37th USAEE/IAEE North American Conference

ENGAGE WITH USAEE AND OTHER CONFERENCE PARTICIPANTS

Follow updates from the conference on Twitter @US4EE or on the Yapp App available free for all conference delegates on Android and IOS Devices. Use the hashtag #USAEE19DV so that others can easily find your postings about the conference.

CONFERENCE PHOTOS WANTED!

Help us by uploading photos from the conference to: https://tinyurl.com/usaee2019
Your pictures will be made available to USAEE members and will help us to document the memorable events here in Denver.

PLEASE NOTE:

By the act of registering and attending this USAEE/IAEE North American conference, you agree that USAEE/IAEE shall acquire the right to use your name, photograph, video recording, and/or audio recording in reporting on the conference in their publications or website, in publicity for future conferences, or in other reasonable manners for the benefit of the Association(s).

You further agree to waive any liability on the part of the USAEE/IAEE, and to hold the USAEE/IAEE harmless, for any damages, injury, or loss of benefits that you incur during your travel to or from or attendance at this conference.

Looking forward to seeing you, November 1-4, 2020

38th USAEE/IAEE NORTH AMERICAN CONFERENCE – AUSTIN, TX

38th USAEE/IAEE North American Conference

Energy Economics: Bringing Markets, Policy and Technology Together

Sheraton Austin Hotel

DOWNLOAD THE OFFICIAL CONFERENCE APP: https://my.yapp.us/USAEE2019

#USAEE20ATX
SUNDAY, NOVEMBER 3

REGISTRATION
8:00am - 7:00pm • Outside Private Dining Room

PHD DAY SESSION
10:30am - 4:00pm • Cedar Room

The PhD Day is a student-only event that will be held on Sunday, November 3 from 10:30am to 4:00pm. All current PhD Students in energy economics and related fields are invited to submit papers. Sponsored by:

CASE COMPETITION SESSION
2:00pm - 3:30pm • Alder Room

Erin Mayfield (Presiding)
Postdoctoral Research Associate, Princeton University

Team #1 - BYuiuc
Boya Hou
Yangxue Yu
University of Illinois, Urbana-Champaign

Team #2 - eVOLve
Colin Sasthav
Dustin Gilmer
University of Tennessee

STUDENT MENTORING SESSION
4:00pm - 5:30pm • Pine Room

Join us at this opportunity to meet a selection of mentors with experience in energy economics professions. Learn from seasoned professionals in various energy fields, chat about careers and personal experiences, and make connections with other conference attendees. All student and early professional attendees are welcome.

OPENING RECEPTION
6:00pm - 7:30pm • Lobby Court and Terrace

STAY UP TO DATE WITH THE LATEST CONFERENCE DEVELOPMENTS

- View the most current program
- Set up your own personal schedule to ensure that you attend the events that are the most important to you.
- Receive last-minute alerts to your phone or tablet
- Connect with other attendees
- View the conference floorplan
- Read speaker biographies and session descriptions

Download the conference app now, available for both Android and iOS:

https://my.yapp.us/USAEE2019

For assistance in using the mobile app, stop by our registration office, outside the Private Dining room.

DOWNLOAD THE OFFICIAL CONFERENCE APP: https://my.yapp.us/USAEE2019
MONDAY, NOVEMBER 4

REGISTRATION
7:00am - 7:00pm · Outside Private Dining Room

MORNING NETWORKING COFFEE
7:45am - 8:30am · Centennial Ballroom Foyer

WELCOME AND INTRODUCTION
8:30am - 8:45am · Interlocken BCD

KEYNOTE PRESENTATION
8:45am - 9:30am · Interlocken BCD
William "Bill" Ritter Jr (Keynote Speaker)
Former Governor of Colorado
"State of the States: Driving the Energy Transition for more than 250 Million Americans"

PLENARY SESSION: GEOPOLITICS OF ENERGY TRANSITION
9:30am - 11:00am · Interlocken BCD
The notion of an 'energy transition' remains an inchoate concept; its links to geopolitics and security are even less well-understood. Classically understood to encompass shifts in the national supply of energy or the discovery of new energy resources, energy transitions are now impacting markets, demand, and trade. Panelists will explore some of the contours which range from institutional shifts in the influence and membership of multilateral organizations, to the accelerating growth of trade in natural gas, to issues of resilience and cybersecurity that are growing in importance with the rise of interconnected systems, to the changing landscape of conflict and other minerals due to these changes in technologies and their deployment in large numbers.

Morgan Bazilian (Chairing)
Director, Payne Institute of Public Policy, Colorado School of Mines

Wim Thomas
Chief Energy Advisor, Shell International BV

Amy Jaffe
Senior Fellow and Director, Council on Foreign Relations

Andreas C Goldthau
Franz Haniel Professor for Public Policy, Willy Brandt School of Public Policy, Research Group Lead, Institute for Advanced Sustainability Studies

Erik Vammen
Senior Vice President and Chief Economist, Equinor ASA

COFFEE BREAK
11:00am - 11:30am · Centennial Ballroom Foyer

DUAL PLENARY SESSION: DECARBONISATION OF NORTH AMERICAN POWER
11:30am - 1:00pm · Interlocken BCD
The North American power market is rapidly evolving, and decarbonizing, due to the continued economic opportunities for natural gas, renewables, and increasingly storage, demand response and other modern power system solutions. This panel will explore the critical nature of technology innovation, policy and regulation, and business model evolutions, including regional and international related issues.

Douglas Arent (Chairing)
Deputy Associate Laboratory Director, NREL

Jesse Jenkins
Postdoctoral Environmental Fellow, Harvard Kennedy School and Harvard University Center for the Environment
Debra Lew
Founder, Debra Lew LLC
Steve Berberich
President and Chief Executive Officer, California ISO

DUAL PLENARY SESSION: CHALLENGES TO ENERGY INFRASTRUCTURE DEVELOPMENT IN U.S., CANADA AND MEXICO
11:30am - 1:00pm · Interlocken A
This panel will explore the challenges and potential solutions in building new energy infrastructure in the U.S., Canada and Mexico. While the three countries share similar experiences, they also have unique issues. Are their learnings about successful solutions that can be transferred between nations? To what extent does a lack of energy infrastructure limit energy flows across shared borders? How should those issues be resolved?

Paula A. Gant (Chairing)
SVP, Corporate Strategy and Innovation, Gas Technology Institute

Luis Serra Baragan
Executive Director, Tecnologico de Monterrey Energy Initiative at the School of Government and Public Transportation
Tisha Schuller
Principal, Adamantine Energy
Jean-Denis Charlebois
Chief Economist, Canadian Energy Regulator

AWARD LUNCHEON
1:00pm - 2:30pm · Centennial Ballroom

USAAE Adelman Frankel Award to: BP Statistical Review of World Energy

USAAE Senior Fellow Awards:
Dr. Wallace E. Tyner (posthumous)
Dr. Andrew Klett

Case Competition Awards
Best Working Paper Award

ROUNDTABLE AND CONCURRENT SESSIONS 1-9
2:30pm - 4:00pm

1. Roundtable: Women in Energy
   (Interlocken B Room)

Energy Price Forecasting Tricks of the Trade

Energy prices can be notoriously difficult to forecast, with projections often undermined by unexpected weather events, the daily whims of world leaders and gaps in fundamental supply and demand data. The advent of computer-assisted big data analytics and satellite imagery seems to offer a means of improvement for accuracy. In electricity markets where precision is most necessary, computer-assisted digital technologies are likely to have a large impact, but oil and gas price forecasting remains more of an art than a science as previous methodologies and algorithms need to be adjusted to reflect changing digitized energy and vehicle technologies and consumer use patterns. Four distinguished women forecasters from government, business and academia discuss changes in the tools and methods used to forecast energy prices, successes and challenges to accurate energy price forecasting and the opportunities for women and diverse workforces in the energy forecasting field.

Amy Myers Jaffe, President
Senior Fellow and Director, Council on Foreign Relations

Kathryn Downey Miller, President, BTU Analytics

Helen Currie, Chief Economist, ConocoPhillips

Jill N Scotcher Energy Economist, Chevron

Join the conversation on Twitter! #USAEE19DV
2. Energy Storage and the Grid 1
(Interclocken A Room)
Derek Olmstead, Presiding
Director Capacity Markets, Market
Surveillance Administrator

Generators’ Owned Energy Storage
System Can Increase System Cost:
Cause and Solution (8 min.)
Rui Shan, Oak Ridge National Laboratory
Mingquan Li, Duke University

Assessing the Role of Energy Storage as
a Peaking Capacity Resource in the
United States (8 min.)
Will Frazier, Wesley Cole, National
Renewable Energy Laboratory

How Does Energy Storage Affect the
Generation and Revenue of Existing
Generation Technologies? (8 min.)
Naga Srujana Gotedi, Eric Hittinger,
Rochester Institute of Technology
Ines Azevedo, Brian Sergi, Carnegie
Mellon University

Complementary Roles of Power-to-
Gas–to-Power and Batteries in a 100%-
Reliable Wind and Solar Electricity
System (15 min.)
Jacqueline A. Dowling, Nathan S. Lewis,
California Institute of Technology
Ken Caldeira, Mengyao Yuan, Fan Tong,
Carnegie Institution for Science

3. Energy & Economic Growth 1
(Pine Room)
Peter Balash, Presiding
Senior Economist, US Department of
Energy – NETL

Gasoline Subsidy Reform and Economic
Growth: A Comparative Analysis (8 min.)
Muhammad I Akimaya, King Fahd
University of Petroleum and Minerals

Macroeconomic and Sectoral Impacts of
Gas Supply Increases in Nigeria: A
CGE Analysis (15 min.)
Emmanuel O Agiye, Emerald Energy
Institute, University of Port Harcourt
Adeola F Adenikinju, Centre for Energy
Economics, Petroleum and Law,
University of ibadan

Case Study: Adoption and Penetration of
Modern Energy Technology in
Nigeria’s Residential Sector (15 min.)
Adeola F Adenikinju, Dilinna I. Nwobi,
Nkachinyelu P Oranye, Centre for
Petroleum Energy Economics and Law
CPEEL University of ibadan Nigeria
Olalekan J Akintande, Laboratory for
Interdisciplinary Statistical Analysis,
University of ibadan Nigeria

Rainfall, Temperature, Energy and
Economic Growth in Ethiopia: A Non-
Linear and Asymmetric Approach (15 min.)
Nyakundi M Michieka, Richard S
Gearhart, California State University,
Bakersfield
Noha Razek, University of Regina

4. Longer-Term Energy
Transition 1 (Interclocken D Room)
Christophe Bonnery, Presiding
Director Economics & Prospective, F-AEE

Canada’s Energy Transition: Trends
and Indicators (15 min.)
Jean-Denis Charlebois, Abha
Bhargava, Ryan Creighton, Margaret
Skwara, Matthew Hansen, Canadian
Energy Regulator

Case Study: Synergy Options Between
Gas-fired Electricity Generation and
Solar PV in the Power Sector Markets of
Gulf Cooperation Council Countries
(GCC) and the U.S. (15 min.)
Nabeel H Alabbas, SAUDI ARAMCO
Joseph Nyangon, University of Delaware

Do Market Barriers Exist for
Renewables? A Portfolio Approach (15 min.)
Elizabeth A Wachs, Bernard Engel,
Purdue University

The State-level Impacts of the
Introduction of a Carbon Tax in the
United States (15 min.)
Jon Stenning, Unnada Chwepwecha,
Hector Pollitt, Cambridge Econometrics

5. Renewables in the Electricity
System 1 (Interclocken C Room)
Edson Daniel Lopes Goncalves,
Presiding
Professor, FGV – CERI

Improving Curtailment Representation
in Utility Planning Tools (8 min.)
Bradly Stoll, Elaine Hales, Jennie
Jorgensen, Matt Irish, National
Renewable Energy Laboratory

Impacts of High VRE Futures on
Demand–side Decisions (15 min.)
Cody Warner, Jo Seel, Ben Paulos,
Andrew D Mills, Lawrence Berkeley
National Laboratory

Assessing Country and Sub-National
Region Renewable Energy Potential (15 min.)
Gregory Upton, Siddhartha Narra, LSU
Center for Energy Studies
Areendam Chanda, LSU Department of
Economics

Property Tax Incentives and Wind
Energy Development: Effectiveness
and Fiscal Impacts (15 min.)
Ziqiao Chen, Youn-Jung Choi,
Syracuse University

6. Student Best Paper Award
Competition (Spruce Room)
Eric Hittinger, Presiding
Associate Professor, Rochester Institute of
Technology

Do Federal Oil and Gas Assessments
Affect Lease Acquisition Behavior? A
Natural Experiment in the Williston
Basin (15 min.)
Jesse D Backstrom, Texas A&M
University

Credit and attention in the adoption
of profitable energy efficient
technologies in Kenya (15 min.)
Susanna Berkouwer, UC Berkeley
Joshua T Dean, Institute for Behavior &
Inequality

Does Increasing Block Pricing
Decrease Energy Use? Evidence from
the Residential Electricity Market (15 min.)
Becka Brodin, Georgetown
University

Not on My Coast? North American
Natural Gas Markets Under LNG
Demand Growth and Infrastructure
Restrictions (15 min.)
Baturay Calci, University of Texas

7. Environmental Issues with
Shale Oil & Gas 1 (Fir Room)
Daniel Raimi, Presiding
Senior Research Associate, Resources for
the Future

Patterns and Drivers of Flaring in the
Permian Basin (15 min.)
Mark Agerton, UC Davis

An Estimate-based Approach to
Pricing Methane Emissions (15 min.)
Levi Marks, University of California,
Santa Barbara

Oil and Gas Well Targeting:
Implications for Supply and Methane
Emissions (15 min.)
Benjamin Gilbert, Colorado School of
Mines
Gavin Roberts, Weber State University

DOWNLOAD THE OFFICIAL CONFERENCE APP: https://my.yapp.us/USAEE2019
8. Oil Supply 1 (Birch Room)
Lindsay Goldstein, President Program Analyst, ONRR

Effects of Tax Cuts and Jobs Act in the Upstream Oil and Gas Industry (8 min)
Víctor Del Carpio Neyra, Svetlana Ikonnikova, Bureau of Economic Geography, The University of Texas at Austin

The Marginal Barrel of Oil (15 min)
Giacomo Benini, Stanford University Valerio Dotti, Washington University in St. Louis

Case Study: Effect of Carbon Taxes Applied to Upstream Carbon Emissions on Reserves Estimates (15 min)
Florent Rouzet, Regional Director, Gaffney, Cline & Associates

OPEC’s “Reasonable Oil Price Level” Notion and the External Breakeven in Saudi Arabia, Russia and Canada: Accounting for Economic Cycles and Pipeline Politics (15 min)
Noha Razek, The University of Regina Nyakundu M Michieka, California State University, Bakersfield Emison Silva, The University of Alberta

9. LNG (Alder Room)
Robert Borgstrom, President Advisor on Energy Regulation, Independent Consultant

Liquefied Natural Gas as an Alternative to the Transportation Sector in Brazil (8 min)
Drielli Peyerl, Dominique Mouette, Pedro Gerber Machado, University of São Paulo

Growing U.S. LNG Exports and the Impact of Removing Destination Clauses on Market Liquidity in the Asia-Pacific (8 min)
Fang-Chia Lee, Researcher, Asia Pacific Energy Research Centre

Case Study: How the U.S. LNG Export Models May Compete on European and Asian Gas Markets in Increasing LNG Trade and Arbitrage (8 min)
Aminam Tailpova, Higher School of Economics, National Research University

Exploiting Real Options in LNG Trade (15 min)
Peter R Hartley, Kenneth B Medlock III, Rice University Baker Institute

Case Study: Small-scale LNG Potential in the Asia Pacific Region (15 min)
Diego Rivera Rivota, Researcher, Asia Pacific Energy Research Centre (APERC)

COFFEE BREAK
4:00pm - 4:30pm - Centennial Ballroom Foyer

ROUND TABLE AND CONCURRENT SESSIONS 10-18
4:30pm - 6:00pm

10. Roundtable: The Promise of Carbon Capture, Storage and Utilization (Interlocken B Room)

The National Energy Technology Laboratory (NETL) is pleased to host a roundtable that intensively examines the promise of Carbon Capture, Storage and Utilization (CCUS). As chief steward of the Department of Energy’s carbon management program, NETL fosters technology development across the entire CCUS chain as it seeks to lower the capital and operating costs of carbon dioxide separation at gas processing units, industrial sources, and power plants, safely deliver, inject, and monitor CO2 into saline reservoirs, and employ CO2-based enhanced oil recovery and associated CO2 storage as a means to incentivize capture. NETL will convene leading experts active in all phases of DOE’s program, highlighting program highlights and successes, and examining remaining challenges facing the integration of CCUS into both the nation’s energy economy and the global energy ecosystem. Special attention to recent tax incentives will be paid as the DOE moves to deploy CCUS by 2025.

Andrea McNe mar, President Acting Technology Manager, Carbon Storage Program, National Energy Technology Laboratory, U.S. DOE

Justin Ong, Program Director, ClearPath Foundation
Joseph Thom, Director, Renewable Energy & Environmental Finance, Wells Fargo
Lynn Helm, Director, North Dakota Department of Mineral Resources Vello Kuvukja, President, Advanced Resources International, Inc.

11. Renewables in The Electricity System 2 (Interlocken A Room)
Peter Schwarz, President Professor of Economics, UNC Charlotte

System Integration Cost of High Penetration of Interruptible Renewable Energy (15 min)
Nisai Herath, Wallace E Tyner, Purdue University

Capacity Markets versus Energy-only Markets: A Comparison Under Wind Energy Penetration (15 min)
Cody Hoil, Chiara Lo Prete, The Pennsylvania State University

Retail Electricity Rate Design, Distributed Energy Resources, and Emissions (15 min)
Burcin Unel, Institute for Policy Integrity at NYU School of Law Elisha Spiller, Kristina Mohlin, Environmental Defense Fund Karen Tapia-Ahumada, Massachusetts Institute of Technology Energy Initiative

Case Study: Enhancing Price Formation Process in Electricity Markets to Support Advancing High Renewable Energy Targets: A PJM Case Study (15 min)
Ali Daraeipour, Eric Larson, Tom Kreutz, Princeton University

12. Energy & Economic Growth 2 (Pine Room)

Natural Gas and Energy Transition: Perspectives of Demand in the Sao Paolo State (8 min)
Marina O Barboza, Drielli Peyerl, Universidade de Sao Paulo (USP)

Long-term Investment Planning for the Electricity Sector in Small Island Developing States: Case Study for Jamaica (15 min)
Travis Atkinson, Douglas Gotham, Paul V Preckel, Purdue University

Integrated Top–Down and Bottom–Up Approaches: A CGE Energy Model for a Developing Country (15 min)
Alma R Cortes Selva, Dominique van der Mensbrugghe, Purdue University

Is the Global Economy a Superorganism? (15 min)
Carey King, University of Texas at Austin Andrew Jarvis, Lancaster University

Join the conversation on Twitter! #USAAEE19DV
13. Longer-Term Energy Transition 2 (Interlocken D Room)
Michael Pollitt, President, Judge Business School

U.S. Electricity Infrastructure of the Future: Generation and Transmission Pathways Through 2050 (15 min.)
Gopika Jayadev, Erhan Kutanoglu, Benjamin D Leibowitz, The University of Texas at Austin

Case Study: Improving Local and Long Term Distribution Grid Management: A Prospective Approach (15 min.)
Jonas Meyer, Christophe Bonnery, Enedis

Daniel Steinberg, Maxwell Brown, National Renewable Energy Laboratory (NREL)

14. Influences on EV Demand (Interlocken C Room)
Ben Schlesinger, President, Benjamin Schlesinger & Assoc LLC

Assessment of the Electric Vehicle Charging Station Incentive Program in the U.S. Electric Vehicle Market: The Case of Missouri (16 min.)
Nhue Nguyen, Tyner Wallace, Purdue University

Timing is Everything: Optimal EV Charging to Maximize Welfare (15 min.)
Miguel A Castro, Researcher, Inter-American Development Bank

Future Costs of Electric Vehicles: Effects of Technological Progress and Consumer Heterogeneity (15 min.)
Ranjit R Desai, Eric Williams, Eric Hittinger, Rochester Institute of Technology

Impact of Electric Vehicle Use in Uber and Lyft (15 min.)
Alan Jenn, Assistant Professor, University of California, Davis

15. Competition & Oil & Gas Price Arbitrage 1 (Spruce Room)
Benjamin Gilbert, President, Assistant Professor, Colorado School of Mines

Closer to One Great Pool? Evidence from Structural Breaks in Oil Price Differentials (15 min.)
Michael Plante, Grant Strickler, Federal Reserve Bank of Dallas

Time-Varying Jump Intensities and the Interconnectedness of the North American Crude Oil Complex (15 min.)
Neil A Wilmot, University of Minnesota Duluth

Spatial Competition and Retail Pricing in the Newly-Created Mexican Gasoline Market (15 min.)
Shaun D McRae, Enrique Seira, ITAM

Environmental Issues with Shale Oil & Gas 2 (Fir Room)
Matthew Butner, President, Economic Fellow, NYU Institute of Policy Integrity

NUMBy or Not? The Influence of Geographic Proximity on Public Risk Perception and Attitudes of Shale Gas Development in China (15 min.)
Huimin Tan, Southwestern University of Finance and Economics

Fracking and Indoor Radon: Spurious Correlation or Cause for Concern? (15 min.)
Katie Jo Black, Kenyon College
Shawn J McCoy, University of Nevada - Las Vegas
Jeremy G Weber, University of Pittsburgh

The Equity State of an Energy System: Air Quality, Climate Change, and Labor Market Equity of the Shale Gas Boom in the Appalachian Basin (15 min.)
Erin N Mayfield, Jared Cohen, Robinson Allen, Ines Azevedo, Nicholas Muller, Carnegie Mellon University

17. Oil Supply 2 (Birch Room)
John Huling, President, Independent Energy Analyst

Changes in Institutional Design and Learning-by-doing: An Empirical Study of Offshore Exploration Drilling Efficiency in South East Asia (8 min.)
Mohammad Kemal, Aidy Amir, SKK Migas

Estimating Potential Costs of Adding New Anthropogenic CO2 and Expanding Production of Natural CO2 for EOR in the Permian Basin (15 min.)
Steven T. Anderson, Steven M. Cahan, U.S. Geological Survey

Low-Carbon Electrofuel Synthesis From Variable Renewable Electricity: An Optimization-Based Techno-Economic Analysis (15 min.)
Evan D Sherwin, Stanford University

No Fool’s Choice: How Unconventional Shale Development Fit into a Sustainable Energy Future for Emerging Economies (15 min.)
Ning Lin, Chief Economist, University of Texas, Austin

In the Name of Profit: Explaining the Emergence of the Global Oil Commodity Regime (15 min.)
Andreas Goldthau, Willy Brandt School of Public Policy
Llewelyn Hughes, ANU Crawford School of Public Policy

18. Student WIP Session (Alder Room)
This session aims to give students feedback from leading professors and the USAEE community who will be in attendance. Half an hour will be given for the presentation and discussion of each paper. All are welcome to attend and participate in the discussions.

Peter Hartley, President, Peterkin Professor of Economics, Rice University

A Financial Analysis of the Importation of Liquefied Natural Gas from the United States as a Natural Gas Source to the Brazilian Market (15 min.)
Lauren Arend, Driella Peyerl, Edmison M dos Santos, University of São Paulo

Returns From Distributed Generation: Utilities, Consumers, and Communities (15 min.)
Anjul Sen, Nathan Huftman, University of Maryland, College Park

Transition Strategies to Harness Local Solar and Geothermal Energies in the USA: A Linear Programming Approach (15 min.)
Amos Oppong, Ma Jie, Kingsley Nketa Acheampong, Bismark Ameyaw, University of Electronic Science and Technology of China (UESTC)
YOUR TIME TO ENGAGE – ENERGY NETWORKING RECEPTION
8:30pm – 8:00pm • Centennial Ballroom

Dennis J. O’Brien USAEE/IAEE Best Student Paper Awards

This event is a networking reception with beverages and hors d’oeuvres where participants get to discuss energy-related topics of interest. There will be 8 tables with leaders on various energy topics and four 15-minute intervals will be allocated allowing participants to switch topics 4 times during the reception. Participants can also chose to remain at one table if the topic is of particular interest. This is a good way to get to know people with similar interests.

STUDENT RECEPTION
8:00pm – 10:00pm • Gordon Biersch Brewery

Immediately following the Energy Networking Reception, come join fellow students at Gordon Biersch Brewery, a 5-minute drive from the conference hotel. Enjoy food and dessert in our reserved space, with drinks available for purchase. Transportation to/from the hotel will be provided.

Gordon Biersch Brewery, 1 West Flatiron Crossing Dr. #428, Broomfield CO

Reception sponsored by:

center for ENERGY STUDIES

CONFERENCE SURVEY: GIVE US YOUR FEEDBACK

We value your participation in our conference survey as this helps us to improve our programming to benefit all that attend.

Let us know what was of value to you!

https://www.surveymonkey.com/r/USAEE2019

Join the conversation on Twitter! #USAEE19DV
37th USAEE/IAEE North American Conference

TUESDAY, NOVEMBER 5

REGISTRATION
7:00am - 7:00pm • Outside Private Dining Room

MORNING NETWORKING COFFEE
7:45am - 8:30am • Centennial Ballroom Foyer

DUAL PLENARY SESSION: GOVERNMENT POLICIES PROMOTING LOW CARBON TRANSITION
8:30am - 10:00am • Interlocken BCD

The U.S. has cut carbon emissions around 13% from 2005 to 2017 led by the electricity sector. Market forces contributing to the cut include lower natural gas prices, cost reductions in wind and solar, and energy efficiency investments in buildings, power plants, vehicles, and industry. A myriad of government policies have also contributed including federal R&D investment and tax incentives, stricter energy standards, and state and regional carbon cap-and-trade programs. Since these emissions cuts, though welcome, do not meet the even deeper cuts recommended by the scientific community to safeguard our climate, this session explores a number of questions: What is ahead on the state and federal policy agenda? What policies will support efficient and effective pathways to lower carbon energy economies given the myriad policy makers at various levels of government? What policies have a chance of being adopted, and why? How does the Green New Deal fit into this discussion?

Susan Tierney (Presiding)
Senior Advisor, Analysis Group

Kelly Sims-Gallagher
Professor of Energy and Environmental Policy and Director of the Center for International Environmental and Resource Policy at The Fletcher School, Tufts

Sarah Ladislaw
Senior Vice President; Director and Senior Fellow, Energy and National Security Program, CSIS

Carrie Jenkins
Executive Vice President, M.J. Bradley & Associates

DUAL PLENARY SESSION: U.S. ENERGY TRADE
8:30am - 10:00am • Interlocken A

This session will discuss North American energy trade in a global context. Globalization and international trade are pivotal to the energy complex, especially for coal, oil and refined products and increasingly for natural gas. By contrast, renewables and electricity generated from them are local and largely non-tradeable energy sources. These energy sources are competing to enhance domestic and export-related infrastructure, with energy and environmental policies at all levels of government playing increasing role.

R Dean Foreman (Presiding)
Chief Economist, American Petroleum Institute

Kevin Book
Managing Director, ClearView Energy Partners

Horace Hobbs
Chief Economist, Phillips 66

Oliver Tuckerman
Vice President of Corporate Development and Strategy, Cheniere

COFFEE BREAK
10:00am - 10:30am • Centennial Ballroom Foyer

CONCURRENT SESSIONS AND GOVERNMENT TRACK 19-26
10:30am - 12:00

19. Renewables in The Electricity System 3 (Interlocken B Room)

H. Alan Love, Presiding Professor, Washington State University

An Integrated Framework for Analyzing Clean Energy Technology Subsidies Applied to Residential Solar

Tiruwork B Tibebu, Eric Hittinger, Qing Miao, Eric Williams, Rochester Institute of Technology

A Support Mechanism Through the Shapley Value for Household Photovoltaic Generation after Feed-in Tariffs (15 min.)

Yoshihiro Yamamoto, Takasaki City University of Economics

The Effect of Rate Design on Deployment of Distributed Energy Resources (15 min.)

Elisheva Spiller, Kristina Mohlin, Environmental Defense Fund

Burcin Unel, Institute for Policy Integrity at New York University School of Law

Karen Tapia-Ahumada, Massachusetts Institute of Technology Energy Initiative

 Electricity Market Design in a Zero Marginal Cost Setting (15 min.)

Robert Iadel, Baker Institute for Public Policy at Rice University

20. Energy Storage and the Grid 2 (Interlocken A Room)

Eric Williams, Presiding Associate Professor, Rochester Institute of Technology

The Value and Interplay Between Gas Generation and Energy Storage for Power Systems with High Penetration of Variable Renewables (8 min.)

Nestor A Sepulveda, Drakr Mallapragada, MIT Energy Initiative

Influence of Electric Vehicle Uptake on Competitive Dynamics of Storage Technologies in Electricity Sector Applications (15 min.)

Martin Beuse, Tobias Schmidt, Bjarte Steffen, ETH Zurich

Heat Pumps with Thermal Energy Storage: The Cost, Peak Demand, and Emissions Impacts of a Flexible, Electrified Heating Sector (15 min.)

Thomas Deutjen, Parth Vaishnav, Carnegie Mellon University


The goal of the session is to strengthen contacts between energy researchers and representatives of different governmental agencies that fund research in energy economics, demystifying the funding application process and helping lower barriers between government and academia. The panelists will discuss different ways an energy economist can engage with governmental agencies, ranging from obtaining funding to connecting to other researchers and spinning off a startup. The session will include an interactive component, allowing the audience members to pitch their research ideas and receive feedback from the panelists.

Anna Ebers, Presiding Statistician, Tetra Tech

Ellen Morris
Program Lead, University Partnerships, National Renewable Energy Laboratory

John Primo
Senior Social Scientist, Bureau of Ocean Energy Management, Department of Interior

DOWNLOAD THE OFFICIAL CONFERENCE APP: https://my.yapp.us/USAEE2019
22. Longer-Term Energy Transition 3

**Why Rapid and Deep Decarbonization Isn’t Simple: Linking Bottom-up Socio-technical Decision-making Insights with Top-down Macroeconomic Analyses**

**Turning the Tables on the Shale Revolution on the U.S. Energy Mix: Evidence from the Natural Gas Pipeline Network**

*Saptarshi Das, Ranjit R. Desai, Eric Hittinger, Eric Williams, Rochester Institute of Technology*

**Market Power in Australia’s Eastern Natural Gas Market**

*Kelly Neill, Rice University*

**Rotary Rig Parity: The Drilling Rate Augmented Relationship Between Oil and Gas Prices**

*Gavin E Roberts, Weber State University*

**Short Run Effects of Carbon Policy on U.S. Electricity Markets**

*Steve Dehike, Colorado School of Mines*

**U.S. Power Sector Transitions Under High Electrified Futures**

*Matteo Muratori, Trieu Mai, Caitlin Murphy, NREL*

**Capacity Expansion of ERC’s Generator Fleet Under Climate Change**

*Francisco Raistoon Fonsca, Paulina Jaramillo, Haibo Zhai, Avila Leow, Mario Berges, Edson Severini, Carnegie Mellon University*

**Join the conversation on Twitter! #USAEE19DV**
solutions, but each has its benefits and costs. For example, nuclear has little carbon emissions but there are visions of mushroom clouds and toxic wastes dancing in many heads. Gas is abundant but it too emits carbon from burning and fugitive emissions. Nuclear has little carbon emissions but there are visions of mushroom clouds and toxic wastes dancing in many heads. With CCS, where can we economically put all the carbon we capture. For these and some other less mainstream solutions (dilithium crystals, anyone?), we will consider their potential, costs, and drawbacks along with the needed technology breakthroughs and carbon policies to incentivize their application.

Carol Dahl (Presiding)
Senior Fellow, Payne Institute of Public Policy, Colorado School of Mines

Sara Banaszak
Senior Advisor, Exxon Mobil Corporation

Shannon Bragg-Sitton
Manager of the Systems Integration Department in the Nuclear Systems Design & Analysis Division, Idaho National Laboratory

Cindy A. Yeilding
Senior Vice President, BP America Inc.

---

**DUAL PLENARY SESSION: CHANGING OIL AND GAS COMPANY INVESTMENT**

2:00pm - 3:30pm • Interlocken A

This panel will explore how oil and gas company investment has changed and the impact on oil and gas supply. Changing expectations for prices, technological progress (including the sustainability of US tight oil), policy, and geopolitics have impacted company thinking re: oil/gas investment, both in absolute terms and relative to renewables. How have these factors changed company investment plans, and what will the implications be for future supply? Are prospects different for oil vs gas?

Mark Finley (Presiding)
Fellow in Energy and Global Oil, Rice University

Mark S Berg
Executive Vice President, Pioneer Natural Resources

Chris Birdsell
Manager Economics & Energy, Corporate Strategic Planning, Exxon Mobil Corporation

Per Magnus Nygren
Senior Partner, Rystad Energy

---

**COFFEE BREAK**

3:30pm - 4:00pm • Centennial Ballroom Foyer

---

**CONCURRENT SESSIONS AND GOVERNMENT TRACK 27–34**

4:00pm - 5:30pm

---

**27. Renewables in the Electricity System 4**

(Interlocken B Room)

Lucy Qiu, Presiding
Assistant Professor, University of Maryland College Park

Case Study: Simulation of Solar Panel Adaption Using Agent-based Model: A Case Study of California (15 min.)

Zining Yang, Yuan Yuan Lee
Claremont Graduate University

Solar Pricing: Grid Metering and Other Alternatives to Net Metering (15 min.)

Peter M Schwarz, Nathan Duma, Ercument Camadan
UNC Charlotte

Output-based Incentives for Residential Solar PV: Demand Responsiveness, Cost-effectiveness, and Alternative Policy Scenarios (15 min.)

Marta Talevi
London School of Economics and Political Science

---

**28. Energy Storage and the Grid 3**

(Interlocken A Room)

Kyle Haemig, Presiding
Economist, Central Municipal Power

Assessing the Economics of Commercial/Residential Storage Using an Intertemporal Decision Framework (15 min.)

Himanshu Deshpande, Jay Whitacre, Guannan He, Carnegie Mellon University

The Effects of Electricity Consumption and Rate Design on Solar Plus Storage-enabled Grid Defection (15 min.)

Will Gorman, Duncan Callaway, Stephen Jarvis, University of California, Berkeley

Socially Optimal Operation of Grid-Scale Energy Storage: Balancing Direct Benefits with Indirect Costs (15 min.)

Eric Hittinger, Maanasa Govindaraju, Rodrigo Folgar, Rochester Institute of Technology

---

**29. Government Session: Energy Data for Western and Federal Lands**

(Pine Room)

The U.S. does not have a single central repository for all energy-related information. The U.S. Energy Information Administration provides a wide range of valuable data; individual bureaus/offices at Department of the Interior provide information on energy and revenue from Federal lands; the Federal Energy Regulatory Commission provides information on regulation activities such as oil and gas pipelines; individual states have planning and regulatory bodies that publish data on energy subject to their jurisdiction/taxation; and some energy companies publish energy statistics and forecasts. The speakers will provide demonstrations of how to use some of the tools on their agencies’ websites and provide information the other data they make available to the public. After the presentations, there will be time not only for questions but also for discussion of additional data resources and tools that attendees wish were available. Speakers will be available after the session to continue discussions and provide hands-on access to their websites.

Kim Coffman, Presiding
Economist, Bureau of Ocean Energy Management

Chris Peterson
Senior Energy Markets Analyst, U.S. Energy Information Administration

Lindsay Goldstein
Program Analyst, Office of Natural Resources Revenue, U.S. Department of the Interior

Marina Fassell
Program Analyst, Office of Natural Resources Revenue, U.S. Department of the Interior

Brian N. Shaffer
Geologist, Project Chief, U.S. Geological Survey

---

**30. Electricity Market Management**

(Interlocken D Room)

Sanya Carley, Presiding
Professor, Indiana University

Policy Options to Reduce the Risk of Resource Constraints Under the Increase Demand of New Energy Technologies (8 min.)

Hisanori Hori, Professor, National Graduate Institute for Policy Studies

---

DOWNLOAD THE OFFICIAL CONFERENCE APP: https://my.yapp.us/USAEE2019
<table>
<thead>
<tr>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Time-of-day Travel Demand Elasticity Paradox (15 min.)</td>
<td>Cody Nehiba, Louisiana State University</td>
</tr>
<tr>
<td>Climatic Impact on China’s Residential Electricity Consumption: Does the Level of Income Matter? (15 min.)</td>
<td>Ying Yu, Xiamen University; Kenli Du, China Institute for Studies in Energy Policy, Xiamen University; Chu Wei, Department of Energy Economics, School of Economics, Renmin University of China</td>
</tr>
<tr>
<td>Alternatives to the Autoregressive Moving Average Structure in State Adjustment Dynamic Demand Modeling (15 min.)</td>
<td>Steven C Fischer, Inter-American Development Bank (retired)</td>
</tr>
<tr>
<td>Revisiting Income and Price Elasticities for Residential and Industrial Electricity and Road Gasoline and Diesel (15 min.)</td>
<td>Brant Liddle, Senior Research Fellow, Energy Studies Institute, NUS</td>
</tr>
<tr>
<td>Trends in U.S. Manufacturing Energy Consumption (15 min.)</td>
<td>Behjat Hojjati, U.S. Energy Information Administration</td>
</tr>
<tr>
<td>33. Energy &amp; The Environment (Birch Room)</td>
<td></td>
</tr>
<tr>
<td>Robert Kleinberg, Presiding Senior Research Scholar, Center on Global Energy Policy</td>
<td></td>
</tr>
<tr>
<td>Traffic Congestion and Air Quality in Beijing: Utilizing Taxi Trajectory Data (15 min.)</td>
<td>Zhen Lei, Penn State University; Fan Xia, Jintao Xu, Ximeng Chen, Yu Liu, Peking University</td>
</tr>
<tr>
<td>Pollution Externalities, Generation Subsidies and Efficiency in Energy and Capacity Markets (15 min.)</td>
<td>Sylvia Blais, Burcin Unei, Institute for Policy Integrity, New York University</td>
</tr>
<tr>
<td>Internalizing Damages from CO2 and Air Pollution: Should We Co-regulate Greenhouse Gas and Air Pollution Emissions Via Taxation? (15 min.)</td>
<td>Michael B Roth, Peter Adams, Paulina Jaramillo, Nicholas Muller, Carnegie Mellon University</td>
</tr>
</tbody>
</table>

**34. Energy & Financial Markets** (Alder Room)

Michael Platne, Presiding Senior Research Economist, Federal Reserve Bank of Dallas

The Impact of Virtual Spread Product on the Multi-settlement Electricity Market Price (8 min.) Hyungkwan Kim, Lawrence Berkeley National Laboratory

Determinants of Forward Premium in the Electricity Market (15 min.) Kun Li, Beijing Normal University


David Broadstock, Hong Kong Polytechnic University Case Study: Financing Renewable Energy in Brazil – The Case of Wind Power Plants (15 min.) Edson Daniel Lopes Goncalves, Professor, FGV – CERI

**USAAE GENERAL MEMBERSHIP MEETING**

5:30pm – 6:00pm • Fir Room

**AN EVENING AT CSU’S GEOLOGY MUSEUM**

6:30pm – 9:30pm • Colorado School of Mines Geology Museum (Board bus at 5:45pm)

Join us for an evening of conviviality (tango lessons optional) at The Colorado School of Mines Geology Museum. The museum is home to one of the state’s two Goodwill moon rocks collected during the Apollo 17 mission. It was started in 1874 and displays mineral, fossil, gemstone, meteorite and historic mining artifact exhibits on two floors. The museum serves as the state repository for Colorado's mineral heritage and promotes its importance and understanding to the university community and the public. It aims to inspire scientific curiosity through education and research while encouraging appreciation of the earth and responsibility for its mineral, fossil, meteorite, and historic mining treasures.
37TH USAEE/IAEE North American Conference

WEDNESDAY, NOVEMBER 6

REGISTRATION
7:00am – 2:00pm • Outside Private Dining Room

2020 CONFERENCE INFORMATION MEETING (BY INVITATION)
7:30am – 8:30am • Pine Room

MORNING NETWORKING COFFEE
7:45am – 8:30am • Centennial Ballroom Foyer

CONCURRENT SESSIONS AND GOVERNMENT TRACK 35-42
8:30am – 10:00am

35. Regulation (Interlocken B Room)

Marie Fagen, Presidenting Lead Economist, London Economics IntI LLC

Design of Regulation (15 min.)
Robert L Kleinberg, Senior Research Scholar, Boston University; Columbia University

Managing the Threat of Regulatory Capture Under the European Energy Union (15 min.)
Notif Emmanuel Macatangay, Volker Reeser, University of Dundee

Comparing the Results of Renewable Energy Auctions: A Model-Based Analysis of Recent Trends from Around the World (15 min.)
Michael P Pollitt, University of Cambridge

Simon F Lang, London School of Economics

How Much Would China Gain from Power Sector Reforms? (15 min.)
Govinda R Timilsina, World Bank Group

Xi Yang, China University of Petroleum Beijing, China

Jun Pang, Renmin University, China

36. Energy Use By Buildings (Interlocken A Room)

Greg Adams, Presidenting Team Leader Coal & Uranium Analyst, Energy Information Administration

Canada’s Built Environment in the Energy Transition (15 min.)
Matthew Hansen, Michael Nadow, National Energy Board

Carbon Net-Neutral Residential Case Study – Can State-Of-The-Art Renewable Energy Technology Deliver Economically? (15 min.)
Ben Schlesinger, Benjamin Schlesinger and Associates, LLC

Heat Pumps’ Impact on Housing Prices and Implications for Policy Instruments to Facilitate Electrification and Deep Decarbonization (15 min.)
Xingchi Shen, Anand Patwardhan, Yueming Qiu, University of Maryland College Park

Parth Vaidhnav, Carnegie Mellon University

Pengfei Liu, University of Rhode Island

Analyzing Multifamily Building Common Area Electricity Consumption Features and Saving Potentials – Findings From Residential Building Energy Audit Project (15 min.)
Ting-Jui Sun, Meng-Tai Fu, Wen-Hua Liao, Min-Chia Su, Chuan-Yi Su, Industrial Technology Research Institute, Taiwan

Wen-Hsiang Lin, Wei-Huang Hsiieh, Taiwan Green Productivity Foundation

37. International Trade, Finance & Energy (Fir Room)

Guy Caruso, Presidenting Senior Advisor, CSIS

Spatial Effects of Foreign Direct Investment on Carbon Emissions: Evidence from China’s Provincial Panel Data (8 min.)
Xingyu Wang, University of East Anglia

Zhidu Mi, University College London

Hang Lin, Junjie Hong, University of International Business and Economics

The Role of Oil Price Changes on the Balance of Trade: Evidence From Korea–ASEAN Commodity Trade Data (15 min.)
Jungho Baek, University of Alaska Fairbanks

Yeon Jung Choi, Sejong Institute

California’s Carbon Policy and Emission Leakage: A Machine Learning Approach (15 min.)
Chiara de Prete, The Pennsylvania State University

Ashish Tyagi, Frankfurt School of Finance & Management

Technical Potential of Biomass Energy in the APEC Region (15 min.)
Dan L Nguyen, Asia Pacific Energy Research Centre (APERC)

Michael O Sinocruz, DOE of the Philippines

38. Electricity Supply Disruption (Interlocken D Room)

Kari Nalipa, Presidenting President, ReSolved Energy Consulting

Resource Adequacy and Scarcity Pricing Implications of Correlated Generator Failures (8 min.)
Luke A Lavin, Jay Apt, Sinnott Murphy, Carnegie Mellon University

The Wider Economic Benefits of Managing Power Grids Through Vegetation Management: Evidence From the U.S. (8 min.)
Marcello Graziano, Brian Becker, Adam Gallacher, Central Michigan University

Fred V. Carstensen, Peter Gunther, Connecticut Center for Economic Analysis, University of Connecticut

Quantifying Generator Outages and Non-Performance in the Midcontinent Independent System Operator (15 min.)
Chen-Hao Tsai, Stephen Rose, Midcontinent Independent System Operator

Accounting for Uncertainty and Risk Aversion in Grid Expansion Models (15 min.)
Eric Williams, Eric Hittinger, Naga Srujana Goteti, Rochester Institute of Technology

39. Changing Transport Sector Impacts (Interlocken C Room)

Ning Lin, Presidenting Chief Economist, CEE, Univ. of Texas at Austin

Effects of On-Demand Ridesourcing on Vehicle Ownership, Travel, Energy, and Environmental Outcomes of the United States (15 min.)

Private and Social Benefits and Costs of Long-Haul Truck Electrification in the United States (15 min.)
Fan Tong, Corinne Scown, Lawrence Berkeley National Laboratory

Maximilian Auffhammer, Derek Wolfson, University of California, Berkeley

The Dynamic Costs & Benefits of Technology Forcing Policy Nested in a Broader Performance Standard: The Case of ZEV & CAFE (15 min.)
Arthur HC Yip, Kate S Whitefoot, Jeremy J Michalek, Carnegie Mellon University

DOWNLOAD THE OFFICIAL CONFERENCE APP: https://my.yapp.us/USAEE2019
The Impact of Rapid Technological Change in the Global Energy Industry AND on U.S. Imports Containing Rare Earth Elements (15 min)
Cecilia M Logan, Clinton Noack
Isabella Madalina, Deloitte Consulting LLP
Gavin Pickenpaugh, William M Summers, NETL/DOE

40. Government Session: Laboratory Showcase
(Spruce Room)

The western United States provides natural resources necessary for energy conversion. The National Laboratory system is a primary conduit through which the Department of Energy promotes science and technology development along the energy value chain. Come listen to senior representatives discuss exciting nearer-term energy R&D across the nuclear, fossil, and renewable energy sectors.

Christopher Nichols, Presiding National Energy Technology Laboratory
Shannon Bragg-Sitton Idaho National Laboratory
Doug Arent National Renewable Energy Laboratory
Peter Kobis Sandia National Laboratory

41. Electricity & Climate Policy
2 (Birch Room)

Anna Ebers, Presiding Statistician, Tetra Tech

 Burning the Bridge Fuel: Regulation and Natural Gas Retirements (8 min)
Cameron Duff, University of Colorado, Boulder

Aligning Climate and Health Benefits in Power Plant Siting and Retirement Decisions (15 min)
Brian Sergi, Allen Robinson, Nick Z Muller, Peter Adams, Inês Azevedo, Carnegie Mellon University
Steven J Davis, UC Irvine
Julian Marshall, University of Washington

Scenarios for Decarbonization of the Future Indian Electricity Sector (15 min)
Ivan Rudnick, Pablo Duenas, Audun Bottaru, Carlos Batlle, MIT Energy Initiative

Karthik Ganesan, Council on Energy, Environment and Water
Dimitri J Papageorgiou, Bryan K Mignone, Michael R Harper, Srinivasan Rajagopalan, ExxonMobil Research and Engineering Company

True or Not True: Carbon-free Electricity Generation is Possible (15 min)
Rolf Golombok, Simen Gaur, Frisch Centre

42. Technology Innovation
(Alder Room)

Hisanori Nishida Presiding Professor, GRIPS

Effectiveness of Expert Judgement in Technology Innovation (15 min)
Rebecca E Ciez, Elke Weber, Princeton University
Daniel Stieglitz, Columbia University

Evolution of Hardware Costs and Soft Costs in Photovoltaic Systems (15 min)
Magdalena Kiemiet, Massachusetts Institute of Technology
James McInerney, Harvard University
Jessica E. Trani, Goksin Kavik, MIT

An Assessment of Utility-Scale Solar Farm Locations (15 min)
Gilbert L Michaud, Christelle Khalaf, Ohio University

COFFEE BREAK
10:00am - 10:30am • Centennial Ballroom Foyer

DUAL PLENARY SESSION: GLOBAL DECARBOXYLATION OF ROAD TRANSPORT
10:30am - 12:00am • Interlochen BCD

As the global power sector decarbonizes, the transport sector will become the main driver of CO2 emissions growth. Much of the focus today is on the electrification of road transport since fuel substitution is considered to be less challenging than for other transportation modes. This session addresses the challenges and prospects of electrifying passenger cars and trucks around the world, including the infrastructure needs of the transition. What are the advantages and disadvantages of electrification vs. other decarbonization alternatives (e.g., hydrogen, biofuels)? Which countries or regions will be leaders in electrifying road transport and which countries will lag? The panel also assesses the impact of automation and shared mobility on energy demand. Will they increase the efficiency of travel, thereby reducing energy demand? Alternatively, if they increase the convenience of driving and reduce cost, will they instead increase vehicle miles traveled and energy demand in road transport? What happens to CO2 emissions if power for electrification is generated by coal?

Marianne Kah (Presiding)
Senior Research Scholar, Columbia Center on Global Energy Policy

Lewis Fulton
Director, STEPS (Sustainable Transportation Energy Pathways), UC Davis Institute of Transportation Studies

Amal Bin-Nun
Vice President, Autonomous Vehicles and Mobility Innovation, Securing America’s Energy Future

Paul Leiby
Distinguished Research Scientist, Oak Ridge National Laboratory

DUAL PLENARY SESSION: ENERGY ENTREPRENEURSHIP AND FINANCE
10:30am – 12:00am • Interlochen A

This session explores changes in the private securities industry are giving private companies unprecedented access to a wide range of equity and debt institutional funding – and giving institutional investors (including family offices, sovereign wealth funds, private equity, hedge funds, banks, venture capital, pension funds, and strategic investors) access to curated, targeted equity and debt investment opportunities. Panelists will probe challenges facing local and international investment in energy infrastructure projects – and why some succeed and others fail.

Tina Vital
Managing Director, Castle Placement LLC

Robert Fenwick-Smith
Founder and Managing Director, Aravaipa Ventures

Ambassador Robert C Perry
Director – Africa, The Stevenson Group

Greg Taylor
Partner, Sequoia Investment Management Company

CLOSING PLENARY SESSION: ENERGY TRANSITIONS – LEARNING THROUGH HISTORY
12:00am – 1:30pm • Interlochen BCD

Energy markets have changed drastically in the past few years but this panel will seek to answer the question: have the changes been any different from what's gone on previously? Sometimes a person's perspective on
history is set by their own time span, which may be limited. Our discussion will hear from people who have been watching energy markets and ecosystems change and change again for many years. They will give us their perspective on just where the current shifts stand compared to what has gone on before. A push to decarbonize fuels as the world deals with the reality that oil and natural gas supplies won’t be in anything resembling a tight market for the foreseeable future is a paradigm that we haven’t seen previously. But there have been other upheavals in the past as well. Where do our current changes stand compared to the shifts of the past? People who know their history will help provide answers.

John Kingston (President)
Executive Director and Oil Market Expert, FreitWaves
Richard Newell
President and CEO, Resources for the Future
Amory Lovins
Cofounder, Chief Scientist, and Chairman Emeritus, Rocky Mountain Institute

TOUR THE NATIONAL RENEWABLE ENERGY LABORATORY (NREL) ENERGY SYSTEMS INTEGRATION FACILITY
1:30 p.m. – 5:00 p.m. • Golden, CO
(Separate registration required)

We will meet and board the bus at the Omni Interlocken Hotel lobby at 1:30 p.m. sharp and drive to NREL, where their staff will conduct the tour. At the end of the tour we will board the bus for the trip back to the Omni. Please note that because of traffic, we cannot guarantee a return time to the hotel, so please plan your flights and reservations accordingly.

TOUR NOBLE ENERGY’S O&G PRODUCTION FACILITIES
7:00am – 5:00pm (est.) • DJ Basin
(Separate registration required)

We will travel to Greeley Colorado. On route, Noble staff will provide us an overview of their operations in the Denver-Julesburg (DJ) Basin. In Greeley, we will tour the NOSTC, a full-scale training facility and competency center that features simulated operations equipment.

Sponsored by: