THE
Energy Council Quarterly

SPRING 2019

The Energy Council's First-ever Meeting in Denver Focuses on Global Energy and Environmental Issues

The 2018 Global Energy and Environmental Issues Conference brought discussions of international energy and environmental policy to Colorado's capitol city on December 6-9. In addition to presentations on a wide range of topics, the meeting afforded participants the opportunity to tour the National Renewable Energy Laboratory and Colorado State Capitol.

Presiding over the meeting was Chairman of the Energy Council, Kansas Representative Kyle Hoffman, and Chairman for the Center for Legislative Energy and Environmental Research (CLEER), Arkansas Representative Ken Bragg. Colorado legislators Senator Ray Scott, and Representative Chris Hansen, served as Co-Vice Presidents for the Global Energy and Environmental Issues Conference, assisting with leadership duties for the conference.

Noting that this was the Council's first meeting in Denver, Colorado, Senate President Kevin Grantham and Colorado House Majority Leader Alec Garnett welcomed attendees back to Colorado. Discussions related to the world energy outlook, as well as North American energy and environmental production, transmission, and market issues.

The Opening Address on "World Energy Outlook" was given by Dr. Tim Considine, Distinguished Professor of Energy Economics, School of Energy Resources,

See GLOBAL ENERGY continued on page 4

The Energy Council and CLEER leadership, along with Colorado legislative hosts, welcomed a number of experts as speakers at the 2018 Global Energy and Environmental Issues Conference, which took place in Denver on December 6-9. Seated (left to right) are the Co-Vice Presidents for the conference Colorado Representative Chris Hansen and Colorado Senator Ray Scott. Mr. Paul Jeakins, Commissioner & CEO, British Columbia Oil and Gas Commission; and Mr. R.A. "Sandy" MacMullin, Executive Director, Petroleum Branch, Nova Scotia Department of Energy. Standing (left to right) are Kansas Representative Kyle Hoffman, Chairman of The Energy Council; Ms. Mary Ann Zehr, Senior Manager, Tri-State Generation; Kara Brighton, Deputy Chair, Wyoming Public Service Commission; and Arkansas Representative Ken Bragg, Chairman of CLEER.

The Energy Council

The Energy Council Quarterly is the official publication of the Energy Council, a legislative organization comprised of 13 states and two international affiliates, drawn from the major energy producing regions of the United States and Canada. The Energy Council provides a forum for discussing government policies regarding energy and the environment.

Executive Director: *Tara Shaw*

Editor: *Evya Richards, CMP*

For information regarding the *Energy Council Quarterly* or the Energy Council, please contact:

The Energy Council
13760 Noel Road, Suite 1160
Dallas, Texas 75240
Phone: (972) 243-7788
Fax: (972) 243-7722
E-mail: energy@theenergycouncil.org

Tell us what you think!

We welcome your suggestions and feedback. Please email erichards@theenergycouncil.org

The 2019 State & Provincial Trends in Energy and the Environment Conference to be Held in Biloxi, Mississippi

The Energy Council's State & Provincial Trends in Energy and the Environment Conference will be held in Biloxi, Mississippi June 13-16.

Leading the conference will be the Chairman of the Energy Council, Kansas Representative Kyle Hoffman; Arkansas Representative Ken Bragg, Chairman of the Center for Legislative Energy and Environmental Research (CLEER); and the Co-Vice Presidents for the State and Provincial Trends conference Mississippi Representative Angela Cockerham; Mississippi Senator Briggs Hopson; and Mississippi Representative Jim Beckett.

The meeting will begin on Thursday evening, June 13, with a Welcome Reception and will conclude, Sunday, June 16 with The Energy Council and CLEER Business Session.

Discussion topics under consideration for the 2019 State and Provincial Trends in Energy & the Environment Conference are:

- **State Oil and Gas Regulatory Programs – Adoptions to Evolving Technology**
- **Preparing States for a Higher Electric Vehicle Market Share**
- **Canadian Oil Pipeline Update**
- **Tribal and First Nations Law and Energy Law in North America**
- **Trends in Refining**
- **Distribution System Planning and Electric Grid Reliability & Resiliency**
- **The Gulf Coast's Role in U.S. Energy Exports**
- **Policy Integration & Innovation: Approaches, Challenges, Solutions and Success Stories in Clean Energy**
- **Stranded Assets Tools**
- **Are Shale Plays Overshadowing Additional Opportunities for Increased Production?**

The Energy Council Welcomes New Executive Director

After a deliberate search spanning more than four months, The Energy Council is pleased to announce that Tara Shaw has joined the Energy Council as Executive Director, following Lori Cameron's retirement.

Tara came to The Energy Council from the office of U.S. Senator Mike Enzi of Wyoming, where she was his Chief of Staff. Prior to her work for Senator Enzi, Tara served as Legislative Director to U.S. Senator Lisa Murkowski of Alaska and as Counsel to U.S. Senator Pete Domenici of New Mexico.

Earlier, following her graduation from Texas Tech University School of Law *(summa cum laude),* Tara served as Briefing Attorney to Texas Supreme Court Justice Nathan Hecht and practiced law in Texas. Prior to law school, she began her career as a Legislative Assistant to Texas State Representative Carl Isett. Tara had previously earned a Bachelor of Science in Agricultural Communications from Texas Tech *(magna cum laude)*.

The Energy Council Unanimously Adopts Carbon Capture, Utilization, and Storage Policy & Technology Deployment Policy Statement

Fossil fuels will continue to play a dominant role in the North America's energy mix for at least the next several decades, according to the U.S. Energy Information Administration (EIA).

With respect to electricity generation in the United States, for example, EIA's Annual Energy Outlook 2018 forecasts that in 2050 natural gas, renewables and coal will remain, in that decreasing order, the top three fuels for net generation of electricity. With respect to transportation fuels, EIA forecasts that motor gasoline and distillate fuel oil's combined share of total energy consumption similarly remains dominant over the coming decades. Fossil fuels are anticipated to continue to face policy, investor and market pressures to reduce their greenhouse gas (GHG) impacts in the decades ahead, too.

International. The Kyoto Protocol remains in effect through 2020, at which time it will be replaced by the Paris Agreement. The United States currently is a party to the Paris Agreement, although the Trump Administration has begun a multi-year process of withdrawing from it. The Paris Agreement effectively calls for the complete decarbonization of energy systems by the 2050 time frame.

Federal//National. Although the Trump Administration is in the midst of modifying key aspects of the prior Administration's climate policies, EPA's authority to regulate GHG emissions remains unchallenged, as upheld by the U.S. Supreme Court in 2007. In Canada, the Government of Canada has set regulations to phase out coal by the end of 2030 and is implementing a federal carbon tax.

Regional/States. Numerous states continue to enforce and, in many cases, expand regulatory programs such as Renewable Portfolio Standards, Low Carbon Fuel Standards and the like that either encourage or mandate a transition towards low-carbon fuels. In Canada, Saskatchewan and Alberta are globally-recognized leaders in CCUS. Saskatchewan's Boundary Dam project, first in the world, has reduced emissions by more than 2 million tons.

Private Sector/Investors/Markets. A growing list of companies, banks, investors and similar entities have taken the position – through mechanisms such as investment choices and shareholder resolutions – that GHG emissions must be reduced.

Carbon capture utilization and storage (CCUS) is a critically needed GHG mitigation technology to enable fossil fuels to address these and related climate policy pressures in the decades ahead, according to the International Energy Agency.

The Energy Council urges federal policymakers to support the development and commercial deployment of affordable CCUS technologies through: (1) continued federal investment in technology demonstration and deployment, including the Regional Carbon Sequestration Partnerships and CarbonSAFE program; (2) enactment of economic incentives and policies to commercially deploy demonstrated technologies; (3) passage of reasonable standards related to monitoring, reporting & verification; (4) clarification of issues such as ownership of and liability for CO_2 in long-term storage; and (5) promotion of cooperation between jurisdictions and companies that will result in increased CCUS throughout North America and the world.

See CARBON CAPTURE continued on page 9

Global Energy

Continued from page 1

University of Wyoming. Looking into the future, Dr. Considine began by making five key points related to technology, economics, environmental concerns and policy. He began by characterizing the replacement of fossil fuels as a daunting challenge.

However, Dr. Considine also recognized rapid advances likely in energy production technologies, the likely acceleration of the long-term trend of electrification, and the reality of carbon emissions as a reflection of development and energy intensity. He predicted that government intervention will be disciplined by market focus. In his discussions, Dr. Considine foresaw access to more resources, intense competition among fuels, and lower prices. Further, he recognized the management of greenhouse gas (GHG) emissions as the environmental challenge.

Concluding, Dr. Considine called the human mind the ultimate resource and maintained that technological advances and substitutions will unleash resources, leading to the redefinition of energy use patterns. He closed by cautioning the Energy Council's legislators that governments have a poor track record, unless policies are realistic and there is political consensus to act.

Dr. Mine Yucel, Senior Research Advisor for the Federal Reserve Bank of Dallas delivered an update on "U.S. Oil and Gas Economics." Dr. Yucel stated that oil prices have become quite volatile recently. "The market, and risks going forward, are shaped by the supply and demand balance, especially with regard to global and U.S. production." She added that geopolitics are having an impact, as well.

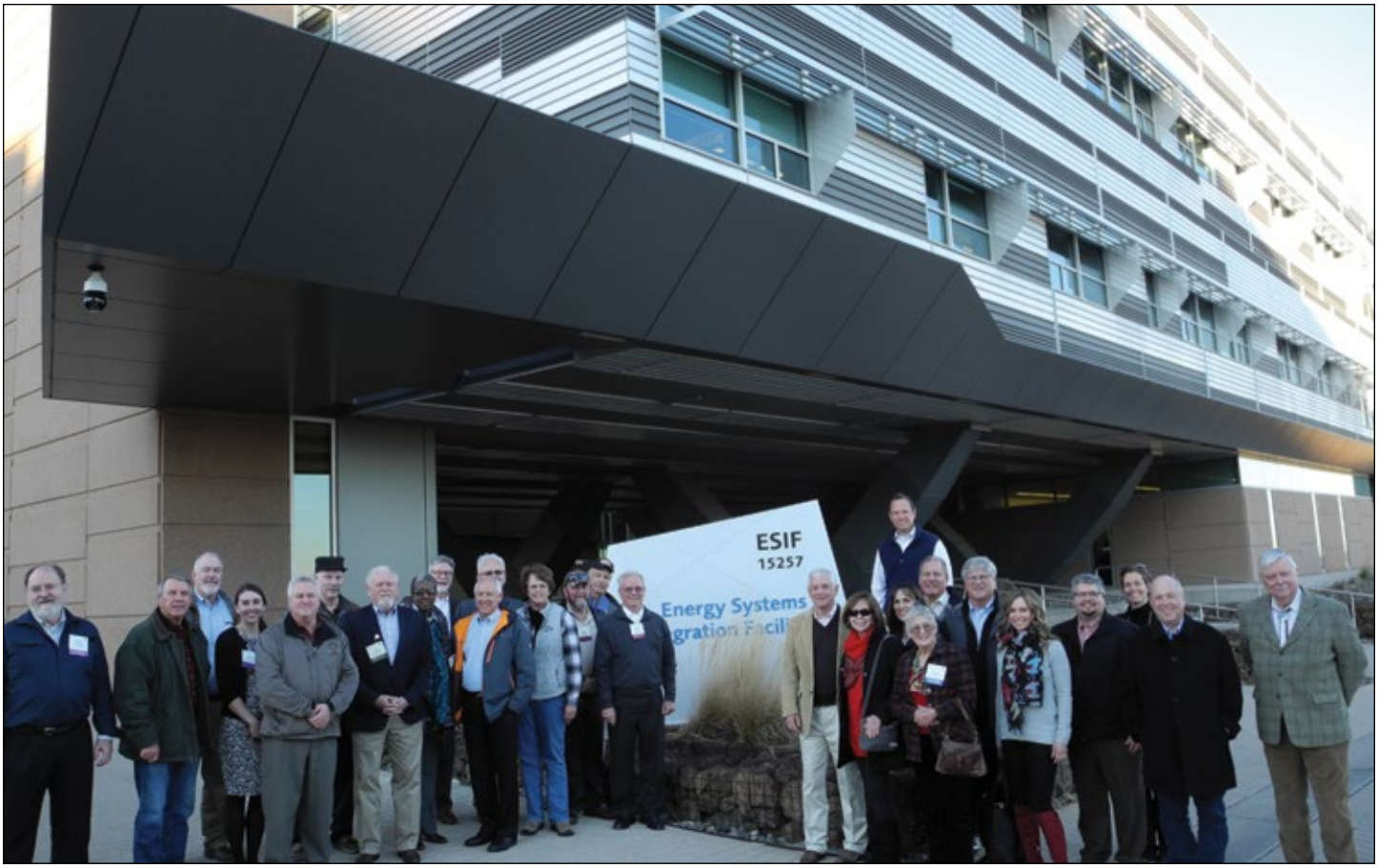
North American perspectives were a large part of the 2018 Global Energy and Environmental Issues Conference. "U.S. Oil and Gas Economics," were addressed by Dr. Mine Yucel, Senior Research Advisor at the Federal Reserve Bank of Dallas, while the topic of "Complementary Interests: Western Canadian – U.S. Crude Oil Flows" was discussed by Mr. Cyril Elbers, Director of Communications, Canadian Energy Pipeline Association. Following their remarks the speakers were thanked by the conference leaders: (Front row, left to right) Kansas Representative Kyle Hoffman, Chairman of The Energy Council; Dr. Yucel; Arkansas Representative Ken Bragg, Chairman of CLEER. (Second row, left to right) Colorado Senator Ray Scott, Co-Host for the conference; Mr. Elbers; and Colorado Representative Chris Hansen, Conference Co-Host.

"Complementary Interests: Western Canadian - U.S. Crude Oil Flows" was presented by Mr. Cyril Elbers, Director of Communications, Canadian Energy Pipeline Association.

Mr. Elbers stated that few countries share more complementary interests than the United States and Canada. "In an era of booming global demand for energy, Canada is perfectly positioned as the most secure source of responsibly-produced oil and natural gas to the U.S. and is blessed with some of the largest reserves of crude oil in the world," Mr. Elbers noted. He stated that Canada is severely constrained in moving product to new and existing markets due to a lack of pipeline capacity and it is costing our economy billions of dollars annually. Additional pipelines connecting Canadian resources to U.S. markets are critical, but will only be built if the two countries' regulatory systems provide clarity and predictability to companies looking to make those capital investments, he concluded.

Addressing "Greenhouse Gas Reductions: A Made-in-Saskatchewan Climate Change Strategy" was the Honorable Dustin Duncan, Minister of Environment, Saskatchewan. Mr. Duncan told attendees that climate change presents a challenge for all governments, particularly in resource-based, trade-exposed economies. Saskatchewan is a land-locked province dependent on trade to get the food, fuel and fertilizer it produces to international markets. Minister Duncan emphasized that government policies directly affect investment and jobs, and Saskatchewan is standing up against policies that affect competitiveness of its industries.

Saskatchewan has introduced *Prairie Resilience*, a made-in-Saskatchewan Climate Change Strategy that takes a different approach than the carbon tax that will be imposed by the



Members and guests of The Energy Council enjoyed a field trip to the National Renewable Energy Laboratory (NREL) Energy Systems Integration Facility in Golden, Colorado, as part of the 2018 Global Energy and Environmental Issues Conference. The visit included briefings by senior NREL officials and a tour of the facility.

Government of Canada. *Prairie Resilience* will reduce emissions and help to ensure Saskatchewan is resilient to the effects of climate change while also maintaining the competitiveness of its industries and protecting jobs for its citizens, Minister Duncan concluded.

Friday morning's panelists reported on "The Value of Improved Grid Interconnections to States, Provinces and Regions." Chairman Jeffrey Ackermann, Colorado Public Utilities Commission began the discussion. According to Chairman Ackermann, historically there have been geographical constraints, as well as operational efficiencies, that have restricted grid regionalization.

Regionalization is clearly beneficial, Chairman Ackerman stated, in part due to a more effective use of resources, and accelerating integration of renewables. Regionalization should explicitly address state policy objectives by balancing market benefits, and state subsidization. In his conclusion, Chairman Ackermann said that uncertainty is the new normal and that we should presume an iterative journey into the future.

The next speaker on this topic was Mr. Paul Suskie, Executive Vice President, Regulatory Policy and General Counsel, Southwest Power Pool, Inc. Mr. Suskie told meeting attendees that SPP currently oversees the bulk electric grid and wholesale power market in the central United States on behalf of a diverse group of utilities and transmission companies in 14 states. SPP ensures the reliable supply of power, adequate transmission infrastructure, and competitive wholesale electricity prices for a 546,000-square-mile region including more than 60,000 miles of high-voltage transmission lines.

One of the projects that Mr. Suskie spoke on was SPP's development of the company's new energy markets to bring additional regional benefits to its members, The Integrated Marketplace. The Integrated Marketplace launched in 2014 – making SPP the first Regional Transmission Organizations (RTO) to design, build and implement a Day 2 market on time – and includes a Day-Ahead Market with Transmission Congestion Rights, a Reliability Unit Commitment process, a Real-Time Balancing Market replacing the EIS Market and the incorporation of price-based Operating Reserve procurement. The Integrated Marketplace also consolidated 16 legacy Balancing Authorities within SPP's footprint into an SPP Balancing Authority. According to Mr. Suskie, SPP conducted complex cost-benefit studies before beginning new market

See GLOBAL ENERGY continued on page 6

New Mexico Senator Carroll Leavell, Two-time CLEER Chairman, Retires

Carroll Leavell
New Mexico Senator

New Mexico Senator Carroll Leavell, who served twice as Chairman of the Center for Legislative Energy and Environmental Research (CLEER), has retired from the New Mexico Legislature.

Senator Leavell served for 22 years, representing the energy-rich southwest corner of his state. His interests in energy reflected those of his district, which includes part of the prolific Permian Basin and URENCO USA. Senator Leavell is renowned as a gentleman, a gracious collaborator and selfless public servant who has steadfastly pursued his vision to the betterment of the citizens of New Mexico, as well as The Energy Council and CLEER.

Senator Leavell and his wife, Bobbi, who brought her own expertise in the energy sector, have been deeply involved in The Energy Council throughout the Senator's tenure. The Energy Council's Executive Committee recognizes Senator Leavell as an exemplary public servant, thanks the Leavell's for the contribution to The Council and CLEER, and wishes them the best in retirement.

Global Energy

Continued from page 5

development, and the Integrated Marketplace will bring estimated annual average additional net benefits of $100 million.

"Microgrids 101" was covered by Ms. Beth Chacon, P.E., Director, Grid Storage and Emerging Technologies for Xcel Energy. Ms. Chacon stated that Xcel Energy currently serves eight states, to include 3.6 million electricity customers and 2 million natural gas customers. She noted that through Xcel's Advanced Grid Intelligence and Security (Advanced Grid) strategic initiative, the company is leading the clean energy transition, enhancing the customer experience and keeping bills low.

Ms. Chacon briefed participants on two projects that Xcel is working on in coordination with Colorado's Innovative Clean Technology program. "We have and continue to test several new technologies and evaluate their cost, reliability and environmental performance on a small, demonstration scale before determining whether to deploy them more widely for our customers," she said.

The battery storage demonstration projects currently under the Colorado Innovative Clean Technology program include:

• An examination of how battery storage can help integrate higher concentrations of customer solar energy on Xcel Energy's system. Through a project in Denver's Stapleton neighborhood, in 2017 six homeowners have received Sunverge customer battery systems to test with their rooftop solar installations.

• Through a public-private partnership, Xcel Energy, Panasonic and Denver International Airport are collaborating to test a battery storage system that can both serve as a microgrid to provide backup power to Panasonic's Denver headquarters and to support Xcel Energy's grid at other times.

On Friday afternoon following the last business session, The National Renewable Energy Laboratory (NREL) hosted The Energy Council for a tour of their facilities. NREL is the U.S. Department of Energy's primary national laboratory for renewable energy and energy efficiency research. From scientific discovery to accelerating market adoption, NREL deploys its deep technical expertise and unmatched breadth of capacities to drive the transformation of our nation's energy resources and systems. The tour included briefings by the Lab's leadership and a tour of the Energy Systems Integration Facility.

Saturday morning's general session began with a Breakfast Panel discussion entitled "Global Energy Consumption and Impacts on Third World Populations." The two panelists were Mr. Brandon Bridge, Economist and Director of Forecasting, Bureau of Business and Economic Research, University of Montana and Mr. Chris Wright, Chief Executive Officer, Liberty Oilfield Services.

Mr. Bridge spoke first on the topic and discussed the impacts of energy poverty on human development in rural Nicaragua at the individual and household-level. He noted that Nicaragua over the last 25 years has contended with revolution, civil war, and environmental disasters. Fifty percent of the country is below the poverty line and without sufficient employment, infrastructure, health care, and education. According to Mr. Bridge, much of the nation's land continues to be decimated by unsustainable agriculture, as well as

landmines left during the Contra War. Human rights violations, child labor, and intra-familial abuse are commonplace, he said.

Mr. Bridge focused on the human development areas of Income, Education and Health in his discussion of the impacts of energy poverty. He explained that lack of modern energy affects income by limiting employment choices, primarily for women. Modern electricity may also improve labor productivity and improve communications. According to Mr. Bridge, education, both formal and informal, improves with modern energy. In households with no access to electricity, information is scarcer. Energy poverty has also been shown to lead to negative health outcomes. The reasons for this are varied, but can be placed into two categories: health problems caused by energy poverty, and health problems that are made more difficult to treat due to energy poverty.

The second panelist was Mr. Wright who stated that the last two centuries have seen an unprecedented increase in human wellbeing. Life expectancy has doubled, and extreme poverty has dropped from 90 percent of the human population to 10 percent. The growth in economic liberty, free enterprise, and access to modern energy have been the primary drivers of the transformation of the human condition.

"However, far too many have been left behind," Mr. Wright said, "Over one billion still lack access to electricity and another billion have only intermittent access." Traditional biomass — burning wood, grass and dung — is still the primary fuel for heat and cooking for far too many. The resulting indoor air pollution kills roughly four million annually," Mr. Wright said. Far more die annually from malnutrition and lack of access to clean water, which dominantly plague those who lack access to electricity, LPG, or natural gas.

The next group of panelists discussed "Expansions of Regional Transmission Organization (RTOs) and Independent System Operators (ISOs) in the West. Deputy Chair Kara Brighton Fornstrom, Wyoming Public Service Commission spoke first.

Ms. Brighton Fornstrom explained to attendees that the Federal Energy Regulatory Commission (FERC) Orders No. 888/889 – issued in April 1996, played an instrumental role in opening up the U.S. electricity system to generator competition and wider transmission access.

Specifically, Orders 888 and 889 resulted in the following:

- 888 requires utilities unbundle their generation functions and provide open access to their transmission facilities; and,

- 889 established the Open Access Same-Time Information System (OASIS) and set standards for how utilities and customers would come to share information about the transmission system.

These Orders also encouraged the creation of (ISOs) and (RTOs)—entities that now manage most of the power transfers in the eastern interconnection and California. In December 1999, FERC implemented Order 2000 with hopes of continuing the industry-wide momentum toward restructuring and open access that first started with Orders 888/889. In her closing, Ms. Brighton Fornstrom stated, as regulators, it is not our job to encourage or discourage participation in markets; however, it puts us in interesting position of educating ourselves and constantly monitoring developments without pre-judging an application.

See GLOBAL ENERGY continued on page 9

Arkansas Representative Ken Bragg, Chairman of CLEER (left), congratulated and thanked the Immediate Past Chairman of CLEER, Alabama Senator Cam Ward (right) during The Energy Council's 2018 Global Energy and Environmental Issues Conference in Denver in December. Chairman Bragg expressed appreciation for the great job Senator Ward had done as Chairman.

Colorado Capitol Tour

A visit to the Colorado State Capitol on December 7, was a highlight of the 2018 Global Energy and Environmental Issues Conference in Denver. Colorado Senator Ray Scott and Representative Chris Hansen served as tour guides in their respective Chambers.

Representative Hansen (center, front step) shared the outstanding view from the House balcony with Energy Council guests (above) and the group gathered at the "Mile High" marker on the Capitol steps at the conclusion of the visit.

Global Energy

Continued from page 7

The next speaker was Ms. Mary Ann Zehr, Senior Manager, Transmission Contacts Rates & Policy from Tri-State Generation. In her overview of Tri-State Generation, Ms. Zehr noted that its 43-member system covers nearly 200,000 square miles and services more than one million end-use consumers. Tri-State owns, operates and maintains a 5,535-mile high-voltage transmission network throughout four states, with more than 400 delivery points.

According to Ms. Zehr, organized markets are needed to:

• Potentially gain efficiencies and reduce costs;

• Deal with increasing complexity and costs to operate the grid;

• Address changing regulatory requirements (EPA, FERC) and, the low cost of natural gas, lower intermittent resource energy costs, and state resource requirements.

In her closing, Ms. Zehr stated that the landscape in the Western Interconnection is changing. Resource types, policy drivers, costs and access all play a part in decisions electric utilities are making in regards to markets.

The next panel of speakers provided a "Canadian LNG Update." First to speak was Mr. Paul Jeakins, Commissioner & CEO, Regulatory Affairs and Stewardship Division, British Columbia Oil & Gas Commission.

Mr. Jeakins stated that Canada has been moving toward LNG for the past few years. Twenty export facilities have been proposed; 14 on the West Coast and six on the East Coast. Presently, Canada's only operating LNG import terminal is located in Saint John, New Brunswick.

Mr. Jeakins reported that, in early October 2018, a decision was made to move forward on the single largest private sector investment in Canadian history. The $40 billion LNG Canada project, located in Kitimat, British Columbia, and associated 670-kilometre (415 mile) Coastal GasLink natural gas pipeline, will utilize abundant natural gas reserves from northeast British Columbia's Montney Play.

The process to attain a permit requires a detailed review by several agencies, including, in most cases, both a provincial and federal environmental assessment along with deep consultation with Canada's Indigenous peoples. The BC Oil and Gas Commission is a single-window regulatory agency and oversees all aspects of LNG, including natural gas production, pipeline transportation and facility construction and operation within British Columbia, Mr. Jeakins said.

The next speaker on this subject was Mr. R.A. "Sandy" MacMullin, Executive Director, Petroleum Branch, Nova Scotia Department of Energy. According to Mr. MacMullin, the global demand for liquefied natural gas (LNG) will substantially increase over the coming years. He noted that countries are looking for more competitive sources of cleaner energy to meet international commitments for reduction of greenhouse gas emissions. Further, power generation is needed in locations where additional renewable energy power generation is taking place and new power supplies can be intermittent.

Mr. MacMullin stated that Canada is one of the top natural gas producers in the world, as is the United States. In addition, with the advancement of hydraulic fracturing technology over the past 10 years, there is a surplus of available natural gas in North America, which is increasingly supplying global natural gas markets. Currently, there are LNG export projects in the planning stages for Nova Scotia, Mr. MacMullin reported.

"Energy and the United States, Mexico, and Canada Agreement (USMCA)" was the subject presented by Mr. Stéphane Lessard, Consul General of Canada – Denver. He noted that the status of U.S.-Canada trade relations has been a topic of interest for the past couple of years as the Trump Administration has pursued updates to existing trade agreements, such as NAFTA.

Mr. Lessard feels that with a new NAFTA deal in reach – now called USMCA – the long-term horizon for North American trade looks bright. The agreement provides key outcomes for U.S. and Canadian businesses, workers and communities in areas such as labor, environment, dispute resolution, energy, and agriculture. Importantly, the USMCA recognizes the importance of progressive and inclusive trade and reflects the modern realities of industry, Mr. Lessard concluded.

See GLOBAL ENERGY continued on page 10

Carbon Capture

Continued from page 3

This policy statement, passed unanimously by the Energy Council on December 9, 2018 shall be distributed to the President of the United States of America, the Secretary of the U.S. Department of Energy, Secretary of the U.S. Department of Commerce, Secretary of the U.S. Department of Transportation, Administrator of the U.S. Environmental Protection Agency, the Chairman of the Federal Energy Regulatory Commission, and the Energy Council's Congressional delegations; as well as the Prime Minister of Canada, the Canadian Minister of Environment and Climate Change, the Canadian Minister of Natural Resources, and Energy Ministers of the Council's member Canadian provinces.

A copy of the policy statement is available by contacting The Energy Council's office.

New Member Joins CLEER Board of Directors

NEW MEXICO

Senator Ron Griggs

Senator Ron Griggs has served in the New Mexico Senate since 2012. He served as Alamogordo Mayor from 2009-2012. He currently serves on the following Standing Committees: Judiciary, and Senate Conservation Committee on Compacts. He is also a member of the following Interim Committees: Water & Natural Resources; Transportation, Economic & Rural Development; Legislative Council; New Mexico Finance Authority Oversight Committee; Science, Technology & Telecommunication; and Radioactive & Hazardous Materials.

Senator Griggs, and his wife Joan, reside in Alamogordo.

Ron Griggs
New Mexico Senator

Global Energy

Continued from page 9

Mr. Lynn Helms, Director, Oil and Gas Division, North Dakota Department of Mineral Resources reported on "Fracking and Natural Gas Utilization Technology Advances."

Mr. Helms began his presentation by stating that shale oil and gas production is now utilizing fourth generation horizontal drilling and hydraulic fracturing technology. These wells produce 3 to 6 times as much natural gas and 6 to12 times as much oil per drilling rig as first generation wells did.

Furthermore, he noted, some technologies that intuitively seemed to offer great promise have been shelved or abandoned. New technologies for enhanced oil recovery, horizontal drilling and hydraulic fracturing continue to enter the marketplace. Business and regulatory policies need to be adaptable, and regulators need to be fast followers.

Dr. David Ellis, Senior Research Scientist at Texas A&M Transportation Institute delivered his presentation on "Electric Vehicle Infrastructure Corridors." Dr. Ellis explained that plug-in electric vehicle (PEV) infrastructure is in the 'supply-push' stage of development as market penetration rates have yet to achieve levels sufficient to initiate the 'demand-pull' stage (the desired end-state).

According to Dr. Ellis, range anxiety, cost, and charging time are among the major concerns cited by potential buyers. Range anxiety due to lack of charging infrastructure can be addressed through investments in PEV corridors, while the market is in the 'supply-push' stage. Other technologies (some of which are already deployed), as well as demographic change, will also have a significant positive impact on PEV adoption and corridor development.

Saturday afternoon's CLEER University Advisory Board (UAB) Seminar was on the topic of "Siting and Permitting of Electric Transmission Systems." Ms. Laura J. Manz, Director of Energy at Navigant presented on the seminar.

The patterns of electricity flow on the power grid are changing based on a new resources mix and evolution of energy markets, Ms. Manz explained. Current planning, permitting, and other requirements can sometimes complicate an efficient path forward. She noted that additional reliability and resiliency needs are driving aging asset replacement and upgrades. Effective siting and permitting of grid infrastructure, especially as related to the high voltage transmission grid, is key to enabling and supporting North America's energy future.

Following the conclusion of Saturday's General Session, there was a tour of the Colorado State Capitol, led by Executive Committee members Colorado Senator Ray Scott and Representative Chris Hansen.

On Sunday morning, The Energy Council and CLEER Business meetings were held. The CLEER Program Advisory Board Planning Session, which gathered input for the 2019 State and Provincial Trends in Energy Conference, followed the Business Sessions.

CLEER Welcomes New University Advisory Board Member

NEW MEXICO
San Juan College

San Juan College is located in the Four Corners region in northwestern New Mexico. San Juan College (SJC) serves approximately 11,600 credit and 3,700 non-credit students each year. The college offers over 100 degree and certificate options. The state-of-the-art School of Energy has programs in lease operator, well control, gas compression, industrial plant and process operations, instrumentation, mechanical maintenance, safety, and tribal energy management. The School of Energy has long-standing industry partnerships. The School of Energy faculty and staff have extensive experience developing and delivering training specifically designed to meet the needs of the energy workforce. These trainings have been delivered at the School of Energy or at locations throughout the Lower 48.

Toni Hopper Pendergrass, Ph.D.
President
San Juan College

Dr. Toni Hopper Pendergrass has served as president of San Juan College since 2012. With over 22 years of experience in community college administration, Dr. Pendergrass is committed to continuing to advance student success, community partnerships and economic development. She has worked closely with the faculty and staff to increase the graduation rate by 115 percent during the past five years. She also collaborated with four school district superintendents to establish an early college high school that is ranked as the number one public high school in the State of New Mexico.

Dr. Pendergrass earned her Ph.D. in Educational Administration with a specialization in Community College Leadership from the University of Texas at Austin. She also holds a Master of Science degree in Agricultural Economics and Economics and a Bachelor's Degree in Agricultural Economics and Business, both from New Mexico State University. She serves on several local, state, and national boards.

Address: 4601 College Boulevard,
Farmington, NM 87402

Phone: (505) 566-3209
E-Mail: pendergrasst@sanjuancollege.edu

THE ENERGY COUNCIL'S 2019 UPCOMING CONFERENCE SCHEDULE

State and Provincial Trends in Energy and the Environment Conference
Thursday, June 13 – Sunday, June 16, 2019
Biloxi, MS

Annual Meeting
Thursday, September 19 – Sunday, September 22, 2019
Anchorage, AK

Global Energy and Environmental Issues Conference
Thursday, December 5 – Sunday, December 8, 2019
White Sulphur Springs, WV

More information on these conferences is available at www.theenergycouncil.org

The Energy Council's 2018 Global Energy and Environmental Issues Conference

December 6-9, 2018

Denver, Colorado

Welcome Remarks and Opening Address
The Honorable Kyle Hoffman
Kansas House of Representatives and Chairman, The Energy Council

The Honorable Ken Bragg
Arkansas House of Representatives and Chairman, CLEER

The Honorable Kevin Grantham
President of the Colorado Senate

The Honorable Alec Garnett
Majority Leader
Colorado House of Representatives

The Honorable Ray Scott
Colorado Senate and
Co-Vice President for Global Issues

The Honorable Chris Hansen
Colorado House of Representatives and Co-Vice President for Global Issues

Opening Address: World Energy Outlook
Dr. Tim Considine
Distinguished Professor of Energy Economics
School of Energy Resources
University of Wyoming

U.S. Oil and Gas Economics
Dr. Mine Yucel
Senior Research Advisor
Federal Reserve Bank of Dallas

Complementary Interests: Western Canadian - U.S. Crude Oil Flows
Mr. Cyril Elbers
Director of Communications
Canadian Energy Pipeline Association

Greenhouse Gas Reductions: A Made-in-Saskatchewan Climate Change Strategy
The Honorable Dustin Duncan
Minister of Environment
Saskatchewan

The Value of Improved Grid Interconnections to States, Provinces and Regions
Chairman Jeffrey Ackermann
Colorado Public Utilities Commission

Mr. Paul Suskie
Executive Vice President, Regulatory Policy and General Counsel
Southwest Power Pool, Inc.

Microgrids 101
Ms. Beth Chacon, P.E.
Director, Grid Storage and Emerging Technologies
Xcel Energy

Breakfast Panel: Global Energy Consumption and Impacts on Third World Populations
Mr. Brandon Bridge
Economist and Director of Forecasting, Bureau of Business and Economic Research
University of Montana

Mr. Chris Wright
Chief Executive Officer
Liberty Oilfield Services

Expansions of Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) in the West
Deputy Chair Kara Brighton Fornstrom
Wyoming Public Service Commission

Ms. Mary Ann Zehr
Senior Manager, Transmission Contracts Rates & Policy
Tri-State Generation

Canadian LNG Update
Mr. Paul Jeakins
Commissioner & CEO
Regulatory Affairs and Stewardship Division
British Columbia Oil & Gas Commission

Mr. R.A. "Sandy" MacMullin
Executive Director, Petroleum Branch
Nova Scotia Department of Energy

Energy and the United States, Mexico, and Canada Agreement (USMCA)
Mr. Stéphane Lessard
Consul General of Canada – Denver

Fracking and Natural Gas Utilization Technology Advances
Mr. Lynn Helms
Director, Oil and Gas Division
North Dakota Department of Mineral Resources

Electric Vehicle Infrastructure Corridors
Dr. David Ellis
Senior Research Scientist
Texas A&M Transportation Institute

CLEER University Advisory Board Seminar: Siting and Permitting of Electric Transmission Systems
Ms. Laura J. Manz
Director, Energy
Navigant

Working Breakfast: Energy Council and CLEER Business Sessions and CLEER Program Advisory Board Meeting