



I-WEST

Intermountain West Energy Sustainability & Transitions

WORKSHOP SUMMARY

The Economics of Energy Transitions in the I-WEST Region

Virtual workshop held March 17, 2022

WORKSHOP FACILITATORS

Janie Chermak (jchermak@unm.edu)

Renia Ehrenfeucht (rehrenfeucht@unm.edu)

Daniel Raimi (raimi@rff.org)

George Guthrie (geo@lanl.gov)

I-WEST PRINCIPAL INVESTIGATOR

George Guthrie
(geo@lanl.gov)

I-WEST PROJECT MANAGER

Rachel Atencio
(Rcatencio@lanl.gov)

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Summary of Workshop on Economics of Energy Transitions in the I-WEST Region

This workshop was focused on the economic opportunities and concerns of energy transitions from the perspectives of states, Sovereign Nations, and communities.

Energy transitions to achieve carbon-neutrality will bring opportunities and challenges to the I-WEST region. A key factor in the process will be economic impacts. The potential for economic growth may depend on the state or Sovereign Nation, its portfolio of existing and future energy projects, and the location of those projects. There will most likely be tradeoffs. Understanding these tradeoffs, the economic impact, opportunities, and community concerns are key considerations in developing regional energy transition strategies.

The objective of this workshop was to gain insight from individuals working at state, tribal, and local levels focusing on history, objectives, challenges, concerns, and opportunities from energy transitions. The primary topics included:

- Economics opportunities of energy transitions
- Benefits, costs and weighing tradeoffs
- Economic roadblocks to energy transitions
- The potential for collaboration and cooperation

In addition to informing the I-WEST roadmap of the economics considerations for the future, the workshop was intended to improve knowledge and understanding of the communities, states, and Sovereign Nations in the I-WEST region.

To facilitate these objectives, a four-hour, invitation only workshop was held. Due to COVID-19 restrictions the workshop was held virtually and consisted of three invited panels. The workshop included eight panelists and more than 57 stakeholders from 45 organizations across the region (see Section 1.1 for a list of stakeholder attendees).

The workshop was structured as moderated panel discussions. The first panel focused on the state and Sovereign Nation perspective, while the second panel focused on the community perspective. The third panel discussion consisted of the panelists from both the first and second panels and explored opportunities for cooperation between communities, states, and Sovereign Nations. The panelists are listed in the workshop agenda in Section 1.2.

Key takeaways, expressed by panelists are summarized below. More complete discussions of each panel are provided in Section 1.5.

- Historic energy projects have positively impacted economic development in many of the places in the I-WEST region, but this impact has been uneven.
- Tribal sovereignty provides a mix of advantages and disadvantages for energy transition on tribal lands; developing a process that allows tribes to benefit from projects is an ongoing concern.
- There has been collaboration between tribal and non-tribal entities on past energy projects and there are opportunities for future collaborations. Success of these projects requires commitment and ongoing interactions between parties.

- Preserving existing high-quality jobs, providing new opportunities, and preserving the way of life in communities are all top priorities.
- Consideration of specific projects needs to be from a broad-based perspective with all benefits and costs considered from throughout the life of a project.
- The historical impact of energy projects and current economic conditions in a region or community, may impact the future of energy transitions in that community or region. For example, economic reliance on existing energy projects may influence community or regional choices when tradeoffs between future projects are considered. Existing infrastructure and/or the developed workforce may also influence the acceptance of future projects. Similarly, negative economic or environmental impacts from prior projects may negatively impact the potential acceptance of future projects.

1.0 Details on the Workshop

1.1 Workshop Attendees

Stakeholders (does not include I-WEST team members that attended)

Last Name	First Name	Company Name	Job Title
Brown	Amy	Adelante Consulting, Inc.	Chief Operating Officer
English	Joe	Adelante Consulting, Inc.	Program Manager
Huben	Daniel	AECOM	Director, Program Management. Growth Manager - New Fuels
Fitzpatrick	Sidney	Big Horn County	Commissioner
Hale	Summer	Bureau of Indian Affairs	Natural Resource Specialist
Kambich	Jim	Butte- Silver Bow Local Government	Chief of Staff
Simpson	Jeff	Chandler Gilbert Community College / LANL	Professor / Tech Writer
Alatorre	Ramon	City of Flagstaff Sustainability Section	Climate and Energy Coordinator
Larocque	Lisa	City of Las Cruces	Sustainability Officer
Beck	Bryce	City of Sedona	Sustainability Coordinator
Mcperson	Kirstie	Colorado Office Of Just Transition	Economic and Community Development Manager
Eisemann	Maria	Colorado Energy Office	Senior Transportation Policy Analyst
Blansett	Susan	Colorado Rural Workforce Consortium	Energy & Industry Consultant
Bongiovanni	Nic	Denbury	Geophysicist
Holmes	Gordon	Denbury	CCUS
Goodarzi	Somayeh	Denbury	Simulation Engineer
Silvis	Nick	Denbury	Geologist

Last Name	First Name	Company Name	Job Title
Hegewald	Andrew	Dominion Energy (Richmond, VA)	Gas Business Development Manager
Todd	Gregory	Duchesne County Utah	--
Eppink	Jeffrey	Enegis, LLC	President and Founder
Duckett	Nate	Farmington	Mayor
Trujillo	Arvin	Four Corners Economic Development	CEO
Doughty	Brian	Individual	Project Manager
Tucker	Brooke	Individual	Academic
Linsebigler Smentkowski	Amy	GE Research	Chief Scientist
Pantuck	Bradford	GE Research	Senior Manager - External Technology Partnerships
Whisenhunt	Donald	GE Global Research	Chemist
Lucero	Ray	Janix Energy	COO
Larson	Ronal	Larson Consulting	Principal
Eales	Matt	Lucid Energy Group	VP of EHS&R
Kaiserski	Tom	Montana Department of Commerce	Industry Development Program Manager
Baan	Joseph	Montana State Legislature	Fiscal Analyst
Borchert	Claudia	New Mexico Environment Department	Climate Change Policy Coordinator
Ely	Sandra	New Mexico Environment Department	Environment and Energy Policy Coordinator
Mcmonagle	Matt	NovoHydrogen	CEO
Lee	Katherine	Nutter Consulting LLC	Senior Associate
Bhargava	Clarissa	Office of U.S. Senator Ben Ray Lujan	Legislative Fellow

Last Name	First Name	Company Name	Job Title
Byrom	John	PESCO (Process Equipment and Service Company)	Business Development Manager
Fonquergne	Jean-Lucien	Petroleum Recovery Research Center, NM Tech	Outreach Engineer
Ferrer	Alberto	Power Renaissance	Senior Executive
Thomas	Pilar	Quarles & Brady LLP	Partner
Walje	Arlo	RAW-Energy, Inc	CEO
Ralston	Nick	Sage Green NRG	Director
Friedrich	Collin	Salt River Project	Engineer
Murdock	Tessa	Salt River Project	Research Engineer
Sharp	Walter	Sharper Energy Technologies	Chief Collaboration Architect
Rosewell	David	Tourism America Project	Executive Director
Jurkovich	Evan	Tri-State Generation and Transmission Association	Manager, Energy Policy and Federal Affairs
Piper	Shelby	Tri-State Generation and Transmission Association	Energy Policy Analyst
Robertson	AMY	Tri-State	Sr Manager
Baquero	Angela	TYR Logistics LLC	VP Commercial
Martinez	Ninfa	TYR Logistics LLC	Chief Commercial Officer
Valadez	Edith	TYR	Project manager
Logan	Kathryn	University of Arizona	Postdoc
Hrenko-Browning	Rikki	Utah Petroleum Association	President
Brucker	Sam	Utah State Legislature	Managing Policy Analyst
Cooley	Robin	Wyoming Department of Workforce Services	Director

1.2 Workshop Agenda

March 17, 2022

9:00 am – 1:00 pm MT

Time	Topic	Presenter
9:00-9:05	Welcome	Janie Chermak University of New Mexico
9:05-9:15	Overview of I-WEST	George Guthrie Los Alamos National Laboratory
9:15-10:30	<p style="text-align: center;">PANEL 1</p> <p style="text-align: center;">The Economics of State and Sovereign Nation Energy Transitions</p> <p style="text-align: center;"><i>Potential discussion questions:</i></p> <ul style="list-style-type: none"> ● From an economic perspective, on which energy transitions is your state or nation focused and what are the expected economic outcomes of these transitions? ● What are your largest economic concerns about these transitions? ● What are the economic tradeoffs faced and how does the state or nation decide between them? ● What are the largest roadblocks to the economics of energy transitions? 	<p>Moderated by Renia Ehrenfeucht</p> <p>Panelists</p> <ul style="list-style-type: none"> ● Sandra Ely, Director, Environmental Protection Division, State of New Mexico ● Thom Holst, Senior Energy Analyst at the Kem C. Gardner Policy Institute, University of Utah ● Kipp Coddinton, Director, Energy Policy and Economics, University of Wyoming ● Pilar Thomas, Quarles & Brady LLC, Tucson, Arizona and member of the Pascua Yaqui Tribe ● Arvin Trujillo, Chair of Four Corners Economic Development (4CED) and member of the Navajo Nation
10:30-10:45	BREAK	

March 17, 2022

9:00 am – 1:00 pm MT

10:45-11:45	<p style="text-align: center;">PANEL 2</p> <p style="text-align: center;">Economic Impacts on Communities</p> <p style="text-align: center;"><i>Potential discussion questions:</i></p> <ul style="list-style-type: none"> ● From an economic perspective, on which energy transition technologies, if any, are you focused? ● What are the anticipated impacts and/or tradeoffs? ● What are the biggest deterrents or roadblocks that you face? ● What are deterrents or roadblocks ● What are the gains on which your community is focused? 	<p>Moderated by Daniel Raimi</p> <p>Panelists</p> <ul style="list-style-type: none"> ● Nate Duckett, Mayor, Farmington, New Mexico ● Amy Brown, Adelante Consulting, Santa Fe, New Mexico ● Gregory Todd, Duchesne County Commissioner, Utah
11:45-12:30	<p style="text-align: center;">PANEL 3</p> <p style="text-align: center;">Where do we go from here? Opportunities for cooperation between communities, states, and Sovereign Nations</p> <p style="text-align: center;"><i>Potential discussion questions:</i></p> <ul style="list-style-type: none"> ● What is the potential for cooperation and collaboration for energy transitions? ● What are the roadblocks? <p>What are the economic gains that your state, Tribe, or community could realize?</p>	<p>Moderated by George Guthrie</p> <p>Roundtable of panelists from the previous panelists</p>
12:30-12:45	<p>Wrap up: Next steps and the I-WEST network</p>	<p>Janie Chermak</p>

1.3 Workshop Panel Questions

Panel 1: The Economics of State and Sovereign Nation Energy Transitions

Moderator: Renia Ehrenfeucht (University of New Mexico)

The following questions were introduced at the beginning of the panel to serve as prompts:

- What are the economic opportunities in the energy transitions?
- What are the economic tradeoffs and how do you weigh the potential benefits and challenges?
- Past energy production has led to environmental injustice, as some communities shoulder the adverse environmental and social costs of energy production. How can we ensure greater environmental justice and economic opportunity in the energy transition?
- What are the largest roadblocks to the economics of energy transitions?

Panel 2: Economic Impacts on Communities

Moderator: Daniel Raimi (Resources for the Future)

The following questions were introduced at the beginning of the panel to serve as prompts:

- Which energy transition technologies, if any, do you think are most economically promising for your community? What potential economic benefits could these technologies bring?
- What are the biggest potential downsides or tradeoffs of pursuing these technologies for your community?
- What roadblocks or barriers stand in the way of your community's pursuit of energy transition technologies?

Panel 3: Opportunities for cooperation between Communities, States, and Sovereign Nations

Moderator: George Guthrie (Los Alamos National Laboratory)

The following questions were introduced at the beginning of the panel to serve as prompts:

- What is the potential for cooperation and collaboration for energy transitions?
- What are the roadblocks?
- What are the economic gains that your state, Tribe, or community could potentially realize?

1.4 Summary of Key Takeaways

The panelists and attendees of the Economics of Energy Transitions Workshop represent large sections of the I-WEST region (AZ, CO, MT, NM, UT, WY) from local to state to Sovereign Nation representation. Their expertise ranges from the economics of a project, to that of a community, to that of a state(s) or tribe(s). The panelists included elected officials, leaders, discipline-specific experts, and governmental appointed experts. One aspect common to all panelists is that they have lived in the region and worked on energy issues in their communities. The panel discussions and panelists' expertise provided key insights and lessons that will assist in developing a roadmap for the region and help facilitate a better understanding of issues and factors that will accelerate acceptance and adoption of transition technologies.

General Observations:

- Communities, states, and Sovereign Nations in the I-WEST region each have unique energy histories and energy transition futures, but there are commonalities that emerged:
 - Holistic assessment of economic impacts and economic development, including societal benefits and costs, in addition to private outcomes, provide a more complete picture of the outcomes and tradeoffs of a potential energy transition project.
 - Boom-and-bust economies with uneven distribution of economic gain to residents are a concern, particularly for historical energy development.
 - Transition futures that take advantage of the existing strengths of communities and regions may improve the acceptance of a project by that region and, ultimately, improve project success.
 - To facilitate acceptance, active and ongoing two-way engagement efforts in the region and potentially impacted communities are needed to communicate about transition, its drivers, and its opportunities, and understand and address community priorities and concerns.
 - Retaining high-quality jobs, expanding job opportunities, and preserving government revenue in communities is a key concern.
- Collaboration and cooperation is an important element of energy transitions.

Main takeaways from the State and Sovereign Nation Panel:

Five panelists participated in this panel. Two focused on Sovereign Nation issues and three focused on state-level issues. The panelists represented a broad spectrum across the I-WEST region and their expertise and experiences allowed them to address questions reflecting a broad set of perspectives. Each panelist provided a brief overview of the issues as they see them, their experience, and what they think is most important. In general, the panelists all spoke about how the history of energy in their state or Sovereign Nation contributed to the current economy and the importance of energy moving forward.

A few Sovereign Nations have extensive fossil fuel energy production that has provided jobs, education and tax revenues for those locations with production. In these cases, the energy industries have provided careers that allowed people to stay and thrive in their community. At the same time, some of this energy development has come with substantial environmental and health consequences for tribes and their lands. In addition, energy development has not resulted in across the board economic development with many community services and attributes lagging behind (e.g., housing).

More tribes have the potential to develop energy projects. As a result, some have existing energy projects and are contending with energy transitions and potential economic loss if and when fossil fuel

production decreases. Others are considering moving into energy through transition technologies. Moving forward, opportunities are seen that will allow all tribes who want to participate to take advantage of the energy potential on their lands to provide energy to members – some who currently don't have electricity – and leverage energy for their own economic benefit, and partner with others in order to bring projects to fruition.

At the state level, a major focus was on objectives for energy transitions. State objectives are far-ranging. Energy transitions and state economies are considered from a broad perspective to include the benefits of a cleaner environment that can be gained from reducing greenhouse gas (GHG) emissions, transition technologies as an economic driver, and the potential impacts across a state. Similar to the tribes, states with existing energy industries are focusing on transitions within those industries (e.g., CCUS), while all states are considering the potential viability of new energy transition projects that are not tied to existing projects. For example, the viability of renewables, as well as hydrogen were mentioned by panelists.

A repeated focus from the panelists were the broad-based economic opportunities from energy transitions that reach far beyond a single project and encompassed peripheral industries. For example, a single congressional district in Utah has one of the highest number of jobs in the solar industry as any in the nation.

Positioning states and tribes to capitalize on transitions was a key point made by several panelists – as was the idea of focusing on the broad spectrum of energy opportunities and job creation.

Moving beyond a boom-and-bust economy through a diversified economy, especially in rural regions was an expressed motivation and a diversified, energy transition plan was recognized as a mechanism to achieve that goal.

In rural communities the adoption of energy transition technologies was seen as a way to provide jobs that would allow rural areas to maintain their way of life.

At the same time, potential negative consequences of energy transitions were raised. For example, the types, numbers, and longevity of jobs tied to renewable energy projects were viewed as lower-quality than those in the existing fossil industries—particularly when extending beyond the infrastructure installation phase.

In addition, panelists expressed concerns of the cost of energy for low-income residents and the impact on costs from new technologies. In other words, there was a concern that energy transition might increase the cost of electricity and gasoline and reduce the reliability of electricity supply, which would have a disproportionate impact on rural communities that have lower incomes and that have longer distances to drive for work/school/etc.

The panelists also considered the impact of history on communities and energy projects. Each community, state, or Sovereign Nation's starting point in terms of the potential for future adoption of transition technologies is based on where an economy is now. Economic impacts and gains from the present energy industry are recognized as having been uneven across communities resulting in questions of paths forward. Panelists representing community perspectives emphasized the importance of considering historical economic impacts broadly—including, but not limited to direct economic impacts, environmental impacts, community impacts, as well as life-style impacts. Historically, divergent objectives between communities, states, or Sovereign Nations and industry may have been an important factor in outcomes.

Moving forward, social license was viewed as important. The importance of industry in the development of future activities is understood, as is the need for projects to be profitable. But, ongoing social license to operate and acceptance by communities was considered an important factor that would provide communities, states, and Sovereign Nations the opportunity to help shape the future and realize positive economic gains from these endeavors. *Consistent with this was the expressed opinion that communication and ongoing interactions between entities are important.*

Main Takeaways from the Communities Panel:

Three panelists participated in the second panel. One provided input as the mayor of a town that is dependent on the fossil energy industry and that is currently experiencing energy transition; one provided input as the county commissioner of a county with an active energy industry; and the third as an expert who focuses on economic development and community projects. Each panelist provided a brief overview of their community or focus. Discussion by panelists show that the a “community” may be defined as much by a project, goal, or objective, as by a specific location.

A key takeaway from the panelists was the historic dependence of the communities on fossil fuel energy production, the challenges of diversifying economies, and the potential benefits and costs for energy transitions in communities. The communities represented by the panel are located in energy rich areas and have a history of fossil fuel production, and economies that are dependent on that production. Moving forward, the communities have varying potentials for future energy project diversification. Physical isolation, access to transportation networks (e.g., road, rail, pipelines), transmission lines, or broadband, as well as renewable potential, vary across the locations, resulting in distinct future pathways across communities. While the communities see fossil fuels continuing to be an important factor to their economy, they are also considering the viability of energy transition technologies. One sees a variety of technologies as viable, while the other finds the isolated location of the county to be a major deterrent in adoption of many transition technologies.

Risks discussed include the impact on communities of changing activities and the risk of leaving people behind. Loss of jobs and tax revenue were a primary focus. The panelists acknowledged the efforts to train displaced workers, but some question what those workers will trained for, whether the new jobs will provide an equivalent quality of life, and whether the training will lead to jobs that allow workers to stay in their communities.

Other issues included a concern over the lifecycle impacts of new technologies, potentially leaving communities with waste, material to recycle, and other impacts that were not considered in the original assessment. Concerns also arose over the risk to electricity system cost and reliability associated with the transition away from large-scale centralized power generation.

Looking forward, panelists identified bioenergy and carbon capture, use, and storage as having economic potential – due in part to existing infrastructure and capital. But, in all cases, panelists expressed a preference for an “all of the above” approach wherever possible. The overall opinion expressed was that communities would be willing to entertain those technologies that provide economic benefits and are appropriate for the community characteristics.

Main Takeaways from the Opportunities for Cooperation Panel

The panelists from the first two panels were invited to participate in this final panel. This provided a broad perspective from the state, Sovereign Nation, and community level. The panel focused on cooperation and other important factors at three levels of scale that could help in the successful adoption of energy transition technologies and make the I-WEST region competitive.

At the individual level, the panelists focused strongly on the importance of education on two fronts. First, education that results in well-informed citizens and local expertise was deemed necessary to make sound economic decisions for the community concerning transitions. Second, an educated workforce that could support or expand economic opportunities not only through a specific energy transition technology, but to supporting industries and needed community activities as well, was considered important.

At a community or state level, collaboration across entities was considered important. The formation of regional collectives and partnerships was discussed and the potential these types of entities would have on developing resilient communities in rural areas. The structure of cooperative agreements was also discussed as important. Developing a structure that allows all parties to develop relationships that are mutual beneficial, rather than single directional beneficial provides paths forward to shared benefits.

State support, cooperation between the executive and the legislative branches was considered important elements of cooperation.

At the federal level, some panelists considered federal support for large, regional collaborative efforts as vital to regional cooperation as it provides communities and states resources and access to expertise that would not be possible on an individual level.

Summary

The panels provided contrasts based on scale, location, history, and goals. These unique characteristics and perceptions illustrate the importance of place-based considerations in the adoption of energy transition technologies.

A common set of key factors emerged: jobs, maintaining rural economies, providing stable economic activity, and the consideration of economic impact broadly (e.g., beyond specific projects).

Finally, there was a strong acknowledgement of the importance of collaboration and cooperation across communities, states, and Sovereign Nations in order to promote acceptance and adoption of these technologies.