



WYOMING WILL OFFER NEW WAYS TO PROVIDE ENERGY – DO CONSUMERS WANT THEM? A REVIEW FROM SOCIAL SCIENCE AND PUBLIC OPINION POLL DATA.

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EXECUTIVE SUMMARY

This report presents a social science literature search in relation to energy types and states that are of interest to Wyoming's energy economy. The Wyoming Energy Strategy is focussed on pursuit of an all-of-the-above energy mix utilizing all forms of energy production, transportation and consumption. This includes technologies and energy systems such as CCUS, decarbonized hydrogen and advanced reactor nuclear based power. The Wyoming Energy Authority commissioned this report in order to determine what social science information, if any, is available to indicate levels of social license regarding these technologies in California, Oregon, Washington, Utah, Colorado and Texas.



In addition to the above, I have cast a wide net to look not only at social science literature, but also polling data. For context I have added information on national and international scales when little or no data was available regarding a particular technology e.g. hydrogen generation or CCS.

The clearest result is that there are big gaps among the general public (as opposed to individuals engaged in energy delivery and policies) regarding:

- Knowledge in these states regarding these technologies, similar to Wyoming itself.
- Knowledge regarding the trade-offs involved in using these technologies e.g.: the extent to which they contribute to or decrease carbon emissions vis-a-vis the cost of energy.
- The risks and benefits involved with these technologies at various scales, from national to individual households.

Based on these findings, I conclude with the recommendation that Wyoming and its energy experts engage in thorough market research and design a wide spread public engagement effort that tackles consumer preferences and their motivations in order to change a. accurately inform the public, b. build social license and c. change narratives of “peril” to “promise”.

INTRODUCTION

This report presents a social science literature search regarding energy types and states that are of interest to Wyoming's energy economy. The Wyoming Energy Strategy is focussed on pursuit of an all-

of-the-above energy mix utilizing all forms of energy production, transportation and consumption. This includes technologies and energy systems such as CCUS, decarbonized hydrogen and advanced reactor nuclear based power. The Wyoming Energy Authority commissioned this report in order to determine what information, if any, is available to indicate levels of social license regarding these technologies. In addition, I have cast a wide net to look not only at social science literature, but also polling data. To provide context I have also included information on national and international scales when little or no data was available regarding a particular technology in a particular state.

METHODOLOGY

I used University of Wyoming’s library databases (e.g. Web of Science, JSTOR, etc.) and Google Scholar as an additional resource. The key words I used are based on social psychological theory related to human cognitive concepts that lead to human behaviors (Bosnjak, Ajzen, and Schmidt 2020; Ajzen 2011). The key words used in relation to each state were “attitudes”, “beliefs” and “perceptions”. If no social science results emerged, I searched for general surveys and polls regarding these specific subjects using the key words “opinions”, “polls” and “survey”. If necessary, I also used these key words in national and international contexts. In Table 1 below I provide a quick overview of what social science could be found and where there was none:

Table 1: Social science and Opinion data available for each state and energy type of interest to Wyoming’s future as of April 1, 2022.

State and Energy Type	Information Available
California	
Current use of natural gas-based power generation	A survey regarding a variety of energy types, a paper re. the future of natural gas-based power generation needs in California and a paper re. energy information needs. No data regarding perceptions regarding hydrogen as energy or nuclear-based power.
Future use of nuclear-based power	
Future use of hydrogen generation	

Oregon	
Current use of natural gas-based power generation	Data was representative of the Pacific Northwest. No social science data available regarding hydrogen generation. Some data available regarding perceptions of natural gas-based power generation and nuclear-based power.
Future use of nuclear-based power	
Future use of hydrogen generation	
Washington	
Current use of natural gas-based power generation	
Future use of nuclear-based power	
Future use of hydrogen generation	
Colorado	
Current use of renewable energy	No information available regarding hydrogen generation. Some information regarding social acceptance of renewable and nuclear-based power.
Future use of nuclear-based power	
Future use of hydrogen generation	
Utah	
Hydrogen Gas	No information regarding social acceptance of either hydrogen gas or nuclear-based power in Utah.
Nuclear-based power	
Texas	
Coal-based energy	Some information regarding coal, but not combined with CCS, only CCS on its own.
Coal-based energy in combination with carbon capture and storage.	

1. CALIFORNIA

This literature review in social sciences included California’s public and their beliefs, preferences and attitudes regarding current use of natural gas-based power generation, and future use of nuclear-based power and hydrogen generation.

There is very little, if any, social science research that has been done regarding these topics specifically related to California. A very recent general survey provides information regarding Californian attitudes toward an array of energy related policies (Baldassare et al. 2021), a recent paper provides information regarding the future of natural gas-based power generation in California (Smead 2021) and a third paper provided information on the need for more information (Boudet et al. 2021). Natural gas-based power generation and public preferences may not be enough of a topic to warrant research. On the other hand, hydrogen gas and nuclear-based power may not have emerged in social scientists' line of sight yet.

GENERAL SURVEY INFORMATION RE. CA ENERGY POLICIES FROM PPIC STATEWIDE SURVEY.

According to general survey information, large majorities of Californians believe the effects of climate change are already evident (68%, 70% likely voters) (Baldassare et al. 2021). Even larger majorities are convinced climate change is a contributing factor to drought (80%) and to wildfires (78%). A majority of respondents also believed climate change will contribute to more severe droughts and wildfires (63% each) and to more severe heat waves (52%).

One energy specific question pertinent to this report in this survey asked:

“Right now, which one of the following do you think should be the more important priority for addressing America’s energy supply: developing alternative energy sources such as wind, solar, and hydrogen technology or expanding exploration and production of oil, coal, and natural gas-based power generation?”

80% of adults (Democrats 93%, Republicans 56%, Independents 78%) believed “developing alternative energy sources”, and 18% believed “expanding exploration and production” of fossil fuels was more important. Additionally, 74% of respondents favored “The state law that requires California to reduce its greenhouse gas emissions to 40 percent below the 1990 levels by the year 2030” and 70% favored the state law requiring “100% of CA’s electricity to come from renewable energy by 2045”.

One report described the “Role of Community Choice Aggregators in Advancing Clean Energy Transitions: Lessons from California” (Trumbull, Gattaciecce, and Deshazo 2020), a community tool that is allowing California to be successful in its goals of deriving electricity from carbon-free sources. The report estimated that 41% of California electricity consumers were members of a Community Choice Aggregators (CCA). A CCA is a municipal or county entity that provides its communities control over electricity purchasing decisions. These CCA’s



have been driving transitions to renewable energy faster than would otherwise be achieved. The largest portion of CCA's buy more renewable energy than investor-owned utilities (IOU) they compete with, accelerating the transition to zero-carbon electricity in that State. The report defines zero-carbon electricity as renewable energy combined with hydro-energy.

An article that outlines the history of California energy policy since World War II (Mazmanian, Jurewitz, and Nelson 2020) indicates that this great increase in CCA's is at the cost of IOU's who have a far greater financial capability to meet California's Renewable Portfolio Standard (RPS). However, increased electrification generally in California is projected to open up new demands of IOU-provided electricity, which in turn would continue the increase in the state's demand for zero-carbon electricity. In the future Wyoming may be able to offer California different kinds of zero carbon electricity, e.g., generated with hydrogen gas and/or nuclear, in addition to wind, and marketing to CCA's and their customers may be relevant.



NATURAL GAS-BASED POWER GENERATION

Although not derived from social science per se, one article regarding the future of natural gas-based power generation in California looked at policies, consumer preferences to project future needs in that state (Smead 2021). Natural gas-based power generation has the largest share of power generation in CA but it has declined from 55% in 2009 to 45% in 2021. However, loss of hydro-energy due to climate change-related loss of water, and California's decision to decommission nuclear power generation plants, are projected to be offset in the near future by more natural gas-based power generation. Long term, Smead projects that natural gas-based power generation will generally decline due to displacement by solar and wind resources (Smead, 2021).

FUTURE USE OF HYDROGEN GAS AND NUCLEAR-BASED POWER IN CALIFORNIA

No literature or polling was found to indicate what attitudes, beliefs or opinions the California public has related to either nuclear-based power or hydrogen generation. One article did mention that policy makers are very interested in hydrogen gas using water and over-generated renewable energy (Mazmanian, Jurewitz, and Nelson 2020).

2. OREGON AND WASHINGTON

Very little social science research has been done regarding current use of natural gas-based power generation and the future use of nuclear and hydrogen generation in these states. Some information regarding nuclear-based power was obtained from a Pacific Northwest study regarding energy preferences.

A document by Oregon’s Citizen Utility Board (CUB) has raised concerns regarding Pacific Power’s plans to build the Wyoming Natrium nuclear plant (<https://oregoncub.org/news/blog/will-oregon-see-a-nuclear-comeback/2466/>). Their concerns are mostly related to economic risks, and are encouraging Pacific Power to look at onshore and offshore renewable energy instead.

A 2020 study looked at public preferences regarding eight energy types across the Pacific Northwest (Hazboun and Boudet 2020). This is a region where hydropower generates the most electricity, after which natural gas-based power generation is most important. Smaller percentages are generated by nuclear power and coal. Results in this study showed a large majority in favor of four types of renewable energy (wind, solar, geothermal and wave/tidal), followed by preferences for hydropower and natural gas-based power generation (Hazboun and Boudet 2020). Nuclear-based power was second to last. Regionally an increase in hydropower, geothermal, wave/tidal, wind and solar generated electricity was preferred, with 32% preferring an increase in natural gas-based power generation and 26% preferring an increase in nuclear generated electricity.

The analysis in this study used odds ratios. Using this methodology, predictors regarding support for nuclear-based power were found to be gender, with men’s support being three times that of women. The odds were also 73% higher that men would support natural gas-based power generation more than women.

Other significant predictors of support for nuclear-based power were respondents who were white, urban, and/or conservative. Respondents who prioritized environmental protection over economic development had lower odds of supporting nuclear-based

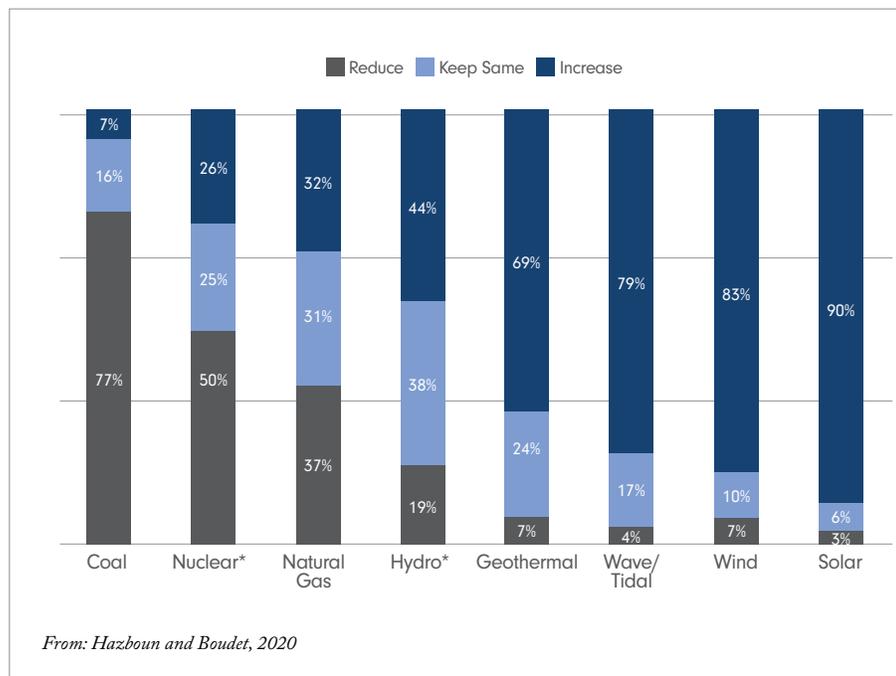


Figure 1: Public preferences to reduce or increase energy types in the Pacific Northwest.

power. Respondents who thought climate change is caused by humans were also less likely to support nuclear-based power. Other predictors regarding opposition to nuclear-based power were positive beliefs regarding anthropogenic warming. The authors conclude if these generally more environmentally progressive states desire zero carbon electricity, more will need to be done to alleviate social reservations regarding nuclear-based power (Hazboun and Boudet 2020).



3. COLORADO

There are currently no data regarding Coloradoan public perceptions regarding hydrogen generation.

The 2022 State of the Rockies survey conducted in January this year reported that 62% of its respondents in the Intermountain West favored solar power, 38% favored wind power and 24% favored nuclear-based power. Colorado respondents' preferences were 61% in favor of solar power, 41% wind power, 27% natural gas-based power generation, 23% nuclear, 7% oil and 6% coal-powered energy.

Recently a public discussion took place in Pueblo, CO where the Comanche power plant was proposed to be replaced with small modular nuclear reactor. A poll conducted in December 2021 reported that 61% of respondents preferred wind and solar generated electricity and 37% preferred nuclear-based power. The two main reasons for preferring renewable energy types over nuclear were that “nuclear is dangerous” (37%) and renewable is clean energy (32%). A point/counter point article in the Denver Gazette exemplifies the arguments in favor (reliability, emission-free, efficient, good combination with renewables) and against (experimental, not operational, expensive, dangers of radioactive waste) (McKean and Campell, 2021).

4. UTAH

There is no social science literature or polling available in Utah related to hydrogen generation. While there's no social science or polling information to be found regarding nuclear-based power either, the University of Utah's Nuclear Engineering Program has produced a report demonstrating the importance of public education to increasing public support for nuclear-based power (Schow and Jevremovic 2017).

A poll conducted in 2019 explored Utahn likely voters' preferences regarding Pacificorp's announcement that it would transition some of its coal-fired power plants to renewable energy. While 53% of

participants supported this, 33% opposed the transition. (“GSG-Dan-Jones-Survey-of-Utah-Likely-Voters-Topline,” 2019).

5. TEXAS

A Topline Survey conducted in February 2022 provided results regarding Texas registered voters’ levels of support for various types of energy. Results pertinent to respondents’ topics related to coal or alternatives to coal are below in the table below:

	% Support/ Agreement
More solar energy	73
More wind energy	68
More coal energy	18
Same amount of coal energy	31
More nuclear-based power	28
The primary goal of Texas’ energy policy should be achieving 100% clean power, which means phasing out all fossil fuels used to generate electricity	62
Transitioning to 100% clean, renewable energy like wind and solar	71
Closing existing coal-fired power plants	45
Reducing carbon pollutions	80
Building new coal-fired power plants	29
Requiring electric utility companies in Texas to generate 100% of their electricity from clean, renewable sources, like wind and solar, by the year 2035	68

From Topline Survey, Texas, 2022

There is no literature or polling related to public acceptance of coal-fired energy combined with carbon capture and storage (CCS) in Texas. There is literature regarding CCS independent of the coal industry focused on Europe, Switzerland, Canada and U.S. states like Indiana (L’Orange Seigo et al. 2014; Boyd, Hmielowski, and David 2017; Chaudhry et al. 2013; Krause et al. 2014).

A 2014 qualitative study of policy stakeholders' perceptions around CCS activities concentrated on several states, including Texas (Chaudhry et al. 2013). Texas has been experimenting and planning for CCS in relation to its refineries and other fossil fuel related activities. One quote from a Texas respondent that was shared by many of the other participants was "What we lack, it's not the knowledge of how to do it, but an economic incentive to make people want to do it and a regulatory framework that provides certainty to the developers ..., and certainty to the public that they'll be able to do this in a safe manner that protects the environment". The point about safety was reflected in the results of other studies. In most studies, the results indicated low familiarity with CCS. When looking at Switzerland or Canada, the knowledge that respondents needed to evaluate risks and benefits included e.g., physical knowledge about CO₂ and CCS, storage mechanisms, climate change and its causes. A predictor of higher support for CCS was whether respondents were aware of CCS activities in their area, e.g., Saskatchewan and Alberta in Canada. Other predictors concerned trust in government and corporate entities, dependence on fossil fuel-related energy and/or industries and the degree of concern regarding climate change.



MORE CONTEXT: NATIONAL AND INTERNATIONAL NUCLEAR AND HYDROGEN PRODUCTION RELATED SOCIAL SCIENCE

Hydrogen production: In 2021 a comprehensive review of social science around the world in relation to hydrogen energy technologies (HET) was published (Emodi et al. 2021). Most of this type of research has taken place in Western Europe and Asia, with only three studies found in the United States. Although social science re. HET in the states of interest to Wyoming is not available, this journal article provides a good indicator of the social acceptance of HET and the concerns that are on publics' minds generally.

The first finding was that awareness and knowledge regarding HET is generally low. A key indicator of a higher level of awareness and/or knowledge is whether any forms of HET are prevalent in a person's country or immediate area. The main factors that influence levels of social acceptance related to HET are prior knowledge, perceived cost and risks, environmental knowledge, higher education and income, personal and distributive benefits, belief that technologies are a solution to environmental issues and finally, infrastructure availability. Prior knowledge related to this was found to be key to social acceptance. It informs individuals' perceptions of risks and benefits and thus influences attitudes and guides behavior

e.g.: voting and other forms of providing support or opposition. Another example is the result from especially Western European studies regarding the perception of risk related to possible accidents or explosions, in turn leading to negative attitudes to HET.

Environmental knowledge in particular was associated with preferences for particular types of HET (Emodi et al. 2021). Generally, the public appeared divided regarding their choice of hydrogen from fossil fuels with CCS and renewable hydrogen, and when to move into fully renewable hydrogen. The trade-offs that emerged on publics' minds in these studies related to affordability, infrastructure availability and community benefit. The article concluded that "Improving public awareness, community engagement and providing the necessary hydrogen support infrastructure will be key for guiding the behavior of the public in a future hydrogen economy".

Another article relevant to Wyoming came out this year, concentrating on large scale hydrogen generation, in line with the types under discussion in Wyoming (Schönauer and Glanz 2022). In this German case, similar to the article regarding CCS in Indiana, results indicate that there is social acceptance for large-scale hydrogen infrastructure, but this declines when the infrastructure is built close by. Several factors were found to be associated with respondents who did not want these projects "in their backyard" (NIMBYism). In this study, women, younger people and lower levels of climate change concerns were connected to NIMBY attitudes. This can be explained by German values and attitudes regarding climate change, place-attachment, personal factors and project factors. The authors concluded that project factors can be addressed by developers. To reduce negative NIMBY attitudes and improve trust, the authors recommended active participation in project development.

Regarding nuclear-based power, a considerable body of work exists internationally and nationally that addresses public preferences, attitudes and beliefs on nuclear-based power. One article provided information in the demographic differences related to higher and lower levels of favor for nuclear-based power, and a second article addressed measures to overcome any lack of social acceptance or license.

The first article charts the history of public opinion regarding anything nuclear from the Second World War to the present (Lovering and Hobbs Baker 2021). Both nuclear weapons and nuclear-based power have had their advocates and their detractors, with the discourse evolving mostly based on powerplant events (Fukushima, Chernobyl) or energy crises (1970's) and related discussions in Washington DC



and the media. Generally, there is a partisan divide related to nuclear-based power, with Republicans generally favoring nuclear-based power by a 15-20% margin over Democrats. Although progressives are more likely to put higher priority on climate change related policies, and more likely to attribute climate change to humans, and generally believe in climate change at all, they are also less likely to favor nuclear-based power as a zero-carbon option. This may not be relevant to Wyoming's population but it is when considering that the most likely end users of nuclear-based power generated in this State will go to progressive, liberal-leaning communities. The authors of this article argue that new advanced nuclear technologies depend on the ability to "embrace progressive changes in its governance, educational pipeline and approach to community engagement and siting". They emphasize the need for nuclear industry to not simply expect public support and instead seek to earn it. One important step is to get away from the "white male effect", and instead especially reach out to women, people of color and young people, on all scales, in a participatory manner.

These conclusions are similar to those of a 2018 review of nuclear-based power research (Stouffer Bisconti 2018). Based on years of public opinion surveys regarding nuclear-based power, the author agrees with the generally favorable view of nuclear-based power by Republicans and negative views by Democrats. The author points out that nuclear-based power needs to be framed differently than it has been to persuade progressives and climate change concerned individuals of the benefits of nuclear-based power. She describes the nuclear-based power narratives used in the past of either being related to promise (Republican, conservative) or peril (Democrat, progressive). When combining the narrative of peril with a general lack of knowledge regarding modern nuclear-based power technologies, this creates a formidable obstacle to Wyoming's desire to sell nuclear-based power electrons to states like Oregon and California. The author suggests that rather than not engaging seriously with end users and other stakeholders, energy providers, advocates and policy-makers take control of the narrative in order to influence attitudes more toward promise than peril. Right now, the public is "unformed and uninformed" and opinions are at the mercy of external influences such as accidents or energy crises. She recommends instead framing nuclear-based power not as just another option but more as a unique, zero-carbon, clean air and reliable energy type instead. Other recommendations included using nuclear-based power's "clear distinctive features" such as reliable electricity, advanced technology, energy security and climate change solution as arguments to persuade the public away from the peril narrative, not e.g. jobs. She argues against using jobs-related arguments since they are not distinctive to nuclear-based power.



In the research I conducted, I found a key indicator of public preferences for particular forms of energy was their level of concern regarding climate change. For example, a study in Washington, Oregon and British Columbia indicated that a prime predictor of public preference for renewable energy was climate change (Hazboun and Boudet 2020). The early 2022 the Colorado State of the Rockies poll (Colorado College 2022) provides the most recent information on many energy subjects in the Intermountain West. Colorado’s public has the highest belief that climate change is an important issue (69%) (Table 1) of these states. Although in this case no statics have tried to correlate this, their respondents also favor renewable, natural gas-based power generation and nuclear-based power considerably more than fossil fuel related energy types (Table 2). Hydrogen production was not mentioned. Climate change is probably not the only motivator driving public opinion, but the Colorado percentage contrasts with Wyoming public beliefs (53%) on this topic and points to a difference in energy demands between Wyoming and its clients.

Table 1: Beliefs regarding climate change in Intermountain States.

From what you know about climate change, sometimes referred to as global warming, which of the following four statements is closest to your opinion?									
	Total	AZ	CO	ID	MT	NV	NM	UT	WY
Climate change has been established as a serious problem and immediate action is necessary	44%	46%	51%	33%	43%	46%	43%	34%	32%
There is enough evidence that climate change is taking place that some action should be taken	18%	15%	18%	19%	15%	16%	22%	26%	20%
We do not know enough about climate change and more research is necessary before we take action	15%	17%	13%	15%	16%	15%	12%	14%	16%

Concern about climate change has been greatly exaggerated.	22%	22%	18%	31%	25%	21%	22%	24%	30%
Don't know	1%	1%	--	1%	--	1%	--	1%	1%
Refused	*	*	*	1%	1%	1%	1%	1%	*
TOTAL HAPPENING/ TAKE Action	62%	60%^	69%	52%	58%	62%	65%	60%	53%^
Total More Research/ Exaggerated	37%	39%	31%	46%	41%	36%	34%	38%	46%

From: Colorado College, 2022

Table 2: Preferences for energy types in the Intermountain West.

Which one or two of the following sources of energy would you want to encourage the use of here in state?									
	Total	AZ	CO	ID	MT	NV	NM	UT	WY
Solar power	61%	71%	61%	44%	44%	65%	62%	54%	31%
Wind power	37%	37%	41%	35%	41%	35%	42%	32%	28%
Natural gas	26%	21%	27%	35%	28%	31%	26%	27%	35%
Nuclear	24%	26%	23%	30%	17%	21%	18%	30%	25%
Energy efficiency efforts	23%	23%	23%	24%	25%	23%	17%	26%	16%
Oil	8%	5%	7%	8%	13%	8%	14%	8%	19%
Coal	7%	4%	6%	4%	16%	4%	6%	11%	27%
All/combination	5%	5%	5%	7%	7%	4%	7%	5%	10%
None of these	1%	2%	*	2%	*	1%	*	1%	1%
Unsure/refused	1%	1%	1%	2%	1%	2%	1%	2%	--

From: Colorado College, 2022

CONCLUSION

From a social science perspective, it appears that Wyoming's ambitions are far ahead of public knowledge and therefore attitudes and preferences. Where CCS, CCUS, modern nuclear-based power and hydrogen generation technologies are concerned in these specific states, there is little that social science can currently provide to help Wyoming understand the level of social license and acceptance of these forms in these states. As a result, to provide some indication of what is known regarding these subjects, I have increased the scale of this literature search by looking at other states and even internationally, both in terms of social science peer-reviewed literature and polls.

The most dominant takeaway from this study is the adamant urging from social scientists, based on data worldwide, that energy actors do far more to involve and engage the public in educational and informational outreach and increase public deliberation processes in the design and development of energy infrastructure. The combination of lack of information, while having strong opinions based on the “perils” associated with an energy type, needs to be addressed in order to create the social license in a state to use what Wyoming has to offer (Stouffer-Bisconti 2018).

A good example that emerged from this project is Oregon. There is little research in this state regarding the social license for nuclear-based power. On the other hand, potential consumers of Wyoming nuclear electrons are already voicing concern based on the “peril narrative” (expensive, dangerous, insufficient safety) regarding the Natrium plant (Stouffer-Bisconti, 2018). Oregon seems to offer an instance where energy leaders could use resources to transform a peril narrative into one of “promise”.

A note regarding the limitations of this study: the purpose of this study was to explore to what extent social scientists are focusing their research on the products that Wyoming is wanting to deliver in the future: hydrogen generation, nuclear-based power, carbon sequestration related products and natural gas-based power generation. I present here what I could find in that literature but it is clear that rigorous market analysis is needed. Not only whether an energy type is in demand but also why in order to effectively address the preferences and concerns of prospective publics.

Both in and outside of the state of Wyoming a concerted effort needs to be undertaken to provide a suite of different types of opportunities for the public to learn about alternative forms of energy other than traditional fossil fuels. In a study of literature around the world one journal



Photo credit: PacifiCorp

article concluded that the one component that will increase the use of renewable technologies is using educational programs (Qazi et al. 2019).

Another article looking at an array of electricity grid decarbonization policies in California such as requiring households to be all-electric or funding for community microgrid development, concludes (Boudet et al. 2021):

“Except for this solar requirement policy, “don’t know” and neutral responses together made up the largest percentage of responses. This lack of firmly held opinions among members of the public can serve as both an opportunity and a challenge. It presents an opportunity for policy makers, energy experts, and affected stakeholders to work together in shaping the implementation of these policy solutions through meaningful engagement potentially absent the baggage of partisanship and misinformation that plagues many more established policy issues in the United States. However, the challenge becomes that, as these policy approaches become more familiar and salient to the public (such as through policy proposals, implementation, and media coverage), stances can split along partisan or other lines, especially if their implementation becomes associated with already divisive issues, like climate change (Boudet, 2019)”.

This conclusion is similar to results in Wyoming where in 2020 and 2021 results generated large percentages of “don’t know” and neutral responses to little understood energy types (Western and Gerace 2020; 2021). As Wyoming seeks to bolster its economy by diversifying and modernizing its energy portfolio, an ambitious and thorough program to inform and engage with all stakeholders at home and in client states will be necessary. Wyoming and its energy experts need to engage in thorough market research and design a wide spread public outreach effort that tackles consumer preferences and their motivations in order to change a. accurately inform the public, b. build social license and c. change narratives of “peril” to “promise”.

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