Renewable Taos, Inc. – 2017 Annual Report
February 2018

I. Overview – the second hottest year on record

2017 actually did break another record. Although it was only the second hottest year, it was the hottest non-El Niño year on record. So, after three consecutive record breaking years the march of global warming continues more or less unbroken. Can we say that climate change denial has ended among people of good-will? We think so, although some naive people may continue to be duped.

What does this mean for us? We want to renew our commitment with an additional sense of urgency. We are confident that solutions like emission-free energy from wind, water and solar will enjoy growing support. The next decade will, in our opinion at least, have a profound impact on humanity's future on earth.

Renewable Energy has Reached an Inflection Point – It is Now the Low-Cost Alternative

Renewable Energy has been the low-cost energy source for a long time when you factor in the cost of damage caused by Fossil Fuels – the health costs, environmental damage caused by extraction, and climate disruption caused by Greenhouse Gas (GHG) emissions.

But 2017 saw the market price of Solar Photovoltaic (PV) and Wind power fall below that of electricity generated from Coal and Natural Gas. There are still some regional price variations, but Solar PV and Wind are the low-cost energy sources in the American Southwest. And, the cost of both continue to fall surprisingly fast.

What does this mean for us? First, and really most importantly, the financial arguments against adopting wind and solar are rapidly diminishing toward the vanishing point. We can expect rapid growth and adoption of both by utilities especially here in the Southwest.

Behind-the-meter adoption of Solar PV will continue to grow. In the last year rooftop solar grew by approximately 50% in the Kit Carson Service area.

China and India are now leading the way in renewable energy. In both countries clean energy is the key solution to their increasing smog and environmental problems. Plus, solar and wind are the low-cost solutions for energy needs. Solar especially provides a lot of flexibility in deploying generation and can be seen in massive arrays feeding the grid and in remote villages in India powering lights, cell phone charging, and computers.

Battery Prices Falling Rapidly

The prices of batteries for Electric Vehicles (EVs) and grid storage have fallen by half twice in the last six years, and indications are that prices will continue to all for at least the next half decade. Both Solar PV + battery storage and wind + battery storage produced amazingly low numbers in response to an Xcel Energy Request for Purchase. These low prices will go a long way toward providing electricity from solar when the sun is down and from wind during periods of calm.

Setbacks – Not that Serious

Current Federal policies threaten serious harm to our environment, but, they haven't derailed the growth of renewable energy. The most serious threat is a 30% import tariff on solar panels from China and a few other countries. Since solar panels represent around 30% of the cost of rooftop solar, the actual impact represents only 9% of the total cost. With costs of both panels and installation services continuing to fall, many feel that the uncertainty caused by the tariff will do the most damage to the U.S. solar industry. However, there are a lot of things that can be done at the State and local levels that will offset that uncertainty, and we'll be working on those this year.

The other intervention that sounds as though it could inflict serious harm is U.S. Department of Energy recommendation that rate-payers subsidize 3 months of coal and nuclear fuel supplies at coal and nuclear plants around the country. The proposal has been rejected by the Federal Energy Regulatory Commission and the tariff isn't slowing adoption of wind and solar.

The reversal of the Clean Power Plan seemingly blocks the path mapped out to meet U.S. commitments made at the Paris Climate Accords. Interestingly the dramatic fall in the cost of solar PV and wind energy may allow us to meet our goals anyway, and the Clean Power Plan's 2030 goals may be achieved a decade early. The transition to renewable energy is picking up steam!

Electric Vehicles and Transportation

For the first time in 2017 U.S. emissions of GHGs from vehicles exceeded those from the electric power system. Together they account for approximately two-thirds of U.S. GHG emissions.

The Electric Vehicle (EV) marketplace in the U.S. continued its steady growth led by California. Two moderately priced EVs with ranges of 250 miles were introduced this year – the 2017 Motor Trend Car

of the Year, the Chevrolet Bolt, and the Tesla Model 3. Hundreds of thousands of Model 3s will be delivered this year as Tesla ramps up production.

Almost every major auto maker announced aggressive plans for EVs led by Volvo which promised that by 2022 all its vehicles would be either EVs or plug-in hybrid vehicles. Electric buses continued to spread, and the first electric semi-trucks have appeared as demo models. A plug-in hybrid pickup truck from Workhorse, an Ohio company, has pre-orders for thousands of vehicles from companies like Duke Energy. Tesla has also promised a pickup and an SUV by 2020.

EVs with more than 300 miles range are commonplace in announcements for introduction in 2019 and later. In Norway EV sales account for more than half new car sales. Several cities have banned gasoline powered vehicles after 2025 or 2030. China is now the leader in EV manufacturing, but the big car companies promise many new electric models for the next 5 years.

Utilities Begin to Compete with Natural Gas in Home Heating

This trend is just getting started but will gain momentum as electric utilities begin to compete in the entire energy market. Home and building heat make another 30% of the energy market. Electric powered Ground and Air source Heat Pumps are already less costly than natural gas for heat. Utilities simply need to build this market. We can do a lot right here in North Central N.M.

Regulatory Support for Clean Energy

The most effective regulatory support for solar and wind has come from the Federal Government in the form of an Investment Tax Credit (ITC) of 30% for solar equipment and a Production Tax Credit for Wind. Both are set to be phased out beginning in 2020. In 2018-19 there will be an increase in both solar and wind installations to take advantage of these credits before they begin to expire.

The next most effective supports are Renewable Portfolio Standards (RPS) enacted by States mandating that Utilities supply increasing shares of the electricity generated by wind, solar or hydro. New Mexico has a 20% by 2020 RPS for renewable energy for Investor Owned Utilities (IOUs). Mandating more solar and wind with an updated RPS is one of our goals for the 2019 legislature. It is championed by 350.nm, and we'll join with other environmental groups to see that an aggressive set of goals are adopted by N.M.

In other states including Colorado regulatory agencies are applying standards like the Social Cost of Carbon and updated interpretations of the Public Utility Regulatory Policies Act (PURPA) to encourage development of renewable energy. It's a shame that some utilities don't take the lead in adopting the lowest cost, cleanest energy generation possible. One of the main reasons for that are outmoded regulatory principles that allow utilities to make a larger total profit on more expensive fossil-fueled generation. It's not good for the planet and not good for rate-payers pocketbooks.

II. RENEWABLE TAOS ACCOMPLISHMENTS DURING 2017

KCEC Solar Project – Clean Energy for 20,000 Households

The Kit Carson Electric Cooperative (KCEC) Solar Project will build 30 to 35 1-megawatt (MW) solar arrays distributed around the KCEC Service Area over the next five years. This will bring the solar share of our energy portfolio up to around 35%, and on many sunny days during hours of peak sunlight, all the energy on our grid will be from the sun. Each of the 1-MW arrays will power the equivalent of 500 houses. The Solar Project will also install battery storage at some of the solar sites to store excess energy and dispatch it after sundown or when clouds are passing over. The storage component of this project is an avenue into a future where electricity is dispatched for multiple purposes, peak demand is shaved, and homes participate in a smart grid. By the end of the project 40 MW of solar arrays will provide the energy for around 20,000 houses in the Kit Carson Service Area.

Members of RT helped at various stages of the Solar Project, but the credit goes to Kit Carson and Guzman Renewable Energy Partners who manage and finance construction of the solar arrays. Each array will produce wholesale electricity at 4 to 5.5 cents per kilowatt-hour (kWh) for the next 25 years.

Education and Community Outreach

RT contributed financial support and speakers for the Renewable Energy Festival, a two-day teach-in at the Northern New Mexico College in Espanola celebrating Earth Day 2017. Luis Torres and the many volunteers he brought together made this Saturday event an impressive success.

RT presented detailed information on renewable energy to the Taos County Commission, the Taos Ski Valley via Chris Stagg, and the Taos Community Foundation Collaborative Chaos Event which reached a whole new audience of people in the Taos Community, and on numerous visits to other Rural Electric Cooperatives like Mora-San Miguel, Jemez and NORA.

Bill Brown's presentation to the Taos County Commissioners at a Work-Study Session devoted to renewable energy was impressive. We'll continue this work by continuing to recommend specific actions for the Commissioners and other political, business and NGO principals.

The 2nd Annual Taos Land & Water Conference sponsored by Amigos Bravos last May was well attended. It included a climate panel with Bill Brown and Luis Reyes.

RT, PPC Solar, and Kit Carson Electric hosted a full day field trip for UNM Taos students in the Northern NM Climate Change Corps. It's vital that we educate ourselves about clean energy coupled with the threats of climate disruption.

Members of Renewable Taos, Kit Carson Electric, and Guzman Energy provided information to residents who attended an Open House/Listening Session convened by Lucky Corridor, LLC. The Lucky Corridor representatives sought input and comments on plans to route new transmission facilities

through Taos. The Corridor would bring wind generated electricity to our community from wind farms in located North-Eastern New Mexico. The energy would also be sent west to Arizona and California where it would power thousands of households with clean energy. Weeks of discussion in the Taos News followed the meeting including an op-ed from RT outlining the facts and misinformation surrounding the need for new transmission infrastructure.

The Collaborative Chaos: Climate Change Event at the TCA covered a full week in December and included a program where Gary Ferguson created an art installation representing the "thin blue line" of Earth's atmosphere, and Bill Brown discussed climate change and clean energy.

Renewable Taos principals participated in the September 19, 2017 Coalition for Clean Affordable Energy (CCAE) Planning for 100% Renewable Energy conference held in Santa Fe, NM. Luis Reyes and Bob Bresnahan spoke.

Kim Shanahan, the President of the Santa Fe Builders Association, interviewed Bob Bresnahan on his KRTC Sunday Program in December. Bob Bresnahan also wrote an article that appeared in High Country News and The Albuquerque Journal. The article discussed Kit Carson's withdrawal from Tri-State, an event whose importance is nationally recognized in energy industry publications and books.

RT members supported the renewable energy component of Taos United, a really notable addition to our community. Taos United holds monthly forums where people working on community projects are invited to provide updates on their work. We regularly have one or two members reporting on clean energy and Electric Vehicles. Bob Bresnahan has joined the Taos United Board.

RT hosted about 25 new people interested in renewable energy at its weekly RT meetings. These weekly meetings have taken place for more six years and have contributed a lot to strengthening community support for clean energy.

Analytical Work

John Gusdorf continued his excellent work with papers dealing with issues involved in deploying solar PV in the Kit Carson Service area. There are constraints on solar energy that can be overcome with storage of electricity and blending local solar with energy from renewable sources in the surrounding area. It's a non-trivial problem, but there are several promising solutions. Others are ahead of us, and we'll be able to benefit from their experience.

Bob Bresnahan presented a paper to Kit Carson on the potential of Electric Vehicles.

Gary Ferguson and Bob Bresnahan worked on a proposal for large-scale solar arrays on the west side of the Rio Grande Gorge.

Electric Vehicles

Jay Levine and Jonathan Hansen presented an approach to electric vehicles (EVs) for Taos to the Taos Town Council. They have met repeatedly with Town staff and elected officials to discuss EV charging. The idea of transitioning to an all EV fleet is also discussed. They also raised the issue with Luis Reyes from Kit Carson.

As of this writing the only public charging stations in North Central NM are at Taos Ski Valley. A few local businesses in and around Taos have installed charging stations. Kit Carson and the Town are interested, so we can expect some action this year. Kit Carson is also considering the possibility of EV support programs and EVs for their fleet

State and Regional Politics and Energy Policy

RT initiated an event to discuss rural energy held in Santa Fe this Fall. The event was sponsored by the Coalition for Clean Affordable Energy and drew over 40 participants including 8 representatives of Colorado groups. The meeting discussed an upgrade to NM's Renewable Portfolio Standard (RPS) and the potential for wider adoption of renewable energy by NM and CO Rural Electric Cooperatives. An ad hoc group is planning another meeting in Colorado in early 2018.

RT members attended State Investment Council meetings in Santa Fe. We discussed using funds from the State Investment Council to prime public private solar and wind development. We also discussed the issue of divestment in fossil fuel securities.

RT met with Jeff Apodaca, candidate of Governor, and discussed his proposals for using the State Investment Council and the State Land Trust to further economic development in NM by tapping our state's vast renewable energy resources.

RT developed a 2018-19 Renewable Energy Strategy for elections and legislative sessions. We distributed it fairly widely and carefully evaluated the feedback. There is a lot to do and a lot of potential this year and next, so it's imperative that we continually evaluate our activities to get the best possible results.

RT circulated draft memorials on renewable energy for the state legislature. At least one statewide candidate has indicated interest and support.

The State of NM Energy, Minerals and Natural Resources Department is crafting a NM Energy Roadmap. Stakeholders including Renewable Taos will formally review the Roadmap in early 2018.

RT, UNM-Taos, and Northern New Mexico Climate Change Corps hosted Taos area participants in a State-wide Citizen's Climate Lobby Virtual Meeting this summer. CCL is the sponsor of a tax and

dividend proposal for carbon emissions. A version of the proposal is a central part of the platform for Minnesota Gubernatorial candidate Rebecca Otto.

Rural Electric Cooperative Outreach and Website

RT is participating in an outreach effort joining numerous NM and Colorado environmental and clean energy advocacy groups. Kit Carson and Luis Reyes are central to the strategy the group is considering. Breaking with Tri-State Generation and Transmission Association was ***a shot heard around rural America.*** People from progressive Rural Electric Cooperatives (RECs) all over the country are interested in how it was accomplished and how Kit Carson is faring.

The break with Tri-State and the Kit Carson Solar Project led directly to a sizable grant for us to continue our work with other Rural Electric Cooperatives. We plan to launch a website tentatively titled "Renewable Energy for Rural Electric Cooperatives" and support renewable energy activities in other rural areas.

A Taste of What's to Come in 2018-19 – Electrify Everything with Emission Free Energy!

The entire Clean Energy movement has been more successful than we hoped in 2011 when RT was founded. Key to this is the falling price of solar PV and wind. We're facing some setbacks at the Federal level in the U.S., but States and cities are marching forward.

Solar PV and wind are now the low-cost energy sources, not simply clean and environmentally responsible. We will continue our campaign to Electrify Everything including transportation and building and water heat. Plus, we hope to unblock the obstacles to deeper energy efficiency in rural NM.

In NM we can expect big breakthroughs over the coming few years. As always, we deeply appreciate your support. It makes a difference.

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