

Xcel Open House – Clean Energy Plan – Xcel Open House Kiowa Summary

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Executive Summary

It was clear that the Xcel Representatives at the Open House in Kiowa on Feb. 1 were prepped with many speaking points, many of which were not technically correct.

Details backing up the following points below can be found in the detailed notes section of this document.

1. They admitted they have no plan on how to mitigate the intermittency issues they will be building onto the grid with the Clean Energy Plan. Having a grid in a northern climate supported by over 80% intermittent renewable energy is a recipe for disaster. This is unprecedented, and very likely to end in tragedy. John Welch, the Vice President for Commercial Operations for Xcel Energy, quoted in is direct testimony that he has concerns regarding the issues around intermittency and how to keep the grid viable for multiple days with little to no production from wind or solar⁴.
2. They quoted a net cost to the consumer of 1.4 to 1.5% increase in electricity prices. This, quite frankly, is impossible. Other costs analysis for Colorado is to expect our power pricing to increase by roughly 44%. If we look at the grid in CA, their power generation is roughly 43% non-hydro renewables (wind and solar). Their energy prices are 62% higher than the US, and Industrial users pay 115% above the average⁶.
3. They are requesting quotes for this project and will continue to do so, despite being told otherwise at the open house. In 2017 they issued the RFPs for the projects summarized in this document below. We were told at the open house that Xcel Energy has no control over the content in the RFPs. That is not the case as they are the party issuing these documents for bid.
4. When asked about ensuring that the wind and solar generators provide ensured funding to cover the cost of land reclamation at the end of the project life, I was told that they have no control over the wind and solar generators reclamation requirements. (Gets back to item #3).
5. When asked about the decrease in local property values because of the high voltage power lines running through the land, we were all told that there would be minimal impact to property values. Common sense dictates that we all know this is not true. A case study completed in 2018 from the Journal of Real Estate Research found that vacant lots near high-voltage power lines sell for 44.9% less than equivalent lots that aren't located near power lines. A lot that is located within 1000 ft of transmission lines tend to sell for 17.9% less.⁷
6. We were told that an environmental impact study was not required because the project does not impact Federal lands. The wildlife representatives there only had data on where the proposed transmission lines would be in relation to elk and mule deer migration, and ranges. There was no mention of Pronghorn, and basically, I was told that they did not know why antelope were not included and suggested that perhaps the data did not exist. It appears that much of their routing will go through pronghorn ranges⁸, and it is questionable what these transmission lines and power generators will do to our wildlife populations.

Detailed Background and Open House Meeting Notes

From discussions with the Xcel Energy representatives at the open house, I found that the plans for the power generation for their Power Pathway is actually defined by the Clean Energy Plan. The Power Pathway is how they will deliver the power required based upon their clean energy vision, which was approved by the PUC.

They plan on reducing carbon emissions by 80% by 2030. What I discovered was that much of the information that was provided at the open house does not jive with their documentation that they have posted online. This document is intended to provide a summary of what information I was able to find on the Clean Energy Plan, and then compare that with the information that was being discussed during the Elbert County Open House.

Clean Energy Plan History

It appears that the Clean Energy plan started back in 2016, with the Colorado Electric Resource Plan. In 2018, they then presented the Colorado Energy Plan which state regulators approved to retire 2 coal plants and increase clean energy investments in Colorado.

In November 2021, **they modified their proposed Clean Energy Plan based on a partial non-unanimous agreement between Xcel Energy and more than a dozen stakeholders.** The revised plan accelerates the coal action timeline and aims to reduce carbon emissions 87% by 2030. The plan is to double their renewable energy and battery storage on their system. The plan is also to fully exit from coal by 2040. Their goal is to be carbon-free by 2050. ^{1,2}

You can also follow the proceedings and access electronic filings at the Colorado Public Utilities Commission electronic filings page (external link). Search for docket number 21A-0141E. I strongly recommend that we look at the proceedings as it is important to understand who these partial non-unanimous stakeholders are.

Clean Energy Plan as it Stands

Their current clean energy plan is laid out in the following document: Public Service Company of Colorado, Our Energy Future: Destination 2030, 2021 Electric Resource Plan and Clean Energy Plan, Volume 1 Plan Overview, CPUC Proceeding No. 21A-_____ E, March 31 2021.³

After going through this document, it became clear to me that there are a number of comments that I was told by Xcel representatives at the open house in Elizabeth that do not align with their published plan.

High Level Summary of the additions / modifications that will be made to the power generation resources to achieve this goal:

Additions:

- 2,300 MW of wind
- 1,600 MW of large-scale solar
- 400 MW of battery storage
- 1300 MW of flexible dispatchable generation

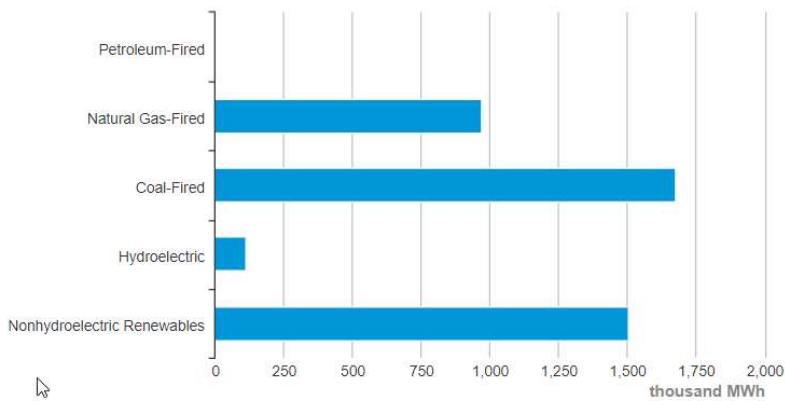
Note the plan is to add 3,900 MW of renewable energy into the grid by 2030.

To put the land use in perspective, let's assume that for that the land required for a wind turbine is 60 acres per MW⁵. **Based on their plan they will need to find roughly 138,000 acres to place wind farms on the eastern plains (215 square miles).**

For solar, if we assume 4000 acres are required for 300 MW generation (Atkima Solar Farm in Texas), that equates to 21,333 acres (33 square miles).

To put that into perspective, this is the current electrical generation resources in Colorado as reported by the EIA: Natural Gas: 969 MW, Coal 1676 MW, Hydro 111 MW, Renewables 1505 MW, petroleum fired, 2 MW, for a total of 4263 MW. **Note that natural gas and coal currently comprise 57% of our power generation.**

Colorado Net Electricity Generation by Source, Nov. 2021 [DOWNLOAD](#)

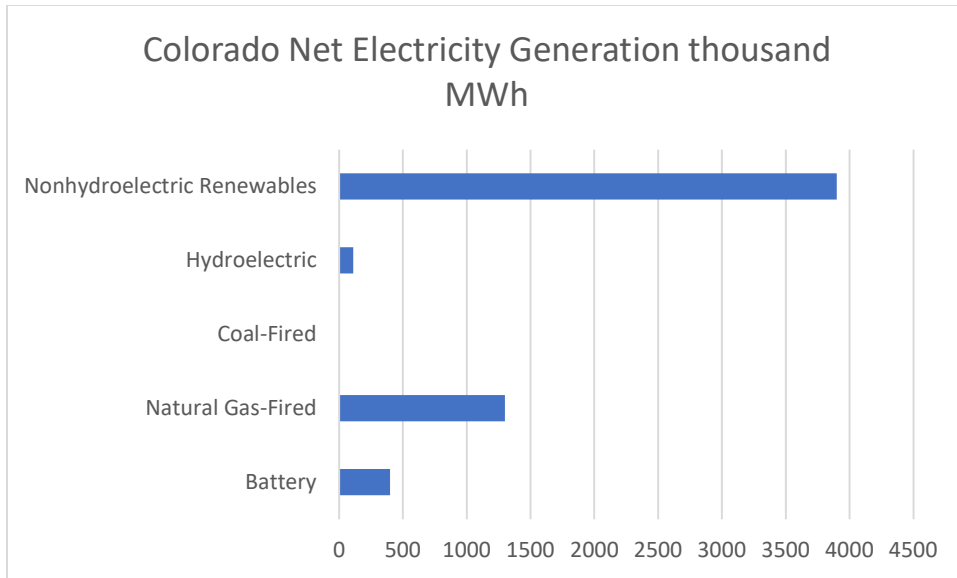


 Source: Energy Information Administration, Electric Power Monthly

Their plan is to increase the reliance on wind and solar to 80%. This level of dependence upon renewable energy is unprecedented, even on a global scale.

We all need to remember that the capacity factors (percentage of time the turbine or solar panel produces power) need to be considered to ensure reliable power generation. For example, the capacity factor of wind turbines range from 33 – 44% roughly. To have a reliable grid the wind generation needs to be backed up by 56 – 67 % of the time by another power generation source. Solar, best case is 25%. 75% of the time these installations are not generating power.

From their plans it is not clear if they are planning on the over-installation of wind and solar generators to account for the generators the capacity factors. But with that said, what has been proven is that even over installation of wind and solar in a location it is not insurance that the amount of power generation that is required will be provided from the generators.



The Intermittency Issue and Reliability

I found it interesting that when I asked their engineers, whom I had the bulk of my discussions with at the open house, were not too concerned given the intermittency and unreliability of solar and wind (which is the bulk of their focus for new power generation). We all witness with heartbreak over 200 deaths in Texas during the Feb 2019 Storm Uri as a direct result of unreliable grid generation planning. In Colorado, given our sub-zero winter temperatures the stakes are even higher.

I spent some time going through the Direct Testimony documents provided on Xcel’s website in regard to the March 31, 2021 hearing which approved this plan.

The testimony of John T. Welch is a direct testimony to the uncertainty of deploying renewables at a scale that they are considering here.⁴ John Welch is the Vice President for Commercial Operations for Xcel Energy.

1 Before moving on to my Direct Testimony, I believe it is important to
 2 emphasize that increasing levels of renewable energy resources combined with
 3 weather events pose a particular challenge to reliable system operations. Simply
 4 put, in addition to the day-to-day intermittency of these resources, there are
 5 extended periods of time, particularly in the winter, when generation is limited from
 6 both wind and solar. Commercial Operations requires firm dispatchable resources
 7 that can generate on-demand—for many hours or even days—to preserve
 8 reliability under these conditions. The importance of ensuring the Company has
 9 flexibility associated with firm dispatchable resources will continue to grow in the
 10 coming years.

When I asked their engineers more directly, if Xcel Energy should be criminally liable if the grid were to fail during a cold winter storm and as a result, with multiple instances of loss of life, they became defensive and said that their grid was reliable.

Indeed, our grid has been reliable to date, but not with 80% intermittent generation. When pressed further, they, as a group admitted that they were not sure how the planning was going to be integrated to ensure 100% back up generation (which is essentially what you need in a worst-case winter storm).

The battery storage that they are looking at has only a 4 hour capacity based on discussions at the meeting. I was told that nuclear was completely off of the table for new power generation in Colorado.

In addition, the engineers that I was speaking to were not aware of quick, dispatchable energy (peak shaving gas engine generators that cost along the lines of nuclear reactors on LCOE, but are typically the back up generation of choice for renewable grids because they can cycle fast without having the deleterious effects of increased maintenance and decreased efficiency as standard single cycle plants).

I was told that their conventional gas generation facilities have no problems turning down or up based on the requirements without any issues in regards to maintenance, CO₂ emissions or thermal efficiencies.

Note – industry experiences finds otherwise. UNLESS these are aeroderivative simple cycle turbines which would make them pretty new installations (newer technology).

Renewable Company Bids

At the open house, I was explicitly told that Xcel was not soliciting renewable energy companies to bid on projects based on the location of the transmission lines. When one has a review of the overall planning document³ you will clearly see that this was not the case:

Contents and Organization of the 2021 ERP and CEP

The 2021 ERP and CEP filing is comprised of the following three volumes:

Volume 1: 2021 Electric Resource Plan and Clean Energy Plan

Volume 2: Technical Appendix and References

Volume 3: Requests for Proposals and Model Contracts

Volume 1 contains an Executive Summary and high-level overview that outlines the essential elements of the Company's 2021 ERP & CEP. Appendix 1 of Volume 1 provides the Company's Workforce Transition Plan.

Interestingly enough – the previous links that were available for download where I was able to download Volume 1 have been taken down. At least based on my recent searches (this has been roughly a week ago). With that said, Volume 3 appears not to be published anywhere that I can find to get additional information regarding the Requests for Proposals and Model Contracts for Renewable Energy. However, the for them to state at the Open House that this planning is ONLY about the

transmission lines is a farce at best. This is all about transforming Colorado’s power infrastructure to be “green”, and by their definitions requires significant deployment of wind and solar to do so.

Again, from reviewing Volume 1 (attached, it is clear that they have already implemented and have received multiple RFPs). The primary driver are the tax credits for solar and wind. *See Extract from Reference 1 below:*

By having certain segments and substations constructed and in-service by the end of 2025, wind and solar developers will be able to interconnect their resources prior to the expiration of the Production Tax Credits (“PTCs”) and Investment Tax Credits (“ITCs”). Bids submitted by generation developers will enable significant cost savings to customers if those generating resources can be online before the end of 2025, which is when the PTC is set to expire and the ITC steps down. – page 11¹

It should be noted that the wind ITC expired when the Build Back Better legislation was not passed. That does not mean that it will not be back on the ballot for this year. With that said, the RFP and the results from Phase II of this plan are below:

In November 2017, the Company received over 400 bids in response to its Phase II 2017 All-Source Solicitation, including an unprecedented number of low-cost bids across diverse technology types. Following an evidentiary hearing and extensive stakeholder engagement and public comment, the Commission approved the Preferred CEPP (Portfolio 6) and issued its Phase II Decision (Decision No. C18-0761) on September 10, 2018.

The approved CEPP included over 1,800 MW of wind and solar generation, paired with 275 MW of battery storage, and 383 MW of existing gas assets, all while retiring 660 MW of coal-fired generation. In September 2019, the Company filed an Application for an Amendment to its 2016 ERP (Proceeding No. 19A-0530E) to replace two approved CEPP projects for which the developer was unable to deliver as bid. Consistent with the Commission’s direction, the Company issued a targeted request for proposals (“2019 Solar RFP”) to solicit replacement bids. By Decision No. R20-0285, the Commission approved the Company’s proposed replacement bids and back-up bids. As detailed in status reports filed in Proceeding No. 19A-0530E, the Company successfully executed both replacement PPAs by the end of 2020 and the projects are expected to be online by 2023.

Table 1.1-1 below is a summary of the generation resources that comprise the CEPP approved in Phase II of the 2016 ERP and the two replacement projects approved as part of the 2016 ERP Amendment.

Table 1.1-1 Colorado Energy Plan Portfolio & Replacement Projects

Bid ID	Technology	MW	Ownership	In-Service¹
X645	Solar w/ Storage	250/125	IPP	2023
X647	Solar w/ Storage	200/100	IPP	2023
056	Solar w/ Storage	100/50	IPP	2023
077	Solar	200	IPP	2023
S085	Solar	72	IPP	2023
W192	Wind	500	Own	2021
W602	Wind	300	IPP	2021
W090	Wind	169	IPP	2021
W301	Wind (repower)	162	IPP	2019
G215	Gas (existing)	301	Own	2022
G065	Gas (existing)	82	Own	2020 ²

¹ In-Service refers to the first summer the unit is available.

While I was at the open house in Kiowa, I asked the Xcel representatives about the additional cost to the Colorado utility consumer that this plan would entail. I was told only 1.4%, at best power price increase. There is no way that this is a realistic estimate.

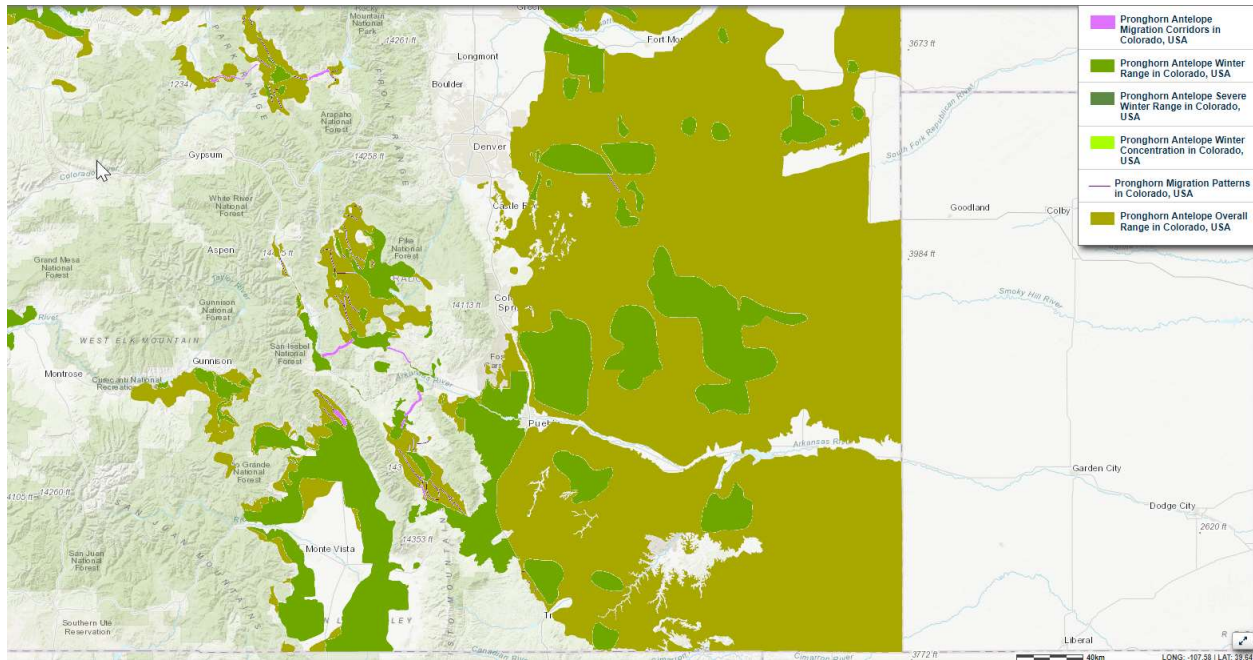
I think as taxpayers, we seriously need to question where is the \$1.7 billion coming from now to what year to fund this fiasco is being funded. The estimate I saw, which I believe is more reliable is that our electricity prices will increase by roughly 44%.

Wildlife Concerns

While at the open house in Kiowa, I had the opportunity to speak to their wildlife experts that were present. They had the data available for elk and mule deer migration, winter and spring ranges. Oddly enough, pronghorns were not included in any of their studies or analysis. I was told she did not know why pronghorns were not covered and suggested that perhaps the data on the pronghorn movements was not known. There is significant local concern in the Bijou Basin, Elbert County, that the Power

Pathway and subsequent wind and solar generators in the local region will have a devastating impact on the wildlife, as well as the cattle and other livestock animals prevalent throughout the area.

With a little research I discovered that the pronghorn data is readily available online.



Pronghorn Ranges and Migration Routes, Colorado⁸

As can be seen much of the eastern plains is included in the pronghorn overall range, and there are segments of the pathway that would likely impact their winter range as well.

References:

1. https://www.xcelenergy.com/company/rates_and_regulations/resource_plans/clean_energy_plan (Refer to Volume 1 Plan Overview PDF)
2. <https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Sustainability%20Report/2020%20SR/2020-Leading-the-Clean-Energy-Transition-SR.pdf>
3. https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Rates%20&%20Regulations/Resource%20Plans/Clean%20Energy%20Plan/Vol_1-Plan_Overview.pdf
4. https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Rates%20&%20Regulations/Resource%20Plans/Clean%20Energy%20Plan/HE_106-Direct_Testimony-John_T_Welch.pdf

5. <https://www.landmarkdividend.com/wind-turbine-lease-rates-2/#:~:text=Quantity%20of%20Land%20Available,turbines%20and%20other%20supporting%20in%20infrastructure.>
6. <https://www.petroskills.com/en/blog/entry/oct-2021-clean-energy>
7. <https://orchard.com/blog/posts/power-lines-and-property-value>
8. <https://databasin.org/maps/27cd012ec1764931b98eb2e71996eae1/active/>