Appendix K

Public Service
Stakeholder Comments

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Section VI of the 10-Year Report describes stakeholder outreach efforts by each entity. That section describes the numerous opportunities and forums that were and are available for stakeholders to participate in the transmission planning processes. Those forums include Rule 3627 webinars, FERC 890 meetings, CCPG meetings, CCPG task force and subcommittee meetings, and project-specific open houses. In addition to those forums, stakeholders also have the opportunity to provide written comments. Written comments received pertaining to Rule 3627 have been included in this appendix along with Public Service's response.

Holy Cross Energy Request

The Holy Cross Energy request came in response to the Public Service July 15, 2021, Rule 3627 webinar. Stakeholders are encouraged to propose alternatives as well as bring forward any specific electric transmission interests of Stakeholders. Holy Cross Energy voiced concern during the 3627 meeting regarding a reliability concern in the Carbondale and Crystal, Colorado, areas.

Public Service Response

Public Service has reached out to Holy Cross Energy to discuss their concerns. Included below is an e-mail exchanged to acknowledge the Stakeholder's suggestion, identify the parties involved, and set up future meetings to discuss further. An initial meeting was held with Holy Cross Energy on August 11, 2021.

To: Flores, Gilbert Y
Cc: Twardy, Matt E; Anderson, William M; David Bleakley; Bo Jones; Bryan Hannegan
Subject: RE: [EXTERNAL] 3627 Outreach follow up
Date: Monday, July 19, 2021 8:53:55 AM
Attachments: image001.png

EXTERNAL - STOP & THINK before opening links and attachments.

Thank you Gilbert. I've copied David Bleakley, VP-Engineering and Bo Jones, Manager – System Operations to be involved in this discussion. As a reminder, we'd like to add a Carbondale – Crystal transmission tie as a TBD project for Xcel's filing under CPUC Rule 3627.

Bryan J. Hannegan
President and Chief Executive Officer

HOLY CROSS ENERGY
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Monday – Friday 7:30 a.m. to 4:30 p.m. Mountain Time
Holy Cross Energy provides safe, reliable, affordable and sustainable energy and services that improve the quality of life for our members and their communities.
Holy Cross Energy is an equal opportunity provider and employer.

From: Flores, Gilbert Y <Gilbert.Y.Flores@xcelenergy.com>
Sent: Thursday, July 15, 2021 2:40 PM
To: Bryan Hannegan <bhannegan@holycross.com>
Cc: Twardy, Matt E <Matt.E.Twardy@xcelenergy.com>; Anderson, William M <william.anderson@xcelenergy.com>
Subject: [EXTERNAL] 3627 Outreach follow up

Hello Bryan,

Thank you for joining today. I just wanted to link you with the planners in your area. Included here are Matt and Bill who cover the area which includes the Carbondale and Crystal substation. Matt and/or Bill will be in touch to discuss your questions further.

Thanks again,

Gilbert Y. Flores, P.E.
Xcel Energy | Responsible By Nature
Regional Transmission Planning
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Mr. Larry Miloshevich Advanced Transmission Technologies Request

Evaluation of Advanced Transmission Technologies on the Colorado Transmission System

Larry Miloshevich is an "Independent Advocate" with a background of active involvement in PUC proceedings, including Rule 3627 Transmission Planning.

This stakeholder comment concerns a proposal to evaluate a way to increase the capacity and cost-effectiveness of the Colorado transmission system by deploying a set of modern hardware and software technologies that are collectively known as "Advanced Transmission Technologies" (ATT), or alternatively as "Grid-Enhancing Technologies" (GETs). These technologies are relevant for both the existing transmission system and any new-build transmission, including the project described in the CCPG 80x30 Task Force Phase I report[1] and the forthcoming Phase II additional and alternative studies.

The Colorado PUC has indicated its strong interest in these technologies, as outlined below. A recent study of the potential value of ATT/GETs on the Southwest Power Pool (SPP) transmission system found that these technologies can double the available capacity of the system at low cost, and enable massive new renewable energy integration.

1. BACKGROUND

Much recent work has been done to assess the value of ATT/GETs to transmission systems.

ATT/GETs include:

- **Dynamic Line Ratings** (DLR): Line capacity ratings can be adjusted in real time by measuring the line's actual capacity under ambient conditions (temperature, windspeed, humidity, irradiance, precipitation) using monitoring devices and forecasts. The resulting line rating almost always allows for more capacity than the traditional fixed capacity rating that is based on worst-case conditions.
- **Advanced Power Flow Control** (APFC): Refers to devices that apportion power flow to different lines as needed to prevent congestion on any given line. A PG&E pilot study showed that scale deployment of APFC would be "*significantly less costly than a traditional transmission upgrade to increase capacity in most scenarios.*"[2]

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[1] Phase I Transmission Report by the Colorado Coordinated Planning Group 80x30 Task Force. Feb. 24, 2021. https://doc.westconnect.com/Documents.aspx?NID=19262

[2] *Smart transmission: How FERC can spur modernization of the bulk power system*. Herman Trabish. Utility Dive. March 26, 2018. https://www.utilitydive.com/news/smart-transmission-how-ferc-can-spur-modernization-of-the-bulk-power-syste/519901/

- **Topology Optimization**: Software that automatically reconfigures power flow around congestion by distributing power more evenly across the system, increasing the transmission capacity of the grid as a whole and reducing congestion charges.

ATT/GETs and Non-Wires Alternatives (NWA) have not yet been seriously considered during transmission planning in Colorado as a means of cost-effectively increasing the capacity of the existing grid and new-build transmission. However, stakeholders have called for evaluation of these technologies over the previous two Rule 3627 cycles.[3] The primary legal argument is that Rules 3627(c)(VI) and 3627(b)(I) require utilities to consider alternatives to their proposed projects and justify their chosen approach on a best-cost basis.

The Commission's strong interest in ATT/GETs was made clear in Decision No. R21-0073_20M-0008E, which requires utilities to consider ATT/GETs and NWA for all proposed projects in all future Rule 3627 filings, specifically including those technologies listed above.[4] Presumably this interest is not limited to Rule 3627 projects but extends to projects outside the Rule 3627 process, including the major project described in the CCPG 80x30 Task Force Phase I report.

The Commission had previously indicated its strong interest in these technologies by holding a Commissioners' Information Meeting (CIM) on the topic of Advanced Transmission Technologies on Oct. 22, 2020. The CIM agenda, presentations, and a summary are available in the 20M-0008E docket,[5] and a more detailed summary was prepared by a PUC Staff member.[6] The CIM presentations by Tsuchida (Brattle Group) and Del Rosso (EPRI) contain descriptions and examples of DLR, APFC, and Topology Optimization.

<u>Additional resources about ATT/GETs</u>

- Brattle Group white paper on Advanced Transmission Technologies and deployment experience.[7]

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[3] Comments filed in PUC Proceeding No. 20M-0008E by Larry Miloshevich include a summary of stakeholder input that calls for consideration of ATT/GETs and NWA in transmission planning: https://www.dora.state.co.us/pls/efi/efi.show_document?p_dms_document_id=926557&p_session_id=

[4] Decision No. R21-0073 in Proceeding No. 20M-0008E (Feb. 11, 2021). See summary in paragraph 45. https://www.dora.state.co.us/pls/efi/efi_p2_v2_demo.show_document?p_dms_document_id=940011

[5] https://www.dora.state.co.us/pls/efi/EFI.Show_Filing?p_fil=G_771128&p_session_id=

[6] https://www.linkedin.com/pulse/shining-light-advanced-transmission-technologies-dan-greenberg/

[7] *Improving transmission operation with Advanced Transmission Technologies: A review of deployment experience and analysis of incentives*. T. Bruce Tsuchida (Brattle Group) and Rob Gramlich (Grid Strategies). June 24, 2019. https://brattlefiles.blob.core.windows.net/files/16634_improving_transmission_operating_with_advanced_technologies.pdf

- Brattle Group study on the impact of GETs on the Southwest Power Pool (SPP) transmission system (see report and release page,[8] and Greentech Media article[9]).

The results of the Brattle study on the SPP system are remarkable. Implementing ATT/GETs could double the amount of renewable energy connected to the system (thereby reducing interconnection queues) at a cost that is paid for by its benefits in 6 months (i.e., dirt cheap) with substantial ongoing economic benefits. The technologies can be deployed far more rapidly than traditional transmission solutions, with major implications for decarbonization.

Summary of this section:

Evaluating the impact of ATT/GETs on the Colorado transmission system is called for in light of the following developments:

- Decision No. R21-0073_20M-0008E requires consideration of ATT/GETs and NWA in transmission planning.
- Strong Commission interest in the benefits of ATT/GETs is indicated by their convening of a CIM on this topic.
- Astounding potential benefits of ATT/GETs to the system, to ratepayers. and to renewable energy developers were shown by the Brattle SPP study.

For-profit utilities may have ignored or slow-walked consideration of ATT/GETs and NWA due to the cost-efficiency and therefore lesser profitability of these technologies relative to traditional transmission solutions. However, please consider an alternative utility approach of proposing new performance-based incentive mechanisms that supplement the current cost-of-service incentives where the interests of utilities are not aligned with the interests of ratepayers and society. An example performance-based incentive might involve sharing the benefits of ATT/GETs deployment between shareholders and ratepayers in some proportion. Another example might involve seeking Commission permission to over-build transmission in the present, if it is done efficiently using ATT/GETs, with an eye toward the future when additional transmission beyond the 80x30 level will be needed to enable deep beneficial electrification and/or to enable greater regional or inter-regional transfer capability with a coming regional wholesale market or RTO. This latter idea is particularly relevant to the 80x30 project. In any event, ignoring the potential for cost-effectively maximizing the system capacity is no longer viable, and failure of the utilities to suggest carrots may result in the use of sticks.

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[8] *Unlocking the Queue with Grid-Enhancing Technologies: Case study of the Southwest Power Pool*. T. Bruce Tsuchida, Stephanie Ross and Adam Bigelow. Brattle Group. Feb. 1, 2021.
Report: https://watt-transmission.org/wp-content/uploads/2021/02/Brattle__Unlocking-the-Queue-with-Grid-Enhancing-Technologies__Final-Report_Public-Version.pdf90.pdf
Release page: https://watt-transmission.org/2021/02/22/unlocking-the-queue/

[9] *Report: 'Grid-Enhancing Technologies' Could Save $5B per Year by Boosting US Renewables Capacity*. Jeff St. John. Greentech Media. Feb. 24, 2021. https://www.greentechmedia.com/articles/read/report-grid-enhancing-technologies-could-save-5b-per-year-double-u.s-renewables-capacity-growth

2. PROPOSAL

A robust study of ATT/GETs that encompasses at least the Colorado transmission system is proposed, to include both the existing system and planned new-build transmission such as the 80x30 project. The Brattle study of the SPP system might provide a good model for consideration.

Presumably the utilities do not possess the necessary ATT/GETs expertise to conduct such an analysis internally, so external expertise must be engaged. The obvious choice would be to hire the Brattle Group (especially Bruce Tsuchida), and possibly also involve the WATT Coalition (especially Rob Gramlich). The CCPG is the logical utility entity to lead the effort, as it represents all the relevant Colorado transmission systems. It would be wise, if not essential, to also engage the PUC and all interested stakeholders.

A set of topics to discuss:

- **Who should pay for the study?** In the end it will probably fall on ratepayers or the PUC. However, given the likelihood of future savings, the simplest and most expeditious route might be for the utilities to foot the bill after reaching an understanding that they can recover the costs later from the PUC or ratepayers, perhaps by taking the first tranche of savings from ATT/GETs deployment.

- **Details of the study.** A task force and stakeholder input would seem advisable.

- **Alternative approaches**. Perhaps there are other ideas for evaluating ATT/GETs among members or stakeholders that differ from an SPP-like Brattle study.

- **Timeline**. Please review the ATT/GETs material and initiate a study as soon as possible. Why wait?

Thank you for your consideration!

Larry Miloshevich
larry.miloshevich@gmail.com

Public Service Response

On March 3, 2021, Public Service received a proposal from Mr. Larry Miloshevich requesting a study of advanced transmission technologies ("ATTs") and grid-enhancing technologies ("GETs") focusing on the Colorado transmission system as a whole, "to include both the existing system and planned new-build transmission such as the 80x30 project."[1] Among other things, Mr. Miloshevich suggests that a study conducted by The Brattle Group on the Southwest Power Pool's ("SPP") transmission system (the "Brattle SPP Study") "might provide a good model for consideration."[2] Of note, while Mr. Miloshevich submitted the request to Public Service, he suggests that his proposed study evaluate "at least the Colorado transmission system," and be funded by multiple, albeit undefined utilities.[3]

While the Brattle SPP Study mentioned by Mr. Miloshevich provides interesting insight into the congestion issues and potential mitigation measures available within SPP's regional transmission organization, Public Service is unaware of chronic congestion in its system to support the need or justification for a similar study. Nor does Public Service believe such a study would yield actionable results applicable to a utility operating within a non-RTO/ISO service area.

In addition, the Brattle SPP Study that Mr. Miloshevich cites is not applicable to Public Service's footprint, or even to Colorado as a whole, for a number of reasons. Most notably, the Brattle SPP Study is based upon modeling and assumptions derived from the SPP multistate, multi-entity organized market, where locational marginal pricing data is readily available. Since Public Service and other utilities in Colorado do not operate as part of an organized market, many of the assumptions utilized to develop potential economic results are not available or applicable to Public Service's area or within Colorado as a whole.

While Mr. Miloshevich notes that the study likely would need to be funded by customers, the scope of the proposed study also is insufficiently developed to develop a potential study cost estimate. It is unclear how the dollars would be allocated between Colorado utility customers, particularly if the study were to include non-Commission-regulated transmission owners, such as Western Area Power Administration or local electric cooperatives that own transmission facilities.

Public Service would last note that it discussed its approach to ATTs at length through testimony filed in Proceeding No. 21A-0096E, which is currently pending before the Commission. As part of that proceeding, the Company entered into a settlement agreement that included a specific commitment to evaluate ATT alternatives to transmission projects necessitated by the Company's pending 2021 Electric Resource Plan & Clean Energy Plan, and engage with interested stakeholders

[1] Miloshevich Request at p. 4.
[2] Miloshevich Request at p. 4; citing https://watt-transmission.org/wp-content/uploads/2021/02/Brattle__Unlocking-the-Queue-with-Grid-Enhancing-Technologies__Final-Report_Public-Version.pdf90.pdf
[3] Miloshevich Request at p. 4.

through the existing Colorado Coordinated Planning Group ("CCPG") process. For these reasons, Public Service does not believe it is appropriate to proceed with the requested study at this time.