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February 27, 2018

VIA ELECTRONIC FILING

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: Public Service Company of Colorado
Xcel Energy Operating Companies Open Access Transmission Tariff
Docket No. ER18-___-000
Terms, Conditions and Rates for Use of Rush Creek Gen-Tie

Dear Secretary Bose:

Pursuant to section 205 of the Federal Power Act, 16 U.S.C. § 824d, part 35 of the Federal Energy Regulatory Commission's ("FERC" or "Commission") regulations, 18 C.F.R. § 35.13 (2017), and Order No. 714,[1] Xcel Energy Services Inc.,[2] on behalf of its utility operating company affiliate Public Service Company of Colorado ("PSCo"),[3] submits revisions to the Xcel Energy Operating Companies Open Access Transmission Tariff ("Tariff" or "OATT").[4] PSCo proposes to add new Part VII "Interconnection Service using the PSCo Rush Creek Generator-Tie Line" and Schedule 19 "Rush Creek Gen-Tie Use Charge," to the Tariff. PSCo proposes these revisions to provide for the rates, terms and conditions for interconnection service over a new radial generation-tie line now being constructed by PSCo, the Rush Creek Generator Tie-Line ("Rush Creek Gen-Tie" or "Gen-Tie"). PSCo respectfully requests that the Commission act

[1] *Electronic Tariff Filings*, FERC Stats. & Regs. ¶ 31,276 (2008).

[2] Xcel Energy Services Inc. ("XES") is the centralized service company subsidiary of Xcel Energy Inc. ("Xcel Energy"), a Minnesota corporation and a holding company under the Public Utility Holding Company Act of 2005. XES performs a variety of administrative and general services for the utility operating company affiliates within the Xcel Energy Inc. holding company system, including PSCo. The other Xcel Energy Operating Companies are Northern States Power Company, a Minnesota corporation, Northern States Power Company, a Wisconsin corporation (together the "NSP Companies") and Southwestern Public Service Company ("SPS").

[3] PSCo is the designated e-Tariff filing entity for the Xcel Energy Tariff, consistent with the requirements of Order No. 714.

[4] Xcel Energy Operating Companies, FERC Electric Tariff, Second Revised Volume No. 1. The NSP Companies operate in the Midcontinent Independent System Operator, Inc. ("MISO") region, and SPS operates in the Southwest Power Pool, Inc. ("SPP") region. The new Part VII and Schedule 19 to the Tariff are thus applicable only to the PSCo system.

on this filing and accept the proposed tariff changes effective on May 1, 2018, more than sixty (60) days after filing, without suspension.

I. BACKGROUND

A. Description of PSCo

PSCo is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), a public utility holding company. PSCo is an integrated electric and natural gas utility that, *inter alia*, generates, transmits, distributes, and sells electric energy at cost-based regulated rates to approximately 1.5 million retail customers in the state of Colorado subject to the jurisdiction of the Colorado Public Utilities Commission ("CoPUC" or "Colorado Commission"). PSCo also provides cost-based requirements wholesale service to six (6) municipal and cooperative customers in Colorado subject to the jurisdiction of the Commission; these six customers make up approximately eight (8) percent of PSCo's total native loads. PSCo owns and operates approximately 4,600 miles of electric transmission facilities and 229 substations. PSCo operates a Balancing Authority Area ("BAA") in the Western Interconnection region. PSCo provides open access wholesale transmission service under Parts II and III of the Tariff, and balancing authority ancillary-only services under Part IV of the Tariff. PSCo provides generation interconnection services under the Large Generator Interconnection Procedures ("LGIP") in Attachment N and the Small Generator Interconnection Procedures ("SGIP") in Attachment P of the Tariff.

PSCo is subject to comprehensive state integrated resource planning processes pursuant to Colorado statutes and CoPUC rules.[5] The CoPUC determines the future resource needs of PSCo's loads, and generation resources – whether PSCo-owned or purchased from third party independent power producers – are selected subject to CoPUC approval.

B. The Rush Creek Wind Project and Proceedings before the CoPUC

1. The Rush Creek Project

The Rush Creek Wind Project ("Rush Creek Project" or "Project") is a 600 megawatt ("MW") nameplate capacity wind generation farm now under construction that will be owned, and operated by PSCo, and will be used to serve PSCo retail and wholesale native load customers. The Project is located on two proximate sites known as Rush Creek I and Rush Creek II, totaling approximately 96,000 acres of land south of Limon, Colorado, and spanning Elbert, Lincoln, Cheyenne and Kit Carson counties. The Rush Creek Project involves installing 300 model 2.0 MW V110 Vestas wind turbines with supporting site infrastructure, including access roads, foundations, electrical cable collection systems, and collection system substations, and an 82-mile radial generation intertie line, as discussed further below.

[5] Colorado Code Regs.§ 723-3, Rule 3607(c)(II). *See also Xcel Energy Operating Companies*, 109 FERC ¶ 61,072 (2004).

In February 2016, the PSCo Generation Function requested interconnection of 600 MW of wind generation to the PSCo transmission system pursuant to the LGIP (Attachment N) set forth in the Tariff. PSCo's Generation Function requested interconnection at the Missile Site Substation in Arapahoe County, Colorado. The interconnection request was posted on the PSCo OASIS and then studied by the PSCo Transmission Function through the processes set forth in the LGIP, with a feasibility study, system impact study and facility study completed and posted on the PSCo OASIS. The preferred interconnection facility was an 82-mile 345 kilovolt ("kV") radial line gen-tie because it presented multiple benefits as compared to a 230 kV alternative, including lower line losses, which resulted in greater overall cost-effectiveness for the Rush Creek Project.[6]

As a result of the interconnection process, the 600 MW wind farm will interconnect to the PSCo Transmission System[7] at the existing Missile Site Substation through the new, approximately 82-mile 345 kV generation intertie line, which is the Rush Creek Gen-Tie. The Rush Creek Gen-Tie is a non-networked, direct assignment facility and is classified as an Interconnection Customer's Interconnection Facility pursuant to the LGIP in the Tariff. The Rush Creek Gen-Tie was planned, designed and fully justified to the CoPUC as a sole use facility for delivering the output of the Rush Creek Project to PSCo's Transmission System for delivery to PSCo retail and wholesale native load production customers on an at-cost basis; PSCo thus anticipated that its native retail and wholesale production customers would bear the entire cost of the Gen-Tie. As discussed below, the CoPUC approved the Rush Creek Project in 2016. Construction of the switching station commenced in April 2017 and construction of the radial transmission line commenced in August 2017.[8] The Rush Creek Gen-Tie is scheduled to be in-service by August 2018, and the entire Rush Creek Project is scheduled to be in-service by October 2018. The total cost of the Rush Creek Project, including the Gen-Tie, is estimated to be $1.036 billion. Exhibit No. XES-100 provides a map of the Rush Creek Project, the Rush Creek Gen-Tie and the Missile Site substation.

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[6] The planning estimate for construction of the Gen-Tie project was approximately $121 million and the line mileage was expected to be approximately 83 miles. The Gen-Tie estimated rate calculation in Exhibit No. XES-301 uses an estimated rate base of approximately $118 million. The final Gen-Tie rate will reflect the actual construction costs of the Gen-Tie.

[7] "Transmission System" is defined in Attachment N of the Tariff as "the facilities owned, controlled or operated by the Transmission Provider or Transmission Owner that are used to provide transmission service under the Tariff."

[8] The Large Generator Interconnection Agreement associated with the Rush Creek Project was executed on August 15, 2017, and filed with the Commission in Docket No. ER17-2535-000 on September 21, 2017. *See Xcel Energy Services Inc.*, Docket. No. ER17-2535, unpublished letter order (Nov. 13, 2017) (accepting LGIA between PSCo Transmission Function and PSCo Generation Function for interconnection of the Rush Creek Project at Missile Site Substation). The Rush Creek Gen-Tie is identified as an Interconnection Customer's Interconnection Facility in Appendix A of that agreement.

2. Proceedings Before the CoPUC and Settlement Agreement

PSCo has already received the necessary regulatory approvals for the Rush Creek Project from the CoPUC. On May 13, 2016, PSCo filed an Application with the CoPUC for approval of the Rush Creek Project, including a Certificate of Public Convenience and Necessity ("CPCN") for the 600 MW of wind generating facilities and a CPCN for the Rush Creek Gen-Tie.[9] On September 2, 2016, PSCo filed a Non-Unanimous Settlement Agreement ("Settlement Agreement") with the CoPUC.[10] On October 20, 2016, the CoPUC issued its approval of the Settlement Agreement and granted PSCo the requested CPCNs for the Rush Creek wind generating facilities and the Rush Creek Gen-Tie.[11]

The Settlement Agreement approved by the Colorado Commission contains several provisions that are relevant to the instant filing. As part of the Settlement Agreement, PSCo agreed to "make the Gen-Tie available for other entities to interconnect to the Company's transmission system at Missile Site Substation once the Gen-Tie reaches commercial operation."[12] In other words, PSCo agreed to forego asserting priority rights to unused capacity on the Gen-Tie interconnection facilities. In the Settlement Agreement, PSCo also committed to file with the Commission an addendum or exhibit to its Tariff that sets forth how PSCo would charge third party Interconnection Customers for use of the Rush Creek Gen-Tie.[13] The Settlement Agreement sets forth a non-exclusive list of components that will be included in the development of the charge (e.g., net book value of the asset, depreciation expense, operation and maintenance ("O&M") expenses, and taxes) and establishes the preference that the charge be developed as a formula rate.[14]

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[9] *See Public Service Company of Colorado*, Application for Approval of the 600 MW Rush Creek Wind Project, a Certificate of Public Convenience and Necessity for the Rush Creek Wind Farm, and a Certificate of Public Convenience and Necessity for the 345 kV Rush Creek to Missile Site Generation Tie Transmission Line, Public Utilities Commission of Colorado Proceeding No. 16A-0117E (May 13, 2016).

[10] A copy of the Settlement Agreement is included with this filing as Exhibit No. XES-201.

[11] *See In the Matter of the Application of Public Service Company of Colorado for Approval of the 600 MW Rush Creek Wind Project Pursuant to Rule 3660(H), A Certificate of Public Convenience and Necessity for the Rush Creek Wind Farm, and a Certificate of Public Convenience and Necessity for the 345 kV Rush Creek to Missile Site Generation Tie Transmission Line and Associated Findings of Noise and Magnetic Field Resonance*, Public Utilities Commission of Colorado, Decision No. C16-0958 (Sept. 30, 2016).

[12] Settlement Agreement, Exhibit No. XES-201, Settlement Terms and Conditions, § III.B.

[13] *Id.*

[14] *Id.* While the Settlement Agreement included a commitment by PSCo to submit a filing to establish the rates, terms and conditions for third party uses of the Gen-Tie, PSCo recognizes that the Commission possesses ultimate jurisdiction to determine whether the proposed rates, terms and conditions meet the just and reasonable standard under Section 205 of the FPA.

In the instant filing, PSCo proposes rates, terms and conditions for use of the Rush Creek Gen-Tie. Although the Gen-Tie has not yet reached commercial operation, the enclosed rates, terms, and conditions will provide up-front clarity for potential Interconnection Customers of the costs and terms for use of the Gen-Tie. The proposed revisions include a cost-based formula rate inclusive of the cost components set forth in the Settlement Agreement.

The Settlement Agreement also included provisions for conferring with settling parties on PSCo's proposed draft rate to recover the costs of the Gen-Tie. Accordingly, on January 24, 2017, PSCo held a meeting with interested parties to discuss these proposed tariff changes and formula rate, and requested written comments. Written comments were received in February, 2017. The results of the stakeholder meeting and stakeholder comments are reflected in this filing. PSCo also posted a copy of the enclosed Tariff revisions and formula rate on its OASIS on February 5, 2018, in anticipation of this filing.

C. Interconnection Requests Seeking Interconnection Service Over the Rush Creek Gen-Tie

In the interconnection planning process, PSCo determined that the radial gen-tie facility to deliver its Rush Creek generation to the PSCo Transmission System would be most cost-effective if constructed at a 345 kV rating due to, among other things, losses, as compared to a line built at a 230 kV rating. At 345 kV, the Gen-Tie is expected to have thermal capacity of 1,600 MW, which represents an additional 1,000 MW of interconnection capacity beyond the use by the Rush Creek Project. This additional 1,000 MW of capacity is available for additional generation resources to use as an interconnection facility to reach the PSCo transmission system at Missile Site.

It became clear during the proceeding before the Colorado Commission that third-party interest in using the Rush Creek Gen-Tie as an interconnection facility to the PSCo transmission system was due in part to the opportunity the Gen-Tie presented third party developers to propose a generation project under the Colorado integrated resource planning process to sell power to PSCo for native retail and wholesale loads. During the CPCN proceedings before the Colorado Commission, the PSCo Transmission Function began to receive interconnection requests related to the Rush Creek Gen-Tie. In particular, as early as July 2016 – more than two full years before the Rush Creek Gen-Tie was expected to be placed into service, and three months before PSCo received a CPCN for the Rush Creek Project – Interconnection Customers began requesting interconnection to the PSCo Transmission System through the Rush Creek Gen-Tie. Potential developers appeared to be requesting interconnections in anticipation of the 2016 PSCo Electric Resource Plan. At the time of filing, there are approximately 4,700 MW of generation interconnection requests seeking interconnection through the Rush Creek Gen-Tie to the PSCo transmission system with the Missile Site Substation as the Point of Interconnection. The enclosed revisions are intended to facilitate transparency for customers seeking to use the Rush Creek Gen-Tie.

II. DESCRIPTION AND JUSTIFICATION OF THE PROPOSED TARIFF REVISIONS

A. Overview of Use of the Rush Creek Gen-Tie

As noted above, the Rush Creek Gen-Tie will not be networked with the rest of the PSCo transmission system and thus its costs will not be rolled-in to PSCo transmission system rates under Commission policy.[15] The Rush Creek Gen-Tie was planned and proposed as a sole use, Interconnection Customer's Interconnection Facility,[16] and — consistent with Commission precedent, the terms of the Attachment N of the tariff, and the accepted Rush Creek LGIA — the costs are directly-assignable to the interconnection customer (*i.e.*, PSCo).[17]

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[15] *Northeast Texas Elec. Coop., Inc*., 111 FERC ¶ 61,189 at P 4 ("The Commission permits direct assignment of costs to the customer only for non-grid facilities that do not serve a system-wide function, such as radial lines and generator interconnection facilities on the generator's side of the point of interconnection with the grid.").

[16] PSCo notes that, even if the Gen-Tie were to be construed as a Transmission Provider Interconnection Facility, the treatment proposed in this filing is consistent with Commission policy, as discussed in section 9.9.2 of the *pro forma* LGIA.

[17] *See Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003, FERC Stats. & Regs. ¶ 31,146, Appendix C, *pro forma* Large Generator Interconnection Agreement, Art. 1 (2003) ("Interconnection Facilities mean the Transmission Provider's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Transmission Provider's Transmission System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades, Stand Alone Network Upgrades or Network Upgrades."). *S. Cal. Edison Co*., 112 FERC ¶ 61,014, at P 40-42 ("these appear to be generation-tie facilities, and our precedent has been that it would be improper to shift the costs of such facilities from the interconnection customers to all users of the transmission grid."), *reh'g denied*, 113 FERC ¶ 61,143 (2005); *S. Cal. Edison Co*., Opinion No. 487, 117 FERC ¶ 61,103 at P 68 (2006); *Mansfield Mun. Elec. Dept*., Opinion No. 454, 97 FERC ¶ 61,134, at 61,613-14 (2001), *reh'g denied*, Opinion No. 454-A, 98 FERC ¶ 61,115 (2002); *NorthWestern Corp*., 127 FERC ¶ 61,266 at P 28 (2009) ("The Commission has permitted the direct assignment of the costs of generator lead lines to those generators that are solely benefitted by the access to a transmission system such facilities afford. Consistent with that precedent, we approve NorthWestern's proposal to directly assign the costs of the Collector Project to interconnection customers thereon."). *NorthWestern Corp*., 127 FERC ¶ 61,266 at P 29 (2009) also directly addressed the issue of pancaked rates for generator lead lines: "In light of our determination that the Collector Project is a series of generator lead lines, rather than an integrated portion of NorthWestern's system, and that its costs may be directly assigned to those customers interconnecting via the Collector Project, we reject PPL's argument that the Collector Project will result in impermissible rate pancaking. Because the directly assigned costs of the Collector Project would compensate NorthWestern for interconnection service only, such costs would not constitute a pancaked transmission rate. Generators interconnecting via the Collector Project would have to procure transmission service at the point of interconnection (Townsend) and pay the applicable rate for that service." PSCo notes that in *Mountain States Transmission Intertie, LLC*, 127 FERC ¶ 61,270 (2009), a companion order to *NorthWestern Corp*., which addressed a request for negotiated rate authority in connection with a planned 433-mile, 500 kV transmission line that was not a generator tie line, the Commission rejected the request for negotiated rate authority; however, Mountain States is not relevant to the instant filing, because it involved a network facility used to deliver energy across a transmission network and was not a generator interconnection facility (which is at issue here). Additionally, this instant filing does not seek negotiated rates.

PSCo will use approximately 600 MW of the expected total thermal rating of approximately 1,600 MW of Gen-Tie capacity to deliver the output of Rush Creek to the PSCo transmission system for delivery to PSCo's wholesale and retail native load production customers.[18] PSCo does not seek to assert "priority rights" to the Rush Creek Gen-Tie's unused interconnection service capacity above the 600 MW needed for delivery of Rush Creek.[19] PSCo is offering the remaining approximately 1,000 MW of interconnection service capacity on the Rush Creek Gen-Tie on a non-discriminatory basis to eligible interconnection service customers under the Tariff. As with *pro forma* interconnection service, and consistent with Commission policy, transmission service on the PSCo transmission system must be requested separately from interconnection service under the existing terms of the Tariff.[20] In addition, interconnection service requests seeking use of the Rush Creek Gen-Tie will be processed by the PSCo transmission function, consistent with Commission policy.[21]

B. Interconnection Service over the Rush Creek Gen-Tie.

In the enclosed tariff revisions, PSCo proposes a new Part VII to the Tariff, which addresses processing generation interconnection requests seeking interconnection service to the PSCo Transmission System at the Missile Site Substation over the Gen-Tie. Part VII consists of a preamble, certain limited definitions associated with the service (section 45), provisions governing the processing and basic terms and conditions for service over the Gen-Tie (section 46), and a provision addressing the potential future networking of the Gen-Tie (section 47). A corresponding rate schedule is also proposed (Schedule 19), with a formula rate template, that provides the cost-sharing rate applicable to customers' use of the Gen-Tie. Finally, PSCo also includes proposed revisions to its Attachment O-PSCo Transmission Formula Rate Implementation Procedures ("Protocols"), which incorporate the annual true-up protocols for customers using the Gen-Tie to be consistent with PSCo's existing Protocol processes.

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[18] PSCo has rights to set aside capacity on the Gen-Tie to deliver Rush Creek's output to its native load consistent with the native load priority and, moreover, the Gen-Tie is being constructed as an interconnection facility to facilitate an interconnection service request by PSCo's Generation Function. The Large Generator Interconnection Agreement that included the Gen-Tie as an Interconnection Customer's Interconnection Facility was accepted for filing in Docket No. ER17-2535-000. See fn. 8.

[19] *See Open Access and Priority Rights on Interconnection Customer's Interconnection Facilities*, Order No. 807, FERC Stats. & Regs. ¶ 31,367, *order on reh'g*, Order No. 807-A, 153 FERC ¶ 61,047 (2015).

[20] *See also* Order No. 807 at P 127 ("We conclude that the existing policy, that third-party requesters are obligated to obtain service on the transmission facilities at or beyond the Point of Change of Ownership as well as those facilities beyond the Point of Interconnection pursuant to the relevant OATT and interconnection procedures, strikes the right balance between ensuring reliability, providing flexibility, and protecting the rights of the ICIF owner.").

[21] Order No. 807 at P 169 ("[w]here a Generation Function of the public utility transmission provider is an ICIF owner, we find it appropriate, in the event of a third-party request, for the request to be processed pursuant to its affiliated public utility transmission provider's OATT.").

Section 46 of Part VII states that interconnection will proceed according to the existing procedures of Attachment N (Standard Large Generator Interconnection Procedures) or Attachment P (Standard Small Generator Interconnection Procedures). For clarity, the Customer requests the use of the Rush Creek Gen-Tie Line as part of the interconnection process, as discussed in section 46.1. The Gen-Tie capacity used by the Interconnection Customer is equal to the Generating Facility Capacity as defined in the Interconnection Customer's Interconnection Agreement. If the interconnection service is granted, the Customer is responsible for their share of the costs of the Gen-Tie as stated in section 46.4.1, and as discussed in more detail below.

1. Sharing of the Gen-Tie Costs

In proposed section 46.4.1 of Part VII, Interconnection Customers are required to pay for the Customer's proportional use of the Rush Creek Gen-Tie as described in the proposed Schedule 19. Under Order No. 2003 and Commission policy, the interconnection customer is generally responsible for one hundred percent of the facilities needed to interconnect with the PSCo Transmission System as such facilities are Interconnection Facilities.[22] This principle is equally applicable to the costs of Interconnection Facilities that are generator lead lines. In *NorthWestern Corp.*, where the Commission approved the direct assignment of generator lead lines to customers using NorthWestern Corporation's "Collector Project," the Commission explained that it permits "the direct assignment of the costs of generator lead lines to those generators that are solely benefitted by the access to a transmission system that such facilities afford."[23]

In this case, the Interconnection Customer's Interconnection Facility will be owned by PSCo, with a portion of the Interconnection Customer's Interconnection facilities used by PSCo and a portion available to be used by third parties. PSCo is therefore proposing to proportionally share the cost of the Gen-Tie with third-party Interconnection Customers using the Gen-Tie.[24] Commission policy, as shown in *NorthWestern Corp.*, permits sharing of the costs of direct assignment facilities among the customers that use them. Moreover, the Commission's policy is to allow "facility-use" arrangements among interconnection customers using interconnection

[22] *See pro forma* LGIA § 11.1 ("Interconnection Customer shall design, procure, construct, install, own and/or control Interconnection Customer Interconnection Facilities described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades, at its sole expense.") and LGIA § 11.2 ("Transmission Provider or Transmission Owner shall design, procure, construct, install, own and/or control the Transmission Provider's Interconnection Facilities described in Appendix A, Interconnection Facilities, Network Upgrades and Distribution Upgrades, at the sole expense of the Interconnection Customer.").

[23] *Northwestern Corp.*, 127 FERC ¶ 61,266 at P 28-29 (2009); *see also S. Cal. Edison Co.*, 112 FERC ¶ 61,014, at P 40-42.

[24] Note that the use of the Rush Creek Gen-Tie is only a subset of the third party's Interconnection Customer's Interconnection Facilities and the Gen-Tie Use Charge would not account for any facilities necessary to connect the customer's project to the Gen-Tie.

facilities and sharing the costs.[25] This policy is also expressed in the Small Generator Interconnection Agreement adopted by the Commission in Order No. 2006, where the Commission clarified that "the Interconnection Customer is responsible for the cost of Interconnection Facilities except when such cost is shared with other entities that may benefit from the Interconnection Facilities by agreement of the Interconnection Customer, the other entities, and the Transmission Provider."[26]

In this case, the parties to the Settlement Agreement approved by the Colorado Commission, which includes parties that have submitted requests to PSCo for interconnection service over the Rush Creek Gen-Tie, agreed that PSCo would develop a separate rate to be paid by subsequent users of the Rush Creek Gen-Tie:

> "the Settling Parties agree that [PSCo] will develop a draft addendum or exhibit to its OATT that will set forth how [PSCo] will develop the charge for interconnection customers selling power to a third-party off-taker. It is understood that the charge will be designed to cover cost components permitted by FERC to be included in the development of a directly assigned facilities charge including, but not necessarily limited to, a return on the net book value of the asset, depreciation expense, O&M expenses, and taxes. The Company's return will be the same as reflected in the Company's OATT formula rate, and will be subject to modification over time."[27]

The commitment for each customer to bear its share of the costs of the Rush Creek Gen-Tie will also be described in Appendix A to the LGIA with the Interconnection Customer, which will be filed with the Commission.

Schedule 19 implements the Settlement Agreement's requirement for the development of a direct assignment charge. The Rush Creek Gen-Tie Use Charge described in Schedule 19 uses

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[25] *See generally, Dominion Solar Gen-Tie, LLC*, 148 FERC ¶ 61,167 (2014); *Cooper Mountain Solar 1, LLC*, 140 FERC ¶ 61,122 (2012); *Pacific Wind Lessee, LLC*, 141 FERC ¶ 61,122 (2012); *Bishop Hill Interconnection LLC*, 138 FERC ¶ 61,159 (2012); *The Detroit Edison Co*., 136 FERC ¶ 61,210 (2011); *BP Wind Energy North America, Inc.*, 129 FERC ¶ 61,207 (2009); *Grand Ridge Energy*, 128 FERC ¶ 61,134 (2009). PSCo notes that the Commission allows customers sharing use of Transmission Provider Interconnection Facilities to have such arrangements, as provided in section 9.9.2 of the *pro forma* LGIA ("...if the Parties mutually agree, such agreement not to be unreasonably withheld, to allow one or more third parties to use Transmission Provider's Interconnection Facilities, or any part thereof, Interconnection Customer will be entitled to compensation for the capital expenses it incurred in connection with the Interconnection Facilities based upon the *pro rata* use of the Interconnection Facilities by the Transmission Provider, all third-party users and the Interconnection Customer. ...").

[26] *Standardization of Small Generator Interconnection Agreements and Procedures*, Order No. 2006, FERC Stats. & Regs. ¶ 31,180 at P 445 (2005) (emphasis added); *see also pro forma* SGIA Art. 4.1.1.; *see also* Section 9.92 of the *pro forma* LGIA.

[27] *See* Settlement Agreement, Exhibit No. XES-201 at III.B.

a forward-looking formula rate with a true-up and, is conceptually based on PSCo's existing Attachment O-PSCo forward-looking formula rate for transmission service. Schedule 19 also describes the loss rate used to account for lost energy transmitted over the Rush Creek Gen-Tie. These rates are discussed in detail below.

2. Description and Justification of the Rush Creek Gen-Tie Use Charge

The proposed Gen-Tie Use Charge equals the Generating Facility Capacity defined in the LGIA times the Rush Creek Gen-Tie Rate. The Rush Creek Gen-Tie Rate is developed formulaically in Attachment 1 to Schedule 19 and is described by Company witness Mr. Steven Berman in Exhibit No. XES-300. A populated working Excel® version of the formula template that calculates the proposed Estimated Rate for 2018 is posted on PSCo's OASIS.[28]

As described by Mr. Berman in his testimony, the Schedule 19 formula template is structured similar to the Attachment O-PSCo transmission formula rate template used to develop PSCo's wholesale transmission rates for use of the PSCo transmission system, including use of PSCo's depreciation rates and return on equity applied to PSCo's transmission facilities.[29] Consistent with the provisions of the Settlement Agreement, the proposed annual revenue requirement is the sum of the return on the net book value of the asset, the operation and maintenance expense, depreciation and amortization expense of the asset, and taxes.[30] The return on equity ("ROE") used is the same as the return used in Attachment O-PSCo of the Tariff (9.72 percent) as required by the Settlement Agreement.[31] The denominator used to calculate the Rush Creek Gen-Tie Use Rate is simply the estimated thermal capacity of the Rush Creek Gen-Tie (1600 MW). Using the Gen-Tie thermal capacity as the denominator – instead of the total capacity used by all Interconnection Customers – only allocates the portion of the Rush Creek Gen-Tie costs that are actually used by the third-party to that third-party.[32]

The process for annually updating the rate under Schedule 19 is described in the proposed changes to PSCo's Protocols.[33] PSCo proposes the Gen-Tie rate update process be the same as PSCo's transmission rate update process for Attachment O-PSCo. Under the revised Protocols, customers would have the ability to, among other things, review the annual update of the Rush

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[28] *See* "Rush Creek Gen-Tie Use Filing" folder under the "General Information" folder on PSCo's OASIS, http://www.oasis.oati.com/psco/index.html.

[29] The Gen-Tie Use Rate references data from FERC Form 1 and Attachment O-PSCo.

[30] Settlement Agreement, Exhibit No. XES-201 at § III.B.

[31] *See id*. The 9.72 percent ROE was established by a settlement approved by the Commission in Docket No. ER12-1589-000 et al. *See Public Service Company of Colorado*, 149 FERC ¶ 61,077 (2014).

[32] Because the denominator is the total thermal capacity of the Gen-Tie, the cost of any remaining unused capacity of the line would be borne by PSCo's native load retail and wholesale production customers.

[33] *See* revised PSCo Transmission Formula Rate Implementation Procedures, which are included in redlined format with this filing.

Creek Gen-Tie revenue requirement and rates, to attend Customer Meetings, and to challenge the annual update to the formula rate; similar to the rights of other transmission customers.

PSCo notes that ancillary services are not required for interconnection service over the Rush Creek Gen-Tie. However, delivery of any generation out of the radial Gen-Tie requires the Interconnection Customer or the load serving entity purchasing the power to separately procure PSCo transmission service under the Tariff, which includes associated ancillary services.

Although there are numerous pending requests to interconnect generation using the Gen-Tie, the interconnection processes are not yet complete and it is unclear how many customers eventually will take service over the Gen-Tie subject to the Schedule 19 rate. The thermal capacity of the Rush Creek Gen-Tie will limit the number of customers able to take this service.

3. Rush Creek Gen-Tie Loss Rate and Calculation Methodology

Real power losses will occur as power is transmitted over the Rush Creek Gen-Tie. These losses are in addition to the losses experienced on the PSCo transmission network and billed under the Tariff. To account for these losses on the radial Gen-Tie, a loss factor is applied when determining the amount of energy delivered to the Missile Site Point of Receipt on the PSCo transmission system. This is similar to the process PSCo uses for generation or load that is metered at a location distant from the PSCo transmission system. This process is also consistent with the *pro forma* LGIA section 7.1 that states, "Power flows… shall be measured or, at Transmission Provider's option, compensated to, the Point of Interconnection." In the case of generation interconnecting to the Gen-Tie, PSCo is using the loss rate to compensate power flows to the Point of Interconnection.

Each Interconnection Customer's Generation Facility's output will be metered in real-time at the high side of the point where the Generating Facility connects to the Rush Creek Gen-Tie. The flow into the Missile Site Substation will be metered, but that flow into Missile Site is the combined flow of all of the interconnected generation facilities. There is no way to measure each entity's individual contribution to this combined flow, and thus no way to "directly assign" losses to a specific Customer. Therefore, PSCo proposes to use a loss factor formula to derive each individual Interconnecting Customer's deliveries at Missile Site. This calculated volume should then allocate the Customer a reasonable share of the losses occurring on the Gen-Tie.

As described in more detail in the testimony of Mr. Corrigan in Exhibit No. XES - 400, PSCo modeled the expected losses over the Rush Creek Gen-Tie as the flow over the Gen-Tie line increases. This analysis determined the expected loss over the Gen-Tie is equal to $0.0000251x$ MWs per MW of flow over the line where x equals the total flow over the line.

The Settlement Agreement states that Rush Creek Gen-Tie line losses will be averaged and applied to all interconnected parties on the Rush Creek Gen-Tie.[34] The proposal submitted

[34] Settlement Agreement, Exhibit No. XES-201, § III.C.

here follows the Settlement Agreement in that it calculates the total average annual expected line losses and applies the losses equally to all the interconnected parties, including the PSCo Generation Function.

Since the losses are expected to be reasonably close to the actual losses and consistent with the Settlement Agreement, the proposed methodology should be found just and reasonable.

C. Emergency Operations and Curtailment of Generation Connected to the Rush Creek Gen-Tie

Sections 46.2 and 46.3 of proposed Part VII to the Tariff address emergency operations and generation curtailments on the Rush Creek Gen-Tie. Because the Rush Creek Gen-Tie is a radial facility, any injection into the Rush Creek Gen-Tie must flow into the PSCo transmission system. As noted, all generation connected to the Rush Creek Gen-Tie must acquire transmission service on the PSCo transmission system to deliver generation connected to the Rush Creek Gen-Tie.[35] Operationally, the PSCo Transmission Function will monitor the Rush Creek Gen-Tie along with the rest of the PSCo transmission system to ensure that generation on the Rush Creek Gen-Tie can be safely and reliably delivered. The PSCo Transmission Function will have operational control of the Rush Creek Gen-Tie and accordingly will have the authority to take necessary action to: (1) preserve the public health, safety, and welfare; (2) preserve the reliability of the PSCo Balancing Authority Area ("BAA") and Transmission System; (3) limit or prevent damage to the PSCo BAA and Transmission System; and (4) expedite the restoration of electric service within the PSCo BAA.

It also follows that because all Rush Creek Gen-Tie connected generation must flow onto the PSCo Transmission System, curtailment priority for generation connected to the Rush Creek Gen-Tie is determined according to the transmission service over the PSCo transmission system. Therefore, in order to direct curtailments on a non-discriminatory basis in the simplest and most transparent manner, the PSCo Transmission Function will use the customer's transmission service reservation priority on the PSCo transmission system to determine curtailment priority of transactions over the Rush Creek Gen-Tie. For example, a generator taking interconnection service over the Rush Creek Gen-Tie with non-firm transmission service on the PSCo Transmission System would be curtailed before a Gen-Tie connected generator with firm transmission service. Similarly, two customers taking interconnection service over the Rush Creek Gen-Tie that both have firm transmission service on the PSCo Transmission System would be curtailed *pro rata* if their generation equally impacted a constraint.

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[35] Alternatively, the purchaser of the generation interconnected to the Gen-Tie may contract for the network or point-to-point transmission service on the PSCo transmission system from Missile Site to the purchaser's load.[36] *See* Settlement Agreement, Exhibit No. XES-201, § III.D.

D. Process Applicable to a Change in Status of the Rush Creek Gen-Tie Line

As noted, the Rush Creek Gen-Tie was proposed and developed as a radial interconnection facility that would not be networked with the rest of the PSCo Transmission System. The Gen-Tie was proposed as a direct assignment facility to allocate the costs to the PSCo production customers (retail and wholesale) that would benefit from the wind generation interconnecting to the Gen-Tie. However, the Settlement Agreement[36] required PSCo to (1) analyze the costs and benefits of alternative proposals to potentially integrate the Gen-Tie as a network transmission facility through an open and transparent sub-group of the Colorado Coordinated Planning Group ("CCPG"), and (2) publish the CCPG report after stakeholder comment. This report has been published.[37]

Although PSCo does not currently contemplate networking the Rush Creek Gen-Tie, networking could change cost obligations for the Gen-Tie facility among PSCo customers (production versus transmission) but also potentially alter interconnection study results for interconnecting generators in an area where there is interest in generation development. To add clarity and transparency, PSCo proposes to describe a transition process in proposed section 47 of the new Part VII of the Tariff that would apply if PSCo subsequently determines to network the Rush Creek Gen-Tie with the PSCo Transmission System.

As described in section 47, if the Rush Creek Gen-Tie becomes a network facility, PSCo proposes to make a filing with the Commission requesting approval to move the costs associated with the Rush Creek Gen-Tie into PSCo's transmission formula rate under the Tariff, and remove the costs from PSCo's production formula rates set forth in its Assured Power and Energy Requirements Tariff ("Assured Power Tariff"). If the Rush Creek Gen-Tie becomes a network facility, PSCo will also need to modify Part VII and Schedule 19 as well as modify the interconnection agreements impacted by networking the Gen-Tie.[38] For instance, if PSCo is allowed to include the costs of the entire Rush Creek Gen-Tie in Attachment O-PSCo, then, as of the effective date of such change authorized by the Commission: 1) the point of interconnection under Interconnection Customer's Interconnection Agreement will be transferred from the Missile Site Substation to the point where the Interconnection Customer's generator facility

[36] *See* Settlement Agreement, Exhibit No. XES-201, § III.D.

[37] This report is published here: http://regplanning.westconnect.com/ccpg_rush_creek_tf.htm. The Colorado Coordinated Planning Group (CCPG) is an open transmission planning forum. Its core mission is to assure a high degree of reliability through cooperative planning, joint development, and coordinated operation of the high voltage transmission system in the Rocky Mountain Region of the Western Electricity Coordinating Council (WECC). The CCPG provides a technical forum to complete reliability assessments, develop joint business opportunities, and accomplish coordinated planning under the single-system planning concept. The CCPG is a sub-regional planning group within the WestConnect Order No. 1000 planning region.

[38] PSCo therefore expects that a filing requesting recovery of the networked Rush Creek Gen-Tie in transmission rates will at a minimum 1) provide justification for determination that the Rush Creek Gen-Tie or portion thereof is a network transmission facility, 2) identify the expected cost to be included in transmission rates, 3) provide changes to Part VI and Schedule 19, and 4) update impacted interconnection agreements.

interconnects to the Rush Creek Gen-Tie with no further study required; and 2) the Rush Creek Use Charge will no longer apply.

Although it is uncertain if or when the Gen-Tie might be converted to a network facility, PSCo believes the Commission should be aware of the commitments in the Settlement Agreement on this issue and the potential implications for future changes in how the Gen-Tie costs might be recovered. As noted, no changes would occur without Commission approval.

E. Stakeholder Discussion and Review of Proposed Changes

As required by the Settlement Agreement,[39] PSCo provided a draft rate and Tariff terms and conditions for use of the Rush Creek Gen-Tie on January 18, 2017 to settling parties.[40] This was followed by an in-person meeting at the Xcel Energy offices in Denver, Colorado, to discuss the proposed rate and tariff changes on January 24, 2017. The January 24, 2017 meeting also offered call-in and webex capability for parties unable to travel to the Xcel Energy offices. In the January 18th memorandum and the January 24th meeting, PSCo requested feedback on the proposed rates and terms and conditions by February 15th, 2017. Comments were received by three parties. PSCo then worked with each party and attempted to incorporate reasonable requests into the proposal set forth in the instant filing. Most changes and concerns were addressed quickly. PSCo incorporated most of the revisions requested in the stakeholder discussion in the Tariff changes submitted here.

III. INFORMATION RELATING TO THE EFFECT OF THE RATE CHANGE

PSCo requests waiver of the requirements of 18 C.F.R. § 35.12 and 18 C.F.R. § 35.13 to the extent they would require the submission of cost of service statements or explicit rate impacts in support of the enclosed revisions to the Tariff, including the attestation requirement in support of such statements.[41]

The proposed rate for the use of the Rush Creek Gen-Tie is calculated similarly to PSCo's approved transmission formula rate for network facilities described in Attachment O-PSCo of the Tariff. The proposed rate is a cost of service rate that uses company records and inputs from PSCo's approved Attachment O-PSCo formula transmission rate, which in turn uses FERC Form 1 data. The proposed rate will be developed using annually updated estimated costs for the Rush Creek Gen-Tie, and will be trued up annually. The users of the Rush Creek Gen-Tie will be only charged the portion of the costs for their use. The detailed calculation of the 2018

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[39] *See* Settlement Agreement, § III.B ("Public Service will endeavor to have its draft rate available to CIEA and other interested parties within ninety (90) days of an order approving this Settlement Agreement. Public Service will confer with the CIEA and other interested parties and will consider modifications proposed by CIEA to achieve consensus on a filing that would be unopposed to the FERC."

[40] The memorandum provided to parties describing the draft rate is attached as Exhibit No. XES-202 to this filing.

[41] 18 C.F.R. § 35.13(d)(6) (2017).

Estimated Rate is posted on PSCo's OASIS, and the estimated rate will be trued-up with interest once actual 2018 costs are known.

At this time, PSCo does not have firm commitments that any third party will use the Rush Creek Gen-Tie, in which case the transactions and revenues associated with Schedule 19 would equal zero. If third parties contract all 1,000 MW of potential remaining thermal capacity of the Rush Creek Gen-Tie, PSCo estimates it would receive approximately $760 thousand per month for such use. Under the revisions to the PSCo Assured Power Tariff recently approved by the Commission in Docket No. ER18-176-000, the wholesale jurisdictional portion of third party Gen-Tie revenues will be credited to the PSCo production formula rate to off-set a portion of the Gen-Tie costs, since the Gen-Tie will be included as a generator outlet facility in wholesale production rates.[42]

IV. ADDITIONAL INFORMATION SUBMITTED IN SUPPORT OF FILING

A. Information Required by Section 35.13 of the Commission's Regulations, 18 C.F.R. § 35.13(b)

1. Contents of Filing – Section 35.13(b)(1)

In addition to this transmittal letter, this filing includes the following:

- The proposed revisions to the PSCo Tariff in clean format, specifically new section VII "Interconnection Service using the PSCo Rush Creek Generator-Tie Line", new Schedule 19 "Rush Creek Gen-Tie Use Charge," and the updated PSCo Transmission Formula Rate Implementation Procedures.

- The proposed revisions to the PSCo Tariff in marked format, specifically new section VII "Interconnection Service using the PSCo Rush Creek Generator-Tie Line", new Schedule 19 "Rush Creek Gen-Tie Use Charge," and the updated PSCo Transmission Formula Rate Implementation Procedures.

- Exhibit No. XES – 100: Map of Rush Creek Project and Rush Creek Gen-Tie;

- Exhibit No. XES – 200: Direct Testimony of Dr. Liam D. Noailles;

- Exhibit No. XES – 201: Rush Creek Settlement Agreement approved by the CoPUC in Proceeding No. 16A-0117E ;

[42] *See Public Service Company of Colorado*, Docket No. ER18-176-000 (unpublished letter order) (Dec. 22, 2017).

- Exhibit No. XES – 202: January 18, 2017 Memorandum to Stakeholders regarding proposed Gen-Tie Tariff revisions;
- Exhibit No. XES – 300: Direct Testimony of Mr. Steven P. Berman;
- Exhibit No. XES – 301: Calculation of the proposed Gen-Tie 2018 Estimated Rate
- Exhibit No. XES – 400: Direct Testimony of Patrick M. Corrigan;

2. Requested Effective Date – Section 35.13(b)(2); Waiver

As described above, PSCo requests an effective of May 1, 2018, more than sixty (60) days after filing.

PSCo believes the materials submitted herewith comply with the Commission's filing requirements and will permit the Commission to review the proposed revisions and determine them to be just and reasonable. PSCo respectfully requests waiver of any other applicable filing or notice requirements under the Commission's Rules and Regulations as may be necessary to accept the proposed revisions to the Xcel Energy Tariff on the date requested.

3. The Names and Addresses of Persons to Whom a Copy of the Rate Change Has Been Posted – Section 35.13(b)(3)

An electronic notice of this filing will be served on 1) the Colorado Public Utilities Commission, 2) all affected PSCo transmission service customers and ancillary service customers taking service under the Xcel Energy Tariff, and 3) all Interconnection Service Customers requesting service over the Rush Creek Gen-Tie to date. A courtesy copy will be served on the Commission's Director of the Division of Electric Power Regulation (West). Pursuant to 18 C.F.R. § 35.2(d), a copy of this filing will be posted for public inspection at the offices of Xcel Energy – Transmission Services at 414 Nicollet Mall – 6th Floor, Minneapolis, Minnesota 55401; and at the offices of PSCo – Transmission at 18201 West 10th Avenue, Golden, Colorado 80401. A copy of the filing also will be posted at the OASIS/Open Access Transmission Tariff link at the Transmission page of the Xcel Energy Inc. website (www.transmission.xcelenergy.com).

4. Brief Description of Rate Change – Section 35.13(b)(4)

See Sections II and III above and Exhibit Nos. XES – 300 and XES – 400.

5. Statement of Reasons for Rate Change – Section 35.13(b)(5)

See Sections II and III above.

6. Requisite Agreement for Rate Change – Section 35.13(b)(6)

See Sections II and III above.

7. Statement Showing Expenses or Costs Included in Cost-of-Service Statements – Section 35.13(b)(7)

None of the costs related to this filing have been alleged in any administrative or judicial proceeding to be illegal, duplicative, or unnecessary costs that are demonstrably the product of discriminatory practices.

V. COMMUNICATIONS

Correspondence and communications with respect to this filing should be sent to, and the PSCo requests the Secretary include on the official service list, the following:[43]

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401 Nicollet Mall - 8th Floor
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[43] To the extent necessary XES respectfully request waiver of Rule 203(b)(3) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.203(b), to permit all of the persons listed to be placed on the official service list for this proceeding.

V. CONCLUSION

For the reasons stated above, PSCo requests that the Commission accept the proposed Tariff changes to be effective on May 1, 2018, more than sixty (60) days after filing, without suspension.

PSCo appreciates the Commission's prompt attention to this matter. Please direct any questions regarding this filing to the undersigned.

Respectfully submitted,

/s/ *Liam D. Noailles*

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CERTIFICATE OF SERVICE

I, Tracee J. Holte, hereby certify that I have this day served a notice of the enclosed document filing, electronically, on the Colorado Public Utilities Commission and each party designated on the official service list compiled by the Secretary in this proceeding.

Dated at Minneapolis, Minnesota this 27th day of February 2018.

/s/ *Tracee J. Holte*
Tracee J. Holte
Xcel Energy/Responsible by Nature
Transmission Business Analyst
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Clean Tariff Pages

VII. Interconnection Service using the PSCo Rush Creek Generator-Tie Line

Preamble

PSCo is constructing the Rush Creek Generator Tie Line ("Gen-Tie") as an Interconnection Customer's Interconnection Facility in order to interconnect PSCo's 600 MW Rush Creek Generating Facility ("Rush Creek") to the PSCo Transmission System at the Missile Site Substation ("Missile Site"), which is the Point of Interconnection ("POI") with the PSCo Transmission System. The Gen-Tie will be an approximately 82 mile 345 kV radial transmission line interconnecting Rush Creek to Missile Site, and is scheduled to be placed in-service in August 2018. Rush Creek will use the first 600 MW of thermal capacity on the Gen-Tie for delivery of the output of Rush Creek to the PSCo Transmission System. Interconnection service over the capacity on the Gen-Tie above the first 600 MW of thermal capacity is available as described in this Part VII. This Part VII of the Tariff describes the rates, terms and conditions for a third party Interconnection Customer's use of the Gen-Tie to deliver electric capacity and/or energy to the PSCo Transmission System at the Missile Site POI.

The Gen-Tie as it is presently planned to be configured is available only for generation interconnection service. Delivery over the Gen-Tie is separate from transmission service over the PSCo Transmission System. Transmission service over the PSCo Transmission System must be reserved separately pursuant to parts II or III of this Tariff, as applicable. Charges for interconnection service on the Gen-Tie are in addition to: (i) charges for Network Integration Transmission Service or Point-to-Point Transmission Service over the PSCo transmission system, including Ancillary Services charges and any direct assignment facility costs associated with the customer's transmission service request; and (ii) any other interconnection-related costs associated with a customer's interconnection request as determined under Attachments N or P, as applicable.

45 Definitions

In addition to the Definitions and Terms set forth in the Common Service Provisions found in Part 1 of this Tariff, the following definitions shall apply to this Part VII and to Schedule 19 of this Tariff.

45.1 Rush Creek Generator-Tie Line (“Gen-Tie”): An 82-mile 345 kV radial transmission line that will provide interconnection between the high side of PSCo’s Rush Creek Generating Facility’s 34.5/345 kV main step-up transformers located near Simla, Limon, and Hugo, Colorado, and PSCo’s Missile Site Substation located near Deer Trail, Colorado.

45.2 Rush Creek Generating Facility: A 600 MW wind generation plant to be constructed near the Rush Creek I and Rush Creek II collector system sites in Elbert, Lincoln, Kit Carson, and Cheyenne counties in Colorado.

45.3 Rush Creek Generator-Tie Line Use Charge: The monthly charge for interconnection service using the Rush Creek Gen-Tie as defined in Schedule 19 to this Tariff.

46 Interconnection Service over the Rush Creek Gen-Tie

The Rush Creek Gen-Tie (Gen-Tie) is an Interconnection Customer's Interconnection Facility owned by PSCo as the Interconnection Customer for the Rush Creek Generating Facility. PSCo takes Interconnection Service over the Gen-Tie, which electrically interconnects the Rush Creek Generating Facility to the PSCo Transmission System at the Missile Site Substation Point of Interconnection. An Interconnection Customer may request to use the Gen-Tie to facilitate interconnection to the PSCo Transmission System to the extent capacity is available above PSCo's rights to 600 MW for delivery of the output of the Rush Creek Generating Facility at Missile Site. An Interconnection Customer seeking to use the Gen-Tie for Interconnection Service agrees to share in the costs of the Gen-Tie. The terms, conditions, and charges for a third-party Interconnection Customer's use of the Gen-Tie are consistent with Section 9.9.2 of PSCo's *pro forma* LGIA in Attachment N of this Tariff, Section 4.1.1 of PSCo's *pro forma* SGIA in Attachment P of this Tariff, and the settlement and order approving settlement in Public Utilities Commission of Colorado Proceeding Nos. 16A-0117E and 16V-0314E (2016).

46.1 Interconnection Requests to the PSCo Transmission System through the Gen-Tie

An Interconnection Customer seeking to interconnect to the PSCo Transmission System via the Gen-Tie shall request interconnection to the PSCo Transmission System using the process described in Attachment N (Standard Large Generator Interconnection Procedures) or Attachment P (Standard Small Generator Interconnection Procedures) to this Tariff. The interconnection request must identify a primary Point of Interconnection at the PSCo Missile Site Substation and request the use of the Rush Creek Gen-Tie Line. This request will generate a queue position for the requesting Interconnection Customer. The interconnection study/ies will identify any Interconnection Facilities, Network Upgrades, and Distribution Upgrades required for the requested generation interconnection service, including facilities necessary to connect the Interconnection Customer's Generating Facility to the Rush Creek Gen-Tie.

The Gen-Tie capacity used by Interconnection Customer is equal to the Generating Facility Capacity as defined in the Interconnection Customer's Interconnection Agreement. The Interconnecting Customer's cost responsibility for interconnection service over the Gen-Tie, as a Third Party User of the Gen-Tie, shall be based upon the Gen-Tie Use Charge in Schedule 19 of this Tariff. The Interconnection Customer also shall be responsible for applicable interconnection costs associated with facilities needed to connect Interconnection Customer's Generating Facility to the Gen-Tie and any other costs determined to be necessary under Attachment N or Attachment P of the Tariff.

Approval by PSCo of an Interconnection Request, completion of all studies, payment of interconnection costs, and execution of a generation interconnection agreement in the form provided in either Attachment N or Attachment P of the Tariff shall not grant Interconnection Customer transmission service on the PSCo Transmission System. Such transmission service must be separately arranged under Part II or Part II of the Tariff.

46.2 Curtailment of Generation on the Rush Creek Gen-Tie

Generators interconnected to the Gen-Tie are subject to curtailment. In its function as Transmission Operator, Transmission Service Provider and Balancing Authority, PSCo will monitor generation and may direct curtailments of deliveries into and over the Gen-Tie to maintain system reliability. Curtailments will be made on a non-discriminatory, pro rata basis to the transaction(s) that effectively relieve the constraint and according to the priority of the transmission service on the PSCo Transmission System arranged for Interconnection Customer's Generating Facility pursuant to Part II or Part III of the Tariff and used for deliveries from the Generating Facility. For instance, Transmission Customers connected to the Rush Creek Gen-Tie with the same transmission service priority over the PSCo Transmission System will be curtailed on a pro rata basis if their impact to a constraint is similar. Transactions using Non-Firm Transmission Service over the PSCo Transmission System will be curtailed prior to curtailment of any transaction using Firm Transmission Service over the PSCo Transmission System. Please see Sections 13.6 and 15.4 of Part II of this Tariff for more information on curtailment.

46.3 Emergency Operations

As the Balancing Authority Operator and the Transmission Provider, consistent with Good Utility Practice, PSCo shall have all necessary authority to take whatever action PSCo deems necessary, including giving orders to the third-party Interconnection Customer using the Gen-Tie to: (1) preserve the public health, safety, and welfare; (2) preserve the reliability of the PSCo Balancing Authority Area (BAA) and Transmission System; (3) limit or prevent damage to the PSCo BAA and Transmission System; and (4) expedite the restoration of electric service within the PSCo BAA. PSCo shall use reasonable efforts to minimize the effect of such actions or interactions on Interconnection Customers using the Gen-Tie.

46.4 Charges for Use of Rush Creek Gen-Tie

In addition to applicable generation interconnection fees (e.g., study fees) and costs (e.g., costs for incremental Interconnection Facilities) under Attachment N or Attachment P to this Tariff, the following charges shall apply:

46.4.1 Gen-Tie Use Charge

All Interconnection Customers interconnecting to the PSCo Transmission System at the Missile Site POI and using the Gen-Tie for interconnection service will be charged a Rush Creek Gen-Tie Use Charge as provided in Schedule 19, based on the Generating Facility Capacity of the Interconnection Customer's Generating Facility. The Usage Charge will be billed to Interconnection Customer starting with the first month the Interconnection Customer's Generating Facility is in-service.

46.4.2 Losses

Real Power Losses are associated with all delivery transactions over the Gen-Tie. Real Power Losses over the Gen-Tie will be used to determine transmission and ancillary service volumes associated with transmission service over the PSCo Transmission System. Volumes measured at the point where the Generating Facility connects to the Rush Creek Gen-Tie will be grossed down by application of a transmission loss factor to determine Transmission Service, Ancillary Service Charges, and Scheduled volumes at the Missile Site Point of Receipt. All generators connecting to the Rush Creek Gen-Tie will be assigned average losses for use of the Rush Creek Gen-Tie irrespective of location or sequence of interconnection to the Rush Creek Gen-Tie. The Rush Creek Real Power Loss Factor is detailed in Schedule 19 and is in addition to Real Power Losses associated with transmission service over the PSCo Transmission System.

47 Change in Status of Rush Creek Gen-Tie Line

If the Rush Creek Gen-Tie is physically altered from a radial generator outlet line to a PSCo network Transmission System facility, and is thus no longer an Interconnecting Customer's Interconnection Facility, PSCo will seek permission from the Commission to reclassify the Gen-Tie from Transmission Serving Generation to a Transmission System facility and to thereafter include the costs of the Rush Creek Gen-Tie facilities in the Annual Transmission Revenue Requirement (ATRR) under Attachment O-PSCo to this Tariff. If PSCo is allowed to include the costs of the Rush Creek Gen-Tie in Attachment O-PSCo, as of the effective date of such change authorized by the Commission, then 1) the point of interconnection under Interconnection Customer's Interconnection Agreement will be transferred, with no further study required, from the Missile Site Substation to the point where the Interconnection Customer's generator facility interconnects to the Rush Creek Gen-Tie; and 2) the Rush Creek Use Charge may be modified or will no longer apply. In no event shall PSCo be required to refund Rush Creek Usage Charges collected from a Third Party Interconnection Customer for the period prior to the effective date of such change in classification.

SCHEDULE 19

Rush Creek Gen-Tie Use Charge

The Interconnection Customer shall compensate PSCo each month for the capacity of the Rush Creek Gen-Tie ("Gen-Tie") used to achieve Interconnection Service from Interconnection Customer's Generating Facility(ies) over the Gen-Tie to the Missile Site Substation Point of Interconnection with the PSCo Transmission System. The quantity of Rush Creek Gen-Tie Capacity Usage in kW is set forth in the Interconnection Customer's Interconnection Agreement and will equal the Generating Facility Capacity measured in kW. The Rush Creek Gen-Tie Use Charge will be invoiced on a monthly basis in accordance with Section 7 of the Common Use provisions of this Tariff.

I. Rush Creek Gen-Tie Use Charge

The Rush Creek Gen-Tie Use Charge is equal to:

Generating Facility Capacity x Gen-Tie Use Rate

Where the monthly Gen-Tie Use Rate is formulaically determined in Table 1, Column 3, Line 10 of Appendix 1 to this Schedule 19

II. Rush Creek Gen-Tie Loss Rate and Calculation Methodology

Real Power Losses are associated with usage of the Rush Creek Gen-Tie. All metered volume measured where the Generating Facility connects to the Rush Creek Gen-Tie will be grossed down in real-time using a static average loss factor to determine the volume at the Missile Site Point of Receipt.

The volume of generation delivered to the Missile Site Substation is equal to the metered volume of the generation at the Generating Facility's connection to the Rush Creek Gen-Tie times one minus the Rush Creek Gen-Tie Average Loss Factor.

The Rush Creek Gen-Tie Average Loss Factor is determined by the total generation connected to the Gen-Tie measured in MW according to the following equation:

Rush Creek Gen-Tie Average Loss Factor =

0.0000251 times x

where x = each Interconnection Customer's Generating Facility Capacity measured in MW times that Generating Facility's projected annual net capacity factor summed for all Generating Facilities connected to the Gen-Tie. The value for x shall change as additional Generating Facilities connect to the Gen-Tie, to be effective on the commercial operation date of the incremental Generating Facility(ies). PSCo may file with the Commission to adjust the Gen-Tie loss factor based on actual operating data for the Gen-Tie and connected Generating Facilities.

ATTACHMENT 1 TO SCHEDULE 19

Public Service Company of Colorado
Twelve Months Ended December 31, XXXX

Schedule 19 Rush Creek Gen Tie Use Estimated Rate, Table 1

Line No.	Description	Reference	Transmission Amount	
	Col. (1)	Col. (2)	Col. (3)	
1	**Revenue Requirement**	Line 79	$ -	
2	True-Up	20XX ARR Gen Tie Actual	-	
3	Interest on True-Up	20XX Interest on True-Up	$0	
4	TOTAL REVENUE REQUIREMENT		-	
5				
6	**Divisor**			
7	Rush Creek Line Capacity	Note A	1,600,000	kW
8				
9	**Rates**			
10	Monthly Rate ($/kW-Mo)	(Line 4 / Line 7) / 12	$ -	/kW-month

Annual Transmission Revenue Requirement-Rush Creek Interconnection Generation Tie Rate Formula (Note B)

Line No.	RATE BASE & RETURN CALCULATION	Reference/Notes	Total	Allocator (Note J)		Generation Tie
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
11	GROSS PLANT IN SERVICE	(Note C)				
12	Production	ATRR Est Col. (3), Line 2		NA	0.00%	-
13	Generation Tie Plant	Company Records		DA	100.00%	-

14	Distribution	ATRR Est Col. (3), Line 4		NA	0.00%	-
15	General Plant	ATRR Est Col. (3), Line 5		W/S	0.00%	-
16	Intangible Plant	ATRR Est Col. (3), Line 6		W/S	0.00%	-
17	Common Intangible	ATRR Est Col. (3), Line 7		CE	0.00%	-
18	Common General	ATRR Est Col. (3), Line 8		CE	0.00%	-
19	TOTAL GROSS PLANT	Sum Lines 12 through 18	-			-
20						
21						
22	ACCUMULATED DEPRECIATION	(Note C)				
23	Production	ATRR Est Col. (3), Line 13		NA	0.00%	-
24	Generation Tie Plant	Company Records		DA	100.00%	-
25	Distribution	ATRR Est Col. (3), Line 15		NA	0.00%	-
26	General Plant	ATRR Est Col. (3), Line 16		W/S	0.00%	-
27	Intangible Plant	ATRR Est Col. (3), Line 17		W/S	0.00%	-
28	Common Intangible	ATRR Est Col. (3), Line 18		CE	0.00%	-
29	Common General	ATRR Est Col. (3), Line 19		CE	0.00%	-
30	TOTAL ACCUMULATED DEPRECIATION	Sum Lines 23 through 29	-			-
31						
32	NET PLANT IN SERVICE	(Note C)				
33	Production	Line 12 minus 23	-			-
34	Transmission	Line 13 minus 24	-			-
35	Distribution	Line 14 minus 25	-			-
36	General Plant	Line 15 minus 26				

			-			-
37	Intangible Plant	Line 16 minus 27	-			-
38	Common Intangible	Line 17 minus 28	-			-
39	Common General	Line 18 minus 29	-			-
40	TOTAL NET PLANT IN SERVICE	Sum Lines 33 through 39	-			-
41						
42						
43	OTHER RATE BASE ITEMS	(Note D)				
44	ADIT	Company Records		DA	100.00%	-
45	ADIT Proration Adjustment	WP_ADIT Prorate		DA	100.00%	-
46	TOTAL OTHER RATE BASE ITEMS		-			-
47						
48	RATE BASE	Line 40 plus 46	-			-
49						
50	Rate of Return	Line 112	0.00%			0.00%
51						
52	RETURN (Rate Base * Rate of Return)	Line 48 times Line 50	-			-

Line No.	EXPENSE, TAXES & REVENUE REQUIREMENTS CALCULATION	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
53	TOTAL O & M EXPENSE	(Note E)				
54	Total ATRR O&M Expense	ATRR Est Col. (5), Line 88		GTGP	0.00%	-
55						
56	DEPRECIATION AND AMORTIZATION					

	EXPENSE					
57	Generation Tie	Company Records		DA	100.00%	-
58	General	ATRR - WP_B-1 Line 26 Col. (d)		W/S	0.00%	-
59	Intangible	ATRR - WP_B-1 Line 27 Col. (d)		W/S	0.00%	-
60	Common Intangible	ATRR - WP_B-1 Line 28 Col. (d)		CE	0.00%	-
61	Common General	ATRR - WP_B-1 Line 29 Col. (d)		CE	0.00%	-
62	TOTAL DEPRECIATION AND AMORTIZATION	Sum Lines 57 through 61	-			-
63						
64	TAXES OTHER THAN INCOME	(Note F)				
65	Labor Related	ATRR - WP_D-1 Line 5		W/S	0.00%	-
66	Plant Related	ATRR - WP_D-1 Line 9		GTGP	0.00%	-
67	Miscellaneous	ATRR - WP_D-1 Line 12	-	NA	0.00%	-
68	TOTAL OTHER TAXES	Sum Lines 65 through 67	-			-
69						
70	INCOME TAXES	(Note G)				
71	T=1 - {[(1 - SIT) * (1 - FIT)] / (1 - SIT * FIT * p)} =		0.00%			
72	CIT=(T/1-T) * (1-(WCLTD/R)) =		0.00%			
73	where WCLTD=(line 106) and R= (line 109)					
74	and FIT, SIT & p are as given in Note G.					
75	1 / (1 - T) = (from ln 68)		-			
76						
77	TOTAL INCOME TAXES	Line 52 times Line 72	-			-
78						
79	REVENUE REQUIREMENT	Sum of Lines (52, 54, 62, 68, 77)	-			-

Line No.	SUPPORTING CALCULATIONS	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
80	TRANSMISSION PLANT INCLUDED IN THE ATRR	(Note H)				
81	Transmission plant	ATRR - WP_B-1 Col (a), Line 3				
82	Transmission related Acquisition Adjustment	ATRR - WP_B-4 Col. (c), Line 15				
83	Total Transmission Plant	Sum Lines 81 through 82				-
84	Eliminate Generator Step-up facilities	ATRR - WP_B-Inputs Est. Line 117				
85	Eliminate Transmission Plant Recovered via ATRR	ATRR Est Col. (3), Line 3 plus Line 25				
85	Transmission plant included in OATT Trans Rate	Sum Lines 83 through 85				-
86	Percent of Transmission Plant in the ATRR	Line 86 divided by Line 83			**GTTP =**	**0.00%**
87						
88	Generation Tie Plant included in Total Gross Plant					
89	Generation Tie Plant	Line 12				-
90	Total Gross Plant	Line 18				-
91					**GTGP =**	**0.00%**
92						
93	WAGES & SALARY ALLOCATOR (W/S)					
94	Production	ATRR Est Col. (3), Line 140		NA	0.00%	-
95	Transmission	ATRR - WP_C-1 Line 31 Col. (b)		GTTP	0.00%	-
96	Regional Market	ATRR Est Col. (3), Line 142		NA	0.00%	-
97	Distribution	ATRR Est Col. (3), Line 143		NA	0.00%	-

98	Other	ATRR Est Col. (3), Line 144		NA	0.00%	-
99	Total	Sum Lines 94 through 98	-			-
100						
101	W/S Allocator	Line 99, Col. Col. (5) divided by Col. Col. (3)			**W/S=**	**0.00%**
102						
103	Common to Electric Transmission Allocator	ATRR Est Col. (5), Line 149				
104		W/S Allocator, Line 101				0.00%
105		Line 103 times Line 104			**CE=**	**0.00%**
106						
107						
108	RETURN	(Note I)	$	%	Cost	Weighted
109	Long Term Debt	ATRR - WP_G-1 Col (n), Line 6		0.00%		0.0000
110	Preferred Stock	ATRR - WP_G-1 Col (n), Line 8	-	0.00%		0.0000
111	Common Stock	ATRR - WP_G-1 Col (n), Line 14		0.00%		0.0000
112	Total	Sum Lines 109 through 111	-		**ROR=**	**0.0000**

General Notes: a) References to data from FERC Form No. 1 are indicated as: page#.line#.col.#

Notes:

A Equals Rush Creek Gen Tie total thermal capacity.

B All references to ATRR are referring to Attachment O-PSCo of the OATT, or the Annual Transmission Revenue Requirement Template. The rate will be estimated annually each October and trued-up each June and published on OASIS along with the Attachment O-PSCo. The Gen Tie use rate year will match the ATRR estimate or actual for the same year.

C Gross Plant, Accumulated Depreciation Reserves will be the average of thirteen monthly balances except for the 2018 rate year, which will utilize year end balances. The Gen-Tie are the same as described in Table 25 to the Attachment O-PSCo Transmission Formula Rate Template depreciation rates.

D Reflects the BOY/EOY average of the Gen-Tie related portion of balances in Accounts 281, 282, 283, 190 and 255 as adjusted by any amounts in contra accounts identified as regulatory assets or liabilities related to FASB 106, 109, 133, 158 or FASB Interpretation No. 48. Balance of Account 255 is reduced by prior flow throughs and completely excluded if the utility chose to utilize amortization of tax credits against taxable income as discussed in Note G. The calculation of ADIT for both the true-up and the annual projection will be performed in accordance with IRS regulation Section 1.167(l)-1(h)(6). The 2018 rate year will utilize year end balances.

E The GTGP allocator is applied to the total ATRR Operation and Maintenance (O&M) expense to recover reasonable expenses including overheads, associated with operation, maintenance, and repair of the Gen Tie.

F Includes only FICA, unemployment, property, and other assessments charged in the current year.

Taxes related to income are excluded. Franchise taxes are not included in transmission revenue requirement in the Rate Formula Template,

G The currently effective income tax rate, where FIT is the Federal income tax rate; SIT is the State income tax rate, and p = "the percentage of federal income tax deductible for state income taxes".

Inputs Required:	FIT =		
	SIT=		(State Income Tax Rate or Composite SIT)
	p =		(percent of FIT deductible for state purposes)

If a change in an income tax rate is known sufficiently in advance to be reflected in the estimated rates that will become effective January 1 for the upcoming formula rate year, PSCo will reflect the new tax rate(s) in the estimated rate calculations for the months in which the new tax rate will be in effect for the formula rate year. Otherwise, such tax change will be captured and reflected in the annual formula true-up by weighting the tax rates in effect during the year by the number of days each such tax rate was in effect.

H Removes the dollars of plant booked to transmission plant that is excluded from the Tariff because it does not meet the Tariff's definition of Transmission Facilities, or is booked to transmission (e.g. step-up transformers) that is included in the development of OATT ancillary service rates, or is otherwise not eligible to be recovered under this Tariff.

I Return on Equity will be equal to the ROE in Attachment O-PSCo. Any change to Attachment O-PSCo ROE requires a filing with the Commission pursuant to Section 205 or 206 filing. If and when the Company issues preferred stock, footnote will indicate the authorizing regulatory agency, the docket/case number, and the date of the authorizing order.

J The calculation of the GTTP Allocator is found on Line 86

The calculation of the GTGP Allocator is found on Line 91

The calculation of the W/S Allocator is found on Line 101

The calculation of the CE Allocator is found on Line 105

Public Service Company of Colorado
Twelve Months Ended December 31, XXXX

Schedule 19 Rush Creek Gen Tie Use Actual Rate, Table 2

Line No.	Description	Reference	Transmission Amount Actual ARR	Transmission Amount Estimated ARR	Difference (True-Up) (Note K)
	Col. (1)	Col. (2)	Col. (3)	Col. (4)	Col. (5) = (3) - (4)
1	**True-Up**	ARR Act & Est Line 70	$ -	$ -	$ -

Annual Transmission Revenue Requirement-Rush Creek Interconnection Generation Tie Rate Formula (Note B)

Line No.	RATE BASE & RETURN CALCULATION	Reference/Notes	Total	Allocator (Note J)		Generation Tie
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
2	GROSS PLANT IN SERVICE	(Note C)				
3	Production	ATRR Act Col. (3), Line 2		NA	0.00%	-
4	Generation Tie Plant	Company Records		DA	100.00%	-
5	Distribution	ATRR Act Col. (3), Line 4		NA	0.00%	-
6	General Plant	ATRR Act Col. (3), Line 5		W/S	0.00%	-
7	Intangible Plant	ATRR Act Col. (3), Line 6		W/S	0.00%	-
8	Common Intangible	ATRR Act Col. (3), Line 7		CE	0.00%	-
9	Common General	ATRR Act Col. (3), Line 8		CE	0.00%	-

10	TOTAL GROSS PLANT	Sum Lines 3 through 9	-			-
11						
12						
13	ACCUMULATED DEPRECIATION	(Note C)				
14	Production	ATRR Act Col. (3), Line 13		NA	0.00%	-
15	Generation Tie Plant	Company Records		DA	100.00%	-
16	Distribution	ATRR Act Col. (3), Line 15		NA	0.00%	-
17	General Plant	ATRR Act Col. (3), Line 16		W/S	0.00%	-
18	Intangible Plant	ATRR Act Col. (3), Line 17		W/S	0.00%	-
19	Common Intangible	ATRR Act Col. (3), Line 18		CE	0.00%	-
20	Common General	ATRR Act Col. (3), Line 19		CE	0.00%	-
21	TOTAL ACCUMULATED DEPRECIATION	Sum Lines 14 through 20	-			-
22						
23	NET PLANT IN SERVICE	(Note C)				
24	Production	Line 3 minus 14	-			-
25	Transmission	Line 4 minus 15	-			-
26	Distribution	Line 5 minus 16	-			-
27	General Plant	Line 6 minus 17	-			-
28	Intangible Plant	Line 7 minus 18	-			-
29	Common Intangible	Line 8 minus 19	-			-
30	Common General	Line 9 minus 20				

			-			-
31	TOTAL NET PLANT IN SERVICE	Sum Lines 24 through 30	-			-
32						
33						
34	OTHER RATE BASE ITEMS	(Note D)				
35	ADIT	Company Records		DA	100.00%	-
36	ADIT Proration Adjustment	WP_ADIT Prorate		DA	100.00%	-
37	TOTAL OTHER RATE BASE ITEMS		-			-
38						
39	RATE BASE	Line 31 plus 37	-			-
40						
41	Rate of Return	Line 103	0.00%			0.00%
42						
43	RETURN (Rate Base * Rate of Return)	Line 39 times Line 41	-			-

Line No.	EXPENSE, TAXES & REVENUE REQUIREMENTS CALCULATION	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
44	TOTAL O & M EXPENSE	(Note E)				
45	Total ATRR O&M Expense	ATRR Act Col. (5), Line 88		GTGP	0.00%	-
46						
47	DEPRECIATION AND AMORTIZATION EXPENSE					
48	Generation Tie	Company Records		DA	100.00%	-
49	General	ATRR - WP_B-1 Line 26		W/S	0.00%	

		Col. (d)				-
50	Intangible	ATRR - WP_B-1 Line 27 Col. (d)		W/S	0.00%	-
51	Common Intangible	ATRR - WP_B-1 Line 28 Col. (d)		CE	0.00%	-
52	Common General	ATRR - WP_B-1 Line 29 Col. (d)		CE	0.00%	-
53	TOTAL DEPRECIATION AND AMORTIZATION	Sum Lines 48 through 52	-			-
54						
55	TAXES OTHER THAN INCOME	(Note F)				
56	Labor Related	ATRR - WP_D-1 Line 5		W/S	0.00%	-
57	Plant Related	ATRR - WP_D-1 Line 9		GTGP	0.00%	-
58	Miscellaneous	ATRR - WP_D-1 Line 12	-	NA	0.00%	-
59	TOTAL OTHER TAXES	Sum Lines 56 through 58	-			-
60						
61	INCOME TAXES	(Note G)				
62	T=1 - {[(1 - SIT) * (1 - FIT)] / (1 - SIT * FIT * p)} =		0.00%			
63	CIT=(T/1-T) * (1-(WCLTD/R)) =		0.00%			
64	where WCLTD=(line 106) and R= (line 109)					
65	and FIT, SIT & p are as given in Note G.					
66	1 / (1 - T) = (from ln 68)		-			
67						
68	TOTAL INCOME TAXES	Line 43 times Line 63	-			-
69						
70	REVENUE REQUIREMENT	Sum Lines (43, 45, 53, 59, 68)	-			-

Line No.	SUPPORTING CALCULATIONS	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
71	TRANSMISSION PLANT INCLUDED IN THE ATRR	(Note H)				
72	Transmission plant	ATRR - WP_B-1 Col (a), Line 3				
73	Transmission related Acquisition Adjustment	ATRR - WP_B-4 Col. (c), Line 15				
74	Total Transmission Plant	Sum Lines 72 through 73				-
75	Eliminate Generator Step-up facilities	ATRR - WP_B-Inputs Est. Line 117				
76	Eliminate Transmission Plant Recovered via ATRR	ATRR Act Col. (3), Line 3 plus Line 25				
76	Transmission plant included in OATT Trans Rate	Sum Lines 74 through 76				-
77	Percent of Transmission Plant in the ATRR	Line 77 divided by Line 74			**GTTP =**	**0.00%**
78						
79	Generation Tie Plant included in Total Gross Plant					
80	Generation Tie Plant	Line 12				-
81	Total Gross Plant	Line 18				-
82					**GTGP =**	**0.00%**
83						
84	WAGES & SALARY ALLOCATOR (W/S)					
85	Production	ATRR Act Col. (3), Line 140		NA	0.00%	-
86	Transmission	ATRR - WP_C-1 Line 31 Col. (b)		GTTP	0.00%	-

87	Regional Market	ATRR Act Col. (3), Line 142		NA	0.00%	-
88	Distribution	ATRR Act Col. (3), Line 143		NA	0.00%	-
89	Other	ATRR Act Col. (3), Line 144		NA	0.00%	-
90	Total	Sum Lines 85 through 89	-			-
91						
92	W/S Allocator	Line 90, Col. Col. (5) divided by Col. Col. (3)			**W/S=**	**0.00%**
93						
94	Common to Electric Transmission Allocator	ATRR Act Col. (5), Line 149				
95		W/S Allocator, Line 92				0.00%
96		Line 94 times Line 95			**CE=**	**0.00%**
97						
98						
99	RETURN	(Note I)	$	%	Cost	Weighted
100	Long Term Debt	ATRR - WP_G-1 Col (n), Line 6		0.00%		0.0000
101	Preferred Stock	ATRR - WP_G-1 Col (n), Line 8	-	0.00%		0.0000
102	Common Stock	ATRR - WP_G-1 Col (n), Line 14		0.00%		0.0000
103	Total	Sum Lines 100 through 102	-		**ROR=**	**0.0000**

General Notes: a) References to data from FERC Form No. 1 are indicated as: page#.line#.col.#

Notes:

A Not Applicable to this page

B All references to ATRR are referring to Attachment O-PSCo of the OATT, or the Annual Transmission Revenue Requirement Template. The rate will be estimated annually each October and trued-up each June and published on OASIS along with the Attachment O-PSCo. The Gen-Tie Use rate year will match the ATRR estimate or actual for the same rate year.

C Gross Plant, Accumulated Depreciation Reserves will be the average of thirteen monthly balances except for the 2018 rate year, which will utilize year end balances. The Gen-Tie depreciation rates are the same as described in Table 25 to the Attachment O-PSCo Transmission Formula Rate Template

D Reflects the BOY/EOY average of the generation tie-related portion of balances in Accounts 281, 282, 283, 190 and 255 as adjusted by any amounts in contra accounts identified as regulatory assets or liabilities related to FASB 106, 109, 133, 158 or FASB Interpretation No. 48. Balance of Account 255 is reduced by prior flow throughs and completely excluded if the utility chose to utilize amortization of tax credits against taxable income as discussed in Note G. The calculation of ADIT for both the true-up and the annual projection will be performed in accordance with IRS regulation Section 1.167(l)-1(h)(6). The 2018 rate year will utilize year end balances.

E The GTGP allocator is applied to the total ATRR Operation and Maintenance (O&M) expense to recover reasonable expenses including overheads, associated with operation, maintenance, and repair of the Gen Tie.

F Includes only FICA, unemployment, property, and other assessments charged in the current year. Taxes related to income are excluded. Franchise taxes are not included in transmission revenue requirement in the Rate Formula Template,

G The currently effective income tax rate, where FIT is the Federal income tax rate; SIT is the State income tax rate, and p = "the percentage of federal income tax deductible for state income taxes".

Inputs Required:	FIT =		
	SIT=		(State Income Tax Rate or Composite SIT)
	p =		(percent of FIT deductible for state purposes)

If a change in an income tax rate is known sufficiently in advance to be reflected in the estimated rates that will become effective January 1 for the upcoming formula rate year, PSCo will reflect the new tax rate(s) in the estimated rate calculations for the months in which the new tax rate will be in effect for the formula rate year. Otherwise, such tax change will be captured and reflected in the annual formula true-up by weighting the tax rates in effect during the year by the number of days each such tax rate was in effect.

H Removes the dollars of plant booked to transmission plant that is excluded from the Tariff because it does not meet the Tariff's definition of Transmission Facilities, or is booked to transmission (e.g. step-up transformers) that is included in the development of OATT ancillary service rates, or is otherwise not eligible to be recovered under this Tariff.

I Return on Equity will be equal to the ROE in Attachment O-PSCo. Any change to Attachment O-PSCo ROE requires a filing with the Commission pursuant to Section 205 or 206 filing. If and when the Company issues preferred stock, footnote will indicate the authorizing regulatory agency, the docket/case number, and the date of the authorizing order.

J The calculation of the GTTP Allocator is found on Line 77
The calculation of the GTGP Allocator is found on Line 82
The calculation of the W/S Allocator is found on Line 92
The calculation of the CE Allocator is found on Line 96

K True-up amount and related interest will be included in the calculation of the estimated Revenue Requirement (ATRR) for the Gen Tie Rate rate in the second year subsequent to the rate year.

Public Service Company of Colorado
Twelve Months Ended December 31, XXXX

Schedule 19 Accumulated Deferred Income Tax Proration Adjustment, Table 3 (WP_ADIT Prorate)

Rate Year =

1	**ADIT Associated with Transmission Serving Generation Plant**													
2														
3	**Days in Period**					**Averaging with Proration - Projected**			**Averaging Preserving Projected Proration - True-up**					
4	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**
5	Month	Days in the Month	Number of Days Prorated	Total Days in Future Portion of Test Period	Proration Amount (C / D)	Projected Monthly Activity	Prorated Projected Monthly Activity (E x F)	Prorated Projected Balance (Cumulative Sum of G)	Actual Monthly Activity	Difference between projected and actual activity	Partially prorate actual activity above Monthly projection	Partially prorate actual activity below Monthly projection but increases ADIT	Partially prorate actual activity below Monthly projection and is a reduction to ADIT	Partially prorated actual balance
6														
7	December 31st Balance - Prorated Items													-
8	January	31	335	365	91.78%		-	-	-	-	-	-	-	-
9	February	28	307	365	84.11%		-	-	-	-	-	-	-	-
10	March	31	276	365	75.62%		-	-	-	-	-	-	-	-
11	April	30	246	365	67.40%		-	-	-	-	-	-	-	-
12	May	31	215	365	58.90%		-	-	-	-	-	-	-	-
13	June	30	185	365	50.68%		-	-	-	-	-	-	-	-

14	July	31	154	365	42.19%		-	-	-	-	-	-	-	-
15	August	31	123	365	33.70%		-	-	-	-	-	-	-	-
16	September	30	93	365	25.48%		-	-	-	-	-	-	-	-
17	October	31	62	365	16.99%		-	-	-	-	-	-	-	-
18	November	30	32	365	8.77%		-	-	-	-	-	-	-	-
19	December	31	1	365	0.27%		-	-	-	-	-	-	-	-
20		Total	2,029	4,380		-	-		-	-	-	-	-	
21														
22	Proration Factor			53.68%										
23														
24														
25	Beginning Balance of Prorated items				(Line 7, Col H)			-			(Line 7, Col N)			-
26	Ending Balance of Prorated items				(Line 19, Col H)			-			(Line 19, Col N)			-
27	Average Balance Prorated items				(Average of Line 25 & Line 26)			-			(Average of Line 25 & Line 26)			-
28	Non-prorated Average Balance				(WP_B-3, Average of Line 26, Cols (a) and (b))			-			(WP_B-3, Average of Line 26, Cols (a) and (b))			-
29	Proration Adjustment							-						-

Public Service Company of Colorado
Twelve Months Ended December 31, XXXX

Schedule 19 True-Up Interest Calculation, Table 4

III. Interest Calculation:

1	Month	Year	FERC Quarterly Interest Rates	Number of Days in Month	Monthly Interest Rate
2	January				0.0000
3	February				0.0000
4	March				0.0000
5	April				0.0000
6	May				0.0000
7	June				0.0000
8	July				0.0000
9	August				0.0000
10	September				0.0000
11	October				0.0000
12	November				0.0000
13	December				0.0000
14	January				0.0000
15	February				0.0000
16	March				0.0000
17	April				0.0000
18	May				0.0000
19	June				0.0000
20	July				0.0000
21	August				0.0000
22	September				0.0000
23	October				0.0000

24	November				0.0000	
25	December				0.0000	
26	Average Monthly Interest Rate				0.0000	
27						
28	Over/Under Recovery Amount (Col (5), ln 1, amount on ARR Gen Tie Actual tab)					$0
29	Average Monthly Interest Rate (ln 26)					0.0000
30	Monthly Interest Recovery Amount (ln 28 x ln 29)					$0
31						
32	Number of Months for Interest Recovery Amount					24
33						
34	Interest Recovery Amount (ln 32 times ln 30)					$0 **(Input to ATRR Gen Tie Estimate)**

Note:
The interest is calculated pursuant to Section 35.19a using the interest rate posted on the FERC website.
See link to website below.
http://www.ferc.gov/enforcement/acct-matts/interest-rates.asp

Appendix 1

Public Service Company of Colorado ("PSCo" or "Company")
Transmission Formula Rate Implementation Procedures

Section 1 Applicability

The formula rate template ("Formula Rate Template") and these Transmission Formula Rate Implementation Procedures ("Implementation Procedures") (collectively, the "Formula Rate") together comprise PSCo's filed transmission rates and ancillary services rates. PSCo shall follow the Formula Rate to calculate its Annual Transmission Revenue Requirement ("ATRR"), the monthly rate for Network Integration Transmission Service ("NITS Rate"), the monthly rates for Point-to-Point Transmission Service ("PTP Rates"), the Annual Ancillary Services Schedule 1 Revenue Requirement ("S1RR") and the monthly rates for Ancillary Services Schedule 1 - Scheduling, System Control and Dispatch Service ("Schedule 1 Rates"), Ancillary Services Schedule 2 - Reactive Supply and Voltage Control from Generation or Other Sources Service ("Schedule 2 Rates"), Ancillary Service Schedule 3 - Regulation and Frequency Response Service ("Schedule 3 Rates"), "), Ancillary Services Schedule 3A – Regulation and Frequency Response Service for Point-to-Point Transmission Service for exports from the PSCo Balancing Authority Area ("Schedule 3A Rates"), Ancillary Services Schedule 5 - Operating Reserve - Spinning Reserve Service ("Schedule 5 Rates"), Ancillary Services Schedule 6 - Operating Reserve Supplemental Reserve Service ("Schedule 6 Rates"), Ancillary Services Schedule 16 – Flex Reserve Service ("Schedule 16 Rates"), and Schedule 19 – Rush Creek Gen-Tie Charge ("Schedule 19 Rates") for the PSCo rate zone under the Xcel Energy Operating Companies ("Xcel Energy") Open Access Transmission Tariff ("Joint OATT").

The Formula Rate shall be effective for service on and after November 17, 2012 for each full or partial calendar year (the "Rate Year" or "Formula Rate Year"), subject to the implementation, review, challenge and true-up procedures of these Implementation Procedures. The Schedule 19 Rate shall be effective for service on and after August 1, 2018 for each full or partial calendar year (the "Rate Year" or "Formula Rate Year"), subject to the implementation, review, challenge and true-up procedures of these Implementation Procedures.

The customers taking NITS service and the customers taking PTP service or customers taking Interconnection Service over the Rush Creek Gen-Tie are hereinafter referred to, collectively, as "Customers" or "Transmission Customers" or "Gen-Tie Customers." The forecasted ATRR is referred to as the "Estimated ATRR," the forecasted S1RR is referred to as the "Estimated S1RR", the forecasted Gen-Tie ARR is referred to as the "Estimated S19ARR," and the forecasted NITS Rate, PTP Rates, Schedule 19 Rates, and Ancillary Services Schedule 1 Rates are collectively referred to as the "Estimated Rates." In the spring of the year following the Rate Year, the Estimated ATRR, Estimated S19ARR and the Estimated S1RR will be trued-up, as described herein, based on actual data for the Rate Year, to establish the Actual ATRR, Acrual S19ARR and Actual S1RR. As part of such true-up (the "Annual True-up"), PSCo also will calculate the Actual NITS Rate, Actual PTP Rates, Actual Schedule 19 Rates and Actual Ancillary Services Schedule 1 Rates (collectively or individually referred to as the "Actual Rates"). PSCo will calculate the rates for Ancillary Services Schedules 2, 3, 3A 5, 6 and 16 for each Rate Year based on actual data from PSCo's most recently filed Federal Energy Regulatory Commission FERC Form 1 ("FERC Form 1") and such rates are not subject to the

Annual True-up.

The Federal Energy Regulatory Commission ("FERC" or "Commission") annually determines the FERC Annual Charge and PSCo assesses the charge to its Transmission Customers. The FERC Annual Charge is shown on the Formula Rate Template rate sheet for ease of reference but it is a pass through of the FERC-calculated charge and is not part of the Formula Rate calculations or subject to the Annual True-up.

Section 2 Annual Update for Upcoming Rate Year

No later than October 1 of each year (or, if October 1 is a weekend day or a holiday recognized by FERC, the first day following such weekend day or holiday that FERC is open for business ("Business Day")), PSCo shall post the Estimated ATRR, the Estimated S19ARR, the Estimated S1RR, the Estimated Rates, and the Ancillary Services Schedule 2, 3, 5 and 6 Rates for the upcoming Rate Year, to be effective beginning January 1 of the upcoming Rate Year ("Annual Update"). PSCo shall post the Annual Update on the Transmission OATT page of the Xcel Energy website (www.xcelenergy.com <http://www.xcelenergy.com>) and on the PSCo OASIS (wesTTrans.net OASIS or any successor OASIS) (hereinafter, "PSCo OASIS"), in a location that is accessible by the general public. PSCo shall simultaneously notify its Customers electronically that the Annual Update is available for their review.

a. Annual Update: Components

The Annual Update shall include the following:

(i) a data-populated version of the Formula Rate Template, including fully functioning Excel® files, setting forth the Estimated ATTR, the Estimated S19ARR, the Estimated S1RR, the Estimated Rates and the Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates for the next Rate Year;

(ii) supporting documentation, including, but not limited to, fully functioning Excel® files (or other such native format files) and workpapers required to support, demonstrate and explain the information upon which the Annual Update is based;

(iii) disclosure of the Material Changes to the extent (a) such changes have taken effect since January 1, 2012 for the first Annual Update in October 2012 and, thereafter, in subsequent, any such changes that have taken place since the immediately prior Annual Update; and (b) any such changes affect the Formula Rate, calculation of the Annual Update or the allocation of costs or revenues to PSCo's Customers. For purposes of these Implementation Procedures, "Material Changes" are changes in (1) FERC's Uniform System of Accounts ("USoA"), (2) FERC Form No. 1 reporting requirements as applicable, and (3) the accounting policies, practices, or procedures of PSCo. Material Changes also include (4) changes directed by FERC orders applicable to the Formula Rate or accounting orders applicable to PSCo that affect accounts providing inputs directly or indirectly to the Formula Rate Template, (5) disclosure of any errors in the FERC Form No. 1, the Formula Rate Template, or accounting data that impacts the Formula Rate in the upcoming Rate Year or previous Rate Years;

(iv) a list of each transmission, general, intangible, and electric common annual capital addition;

(v) the Common Plant Study that is the basis of the common plant allocation factors used in the Annual Update; and

(vi) Detail of the amount included in rate base and the amortization of the wholesale share of the transmission serving transmission acquisition adjustment ($5,308,257) associated with PSCo's December 10, 2010 purchase of the Rocky Mountain Energy Center, with the amortization of such acquisition adjustment to be over a period of 55 years.

b. Annual Update: Estimated Rates

The Annual Update shall compute the Estimated Rates based upon PSCo's most recent budget for the upcoming Rate Year and supplemental data from PSCo's books and records concerning the upcoming Rate Year ("Supplemental Data") that reasonably project transmission peak demands and costs properly recorded (or to be recorded) on its books consistent with the USofA, FERC's orders establishing generally applicable transmission ratemaking policies, and FERC accounting policies and directives. The Estimated Rates shall be developed in the following manner:

(i) an average of 13-monthly balances shall be applied to: (a) gross plant balances and gross plant adjustments for all plant functions, excluding generator step-ups; (b) accumulated depreciation and amortization reserve balances and depreciation reserve adjustments for all plant functions, excluding generator step-ups; (c) capital structure balances inclusive of long-term debt, preferred stock, and common equity; (d) the following Other Rate Base Items: Future Use Land and Land Rights, Materials and Supplies, Prepayments Regulatory Liabilities, and Construction Work In Progress ("CWIP") and related pre-funded Allowance for Funds Used During Construction ("AFUDC") (if and when the inclusion of CWIP in rate base is approved by FERC); and (e) the transmission-related acquisition adjustments permitted by FERC order to be included in the Formula Rate for ratemaking purposes; and

(ii) an average of the beginning of year and end of year balances shall be applied to Accumulated Deferred Income Taxes.

c. Annual Update: Ancillary Services Schedule 2, 3, 3A, 5, 6 and 16 Rates

PSCo will calculate the rates for Ancillary Service Schedules 2, 3, 3A, 5, 6 and 16 using actual data from PSCo's most recently filed FERC Form 1. For example, the Schedule 2, 3, 3A, 5, 6 and 16 rates to become effective as of November 17, 2012 for the remaining months in Rate Year 2012 will be based on PSCo's 2010 FERC Form 1. The Schedule 2, 3, 3A, 5, 6 and 16 rates to become effective January 1, 2013 will be based on PSCo's 2011 FERC Form 1. Ancillary Services Schedule 2, 3, 3A, 5, 6 and 16 rates are not subject to the Annual True-up.

d. Annual Update: Customer Meeting

Each year, no later than October 20 (or the next Business Day if October 20 is not a Business

Day), PSCo shall convene a meeting ("Annual Update Customer Meeting") among PSCo, its Customers and their respective designated representatives (collectively, "Interested Parties") to explain the Annual Update, including the derivation of the Estimated Rates and, the Ancillary Services Schedule 2, 3, 3A, 5, 6 and 16 Rates for the next Rate Year. Notwithstanding the foregoing, PSCo and the Customers may mutually agree to a later date for the Annual Update Customer Meeting. The Annual Update Customer Meeting shall (i) allow enough time for PSCo to present details about its Annual Update and (ii) provide the Interested Parties the opportunity to seek information and clarification from PSCo about the Annual Update. PSCo will accommodate Interested Parties that wish to participate in the Annual Update Customer Meeting via teleconference or webinar. PSCo shall provide at least fourteen (14) calendar days' prior written notice of the Annual Update Customer Meeting. Such notice shall be provided no later than the time the Annual Update is provided. Such written notice may be provided by electronic mail to the Interested Parties.

e. Modification of Annual Update

PSCo shall modify the Annual Update to reflect any changes that it and the Customers comprising the majority of PSCo's network load have mutually agreed upon as of December 31 (or the next Business Day if December 31 is not a Business Day). If there are mutually agreed upon changes, PSCo shall post a Revised Annual Update incorporating the agreed changes as soon as possible after such agreement, but no later than January 15 (or the next Business Day if January 15 is not a Business Day). PSCo shall simultaneously notify the Customers of the posting.

f. Challenge and Review of Annual Update

The Annual Update is subject to review and challenge in accordance with the procedures set forth in Section 6 and Section 7 below.

g. Annual Update: Informational Filing

By January 15 (or the next Business Day if January 15 is not a Business Day), PSCo shall file with FERC the Annual Update, as revised to reflect any changes that PSCo and the Customers comprising the majority of PSCo's network load have mutually agreed upon pursuant to Section 2e ("Annual Informational Filing"). The Annual Informational Filing will include both portable document format ("PDF") and fully functioning Excel® files (or other such native format files) of the Annual Update. The Annual Informational Filing shall not require action by FERC.

h. Subsequently Discovered Errors

Any error, defined as a calculation error in the formula rate or an input error in the formula rate or FERC Form No. 1, to the Annual Update identified by PSCo or Customer(s) during the Formula Rate Year, which PSCo and one or more Customers agree affects the Customers' Estimated Rates, shall be rectified by PSCo in the Formula Rate Template. PSCo shall implement the resulting revised Estimated Rates and/or revised Ancillary Services Schedule 1, 2, 3, 5 or 6 Rates in the next billing month after such revision is calculated. To the extent such error affects months prior to the month that PSCo and Customer(s) agree that an error should be rectified, the correction for such months will be reflected in the subsequent Annual True-up (as defined in Section 4, below) and there shall be no intra-Rate Year refund or surcharge associated with such error. The same procedures shall apply in the event of an error affecting the Estimated Rates of an individual customer. Once the Formula Rate Year is complete, there shall no longer be a requirement to correct the Estimated Rates for such year. Any such correction to address the error shall be made to the Actual Rates for such Formula Rate Year at the time of the Annual True-up or thereafter should the error be discovered after the Annual True-up. *See* Section 4.f. below.

Section 3 Post-Employment Benefits Other Than Pensions ("PBOP") Filing

The PBOP charges included in each Annual Update shall be the actual FERC-approved PBOP cost booked to FERC Account 926 for the prior Rate Year.

On or before April 1 of each year, an Actuarial Study supporting PSCo's proposed actual PBOP costs for the prior Rate Year will be filed with the Commission for approval under FPA Section 205 ("PBOP Filing"). The PBOP Filing will be posted and provided to Customers. The actual PBOP costs for the prior Rate Year that are approved by FERC shall be used for the annual true-up ("Annual True-up") of such prior Rate Year. PSCo expects, absent extraordinary circumstances, that the Commission will have acted on the April 1st PBOP filing in time for inclusion of the FERC-approved actual PBOP costs in the Annual True-up of such prior Rate Year. In the event the Commission has not acted on the April 1st PBOP filing by the time PSCo posts the Annual True-Up, PSCo will include its actual costs pending approval from FERC in the initial posting of the Annual True-Up, but will ultimately reflect, before the true-up is finalized, the Commission-approved PBOP costs for such prior Rate Year, if they are different.

With respect to the Estimated Rates for the upcoming Formula Rate Year, PSCo will use the budgeted PBOP costs for each such Rate Year in the Annual Update, subject to true-up. For example, the 2012 Estimated Rates will use the 2012 estimated PBOP costs but, by the time that the 2012 Estimated Rates are trued-up in 2013, PSCo will have and will use the FERC-approved actual 2012 PBOP costs in the Annual True-up for Rate Year 2012. Similarly, the 2013 Estimated Rates will use the 2013 estimated PBOP costs, but when the 2013 Estimated Rates are trued-up in 2014, PSCo will have and will use the actual FERC-approved 2013 PBOP costs for the Annual True-up of Rate Year 2013. Annually, PSCo will fund to an external trust the PBOP costs collected pursuant to the Formula Rate.

Section 4 Annual True-up

Beginning in 2013, by no later than June 1 of each Rate Year (or the next Business Day if June 1 is not a Business Day), PSCo shall true-up the Annual Update for the prior Rate Year (the "True-up Year"). The annual true-up ("Annual True-Up") shall establish the Actual ATRR, the Actual S19ARR, the Actual S1RR, and the Actual Rates for True-up Year based on PSCo's actual costs as reflected in its FERC Form No. 1 and its books and records (maintained in accordance with the FERC's Uniform System of Accounts ("USofA")) for such True-up Year. PSCo shall post the Actual ATRR, the Actual S19ARR, the Actual S1RR and the Actual Rates for the True-up Rate Year on the Transmission OATT page of the Xcel Energy website and on the PSCo OASIS, in a location that is accessible by the general public. PSCo shall simultaneously notify its Customers electronically that the Annual True-up is available for their review.

a. Annual True-up: Components

The Annual True-up shall include the following:

(i) a data-populated version of the Formula Rate Template, including fully functioning Excel® files, setting forth the Actual ATTR, the Actual S19ARR, the Actual S1RR and the Actual Rates;

(ii) supporting documentation, including, but not limited to, fully functioning Excel® files (or other such native format files) and workpapers required to support and explain information upon which the Annual True-up is based;

(iii) disclosure of the Material Changes to the extent (a) such changes have taken effect since January 1, 2012 for the first Annual True-Up in June 2013 and, thereafter, in subsequent Annual True-Ups, any such changes that have taken place in the True-Up Year (January 1 – December 31 of the calendar year immediately prior to the June True-Up); and (b) any such changes affect the Formula Rate, calculation of the True-up or the allocation of costs or revenues to PSCo's Customers;

(iv) a list of each transmission, general, intangible, and electric common annual capital addition;

(v) Detail of the amount included in rate base and the amortization of the wholesale share of the transmission serving transmission acquisition adjustment ($5,308,257) associated with PSCo's December 10, 2010 purchase of the Rocky Mountain Energy Center, with the amortization of such acquisition adjustment to be over a period of 55 years; and

(vi) a side-by-side comparison of the actual Formula Rate Template components with the estimated Formula Rate Template components for the True-up Year ("Variance Analysis"). Where an estimated rate base component, when trued-up, is $5,000,000 above or below the actual rate base component, and where an estimated expense or revenue component, when trued-up, is more than five percent (5%) and $500,000 above or below the actual expense or revenue component, PSCo shall provide a written explanation of the reason for such variance. The foregoing limits do not, however, preclude Customers from seeking information for any variance falling below such thresholds.

b. Annual True-up: Actual Rate Calculations

The Annual True-up shall calculate Actual Rates in the following manner:

(i) costs shall be actual costs as reflected in PSCo's FERC Form 1 or Company Records, inclusive of any revisions thereto, for the True-up Year and in any Supplemental Data necessary to complete the Formula Rate Template inputs for the Annual True-up.

(ii) the Actual ATRR, the Actual S19ARR and Actual S1RR will be determined using the same methodologies for calculating the Estimated ATRR, Estimated S19ARR and Estimated S1RR, except to the extent different methodologies are required as a result of

Material Changes identified pursuant to Section 4a(iii); and

(iii) Actual Rates will be determined based upon the Actual ATRR and Actual S1RR, as appropriate, and the actual system transmission peak load.

c. Annual True-up: Customer Meeting

Each year, beginning in 2013, by June 30 (or the next Business Day if June 30 is not a Business Day), PSCo shall convene a meeting ("Annual True-up Customer Meeting") among PSCo and Interested Parties to explain the Annual True-up, including the derivation of the Actual ATRR, Actual S19ARR, Actual S1RR and Actual Rates for the True-up Year. Notwithstanding the foregoing, PSCo and the Customers may mutually agree to a later date for the Annual True-up Customer Meeting. The Annual True-up Customer Meeting shall (i) allow enough time for PSCo to present details about its Annual True-up and (ii) provide the Interested Parties the opportunity to seek information and clarification from PSCo about the Annual True-up. PSCo will accommodate Interested Parties that wish to participate in the Annual True-up Customer Meeting via teleconference or webinar. PSCo shall provide at least fourteen (14) calendar days' prior written notice of the Annual True-up Customer Meeting. Such notice shall be provided no later than the date on which the Annual True-up is provided. Such written notice may be provided by electronic mail to the Interested Parties.

d. Challenge and Review of Annual True-up

The Annual True-up is subject to challenge and review in accordance with the procedures set forth in Section 6 and Section 7 below.

e. Annual True-up: Individual Customer True-up, Refunds and/or Surcharges

The Annual True-up for transmission rates shall include, for each Customer affected by the Annual True-up, a comparison of what the Customer paid for service based on Estimated Rates and what the Customer should have paid based upon Actual Rates ("Customer True-up Adjustment"). In the event the Customer True-up Adjustment reflects an overpayment, PSCo shall refund such overpayment to the affected Customer, with interest determined in accordance with 18 C.F.R § 35.19a, as promptly as possible after PSCo and the Customers comprising the majority of PSCo's network load mutually agree on the Actual Rates and PSCo and the affected Customer agree on the individual Customer True-up Adjustment. In the event that the Customer True-up Adjustment reflects an underpayment, the affected Customer shall pay such underpayment to PSCo, with interest determined in accordance with 18 C.F.R § 35.19a, as promptly as possible after PSCo and the Customers comprising the majority of PSCo's network load mutually agree on the Actual Rates and PSCo and the affected Customer agree on the individual Customer True-up Adjustment; provided, however, if the amount due to PSCo exceeds 10 percent (10%) of the amount previously paid by the Customer in the True-up Year, a Customer may elect to extend such payment to PSCo over not more than twelve (12) months, with interest on the unpaid balance calculated using the interest rate specified in 18 C.F.R. § 35.19a. PSCo shall provide notice to the Customers that no issues have been raised or all issues have been resolved and that PSCo intends to refund to or surcharge Customers thirty (30) days after the issuance of such notice, absent a statement to the contrary from an affected Customer in the thirty (30) days.

The True-Up Adjustment for Schedule 19 will be determined in the following manner:

i. The difference between Actual Revenue Requirement and Estimate Revenue Requirement is calculated (Schedule 19, Attachment 1, Table 2, line 1) to determine any over or under recovery. The True-Up Adjustment and related calculations shall be posted to the Transmission Provider's OASIS no later than June 1 (or if that day falls on a weekend or a holiday recognized by FERC, then the posting shall be due on the next business day) following the issuance of the FERC Form No.1 for the previous year.

ii. Interest on any over or under recovery of the revenue requirement shall be determined based on the Commission's regulation at 18 C.F.R § 35.19a. The interest payable shall be calculated using an average interest rate for the twenty-four (24) months during which the over or under recovery in the revenue requirement (Schedule 19, Attachment 1, Table 4). The interest rate to be applied to the over or under recovery amounts will be determined using the average rate for the twenty-one (21) months preceding October of the current year. The interest amount will be included in the Estimated S19ARR made available on October 1 in accordance with Section 2 above.

iii. The Total Revenue Requirement for transmission services for the following Year shall be the sum of the projected revenue requirement for the following year, plus or minus the True-Up Adjustment (Schedule 19, Attachment 1, Table 1, ln 4) from the previous year, if any, including interest, as explained above. PSCo may accelerate the refund of any over recovery amounts by one year. The interest calculation will be adjusted to reflect the period the over recovery exists.

f. Subsequently Discovered Errors

Any error, defined as a calculation error in the formula rate or an input error in the formula rate or FERC Form No. 1, to the Annual True-up subsequently identified by PSCo or Customer(s), which PSCo and one or more Customers agree affects the Customers' Actual Rates, shall be rectified by PSCo in the Formula Rate Template. PSCo shall reflect the resulting corrected Actual Estimated Rates and/or corrected Ancillary Services Schedule 1, 2, 3, 3A, 5, 6 and 16 Rates in the next billing month after such revision is calculated or such subsequent billing month as is mutually agreeable to PSCo and the Customers. The same procedures shall apply in the event of an error affecting the Actual Rates of an individual customer. There is no time limit with respect to PSCo's obligation to, and right to, correct an error in the implementation of the formula rate.

Section 5 Annual Formula Rate Calendar

As an example and for ease of reference, once the Formula Rate is in effect, the calendaring shall be as follows:

Month	Year	Action
Oct.	2018	Annual Update – No later than the first Business Day in October 2018, PSCo populates the Formula Rate Template with Rate Year 2019 budgeted/estimated data and calculates the Estimated ATRR, Estimated S19ARR, Estimated S1RR, and Estimated Rates to be effective January 1, 2019. PSCo develops Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates, also to be effective January 1, 2019, by populating the Ancillary

		Service Rate Templates with actual data from PSCo's 2017 FERC Form 1 and books and records.
Dec.	2018	PSCo makes any mutually agreed changes to the Annual Update by December 31 (or the next Business Day if December 31 is not a Business Day).
Jan.	2019	PSCo submits the Annual Update, as modified to incorporate any agreed upon changes, as the Annual Informational Filing no later than January 15 (or the next Business Day if January 15 is not a Business Day).
April	2019	Annual PBOP Filing - On or before April 1, PSCo files for Commission approval actuarial studies for the prior calendar year (Rate Year 2022) showing the PBOP amounts to be booked for such Rate Year which, when approved by the FERC, will be used in the Annual True-Up for such prior Rate Year (Rate Year 2022).
June	2019	Annual True-up - No later than the first Business Day in June 2023, PSCo populates the Rate Year 2022 Formula Rate Template with Rate Year 2022 actual data, calculates the Actual ATRR, Actual Schedule 19 Rate, Actual S1RR, Actual Rates, and Customer True-up Adjustments.
Oct.	2019	Annual Update – No later than the first Business Day in October 2023, PSCo populates the Formula Rate Template with Rate Year 2014 budgeted/estimated data and calculates the Estimated ATRR, Estimated ARR, Estimated S1RR, and Estimated Rates to be effective January 1, 2024. PSCo develops the Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates, also to be effective January 1, 2024, by populating the respective Ancillary Service Rate Templates with actual 2022 data from PSCo's 2022 FERC Form 1 and books and records.
Dec.	2019	PSCo makes any mutually agreeable changes to the Annual Update by December 31 (or the next Business Day if December 31 is not a Business Day).
Jan.	2020	PSCo submits the Annual Update, as modified to incorporate any agreed upon changes, as the Annual Informational Filing no later than January 15 (or the next Business Day if January 15 is not a Business Day).
April	2020	Annual PBOP Filing - On or before April 1, PSCo files, for Commission approval, actuarial studies for the prior calendar year (Rate Year 2019) showing the PBOP amounts to be booked for such Rate Year, which when approved by the FERC will be used in the Annual True-Up for such prior Rate Year (Rate Year 2019).
June	2020	Annual True-up - No later than the first Business Day in June 2020, PSCo populates the Rate Year 2019 Formula Rate Template with Rate Year 2019 actual data, calculates the Actual ATRR, Actual S19ARR, Actual

S1RR, Actual Rates, and Customer True-up Adjustments.

Oct.	2020	Annual Update – No later than the first Business Day in October 2020, PSCo populates the Formula Rate Template with Rate Year 2021 budgeted/estimated data and calculates the Estimated ATRR, Estimated S19ARR, Estimated S1RR, and Estimated Rates to be effective January 1, 2021. PSCo develops the Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates, also to be effective January 1, 2021, by populating the respective Ancillary Service Rate Templates with actual 2019 data from PSCo's 2019 FERC Form 1 and books and records.

This sequencing pattern thereafter continues.

Section 6 Annual Review Procedures

Each Annual Update and Annual True-up shall be subject to the following review procedures ("Annual Review Procedures"):

a. Customer Review

In the course of the two-stage Annual Review each year, Interested Parties shall have one hundred and thirty (130) calendar days after each of the Annual Update Customer Meeting and the Annual True-up Customer Meeting to serve information requests ("Data Requests") on PSCo with respect to the Annual Update and the Annual True-up, respectively. The Data Requests may be directed at any aspect of the implementation of or the inputs used in the Annual Update or Annual True-up, including the derivation of Estimated Rates, Actual Rates, Ancillary Service Schedule 1, 2, 3, 3A, 5, 6 and 16 Rates, or any associated issue raised at the Annual Update Customer Meeting or the Annual True-up Customer Meeting. The deadline for discovery may be extended by mutual consent. Nothing in this Section 6.a shall prohibit Interested Parties from submitting information requests to PSCo concerning the Annual Update and the Annual True-up, respectively, after the posting of the Annual Update and the Annual True-up but prior to the Annual Update Customer Meeting or the Annual True-up Customer Meeting.

b. PSCo Response to Data Requests

PSCo shall make a good faith effort to respond to any Data Requests within ten (10) Business Days after receipt. If a response requires additional time to prepare, PSCo shall promptly inform the requesting Interested Party and shall provide the response as soon as possible, but in no event later than thirty (30) calendar days after PSCo's receipt of the Data Request, unless the parties mutually agree otherwise. All Interested Parties shall be provided PSCo's responses to all Data Requests via electronic mail or other mutually acceptable means.

c. Discovery Dispute Resolution

To the extent PSCo and any Customer(s) are unable to resolve disputes related to any Data

Request or the adequacy of any response, PSCo or any Customer(s) may petition FERC to appoint an Administrative Law Judge as a discovery master. The discovery master shall have the power to issue binding orders to resolve discovery disputes and compel the production of discovery relating to application of the Formula Rate or population of the Formula Rate Template for the Rate Year in question, as appropriate, in accordance with these Implementation Procedures.

d. Use of Information from Annual Review Procedures

All information and correspondence produced pursuant to these Annual Review Procedures may be used in any Formal Challenge (as defined in Section 7.c., below) concerning the Formula Rate, any Federal Power Act ("FPA") Section 205, 206 or 306 filing concerning the Formula Rate, or in any other proceeding concerning the Formula Rate initiated at FERC pursuant to the FPA.

e. Confidential Information

PSCo may designate any response to a Data Request as confidential if the information conveyed in the response is not publicly available. Interested Parties shall treat such a designated response as non-public information provided in confidence. Interested Parties may use confidential responses to Data Requests in connection with any informal dispute resolution process commenced pursuant to Section 7. Interested Parties may also use confidential responses to Data Requests in any Formal Challenge (as defined in Section 7.c., below) concerning the Formula Rate, in any FPA Section 205, 206 or 306 filing concerning the Formula Rate, or in any other proceeding concerning the Formula Rate initiated at FERC pursuant to the FPA; provided, however, when so used, such Data Response(s) shall initially be filed under seal (unless the claim of confidentiality is waived by PSCo), subject to a later determination by the presiding administrative authority that the material is, in whole or in part, not entitled to confidential treatment.

Section 7 Annual Update and Annual True-up Informal Resolution Procedures and Challenges

PSCo and the Customer(s) shall undertake good faith efforts to resolve any disputes through the informal dispute resolution procedures described below before a Formal Challenge is filed with FERC.

a. Specific Challenges

Unless the parties mutually agree otherwise, any Customer shall have the longer of one hundred and seventy-five (175) calendar days after an Annual Update Customer Meeting and after an Annual True-up Customer Meeting or fifteen (15) calendar days after PSCo has fully responded to all proper and timely Data Requests related to an Annual Update or an Annual True-up, to review the Annual Update or the Annual True-up and notify PSCo in writing of specific challenges to such Annual Update or Annual True-up. PSCo or Customer(s) may request, with at least ten (10) calendar days' written notice, that additional meetings be held between PSCo and Interested Parties to discuss specific areas of concern. Failure to notify PSCo of a specific challenge to an Annual Update or an Annual True-up within such time limits shall not bar pursuit of informal dispute resolution of such issue(s) by a specific challenge made in a subsequent Annual Update or Annual True-up.

b. Informal Dispute Resolution

Non-executive representatives of PSCo and the Customer(s) shall attempt to resolve a specific challenge within thirty (30) calendar days of written notification (or a longer period if the parties mutually agree to extend such period) of such specific challenge. If non-executive representatives are unable to resolve a specific challenge, senior management representatives of PSCo and the Customer(s), who have the authority to negotiate and settle such disputes, shall meet and attempt to resolve the specific challenge. All Interested Parties will be served notice of each specific challenge and copies of correspondence related thereto.

c. Formal Dispute Resolution

If the senior management representatives of PSCo and the Customer(s) are unable to resolve a specific challenge within thirty (30) calendar days after the dispute is referred to them (or a longer period if the parties mutually agree to extend such period), then the Customer(s) may pursue such formal dispute resolution as may be available to them under the Federal Power Act and FERC's regulations ("Formal Challenge"). PSCo may raise both substantive and procedural defenses against such a Formal Challenge except as set out at the end of the following sentence. A decision not to file a Formal Challenge for a given Annual True-up or Annual Update, does not preclude the Customers raising the same or other issues as a specific challenge to a subsequent Annual Update or Annual True-up and, if they take that action, PSCo shall not assert that the prior failure to file a Formal Challenge is evidence of an accepted ratemaking practice.

d. Burden of Proof

In any proceeding ordered by FERC in response to a Formal Challenge raised under these Implementation Procedures, PSCo shall have the ultimate burden of proof as to the justness and reasonableness of the charges resulting from its application of the Formula Rate, and as to whether it properly applied the Formula Rate and these Implementation Procedures.

Section 8 Changes to Stated Inputs in the Formula Rate

a. Stated Inputs

The following Formula Rate inputs, as agreed to in the settlement of Docket No. ER12-1589-000, shall be stated values to be used in the Formula Rate (both for the Annual Update and the Annual True-up) until changed by a filing pursuant to Section 205 of the FPA or by order of the Commission pursuant to Section 206 of the FPA:

(i) the rate of return on common equity ("ROE");

(ii) depreciation rates and amortization periods, including amortization periods for FERC-approved regulatory assets and liabilities and acquisition adjustments (as set forth in Table 25 to the Formula Rate);

(iii) the actual costs of Post-Employment Benefits Other than Pensions pursuant to Statement of Financial Accounting Standards No. 106 Employers' Accounting for PBOP charges, as approved by Order of the FERC;

(iv) Percent of Production Plant for Dual Use;

(v) Real Power Losses;

(vi) Ancillary Service Schedules 3, 3A 5, 6, and 16 percentage of reserved capacity used for billing purposes; and

(vii) Ancillary Service Schedules 3 and 3A, and 16 Required Capacity, and 12 Coincident Peak Load used to calculate the Reserve Obligation.

b. ROE

The stated return on common equity ("ROE"), effective November 17, 2012, shall be established pursuant to a final Commission order on ROE in Docket No. ER12-1589-000. Thereafter, the ROE shall not be changed unless and until PSCo or the Customer(s) has (have) filed for a different ROE pursuant to Section 205 and 206 of the FPA, respectively.

c. PBOP Charges

PBOP charges shall be determined for each Annual True-Up pursuant to the procedure described in Section 3.

d. Cash Working Capital

The stated amount for Cash Working Capital ("CWC") shall be set at zero dollars and shall not be changed until PSCo or the Customer(s) has(have) filed for a different level of recovery pursuant to Section 205 and 206 of the FPA, respectively.

e. Extraordinary Property Losses

The balance for Extraordinary Property Losses shall be set at zero dollars and shall not be changed until PSCo has filed under Section 205 of the FPA for recovery of such loss(es) and FERC has authorized the recovery of such losses. The FERC-approved amortized annual amount for Extraordinary Property Losses shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincide with the approved amortization period.

f. Construction Work in Progress

The balance for Construction Work in Progress ("CWIP") shall be set at zero dollars and shall not be changed until PSCo has filed for and received FERC approval to include CWIP related to specific projects in rate base for the Formula Rate pursuant to a filing under Section 205 of the FPA.

g. Abandoned Plant

The balance for Abandoned Plant shall be set at zero dollars and shall not be changed until PSCo has filed under Section 205 of the FPA for recovery of costs associated with Abandoned Plant and FERC has approved the recovery of such costs together with an allowable annual amount and an amortization period. The FERC-approved amortized annual amount for costs associated with Abandoned Plant shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincide with the approved amortization period.

h. Formula Rate Inputs Not Requiring FERC Filing

As distinguished from the Formula Rate restrictions with respect to CWIP, CWC, Extraordinary Property Losses, and Abandoned Plant where PSCo must make a FPA Section 205 filing to change an existing Formula Rate input of zero dollars, the Formula Rate may, in any given year, reflect a number of FERC Accounts where the Formula Rate inputs also are zero dollars. For those years in which there the Formula Rate inputs are other than zero dollars, PSCo may change such inputs without the need to make a FPA Section 205 filing with FERC. Such Formula Rate inputs include but may not be limited to the following:

(i) scheduling, system control and dispatch services operating expense (recorded in FERC Account 561.4);

(ii) underground lines operating expense (recorded in FERC Account 564);

(iii) maintenance of structures (recorded in FERC Account 569);

(iv) maintenance of computer hardware, computer software, communication equipment and regional transmission plant (recorded in FERC Accounts 569.1, 569.2, 569.3 and 569.4);

(v) maintenance of underground lines (recorded in FERC Account 572);

(vi) maintenance of miscellaneous transmission plant (recorded in FERC Account 573);

(vii) franchise requirements (recorded in FERC Account 927);

(viii) preferred stock (recorded in FERC Account 204);

(ix) preferred stock dividends (recorded in FERC Account 437);

(x) interest on debt to associated companies, long-term debt portion only (recorded in FERC Account 430);

(xi) amortization of premium on debt (recorded in FERC Account 429); and,

(xii) amortization of gain on reacquired debt (recorded in FERC Account 429.1).

i. Asset Retirement Obligations

There are no Asset Retirement Obligations ("AROs") recovered in the Formula Rate. Any proposal by PSCo to recover AROs will require a FPA Section 205 filing.

j. Mountain Pine Beetle

PSCo filed in FERC Docket No. ER12-1589-000 to include and thereby recover in the Formula Rate, effective January 1, 2013, a proposed two-year amortization of the costs PSCo incurred combating the Mountain Pine Beetle infestation of Colorado forests for the period prior to January 1, 2013. These costs have been deferred as authorized by the Commission in Docket No. AC11-186-000. The parties to the docket agreed by settlement to a three-year amortization. When approved by the Commission in Docket No. ER12-1589-000, these costs shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincides with the amortization period accepted by the Commission.

k. San Luis-Calumet-Comanche Transmission Project

PSCo filed in Docket No. ER12-1589-000 to include and thereby recover in the Formula Rate a proposed two-year amortization of 50 percent (50%) of the pre-construction costs that PSCo incurred in connection with the San Luis-Calumet-Comanche transmission project. PSCo will no longer build this project. The parties to the docket agreed by settlement to a three-year amortization. When approved by the Commission in Docket No. ER12-1589-000, these costs shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincides with the amortization period accepted by the Commission. The Wholesale share of 50 percent of the pre-construction costs will be recovered in the formula rates over a 3 year period beginning with the effective date of the Formula Rate. The Wholesale share of the other 50 percent will be booked to Account No. 426.5 and absorbed by the Company.

l. Rate Case Expenses

PSCo filed in Docket No. ER12-1589-00 to include and thereby recover in the Formula Rate a proposed two-year amortization of rate case expenses that PSCo incurred in connection with approval of the Formula Rate. The parties to the docket agreed by settlement to a three-year amortization. When approved by the Commission in Docket No. ER12-1589-000, these costs shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincides with the amortization period accepted by the Commission.

As distinguished from the expenses associated explicitly with Docket No. ER12-1589-000, ongoing expenses associated with the Formula Rate (*e.g.*, Annual Update costs; Annual True-up costs) shall be expensed in the Rate Year in which such costs are incurred.

Section 9 Changes to Annual True-Up

Changes to PSCo's FERC Form 1 data or changes that affect Supplemental Data, which changes are made subsequent to completion of the Annual True-up, shall trigger a True-up Adjustment to be reflected in the subsequent Annual True-up. Any change to such input data will be provided by PSCo to the Customer(s) as soon as possible, together with an explanation of the change(s) and a repopulated Formula Rate Template for the applicable Rate Year(s) that demonstrates the effect of the change. Customers shall have all of the rights afforded by these Implementation Protocols to investigate and protest such changes, with all dates running from the date PSCo provides the Customer(s) with changed input data.

Section 10 Changes to or Termination of Formula Rates

PSCo and Customers reserve their respective rights under Sections 205 and 206 of the FPA, respectively, to seek modification of or termination of the Formula Rate. PSCo shall provide to the Customers a copy of any proposed Section 205 filing at least thirty (30) calendar days prior to making the filing and shall offer to meet with Interested Parties to discuss the proposed filing prior to its submission to FERC. The Customers shall provide similar advance notice and opportunity to meet prior to making a Section 206 filing. Unless PSCo and the Customers(s) mutually agree otherwise, PSCo or the Customer(s) shall request in any such FPA Section 205 or 206 that the effectiveness of any proposed modification or termination of the Formula Rate be coincident with the beginning of the next Rate Year.

The advance notification and meeting requirements set forth above shall not apply in the event that FERC mandates any changes in the format of the FERC Form 1 or the USoA, or otherwise issues a ruling that necessitates a modification to the Formula Rate. In such event, PSCo may propose a modification to the Formula Rate without notice by making a FPA Section 205 filing at any time. Such filing, however, may not be used by either PSCo or Customers to raise issues unrelated to such FERC-required changes. Moreover, if such a change in the Formula Rate is required for the reasons described in this paragraph, the FPA Section 205 filing may include a request for waiver of applicable notice requirements as may be necessary to permit the change to become effective for the Annual Update or Annual True-up for the applicable Rate Year.

Section 11 True-up for Departed Customer

A Customer that ceases taking transmission service from PSCo will remain subject to the true-up provisions of the Formula Rate applicable to the Estimated Rates collected during the period of time that the Customer was taking service pursuant to the Formula Rate. As the result of such true-up, the departed Customer may be liable for an additional payment due to PSCo or entitled to a refund from PSCo. The True-up calculation will be made as part of the Annual True-up and, therefore, may not be available coincident with the date of the Customer's departure.

Section 12 Miscellaneous

a. Inter-Company Cost Allocation

It is understood that Xcel Energy Services Inc. ("XES"), PSCo's service company affiliate, may undertake activities on behalf of PSCo under these Implementation Procedures. XES will allocate certain costs among PSCo and PSCo's affiliates pursuant to the allocation methodology in place at the time the Formula Rate becomes effective, as set forth in PSCo's 2011 FERC

Form No. 60. PSCo will advise the Customers of any proposed change to such allocation methodology pursuant to Section 4(a)(iii). Any proposed modification to the allocation methodology that has the effect of increasing charges produced by the Formula Rate shall be subject to Section 7 of these Implementation Procedures.

b. Customer Right to Audit

Any Customer shall have the right not more than once in any twelve (12) month period to audit, at Customer's expense, PSCo's books and records. A Customer requesting to audit PSCo's books and records shall give a minimum of (14) calendar days' written notice to PSCo of its desire to conduct an audit. PSCo may schedule the timing of Customer Audit such that it does not conflict with other scheduled audits. PSCo shall notify all Customers of a Customer-initiated audit request and shall cooperate with Customers seeking to conduct a joint audit. In the event the audit reveals any errors in the Annual True-up, PSCo and the Customer(s) shall resolve such errors in accordance with Section 7 of these Implementation Procedures.

c. No Waiver of Statutory Rights

Nothing contained in these Transmission Formula Rate Implementation Procedures shall limit or prohibit the right of any Customer to file a request for relief under Sections 206 or 306 of the FPA and FERC's regulations to challenge PSCo's application of the Formula Rate or the prudence of any expense flowed through the formula rate or to seek to change or terminate the Formula Rate.

Marked Tariff Pages

Appendix 1

Public Service Company of Colorado ("PSCo" or "Company")
Transmission Formula Rate Implementation Procedures

Section 1 Applicability

The formula rate template ("Formula Rate Template") and these Transmission Formula Rate Implementation Procedures ("Implementation Procedures") (collectively, the "Formula Rate") together comprise PSCo's filed transmission rates and ancillary services rates.~~–~~ PSCo shall follow the Formula Rate to calculate its Annual Transmission Revenue Requirement ("ATRR"), the monthly rate for Network Integration Transmission Service ("NITS Rate"), the monthly rates for Point-to-Point Transmission Service ("PTP Rates"), the Annual Ancillary Services Schedule 1 Revenue Requirement ("S1RR") and the monthly rates for Ancillary Services Schedule 1 - Scheduling, System Control and Dispatch Service ("Schedule 1 Rates"), Ancillary Services Schedule 2 - Reactive Supply and Voltage Control from Generation or Other Sources Service ("Schedule 2 Rates"), Ancillary Service Schedule 3 - Regulation and Frequency Response Service ("Schedule 3 Rates"), "), Ancillary Services Schedule 3A – Regulation and Frequency Response Service for Point-to-Point Transmission Service for exports from the PSCo Balancing Authority Area ("Schedule 3A Rates"), Ancillary Services Schedule 5 - Operating Reserve - Spinning Reserve Service ("Schedule 5 Rates"), Ancillary Services Schedule 6 - Operating Reserve Supplemental Reserve Service ("Schedule 6 Rates"), Ancillary Services Schedule 16 – Flex Reserve Service ("Schedule 16 Rates"),~~-~~ and Schedule 19 – Rush Creek Gen-Tie Charge ("Schedule 19 Rates") for the PSCo rate zone under the Xcel Energy Operating Companies ("Xcel Energy") Open Access Transmission Tariff ("Joint OATT").

The Formula Rate shall be effective for service on and after November 17, 2012 for each full or partial calendar year (the "Rate Year" or "Formula Rate Year"), subject to the implementation, review, challenge and true-up procedures of these Implementation Procedures. The Schedule 19 Rate shall be effective for service on and after August 1, 2018 for each full or partial calendar year (the "Rate Year" or "Formula Rate Year"), subject to the implementation, review, challenge and true-up procedures of these Implementation Procedures.

The customers taking NITS service and the customers taking PTP service or customers taking Interconnection Service over the Rush Creek Gen-Tie are hereinafter referred to, collectively, as "Customers" or "Transmission Customers~~.~~" or "Gen-Tie Customers." The forecasted ATRR is referred to as the "Estimated ATRR," the forecasted S1RR is referred to as the "Estimated S1RR", the forecasted Gen-Tie ARR is referred to as the "Estimated S19ARR," and the forecasted NITS Rate, PTP Rates, Schedule 19 Rates, and Ancillary Services Schedule 1 Rates are collectively referred to as the "Estimated Rates." In the spring of the year following the Rate Year, the Estimated ATRR, Estimated S19ARR and the Estimated S1RR will be trued-up, as described herein, based on actual data for the Rate Year, to establish the Actual ATRR, Acrual S19ARR and Actual S1RR. As part of such true-up (the "Annual True-up"), PSCo also will calculate the Actual NITS Rate, Actual PTP Rates, Actual Schedule 19 Rates and Actual Ancillary Services Schedule 1 Rates (collectively or individually referred to as the "Actual Rates"). PSCo will calculate the rates for Ancillary Services Schedules 2, 3, 3A 5, 6 and 16 for each Rate Year based on actual data from PSCo's most recently filed Federal Energy Regulatory Commission FERC Form 1 ("FERC Form 1") and such rates are not subject to the

Annual True-up.

The Federal Energy Regulatory Commission ("FERC" or "Commission") annually determines the FERC Annual Charge and PSCo assesses the charge to its Transmission Customers. The FERC Annual Charge is shown on the Formula Rate Template rate sheet for ease of reference but it is a pass through of the FERC-calculated charge and is not part of the Formula Rate calculations or subject to the Annual True-up.

Section 2 Annual Update for Upcoming Rate Year

No later than October 1 of each year (or, if October 1 is a weekend day or a holiday recognized by FERC, the first day following such weekend day or holiday that FERC is open for business ("Business Day")), PSCo shall post the Estimated ATRR, the Estimated S19ARR, the Estimated S1RR, the Estimated Rates, and the Ancillary Services Schedule 2, 3, 5 and 6 Rates for the upcoming Rate Year, to be effective beginning January 1 of the upcoming Rate Year ("Annual Update"). PSCo shall post the Annual Update on the Transmission OATT page of the Xcel Energy website (www.xcelenergy.com <http://www.xcelenergy.com>) and on the PSCo OASIS (wesTTrans.net OASIS or any successor OASIS) (hereinafter, "PSCo OASIS"), in a location that is accessible by the general public. PSCo shall simultaneously notify its Customers electronically that the Annual Update is available for their review.

a. Annual Update: Components

The Annual Update shall include the following:

(i) a data-populated version of the Formula Rate Template, including fully functioning Excel® files, setting forth the Estimated ATTR, the Estimated S19ARR, the Estimated S1RR, the Estimated Rates and the Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates for the next Rate Year;

(ii) supporting documentation, including, but not limited to, fully functioning Excel® files (or other such native format files) and workpapers required to support, demonstrate and explain the information upon which the Annual Update is based;

(iii) disclosure of the Material Changes to the extent (a) such changes have taken effect since January 1, 2012 for the first Annual Update in October 2012 and, thereafter, in subsequent

, any such changes that have taken place since the immediately prior Annual Update; and (b) any such changes affect the Formula Rate, calculation of the Annual Update or the allocation of costs or revenues to PSCo's Customers. For purposes of these Implementation Procedures, "Material Changes" are changes in (1) FERC's Uniform System of Accounts ("USoA"), (2) FERC Form No. 1 reporting requirements as applicable, and (3) the accounting policies, practices, or procedures of PSCo. Material Changes also include (4) changes directed by FERC orders applicable to the Formula Rate or accounting orders applicable to PSCo that affect accounts providing inputs directly or indirectly to the Formula Rate Template, (5) disclosure of any errors in the FERC Form No. 1, the Formula Rate Template, or accounting data that impacts the Formula Rate in the upcoming Rate Year or previous Rate Years;

(iv) a list of each transmission, general, intangible, and electric common annual capital addition;

(v) the Common Plant Study that is the basis of the common plant allocation factors used in the Annual Update; and

(vi) Detail of the amount included in rate base and the amortization of the wholesale share of the transmission serving transmission acquisition adjustment ($5,308,257) associated with PSCo's December 10, 2010 purchase of the Rocky Mountain Energy Center, with the amortization of such acquisition adjustment to be over a period of 55 years.

b. Annual Update: Estimated Rates

The Annual Update shall compute the Estimated Rates based upon PSCo's most recent budget for the upcoming Rate Year and supplemental data from PSCo's books and records concerning the upcoming Rate Year ("Supplemental Data") that reasonably project transmission peak demands and costs properly recorded (or to be recorded) on its books consistent with the USofA, FERC's orders establishing generally applicable transmission ratemaking policies, and FERC accounting policies and directives. The Estimated Rates shall be developed in the following manner:

(i) an average of 13-monthly balances shall be applied to: (a) gross plant balances and gross plant adjustments for all plant functions, excluding generator step-ups; (b) accumulated depreciation and amortization reserve balances and depreciation reserve adjustments for all plant functions, excluding generator step-ups; (c) capital structure balances inclusive of long-term debt, preferred stock, and common equity; (d) the following Other Rate Base Items: Future Use Land and Land Rights, Materials and Supplies, Prepayments Regulatory Liabilities, and Construction Work In Progress ("CWIP") and related pre-funded Allowance for Funds Used During Construction ("AFUDC") (if and when the inclusion of CWIP in rate base is approved by FERC); and (e) the transmission-related acquisition adjustments permitted by FERC order to be included in the Formula Rate for ratemaking purposes; and

(ii) an average of the beginning of year and end of year balances shall be applied to Accumulated Deferred Income Taxes.

c. Annual Update: Ancillary Services Schedule 2, 3, 3A, 5, 6 and 16 Rates

PSCo will calculate the rates for Ancillary Service Schedules 2, 3, 3A, 5, 6 and 16 using actual data from PSCo's most recently filed FERC Form 1. For example, the Schedule 2, 3, 3A, 5, 6 and 16 rates to become effective as of November 17, 2012 for the remaining months in Rate Year 2012 will be based on PSCo's 2010 FERC Form 1. The Schedule 2, 3, 3A, 5, 6 and 16 rates to become effective January 1, 2013 will be based on PSCo's 2011 FERC Form 1. Ancillary Services Schedule 2, 3, 3A, 5, 6 and 16 rates are not subject to the Annual True-up.

d. Annual Update: Customer Meeting

Each year, no later than October 20 (or the next Business Day if October 20 is not a Business Day), PSCo shall convene a meeting ("Annual Update Customer Meeting") among PSCo, its Customers and their respective designated representatives (collectively, "Interested Parties") to explain the Annual Update, including the derivation of the Estimated Rates and, the Ancillary Services Schedule 2, 3, 3A, 5, 6 and 16~~.~~ Rates for the next Rate Year. Notwithstanding the foregoing, PSCo and the Customers may mutually agree to a later date for the Annual Update Customer Meeting. The Annual Update Customer Meeting shall (i) allow enough time for PSCo to present details about its Annual Update and (ii) provide the Interested Parties the opportunity to seek information and clarification from PSCo about the Annual Update. PSCo will accommodate Interested Parties that wish to participate in the Annual Update Customer Meeting via teleconference or webinar. PSCo shall provide at least fourteen (14) calendar days' prior written notice of the Annual Update Customer Meeting. Such notice shall be provided no later than the time the Annual Update is provided. Such written notice may be provided by electronic mail to the Interested Parties.

e. Modification of Annual Update

PSCo shall modify the Annual Update to reflect any changes that it and the Customers comprising the majority of PSCo's network load have mutually agreed upon as of December 31 (or the next Business Day if December 31 is not a Business Day). If there are mutually agreed upon changes, PSCo shall post a Revised Annual Update incorporating the agreed changes as soon as possible after such agreement, but no later than January 15 (or the next Business Day if January 15 is not a Business Day). PSCo shall simultaneously notify the Customers of the posting.

f. Challenge and Review of Annual Update

The Annual Update is subject to review and challenge in accordance with the procedures set forth in Section 6 and Section 7 below.

g. Annual Update: Informational Filing

By January 15 (or the next Business Day if January 15 is not a Business Day), PSCo shall file with FERC the Annual Update, as revised to reflect any changes that PSCo and the Customers comprising the majority of PSCo's network load have mutually agreed upon pursuant to Section 2e ("Annual Informational Filing"). The Annual Informational Filing will include both portable document format ("PDF") and fully functioning Excel® files (or other such native format files) of the Annual Update. The Annual Informational Filing shall not require action by FERC.

h. Subsequently Discovered Errors

Any error, defined as a calculation error in the formula rate or an input error in the formula rate or FERC Form No. 1, to the Annual Update identified by PSCo or Customer(s) during the Formula Rate Year, which PSCo and one or more Customers agree affects the Customers' Estimated Rates, shall be rectified by PSCo in the Formula Rate Template. PSCo shall implement the resulting revised Estimated Rates and/or revised Ancillary Services Schedule 1, 2, 3, 5 or 6 Rates in the next billing month after such revision is calculated. To the extent such error affects months prior to the month that PSCo and Customer(s) agree that an error should be rectified, the correction for such months will be reflected in the subsequent Annual True-up (as defined in Section 4, below) and there shall be no intra-Rate Year refund or surcharge associated with such error. The same procedures shall apply in the event of an error affecting the Estimated Rates of an individual customer. Once the Formula Rate Year is complete, there shall no longer be a requirement to correct the Estimated Rates for such year. Any such correction to address the error shall be made to the Actual Rates for such Formula Rate Year at the time of the Annual True-up or thereafter should the error be discovered after the Annual True-up. *See* Section 4.f. below.

Section 3 Post-Employment Benefits Other Than Pensions ("PBOP") Filing

The PBOP charges included in each Annual Update shall be the actual FERC-approved PBOP cost booked to FERC Account 926 for the prior Rate Year.

On or before April 1 of each year, an Actuarial Study supporting PSCo's proposed actual PBOP costs for the prior Rate Year will be filed with the Commission for approval under FPA Section 205 ("PBOP Filing"). The PBOP Filing will be posted and provided to Customers. The actual PBOP costs for the prior Rate Year that are approved by FERC shall be used for the annual true-up ("Annual True-up") of such prior Rate Year. PSCo expects, absent extraordinary circumstances, that the Commission will have acted on the April 1st PBOP filing in time for inclusion of the FERC-approved actual PBOP costs in the Annual True-up of such prior Rate Year. In the event the Commission has not acted on the April 1st PBOP filing by the time PSCo posts the Annual True-Up, PSCo will include its actual costs pending approval from FERC in the initial posting of the Annual True-Up, but will ultimately reflect, before the true-up is finalized, the Commission-approved PBOP costs for such prior Rate Year, if they are different.

With respect to the Estimated Rates for the upcoming Formula Rate Year, PSCo will use the budgeted PBOP costs for each such Rate Year in the Annual Update, subject to true-up. For example, the 2012 Estimated Rates will use the 2012 estimated PBOP costs but, by the time that the 2012 Estimated Rates are trued-up in 2013, PSCo will have and will use the FERC-approved actual 2012 PBOP costs in the Annual True-up for Rate Year 2012. Similarly, the 2013 Estimated Rates will use the 2013 estimated PBOP costs, but when the 2013 Estimated Rates are trued-up in 2014, PSCo will have and will use the actual FERC-approved 2013 PBOP costs for the Annual True-up of Rate Year 2013. Annually, PSCo will fund to an external trust the PBOP costs collected pursuant to the Formula Rate.

Section 4 Annual True-up

Beginning in 2013, by no later than June 1 of each Rate Year (or the next Business Day if June 1 is not a Business Day), PSCo shall true-up the Annual Update for the prior Rate Year (the "True-up Year"). The annual true-up ("Annual True-Up") shall establish the Actual ATRR, the Actual S19ARR, the Actual S1RR, and the Actual Rates for True-up Year based on PSCo's actual costs as reflected in its FERC Form No. 1 and its books and records (maintained in accordance with the FERC's Uniform System of Accounts ("USofA")) for such True-up Year. PSCo shall post the Actual ATRR, the Actual S19ARR, the Actual S1RR and the Actual Rates for the True-up Rate Year on the Transmission OATT page of the Xcel Energy website and on the PSCo OASIS, in a location that is accessible by the general public. PSCo shall simultaneously notify its Customers electronically that the Annual True-up is available for their review.

a. Annual True-up: Components

The Annual True-up shall include the following:

(i) a data-populated version of the Formula Rate Template, including fully functioning Excel® files, setting forth the Actual ATTR, the Actual S19ARR, the Actual S1RR and the Actual Rates;

(ii) supporting documentation, including, but not limited to, fully functioning Excel® files (or other such native format files) and workpapers required to support and explain information upon which the Annual True-up is based;

(iii) disclosure of the Material Changes to the extent (a) such changes have taken effect since January 1, 2012 for the first Annual True-Up in June 2013 and, thereafter, in subsequent Annual True-Ups, any such changes that have taken place in the True-Up Year (January 1 – December 31 of the calendar year immediately prior to the June True-Up); and (b) any such changes affect the Formula Rate, calculation of the True-up or the allocation of costs or revenues to PSCo's Customers;

(iv) a list of each transmission, general, intangible, and electric common annual capital addition;

(v) Detail of the amount included in rate base and the amortization of the wholesale share of the transmission serving transmission acquisition adjustment ($5,308,257) associated with PSCo's December 10, 2010 purchase of the Rocky Mountain Energy Center, with the amortization of such acquisition adjustment to be over a period of 55 years; and

(vi) a side-by-side comparison of the actual Formula Rate Template components with the estimated Formula Rate Template components for the True-up Year ("Variance Analysis"). Where an estimated rate base component, when trued-up, is $5,000,000 above or below the actual rate base component, and where an estimated expense or revenue component, when trued-up, is more than five percent (5%) and $500,000 above or below the actual expense or revenue component, PSCo shall provide a written explanation of the reason for such variance. The foregoing limits do not, however, preclude Customers from seeking information for any variance falling below such thresholds.

b. Annual True-up: Actual Rate Calculations

The Annual True-up shall calculate Actual Rates in the following manner:

(i) costs shall be actual costs as reflected in PSCo's FERC Form 1 or Company Records, inclusive of any revisions thereto, for the True-up Year and in any Supplemental Data necessary to complete the Formula Rate Template inputs for the Annual True-up.

(ii) the Actual ATRR, the Actual S19ARR and Actual S1RR will be determined using the same methodologies for calculating the Estimated ATRR, Estimated S19ARR and Estimated S1RR, except to the extent different methodologies are required as a result of Material Changes identified pursuant to Section 4a(iii); and

(iii) Actual Rates will be determined based upon the Actual ATRR and Actual S1RR, as appropriate, and the actual system transmission peak load.

c. Annual True-up: Customer Meeting

Each year, beginning in 2013, by June 30 (or the next Business Day if June 30 is not a Business Day), PSCo shall convene a meeting ("Annual True-up Customer Meeting") among PSCo and Interested Parties to explain the Annual True-up, including the derivation of the Actual ATRR, Actual S19ARR, Actual S1RR and Actual Rates for the True-up Year. Notwithstanding the foregoing, PSCo and the Customers may mutually agree to a later date for the Annual True-up Customer Meeting. The Annual True-up Customer Meeting shall (i) allow enough time for PSCo to present details about its Annual True-up and (ii) provide the Interested Parties the opportunity to seek information and clarification from PSCo about the Annual True-up. PSCo will accommodate Interested Parties that wish to participate in the Annual True-up Customer Meeting via teleconference or webinar. PSCo shall provide at least fourteen (14) calendar days' prior written notice of the Annual True-up Customer Meeting. Such notice shall be provided no later than the date on which the Annual True-up is provided. Such written notice may be provided by electronic mail to the Interested Parties.

d. Challenge and Review of Annual True-up

The Annual True-up is subject to challenge and review in accordance with the procedures set forth in Section 6 and Section 7 below.

e. Annual True-up: Individual Customer True-up, Refunds and/or Surcharges

The Annual True-up for transmission rates shall include, for each Customer affected by the Annual True-up, a comparison of what the Customer paid for service based on Estimated Rates and what the Customer should have paid based upon Actual Rates ("Customer True-up Adjustment"). In the event the Customer True-up Adjustment reflects an overpayment, PSCo shall refund such overpayment to the affected Customer, with interest determined in accordance with 18 C.F.R § 35.19a, as promptly as possible after PSCo and the Customers comprising the majority of PSCo's network load mutually agree on the Actual Rates and PSCo and the affected Customer agree on the individual Customer True-up Adjustment. In the event that the Customer True-up Adjustment reflects an underpayment, the affected Customer shall pay such underpayment to PSCo, with interest determined in accordance with 18 C.F.R § 35.19a, as promptly as possible after PSCo and the Customers comprising the majority of PSCo's network load mutually agree on the Actual Rates and PSCo and the affected Customer agree on the individual Customer True-up Adjustment; provided, however, if the amount due to PSCo exceeds 10 percent (10%) of the amount previously paid by the Customer in the True-up Year, a Customer may elect to extend such payment to PSCo over not more than twelve (12) months, with interest on the unpaid balance calculated using the interest rate specified in 18 C.F.R. § 35.19a. PSCo shall provide notice to the Customers that no issues have been raised or all issues have been resolved and that PSCo intends to refund to or surcharge Customers thirty (30) days after the issuance of such notice, absent a statement to the contrary from an affected Customer in the thirty (30) days.

The True-Up Adjustment for Schedule 19 will be determined in the following manner:

i. The difference between Actual Revenue Requirement and Estimate Revenue Requirement is calculated (Schedule 19, Attachment 1, Table 2, line 1) to determine any over or under recovery. The True-Up Adjustment and related calculations shall be posted to the Transmission Provider's OASIS no later than June 1 (or if that day falls on a weekend or a holiday recognized by FERC, then the posting shall be due on the next business day) following the issuance of the FERC Form No.1 for the previous year.
ii. Interest on any over or under recovery of the revenue requirement shall be determined based on the Commission's regulation at 18 C.F.R § 35.19a. The interest payable shall be calculated using an average interest rate for the twenty-four (24) months during which the over or under recovery in the revenue requirement (Schedule 19, Attachment 1, Table 4). The interest rate to be applied to the over or under recovery amounts will be determined using the average rate for the twenty-one (21) months preceding October of the current year. The interest amount will be included in the Estimated S19ARR made available on October 1 in accordance with Section 2 above.
iii. The Total Revenue Requirement for transmission services for the following Year shall be the sum of the projected revenue requirement for the following year, plus or minus the True-Up Adjustment (Schedule 19, Attachment 1, Table 1, ln 4) from the previous year, if any, including interest, as explained above. PSCo may accelerate the refund of any over recovery amounts by one year. The interest calculation will be adjusted to reflect the period the over recovery exists.

f. Subsequently Discovered Errors

Any error, defined as a calculation error in the formula rate or an input error in the formula rate or FERC Form No. 1, to the Annual True-up subsequently identified by PSCo or Customer(s), which PSCo and one or more Customers agree affects the Customers' Actual Rates, shall be rectified by PSCo in the Formula Rate Template. PSCo shall reflect the resulting corrected Actual Estimated Rates and/or corrected Ancillary Services Schedule 1, 2, 3, 3A, 5, 6 and 16 Rates in the next billing month after such revision is calculated or such subsequent billing month as is mutually agreeable to PSCo and the Customers. The same procedures shall apply in the event of an error affecting the Actual Rates of an individual customer. There is no time limit with respect to PSCo's obligation to, and right to, correct an error in the implementation of the formula rate.

Section 5 Annual Formula Rate Calendar

As an example and f~~F~~or ease of reference, once the Formula Rate is in effect, the calendaring shall be as follows:

Month Year Action

Oct.	20~~12~~18	Annual Update – No later than the first Business Day in October 20~~12~~18, PSCo populates the Formula Rate Template with Rate Year 2019~~13~~ budgeted/estimated data and calculates the Estimated ATRR, Estimated S19ARR, Estimated S1RR, and Estimated Rates to be effective January 1, 2019~~3~~. PSCo develops Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates, also to be effective January 1, 2019~~13~~, by populating the Ancillary Service Rate Templates with actual data from PSCo's 2017~~11~~ FERC Form 1 and books and records.
Dec.	2018~~12~~	PSCo makes any mutually agreed changes to the Annual Update by December 31 (or the next Business Day if December 31 is not a Business Day).
Jan.	2019~~13~~	PSCo submits the Annual Update, as modified to incorporate any agreed upon changes, as the Annual Informational Filing no later than January 15 (or the next Business Day if January 15 is not a Business Day).
April	2019~~13~~	Annual PBOP Filing - On or before April 1, PSCo files for Commission approval actuarial studies for the prior calendar year (Rate Year 202~~1~~2) showing the PBOP amounts to be booked for such Rate Year which, when approved by the FERC, will be used in the Annual True-Up for such prior Rate Year (Rate Year 202~~1~~2).
June	2019~~13~~	Annual True-up - No later than the first Business Day in June 202~~1~~3, PSCo populates the Rate Year 202~~1~~2 Formula Rate Template with Rate Year 202~~1~~2 actual data, calculates the Actual ATRR, Actual Schedule 19 Rate, Actual S1RR, Actual Rates, and Customer True-up Adjustments.
Oct.	2019~~13~~	Annual Update – No later than the first Business Day in October 202~~1~~3, PSCo populates the Formula Rate Template with Rate Year 2014 budgeted/estimated data and calculates the Estimated ATRR, Estimated ARR, Estimated S1RR, and Estimated Rates to be effective January 1, 202~~1~~4. PSCo develops the Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates, also to be effective January 1, 202~~1~~4, by populating the respective Ancillary Service Rate Templates with actual 202~~1~~2 data from PSCo's 202~~1~~2 FERC Form 1 and books and records.
Dec.	2019~~13~~	PSCo makes any mutually agreeable changes to the Annual Update by December 31 (or the next Business Day if December 31 is not a Business Day).
Jan.	2020~~14~~	PSCo submits the Annual Update, as modified to incorporate any agreed upon changes, as the Annual Informational Filing no later than January 15 (or the next Business Day if January 15 is not a Business Day).
April	2020~~14~~	Annual PBOP Filing - On or before April 1, PSCo files, for Commission approval, actuarial studies for the prior calendar year (Rate Year 2019~~13~~) showing the PBOP amounts to be booked for such Rate Year, which

when approved by the FERC will be used in the Annual True-Up for such prior Rate Year (Rate Year 2019~~13~~).

June	2020~~14~~	Annual True-up - No later than the first Business Day in June 2020~~13~~, PSCo populates the Rate Year 2019~~13~~ Formula Rate Template with Rate Year 2019~~13~~ actual data, calculates the Actual ATRR, Actual S19ARR, Actual S1RR, Actual Rates, and Customer True-up Adjustments.
Oct.	2020~~14~~	Annual Update – No later than the first Business Day in October 2020~~14~~, PSCo populates the Formula Rate Template with Rate Year 2021~~15~~ budgeted/estimated data and calculates the Estimated ATRR, Estimated S19ARR, Estimated S1RR, and Estimated Rates to be effective January 1, 2021~~15~~. PSCo develops the Ancillary Service Schedule 2, 3, 3A, 5, 6 and 16 Rates, also to be effective January 1, 2021~~15~~, by populating the respective Ancillary Service Rate Templates with actual 2019~~13~~ data from PSCo's 2019~~13~~ FERC Form 1 and books and records.

This sequencing pattern ~~shall be followed~~ thereafter continues.

Section 6 Annual Review Procedures

Each Annual Update and Annual True-up shall be subject to the following review procedures ("Annual Review Procedures"):

a. Customer Review

In the course of the two-stage Annual Review each year, Interested Parties shall have one hundred and thirty (130) calendar days after each of the Annual Update Customer Meeting and the Annual True-up Customer Meeting to serve information requests ("Data Requests") on PSCo with respect to the Annual Update and the Annual True-up, respectively. The Data Requests may be directed at any aspect of the implementation of or the inputs used in the Annual Update or Annual True-up, including the derivation of Estimated Rates, Actual Rates, Ancillary Service Schedule 1, 2, 3, 3A, 5, 6 and 16 Rates, or any associated issue raised at the Annual Update Customer Meeting or the Annual True-up Customer Meeting. The deadline for discovery may be extended by mutual consent. Nothing in this Section 6.a shall prohibit Interested Parties from submitting information requests to PSCo concerning the Annual Update and the Annual True-up, respectively, after the posting of the Annual Update and the Annual True-up but prior to the Annual Update Customer Meeting or the Annual True-up Customer Meeting.

b. PSCo Response to Data Requests

PSCo shall make a good faith effort to respond to any Data Requests within ten (10) Business Days after receipt. If a response requires additional time to prepare, PSCo shall promptly inform the requesting Interested Party and shall provide the response as soon as possible, but in no event later than thirty (30) calendar days after PSCo's receipt of the Data Request, unless the parties mutually agree otherwise. All Interested Parties shall be provided PSCo's responses to all Data Requests via electronic mail or other mutually acceptable means.

c. Discovery Dispute Resolution

To the extent PSCo and any Customer(s) are unable to resolve disputes related to any Data Request or the adequacy of any response, PSCo or any Customer(s) may petition FERC to appoint an Administrative Law Judge as a discovery master. The discovery master shall have the power to issue binding orders to resolve discovery disputes and compel the production of discovery relating to application of the Formula Rate or population of the Formula Rate Template for the Rate Year in question, as appropriate, in accordance with these Implementation Procedures.

d. Use of Information from Annual Review Procedures

All information and correspondence produced pursuant to these Annual Review Procedures may be used in any Formal Challenge (as defined in Section 7.c., below) concerning the Formula Rate, any Federal Power Act ("FPA") Section 205, 206 or 306 filing concerning the Formula Rate, or in any other proceeding concerning the Formula Rate initiated at FERC pursuant to the FPA.

e. Confidential Information

PSCo may designate any response to a Data Request as confidential if the information conveyed in the response is not publicly available. Interested Parties shall treat such a designated response as non-public information provided in confidence. Interested Parties may use confidential responses to Data Requests in connection with any informal dispute resolution process commenced pursuant to Section 7. Interested Parties may also use confidential responses to Data Requests in any Formal Challenge (as defined in Section 7.c., below) concerning the Formula Rate, in any FPA Section 205, 206 or 306 filing concerning the Formula Rate, or in any other proceeding concerning the Formula Rate initiated at FERC pursuant to the FPA; provided, however, when so used, such Data Response(s) shall initially be filed under seal (unless the claim of confidentiality is waived by PSCo), subject to a later determination by the presiding administrative authority that the material is, in whole or in part, not entitled to confidential treatment.

Section 7 Annual Update and Annual True-up Informal Resolution Procedures and Challenges

PSCo and the Customer(s) shall undertake good faith efforts to resolve any disputes through the informal dispute resolution procedures described below before a Formal Challenge is filed with FERC.

a. Specific Challenges

Unless the parties mutually agree otherwise, any Customer shall have the longer of one hundred and seventy-five (175) calendar days after an Annual Update Customer Meeting and after an Annual True-up Customer Meeting or fifteen (15) calendar days after PSCo has fully responded to all proper and timely Data Requests related to an Annual Update or an Annual True-up, to review the Annual Update or the Annual True-up and notify PSCo in writing of specific challenges to such Annual Update or Annual True-up. PSCo or Customer(s) may request, with at least ten (10) calendar days' written notice, that additional meetings be held between PSCo and Interested Parties to discuss specific areas of concern. Failure to notify PSCo of a specific challenge to an Annual Update or an Annual True-up within such time limits shall not bar pursuit of informal dispute resolution of such issue(s) by a specific challenge made in a subsequent Annual Update or Annual True-up.

b. Informal Dispute Resolution

Non-executive representatives of PSCo and the Customer(s) shall attempt to resolve a specific challenge within thirty (30) calendar days of written notification (or a longer period if the parties mutually agree to extend such period) of such specific challenge. If non-executive representatives are unable to resolve a specific challenge, senior management representatives of PSCo and the Customer(s), who have the authority to negotiate and settle such disputes, shall meet and attempt to resolve the specific challenge. All Interested Parties will be served notice of each specific challenge and copies of correspondence related thereto.

c. Formal Dispute Resolution

If the senior management representatives of PSCo and the Customer(s) are unable to resolve a specific challenge within thirty (30) calendar days after the dispute is referred to them (or a longer period if the parties mutually agree to extend such period), then the Customer(s) may pursue such formal dispute resolution as may be available to them under the Federal Power Act and FERC's regulations ("Formal Challenge"). PSCo may raise both substantive and procedural defenses against such a Formal Challenge except as set out at the end of the following sentence. A decision not to file a Formal Challenge for a given Annual True-up or Annual Update, does not preclude the Customers raising the same or other issues as a specific challenge to a subsequent Annual Update or Annual True-up and, if they take that action, PSCo shall not assert that the prior failure to file a Formal Challenge is evidence of an accepted ratemaking practice.

d. Burden of Proof

In any proceeding ordered by FERC in response to a Formal Challenge raised under these Implementation Procedures, PSCo shall have the ultimate burden of proof as to the justness and reasonableness of the charges resulting from its application of the Formula Rate, and as to whether it properly applied the Formula Rate and these Implementation Procedures.

Section 8 Changes to Stated Inputs in the Formula Rate

a. Stated Inputs

The following Formula Rate inputs, as agreed to in the settlement of Docket No. ER12-1589-000, shall be stated values to be used in the Formula Rate (both for the Annual Update and the Annual True-up) until changed by a filing pursuant to Section 205 of the FPA or by order of the Commission pursuant to Section 206 of the FPA:

(i) the rate of return on common equity (“ROE”);

(ii) depreciation rates and amortization periods, including amortization periods for FERC-approved regulatory assets and liabilities and acquisition adjustments (as set forth in Table 25 to the Formula Rate);

(iii) the actual costs of Post-Employment Benefits Other than Pensions pursuant to Statement of Financial Accounting Standards No. 106 Employers’ Accounting for PBOP charges, as approved by Order of the FERC;

(iv) Percent of Production Plant for Dual Use;

(v) Real Power Losses;

(vi) Ancillary Service Schedules 3, 3A 5, 6, and 16 percentage of reserved capacity used for billing purposes; and

(vii) Ancillary Service Schedules 3 and 3A, and 16 Required Capacity, and 12 Coincident Peak Load used to calculate the Reserve Obligation.

b. ROE

The stated return on common equity (“ROE”), effective November 17, 2012, shall be established pursuant to a final Commission order on ROE in Docket No. ER12-1589-000. Thereafter, the ROE shall not be changed unless and until PSCo or the Customer(s) has (have) filed for a different ROE pursuant to Section 205 and 206 of the FPA, respectively.

c. PBOP Charges

PBOP charges shall be determined for each Annual True-Up pursuant to the procedure described in Section 3.

d. Cash Working Capital

The stated amount for Cash Working Capital (“CWC”) shall be set at zero dollars and shall not be changed until PSCo or the Customer(s) has(have) filed for a different level of recovery pursuant to Section 205 and 206 of the FPA, respectively.

e. Extraordinary Property Losses

The balance for Extraordinary Property Losses shall be set at zero dollars and shall not be changed until PSCo has filed under Section 205 of the FPA for recovery of such loss(es) and FERC has authorized the recovery of such losses. The FERC-approved amortized annual amount for Extraordinary Property Losses shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincide with the approved amortization period.

f. Construction Work in Progress

The balance for Construction Work in Progress ("CWIP") shall be set at zero dollars and shall not be changed until PSCo has filed for and received FERC approval to include CWIP related to specific projects in rate base for the Formula Rate pursuant to a filing under Section 205 of the FPA.

g. Abandoned Plant

The balance for Abandoned Plant shall be set at zero dollars and shall not be changed until PSCo has filed under Section 205 of the FPA for recovery of costs associated with Abandoned Plant and FERC has approved the recovery of such costs together with an allowable annual amount and an amortization period. The FERC-approved amortized annual amount for costs associated with Abandoned Plant shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincide with the approved amortization period.

h. Formula Rate Inputs Not Requiring FERC Filing

As distinguished from the Formula Rate restrictions with respect to CWIP, CWC, Extraordinary Property Losses, and Abandoned Plant where PSCo must make a FPA Section 205 filing to change an existing Formula Rate input of zero dollars, the Formula Rate may, in any given year, reflect a number of FERC Accounts where the Formula Rate inputs also are zero dollars. For those years in which there the Formula Rate inputs are other than zero dollars, PSCo may change such inputs without the need to make a FPA Section 205 filing with FERC. Such Formula Rate inputs include but may not be limited to the following:

(i) scheduling, system control and dispatch services operating expense (recorded in FERC Account 561.4);

(ii) underground lines operating expense (recorded in FERC Account 564);

(iii) maintenance of structures (recorded in FERC Account 569);

(iv) maintenance of computer hardware, computer software, communication equipment and regional transmission plant (recorded in FERC Accounts 569.1, 569.2, 569.3 and 569.4);

(v) maintenance of underground lines (recorded in FERC Account 572);

(vi) maintenance of miscellaneous transmission plant (recorded in FERC Account 573);

(vii) franchise requirements (recorded in FERC Account 927);

(viii) preferred stock (recorded in FERC Account 204);

(ix) preferred stock dividends (recorded in FERC Account 437);

(x) interest on debt to associated companies, long-term debt portion only (recorded in FERC Account 430);

(xi) amortization of premium on debt (recorded in FERC Account 429); and,

(xii) amortization of gain on reacquired debt (recorded in FERC Account 429.1).

i. Asset Retirement Obligations

There are no Asset Retirement Obligations ("AROs") recovered in the Formula Rate. Any proposal by PSCo to recover AROs will require a FPA Section 205 filing.

j. Mountain Pine Beetle

PSCo filed in FERC Docket No. ER12-1589-000 to include and thereby recover in the Formula Rate, effective January 1, 2013, a proposed two-year amortization of the costs PSCo incurred combating the Mountain Pine Beetle infestation of Colorado forests for the period prior to January 1, 2013. These costs have been deferred as authorized by the Commission in Docket No. AC11-186-000. The parties to the docket agreed by settlement to a three-year amortization. When approved by the Commission in Docket No. ER12-1589-000, these costs shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincides with the amortization period accepted by the Commission.

k. San Luis-Calumet-Comanche Transmission Project

PSCo filed in Docket No. ER12-1589-000 to include and thereby recover in the Formula Rate a proposed two-year amortization of 50 percent (50%) of the pre-construction costs that PSCo incurred in connection with the San Luis-Calumet-Comanche transmission project. PSCo will no longer build this project. The parties to the docket agreed by settlement to a three-year amortization. When approved by the Commission in Docket No. ER12-1589-000, these costs shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincides with the amortization period accepted by the Commission. The Wholesale share of 50 percent of the pre-construction costs will be recovered in the formula rates over a 3 year period beginning with the effective date of the Formula Rate. The Wholesale share of the other 50 percent will be booked to Account No. 426.5 and absorbed by the Company.

l. Rate Case Expenses

PSCo filed in Docket No. ER12-1589-00 to include and thereby recover in the Formula Rate a proposed two-year amortization of rate case expenses that PSCo incurred in connection with approval of the Formula Rate. The parties to the docket agreed by settlement to a three-year amortization. When approved by the Commission in Docket No. ER12-1589-000, these costs shall be includable in the Formula Rate for Annual Update and Annual True-up purposes for the number of partial or full Rate Years that coincides with the amortization period accepted by the Commission.

As distinguished from the expenses associated explicitly with Docket No. ER12-1589-000, ongoing expenses associated with the Formula Rate (*e.g.*, Annual Update costs; Annual True-up costs) shall be expensed in the Rate Year in which such costs are incurred.

Section 9 Changes to Annual True-Up

Changes to PSCo's FERC Form 1 data or changes that affect Supplemental Data, which changes are made subsequent to completion of the Annual True-up, shall trigger a True-up Adjustment to be reflected in the subsequent Annual True-up. Any change to such input data will be provided by PSCo to the Customer(s) as soon as possible, together with an explanation of the change(s) and a repopulated Formula Rate Template for the applicable Rate Year(s) that demonstrates the effect of the change. Customers shall have all of the rights afforded by these Implementation Protocols to investigate and protest such changes, with all dates running from the date PSCo provides the Customer(s) with changed input data.

Section 10 Changes to or Termination of Formula Rates

PSCo and Customers reserve their respective rights under Sections 205 and 206 of the FPA, respectively, to seek modification of or termination of the Formula Rate. PSCo shall provide to the Customers a copy of any proposed Section 205 filing at least thirty (30) calendar days prior to making the filing and shall offer to meet with Interested Parties to discuss the proposed filing prior to its submission to FERC. The Customers shall provide similar advance notice and opportunity to meet prior to making a Section 206 filing. Unless PSCo and the Customers(s) mutually agree otherwise, PSCo or the Customer(s) shall request in any such FPA Section 205 or 206 that the effectiveness of any proposed modification or termination of the Formula Rate be coincident with the beginning of the next Rate Year.

The advance notification and meeting requirements set forth above shall not apply in the event that FERC mandates any changes in the format of the FERC Form 1 or the USoA, or otherwise issues a ruling that necessitates a modification to the Formula Rate. In such event, PSCo may propose a modification to the Formula Rate without notice by making a FPA Section 205 filing at any time. Such filing, however, may not be used by either PSCo or Customers to raise issues unrelated to such FERC-required changes. Moreover, if such a change in the Formula Rate is required for the reasons described in this paragraph, the FPA Section 205 filing may include a request for waiver of applicable notice requirements as may be necessary to permit the change to become effective for the Annual Update or Annual True-up for the applicable Rate Year.

Section 11 True-up for Departed Customer

A Customer that ceases taking transmission service from PSCo will remain subject to the true-up provisions of the Formula Rate applicable to the Estimated Rates collected during the period of time that the Customer was taking service pursuant to the Formula Rate. As the result of such true-up, the departed Customer may be liable for an additional payment due to PSCo or entitled to a refund from PSCo. The True-up calculation will be made as part of the Annual True-up and, therefore, may not be available coincident with the date of the Customer's departure.

Section 12 Miscellaneous

a. Inter-Company Cost Allocation

It is understood that Xcel Energy Services Inc. ("XES"), PSCo's service company affiliate, may undertake activities on behalf of PSCo under these Implementation Procedures. XES will allocate certain costs among PSCo and PSCo's affiliates pursuant to the allocation methodology in place at the time the Formula Rate becomes effective, as set forth in PSCo's 2011 FERC Form No. 60. PSCo will advise the Customers of any proposed change to such allocation methodology pursuant to Section 4(a)(iii). Any proposed modification to the allocation methodology that has the effect of increasing charges produced by the Formula Rate shall be subject to Section 7 of these Implementation Procedures.

b. Customer Right to Audit

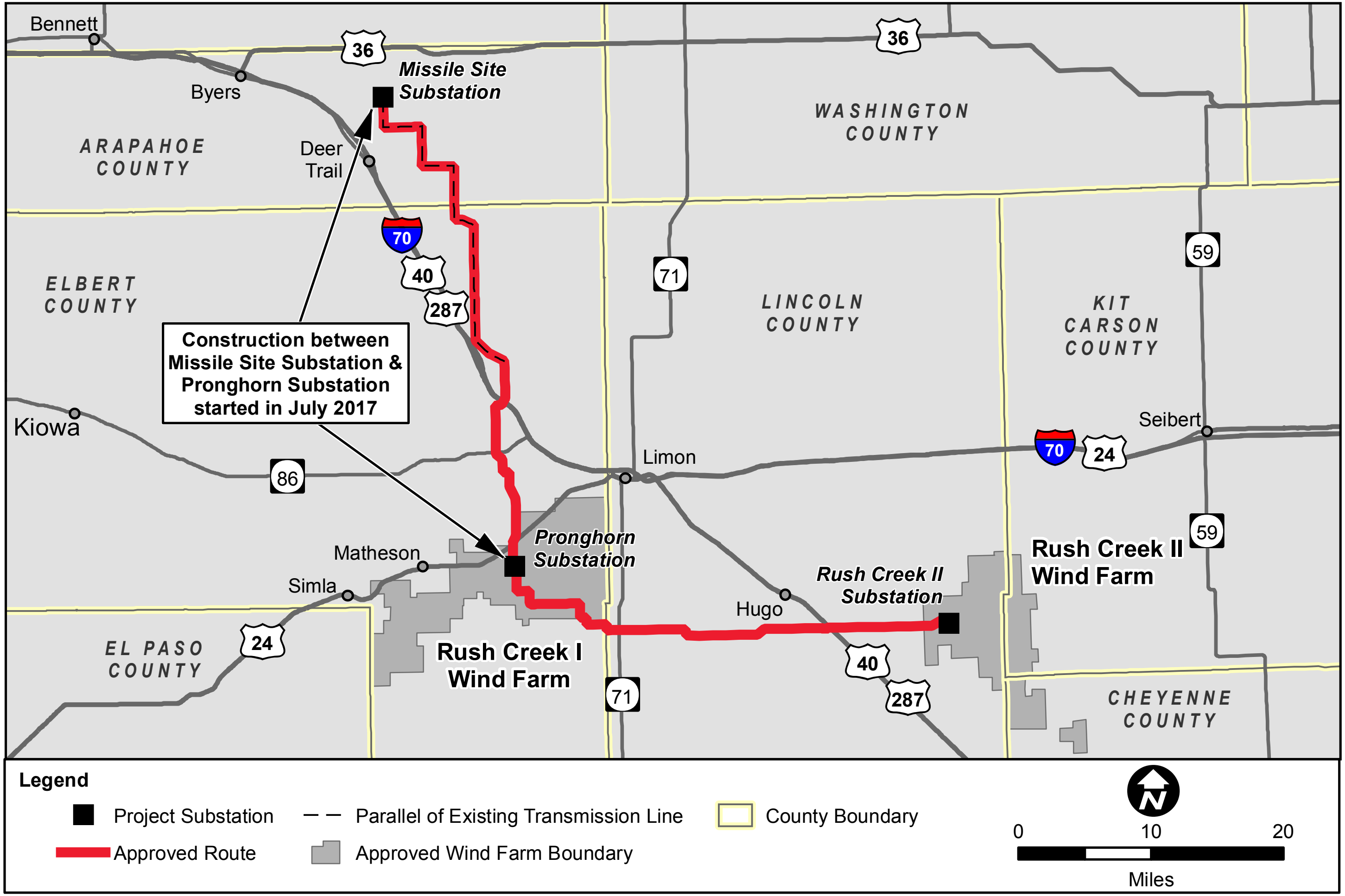
Any Customer shall have the right not more than once in any twelve (12) month period to audit, at Customer's expense, PSCo's books and records. A Customer requesting to audit PSCo's books and records shall give a minimum of (14) calendar days' written notice to PSCo of its desire to conduct an audit. PSCo may schedule the timing of Customer Audit such that it does not conflict with other scheduled audits. PSCo shall notify all Customers of a Customer-initiated audit request and shall cooperate with Customers seeking to conduct a joint audit. In the event the audit reveals any errors in the Annual True-up, PSCo and the Customer(s) shall resolve such errors in accordance with Section 7 of these Implementation Procedures.

c. No Waiver of Statutory Rights

Nothing contained in these Transmission Formula Rate Implementation Procedures shall limit or prohibit the right of any Customer to file a request for relief under Sections 206 or 306 of the FPA and FERC's regulations to challenge PSCo's application of the Formula Rate or the prudence of any expense flowed through the formula rate or to seek to change or terminate the Formula Rate.

EXHIBIT NO. XES – 100

Map of Rush Creek Project and Rush Creek Gen-Tie



Bennett
Byers
Deer Trail
Kiowa
Matheson
Simla
Limon
Hugo
Seibert
ARAPAHOE COUNTY
ELBERT COUNTY
EL PASO COUNTY
WASHINGTON COUNTY
LINCOLN COUNTY
KIT CARSON COUNTY
CHEYENNE COUNTY
36
70
40
287
71
86
24
59
Missile Site Substation
Pronghorn Substation
Rush Creek II Substation
Rush Creek I Wind Farm
Rush Creek II Wind Farm
Construction between Missile Site Substation & Pronghorn Substation started in July 2017
Legend
Project Substation
Approved Route
Parallel of Existing Transmission Line
Approved Wind Farm Boundary
County Boundary
N
0
10
20
Miles

EXHIBIT NO. XES – 200

Direct Testimony of Dr. Liam D. Noailles

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Affidavit of Liam D. Noailles

Public Service Company of Colorado	)))	**Docket No. ER18-____-000**

County of Denver)
State of Colorado)

I, Dr. Liam D. Noailles, being duly sworn, depose and state that the statements contained in the prepared Direct Testimony of Dr. Liam D. Noailles served on behalf of Public Service Company of Colorado in these proceedings are true and correct to the best of my knowledge, information and belief, and I hereby adopt said testimony as if given by me in formal hearing, under oath.

Dr. Liam D. Noailles

Subscribed and sworn before me this 22 day of February, 2018

Kimberly Ann Agee
Notary Public

KIMBERLY ANN AGEE
Notary Public – State of Colorado
Notary ID 20144008609
My Commission Expires Feb 24, 2022

My Commission expires: February 24, 2022

DB1/ 93880968.1

Exhibit XES-200

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Public Service Company of Colorado	**)**	**Docket No. ER18-___-000**

DIRECT TESTIMONY OF DR. LIAM D. NOAILLES

XCEL ENERGY SERVICES INC.
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

FEBRUARY 27, 2018

I INTRODUCTION AND EXPERIENCE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Liam D. Noailles. My office address is 1800 Larimer Street, 12th Floor, Denver, Colorado, 80202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Xcel Energy Services Inc. ("XES"), the service company subsidiary of Xcel Energy Inc. ("Xcel Energy"), a utility holding company. I am a Manager, Federal Regulatory Administration.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of Public Service Company of Colorado ("PSCo" or the "Company"), a utility operating company subsidiary of Xcel Energy. PSCo is an integrated electric and natural gas utility operating in Colorado, including in the Denver metropolitan area, and is one of four utility operating company subsidiaries of Xcel Energy.

Q. PLEASE EXPLAIN YOUR DUTIES AND RESPONSIBILITIES.

A. The Federal Regulatory Administration group at XES is responsible for regulatory filings, regulatory activity, and compliance monitoring activities involving the Commission for the four Xcel Energy utility operating companies, including PSCo.

Q. PLEASE BRIEFLY DESCRIBE YOUR BACKGROUND, INCLUDING YOUR EDUCATION AND YOUR EXPERIENCE IN THE ELECTRIC UTILITY BUSINESS.

A. In 1997, I received my Bachelor of Arts degree from Reed College with a major in Chemistry. In 2002, I received my Doctor of Philosophy from the University of Oxford in Inorganic Chemistry. From 2002 to 2004, I worked as a post-doctoral fellow at the University of California, Los Angles in the Department of Materials Science and Engineering. Between 2004 and 2008, I worked for Cabot Corporation as a Materials Scientist and then as a Senior Scientist developing new business lines utilizing novel nano to micron sized materials. I started at Xcel Energy in 2008 as Manager, Market Operations. In that role I was responsible for, among other things, wholesale market policy development, including representing XES' utility affiliates Northern States Power Company, a Minnesota corporation ("NSPM"), and Northern States Power Company, a Wisconsin corporation ("NSPW," and collectively with NSPM, "NSP") at the Regional Transmission Organization ("RTO") to which NSP belongs, the Midcontinent Independent System Operator, Inc. ("MISO"). In 2013, I transferred into my current role in XES's Federal Regulatory Administration group where I manage federal electric transmission related policy and transmission related compliance issues.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY OR AFFIDAVITS BEFORE ANY REGULATORY COMMISSION?

A. Yes, I have previously submitted an affidavit on behalf of XES before the Federal Energy Regulatory Commission ("FERC" or "Commission") in Docket No. EL13-75, a section 206 complaint proceeding involving MISO and PJM Interconnection, L.L.C. I also recently submitted testimony in Docket No. ER18-176-000 related to the PSCo Rush Creek Project.

II <u>PURPOSE AND SUMMARY</u>

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide a brief description of Xcel Energy, XES and PSCo, and to provide an overview of PSCo's request for approval of proposed revisions to the Xcel Energy Operating Companies Open Access Transmission Tariff ("Xcel

Energy Tariff" or "Tariff") to: (i) facilitate generator interconnections to the new PSCo Rush Creek Generator Tie Line ("Rush Creek Gen-Tie" or "Gen-Tie"), and (ii) establish the associated charges for the use of the Rush Creek Gen-Tie. I also introduce the other witnesses testifying for PSCo.

The Rush Creek Project consists of 600 megawatts ("MW") of new wind generation being constructed by PSCo in southern Colorado and an associated 82 mile, 345 kilovolt ("kV") radial transmission line interconnecting the wind farms to the PSCo transmission system at the Missile Site Substation. The Tariff revisions proposed here will establish the rates and terms and conditions for third parties that use the available capacity of the Gen-Tie to interconnect to the PSCo transmission system.

Q. HAS THE COMMISSION PREVIOUSLY ADDRESSED MATTERS RELATED TO THE RUSH CREEK PROJECT?

A. Yes. In Docket No. ER17-2535-000, the Commission accepted the Large Generator Interconnection Agreement ("LGIA") between the PSCo Transmission Function and the PSCo Energy Supply (Generation) Function for the interconnection of the Rush Creek Project to the PSCo transmission system at Missile Site substation via the Gen-Tie.[1] In Docket No. ER18-176-000, the Commission accepted proposed changes to the PSCo Assured Power and Energy Requirements Service Tariff (a wholesale power sales tariff) to, among other things, allow the costs of the Rush Creek Project, including the Rush Creek Gen-Tie, to be included in PSCo's wholesale production rates.[2]

Q. PLEASE SUMMARIZE THE PROPOSED TARIFF CHANGES.

A. The proposed revisions to the Xcel Energy Tariff include:

- A new Part VII to the Tariff entitled "Third-party Use of the PSCo Rush Creek Generator Tie-Line," which sets forth the terms and conditions for

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[1] *Public Service Company of Colorado*, Docket No. ER17-2535-000, letter order (Nov. 13, 2017).

[2] *Public Service Company of Colorado*, Docket No. ER18-176-000, letter order (December 22, 2017).

interconnection service on the Rush Creek Gen-Tie. Use of the radial Gen-Tie would be a service separate from transmission service over the PSCo Transmission System, as defined in the Tariff.

- A new Schedule 19 to the Tariff, which provides the charge to customers using the Rush Creek Gen-Tie for interconnection service using a formula rate to calculate the annual revenue requirement ("ARR") related to the Gen-Tie; and
- Revisions to the Transmission Formula Rate Implementation Procedures ("Protocols") applicable to Attachment O-PSCo to the Xcel Energy Tariff to incorporate a process for customers taking interconnection service on the Gen-Tie to review and obtain further information about the Gen-Tie Rate. Attachment O-PSCo is the transmission formula rate template used to develop the annual transmission revenue requirement ("ATRR") and rates for use of the PSCo transmission network. Rather than develop separate protocols for the Gen-Tie, PSCo proposes to amend the existing Protocols so Gen-Tie customers can review the Gen-Tie ARR at the same time and subject to the same processes applicable to transmission service customer review of the Attachment O-PSCo ATRR, including customer discovery and challenge rights.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring Exhibit No. XES – 201, which is a copy of a September 2, 2016 settlement agreement that was approved by the Colorado Public Utilities Commission ("Colorado Commission" or "CoPUC") authorizing PSCo to construct the Rush Creek Project, including the Gen-Tie, and which is relevant to the proposed Tariff changes, as I discuss below. I am also sponsoring Exhibit XES – 202, which is a January 2017 communication to stakeholders related to proposed tariff revisions. In addition, I discuss the proposed changes to the Xcel Energy Tariff attached to this filing; specifically, I discuss new Part VII, new Schedule 19 and the revisions to the existing Protocols. My testimony describes these changes and why they are just and reasonable.

Q. ARE ANY OTHER WITNESSES SPONSORING TESTIMONY AND EXHIBITS?

A. Yes. PSCo witness Mr. Steven Berman describes the formula rate template (Attachment 1 to new Schedule 19) that will be used to calculate the Gen-Tie ARR on an estimated basis subject to after the fact true-up (similar to the Attachment O-PSCo formula rate template), and provides the initial estimated ARR and Gen-Tie rate to be in effect when the Gen-Tie is placed in service, expected to be in August 2018. In addition, PSCo witness Mr. Patrick Corrigan describes the methodology PSCo will use to calculate the electrical loss factor applicable to interconnection services on the Gen-Tie.

III <u>CORPORATE OVERVIEW</u>

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF XCEL ENERGY.

A. Xcel Energy is a utility holding company that primarily engages in the production, transmission and distribution of electricity and the distribution of natural gas through its four utility operating company subsidiaries: PSCo, NSPM, NSPW and Southwestern Public Service Company (“SPS”). PSCo, NSPM and NSPW are each combination electric and natural gas utilities. SPS is an electric-only utility. Collectively, Xcel Energy’s utility operating company subsidiaries serve 3.4 million electric and 1.9 million natural gas customers in Colorado, Michigan, Minnesota, New Mexico, North Dakota, South Dakota, Texas and Wisconsin. In addition, SPS owns and operates transmission facilities in Kansas and Oklahoma. I note that the changes to the Xcel Energy Tariff proposed in this filing only impact rates and terms for interconnection service to the PSCo system and do not affect the rates or terms of transmission service on the NSP or SPS transmission systems, which are subject to the MISO and Southwest Power Pool, Inc. (“SPP”) regional tariffs, respectively.

Q. PLEASE DESCRIBE XES.

A. XES is a centralized service company that provides a variety of management and administrative services to Xcel Energy's four utility operating companies, including PSCo. Some of the services provided by XES include executive management, human resources, accounting, audit, legal, claims, regulatory and compliance, fuel and energy management, engineering and customer services. As a service company, XES files an annual Form 60 service company report with the Commission each year detailing the revenues from its charges to the individual utility operating companies.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF PSCO.

A. PSCo generates, transmits and distributes electric power and energy throughout portions of the State of Colorado. PSCo provides, among other things, retail cost-based electric service to approximately 1.5 million retail customers in Colorado subject to the jurisdiction of the Colorado Commission. The Company's greatest concentration of retail customers is in the Denver metropolitan area. PSCo also provide cost-based wholesale power sales and transmission services subject to the jurisdiction of the Commission.

PSCo is located at the eastern edge of the Western Interconnection and is a member of the Western Electricity Coordinating Council ("WECC"). Since there is no RTO serving Colorado, PSCo is the transmission provider for the PSCo Transmission System.[3] PSCo provides Network Integration Transmission Service ("NITS"), Point-to-Point Transmission Services ("PTP") and various ancillary services pursuant to the Xcel Energy Tariff, on file with the Commission pursuant to Order Nos. 888 and 890, and derives the rates for NITS and PTP services pursuant to the Attachment O-PSCo transmission formula rate template.

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[3] "Transmission System" is defined in the Tariff to mean the facilities owned, controlled or operated by the Transmission Provider or Transmission Owner that are used to provide transmission service under the Tariff.

IV. BACKGROUND OF THE RUSH CREEK PROJECT AND GEN-TIE

Q. PLEASE DESCRIBE THE DEVELOPMENT OF THE RUSH CREEK GEN-TIE.

A. As discussed previously, Rush Creek Wind Project ("Rush Creek Project" or "Project") is a 600 MW nameplate capacity wind farm that will be owned and operated by PSCo. The Project is located on two proximate sites known as Rush Creek I and Rush Creek II, totaling approximately 96,000 acres of land south of Limon, Colorado, and spanning Elbert, Lincoln, Cheyenne and Kit Carson counties. The Rush Creek Project involves installing 300 model 2.0 MW V110 Vestas wind turbines with supporting site infrastructure, including access roads, foundations, electrical cable collection systems, and collection system substations.

The Rush Creek Project will interconnect to the PSCo Transmission System through the Rush Creek Gen-Tie, which is a new, approximately 82-mile 345 kV generation intertie. The Rush Creek Gen-Tie is part of the Rush Creek Project and is PSCo's Interconnection Customer's Interconnection Facility. The Rush Creek Gen-Tie was planned to be a sole use facility designed and fully justified for delivering the output of the Rush Creek Project to the PSCo Transmission System and, ultimately, to PSCo's retail and wholesale native load customers. The Rush Creek Gen-Tie will include substations, where the wind farm collector systems will interconnect to the Gen-Tie, and where the Gen-Tie will interconnect to the PSCo transmission system at the existing Missile Site Substation in Arapahoe County, Colorado. The preferred route of the Rush Creek Gen-Tie was identified in early 2017, and the route was finalized in August of 2017. Construction of the switching station commenced in April 2017 and construction of the Gen-Tie line commenced in August 2017. The Rush Creek Gen-Tie is scheduled to be in-service by August of 2018, and the Rush Creek Project is scheduled to be in-service by October 2018. The total cost of the Rush Creek Project and the Rush Creek

Gen-Tie is estimated to be $1.036 billion. Of the total, the Gen-Tie cost is estimated at $118 million.

Q. DID PSCO SUBMIT AN INTERCONNECTION REQUEST FOR THE RUSH CREEK PROJECT PURSUANT TO THE TARIFF?

A. Yes. The PSCo Energy Supply (Generation) Function submitted a generation interconnection request for the Rush Creek Project to the PSCo Transmission Function in February 2016 pursuant to Attachment N of the Xcel Energy Tariff, which is the Large Generator Interconnection Procedures ("LGIP"). The Gen-Tie was identified through the interconnection and state regulatory process as the preferred Interconnection Customer Interconnection Facility to interconnect the Rush Creek Project to the PSCo Transmission System. After completion of the LGIP process, the PSCo Transmission Function and Generation Function executed a Large Generator Interconnection Agreement ("LGIA"), which was (as noted) filed with the Commission on September 21, 2017, in Docket No. ER17-2535-000, and accepted by the Commission.

Q. HAS PSCO RECEIVED THE NECESSARY COLORADO COMMISSION APPROVALS TO CONSTRUCT THE RUSH CREEK PROJECT AND GEN-TIE?

A. Yes. On May 13, 2016, PSCo filed an application for a certificate of public convenience and necessity ("CPCN") for the Rush Creek Project with the Colorado Commission. PSCo's application was docketed in CoPUC Docket No. 16A-0117E. PSCo reached a Non-Unanimous Settlement Agreement ("Settlement Agreement") with active participants in the case and filed the Settlement Agreement with the Colorado Commission on September 2, 2016.[4] The Settlement Agreement resolved certain issues raised by participants in the case and addressed, among other things, third party use of the Gen-Tie. On October 20, 2016, the Colorado Commission approved the Settlement

[4] The Settlement Agreement is attached to this filing as Exhibit XES-201.

Agreement and issued a CPCN to PSCo for the Rush Creek Project including the Gen-Tie.

Q. PLEASE DESCRIBE THE RELEVANT PROVISIONS OF THE SETTLEMENT AGREEMENT.

A. The Settlement Agreement states that PSCo will "make the Gen-Tie available for other entities to interconnect to the Company's transmission system at Missile Site Substation once the Gen-Tie reaches Commercial Operation." PSCo also committed to develop Tariff provisions that determine a Gen-Tie use charge. Specifically, the Settlement Agreement states:

> [t]o provide greater detail, the Settling Parties agree that Public Service will develop a draft addendum or exhibit to its OATT that will set forth how the Company will develop the charge for interconnecting customers selling power to a third-party off taker. It is understood that the charge will be designed to cover cost components permitted by FERC to be included in the development of a directly assigned facilities charge, including, but not necessarily limited to, a return on the net book value of the asset, depreciation expense, O&M expenses, and taxes. The Company's return will be the same as reflected in the Company's OATT formula rate, and will be subject to modification over time."

This filing proposes additions to the Tariff compliant with this provision.

V. OVERVIEW OF THE PROPOSED TARIFF CHANGES

Q. WHAT IS THE PURPOSE OF THE INSTANT FILING?

A. The instant filing proposes changes to the Xcel Energy Tariff designed to honor certain commitments PSCo made in the Settlement Agreement approved by the Colorado Commission. The filing is also consistent with Commission precedent regarding how public utilities like PSCo are to allow access to gen-tie lines where the public utility's generation project does not utilize all the capacity of the gen-tie line.[5]

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[5] *See*, *e.g.*, *Northwestern Corp.*, 127 FERC ¶ 61,266 at P 28 (2009); *S. Cal. Edison Co.*, 112 FERC ¶ 61,014, at P 40-42 (2005).

Q. PLEASE DESCRIBE THE COMMISSION'S POLICY RELATED TO OPEN ACCESS TO AN INTERCONNECTION CUSTOMER'S INTERCONNECTION FACILITIES.

A. The Commission's policy related to open access to an Interconnection Customer's Interconnection Facilities is described in Order 807, "Open Access and Priority Rights on Interconnection Customer's Interconnection Facilities." The Commission is charged with ensuring that a public utility's rates, charges and classifications of service are just and reasonable and not unduly discriminatory.[6] In general, unless an Interconnection Customer has definitive plans to use the remaining capacity of an Interconnection Customer's Interconnection Facility, the Interconnection Customer must make the remaining capacity available to third parties requesting interconnection.[7] For Transmission Providers where the Generation Function is the owner of the Interconnection Customer's Interconnection Facility, such as is the case with the Rush Creek Gen-Tie, Transmission Providers are required to process interconnection requests pursuant to the existing OATT.[8]

Q. WILL THE RUSH CREEK PROJECT UTILIZE THE FULL CAPACITY OF THE GEN-TIE?

A. No. The Rush Creek Project approved by the Colorado Commission is 600 MW. The same 600 MW Project is associated with the Commission approved LGIA. PSCo thus has rights to use 600 MW of the Gen-Tie capacity. The thermal capacity of the Gen-Tie

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[6] 16 U.S.C. 824d and 824e.

[7] See for example, *Milford Wind Corridor*, *LLC*, 129 FERC ¶ 61,149, at P 24 (2009) (*Milford*). *See, e.g., Milford,* 129 FERC ¶ 61,149 at P 24; *Terra-Gen I*, 132 FERC ¶ 61,215 at P 49.

[8] Order 807 P. 169 "The public utility transmission provider has certain rights and obligations, one of which is to administer the transmission grid pursuant to its existing OATT. Where a Generation Function of the public utility transmission provider is an ICIF owner, we find it appropriate, in the event of a third-party request, for the request to be processed pursuant to its affiliated public utility transmission provider's OATT."

is approximately 1,600 MW, however. There is thus approximately 1000 MW of Gen-Tie thermal capacity available for use by other generation projects.

Q. IS IT POSSIBLE THAT PSCO COULD EXPAND ITS RUSH CREEK PROJECT, OR CONSTRUCT AN ADDITIONAL GENERATION PROJECT INTERCONNECTED TO THE GEN-TIE, TO FULLY UTILIZE THE GEN-TIE CAPACITY?

A. Yes. PSCo would, however, need Colorado Commission approval to construct an additional PSCo-owned generation project connected to the Gen-Tie. PSCo would also have to utilize the generation interconnection process described in the OATT to increase the generation capacity on the Gen-Tie.

Q. IS PSCO PROPOSING TO ASSERT PRIORITY RIGHTS TO THE UNUSED CAPACITY OF THE GEN-TIE GIVEN THE POTENTIAL FOR ITS OWN FUTURE EXPANSION?

A. No. Even though it may be beneficial for PSCo to use this incremental capacity for its future generation expansion, PSCo is not proposing to assert priority rights for the unused capacity of the Gen-Tie. PSCo is proposing to allow third party interconnection customers to use the remaining capacity for interconnection service over the Gen-Tie and interconnect with the PSCo transmission system on a comparable basis with itself. The third party generator could then sell the output of its generator to a third party off-taker – for example, another LSE on or near the PSCo system – or could sell the generation to the PSCo LSE function. PSCo believes that lower queued projects will also prevent other third party interconnection customers (if any) from asserting priority rights over the remaining capacity of Gen-Tie as well.

Q. PLEASE PROVIDE AN OVERVIEW OF THE PROPOSED TARIFF CHANGES.

A. PSCo's proposed tariff language provides clarity on the use of the Gen-Tie. The new Part VII to the tariff describes 1) interconnection, 2) charges, 3) operations, and 4) procedures that will apply in the event of a change in status of the Gen-Tie.

Q. IS PSCO PROPOSING TO MODIFY RATE, TERMS OR CONDITIONS OF ITS LGIP OR LGIA?

A. No. PSCo is not proposing any change to the existing rates, terms and conditions of the LGIP or LGIA, which will apply to interconnection requests seeking interconnection service over the Gen-Tie. In fact, the revisions proposed in PSCo's filing clarify the applicability of the LGIP and LGIA to interconnection requests associated with the Gen-Tie and offer additional clarifications as to how such requests should be submitted.

Q. IS PSCO PROVIDING TRANSMISSION SERVICE OVER THE GEN-TIE?

A. No.[9] The Gen-Tie is not a part of the networked Transmission System over which PSCo provides transmission service. PSCo is offering Interconnection Service that utilizes the Gen-Tie. Consistent with the LGIP and Commission policy, the interconnection service offered by PSCo does not convey transmission service. In order to deliver the output of their generation facilities over the PSCo Transmission System, interconnection customers would need to separately request transmission service on the PSCo Transmission System. Alternatively, a load serving entity ("LSE") could contract for transmission service by designating a generator interconnected to the Gen-Tie as a designated network resource under the LSE's NITS Agreement with PSCo under the Tariff.

Q. WILL THE PSCO TRANSMISSION FUNCTION HAVE FUNCTIONAL CONTROL OF THE GEN-TIE?

A. Yes. Although the Gen-Tie is classified as an Interconnection Customer's Interconnection Facility for ratemaking purposes, functional control of the Rush Creek

[9] Except to the extent the Commission interprets Interconnection Service as a separate part of Transmission Service.

Gen-Tie will reside with the PSCo Transmission Function and interconnection service over the Rush Creek Gen-Tie will be available under the Xcel Energy OATT.

VI. PROPOSED TARIFF CHANGES FOR THE INTERCONNECTION PROCESS

Q. IS THE GEN-TIE IN-SERVICE?

A. No. The Gen-Tie is not expected to be in-service until August 2018.

Q. HAVE THIRD PARTY GENERATORS EXPRESSED INTEREST IN USING THE GEN-TIE?

A. Yes. PSCo has received a substantial number of interconnection requests to the Gen-Tie. Currently, there are approximately 4,700 megawatts of interconnection requests seeking to use the Gen-Tie to interconnect to the PSCo Transmission System at Missile Site substation. This is substantially more than the remaining Gen-Tie thermal capacity.

Q. WHAT PROCESS DOES A CUSTOMER USE TO REQUEST GENERATOR INTERCONNECTION THROUGH THE GEN-TIE?

A. The new Part VI of the Tariff describes the process to interconnect through the Rush Creek Gen-Tie to the PSCo Transmission System at the Missile Site Substation. The interconnection process follows the LGIP (or SGIP) described in Attachment N (or Attachment P) of the Tariff.

Q. WHY WOULD POTENTIAL GENERATORS BE INTERESTED IN INTERCONNECTING TO THE GEN-TIE NOW?

A. The Rush Creek Project is located in a relatively rural, wind rich area, and the 82 mile 345 kV Gen-Tie could provide access to other wind generators wishing to locate their generation in the region.

PSCo is currently in the middle of Phase 2 of the Colorado Electric Resource Plan ("ERP") process, which is Colorado's form of integrated resource planning. During this process, PSCo releases one or more Request for Proposals ("RFPs") which are either general (i.e., an all-source) or which target specific generation technologies. At the conclusion of Phase 2, the Colorado Commission issues a final order that directs PSCo to pursue the approved acquisition of resources. It is our understanding that some of the current Gen-Tie generation interconnection requests are generators attempting to show readiness to participate in Phase 2 of the ERP process. PSCo could then enter into one or more Power Purchase Agreements ("PPAs") to purchase the output from generators requesting interconnection to the Gen-Tie, if those generation projects are selected as least cost resources in the ERP process.

VII. RUSH CREEK USE CHARGE AND SCHEDULE 19

Q. HOW WILL PSCO CHARGE FOR THE USE OF THE RUSH CREEK GEN-TIE?

A. PSCo is proposing a new Schedule 19 to determine the rate charged for the use of the Gen-Tie. The Rush Creek Use Charge is determined by multiplying the Generating Facility Capacity by the Gen-Tie Rate, where the Gen-Tie Rate is the annual revenue requirement ("ARR") of the Gen-Tie divided by the total thermal capacity of the Gen-Tie. In this way, the third party users of the Gen-Tie are only allocated the portion of cost of the Gen-Tie for the amount of their use.

Q. WILL THE COST OF THE GEN-TIE BE INCLUDED IN PSCO'S TRANSMISSION RATES?

A. No.

Q. WHY IS PSCO NOT SIMPLY INCLUDING THE GEN-TIE COSTS IN ITS TRANSMISSION RATES AND CHARGING ALL TRANSMISSION CUSTOMERS A SINGLE RATE?

A. Allocating the Gen-Tie costs to transmission customers instead of to the users of the Gen-Tie would not follow the Commission's cost causation principles.[10] The users of the Gen-Tie receive the majority of the benefits of the Gen-Tie and so PSCo is proposing allocating the users the costs for the Gen-Tie.

Q. HOW IS THE GEN-TIE RATE DETERMINED?

A. The determination of the rate is discussed in more detail by Mr. Berman in Exhibit XES – 300. The rate is developed similarly to the development of PSCo's transmission service rate and is consistent with the Settlement Agreement.

Q. WHAT PARTIES PAY FOR THE COST OF THE GEN-TIE OTHER THAN THE THIRD PARTY USE?

A. PSCo's Generation Function will bear 100 percent of the costs of the Gen-Tie, and PSCo will recover those costs from its native wholesale production and retail customers if no third party generators use the Gen-Tie. The Gen-Tie costs would not be included in PSCo's wholesale transmission rates so no other parties pay the cost of the Gen-Tie.

Q. IF THIRD PARTY GENERATORS ARE USING THE GEN-TIE, ARE THE COSTS ALLOCATED *PRO RATA* BASED OFF OF THEIR INTERCONNECTED CAPACITY?

A. Yes, but only if the Gen-Tie is fully subscribed. Because the denominator used to develop the rate for the Gen-Tie Use Charge is based off the total capacity of the Gen-Tie instead of the total amount of interconnected capacity, PSCo (and thus its native load customers) continues to pay for the remainder of the cost of "unused" portion of the Gen-Tie until the Gen-Tie is fully subscribed. Third party generators are only charged for the portion of the line's costs that they use. For example, if the Rush Creek Project uses 600 MW of Gen-Tie capacity, third parties subscribe to 400 MW of Gen-Tie capacity, and 600 MW

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[10] See for example, *Ill. Commerce Comm'n v. FERC* 576 F.3d 470 (7th Cir. 2009); *Midwest ISO Transmission Owners v. FERC*, 373 F.3d 1361, 1368 (D.C. Cir. 2004).

is unsubscribed, the third parties would pay twenty-five (25) percent of the costs (400/1600), not their forty (40) percent proportionate share of subscribed uses (400/1000). So if the Gen-Tie line is not fully subscribed, third party generators pay a lower effective rate for using the Gen-Tie than PSCo.

Once the Gen-Tie is fully subscribed — that is, once the total interconnected capacity is equal to the capacity of the Gen-Tie line — then the cost of the Gen-Tie are allocated the third party generators *pro rata* based off the third party's interconnected capacity, e.g., PSCo and third party generators pay the same rate. Note that under the terms of the Settlement Agreement, if a third party generator contracts to sell its entire capacity to PSCo, PSCo will reimburse the third party for the Gen-Tie Use Charge.

Q. WHY WILL PSCO REIMBURSE THIRD PARTY GENERATORS FOR THE GEN-TIE IF THEY SELL THE ENTIRE OUTPUT OF THEIR FACILITY TO PSCO?

A. PSCo justified the Gen-Tie as the best option to deliver its 600 MW Rush Creek Project to serve retail and wholesale native loads. If no third party generators interconnect to the Gen-Tie, PSCo native load customers will pay 100% of the costs of the Gen-Tie. If PSCo were to expand its Rush Creek Project, or construct other wind farms nearby to fully utilize the Gen-Tie, there would be no impact to PSCo's costs associated with the Gen-Tie; PSCo native loads would continue to pay for 100% of the costs of the Gen-Tie. PSCo's proposal to reimburse a third party generator selling the full output of its facility to PSCo for the Gen-Tie Use Charge is effectively treating those third party sellers of energy to PSCo native load customers similar to PSCo. This aspect of the Settlement Agreement is not addressed in the proposed Tariff provisions because it is associated with how PSCo will treat the Gen-Tie as part of the interconnection costs in PSCO's resource planning process. It is related to the delivered cost of power to PSCo's native loads rather than a transmission or interconnection-related provision. I note that under this cost allocation structure, it is PSCo (and its native load) that will bear such costs, not third parties taking interconnection service over the Gen-Tie.

Q. WHAT PARTIES BENEFIT FROM THE GEN-TIE?

A. PSCo's retail and wholesale production customers benefit from the Gen-Tie. Even though there is additional capacity on the Gen-Tie, the Gen-Tie was the best option to deliver the 600 MW Rush Creek Project to PSCo's native load customers. If a third party generator were able to use the Gen-Tie in lieu of solely bearing the costs of entirely separate interconnection facilities, that third party generator would also benefit.

Q. HOW WILL PSCO TREAT THE REVENUES ASSOCIATED WITH THE RUSH CREEK GEN-TIE USE CHARGE?

A. In a separate filing in Docket No. ER18-176-000, PSCo filed revisions to its production formula rate and explained how the wholesale jurisdictional portion of revenues is credited to its wholesale production customers though the production formula rate. Retail customers will also receive their proportionate share of the revenues since they will bear the majority of the costs of the Gen-Tie.

Q. WHAT LOSSES ARE RELATED TO THE GEN-TIE?

A. Real power Gen-Tie losses are associated with all usage of the Gen-Tie. The loss factor is discussed in more detail in the testimony of Mr. Corrigan, and in Schedule 19. The loss factor for the Gen-Tie is used to determine the amount of energy delivered to the PSCo transmission system. The volume metered at the location where the generator interconnects to the Rush Creek Gen-Tie decreases due to losses before it enters the PSCo Transmission System. The loss factor estimates this lost energy. The volume corrected for losses is used in conjunction with the scheduling of energy over the PSCo transmission system and will be used, for instance, to determine the deviation of actual injections from the scheduled transaction as part of PSCo's normal billing process.

VII. CURTAILMENT AND EMERGENCY OPERATIONS

Q. HOW WILL PSCO DETERMINE THE CURTAILMENT PRIORITY FOR GENERATORS CONNECTED TO THE GEN-TIE?

A. PSCo will use the transmission service priority on the PSCo transmission system to determine curtailment priority. Because the Rush Creek Gen-Tie is a radial line, any flow over the line will also flow on the PSCo transmission system. In order to direct curtailments on a non-discriminatory basis in the simplest and most transparent manner, the PSCo transmission function will use the transmission service reservation priority on the PSCo system to determine curtailment priority of transactions over the Rush Creek Gen-Tie.

For example, a generator taking interconnection service over the Rush Creek Gen-Tie with non-firm transmission service on the PSCo Transmission System would be curtailed before a Gen-Tie connected generator with firm transmission service. Similarly, two customers taking interconnection service over the Rush Creek Gen-Tie that have firm transmission service on the PSCo Transmission System would be curtailed *pro rata* if their generation equally impacted a constraint. For instance, transactions sourced from generation connected to the Gen-Tie with non-firm service on the PSCo Transmission System will be curtailed pro rata if their impact to a constraint is similar. Transactions sourced from generation connected to the Gen-Tie with non-firm service on the PSCo Transmission System will be curtailed prior to those transactions with firm service. This is conceptually the same as curtailment determination for any generators interconnected to the PSCo system, is consistent with Commission policy and is reasonable.

Q. IS THIS PROPOSED CURTAILMENT TREATMENT SIMPLY AN EXTENSION OF TRANSMISSION SERVICE ON THE PSCO SYSTEM?

A. Yes. PSCo is simply treating generators that are using the Gen-Tie and injecting at Missile Site the same as any other generator that is injecting at Missile Site.

Q. WILL PSCO TREAT ITS OWN GENERATION COMPARABLY TO THIRD PARTY GENERATION USING THE GEN-TIE AND INJECTING AT MISSILE SITE?

A. Yes. PSCo is proposing to treat its own generation connected to the Gen-Tie and injecting at Missile Site the same as third party generation.

Q. WILL PSCO MONITOR THE GEN-TIE AND INTERCONNECTED GENERATION?

A. Yes. The PSCo transmission function will monitor all generation connected to the Gen-Tie and flows over the Gen-Tie. PSCo will do this by incorporating the Gen-Tie and all interconnected generation into its Balancing Authority functions, for instance in its contingency planning and real-time operations.

Q. WHAT AUTHORITIES DOES PSCO HAVE AS A BALANCING AUTHORITY OPERATOR IN EMERGENCY CONDITIONS?

A. PSCo shall have all necessary authority to (1) preserve the public health, safety, and welfare; (2) preserve the reliability of the PSCo Balancing Authority Area (BAA) and Transmission System; (3) limit or prevent damage to the PSCo BAA and Transmission System; and (4) expedite the restoration of electric service within the PSCo BAA.

VIII. <u>CHANGE IN STATUS FROM A RADIAL TO A NETWORK FACILITY</u>

Q. SECTION 47 OF THE PROPOSED TARIFF REVISIONS ADDRESSES A POSSIBLE CHANGE IN STATUS OF THE GEN-TIE. IS PSCO PLANNING TO CONVERT THE GEN-TIE INTO A NETWORK FACILITY?

A. No. Although PSCo has no current plans to network the Gen-Tie, PSCo, as part of the Settlement Agreement, published the results of an open stakeholder group that studied the potential to network the Gen-Tie. Because some stakeholders are advocating to "network" the Gen-Tie, and networking the Gen-Tie may impact the proposed Gen-Tie Use Charge, we feel it is important to describe a process and the related impacts of changing the status of the facility. That process is described in Schedule 19, section 47.

Q. WILL CHANGING THE STATUS OF THE GEN-TIE TO A NETWORK FACILITY IMPACT INTERCONNECTION CUSTOMERS?

A. Changing the status of the Gen-Tie will impact parties interconnected to the Gen-Tie. From the interconnection customer's perspective there are two important aspects of networking a portion of or the entire Gen-Tie. The first important impact is that the costs of the networked portion of the Gen-Tie should be removed from the Gen-Tie rate and recovered from PSCo's transmission customers. If the Gen-Tie were to be converted to a network facility, PSCo plans to request permission from the Commission through a Section 205 filing to move these costs. Such a transfer of costs will impact the Gen-Tie Use Charge, the PSCo production formula rate and the PSCo transmission formula rate. The second important aspect of networking the Gen-Tie is that point of interconnection will move from Missile Site to the point where the generator connects to the networked transmission system. However, I note that nothing in section 47 binds the Commission to any predetermined rate treatment in the event that the Gen-Tie becomes a networked transmission facility. Section 47 establishes that PSCo would make a section 205 filing in that eventuality and contains several of the rate treatments that PSCo would propose to the Commission, but which the Commission is not obligated to accept the proposal.

Q. IS PSCO REQUESTING AUTHORITY TO TREAT THE GEN-TIE AS A NETWORKED FACILITY FOR RATE PURPOSES AT THIS TIME?

A. No. As I discussed earlier, PSCo is not seeking to recover costs of the Gen-Tie in transmission rates. The Gen-Tie currently is an interconnection facility and is not networked with the PSCo transmission system, and there is no basis for including the costs of the facility in transmission rates. In the event the Gen-Tie becomes networked with the PSCo transmission system and is properly allocable in system-wide transmission rates, PSCo will propose appropriate rate treatment in a separate section 205 filing. In that filing PSCo will describe and justify any changes to the Rush Creek Gen-Tie Use Charge and PSCo transmission formula rate resulting from moving facilities into the PSCo transmission rate base.

Q. DO PSCO'S PROPOSED TARIFF CHANGES AND PROCESSES COMPLY WITH COMMISSION POLICIES?

A. Yes. PSCo is describing a process for third party generators to interconnect to the Gen-Tie and a reasonable charge for the use of the Gen-Tie.

Q. WHY SHOULD THE TARIFF REVISIONS BE APPROVED BY THE COMMISSION, AND ARE THE PROPOSED CHANGES JUST AND REASONABLE AND NOT UNDULY DISCRIMINATORY?

A. The proposed changes will facilitate third- party use of the Rush Creek Gen-Tie in an open and transparent manner. The proposed interconnection and curtailment processes are non-discriminatory. The charge for use of the Gen-Tie is just and reasonable and follows the Commission's accepted ratemaking policies.

IX CONCLUSION

Q. DOES THIS CONCLUDE YOUR PREPARED PRE-FILED TESTIMONY?

A. Yes.

EXHIBIT NO. XES – 201

Rush Creek Settlement Agreement approved by the CoPUC in Proceeding No. 16A-0117E

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * * *

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF THE 600 MW RUSH CREEK WIND PROJECT PURSUANT TO RULE 3660(H), A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE RUSH CREEK WIND FARM, AND A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE 345 KV RUSH CREEK TO MISSILE SITE GENERATION TIE TRANSMISSION LINE AND ASSOCIATED FINDINGS OF NOISE AND MAGNETIC FIELD REASONABLENESS.	)	**PROCEEDING NO. 16A-0117E**
IN THE MATTER OF THE PETITION OF PUBLIC SERVICE COMPANY OF COLORADO FOR A VARIANCE OF THE CONSTRUCTION SCHEDULE FOR THE PAWNEE TO DANIELS PARK 345 KV TRANSMISSION PROJECT.	)	**PROCEEDING NO. 16V-0314E**

NON-UNANIMOUS SETTLEMENT AGREEMENT

INTRODUCTION

Public Service Company of Colorado (“Public Service” or “Company”), Trial Staff of the Colorado Public Utilities Commission (“Staff”); the Colorado Office of Consumer Counsel (“OCC”); the Colorado Energy Office (“CEO”); Tri-State Generation and

Transmission Association, Inc. ("Tri-State");[1] CF&I Steel, L.P./Evraz ("Evraz"); Interwest Energy Alliance ("Interwest"); Colorado Energy Consumers ("CEC"); Southwest Generation Operating Company, LLC ("SWGen"); Western Resource Advocates ("WRA"), Rocky Mountain Environmental Labor Coalition ("RMELC") and Colorado Building and Construction Trades Council, AFL-CIO ("CBCTC") (jointly, "RMELC/CBCTC"); the Colorado Independent Energy Association ("CIEA"); the City of Boulder ("Boulder"); and the City and County of Denver ("Denver") (collectively the "Settling Parties"), hereby enter into this Settlement Agreement ("Agreement") to resolve all issues that have been raised in this proceeding.

In addition to the 14 Settling Parties, three other parties have intervened in this proceeding but have not joined in the Settlement Agreement. Non-joining parties who intervened and do not oppose the Agreement are: Climax Molybdenum Company, ("Climax"); Holy Cross Electric Association, Inc., Yampa Valley Electric Association, Inc., Intermountain Rural Electric Association, and Grand Valley Rural Power Lines, Inc. (collectively, "Joint Cooperatives");[2] and Sustainable Power Group, LLC ("sPower"). Non-joining parties who intervened and oppose the Agreement are a group of ratepayers known as the Ratepayers Coalition.

BACKGROUND

Rush Creek Wind Project

On May 13, 2016, Public Service filed its Verified Application for Approval of the 600 MW Rush Creek Wind Project pursuant to Rule 3660(h), a Certificate of Public

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[1] Tri-State supports the resolution of the transmission planning issues in this proceeding, but takes no position on the remaining provisions of the Settlement Agreement.

[2] The Joint Cooperatives do not oppose the Settlement Agreement and may join the Settlement Agreement pending further discussion by and among its respective members.

Convenience and Necessity for the Rush Creek Wind Farm, and a Certificate of Public Convenience and Necessity for the 345 kV Rush Creek to Missile Site Generation Tie Transmission Line and Associated Findings of Noise and Magnetic Field Reasonableness ("Rush Creek Application"), along with the Direct Testimony of eleven witnesses, commencing Proceeding No. 16A-0117E. The Rush Creek Application also included a report from the Independent Evaluator ("IE"), Leidos, as required by Rule 3660(h)(V).[3]

In the Rush Creek Application, the Company sought approval to develop, own, and operate a new 600 MW nameplate capacity wind facility[4] located in eastern Colorado ("Rush Creek Wind Project" or "Project"), comprised of the Rush Creek I and II sites. The Company also requested two Certificates of Public Convenience and Necessity ("CPCN"): (1) to construct and operate Rush Creek I and II, and (2) to construct and operate a 345 kV generation intertie ("Gen-Tie") to interconnect the Rush Creek Wind Project to the grid.

Rush Creek I wind generation facility is rated at 400 MW and sited on approximately 75,000 acres southeast of Limon, Colorado. Rush Creek II wind generation facility is rated at 200 MW and will be constructed on approximately 41,000

[3] Rush Creek Application, Attachment 1, at 2 ("We conclude that the Project as proposed by PSCo, is reasonably likely to be developed, constructed, and operated at a lower levelized cost than the projects from which PSCo is currently purchasing energy.")

[4] On March 11, 2016, Staff petitioned the Commission for a Declaratory Order in Proceeding No. 16D-0168E determining the amount of new eligible energy resources an investor-owned utility (such as Public Service) shall be allowed to develop and own as utility-rate based property without being required to comply with certain competitive bidding requirements. Rule 3660(h) implements § 40-2-124(1)(f)(I), C.R.S. On April 15, 2016, the Commission adopted Decision No. C16-0362, declaring in Ordering ¶ 1 "that 'twenty-five percent of the total new eligible energy resources' as of 'March 27, 2007' means the cumulative of all eligible energy resources that were not in existence prior to March 27, 2007, and should therefore be calculated as a cumulative percentage of eligible energy resources the utility acquires after March 27, 2007…"

acres east of Hugo, Colorado. Collectively across both sites, the Project will install 300 wind turbines with a capacity of 2 MW each.

In order to deliver power generated at Rush Creek I and II to the grid, Public Service will also construct (1) a 345 kV Gen-Tie interconnecting the new facilities to the Company's existing Missile Site Substation ("Missile Site"), and (2) a 345 kV transmission switching station at Rush Creek I. In the Rush Creek Application, the Company requested that the Commission make specific findings with respect to the reasonableness of the noise and magnetic field levels projected to result from operating the Gen-Tie.

Public Service estimates that the total cost of the Project will be $1.036 billion: this equates to $1,727 per kW on a total construction cost basis, and less than $0.03 per kWh on a levelized cost of energy ("LCOE") basis.[5]

In addition to the development, construction, ownership, and operation of the Rush Creek Wind Project, the Company also requested approval of its cost recovery proposal, the baseline for future net economic benefits calculations under Rule 3660(g), and four (4) studies in support of the Rush Creek Application.

Pawnee-Daniels Project

On March 28, 2014, Public Service filed its Application for a Certificate of Public Convenience and Necessity for the Pawnee to Daniels Park 345 kV Transmission Project, and for Specific Findings with Respect to EMF and Noise ("Pawnee-Daniels Application") along with the Direct Testimony of five witnesses, commencing Proceeding No. 14A-0287E. In the Pawnee-Daniels Application, the Company requested

[5] The total Project cost of $1727/kW contained in the Company's Application does not include the AFUDC cost. However, the AFUDC cost has been included in Section IV – Rush Creek Cost Cap.

Commission approval to construct a transmission project consisting of approximately 115 miles of new 345 kV transmission originating at the Pawnee Station near Brush, Colorado, and terminating at the Daniels Park Substation, north of Castle Pines, Colorado ("Pawnee-Daniels Project"). The Pawnee-Daniels Project also included a new Smoky Hill – Daniels Park 345 kV circuit and a new Harvest Mile substation.

By Recommended Decision No. R14-1405, the Administrative Law Judge ("ALJ") assigned to the case granted the CPCN with the condition that construction not begin prior to May 1, 2020. The Commission adopted that recommendation in Decision No. C15-0316 on March 11, 2015.

On April 29, 2016, Public Service filed its Verified Petition for Variance of Commission Decision for Accelerated Construction Schedule ("Petition"), commencing Proceeding No. 16V-0314E ("Pawnee-Daniels Variance"). In this Petition the Company requested that the Commission provide a variance from Decisions R14-1405 and C15-0316 to allow the Pawnee-Daniels Project to begin construction in 2017 with an in-service date of October 2019 to help accommodate the generation output of the Rush Creek Wind Project.

On May 18, 2016, OCC filed a motion to consolidate the Pawnee-Daniels Variance, Proceeding No. 16V-0314E, with the Rush Creek Wind Project, Proceeding No. 16A-0117E.[6] By Decision No. C16-0458-I adopted on May 26, 2016, the Commission granted OCC's motion and consolidated the two proceedings.[7] The Commission also set an intervention deadline of June 1, 2016 for both proceedings.

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[6] OCC is an intervenor by right.

[7] The Commission also granted the consolidation in the Rush Creek Wind Project Proceeding No. 16A-0117E by Decision No. C16-0548-I adopted on June 15, 2016.

Consolidated Rush Creek Wind Project and Pawnee-Daniels Variance Proceedings

By Decision No. C16-0548-I adopted June 15, 2016 in the consolidated proceedings, the Commission acknowledged the interventions by right of Staff, OCC, and CEO. It also granted the permissive interventions of CEC, Interwest, the Joint Cooperatives, Boulder, Tri-State, Climax, CF&I/Evraz, CIEA, the Ratepayers Coalition, Denver, RMELC/CBCTC, sPower, SWGen, and WRA.[8]

On July 5, 2016, NextEra Energy Resources filed a limited motion to intervene out of time, which the Commission granted by Decision No. C16-0662-I effective July 15, 2016.[9] Invenergy, previously granted *amicus curiae* status in Decision No. C16-0548-I on June 15, moved for limited intervention out of time on July 12. On July 15, Solar Star also moved for a limited intervention out of time. The ALJ granted Invenergy and Solar Star's interventions in Decision No. R16-0692 on July 22, 2016. On July 29, the IE, Leidos moved for a limited intervention, which the ALJ granted in Decision No. R16-0731-I on August 5, 2016.

The Commission set the procedural schedule in Decision No. C16-0548-I adopted on June 15, 2016. The schedule included Answer Testimony filed by July 27, 2016; Rebuttal Testimony and Cross-Answer Testimony filed by August 22, 2016; prehearing motions filed by August 29, 2016; responses to prehearing motions by September 1, 2016; a prehearing conference on September 2, 2016; hearings from September 7 to 9, 2016; and post-hearing statements of position by September 19, 2016.

[8] The Commission granted Invenergy *amicus curiae* status in the same decision.
[9] The Commission also referred the consolidated proceedings to an ALJ in this decision.

Also in Decision No. C16-0548-I, the Commission ordered Public Service to file an Amended Application and Direct Testimony to remove its request for the Commission to establish a baseline and methodology to determine the potential level of net economic benefits for a potential future request under Rule 3660(g).[10] The Company filed the Amended Application on July 8, 2016 together with the supplemental Direct Testimony of two of the original eleven witnesses.

Nine parties filed Answer Testimony on July 27: WRA, RMELC/CBCTC, OCC, Tri-State, Staff, CEO, sPower, CIEA, and SWGen. The Ratepayers Coalition filed a motion for extension of time to file their Answer Testimony on July 29, and filed the testimony the same day; the Commission granted the motion after the fact by Decision No. C16-0748-I. Public Service filed Rebuttal Testimony on August 22, and three parties filed Cross-Answer Testimony on the same date: Tri-State, CIEA, and WRA.

The Parties began settlement negotiations on August 26, 2016, and the Settling Parties reached a settlement in principle on August 31, 2016. The Settlement Agreement filed here represents the comprehensive agreements of all Settling Parties to resolve the issues in these consolidated proceedings.

SETTLEMENT TERMS AND CONDITIONS

I. RUSH CREEK WIND PROJECT

The Settling Parties agree that the Commission should grant the Rush Creek Application filed pursuant to § 40-5-101 and § 40-2-124, C.R.S., and Rules 3002(a)(III), 3002(b), 3002(c), 3102, 3206, and 3660(h) of the Commission's Rules, and that the granting of the Application is within the public interest, consistent with the agreements below.

[10] Originally in the Rush Creek Application in Proceeding No. 16A-0117E.

II. RUSH CREEK I AND II

The Settling Parties agree that the Commission should grant the Rush Creek Application filed pursuant to Rule 3660(h) and grant an unconditional CPCN for Rush Creek I and II consistent with the agreements below.

A. IN-SERVICE DATE

In its direct case, the Company proposed an in-service date of October 31, 2018.[11] The Settling Parties agree that Rush Creek I and II should be placed in service by October 31, 2018.

B. USEFUL LIFE

The Company proposed a useful life of 25 years for Rush Creek I and II in its direct case.[12] The Settling Parties agree that the useful life for Rush Creek I and II should be set at 25 years.

C. PERFORMANCE METRIC

Given the 25-year useful life of Rush Creek I and II, the Settling Parties agree that a performance metric ("Performance Metric") shall be used with regard to the Project to alleviate performance concerns expressed by certain Parties in the outer years of the useful life. The generation performance of Rush Creek I and II as compared to the Performance Metric will be provided annually to the Commission in this proceeding each year on or before June 1 of each year that the Rush Creek Wind Project is in-service. The Settling Parties agree that the Company will implement a Performance Metric to assess the generation performance for years thirteen through twenty-five (2031 – 2043) of the Project, which may affect recovery of the revenue

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[11] Rush Creek Application, at 17 (filed May 13, 2016); Amended Direct Testimony of Alice K. Jackson, at 15:1-4 (filed July 8, 2016).

[12] Amended Direct Testimony of Alice K. Jackson, at 105:24-26 (filed July 8, 2016).

requirement during years sixteen through twenty-five as detailed below and as depicted in Attachment A - Performance Metric Description. In addition, the Performance Metric may affect the calculation of the sharing of capital cost savings during years thirteen through twenty-five as discussed later in this Settlement Agreement in Section IV.

The Performance Metric will function as follows. For the first five years that Rush Creek I and II is in-service, the Company will measure the actual wind speed at the facility site as well as the electrical production output from the facility and the resulting power curve for the facility. The measured wind speed data and electrical production during the first five years will be utilized to establish the Initial 5-year Farm Production. The Settling Parties have agreed upon an approach for establishing the Initial 5-Year Farm Production, and this approach is described in Attachment A – Performance Metric Description. An annual Baseline Performance Metric shall be calculated so that the Initial 5-Year Farm Production is degraded by 0.78% annually from year 1 through year 25.

The Performance Metric also includes a Reasonability Limit, calculated as follows. In direct testimony the Company showed that its Strategist modeling of the Rush Creek Wind Project resulted in $443 million of customer savings on a Net Present Value basis. In answer testimony, Staff modeled more restrictive assumptions that demonstrated that even under more restrictive scenarios, the Rush Creek Wind Project still resulted in customer savings. This more restrictive modeling result is used to establish a Reasonability Limit for the Performance Metric, such that, if the Performance Metric falls above the Reasonability Limit, the Reasonability Limit governs. An illustrative Performance Metric and Reasonability Limit is reflected in Attachment A - Performance Metric Description.[13]

Beginning in year sixteen (2034) and ending in year twenty-five (2043) of the Project, if the actual normalized annual MWh production (i.e., wind-level normalized) in any year of the Project is less than the Performance Metric and the Reasonability Limit for the same year, then the Company will bear the burden to show that the revenue requirement recovery above that of production levels is justified.

In each year during years sixteen through twenty-five of the Project, the revenue requirement for that year is tied to the outcome of this evaluation. If the annual MWh production of Rush Creek I and II as normalized in any of those years meets or exceeds the Performance Metric or Reasonability Limit, whichever is less, the Company shall recover the entire revenue requirement for that year. If the annual MWh production of Rush Creek I and II as normalized in any of those years is below that of the Performance Metric and the Reasonability Limit, the Company shall recover pro-rata the revenue requirement based on the percentage of actual production compared to the Performance Metric or Reasonability Limit, whichever is less. For example, if in year 2040, the Performance Metric is 2,000 GWh, and the actual cumulative MWh production after being normalized is 1,500 GWh, this represents 75% of the Performance Metric In this example, the Company shall receive 75% of the revenue requirement for the year 2040, and the Company shall have the burden of proof for any revenue requirement recovery above 75% and up to 100%.

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[13] Although all parties have agreed to the approach used for establishing the Performance Metric, technical details regarding the implementation of the Performance Metric will be worked out and agreed upon by Staff and Public Service and filed in this proceeding no later than December 2, 2016.

The Settling Parties acknowledge that in the event that other entities interconnect to the Gen-Tie the measurement point or the line losses associated with the measurement point may need to be adjusted so that the measurement continues on an equivalent basis.

D. Best Value Employment Metrics

In its direct case and as reiterated on its rebuttal case, the Company intends to comply with Rule 3102(f) with regard to best value employment metrics ("BVEM"). Furthermore, the Settling Parties agree that, in awarding the contracts for the Rush Creek I and II Balance of Plant ("BOP") and Rush Creek Gen-Tie, Public Service shall consider on a qualitative basis the factors that affect employment and the long-term economic viability of the Colorado communities identified as BVEM pursuant to § 40-2-129, C.R.S., the Colorado Renewable Energy Portfolio Standard (HB10-10 1001), as amended by the Keep Jobs in Colorado Act of 2013 (HB13-1292), as well as by Commission Rules set forth at Rule 3102(e) and Rule 3102(f) for CPCN applications to ensure that these projects provide economic benefits to Colorado and the local community.

III. Rush Creek Gen-Tie

The Settling Parties agree that the Commission should grant an unconditional CPCN for the Rush Creek Gen-Tie consistent with the agreements below. The Settling Parties further agree that the Commission should find that the noise and magnetic field levels projected to result from operating the Gen-Tie are reasonable pursuant to Rule 3102 and Rule 3206.[14]

[14] Rush Creek Application, at 7 (filed May 13, 2016); Direct Testimony of Brad D. Cozad, at 14:1 – 30:5 (filed May 13, 2016).

A. TRANSMISSION CLASSIFICATION

The Settling Parties agree that the Rush Creek Gen-Tie shall be designated as "transmission serving generation" pursuant to FERC Guidelines. Entities seeking transmission service across the Gen-Tie will be subject to the Company's open-access transmission tariff ("OATT") rates for Wholesale services, until such time as the Gen-Tie becomes a network transmission resource.

B. TREATMENT IN ERP PHASE II

The Company will make the Gen-Tie available for other entities to interconnect to the Company's transmission system at the Missile Site substation once the Gen-Tie reaches commercial operation. Parties submitting proposals into any competitive generation resource acquisition process, including but not limited to Phase II ERP requests for proposals ("RFPs"), that utilize the Gen-Tie will not be allocated any costs detailed in section 9.9.2 of the Large Generator Interconnection Agreement ("LGIA") for usage of the Gen-Tie in the evaluation of their proposal, so long as they sell the entire output of the connected generator to Public Service.

In the event that such a proposal is selected and the party awarded a Power Purchase Agreement ("PPA") enters into a LGIA interconnecting its project to the Gen-Tie, an agreement will be structured to offset the payment that the party delivering energy to Public Service must make for use of Gen-Tie pursuant to the Company's OATT with reciprocal payments made coincident between Public Service and the contracting IPP. This agreement will be separate from the PPA for any capacity and energy from the resource and shall remain in effect as long as and to the extent that (1) the party is selling the entire output of the project to Public Service; and (2) to the extent that the Gen-Tie is not interconnected as a network resource. This agreement would terminate at the same time as the OATT payment for use of the transmission line also terminates. The Gen-Tie will also be available for interconnection by other generators when the purchase of the generation of such generators is a third-party, and not Public Service, pursuant to the terms of the Company's OATT.

To provide greater detail, the Settling Parties agree that Public Service will develop a draft addendum or exhibit to its OATT that will set forth how the Company will develop the charge for interconnecting customers selling power to a third-party off taker. It is understood that the charge will be designed to cover cost components permitted by FERC to be included in the development of a directly assigned facilities charge, including, but not necessarily limited to, a return on the net book value of the asset, depreciation expense, O&M expenses, and taxes. The Company's return will be the same as reflected in the Company's OATT formula rate, and will be subject to modification over time.

Public Service may propose to develop a stated rate or a formula rate. Stated rates will be subject to change by making appropriate filings under Sections 205 and 206 of the Federal Power Act. If a formula rate, the rates will change automatically, per the formula, but consistent with the Company's other formulas, Public Service would file update filings with FERC. The formula rate will be subject to change by making appropriate filings under Sections 205 and 206 of the Federal Power Act. The Company recognizes that there is a preference to develop the Facilities Charge for the Gen-Tie as a formula rate, and will if feasible develop the rate on that basis.

Public Service will endeavor to have its draft rate available to CIEA and other interested parties within ninety (90) days of an order approving this Settlement Agreement. Public Service will confer with the CIEA and other interested parties and will consider modifications proposed by CIEA to achieve consensus on a filing that would be unopposed to the FERC. Notwithstanding that, it is understood that the Company reserves the right to file its proposed addendum or schedule with the FERC without modification, and CIEA and interested parties retain the right to oppose or seek modification of this filing if consensus is not reached.

The Settling Parties agree that this filing approach will satisfy open-access requirements. Any rates will be effective until the Gen-Tie becomes a network resource.

C. LOSSES

The Settling Parties agree that Rush Creek Gen-Tie line losses will be averaged and applied to all interconnected parties on the Rush Creek Gen-Tie.

D. FURTHER STUDY

The Company will take a leadership role in a Colorado Coordinated Planning Group ("CCPG") Task Force (or Sub-Group) to analyze the costs and benefits of alternative proposals to potentially integrate the Gen-Tie as a network transmission facility. The alternatives to be studied must be reviewed and determined to be a reasonable networking alternative to be evaluated by the CCPG Task Force. The Company commits that it will offer staff and computing resources from its Transmission Planning group, will use its best efforts to publish the CCPG report after stakeholder comment no later than 12 months after the settlement is filed with the Commission.

If the CCPG Task Force studies identify benefits associated with alternatives that integrate the Rush Creek Gen-Tie line as a network facility, and which alternatives address identified present or future needs, Public Service will initiate conversations with other transmission providers and stakeholders (as defined in Rule 3627) concerning the identified alternatives. Such discussions will include, but are not limited to, the interest in constructing an identified alternative, potential financial responsibilities associated with the alternative, the timing of a CPCN application to the extent a CPCN is required, and the proposed in-service date for the alternative. Notwithstanding the results of the CCPG Task Force studies or the outcome of such discussions, Public Service will include in its February 2018 filing under Rule 3627 the CCPG Task Force study results, a summary of the subsequent discussions, and a presentation of Public Service's position with respect to moving forward with any of the identified alternatives.

E. Rush Creek Cost Recovery

The Company in its direct case presented cost recovery of the Rush Creek Wind Project through the Electric Commodity Adjustment ("ECA") and Renewable Energy Standard Adjustment ("RESA") until such time as the Company files a base rate case following the commercial operation date of the Project.[15] The Settling Parties agree that the cost recovery approach proposed by the Company in its direct case is appropriate and should be approved by the Commission. Reporting of this cost recovery (i.e., the amounts recovered through the ECA and RESA until the Project is placed in base rates) will occur through Appendix E of each annual RES Compliance Report. Parties have the right, as is provided in the procedures to review the annual RES Compliance Reports, to

[15] *See, e.g.,* Amended Direct Testimony of Alice K. Jackson, at 73:2 – 100:20 (filed July 8, 2016).

participate in that review process. In addition, the jurisdictional cost allocation will be based on an energy allocator for the Rush Creek Wind Project.

IV. RUSH CREEK COST CAP

Due to the unique circumstances of a Rule 3660(h) approval, as well as the expedited timeframe in which this project has been reviewed, the Settling Parties agree to institute a hard cost cap for the cost of the Rush Creek I and II and Gen-Tie CPCNs with a sharing of capital cost savings between customers and the Company if capital costs are less than $1.0958 billion (inclusive of AFUDC). The Settling Parties further agree that the hard cost cap includes the costs in the table below but will be evaluated on a total basis and not based upon the individual cost components of the Rush Creek Wind Project.

	Plant	***AFUDC***	***Total***
Rush Creek I and II	$ 915,000,000	$ 52,147,229	$ 967,147,229
Rush Creek Gen-Tie	$ 114,916,000	$ 6,908,070	$ 121,824,070
Network Trans	$ 6,491,000	$ 337,141	$ 6,828,141
Total Project Cost	**$ 1,036,407,000**	**$ 59,392,440**	**$ 1,095,799,440**

The Settling Parties agree that, as part of the implementation of the hard cost cap, a sharing of any savings will be instituted as follows. For each $10 million in capital cost savings for the construction of the Project, i.e., total capital costs less than the overall cost cap of $1.0958 billion, the parties agree that the Company and the customers will share the capital cost savings, with 82.5% retained by customers, and 17.5% retained by the Company. Attachment B to the Settlement Agreement details the annual capital cost sharing that will be provided to the Company dependent on the initial capital cost savings. This Attachment B schedule is designed such that the shape of the sharing is reflective of the savings that customers would see over time, with a larger dollar level in the earlier years and a smaller dollar level in the latter years. It is also designed such that Customers retain 82.5% of the Net Present Value of the savings over the life of the project. The capital cost sharing will be reflected in the ECA after the level of capital cost savings is determined.

Notwithstanding the foregoing, the Settling Parties agree that the Performance Metric shall apply with regard to the sharing of any capital cost savings in Years 13 through 25. Specifically, in the event that during Years 13 through 25 the Company has not met the lower of the Performance Metric or the Reasonability Limit for a particular year, the Company's share of the capital cost savings would be reduced proportionally by the percentage that the Company missed the Performance Metric for that year. For example, if in Year 17 the Performance Metric is 2,000 GWh, and the Company's actual production was 1,800 GWh (i.e., 10% below the metric), the Company's share of the capital cost savings would be reduced by 10%.

V. REASONABLE COST FINDING

The Settling Parties agree that the Rush Creek Wind Project satisfies the reasonable cost standard in § 40-2-124(1)(f)(I), C.R.S., and Rule 3660(h) applicable to utility ownership of up to 25 percent of the total new eligible energy resources acquired after March 27, 2007.

VI. NET ECONOMIC BENEFIT

The Settling Parties agree that the Company will forego any claim, at this time or any time in the future, to file for or receive a net economic benefit associated with the Rush Creek Wind Project under Rule 3660(g).

VII. PAWNEE-DANIELS PARK

The Settling Parties agree that the Company's request to accelerate the in-service date for the Pawnee-Daniels Park Project to October 2019 is within the public interest and that the Company's Petition for Variance should be granted by the Commission. No costs associated with this transmission project will be allocated to the Rush Creek Wind Project or taken into account to determine if the Project meets the reasonable cost standard. No costs associated with Pawnee-Daniels Park Project will be assigned to ERP bids that propose to interconnect to the Rush Creek Gen-Tie. As detailed in Decision No. R14-1405 in Proceeding No. 14A-0287E, the Company will file semi-annual status reports, including costs incurred as compared to the Company's budget. The Company will file an estimate "revised to plus or minus 10 percent prior to commencement of construction" in this proceeding, i.e., Proceeding No. 16V-0134E. The Company will file this cost estimate with the Commission within 30 days of receiving the final cost estimate and prior to commencing construction of the Pawnee-Daniels Park Project.

VIII. STUDIES AND OTHER POSTING ISSUES

The Settling Parties agree that the four studies filed in this proceeding with regard to the Rush Creek Wind Project shall be evaluated and decided upon in the ERP proceeding (Proceeding No. 16A-0396E). These studies include (1) Coal Cycling Cost, (2) Flex Reserve Adequacy, (3) Effective Load Carrying Capacity, and (4) Wind Integration. In addition, the Settling Parties agree that the Company shall post the Available Transfer Capability ("ATC") of the Rush Creek Gen-Tie on its OASIS site as may be required by the FERC's requirements to post transmission information on the

Company's OASIS. The Company agrees to, at a minimum, identify the location of posting of the ATC information for the Gen-Tie and the template agreement associated with interconnection to the Gen-Tie, if materially different than its *pro forma* LGIA, with sufficient time for parties to evaluate prior to the submission deadline for the receipt of bids pursuant to its next Phase II ERP process.

IX. Miscellaneous

The Settling Parties agree that sPower may file a pleading in the ERP proceeding (Proceeding No. 16A-0396E) seeking to adjudicate whether the Commission's ERP rules are PURPA-compliant by October 14, 2016. This pleading will state with specificity the issues that sPower proposes to be addressed and its position on those issues with any legal support. This filing shall also propose a procedure whereby Public Service and other interested parties will have until December 9, 2016 to respond to sPower's pleading.

While the Settling Parties may not oppose this pleading on the basis that it is outside of the scope of Proceeding No. 16A-0396E, any party may oppose the pleading on any other basis, including, without limitation, that the pleading requests relief that can only be granted in a rulemaking or some other proceeding and that the existing Commission PURPA-implementation rules are appropriate.

Given that sPower may be raising PURPA compliance issues that affect parties other than Public Service or other parties in the ERP proceeding, the Settling Parties believe that responses to the sPower pleading should be permitted by any entity.

GENERAL PROVISIONS

1. The Settling Parties understand and agree that this Settlement Agreement represents a negotiated resolution of all issues that the Settling Parties either raised or could have raised in this proceeding. The Settling Parties understand that the Commission's approval of this Settlement Agreement shall constitute a determination that the Settlement Agreement represents a just, equitable, and reasonable resolution of these issues. Accordingly, the Settling Parties state that reaching resolution of these issues in this proceeding through this negotiated Settlement Agreement is in the public interest and that the results of the compromises and agreements reflected in the Settlement Agreement are just, reasonable, and in the public interest.

2. The Settling Parties agree to join in a motion that requests that the Commission approve this Settlement Agreement, and to support the Settlement Agreement in any subsequent pleadings or filings. Each Settling Party further agrees that in the event that it sponsors a witness to address the Settlement Agreement at any hearing that the Commission may hold to address it, the Settling Party's witness will testify in support of the Settlement Agreement and all of the terms and conditions of the Settlement Agreement. The Settling Parties agree to reasonably seek approval of this Settlement Agreement before the Commission against challenges that may be made by non-executing parties.

3. The Settling Parties agree that all their pre-filed testimony and exhibits shall be admitted into evidence in this proceeding without cross examination by the Settling Parties.

4. Except as expressly stated herein, nothing in this Settlement Agreement shall resolve any principle or establish any precedent or settled practice.

5. Nothing in this Settlement Agreement shall constitute an admission by any Settling Party of the correctness or general applicability of any principle, or any claim, defense, rule, or interpretation of law, allegation of fact, regulatory policy, or other principle underlying or thought to underlie this Settlement Agreement or any of its provisions in this or any other proceeding. As a consequence, no Settling Party in any future negotiations or proceedings whatsoever (other than any proceeding involving the honoring, enforcing, or construing of this Settlement Agreement in those proceedings specified in this Settlement Agreement, and only to the extent, so specified) shall be bound or prejudiced by any provision of this Settlement Agreement.

6. The discussions among the Settling Parties that have produced this Settlement Agreement have been conducted with the understanding, pursuant to Colorado law, that all offers of settlement, and discussions relating thereto, are and shall be privileged and shall be without prejudice to the position of any of the Settling Parties and are not to be used in any manner in connection with this or any other proceeding.

7. This Settlement Agreement shall not become effective until the issuance of a final Commission Decision approving the Settlement Agreement, which Decision does not contain any modification of the terms and conditions of this Settlement Agreement that is unacceptable to any of the Settling Parties. In the event the Commission modifies this Settlement Agreement in a manner unacceptable to any Settling Party, that Settling Party shall have the right to withdraw from this Agreement and proceed to hearing on the issues that may be appropriately raised by that Settling Party in this proceeding. The withdrawing Settling Party shall notify the Commission and the Settling Parties to this Agreement by e-mail within three business days of the Commission modification that the party is

withdrawing from the Settlement Agreement and that the party desires to proceed to hearing; the e-mail notice shall designate the precise issue or issues on which the party desires to proceed to hearing (the "Hearing Notice").

8. The withdrawal of a Settling Party shall not automatically terminate this Agreement as to any other party. However, within three business days of the date of the Hearing Notice from the first withdrawing party, all Settling Parties shall confer to arrive at a comprehensive list of issues that shall proceed to hearing and a list of issues that remain settled as a result of the first party's withdrawal from this Settlement Agreement. Within five business days of the date of the Hearing Notice, the Settling Parties shall file with the Commission a formal notice containing the list of issues that shall proceed to hearing and those issues that remain settled together with a proposed procedural schedule. The Settling Parties who proceed to hearing shall have and be entitled to exercise all rights with respect to the issues that are heard that they would have had in the absence of this Settlement Agreement.

9. All Parties have had the opportunity to participate in the drafting of this Settlement Agreement and the term sheet upon which it was based. There shall be no legal presumption that any specific Settling Party was the drafter of this Settlement Agreement.

10. This Settlement Agreement may be executed in counterparts, all of which when taken together shall constitute the entire Settlement Agreement with respect to the issues addressed by this Agreement.

Dated this 2nd day of September, 2016.

Agreed on behalf of:

PUBLIC SERVICE COMPANY
OF COLORADO

By: ______________________________
Alice K. Jackson
Regional Vice President, Rates and
Regulatory Affairs

Approved as to Form:

By: ______________________________
William M. Dudley
Lead Assistant General Counsel

COMMISSION TRIAL STAFF

By: ______________________________

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Approved as to Form:

CYNTHIA H. COFFMAN
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____

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*Counsel of Record

Agree on behalf of:

Colorado Office of Consumer Counsel

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Signature page for settlement in proceeding Nos. 16A-0117E and 16V-0314E

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EXHIBIT NO. XES – 202

January 18, 2017 Memorandum to Stakeholders regarding proposed Gen-Tie Tariff revisions

Xcel Energy
PUBLIC SERVICE COMPANY

MEMORANDUM

To: Rush Creek Settling Parties (CPUC Proceeding Nos. 16A-0117E and 16V-0314E)

Re: Proposed Rush Creek Gen-Tie Tariff Provisions

Date: January 18, 2017

As part of the Settlement Agreement in CPUC Proceeding Nos. 16A-0117E and 16V-0314E, Public Service committed to file with the Federal Energy Regulatory Commission ("FERC") "an addendum or exhibit to its [open-access transmission tariff ("OATT")] that will set forth how the Company will develop the charge for interconnection customers selling power to a third-party off taker." The Settlement Agreement sets forth a non-exclusive list of components that will be included in the development of such charge. The Settlement Agreement sets forth the parties preference that the charge be developed as a formula rate.

Consistent with our commitment in the Settlement Agreement to endeavor to provide a draft of such charge to the Colorado Independent Energy Association and other interested parties for review and comment, we have prepared and are providing the following documents for comment:

- Part VII-Rush Creek Gen-Tie Use Charge
- Sch 19- Rush Creek Gen-Tie Use Rate
- Gen Tie Rate Formula (Excel)
- Gen Tie Stated Rate Back Up (Excel)

Public Service intends to implement a stated rate for the years 2018, 2019, and 2020 that converts to a historic-looking formula rate on January 1, 2021. We recognize that the Settlement Agreement reflects that there was a preference to develop a formula rate, and our approach is intended to reflect that preference, which is ours as well. However, we are unable to use the formula until we have actual 13 month averages, which will not be until 2021. Accordingly, our proposal starts with a stated rate that is based on estimated plant balances and the most recent available actuals. The stated rate uses the same concepts as the formula rate, but uses projected capital costs, return and depreciation expense until thirteen month averages can be calculated based on actuals and reflected in the proposed formula. When we transition to the formula rate, Public Service proposes to use a historic formula template for the Rush Creek Gen-Tie. The estimated initial stated rate, including back-up detail, and a draft formula rate template are provided in the attached Excel files.

As agreed to in the settlement, the rate covers cost components such as a return on the net book value of the asset, depreciation expense, O&M expenses, and taxes. The return on equity used is the same used for transmission system investments in Public Service's OATT formula rate (currently 9.72%). The Gen-Tie rate would be in addition to the applicable Network or Point-to-Point rate that would apply for deliveries from the Missile Substation Point of Receipt to the load(s) being served.

Also attached are drafts of new proposed Part VII of the Xcel Energy OATT and a new proposed Schedule 19. The formula rate template, currently in Excel format, will be filed with FERC as an attachment to the Tariff. The proposed Tariff amendments describe: 1) the process to interconnect to the Public Service Transmission System through the Rush Creek Gen-Tie; 2) curtailment provisions; 3) charges for the use of the Rush Creek Gen-Tie; 4) application and calculation of losses over the Rush Creek Gen-Tie; and 5) the impact of changing the status of the Rush Creek Gen-Tie from a radial generator outlet line to a networked transmission facility. Note that if the Rush Creek Gen-Tie becomes a network facility, Public Service intends to roll the remaining costs of the Rush Creek Gen-Tie into transmission system costs, and the Rush Creek Use Charge would no longer apply.

Public Service proposes that this rate apply to all third-party use of the Gen-Tie. As contemplated by the Settlement Agreement, a third-party could use the Gen-Tie to deliver generation either for sale to Public Service or for sale to a third party load serving entity (on system or off-system). We have agreed in the Settlement Agreement that if the generator is selling the entire output of the project to Public Service, the Company would reimburse the Gen Tie charge to the third-party user. That commitment is not included in our proposed FERC filing since it is a commitment related to providing our retail service.

Public Service will hold a meeting to discuss these proposed tariff changes on January 24, 2017 from 3-5 pm MST at our 1800 Larimer location. The meeting will have call-in capabilities. Public Service requests written comments related to the proposed tariff changes by February 15, 2017. Our goal is to achieve consensus on a filing that would be unopposed when we later file it with the FERC.

EXHIBIT NO. XES – 300

The Direct Testimony of Mr. Steven P. Berman

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Affidavit of Steven P. Berman

Public Service Company of Colorado	)))	**Docket No. ER18-____-000**

County of Denver)
State of Colorado)

I, Steven P. Berman, being duly sworn, depose and state that the statements contained in the prepared Direct Testimony of Steven P. Berman served on behalf of Public Service Company of Colorado in these proceedings are true and correct to the best of my knowledge, information and belief, and I hereby adopt said testimony as if given by me in formal hearing, under oath.

Steven P. Berman

Subscribed and sworn before me this 22nd day of February, 2018

AMANDA G. ALLEN
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20164011605
MY COMMISSION EXPIRES MARCH 24, 2020

Notary Public

My Commission expires: 03/24/2020

DB1/ 93880968.1

Exhibit No. XES – 300

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Public Service Company of Colorado	**)** **)**	**Docket No. ER18-___-000**

DIRECT TESTIMONY
OF
STEVE BERMAN

XCEL ENERGY SERVICES INC.
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

February 27, 2018

DIRECT TESTIMONY OF
STEVE BERMAN

I. INTRODUCTION AND EXPERIENCE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven P. Berman. My business address is 1800 Larimer Street, Suite 1400, Denver, Colorado 80202. I am the Manager of Revenue Analysis.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Xcel Energy Services Inc. ("XES" or "Service Company") as Manager, Revenue Analysis. XES is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), and provides an array of support services to Public Service Company of Colorado ("Public Service" or the "Company") and the other utility operating company subsidiaries of Xcel Energy on a coordinated basis.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Public Service Company of Colorado ("PSCo" or "Public Service").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I graduated from the University of Maryland in 1999 with a Bachelor of Science degree in Business Administration, and from George Washington University in 2005 with a Masters degree in Business Administration concentrating in Finance. I am licensed by the state of Colorado as a Certified Public Accountant.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I accepted the position of Revenue Analysis Manager with XES in April 2015 and have worked in the energy industry for over 10 years. Over that time, I have worked for XES and Colorado Springs Utilities (a municipal utility) in progressively more responsible financial roles. In June 2006, I began working at Colorado Springs Utilities as a Senior Analyst in the corporate budgeting group. In June 2008, I accepted a position as a Financial Consultant with XES supporting the Customer Care organization, where I provided financial analysis and support for customer care and bad debt expenses used in rate cases across the eight state regulatory jurisdictions service by Xcel Energy's four operating companies. In July 2010, I returned to Colorado Springs Utilities as a Principal Financial Analyst, and in July 2011 accepted the position of Financial Planning & Analysis Manager. In that role, I was responsible for the budget and revenue requirements of the organization. I presented them annually to the City Council who acts as the regulator for Colorado Springs Utilities. In March 2014, I accepted the position of Treasury Manager. In that role, I directed all cash and financing activities of the Utility. I worked closely with the Chief Financial Officer to develop an annual financing plan and present it to the board and credit rating agencies in support of the Utility's strong "AA" credit rating. Prior to working in the utility industry, I held various positions in marketing and finance after graduating college in 1999 and moving into the utility industry in 2006.

Q. WHAT ARE YOUR DUTIES IN YOUR CURRENT POSITION?

A. As the Manager of Revenue Analysis for XES, I am responsible for leading a team of analysts who develop revenue requirements models to support the rates charged by Public Service. My responsibilities include directing, reviewing, and analyzing the revenue requirements that support the retail base rates and rate riders, and the transmission and production formula rates used by Public Service to set the rates for wholesale services regulated by the Federal Energy Regulatory Commission ("FERC" or "Commission").

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION OR BEFORE OTHER REGULATORY AGENCIES OR COURTS ON UTILITY-RELATED MATTERS?

A. Yes, I have submitted written testimony before the Colorado Public Utilities Commission ("CoPUC") in Proceeding No. 15AL-0938ST and 17AL-0363G, related to the retail ratemaking for the PSCo Gas and Steam systems. I provided pre-filed testimony before the Commission in Docket No. ER18-176-000, which was related to the treatment of the Rush Creek Project in PSCo's production formula rate.

II. PURPOSE OF TESTIMONY AND OVERVIEW OF THE GEN-TIE RATE

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. In this testimony, I describe the rate proposed to be added to the Xcel Energy Operating Companies Open Access Transmission Tariff ("Xcel Energy OATT") for use of the Rush Creek Gen-Tie and explain and support the reasonableness of the proposed formula rate. As described by PSCo witness Mr. Liam Noailles, the Gen-Tie rate will be a direct assignment charge separate from the Network Integration Transmission Service or Point-to-Point Transmission Service rates for use of the Public Service transmission facilities classified as "network" facilities, and will allow third party generators to interconnect to and use the Rush Creek Gen-Tie as an interconnection facility.

The proposed rate formula provides an estimate of the net revenue requirement for the Rush Creek Gen-Tie facilities each rate year, with a true-up of the rate based on actual costs. The rate formula will be set forth as Attachment 1 to new Schedule 19 to the Xcel Energy OATT. The estimated rate will be developed using budgeted information for the Gen-Tie and will utilize inputs from PSCo's existing Transmission Formula Rate Template (Attachment O – PSCo) Annual Transmission Revenue Requirement ("ATRR"). The actual rate will be calculated using actual data from PSCo's company records and filed FERC Form 1 and will also use inputs from PSCo's existing Attachment O-PSCo Transmission Formula Rate Template ("Attachment O Template"). The true-up, calculated by taking the difference between the estimated rate and actual rate for a rate year, plus interest, will be added to the estimated rate.

Q. PLEASE PROVIDE AN EXAMPLE OF HOW THE GEN-TIE FORMULA FUNCTIONS.

A. For service from January to December ("the Rate Year"), the average rate base balance and annual expenses are forecasted and the populated formula template is posted with the existing Attachment O-PSCo Template by October 1 preceding the Rate Year. The actual average rate base balance and annual expenses per PSCo's company records and filed FERC Form 1 for the Rate Year are posted along with the actual rate base, annual expenses and loads for the existing Attachment O –PSCo Template by June 1 of the year following the Rate Year. The difference between actual costs and forecasted costs are then trued-up, including interest, and incorporated into the following rate year's estimate.

For example, the 2019 estimated rate would be posted on October 1, 2018, and placed into effect on January 1, 2019. PSCo would calculate the actual 2019 rate after the 2019 PSCo Form 1 report is filed with the Commission, and post the actual rate and true-up calculation on June 1, 2020. Any true-up adjustment (positive or negative) would be provided to customers by October 2020 and reflected in the Gen-Tie annual revenue requirement ("ARR") and Gen-Tie rate effective January 1, 2021.

Q. WHAT IS THE PROPOSED EFFECTIVE DATE FOR THE FORMULA RATE?

A. PSCo proposes an effective date of May 1, 2018, for the proposed tariff sheets. The rate, however, would not be effective until an interconnection customer is using the Gen-Tie, which will not occur until August 2018 at the earliest, which is the date the Rush Creek Gen-Tie is expected to be placed in service. Even though PSCo is uncertain if there will be any third party customers to be charged the rate when the Rush Creek Gen-Tie is initially in service, this proposed effective date would allow third parties to understand the rate prior to executing a generation interconnection agreement under the OATT. The effective date also provides access to the Rush Creek Gen-Tie as of the in-service date, and allows PSCo to begin charging the Gen-Tie Rate as soon as an Interconnection Customer is able to interconnect to the Gen-Tie and use the Gen-Tie to deliver to the PSCo transmission network.

PSCo has calculated an estimate of the Gen-Tie rate for the 2018 Rate Year based on cost estimates as of late 2017. The estimated rate for 2018 is $0.76/kW-month.

Q. PLEASE EXPLAIN WHY THE PROPOSED RATE FORMULA IS JUST AND REASONABLE.

A. The proposed formula is very similar to the existing Commission-approved PSCo Attachment O-PSCO Transmission Formula Rate Template, which also uses estimated data and a true-up, and utilizes data found in PSCo's FERC Form 1 reports and Attachment O - PSCo. The Gen-Tie rate formula would allow PSCo to collect a revenue requirement that is representative of the actual costs incurred to build and operate the Gen-Tie, and ensures that parties interconnecting to the Gen-Tie pay their share of the costs to use the facility. As I understand, the Commission has approved numerous other formulas that employ similar true-up mechanisms, in, for example, *Boston Edison Company*, 91 FERC ¶ 61,198 (2000); *Northeast Utilities Service Company*, 105 FERC ¶ 61,089 (2003); *San Diego Gas & Electric Company*, 103 FERC ¶ 61,115 (2003); *Commonwealth Edison Co.*, 122 FERC ¶ 61,030 (2008); *American Electric Power Service Corp.*, 124 FERC ¶ 61,306 (2008); *American Electric Power Transmission Co.*, 135 FERC ¶ 61,066 (2011); *Tallgrass Transmission, LLC and Prairie Wind Transmission, LLC* 132 FERC ¶ 61,114 (2010); *American Electric Power Transmission Co.*, 135 FERC ¶ 61,066 (2011); and *RITELine Indiana, LLC and RITELine Illinois, LLC*, 137 FERC ¶ 61,039 (2011).

III. FORMULA RATE

Q. PLEASE PROVIDE AN OVERVIEW OF THE PROPOSED FORMULA RATE METHODOLOGY.

A. The formula rate has two components. The first is the formula itself discussed later in my testimony, including a statement of the ARR. The formula rate template populated for 2018 is included in the filing as Exhibit No. XES – 301, and a working Excel® version is posted on PSCo's OASIS.[1] The second component is the Formula Rate Implementation Procedures (or "protocols") which govern stakeholder interaction, how the formula will be updated each year and how any changes to the annual rate restatement will be implemented. The Implementation Procedures for the Rush Creek Gen-Tie

[1] *See* "Rush Creek Gen-Tie Use Filing" folder under the "General Information Folder" on PSCo's OASIS, http://www.oasis.oati.com/psco/index.html.

formula rate are incorporated into Appendix 1 of Attachment O –PSCo and are attached to this instant filing as both clean and marked tariff sheets.

Q. PLEASE DESCRIBE IN DETAIL THE PROPOSED FORMULA RATE "ESTIMATE."

A. The Estimated Rate calculation is described in Table 1 of Attachment 1 of Schedule 19. Lines 1-10 of Table 1 summarize the calculation of the rate for the Gen-Tie based on the annual revenue requirement and the divisor. Lines 11-52 calculate the net plant revenue requirement for the Gen-Tie. The gross revenue requirement is the sum of operation and maintenance expense ("O&M"), depreciation expense, taxes other than income taxes, income taxes and return on rate base shown on lines 53–79. The underlying cost data reflect PSCo's estimated costs for the rate year.

Attachment 1 to Schedule 19 also includes, beginning on line 80, a listing of "Supporting Calculations and Notes" for the general formula on lines 11-79, specifically: (a) the Gen-Tie Transmission Plant allocator ("GTTP") (lines 80-86); (b) the Gen-Tie Gross Plant allocator ("GTGP") (lines 88–90); (c) the Wages & Salaries allocator ("W/S") (lines 93-101); (d) the Common to Electric allocator ("CE") (lines 103-105); and (e) the capital structure and overall Rate of Return ("ROR") (lines 108-112). These supporting calculations and notes are followed by explanatory notes.

Each line of the formula generally consists of five columns of information or data (in addition to the "Line No." column):

(1) a description of the cost item or formulaic result of the calculation on the line;

(2) the source of the input data (a reference to the ATRR or other worksheet), or an instruction describing a calculation (*e.g.*, "Sum lines 5 to 9");

(3) the actual Total Company data input (areas shaded) or sum of the data (unshaded);

(4) the allocator or functionalization factor applicable to the Total Company value; and

(5) the Gen-Tie amount obtained by applying the allocator or functionalization factor to the Total Company value.

Q. PLEASE DESCRIBE IN DETAIL THE PROPOSED FORMULA RATE "ACTUAL."

A. The Actual Rate is calculated using Table 2 of Attachment 1 of Schedule 19. Line 1 on Table 2 in Attachment 1 to Schedule 19, provides the difference between the actual and the estimated ARR for the Rate Year being trued-up. Lines 2–103 provide all if the same calculations as lines 11–112 in Table 1. Actual data to complete Table 2 will be obtained from PSCo's company records and filed FERC Form 1 for the Rate Year.

Q. PLEASE DESCRIBE IN DETAIL HOW THE TRUE-UP IS REFUNDED OR BILLED TO CUSTOMERS.

A. The true-up calculated in Table 2, line 1 is included in the next estimated ARR on Table 1, line 2. Interest on the true-up amount is calculated in Table 4, line 34, and included in the next estimated ARR on Table 1, line 3. The true-up is calculated by June 1 following the end of the rate year. That true-up will be included in the next estimated rate year ARR and posted on OASIS by October 1. This timing is such that the true-up included in an estimated rate year will be from 2 years prior. For example, as noted, the 2019 true-up calculated and posted on OASIS by June 1, 2020, will be included in the ARR estimated rate for 2021 that is posted on OASIS by October 1, 2020.

Q. PLEASE EXPLAIN WHY THE PROPOSED TREATMENT OF THE REFUNDING OR SURCHARGING THE TRUE-UP IS REASONABLE.

A. Given the nature of the proposed formula and the predictability of the Gen-Tie ARR (e.g. a known radial asset and not an evolving system), the true-ups are not expected to be large. Customers utilizing the Gen-Tie will likely be doing so on a long-term basis. The expected small size of the true-up, coupled with the expectation that the customers using the Gen-Tie (either generators or load serving entities) will be stable over time, makes rolling the true-up into a future estimated rate the most efficient mechanism for providing refunds or surcharges.

Q. WILL INTEREST BE APPLIED TO TRUE-UPS?

A. Yes, interest will be calculated using the FERC approved methodology that is also currently used in PSCo's existing Attachment O - PSCo Template. The interest amount is also added into the estimated ARR on Table 1, line3.

Q. PLEASE DESCRIBE HOW RATE BASE IS CALCULATED PURSUANT TO THE FORMULA.

A. As set out in Table 1 of Attachment 1 to Schedule 19, lines 11-19, the Gen-Tie Plant is functionalized at 100% to the Gen-Tie. Total General and Intangible Plant are derived from the Annual Transmission Revenue Requirement ("ATRR") in PSCo's Attachment O and are then functionalized to the Gen-Tie using the W/S allocator. Total Common General and Common Intangible Plant are derived from the ATRR in PSCo's Attachment O and are functionalized to the Gen-Tie using the CE allocator. The Accumulated Depreciation associated with the Gen-Tie is functionalized at 100% to the Gen-Tie, and the general, intangible, and common plant (lines 22-30) is functionalized using the GTGP allocator.

Net transmission plant, property and equipment balances are calculated at lines 32-40. All plant balances are calculated based on 13-month averages, the details of which are supported by company records, FERC Form 1, and the Attachment O for all balances which are functionalized to the rate.[2]

Accumulated Deferred Income Tax ("ADIT") associated with the direct plant for the Gen-Tie is shown on line 46.

Q. PLEASE DISCUSS HOW THE ADIT BALANCES ARE INCLUDED IN THE FORMULA.

A. Deferred income taxes arise when items are included in taxable income in different periods than they are included in rates. The average of the beginning of year and end of year ADIT balances associated with the direct plant of the Gen-Tie are calculated in Table 3 and are included on line 46.[3]

[2] Because the Gen-Tie will have been in service for less than 5 months, the 2018 rate year will use end of year balances instead of thirteen month averages.

[3] Because the Gen-Tie will have been in service for less than 5 months, the 2018 rate year will use end of year balances instead beginning of year/end of year averages.

Q. PLEASE DISCUSS THE DEVELOPMENT OF O&M EXPENSES.

A. Operating and Maintenance (“O&M”) expenses are included on line 54. The GTGP allocator is applied to the total ATRR Operation and Maintenance (O&M) expense to recover reasonable expenses including overheads, associated with operation, maintenance, and repair of the Gen Tie. This is consistent with the approach used in PSCo’s Wholesale Production formula to assign O&M to Generator Step-Up Facilities.

Q. PLEASE DISCUSS HOW THE FORMULA DEVELOPS DEPRECIATION AND AMORTIZATION EXPENSE.

A. Total Depreciation and Amortization Expense is shown on line 62 of Table 1 in Attachment 1 to Schedule 19. It is the sum of the Gen-Tie plant depreciation and amortization expense (line 57), plus general plant depreciation and intangible plant amortization (lines 58-59), plus Common plant (lines 60-61), functionalized to the Gen-Tie. The Gen-Tie uses the same depreciation rates as are used in Attachment O-PSCo to develop PSCo’s transmission rates (i.e., in table 25 of Attachment O-PSCo).

Gen-Tie Depreciation and Amortization Expense is functionalized at 100% to the Gen-Tie. Consistent with the functionalization of general and intangible plant, total G&I depreciation is derived from the ATRR in PSCo’s Attachment O Template and functionalized to the Gen-Tie by the W/S allocation factor. Common depreciation is derived from the ATRR in PSCo’s Attachment O Template and functionalized to the Gen-Tie by the CE allocation factor.

Q. PLEASE DISCUSS HOW THE FORMULA DEVELOPS TAXES OTHER THAN INCOME TAXES.

A. Taxes other than income taxes (“Other Taxes”) are derived in total from the ATRR in PSCo’s Attachment O Template and functionalized to the Gen-Tie on lines 64-68 of

Table 1 in Attachment 1 to Schedule 19. Labor-related taxes are functionalized by the W/S allocator (line 65). Real and personal property taxes (line 66) are functionalized by the GTGP allocator.

Q. PLEASE DISCUSS HOW THE FORMULA DEVELOPS INCOME TAXES.

A. Federal and state income taxes (line 77) are developed consistent with the return on rate base calculated at line 52.

The tax components are Federal Income Tax Rate ("FIT"), State Income Tax Rate (or Composite) ("SIT"), and the percent ("p"), if any, of federal income tax deductible in the calculation of state income tax. These components are specified in Note G. The composite federal/state income tax rate, ("T"), is calculated on line 71, where:

$$T = 1-\{[(1\text{-}SIT) * (1\text{-}FIT)] / (1\text{-}SIT * FIT * p)\} * (1\text{-}TEP)$$

The tax multiplier, 1/(1-T), is calculated on line 75.

Total Income Tax is calculated at line 77 as the product of (T/1-T) times the portion of the investment return that is taxable (which is 1 minus the weighted debt cost rate divided by the overall rate of return) times the return on rate base (line 52). The weighted debt cost rate is calculated on line 109, and the overall rate of return is calculated on line 112. The Gen-Tie uses the same rate of return used to develop PSCo's transmission rates in the Attachment O-PSCo Template.

Q. PLEASE DISCUSS HOW THE FORMULA DEVELOPS THE RETURN ON RATE BASE.

A. Return on Rate Base ("ROR") (line 52) is the product of rate base (line 48) times overall rate of return ("R") (line 112). R is the sum of the weighted cost rates for long-term debt

(“LTD”), preferred stock, and return on common equity (“ROE”) calculated at lines 109 through 112. The R is calculated consistent with the Attachment O –PSCo Template for a given Rate Year.

The LTD cost rate, preferred cost rate (if any), and common equity of the capital structure are derived in the ATRR – WP_G-1 in the Attachment O –PSCo Template.

Q. PLEASE DISCUSS HOW PSCO WILL CALCULATE THE DIVISOR USED TO CALCUATE THE ESTIMATED AND ACTUAL GEN-TIE RATE.

A. The divisor is based on the estimated total thermal capacity of the Gen-Tie and is independent of the volume of customers taking interconnection service. The total thermal capacity of the Rush Creek Gen-Tie radial line is approximately 1,600 MW. Therefore, the devisor is 1,600,000 kW.

Q. PLEASE DISCUSS THE PROTOCOLS ASSOCIATED WITH SCHEDULE 19.

A. PSCo proposes revisions to the Protocols approved by the Commission for PSCo’s Attachment O-PSCo Template that add Schedule 19 as being subject to the Protocols. The Attachment O-PSCo Protocols provide the procedures for review and challenge and also conform to the July 17, 2014 Commission Staff guidance on Formula Rate Updates. The Protocols include a requirement to post fully functional workable formulas in Microsoft Excel format with all formulas intact. The Protocols provide for annual updates that are publically posted for interested parties and informational filings to the Commission that will contain sufficient support for all inputs so that interested parties can verify that each input is consistent with the requirements of the formula. The review procedures provide for transmission customers, state commissions, and other interested parties to review and submit a written preliminary challenge to specific items included in the template. These interested parties also may serve reasonable information requests on PSCo. PSCo will make a good faith effort to respond to these requests within ten (10) business days. If the parties have not been able to resolve any such challenge, the party bringing the challenge may file a formal challenge with the Commission. The Protocols do not limit in any way PSCo's right to file, pursuant to Section 205 of the FPA, changes to the Gen-Tie Formula Rate or any of its inputs requiring a Section 205 filing under the Protocols, or the right of any other party to file a complaint requesting such changes under FPA Section 206 at any time.

Q. IN YOUR OPINION, DOES THE FORMULA RATE PROPOSED IN THIS PROCEEDING CONFORM TO COMMISSION PRECEDENT WITH RESPECT TO FORMULA RATES?

A. Yes. The classification, functionalization and allocation factors used for the cost items reflect standard Commission ratemaking. The use of an estimated rate and subsequent true-up is consistent with PSCo's existing Attachment O-PSCo Template. Furthermore, the data used in the Gen-Tie rate formula is predominately taken directly out of Attachment O-PSCo of the Tariff, which in turn is sourced from PSCo's FERC Form 1 reports.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.

EXHIBIT NO. XES – 301

The Calculation of the proposed Gen-Tie 2018 Estimated Rate

Public Service Company of Colorado
Twelve Months Ended December 31, 2018

Schedule 19 Rush Creek Gen Tie Use Estimated Rate, Table 1

Line No.	Description	Reference	Transmission Amount
	Col. (1)	Col. (2)	Col. (3)
1	**Revenue Requirement**	Line 79	$ 14,589,244
2	True-Up	20XX ARR Gen Tie Actual	
3	Interest on True-Up	20XX Interest on True-Up	
4	TOTAL REVENUE REQUIREMENT		14,589,244
5			
6	**Divisor**		
7	Rush Creek Line Capacity	Note A	1,600,000 kW
8			
9	**Rates**		
10	Monthly Rate ($/kW-Mo)	(Line 1 / Line 4) / 12	$ 0.760 /kW-month

Annual Transmission Revenue Requirement-Rush Creek Interconnection Generation Tie Rate Formula (Note B)

Line No.	RATE BASE & RETURN CALCULATION	Reference/Notes	Total	Allocator (Note J)		Generation Tie
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
11	GROSS PLANT IN SERVICE	(Note C)				
12	Production	ATRR Est Col. (3), Line 2	5,433,639,327	NA	0.00%	-
13	Generation Tie Plant	Company Records	117,205,710	DA	100.00%	117,205,710
14	Distribution	ATRR Est Col. (3), Line 4	4,931,553,653	NA	0.00%	-
15	General Plant	ATRR Est Col. (3), Line 5	278,600,181	W/S	0.05%	139,300
16	Intangible Plant	ATRR Est Col. (3), Line 6	80,353,488	W/S	0.05%	40,177
17	Common Intangible	ATRR Est Col. (3), Line 7	377,153,961	CE	0.04%	135,413
18	Common General	ATRR Est Col. (3), Line 8	419,487,281	CE	0.04%	150,612
19	TOTAL GROSS PLANT	Sum Lines 12 through 18	11,637,993,602			117,671,212
20						
21						
22	ACCUMULATED DEPRECIATION	(Note C)				
23	Production	ATRR Est Col. (3), Line 13	1,619,942,374	NA	0.00%	-
24	Generation Tie Plant	Company Records	757,447	DA	100.00%	757,447
25	Distribution	ATRR Est Col. (3), Line 15	1,429,917,533	NA	0.00%	-
26	General Plant	ATRR Est Col. (3), Line 16	109,057,827	W/S	0.05%	54,529
27	Intangible Plant	ATRR Est Col. (3), Line 17	50,322,122	W/S	0.05%	25,161
28	Common Intangible	ATRR Est Col. (3), Line 18	172,399,359	CE	0.04%	61,898
29	Common General	ATRR Est Col. (3), Line 19	204,576,607	CE	0.04%	73,451
30	TOTAL ACCUMULATED DEPRECIATION	Sum Lines 23 through 29	3,586,973,269			972,486
31						
32	NET PLANT IN SERVICE	(Note C)				
33	Production	Line 12 minus 23	3,813,696,952			-
34	Transmission	Line 13 minus 24	116,448,263			116,448,263
35	Distribution	Line 14 minus 25	3,501,636,121			-
36	General Plant	Line 15 minus 26	169,542,354			84,771
37	Intangible Plant	Line 16 minus 27	30,031,366			15,016
38	Common Intangible	Line 17 minus 28	204,754,602			73,515
39	Common General	Line 18 minus 29	214,910,675			77,161
40	TOTAL NET PLANT IN SERVICE	Sum Lines 33 through 39	8,051,020,333			116,698,726
41						
42						
43	OTHER RATE BASE ITEMS	(Note D)				
44	ADIT - BOY/EOY Average	Company Records	741,481	DA	100.00%	741,481
45	ADIT Proration Adjustment	WP_ADIT Prorate	(4,149,714)	DA	100.00%	(4,149,714)
46	TOTAL OTHER RATE BASE ITEMS		(3,408,234)			(3,408,234)
47						
48	RATE BASE	Line 40 plus 46	8,047,612,099			113,290,492
49						
50	Rate of Return	Line 112	7.35%			7.35%
51						
52	RETURN (Rate Base * Rate of Return)	Line 48 times Line 50	591,499,489			8,326,851

Line No.	EXPENSE, TAXES & REVENUE REQUIREMENTS CALCULATION	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
53	TOTAL O & M EXPENSE	(Note E)				
54	Total ATRR O&M Expense	ATRR Est Col. (5), Line 88	46,930,996	GTGP	1.01%	472,640
55						
56	DEPRECIATION AND AMORTIZATION EXPENSE					
57	Generation Tie	Company Records	2,258,906	DA	100.00%	2,258,906
58	General	ATRR - WP_B-1 Line 26 Col. (d)	11,273,811	W/S	0.05%	5,637
59	Intangible	ATRR - WP_B-1 Line 27 Col. (d)	7,942,148	W/S	0.05%	3,971
60	Common Intangible	ATRR - WP_B-1 Line 28 Col. (d)	33,410,487	CE	0.04%	11,996
61	Common General	ATRR - WP_B-1 Line 29 Col. (d)	30,014,464	CE	0.04%	10,776
62	TOTAL DEPRECIATION AND AMORTIZATION	Sum Lines 57 through 61	84,899,817			2,291,286
63						
64	TAXES OTHER THAN INCOME	(Note F)				
65	Labor Related	ATRR - WP_D-1 Line 5	13,438,496	W/S	0.05%	6,719
66	Plant Related	ATRR - WP_D-1 Line 9	148,278,276	GTGP	1.01%	1,493,304
67	Miscellaneous	ATRR - WP_D-1 Line 12	-	NA	0.00%	-
68	TOTAL OTHER TAXES	Sum Lines 65 through 67	161,716,772			1,500,023
69						
70	INCOME TAXES	(Note G)				
71	T=1 - {[(1 - SIT) * (1 - FIT)] / (1 - SIT * FIT * p)} =		24.66%			
72	CIT=(T/1-T) * (1-(WCLTD/R)) =		24.00%			
73	where WCLTD=(line 106) and R= (line 109)					
74	and FIT, SIT & p are as given in Note G.					
75	1 / (1 - T) = (from ln 68)		1.3273			
76						
77	TOTAL INCOME TAXES	Line 52 times Line 72	141,959,877			1,998,444
78						
79	REVENUE REQUIREMENT	Sum Lines (49, 51, 59, 65, 74, 76)	980,075,955			**14,589,244**

Line No.	SUPPORTING CALCULATIONS	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
80	TRANSMISSION PLANT INCLUDED IN THE ATRR	(Note H)				
81	Transmission plant	ATRR - WP_B-1 Col (a), Line 3				2,295,830,431
82	Transmission related Acquisition Adjustment	ATRR - WP_B-4 Col. (c), Line 15				5,308,257
83	Total Transmission Plant	Sum Lines 81 through 82				2,301,138,688
84	Eliminate Generator Step-up facilities	ATRR - WP_B-Inputs Est. Line 119				(102,646,084)
85	Eliminate Transmission Plant Recovered via ATRR	ATRR Est Col. (3), Line 3 plus Line 25				(2,188,503,434)
85	Transmission plant included in OATT Trans Rate	Sum Lines 83 through 85				9,989,170
86	Percent of Transmission Plant in the ATRR	Line 86 divided by Line 83			**GTTP =**	**0.43%**
87						
88	Generation Tie Plant included in Total Gross Plant					
89	Generation Tie Plant	Line 12				117,205,710
90	Total Gross Plant	Line 18				11,637,993,602
91					**GTGP =**	**1.01%**
92						
93	WAGES & SALARY ALLOCATOR (W/S)					
94	Production	ATRR Est Col. (3), Line 140	71,260,423	NA	0.00%	-
95	Transmission	ATRR Est Col. (3), Line 141	16,489,254	GTTP	0.43%	71,563
96	Regional Market	ATRR Est Col. (3), Line 142	302,631	NA	0.00%	-
97	Distribution	ATRR Est Col. (3), Line 143	41,006,893	NA	0.00%	-
98	Other	ATRR Est Col. (3), Line 144	13,865,684	NA	0.00%	-
99	Total	Sum Lines 94 through 98	142,924,885			71,563
100						
101	W/S Allocator	Line 99, Col. Col. (5) divided by Col. Col. (3)			**W/S=**	**0.05%**
102						
103	Common to Electric Transmission Allocator	ATRR Est Col. (5), Line 149				**71.81%**
104		W/S Allocator, Line 101				0.05%
105		Line 103 times Line 104			**CE=**	**0.04%**
106						
107						
108	RETURN	(Note I)	$	%	Cost	Weighted
109	Long Term Debt	ATRR - WP_G-1 Col (n), Line 6	4,734,615,385	44.56%	4.40%	0.0196
110	Preferred Stock	ATRR - WP_G-1 Col (n), Line 8	-	0.00%	0.00%	0.0000
111	Common Stock	ATRR - WP_G-1 Col (n), Line 14	5,890,759,677	55.44%	9.72%	0.0539
112	Total	Sum Lines 109 through 111	10,625,375,062		**R=**	**0.0735**

General Notes: a) References to data from FERC Form No. 1 are indicated as: page#.line#.col.#

Notes:

A Equals Rush Creek Gen Tie total thermal capacity.

B All references to ATRR are referring to Attachment O-PSCo of the OATT, or the Annual Transmission Revenue Requirement Template. The rate will be estimated annually each October and trued-up each June and published on OASIS along with the Attachment O-PSCo. The Gen Tie use rate year will match the ATRR estimate or actual for the same year.

C Gross Plant, Accumulated Depreciation Reserves will be the average of thirteen monthly balances except for the 2018 rate year, which will utilize year end balances. The Gen-Tie deprecation rates are the same as described in Table 25 to the Attachment O-PSCo Transmission Formula Rate Template

D Reflects the BOY/EOY average of the Gen-Tie related portion of balances in Accounts 281, 282, 283, 190 and 255 as adjusted by any amounts in contra accounts identified as regulatory assets or liabilities related to FASB 106, 109, 133, 158 or FASB Interpretation No. 48. Balance of Account 255 is reduced by prior flow through and completely excluded if the utility chose to utilize amortization of tax credits against taxable income as discussed in Note G. The calculation of ADIT for both the true-up and the annual projection will be performed in accordance with IRS regulation Section 1.167(l)-1(h)(6). The 2018 rate year will utilize year end balances.

E The GTGP allocator is applied to the total ATRR Operation and Maintenance (O&M) expense to recover reasonable expenses including overheads, associated with operation, maintenance, and repair of the

F Includes only FICA, unemployment, property, and other assessments charged in the current year.

G The currently effective income tax rate, where FIT is the Federal income tax rate; SIT is the State income tax rate, and p = "the percentage of federal income tax deductible for state income taxes".

Inputs Required:	FIT =	21.00%	
	SIT=	4.63%	(State Income Tax Rate or Composite SIT)
	p =	0.00%	(percent of FIT deductible for state purposes)

If a change in an income tax rate is known sufficiently in advance to be reflected in the estimated rates that will become effective January 1 for the upcoming formula rate year, PSCo will reflect the new tax rate(s) in the estimated rate calculations for the months in which the new tax rate will be in effect for the formula rate year. Otherwise, such tax change will be captured and reflected in the annual formula true-up by weighting the tax rates in effect during the year by the number of days each such tax rate was in effect.

H Removes the dollars of plant booked to transmission plant that is excluded from the Tariff because it does not meet the Tariff's definition of Transmission Facilities, or is booked to transmission (e.g. step-up transformers) that is included in the development of OATT ancillary service rates, or is otherwise not eligible to be recovered under this Tariff.

I Return on Equity will be equal to the ROE in Attachment O-PSCo. Any change to Attachment O-PSCo ROE requires a filing with the Commission pursuant to Section 205 or 206 filing. If and when the Company issues preferred stock, footnote will indicate the authorizing regulatory agency, the docket/case number, and the date of the authorizing order.

J The calculation of the GTTP Allocator is found on Line 86
The calculation of the GTGP Allocator is found on Line 91
The calculation of the W/S Allocator is found on Line 101
The calculation of the CE Allocator is found on Line 105

Public Service Company of Colorado
Twelve Months Ended December 31, 2018

Schedule 19 Rush Creek Gen Tie Use Actual Rate, Table 2

Line No.	Description	Reference	Transmission Amount Actual ARR	Transmission Amount Estimated ARR	Difference (True-Up) (Note K)
	Col. (1)	Col. (2)	Col. (3)	Col. (4)	Col. (5) = (3) - (4)
1	**Revenue Requirement**	ARR Act & Est Line 70	$ -	$ 14,589,244	$ (14,589,244)

Annual Transmission Revenue Requirement-Rush Creek Interconnection Generation Tie Rate Formula (Note B)

Line No.	RATE BASE & RETURN CALCULATION	Reference/Notes	Total	Allocator (Note J)		Generation Tie
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
2	GROSS PLANT IN SERVICE	(Note C)				
3	Production	ATRR Act Col. (3), Line 2		NA	0.00%	-
4	Generation Tie Plant	Company Records		DA	100.00%	-
5	Distribution	ATRR Act Col. (3), Line 4		NA	0.00%	-
6	General Plant	ATRR Act Col. (3), Line 5		W/S	0.00%	-
7	Intangible Plant	ATRR Act Col. (3), Line 6		W/S	0.00%	-
8	Common Intangible	ATRR Act Col. (3), Line 7		CE	0.00%	-
9	Common General	ATRR Act Col. (3), Line 8		CE	0.00%	-
10	TOTAL GROSS PLANT	Sum Lines 3 through 9	-			-
11						
12						
13	ACCUMULATED DEPRECIATION	(Note C)				
14	Production	ATRR Act Col. (3), Line 13		NA	0.00%	-
15	Generation Tie Plant	Company Records		DA	100.00%	-
16	Distribution	ATRR Act Col. (3), Line 15		NA	0.00%	-
17	General Plant	ATRR Act Col. (3), Line 16		W/S	0.00%	-
18	Intangible Plant	ATRR Act Col. (3), Line 17		W/S	0.00%	-
19	Common Intangible	ATRR Act Col. (3), Line 18		CE	0.00%	-
20	Common General	ATRR Act Col. (3), Line 19		CE	0.00%	-
21	TOTAL ACCUMULATED DEPRECIATION	Sum Lines 14 through 20	-			-
22						
23	NET PLANT IN SERVICE	(Note C)				
24	Production	Line 3 minus 14	-			-
25	Transmission	Line 4 minus 15	-			-
26	Distribution	Line 5 minus 16	-			-
27	General Plant	Line 6 minus 17	-			-
28	Intangible Plant	Line 7 minus 18	-			-
29	Common Intangible	Line 8 minus 19	-			-
30	Common General	Line 9 minus 20	-			-
31	TOTAL NET PLANT IN SERVICE	Sum Lines 24 through 30	-			-
32						
33						
34	OTHER RATE BASE ITEMS	(Note D)				
35	ADIT	Company Records		DA	100.00%	-
36	ADIT Proration Adjustment	WP_ADIT Prorate		DA	100.00%	-
37	TOTAL OTHER RATE BASE ITEMS		-			-
38						
39	RATE BASE	Line 31 plus 37	-			-
40						
41	Rate of Return	Line 103	0.00%			0.00%
42						
43	RETURN (Rate Base * Rate of Return)	Line 39 times Line 41	-			-

Line No.	EXPENSE, TAXES & REVENUE REQUIREMENTS CALCULATION	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
44	TOTAL O & M EXPENSE	(Note E)				
45	Total ATRR O&M Expense	ATRR Act Col. (5), Line 88		GTGP	0.00%	-
46						
47	DEPRECIATION AND AMORTIZATION EXPENSE					
48	Generation Tie	Company Records		DA	100.00%	-
49	General	ATRR - WP_B-1 Line 26 Col. (d)		W/S	0.00%	-
50	Intangible	ATRR - WP_B-1 Line 27 Col. (d)		W/S	0.00%	-
51	Common Intangible	ATRR - WP_B-1 Line 28 Col. (d)		CE	0.00%	-
52	Common General	ATRR - WP_B-1 Line 29 Col. (d)		CE	0.00%	-
53	TOTAL DEPRECIATION AND AMORTIZATION	Sum Lines 48 through 52	-			-
54						
55	TAXES OTHER THAN INCOME	(Note F)				
56	Labor Related	ATRR - WP_D-1 Line 5		W/S	0.00%	-
57	Plant Related	ATRR - WP_D-1 Line 9		GTGP	0.00%	-
58	Miscellaneous	ATRR - WP_D-1 Line 12	-	NA	0.00%	-
59	TOTAL OTHER TAXES	Sum Lines 56 through 58	-			-
60						
61	INCOME TAXES	(Note G)				
62	T=1 - {[(1 - SIT) * (1 - FIT)] / (1 - SIT * FIT * p)} =		0.00%			
63	CIT=(T/1-T) * (1-(WCLTD/R)) =		0.00%			
64	where WCLTD=(line 106) and R= (line 109)					
65	and FIT, SIT & p are as given in Note G.					
66	1 / (1 - T) = (from ln 68)		-			
67						
68	TOTAL INCOME TAXES	Line 43 times Line 63	-			-
69						
70	REVENUE REQUIREMENT	Sum Lines (43, 45, 53, 59, 68)	-			-

Line No.	SUPPORTING CALCULATIONS	Reference/Notes	Total	Allocator (Note J)		Total Transmission
	Col. (1)	Col. (2)	Col. (3)	Col. (4)		Col. (5)
71	TRANSMISSION PLANT INCLUDED IN THE ATRR	(Note H)				
72	Transmission plant	ATRR - WP_B-1 Col (a), Line 3				
73	Transmission related Acquisition Adjustment	ATRR - WP_B-4 Col. (c), Line 15				
74	Total Transmission Plant	Sum Lines 72 through 73				-
75	Eliminate Generator Step-up facilitie	ATRR - WP_B-Inputs Est. Line 117				
76	Eliminate Transmission Plant Recovered via ATRF	ATRR Act Col. (3), Line 3 plus Line 2				
76	Transmission plant included in OATT Trans Rate	Sum Lines 74 through 76				-
77	Percent of Transmission Plant in the ATRR	Line 77 divided by Line 74			**GTTP =**	**0.00%**
78						
79	Generation Tie Plant included in Total Gross Plant					
80	Generation Tie Plant	Line 12				-
81	Total Gross Plant	Line 18				-
82					**GTGP =**	**0.00%**
83						
84	WAGES & SALARY ALLOCATOR (W/S)					
85	Production	ATRR Act Col. (3), Line 140		NA	0.00%	-
86	Transmission	ATRR - WP_C-1 Line 31 Col. (b)		GTTP	0.00%	-
87	Regional Market	ATRR Act Col. (3), Line 142		NA	0.00%	-
88	Distribution	ATRR Act Col. (3), Line 143		NA	0.00%	-
89	Other	ATRR Act Col. (3), Line 144		NA	0.00%	-
90	Total	Sum Lines 85 through 89	-			-
91						
92	W/S Allocator	Line 90, Col. Col. (5) divided by Col. Col. (3)			**W/S=**	**0.00%**
93						
94	Common to Electric Transmission Allocator	ATRR Act Col. (5), Line 149				
95		W/S Allocator, Line 92				0.00%
96		Line 94 times Line 95			**CE=**	**0.00%**
97						
98						
99	RETURN	(Note I)	$	%	Cost	Weighted
100	Long Term Debt	ATRR - WP_G-1 Col (n), Line 6		0.00%		0.0000
101	Preferred Stock	ATRR - WP_G-1 Col (n), Line 8	-	0.00%		0.0000
102	Common Stock	ATRR - WP_G-1 Col (n), Line 14		0.00%		0.0000
103	Total	Sum Lines 100 through 102	-		**ROR=**	**0.0000**

General Notes: a) References to data from FERC Form No. 1 are indicated as: page#.line#.col.#

Notes:

A Not Applicable to this page

B All references to ATRR are referring to Attachment O-PSCo of the OATT, or the Annual Transmission Revenue Requirement Template. The rate will be estimated annually each October and trued-up each June and published on OASIS along with the Attachment O-PSCo. The Gen-Tie Use rate year will match the ATRR estimate or actual for the same rate year.

C Gross Plant, Accumulated Depreciation Reserves will be the average of thirteen monthly balances except for the 2018 rate year, which will utilize year end balances. The Gen-Tie deprecation rates are are the same as described in Table 25 to the Attachment O-PSCo Transmission Formula Rate Template

D Reflects the BOY/EOY average of the generation tie-related portion of balances in Accounts 281, 282, 283, 190 and 255 as adjusted by any amounts in contra accounts identified as regulatory assets or liabilities related to FASB 106, 109, 133, 158 or FASB Interpretation No. 48. Balance of Account 255 is reduced by prior flow through and completely excluded if the utility chose to utilize amortization of tax credits against taxable income as discussed in Note G. The calculation of ADIT for both the true-up and the annual projection will be performed in accordance with IRS regulation Section 1.167(l)-1(h)(6). The 2018 rate year will utilize year end balances.

E The GTGP allocator is applied to the total ATRR Operation and Maintenance (O&M) expense to recover reasonable expenses including overheads, associated with operation, maintenance, and repair of the Gen Tie.

F Includes only FICA, unemployment, property, and other assessments charged in the current year.
Taxes related to income are excluded. Franchise taxes are not included in transmission revenue requirement in the Rate Formula Template,

G The currently effective income tax rate, where FIT is the Federal income tax rate; SIT is the State income tax rate, and p =
"the percentage of federal income tax deductible for state income taxes".

Inputs Required:	FIT =		
	SIT=		(State Income Tax Rate or Composite SIT)
	p =		(percent of FIT deductible for state purposes)

If a change in an income tax rate is known sufficiently in advance to be reflected in the estimated rates that will become effective January 1 for the upcoming formula rate year, PSCo will reflect the new tax rate(s) in the estimated rate calculations for the months in which the new tax rate will be in effect for the formula rate year. Otherwise, such tax change will be captured and reflected in the annual formula true-up by weighting the tax rates in effect during the year by the number of days each such tax rate was in effect.

H Removes the dollars of plant booked to transmission plant that is excluded from the Tariff because it does not meet the Tariff's definition of Transmission Facilities, or is booked to transmission (e.g. step-up transformers) that is included in the development of OATT ancillary service rates, or is otherwise not eligible to be recovered under this Tariff.

I Return on Equity will be equal to the ROE in Attachment O-PSCo. Any change to Attachment O-PSCo ROE requires a filing with the Commission pursuant to Section 205 or 206 filing.
If and when the Company issues preferred stock, footnote will indicate the authorizing regulatory agency, the docket/case number, and the date of the authorizing order.

J The calculation of the GTTP Allocator is found on Line 77
The calculation of the GTGP Allocator is found on Line 82
The calculation of the W/S Allocator is found on Line 92
The calculation of the CE Allocator is found on Line 96

K True-up amount and related interest will be included in the calculation of the estimated Revenue Requirement (ATRR) for the Gen Tie Rate rate in the second year subsequent to the rate year.

Public Service Company of Colorado
Twelve Months Ended December 31, 2018

Schedule 19 Accumulated Deferred Income Tax Proration Adjustment, Table 3 (WP_ADIT Prorate)

Rate Year = *2018*

1 **ADIT Associated with Transmission Serving Generation Plant**

Line		Days in Period				Averaging with Proration - Projected			Averaging Preserving Projected Proration - True-up					
4	A	B	C	D	E	F	G	H	I	J	K	L	M	N
5	Month	Days in the Month	Number of Days Prorated	Total Days in Future Portion of Test Period	Proration Amount (C / D)	Projected Monthly Activity	Prorated Projected Monthly Activity (E x F)	Prorated Projected Balance (Cumulative Sum of G)	Actual Monthly Activity	Difference between projected and actual activity	Partially prorate actual activity above Monthly projection	Partially prorate actual activity below Monthly projection but increases ADIT	Partially prorate actual activity below Monthly projection and is a reduction to ADIT	Partially prorated actual balance
6														
7	December 31st Balance - Prorated Items							(222,511)						-
8	January	31	335	365	91.78%	1,517,230	1,392,526	1,170,015	-	(1,517,230)	-	1,392,526	1,392,526	-
9	February	28	307	365	84.11%	1,517,230	1,276,136	2,446,151	-	(1,517,230)	-	1,276,136	1,276,136	-
10	March	31	276	365	75.62%	1,517,230	1,147,275	3,593,426	-	(1,517,230)	-	1,147,275	1,147,275	-
11	April	30	246	365	67.40%	1,517,230	1,022,571	4,615,997	-	(1,517,230)	-	1,022,571	1,022,571	-
12	May	31	215	365	58.90%	1,517,230	893,711	5,509,708	-	(1,517,230)	-	893,711	893,711	-
13	June	30	185	365	50.68%	1,517,230	769,007	6,278,715	-	(1,517,230)	-	769,007	769,007	-
14	July	31	154	365	42.19%	1,517,230	640,146	6,918,861	-	(1,517,230)	-	640,146	640,146	-
15	August	31	123	365	33.70%	1,517,230	511,286	7,430,146	-	(1,517,230)	-	511,286	511,286	-
16	September	30	93	365	25.48%	1,517,230	386,582	7,816,728	-	(1,517,230)	-	386,582	386,582	-
17	October	31	62	365	16.99%	1,517,230	257,721	8,074,450	-	(1,517,230)	-	257,721	257,721	-
18	November	30	32	365	8.77%	1,517,230	133,017	8,207,467	-	(1,517,230)	-	133,017	133,017	-
19	December	31	1	365	0.27%	39,989	110	8,207,576	-	(39,989)	-	110	110	-
20		Total	2,029	4,380		16,729,516	8,430,087		-	(16,729,516)	-	8,430,087	8,430,087	
21														
22	Proration Factor			53.68%										

Line	Item	Reference	Amount	Reference	Amount
23					
24					
25	Beginning Balance of Prorated items	(Line 7, Col H)	(222,511)	(Line 7, Col N)	-
26	Ending Balance of Prorated items	(Line 19, Col H)	8,207,576	(Line 19, Col N)	-
27	Average Balance Prorated items	(Average of Line 25 & Line 26)	3,992,533	(Average of Line 25 & Line 26)	-
28	Non-prorated Average Balance	(WP_B-3, Average of Line 26, Cols (a) and (b))	8,142,247	(WP_B-3, Average of Line 26, Cols (a) and (b))	-
29	Proration Adjustment		(4,149,714)		-

Schedule 19 True-Up Interest Calculation, Table 4

III. Interest Calculation:

1	Month	Year	FERC Quarterly Interest Rates	Number of Days in Month	Monthly Interest Rate
2	January				0.0000
3	February				0.0000
4	March				0.0000
5	April				0.0000
6	May				0.0000
7	June				0.0000
8	July				0.0000
9	August				0.0000
10	September				0.0000
11	October				0.0000
12	November				0.0000
13	December				0.0000
14	January				0.0000
15	February				0.0000
16	March				0.0000
17	April				0.0000
18	May				0.0000
19	June				0.0000
20	July				0.0000
21	August				0.0000
22	September				0.0000
23	October				0.0000
24	November				0.0000
25	December				0.0000
26	Average Monthly Interest Rate				0.0000

27			
28	Over/Under Recovery Amount (Col (5), ln 1, amount on ATRR Gen Tie Actual tab)	########	
29	Average Monthly Interest Rate (ln 26)	0.0000	
30	Monthly Interest Recovery Amount (ln 28 x ln 29)	$0	
31			
32	Number of Months for Interest Recovery Amount	24	
33			
34	Interest Recovery Amount (ln 32 times ln 30)	$0	**(Input to ATRR Gen Tie Estimate)**

Note:
The interest is calculated pursuant to Section 35.19a using the interest rate posted on the FERC website.
See link to website below.
http://www.ferc.gov/enforcement/acct-matts/interest-rates.asp

EXHIBIT NO. XES – 400

The Direct Testimony of Mr. Patrick M. Corrigan

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Affidavit of Patrick M. Corrigan

Public Service Company of Colorado	)))	**Docket No. ER18-____-000**

County of Denver)
State of Colorado)

I, Patrick M. Corrigan, being duly sworn, depose and state that the statements contained in the prepared Direct Testimony of Patrick M. Corrigan served on behalf of Public Service Company of Colorado in these proceedings are true and correct to the best of my knowledge, information and belief, and I hereby adopt said testimony as if given by me in formal hearing, under oath.

Patrick M. Corrigan

Subscribed and sworn before me this 23rd
day of February, 2018

Mia L. Buffard
Notary Public

My Commission expires: November 15, 2019

MIA L BUFFARD
Notary Public
State of Colorado
Notary ID 20074042712
My Commission Expires Nov 15, 2019

DB1/ 93880968.1

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

Public Service Company of Colorado) Docket No. ER18-___-000

PREPARED TESTIMONY
OF
PATRICK M. CORRIGAN

XCEL ENERGY SERVICES INC.
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

February 27, 2018

I INTRODUCTION AND EXPERIENCE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Patrick M. Corrigan. My office address is 1800 Larimer Street, Denver, Colorado, 80202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Xcel Energy Services Inc. ("XES"). I am a Principal Engineer, Transmission Planning in the Transmission Planning – West department. XES is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), and provides an array of support services to Public Service Company of Colorado ("Public Service" or the "Company") and the other utility operating company subsidiaries of Xcel Energy on a coordinated basis.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of Public Service, a wholly owned utility operating company subsidiary of Xcel Energy.

II PURPOSE AND SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe the proposed electrical loss factor to be applied for customers taking interconnection service over the Rush Creek Gen-Tie ("Gen-Tie"). The Gen-Tie consists of approximately 82 miles of a new 345 kV radial transmission line between the Missile Site Substation near Deer Trail, Colorado, and two wind collector sites in Elbert and Lincoln Counties. The Project also includes a new Pronghorn Substation near the Rush Creek I Wind Farm collector site.

Q. WHY DID PSCO CALCULATE A LOSS FACTOR FOR THE GEN-TIE?

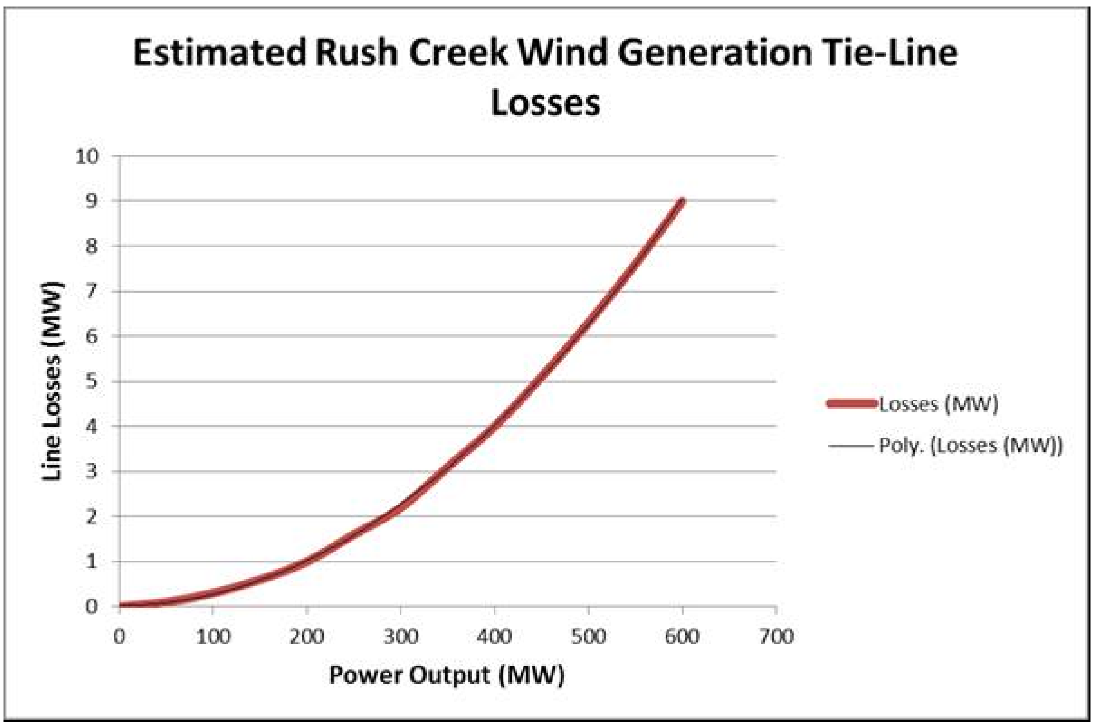
A. Public Service calculated the expected transmission line losses of the Gen-Tie in order to estimate losses attributed to each potential generation interconnection on the Gen-Tie line. The Gen-Tie facilities will be radial and thus not "networked" transmission facilities. Individual generators or projects interconnected to the Gen-Tie, including the 600 megawatts ("MWs") of wind generation to be owned by PSCo, will deliver energy onto the Gen-Tie at the points where the generators and Gen-Tie facilities interconnect. PSCo will have revenue quality meters at these points. The total energy from all generators interconnected to the Gen-Tie, minus losses, will be delivered onto the PSCo transmission system at Missile Site Substation through a single meter. The loss factor is necessary to reasonably determine the net amount of energy delivered by each generation project interconnected to the Gen-Tie to the PSCo transmission system.

Q. WHAT ASSUMPTIONS DID PSCO USE IN ITS CALCULATION OF THE EXPECTED TRANSMISSION LINE LOSSES OF THE GEN-TIE?

A. PSCo modeled the Project in the Siemens PSS/E Version 33.6.0 software tool using several assumptions. The total interconnected generation was assumed to be 380 MW and 220 MW installed at the Rush Creek I and Rush Creek II collector sites, respectively. The Gen-Tie also was assumed to be 44.3 miles between Missile Site and Pronghorn (Rush Creek I) substations and 37.7 miles between Pronghorn and Rush Creek II substations. In addition, the Gen-Tie was assumed to be constructed with single circuit 345 kV H-frame towers and strung with double bundled 1272 aluminum-conductor-steel-reinforced (ACSR) cable. This configuration results in an estimated continuous thermal rating of approximately 1600 MVA for the Gen-Tie.

Q. PLEASE EXPLAIN THE CALCULATION PSCO PERFORMED TO DETERMINE THE EXPECTED TRANSMISSION LINE LOSSES.

A. Using the PSS/E software tool, the total output of the generation was varied from 0 MW to 600 MW in 50 MW increments assuming a 380/220 ratio between Rush Creek I and Rush Creek II. The line loss into Missile Site Substation was recorded at each step. With these results, PSCo determined an equation for the line losses by creating a second order polynomial trend line of the recorded losses using Microsoft Excel 2010. The trend line is represented graphically below:



The equation describing the projected losses over the Gen-Tie is:

$$y = 0.0000251x^2 - 0.000045x + 0.0253$$

In this equation, x equals the output of generation connected to the Gen-Tie in MW and y equals the line losses in MW. The amount of losses per MW reduces the equation to:

$$y/x = 0.0000251x - 0.000045 + 0.0253/x$$

Because the term "- 0.000045 + 0.0253/x" is negligible, it can be ignored, further reducing the equation to:

$$y/x = 0.0000251x$$

As can be seen by the trend line, the losses increase for each increment of generation flow over the line.

Q. HOW WILL PSCO USE THIS EQUATION TO DETERMINE THE RUSH CREEK AVERAGE LOSS FACTOR?

A. To determine the Rush Creek Average Loss Factor, PSCo will first determine the expected annual average flow over the line. This average flow over the line is "x." PSCo will then use the equation ($y/x = 0.0000251x$) to determine the losses (i.e. "y"). The expected annual average flow over the Gen-Tie (e.g. "x") is determined by 1) multiplying each customer's Generating Facility Capacity measured in MW by the Generating Facility's projected annual net capacity, factor and then 2) summing that product for all interconnected generators. Three examples of this calculation are in column C of the table below:

	A	**B**	**C= 0.0000251 * ∑(A * B)**	**D=1-C**	**E=50*D**
Case	Generation Interconnected (MW)	Annual Energy Capacity Factor	Rush Creek Gen-Tie Average Loss Factor	% of Gen Tie Energy Delivered to Missile Site	MW Delivered to Missile Site for 50 MW Produced
1	600	0.4	0.00602	99.4%	49.70
2	600	0.4	0.01230	98.8%	49.39
	500	0.5			
3	600	0.4	0.01381	98.6%	49.31
	500	0.5			
	200	0.3			

If the 600 MW PSCo Rush Creek Wind Project is the only generator connected to the Gen-Tie, the loss factor will be lower than if additional generators interconnect.

Q. HOW WILL PSCO USE THE RUSH CREEK AVERAGE LOSS FACTOR TO DETERMINE THE ENERGY DELIVERED TO THE PSCO TRANSMISSION SYSTEM AT MISSLE SITE?

A. To determine the amount of energy delivered to the PSCo Transmission System at the Missile Site Substation, PSCo will multiply the volume metered on the high side of where the generator connects to the Gen-Tie by one minus the Rush Creek Average Loss Factor. Columns D and E in the table above show an illustrative example of this calculation for a generator producing 50 MW at the point where it connects to the Gen-Tie.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.