

ATTACHMENT H

CITY OF BOULDER
OPEN ACCESS TRANSMISSION TARIFF



DRAFT

Prepared for:

CITY OF BOULDER
1777 BROADWAY
BOULDER CO 80302

Prepared by:



1942 BROADWAY
BOULDER CO 80302

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EXECUTIVE SUMMARY

- If the city chose to municipalize its electric utility, they would become a wholesale customer of Xcel Energy.
- Under FERC's Order 888, a utility that owns transmission lines is obligated to provide transmission, balancing and Ancillary Services to its wholesale customers.
- Utilities that own transmission lines are required by the Federal Government to provide open access to transmission on a comparable basis to that in which the owners provide transmission services to themselves.
- Wholesale transmission under Open Access consists of:
 - Point-To-Point (OATT Part II, P2P) transmission: from a generator to a non-designated load.
 - Network Integration Transmission System (OATT Part III, NITS): for designated loads such as The City's.
 - Ancillary Services alone (OATT Part IV, A/S)
- Wholesale transmission costs are based upon a city's monthly peak demand. The effects of transmission costs on City's energy rates are related to the city's load management and localization of resources.
 - Under a 56 percent load utilization¹, the transmission costs will be approximately:
 - NITS and A/S: 7.00 cents per kWh of load
 - P2P and A/S: 9.50 cents per kWh

¹ Load utilization is the ratio of the monthly average demand over the monthly maximum demand. Transmission charges are based on the single highest power reading in the month (monthly maximum demand) for the total load. Hence a lower load utilization means a higher peak relative to the monthly average load and thus a higher transmission cost applied to the load.

INTRODUCTION

The City of Boulder (The City) has contracted Robertson-Bryan, Inc. (RBI) for the development of a municipal utility business plan. A significant recurring charge to the operation of a municipal utility is the cost incurred from wholesale transmission.

Currently, The City is a retail customer of Xcel Energy. Xcel provides and controls all aspects of energy procurement, generation, transmission and delivery, and provides these services to its retail customers under a bundled package and a single monthly invoice. Should The City elect to create its own utility, they would take control of its energy procurement, while becoming a transmission wholesale customer of Xcel Energy. Wholesale transmission is used to “wheel” energy from remote generators to The City’s substations. Wholesale transmission is regulated by the Federal Energy Regulatory Commission (FERC), under its Open Access Transmission Tariff (OATT).

The purpose of this report is to describe the wholesale transmission system, the Open Access Transmission Tariff, determine what applies to The City, should it municipalize its electric utility, and quantify the expected charges. This report is intended as a summary and clarification to the OATT, it is not designed as a reference or to replace the OATT.

TRANSMISSION VERSUS DISTRIBUTION: GENERAL DESCRIPTION

Transmission and Distribution are the two connected systems that together deliver power from generators to consumers. Transmission systems are the high-voltage lines that carry power from generators to substations located around The City. Power is converted to lower voltages at the substations and then delivered to the end user. The delivery of power from the substation to the end user is called the Distribution System. Transmission and Distribution systems for Boulder are currently owned and operated by Public Services of Colorado (PSCo), a subsidiary company of Xcel Energy.

While The City is considering ownership of the Distribution System under a municipal utility, they would contract PSCo for wholesale transmission services. This report will focus on the transmission service options available to The City.

WHOLESALE TRANSMISSION SERVICES

The federal government, via FERC, issued Order No. 888, which requires utilities that own transmission lines to provide open access to transmission on a comparable basis to that in which the owners provide transmission services to themselves. The overall goal is to increase opportunity for competition in the power market that will bring more efficient and lower cost power to consumers. The OATT is the federal document that defines the guidelines for transmission service.

Simply stated, all transmission owners are required to honor transmission requests and be compensated under rates published annually and approved by FERC. However, there is a finite amount of room on the transmission lines in any single hour, termed “transmission capacity”. To the extent there is capacity

available, the transmission owner must make service available to requesting users provided they have an active service agreement with the transmission owner.

There are two basic types of transmission service: Point-To-Point (P2P) and Network Integration Transmission Service (NITS).

Any transmission service for sales of resources (generators) to non-designated third parties must do so under a P2P arrangement. Under P2P, a specified amount of capacity is reserved for a defined Point of Receipt on which the resource will enter the transmission system and the Point of Delivery where the power is to be delivered.

The other option, which The City would most likely use, is NITS in which the customer defines Network Load and Network Resources to serve the load. These two services are not mutually exclusive and The City may elect to arrange the majority of its transmission service under NITS but also have P2P service for certain resources.

In addition to basic transmission service of power flow from resources to serve end user load, the transmission owner is responsible for reliability of the transmission system, service termed Ancillary Services (A/S). A/S includes control and resolution for differences in supply and demand, line voltage fluctuations, and overall maintenance. While certain A/S must be purchased from PSCo, others can be procured from third parties or be self-supplied.

Table 1 below summarizes all OATT service schedules and their applicability to The City under NITS and P2P transmission service.

Table 1. Summary of OATT Schedules

Schedule	Description	Service Type	NITS	P2P
Schedule 1	Scheduling, System Control, & Dispatch	Ancillary	x	x
Schedule 2	Reactive Supply and Voltage Control	Ancillary	x	x
Schedule 3	Regulation & Frequency Response	Ancillary	x	x
Schedule 4	Energy Imbalance	Ancillary	x	x
Schedule 5	Operating Reserve – Spinning Reserve	Ancillary	x	x
Schedule 6	Operating Reserve – Supplemental Reserve	Ancillary	x	x
Schedule 7	Firm P2P Transmission Service	Transmission		x
Schedule 8	Non-Firm P2P Transmission Service	Transmission		x
Schedule 9	Generator Imbalance	Ancillary		x
Schedule 10 - 12	<i>Not applicable to PSCo</i>			
Schedule 13	NITS Transmission Service	Transmission	x	
Schedule 14	P2P Transmission Losses	Transmission		x

Last, PSCo will evaluate The City's creditworthiness upon entering into a service contract(s). Credit worthiness is a determination of unsecured credit to extend, and/or the collateral to request, in order to ensure compensation for services rendered. Customer's credit worthiness is determined annually.

TRANSMISSION SERVICE COMPENSATION

Transmission owners are required to provide transmission service at just and reasonable rates. The rates cover the costs of providing transmission service, as well as a return on the associated capital invested. The total cost of providing transmission service, including the return, is referred to as the utility's Transmission Revenue Requirement (TRR) and is published each year on May 15th and effective June 1st. The TRR published in June 2010 is net revenue of \$145,704,396 divided by an average PSCo system peak demand of 6,127,954 kW yielding a rate of \$23.777 per kilowatt (kW). This annual rate yields the monthly service rate of \$1.981 per kW-month.

In contracting PSCo for transmission service, The City would also need to secure Ancillary Services. PSCo is required to offer all A/S to transmission customers and rates are published in Schedules for each service under the OATT tariff.

In all services (transmission or ancillary), it is The City's responsibility to cover demand needs inclusive of line losses. Although transmission lines deliver power at efficient high voltages, there are still transmission line losses. PSCo's published losses are currently 2.56% for the transmission system and 2.35% for primary distribution services. For example, The City may need 100,000 kW for its load, but the energy procurement and delivery reservation will need to be for 105,000 kW to cover losses during delivery along the transmission and distribution systems.

NETWORK INTEGRATION TRANSMISSION SERVICE (NITS)

Definition: Allows the Network Customer (The City) to integrate, economically dispatch and regulate its current and planned Network Resources to serve its Network Load in the same manner and treatment as PSCo services its Native Load. NITS also may be used by the Network Customer to deliver economy energy purchases to its load from non-designated resources without additional charge.

NITS cannot be used for sales of capacity and energy to non-designated load; P2P is available for such transactions. The following steps illustrate how to establish a NITS contract with PSCo:

Initiating Service

- Complete an Application for Service with deposit of one month's service cost
 - Deposit can be waived due to creditworthiness results
- Complete technical arrangements (meters / interconnection facilities)
- Meet creditworthiness
- Execute a Service Agreement

Network Resources

- Specified in Service Agreement
- Includes generation owned, purchased, or leased by The City to serve its Network Load
- Cannot include generation that is committed for sale to third parties
- Schedules of resources (net of sales on P2P) cannot exceed load
- Do not have to be physically connected to PSCo transmission system. Arrangements necessary for delivery of capacity and energy are the responsibility of The City

Network Load

- Specified in Service Agreement
- Load not physically connected to PSCo system can be included for service under NITS, or excluded and served under P2P service.

Billing

- OATT Schedule 13 – monthly coincident hourly demand * monthly service rate
 - Peak hourly usage on the PSCo system is determined and the demand of The City in that hour is the demand used in the monthly rate calculation.
 - Demand is always inclusive of line losses.
- For example, assume the coincidental load at the PSCo system peak is 240,000 kW for The City.
 - $253,000 \text{ kW} * \$1.981 = \$501,298$
 - 253,000 kW used instead of 240,000 kW to account for losses
 - \$1.981/ kW is the monthly published service rate

POINT-TO-POINT (P2P)

Definition: For the reservation and transmission of capacity and energy from designated Point(s) of Receipt to designated Point(s) of Delivery.

P2P is used for sales of energy and capacity from multiple generating units that are on the PSCo transmission system.

Initiating Service

- Same as NITS

Contract Information

- Non-Firm P2P
 - Reserved and scheduled on an as-available basis
 - Subject to curtailment or interruption before P2P Firm, NITS, or native customers
 - Contracts offered in hourly, daily, weekly, and monthly duration
 - Maximum contract length is one month
- Firm P2P
 - Reservation and curtailment priority is higher than non-firm P2P and equal to NITS and native customers.
 - Contracts offered in daily, weekly, or monthly durations

Billing

- OATT Schedule 7 for firm and Schedule 8 for non-firm
 - The rates are the same under both Schedules; however, Schedule 8 includes rates for hourly contracts, which is not available under Schedule 7 for Firm service.
- Calculation is reserved capacity kW * rate
 - The rate is determined by taking the TRR annual rate of \$23.777 and dividing it by the applicable contract length.
 - For example, if the P2P contract is for monthly service, the rate is the same as NITS at \$1.981. However if it is weekly service, the annual rate of \$23.777 is divided by 52 (weeks in the year) to use a rate of \$0.457 per kW-week.
- For example, assume a reserved capacity of 253,000 kW for The City for one week.
 - $253,000 \text{ kW} * \$0.457 = \$115,621$
- OATT Schedule 14 – Transmission Loss Obligations
 - This schedule specifies options for satisfying transmission loss obligations. The option above in which it is included in the transmission service reservation calculation is used here for simplicity.

ANCILLARY SERVICES (A/S)

Definition: Services necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission System.

PSCo is required to provide, and The City is required to purchase:

- Scheduling, System Control and Dispatch (Schedule 1)
- Reactive Supply & Voltage Control from Generators and other Sources (Schedule 2)

The City is required to purchase or self-supply other A/S. The City could purchase these services from PSCo or a third party:

- Regulation & Frequency Response (Schedule 3)
- Energy Imbalance (Schedule 4)
- Operating Reserve – Spinning (Schedule 5)
- Operating Reserve – Supplemental (Schedule 6)

Because The City would purchase power from generators that are in the PSCOs transmission system, The City would be required to purchase from PSCo or a third party

- Generator Imbalance Service (Schedule 9)

The City may not turn down PSCo A/S services unless it demonstrates that it has acquired the A/S from another source. If The City uses services that it does not reserve, PSCo will bill The City for the services at established rates in the service agreement.

Billing

All A/S are billed in the same manner as transmission service. The applicable rates are published in each Schedule in the OATT tariff. The demand basis for NITS is coincidental demand and reserved capacity is used for P2P.

CREDITWORTHINESS

Prior to becoming a transmission customer, an applicant must undergo a credit evaluation using commercially reasonable practices to determine the level of unsecured credit PSCo is willing to extend for services. Evaluation criteria include but are not limited to:

- Review of Financial Statements
 - Audited statements for the 3 fiscal years most recently ended
- Rating Agency reports (if available)
 - Senior Unsecured Long Term Debt ratings issued by Standard & Poor's, Moody's Investors Service, Fitch Ratings, or other agreed source.
- References
 - Bank information and three major industry trade references
- Estimated Peak Load
 - Used to estimate highest 60 day credit exposure
- Other indicators of credit strength

Transmission service credit policies mandated by FERC, such as Large Generation Interconnection Procedure (LGIP) and Large Generation Interconnection Agreement (LGIA), may have different credit requirements. These apply to generating facilities over 20 MW.

Credit Evaluation

- Performed every 12 months, or more frequently if material adverse change in creditworthiness
- If determined the customer is creditworthy, an unsecured credit limit will be established
 - This must equal the historical, or estimated highest 60 day credit exposure.
 - Minimum unsecured Credit Limit for public entity is \$250,000
- If unsecured credit limit is insufficient, or unsecured credit denied, collateral or security will be required. Upon notification, the customer will have 2 days to provide collateral/security.
 - Acceptable forms of financial security are cash or letters of credit.

CONCLUSION

If the City chose to form a municipal utility, they would need to make arrangements for the delivery of its power procurements. While The City is considering ownership of the Distribution System, it will need to contract with PSCo for Transmission Service.

Of the two options available, NITS is the service that best fits The City's business model as it gives the most flexibility in economically scheduling and maintaining its resources to meet load. While most if not all load will be served under NITS, The City may also have P2P arrangements for sales of excess resources to third parties. In addition to transmission service, They City will also need to procure Ancillary Services from PSCo to ensure system reliability.

Under assumption that The City would procure NITS and all Ancillary Services from PSCo, the composite rate under currently published rates for an estimated City load of 1,009,500 kWh is 7 to 9 cents per kWh, an annual cost of \$7.8 to 9 million dollars. This is a conservative estimate as it utilizes The City's peak usage of 240,000 kW for all months of the year. While The City may start off purchasing all required services from PSCo and later contract other parties for ancillary services, it does have options to reduce its transmission costs by developing local generation. Having local generation and/or demand-side management can reduce significantly the amount of procured energy needed to travel along the Transmission System.