

**NETWORK OPERATING AGREEMENT**

**BETWEEN**

*[CUSTOMER NAME]*

**AND**

**PUBLIC SERVICE COMPANY OF COLORADO**

**DATED:** \_\_\_\_\_

[**Note:** It may be necessary to include additional provisions or revise the provisions of this Network Operating Agreement to take into account the particular circumstances of a Network Customer. Northern States Power Companies (“NSP”), Public Service Company of Colorado (“PSCo”) and Southwestern Public Service Company (“SPS”) therefore reserve the right to modify this form of Network Operating Agreement for individual Transmission Customers.

Cheyenne Light, Fuel and Power Company (“CLF&P”) does not operate a control area; it is in the Western Area Power Administration’s (“WAPA”) control area. Therefore, a Network Customer taking Network Integration Service under this Tariff will need to enter into a network operating agreement, or other suitable arrangement with WAPA. If requested by a Network Customer, CLF&P will commit to help arrange such an agreement with WAPA. ]

This Network Operating Agreement, dated as of \_\_\_\_\_, is made and entered by and between \_\_\_\_\_ (“Transmission Provider”), and \_\_\_\_\_ (“Network Customer”) all of whom may be referred to individually as “Party” or jointly as “Parties”.

WHEREAS, The Network Customer has been determined by the Transmission Provider to have a Completed Application for Network Integration Transmission Service under Part III of the Tariff; and

WHEREAS, The terms and conditions under which the Network Customer shall operate its facilities, and the technical and operational matters associated with implementation of Part III of the Tariff are to be specified in this Network Operating Agreement in accordance with Section 35.2 of the Tariff;

NOW THEREFORE, In consideration of the mutual agreements set forth below, the Network Customer and the Transmission Provider agree as follows:

### **1.0 Purpose of Agreement and General Requirements**

By this agreement, the Transmission Provider and Network Customer agree that the provisions of this Network Operating Agreement (“NOA”) and the Network Integration Transmission Service Agreement (“Service Agreement”) govern the Transmission Provider’s provision of Network Integration Transmission Service to the Network Customer in accordance with the Open Access Transmission Tariff (“Tariff”), as it may be amended from time to time. This NOA requires the Parties to: (i) operate and maintain equipment necessary for incorporating the Network Customer within the Transmission Provider’s Transmission System including, but not limited to, remote terminal units, metering, communications equipment and relaying equipment; (ii) transfer data including, but not limited to, heat rates, fuel costs, and operational characteristics of Network Resources, generation schedules for Network Resources, interchange schedules, unit outputs for redispatch required

under Section 33 of the Tariff, voltage schedules, loss factors and other real time data, between their respective control centers; (iii) use software programs required for data links and constraint dispatching; (iv) exchange data on forecasted loads and resources necessary for planning and operation; and (v) address any other technical and operational considerations required for implementation of the Tariff, including scheduling protocols.

The Network Customer shall: (i) operate as a Control Area under applicable guidelines of the North American Electric Reliability Council (“NERC”) and the applicable regional reliability council; (ii) satisfy its control area requirements, including the provision of all Ancillary Services, by contracting with the Transmission Provider; or (iii) satisfy its Control Area requirements, including all Ancillary Services and/or Interconnected Operations Services (“IOS”), by providing them itself or by contracting with another entity that can satisfy those requirements in a manner that is consistent with Good Utility Practice and satisfies the standards of NERC and the regional reliability council. The Network Customer shall plan, construct, operate and maintain its facilities and Transmission System in accordance with Good Utility Practice, which shall include, but not be limited to, all applicable guidelines of NERC and the regional reliability council, as they may be modified from time to time and any generally accepted practices in the region that are consistently adhered to by the Transmission Provider.

Unless specified herein, capitalized terms shall refer to terms defined in the Tariff. When the terms Load Responsibility, Regulating Margin, Most Severe Single Contingency (“MSSC”), First Contingency, Spinning Reserves, Supplemental Reserves and Operating Reserves are used in this NOA, the regional reliability council definitions of those terms apply.

The Network Customer acknowledges that the Transmission Provider may revise this NOA as necessary to incorporate changes to the Transmission Provider’s Control Area requirements and the Network Customer shall conform and operate according to the revised NOA.

## **2.0 Network Operating Committee**

- (a) Membership - The Network Operating Committee shall be composed of representatives from the Network Customers taking service under the Tariff and the Transmission Provider.
- (b) Responsibilities - The Network Operating Committee shall: (1) adopt rules and procedures consistent with this NOA and

- the Tariff governing operating and technical requirements necessary for implementing the Tariff; (2) review Network Resources and Network Loads on an annual basis in order to assess the adequacy of the Transmission System; and (3) obtain from the Transmission Provider the Transmission Provider's operating policies, procedures, and guidelines for network interconnection and operation, (4) adopt standards for provision of Ancillary Services and/or IOS, and develop non-compliance procedures and penalties.
- (c) Authority - The Network Operating Committee will not have any authority to modify or bypass the Transmission Provider's Open Access Transmission Tariff or the Service Agreements under such Tariff. The Network Operating Committee, through their actions, will ensure that the reliability criteria of NERC and the regional reliability council are met.

### **3.0 Regulation and Frequency Response**

The Network Customer shall meet its proportional share of Regulating Margin by either: (a) purchasing Regulation and Frequency Response Service from the Transmission Provider pursuant to Schedule 3 of the Tariff; or (b) contributing or arranging to have a third party contribute generating resources to meet the Regulating Margin requirement for the current year as follows:

If the Network Customer is located within the PSCo or NSP Control Areas, Network Customer must contribute generating resources in the amount specified in Schedule 3 of the Tariff.

If the Network Customer is located within the SPS Control Area, Customer must contribute generating resources according to the following formula:

$$\text{NCRM} = \frac{\text{CARM} \times \text{NC maximum demand}}{\text{CA maximum demand}}$$

CA: Control Area

CARM: Control Area Regulating Margin

NC: Network Customer  
NCRMR: Network Customer Regulating Margin Requirement

Should the Network Customer's load include major loads not conforming to the general pattern of the control area's load, i.e., arc furnace load, additional Regulating Margin may be required to be provided by the Network Customer.

A Network Customer that meets its proportional share of Regulating Margin by Alternative (b) above shall also meet the requirements of Section 5.0 below.

#### **4.0 Operating Reserve**

The Network Customer shall meet its proportional share of Operating Reserve by either: (1) purchasing Operating Reserve Services from the Transmission Provider pursuant to Schedules 5 and 6 of the Tariff; or (2) meeting or arranging to have a third party meet the Operating Reserve requirement. A Network Customer that meets its proportional share of Operating Reserve by alternative (2) above shall also meet the requirements of Section 5.0 below. The Operating Reserve requirement is as specified by the regional reliability council as implemented by the Transmission Provider. Inasmuch as the Transmission Provider is obligated to meet these requirements, as they may be modified from time to time, the Network Customer recognizes and agrees that its proportional share of the Operating Reserve requirement may change to reflect such modification.

In order to facilitate the use of Operating Reserve, the Network Customer shall have available unloaded reserve firm transmission capacity at least equal to that Operating Reserve amount. Such transmission may be loaded with interruptible energy so that, upon interruption of the energy, transmission service is available to replace such energy from the Operating Reserve.

#### **5.0 Requirements to Contribute to System Regulation and Operating Reserve**

The Network Customer shall operate its generating resources in a manner similar to that of the Transmission Provider including following voltage schedules, providing free governor response, meeting power factor requirements at the point of interconnection with the Transmission Provider's system, and such other criteria as may be developed by the Transmission Provider, the Network Operating Committee, or required by the NERC and the regional reliability council. The Network Customer

shall pay the cost of modification of Transmission Provider's computer hardware and software to accommodate the Network Customer's contribution to Regulating Margin and Operating Reserve. Any resources used by the Network Customer to meet its proportional share, whether the Network Customer's Network Resources or a third party's generating resources, shall meet the same requirements as the Transmission Provider's generating resources used to meet the Regulating Margin and Operating Reserve requirements, including, but not limited to, automatic generation control capability, ramp rate, and governor response, and are subject to random testing, and if applicable, a monthly start-up test.

## **6.0 Redispatch to Manage Transmission System Constraints**

If the Transmission Provider determines that redispatching Network Resources, including reductions in off-system purchases, to relieve an existing or potential transmission system constraint is the most effective way to ensure the reliable operation of the Transmission System, the Transmission Provider will redispatch the Transmission Provider's and the Network Customer's Network Resources on a least-cost basis, without regard to the ownership of such resources. The Transmission Provider will apprise the Network Customer of its redispatch practices and procedures as they may be modified from time to time.

The Network Customer will submit verifiable incremental and decremental cost data for its Network Resources that estimates the cost to the Network Customer of changing the generation output of each of its Network Resources to the Transmission Provider. These costs will be used, along with similar data for the Transmission Provider's resources, as the basis for least-cost redispatch. The Transmission Provider's grid operation staff will keep this data confidential, including from the Transmission Provider's marketing staff. If the Network Customer experiences changes to its costs, the Network Customer must submit those changes to the Transmission Provider's energy control center. The Transmission Provider will implement least-cost redispatch consistent with its existing contractual obligations and its current practices and procedures for its own resources. The Network Customer is obligated to respond immediately to requests for redispatch from the Transmission Provider's energy control center.

Once redispatch has been implemented, the Transmission Provider will book in a separate account costs incurred by both the Transmission Provider and the Network Customer based on the submitted incremental and decremental costs. The Transmission Provider and the Network Customer will each bear a proportional share of the total redispatch cost based on their then-current Load Ratio Shares. The Transmission Provider will bill or credit the Network Customer's monthly bill as appropriate.

## **7.0 Maintenance of Facilities**

- (a) The Network Operating Committee shall establish procedures to coordinate the maintenance schedules of the generating resources and transmission and substation facilities, to the greatest extent practicable, to ensure sufficient transmission resources are available to maintain system reliability and reliability of service. By November 1 of each year, the Network Customer shall provide to the Transmission Provider the maintenance schedules and planned outages of each Network Resource for the next five years. Thirty (30) days in advance of each annually forecasted maintenance outage, the Network Customer shall provide the Transmission Provider confirmation of such outage. Such information shall include, but not be limited to, the expected time the unit will be separated from the system and the time at which the unit is available for (1) parallel operation, (2) loading, and (3) if applicable, to be put on automatic generation control.
- (b) The Network Customer shall obtain: (1) concurrence from the Transmission Provider at least 72 hours before beginning any scheduled maintenance of its facilities; and (2) clearance from the Transmission Provider when the Network Customer is ready to begin maintenance on a Network Resource, transmission line, or substation. The Network Customer shall immediately notify the Transmission Provider at the time when any unscheduled or forced outages occur and again when such unscheduled or forced outages end. The Network Customer shall notify and coordinate with the Transmission Provider prior to reparalleling the Network Resource, transmission line, or substation.
- (c) Maintenance schedules will be posted on an electronic bulletin board or communicated via the data link.

## **8.0 Load Shedding**

- (a) The Parties shall implement load shedding programs to maintain the reliability and integrity of the Control Area, as provided in Section 33.6 of the Tariff. Load shedding shall include: (1) automatic load shedding; (2) manual load shedding; or (3) rotating interruption of customer load. The Transmission Provider will order load shedding to maintain the relative sizes of load served, unless otherwise required by

circumstances beyond the control of the Transmission Provider or the Network Customer. Automatic load shedding devices will operate without notice. When manual load shedding or rotating interruptions are necessary, the Transmission Provider shall notify the Network Customer's dispatchers or schedulers of the required action and the Network Customer shall comply immediately.

- (b) The Network Customer shall, at its own expense, provide, operate, and maintain in service underfrequency load-shedding equipment. The Network Customer's equipment shall be: (1) compatible and coordinated with the Transmission Provider's load shedding equipment; and (2) set for the amount of load to be shed with frequency trips and tripping times as coordinated in the regional reliability council. In the event that Transmission Provider modifies the load-shedding system, the Network Customer shall, at its own expense, make changes to the equipment and setting of such equipment, as required. The Network Customer shall test and inspect the load-shedding equipment within ninety (90) days of taking Network Integration Transmission Service under the Tariff and at least once each year thereafter, and provide a written report to the Transmission Provider. The Transmission Provider may request a test of the load-shedding equipment with reasonable notice.

## **9.0 Recognition of Flow of Power and Energy**

- (a) The Parties recognize that: (1) the Transmission provider's Transmission System is, and will be, directly or indirectly interconnected with transmission systems owned or operated by others; (2) the flow of power and energy between such systems will be controlled by the physical and electrical characteristics of the facilities involved and the manner in which they are operated; and (3) part of the power and energy being delivered under this NOA may flow through such other systems rather than through the facilities of the Transmission Provider. The Network Operating Committee shall, from time to time as necessary, determine methods and take reasonably appropriate action to assure maximum delivery of power and energy at the points of receipt and delivery and at such additional or alternate points of receipt and delivery as may be established by the Parties.
- (b) Each Party will at all times cooperate with other interconnected systems in establishing arrangements or

mitigation measures to minimize operational impacts on each other's systems.

- (c) Each Party recognizes that a Party's proposed new interconnection or modification of an existing interconnection between that Party's system and the system of a third party, may cause adverse anticipated effects on the system of the other Party. The Party making such interconnection or modification shall minimize, or otherwise compensate for, adverse operational effects to the Party's system.

## **10.0 Service Conditions**

The Parties recognize that operating and technical problems may arise in the control of the frequency and in the flow of real and reactive power over the interconnected transmission systems. The Network Operating Committee may adopt operating rules and procedures as necessary to assure that, as completely as practical, the delivery and receipt of real and reactive power and energy hereunder shall be accomplished in a manner that causes the least interference with such interconnected systems.

A Network Customer interconnecting with the Transmission Provider's Transmission System is obligated to follow the same practices and procedures for interconnection and operation that the Transmission Provider uses for its own load and resources.

Where the Network Customer purchases Ancillary Services and/or IOS from third parties, the Network Customer shall have the responsibility to secure contractual arrangements with such third parties that are consistent with the Tariff, this Network Operating Agreement, and any applicable rules and procedures of the Network Operating Committee.

## **11.0 Data, Information and Reports**

- (a) The Network Customer shall, upon request, provide the Transmission Provider with such reports and information concerning its network operation as are reasonably necessary to enable the Transmission Provider to operate its Transmission System adequately.
- (b) Scheduling: Hourly transactions from outside of the Transmission Provider's Control Area, in whole megawatts, are prescheduled. Hourly transactions and forecasts of generation and load from within the Transmission Provider's

Control Area, in megawatts, are prescheduled. Schedules can be changed consistent with the practices in the regional reliability councils.

The Network Customer shall notify the Transmission Provider of intended imports into the Control Area for the next normal business day(s) by voice no later than \_\_\_\_\_. No later than \_\_\_\_\_ of each normal business day, the Network Customer shall finalize import preschedules by voice and transmit all the preschedules and forecasts in a format and using a method specified by the Transmission Provider. The Network Customer shall update the preschedules and forecasts before \_\_\_\_\_. Such preschedules and forecasts shall include, as applicable: (i) each import into or export out of the Control Area; (ii) each power purchase and sale from within the Control Area; (iii) losses; (iv) generation from each Network Resource; (v) Network Load at each point designated in Section 4.0 of the Specifications for Network Integration Transmission Service attached to the Service Agreement; (vi) Regulating Margin; (vii) Spinning and Supplemental Reserve from each Network Resource; (viii) Spinning and Supplemental Reserve purchased from the Transmission Provider or each third party; (ix) the Network Customer's MSSC; (x) available capacity from each Network Resource; (xi) transmission service associated with each preschedule and forecast; (xii) incremental and decremental cost data for Network Resources; and (xiii) other information, as required by the Transmission Provider.

- (c) Annual Forecast: By January 10 of each year, the Network Customer shall update its load and resource forecast pursuant to Section 29.2 and 31.6 of the Tariff by providing the Transmission Provider with a non-binding typical weekday and typical weekend forecast in a format specified by the Transmission Provider.
- (d) Monthly Forecast; Five (5) days before the end of the month, the Network Customer shall update the forecast for the following month specifying purchases, generation, maximum demand, total monthly energy, and Operating Reserve Service from the Transmission Provider or third party.
- (e) The Network Customer shall telemeter to the Transmission Provider information including but not limited to watts, vars, generator status, generator breaker status, generator terminal voltage and high side transformer voltage, unless otherwise agreed.

- (f) The Network Customer shall provide generating resource characteristics to the Transmission Provider as necessary to implement redispatch, and constraint and reserve management.

## **12.0 Metering**

- (a) The Network Customer shall have the obligation to install and maintain revenue meters and communication equipment compatible with the Transmission Provider's meter reading system. Revenue quality meters shall be installed at the point of interconnection between the Network Customer's facility and the Transmission Provider's system. The meters shall measure and record both real power (watts) and reactive power (vars) flow in both directions. Meters installed at a point other than the point of delivery shall be adjusted for the appropriate line and/or transformer losses.
- (b) The Transmission Provider shall read or retrieve meter data on the first work day after the end of each billing cycle or such other data as may be required to carry out the provision of the Tariff. The Transmission Provider shall process the meter data and determine energy imbalances, accounting, and billing using such meter data.
- (c) The meter owner shall test revenue meters for power deliveries at least once a year and within ten (10) business days after a request by the other Party. The other Party will be afforded the opportunity to be present during the meter test. For meters owned by the Transmission Provider, the Network Customer may request a meter test by calling the Transmission Provider's Network Operating Committee representative and shall pay for the cost of the requested test if the meter has been tested within the previous twelve months. The Parties present at the meter test shall estimate the amount of capacity and energy transferred during the meter test. The meter owner shall immediately repair, adjust, or replace any meter or associated equipment found to be defective or inaccurate. An inaccurate meter is one that exceeds two percent (2%) plus or minus, of the calibrated standards.
- (d) The Transmission Provider shall adjust the recorded data to compensate for the effect of an inaccurate meter. Such adjustment shall be made for a maximum period of thirty (30) days prior to the date of the test or to the period during which

such inaccuracy may be determined to have existed, whichever period is shorter. No adjustment prior to the beginning of the next preceding month shall be made except by agreement of the Parties. Should any meter fail to register, the Transmission Provider shall estimate, from the best information available, the demand created, energy flow, and var flows during the period of the failure. The Transmission Provider shall, as soon as possible, correct the Network Customer's bills affected by the inaccurate meter. That correction, when made, shall constitute full adjustment of any claim arising out of the inaccurate meter for the period of the correction.

### **13.0 Communications**

- (a) The Network Customer shall, at its own expense, install and maintain communication links for scheduling. One communication link may be used for data transfer and the other link shall be used for voice communication.
- (b) A Network Customer contributing to Regulating Margin and Operating Reserve requirements or securing the requirements from a third party shall, at its own expense, install and maintain telemetry equipment communicating between the generating resource(s) and the Transmission Provider.

### **14.0 Notice**

Any notice or request made to or by either Party regarding this NOA shall be made to the representative of the other Party as indicated in the Service Agreement.

### **15.0 Term**

The term if this NOA shall be concurrent with the term of the Network Customer's Service Agreement for Network Integration Transmission Service as it may be amended from time to time.

### **16.0 Entire Agreement**

The Tariff and the Service Agreement as they are amended from time to time are incorporated herein and made a part hereof. To the extent that a conflict exists between the terms of this NOA and the terms of the Open Access Transmission Tariff, the tariff shall control.

**17.0 Assignment**

This NOA shall inure to the benefit of and be binding upon the Parties hereto and their respective successors and assigns, but shall not be assigned by either Party without the written consent of the other, except to a successor to all or substantially all of the electric properties and assets of such Party.

IN WITNESS WHEREOF, the Parties have caused this Network Operating Agreement to be executed by their respective authorized officials.

Transmission Provider:

By: \_\_\_\_\_  
Name Title Date

Network Customer:

By: \_\_\_\_\_  
Name Title Date