# IV. COST OF GAS CLAUSE

**Section**



1. Purpose

The purpose of this clause is to establish procedures that allow the Company, subject to the jurisdiction of the New Hampshire Public Utilities Commission ("NHPUC"), to set on an annual basis seasonal firm gas supply sales rates and to adjust these rates on a monthly basis.

The firm gas supply sales rates recover the seasonal costs of gas supplies, any taxes applicable to those supplies, upstream pipeline and storage capacity costs, on-system production capacity and storage costs, miscellaneous overhead costs related to those supplies, bad debt expense associated with purchased gas costs, costs of purchased gas working capital, and any other costs approved by the NHPUC, and return the seasonal credits from supplier and pipeline refunds, non-core gas supply sales and transportation, interruptible gas supply sales and transportation, capacity assignment, capacity release, application of the Delivery-to-Sales Service Fee, and any other credits or revenue approved by the NHPUC.

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capacity, including the revenues resulting from the elective, short-term assignment of capacity.

(4) **Carrying Charges** - Interest expense calculated on the average monthly COG reconciliation balance and added to the end of month COG reconciliation balance. The interest rate is to be adjusted each quarter using the prime interest rate as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter, ,.

(5) **Direct Gas Costs** - All purchased gas costs including supplier, storage and pipeline demand and commodity costs, as well as the commodity costs for production and storage gas (LP-air and LNG).

(6) **Firm Sales Service Re-Entry Fee Revenues** The revenues resulting from billing certain customers who switched from firm transportation service to firm sales service after June 30, 2006.

(7) **Indirect Gas Costs** – Bad Debt Expense, Working Capital Carrying Charges, COG reconciliation balances, miscellaneous overhead costs, supplier and pipeline refunds, and local production and storage capacity costs.

(8) **Interruptible Sales Margins** - The Economic Benefit derived from the interruptible sale of gas downstream of the Company's distribution system.

(9) **Inventory Finance Charges** - As billed in each Winter Season for annual charges. The amount shall represent an accumulation of the projected charges as calculated using the monthly average of financed inventory at the Company's average short-term cost of borrowing for the month, or some other finance vehicle subject to the approval of the NHPUC.

(10) **Modified PR Allocator** - The percentage allocated for the portion of annual capacity charges assigned to the Company's New Hampshire and Maine divisions calculated in each annual COGC filing using the Modified Proportional Responsibility ("PR") Method. The allocation percentages for Northern's New Hampshire and Maine divisions reflect the approval of the Modified PR Allocator by the NHPUC and Maine PUC in NHPUC Docket 05-080 and in MPUC Docket Nos. 2005-87 and 2005-273, respectively.

(11) **Non-Core Commodity Revenuess** - The commodity revenues associated with non-core sales to which the COG Factor is not applied. Non-core sales include sales made under interruptible contracts, non-core contracts and off-system sales

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contracts.

(12) **Non-Core Demand Revenues** - The revenue derived from non-core transactions to which the COG Factor is not applied, including interruptible sales and other non-core sales generated from the use of the Company's gas supply resource portfolio.

(13) **Off-System Sales Revenue** - The revenue derived from the non-firm sales of natural gas supplies upstream of Company's distribution system.

(14) **Production and Storage Capacity Costs** - The costs of providing local, on-system storage service from the Company's storage facilities (i.e., LNG and LPG) as determined in the Company's most recent base rate proceeding.

(15) **Purchased Gas Working Capital** - The allowable working capital derived from Winter and Summer Season demand and commodity related costs.

(16) **Simplified Market Based Allocation (SMBA) method** – Used in determining the allocation of gas costs among the Company’s High and Low load factor Commercial and Industrial Customer Classifications.

(17) **Summer Commodity** - The gas supplies procured by the Company to serve firm sales load in the Summer Season.

(18) **Summer Demand** - The gas supply demand and transmission capacity procured by the Company to serve firm sales load in the Summer Season.

(19) **Summer Season** – The months May through October.

(20) **Winter Commodity** - The gas supplies procured by the Company to serve firm sales load in the Winter Season.

(21) **Winter Demand** – The gas supply demand, peaking demands, storage and transmission capacity procured by the Company to serve firm sales load in the Winter Season.

(22) **Winter Season** – The months November through April.

(23) **Working Capital Carrying Charge Rate**- the monthly prime interest rate, as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter

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| | |
|---|---|
| Industrial: Low Winter | |
| Commercial and Industrial: High Winter | G-40, G-41 and G-42 |

COG Factors will be calculated on a seasonal basis. The Winter Season COG Factors will be effective November 1st and Summer Season COG Factors will be effective on May 1st.

The seasonal COG Factors for the Residential rate classes shall represent the total system average unit cost of gas for meeting firm sales load projected in each COG season. The seasonal COG Factors for the Commercial and Industrial ("C&I") Low Winter and High Winter classes shall be derived by using the load factor based SMBA method of allocating gas costs as defined in Part IV, Section 5, and shall include other costs and credits allowed by the NHPUC.

6.3 Winter Season COG Factors

Winter Season COG costs (COGw) shall be comprised of Winter Season direct costs of gas (DCOGw) which include Winter Season direct demand costs (DDw) and Winter Season commodity costs (Cw), and Winter Season indirect costs (ICOGw) including Winter Season COG reconciliation gas costs (Rw), Winter Season working capital costs (WCw), Winter Season bad debt costs (BDw), production and storage capacity costs (PS), Winter Season miscellaneous overhead costs (MISC) and any supplier refunds allocated to the Winter Season (SRw) according to the following formulas:

COGw = DCOGw + ICOGw

**Winter Direct Cost of Gas (DCOGw) and Indirect Cost of Gas (ICOGw) Formulas**

DCOGw = DDw + Cw

**and:**

DDw = DEMw – NCDRw – CARw

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**and:**

ICOGw = Rw + BDw + WCw +PS + MISC * (W:Sales / A:Sales) + SRw

**Where:**

A:Sales Forecasted annual firm gas supply sales volumes.

BDw Bad debt expense allocated to the Winter Season.

CARw Capacity assignment revenues, pursuant to the capacity assignment provisions in the Company's Delivery Service Terms and Conditions, allocated to the Winter Season.

Cw Commodity gas costs allowable for the Winter Season.

COGw Total cost of gas for the Winter Season to serve the Company's firm sales customer classes previously defined.

DDw Direct demand costs allowable for the Winter Season

DCOGw Direct gas costs allowable for the Winter Season.

DEMw Demand costs allocated to the Winter Season defined in Part IV, Section 5.

ICOGw Indirect gas costs allowable for the Winter Season.

MISC The amount of gas costs associated with acquisition, dispatching, Administrative and General expenses, and miscellaneous overhead costs as determined in the Company's most recent base rate proceeding. Refer to Part IV, Section 6.1 for this amount.

NCDRw Winter Season returnable capacity release revenues and return to sales service revenues.

PS The amount of costs associated with production and storage capacity, as determined in the Company's most recent rate proceeding, less any production and storage capacity assignment revenues. Refer to Part IV, Section 6.1 for this amount.

Rw Annual reconciliation costs allocated to Winter Season from the Account 191 balance, inclusive of the associated Account 191 interest, as outlined in Part IV,

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Section 9.

| | |
|---|---|
| SRw | Supplier demand and commodity related refunds assigned to the Winter Season associated with refund program credits derived from Account 242, "Undistributed Gas Suppliers' Refunds." See Part IV, Section 8. |
| WCw | Working capital carrying charges allocated to the Winter Season as defined in Part IV, Section 10. |
| W:Sales | Forecasted Winter Season firm gas supply sales volumes. |

### Winter Commodity Cost (Cw) Formula

$$Cw = WSC - NCCRw + FC$$

**Where:**

| | |
|---|---|
| FC | Annual inventory finance charges as defined in Part IV, Section 5. |
| NCCRw | Non-core commodity gas revenues incurred in the Winter Season as defined in Part IV, Section 5. |
| WSC | Commodity gas costs associated with gas supply dispatched to firm gas supply sales customers in the Winter Season. |

### Winter Working Capital Carrying Charges (WCw) Formula

$$WCw = (DCOGw) \times WCAw\ \% + Rwcw$$

**Where:**

| | |
|---|---|
| WCAw % | Working capital allowance percentage associated with Winter Season gas costs. See Part IV, Section 6.1. |
| Rwcw | Working capital allowance reconciliation adjustment associated with Winter Season gas costs Account 182 balance, as outlined in Part IV, Section 10. |

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| | |
|---|---|
| BDs | Bad debt expense allocated to the Summer Season. |
| Cs | Commodity gas costs allowable for the Summer Season. |
| COGs | The total cost of gas for the Summer Season to serve the Company's firm sales customer classes previously defined. |
| DDs | Direct demand costs allowable for the Summer Season. |
| DCOGs | Direct gas costs allowable for the Summer Season. |
| ICOGs | Indirect gas costs allowable for the Summer Season. |
| MISC | The amount of gas costs associated with acquisition, dispatching, Administrative and General expenses, and miscellaneous overhead costs as determined in the Company's most recent base rate proceeding. Refer to Part IV, Section 6.1 for this amount. |
| Rs | Annual reconciliation costs allocated to the Summer Season from the Account 191 balance, inclusive of the associated Account 191 interest, as outlined in Part IV, Section 9. |
| SRs | Supplier demand and commodity related refunds assigned to the Summer Season associated with refund program credits derived from Account 242, "Undistributed Gas Suppliers' Refunds." See Part IV, Section 8. |
| S:Sales | Forecasted Summer Season firm gas supply sales volumes. |
| WCs | Working capital carrying charges allocated to the Summer Season as defined in Part IV, Section 10. |

## Summer Commodity Cost (Cs) Formula

$$Cs = SSC - NCCRs$$

**Where:**

| | |
|---|---|
| NCCRs | Non-core commodity gas revenues incurred in the Summer Season as defined in Part IV, Section 5. |
| SSC | Commodity gas cost charges associated with gas supply dispatched to firm gas supply sales customers in the summer season. |

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ICOGsh Per unit indirect cost of gas for the Summer Season for High Winter Use C&I firm sales customers.

RRADsh Residential reallocation adjustment for Summer Season demand costs to High Winter Use C&I firm sales customers.

RRACsh Residential reallocation adjustment for Summer Season commodity costs to High Winter Use C&I firm sales customers.

RDSMBA Residential demand costs per the SMBA methodology.

RCSMBA Residential commodity costs per the SMBA methodology.

RDAVG Demand cost per average Residential rate

RCAVG Commodity cost per average Residential rate

SH:Sales Summer Season forecasted C&I High Winter Use firm sales volumes.

7. Non-Core Sales Demand and Commodity Revenues

One hundred percent (100%) ofor revenues from Interruptible Sales, Off-System Sales, and Capacity Release will be credited to firm sales customers through operation of the COGC.

8. Gas Suppliers' Refunds – FERC Account 242

Refunds from upstream capacity suppliers and suppliers of product demand are credited to Account 242, "Undistributed Purchased Capacity/Product Demand Refunds." Refunds from suppliers of gas are credited to account 242, "Commodity Undistributed Gas Suppliers' Refunds." Transfers from these accounts will be reflected as a credit in the annual calculation of the seasonal COG Factors to be calculated as follows:

Refund programs shall be initiated with each annual COG filing and shall remain in effect for a period of one year. The amount to be placed into a given refund program shall be net of over/under-balances from expired refund programs plus refunds received from suppliers since the previous program was initiated. Refunds shall be segregated by demand and commodity and distributed volumetrically, producing a per unit refund that will return the principal amount with interest applied to the average of the beginning and

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end of month balances of refunds. The interest rate is to be adjusted each quarter using the prime interest rate as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter ,. The Company shall track and report on all Account 242 activities as specified in Part IV, Section 12.

9. Annual COG Reconciliation Adjustment – FERC Account 191

(1) The following **definitions** pertain to the annual COG reconciliation adjustment:

a. **Capacity Costs Allowable** shall be:

i. Charges associated with upstream storage and transmission capacity and product demand procured by the Company to serve firm gas supply sales service.

ii. Charges associated with peaking, downstream production and storage capacity to serve firm gas supply sales load, dispatching costs, and other administrative and general expenses in connection with purchasing gas supplies allocated to firm gas supply sales services in the respective season. These expenses are from the test year of the Company's most recent base rate proceeding, and are provided in Part IV, Section 6.1.

iii. Non-Core Sales Margins or Economic Benefits associated with returnable capacity release, off-system sales and interruptible sales margins allocated to the firm gas supply sales service.

iv. Credits associated with daily imbalance charges and the fixed component of penalty charges billed Delivery Service, as well as revenues associated with: (a) mandatory assignment of capacity to meet the requirements of firm transportation customers (non-grandfathered customers); (b) the billing of the Capacity Reservation Charge; and (c) the billing of the Delivery-to-Sales Service Fee to firm customers switching from transportation to firm gas supply sales service.

v. Capacity Cost Carrying Charges.

b. **Commodity Gas Costs Allowable** shall be:

i. Commodity Charges associated with gas supplies, including any applicable taxes, purchased by the Company to serve firm gas supply sales

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service.

ii. Credit for non-core commodity costs assigned to non-core customers to which the COGC does not apply, as defined in Part IV, Section 6.3 (NCCCw and NCCCs), as well as the commodity costs of all supplies nominated by third party Suppliers associated with the assignment of Company-Managed resources, as defined in the Company's Delivery Service Terms and Conditions.

iii. Inventory finance charges.

iv. Commodity Cost Carrying Charges.

.

(2) Allocation of the annual COG Reconciliation Adjustment to the Summer Season (Rs) and Winter Season (Rw).

Account 191 contains the accumulated difference between actual COG Factor revenues and the actual monthly COG Factor costs incurred by the Company including Carrying Charges. The allocation of the annual COG reconciliation ending balance to the Winter and Summer Seasons is derived by multiplying the ratio of each season's firm gas supply sales service to annual firm gas supply sales service by the annual COG reconciliation ending balance.

Carrying Charges shall be calculated on the average monthly balance of each subaccount. The interest rate is to be adjusted each quarter using the prime interest rate as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter.

The annual COG Reconciliation filing shall coincide with the next annual COG filing each year.

10. Bad Debt and Working Capital Reconciliation Adjustments – FERC Account 182

(1) The following **definitions** pertain to Working Capital and Bad Debt reconciliation adjustment calculations:

a. **Working Capital Costs Allowable** shall be:

i. Charges associated with gas supplies, upstream storage, transmission

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capacity, and product demand procured by the Company, as well as applicable taxes, to serve firm gas supply sales customers in the respective season. The annual working capital accumulated difference is then multiplied by the ratio of each season's firm gas supply sales to annual firm gas supply sales in order to derive the seasonal working capital reconciliation amount.

ii. Non-core commodity costs associated with non-core sales in the respective season to which the COG Factor is not applied, as defined in Part IV, Section 5.

iii. Carrying charges.

b. **Bad Debt Costs Allowable** shall be:

Costs associated with uncollected gas costs, incurred by the Company to serve sales load in the Winter and Summer Seasons. Such costs represent the bad debt expense related to the gas supply related write-off of sales customers. The annual bad debt expense accumulated difference is then multiplied by the ratio of each season's firm gas supply sales to annual firm gas supply sales in order to derive the seasonal bad debt reconciliation amount.

2) Calculation of the Working Capital and Bad Debt Reconciliation Adjustments

A Account 182 contains the accumulated difference between actual working capital allowance revenues and the actual monthly working capital allowance costs. The actual monthly working capital allowance costs shall be calculated by multiplying the actual gas costs times the Working Capital Allowance Percentage (WCA%) set forth in Part IV, Section 6.1, to the actual Direct Gas Costs allowable.

b. Account 182 contains the accumulated difference between actual monthly bad debt allowance revenues and the actual monthly bad debt expense. Bad debt revenues are based on the Company's annual forecast of gas supply related write-offs and allocated to each respective season based on the portion of historical bad debt activity occurring in each season.

11. Application of COG Factors to Bills

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**Section**



1. Purpose

The purpose of this clause is to establish procedures that allow the Company, subject to the jurisdiction of the ~~State of~~ New Hampshire Public Utilities Commission ("NHPUC"), to set~~adjust,~~ on an ~~semi~~annual basis seasonal firm gas supply sales rates~~,~~ and to ~~revise~~adjust these rates on a monthly basis.

The~~its~~ firm gas ~~sales and standby gas~~ supply sales rates ~~in order to~~ recover the seasonal costs of gas supplies, ~~along with~~ any taxes applicable to those supplies, upstream pipeline and storage capacity costs, on-system production capacity and storage costs, miscellaneous overhead costs related to those supplies, bad debt expense associated with purchased gas costs, ~~and the~~ costs of purchased gas working capital, and any other costs approved by the NHPUC, and ~~to~~ return~~flect~~ the seasonal ~~variation in the cost of gas, and to~~ credits ~~to firm ratepayers~~ from~~all~~ supplier and pipeline refunds, ~~and capacity credits from~~ non-core gas supply sales and transportation, interruptible gas supply sales and transportation, ~~revenues from~~ capacity assignment, capacity release, ~~revenues, revenues~~

Issued: ~~July 1, 2014~~August 18, 2016 Issued By:

Effective: ~~May 1, 2014~~ November 1, 2016 Title: ~~Treasurer~~ Senior Vice President

Authorized by NHPUC Order No. ~~25,653~~ in Docket No. DG~~13-086~~, dated ~~April 21, 2014~~

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~~from the application of the Capacity Reserve Charge  and any revenues from the~~ application of the Delivery-to-Sales Service Fee,~~.~~ and any other credits or revenue approved by the NHPUC.

2. Applicability

This Cost of Gas Clause ("COGC") shall be applicable to ~~Northern and~~ all firm gas supply sales made by Northern, unless otherwise designated. ~~The~~ A~~a~~pplication ~~t~~of the COGC~~clause~~ may, for good cause shown, be modified by the NHPUC. See Part IV, Section 13, "Other Rules."

3. Cost of Firm Gas Allowable for the COGC

All costs of firm gas supply including, but not limited to, commodity costs, taxes on commodity, demand charges, local production and storage costs, other gas supply expense incurred to procure and transport supplies, expense of the gas used in company operations, transportation fees, costs associated with buyouts of existing contracts, and bad debt expenses and purchased gas working capital may be included in the COGC. Any costs recovered through application of the COGC shall be identified and explained fully in the ~~semiannual~~ annual and monthly~~summer and winter~~ COGC~~rate~~ filings outlined in Part IV, Section 12.

4. Effective Date of Cost of Gas Factors

The ~~seasonal~~ firm gas supply sales rates or Cost of Gas ("COG") F~~f~~actors ~~("COG")~~ shall be seasonal and become effective upon NHPUC approval for services rendered on the first day of each season as designated by the Company. Unless otherwise notified by the NHPUC, the Company shall submit its annual COGC filing~~s~~ as outlined in Part IV, Section 12 of this clause at least 45 days before ~~they are to~~ taking~~e~~ effect~~.~~ on November 1st. The approved seasonal COG Factors may be ~~revised~~adjusted by the Company on a monthly basis ~~as prescribed~~without further action by the NHPUC and shall become effective on the first day of the subsequent month. See Part IV, Section 13.

5. Definitions

The following terms shall be defined in this S~~s~~ection IV, unless the context requires otherwise.

(1) **Bad Debt Expense** - The uncollectable expense attributed to the portion of the

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Company's charges associated with its gas costs.

(2) **Capacity Assignment Revenues** – The revenue~~s~~ received from Suppliers for the mandatory assignment of capacity pursuant to the Company's Delivery Service Terms and Conditions.

(3) **Capacity Release Revenues** - The ~~economic benefit~~revenue derived from the sale of upstream capacity, including the revenues resulting from the elective, short-term assignment of capacity.

(4) **Carrying Charges** - Interest expense calculated on the average monthly COG reconciliation balance ~~using the monthly prime lending rate~~ and added to the end of month COG reconciliation balance. The interest rate is to be adjusted each quarter using the prime interest rate as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter, ~~as reported by the Federal Reserve Statistical Release of Selected Interest Rates~~, ~~and then added to the end of month balance~~.

~~(6)~~ ~~**Correction Factor** – Seasonal Adjustment necessary to align the peak day volumes used to load calculate the load factor ratios with the seasonal throughput volumes applied to the COG Factor calculations.~~

(5) **Direct Gas Costs** - All purchased gas costs including supplier, storage and pipeline demand and commodity costs, as well as the commodity costs for ~~local~~ production and storage~~manufactured~~ gas (LP-air and LNG).

~~(6)~~ ~~**Economic Benefit** - The difference between the revenues received and the marginal cost determined to serve non-core customers.~~

(6~~7~~) **Firm Sales Service Re-Entry Fee Revenues** ~~are~~ Tthe revenues resulting from billing certain customers who switched from firm transportation service to firm sales service after June 30, 2006.

(7~~8~~) **Indirect Gas Costs** – Bad Debt Expense, Working Capital Carrying Charges, COG reconciliation balances, miscellaneous overhead costs, supplier and pipeline refunds, and local production and storage capacity costs.

(8~~9~~) **Interruptible Sales Margins** - The Economic Benefit derived from the

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interruptible sale of gas downstream of the Company's distribution system.

(9~~10~~) **Inventory Finance Charges** - As billed in each Winter Season for annual charges. The ~~total~~ amount shall represent an accumulation of the projected charges as calculated using the monthly average of financed inventory at the Company’s average short-term cost of borrowing for the month, or some other finance vehicle subject to the approval of the NHPUC.

~~(11)~~ ~~**Local Production and Storage Capacity Costs** - include the costs of providing storage service from the Company's storage facilities (i.e., LNG and LPG) as determined in the Company's most recent rate proceeding.~~

(10~~2~~) **Modified PR Allocator** - The percentage allocated for the portion of annual capacity charges assigned to the Company’s New Hampshire and Maine divisions calculated in each annual~~Winter Season~~ COGC filing using the Modified Proportional Responsibility (“PR”) Method. The allocation percentages for Northern’~~ Utilities Inc.’~~s New Hampshire and Maine divisions reflect the approval of the Modified PR Allocator by the N~~ew~~ H~~ampshire~~ PUC and Maine PUC~~ respectively~~ in NHPUC Docket 05-080 and~~,~~ in MPUC Docket Nos. 2005-87 and 2005-273,~~.~~ ~~R~~respectively.

(11~~3~~) **Non-Core Commodity Revenues~~Costs~~** - The commodity ~~cost of gas assigned~~revenues associated with ~~to~~ non-core sales to which the COG Factor is not applied. Non-core sales include sales made under interruptible contracts, non-core contracts and o~~O~~ff-s~~S~~ystem s~~S~~ales contracts.

(12~~4~~) **Non-Core Demand Revenues~~Sales Margins~~** - The ~~Economic Benefit~~revenue derived from non-core transactions to which the COG Factor is not applied, including interruptible sales and other non-core sales generated from the use of the Company's gas supply resource portfolio.

(13~~5~~) **Off-System Sales Revenue~~Margin~~** - The ~~Economic Benefit~~revenue derived from the non-firm sales of natural gas supplies upstream of Company's distribution system.

(14) **Production and Storage Capacity Costs** - The costs of providing local, on-system storage service from the Company's storage facilities (i.e., LNG and LPG) as determined in the Company's most recent base rate proceeding.

(15~~6~~) **Purchased Gas Working Capital** - The allowable working capital derived from

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Winter and Summer Season demand and commodity related costs.

(16~~7~~) **~~SMBA –~~ Simplified Market Based Allocation (SMBA) method** – Used in determining the allocation of gas costs among the Company's High and Low load factor Commercial and Industrial Customer Classifications.

(17~~8~~) **Summer Commodity** - The gas supplies procured by the Company to serve firm ~~customer~~ sales load in the Summer Season.

(18~~9~~) **Summer Demand** - The gas supply demand and transmission capacity procured by the Company to serve firm ~~customer~~ sales load in the Summer Season.

(19~~20~~) ~~(21)~~ **Summer Season** – The months May through October.

(20~~1~~) **Winter Commodity** - The gas supplies procured by the Company to serve firm ~~customer~~ sales load in the Winter Season.

(21~~2~~) **Winter Demand** ~~-~~ – The gas supply demand, peaking demands, storage and transmission capacity procured by the Company to servi~~ce~~e firm ~~customer~~ sales load in the Winter Season.

(22~~3~~) **Winter Season** – The months November through April.

(23~~4~~) **Working Capital Carrying Charge Rate**- the monthly prime ~~lending~~interest rate, as reported by the~~-~~ Wall Street Journal on the first date of the month preceding the first month of the quarter~~Federal Reserve Statistical Release of Selected Interest Rates.~~

6. C~~ost of~~ OGas~~as~~ Factor Calculations by Customer Classification

6.1 Approved Cost Amounts~~Figures~~

The COost~~ of~~ G~~as~~ Factor calculations~~ utilizes~~ include~~formation~~ costs and amounts periodically established by the N~~ew~~ H~~ampshire~~ P~~ublic~~ U~~tilities~~ C~~ommission~~. The table below lists~~ the~~ approved costs and amounts~~factors~~:

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effective on May 1st.

The seasonal COG Factors for the Residential rate classes shall represent the total system average unit cost of gas for meeting firm~~-customer~~ sales load~~,~~ projected in each COG season~~filing~~. The seasonal COG Factors ~~shall be derived~~ for the Commercial and Industrial ("C&I") Low Winter and High Winter classes shall be derived by using the load factor based SMBA method of allocating gas costs as defined in Part IV~~.~~, Section 5, and shall include other costs and credits allowed by the NHPUC.

6.3 Winter Season COG ~~ost of~~ ~~as~~ Factors~~ormula (CGw)~~

~~The~~ Winter Season COG ~~Factors~~ costs (COGw) shall be comprised of Winter Season direct costs of gas (DCOGw) which include Winter Season direct demand costs (DDw) and Winter Season c~~C~~ommodity costs (Cw), and Winter Season indirect costs (ICOGw) including Winter Season COG reconciliation gas costs (Rw), Winter Season working capital ~~reconciliation~~costs (WCw), Winter Season bad debt costs (BDw), ~~local~~ production and storage capacity costs (PS)~~;~~, ~~and~~ Winter Season miscellaneous ~~and A&G~~ overhead costs (MISC)~~-~~ and any ~~capacity or~~ supplier~~y~~ refunds ~~calculated~~ allocated ~~at the beginning~~ to ~~of~~ the Winter Season (SRw) according to the following formulas:

COGw = DCOG~~D~~w + ICOGw~~Cw~~

~~+ Rw + WCRw + BDw + PS + (MISC x W:Sales / A:Sales)~~

**Winter Direct Cost of Gas (DCOGw) and Indirect Cost of Gas (ICOGw) Formulas**

DCOGw = DDw + Cw

~~Winter Demand Cost (Dw) Formula~~**and:**

DDw = DEMw – NCDR~~SM~~w ~~-~~ – CARw

**and:** ~~- CRCRw + WCwd – Rld – R2d~~

ICOGw = Rw + BDw + WCw +PS + MISC * (W:Sales / A:Sales) + SRw

~~**and:**~~

Issued: ~~July 1, 2014~~August 18, 2016 | Issued By: [signature]

Effective: ~~May 1, 2014~~ November 1, 2016 | Title: ~~Treasurer~~ Senior Vice President

Authorized by NHPUC Order No. ~~25,653~~ in Docket No. DG~~13-086~~, dated ~~April 21, 2014~~

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~~NCSMw = CRRw + ISMw + OSSMw~~

~~**and:**~~

~~WCwd = (DEMw – NCSMw) x WCA%~~

**Where:**

A:Sales Forecasted annual firm gas supply sales volumes.

BDw Bad ~~d~~debt expense allocated to ~~for~~ the Winter Season.

CARw ~~The~~ Capacity a~~A~~ssignment r~~R~~evenues, pursuant to the c~~C~~apacity a~~A~~ssignment provisions in the Company's Delivery Service Terms and Conditions, allocated to the Winter Season.

~~CRCRw The Capacity Reserve Charge Revenues allocated to firm Sales Service and allocated to the Winter Season.~~

Cw Commodity~~-related direct~~ gas costs allowable for the Winter Season.

COGw T~~he t~~otal cost of gas for the Winter Season to serve ~~for~~ the Company's firm~~-~~ sales customer~~s~~ classes previously defined.

~~CRRw The returnable Capacity Release Revenues allocated to the Winter Season. See Part IV, Section 7.~~

DDw Direct d~~D~~emand costs allowable for the Winter Season

DCOGw Direct gas costs allowable for the Winter Season.

DEMw Demand c~~C~~ost~~harge~~s allocated to the Winter Season defined in Part IV, Section 5.

ICOGw Indirect gas costs allowable for the Winter Season.

~~ISMw The returnable Interruptible Sales Margins allocated to the Winter Season. See Part IV, Section 7.~~

MISC The ~~total dollar~~ amount of gas costs associated with acquisition, dispatching, Administrative and General expenses, ~~and~~ and miscellaneous overhead costs~~s~~ as determined in the Company's most recent base rate proceeding. Refer to Part IV, Section 6.1 for this ~~dollar~~ amount.

NCDSRMw ~~The sum of the~~ Winter Season returnable ~~Interruptible Sales Margins, the~~ c~~C~~apacity r~~R~~elease r~~R~~evenues and return to sales service revenues. ~~and the Off-~~

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Cw = WSC - NCCR~~C~~w + FC ~~+ WCwc – R1c – R2c~~

~~**and:**~~

~~WCwc = (WSC - NCCCw + FC) × WCA %~~

**Where:**

~~Cw Allowable commodity costs for the Winter Season.~~

FC Annual i~~I~~nventory finance charges as defined in Part IV, Section 5.

NCCR~~C~~w Non-c~~C~~ore c~~C~~ommodity gas revenues~~Costs~~ incurred in the Winter Season as defined in Part IV, Section 5.

~~R1c, R2c Supplier commodity-related refunds - The supplier refunds associated with refund program credits derived from Account 242, "Undistributed Gas Suppliers' Refunds". See Part IV, Section 8.~~

~~WCwc Working Capital allowance Associated with commodity charges allocated to the Winter Season as defined in Part IV, Section 10.~~

~~WCA % Ratio of Working Capital Allowance associated with gas costs to total direct gas costs. Refer to Part IV, Section 6.1 for this percentage.~~

WSC Commodity gas costs ~~charges~~ associated with gas supply ~~sent out~~dispatched to firm gas supply sales customers in the Winter Season~~ as defined in Part IV, Section 5~~.

## Winter ~~Season~~ Working Capital ~~Cost~~Carrying Charges (WCw) Formula

WCw = (DCOGw) × WCAw % + Rwcw

**Where:**

WCAw % Working capital allowance percentage associated with Winter Season gas costs. See Part IV, Section 6.1.

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Cs = SSC - NCCR~~C~~s ~~+ WCsc – R1c – R2c~~
~~and: WCsc = (SSC - NCCCs) x WCA%~~

**Where:**

~~Cs Allowable commodity costs for the Summer Season.~~

NCCR~~C~~s Non-core commodity gas ~~costs~~ revenues incurred in the Summer Season as defined in Part IV, Section 5.

~~R1c, R2c Supplier refunds from pipeline commodity charges - The supplier refunds associated with refund program credits derived from Account 242, "Undistributed Gas Suppliers' Refunds."~~

SSC Commodity gas cost charges associated with gas supply ~~supply sent~~dispatched to firm gas supply sales customers in the summer season ~~out in the Summer Season as defined in Part IV, Section 5~~.

~~WCA% Ratio of working capital allowance associated with gas costs to total direct gas costs. Refer to Part IV, Section 6.1 for this percentage.~~

~~WCsc Working Capital allowable costs associated with commodity charges allocated to the Summer Season as defined in Part IV, Section 10.~~

**Summer Working Capital Carrying Charges (WCs) Formula**

WCs = DCOGs × WCAs% + Rwcs

**Where:**

WCAs% Working capital allowance percentage associated with Summer Season gas costs. Refer to Part IV, Section 6.1.

Rwcs Working capital allowance reconciliation adjustment associated with the Summer Season gas costs, Account 182 balance, as outlined in Part IV, Section 10.

**Summer Bad Debt (BDs) Formula**

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~~UDEMsh Unit Cost of Summer Demand associated with the High Winter Use Commercial and Industrial customer group as defined in Part IV, Section 5.~~

7. Non-Core Sales Demand and Commodity Revenues~~Margins (“NCSM”)~~

One hundred percent (100%) of ~~EB~~or ~~margins~~ revenues from Interruptible Sales, ~~and~~ Off-System Sales, and ~~all revenues from~~ Capacity Release will be credited to firm sales customers through operation of the COGC.

8. Gas Suppliers' Refunds ~~–~~– FERC Account~~s~~ 242

Refunds from upstream capacity suppliers and suppliers of product demand are credited to Account 242, "Undistributed Purchased Capacity/Product Demand Refunds." Refunds from ~~gas~~ suppliers of gas are credited to account 242, "Commodity Undistributed Gas Suppliers' Refunds." Transfers from these accounts will be reflected as a credit in the ~~semi~~annual calculation of the seasonal COG Factors to be calculated as follows:

Refund programs shall be initiated with each ~~semi~~annual COG filing and shall remain in effect for a period of one year. The ~~total~~ amount~~dollars~~ to be placed into a given refund program shall be net of over/under-~~returns~~ balances from -expired refund programs plus refunds received from suppliers- since the previous program was initiated. Refunds shall be segregated by demand and commodity ~~charges~~ and distributed volumetrically, producing a per unit refund that will return the principal amount with interest applied to the average of the beginning and end of month balances of refunds. The interest rate is to be adjusted each quarter using the prime interest rate as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter ~~as calculated using the monthly prime lending rate, as reported by the Federal Reserve Statistical Release of Selected Interest Rates~~, ~~to the average of the beginning and end of month balances of refunds~~. The Company shall track and report on all ~~Account 242 and~~ Account 242 activities as specified in Part IV, Section ~~10~~12-.

9. Annual COG Reconciliation Adjustment~~s~~ ~~–~~ FERC Account ~~182~~191

(1) The following **definitions** pertain to the annual COG reconciliation adjustment ~~calculations~~:

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~~computed as the difference between the previous year's actual bad debt expense related to gas supply for the same season and the actual bad debt revenues collected related to gas supply for that season.~~

~~ii. Account 182.16 - Winter Season Bad Debt, reconciliation adjustment.~~

~~iii. Account 182.22 - Summer Season Bad Debt reconciliation adjustment.~~

(2) ~~Calculation~~ Allocation of the annual COG Reconciliation Adjustment~~s~~ to the S~~s~~ummer Season (Rs) and Winter Season (Rw).

Account 191 contains the accumulated difference between actual ~~gas~~ COG Factor ~~cost~~ revenues and the actual monthly COG Factor ~~gas~~ costs incurred by the Company including Carrying Charges.~~-~~ The allocation of the annual COG reconciliation ending balance to the Winter and Summer Seasons is derived by multiplying the ratio of each season's firm gas supply sales service to annual firm gas supply sales service by the annual COG reconciliation ending balance. ~~The Company shall separate Account 191 into Winter Season Gas Costs (Account 191.20) and~~

~~Summer Season Gas Costs (Account 191.10). Account 191.20 shall contain the accumulated difference between revenues toward gas costs calculated by multiplying the Winter Season Gas Cost for each Customer Classification, (COGwr, COGwl and COGwh) times monthly firm sales volumes for each Customer Classification, and the total costs allowable per the Winter Season gas cost formula. Account 191.10 shall contain the accumulated difference between revenues toward gas costs calculated by multiplying the Summer Season Gas Cost for each Customer Classification, (COGsr, COGsl and COGsh) times monthly firm sales volumes for each Customer Classification, and the total gas costs allowable per the Summer Season gas cost formula.~~

Carrying Charges shall be calculated on the average monthly balance of each subaccount. The interest rate is to be adjusted each quarter using the prime interest rate as reported by the Wall Street Journal on the first date of the month preceding the first month of the quarter. ~~Effective on and after May 1, 2006, the interest rate is to be adjusted monthly using the monthly prime lending rate, as reported by the Federal Reserve Statistical Release of Selected Interest Rates on the first date of the month preceding the first month of the quarter.~~

~~The seasonal bad debt reconciliation adjustments Rbdw and Rbds shall be~~

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Part IV, Section 5.

iii. Carrying charges.

b. **Bad Debt Costs Allowable** shall be:

Costs associated with uncollected gas costs, incurred by the Company to serve sales load in the Winter and Summer Seasons. Such costs represent the bad debt expense related to the gas supply related write-off of sales customers. The annual bad debt expense accumulated difference is then multiplied by the ratio of each season's firm gas supply sales to annual firm gas supply sales in order to derive the seasonal bad debt reconciliation amount.

~~c. **Working Capital Demand Gas Costs Allowable per Summer Season Gas Formula** shall be:~~

~~i. Charges associated with upstream storage and transmission capacity procured by the Company to serve firm load in the Summer Season.~~

~~ii. Carrying Charges.~~

~~**Working Capital Commodity Gas Costs Allowab per Summer Season Gas Formula** shall be:~~

~~Charges associated with gas supplies, including any applicable taxes, procured by the Company to serve firm load in the Summer Season.~~

~~i. Non-core commodity costs associated with non-core sales to which the COG is not applied, as defined in Part IV, Section 5.~~

~~iii. Carrying Charges.~~

~~(2) The Winter and Summer Cost of Gas working capital allowances shall be calculated by applying the Working Capital Allowance percentage (WCA %).~~

(~~3~~2) Calculation of the Working Capital and Bad Debt Reconciliation Adjustments

A Account~~s~~ 182 ~~.11 and 182.21~~ contains the accumulated difference between actual working capital allowance revenues and the actual monthly working capital allowance costs. The actual monthly working capital allowance costs shall be calculated by multiplying the actual gas costs times the