

**Exhibit B**

Twenty-Third Supplemental Indenture, dated September 1, 2018. A copy of the Mortgage and all other Supplemental Indentures have been previously provided.

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NORTHWEST NATURAL GAS COMPANY

TO

DEUTSCHE BANK TRUST COMPANY AMERICAS  
(FORMERLY KNOWN AS BANKERS TRUST COMPANY),

As Corporate Trustee under the Mortgage and Deed of Trust,  
dated as of July 1, 1946, of Portland Gas & Coke  
Company (now Northwest Natural Gas Company)

TWENTY-THIRD SUPPLEMENTAL INDENTURE  
PROVIDING, AMONG OTHER THINGS, FOR  
FIRST MORTGAGE BONDS, 4.11% SERIES DUE 2048

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DATED AS OF SEPTEMBER 1, 2018

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TWENTY-THIRD SUPPLEMENTAL INDENTURE

INDENTURE, dated as of the 1st day of September, 2018, made and entered into by and between NORTHWEST NATURAL GAS COMPANY (formerly Portland Gas & Coke Company), an Oregon corporation, with offices at One Pacific Square, 220 N.W. Second Avenue, Portland, Oregon 97209 (hereinafter sometimes called the Company), and DEUTSCHE BANK TRUST COMPANY AMERICAS (formerly known as BANKERS TRUST COMPANY), a New York banking corporation, with offices at 60 Wall Street, 27th Floor, New York, New York 10005 (hereinafter sometimes called the Corporate Trustee or the Trustee), as Trustee under the Mortgage and Deed of Trust, dated as of July 1, 1946 (hereinafter called the Mortgage), executed and delivered by Portland Gas & Coke Company (now Northwest Natural Gas Company) to secure the payment of bonds issued or to be issued under and in accordance with the provisions of the Mortgage, this indenture (hereinafter called Twenty-third Supplemental Indenture) being supplemental thereto;

WHEREAS the Mortgage was or is to be recorded in the official records of various counties in the States of Oregon and Washington which counties include or will include all counties in which this Twenty-third Supplemental Indenture is to be recorded; and

WHEREAS by the Mortgage the Company covenanted that it would execute and deliver such supplemental indenture or indentures and such further instruments and do such further acts as might be necessary or proper to carry out more effectually the purposes of the Mortgage and to make subject to the lien of the Mortgage any property thereafter acquired, made or constructed and intended to be subject to the lien thereof; and

WHEREAS the Company executed and delivered to the Trustee its First Supplemental Indenture, dated as of June 1, 1949 (hereinafter called its First Supplemental Indenture), its Second Supplemental Indenture, dated as of March 1, 1954 (hereinafter called its Second Supplemental Indenture), its Third Supplemental Indenture, dated as of April 1, 1956 (hereinafter called its Third Supplemental Indenture), its Fourth Supplemental Indenture, dated as of February 1, 1959 (hereinafter called its Fourth Supplemental Indenture), its Fifth Supplemental Indenture, dated as of July 1, 1961 (hereinafter called its Fifth Supplemental Indenture), its Sixth Supplemental Indenture, dated as of January 1, 1964 (hereinafter called its Sixth Supplemental Indenture), its Seventh Supplemental Indenture, dated as of March 1, 1966 (hereinafter called its Seventh Supplemental Indenture), its Eighth Supplemental Indenture, dated as of December 1, 1969 (hereinafter called its

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Eighth Supplemental Indenture), its Ninth Supplemental Indenture, dated as of April 1, 1971 (hereinafter called its Ninth Supplemental Indenture), its Tenth Supplemental Indenture, dated as of January 1, 1975 (hereinafter called its Tenth Supplemental Indenture), its Eleventh Supplemental Indenture, dated as of December 1, 1975 (hereinafter called its Eleventh Supplemental Indenture), its Twelfth Supplemental Indenture, dated as of July 1, 1981 (hereinafter called its Twelfth Supplemental Indenture), its Thirteenth Supplemental Indenture, dated as of June 1, 1985 (hereinafter called its Thirteenth Supplemental Indenture), its Fourteenth Supplemental Indenture, dated as of November 1, 1985 (hereinafter called its Fourteenth Supplemental Indenture), its Fifteenth Supplemental Indenture, dated as of July 1, 1986 (hereinafter called its Fifteenth Supplemental Indenture), its Sixteenth Supplemental Indenture, dated as of November 1, 1988 (hereinafter called its Sixteenth Supplemental Indenture), its Seventeenth Supplemental Indenture, dated as of October 1, 1989 (hereinafter called its Seventeenth Supplemental Indenture), its Eighteenth Supplemental Indenture, dated as of July 1, 1990 (hereinafter called its Eighteenth Supplemental Indenture), its Nineteenth Supplemental Indenture, dated as of June 1, 1991 (hereinafter called its Nineteenth Supplemental Indenture), its Twentieth Supplemental Indenture, dated as of June 1, 1993 (hereinafter called the Twentieth Supplemental Indenture), and its Twenty-first Supplemental Indenture, dated as of October 15, 2012 (herein after called the Twenty-first Supplemental Indenture); and

WHEREAS the First through Twenty-first Supplemental Indentures were filed for record, and were recorded and indexed, as a mortgage of both real and personal property, in the official records of various counties in the States of Oregon and Washington which counties include or will include all counties in which this Twenty-first Supplemental Indenture is to be recorded; and

WHEREAS the Company executed and delivered to the Trustee its Twenty-second Supplemental Indenture, dated as of November 1, 2016 (hereinafter called its Twenty-second Supplemental Indenture); and

WHEREAS said Twenty-second Supplemental Indenture was filed for record, and was recorded and indexed, as a mortgage of both real and personal property, and financing statements were filed, in the official records of the several counties and other offices in the States of Oregon and Washington listed below, as follows:

IN THE STATE OF OREGON

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Real Property Mortgage Records

<u>No.</u>	<u>County</u>	<u>Recordation Date</u>	<u>Document No.</u>
1	Benton	11/1/16	2016-550735
2	Clackamas	11/1/16	2016-075424
3	Clatsop	11/1/16	201608559
4	Columbia	11/3/16	2016-9634
5	Coos	11/1/16	2016-009693
6	Douglas	11/1/16	2016-017166
7	Hood River	11/1/16	2016-03803
8	Lane	11/1/16	2016-03803
9	Lincoln	11/2/16	2016-10440
10	Linn	11/1/16	2016-18788
11	Marion	11/1/16	Reel 3877, Page 196
12	Multnomah	11/1/16	2016-137672
13	Polk	11/1/16	2016-012260
14	Tillamook	11/3/16	2016-006279
15	Wasco	11/1/16	2016-004067
16	Washington	11/1/16	2016-090083
17	Yamhill	11/1/16	201617020

Filed as a Financing Statement

<u>No.</u>	<u>Office</u>	<u>Date Filed</u>	<u>File No.</u>
	Secretary of State	June 23, 1993	R61325

IN THE STATE OF WASHINGTON

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Real Property Mortgage Records

<u>No.</u>	<u>County</u>	<u>Recordation Date</u>	<u>Document No.</u>
18	Clark	11/1/16	5342787 SUPIND
19	Klickitat	11/1/16	1120804 M
20	Skamania	11/1/16	AFN #2016002298

WHEREAS in addition to the property described in the Mortgage, as heretofore supplemented, the Company has acquired certain other property, rights and interests in property; and

WHEREAS, the Company has heretofore issued, in accordance with the provisions of the Mortgage, as supplemented, and on the date hereof there remain outstanding, the following series of First Mortgage Bonds:

<u>Series</u>	<u>Principal Amount Outstanding</u>
Secured Medium-Term Notes, Series A	\$10,000,000
Secured Medium-Term Notes, Series B	\$704,700,000
4.00% Series due 2042	\$50,000,000

; and

WHEREAS Section 8 of the Mortgage provides that the form of each series of bonds (other than the First Series) issued thereunder shall be established by Resolution of the Board of Directors of the Company; that the form of such series, as established by the Board of Directors, shall specify the descriptive title of the bonds and various other terms thereof; and that such Series may also contain such provisions not inconsistent with the provisions of the Mortgage as the Board of Directors may, in its discretion, cause to be inserted therein expressing or referring to the terms and conditions upon which such bonds are to be issued and/or secured under the Mortgage; and

WHEREAS Section 120 of the Mortgage provides, among other things, that any power, privilege or right expressly or impliedly reserved to or in any way conferred upon

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the Company by any provision of the Mortgage, whether such power, privilege or right is in any way restricted or is unrestricted, may (to the extent permitted by law) be in whole or in part waived or surrendered or subjected to any restriction if at the time unrestricted or to additional restriction if already restricted, and the Company may enter into any further covenants, limitations or restrictions for the benefit of any one or more series of bonds issued thereunder, or the Company may cure any ambiguity contained therein or in any supplemental indenture or may (in lieu of establishment by Resolution as provided in Section 8 of the Mortgage) establish the terms and provisions of any series of bonds other than said First Series, by an instrument in writing executed and acknowledged by the Company in such manner as would be necessary to entitle a conveyance of real estate to record in all of the states in which any property at the time subject to the lien of the Mortgage shall be situated; and

WHEREAS the Company now desires to create a new series of bonds and (pursuant to the provisions of Section 120 of the Mortgage) to add to its covenants and agreements contained in the Mortgage, as heretofore supplemented, certain other covenants and agreements to be observed by it and to alter and amend in certain respects the covenants and provisions contained in the Mortgage, as heretofore supplemented and amended; and

WHEREAS the execution and delivery by the Company of this Twenty-third Supplemental Indenture, and the terms of the bonds of the Twenty-third Series hereinafter referred to, have been duly authorized by the Board of Directors of the Company by appropriate resolutions of the Board of Directors;

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

That Northwest Natural Gas Company, in consideration of the above premises and such other valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, and in further assurance of the estate, title and rights of the Trustee, and in order further to secure the payment both of the principal of and interest and premium, if any, on the bonds from time to time issued under the Mortgage, according to their tenor and effect, and the performance of all the provisions of the Mortgage (including any instruments supplemental thereto and any modification made as in the Mortgage provided) and of said bonds, hereby grants, bargains, sells, releases, conveys, assigns, transfers, mortgages, pledges, sets over and confirms (subject, however, to Excepted Encumbrances, as defined in Section 6 of the Mortgage) to Deutsche Bank Trust Company Americas, as Trustee under the Mortgage, and to its successor or successors in said trust, and to said Trustee and its



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successors and assigns forever, all property, real, personal and mixed, acquired by the Company after the date of the Mortgage, of the kind or nature specifically mentioned in Article XXI of the Mortgage or of any other kind or nature (except any herein or in the Mortgage expressly excepted) now owned or, subject to the provisions of subsection (I) of Section 87 of the Mortgage, hereafter acquired by the Company (by purchase, consolidation, merger, donation, construction, erection or in any other way) and wheresoever situated, including (without in anywise limiting or impairing by the enumeration of the same the scope and intent of the foregoing) all lands, gas plants, by-product plants, gas holders, gas mains and pipes; all power sites, water rights, reservoirs, canals, raceways, dams, aqueducts, and all other rights or means for appropriating, conveying, storing and supplying water; all rights of way and roads; all plants for the generation of electricity by steam, water and/or other power; all power houses, street lighting systems, standards and other equipment incidental thereto, telephone, radio, television and air-conditioning systems and equipment incidental thereto, water works, water systems, steam heat and hot water plants, substations, lines, service and supply systems, bridges, culverts, tracts, ice or refrigeration plants and equipment, offices, buildings and other structures and the equipment thereof; all machinery, engines, boilers, dynamos, gas, electric and other machines, regulators, meters, transformers, generators, motors, gas, electrical and mechanical appliances, conduits, cables, gas, water, steam heat or other pipes, service pipes, fittings, valves and connections, pole and transmission lines, wires, cables, tools, implements, apparatus, furniture and chattels; all franchises, consents or permits; all lines for the transmission and distribution of gas, electric current, steam heat or water for any purpose including mains, pipes, conduits, towers, poles, wires, cables, ducts and all apparatus for use in connection therewith; all real estate, lands, easements, servitudes, licenses, permits, franchises, privileges, rights of way and other rights in or relating to public or private property, real or personal, or the occupancy of such property and (except as herein or in the Mortgage, as heretofore supplemented, expressly excepted) all right, title and interest the Company may now have or may hereafter acquire in and to any and all property of any kind or nature wheresoever situated.

TOGETHER WITH all and singular the tenements, hereditaments, prescriptions, servitudes and appurtenances belonging or in anywise appertaining to the aforementioned property or any part thereof, with the reversion and reversions, remainder and remainders and (subject to the provisions of Section 57 of the Mortgage) the tolls, rents, revenues, issues, earnings, income, product and profits thereof, and all the estate, right, title and interest and claim whatsoever, at law as well as in equity, which the Company now has or may hereafter acquire in and to the aforementioned property and franchises and every part and parcel thereof.

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IT IS HEREBY AGREED by the Company that, subject to the provisions of subsection (I) of Section 87 of the Mortgage, all the property, rights, and franchises acquired by the Company (by purchase, consolidation, merger, donation, construction, erection or in any other way) after the date hereof (other than any Excepted Property) shall be and are as fully granted and conveyed hereby and by the Mortgage, and as fully embraced within the lien hereof and the lien of the Mortgage, as supplemented, as if such property, rights and franchises were now owned by the Company and were specifically described herein or in the Mortgage, as heretofore supplemented, and conveyed hereby or thereby.

TO HAVE AND TO HOLD all such properties, real, personal and mixed, granted, bargained, sold, released, conveyed, assigned, transferred, mortgaged, pledged, set over or confirmed by the Company as aforesaid, or intended so to be, to Deutsche Bank Trust Company Americas, as Trustee, and its successors and assigns forever.

IN TRUST NEVERTHELESS, for the same purposes and upon the same terms, trusts and conditions and subject to and with the same provisos and covenants as are set forth in the Mortgage, as heretofore supplemented, this Twenty-third Supplemental Indenture being supplemental thereto.

AND IT IS HEREBY COVENANTED by the Company that all the terms, conditions, provisos, covenants and provisions contained in the Mortgage, as heretofore supplemented, shall affect and apply to the property hereinbefore described and conveyed, and to the estates, rights, obligations and duties of the Company and the Trustee and the beneficiaries of the trust with respect to said property, and to the Trustee and its successors in the trust, in the same manner and with the same effect as if the said property had been owned by the Company at the time of the execution of the Mortgage, and had been specifically and at length described in and conveyed to said Trustee by the Mortgage as a part of the property therein stated to be conveyed.

The Company further covenants and agrees to and with the Trustee and its successors in said trust under the Mortgage, as follows:

#### ARTICLE I.

Twenty-third Series of Bonds.

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SECTION 1.01 There shall be a series of bonds designated "4.11% Series due 2048" (herein sometimes referred to as the "Twenty-third Series"), each of which shall also bear the descriptive title "First Mortgage Bond", and the form thereof attached hereto as Exhibit A, as established by Resolution of the Board of Directors of the Company and shall contain suitable provisions with respect to the matters hereinafter in this Article I specified. Bonds of the Twenty-third Series shall be issued from time to time as fully registered bonds in denominations of One Hundred Thousand Dollars and, at the option of the Company, in any multiple or multiples of One Thousand Dollars (the exercise of such option to be evidenced by the execution and delivery thereof). Bonds of the Twenty-third Series shall mature on September 10, 2048 (the "Stated Maturity") and bear interest at the rate of 4.11% per annum, payable semi-annually on February 1 and August 1 of each year, commencing February 1, 2019, and at the Stated Maturity; and the principal of, and premium, if any, and, unless otherwise agreed between the Company and the registered owner of any bonds of the Twenty-third Series registered in the name of such registered owner, interest on, each such bond shall be payable at the office or agency of the Company in the Borough of Manhattan, The City of New York or as otherwise provided in the form of bond of the Twenty-third Series, in such coin or currency of the United States of America as at the time of payment is legal tender for public and private debts. Bonds of the Twenty-third Series shall be dated as in Section 10 of the Mortgage provided.

The bonds of the Twenty-third Series shall be payable and have and be subject to such other terms as provided in the form of bond of the Twenty-third Series established by the Board of Directors in a Resolution filed with the Corporate Trustee referring to the Twenty-third Series and shall have and be subject to such other terms as are provided in the Mortgage.

All references in the Mortgage to the principal amount of bonds shall, when used with respect to the bonds of the Twenty-third Series, mean the unpaid principal amount thereof, except that, (a) for the purposes of transfers of fully registered bonds under Section 13 of the Mortgage, the term "like principal amount" shall, when used with respect to the bonds of the Twenty-third Series, mean "like aggregate unpaid principal amount", and (b) for the purposes of exchanges of temporary bonds under Section 15 of the Mortgage, the term "like aggregate principal amount" shall, when used with respect to the bonds of the Twenty-third Series, mean "like aggregate unpaid principal amount".

(I) **Optional Redemption.** At any time prior to March 10, 2048 (six months prior to the Stated Maturity), the Company may, at its option, upon notice as provided below,

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redeem at any time all, or from time to time any part of, the bonds of the Twenty-third Series at 100% of the principal amount so redeemed, and the Make-Whole Amount determined for the Settlement Date specified by the Company in such notice with respect to such principal amount. The Company will give each registered owner of bonds of the Twenty-third Series written notice (by first class mail or such other method as may be agreed upon by the Company and such registered owner) of each optional redemption under this subsection (I) mailed or otherwise given not less than 30 days and not more than 60 days prior to the date fixed for such redemption, to each such registered owner at his, her or its last address appearing on the bond register. Each such notice shall specify the Settlement Date (which shall be a Business Day), the aggregate principal amount of the bonds of the Twenty-third Series to be redeemed on such date, the principal amount of each bond held by such registered owner to be redeemed (determined in accordance with subsection (II) of this section), and the interest to be paid on the Settlement Date with respect to such principal amount being redeemed, and shall be accompanied by a certificate signed by a Senior Financial Officer as to the estimated Make-Whole Amount due in connection with such redemption (calculated as if the date of such notice were the date of the redemption), setting forth the details of such computation. Two Business Days prior to such Settlement Date, the Company shall send to each registered owner of bonds of the Twenty-third Series (by first class mail or by such other method as may be agreed upon by the Company and such registered owner) a certificate signed by a Senior Financial Officer specifying the calculation of such Make-Whole Amount as of the specified Settlement Date. As promptly as practicable after the giving of the notice and the sending of the certificates provided in this subsection, the Company shall provide a copy of each to the Corporate Trustee. The Trustee shall be under no duty to inquire into, may conclusively presume the correctness of, and shall be fully protected in relying upon the information set forth in any such notice or certificate.

At any time on or after March 10, 2048, the bonds of the Twenty-third Series will be redeemable at the option of the Company, in whole or in part, on not less than 30 nor more than 60 days' notice prior to the Settlement Date, at a redemption price equal to 100% of the principal amount of the bonds of the Twenty-third Series to be redeemed, plus accrued and unpaid interest thereon to the Settlement Date. The bonds of the Twenty-third Series are not otherwise subject to voluntary or optional redemption.

**(II) Allocation of Partial Redemptions.** In the case of each partial redemption of the bonds of the Twenty-third Series, the principal amount of the bonds of the Twenty-third Series to be redeemed shall be allocated by the Company among all of the bonds of

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the Twenty-third Series at the time outstanding in proportion, as nearly as practicable, to the respective unpaid principal amounts thereof not theretofore called for redemption.

(III) **Maturity; Surrender, Etc.** In the case of each notice of redemption of bonds of the Twenty-third Series pursuant to this section, if cash sufficient to pay the principal amount to be redeemed on the Settlement Date (which shall be a Business Day), together with interest on such principal amount accrued to such date and the applicable Make-Whole Amount, if any, is not paid as agreed upon by the Company and each registered owner of the affected bonds, or, to the extent that there is no such agreement entered into with one or more such owners, deposited with the Corporate Trustee on or before the Settlement Date, then such notice of redemption shall be of no effect. If such cash is so paid or deposited, such principal amount of the bonds of the Twenty-third Series shall be deemed paid for all purposes and interest on such principal amount shall cease to accrue. In case the Company pays any registered owner pursuant to an agreement with that registered owner, whether in the case of redemption or at maturity or otherwise, the Company shall notify the Corporate Trustee as promptly as practicable of such agreement and payment, and shall furnish the Corporate Trustee with a copy of such agreement and evidence of such payment, which may include a confirmation of wire transfer or other credit to an account designated by the registered owner, cancelled check or a receipt signed by the registered owner; in case the Company deposits any cash with the Corporate Trustee, the Company shall provide therewith a list of the registered owners and the amount of such cash each registered owner is to receive. The Trustee shall be under no duty to inquire into, may conclusively presume the correctness of, and shall be fully protected in relying upon the information set forth in any such notice, evidence of payment, list or agreement, and shall not be chargeable with knowledge of any of the contents of any such agreement. Any bond redeemed in full shall be surrendered to the Company or the Corporate Trustee for cancellation on or before the Settlement Date (unless otherwise agreed between the Company and the registered owner) or, with respect to cash deposited with the Corporate Trustee, before payment of such cash by the Corporate Trustee; any bond redeemed in part shall be surrendered to the Company or the Corporate Trustee on or before the Settlement Date (unless otherwise agreed between the Company and the registered owner) or, with respect to cash deposited with the Corporate Trustee before payment of such cash by the Corporate Trustee, for a substitute bond in the principal amount remaining unpaid.

**(IV) Make-Whole Amount.**

“Make-Whole Amount” means, with respect to any bond of the Twenty-third Series, an amount equal to the excess, if any, of the Discounted Value of the Remaining Scheduled Payments with respect to the Called Principal of such bond of the Twenty-third Series over the amount of such Called Principal, provided that the Make-Whole Amount may in no event be less than zero. For the purposes of determining the Make-Whole Amount, the following terms have the following meanings:

“Business Day” means any day other than a Saturday, a Sunday or a day on which commercial banks in New York City are required or authorized to be closed.

“Called Principal” means, with respect to any bond of the Twenty-third Series, the principal of such bond that is to be redeemed pursuant to subsection (I) of this section.

“Discounted Value” means, with respect to the Called Principal of any bond of the Twenty-third Series, the amount obtained by discounting all Remaining Scheduled Payments with respect to such Called Principal from their respective scheduled due dates to the Settlement Date with respect to such Called Principal, in accordance with accepted financial practice and at a discount factor (applied on the same periodic basis as that on which interest on the bonds of the Twenty-third Series is payable) equal to the Reinvestment Yield with respect to such Called Principal.

“Reinvestment Yield” means, with respect to the Called Principal of any bond of the Twenty-third Series, the sum of (a) 0.50% plus (b) the yield to maturity implied by the “Ask Yield (s)” reported as of 10:00 a.m. (New York City time) on the second Business Day preceding the Settlement Date with respect to such Called Principal, on the display designated as “Page PX1” (or such other display as may replace Page PX1) on Bloomberg Financial Markets for the most recently issued actively traded on-the-run U.S. Treasury securities (“Reported”) having a maturity equal to the Remaining Average Life of such Called Principal as of such Settlement Date. If there are no such U.S. Treasury securities Reported having a maturity equal to such Remaining Average Life, then such implied yield to maturity will be determined by (i) converting U.S. Treasury bill quotations to bond equivalent yields in accordance with accepted financial practice and (ii) interpolating linearly between the “Ask Yields” Reported for the applicable most recently issued actively traded on-the-run U.S. Treasury securities with the maturities (1) closest to and greater than such Remaining Average Life and (2) closest to and less than such Remaining Average Life.

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The Reinvestment Yield shall be rounded to the number of decimal places as appears in the interest rate of the applicable bond of the Twenty-third Series.

If such yields are not Reported or the yields Reported as of such time are not ascertainable (including by way of interpolation), then “Reinvestment Yield” means, with respect to the Called Principal of any bond of the Twenty-third Series, the sum of (x) 0.50% plus (y) the yield to maturity implied by the U.S. Treasury constant maturity yields reported, for the latest day for which such yields have been so reported as of the second Business Day preceding the Settlement Date with respect to such Called Principal, in Federal Reserve Statistical Release H.15 (or any comparable successor publication) for the U.S. Treasury constant maturity having a term equal to the Remaining Average Life of such Called Principal as of such Settlement Date. If there is no such U.S. Treasury constant maturity having a term equal to such Remaining Average Life, such implied yield to maturity will be determined by interpolating linearly between (1) the U.S. Treasury constant maturity so reported with the term closest to and greater than such Remaining Average Life and (2) the U.S. Treasury constant maturity so reported with the term closest to and less than such Remaining Average Life. The Reinvestment Yield shall be rounded to the number of decimal places as appears in the interest rate of the applicable bond of the Twenty-third Series.

“Remaining Average Life” means, with respect to any Called Principal, the number of years obtained by dividing (i) such Called Principal into (ii) the sum of the products obtained by multiplying (a) the principal component of each Remaining Scheduled Payment with respect to such Called Principal by (b) the number of years, computed on the basis of a 360-day year comprised of twelve 30-day months and calculated to two decimal places, that will elapse between the Settlement Date with respect to such Called Principal and the scheduled due date of such Remaining Scheduled Payment.

“Remaining Scheduled Payments” means, with respect to the Called Principal of any bond of the Twenty-third Series, all payments of such Called Principal and interest thereon that would be due after the Settlement Date with respect to such Called Principal if no payment of such Called Principal were made prior to its scheduled due date, provided that if such Settlement Date is not a date on which interest payments are due to be made under the terms of the bonds of the Twenty-third Series, then the amount of the next succeeding scheduled interest payment will be reduced by the amount of interest accrued

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to such Settlement Date and required to be paid on such Settlement Date pursuant to subsection (I) of this section.

“Settlement Date” means, with respect to the Called Principal of any bond of the Twenty-third Series, the date on which such Called Principal is to be redeemed pursuant to subsection (I) of this section.

“Senior Financial Officer” means the chief financial officer, principal accounting officer, treasurer or controller of the Company.

**(V) Exchanges and Transfers.** At the option of the registered owner, any bonds of the Twenty-third Series, upon surrender thereof, for cancellation, at the office or agency of the Company in the Borough of Manhattan, The City of New York, together with a written instrument of transfer whenever required by the Company duly executed by the registered owner or by his duly authorized attorney, shall (subject to the provisions of Section 12 of the Mortgage) be exchangeable for a like aggregate unpaid principal amount of bonds of the same series of other authorized denominations.

Transfers of bonds of the Twenty-third Series may be registered (subject to the provisions of Section 12 of the Mortgage) at the office or agency of the Company in the Borough of Manhattan, The City of New York.

Upon any registration of transfer or exchange of bonds of the Twenty-third Series, the Company may make a charge therefor sufficient to reimburse it for any tax or taxes or other governmental charge, as provided in Section 12 of the Mortgage, but the Company hereby waives any right to make a charge in addition thereto for any registration of exchange or transfer of bonds of the Twenty-third Series.

## ARTICLE II.

### Consent to Amendments.

SECTION 2.01 Each initial and future holder of bonds of the Twenty-third Series by its acquisition of an interest in such bonds, irrevocably (a) consents to the amendments set forth in Article II of the Twenty-second Supplemental Indenture, in each case without any other or further action by any holder of such bonds, and (b) designates the Corporate Trustee, and its successors, as its proxy with irrevocable instructions to vote and deliver

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written consents on behalf of such holder in favor of such amendments at any bondholder meeting, in lieu of any bondholder meeting, in any consent solicitation or otherwise.

### ARTICLE III.

#### Miscellaneous Provisions.

SECTION 3.01 Subject to the amendments provided for in this Twenty-third Supplemental Indenture, the terms defined in the Mortgage, as heretofore supplemented, shall, for all purposes of this Twenty-third Supplemental Indenture, have the meanings specified in the Mortgage, as heretofore supplemented.

SECTION 3.02 The holders of bonds of the Twenty-third Series consent that the Company may, but shall not be obligated to, fix a record date for the purpose of determining the holders of bonds of the Twenty-third Series entitled to consent to any amendment, supplement or waiver. If a record date is fixed, those persons who were holders at such record date (or their duly designated proxies), and only those persons, shall be entitled to consent to such amendment, supplement or waiver or to revoke any consent previously given, whether or not such persons continue to be holders after such record date. No such consent shall be valid or effective for more than 90 days after such record date.

SECTION 3.03 The Trustee hereby accepts the trusts hereby declared, provided, created or supplemented, and agree to perform the same upon the terms and conditions herein and in the Mortgage, as heretofore supplemented, set forth, including the following:

The Trustee shall not be responsible in any manner whatsoever for or in respect of the validity or sufficiency of this Twenty-third Supplemental Indenture or for or in respect of the recitals contained herein, all of which recitals are made by the Company solely. In general each and every term and condition contained in Article XVII of the Mortgage shall apply to and form part of this Twenty-third Supplemental Indenture with the same force and effect as if the same were herein set forth in full, with such omissions, variations and insertions, if any, as may be appropriate to make the same conform to the provisions of this Twenty-third Supplemental Indenture.

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SECTION 3.04 Whenever in this Twenty-third Supplemental Indenture any of the parties hereto is named or referred to, this shall, subject to the provisions of Articles XVI and XVII of the Mortgage, be deemed to include the successors or assigns of such party, and all the covenants and agreements in this Twenty-third Supplemental Indenture contained by or on behalf of the Company or by or on behalf of the Trustee shall bind and inure to the benefit of the respective successors and assigns of such parties whether so expressed or not.

SECTION 3.05 Nothing in this Twenty-third Supplemental Indenture, expressed or implied, is intended, or shall be construed, to confer upon, or to give to, any person, firm or corporation, other than the parties hereto and the holders of the bonds and coupons outstanding under the Mortgage, any right, remedy, or claim under or by reason of this Twenty-third Supplemental Indenture or any covenant, condition, stipulation, promise or agreement hereof, and all the covenants, conditions, stipulations, promises and agreements by or on behalf of the Company as set forth in this Twenty-third Supplemental Indenture shall be for the sole and exclusive benefit of the parties hereto, and of the holders of the bonds and of the coupons outstanding under the Mortgage.

SECTION 3.06 Except to the extent specifically provided herein, no provision of this Twenty-third Supplemental Indenture is intended to reinstate any provisions in the Mortgage which were amended and superseded by the amendments to the Trust Indenture Act of 1939 effective as of November 15, 1990.

SECTION 3.07 This Twenty-third Supplemental Indenture has been executed in several identical counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

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IN WITNESS WHEREOF, Northwest Natural Gas Company, has caused its corporate name to be hereunto affixed, and this instrument to be signed and sealed by its President or one of its Vice Presidents, and its corporate seal to be attested by its Secretary or one of its Assistant Secretaries for and in its behalf on the 31st day of August, 2018, as of September 1, 2018, in Portland, Oregon; and Deutsche Bank Trust Company Americas, has caused its corporate name to be hereunto affixed, and this instrument to be signed and sealed by its Vice Presidents or its Assistant Vice Presidents and its corporate seal to be attested by one of its Vice Presidents, Assistant Vice Presidents, one of its Assistant Secretaries or one of its Associates on the 27th day of August, 2018, as of September 1, 2018, in The City of New York.

NORTHWEST NATURAL GAS COMPANY

[SEAL]

By /s/ Frank H.  
Burkhartsmeier

Frank H. Burkhartsmeier  
Senior Vice President and Chief  
Financial Officer

Attest:

/s/ Shawn M. Filippi  
Shawn M. Filippi  
Vice President, Chief Compliance Officer  
And Corporate Secretary

Executed, sealed and delivered by  
NORTHWEST NATURAL GAS COMPANY  
in the presence of:

/s/ Kimberley J.  
Kitzmiller  
Kimberley J. Kitzmiller

/s/ Darlene A.  
Barnes  
Darlene A. Barnes

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DEUTSCHE BANK TRUST COMPANY  
AMERICAS, as Trustee,

By /s/ Carol  
Ng  
Carol Ng  
Vice President

By /s/ Nigel  
Luke  
Nigel Luke  
Vice President

Attest:

/s/ Luke  
Russel  
Luke Russel  
Associate

Executed, sealed and delivered by  
DEUTSCHE BANK TRUST COMPANY AMERICAS  
in the presence of:

/s/ Hafsa  
Zahir  
Hafsa Zahiri

/s/ Scott  
Dodic  
Scott Dodic

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STATE OF OREGON            )

: ss.:

COUNTY OF MULTNOMAH    )

August 31, A.D. 2018.

Before me personally appeared Frank Burkhartsmeier, who, being duly sworn, did say that he is the Senior Vice President and Chief Financial Officer, of NORTHWEST NATURAL GAS COMPANY and that the seal affixed to the foregoing instrument is the corporate seal of said Corporation and that said instrument was signed and sealed in behalf of said Corporation; and he acknowledged said instrument to be its voluntary act and deed.

On this 31st day of August, 2018, before me personally appeared Frank Burkhartsmeier, to me known to be the Senior Vice President and Chief Financial Officer of NORTHWEST NATURAL GAS COMPANY, one of the corporations that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said Corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said Corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

/s/ Pamela Lynne Villaloboz  
Pamela Lynne Villaloboz  
Notary Public - Oregon  
Commission No. 977508  
My Commission Expires 7-26-22



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EXHIBIT A TO SUPPLEMENTAL INDENTURE

THIS BOND HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR THE SECURITIES OR "BLUE SKY" LAWS OF ANY OTHER JURISDICTION, AND MAY BE TRANSFERRED ONLY IN COMPLIANCE WITH SUCH REGISTRATION REQUIREMENTS OR UNDER AN EXEMPTION THEREFROM.

IF AGREED BETWEEN THE COMPANY AND THE REGISTERED OWNER OF THIS BOND, THE PRINCIPAL OF THIS BOND MAY BE REDEEMED IN WHOLE OR IN PART WITHOUT SURRENDER OF THIS BOND OR NOTATION ON THIS BOND OF SUCH REDEMPTION. ANY PURCHASER OF THIS BOND, BY ACCEPTANCE HEREOF, AGREES THAT THE UNPAID PRINCIPAL AMOUNT AS OF ANY DATE MAY BE LESS THAN THE PRINCIPAL AMOUNT SHOWN ON THIS BOND. CONFIRMATION OF THE UNPAID PRINCIPAL AMOUNT OF THIS BOND MAY BE OBTAINED FROM THE COMPANY OR THE CORPORATE TRUSTEE.

Registered No.

FORM OF TEMPORARY REGISTERED BOND

**NORTHWEST NATURAL GAS COMPANY**

**First Mortgage Bond**

**4.11% Series due 2048**

CUSIP/PPN: 667655 B@2

Interest Payment Dates: February 1 and  
August 1

Interest Rate: 4.11%

Maturity Date: September 10, 2048

Principal Amount:

Registered Holder:

NORTHWEST NATURAL GAS COMPANY, a corporation of the State of Oregon (hereinafter called the "Company"), for value received, hereby promises to pay to the Registered Holder named above, or assigns in whose name this bond is registered in the bond register, the unpaid portion of the Principal Amount specified above on the Maturity Date specified above, at the office or agency of the Company in the Borough of Manhattan, The City of New York (unless otherwise agreed by the Company and the registered owner), in such coin or currency of the United States of America as at the time of payment is legal tender for public and private debts, and to pay to the

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registered owner hereof interest on the principal amount remaining unpaid from time to time from \_\_\_\_\_, 20\_\_ [Date of initial authentication and delivery of bonds of this series] or from the most recent interest payment date to which interest has been paid, at the Interest Rate specified above in like coin or currency on each Interest Payment Date specified above of each year,

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commencing February 1, 2019, and at the Maturity Date specified above, until the Company's obligation with respect to the payment of such principal shall have been discharged.

This bond is a temporary bond and one of an issue of bonds of the Company issuable in series and is one of a series known as its First Mortgage Bonds, 4.11% Series due 2048, all bonds of all series issued and to be issued under and equally secured (except in so far as any sinking or other fund, established in accordance with the provisions of the Mortgage hereinafter mentioned, may afford additional security for the bonds of any particular series) by a Mortgage and Deed of Trust (herein, together with any indenture supplemental thereto, including the Twenty-third Supplemental Indenture dated as of September 1, 2018, called the Mortgage) dated as of July 1, 1946, executed by Portland Gas & Coke Company (now Northwest Natural Gas Company) to Deutsche Bank Trust Company Americas (formerly known as Bankers Trust Company), as Trustee. Reference is made to the Mortgage for a description of the property mortgaged and pledged, the nature and extent of the security, the rights of the holders of the bonds and of the Trustee in respect thereof, the duties and immunities of the Trustee, the terms and conditions upon which the bonds are and are to be secured, the circumstances under which additional bonds may be issued and the rights of the Company to amend the Mortgage without any consent or other action by the holders of any series of bonds (including this series). With the consent of the Company and to the extent permitted by and as provided in the Mortgage, the rights and obligations of the Company and/or the rights of the holders of the bonds and/or coupons and/or the terms and provisions of the Mortgage may be modified or altered by such affirmative vote or consent of the holders of the bonds then outstanding under the Mortgage as is specified in the Mortgage. In the twenty-second supplemental indenture dated as of November 1, 2016 to the Mortgage (the "Twenty-second Supplemental Indenture"), the Company has reserved the right, without any consent or other action by the holders of any series of bonds subsequent to the Twenty-second Series (as such term is defined in the Twenty-second Supplemental Indenture) (including this bond), to amend the Mortgage and the terms of the bonds as set forth in Article II of the Twenty-second Supplemental Indenture. Each initial and future holder of this bond, by its acquisition of an interest in this bond, irrevocably (a) consents to the amendments set forth in Article II of the Twenty-second Supplemental Indenture, in each case without any other or further action by any holder of such bonds, and (b) designates the Corporate Trustee, and its successors, as its proxy with irrevocable instructions to vote and deliver written consents on behalf of such holder in favor of such amendments at any bondholder meeting, in lieu of any bondholder meeting, in any consent solicitation or otherwise.

Capitalized terms used in this bond which are not otherwise defined herein shall have the meanings ascribed thereto in the Mortgage.

The unpaid principal hereof may be declared or may become due prior to the Maturity Date hereinbefore named on the conditions, in the manner and at the time set forth in the Mortgage, upon the occurrence of a default as in the Mortgage provided.

Except as otherwise agreed between the Company and the registered owner of this bond, payment of the unpaid principal of this bond and interest payable on the Maturity Date will be made when due upon presentation and surrender hereof at the office of the Corporate Trustee or at such other office specified pursuant to Section 35 of the Mortgage and payments of interest (other

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than that payable on the Maturity Date hereof) shall be made, without presentation or surrender hereof, by check mailed to the registered address of the registered owner of this bond as such address shall appear on the bond register maintained pursuant to the Mortgage.

The transfer of this bond may be registered as prescribed in the Mortgage by the registered owner hereof in person, or by his duly authorized attorney, at the office or agency of the Company in the Borough of Manhattan, The City of New York, upon surrender for cancellation of this bond, together with a written instrument of transfer wherever required by the Company duly executed by the registered owner or by his duly authorized attorney, and, thereupon, a new fully registered bond of the same series for a like unpaid principal amount will be issued to the transferee in exchange herefor as provided in the Mortgage. The Company and the Trustee may deem and treat the person in whose name this bond is registered as the absolute owner hereof for the purpose of receiving payment and for all other purposes and neither the Company nor the Trustee shall be affected by any notice to the contrary.

In the manner prescribed in the Mortgage, any bonds of this series, upon surrender thereof, for cancellation, at the office or agency of the Company in the Borough of Manhattan, The City of New York, are exchangeable for a like aggregate unpaid principal amount of bonds of the same series of other authorized denominations.

At any time prior to March 10, 2048 (six months prior to the Maturity Date), the Company may, at its option, upon notice as provided in the Twenty-third Supplemental Indenture to the Mortgage, redeem at any time all, or from time to time any part of, this bond at 100% of the principal amount so redeemed, and the Make-Whole Amount determined for the Settlement Date specified by the Company with respect to such principal amount, together with accrued and unpaid interest thereon. Reference is made to the Twenty-third Supplemental Indenture for the terms and conditions of such redemption and the definitions of Make-Whole Amount and Settlement Date.

At any time on or after March 10, 2048, this bond will be redeemable at the option of the Company, in whole or in part, on not less than 30 nor more than 60 days' notice prior to the Settlement Date, at a redemption price equal to 100% of the principal amount of this bonds to be redeemed, plus accrued and unpaid interest thereon to the Settlement Date. This bond is not otherwise subject to voluntary or option redemption.

As provided in the Mortgage, the Company shall not be required to register transfers or make exchanges of bonds of any series for a period of ten days next preceding any interest payment date for bonds of such series, or next preceding any designation of bonds of such series to be redeemed, and the Company shall not be required to make transfers or exchanges of any bonds designated in whole or in part for redemption.

The Lien of the Mortgage is subject to being legally discharged prior to the Maturity Date of this bond upon the deposit with the Corporate Trustee of money or certain obligations of, guaranteed by or backed by securities of, the government of the United States of America sufficient to pay the unpaid principal of, premium (if any) and interest on this bond when due, all in accordance with the terms and conditions of the Mortgage.

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No recourse shall be had for the payment of the principal or Make-Whole Amount, if any, of or interest on this bond against any incorporator or any past, present or future subscriber to the capital stock, stockholder, officer or director of the Company or of any predecessor or successor corporation, as such, either directly or through the Company or any predecessor or successor corporation, under any rule of law, statute or constitution or by the enforcement of any assessment or otherwise, all such liability of incorporators, subscribers, stockholders, officers and directors being released by the holder or owner hereof by the acceptance of this bond and being likewise waived and released by the terms of the Mortgage.

This bond shall not become obligatory until Deutsche Bank Trust Company Americas (formerly known as Bankers Trust Company), the Corporate Trustee under the Mortgage, or its successor thereunder, shall have signed the form of authentication certificate endorsed hereon.

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IN WITNESS WHEREOF, NORTHWEST NATURAL GAS COMPANY has caused this bond to be signed in its corporate name by its President or one of its Vice Presidents by his signature or a facsimile thereof, and its corporate seal to be impressed or imprinted hereon and attested by its Secretary or one of its Assistant Secretaries by his signature or a facsimile thereof.

Dated:

NORTHWEST NATURAL GAS COMPANY

Attest:

[SEAL]

By \_\_\_\_\_  
[Title]

\_\_\_\_\_  
[Title]

This bond is one of the bonds, of the series herein designated, described or provided for in the within-mentioned Mortgage.

DEUTSCHE BANK TRUST COMPANY AMERICAS,  
(New York)

Corporate Trustee

By \_\_\_\_\_  
Authorized Officer

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FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto

\_\_\_\_\_  
[please insert social security  
or other identifying  
number of assignee]

\_\_\_\_\_  
[name and address of  
transferee must be printed  
or typewritten]

\_\_\_\_\_  
\_\_\_\_\_

the within bond of NORTHWEST NATURAL GAS COMPANY and does hereby irrevocably  
constitute and appoint

\_\_\_\_\_  
\_\_\_\_\_

attorney, to transfer said bond on the books of the within-mentioned Company, with full power of  
substitution in the premises.

Dated: \_\_\_\_\_

\_\_\_\_\_