

AMENDMENT NUMBER EIGHT
TO THE ENERGY FACILITY SITE CERTIFICATE
FOR THE NORTHWEST NATURAL
MIST UNDERGROUND NATURAL GAS STORAGE FACILITY

This amendment number eight to the Energy Facility Site Certificate for the Northwest Natural Mist Underground Gas Storage Facility is issued and executed pursuant to the Order in the Matter of the Application for Amendment by Northwest Natural for amendment number eight to its site certificate for the Mist Underground Natural Gas Storage Facility between the State of Oregon (State) acting by and through its Energy Facility Siting Council (EFSC or “the Council”) and Northwest Natural Co. (NWN), an Oregon corporation.

The amendment authorizes NWN to increase the facility's maximum daily throughput and to install an additional compressor needed to achieve the increased throughput. The amendment also authorizes the installation of one new injection/monitoring well that is served by existing gathering lines. All modifications are located on the existing site.

The findings of fact, reasoning and conclusions of law underlying the terms and conditions of this amendment are set forth in the Council's Final Order Approving Amendment Number Eight which was issued on October 26, 2001 and which by this reference is incorporated herein.

I. DESCRIPTION OF THE AMENDMENT

This amendment increases the permitted daily throughput from 245 million cubic feet per day (mmcf) to 317 mmcf. The increase will involve the installation of new metering facilities, new interconnect piping to the South Mist and North Mist pipelines, and a new gas-turbine driven compressor. All equipment installations will be at Miller station.

The new compressor authorized by this amendment will add up to 7800 horsepower of compression to the facility. Adding this to the 8200 hp currently in operation will bring the total compression capability to 16,000 hp.

The amendment also authorizes NWN to install one new injection/withdrawal well at an existing well site that was developed under Amendment No. 6 to this site certificate. The new well does not require any new gathering lines.

II. CONDITIONS FOR AMENDMENT 8

With the exception of previously applied limits on compression horsepower and permitted daily throughput, existing conditions in the site certificate and amendments one through seven continue to apply. The following new conditions shall apply.

A. Mandatory Conditions under OAR 345 Division 27

The following conditions apply pursuant to OAR 345-027-0020. Some conditions that are listed in OAR 345-027-0020 do not appear below, either because they do not apply or because they are already in the site certificate under a previous amendment.

(1) The modifications authorized under amendment 8 shall be designed, constructed, operated and retired:

(a) Substantially as described in this Site Certificate amendment;

(b) In compliance with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances in effect at the time Amendment No 8 to the Site Certificate is issued; and

(c) In compliance with all applicable permit requirements of other state agencies.

(2) Construction of the modifications authorized under amendment 8 shall begin not later than December 1, 2001 and shall be completed not later than June 1, 2002.

(3) NWN shall restore vegetation to the extent practicable and shall landscape portions of the area disturbed by construction in a manner compatible with its surroundings and/or proposed future use. Upon completion of project construction, NWN shall dispose of all temporary structures not required for future use and all timber, brush, refuse and flammable materials or combustible material resulting from the clearing of land or from construction of the facility.

(4) NWN must decommission the new equipment and portion of the facility described in Amendment 8 and restore the site to a useful and non-hazardous condition as provided in OAR 345-022-0130 and the retirement plan previously described in the Order Approving Amendment 4. In addition, immediately upon execution of amendment 8 to the site certificate, NWN must provide EFSC with a surety bond or other form of financial assurance, which shall guarantee NWN's obligation and indemnify the state from any failure by NWN to decommission the new equipment and portion of the facility described in Amendment 8 and restore the site to a useful and non-hazardous condition as provided in OAR 345-022-0130 and the retirement plan previously described in the order approving amendment 4 to the site certificate. The Council delegates authority for approval of the bond to the Council chair. The amount of the bond or financial assurance must be \$400,000 in 2001 dollars. The calculation of 2001 dollars shall be made using the U.S. Gross Domestic Product Implicit Price Deflator, as published by the U. S. Department of Commerce, Bureau of Economic Analysis, or any successor agency (the "Index"). If, at any time, the Index is no longer published, the Council will select a comparable replacement index.

(5) Pursuant to amendment 8, the permitted daily throughput of the facility is 317 million cubic feet per day.

B. Conditions related to EFSC Standards at OAR Chapter 345 Division 22

Structural and Soils Standards

(1) NWN shall design the modifications authorized by amendment 8 in accordance with the seismic design factors shown in Table 2 of GeoEngineers' September 18, 2001 report "EFSC Structural Standard Information, Miller Station Gas Compression Facility, Mist, Oregon."

(2) NWN shall design, engineer and construct the modifications authorized by amendment 8 substantially in accordance with the recommendations in the section entitled "Non-Seismic Design and Construction Recommendations" in GeoEngineers'

September 18, 2001 report “EFSC Structural Standard Information, Miller Station Gas Compression Facility, Mist, Oregon.”

Waste Minimization

(3) NWN shall transport construction waste materials to an appropriate recycling facility or to an approved sanitary landfill for nonrecyclable goods. NWN shall collect scrap steel and welding rod for transportation to a recycling facility. Silt fence and straw bales shall be transported to an approved landfill.

(4) Nonhazardous wastes associated with the Project such as crankcase oil, triethylene glycol and oil/water separator oils shall be collected, transported and recycled by a vendor as bunker fuel. Oily rags and oil filters shall be incinerated off site by a permitted disposal facility. Granular activated carbon will be collected and sent to a permitted facility for regeneration. NWN may use alternate methods of disposal if approved by the Office of Energy.

Noise Standard (applicable under the General Standard of Review)

(5) Within six months of initial startup of the new compressor authorized by amendment 8, NWN shall conduct noise surveys at the locations previously tested pursuant to amendment 4 to demonstrate compliance with DEQ Noise regulations at OAR 340-035-0035. Sound measurements shall be made with the compressor authorized by amendment 8 running at within 5% of rated horsepower. Measurements shall be made at a time when weather and atmospheric conditions are comparable in terms of sound propagation to the conditions that existed during the measurements taken pursuant to amendment 4. NWN shall mathematically add the sound from this compressor to the sound from compressors installed prior to amendment 8, as measured in the tests required by Amendment 4. NWN shall add instrument error to the noise measurements and shall treat instrument errors as cumulative. NWN shall promptly notify the Office of Energy if the total from this mathematical addition exceeds the limits in Table 8 of OAR 340-035-0035.

C. Conditions related to public safety

Under ORS 469.401(2), EFSC must impose conditions in the site certificate for the protection of public health and safety. The conditions listed above under the EFSC Structural Standard are there to protect public health and safety. The following conditions protect public health and safety specifically with regard to EFSC standards for surface facilities related to underground natural gas storage and natural gas pipelines.

(1) NWN shall design, construct, operate and retire the modifications authorized under amendment 8 in accordance with applicable statutes, rules and ordinances.

(2) NWN shall construct all facilities in accordance with the requirements of the U.S. Department of Transportation as set forth in Title 49, Code of Federal Regulations Part 192.

(3) NWN shall maintain a program to monitor the facility as modified under amendment 8 to ensure protection of the public health and safety, including but not limited to:

(a) Pressure sensing devices positioned at Miller Station and near the wellheads to relay critical information to both Miller station and Portland gas control centers,

(b) high and low pressure alarms monitored on a 24 basis to detect and locate areas where pressure variations may indicate abnormal conditions, and

(c) emergency response personnel on duty 24 hours per day, at Miller Station or in Portland, trained to respond to situations that require immediate attention.

The program that was described in the request for amendment 6 and that was already maintained as of March 30, 1999 in compliance with subpart L of 49 CFR 192 is hereby found to comply with this condition.

D. Conditions related to CO2 standards at OAR 345 Division 24

(1) Immediately upon execution of this Site Certificate Amendment 8 authorizing the compressor described in NWN's Request for Amendment 8 ("new compressor"), NWN shall report to Energy Facility Siting Council ("Council") the design and operating parameters of the new compressor, as specified in sub-sections (a) through (c).

(a) NWN shall notify the Council in writing of its final selection of a gas turbine compressor vendor.

(b) NWN shall submit written design information sufficient to verify the new compressor's designed heat rate (higher heating value) and its nominal capacity. NWN shall include an affidavit certifying the heat rate and nominal capacity of the new compressor.

(c) NWN shall specify the estimated annual average hours that it reasonably expects to operate the new compressor.

(2) NWN shall submit all monetary path payment requirement calculations to the Office of Energy ("Office") for verification in a timely manner prior to making payments to The Climate Trust. NWN shall use the contracted design parameters for nominal capacity and heat rate of the new compressor, along with the estimated annual hours of operation, that it reports pursuant to Condition 1 to calculate the estimated monetary path payment requirement. For the purposes of this site certificate, the "monetary path payment requirement" means the offset funds determined pursuant to OAR 345-024-0630 and the selection and contracting funds that NWN must disburse to The Climate Trust, as the qualified organization, pursuant to OAR 345-024-0710 and this site certificate.

(a) The net carbon dioxide emissions rate for the new compressor shall not exceed 0.522 pounds of carbon dioxide per horsepower hour.

(b) The offset fund rate for the monetary path payment requirement shall be \$0.85 per ton of carbon dioxide (in 2001 dollars). For the initial monetary path payment that NWN must make prior to beginning construction, the calculation of 2001 dollars shall be made using the US Gross Domestic Product Implicit Price Deflator, as published by the US Department of Commerce, Bureau of Economic Analysis, or any successor agency ("the index"). The amount of the payment requirement shall increase annually by the percentage increase in the index and shall be pro-rated within the year to the date of disbursement to The Climate Trust

from October 26, 2001. If at any time the index is no longer published, the Council shall select a comparable calculation of 2001 dollars.

(c) NWN shall offset excess carbon dioxide emissions using the monetary path as described in OAR 345-024-0710 and this site certificate. Contracting and selecting funds shall equal twenty (20) percent of the value of any offset funds up to the first \$250,000 (in 2001 dollars) and 4.286 percent of the value of any offset funds in excess of \$250,000 (in 2001 dollars).

(3) Immediately upon execution of this Site Certificate Amendment 8, NWN shall pay cash to The Climate Trust in the full amount of the monetary path payment requirement (in 2001 dollars) as determined by the calculations set forth in Condition 2.

(4) The Office shall establish an "offset credit account." The initial offset credit account shall be the total carbon dioxide offsets for which NWN has provided offset funds to The Climate Trust, pursuant to Condition 3.

(5) Each year after beginning commercial operation of the new compressor ("annual carbon dioxide reporting period"), NWN shall report to OOE the annual hours the new compressor operated and its fuel use in Btu. NWN shall provide the annual report to the Office within 30 days of the anniversary date of beginning commercial operation of the new compressor.

(a) The Office shall calculate the excess carbon dioxide emissions during each annual carbon dioxide reporting period and subtract those emissions from the offset credit account annually.

(b) If the offset credit account contains fewer than 2,000 tons of carbon dioxide offset credits, NWN shall replenish the offset credit account. NWN shall replenish the offset credit account equivalent to the full amount of the estimated future excess emissions. The Office shall estimate excess emissions for the remaining period of the deemed 30-year life of the facility, based on the average annual excess carbon dioxide emissions in the prior three years. The Office shall calculate the estimated future excess emissions of the new compressor and notify NWN of the amount of payment required, using the monetary path, to replenish the offset credit account.

(c) Notwithstanding the index identified in Condition 2(b), pursuant to OAR 345-024-0710(6)(a) the formula to calculate the rate for the dollar value per ton of carbon dioxide offsets by which NWN shall replenish its offset credit account through the monetary path shall be $\$0.85 \text{ times } (1.0891 \text{ to the power } "t")$; where "t" is the elapsed time in years between October 26, 2001, and the date the Office notifies NWN that it must replenish its offset credit account, pursuant of OAR 345-024-0630(4). Fractional years shall be calculated by dividing the number of elapsed days in excess of a whole year by 365.

(d) The Office shall calculate additional contracting and selection funds pursuant to Condition 2(c).

(e) NWN shall disburse in cash the additional monetary path payment requirement to replenish the offset credit account to The Climate Trust within 30 days after notification by the Office of the amount that NWN owes.

(6) The new gas turbine compressor shall be fueled solely with pipeline quality natural gas or with synthetic gas with a carbon content per million Btu no greater than pipeline quality natural gas. The Office shall use a rate of 117 pounds of carbon dioxide per million Btu of natural gas fuel to calculate carbon dioxide emissions.

IN WITNESS THEREOF, this Site Certificate Amendment Number 8 has been executed by the State of Oregon, acting by and through its Energy Facility Siting Council and Northwest Natural Co.

Northwest Natural Co.

Date

Karen H. Green
Chair, Energy Facility Siting Council

Date