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REPORT NAME: NW Natural's 2014 Greenhouse Gas (GHG) Compliance Report

COMPANY NAME: NW Natural

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION? No Yes

If yes, please submit only the cover letter electronically. Submit confidential information as directed in OAR 860-001-0070 or the terms of an applicable protective order.

If known, please select designation: RE (Electric) RG (Gas) RW (Water) RO (Other)

Report is required by: OAR 860-085-0050(1)

Statute

Order

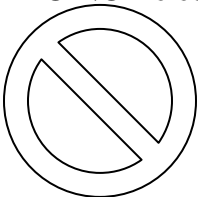
Other

Is this report associated with a specific docket/case? No Yes

If yes, enter docket number: RG 46

List applicable Key Words for this report to facilitate electronic search:
2014, Greenhouse Gas, GHG, Carbon, NW Natural

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June 24, 2014

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Attn: Filing Center

Re: RG 46, OAR 860-085-0050(1) Greenhouse Gas (GHG) Compliance Report

Northwest Natural Gas Company, dba NW Natural (NW Natural or Company), submits this letter in compliance with OAR 860-085-0050(1), which requires natural gas utilities to report the greenhouse gas (GHG) emissions it expects to have from Company operations in 2020 and the costs it may incur to reduce 2020 GHG emissions to a level that is 10% lower than its 1990 emissions and 15% lower than its 2005 emissions. This information will inform Staff's report to the legislature, required per OAR 860-085-0050(7) that will include the estimated rate impacts for reducing utilities' GHG emissions by State's established targets.

NW Natural identified its sources of GHG emissions as: 1) its operations and facilities, 2) its natural gas and electric power usage for operations including compressors, 3) its operation of fleet vehicles to service customers; and 4) natural gas leaks commonly referred to as fugitive emission. The Company's previously submitted GHG Compliance Reports, one submitted informally in 2010 and the second filed in 2012 in Docket RG-46, did not include estimated values for fugitive emissions. The Company believes this change provides a more accurate representation of its emissions.

Since the goal of this effort is to determine the emissions reduction required to achieve the goals of being 10% below 1990 emissions and 15% below 2005 emissions in 2020, the Company began its analysis by establishing its 1990 and 2005 emissions. NW Natural does not have historical energy consumption data necessary for determining its 1990 or 2005 GHG emissions. For this report, NW Natural uses the average emissions for 2008 and 2009 as the proxy for both 1990 and 2005. The Company believes this is a reasonable assumption because, in spite of serving more customers, the Company is more efficient, has a tighter system, and has fewer employees now than it had in 1990. Column A in Table I below shows the average emissions for 2008-2009 as they were reported to the Commission in 2012, and Column B adds a value for fugitive emissions using the estimation process established by the Environmental Protection Agency (EPA) in 40 Code of Federal Regulations (CFR) part 98 subpart W, also known as the Greenhouse Gas Reporting Program.

Table I – NW Natural's Operational GHG Emissions

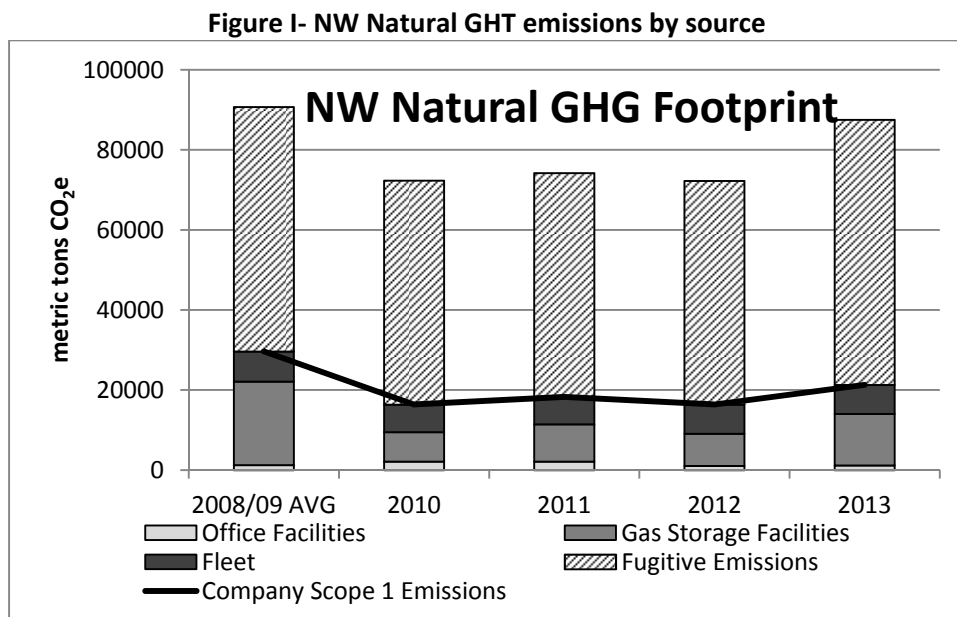
	<u>A</u> <u>Avg of 2008-2009¹</u>	<u>B</u> <u>Adjusted 2008- 2009²</u>	<u>C</u> <u>2012</u>	<u>D</u> <u>2013</u>
NWN Internal CO2 emissions (metric tons)				
Office Facilities	1,275	1,275	1,067	1,169
Gas Storage	20,845	20,845	8,038	12,905
Fleet	7,533	7,533	7,255	7,219
Fugitive Emissions	-	61,068	55,915	66,220
Total CO₂e Footprint	29,653	90,721	72,275	87,513

¹ Proxy for 1990 and 2005 emissions levels submitted in prior reports

² Proxy updated to reflect historic fugitive emissions estimates.

Table I also provides the Company's 2013 emissions, which are the proxy for 2020. The Company assumes that its emissions related to its fleet and office facilities will remain steady through 2020. The Company does not foresee significant long-term changes in these areas, and, as mentioned, the Company is mindful to ensure that it makes energy efficient equipment purchases, building retrofits, and new fleet choices. Presumably gained efficiencies could offset the impact of increased operations, were that to occur. But, as noted previously, the Company's operations have reduced in size in spite of serving more customers.

Figure I below provides a graphical illustration of the source and amount of the Company's GHG emissions over the past five years.



The EPA's recently established requirement for reporting fugitive emissions has revealed that fugitive emissions may be the Company's largest source of GHG emissions. In consideration of this, it is interesting to note that NW Natural has one of the tightest systems in the country as it

has removed all cast iron pipe and by 2015 will have removed all bare steel pipe on its system. The Company further notes that the measurement of fugitive gas is an *estimated value* based on assumptions established by the EPA for pipe composition and system characteristics. It is the Company's expectation that the measurement of fugitive emissions will become better refined over time.

Substantial work is currently underway to better quantify methane emissions from all parts of the natural gas value chain. The most ambitious work in this area is a set of fifteen studies kicked off in 2012 under the leadership and coordination of the Environmental Defense Fund and including participation from academic institutions and industry partners. One of these studies is assessing emissions from local distribution companies; the study includes field measurements from 13 utilities from around the country. NW Natural participated in this study that should be released by the end of the year.

Another major factor in the Company's level of GHG emissions is its use of compressors to move gas in and out of storage. When gas prices are volatile, storage gas is used more as a least cost supply-side resource. When gas storage usage is up, the Company has more GHG emissions. With the continued high availability of domestic shale gas into the market, gas prices continue to be lower and less volatile. As a result, the Company has used less gas from storage to meet its peak day demand and, therefore, has experienced lower GHG emissions associated with direct operations. This is a trend that is expected to continue into the future.

Table II below provides a breakdown of the Company's GHG emissions assumptions and the two 2020 emissions targets.

Table II

10% below 1990		15% below 2005	
Assumed 2020 emissions	87,513	Assumed 2020 emissions	87,513
1990 emissions	90,721	2005 emissions	90,721
10% below 1990	9,072	15% below 2005	13,608
2020 emissions target ¹	81,649	2020 emissions target ¹	77,113
Reduction required from assumed 2020 emissions level	5,864	Reduction required from assumed 2020 emissions level	10,400
Estimated Cost for Offsets ²	\$59,813	Estimated Cost for Offsets ²	\$106,080

¹ 2020 Footprint is assumed to be equal to 2013

² Cost of Carbon in 2021 from Base Case included in 2014 IRP, (IHS CERA) is \$10.20

In 2013, the Company's GHG emissions were 4% lower than the 1990 and 2005 levels. If the Company's 2013 GHG emissions are unchanged through 2020, then some GHG reductions will be necessary to meet the reduction goal of 10% below 1990.

Because reduction activities and their costs cannot yet be known, it would be likely that NW Natural would have to purchase offsets to meet the standard. The Company assumes the cost of offsets needed to achieve the goal of 10% below 1990 levels would be \$59,813. The offsets needed to achieve the goal of 15% below 2005 levels have an estimated cost of \$106,080. These values are based on the Base Case carbon price forecasts¹. Besides having a cost for carbon embedded in the gas price forecast used in the Base Case, the current IRP also explores two additional sensitivities at higher carbon values.² While it is very difficult to estimate the costs of offsets in the future, the \$10.20 per ton offset is similar to the costs of offsets experienced by the Company in its Smart Energy™ Program.

NW Natural provides this information with the understanding that this analysis incorporates numerous assumptions about uncertain future events, any of which may prove inaccurate.

Please contact me at (503) 226-4211, extension 3590, if you have questions

Sincerely,

/s/ Jennifer Gross

Jennifer Gross

¹ Carbon price associated with Base Case gas price forecast (HIS CERA) Incorporates low emerging market scenario.

² See Chapter 5 in NW Natural's 2014 IRP, draft filed in Docket No. LC 60.