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May 29, 2015

**VIA ELECTRONIC FILING**

Public Utility Commission of Oregon  
Attention: Filing Center  
3930 Fairview Industrial Drive SE  
Post Office Box 1088  
Salem, Oregon 97308-1088

**Re: LC 60 – NW Natural’s 2014 Integrated Resource Plan  
North Mist Expansion Update**

Northwest Natural Gas Company, dba NW Natural (“NW Natural” or “Company”), files herewith the Company’s IRP Update relating to the completion of its analysis of a North Mist expansion as described in Action Item 2.3a in the 2014 IRP.

Please call me if you have any questions or require any further information.

Sincerely,

*/s/ Mark R. Thompson*

Mark R. Thompson  
Manager, Rates and Regulatory Affairs

MRT/zdk

Enclosure

**North Mist Analysis**  
**NW Natural's 2014 Integrated Resource Plan**  
**May 29, 2015**

NW Natural's 2014 Integrated Resource Plan (IRP) included as Action Item 2.3a the Company's commitment to completing an analysis of a North Mist Expansion; refining cost estimates and quantifying the value of the project's optionality created by a near-term upsizing of a new takeaway pipeline associated with a prospective North Mist reservoir versus developing incremental takeaway capacity at some future date; and researching applicability of the Company's Hinshaw Exemption to this project.<sup>1</sup> NW Natural committed to submitting this analysis for review by the Public Utility Commission of Oregon and the Washington Utilities and Transportation Commission by May 2015. This filing fulfills the Company's commitments regarding completion of an analysis of a North Mist Expansion within the context of the 2014 IRP.

**Executive Summary**

NW Natural's analysis of potential optionality value associated with upsizing a new northbound<sup>2</sup> pipeline to be built for a non-Core<sup>3</sup> customer's use considers three alternative configurations of takeaway pipelines. Each alternative has capacity to deliver to NW Natural's distribution system on a peak day 100 thousand Dekatherms per day (100 MDT/day)<sup>4</sup> of natural gas from underground storage at a new North Mist reservoir.

Alternative 1 includes shared use of a new northbound pipeline, the Kelso–Beaver Pipeline (KB Pipeline), and interconnecting with Northwest Pipeline (NWP) in the vicinity of Kelso, Washington, for transmission back to NW Natural's system. The 2014 IRP included this configuration of North Mist takeaway as a future supply resource in all least cost resource portfolios.<sup>5</sup> Alternative 1 is also identified in this filing as the "Shared Northbound Takeaway" alternative.

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<sup>1</sup> See page 1.21 of NW Natural's 2014 Integrated Resource Plan. The language in NW Natural's 2014 IRP appears in the Public Utility Commission of Oregon's Order No. 15-064 in Docket No. LC 60 as Action Plan Item 2ci.

<sup>2</sup> Incorporation of a cardinal direction ("north," "south," and including "northbound" and "southbound") in describing a configuration of a North Mist takeaway pipeline is with respect to the general direction the pipeline takes from the general Mist/North Mist area.

<sup>3</sup> The term "Core customers" as used in this document refers to NW Natural's Firm Sales customers and the Company uses the terms Firm Sales customers and Core customers interchangeably. Core customers as used here do not include customers receiving service under Oregon Rate Schedules 90/91.

<sup>4</sup> This is the same capacity of the North Mist Expansion analyzed in the 2014 IRP. See page 3.24 of the 2014 IRP.

<sup>5</sup> See the discussion on pages 3.23 through 3.25 and Table 1.4 on page 1.12 of the 2014 IRP.

Alternative 2 uses the existing South Mist Pipeline (SMP) and South Mist Pipeline Extension (SMPE and, together, SMP/SMPE), interconnecting with NWP’s Grants Pass lateral in the vicinity of Molalla, Oregon, and transmission by NWP to NW Natural’s system.<sup>6</sup> Alternative 2 is also identified in this filing as the “Southbound Takeaway” alternative.

Alternative 3 is a hybrid configuration of takeaway pipelines, with gas flowing north using the existing North Mist Pipeline (NMP), the existing North Coast Feeder (NCF), and onto NWP at the Deer Island gate station for transmission by NWP to NW Natural’s system and flowing south using SMP/SMPE and NWP as described in Alternative 2. Given the limitations of the existing infrastructure in the northbound path (NMP, NCF, and at the Deer Island gate station), full development of Alternative 3 is constrained to a maximum 50 MDT/day of gas flowing northbound on a design day, with the remaining 50 MDT/day flowing southbound from North Mist. A key feature of Alternative 3 is that the southbound takeaway capacity does not have to be developed at the same time the northbound takeaway capacity is developed. Alternative 3 is also identified in this filing as the “Hybrid Takeaway” alternative.

Each alternative has its own set of required incremental investments for new infrastructure, with only Alternative 1 requiring near-term investment; i.e., several years prior to the time when the capacity is expected to be needed for Core customers based on the design day load forecast in the 2014 IRP.

NW Natural’s analysis, based on recent cost estimates, shows that upsizing the new northbound pipeline in Alternative 1 for future shared use has no optionality value for Core customers. The hybrid Alternative 3 is lower cost than Alternatives 1 and 2 in every combination of the five future supply resource scenarios and the three sensitivities regarding future design day loads analyzed in the 2014 IRP.

### **North Mist Expansion in the 2014 IRP**

NW Natural’s 2014 IRP concluded that its existing resource base would, in the Base Case design day load sensitivity, be unable to meet forecasted design day demand throughout the 20-year planning horizon.<sup>7</sup> NW Natural developed multiple scenarios regarding future availability of prospective supply resources, and the least cost portfolio of supply resources for each scenario included the Company’s recalling from interstate storage service the remaining portion of

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<sup>6</sup> “Transmission” here refers not only to physical transmission, but also to “transmission” by displacement; i.e., by displacement of gas that would otherwise be flowing south on the Grants Pass lateral to downstream (south of Molalla) citygates so that more gas is available at upstream (north of Molalla) citygates.

<sup>7</sup> See page 7.9 of the 2014 IRP.

currently existing Mist pipeline takeaway capacity and associated Mist storage capacity to use for delivering gas to Core customers.<sup>8</sup> NW Natural refers to this future supply resource as Mist Recall.

The resource scenarios in the 2014 IRP differ by which new resources were assumed to be available. Table 1 includes the available future resources for each of the five resource scenarios used in the 2014 IRP.<sup>9</sup>

**Table 1 – Available Prospective Pipeline and Storage Resources<sup>10</sup> by Resource Scenario**

Supply Resource	Resource Availability by Scenario				
	A1	A2	A3	B1	B2
Trail West <sup>11</sup>		X		X	X
Pacific Connector (Jordan Cove LNG export)					X
Washington Expansion (Oregon LNG export)				X	
Sumas Expansion (Regional)		X	X		
Sumas Expansion (Local)	X	X	X	X	X
Mist Recall	X	X	X	X	X
North Mist Expansion	X	X	X	X	X
Clark County LNG	X	X	X	X	X
Others	X	X	X	X	X

<sup>8</sup> See page 7.12 of the 2014 IRP, including Table 7.3.

<sup>9</sup> Table 1 replicates Table 7.3 on page 7.12 of the 2014 IRP.

<sup>10</sup> See pages 3.22 through 3.28 of the 2014 IRP for descriptions of prospective resources analyzed in the 2014 IRP.

<sup>11</sup> The 2014 IRP identified the prospective pipeline now known as Trail West as Cross-Cascades. Note that the Trail West resource identified in this document includes NWP’s prospective NMAX service. See the discussion on pages 3.22 through 3.23 of the 2014 IRP.

Each future scenario examined in the 2014 IRP<sup>12</sup> included as a potential future supply resource a new storage reservoir, compression, and pipeline facilities originating from the general area of NW Natural's existing Mist storage field. The 2014 IRP refers to this future supply resource as North Mist or the North Mist Expansion. The 2014 IRP recognized that, with exhaustion of all available Mist Recall, the existing takeaway pipelines from Mist will be at their respective maximum capacities and therefore a North Mist Expansion of storage and related facilities would require incremental investment for new takeaway pipeline capacity.<sup>13</sup>

NW Natural, while preparing the 2014 IRP, developed a proposal combining expansion of Mist storage and a new northbound transmission facility to meet the needs of a prospective non-Core customer.<sup>14</sup> Recognizing the economies of scale, NW Natural developed cost estimates for upsizing the new pipeline, with the incremental capacity reserved for future Core customer use, as well as cost estimates associated with developing a new reservoir and related facilities to fill that incremental pipeline capacity. The 2014 IRP referred to this collective incremental resource as North Mist or North Mist Expansion.

North Mist is a prospective Mist expansion project for Core customer use consisting of 100 MDT/day of maximum delivery capacity coupled with a maximum storage capacity of 2.0 billion cubic feet (Bcf). As analyzed in the 2014 IRP, components of North Mist included a new underground reservoir; pipeline, compression, and related facilities to transport gas from the new reservoir over a shared new northbound pipeline to a new interconnection with the KB Pipeline; transportation over the KB Pipeline to NWP, which also will require new compression and related facilities; and transportation by NWP back to NW Natural's distribution system. The 2014 IRP used estimated tariff rates for transportation of gas for Core customers over KB Pipeline and on NWP.

The 2014 IRP identified that the composition of the least cost portfolio of future supply resources is contingent upon the availability of certain future resources that are outside NW Natural's control.<sup>15</sup> North Mist is a future supply resource option that appears at this time to be largely within the Company's control, as it does not depend upon the uncertain development of a new pipeline by other parties. Each future resource scenario analyzed in the

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<sup>12</sup> See Table 1 and also 7.3 on page 7.12 of the 2014 IRP.

<sup>13</sup> See page 3.24 of the 2014 IRP.

<sup>14</sup> This filing reads somewhat differently than the 2014 IRP as, at the time the IRP was written, the non-Core customer's involvement was uncertain. At this time, the non-Core customer's involvement is assumed to be certain based on current contractual realities.

<sup>15</sup> See page 7.14 of the 2014 IRP.

2014 IRP included North Mist as a future supply resource option, and the analysis indicated that North Mist Expansion would be a component of each least cost resource portfolio irrespective of which future scenario unfolded—only its timing changed.<sup>16</sup>

**North Mist Expansion – Analysis Subsequent to the 2014 IRP**

Table 2 indicates the year North Mist is first needed<sup>17, 18</sup> in each combination of future resource scenario and load growth sensitivity analyzed in the 2014 IRP.

**Table 2 – Timing of Need for North Mist Expansion by Resource Scenario and Load Growth Sensitivity**

2014 IRP Resource Scenario	Year North Mist Expansion Needed for Core by Load Growth Sensitivity		
	Base Case	High Load	Low Load
A1	2024	2022	2030
A2	2030	2028	2036
A3	2024	2022	2030
B1	2030	2028	2036
B2	2030	2028	2036

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<sup>16</sup> See page 7.18 of the 2014 IRP. These results pertain to the Base Case load sensitivity.

<sup>17</sup> The indicated years do not include any use of North Mist capacity to address issues associated with the Maximum Daily Delivery Obligation (MDDO) shortfall in NW Natural’s Vancouver (Clark County) load center, discussed on pages 3.15 through 3.17 and 7.18 through 7.19 of the 2014 IRP. Subsequent to filing the 2014 IRP, NW Natural acquired incremental MDDO from NWP; see the 2014 IRP Update filed May 8, 2015 with the Public Utility Commission of Oregon in Docket No. LC 60.

<sup>18</sup> The current analysis assumes North Mist is not needed until after all Mist Recall is exhausted; i.e., in 2024 or 2030 in the Base Case load sensitivity. The 2014 IRP analyzed a North Mist configuration not connected with any existing NW Natural utility infrastructure, while two of the three alternative configurations in the current analysis are interconnected. See related discussions in the 2014 IRP on pages 1.10 through 1.13, 3.23 through 3.25, and especially pages 7.12 and 7.18 through 7.19.

A key feature of a North Mist Expansion—as described above and included in every least cost portfolio in the 2014 IRP—is that building a *second* new takeaway pipeline, one exclusively used to meet future needs of Core customers and with construction optimally timed to be available to serve these needs, requires a greater investment than does upsizing the first new pipeline for shared use. This is due in part to the economies of scale that can be realized with upsizing the new pipeline for future shared use.

There are two other relevant features associated with a North Mist Expansion. First, as indicated in Table 2, the timing of need by Core customers for North Mist as a future supply resource is uncertain and depends upon which resources become available in the interim. While each future scenario in the 2014 IRP using the Base Case load sensitivity included North Mist as a future supply resource in the least cost portfolio,<sup>19</sup> the timing for North Mist varied depending on which new pipelines are actually constructed, as shown in Table 2. Beyond the use of Segmented Capacity and Mist Recall, the Base Case load growth sensitivity required a new supply resource in 2024, while the High load growth sensitivity required a new resource in 2022 and the Low load growth sensitivity required a new resource in 2030.<sup>20</sup> NW Natural bases the analysis presented in this filing on the timing of need for a North Mist Expansion—for each future resource scenario and relative to the timing of resource need associated with the scenario’s Base Case load sensitivity— being advanced by two years under the High load growth sensitivity and delayed for six years under the Low load growth sensitivity.<sup>21</sup>

Second, while most investments can be deferred in their entirety to within a few years of when the resource is forecast to be needed, the cost of upsizing the new pipeline for shared use occurs at an earlier and fixed date due to the requirements of the non-Core customer; i.e., this pipeline can only be built once<sup>22</sup> and the timing to meet the non-Core customer’s requirements is well in advance of the timing for Core customers in any combination of future resource scenario and load growth sensitivity examined in the 2014 IRP.

This uncertainty as to timing potentially creates optionality associated with the North Mist Expansion. That is, for the cost of a near-term investment (the upsizing of a pipeline in

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<sup>19</sup> See Table 7.6 on page 7.15 of the 2014 IRP.

<sup>20</sup> See Figure 7.10 on page 7.21 and the related discussion on page 7.20 of the 2014 IRP. See also the footnotes above related to the timing of need for North Mist.

<sup>21</sup> These timings are estimated based on the 2014 IRP’s SENDOUT® results; see pages 7.20 through 7.21 of the 2014 IRP.

<sup>22</sup> A conclusion of NW Natural’s engineering analysis is that, as alternatives to upsizing the new northbound pipeline when built, neither future looping of the new pipeline nor adding compression to a non-upsized pipeline in the future are feasible means by which to achieve materially higher throughput.

Alternative 1), a resource is created that can be called upon when needed in the future. Alternatively stated, the North Mist Expansion resource analyzed in the 2014 IRP requires Core customers to “purchase” an option in the near-term, which NW Natural could exercise on behalf of Core customers at an uncertain future date by making the remaining investments associated with a North Mist Expansion described above as Alternative 1. As North Mist is a resource included in all least cost portfolios of future resources in the 2014 IRP,<sup>23</sup> the sum of the present value of revenue requirements (PVRR) of the near-term investment to upsize and the expected PVRR of the remaining Alternative 1 investments,<sup>24</sup> less the expected PVRR of the next best alternative to a North Mist Expansion, establishes the value of the optionality created by the near-term upsizing of the new pipeline for future shared use.<sup>25</sup>

NW Natural’s commitment in the 2014 IRP<sup>26</sup> was to complete the analysis regarding North Mist; i.e., to refine North Mist cost estimates and to quantify the value of the project’s optionality.<sup>27</sup>

The 2014 IRP included a North Mist investment of \$73.5 million (in \$2013). NW Natural refined its North Mist cost estimates, and now estimates the investment cost for Core customers at \$114 million (in \$2015) for the configuration used in the 2014 IRP and identified in this filing as Alternative 1.<sup>28</sup>

Alternative 1 includes shared use of a new northbound pipeline, the KB Pipeline, and interconnecting with NWP in the vicinity of Kelso, Washington for transmission back to NW Natural’s system. The 2014 IRP included this configuration of North Mist takeaway as a

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<sup>23</sup> See; e.g., Table 7.6 on page 7.15 of the 2014 IRP.

<sup>24</sup> Expected PVRR values must be used as the level of PVRR values depends on the time North Mist service for Core customers is initiated, which is uncertain. See the following discussion regarding the expected date when North Mist is needed to provide service for Core customers.

<sup>25</sup> This statement is from a perspective of risk neutrality on the part of decision makers; i.e., choices are made on the basis of expected values.

<sup>26</sup> See Action Item 2.3a on page 1.21 of the 2014 IRP.

<sup>27</sup> NW Natural also committed to researching the applicability of the Company’s Hinshaw exemption with respect to North Mist. The Company discusses its Hinshaw Exemption later in this filing.

<sup>28</sup> This estimate includes \$38.0 million for that portion of the shared facilities allocated to Core customers at service initiation on the basis of respective capacities: 100 MDT/day for Core customers and 120 MDT/day for the non-Core customer. However, the revenue requirement associated with the *incremental* cost for upsizing the shared pipeline in Alternative 1 is attributed to Core customers prior to service initiation. Shared facilities include not only the new northbound pipeline, but also an interconnection with the KB Pipeline and a Lexington compressor station.

future supply resource in all least cost resource portfolios.<sup>29</sup> Alternative 1 is also identified in this filing as the “Shared Northbound Takeaway” alternative.

NW Natural’s analysis includes two additional configurations of takeaway pipeline(s) for a North Mist Expansion.<sup>30</sup> Alternative 2 uses the existing South Mist Pipeline (SMP) and South Mist Pipeline Extension (SMPE and, together, SMP/SMPE), interconnecting with NWP’s Grants Pass lateral in the vicinity of Molalla, Oregon, and transmission by NWP to NW Natural’s system.<sup>31</sup> Alternative 2 is also identified in this filing as the “Southbound Takeaway” alternative.

Alternative 3 is a hybrid configuration of takeaway pipelines, with gas flowing north using the existing North Mist Pipeline (NMP), the existing North Coast Feeder (NCF), and onto NWP at the Deer Island gate station for transmission by NWP to NW Natural’s system and flowing south using SMP/SMPE and NWP as described in Alternative 2. Given the limitations of the existing infrastructure in the northbound path (NMP, NCF, and at the Deer Island gate station), full development of Alternative 3 is constrained to a maximum 50 MDT/day of gas flowing northbound on a design day, with the remaining 50 MDT/day flowing southbound from North Mist. A key feature of Alternative 3 is that the southbound takeaway capacity does not have to be developed at the same time the northbound takeaway capacity is developed. Alternative 3 is also identified in this filing as the “Hybrid Takeaway” alternative.

Although investment timing differs between Alternative 2 and Alternative 3, as the latter has investments at two different times, neither alternative requires a near-term investment such as the one required by Alternative 1. Even including the extended lead times such projects often require, Alternatives 2 and 3 more closely resemble the Sumas Expansion (Local) pipeline resource in Table 1 in that uncertainty regarding future Core customer design day loads is likely to be reduced by the time any investment is required. Figure 1 shows the updated level of investments for each of the three alternatives. Estimated total investment is \$138.6 million for Alternative 2 and \$127.8 million for Alternative 3 (both in \$2015).

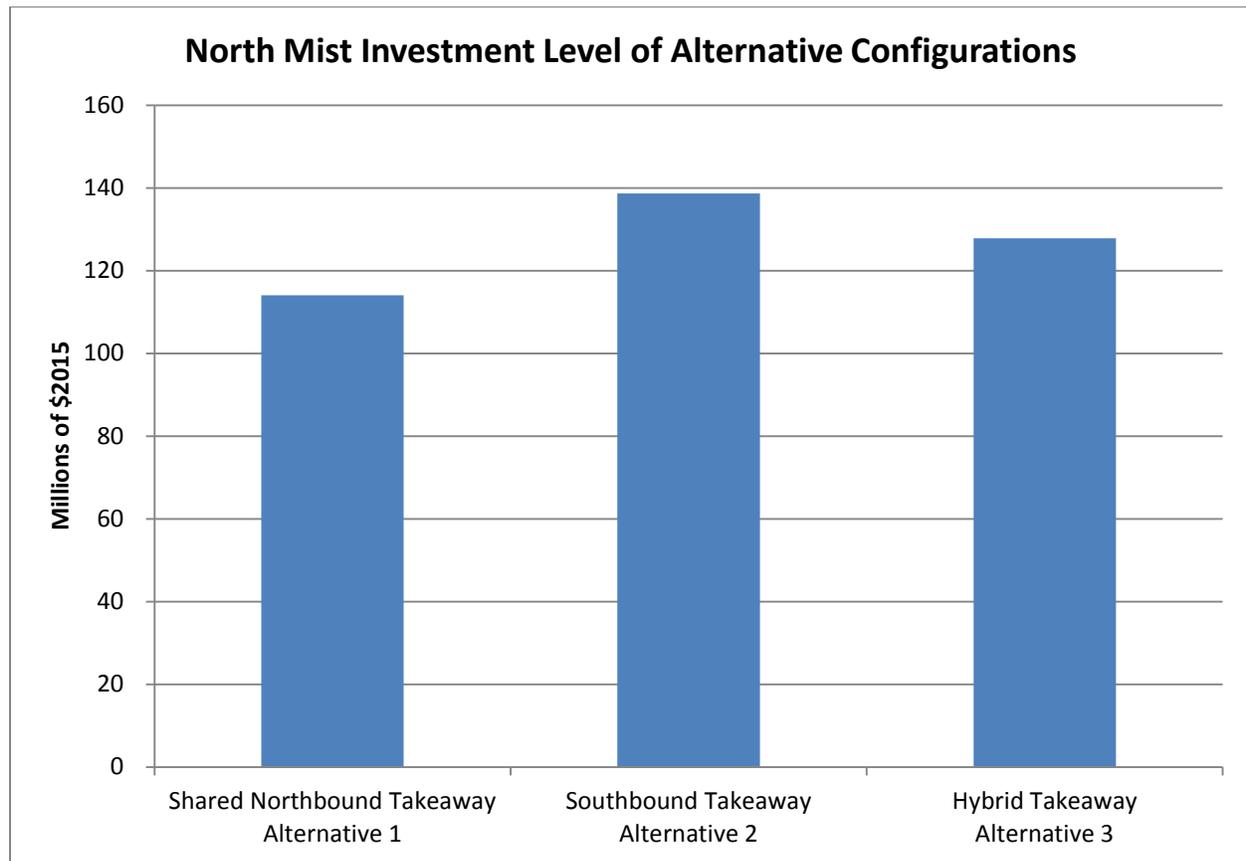
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<sup>29</sup> See the discussion on pages 3.23 through 3.25 and Table 1.4 on page 1.12 of the 2014 IRP.

<sup>30</sup> The 2014 IRP foreshadowed the possibility of this approach; see the discussion on pages 7.18 and 7.19 of the 2014 IRP.

<sup>31</sup> “Transmission” as used here refers not only to physical transmission, but also to “transmission” by displacement; i.e., by displacement of gas that would otherwise be flowing south on the Grants Pass lateral to downstream (south of Molalla) citygates so that more gas is available at upstream (north of Molalla) citygates.

**Figure 1 – North Mist Investment Levels for Core Customer Alternatives**



A comparison of these estimated levels of investment, which Table 3 shows in detail, appears to indicate Alternative 1 is the least cost North Mist configuration for Core customers. However, the relatively near-term investment associated with upsizing the shared pipeline results in an estimated \$667 thousand annual revenue requirement beginning in 2019, regardless of when the remaining investments associated with Alternative 1 are necessary.<sup>32</sup> Somewhat similarly, Alternative 3 has two investment timings, as NW Natural will develop and use the northbound path first due to its lower incremental cost as compared with that for the southbound path. Figure 2 (below) shows the timing of investment for each alternative under the Base Case load sensitivity.

<sup>32</sup> With respect to revenue requirements associated with the new northbound pipeline to be shared, the analysis assumes Core customers pay the revenue requirement associated with upsizing until service is initiated for these customers. Beginning at service initiation for Core customers, these customers pay the share of revenue requirement for the new and upsized shared northbound pipeline associated with the respective capacities. See also the related footnote above.

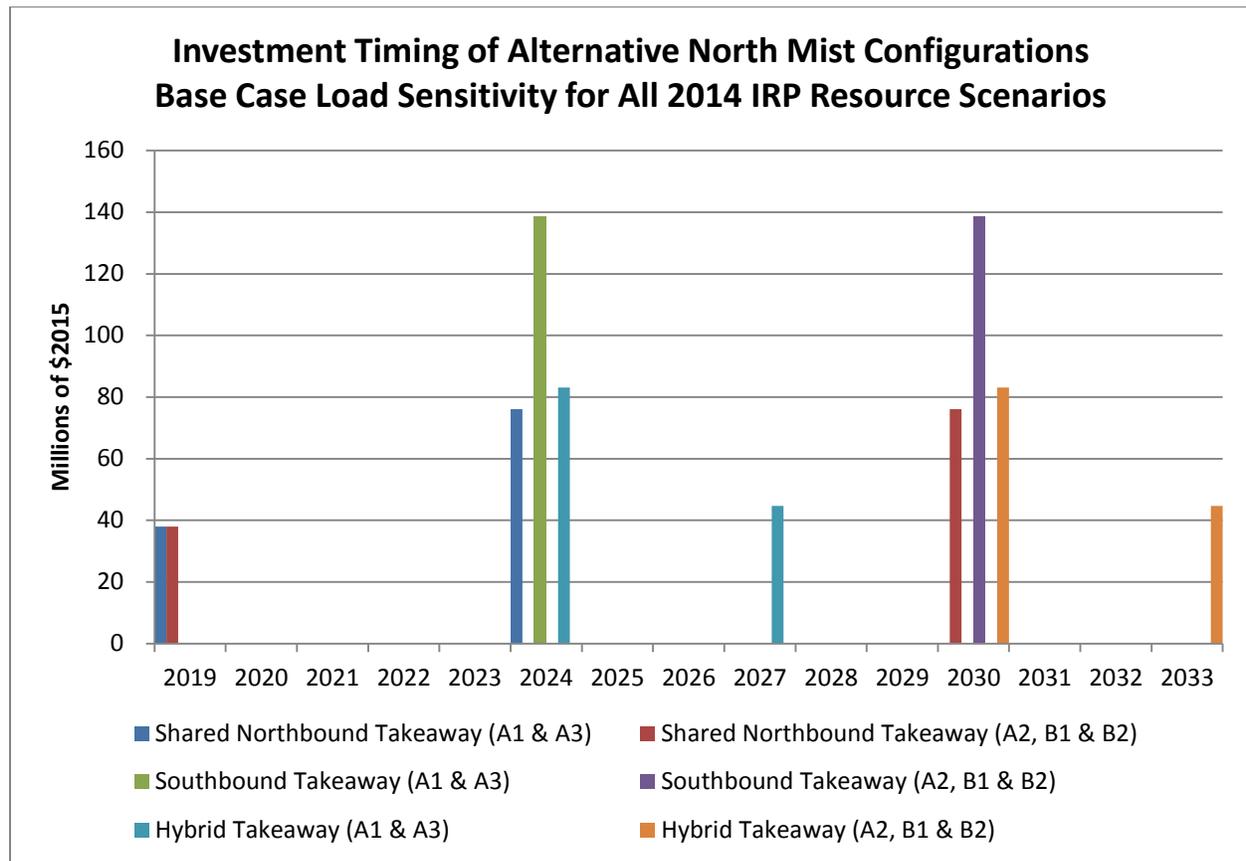
**Table 3 – Investment Detail for Alternatives<sup>33</sup>**

Investment Component	Millions of \$2015		
	Alternative 1	Alternative 2	Alternative 3
North Mist Reservoir	29.1	29.1	29.1
Pipeline: Reservoir to North Mist Compressor Station	2.2	2.2	2.2
North Mist Compressor Station	42.5	42.5	42.5
Pipeline: Compressor Station to Shared Northbound Pipeline	2.2		
Pipeline: Compressor Station to Existing Northbound Pipeline			2.2
Northbound Shared Pipeline	22.6		
Interconnection: NB Shared Pipeline to KB Pipeline	7.3		
Lexington Compressor Station	8.1		
Pipeline: Compressor Station to South Mist Pipeline		22.4	22.4
North Plains & Molalla Compressor Stations		42.5	
Deer Island Compressor Station			7.0
North Plains Compressor Station			22.4
Totals	114.0	138.6	127.8

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<sup>33</sup> Two estimated costs associated with Alternative 3 equal an estimated cost in Alternative 1 (pipeline from the North Mist compressor station to a northbound pipeline) or an estimated cost in Alternative 2 (pipeline from the North Mist compressor station to South Mist Pipeline), even though the Alternative 3 component in each case requires only a 50 MDT/day capacity versus a 100 MDT/day capacity for the respective components in Alternatives 1 and 2. This results from preliminary engineering analysis and final designs might incorporate smaller diameter pipe, potentially resulting in somewhat lower cost pipelines in Alternative 3. Note that lower costs associated with Alternative 3, all else being equal, serve to reinforce this alternative’s dominance over the other alternatives included in this analysis.

**Figure 2 – Investment Timing of Alternative North Mist Configurations**



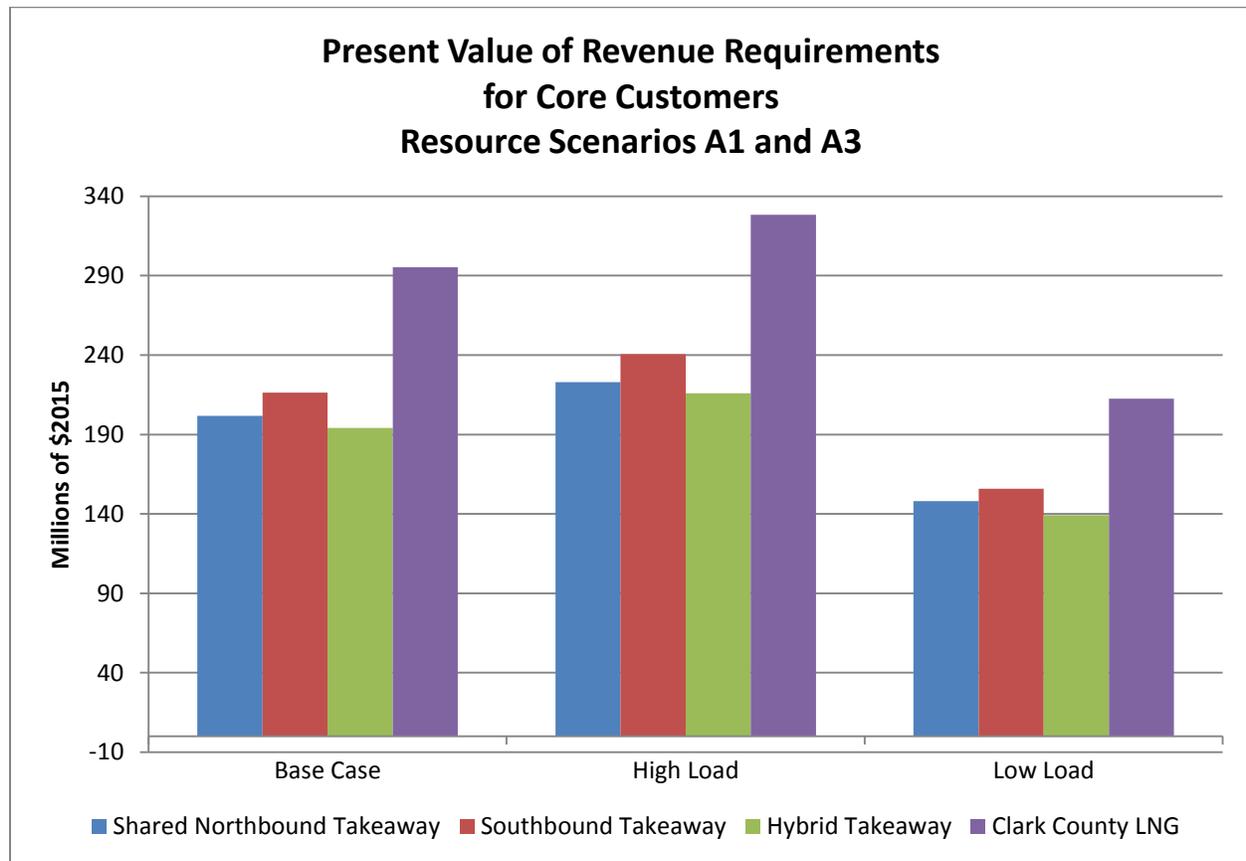
The analysis assumes a three-year lag between initiation of service using Alternative 3’s northbound takeaway at a capacity of 50 MDT/day and service initiation using its southbound takeaway with capacity of another 50 MDT/day.<sup>34</sup> Figure 3 shows the PVRR for Core customers over a 50-year timeframe for each alternative in resource scenarios A1 and A3, while Figure 4 shows the PVRR for Core customers over a 50-year timeframe in resource scenarios A1 and A3.

Figures 3 and 4 show that the Alternative 3 Hybrid Takeaway is the least cost alternative in terms of Core customer PVRR in all resource scenarios and in every load sensitivity examined in the 2014 IRP. As a result of this dominance of Alternative 3, there is no need to complete a real options analysis, as no combination of subjective probabilities with respect to future resource

<sup>34</sup> NW Natural bases this assumption on the three year lag between 2024, when the Firm Sales Base Case load requires an additional resource (in resource scenarios A1 and A3) and 2027, when Firm Sales load has increased by approximately the 50 MDT/day capacity of the Alternative 3 northbound takeaway facilities. See Appendix 2.19 on page 2A-19 of the 2014 IRP.

scenarios or load growth sensitivities result in either Alternative 1 or Alternative 2 having a lower PVRR than Alternative 3.<sup>35</sup>

**Figure 3 – Present Value of Revenue Requirements for Resource Scenarios A1 and A3**



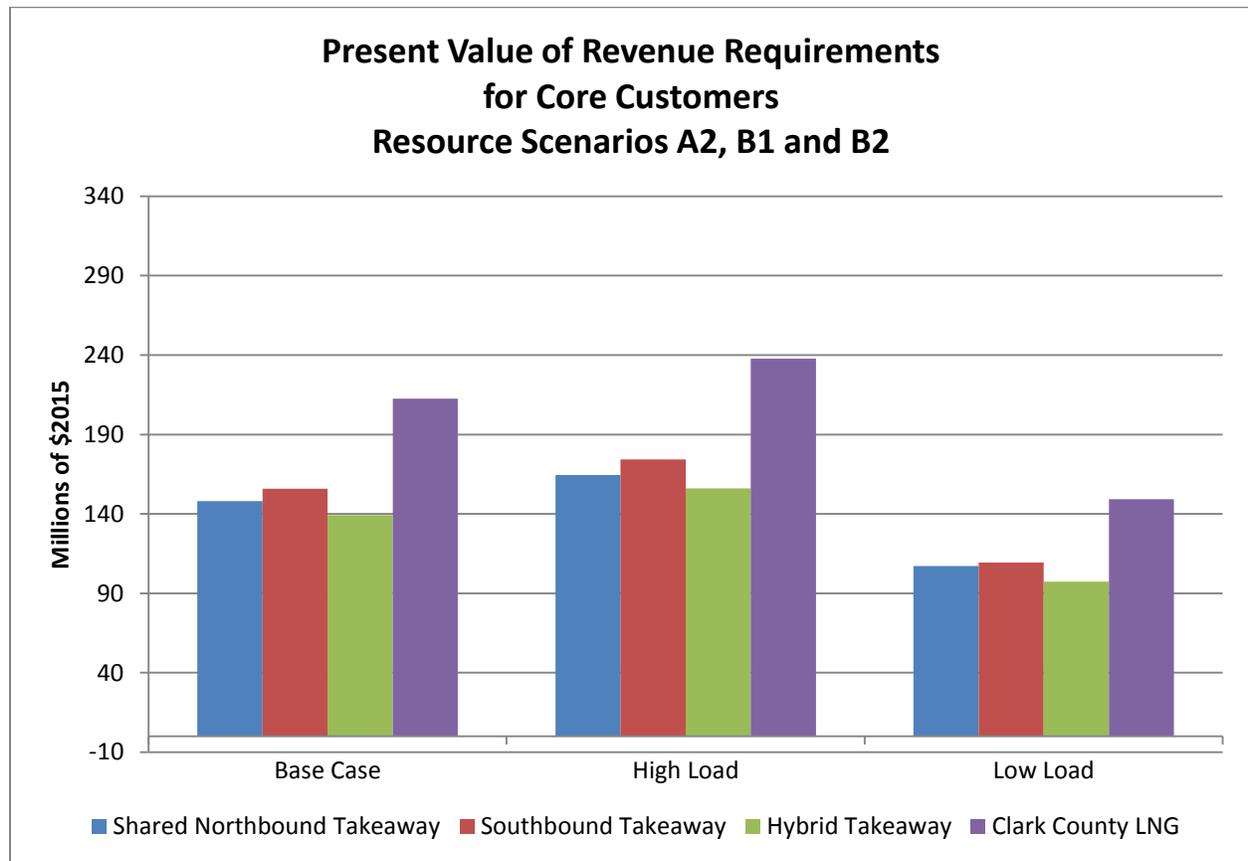
The analysis concludes that a decision to upsize the new northbound pipeline for shared use is unnecessary, as there is an alternative configuration of North Mist takeaway pipelines with a lower PVRR than Alternative 1’s shared new northbound takeaway pipeline.

A key remaining question is how the recently updated North Mist cost estimates compare with those used in the 2014 IRP and the related question of whether the lowest cost configuration of a North Mist Expansion for Core customers retains the same order of selection in the 2014 IRP

<sup>35</sup> There may be risks in some circumstances that are not incorporated when selecting between alternatives on the basis of estimated least cost (estimated lowest PVRR). NW Natural has no reason to believe this pertains to the cost estimates associated with the alternatives considered here.

as a component of least cost resource portfolios. In other words, does another resource identified in the 2014 IRP now appear to be a lower cost resource than a North Mist Expansion?

**Figure 4 – Present Value of Revenue Requirements for Resource Scenarios A2, B1, and B2**



The least cost resource portfolios in the 2014 IRP included North Mist as the resource added after Segmented Capacity and Mist Recall in resource scenarios A1 and A3, over a higher cost resource portfolio for each of these scenarios having a prospective Clark County LNG facility as the resource added after Segmented Capacity and Mist Recall in each scenario. After Segmented Capacity and Mist Recall, North Mist was the resource added (in 2030) in the least cost resource portfolios in each of resource scenarios A2, B1, and B2, over a higher cost resource portfolio having a North Mist Expansion as the *first* choice after Segmented Capacity and Mist Recall.<sup>36</sup>

<sup>36</sup> See Table 7.6 of the 2014 IRP on page 7.15. These results assume the Base Case load sensitivity

The cost of achieving the first 50 MDT/day of capacity in the least cost Alternative 3 is less than the cost of the 100 MDT/day North Mist capacity estimated in the 2014 IRP. The configuration of a North Mist Expansion modeled in the 2014 IRP had a rate—including a NWP redelivery tariff of about \$0.10 per Dth/day—of \$0.34 per Dth/day<sup>37</sup> and the rate for the first 50 MDT/day considered in the current analysis, also including a \$0.10 per Dth/day NWP redelivery tariff, is \$0.32 per Dth/day. Achieving the second 50 MDT/day of North Mist capacity in Alternative 3, including a \$0.10 per Dth/day NWP redelivery tariff, is \$0.43 per Dth/day. This latter (and higher) value compares favorably to the next lowest cost resource indicated in Table 7.4 on page 7.12 of the 2014 IRP, which is a Clark County LNG storage facility with an estimated rate per Dth/day of \$0.55.<sup>38</sup> See Figures 3 and 4 for the PVRR of a Clark County LNG facility in comparison with values of PVRR for the three North Mist Expansion alternatives.

### **NW Natural's Hinshaw Exemption**

North Mist Expansion Alternatives 1 and 3 involve transmission of gas from storage in Oregon at North Mist into Washington for ultimate delivery to NW Natural's Core customers located in Oregon and Washington. In 2001, NW Natural received a limited-jurisdiction blanket certificate from FERC that allows it to use storage capacity at Mist that it may develop in excess of core needs to provide storage services to customers in interstate commerce (i.e., receiving gas within Oregon and returning gas which will then flow outside of Oregon) without losing its Hinshaw Exemption.<sup>39</sup> Under the limited-jurisdiction regulations, only the Mist interstate storage *services* are subject to FERC jurisdiction, while the construction and operation of the Mist *facilities* (including expansions thereof) remain subject to applicable state and local regulation (EFSC, DOGAMI, etc.). The specific service that NW Natural provides under the certificate is a bundled transportation and storage service that may only occur on NW Natural's Oregon LDC system. While NW Natural cannot use this limited-jurisdiction service itself to serve its core customers in Washington, it is possible that third parties may use gas from Mist to backstop natural gas sales to NW Natural that could be received in Washington and delivered to Washington customers.

For North Mist, the same rules discussed above for NW Natural's use of Mist for its interstate and core customers would apply. As currently contemplated in Alternative 1, the new pipeline "takeaway" from North Mist would run north to connect to the Kelso-Beaver Pipeline, an

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<sup>37</sup> See Table 7.4 of the 2014 IRP on page 7.12. Note that values in the Increment column of Table 7.4 refer to the level by which the 2014 IRP assumed a resource could be incremented. The North Mist Expansion analyzed in the 2014 IRP, as documented on page 3.24, had the same 100 MDT/day capacity as the three alternative configurations of a North Mist Expansion discussed in this filing.

<sup>38</sup> NW Natural acknowledges the imprecision potentially resulting from comparing cost estimates recently updated with those made some time ago.

<sup>39</sup> *Northwest Natural Gas Company*, 95 FERC ¶ 61,242 (2001); See also, 18 C.F.R. § 284.224.

existing interstate pipeline that runs between Oregon and NWP system in Washington. Under Alternative 3, the northbound takeaway from North Mist would utilize the existing North Mist Pipeline, the existing North Coast Feeder, and onto NWP at the Deer Island gate for transmission by NWP.<sup>40</sup> Under either alternative, NW Natural could obtain a supply resource to serve core Oregon and Washington customers from a third party North Mist interstate storage customer using a northbound takeaway to physically move the gas into Washington. By creating the availability of this storage and transportation option, it is possible that a third party could make natural gas commodity sales to NW Natural that may include gas that such third party has stored at North Mist. Properly structured to ensure gas does not move across state lines once the gas commodity is sold to and received by NW Natural at the gas sale delivery point in a state, such a sale would avoid impact on NW Natural's Hinshaw Exemption. NW Natural has not explored what such an arrangement would entail, but is encouraged that an impact on the Company's Hinshaw Exemption could potentially be avoided.

### **Conclusion**

NW Natural's analysis shows that a North Mist Expansion using the Alternative 3 Hybrid Takeaway configuration is least cost in terms of PVRR for Core customers when compared with the Alternative 1 configuration and with other future resource alternatives analyzed in the 2014 IRP. As Alternative 3 has no near-term investment based on any load forecast sensitivity included in the 2014 IRP, NW Natural has sufficient time in which to explore other arrangements, such as with a third party so as to avoid impact on the Company's Hinshaw Exemption.

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<sup>40</sup> Under this hybrid approach, using the South Mist Pipeline for the southbound takeaway to deliver gas to core Oregon customers would not impact the Hinshaw Exemption.