

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE
REQUEST OF DOMINION
ENERGY UTAH FOR APPROVAL
OF A VOLUNTARY RESOURCE
DECISION TO CONSTRUCT AN
LNG FACILITY

Docket No. 18-057-03

REBUTTAL TESTIMONY OF

BRUCE L. PASKETT

FOR

DOMINION ENERGY UTAH

EXHIBIT 4.0R

September 6, 2018

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bruce Paskett. My business address is 10731 E. Easter Avenue, Suite 100, Centennial, Colorado 80112.

Q. ARE YOU THE SAME BRUCE PASKETT THAT SUBMITTED PREFILED TESTIMONY IN THIS DOCKET?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I provide rebuttal testimony in response to issues raised by Mr. Neale, Mr. Mierzwa and Mr. Holder.

II. REBUTTAL TO THE DIRECT TESTIMONY OF DPU WITNESS ALLEN R. NEALE

Q. IN MR. NEALE’S TESTIMONY (LINES 921-923), MR. NEALE CONCLUDED THAT DEU HAS NOT SUFFICIENTLY INVESTIGATED AND DOCUMENTED THE MAGNUM ENERGY STORAGE ALTERNATIVE. DO YOU AGREE WITH MR. NEALE’S CONCLUSION?

A. No, I do not. Mr. Neale erred in his conclusion that the Company has not sufficiently investigated the Magnum Energy Storage (MES) alternative. In the DEU Supply Reliability Evaluation (DEU Highly Confidential Exhibit 2.11) the Company identifies and evaluates a number of different options to address the historical shortfalls in cold weather supply reliability. This evaluation includes at least four different Magnum

22 Storage options (Options 3A-3D). Based on the direct testimony of Mr. Holder (Magnum
23 Exhibit 1.0) and my discussions with DEU personnel, there have been numerous meetings
24 and dialogs between Magnum and DEU regarding the Magnum Storage options. DEU
25 has an in-depth understanding of the most current information regarding the various
26 options available for cold weather supply reliability solutions, including the different
27 Magnum options. My understanding is that historically and recently, DEU has
28 experienced supply disruptions of contracted gas supplies during cold weather events
29 when temperatures were well above the Company's Design-Peak-Day. Further, these
30 supply shortfalls have occurred due to events that are upstream of the DEU system and,
31 therefore, outside of the Company's control. Since the Magnum Storage facility is located
32 approximately 80-100 miles away from the DEU distribution system, it is, by definition,
33 an off-system resource. It is not under the direct control of DEU and is subject to all of
34 the same causes and threats of supply shortfalls and interruptions that other off-system
35 resources are exposed to.

36 **III. REBUTTAL TO THE DIRECT TESTIMONY OF OCS WITNESS**
37 **JEROME D. MIERZWA**

38 **Q. IN MR. MIERZWA'S TESTIMONY (MIERZWA DIRECT TESTIMONY LINES**
39 **174-204), HE STATES THAT DEU'S SURVEY OF AGA MEMBER COMPANIES**
40 **WHERE 45 PERCENT OF RESPONDING COMPANIES OPERATE AN ON-**
41 **SYSTEM LNG FACILITY IS NOT RELEVANT FOR THIS PROCEEDING. DO**
42 **YOU AGREE?**

43 A. No. DEU's survey of American Gas Association (AGA) member companies
44 regarding on-system LNG is significant and entirely relevant to this proceeding. In Mr.

45 Mierzwa's testimony, he incorrectly states that although 45% of the respondents to the
46 American Gas Association (AGA) survey operate an on-system LNG facility to maintain
47 system supply reliability, that is not a relevant statistic for this proceeding. I disagree with
48 this conclusion. I had the opportunity to work as a Loaned Executive for the AGA from
49 2009-2013 and have participated in AGA operating committees for over 30 years. The
50 AGA represents the largest Local Distribution Companies (LDCs) in the nation. Based on
51 the AGA website, the Association represents over 200 member companies that serve the
52 natural gas needs of 95 percent of the nation's natural gas customers. Therefore, the other
53 approximately 1,200 NGDCs referenced in Mr. Mierzwa's testimony are smaller
54 operators that collectively account for only 5 percent of the natural gas customers in the
55 nation. The LDCs included in the AGA survey include those large LDCs with a
56 sufficiently large customer base and winter time peak load to justify a diversified gas
57 supply portfolio that includes multiple supply resources, including on-system LNG.

58 In addition, according to the U.S. Department of Transportation (DOT), Pipeline and
59 Hazardous Materials Safety Administration (PHMSA), there are currently 152 LNG
60 facilities in operation as of the end of 2017 (See Exhibit 1). This is a 19.7 % increase
61 over the 122 LNG facilities in operation as of 2010. The implication is that operators are
62 increasingly turning to LNG storage facilities in recent years to solve gas supply
63 problems. The results of the DEU survey of AGA member companies is extremely
64 relevant for consideration in this proceeding.

65 **Q. MR. MIERZWA STATES THAT MOST UTILITIES USE LNG FOR CAPACITY**
66 **AS WELL AS SUPPLY RELIABILITY (MIERZWA DIRECT TESTIMONY**
67 **LINES 174-204). DO YOU AGREE?**

68 A. No. My understanding is that DEU initiated a survey (DEU Exhibit 2.04) of AGA
69 member companies regarding the mechanisms used by the companies to maintain system
70 supply reliability. Of the respondents, 45% (20 out of 44) indicated that they use on-
71 system LNG storage for maintaining system reliability. DEU is justifiably concerned
72 regarding the reliability of a portion of the existing supply stack necessary to provide
73 reliable service on a Design-Peak-Day. The proposed DEU on-system LNG facility
74 would supplement anticipated shortfalls in the Company's supply stack on a Design-Peak-
75 Day. Since each utility faces unique capacity and supply reliability issues, the fact that
76 some LDCs use LNG to meet capacity needs should come as no surprise. DEU has
77 adequate capacity available to meet Design-Peak-Day sales customer requirements; the
78 problem is that it isn't reliable enough to be relied upon during those cold weather events.
79 The lack of confidence in the reliability of those supplies drives the need to supplement
80 them with an on-system resource.

81 **IV. REBUTTAL TO THE DIRECT TESTIMONY OF MES WITNESS**
82 **KEVIN B. HOLDER**

83 **Q. IN THE DIRECT TESTIMONY OF MR. HOLDER (LINES 192-195) HE ASSERTS**
84 **THAT THE MAGNUM OPTIONS PRESENT LOWER SAFETY RISKS-THE**
85 **STORAGE FACILITIES ARE LOCATED IN A REMOTE AREA AWAY FROM**
86 **POPULATION CENTERS AND WEST OF THE WASATCH FAULT. IN**
87 **ADDITION, HE ASSERTS THAT LNG FACILITIES BUILT IN DENSELY-**
88 **POPULATED SALT LAKE COUNTY WOULD PRESENT MUCH HIGHER**
89 **SAFETY RISKS, AND ARE ALSO MORE VULNERABLE TO EARTHQUAKES.**
90 **DO YOU AGREE WITH THIS ASSESSMENT?**

91 A. No. Based on my 31 years of experience at an LDC that included the design, engineering,
92 construction, operations and maintenance of pipeline facilities, underground storage
93 facilities and LNG facilities, I strongly disagree with Mr. Holder's conclusions. It is
94 relevant to note that one of my previous employer's LNG plants is sited in a densely
95 populated urban location.
96 Mr. Holder errs when he asserts that the proposed LNG facility is more vulnerable to
97 earthquakes. There are known earthquake risks in the region that could potentially affect
98 the Magnum Storage option and the associated 80-100 mile pipeline required to deliver
99 gas to the DEU system. These same earthquake risks affect the proposed DEU LNG
100 facility. As noted in DEU Highly Confidential Exhibit 2.11, the proposed LNG facility
101 would be sited, designed, constructed, operated and maintained in accordance with the
102 requirements of strict Federal DOT/PHMSA Safety Regulations contained in 49 CFR,
103 Part 193. This would include the design and construction to withstand any earthquake

104 that could reasonably be expected to occur at the LNG plant location. Once placed into
105 service, the LNG facility would be subject to ongoing inspections by PHMSA and the
106 Utah Pipeline Safety Department.

107 Over many years of service across the nation, LNG has proven to be a very safe and
108 reliable way to store natural gas. And PHMSA data confirms that LNG is a very safe way
109 to store large volumes of natural gas. Transmission pipeline and LNG facility operators
110 are required to report incidents to PHMSA in accordance with 49 CFR, Part 191 (§191.15
111 for transmission pipelines and LNG facilities). Pipeline incidents are categorized as either
112 “Significant”¹ or “Serious”². On PHMSA’s website, the agency provides 20-year
113 trending for incidents by facility category (transmission, distribution, gathering or LNG).
114 The current 20-year trending is based on incidents reported from 1998-2017. Based on
115 the PHMSA Pipeline Serious Incident Trend for LNG, there was one serious incident
116 related to LNG during this 20-year time period (2014) that involved no fatalities and one
117 injury to an operator’s employee (See Exhibit 2). By contrast, there were 94 serious
118 transmission pipeline incidents for the same time period that resulted in 50 fatalities and
119 179 injuries (See Exhibit 3). Based on DOT/PHMSA safety statistics, it is clear that LNG
120 does not present a “significantly higher safety risk” than storage in conjunction with
121 transportation to the DEU system by way of transmission pipeline.

¹ PHMSA defines a significant incident as an incident that involves a fatality, injury requiring in-patient hospitalization or property damage greater than \$50,000 in 1984 dollars

² PHMSA defines a serious incident as an incident that involves a fatality or injury requiring in-patient hospitalization

122 **Q. IN MR. HOLDER’S TESTIMONY (LINES 309-310), HE ASSERTS THAT**
123 **CONSTRUCTION AND OPERATION OF AN LNG FACILITY ARE MUCH**
124 **MORE COMPLICATED AND POSE A SIGNIFICANTLY HIGHER SAFETY**
125 **RISK THAN CONSTRUCTING AND OPERATING STORAGE AND PIPELINE**
126 **FACILITIES. DO YOU AGREE WITH MR. HOLDER’S TESTIMONY?**

127 A. No. Mr. Holder’s testimony is incorrect. During my 31 years employed by NW Natural
128 (NWN), I held a number of different positions, including Manager of Engineering and
129 Chief Engineer. At various times I was involved with supporting the design, construction,
130 operation and maintenance of both the NWN underground storage facilities and two LNG
131 facilities. Based on my experience with operating underground storage facilities and LNG
132 facilities, it is my expert opinion that the types of equipment between the two facilities has
133 many similarities and presents a similar level of complexity and operational issues. In
134 addition, as noted in my rebuttal testimony above, according to DOT/ PHMSA pipeline
135 safety records for the past 20 years, the nation’s LNG facilities have an excellent safety
136 record. By comparison, recent incidents related to underground storage and transmission
137 pipeline serious incidents over the past 20 years point to a less than stellar safety record
138 that stands in sharp contrast to the safe LNG operating record over that same time period.

139 **Q. IN MR. HOLDER’S TESTIMONY (LINES 328-335), HE STATES THAT THERE**
140 **IS NO LEGITIMATE DISTINCTION AS TO THE SOURCE OF GAS BETWEEN**
141 **A MAGNUM FACILITY AND AN LNG FACILITY THAT BOTH DELIVER TO**
142 **THE SAME LOCATION AND AT SIMILAR PRESSURES. IN ADDITION, HE**
143 **ASSERTS THAT “BOTH THE LNG FACILITY AND THE MAGNUM FACILITY**
144 **THUS OFFERS “ON-SYSTEM” STORAGE.” FURTHER, ON LINES 376-377**
145 **MR. HOLDER ASSERTS THAT MAGNUM WILL BE AN “ON-SYSTEM”**
146 **STORAGE FACILITY TIED DIRECTLY INTO THE DISTRIBUTION SYSTEM.**
147 **DO YOU AGREE WITH MR. HOLDER’S ASSERTIONS?**

148 A. No. The assertion that there is no distinction between the proposed Magnum facility
149 located 80-100 miles away and an LNG facility located on the DEU system is incorrect. It
150 is incongruous to state that being 100 miles away is the equivalent to being on-system.
151 Further, to assert that Magnum is an “on-system” storage facility is without merit and
152 clearly an attempt to portray that option as being directly comparable to the proposed
153 LNG facility when it is abundantly clear that it is not. Since the Magnum storage facility
154 would be located 80-100 miles away from the DEU distribution system (depending on the
155 pipeline route and ultimate interconnect location) and therefore storage gas must be
156 transported through a 80-100 mile long transmission pipeline to reach the DEU system,
157 there is no way the Magnum storage facility can reasonably be characterized as being on-
158 system. The Magnum storage option is no more “on-system” than any of the other third
159 party off-system storage services considered by the Company in the DEU Supply
160 Reliability Evaluation (DEU Highly Confidential Exhibit 2.11). The fact that Magnum

161 isn't even fully permitted, much less constructed, places it at a distinct disadvantage
162 compared to those other options.

163 In the DEU Supply Reliability Evaluation, the Company identifies that over the past five
164 years there have been numerous instances where upstream, off-system natural gas supplies
165 have not been delivered to the DEU distribution system during cold weather events at
166 temperatures above a Design-Peak-Day. The causes of these supply shortfalls include
167 production losses (wellhead freeze-off), processing plant outages, compressor station or
168 gate station failures, transportation pipeline capacity reductions, power outages, plant
169 shut-downs, mechanical failures or force majeure events.

170 In addition, in the DEU Supply Reliability Risk analysis (DEU Exhibit 2.12) the Company
171 identified a large number of threats associated with off-system gas supplies, including
172 production freeze-offs, flooding and landslides, earthquakes, human error, upstream
173 facility design issues, cyber-attacks and third-party excavation damage. There are also
174 time-dependent threats associated with the integrity of the transmission pipeline system(s)
175 that is used to deliver off-system natural gas supplies to the DEU system, specifically the
176 threats of external corrosion, internal corrosion and stress corrosion cracking.

177 By virtue of the fact that the Magnum Storage option is located 80-100 miles away from
178 the DEU distribution system, Magnum Energy Storage option is subject to essentially all
179 of the issues and threats identified in DEU Exhibits 2.11 and 2.12 and therefore fails to
180 effectively address or mitigate the identified issue, which is to provide highly reliable
181 natural gas supplies to the DEU system during a very cold day or Peak-Design-Day event.

182 **Q. IN MR. HOLDER’S TESTIMONY (LINES 384-392), HE STATES THAT THE**
183 **LOCATION OF THE MAGNUM FACILITIES MAKE IT LESS VULNERABLE**
184 **TO MOST RISKS, INCLUDING THE RISK OF DAMAGE TO PERSONS OR**
185 **PROPERTY, AND THE RISK OF NATURAL DISASTERS SUCH AS**
186 **EARTHQUAKES. DO YOU AGREE?**

187 A. No. It is indisputable that on-system supply resources will be more reliable and less risky
188 than off-system resources due to their proximity to load centers. As the name suggests, an
189 on-system supply option is physically located on the operator’s system and therefore
190 under the operator’s direct control. The on-system supply option is immediately available
191 to the operator to support the pipeline system and provide safe and reliable service to
192 customers during cold weather operating conditions or under other emergency operating
193 conditions. By contrast, off-system resources are often located many miles from the
194 operator’s system and under the direct control of others (generally third parties). More
195 significantly, off-system supply options are subject to a significant number of issues and
196 threats as detailed in DEU Exhibits 2.11 and 2.12.

197 The on-system LNG storage facility proposed by DEU presents far less risk than the
198 various Magnum storage options. First, the LNG facility is physically located on the DEU
199 system and under the direct control of the Company, and based on the Federal
200 DOT/PHMSA LNG safety statistics from 1998-2017 (Exhibit 2), the safety of the nation’s
201 LNG facilities is proven to be excellent. By contrast, the Magnum Storage facility would
202 be located approximately 80-100 miles away from the DEU system; operated by a third
203 party (Magnum) with gas supplies transported to the Company’s system through a

204 transmission pipeline and interconnect station. The Magnum alternative is subject to
205 almost all of the same issues and threats that precipitated the Company to pursue more
206 reliable winter time gas supply resources. While the proposed LNG facility would require
207 the construction of a one-mile pipeline to connect the LNG facility to the DEU system and
208 therefore subject to some of the same issues and threats as the Magnum Storage pipeline
209 (80-100 miles long), the risks associated with the DEU pipeline are much lower. This is
210 reasonable because (1) The risk is directly proportional to the length of the pipeline (a
211 100- mile pipeline has inherently greater risk than a one- mile pipeline), and (2) the DEU
212 pipeline is under the direct control of the Company.

213 In addition, there are other risks associated with the Magnum storage options. DEU is
214 seeking to construct an on-system LNG storage facility as soon as practicable to improve
215 the reliability of supplies to the Company's customers under peak cold weather
216 conditions. There is a serious question as to whether the Magnum storage option will ever
217 be built and become available to provide reliable gas supplies to DEU (or other
218 subscribers). There are currently no subscribers to the Magnum storage option(s) and
219 DEU is not confident that the Magnum storage option(s) will ever materialize. In
220 addition, if Magnum does become viable and there are multiple subscribers, there is a
221 question as to whether Magnum will be able to reliably support the needs of DEU when
222 faced with multiple subscribers to storage service with competing interests. Finally,
223 Magnum has not yet finalized a complete pipeline alignment, received regulatory
224 approval, acquired rights-of way, construction permits or materials necessary to build the
225 necessary pipeline to the DEU system. These processes are not trivial and add to the risk

226 associated with the Magnum storage alternative to meet the reliability needs of DEU's

227 system.

228 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

229 **A. Yes.**

EXHIBIT 1 - PHMSA LNG FACILITIES DATA

Liquefied Natural Gas (LNG) Facilities and Total Storage Capacities							
YEAR	NUMBER OF RECORDS	IN SERVICE	CAPACITY IN SERVICE	ABANDONED	CAPACITY ABANDONED	RETIRED	CAPACITY RETIRED
2010	124	122	45,422,462	1	37,000	1	0
2011	130	128	53,240,260	1	37,000	1	0
2012	132	130	53,495,045	1	37,000	1	0
2013	122	119	54,128,849	1	0	2	116,000
2014	131	126	53,985,546	1	0	4	262,215
2015	150	145	53,522,528	1	0	4	127,499
2016	156	152	53,259,444	1	0	3	116,000
2017	160	152	54,146,831	2	37,000	6	116,000

EXHIBIT 2 - PHMSA LNG INCIDENTS

PHMSA Pipeline Incidents: (1998-2017)

Incident Type: Serious **System Type:** LIQUEFIED
NATURAL GAS **State:** (All Column Values)

Calendar Year	Number	Fatalities	Injuries
1998			
1999			
2000			
2001			
2002			
2003			
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014	1	0	1
2015			
2016			
2017			
Grand Total	1	0	1

EXHIBIT 3 - PHMSA GT INCIDENTS

PHMSA Pipeline Incidents: (1998-2017)

Incident Type: Serious **System Type:** GAS TRANSMISSION **State:** (All Column Values)

Offshore Flag: (All Column Values)

Calendar Year	Number	Fatalities	Injuries
1998	11	1	11
1999	5	2	8
2000	7	15	16
2001	4	2	5
2002	4	1	4
2003	8	1	8
2004	2	0	2
2005	5	0	5
2006	6	3	3
2007	8	2	7
2008	5	0	5
2009	6	0	11
2010	6	10	61
2011	1	0	1
2012	3	0	7
2013	1	0	2
2014	2	1	1
2015	3	6	16
2016	4	3	3
2017	3	3	3
Grand Total	94	50	179

State of Oregon)

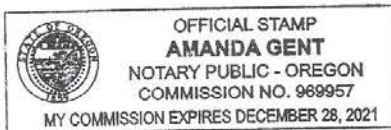
: ss.

County of Washington)

I, Bruce L. Paskett, being first duly sworn on oath, state that the answers in the foregoing written testimony are true and correct to the best of my knowledge, information and belief. Except as stated in the testimony, the exhibits attached to the testimony were prepared by me or under my direction and supervision, and they are true and correct to the best of my knowledge, information and belief. Any exhibits not prepared by me or under my direction and supervision are true and correct copies of the documents they purport to be.


Bruce L. Paskett

SUBSCRIBED AND SWORN TO this 4th day of September 2018.




Notary Public