	Utilize Existing Resources (Option 1)	Demand Response (Large Use Customers) (Option 2A)	Demand Response (Firm Sales Customers) (Option 2B)	[redacted]	[redacted]	[redacted]	[redacted]	Ryckman Creek (Option 4)	Clay Basin (Option 5)	Jackson Prairie (Option 6)	Expand Aquifer Storage (Option 7)	LNG with Liquefactio (Option 8)
Safety	+	-	+	+	+	+	+	-	+	+	+	+
	No concerns	Safety concerns for customers with reduced/curtailed service	No concerns due to the voluntary nature of the reductions	No concerns	No concerns	No concerns	No concerns	History of gas quality concerns	No concerns	No concerns	No concerns	No concerns
Reliability	-	-	-	-	-	-	-	-	-	-	-	+
Concerns regarding distance from DEU demand center	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Subject to NAESB cycle schedule	Yes	No	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No
Additional Reliability Information	Concerns regarding supply availability and reliability for additional purchases	Concerns that customer has supply available for use	Impossible to predict the amount of demand reduction	Unknown reliability because Magnum is not currently serving customers	Unknown reliability because Magnum is not currently serving customers	Unknown reliability because Magnum is not currently serving customers	Unknown reliability because Magnum is not currently serving customers	History of reliability concerns	N/A	N/A	Requires use of upstream transportation capacity	Located on the DEU system
		Requires installation of remote control valves	Expected low participation	[redacted]			[redacted]					
Cost												
Annual cost to customer (millions of dollars)	Between $12.3 and $14.6	$2.70	unknown	[redacted]				$36	$25	$39	[redacted]	$24
Annual bill impact to typical customer	Between $8.57 and $10.11	$2.08	unknown	Between $16.47 and $18.65	Between $24.25 and $25.36	Between $26.39 and $26.63	$15.23	$24.84	$17.33	$26.96	Between $5.12 and $9.47	$18.75
Additional Cost information	Costs shown include commodity cost for only one day			Costs could increase after initial term	Costs could increase after initial term	Costs could increase after initial term	Costs could increase after initial term					
Risk	-	-	-	-	-	-	-	-	-	-	-	+
Concerns regarding distance from DEU demand center	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Additional Risk Information	Subject to supply availability risk for additional purchases	Lack of available supply from customer renders this option ineffective	Risk that not enough demand will be reduced to offset supply shortfalls	Unknown risk because Magnum is not currently serving customers	Unknown risk because Magnum is not currently serving customers	Unknown risk because Magnum is not currently serving customers	Unknown risk because Magnum is not currently serving customers	History of operational, structural, and financial issues	N/A	N/A	N/A	There are no additional risk concerns
	Supply price risk			Operational challenges at Payson gate are a concern								
Other Factors												
Timing	Neutral	+	-	+	Neutral	Neutral	+	Neutral	-	-	-	+
Additional Timing Information	N/A	Not subject contraints such as NAESB cycles or travel time of supplies	Shortfalls occur overnight and the peak-demand time is early morning. Messaging requests would occur while customers are sleeping	Proposal includes NNT which allows for deliveries outside of NAESB cycles	N/A	N/A	Proposal includes NNT which allows for deliveries outside of NAESB cycles	N/A	Capacity not available	Capacity not available	Availability pending execution and results of expansion FEED study	On-System - Not subject to NAESB cycles. Directly controlled by DEU Gas Control
Operations	-	+	-	-	-	-	-	-	-	-	-	+
Additional Operations Information	Facilities owned and operated by outside entity	Within DEU control	Not within DEU control	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Facilities owned and operated by outside entity	Owned and operated by DEU
Obligation to Serve Firm Customers	+	-	-	+	+	+	+	+	+	+	+	+
Additional Information	Ability to serve firm customers	All firm customers pay for and expect reliable service	All firm customers pay for and expect reliable service	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers	Ability to serve firm customers
Peak-Hour Supply	Neutral	Neutral	Neutral	+	Neutral	Neutral	+	Neutral	Neutral	Neutral	Neutral	+
Additional Information				Proposal allows for additional non-ratable peak-hour supply			Proposal allows for additional non-ratable peak-hour supply					Proposal allows for additional non-ratable peak-hour supply
Availabilty	+	-	+	+	+	+	+	+	-	-	-	+
Additional Information		Not readily available without Tariff changes						Additional capacity has recently been offered	Subject to availability of additional storage capacity	Subject to availability of additional storage capacity	Unknown if expansion is feasible	
Other Ancillary Benefits	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	+
Additional Information												Provides for the ability to serve outlying areas though the use of satelite storage facilities; Maintain service during emergencies or maintenance
Affiliate Evaluation												
Recognize Affiliate Conflict	Neutral	+	+	+	Neutral	Neutral	+	Neutral	Neutral	Neutral	Neutral	+
Minimize Conflict	DEQP is the only option	no conflict	no conflict	no conflict	Evaluate between alternatives	Evaluate between alternatives	no conflict	Evaluate between alternatives	DEQP is the only option	Evaluate between alternatives	DEQP is the only option	no conflict
Prioritize Customers First	Yes				Yes	Yes		Yes	Yes	Yes	Yes	
No Undue Influence	Yes				Yes	Yes		Yes	Yes	Yes	Yes	
	1/ This option was superseded by the option described in 3D											

SUPPLY RELIABILITY EVALUATION

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Introduction

Dominion Energy Utah (DEU or Dominion Energy or the Company) is a Local Distribution Company (LDC) that provides safe and reliable natural gas service to more than one million residential, commercial, and industrial customers in Utah, Wyoming, and Idaho. The Company is obligated and committed to ensure reliable and safe service to its customers.

DEU has adequate natural gas supplies in its gas supply portfolio to meet DEU's customers' needs on a Design-Peak Day. However, in order to meet our system requirements, all supplies must be delivered to the DEU system. Over the past five years, there have been times where upstream natural gas providers have been unable to deliver natural gas supplies to the DEU system during cold weather events. This failure to provide natural gas during cold weather conditions has challenged the Company's ability to provide reliable natural gas service to its customers. Other unforeseen events could also impair the Company's ability to maintain reliable service to its customers. To meet its obligation and commitment to provide safe and reliable service to its customers, the Company conducted an evaluation to determine the most prudent resource(s) to add to its growing gas supply portfolio to minimize the potential for serious service interruptions during normal cold weather events and to meet Design-Peak Day conditions.

Objective

To recommend a safe, reliable and cost-effective additional supply source to maintain system safety, reliability and support during periods of supply shortfalls. Planning for ways to address periods of supply shortfalls is prudent. DEU may be unable to meet its commitment and obligation to provide safe and reliable service for customers without additional reliable resources over and above the existing gas supply portfolio.

Over the last five years, supply shortfalls have occurred during cold weather events. These shortfalls have occurred when temperatures have been well above Design-Peak Day[1] conditions. The Company has been subject to a number of events that have occurred upstream of the DEU system, including production losses (e.g., due to wellhead freeze-offs), processing plant outages, compressor station or gate station failures, transportation pipeline capacity reductions, power outages, plant shut-downs, mechanical failures or force majeure events. All of these events could result in a supply shortfall.

[1] Design-Peak Day is a day with a daily mean temperature of -5 degree Fahrenheit or lower in the Salt Lake Valley.

Failure of contracted gas supplies to be delivered to the Dominion Energy Utah (DEU) distribution system during a peak or near-peak design day could result in loss of adequate pressure in the distribution system during extreme cold weather events. If this were to occur, the Company would have no recourse but to initiate emergency service interruptions of both interruptible and firm customers, including industrial, commercial and residential customers. System models show that the types of gas supply shortfalls recently experienced could result in the loss of system pressure in large areas of the DEU distribution system, resulting in a loss of service ranging from 136,000 and 650,000 customers depending on the delivery point where the shortfall occurs. See DEU Exhibit 2.12.

Failure of contracted gas supplies to reach the DEU system on a Design-Peak Day would result in the interruption of gas service to interruptible industrial customers, firm industrial customers, commercial customers and residential customers alike. If a loss of service occurs, industrial customers would be without gas for process use and power generation. Businesses would be without natural gas service for heating, water heating and cooking. Critical facilities such as hospitals, health care facilities, and senior citizen/ assisted living facilities, day care facilities and schools would be without heat and hot water, and residential customers would also be without natural gas for heating, cooking, and hot water. During cold weather conditions that can reach minus 5^0 Fahrenheit (^{0}F) or colder, prolonged exposure would pose a significant risk to the safety, health and property of DEU's residential and commercial customers.

It is important to recognize the differences between restoration of service for electric systems as compared to gas systems. In the restoration of service of electric systems, large blocks of customers can be restored simultaneously with a single flip of a switch. Conversely, once the pressure in a gas system reaches zero pounds per square inch gauge (PSIG), all customers must be *individually* shut off at the meter and service must be restored to each customer, one by one. Based on the potential for the loss of service to up to 650,000 customers, DEU estimates that it may take weeks to restore service to all affected customers. In the meantime, our customers would be exposed to extreme winter temperatures of minus 5^0 F or lower which exposes them to serious life safety and health consequences.

It is also important to recognize that the loss of upstream supply during extreme cold weather conditions is not a hypothetical event. During the winter of 2011, there was a major upstream supply shortfall that disrupted natural gas supplies to communities in the states of Arizona and New Mexico with resulting serious impacts on the safety, health, comfort and convenience of a large number of gas customers. Details of this event are included in the testimony of Tina Faust (DEU Exhibit 2.0).

In addition to serious life safety and health implications, the consequences of an event that results in wide-scale supply loss would have dramatic economic consequences for DEU's customers, the communities served by DEU and the Company.

The estimated cost to restore service to the estimated number of affected customers is up to $100 million. This figure is exclusive of costs for financial and other harm (e.g. property damage) that would be incurred at the state, community, and individual levels, or any financial harm to DEU. The estimated impact on Gross State Product is up to $2.4 billion due to the loss of workforce at Utah businesses.[2]

In order to meet DEU's commitment and statutory obligation to provide safe and reliable service to our customers, the DEU gas supply plan should include sufficient resources to prudently operate and provide uninterrupted service to industrial, commercial and residential sales customers in the event of supply shortfalls during a cold weather event. As a result, the objective of this assessment is to determine the optimum approach to ensure safe, reliable and cost-effective system supply during periods of supply shortfalls. Based on historical supply shortfalls experienced by DEU, reliably replacing 150,000 Dth/day of gas supply is the goal of this evaluation. In analyzing available options DEU considered the following: safety, reliability, cost, risk, location (on system vs off system), location where the supply source would enter the DEU system, other factors and an affiliate evaluation (if necessary).

The following options were evaluated to identify the most reliable, safe and lowest reasonable cost alternative to ensure supply reliability and minimize the potential for service interruptions under cold weather conditions.

[2] This estimate is discussed in detail in DEU Exhibit 3.05.

Option 1 - Utilize Existing Resources (Reserve Aquifer Storage and Purchase Incremental Supplies)

Under this scenario, DEU would continue to annually evaluate the best method for addressing supply shortfalls utilizing existing resources. This would involve reserving the aquifers and likely contracting for additional peaking supplies to be delivered at Goshen. This approach relies on upstream (off-system) sources and third parties for additional supply.

This option would require up to 150,000 Dth/day of the existing aquifer storage withdrawal capacity to be removed from the Design-Peak Day supply portfolio. This would require DEU to replace this supply with purchases at other locations. These purchases would be dependent on supply availability.

i. Safety – Aquifer storage is a proven safe method of storing natural gas that Dominion Energy has used for years.

ii. Reliability – While the aquifer storage is a proven reliable source of supply, the strategy of this option requires Dominion Energy to purchase additional supplies as part of its Design-Peak Day supply portfolio. In order to ensure that adequate supply would be available, DEU would secure these additional supplies with peaking contracts with high penalties for failure to deliver.

    As demand on the DEU system continues to grow, the amount of purchased volumes will need to grow as well. This would increase the amount of purchases required on a high-demand day.

iii. Cost – The aquifer storage contracts and associated transportation capacity costs are already considered in the Dominion Energy supply plan. The additional costs for the option would be for the additional supply, transportation capacity to deliver this supply to the DEU system, and the reservation charges for the peaking deals. Estimates for these costs are as follows:

- Additional Peaking Supply Commodity Costs:
  - 150,000 Dth x $5.00* per Dth = $750,000
  - 150,000 Dth x $10.00* per Dth = $1,500,000
  - 150,000 Dth x $20.00* per Dth = $3,000,000
- Transportation Capacity on Kern River Pipeline:
  - 150,000 Dth x $.2093 per Dth x 365 days = $11,459,175
- Peaking Supply Contract Reservation Charges:
  - 150,000 Dth x $.01 per Dth x 90 days = $135,000

*Prices may increase dramatically during periods of high demand.

iv. Risk – These additional supplies will be subject to the same supply reliability risks DEU currently faces including well freeze-offs, processing plant shut-downs, or force majeure events on

interstate pipelines that are outside of the Company's control as more fully described in DEU Exhibit 2.12. There is also commodity price risk with this option.

v. Affiliate Concerns – This option would include the use of aquifer storage contracts and transportation capacity on Dominion Energy Questar Pipeline (DEQP) to transport the gas from the Aquifers to the DEU system.

   a. Recognize Affiliate Conflict – DEQP would benefit from providing its local distribution company (LDC) affiliate customer with incremental FERC regulated transportation service.
   b. Minimize the Conflict – DEQP would be the only option for storage capacity at the Aquifers and transportation capacity under this alternative.
   c. Prioritize Customers First – When the affiliate option is chosen, the benefits to customers of providing safe, reliable and affordable service are included in the evaluation.
   d. No undue influence –Dominion Energy would model all available options to determine which are best suited for its supply portfolio.

Option 2A - Demand Response (Large Use Customers)

Historically, large industrial or commercial customers were a much smaller number of customers than they are today. Natural gas was used in limited manufacturing processes or for co-generation for DEU's customers. Today, natural gas is used for the same purposes by a much larger group of customers who generate significant revenue from processes that do not easily lend themselves to interruption for even short periods of time. Additionally, anecdotal evidence from our customers indicates that they would not be willing to agree to this option without material consideration to offset loss of revenue and other consequential damages.

Theoretically, this option would systematically reduce load on the distribution system by interrupting service to at least 275 large firm customers. This option assumes all customers with over 100 Dth/day of usage would be included. It also would require the installation of equipment to allow Dominion Energy to remotely shut off each customer's gas service with Commission approval. The Company estimates this could result in a reduction in demand of up to 150,000 Dth/day. While this would be a significant reduction in demand, this option assumes the logistics of shutting off all 275 customers simultaneously would work, while not impacting the health and safety of residential customers, and not having a significant impact on industrial customers. Power generators are excluded from this analysis. Other non-power industrial customers could lose significant revenue even with an alternative fuel source as a backup.

i. Safety – This option would reduce demand on the system. However, it is unclear if an immediate shut-off would create a safety hazard for any customer or group of customers. Additionally some industrial customers may be involved in processes that cannot be interrupted to allow a temporary switch to an alternate fuel. For example, manufacturers who utilize gas may not be able to stop using natural gas mid-process without destroying products and/or manufacturing equipment.

ii. Reliability – If Dominion Energy were to install remote control valves, the Company would have complete control over the reduction of the participating customers' usage. However, the Company would not have control over the availability of supply. There is no guarantee that the customers being curtailed actually have gas being delivered to the system on the day the Company would need excess supplies. The Dominion Energy Tariff and individual customer contracts would also have to include provisions to require customers to continue to deliver the gas once they had been curtailed for an emergency scenario, and provisions to hold the Company harmless from all consequences of reductions.

iii. Cost – The cost of the equipment required to install remote control on approximately 275 of the largest customers is approximately $27,500,000 based on an average cost of at least $100,000 for the equipment for each customer. There would also be consequential damages to the businesses being shut down and potential damage to customer-owned equipment.

iv. Risk – The reduction of demand would occur directly on the DEU system. The primary risk with this option is supply related. Specifically, if the customers did not have any supply scheduled for delivery to the system or if their supplies were cut upstream, their reduction in usage would not help offset any supply shortfalls on the Company's system.

v. Other Factor – Timing – With remote control equipment, Dominion Energy would have direct control over the amount and timing of the reduction. The demand reduction would not be subject to any constraints such as nomination cycles or travel time for supplies. However, Tariff and contract changes will be necessary to facilitate immediate shut-off of customers. Immediate shut-off could also cause equipment damage, interruption of production processes, and adverse economic impacts for large use customers.

vi. Other Factor – Obligation to Firm Customers – Dominion Energy is committed to serving firm customers reliably and opposes planning to curtail firm customers during conditions that are reasonably anticipated. Moreover, firm customers expect and pay for firm, reliable service. Implementing such a program would degrade firm service to the impacted customers.

vii. Affiliate Concerns – There are no affiliate relation concerns with this option.

Option 2B - Demand Response (Firm Sales Customers)

This option would reduce load on the distribution system by relying on firm sales customers to voluntarily decrease demand by lowering the set point of their thermostats. This reduction would be managed through public outreach such as radio and TV announcements, social media and email.

i. Safety – This option may safely reduce some demand on the system. In addition, the fact that the reduction would be completely voluntary should ensure that customers do not reduce the temperature in their homes below safe levels.

ii. Reliability – This option is unreliable because it is strictly voluntary and a very significant number of customers would need to take action immediately. The Company could not estimate, with any accuracy, the expected demand reduction response that would result from a public outreach program such as this. Based on previous periods of interruption, many interruptible customers have continued to burn gas, even when called upon to restrict usage with the consequence of high penalties for non-compliance.

The Company is aware that SoCal Gas in Southern California has installed hourly meters and has utilized campaigns for the purpose of reducing natural gas demand. SoCal employed a mass media campaign promoting reduction in customer usage on "advisory days," and a pilot rebate program. The pilot program utilized an ecobee thermostat and included an incentive for reducing gas usage on "advisory days.

SoCal's data shows that neither of the above campaigns produced statistically significant reductions in gas usage.

SoCal Gas' experience shows that any reduction in usage would not be reliable enough to count on during a Design-Peak Day or similar event. It is also significant to note that the winter "cold weather" design day in the SoCal Gas service territory is significantly warmer than the design day for DEU. It is expected that customer participation in a voluntary reduction of gas usage would be even less in our cold weather climate.

The Company is not aware of any LDC in the country that has successfully relied on a voluntary reduction in firm customer demand as a mechanism to reduce peak demand.

iii. Cost – Costs would be dependent on how the company implemented the program. Costs could include rebates or incentives, advertising, program management, and remote control thermostats.

iv. Risk – The reduction of demand would occur directly on the DEU system. The primary risk associated with this option is the uncertainty regarding how many customers would voluntarily restrict their usage immediately. If the volume were not sufficient to offset the supply shortfalls being experienced, the system would still experience pressure losses and potential outages.

v. Other Factor – Timing – This option would not provide a quick response time. Supply shortfalls generally occur overnight or in the early morning. Residential firm sales customers are likely to be asleep at such times and would be unlikely to respond quickly, if at all, to the request to lower their thermostats. It is also important to note that many thermostats are programmed to increase the temperature prior to when people wake up. In addition, many business and commercial firm sales customers are closed during those times and would not be able to respond quickly, if at all.

vi. Other Factor – Obligation to Firm Customers – Dominion Energy is committed to serving firm customers reliably and opposes planning to curtail firm customers during conditions that are reasonably anticipated. Moreover, firm customers expect and pay for firm, reliable service. Implementing such a program would degrade firm service to the impacted customers.

vii. Other Factor – Lack of Impact – Even if the Company were to deploy this option, and customers were responsive and reduced usage, the Company would not expect to see sufficient reduction in usage to address supply shortfalls.

viii. Affiliate Concerns – There are no affiliate relation concerns with this option.

Option 3A – Magnum Storage [redacted]

[redacted] DEU would have to build an interconnect at [redacted]. See Figure 1.

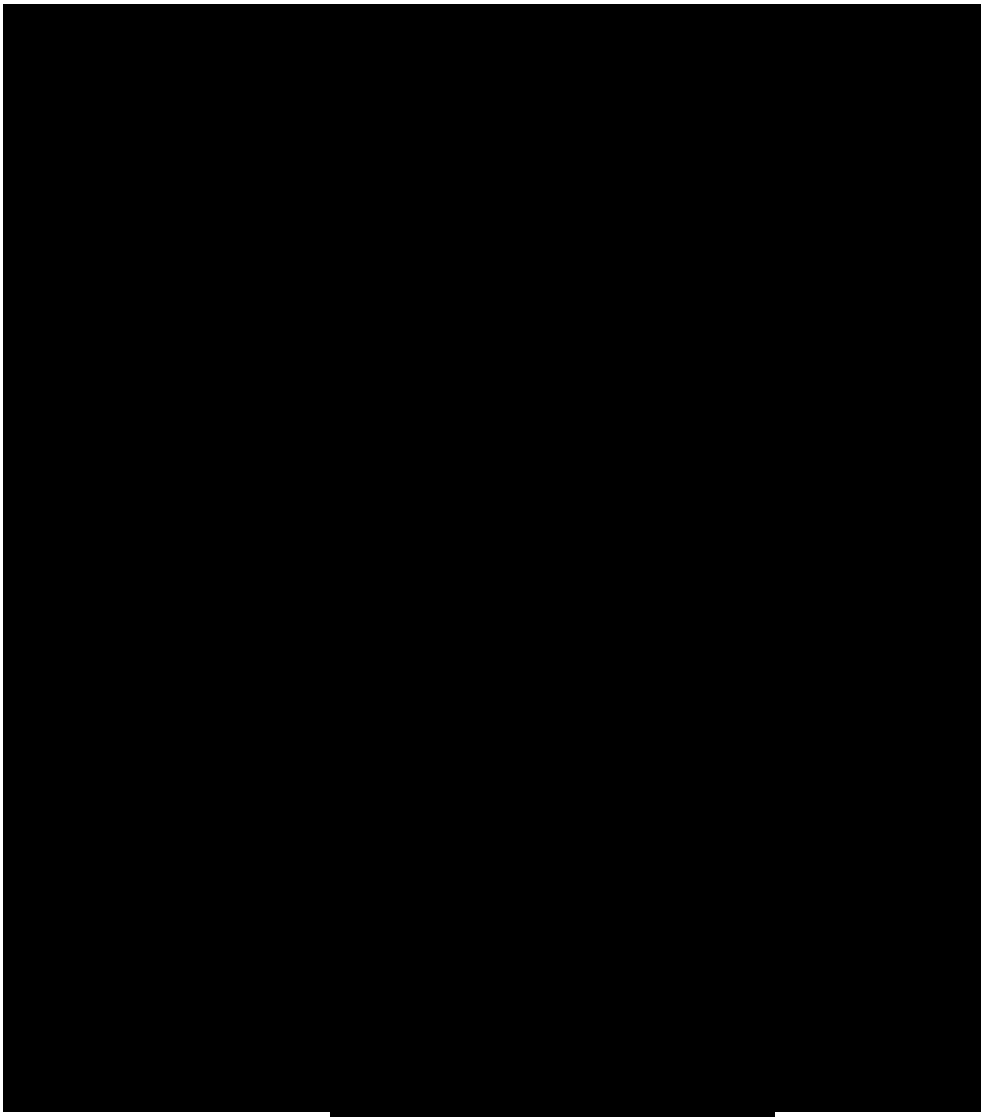

Figure 1: [redacted]

[redacted]

[redacted]

i. Safety – Salt cavern storage is a proven safe method of storing natural gas.

ii. Reliability – Salt cavern storage is a proven reliable method of storing natural gas. However, Magnum is not currently serving any natural gas storage customers, so its reliability is unknown. The location of the facility would require approximately [redacted]. The Company also has concerns regarding the fact that this service is only available for [redacted] contiguous days during the heating season.

iii. Cost –. The storage cost estimate for the [redacted] are as follows:

[redacted]

In addition to these contract costs, the Company would need to construct an interconnect on its system, at a cost of approximately $14.5 million. The levelized revenue requirement of this facility is $1.8 million.

iv. Risk – Magnum Energy has not yet constructed or operated a natural gas storage facility or FERC regulated pipeline. The project appears to be in the preliminary stages, and the Company is concerned about the viability of the project. The pipeline associated with this option could be subject to the same risks outlined in DEU Exhibit 2.12, including third-party tear outs, equipment failures and force majeure events.

The Company also has cost concerns with this option since it will be an ongoing cost. The contract could be subject to significant rate increases [redacted].

v. Other Factor – Timing - [redacted]
However, this storage supply would be owned and controlled by a third party. [redacted]

vi. Other Factor – Providing Peak-Hour System Support - This option may be able to serve a portion of peak-hour demand.

vii. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

viii. Affiliate Concerns – There are no affiliate relation concerns associated with this option.

Option 3B – Magnum Storage (

i. Safety – Salt cavern storage is a proven safe method of storing natural gas. There are no notable safety concerns with this option.

ii. Reliability – Though salt cavern storage is a proven reliable method of storing natural gas, Magnum is not currently serving any customers, so its reliability is unknown. The Company also has concerns regarding the fact that this service is only available for contiguous days during the heating season.

iii. Cost – Magnum provided cost estimates for , as outlined below.

iv. Risk – The risk associated with this option is based upon the geographic location of the facility. The location requires the gas to be transported from the storage to the DEU system which gives rise to the risks more fully discussed in DEU Exhibit 2.12. These risks raise reliability concerns. The Company also has cost concerns with this option since it will be an ongoing cost. The contract could be subject to significant rate increases after the initial term.

v. Other Factor – Timing – [redacted]

vi. Other Factor – Providing Peak-Hour System Support - This option may also provide the ability to serve a portion of peak-hour demand.

vii. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

viii. Affiliate Concerns – There are no affiliate relation concerns associated with this option.

Option 3C- Magnum ([redacted]**)**

This option provides for [redacted]

i. Safety – Salt cavern storage is a proven safe method of storing natural gas. There are no notable safety concerns with this option.

ii. Reliability – Though salt cavern storage is a proven reliable method of storing natural gas, Magnum is not currently serving any customers, so its reliability is unknown.

iii. Cost – Magnum provided cost estimates for different contract terms.

[redacted]

During the[redacted]

iv. Risk – The risk associated with this option is based upon the geographic location of the facility. The location requires the gas to be transported from the storage facility to the DEU system which gives rise to the risks more fully discussed in DEU Exhibit 2.12, options located off of the DEU system pose significant reliability risks.

The Company also has cost concerns with this option since it will be an ongoing cost. The contract could be subject to significant rate increases after the initial term.

v. Other Factor – [redacted]

vi. Other Factor – Providing Peak Hour System Support - This option may also provide the ability to serve a portion of peak-hour demand.

vii. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

viii. Affiliate Concerns – There are no affiliate relation concerns associated with this option.

Option 3D – Magnum Storage [redacted])

This option supersedes the previous proposals 3A and 3B for storage service. [redacted] DEU would still have to build an interconnect at [redacted].

[redacted].

i. Safety – Salt cavern storage is a proven safe method of storing natural gas.

ii. Reliability – Salt cavern storage is a proven reliable method of storing natural gas. However, Magnum is not currently serving any natural gas storage customers, so its reliability is unknown. The location of the facility would require approximately 100 miles of pipeline to be constructed and used to transport the gas to the Dominion Energy system at [redacted]. The Company also has concerns regarding the fact that this service may only be available for [redacted] continuous days during the heating season.

iii. Cost –. The storage cost estimate for a contract with a [redacted] year term would be [redacted] per year. [redacted]

In addition to these contract costs, the Company would need to construct an interconnect facility on its system, at a cost of $17.6 million. The levelized revenue requirement of this facility is $2.7 million.

iv. Risk – Magnum Energy has not yet constructed or operated a natural gas storage facility or FERC regulated pipeline. The project appears to be in the preliminary stages, and the Company is concerned about the viability of the project. The pipeline associated with this option could be subject to the same risks outlined in DEU Exhibit 2.12, including third-party tear outs, equipment failures and force majeure events.

The Company also has cost concerns with this option since it will be an ongoing cost. The contract could be subject to significant rate increases after the initial term.

v. Other Factor – Timing - [redacted]

However, this storage supply would be controlled by a third party and not the Company's Gas

Control department. [redacted]

vi. Other Factor – Providing Peak-Hour System Support - This option may be able to serve a portion of peak-hour demand.

vii. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

viii. Affiliate Concerns – There are no affiliate relation concerns associated with this option.

Option 4 – Ryckman Creek (Third-Party Off-System Storage Services and Transportation to the DEU City Gate)

This option would require the purchase of additional storage capacity at the Ryckman Creek facility, as well as the purchase of additional transportation capacity on either DEQP or KRGT pipeline to deliver the gas to the DEU system.

Ryckman Creek has offered open seasons for additional capacity in the recent past. However, based on deliverability vs. contracted storage volume, a large storage contract would be required in order to obtain sufficient deliverability. There are also a number of performance concerns associated with this facility.

i. Safety – Underground storage is a proven safe method of storing natural gas. However, there have been a number of events in the past at this facility, including fires, gas quality difficulties, and ground-settling/foundation issues which could be cause for safety concerns.

ii. Reliability – This facility has had a number of operating issues over the past few years mostly relating to gas quality. The facility has yet to prove it can deliver into DEQP effectively on a regular basis. Even if the facility is able to operate effectively, it is located far from the DEU system and would require the use of upstream transportation capacity to move the gas from the storage facility to the DEU system. This would limit the deliveries to timing based on NAESB scheduling cycles. It would also restrict the ability to bring the gas on quickly if needed to make sure the gas is available. The fact that the storage facility would be owned and operated by an outside entity would also increase the concern regarding reliability. The facility may be subject to maintenance shut downs that are outside of the control of Dominion Energy. This could result in withdrawals not being available during a time of need.

iii. Cost – Costs for this option would include costs for the storage capacity and the transportation capacity. Both of these costs could be susceptible to change based on potential future rate cases filed by the facility owners.

Based on the details of the current Dominion Energy contract with Ryckman Creek, in order to get an additional 150,000 Dth/day of withdrawal capacity, Dominion Energy would need to contract for an additional 22,590,361 Dth of storage capacity. The current storage costs at Ryckman Creek are $0.09 per Dth per month. This would result in storage costs of $24,397,590 per year.

DEQP has presented options to provide up to 150,000 Dth/day of additional capacity to the Wasatch Front. [redacted]

KRGT may have additional capacity available at a negotiated rate. The estimated costs to provide transportation for 150,000 Dth/day of additional supply, would be approximately $11,459,175 ($0.2093 X 150,000 Dth X 365 days).

iv. Risk – There is considerable risk with this option. The Ryckman Creek Facility has experienced a number of operational and financial failures over the past few years. In addition, it reportedly has had many structural issues. While the facility owners claim it has been in service and operating, they have yet to demonstrate their ability to withdraw gas from the underground storage and meet the gas quality required for the interstate pipelines to deliver it to the DEU system. To date, Ryckman has demonstrated that these risks are not just hypothetical concerns. Additionally, as more fully discussed in DEU Exhibit 2.12, options located off of the DEU system pose significant reliability risks.

v. Other Factor- Availability – While additional capacity has recently been offered at Ryckman Creek, it is unknown if enough storage and withdrawal capacity would be available to meet the supply reliability needs.

vi. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

vii. Affiliate Concerns – Dominion Energy would evaluate between capacity on DEQP and KRGT for transportation of the supply from the storage facility to the Wasatch Front.

a. Recognize Affiliate Conflict – DEQP would benefit from providing its local distribution company (LDC) affiliate customer with incremental FERC regulated transportation service.
b. Minimize the Conflict – The Company routinely conducts a detailed evaluation of capacity options available from DEQP and KRGT in order to determine the best capacity option.
c. Prioritize Customers First – When the affiliate option is chosen, the benefits to customers of providing safe, reliable and affordable service are included in the evaluation.
d. No Undue Influence – Dominion Energy would model all available options to determine which are best suited for its supply portfolio.

Option 5 – Clay Basin (Third-Party Off-System Storage Services and Transportation to the DEU City Gate)

This option would require the purchase of additional storage capacity at Clay Basin. This would also require the purchase of additional transportation capacity to deliver the gas to the DEU system.

i. Safety – Clay Basin storage is a proven safe method of storing natural gas.

ii. Reliability – This facility is located far from the DEU system and requires the use of upstream transportation capacity to move the gas from the storage facility to the DEU system. The distance from the demand center results in a longer travel time from the storage facility, which could create concerns during emergency situations.

Moreover, the need to transport the gas to the demand center makes the supply susceptible to a number of the same issues discussed in DEU Exhibit 2.12.

The fact that the storage facility would be owned and operated by an outside entity also increases the concern regarding reliability. The facility is subject to maintenance shut downs that are outside of the control of Dominion Energy Utah. This could result in the withdrawals not being available when needed.

iii. Cost – Costs for this option would include costs for the storage capacity and the transportation capacity. Both of these costs could be susceptible to change based on potential future rate cases filed by the facility owner.

The current maximum rate for firm storage service at Clay Basin is $.02378 per Dth per month for the inventory charge and $2.8534 per Dth per month for the capacity charge. This would result in storage costs of $10,272,301 per year for 150,000 Dth/day of deliverability, if it were available.

In addition, due to the location of the Clay Basin facility, transportation capacity on DEQP will be required to transport gas to the DEU system. DEQP has presented options to provide up to 150,000 Dth/day of additional capacity to the Wasatch Front. [redacted]

iv. Risk – The risk associated with this option is based upon the geographic location of the facility. The location requires the gas to be transported from storage to the DEU system which gives rise to the risks more fully discussed in DEU Exhibit 2.12. As previously discussed, options located off of the DEU system pose significant reliability risks.

v. Other Factor – Availability –Incremental Clay Basin capacity is unavailable at this time.

ix. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

vi. Affiliate Concerns – Dominion Energy would require capacity on DEQP for transportation of the supply from the storage facility to the Wasatch Front.

a. Recognize Affiliate Conflict – DEQP would benefit from providing its local distribution company (LDC) affiliate customer with incremental FERC regulated storage and transportation service.
b. Minimize the Conflict – The Company routinely conducts a detailed evaluation of capacity options available from DEQP and others in order to determine the best capacity option.
c. Prioritize Customers First – When the affiliate option is chosen, the benefits to customers of providing safe, reliable and affordable service are included in the evaluation.
d. No Undue Influence – Dominion Energy will model all available options to determine which are best suited for its supply portfolio.

Option 6 – Jackson Prairie (Third-Party Off-System Storage Services and Transportation to the DEU City Gate)

This option would require the purchase of additional storage capacity at Jackson Prairie. All storage capacity at Jackson Prairie is currently subscribed. This would also require the purchase of additional transportation capacity in order to deliver the gas to the DEU system.

i. Safety – Jackson Prairie storage is a proven safe method of storing natural gas.

ii. Reliability – This facility is located far from the DEU system, requiring upstream transportation capacity to move the gas from the storage facility to the DEU system. This would limit the deliveries to timing based on the NAESB scheduling cycles, which would restrict the ability to bring the gas on quickly if needed.

iii. Cost – Costs for this option would include costs for the storage capacity and the transportation capacity. Both of these costs could be susceptible to change based on potential future rate cases filed by the facility owners.

The current maximum rate for storage at Jackson Prairie is $.000348 per Dth/day for the inventory charge and $.04056 per Dth/day for the capacity charge. Using these figures, storage costs would be $2,220,660 for 150,000 Dth/day of withdrawal capacity. The total cost of the storage would depend on the amount of inventory required to receive 150,000 Dth of withdrawal capacity. However, no capacity is currently available.

Due to the location of the Jackson Prairie facility, transportation capacity on Northwest Pipeline (NWP) and either DEQP or KRGT will be required to transport gas to the DEU system.

NWP TF-1 rates include a $0.39294 per Dth/day reservation charge and $0.00832 per Dth/day volumetric charge. This would result in a total cost of $21,968,985 per year. Since NWP does not serve the Wasatch Front, the gas would also need to be transported from an interconnect with NWP on either DEQP or KRGT to the Wasatch Front.

DEQP has presented options to provide 150,000 Dth/day of additional capacity to the Wasatch Front. [redacted]

KRGT may have additional capacity available at a negotiated rate. In order to provide transportation for 150,000 Dth/day of additional supply it would be approximately $11,459,175 ($0.2093 X 150,000 Dth X 365 days).

iv. Risk – The risk associated with this option is based upon the geographic location of the facility. The location requires the gas to be transported from the storage to the DEU system, giving rise to the risks more fully discussed in DEU Exhibit 2.12. As previously discussed, options located off of the DEU system pose significant reliability risks.

v. Other Factor –Availability – There is currently no available storage capacity at Jackson Prairie.

vi. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

vii. Affiliate Concerns – Dominion Energy would evaluate between capacity on DEQP and KRGT, in addition to required capacity on NWP, for transportation of the supply from the storage facility to the Wasatch Front.

a. Recognize Affiliate Conflict – DEQP would benefit from providing its local distribution company (LDC) affiliate customer with incremental FERC regulated transportation service.
b. Minimize the Conflict – The Company routinely conducts a detailed evaluation of capacity options available from DEQP and others in order to determine the best capacity option.
c. Prioritize Customers First – When the affiliate option is chosen, the benefits to customers of providing safe, reliable and affordable service are included in the evaluation.
d. No Undue Influence – Dominion Energy would model all available options to determine which are best suited for its supply portfolio.

Option 7 – Aquifer Storage at Coalville and Chalk Creek – (Third-Party Off-System Storage Services and Transportation to the DEU City Gate)

DEQP provided a confidential proposal for [redacted] also require the purchase of additional transportation capacity from the aquifers to the DEU city gates.

i. Safety – Aquifer storage is a proven safe method of storing natural gas that DEU has used for years.

ii. Reliability – This option is subject to risks associated upstream transportation capacity and NAESB cycles. It is also distant from the DEU demand center.

iii. Cost – The additional storage costs for these options would be as follows:

Option A	**Scenario 1**	**Scenario 2**
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Option B	**Scenario 1**	**Scenario 2**
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

DEQP has presented options to provide up to 150,000 Dth/day of additional capacity to the Wasatch Front. [redacted] Dth/day of additional capacity at this rate would cost [redacted] per year.

iv. Risk – The risk associated with this option is based upon the geographic location of the facility. The location requires the gas to be transported from the storage to the DEU system which gives rise to the risks more fully discussed in DEU Exhibit 2.12. As previously discussed, options located off of the DEU system pose significant reliability risks. This would limit the deliveries to

timing based on the NAESB scheduling cycles, which would restrict the ability to bring the gas on quickly if needed.

v. Other Factor – Availability- While the aquifer storage is a proven reliable source of supply, the feasibility of the project is unknown.

vi. Other Factor—Additional Operational Information – The facility is owned and operated by an outside entity. Currently all DEU storage options are controlled, maintained, owned, operated and delivered by a third party. Adding another third party option does not increase the supply diversity on the DEU system. This is discussed in greater detail in DEU Exhibit 2.12.

vii. Affiliate Concerns – This option would require the use of Aquifer storage contracts and transportation capacity on DEQP to transport the gas from the Aquifers to the DEU system.

a. Recognize Affiliate Conflict – DEQP would benefit from providing its local distribution company (LDC) affiliate customer with incremental FERC regulated transportation service.
b. Minimize the Conflict – The Company routinely conducts a detailed evaluation of capacity options available from DEQP and KRGT in order to determine the best capacity option.
c. Prioritize Customers First – When the affiliate option is chosen, the benefits to customers of providing safe, reliable and affordable service are included in the evaluation.
d. No undue influence – Dominion Energy will model all available options to determine which are best suited for its supply portfolio.

Option 8 – LNG Facility (On-system Storage)

DEU researched potential storage options that could be located on the DEU system in close proximity to the demand center that would allow the Company to manage and control its supplies on-system in the event of upstream, off-system supply shortfalls. An on-system facility owned and operated by Dominion Energy would provide supply independence and diversity, and would provide a number of significant operational benefits. For purposes of this analysis the only viable on-system storage option that was identified is a liquefied natural gas (LNG) facility. To our knowledge, no other feasible storage options exist near the demand center of the Wasatch Front. Some utilities are located near salt caverns or depleted natural gas reservoirs and can use these geologic formations for on-system storage. There are no known geologic formations on the DEU system near our demand center.

Under this option, the Company would construct an LNG storage facility on its system near its demand center along the Wasatch Front. This "on-system" storage would be an LNG facility with liquefaction/ vaporization capabilities. This facility would be designed to provide up to 150,000 Dth/day of deliverability.

This on-system facility would be owned and operated by Dominion Energy, allowing the utility complete operational control over the facility and the deliveries into the DEU system. This option would include liquefaction capabilities, including the ability to liquefy gas throughout the summer months for use during the heating season.

i. Safety – LNG storage is a proven safe method of storing natural gas. The facility would be sited, designed, constructed, operated and maintained in accordance with the requirements of strict Federal Safety Regulations (United States Department of Transportation (DOT), 49 CFR, Part 193). Dominion Energy can also draw on its affiliate's extensive experience with safely operating LNG facilities. The LNG plant would be subject to inspections by Federal Pipeline and Hazardous Materials Safety Administration (PHMSA) and Utah Commission regulators.

ii. Reliability – An on-system LNG facility would be very reliable as it would be owned and operated by Dominion Energy, and could be located close to the DEU demand center. An LNG facility could provide 150,000 Dth of supply when needed without any reliance on third-party suppliers or interstate pipelines. It would also eliminate the need to schedule the gas or wait for NAESB cycle deadlines for gas delivery.

    The LNG plant's close proximity to the DEU Demand Center also mitigates the reliability risks outlined in DEU Exhibit 2.12 including 1) freeze-offs of upstream production, gathering and processing facilities, 2) force majeure events such as earthquakes, land movement, floods or washouts that may impact pipelines, 3) external factors such as third-party damage, 4) maintenance shut-downs on compressors, processing plants, or other pipeline facilities, and 5) time delays due to the physical transportation of the gas from distant locations.

iii. Cost – The capital costs associated with construction of the LNG facility would be [redacted] million. Operations and maintenance costs are estimated to be just over $5 million per year.

iv. Risk – Converting and storing natural gas in liquid form is a proven and safe technology with over 100 such facilities in use across the country. Twenty other utilities have LNG facilities for supply reliability. In the liquid state, natural gas cannot burn, effectively eliminating the risk of explosion for the stored gas. Locating the facility on the Dominion Energy system would also eliminate the need to transport the gas over long distances to the system. This would significantly reduce risks detailed in DEU Exhibit 2.12.

v. Other Factor - Timing – This facility would be owned and operated by Dominion Energy. As a result, the facility could be kept ready to operate when supply shortfalls are most likely. This would provide rapid supply availability. Withdrawing from the facility would not be subject to any constraints such as nomination cycles or travel time for supplies and could be used to directly match demand on the DEWUI system. Withdrawals from the facility would be directly into the Dominion Energy feeder line system. There would be no timing concerns with the transportation of the supply to the DEU system.

vi. Other Factor - Providing Peak-Hour System Support – This facility could be used to provide operational benefits, such as offsetting a portion of the peak-hour demands on the system during non-peak events, and at times when supply is not limited.

vii. Other Factor—Additional Operational Information – Owned and operated by DEU.

viii. Other Factor - Service to Remote Communities – This facility could also provide LNG to serve outlying communities that currently do not have natural gas service. Some communities like Kanab, Garden City and West Wendover are distant from the Dominion Energy Utah system and could be more economically served by satellite LNG compared with a mainline extension. The LNG facility on the Wasatch Front could be used to fill trucks to transport natural gas to these remote locations.

ix. Affiliate Concerns – There are no affiliate relation concerns associated with this option.

Conclusion

DEU has considered and evaluated many options to meet the Company's commitment and statutory obligation to provide safe and reliable service to customers. The recommended approach for DEU to ensure safe, reliable, and cost-effective system supplies during periods of supply shortfalls during cold weather events is to construct, own and operate an on-system LNG storage facility with liquefaction and vaporization capabilities.

An on-system LNG storage facility provides the highest reliability and significant advantages compared to the other options. The on-system facility would be owned and operated by the Company, giving it complete control of the facility. Such a facility would provide supply independence in times of supply shortfall. Withdrawing from the LNG facility would not be subject to NAESB nomination cycle constraints or upstream supply risks that are associated with many of the other alternatives the Company considered as solutions to supply disruptions. The LNG supply could be used to directly match demand on the DEU system in the event of an upstream supply disruption. Withdrawals from the facility would feed directly into the DEU feeder line system and ensure supply reliability with the best system pressures.

On-system storage provides flexibility, diversity of supply and reliability that other supplies cannot match. Reliability is an attribute that cannot be overstated. This alternative provides supply reliability when upstream sources fall short. Gas from on-system storage does not need to be purchased or nominated at the time of need, and may be brought onto the distribution system on short notice. With a 15 million gallon LNG storage tank the Company could vaporize a 150,000 Dth/day for 8 full days and be able to maintain pressure for firm customers in the event of supply shortfalls or other system emergencies. Proximity to the demand center provides immediate system support and is not dependent on long transmission pipelines that are subject to a variety of risks such as land movement, third party excavation damage, forest fires, floods, washouts, corrosion, regulatory shutdowns, and other force majeure events.

The on-system LNG facility option also has additional benefits beyond supply reliability. First, it could provide peak-hour system support and flexibility to offset purchases when supply is limited. It also could be used to provide natural gas service to remote communities that do not currently have natural gas availability and would be more economically served by satellite LNG than a mainline extension. The availability of on-system LNG would prove advantageous in responding to emergencies. In addition, LNG from an on-system facility could be sold to customers that could use it for transportation purposes during off-peak times.

Based on the above analysis and evaluations, the construction of a new on-system LNG storage facility is recommended.