TOOELE COUNTY

APPLICATION FOR CONDITIONAL USE PERMIT

SUPPLEMENTARY INFORMATION

FOR

MONA – OQUIRRH TRANSMISSION CORRIDOR PROJECT

SUBMITTED BY:

ROCKY MOUNTAIN POWER
A DIVISION OF PACIFICORP

February 23, 2010

PUBLIC NOTICE OF MEETING AND AGENDA
Tooele County Planning Commission

The Tooele County Planning Commission will hold a Public Meeting/Public Hearing on March 03, 2010 at 7:00 p.m. in the Auditorium at the Tooele County Building, 47 South Main Street, Tooele Utah.

PUBLIC MEETING:

1. Roll Call

2. Approval of meeting minutes from February 3, 2010

3. Recess Public Meeting and Open Public Hearing

4. Public Hearing

    a CUP-2010-1 Mona to Oquirrh High Power Transmission Line beginning at the Tooele County/Utah County line at Five Mile Pass through Rush Valley northwest to the Tooele Army Depot and then east along South Mountain to SR 36 then northeast to Tooele City limits and then east, south of Tooele City limits, across Middle Canyon into the Oquirrh Mountains then to the Tooele County/Salt Lake County line

5. Recess Public Hearing and Open Public meeting

6. Public Meeting

    a CUP-2010-1 Mona to Oquirrh High Power Transmission Line beginning at the Tooele County/Utah County line at Five Mile Pass through Rush Valley northwest to the Tooele Army Depot and then east along South Mountain to SR 36 then northeast to Tooele City limits and then east, south of Tooele City limits, across Middle Canyon into the Oquirrh Mountains then to the Tooele County/Salt Lake County line

7. Public Concerns

8. Adjournment

Pursuant to the Americans with Disability Act, individuals needing special accommodations during this meeting should notify Kerry Beutler, Tooele County Engineering, at 435-843-3160 prior to the meeting.

For questions call (435) 843-3160 and ask to speak to one of the planning staff.

Dated this February 24, 2010
Cindy Coombs, Support Staff
Tooele County Planning Commission

ROCKY MOUNTAIN POWER
A DIVISION OF PACIFICORP

1407 West North Temple
Salt Lake City, Utah 84116

February 23, 2010

Kerry Beutler, County Planner
Tooele County
47 South Main Street
Tooele, UT 84074

Re: Detail Discussion on Routes Not Part of Conditional Use Permit

Mr. Beutler,

Since the release of the Draft Environmental Impact Statement last May, Rocky Mountain Power has repeatedly responded to questions of abandoning the proposed route for the Limber to Oquirrh segment along the south and east benches of the Tooele Valley and replacing it with something different, or eliminating that segment completely.

The attached information details the key issues Rocky Mountain Power must consider when planning major additions to the main grid transmission system. The Mona to Oquirrh project is planned to meet both short and long term needs of customers, not just for a few years, but for the coming decades. Much of this information has previously been discussed in detail with the Tooele County Commissioners and staff. We have refined some of the detailed cost information since those discussions.

Our assessment of all of these issues and risks, is that the prudent course of action is to place the Limber to Oquirrh and Limber to Terminal segments in separate corridors in order to provide safe, reliable, adequate and efficient service to all of our customers.

Please let me know if you have further questions on this issue.

Sincerely,

Rod Fisher
Director Transmission Community Relations

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Opponent's Route and Substation Locations

The Tooele Concerned Citizen's group and others have stated their opposition to Rocky Mountain Power's proposed transmission line route that traverses the southeast bench of Tooele. They have also suggested different locations for the Company's proposed Limber substation site. To our knowledge there is no map that depicts this proposed 'Opposition Route." Therefore, Figure 1 best represents the Company's understanding of the general location of this route and suggested sites for the Limber Substation, heretofore referred to as the 'WalMart Site' and the "I-80 Site". It is the Company's understanding that the 'Opposition Route' would more or less follow the draft EIS' Alternative H along the Stansbury Mountains then turn east just south of the Great Salt Lake followed by a turn south and east at SR 36 along the Oquirrh Mountains . At this point, it would connect into the draft EIS' Alternative D then pass over the Oquirrh Mountains and enter Salt Lake County.

This memorandum explains why after significant consideration and analysis, Rocky Mountain Power does not agree with these alternative suggestions. The information contained herein is solely provided to the Commission in response to its questions. It is not part of Rocky Mountain Power's application for a Conditional Use Permit (CUP). Any reference made to Rocky Mountain Power's proposed route is for comparison purposes only.

As the Commission knows, Rocky Mountain Power has spent several years studying possible routes and locations as part of the project's Environmental Impact Statement (EIS). The Company's proposal involves construction of two 345kV double-circuit transmission lines emanating from the proposed Limber substation. These two segments are commonly referred to as 'Limber to Terminal' and 'Limber to Oquirrh'. Both of these extra high voltage facilities are needed to meet Rocky Mountain Power's transmission system expansion program. As a first step, Rocky Mountain Power has submitted a CUP application for the 'Limber to Oquirrh' segment (which traverses the southeast bench) because of the critical and immediate need to deliver additional resources to the Oquirrh substation by 2013. Later, the Limber Substation and the 'Limber to Terminal' segment will be constructed.

There are several reasons why Rocky Mountain Power does not support the Opponent's Route nor the suggested sites for the Limber Substation. Rocky Mountain Power's perspective is supported by the following key issues which are explained further in this memorandum:

- Increased costs
- Increased risk to reliability
- Schedule delays, and
- Other considerations, such as maintenance and operation, community impacts, and environmental impacts

Attachment 1 provides an overview of the pros and cons of the Company's proposal versus the 'Opposition Route' and substation sites. The key issues are identified and the comparative results are objectively disclosed. As stated above, Rocky Mountain Power has assumed the locations of the 'Opposition Route', the 'I-80' substation site, and the 'WalMart' substation site in absence of an available map. The information provided is provisional only and does not necessarily substitute, alter, or affect the CUP application that has already been submitted.

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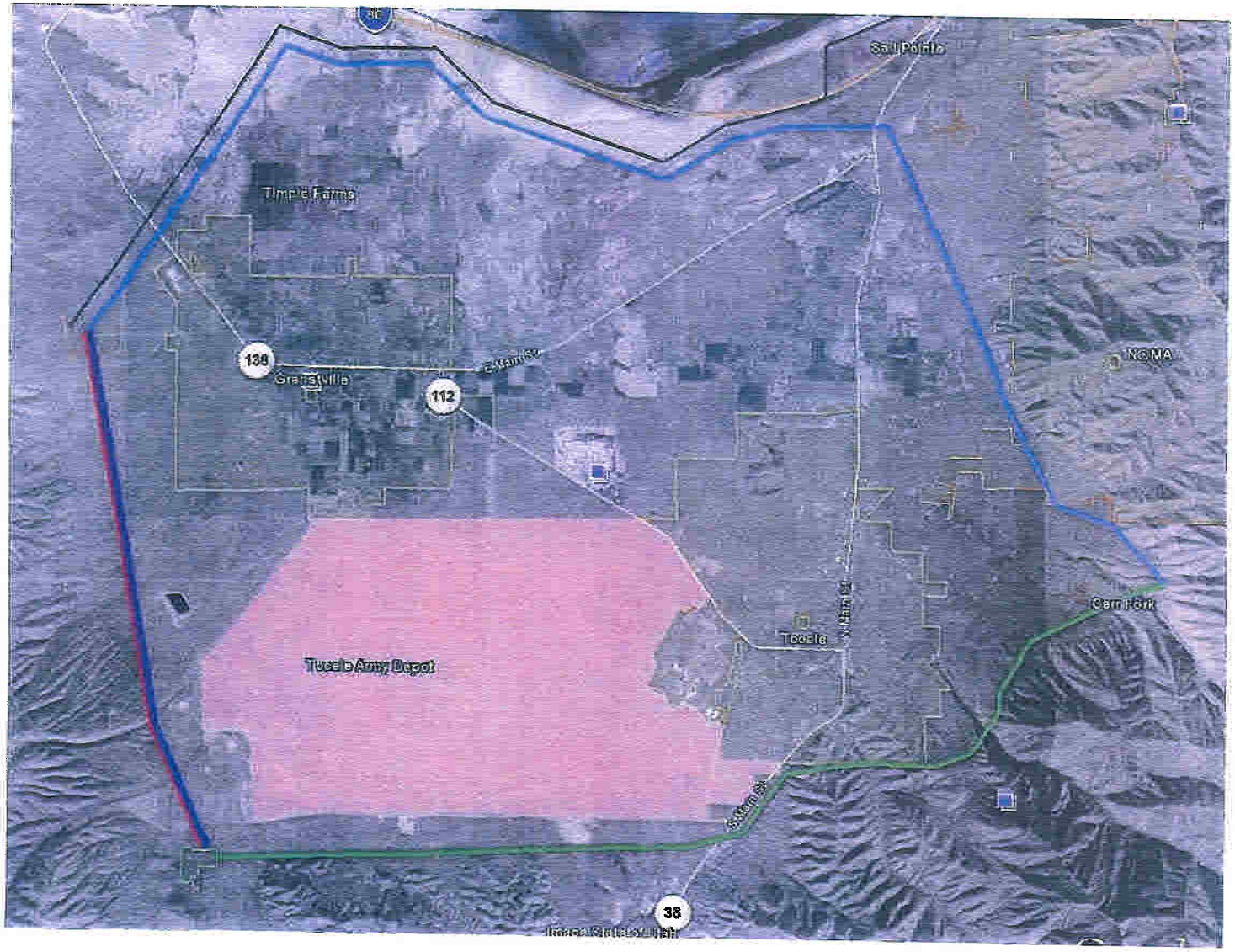

Figure 1 – Rocky Mountain Power Proposed 'Limber to Oquirrh' Route vs. Opposition Route

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Increased Cost

If the 'Opposition Route' were pursued, the Limber substation would be relocated to an area further north. The two sites that have been suggested are referred to as the 'WalMart' Site or the 'West of Grantsville' Site and the 'I-80' Site or the 'North of Grantsville' Site. Attachments 2 and 3 provide detailed maps and a preliminary estimate of the additional costs to construct these alternatives, respectively.

The 'West of Grantsville' location identified on the attached map represents the Company's best understanding of the site referred to by project opponents which is in the same general area as the 'N-1' alternative substation site that was analyzed in the Draft EIS. For approximate cost comparison purposes, every mile of the two 345kV lines is roughly double the cost of the 500 kV transmission line. This proposed location is farther north than the Company's proposed location for the Limber substation. Therefore, the 500kV line could be extended northward. However, the 'Opposition Route' would require more overall miles of double-circuit 345 kV transmission when compared to the Company's current 'Limber to Oquirrh' segment. The result would be an additional cost of approximately $32 million. This cost breakdown is provided in detail as part of Attachment 2 and is also reflected in the comparative table provided as Attachment 1.

The 'North of Grantsville' location identified on the attached map also represents the Company's best understanding of an optimal site situated to avoid the future Timpie Farms development as well as proposed future roads and railroad spurs associated with Timpie Farms. This proposed substation location is the farthest east, thus reducing the length of the 345kV transmission lines by extending the 500 kV line even farther than the 'WalMart' Site. Therefore the transmission line costs would be less than the site above and relatively close to the Company's proposed 'Limber to Oquirrh' segment. However the additional substation costs would be dramatically more due to the site's marginal soil conditions. The result would be an additional cost of approximately $45 million. This cost breakdown is provided in detail as part of Attachment 3 and is also reflected in the comparative table provided as Attachment 1.

Under Utah law, the county may not condition its approval of the conditional use permit for the transmission line by imposing a route that impairs Rocky Mountain Power from providing safe, reliable, adequate and efficient service to its customers. For the reasons stated in this memorandum, the Opposition Route impairs the safe, reliable and adequate service to Rocky Mountain Power's customers. However, even if the Opposition Route did not impair Rocky Mountain Power's ability to provide Safe, reliable, and adequate service, the Opposition Route is not cost-efficient and Utah law dictates that Rocky Mountain Power would need to look to Tooele County to pay the actual excess cost resulting from a requirement to construct the Opposition Route.

Increased Risk to Reliability

As has been stated before, Rocky Mountain Power is required to provide its customers with safe, adequate, reliable, and efficient electricity. As a regulated utility, Rocky Mountain Power must meet minimum reliability requirements which are by their nature difficult to comprehend for those who are not familiar with the regulatory framework of transmission planning. Rocky Mountain Power must design its new transmission facilities to meet strict criteria that were established in 2005 after the Northeast Blackout of 2003. For example, these design standards dictate a minimum physical separation

between parallel extra high voltage lines due to an established understanding within the utility industry of an increased risk of co-locating multiple transmission lines in the same corridor.

For several reasons, the 'Opposition Route' presents an increased risk to reliability. In addition to the recognized concern (noted above) of co-locating two main grid transmission lines in the same general location, a number of other factors strongly influence Rocky Mountain Power's disaffection for this route, including the very important fact that there are no redundant paths for these main grid transmission lines. The presence of wetlands along the route proposed for the Limber to Terminal segment will restrict Rocky Mountain Power's ability to construct permanent access roads. Given that the 'Opposition Route' has greater impacts to wetlands (discussed below), this problem would be exacerbated for not just one, but two main grid transmission lines. Another concern is the limited area between the Tooele Valley airport and the Great Salt Lake. Rocky Mountain Power's proposed Limber to Terminal route has been located as far south as possible to not interfere with the Federal Aviation Administration's height restrictions for the airport. As a result, an additional transmission line would need to be located to the north. In order to meet the minimum design criteria cited above, one of the transmission lines might need to be located below the ordinary high water mark of the Great Salt Lake, e.g. would need to be constructed in a marine environment. This scenario presents a number of extreme challenges from a constructability, maintenance, and operational perspective. Again, these limitations could severely restrict Rocky Mountain Power's ability to provide reliable power to its customers.

The increased risk to reliability of the 'Opposition Route' should be a concern for both Rocky Mountain Power and Tooele County. One of the key components prospective large customers look for when siting new facilities is both adequate supply of electricity and a certain level of redundancy of supply. These principles are incorporated into the design of the Mona to Oquirrh project as well as the 2000 miles of new main-grid transmission lines proposed by Rocky Mountain Power.

Schedule Delays

Despite the fact that the 'Opposition Route' has largely been considered and/or analyzed in the draft EIS, the BLM would need to re-initiate the NEPA process in order to change its proposed action and that of the Company. In addition, the Company would need to re-file its CUP application and cancel its ongoing contractor selection process which has taken over 7 months already. Rocky Mountain Power's application for a Certificate of Public Convenience and Necessity (CPCN) would also be delayed. With the increased impacts to wetlands (see below), the Company would also need to secure a Section 404 permit from the Army Corps of Engineers, the type of which (e.g. Letter of Permission or Individual Permit) could result in even more delays. Given the need to have this project in service no later than 2013, these delays would severely damage Rocky Mountain Power's ability to provide safe, reliable, adequate, and efficient electricity to its customers.

Other Considerations

Community Impacts

The 'Opposition Route' would not result in a substantial increase or decrease in the numbers of homes within ¼ mile of the project facilities. However, it would shift the burden to other communities in Tooele County.

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Increased Impacts to Wetlands

The Draft Environmental Impact Statement (DEIS) and the draft Tooele Valley Wetlands Special Area Management Plan (SAMP) describe wetland resources in the northern part of Tooele Valley. Potential effects to wetland resources were analyzed in detail as part of the draft EIS which compared different alternative routes. The 'Opposition Route' would more or less follow the draft EIS' Alternative H along the Stansbury Mountains then turn east just south of the Great Salt Lake followed by a turn south and east at SR 36.

Using the routes described in the draft EIS, the 'Opposition Route' is approximately 35.2 miles from the Company's proposed Limber substation to the Tooele County boundary. It would potentially cross wetlands for approximately 9.3 miles (169 acres), and impact lands identified in the Tooele Valley SAMP for approximately 14.4 miles (262 acres). After connecting with Alternative D, it would cross less than 0.5 miles of wetlands. Therefore, the 'Opposition Route' would cross more than 8.8 miles of wetlands and 14.4 miles of Tooele Valley SAMP lands compared to Rocky Mountain Power's proposed route. As described previously, Rocky Mountain Power anticipates strict limitations on its ability to build permanent access roads for the 'Limber to Terminal' segment in order to comply with Section 404 of the Clean Water Act. By adding the 'Opposition Route' parallel to the 'Limber to Terminal' segment, impacts to wetlands would more than double and the ability for the Company to secure a permit from the Army Corps of Engineers would be uncertain at best.

Attachment 1 - Tooele County 'Opposition Route' and Substation Site Key Issues Analysis
February 2010

Issues	BLM/RMP Preferred Route Limber to Oquirrh	Tooele County Proposed Route Limber to Oquirrh (near I-80)	Tooele County Proposed Route Limber to Oquirrh (near Wal-Mart)
Line Miles:	• 500 kV = 0 miles • 345 kV (Limber-Oquirrh) = 17.5 miles • 345 kV = (Limber to Terminal) 45.1 miles	• 500 kV = 15.5 miles increase • 345 kV (Limber-Oquirrh)= 18.0 Miles (0.5 mile increase) • 345kV (Limber-Terminal) = 16.5 mile decrease	• 500 kV = 8.75 mile increase • 345 kV (Limber-Oquirrh)= 25.5 miles (8.0 mile increase) • 345kV (Limber-Terminal) = 8.75 miles decrease
Constructability	• Transmission Line o More steep slopes o More rocky conditions o Access roads in steep terrain • Substation o Extensive cut and fill required	• Transmission Line More structures that must contend with: o Artesian conditions o Higher water table o Highly corrosive soils o Poor soil strength o Potential liquefaction and expansive soils • Substation o Larger total volume of material (estimated 2x) o Type 5 cement o Over-excavate to build the slab o 4 ft of imported fill for soil strength o High cost construction techniques (smooth water casing, de-watering, driller slurry, etc)	• Transmission Line More structures that must contend with: o Artesian conditions o Higher water table o Highly corrosive soils o Poor soil strength o Potential liquefaction and expansive soils • Substation o Extensive cut and fill
Engineering:	• Smaller foundations • Long span required over Middle Canyon • Access roads	• Substantially larger foundations required (approximately four times larger) for Transmission Line and Substation • Corrosive soils require Type 5 cement, above ground galvanized structures, and additional protective coating • Increased insulation requirements • Expansive soils require additional backfill (substation)	• Substantially larger foundations required (approximately four times larger) for Transmission Line • Tiered substation yard due to steeper terrain • Corrosive soils require Type 5 cement
Community Impacts:	• Homes within 0.25 miles = 13 • Zoning impacts = 1.0 mile of RR-5, rest MU-40, MG, MG-EX • Residential viewshed impacts • Proximity to Tooele 'T' – cultural resource • Proximity to Settlement Canyon Reservoir	• Homes within 0.25 miles = 12 (preliminary based on undefined centerline) • Zoning impacts = none; all MU-40, A-20, MG • Residential viewshed impacts • Proximity to Stansbury/Erda communities • Proximity to proposed development (Saddleback) • Proximity to Adobe Rock – cultural resource	• Homes within 0.25 miles = 12 (preliminary based on undefined centerline) • Zoning impacts = none; all MU-40, A-20, MG • Residential viewshed impacts • Proximity to Stansbury/Erda communities • Proximity to proposed development (Saddleback) • Proximity to Adobe Rock –cultural resource
Reliability:	• Miles of parallel condition = 0 miles • Redundant path = Limber to Terminal • Backup Capacity = Limber to Terminal • Outage condition = normal • De-rating risk = normal	• Miles of parallel condition = 8-10 miles • Two lines in this area will force one line to be built in marginal conditions (closer to the GSL) • Redundant Path = at risk • Backup Capacity = at risk • Outage Condition = higher risk • De-rating risk(s) = higher risk	• Miles of parallel condition = 15-17 miles • Two lines in this area will force one line to be built in marginal conditions (closer to the GSL) • Redundant Path = at risk • Backup Capacity = at risk • Outage Condition = higher risk • De-rating risk(s) = higher risk
Maintenance and Operations:	• Fugitive dust from Army Base detonations • More vegetation management requirements	• Two lines with limited ability to perform regular/emergency maintenance due to lack of permanent access roads • Substation will require a cleaning program for insulators • Potential impact to grounding system of the substation.	• Two lines with limited ability to perform regular/emergency maintenance due to lack of permanent access roads

Attachment 1 - Tooele County 'Opposition Route' and Substation Site Key Issues Analysis
February 2010

Schedule Impacts:	• FEIS scheduled for release in March 2010 • Known local permitting complications • Facility Siting Board process	• New design and engineering needs to be considered in light of reliability concerns • New resource surveys and NEPA analysis • Potential delay in FEIS schedule to add new alternatives • Unknown local permitting complications • Need to re-initiate Section 404 process • High impact to EPC procurement • Additional geotechnical studies required	• New design and engineering needs to be considered in light of reliability concerns • New resource surveys and NEPA analysis • Potential delay in FEIS schedule to add new alternatives (12-18 month delay to project) • Possibility of Supplemental EIS (12-18 month delay to project) • Unknown local permitting complications • Need to re-initiate Section 404 process • High impact to EPC procurement • Additional geotechnical studies required
Risk to Service	• Low Risk of RMP being unable to provide sufficient service to meet load growth demands with regards to schedule impacts	• Higher Risk of RMP not being able to provide sufficient service to meet load growth demands due to schedule impacts	• Higher Risk of RMP not being able to provide sufficient service to meet load growth demands due to schedule impacts
Right of Way:	• Potential for right-of-way acquisition opposed by local community • Routing through ISR Superfund Site required – avoids capped waste areas	• Potential for right-of-way acquisition opposed by local community • Routing through ISR Superfund Site (more difficulty to avoid reclaimed areas) • Large developer impact	• Potential for right-of-way acquisition opposed by local community • Routing through ISR Superfund Site (more difficulty to avoid reclaimed areas) • Large developer impact
Environmental:	• Visual impacts on southeast bench • Vegetation clearing and access roads on bench • Carr Fork WMA	• More impacts to wetlands (9 miles), Tooele Valley SAMP (14.4 miles) 100 yr. floodplains (8 miles), waterfowl habitat and migratory bird pathways (15 miles) • Visual impacts in Stansbury area likely • Need to traverse the NOMA • More impact to ISR Superfund Site	• More impacts to wetlands (9 miles), Tooele Valley SAMP (14.4 miles) 100 yr. floodplains (8 miles), waterfowl habitat and migratory bird pathways (15 miles) • Visual impacts in Stansbury area likely • Need to traverse the NOMA • More impact to ISR Superfund Site
Estimated Cost:	• Transmission line = $41,000,000 • Substation= $37,000,000 • Rights of Way= no additional cost • Access Roads= basis of estimate • Permitting= NA • Engineering= NA ESTIMATED TOTAL COST: $79,000,000	• Transmission line = $46,000,000 • Substation= $80,000,000 • Rights of Way= $700,000 additional • Access Roads= Decrease of $2,500,000 • Permitting= NA • Engineering= NA • EPC Procurement = NA ESTIMATED TOTAL COST: $124,000,000	• Transmission line = $71,000,000 • Substation= $37,000,000 • Rights of Way= $700,000 additional • Access Roads= Increase of $2,300,000 • Permitting= NA • Engineering= NA • EPC Procurement = NA • ESTIMATED TOTAL COST: $111,000,000
Additional Cost from Proposed Route		**$45,000,000**	**$32,000,000**

NOTE: information in this table is provisional only.
The estimated costs listed herein are not inclusive of all project costs and are used for estimated cost comparison only as of February 12, 2010.

Limber – West of Grantsville (N1 or WalMart)

Current Location Info

- Lat/Long (approx): 40° 37' 8"N 112° 31' 40"W
- Site Elevation Range: 4505' – 4820'
- Soils Description: Valley

Reason for Location

The "Limber - N1" location (sometimes referred to as the "WalMart" location) was identified as an alternate substation site in the Environmental Impact Statement. The soils are assumed to be similar to the RMP proposed Limber substation site (SW corner of Tooele Army Depot).

Moving Limber substation to this location would decrease the foundation/construction costs when compared to the "Limber – North of Grantsville" site. However, when compared to the RMP proposed Limber site, this location would require similar costs of foundation/construction.

Costs Similar to RMP Proposed Limber Location

As stated previously, soils at both the "Limber – N1" and "RMP Proposed" location are assumed to be similar (valley soils). Both sites would require a certain amount of site grading due to the sloped terrain. Site grading effort would likely be greater for the "Limber N1" site; however, for cost comparison purposes, has been considered equal. Due to the similarities of site conditions, substation costs were considered similar and not included in the cost estimate.

Soil Data Research

Areas south of hwy 138 have been assumed as either rocky or valley soil. Utilizing Geotechnical Studies and Google Earth imagery, portions of the alignment have been categorized as one or the other. Rocky soil would allow for smaller foundations, thus decreasing foundation/material cost. Valley soil would require larger foundations, increasing the cost of foundation/materials. Difficulty of drilling in rocky soil helps to offset the cost of additional excavation effort for foundations in valley soil. These factors combined resulted in an assumed 50% additional cost for construction/materials for foundations in valley soil.

Access Road Comparison

Factoring in impacts from the future Limber-Terminal transmission line, the alignment associated with this substation location will require approximately $2,320,000 more for access road construction. For further explanation, please see the *Limber – West of Grantsville – Impacts to Access Roads* document.

Limber – West of Grantsville (N1)
Impacts to Access Roads

Access Road Cost Comparison

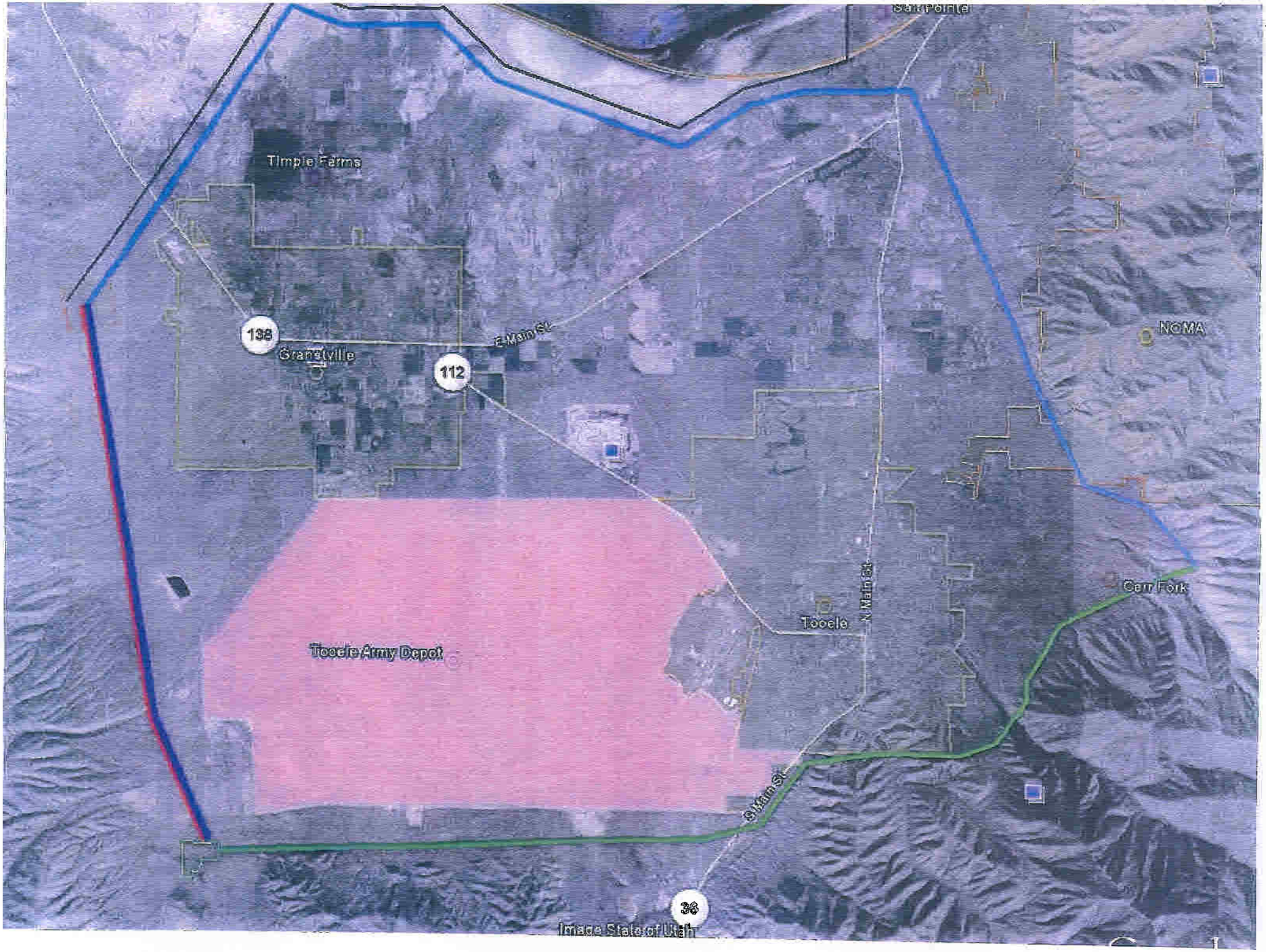
The proposed transmission line alignment for the northern route (N1) suggests that rather than just one 345kV line being constructed north of Grantsville that two 345kV lines will be constructed north of Grantsville. RMP's proposed Limber-Terminal 345kV alignment traverses approximately 9.3 miles of wetlands. The northern route (N1) alignment requires the second line to be moved to the north for necessary separation of the two lines. This results in an additional 10.3 miles (4.5 miles of terrain which falls below the 4217' elevation (Great Salt Lake flood zone), approximately 4.8 line miles through known wetlands, and one additional mile as a result of the second line being shifted further north) of wetlands being impacted due to the second transmission line alignment. For areas of 0-10% slopes, table 2-7 of the EIS states, "Approximately 1.1 to 1.3 miles of new road would be required for each mile of transmission line." This would result in approximately 11.3 miles of access roads, which would traverse wetlands, for the most northerly route. It is assumed that in these areas, temporary roads will be required and construction crews will utilize crane mats.

Experienced transmission line construction managers have quoted a similar cost (approximately $400,000 per mile) for temporary crane mat access roads and construction of access roads in slopes greater than 20%. For this reason, the distance of access roads for RMP's proposed route with slopes greater than 20% and roads traversing wetlands were calculated to create a cost comparison for access road construction for both the northern route (N1) and RMP's proposed route.

The RMP proposed access road plan for the proposed route indicates there are approximately 5 miles of access roads that consist of slopes greater than 20% and approximately 0.5 miles of access roads traversing wetlands for a total of 5.5 miles of access roads which are considered comparable in construction cost per mile to those of the northern route (N1).

Since the length of access roads in wetlands, for the northern route (N1), is approximately 5.8 miles greater than the compilation of access roads in the steep terrain and wetlands for RMP's proposed route, the result is an additional $2.32 million in access road costs for the northern route (N1).

Please note that the access roads that fall outside the wetland and steep slope terrain were investigated and determined to be a similar cost. Therefore, this portion was excluded from the cost estimate for this substation location.


Timple Farms
138
Grantsville
E Main St
112
NOMA
Tooele
N Main St
Tooele Army Depot
Cem Fork
S Main St
36
Image State of Utah

Mona-Oquirrh T-Line Structure Route Analysis "Limber - West of Grantsville (N1)"

PacifiCorp's "Southern Route"

	Structure Type:	Tangent	30° Angle	90° Angle
1	Monopole Cost:	$150,000	$306,000	$480,000
	Steel Cost:	$111,960	$213,240	$388,200
		Approximate Cost (Monopole + Foundation)		
Soil Conditions	Lake (Wetland)	$377,000	$895,000	$1,579,000
	Valley	$232,000	$522,000	$883,000
	Rocky	$205,000	$450,000	$749,000

Mileage: 17.5

Structure Type:	Tangent	30° Angle	90° Angle	
	# of Structures			Approx. Total Cost
Lake (Wetland)	0	0	0	$0
Valley	7	2	1	$3,551,000
Rocky	63	24	8	$29,707,000
	Total Approx Cost of $40,703,655			

Tooele's "Northern Route" 345kV

	Structure Type:	Tangent	30° Angle	90° Angle
2	Monopole Cost:	$150,000	$306,000	$480,000
	Steel Cost:	$111,960	$213,240	$388,200
		Approximate Cost (Monopole + Foundation)		
Soil Conditions	Lake (Wetland)	$377,000	$895,000	$1,579,000
	Valley	$232,000	$522,000	$883,000
	Rocky	$205,000	$450,000	$749,000

Mileage: 25.5

Structure Type:	Tangent	30° Angle	90° Angle	
	# of Structures			Approx. Total Cost
Lake (Wetland)	77	7	3	$40,031,000
Valley	54	3	3	$16,743,000
Rocky	16	1	1	$4,479,000
	Total Approx Cost of $72,102,383			

Tooele's "Northern Route" 500kV

	Structure Type:	Tangent	Small Angle	45° Angle	90° Angle
3	Monopole Cost:	$177,500	$245,000	$335,000	$395,000
	Steel Cost:	$160,000	$220,000	$280,000	$340,000
		Approximate Cost (Monopole + Foundation)			
Soil Conditions	Lake (Wetland)	$569,000	$740,000	$1,078,000	$1,381,000
	Valley	$320,000	$425,000	$605,000	$755,000
	Rocky	$273,000	$365,000	$515,000	$635,000

Mileage: 8.75

Structure Type:	Tangent	Small Angle	45° Angle	90° Angle	
	# of Structures				Approx. Total Cost
Lake (Wetland)	0	0	0	0	$0
Valley	24	4	2	1	$11,345,000
Rocky	4	1	1	0	$1,972,000
	Total Approx Cost of $16,195,083				

Limber to Terminal Savings (due to Tooele's "Northern Route")

	Structure Type:	Tangent	30° Angle	90° Angle
4	Monopole Cost:	$150,000	$306,000	$480,000
	Steel Cost:	$111,960	$213,240	$388,200
		Approximate Cost (Monopole + Foundation)		
Soil Conditions	Lake (Wetland)	$377,000	$895,000	$1,579,000
	Valley	$232,000	$522,000	$883,000
	Rocky	$205,000	$450,000	$749,000

Mileage: 8.75

Structure Type:	Tangent	30° Angle	90° Angle	
	# of Structures			Approx. Total Cost
Lake (Wetland)	0	0	0	$0
Valley	37	3	1	$11,033,000
Rocky	12	0	0	$2,460,000
	Total Approx Cost of $17,215,828			

Summary (Additional Cost = -1 + 2 + 3 - 4 + Access Road Costs)

Tooele's Northern Route is approximately **$32,600,000** more expensive than PacifiCorp's Southern Route

NOTES:

1. Assumed 345 kV Tangent Foundation Costs: Rocky = $55,000, Valley = $82,000, Wetlands = $220,000
2. Assumed 500 kV Tangent Foundation Costs: Rocky = $95,500, Valley = $143,000, Wetlands = $382,000
3. Conductor & Stringing $/mi (included in Total Approx Cost): 345kV: $425,466 500kV: $318,638
4. 5% additional cost for galvanized steel in wetland conditions due to corrosive soils.
5. 15% additional cost to insulator string for structures in close proximity to the Great Salt Lake. (Accounted for in Wetland Soil Condition)
6. Monopole Cost includes steel, erection and insulator string.
7. Costs do not include fixed costs (staging areas, overhead, insurance related expenses), maintenance costs and engineering etc.
8. Land acquisition costs are not included. Tooele's Northern Route requires approximately 250 additional acres.
9. It is assumed that in wetland areas, temporary roads will be required and construction crews will utilize crane mats. Unit costs regarding temporary crane mat access roads and construction of access roads in slopes greater than 20% are assumed similar (approximately $400,000 per mile). Access roads in non-mountainous/wetland terrain costs approximately $100,000 per mile. Refer to additional documentation for detailed explanation of additional costs for access roads.

    Access Road Additional Cost: RMP Proposed (Southern) Route: $0 Northern Route: $2,320,000
10. Any environmental restrictions on construction or mitigation (beyond what has been considered in Note # 9) has not been included in this analysis.
11. Estimate excludes cost related to Limber substation due to site similarities.

Limber – North of Grantsville

Current Location Info

- Lat/Long (approx): 40° 39' 45"N 112° 26' 55"W
- Site Elevation Range: 4219' – 4228'
- Soils Description: Lake/Wetland

Reason for Location

The "Limber – North of Grantsville" or "I-80" location, approximately 1.4 miles south of I-80 (please see exhibit), was chosen for two main reasons. First, this was our understanding of the general location proposed by the citizens of Tooele. Second, this proposed location was slightly modified to avoid the future Timpie Farms development as well as proposed future roads and railroad spurs associated with Timpie Farms. See map for details.

The Timpie Farms Future Industrial Development area (approximately 3 miles South of I-80 and slightly shifted west) was researched for feasible substation locations. From the research conducted (discussed in more detail below), the conclusion reached was that the I-80 location was preferred.

The I-80 proposed substation location is the farthest east, thus reducing the length of the 345kV transmission lines. For approximate cost comparison purposes, every mile of the two 345kV lines is roughly double the cost of the 500 kV transmission line.

Timpie Farms Location

Feasible substation locations within Timpie Farms range in elevation from 4221' – 4245'. Moving Limber substation into the Timpie Farms Future Industrial Development area (closer to Grantsville city limits) would result in an increased transmission line cost due to the shortening of the 500kV line and the lengthening of the two 345kV lines.

The soils in the Timpie Farm future development area are assumed similar to the soils in the proposed "Limber- North of Grantsville" location. Therefore, foundation/construction costs associated with either substation location would not be affected one way or the other.

Restrictions within Timpie Farms include a proposed roadway that would traverse the property connecting hwy 138 and Burmester Rd. There is also a proposed future railroad spur which enters through the northern part of Timpie Farms.

Soil Data Research

Information acquired from the Utah Geological Survey provided insight into liquefaction potential, problem soils and water table depths. From this general study, most of the area north of highway 138 is highly susceptible to liquefaction and has a water table depth of less than 10 feet. These issues, as well as areas with possible expansive and gypsiferous soils, have lead us to consider all areas north of highway 138 to be lake/wetland soil for foundation considerations.

Access Road Comparison

Factoring in impacts from the future Limber-Terminal transmission line, the alignment associated with this substation location will save approximately $2,500,000 on access road construction. For further explanation, please see the *Limber – North of Grantsville – Impacts to Access Roads* document.

Limber – North of Grantsville
Impacts to Access Roads

Access Road Cost Comparison

The proposed transmission line alignment for the I-80 route suggests that rather than just one 345kV line being constructed north of Grantsville that two 345kV lines will be constructed north of Grantsville. RMP's proposed Limber-Terminal 345kV alignment traverses approximately 9.3 miles of wetlands. The I-80 route alignment requires the second line to be moved to the north for necessary separation of the two lines. Due to this proposed substation location, these two transmission lines would traverse a combined 10.5 miles [4.5 miles of terrain which falls below the 4217' elevation (Great Salt Lake flood zone) and approximately 6 line miles through known wetlands] of wetlands. When compared to the RMP proposed Limber to Terminal alignment, the resulting total additional line length of the I-80 routes traversing wetlands is approximately 1.2 miles. For areas of 0-10% slopes, table 2-7 of the EIS states, "Approximately 1.1 to 1.3 miles of new road would be required for each mile of transmission line." This would result in approximately 1.3 miles of access roads for the I-80 route which would traverse wetlands. It is assumed that in these areas, temporary roads will be required and construction crews will utilize crane mats.

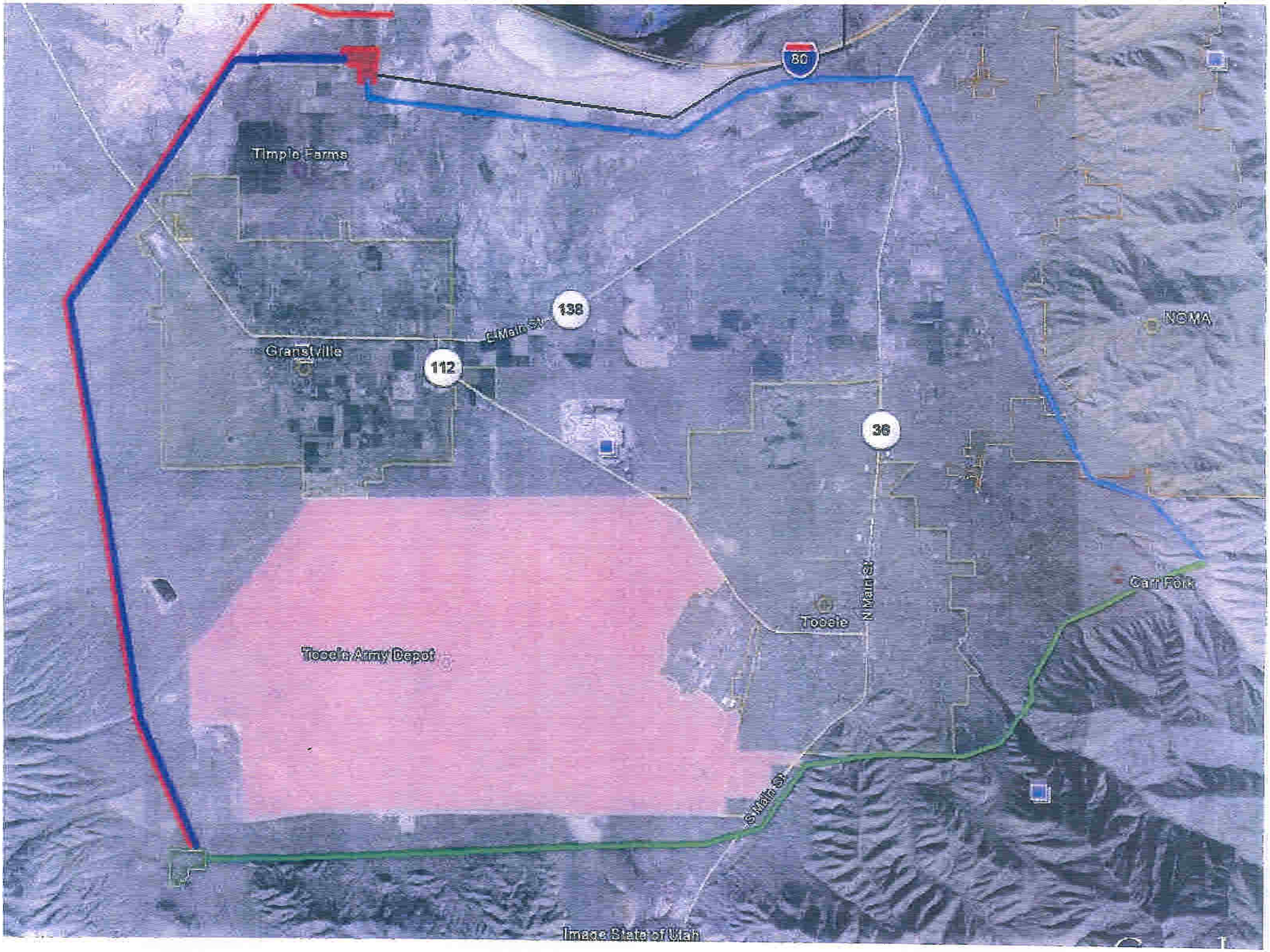
Experienced transmission line construction managers have quoted a similar cost (approximately $400,000 per mile) for temporary crane mat access roads and construction of access roads in slopes greater than 20%. For this reason, the distance of access roads for RMP's proposed route with slopes greater than 20% and roads traversing wetlands were calculated to create a cost comparison for access road construction for both the I-80 routes and RMP's proposed route.

The RMP proposed access road plan for the proposed route indicates there are approximately 5 miles of access roads that consist of slopes greater than 20% and approximately 0.5 miles of access roads traversing wetlands for a total of 5.5 miles of access roads which are considered comparable in construction cost per mile to those of the I-80 route.

Since the length of access roads in wetlands, for the I-80 route, is approximately 4.2 miles less than the compilation of access roads in the steep terrain and wetlands for RMP's proposed route, the result is a savings of $1.68 million in access road costs for the I-80 route.

In addition, due to the substation location, the I-80 route will save approximately 8.5 miles of access roads in terrain outside of wetlands or steep slopes. At an approximate cost of $100,000 per mile, this results in a reduction of approximately $850,000 to the I-80 route.

In conclusion, for the I-80 substation location, the access road cost will decrease by approximately $2.5 million.


80
Timple Farms
138
E Main St
Grantsville
112
NOMA
36
N Main St
Tooele
Tooele Army Depot
Carr Fork
S Main St
Image State of Utah

Mona-Oquirrh T-Line Structure Route Analysis "Limber - North of Grantsville"

1 — PacifiCorp's "Southern Route"

Structure Type:	Tangent	30° Angle	90° Angle
Monopole Cost:	$150,000	$306,000	$460,000
Steel Cost:	$111,960	$213,240	$388,200
Approximate Cost (Monopole + Foundation)			
Lake (Wetland)	$377,000	$895,000	$1,579,000
Valley	$232,000	$522,000	$883,000
Rocky	$205,000	$450,000	$749,000

Mileage: 17.5

Soil Conditions	Structure Type: Tangent	30° Angle	90° Angle	Approx. Total Cost
	# of Structures			
Lake (Wetland)	0	0	0	$0
Valley	7	2	1	$3,551,000
Rocky	63	24	8	$29,707,000
			Total Approx Cost of	$40,783,655

2 — Tooele's "I-80 Route" 345kV

Structure Type:	Tangent	30° Angle	90° Angle
Monopole Cost:	$150,000	$306,000	$460,000
Steel Cost:	$111,960	$213,240	$388,200
Approximate Cost (Monopole + Foundation)			
Lake (Wetland)	$377,000	$895,000	$1,579,000
Valley	$232,000	$522,000	$883,000
Rocky	$205,000	$450,000	$749,000

Mileage: 18

Soil Conditions	Structure Type: Tangent	30° Angle	90° Angle	Approx. Total Cost
	# of Structures			
Lake (Wetland)	53	2	3	$26,508,000
Valley	43	3	2	$13,308,000
Rocky	16	1	1	$4,479,000
			Total Approx Cost of	$51,953,388

3 — Tooele's "I-80 Route" 500kV

Structure Type:	Tangent	Small Angle	45° Angle	90° Angle
Monopole Cost:	$177,500	$245,000	$335,000	$395,000
Steel Cost:	$160,000	$220,000	$280,000	$340,000
Approximate Cost (Monopole + Foundation)				
Lake (Wetland)	$569,000	$740,000	$1,078,000	$1,381,000
Valley	$320,000	$425,000	$605,000	$755,000
Rocky	$273,000	$365,000	$515,000	$635,000

Mileage: 15.5

Soil Conditions	Structure Type: Tangent	Small Angle	45° Angle	90° Angle	Approx. Total Cost
	# of Structures				
Lake (Wetland)	15	2	0	2	$12,777,000
Valley	31	6	2	1	$14,435,000
Rocky	4	1	1	0	$1,972,000
				Total Approx Cost of	$34,122,869

4 — Limber to Terminal Savings (due to Tooele's "I-80 Route")

Structure Type:	Tangent	30° Angle	90° Angle
Monopole Cost:	$150,000	$306,000	$460,000
Steel Cost:	$111,960	$213,240	$388,200
Approximate Cost (Monopole + Foundation)			
Lake (Wetland)	$377,000	$895,000	$1,579,000
Valley	$232,000	$522,000	$883,000
Rocky	$205,000	$450,000	$749,000

Mileage: 16.5

Soil Conditions	Structure Type: Tangent	30° Angle	90° Angle	Approx. Total Cost
	# of Structures			
Lake (Wetland)	28	6	1	$17,505,000
Valley	48	3	1	$13,585,000
Rocky	12	0	0	$2,460,000
			Total Approx Cost of	$40,570,189

Summary (Additional Cost = -1 + 2 + 3 - 4 - Access Road Savings)

Tooele's I-80 Route is approximately **$2,300,000** more expensive than PacifiCorp's Southern Route

NOTES:

1. Assumed 345 kV Tangent Foundation Costs: Rocky = $55,000, Valley = $82,000, Wetlands = $220,000
2. Assumed 500 kV Tangent Foundation Costs: Rocky = $95,500, Valley = $143,000, Wetlands = $382,000
3. Conductor & Stringing $/mi (included in Total Approx Cost): 345kV: $425,466 500kV: $318,638
4. 5% additional cost for galvanized steel in wetland conditions due to corrosive soils.
5. 15% additional cost to insulator string for structures in close proximity to the Great Salt Lake. (Accounted for in Wetland Soil Condition)
6. Monopole Cost includes steel, erection and insulator string.
7. Costs do not include fixed costs (staging areas, overhead, insurance related expenses), maintenance costs and engineering etc.
8. Land acquisition costs are not included. Tooele's I-80 Route requires approximately 180 additional acres.
9. It is assumed that in wetland areas, temporary roads will be required and construction crews will utilize crane mats. Unit costs regarding temporary crane mat access roads and construction of access roads in slopes greater than 20% are assumed similar (approximately $400,000 per mile). Access roads in non-mountainous/wetland terrain costs approximately $100,000 per mile. Refer to additional documentation for detailed explanation of additional costs for access roads.

   Access Road Additional Cost: RMP Proposed (Southern) Route: $2,500,000 I-80 Route: $0
10. Any environmental restrictions on construction or mitigation (beyond what has been considered in Note # 9) has not been included in this analysis.
11. Estimate excludes cost related to Limber substation, which will be shown separately.

Summary for Relocation of Limber Substation

	PacifiCorp Preferred Location		Tooele County Alternative	Cost Difference
Structures		Structures		
500 kV	$6,932,635	500 kV	$7,279,266	$346,632
345 kV	$2,678,354	345 kV	$2,812,272	$133,918
138 kV	$584,038	138 kV	$613,240	$29,202
Foundations		Foundations		
500 kV	$18,373,240	500 kV	$47,454,315	$29,081,074
345 kV	$6,249,800	345 kV	$17,553,256	$11,303,455
138 kV	$1,957,038	138 kV	$4,753,929	$2,796,891
Total	**$36,775,105**	Total	**$80,466,277**	**$43,691,172**

Cost Increase from Preferred to Alternative = **$43,691,172**

*This estimate is preliminary and is based on the ultimate build out.

*This estimate is for structures and foundations only.

*Control house or other building foundations not included nor are series capacitor foundations

*2.0 cost factor for shunt reactor, transformer & circuit breaker slabs is based on 4 feet of over excavation in a high-water table, and placement of 4 feet of compacted fill for required bearing capacity

*2.5 cost factor for small piers is based upon a 200% increase in foundation size due to soil conditions and special construction techniques being required

*4.0 cost factor for large piers is based upon a 200% increase in foundation due to solid conditions and additional special techniques required due to the large size

*1.05 cost factor for steel is based upon an increased thickness of galvanizing required for the corrosive environment caused by the Great Salt Lake

*Concrete costs are based on the following (includes material and standard construction techniques)
- $1700/cyd for slabs
- $1500/cyd for small piers
- $1000/cyd for large piers

*Steel costs are based on $1.75/lb (price includes material, fabrication, and standard galvanizing) erection not included

500kV Foundations

Foundation	Diameter	Depth	Width	Length	Volume	Cost per yd^3	Unit Cost	Estimated Quantity	Total Cost - PacifiCorp Preferred Location	Multiplier - Tooele	Total Cost - Tooele County
Line DE	10.0	35.0			101.81	$1,000.00	$101,810.87	16	$1,628,973.97	4.0	$6,515,895.87
Bus DE	6.0	24.0			25.13	$1,000.00	$25,132.74	78	$1,960,353.82	4.0	$7,841,415.26
Bus Support	3.5	12.5			4.45	$1,500.00	$6,681.34	786	$5,251,532.09	2.5	$13,128,830.24
Switch Support	3.5	12.5			4.45	$1,500.00	$6,681.34	222	$1,483,257.16	2.5	$3,708,142.89
Circuit Breaker		2.0	16.0	8.0	9.48	$1,700.00	$16,118.52	78	$1,257,244.44	2.0	$2,514,488.89
Transformer		3.0	35.0	20.0	77.78	$1,700.00	$132,222.22	7	$925,555.56	2.0	$1,851,111.11
Shunt Reactor		3.0	35.0	20.0	77.78	$1,700.00	$132,222.22	40	$5,288,888.89	2.0	$10,577,777.78
Capacitor		2.0	14.0	12.0	12.44	$1,700.00	$21,155.56	12	$253,866.67	2.0	$507,733.33
CCVT	3.5	12.5			4.45	$1,500.00	$6,681.34	21	$140,308.11	2.5	$350,770.27
LA	4.0	12.5			5.82	$1,500.00	$8,726.65	21	$183,259.57	2.5	$458,148.93
								Total	$18,373,240.27	Total	$47,454,314.58

345kV Foundations

Foundation	Diameter	Depth	Width	Length	Volume	Cost per yd^3	Unit Cost	Estimated Quantity	Total Cost - PacifiCorp Preferred Location	Cost Multiplier - Tooele County	Total Cost - Tooele County
DE	7.0	35.0			49.89	$1,000.00	$49,887.33	42	$2,095,267.77	4.0	$8,381,071.07
High Bus Support	3.5	15.0			5.35	$1,500.00	$8,017.61	102	$817,795.84	2.5	$2,044,489.59
Low Bus Support	2.5	12.0			2.18	$1,500.00	$3,272.49	34	$111,264.74	2.5	$278,161.85
Switch Support	3.0	15.0			3.93	$1,500.00	$5,890.49	92	$541,924.73	2.5	$1,354,811.83
Circuit Breaker		2.0	41.0	10.0	30.37	$1,700.00	$51,629.63	25	$1,290,740.74	2.0	$2,581,481.48
Capacitor		2.0	49.0	26.0	94.37	$1,700.00	$160,429.63	4	$641,718.52	2.0	$1,283,437.04
Transformer		3.0	35.0	25.0	97.22	$1,700.00	$165,277.78	3	$495,833.33	2.0	$991,666.67
CCVT	2.5	12.0			2.18	$1,500.00	$3,272.49	39	$127,627.20	2.5	$319,068.00
LA	2.5	12.0			2.18	$1,500.00	$3,272.49	39	$127,627.20	2.5	$319,068.00
								Total	**$6,249,800.07**	Total	**$17,553,255.54**

$11,303,455.46

138kV Foundations

Foundation	Diameter	Depth	Width	Length	Volume	Cost per yd^3	Unit Cost	Estimated Quantity	Total Cost - PacifiCorp Preferred Location	Cost Multiplier - Tooele County	Total Cost - Tooele County
DE	4.0	14.0			6.52	$1,500.00	$13,031.79	36	$469,144.50	2.5	$1,172,861.26
High Bus Support	3.0	8.5			2.23	$1,500.00	$4,450.59	48	$213,628.30	2.5	$534,070.75
Low Bus Support	3.0	8.5			2.23	$1,500.00	$4,450.59	96	$427,256.60	2.5	$1,068,141.50
Switch Support	3.0	8.5			2.23	$1,500.00	$4,450.59	80	$356,047.17	2.5	$890,117.92
Circuit Breaker		1.5	8.0	8.0	3.56	$1,700.00	$7,111.11	18	$128,000.00	2.0	$256,000.00
Capacitor		2.0	12.0	7.0	6.22	$1,700.00	$12,444.44	12	$149,333.33	2.0	$298,666.67
CCVT	3.0	8.5			2.23	$1,500.00	$4,450.59	24	$106,814.15	2.5	$267,035.38
LA	3.0	8.5			2.23	$1,500.00	$4,450.59	24	$106,814.15	2.5	$267,035.38
								Total	$1,957,038.21	Total	$4,753,928.85

500kV Structures

Structure	Weight (lbs)	Steel Cost ($/lb)	Unit Cost	Estimated Quantity	Total Cost - PacifiCorp Preferred Location	Cost Multiplier - Tooele County	Total Cost - Tooele County
Line DE	203964	$1.75	$356,937.00	2.5	$892,342.50	1.05	$936,959.63
Bus DE	166017	$1.75	$290,528.88	13	$3,776,875.38	1.05	$3,965,719.14
Bus Support	1293	$1.75	$2,262.75	786	$1,778,521.50	1.05	$1,867,447.58
Switch Support	1650	$1.75	$2,887.50	111	$320,512.50	1.05	$336,538.13
CCVT	2343	$1.75	$4,100.25	21	$86,105.25	1.05	$90,410.51
LA	2130	$1.75	$3,727.50	21	$78,277.50	1.05	$82,191.38
				Total	$6,932,634.63	Total	$7,279,266.36

345kV Structures

Structure	Weight (lbs)	Steel Cost ($/lb)	Unit Cost	Estimated Quantity	Total Cost - PacifiCorp Preferred Location	Cost Multiplier - Tooele County	Total Cost - Tooele County
DE	54775	$1.75	$95,856.25	11	$1,054,418.75	1.05	$1,107,139.69
High Bus Support	9377	$1.75	$16,409.75	51	$836,897.25	1.05	$878,742.11
Low Bus Support	2717	$1.75	$4,754.75	17	$80,830.75	1.05	$84,872.29
Switch Support	5150	$1.75	$9,012.50	46	$414,575.00	1.05	$435,303.75
CCVT	2359	$1.75	$4,128.25	39	$161,001.75	1.05	$169,051.84
LA	1914	$1.75	$3,349.50	39	$130,630.50	1.05	$137,162.03
				Total	**$2,678,354.00**	**Total**	**$2,812,271.70**

138kV Structures

Structure	Weight (lbs)	Steel Cost ($/lb)	Unit Cost	Estimated Quantity	Total Cost - PacifiCorp Preferred Location	Cost Multiplier - Tooele County	Total Cost - Tooele County
DE	12274	$1.75	$21,479.50	10	$214,795.00	1.05	$225,534.75
High Bus Support	1768	$1.75	$3,094.00	24	$74,256.00	1.05	$77,968.80
Low Bus Support	1132	$1.75	$1,981.00	48	$95,088.00	1.05	$99,842.40
Switch Support	2163	$1.75	$3,785.25	40	$151,410.00	1.05	$158,980.50
CCVT	433	$1.75	$757.75	12	$9,093.00	1.05	$9,547.65
LA	1876	$1.75	$3,283.00	12	$39,396.00	1.05	$41,365.80
				Total	**$584,038.00**	**Total**	**$613,239.90**

ROCKY MOUNTAIN POWER
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Mike Nelson
Project Manager
Salt Lake Field Office
Bureau of Land Management

October 7, 2009

Dear Mr. Nelson,

The following information has been provided in response to comments provided to the BLM as part of the Mona to Oquirrh Transmission Line and Plan Amendment Draft Environmental Impact Statement. These comments describe the Company's need to initially construct the Mona to Limber to Oquirrh segment of the project for the following reasons:

1. Additional transmission capacity is required into the south part of the Salt Lake Valley and surrounding communities, including Tooele Valley in order to meet current and long term customer demands for electricity. The Limber to Oquirrh double-circuit 345kV line is required in order to provide this transmission capacity; and,
2. The line route was chosen to avoid placing new lines in the existing heavily congested Mona to Camp Williams transmission corridor which already contains four 345kV extra-high voltage lines. Projected population growth and future land use in and around the vicinity of the Oquirrh substation will preclude future siting of transmission lines that will be necessary to serve the area. Therefore, it is prudent that the Company plan its electrical supply systems accordingly; and,
3. The addition of the Oquirrh 345kV substation (initially served by looping the Camp Williams to Terminal 345kV #2 line into Oquirrh) has assisted in 'un-loading' the heavy demand previously experienced by the 90th South 345kV substation; and,
4. The existing Oquirrh substation provides a necessary fourth major transmission substation (in addition to the 90th South, Terminal, and Mid Valley substations) to handle the Salt Lake Valley loads; and,
5. By constructing the new Mona to Limber 500kV line and the Oquirrh 345kV lines, an additional major transmission source is provided into the Salt Lake Valley (in addition to the existing Mona to Camp Williams lines and the Populus to Ben Lomond to Terminal lines); and,
6. The Oquirrh substation is the required site to terminate new transmission capacity into the Salt Lake Valley because of its location relative to current and projected load growth in the Oquirrh sub-area (see Attachment 1) and its electrical connectivity to other stations and lines in the Salt Lake Valley; and,
7. The additions at the Oquirrh substation combined with the construction of the Oquirrh to Terminal 345kV #3 & #4 lines are necessary for the Company to meet NERC required load growth, reliability, and maintenance standards for electrical transmission systems.

For several years, PacifiCorp's long range planning has identified the need to add facility improvements in specific locations. The 'Wasatch Front Spatial Load Forecast' conducted in 2004 is an extremely relevant example of PacifiCorp's long range planning studies that analyzed load growth throughout the Salt Lake Valley. Spatial load forecasting uses GIS to merge distribution system data with land use and development data. The model uses data such as current land use, transportation infrastructure, mountain slopes, and urban centers to forecast the extent, location, and the timeline of community development. Every land use is related to a predefined profile of load on the distribution system. Key to the land use model is

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reproducing the current land use in the area and evaluating where future development may occur (drawn in part from information regarding projects such as the Mountain View Corridor and development projects on the West Bench, including those led by Kennecott Land). The model then translates the land use into a system load forecast, identifying where new load additions are to be expected. This analysis of the community's projected growth helps target where required electrical infrastructure investments should be directed. This planning process and resulting analysis also helps to ultimately reduce the number of electrical facilities (long term) placed in communities, reduce overall infrastructure costs by ensuring the infrastructure is located correctly, sized properly and can be fully utilized to the full benefit of our customers.

The study concluded that 'the highest-growth areas include Southwest Salt Lake City, the western side of the cities of West Jordan and South Jordan, and continued development along the Interstate 15 corridor along the west side of the cities of Midvale, Sandy, and Draper." Consequently, it was predicted that "46 new (lower voltage) substations" would be required by 2013 to manage the new demands on the distribution system. Of these, approximately 10 would be needed in the vicinity of the Oquirrh substation and approximately 20 would be needed in the area near Terminal substation. Furthermore, the report stated that "beyond 15 years, the largest area of concern is the impact of Kennecott Land development...the planned Kennecott Daybreak development will be an established residential community in 10 years, encouraging the location of commercial development throughout the next 10 years and beyond...With Kennecott's plans, and the likely siting of a major transportation corridor, this area will see the largest and most rapid development." Therefore, PacifiCorp evaluated this area very carefully when considering its significance in terms of future electrical system requirements relative to its expected future land use and community setting. As a result of this analysis, PacifiCorp identified the immediate need to provide additional capacity at the Oquirrh substation to meet its customer's projected electrical demand.

Included with this letter are two summaries of data specific to the Oquirrh and Terminal substations. Attachment 1 and Attachment 2 depict both recent and projected load growth at the Oquirrh sub-area and Terminal sub-area, respectively. The tables and bar charts depict the past and projected loads between the summer and winter whereas the line graph shows the quarterly loads dating back several years. This data is provisional and is only intended to represent the load demand and growth associated with the Oquirrh and Terminal substations. Due to the interconnected nature of the electrical system, a much more in-depth electrical study would be needed to strictly isolate individual transformers and loads. Nevertheless, the data in the two attachments illustrates the point that the Oquirrh substation has a high rate of historical and projected load growth (approximately 2.9% in the winter and 7.7% in the summer). Similarly, the Terminal substation also has a substantial rate of projected load growth (approximately 3.4% in the winter and 2.3% in the summer) albeit at a rate less than Oquirrh.

Please let me know if you have any questions or concerns.

Sincerely,

Brandon Smith
Project Manager
Rocky Mountain Power

ATTACHMENT 1

Oquirrh Area Loading

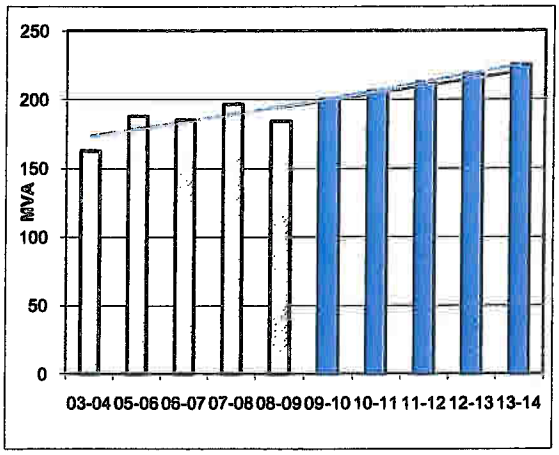
Bangerter, Herriman, Hoggard, Lark, Sunrise, Oquirrh, Welby, Kennecott, Fairchild

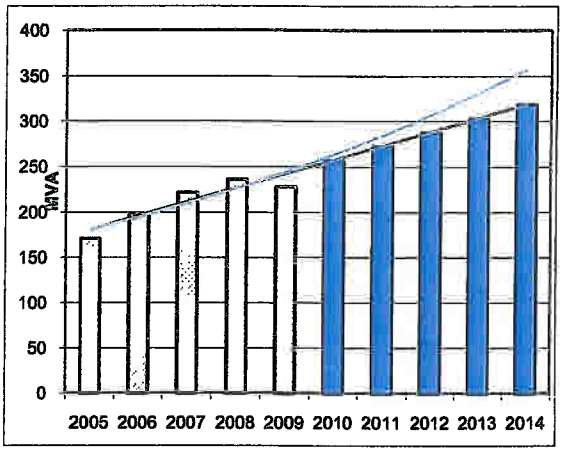
WINTER	
Year	MVA Load
03-04	163.115
05-06	188.391
06-07	185.589
07-08	196.994
08-09	184.835
09-10	200.383
10-11	206.376
11-12	212.547
12-13	218.904
13-14	225.450

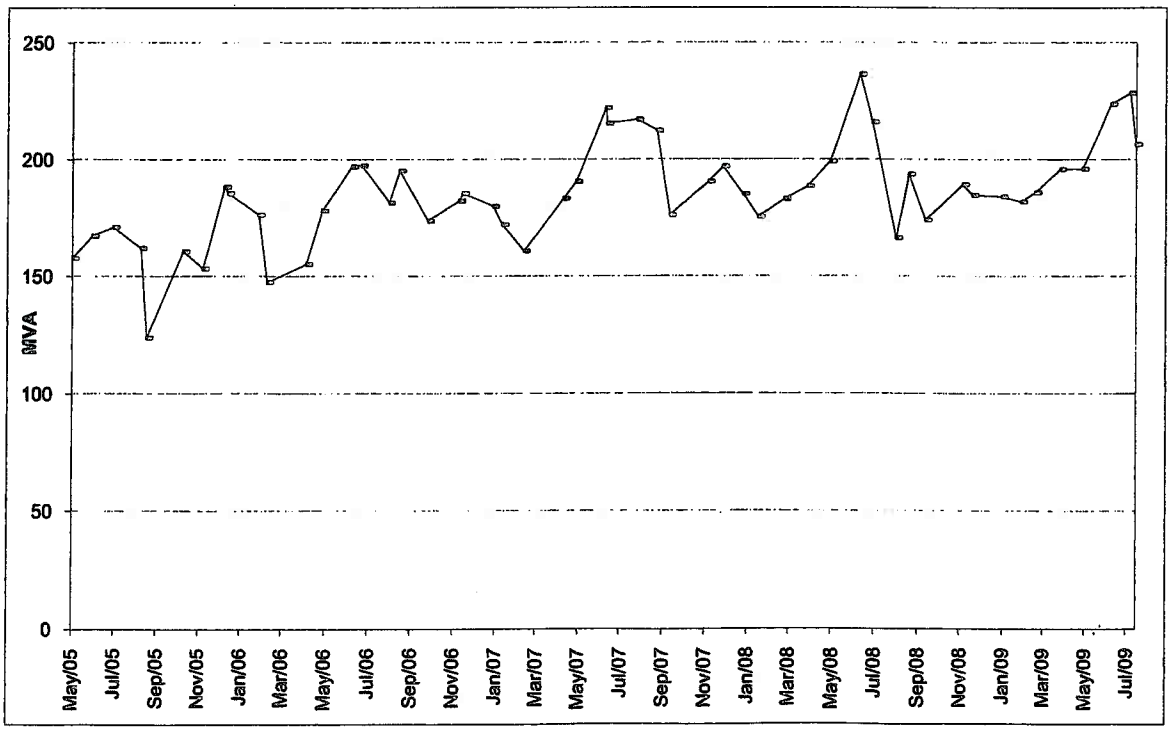
Straight Line R2 = 0.4318 - Ave. Hist. Ld. Growth 2.88%
Exponential R2 = 0.4391 - Ave. Hist. Ld. Growth 2.99%
The closer R2 is to 1.00 the better the curve fit.

SUMMER	
Year	MVA Load
2005	171.202
2006	197.438
2007	222.026
2008	236.497
2009	228.516
2010	257.241
2011	272.610
2012	287.978
2013	303.347
2014	318.716

Straight Line R2 = 0.8299 - Ave. Hist. Ld. Growth 7.61%
Exponential R2 = 0.8223 - Ave. Hist. Ld. Growth 7.87%
The closer R2 is to 1.00 the better the curve fit.







APPENDIX 2
Terminal
230-138 kV, Bank 7 & 345-138 kV, Banks 9 & 10

WINTER	
Year	MVA Load
04-05	723.633
05-06	755.768
06-07	647.577
07-08	560.659
08-09	550.995
09-10	801.331
10-11	826.667
11-12	852.003
12-13	877.339
13-14	902.675

Straight Line R2 = 1.0000 - Ave. Hist. Ld. Growth 3.56%
Exponential R2 = 1.0000 - Ave. Hist. Ld. Growth 3.38%
The closer R2 is to 1.00 the better the curve fit.

SUMMER	
Year	MVA Load
2005	761.509
2006	845.930
2007	801.937
2008	711.097
2009	569.640
2010	846.608
2011	866.011
2012	885.858
2013	906.160
2014	926.928

Straight Line R2 = 1.0000 - Ave. Hist. Ld. Growth 2.38%
Exponential R2 = 1.0000 - Ave. Hist. Ld. Growth 2.29%
The closer R2 is to 1.00 the better the curve fit.