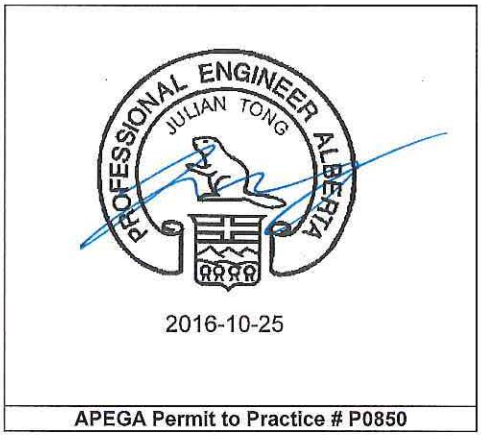
APPENDIX E DFO DISTRIBUTION DEFICIENCY REPORT

ATCO Electric | Distribution Division

Distribution Deficiency Report

Eureka River 861S Substation Upgrade



Approvals:

Responsibility	Name	Signature	Date
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Supervising Engineer, Central Planning	Julian Tong	Digitally signed by Julian Tong DN: cn=Julian Tong, o=ATCO Electric, ou=Distribution Engineering, email=julian.tong@atco.com, c=CA Date: 2016.10.25 13:54:01 -06'00'	Oct 25, 2016
Manager, Distribution Planning	Matt Sveinbjornson		Oct 25, 2016

Contents

Revision History:

R0	Original Draft	Michael Koretimi	January 26, 2015
R1	SAS-R submission	Michael Koretimi	January 28, 2015
R2	Revision for clarity	Stephen Tao	September 4, 2015
R3	NID application revision	Stephen Tao	June 15, 2016
R4	Forecast update for NID filing	Julian Tong	October 14, 2016
R5	NID filing update	Julian Tong	October 25, 2016

1 Executive Summary

Eureka River 861S substation is located 55 km northwest of the Town of Fairview and has a single 6/8 MVA, 72-25 kV transformer. This Point of Delivery (POD) has approximately 2 MVA remaining capacity as the POD peaked at 5.9 MW (or 6 MVA) in 2015/2016 winter. ATCO Electric Distribution (AE DFO) anticipates the growth at this POD to continue. Forecasts reveal only 0.3 MW of available capacity remains after the 2018 winter period.

To provide sufficient capacity for the area growth, AE DFO considered the following development alternatives:

Alternative 1: Offload Eureka River 861S load to Hines Creek 724S. (Distribution-based solution)

Alternative 2: Add a second transformer to Eureka River 861S. (Transmission-based solution)

Alternative 3: Replace existing Eureka River 861S transformer with a larger transformer. (Transmission-based solution)

Based on the analysis outlined in this report, AE DFO prefers Alternative 2 to address the capacity constraints at Eureka River 861S. The requested in-service date (ISD) for this upgrade is February 28, 2017.

2 Customer Requests

In 2014 and 2015, AE DFO energized various farming and industrial load requests in the Eureka River 861S area. Table 2.0-1 summarizes the loads energized.

Load Location	Load Description	Requested Operating Load	Facility Energization
LSD 14-31-83-7-W6M	Industrial (Oilfield)	38 kW	Q4 2014
LSD SW-6-88-9-W6M	Industrial (Oilfield)	410 kW	Q1 2015
LSD 2-21-87-9-W6M	Industrial (Oilfield)	56 kW	Q2 2015
LSD SW-17-85-9-W6M	Farm	83 kW	Q3 2015
	Total	587 kW	

Table 2.0-1 – Loads Recently Energized

In addition to the energized loads, AE DFO anticipates future load growth in this POD. Over the last 5 years, this POD has experienced a 5% growth rate in non-industrial loads and this trend is expected to continue in the future. AE DFO has also been in discussions with area industrial producers who are expecting continued development. Table 2.0-2 summarizes the anticipated industrial load growth in the Eureka River area from requests received in 2016.

Load Location	Load Description	Requested Operating Load	Requested ISD
LSD SW-15-83-8-W6M	Industrial (Oilfield)	200 kW	Q4 2017
LSD SW-36-83-8-W6M	Industrial (Oilfield)	150 kW	Q4 2017
LSD SE-8-83-8-W6M	Industrial (Oilfield)	150 kW	Q4 2017
LSD SE-15-83-8-W6M	Industrial (Oilfield)	150 kW	Q4 2017
LSD NW-27-83-8-W6M	Industrial (Oilfield)	225 kW	Q2 2018
LSD NW-22-83-8-W6M	Industrial (Oilfield)	300 kW	Q2 2018
	Total	1175 kW	

Table 2.0-2 – Anticipated Industrial Loads

Table A-1 in Appendix A shows the forecast and historical loading of Eureka River 861S (including the loads in Table 2.0-2).

3 Existing Distribution and Transmission System Assessment

The PODs closest to the loads discussed in Section 2 are Eureka River 861S, Hines Creek 724S, Ksituan River 754S, Rycroft 730S, Hamburg 855S, Buchanan 927S, Boucher Creek 829S, and Friedenstal 800S.

Ksituan River 754S, Rycroft 730S, Hamburg 855S, Buchanan 927S, Boucher Creek 829S, and Friedenstal 800S were not considered to serve the aforementioned loads.

These PODs are too far from the identified sites to maintain minimum acceptable voltage levels (0.95 pu).

Figure 3.0-1 shows the loads and their locations in respect to the substations identified above.

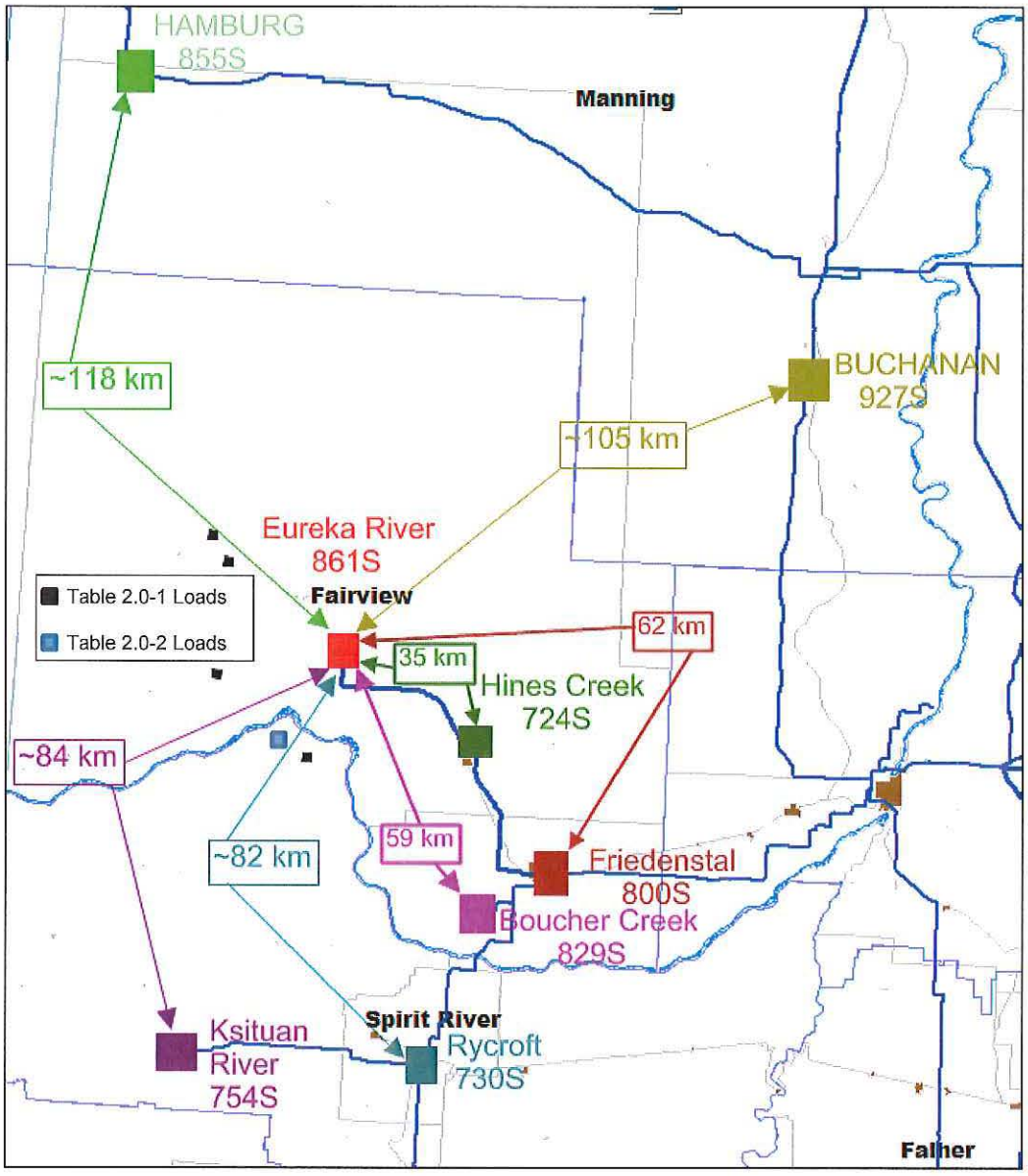

Figure 3.0-1 – Map with straight line distances between Eureka River 861S and PODs in the surrounding area

3.1 Eureka River 861S

Eureka River 861S is equipped with one 6/8 MVA, 72-25 kV transformer (601T) and a 25 kV voltage regulator (501VR) serving two 25 kV feeders (5L451 and 5L452). Eureka River 861S is limited to the rating of 601T, 8MVA. (See Figure 3.1-1)

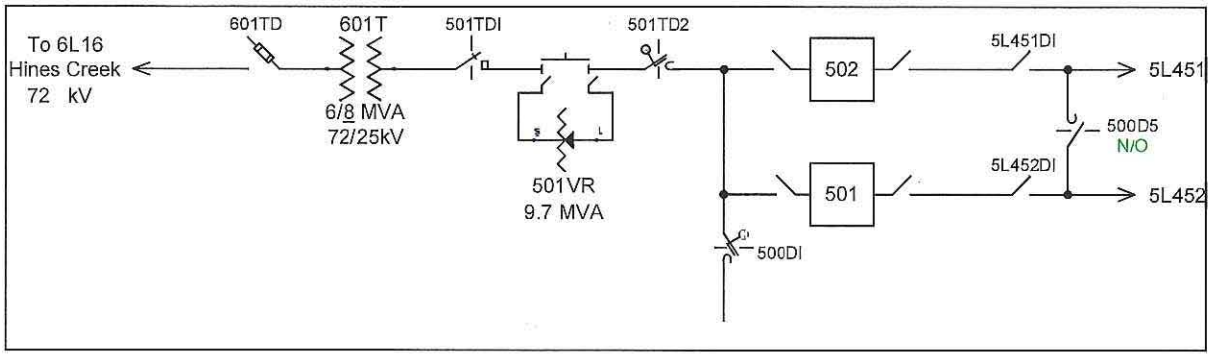

Figure 3.1-1 – Simplified SLD of Existing Eureka River 861S

The Eureka River 861S 25 kV network has a connection point (S24119) with Hines Creek 724S substation via 5L377. Feeder 5L377 consists of approximately 53 km of 3 x #2 ACSR conductor up to the connection point. The transfer capability between these two substations is approximately 0.8 MW.

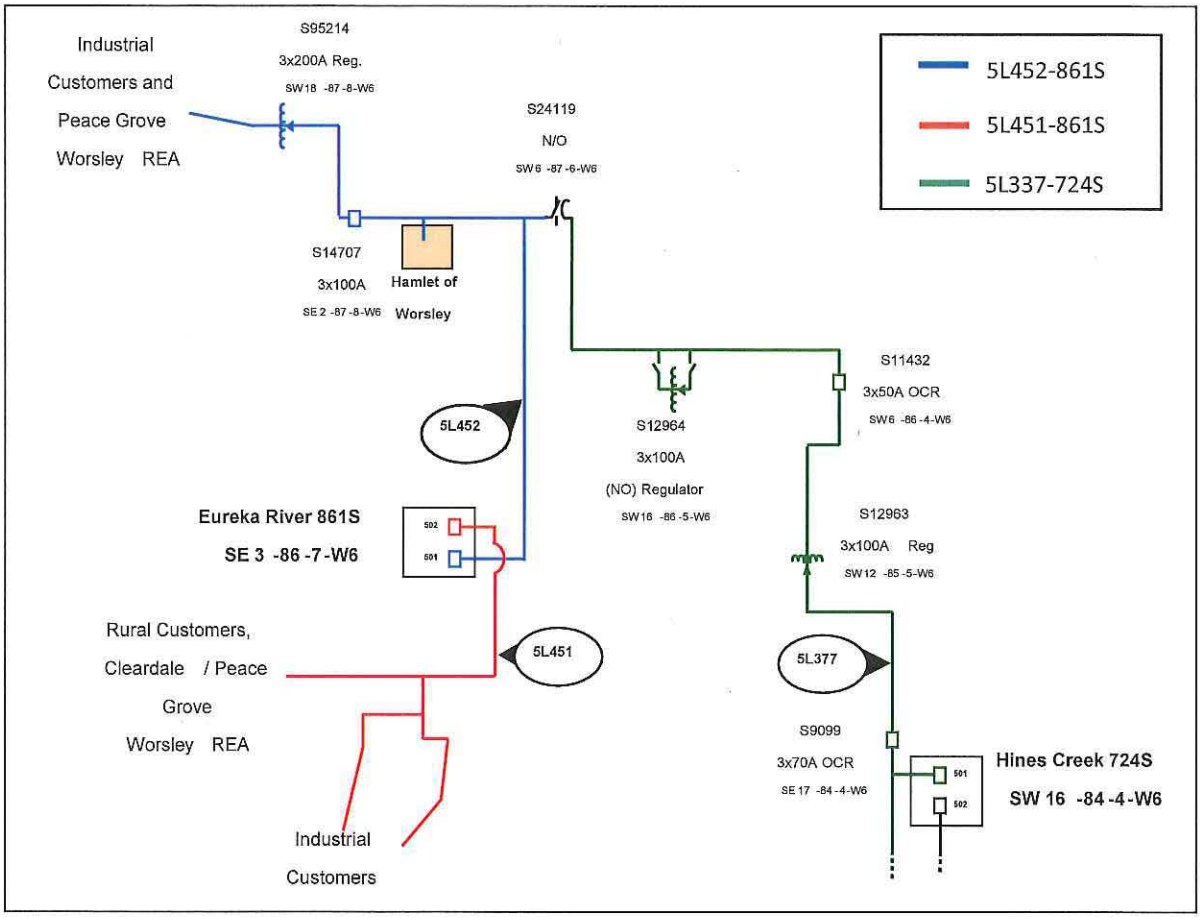

Figure 3.1-2 – Eureka River 861S 25 kV Distribution System

3.2 Hines Creek 724S

Hines Creek 724S is equipped with one 6/8 MVA, 72-25 kV transformer (601T) and a 25 kV voltage regulator (501VR) serving two 25 kV feeders (5L432 and 5L377/5L95). Hines Creek 724S is limited to the rating of 601T, 8MVA. (See Figure 3.2-1). Table A-2 shows the forecast and historical loading of Hines Creek 724S.

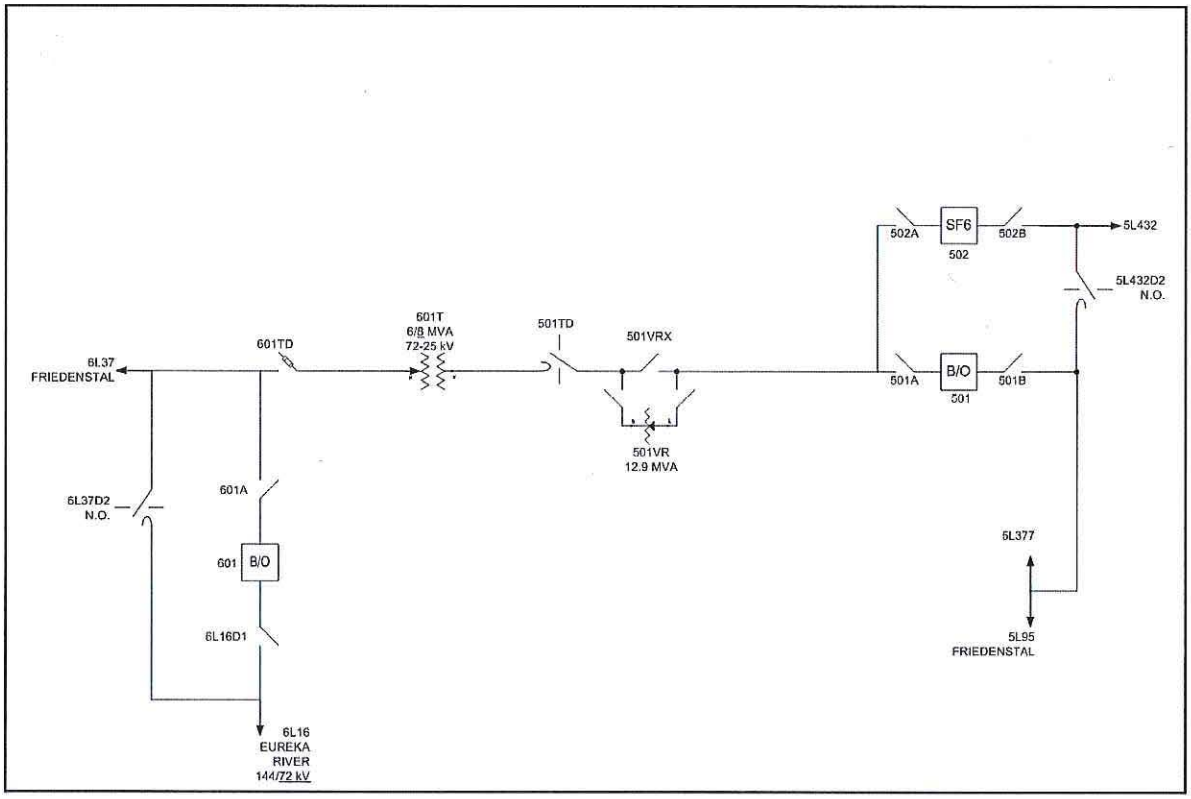

Figure 3.2-1 – Simplified SLD of Existing Hines Creek 724S

3.3 Critical Load at Eureka River 861S

The 2015 winter peak load for Eureka River 861S substation was 5.9 MW (6.0 MVA), as shown in Table A-1.

Table 3.3-1 shows the number of customers served from Eureka River 861S, organized by customer type, extracted from AE DFO's Customer Information System (CIS) database.

Type	Total Customers	% of total load
Residential	84	3%
Commercial	91	8%
Street Lighting	46	0%
Company Farm	498	36%
Industrial	132	53%
Transportation	1	0%
Sentinel Lighting	25	0%
Other	3	0%
Totals	880	100%

Table 3.3-1 – Customer types served from Eureka River 861S (June 2016)

According to the data, the load served by Eureka River 861S is a mix of approximately 53% Industrial and 47% other loads (residential, commercial, and farm).

Critical load is classified as all non-industrial loads (residential, commercial, and farm), as well as 10% of industrial load to allow for basic heating and lighting. Using this classification, the critical load served from Eureka River 861S is determined as follows:

$$Critical\ Load = \{Non\ Industrial\ Load + (Industrial\ Load * 10\%)\} * Total\ Load$$

$$Critical\ Load = \{47\% + (53\% * 10\%)\} * Total\ Load$$
$$Critical\ Load = (0.47 + 0.053) * 5.9\ MW$$
$$Critical\ Load = 3.1\ MW$$

The total critical load requested to be served from Eureka River 861S is 3.1 MW under peak loading conditions.

Figure 3.1-2 shows the connection point between the Eureka River 861S and Hines Creek 724S distribution systems. This distribution system connection provides 0.8 MW load transfer capability between these two distribution systems. During a single substation transformer and/or voltage regulator contingency at Eureka River 861S, the remaining 2.3 MW of critical load will be unsupplied.

4 Need for Development

The need for development in Eureka River area is driven by anticipated customer load additions and the ability to serve area anticipated future area growth.

The energization of 2014 and 2015 loads reduced the available capacity at Eureka River 861S to approximately 2 MVA. AE DFO's POD Capacity Planning Guideline triggers an evaluation of the need for development when the POD loading is within 2 MVA of the total nameplate or declared transformer rating of the POD. This is intended to accommodate modest load growth while providing sufficient lead time for capacity addition.

The anticipated load growth in Table 2.0-2 reduces the available capacity at the POD to 0.3 MW (or 0.35 MVA) in 2018. Additional development is required to ensure capacity is available for area customers.

5 Alternatives

The following alternatives were considered and are described in Section 5.1, 5.2 and 5.3.

Alternative 1	Offload Eureka River 861S to Hines Creek 724S (Distribution-based solution)
Alternative 2	Add a second transformer at Eureka River 861S (Transmission-based solution)
Alternative 3	Replace the existing transformer at Eureka River 861S with a larger unit (Transmission-based solution)

5.1 Alternative 1: Offload Eureka River 861S to Hines Creek 724S (Distribution-based solution)

Alternative 1 involves distribution development to increase the transfer capability between Eureka River 861S and Hines Creek 724S.

Figure 5.1-1 shows a simplified SLD of the existing area distribution system. Currently, distribution feeder 5L377 consists of approximately 53 km of 3 x #2 ACSR conductor up to the connection point with distribution feeder 5L452 from Eureka River 861S (normally open switch S24119).

Voltage drop due to line impedance of the #2 ACSR conductor limits the total load that can be presently transferred to Hines Creek 724S from Eureka River 861S to 0.8 MW (see Figure 5.1-1).

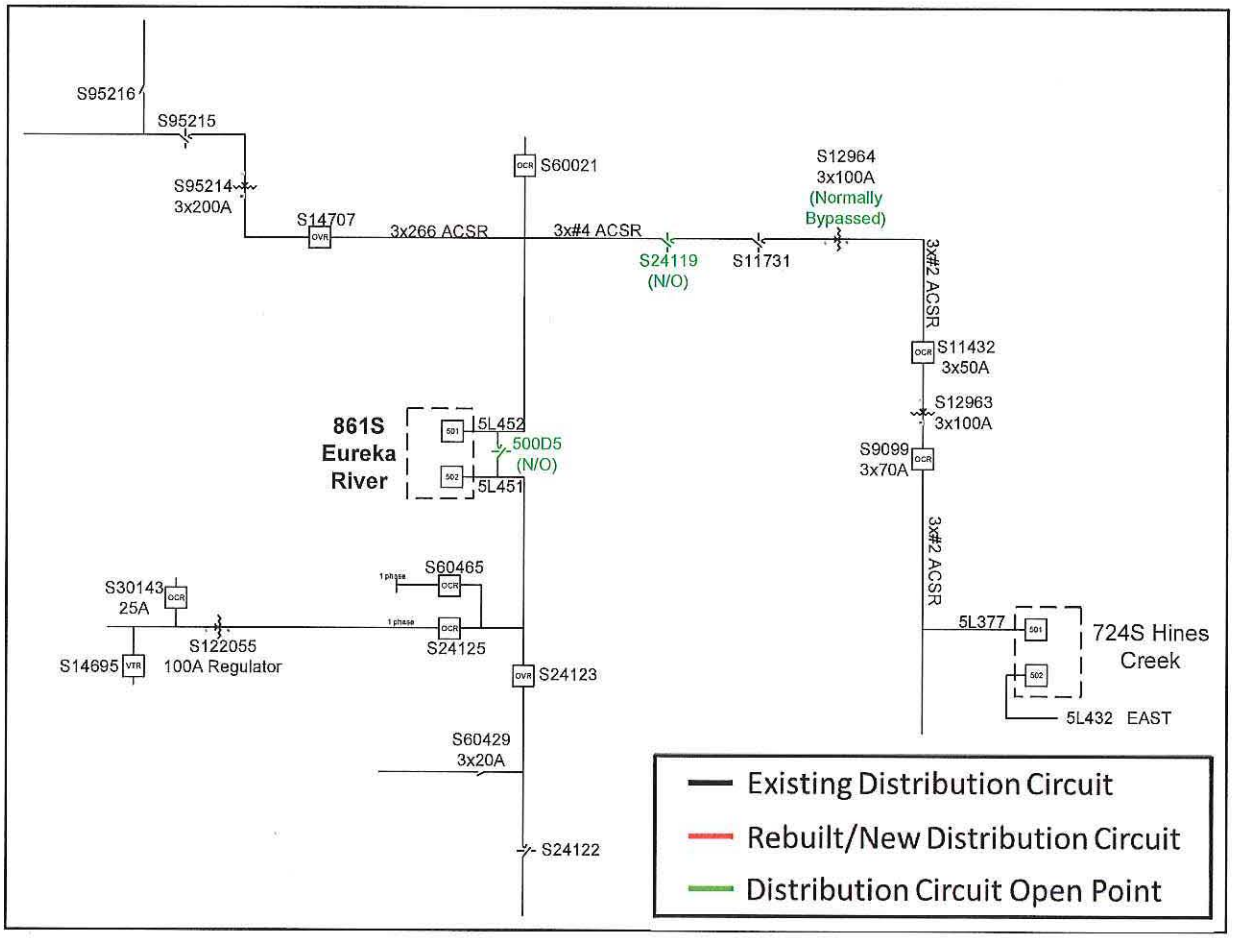

Figure 5.1-1 – Simplified SLD of Existing Area Distribution System

To increase the transfer capability, the following distribution system development is needed for this alternative:

- Rebuild 53 km of distribution feeder 5L377 from 3 x #2 ACSR to 3x477 ACSR.
- Rebuild 2.4 km of distribution feeder 5L452 from 3 x #4 ACSR to 3x266 ACSR.
- Remove voltage regulator S12963.
- Install a 3 x 200A voltage regulator at SW-31-85-4-W6M.
- Install a 3 x 100A voltage regulator at NE-33-86-8-W6M.
- Convert normally open (N/O) 25 kV switch S24119 to normally closed.
- Install a N/O 25 kV switch at NW-35-86-7-W6M.

The cost for this alternative is $11.4 million (2015$, +/- 50%).

This alternative is technically viable. It increases the transfer capability to supply the 3.1 MW of critical load from Eureka River 861S to Hines Creek 724S. The load forecasts for this alternative for Eureka River 861S and Hines Creek 724S are shown in Table A-3 and Table A-4, respectively.

Although this alternative accommodates the anticipated future load growth in the Eureka River area, it creates another POD capacity constraint at Hines Creek 724S. After transferring load, Hines Creek 724S will be within 2 MVA of its nameplate capacity and will require additional transmission development. In addition, this alternative does not address the unsupplied critical load identified in Section 3.3 during a single substation transformer and/or voltage regulator contingency.

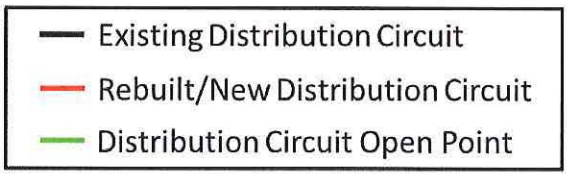

Figure 5.1-2 – Alternative 1 Simplified SLD of the Rebuilt Area Distribution System

5.2 Alternative 2: Add a second transformer at Eureka River 861S (Transmission-based solution)

Alternative 2 involves installing a second transformer at Eureka River 861S to increase the POD capacity to a minimum of 10 MVA.

The assumed transmission system development at Eureka River 861S may include:

- Install one 6/8 MVA, 72-25 kV transformer and fusing.
- Install one 25 kV voltage regulator.
- Install associated protection and metering.

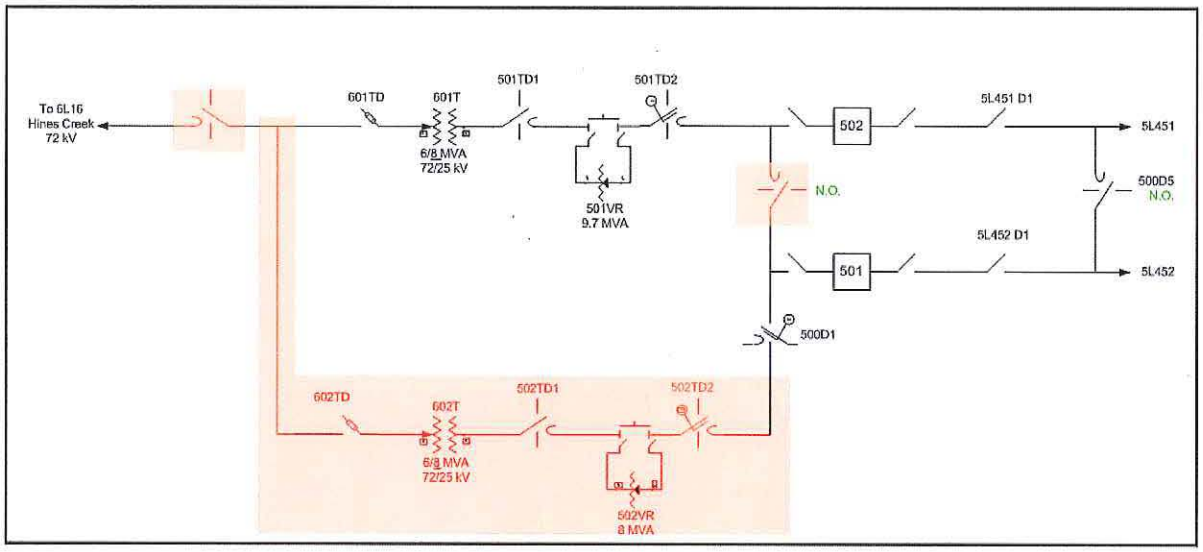

Figure 5.2-1 – Alternative 2 Upgrade Transformer at Eureka River 861S

Alternative 2 will increase the substation capacity by 8 MVA, to a total of 16 MVA. The load forecast of Eureka River 861S resulting from this alternative is shown in Table A-5 in Appendix A.

This alternative is technically viable to AE DFO. It addresses the anticipated load area load growth and, as a benefit, supplies the entire critical load identified in Section 3.3 during a single substation transformer and/or voltage regulator contingency. No distribution system upgrades are required in this alternative.

5.3 Alternative 3: Replace existing 601T POD transformer at Eureka River 861S with a larger one (Transmission-based solution)

Alternative 3 involves replacing the existing 6/8 MVA transformer with a larger capacity unit. For the scope of this alternative, it is assumed that the larger transformer will be 15/20/25 MVA, 72-25 kV LTC unit to meet the 10 MVA capacity minimum requirement.

The assumed transmission system development at Eureka River 861S may include:

- Replace existing 601T and 501 VR with a 15/20/25 MVA, 72-25 kV LTC transformer.
- Install associated protection and metering.

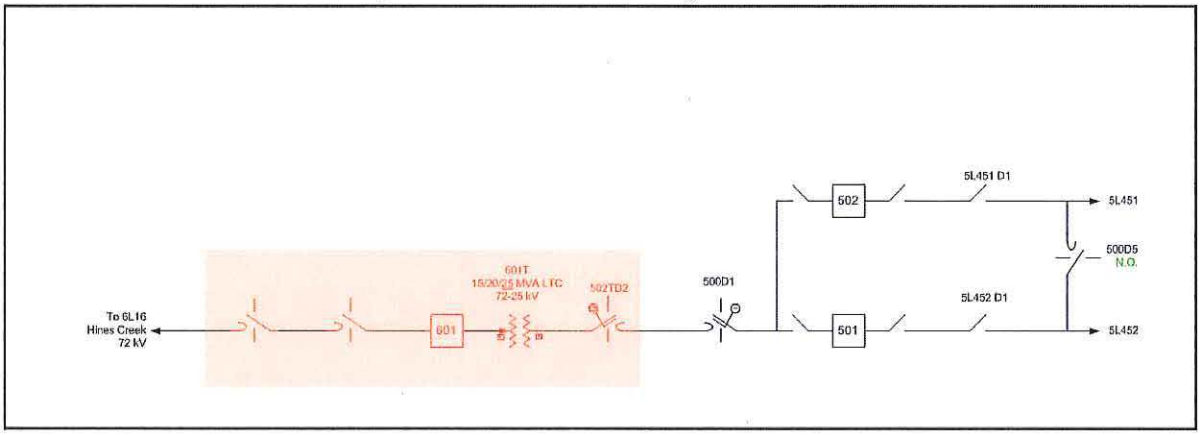

Figure 5.3-1 – Alternative 3 Upgrade at Eureka River 861S

Alternative 3 will increase the substation capacity by 17 MVA. The load forecast of Eureka River 861S resulting from this alternative is shown in Table A-6 in Appendix A.

This alternative is also technically viable to AE DFO. It addresses the anticipated load area load growth and does not require any distribution system upgrades. However, this alternative does not address the unsupplied critical load identified in Section 3.3 during a single substation transformer and/or voltage regulator contingency.

6 Comparison of Alternatives

Alternative 1 does address the capacity deficiency at Eureka River 861S, but requires $11.4M (2015$, +/- 50%) of distribution system upgrades to implement. Transferring 3 MW of load via distribution systems to Hines Creek 724S will increase the loading at Hines Creek 724S to 6.8 MW (Table A-4). This new loading level reduces the remaining capacity to less than 2 MVA of transformer 601T's nameplate rating and triggers further need for development under AE DFO's POD Capacity Planning Guideline. This would initiate a transmission capacity upgrade at Hines Creek 724S in the near future.

Due to the large amount of distribution upgrades needed to offload Eureka River 861S to Hines Creek 724S, and the fact that the distribution deficiency is not eliminated but only transferred to a different POD, Alternative 1 is rejected.

Alternative 2 is the preferred alternative. It addresses capacity concerns at Eureka River 861S and requires no distribution system upgrades. In addition, it provides secondary benefit of serving the critical loads at Eureka River 861S during a single substation transformer and/or voltage regulator contingency.

Alternative 3 is technically viable, does not require distribution system upgrades, and addresses the capacity concern at Eureka River 861S. However, it does not provide the secondary benefit of serving the critical loads at Eureka River 861S and is not the preferred alternative.

Table 6-1 shown below lists the advantages and disadvantages of each of the three alternatives considered.

Alternative	Advantages	Disadvantages
1	• Can serve the forecasted load growth as highlighted in Tables A-3 and A-4.	• Creates POD capacity concern at Hines Creek 724S. • Extensive distribution upgrades required. • Cannot serve Eureka River 861S critical load during a single substation transformer or voltage regulatory contingency.
2	• Can serve the forecasted load growth as highlighted in Table A-5. • Able to serve all critical loads at Eureka River 861S during a single substation transformer or voltage regulator contingency. • Requires no distribution system upgrades.	
3	• Can serve the forecasted load growth as highlighted in Table A-6. • Requires no distribution system upgrades.	• Cannot serve all Eureka River 861S critical load during a single substation transformer or voltage regulator contingency.

Table 6-1 – Comparison of Alternatives

7 Conclusion

AE DFO prefers Alternative 2 to address the capacity concerns at Eureka River 861S. This alternative is requested for the following reasons:

- Achieves the ability to serve forecasted load growth in the region.
- No distribution upgrades are required.
- Allows critical load to be served during a single substation transformer or voltage regulator contingency scenarios at Eureka River 861S.

The requested in-service date (ISD) for this upgrade is February 28, 2017.

Appendix A – Load Forecasts

Table A-1 – Eureka River 861S Load Forecast Including Anticipated Loads

				Historical					Forecasted										
				Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak
				MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
Sub No.	Feeder	Capacity	2015 PF	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
861S	Eureka River	601T	99%	5.6	5.2	5.4	5.8	5.9	6.0	7.0	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.0
	5L451	6/8 MVA	97%	2.9	2.8	2.8	3.0	2.7	2.8	3.7	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5
	5L452		99%	2.8	2.5	2.7	3.0	3.1	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5
861S	Total Station		99%	5.6	5.2	5.4	5.8	5.9	6.0	7.0	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.0

Notes:
The 2015 power factor is used for all forecast peaks and Transformer 601T is rated to 7.9 MW (8 MVA at 0.99 pf)
A coincidence factor of 0.98 was applied to 861S feeders from 2015 data
Transformer capacity available less than 2 MVA; AE-DFO POD Capacity Guideline development trigger.
Transformer capacity unavailable

Table A-2 – Hines Creek 724S Load Forecast Including Anticipated Loads

				Historical					Forecasted										
				Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak
				MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
Sub No.	Feeder	Capacity	2015 PF	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
724S	Hines Creek	601T	93%	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.1
	5L377	6/8 MVA	93%	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.1
	5L432		98%	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
724S	Total Station		93%	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.1

Notes:
The 2015 power factor is used for all forecast peaks and Transformer 601T is rated to 7.4 MW (8 MVA at 0.93 pf)
A coincidence factor of 0.97 was applied to 724S feeders from 2015 data

Table A-3 – Eureka River 861S Load Forecast Including Anticipated Loads – Alternative 1

				Historical					Forecasted										
				Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak
				MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
Sub No.	Feeder	Capacity	2015 PF	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
861S	Eureka River	601T	99%	5.6	5.2	5.4	5.8	5.9	6.0	3.9	4.4	4.5	4.6	4.6	4.7	4.7	4.8	4.9	4.9
	5L451	6/8 MVA	97%	2.9	2.8	2.8	3.0	2.7	2.8	3.7	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5
	5L452		99%	2.8	2.5	2.7	3.0	3.1	3.2	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4
861S	Total Station		99%	5.6	5.2	5.4	5.8	5.9	6.0	3.9	4.4	4.5	4.6	4.6	4.7	4.7	4.8	4.9	4.9

Notes:
The 2015 power factor is used for all forecast peaks and Transformer 601T is rated to 7.9 MW (8 MVA at 0.99 pf)
A coincidence factor of 0.98 was applied to 861S feeders from 2015 data
Transformer capacity available less than 2 MVA; AE-DFO POD Capacity Guideline development trigger.
Transformer capacity unavailable
Feeder 5L452 is offloaded to 724S Hines Creek in 2017.

Table A-4 – Hines Creek 724S Load Forecast Including Anticipated Loads – Alternative 1

				Historical					Forecasted										
				Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak
				MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
Sub No.	Feeder	Capacity	2015 PF	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
724S	Hines Creek	601T	93%	2.6	2.7	2.7	2.7	2.8	2.8	5.8	5.8	5.9	5.9	5.9	5.9	6.0	6.0	6.0	6.0
	5L377	6/8 MVA	93%	2.6	2.7	2.7	2.7	2.8	2.8	5.8	5.8	5.9	5.9	5.9	5.9	6.0	6.0	6.0	6.1
	5L432		98%	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
724S	Total Station		93%	2.6	2.7	2.7	2.7	2.8	2.8	5.8	5.8	5.9	5.9	5.9	5.9	6.0	6.0	6.0	6.0

Notes:
The 2015 power factor is used for all forecast peaks and Transformer 601T is rated to 7.4 MW (8 MVA at 0.93 pf)
A coincidence factor of 0.97 was applied to 724S feeders from 2015 data
Transformer capacity available less than 2 MVA; AE-DFO POD Capacity Guideline development trigger.
Transformer capacity unavailable

Table A-5 – Eureka River 861S Load Forecast Including Anticipated Loads – Alternative 2

				Historical					Forecasted											
				Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak
				MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
Sub No.	Feeder	Capacity	2015 PF	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
861S	Eureka River	601T	99%	5.6	5.2	5.4	5.8	5.9	6.0	3.8	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5
	5L451	6/8 MVA	97%	2.9	2.8	2.8	3.0	2.7	2.8	3.7	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5
861S	Eureka River	602T	99%	-	-	-	-	-	-	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5
	5L452	6/8 MVA	99%	2.8	2.5	2.7	3.0	3.1	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5
861S	Total Station		99%	5.6	5.2	5.4	5.8	5.9	6.0	7.0	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.0

Notes:
The 2015 power factor is used for all forecast peaks and Transformer 601T is rated to 7.9 MW (8 MVA at 0.99 pf)
A coincidence factor of 0.98 was applied to 861S feeders from 2015 data
Transformer capacity available less than 2 MVA; AE-DFO POD Capacity Guideline development trigger.
Transformer capacity unavailable
Feeder 5L452 will remain connected to 601T until 602T is energized in 2017

Table A-6 – Eureka River 861S Load Forecast Including Anticipated Loads – Alternative 3

				Historical					Forecasted											
				Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak	Peak
				MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
Sub No.	Feeder	Capacity	2015 PF	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
861S	Eureka River	601T	99%	5.6	5.2	5.4	5.8	5.9	6.0	7.0	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.0
	5L451	15/20/25 MVA	97%	2.9	2.8	2.8	3.0	2.7	2.8	3.7	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5
	5L452		99%	2.8	2.5	2.7	3.0	3.1	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5
861S	Total Station		99%	5.6	5.2	5.4	5.8	5.9	6.0	7.0	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.0

Notes:
The 2015 power factor is used for all forecast peaks and Transformer 601T is rated to 7.9 MW (8 MVA at 0.99 pf)
A coincidence factor of 0.98 was applied to 861S feeders from 2015 data
Transformer capacity available less than 2 MVA; AE-DFO POD Capacity Guideline development trigger.
Transformer capacity unavailable
Transformer 601T will remain a 6/8 MVA transformer until it is upgraded in 2017.