DFO NEED FOR DEVELOPMENT REPORT

EPCOR DISTRIBUTION & TRANSMISSION INC.

Distribution Deficiency Report (DDR) for

Southeast Service Area

Revision 0

Company	Role	Name	Date	Signature
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APEGA Permit to Practice P07061

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July 31, 2018

Abbreviations

AESO: Alberta Electric System Operator

ASP: Area Structure Plan

CoE: City of Edmonton

DTS: Demand Transmission Service

EDTI: EPCOR Distribution & Transmission Inc.

DDR: Distribution Deficiency Report

DFO: Distribution Facility Owner

GDP: Gross Domestic Product

N-0: all distribution circuits and transmission elements in service (normal operating condition)

N-1: failure of a single transmission element or single distribution circuit (emergency operating condition)

NIS: Not in Service

pf: power factor = MW/MVA

POD: Point of Delivery

STS: Supply Transmission Service

TFO: Transmission Facility Owner

TUC: Transportation/Utility Corridor

Document History

Revision	Date	Author	Description
Rev 0	July 31, 2018	Suleman Haris	New release

1.0 EXECUTIVE SUMMARY

EPCOR Distribution & Transmission Inc. (EDTI) is requesting system access service from the Alberta Electric System Operator (AESO) to address existing capacity and reliability concerns in South and East Edmonton and meet forecasted load growth over the next 10 years. South Edmonton has been the fastest growing area in Edmonton over the past five years and EDTI expects this trend to continue into the future. In addition, EDTI continues to experience load growth in Southeast Edmonton. Southeast Edmonton is served by Summerside and East Industrial PODs.

EDTI DFO records show that there is currently insufficient distribution circuit capacity in the Summerside and East Industrial service areas during normal operating condition (N-0). Moreover, EDTI DFO's load demand forecast indicates that by summer 2018 and summer 2019, there will be insufficient transformation capacity at Summerside and East Industrial PODs under contingency condition (N-1), respectively. This assessment is based upon EDTI's distribution planning criteria for feeders and PODs, which states:

- All 25 kV distribution feeders should operate at or below their design load rating of 12 MVA under N-0
- All 25 kV distribution feeders should operate at or below their emergency load rating of 18 MVA under N-1
- All PODs should operate at or below their N-1 firm capacity

In this Distribution Deficiency Report (DDR), EDTI DFO demonstrates that a minimum of 4 new 25 kV distribution circuits are required over the next 10 years in order to address the existing and anticipated capacity and reliability concerns in South and East Edmonton. The following solution alternatives were considered:

Distribution supply alternative

EDTI DFO has evaluated the distribution alternatives described below.

Alternative I – Distribution Switching

a) Transfer load between existing distribution circuits

Transmission supply alternatives

EDTI DFO proposes the transmission alternatives described below. This proposal is based on EDTI DFO's present understanding of EDTI TFO's design standards and practices that are applicable to PODs.

Alternative II – Capacity Increase of East Industrial POD

a) Transfer load between existing distribution circuits,

b) Increase the capacity of the East Industrial POD in 2019 by adding a new Transformer and switchgear lineup;

c) Connect one new 25 kV distribution circuit to the East Industrial POD in 2020; and

d) Connect two new 25 kV distribution circuits to the Riverview POD: one in 2020 and one in 2022.

Alternative III – New Southeast POD

e) Construct a new Southeast POD in 2019;

f) Connect two new 25 kV distribution circuits to the new Southeast POD: one in 2020 and one in 2023; and

d) Connect two new 25 kV distribution circuits to the Riverview POD: one in 2020 and in 2022.

Alternative IV – Capacity Increase of Summerside POD

g) Increase the capacity of the Summerside POD in 2019 by adding a new Transformer and switchgear lineup;

h) Connect one new 25 kV distribution circuit to the expanded Summerside POD: one in 2020 and one in 2023; and

d) Connect one new 25 kV distribution circuit in 2023 and one new circuit in 2026 from Riverview POD.

Alternative I is not technically acceptable as there is insufficient capacity for distribution switching. A brief comparison of distribution costs associated with the three technically acceptable alternatives (II, III and IV) is provided in the table below. EDTI DFO has not estimated the transmission costs associated with the three alternatives, and requests the AESO to involve the appropriate TFO through the AESO's Connection Process to assess these alternatives. If an alternative is selected that includes transmission facility assets, the AESO may direct EDTI TFO to prepare a facility application for the requested transmission upgrades. This facility application will include an estimate of the transmission capital cost.

Table 1: Cost of Solution Alternatives

Alternative	**II**		**III**		**IV**	
Descriptor[1]	**E_{TX3}**		**SE_{NEW}**		**SU_{TX3}**	
Total Feeders Length (km)	7.1		7.9		9.8	
Estimated Costs ($2018)	a	n/a	e	TBD	g	TBD
	b	TBD	f	$6.3 M	h	$6.2 M
	c	$5.6 M	d	$9.2 M	d	$9.2 M
	d	$9.2 M				
Total Distribution Costs (+/- 50%, $2018)	**$14.8 M**		**$15.5 M**		**$15.4 M**	

b, e and g refer to components of the various transmission alternatives, to be determined by EDTI TFO

[1]: E_{TX3} = East Industrial POD Expansion; SE_{NEW} = New South East POD;

SU_{TX3} = Summerside POD Expansion

Pending the completion of transmission-related cost assessment, Alternative IV is EDTI DFO's preferred alternative to address the identified deficiencies and considerations outlined in this document. Alternative IV has a similar distribution cost to other alternatives considered, but also ensures that any future expansion required in Southeast Edmonton can be served by shorter distribution feeders due to the closer proximity of the Summerside POD to the developing Decoteau Area Structure Plan (ASP), and feeder construction utilizes existing ductline assets, making this is the most cost effective alternative in the long term. In addition, alternative IV is best suited to meet the needs of upcoming large customer connections that are currently planned but not yet committed, and therefore have not yet been included in EDTI's 2018 forecast.

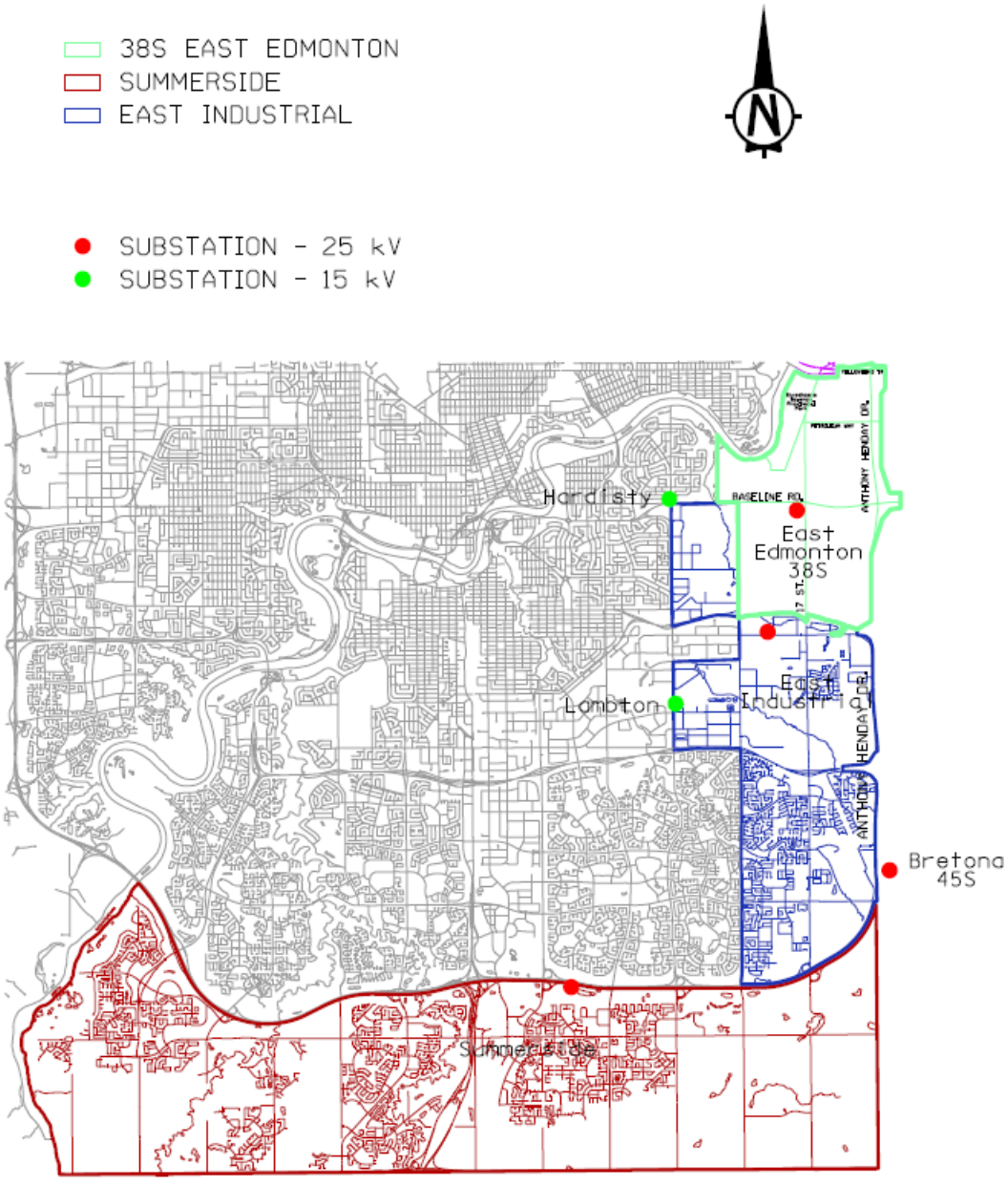
Should EDTI's preferred alternative be selected, EDTI will be requesting a DTS contract increase from 40 MW to 71 MW at the Summerside POD, and a DTS contract increase from 25.96 MW to 42 MW at the East Industrial POD.

The requested in-service date (ISD) for the proposed development is May 01, 2019. The proposed ISD allows for EDTI to have the identified deficiencies detailed within this report addressed prior to the first deficiency incurring risk to the connected customers supplied by EDTI.

2.0 EXISTING SYSTEM DESCRIPTION

Figure 1 shows the existing location of POD's located within southeast Edmonton. Additional highlights delineate the 25 kV service areas of East Industrial POD, Summerside POD, and East Edmonton POD. While Bretona POD is also a 25 kV service area, it is significantly larger than the area shown within Figure 1. Hardisty POD and Lambton POD service 15 kV service areas. This report focuses solely on the distribution deficiencies found within EDTI's service territory - the Summerside service area and the East Industrial service area.

Figure 1: Existing 25 kV Service Areas and POD Locations



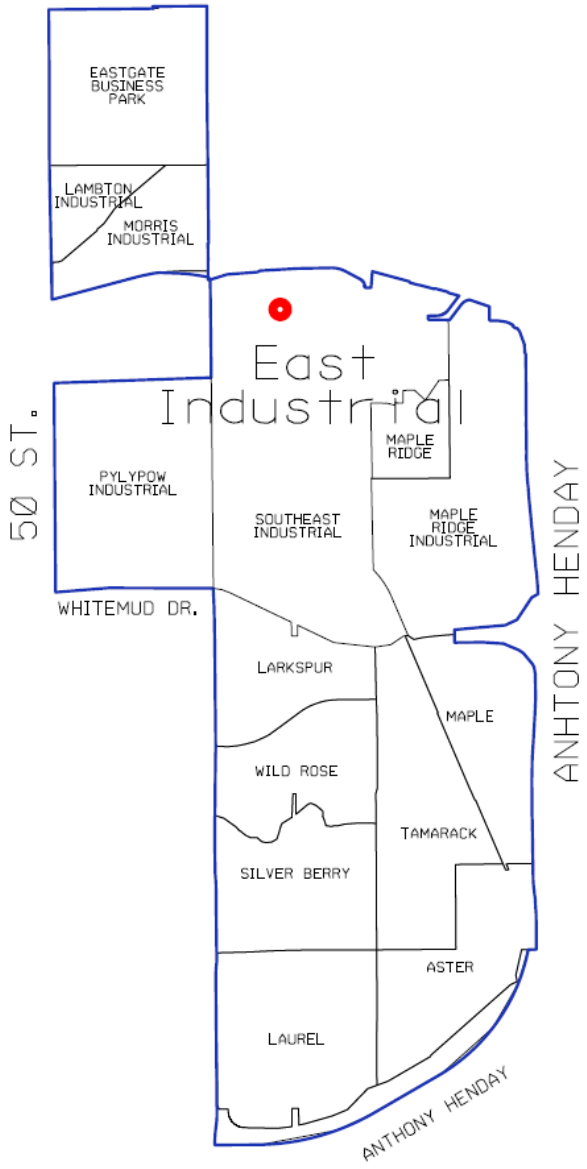
Hardisty POD and Lambton POD are unable to offset the forecasted demand within the East Industrial and Summerside service areas because the two PODs's are presently designed to only service the 15 kV service area and not the 25 kV service area.

AltaLink's East Edmonton POD and Bretona POD are unable to offset the forecasted demand within the East Industrial and Summerside service areas because the two PODs are not electrically connected to EDTI's 25 kV service area through Fortis service territory.

Both the East Industrial service area and the Summerside service area presently have negligible Distributed Generation (DG) connected within. EDTI is not aware of any significant DG additions planned for these service areas that would significantly impact the deficiencies described within this report. EDTI presently does not have any plans to construct DG within the service area.

Throughout this document, distribution circuit names with suffixes SU, E, RV and SE refer respectively to Summerside POD, East Industrial POD, Riverview POD and a new Southeast POD being considered in Alternative III.

2.1 East Industrial Service Area



East Industrial POD is owned and operated by EDTI. It went into service in 1991 and it presently supplies an area of approximately 32 sq. km in southeast Edmonton. The subarea north of Whitemud Drive is primarily industrial load and the subarea south of Whitemud Drive is primarily residential load. Pylypow, Southeast and Maple Ridge Industrial parks still have significant vacant land available for future growth. The Meadows residential area, which includes the neighborhoods of Laurel, Aster, Tamarack, Silver Berry, Maple, Larkpur and Wildrose, is still forecasted to have significant growth over the next ten years. There is approximately 19 sq. km of proposed residential development located within the City of Edmonton's Decoteau ASP, south of the Anthony Henday and east of 50th Street, which is largely undeveloped. Decoteau is presently supplied from Summerside POD (refer to section 2.2 below), however as southeast Edmonton develops EDTI may consider supplying the Decoteau neighborhoods from an alternate source.

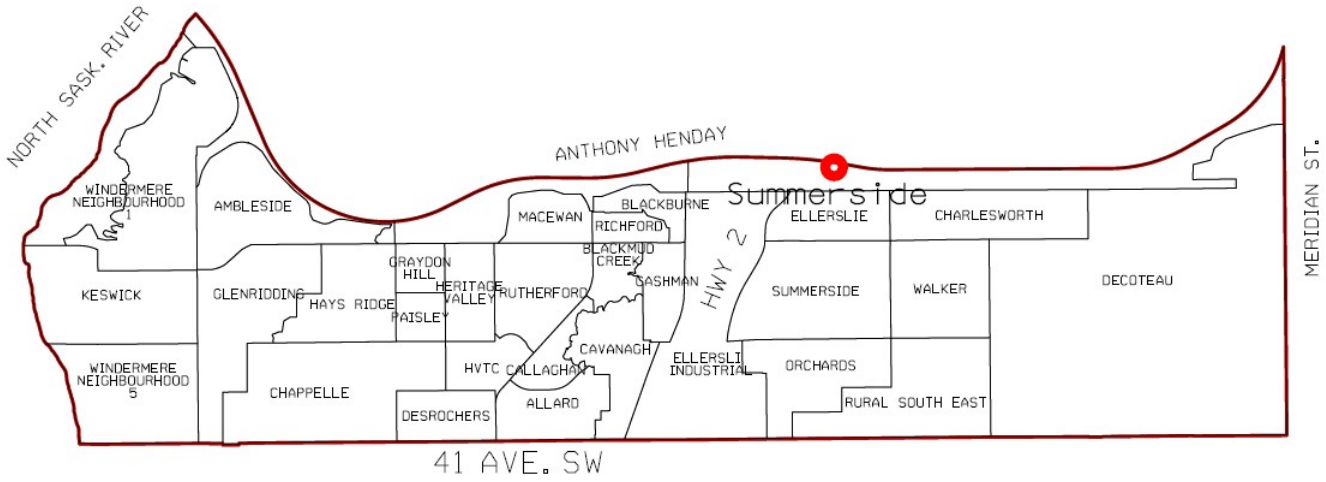
East Industrial POD has two 240/25 kV 37.5/50/63 MVA transformers. There is room for a third transformer at the POD. The winter rating (0 deg. C) of these transformers is 47/59/75 MVA. The secondary switchgear is comprised of two buses, each of which has four 25 kV feeder breaker cells. Seven of the feeder breakers have circuits presently connected to them. These circuits include 11E, 12E, 13E, 14E, 21E, 22E and 23E. The average length of the East Industrial circuits is 7.5 km. The longest circuit, 23E, measures 12.4 km. The POD and transformer N-1 firm capacity is 63/75MVA in summer/winter. The connected distribution load is forecasted to exceed the POD's firm capacity of 63 MVA starting in summer 2019.

East Industrial circuits are tied to each other, as summarized in the feeder tie matrix below. Also, circuits 12E and 23E are tied to circuits 14SU and 24SU from the Summerside POD.

Table 2: East Industrial Circuit Tie Matrix

		Tie								
		11E	12E	13E	14E	21E	22E	23E	14SU	24SU
East Industrial Circuits	11E					X	X	X		
	12E			X	X			X	X	X
	13E		X							
	14E		X					X		
	21E	X								
	22E	X								
	23E	X	X		X					X

2.2 Summerside Service Area



Summerside POD is owned and operated by EDTI. It went into service in 2010 and presently supplies an area of approximately 95 sq. km in South Edmonton. About half of the area is fully developed with residential and small commercial load. These residential communities include Windermere and the west part of Heritage Valley. Significant load growth is forecasted to occur in the neighborhoods of Ellerslie, Heritage Valley and Windermere. There is approximately 19 sq. km of proposed residential development named by the City of Edmonton as Decoteau ASP, located south of the Anthony Henday and west of Meridian Street, which is largely undeveloped. Decoteau is presently supplied from Summerside POD, however as southeast Edmonton develops, EDTI will consider supplying the Decoteau neighborhoods from an alternate source.

Summerside POD has two 240/25 kV 45/60/75 MVA transformers. There is available space within the substation fence for a third transformer-switchgear lineup at the POD. The winter rating (0 deg. C) of these transformers is 56/71/89 MVA. The secondary switchgear is comprised of two buses, each of which has four 25 kV feeder breakers. All eight feeder breakers have circuits presently connected to them. The average length of the Summerside circuits is 10.8 km. The longest circuit, 14SU, measures 25 km. The POD and transformer N-1 firm capacity is 75/89 MVA in summer/winter. The connected distribution load is forecasted to exceed the POD's firm capacity of 75/89 MVA starting in summer 2018.

Summerside circuits are tied to each other, as summarized in the feeder tie matrix below. Also, circuits 14SU and 24SU are tied to circuits 12E and 23E from the East Industrial POD.

Table 3: Summerside Circuit Tie Matrix

		Tie									
		11SU	12SU	13SU	14SU	21SU	22SU	23SU	24SU	23E	12E
Summerside Circuits	11SU		X			X		X			
	12SU	X				X			X		
	13SU				X		X	X			
	14SU			X		X		X			X
	21SU	X	X		X						
	22SU			X				X			
	23SU	X		X	X		X				
	24SU		X							X	X

3.0 EDTI DISTRIBUTION PLANNING CRITERIA

3.1 Distribution Circuit Loading Policy

Design Rating and Emergency Rating are two important parameters that EDTI considers for distribution planning purposes.

- During normal operating condition (N-0), the loading on an EDTI distribution circuit shall not exceed the circuit's Design Rating, which corresponds to 2/3 of the circuit's Emergency Rating. For 25 kV distribution feeders, EDTI has set the Design Rating to 12 MVA.
- During emergency operating condition (N-1), the loading on an EDTI distribution circuit shall not exceed the circuit's Normal Rating for duration of more than three days.
- At no time shall the loading on an EDTI distribution circuit exceed the circuit's Emergency Rating. For 25 kV distribution feeders, EDTI has set the Emergency Rating to 18 MVA.

3.1.1 Design Rating

The Design Rating is the maximum acceptable distribution circuit load under normal operating conditions. The Design Load Rating for EDTI's 25 kV distribution circuits is set to 12 MVA. At 12 MVA, each circuit has the reserve capacity to pick up 50% of the load on any adjacent circuit during contingency situations. In practice, it may not be possible to transfer the entire load from a faulted circuit to two adjacent circuits, due to circuit configurations, infrastructure limitations and load distributions.

3.1.2 Normal Rating

The Normal Rating is the maximum load a cable can be operated at without reducing its service life. Normal daily load cycling, peak loading for 8 hours with the average load throughout the day no more than 75% of the peak ratings, is assumed. If the load criterion is exceeded, the cable may experience thermal degradation and accelerated cable failure. If loaded to a level between the Design Rating and the Normal Rating, it will not be possible to take full advantage of the circuit's load transfer capability to support N-1 contingency conditions.

3.1.3 Emergency Rating

The Emergency Rating is the maximum load that EDTI is willing to operate a circuit under a contingency situation, when load is transferred from an adjacent circuit that has experienced an outage. The Emergency Rating for EDTI's 25 kV distribution circuits is 18 MVA. It is expected that loss of cable life will occur, which is based upon "the assumption that the maximum number of emergency periods will not exceed 3 periods in any 12 consecutive months nor on average of 1 period per year for the life of the cable. The maximum duration of any one period should not exceed 36 hours."[1] If the cable loading exceeds the Emergency Rating, it is expected that the feeder will experience acute thermal degradation resulting in an accelerated cable failure, reducing the asset life of the cable.

3.2 POD Loading Policy

The Firm Capacity of a POD is an important parameter that EDTI DFO considers for distribution planning purposes. EDTI DFO defines a POD's firm capacity as the maximum load that the POD can supply without overloading any transmission equipment under an N-1 contingency. N-1 contingencies include, but are not limited to, the loss of a single transmission line supply to a POD or the loss of a single transformer at a POD. The thermal capability of terminal equipment at the POD may further restrict the firm N-1 capacity. All PODs are to operate at or below their N-1 firm capacity.

[1] CSA Standard C68.1 Appendix G, note 3

4.0 HISTORICAL AND FORECAST LOAD DEMAND

4.1 Load Forecasting Methodology

EDTI uses a hybrid and multilayered load forecasting methodology that combines economic theory, statistical techniques and end-use methods to forecast electricity peak demands at the system level, POD levels and distribution circuit levels. EDTI DFO has determined that load demand in the Edmonton area is highly sensitive to weather conditions. Furthermore, the DFO found that 98% of growth in non-weather sensitive load during the period from 2011 to 2016 can be explained by only three parameters: gross domestic product (GDP), population growth and housing starts. EDTI's load forecasting methodology can be summarized as follows:

- Weather normalization – As electricity peak demands in the Edmonton region are sensitive to weather conditions, historical peak load demands - both summer and winter - are separated into two components (weather sensitive load and non-weather sensitive load) using the Jackknife analysis. Non-weather sensitive peak demands have higher correlation with load growth factors in the city of Edmonton and they allow for more accurate regression models. Based on the past seventeen years of daily temperature during system peak, EDTI DFO has determined the 10th, 50th and 90th percentile temperature, which are provided in the table below. The DFO produces a 10th, 50th and 90th percentile forecast at the system and POD levels.

Table 4: 10th, 50th and 90th percentile temperatures

	Summer	**Winter**
10^{th} percentile	28.3°C	-16.4°C
50^{th} percentile	30.7°C	-26.3°C
90^{th} percentile	34.0°C	-32.8°C

- System level load forecasting – Multiple linear regression analysis is deployed to model the system level coincident load based on historical hourly system loading data, historical and forecasted GDP for the Edmonton area, historical and forecasted housing starts, historical and forecasted population growth.

- POD level coincident and non-coincident peaks – EDTI DFO categorizes each POD as residential, mixed/commercial, or industrial depending on the POD's load profile. Residential PODs are the most sensitive to weather conditions whereas industrial PODs are the least sensitive. Depending on the type of the POD, weather sensitivity is adjusted and different predictors are used for the regression analysis. In addition, an area study is performed for each POD to set the upper limit of load growth and historical growth is examined to validate the regression model. Lastly, any anticipated load transfers and special loads are included. Coincident peaks are computed from the POD non-coincident peaks using coincidence factors derived from historical data.

- Circuit level coincident and non-coincident peaks – The POD level non-coincidental peaks are allocated to each circuit and adjusted based on responsibility factors (circuit's loading at the time of the POD's peak divided by the circuit's peak demand) to calculate both coincidental and non-coincidental circuit peak demands. The size of vacant land, customer applications for load connection and special loads are also considered to refine the forecast.

- The winter/summer power factor recorded at each of the PODs in 2017 is used as the winter/summer forecast for years 2018 to 2027. While apparent power [MVA] is forecasted using the methodology described above, active power [MW] is a calculated value that assumes the 2017 power factors.

4.2 Load Forecasting Results

Non-coincident peak load demand for the past five years and the next 10 years is provided in Table 5 and Table 6 for the summer and winter season, respectively. POD peak load data, including active power [MW], apparent power [MVA] and power factor [pf], is provided for East Industrial and Summerside PODs. Circuit peak load data - in MVA - is provided for 25 kV distribution circuits in East Industrial and Summerside service areas. Highlighted in red are violations of either EDTI DFO's feeder loading policy or POD loading policy, discussed in section 3.0.

The decrease in loading from 2019 to 2020 (summer) and 2018 to 2019 (winter) at the Summerside POD and on circuits 11SU, 13SU, 21SU, 22SU and 23SU is attributed to scheduled distribution load transfers between the Summerside POD and the proposed Riverview POD (11RV and 22RV), whose In Service Date (ISD) is October 01, 2019[1].

[1] AESO Project P1695; AUC proceeding 23128

Table 5: Summer Non-Coincident Peak Load Demand

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
East Industrial POD [MVA]	51.6	55.6	58.2	55.5	56.8	60.5	**67.0**	**69.5**	**71.9**	**74.2**	**76.5**	**78.6**	**80.7**	**82.6**	**84.5**
East Industrial POD [MW]	48.5	51.8	54.5	52.3	53.6	57.1	**63.2**	**65.5**	**67.8**	**70.0**	**72.1**	**74.1**	**76.1**	**77.9**	**79.7**
East Industrial POD Power Factor	0.940	0.932	0.937	0.942	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
POD Peak Day Temperature [°C]	33.7	29.3	34.1	27.9	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11E [MVA]	7.3	7.7	6.7	6.3	6.4	5.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.8
12E [MVA]	8.6	9.8	11.5	9.8	11.5	**12.1**	**12.7**	**13.3**	**13.9**	**14.6**	**15.2**	**16.0**	**16.7**	**17.5**	**18.4**
13E [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.6	8.0	8.3	8.8	9.2	9.6	10.1	10.5	11.1
14E [MVA]	9.5	9.5	10.9	11.0	11.0	11.5	**12.0**	**12.6**	**13.2**	**13.8**	**14.5**	**15.2**	**15.9**	**16.7**	**17.5**
21E [MVA]	9.2	8.4	11.1	10.4	8.9	9.7	9.8	10.0	10.2	10.3	10.4	10.6	10.7	10.9	11.0
22E [MVA]	11.9	**12.2**	**12.1**	10.6	4.5	4.8	5.0	5.2	5.5	5.7	6.0	6.3	6.6	6.9	7.3
23E [MVA]	5.4	6.6	6.7	8.4	5.6	5.8	6.1	6.4	6.7	7.0	7.3	7.7	8.1	8.5	8.9
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Summerside POD N-1 Capacity [MVA]	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Summerside POD [MVA]	49.7	55.2	64.6	66.4	72.7	**84.5**	**88.9**	**75.2**	**78.9**	**87.4**	**90.5**	**93.3**	**95.9**	**98.3**	**100.4**
Summerside POD [MW]	49.2	54.8	64.2	66.0	72.6	**84.3**	**88.7**	**75.0**	**78.7**	**87.2**	**90.3**	**93.1**	**95.7**	**98.1**	**100.2**
Summerside POD Power Factor	0.990	0.992	0.994	0.994	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	33.7	31.2	34.1	27.4	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11SU [MVA]	**18.2**	**18.6**	**14.4**	11.0	10.0	10.5	10.2	10.7	11.2	11.8	**12.4**	**13.0**	**13.7**	**14.4**	**15.2**
12SU [MVA]	5.2	6.2	7.9	9.0	7.6	8.0	8.5	8.9	9.4	9.8	10.4	10.9	11.4	**12.1**	**12.7**
13SU [MVA]	NIS	NIS	**15.6**	**13.0**	**15.2**	**15.4**	6.3	6.6	6.9	7.2	7.5	7.8	8.2	8.5	8.9
14SU [MVA]	NIS	NIS	NIS	6.8	6.5	6.8	10.6	8.9	9.4	9.9	10.4	10.9	11.5	**12.1**	**12.7**
21SU [MVA]	6.2	8.4	11.6	6.9	9.8	**12.9**	8.2	8.6	9.0	9.5	10.0	10.5	11.1	11.7	**12.3**
22SU [MVA]	5.1	8.4	11.6	10.7	11.3	7.4	8.0	8.4	8.9	9.3	9.8	10.3	10.9	11.4	**12.0**
23SU [MVA]	**15.4**	**19.0**	**13.6**	8.9	10.8	11.4	9.5	9.9	10.5	11.0	11.6	**12.2**	**12.8**	**13.5**	**14.2**
24SU [MVA]	NIS	NIS	NIS	NIS	5.7	6.0	6.3	6.7	7.0	7.4	7.8	8.2	8.6	9.0	9.5

NIS = Not in Service

- The increase in load between the 2017 actual and the 2018 forecast for the East Industrial POD is partially attributed to the actual occurring close to the 50th percentile temperature and the demand load being forecasted to the 90th percentile temperature (Section 4.1).
- The increase in load between 2018 and 2019 for the East Industrial POD is partially attributed to the addition of a new industrial customer to feeder 11E.
- The increase in load between the 2017 actual and the 2018 forecast for the Summerside POD is partially attributed to the actual occurring close to the 50th percentile temperature and the demand load being forecasted to the 90th percentile temperature (Section 4.1).
- The feeder peak loading is non-coincident to the POD peak loading.

Table 6: Winter Non-Coincident Peak Demand

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8
East Industrial POD [MVA]	52.0	53.4	55.3	54.2	54.6	61.9	64.4	66.7	69.0	71.3	73.4	**75.5**	**77.4**	**79.3**	**81.1**
East Industrial POD [MW]	49.9	51.2	53.5	51.9	52.7	59.7	62.1	64.4	66.6	68.8	70.8	**72.9**	**74.7**	**76.5**	**78.3**
East Industrial POD Power Factor	0.959	0.958	0.967	0.958	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
POD Peak Day Temperature [°C]	-25.1	-15.1	-20.5	-24.4	-27.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11E [MVA]	6.7	6.7	6.4	5.8	5.4	4.8	8.9	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3
12E [MVA]	10.8	**12.3**	**13.1**	11.8	**12.9**	**13.4**	**14.0**	**14.6**	**15.2**	**15.9**	**16.5**	**17.3**	**18.0**	**18.8**	**19.6**
13E [MVA]	NIS	NIS	NIS	NIS	6.8	7.0	7.3	7.7	8.0	8.3	8.7	9.1	9.5	9.9	10.3
14E [MVA]	10.4	10.8	10.5	11.2	10.9	11.4	11.9	**12.4**	**12.9**	**13.5**	**14.0**	**14.6**	**15.3**	**15.9**	**16.6**
21E [MVA]	10.8	9.5	10.2	10.0	8.2	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.5	9.6	9.7
22E [MVA]	**12.2**	**13.3**	**12.6**	11.8	4.6	4.8	5.0	5.2	5.4	5.7	5.9	6.1	6.4	6.7	7.0
23E [MVA]	6.0	6.5	8.4	8.9	5.7	6.0	6.3	6.5	6.8	7.1	7.4	7.7	8.0	8.4	8.7
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Summerside POD N-1 Capacity [MVA]	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Summerside POD [MVA]	58.9	67.7	71.1	79.4	88.6	**97.6**	84.4	86.7	**91.1**	**100.1**	**103.8**	**107.1**	**110.1**	**112.9**	**115.3**
Summerside POD [MW]	58.8	67.7	71.1	78.9	88.6	**97.6**	84.4	86.7	**91.1**	**100.1**	**103.8**	**107.1**	**110.1**	**112.9**	**115.3**
Summerside POD Power Factor	0.998	1.000	1.000	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	-31.6	-31.6	-30.2	-23.9	-28.2	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11SU [MVA]	**17.2**	**16.9**	**13.5**	10.5	9.8	10.3	10.0	10.6	11.2	11.8	**12.4**	**13.1**	**13.8**	**14.6**	**15.4**
12SU [MVA]	7.7	9.4	9.9	11.8	8.7	9.2	9.7	10.2	10.8	11.4	12.0	**12.6**	**13.3**	**14.0**	**14.8**
13SU [MVA]	NIS	NIS	11.1	**13.3**	**15.0**	**15.2**	9.1	9.5	10.1	10.6	11.2	11.8	**12.4**	**13.1**	**13.9**
14SU [MVA]	NIS	NIS	NIS	7.9	7.7	8.1	9.1	9.5	10.1	10.6	11.2	11.8	**12.5**	**13.1**	**13.9**
21SU [MVA]	8.7	10.4	10.9	8.9	**12.8**	**13.5**	8.7	9.2	9.7	10.2	10.8	11.4	**12.0**	**12.7**	**13.3**
22SU [MVA]	**18.5**	**18.4**	**15.0**	**13.2**	**14.3**	**15.0**	10.2	10.7	11.3	11.9	**12.6**	**13.3**	**14.0**	**14.7**	**15.6**
23SU [MVA]	NIS	NIS	8.5	11.0	11.3	11.9	9.9	10.5	11.1	11.7	**12.3**	**13.0**	**13.7**	**14.4**	**15.2**
24SU [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.7	8.1	8.6	9.0	9.5	10.1	10.6	11.2	11.8

NIS = Not in Service

- The increase in load between the 2017 actual and the 2018 forecast for the East Industrial POD is partially attributed to the actual occurring close to the 50th percentile temperature and the demand load being forecasted to the 90th percentile temperature (Section 4.1).
- The increase in load between 2018 and 2019 for the East Industrial POD is partially attributed to the addition of a new industrial customer to feeder 11E.
- The increase in load between the 2017 actual and the 2018 forecast for the Summerside POD is partially attributed to the actual occurring close to the 50th percentile temperature and the demand load being forecasted to the 90th percentile temperature (Section 4.1).
- The feeder peak loading is non-coincident to the POD peak loading.

4.3 East Industrial POD

Seven out of eight 25 kV feeder breakers at East Industrial POD have distribution feeders connected to them. As shown in Table 5, by summer 2019, the demand at East Industrial POD is forecasted to exceed the POD's N-1 transformer capability for the first time. With both Summerside and East Industrial PODs exceeding their N-1 transformer supply capability, permanent load transfers between the two PODs is not feasible without transmission development. Moreover, the peak load on East Industrial distribution circuits – 12E and 14E - is forecasted to exceed their design rating of 12 MVA by summer 2019. In fact during winter 2017 feeder 12E already exceeded its design rating of 12 MVA, and feeder 14E is forecasted to exceed its design rating – for the first time – in summer 2019. EDTI DFO expects these violations to persist in subsequent years if no action is taken.

4.4 Summerside POD

All eight 25 kV feeder breakers at Summerside POD have distribution feeders connected to them. As shown in Table 5, by summer 2018, the demand at Summerside POD is forecasted to exceed the POD's N-1 transformer capability. Furthermore, peak load on seven out of eight Summerside distribution circuits is forecasted to exceed their design rating of 12 MVA – for the first time – by winter 2025. In fact, Table 6 shows that 11SU, 22SU and 23SU are forecasted to exceed their design ratings – for the first time – in winter 2023, 12SU is forecasted to exceed its design rating – for the first time – in winter 2024 and 13SU, 14SU and 21SU are forecasted to exceed their design ratings – for the first time – in winter 2025. EDTI DFO expects these violations to persist in subsequent years if no action is taken.

5.0 DEFICIENCY ASSESSMENT

This section focuses on evaluating the deficiencies in supply of distribution load for the East Industrial and Summerside service areas. For ease of analysis, the distribution feeder loading deficiencies are evaluated under section 5.1, whereas the POD loading deficiencies are further analyzed under section 5.2.

5.1 Feeder Loading Deficiency Assessment

As per EDTI DFO's loading policy (section 3.0), any distribution feeder should not exceed its design rating of 12.0 MVA under normal operating conditions. It is deemed that if a feeder exceeds its design rating during normal operation, then in the event of an emergency operating condition – the feeder would also exceed the emergency rating of 18.0 MVA. Therefore, any feeder evaluated to be deficient under N-0 state will also be considered deficient under N-1 conditions.

The term "Load at Risk" in section 5.1 refers to any distribution load that is predicted to be unserved under feeder N-1 emergency conditions, due to insufficient distribution capacity available to service the load through adjacently connected distribution infrastructure.

5.1.1 East Industrial Service Area

Tables 7 and 8 present annual peak load forecasts for each of the distribution circuits in the East Industrial service area. In addition, the corresponding load at risk is provided. Violations of EDTI DFO's circuit loading policy are highlighted in red.

5.1.2 Summerside Service Area

Tables 9 and 10 present annual peak load forecasts for each of the distribution circuits in the Summerside service area. In addition, the corresponding load at risk is provided. Violations of EDTI DFO's circuit loading policy are highlighted in red.

Table 7: Summer Load at Risk in East Industrial Service Area

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
11E [MVA]	7.3	7.7	6.7	6.3	6.4	5.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.8
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12E [MVA]	8.6	9.8	11.5	9.8	11.5	12.1	12.7	13.3	13.9	14.6	15.2	16.0	16.7	17.5	18.4
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.3	1.9	2.6	3.2	4.0	4.7	5.5	6.4
13E [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.6	8.0	8.3	8.8	9.2	9.6	10.1	10.5	11.1
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14E [MVA]	9.5	9.5	10.9	11.0	11.0	11.5	12.0	12.6	13.2	13.8	14.5	15.2	15.9	16.7	17.5
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.2	1.8	2.5	3.2	3.9	4.7	5.5
21E [MVA]	9.2	8.4	11.1	10.4	8.9	9.7	9.8	10.0	10.2	10.3	10.4	10.6	10.7	10.9	11.0
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22E [MVA]	11.9	12.2	12.1	10.6	4.5	4.8	5.0	5.2	5.5	5.7	6.0	6.3	6.6	6.9	7.3
Load at Risk [MVA]	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23E [MVA]	5.4	6.6	6.7	8.4	5.6	5.8	6.1	6.4	6.7	7.0	7.3	7.7	8.1	8.5	8.9
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 8: Winter Load at Risk in East Industrial Service Area

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
11E [MVA]	6.7	6.7	6.4	5.8	5.4	4.8	8.9	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12E [MVA]	10.8	12.3	13.1	11.8	12.9	13.4	14.0	14.6	15.2	15.9	16.5	17.3	18.0	18.8	19.6
Load at Risk [MVA]	0.0	0.3	1.1	0.0	0.9	1.4	2.0	2.6	3.2	3.9	4.5	5.3	6.0	6.8	7.6
13E [MVA]	NIS	NIS	NIS	NIS	6.8	7.0	7.3	7.7	8.0	8.3	8.7	9.1	9.5	9.9	10.3
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14E [MVA]	10.4	10.8	10.5	11.2	10.9	11.4	11.9	12.4	12.9	13.5	14.0	14.6	15.3	15.9	16.6
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.5	2.0	2.6	3.3	3.9	4.6
21E [MVA]	10.8	9.5	10.2	10.0	8.2	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.5	9.6	9.7
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22E [MVA]	12.2	13.3	12.6	11.8	4.6	4.8	5.0	5.2	5.4	5.7	5.9	6.1	6.4	6.7	7.0
Load at Risk [MVA]	0.2	1.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23E [MVA]	6.0	6.5	8.4	8.9	5.7	6.0	6.3	6.5	6.8	7.1	7.4	7.7	8.0	8.4	8.7
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NIS = Not in Service

Table 9: Summer Load at Risk in Summerside Service Area

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
11SU [MVA]	18.2	18.6	14.4	11.0	10.0	10.5	10.2	10.7	11.2	11.8	12.4	13.0	13.7	14.4	15.2
Load at Risk [MVA]	6.2	6.6	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	1.7	2.4	3.2
12SU [MVA]	5.2	6.2	7.9	9.0	7.6	8.0	8.5	8.9	9.4	9.8	10.4	10.9	11.4	12.1	12.7
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
13SU [MVA]	NIS	NIS	15.6	13.0	15.2	15.4	6.3	6.6	6.9	7.2	7.5	7.8	8.2	8.5	8.9
Load at Risk [MVA]	0.0	0.0	3.6	1.0	3.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14SU [MVA]	NIS	NIS	NIS	6.8	6.5	6.8	10.6	8.9	9.4	9.9	10.4	10.9	11.5	12.1	12.7
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
21SU [MVA]	6.2	8.4	11.6	6.9	9.8	12.9	8.2	8.6	9.0	9.5	10.0	10.5	11.1	11.7	12.3
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
22SU [MVA]	5.1	8.4	11.6	10.7	11.3	7.4	8.0	8.4	8.9	9.3	9.8	10.3	10.9	11.4	12.0
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23SU [MVA]	15.4	19.0	13.6	8.9	10.8	11.4	9.5	9.9	10.5	11.0	11.6	12.2	12.8	13.5	14.2
Load at Risk [MVA]	3.4	7.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.5	2.2
24SU [MVA]	NIS	NIS	NIS	NIS	5.7	6.0	6.3	6.7	7.0	7.4	7.8	8.2	8.6	9.0	9.5
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 10: Winter Load at Risk in Summerside Service Area

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
11SU [MVA]	17.2	16.9	13.5	10.5	9.8	10.3	10.0	10.6	11.2	11.8	12.4	13.1	13.8	14.6	15.4
Load at Risk [MVA]	5.2	4.9	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	1.8	2.6	3.4
12SU [MVA]	7.7	9.4	9.9	11.8	8.7	9.2	9.7	10.2	10.8	11.4	12.0	12.6	13.3	14.0	14.8
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.3	2.0	2.8
13SU [MVA]	NIS	NIS	11.1	13.3	15.0	15.2	9.1	9.5	10.1	10.6	11.2	11.8	12.4	13.1	13.9
Load at Risk [MVA]	0.0	0.0	0.0	1.3	3.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	1.9
14SU [MVA]	NIS	NIS	NIS	7.9	7.7	8.1	9.1	9.5	10.1	10.6	11.2	11.8	12.5	13.1	13.9
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.1	1.9
21SU [MVA]	8.7	10.4	10.9	8.9	12.8	13.5	8.7	9.2	9.7	10.2	10.8	11.4	12.0	12.7	13.3
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.8	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.3
22SU [MVA]	18.5	18.4	15.0	13.2	14.3	15.0	10.2	10.7	11.3	11.9	12.6	13.3	14.0	14.7	15.6
Load at Risk [MVA]	6.5	6.4	3.0	1.2	2.3	3.0	0.0	0.0	0.0	0.0	0.6	1.3	2.0	2.7	3.6
23SU [MVA]	NIS	NIS	8.5	11.0	11.3	11.9	9.9	10.5	11.1	11.7	12.3	13.0	13.7	14.4	15.2
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	1.7	2.4	3.2
24SU [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.7	8.1	8.6	9.0	9.5	10.1	10.6	11.2	11.8
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NIS = Not in Service

5.2 POD Loading Deficiency Assessment

As per EDTI DFO's POD loading policy (section 3.2), the transmission N-1 firm capacity is defined as the maximum load that the POD can supply without overloading any transmission equipment under an N-1 emergency operating condition.

The term "Load at Risk" in section 5.2 refers to any distribution load that is predicted to be unserved under POD N-1 emergency conditions, due to the distribution load exceeding the remaining available transmission capacity.

5.2.1 East Industrial POD

Tables 11 and 12 present annual peak load forecasts for the East Industrial POD. In addition, the corresponding load at risk is provided. Violations of EDTI DFO's POD loading policy are highlighted in red.

Table 11: Summer Load at Risk at East Industrial POD

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
East Industrial POD [MVA]	51.6	55.6	58.2	55.5	56.8	60.5	**67.0**	**69.5**	**71.9**	**74.2**	**76.5**	**78.6**	**80.7**	**82.6**	**84.5**
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	**4.0**	**6.5**	**8.9**	**11.2**	**13.5**	**15.6**	**17.7**	**19.6**	**21.5**

Table 12: Winter Load at Risk at East Industrial POD

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8
East Industrial POD [MVA]	52.0	53.4	55.3	54.2	54.6	61.9	64.4	66.7	69.0	71.3	73.4	**75.5**	**77.4**	**79.3**	**81.1**
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.7**	**2.6**	**4.5**	**6.3**

5.2.2 Summerside POD

Tables 13 and 14 present annual peak load forecasts for the Summerside POD. In addition, the corresponding load at risk is provided. Violations of EDTI DFO's POD loading policy are highlighted in red. The decline of peak loading at the Summerside POD in winter 2019 and summer 2020 is due to the anticipated permanent distribution load transfer from the Summerside POD to the proposed Riverview POD (11RV and 22RV).

Table 13: Summer Load at Risk at Summerside POD

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Summerside POD N-1 Capacity [MVA]	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Summerside POD [MVA]	49.7	55.2	64.6	66.4	72.7	**84.5**	**88.9**	**75.2**	**78.9**	**87.4**	**90.5**	**93.3**	**95.9**	**98.3**	**100.4**
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	**9.5**	**13.9**	**0.2**	**3.9**	**12.4**	**15.5**	**18.3**	**20.9**	**23.3**	**25.4**

Table 14: Winter Load at Risk at Summerside POD

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Summerside POD N-1 Capacity [MVA]	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Summerside POD [MVA]	58.9	67.7	71.1	79.4	88.6	**97.6**	84.4	86.7	**91.1**	**100.1**	**103.8**	**107.1**	**110.1**	**112.9**	**115.3**
Load at Risk [MVA]	0.0	0.0	0.0	0.0	0.0	**8.6**	0.0	0.0	**2.1**	**11.1**	**14.8**	**18.1**	**21.1**	**23.9**	**26.3**

6.0 IDENTIFIED ALTERNATIVES

The deficiency assessment in section 5 has demonstrated a feeder capacity deficiency of 30.3 MVA for Southeast Edmonton over the next 10 years (i.e. the sum of winter load at risk from Tables 8 and 10 for East Industrial and Summerside service areas in 2027). This includes 18.1 MVA at Summerside and 12.2 MVA at East Industrial. Two 25 kV feeder breakers that will be available for use from the Riverview POD (14RV and 23RV), with a combined capacity of 24 MVA, can be used to address the Summerside distribution deficiency, leaving a balance of 12.2 MVA of distribution deficiency from the East Industrial service area.

Furthermore, a POD N-1 deficiency of 46.9 MVA exists in the Southeast Edmonton area over the next 10 years (i.e. the sum of summer load at risk from Tables 11 and 13 for East Industrial and Summerside PODs in 2027). 25.4 MVA of this deficiency over the next 10 years originates from the Summerside POD. A significant proportion (24 MVA) of this deficiency at the Summerside POD will be eliminated with the commissioning of distribution circuits 14RV and 23RV from the Riverview POD, enabling a load transfer from the Summerside POD to the Riverview POD.

To alleviate the remaining 12.2 MVA distribution deficiency and the 22.9 MVA transmission deficiency over the next 10 years, the following solution alternatives were explored:

Distribution Alternatives

6.1 Alternative I – Distribution Switching

This alternative leverages the existing distribution circuit ties as depicted in Tables 2 and 3 to explore the possibility of distribution load transfers within East Industrial and Summerside service areas. To resolve the identified distribution deficiencies, it would be required to transfer loads to other feeders, which may include upgrade existing assets and/or construction of new assets. However, it is evident from the results produced in Tables 7 through 14 that there is insufficient distribution and transmission capacity within the above discussed service areas to facilitate such load transfers.

Alternative I is not considered technically viable.

Transmission Alternatives

6.2 Alternative II – Capacity Increase of East Industrial POD

This alternative consists of expanding the capacity of the East Industrial POD in 2019 by adding a new Transformer and switchgear lineup. Prior to construction, a distribution load transfer from 12E to 23E (2.6 MVA) would occur in 2019. Three new 25 kV distribution feeders would be needed over the next 10 years to eliminate the distribution and transmission deficiencies in the current East Industrial and Summerside service areas: One feeder will originate from the East Industrial POD (24E) in 2020, after the expansion of East Industrial POD has been completed; whereas two new 25 kV feeders will be built from the Riverview POD (14RV and 23RV), one in 2020 and another in 2022 to serve load presently within the Summerside service area. The total estimated length of the distribution feeders is 7.1 km.

EDTI DFO estimates that alternative II will add 48 MVA of distribution feeder capacity and 63/75 MVA of N-1 POD firm capacity to the Southeast Edmonton area. However, since a large portion of the future load growth in southeast Edmonton is forecasted to come from the Decoteau ASP, approximately 11 km from the East Industrial POD, future expansion in Southeast Edmonton will require relatively long and higher capital cost distribution feeders.

If Alternative II is pursued, the AESO may direct EDTI TFO to prepare a facility application for the requested transmission upgrades. This facility application will include an estimate of the transmission capital cost.

Alternative II is considered technically viable.

6.3 Alternative III – New Southeast POD

This alternative consists of building a new Southeast POD in 2019 adjacent to the existing 138 kV transmission line (780L). Four new distribution feeders will be required to address the distribution feeder and POD deficiencies in the current East Industrial and Summerside service areas. Two of these feeders will originate from the new Southeast POD (11SE and 21SE); one 25 kV feeder in 2020 and one in 2023. Moreover, two new 25 kV feeders will be built from the Riverview POD (14RV and 23RV), one in 2020 and another in 2022. The total estimated length of the distribution feeders under this alternative is 7.9 km.

This alternative assumes that the new POD will be located outside the TUC, and that sufficient capacity exists on 780L to support the forecasted demand of the new POD.

EDTI DFO estimates that alternative III will add 96 MVA of distribution capacity and 75/89 MVA of POD N-1 firm capacity to the Southeast Edmonton area. Additionally, since a large portion of the future load growth in southeast Edmonton is forecasted to come from the Decoteau ASP, approximately 1.5 km

from the new Southeast POD, future load growth in Southeast Edmonton will require relatively short and cost-effective distribution feeders, due to the strategic placement of the new Southeast POD within its future service area.

However, since this alternative involves the addition of a new POD, EDTI DFO anticipates that it will have significantly higher transmission capital costs compared to Alternatives II and IV which require equipment additions to existing PODs.

If Alternative III is pursued, the AESO may direct EDTI TFO to prepare a facility application for the requested transmission upgrades. This facility application will include an estimate of the transmission capital cost.

Alternative III is considered technically viable.

6.4 Alternative IV – Capacity Increase of Summerside POD

This alternative consists of expanding the capacity of the Summerside POD in 2019 by adding a new Transformer and switchgear lineup. Four new distribution feeders will be required to eliminate the distribution and transmission deficiencies in the East Industrial and Summerside service areas. Two new 25 kV distribution circuits (31SU and 32SU) will originate from the proposed Summerside capacity increase; one new circuit in 2020 and one new circuit in 2023. Moreover, two new 25 kV circuits will be built from the Riverview POD (14RV and 23RV), one in 2023 and another in 2026 to mitigate the distribution deficiencies in the Summerside area. The total estimated length of the distribution feeders is 9.8 km.

EDTI DFO estimates that alternative IV will add 48 MVA of distribution feeder capacity and 75/89 MVA of POD N-1 firm capacity to the Southeast Edmonton area. Additionally, since a large portion of the future load growth in southeast Edmonton is forecasted to come from the Decoteau ASP, approximately 5.7 km from the Summerside POD, feeders serving that area from Summerside will be shorter than if that load were served from the East Industrial POD. Furthermore, the Decoteau ASP is already linked to the Summerside substation by existing distribution ducts; therefore construction of new distribution feeders can be completed at lower capital costs compared to the East Industrial POD. Alternative IV is also best suited to meet the needs of upcoming projects that are under evaluation but have not yet been included in EDTI's 2018 forecast (e.g. a new southwest hospital in approximately six years and the annexation of land south of Edmonton from Leduc County in approximately three years).

If Alternative IV is pursued, the AESO may direct EDTI TFO to prepare a facility application for the requested transmission upgrades. This facility application will include an estimate of the transmission capital cost.

Alternative IV is considered technically viable.

7.0 COST COMPARISON

A summary comparison of costs for the three alternatives considered is shown in Table 15 below. Only the distribution costs associated with each alternative have been estimated. If a transmission alternative is pursued, the AESO may direct EDTI TFO to prepare a facility application for the requested transmission upgrades. This facility application will include an estimate of the transmission capital cost.

Table 15: Distribution Cost Comparison

Alternative	Description	Estimated Costs (+/- 50%, $MM, $2018)
II	**Capacity Increase of East Industrial POD** Distribution Costs East Industrial Feeders Riverview Feeders Transmission Costs **Total Costs for Alternative II**	 **5.6** **9.2** **TBD** **TBD**
III	**New Southeast POD** Distribution Costs Southeast Feeders Riverview Feeders Transmission Costs **Total Costs for Alternative III**	 **6.3** **9.2** **TBD** **TBD**
IV	**Capacity Increase of Summerside POD** Distribution Costs Summerside Feeders Riverview Feeders Transmission Costs **Total Costs for Alternative IV**	 **6.2** **9.2** **TBD** **TBD**

8.0 PREFERRED ALTERNATIVE

EDTI prefers Alternative IV – Capacity Increase of Summerside POD. EDTI prefers this alternative for the following reasons:

1. Summerside POD is only approximately 5.7 km away from the load growth in the Decoteau ASP resulting in shorter cost-effective future distribution circuits
2. Existing ductline infrastructure can support the addition of circuits 31SU and 32SU to the Summerside POD, which results in less construction activity and significant cost savings
3. Summerside POD has a sufficiently sized footprint to support the installation of a new Transformer and switchgear lineup
4. This alternative is best suited to meet the needs of upcoming customer connections that have not yet been included in EDTI's 2018 load forecast; such as the proposed Southwest Hospital and the proposed City of Edmonton land annexation from Leduc County

Pending the completion of transmission-related assessment and associated costs, EDTI would use the following implementation strategy of the preferred alternative to address the identified deficiencies.

8.1 Summerside POD N-1 Firm Capacity

Upon completion of the capacity increase of the Summerside POD, the POD N-1 firm capacity constraint at the Summerside POD will be eliminated. The Summerside POD will have sufficient capacity to supply forecasted load growth in Southeast Edmonton for the next 10 years.

8.2 East Industrial POD N-1 Firm Capacity

Upon completion of the capacity increase of the Summerside POD, the following distribution system load transfers would occur:

- 31SU will be added in 2020 to offload 12E and 14E
- 32SU will be added in 2023 to further offload 12E and 14E

Following completion of these load transfers, the POD N-1 firm capacity constraint at the East Industrial POD will be eliminated and the East Industrial POD will have sufficient capacity to supply forecasted load growth in Southeast Edmonton for the next 10 years.

8.3 Distribution Circuits Constraints

The recommended strategy requests the addition of four distribution circuits to help keep circuit loading in Southeast Edmonton area below the Design Load Rating of 12 MVA over the next 10 years.

- 31SU will be added in 2020 to offload 12E and 14E
- 32SU will be added in 2023 to offload further off load 12E and 14E
- 14RV[1] will be added in 2023 to offload 11SU, 12SU, 22SU and 23SU
- 23RV[1] will be added in 2026 to offload 13SU, 14SU and 21SU

8.4 Effectiveness of Preferred Alternative

The effectiveness of the recommended strategy is evident in the following Tables 16 and 17, whereby the loading on all 25 kV distribution feeders in the studied area, namely Summerside and East Industrial service areas, remain below their Design Load Rating of 12 MVA. The four new distribution feeders are highlighted in grey in Table 16 and Table 17.

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[1] AESO Project P1695; AUC proceeding 23128

Table 16: Alternative IV - Summer Load after Solution Implementation

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
East Industrial POD [MVA]	51.6	55.6	58.2	55.5	56.8	60.5	**67.0**	58.5	60.8	63.0	53.9	55.8	57.7	59.4	61.1
East Industrial POD [MW]	48.5	51.8	54.5	52.3	53.6	57.1	**63.2**	55.2	57.3	59.4	50.8	52.6	54.4	56.0	57.6
East Industrial POD Power Factor	0.940	0.932	0.937	0.942	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
POD Peak Day Temperature [°C]	33.7	29.3	34.1	27.9	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11E [MVA]	7.3	7.7	6.7	6.3	6.4	5.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.8
12E [MVA]	8.6	9.8	11.5	9.8	11.5	**12.1**	**12.7**	7.8	8.3	9.0	3.9	4.6	5.2	5.9	6.7
13E [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.6	8.0	8.3	8.8	9.2	9.6	10.1	10.5	11.1
14E [MVA]	9.5	9.5	10.9	11.0	11.0	11.5	**12.0**	7.1	7.7	8.2	3.2	3.8	4.4	5.1	5.8
21E [MVA]	9.2	8.4	11.1	10.4	8.9	9.7	9.8	10.0	10.2	10.3	10.4	10.6	-0.8	10.9	11.0
22E [MVA]	11.9	**12.2**	**12.1**	10.6	4.5	4.8	5.0	5.2	5.5	5.7	6.0	6.3	6.6	6.9	7.3
23E [MVA]	5.4	6.6	6.7	8.4	5.6	5.8	6.1	6.4	6.7	7.0	7.3	7.7	8.1	8.5	8.9
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Summerside POD N-1 Capacity [MVA]	75.0	75.0	75.0	75.0	75.0	75.0	75.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0
Summerside POD [MVA]	49.7	55.2	64.6	66.4	72.7	**84.5**	**88.9**	86.2	90.0	98.6	102.1	105.0	107.7	100.2	102.3
Summerside POD [MW]	49.2	54.8	64.2	66.0	72.6	**84.3**	**88.7**	86.0	89.8	98.4	101.9	104.8	107.5	100.0	102.1
Summerside POD Power Factor	0.990	0.992	0.994	0.994	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	33.7	31.2	34.1	27.4	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11SU [MVA]	**18.2**	**18.6**	**14.4**	11.0	10.0	10.5	10.2	10.7	11.2	11.8	8.4	8.9	9.5	10.1	10.8
12SU [MVA]	5.2	6.2	7.9	9.0	7.6	8.0	8.5	8.9	9.4	9.8	8.4	8.9	9.4	10.1	10.7
13SU [MVA]	NIS	NIS	**15.6**	**13.0**	**15.2**	**15.4**	6.3	6.6	6.9	7.2	7.5	7.8	8.2	5.2	5.6
14SU [MVA]	NIS	NIS	NIS	6.8	6.5	6.8	10.6	8.9	9.4	9.9	10.4	10.9	11.5	8.8	9.3
21SU [MVA]	6.2	8.4	11.6	6.9	9.8	**12.9**	8.2	8.6	9.0	9.5	10.0	10.5	11.1	8.4	9.0
22SU [MVA]	5.1	8.4	11.6	10.7	11.3	7.4	8.0	8.4	8.9	9.3	7.8	8.3	8.9	9.4	10.0
23SU [MVA]	**15.4**	**19.0**	**13.6**	8.9	10.8	11.4	9.5	9.9	10.5	11.0	8.6	9.2	9.8	10.5	11.2
24SU [MVA]	NIS	NIS	NIS	NIS	5.7	6.0	6.3	6.7	7.0	7.4	7.8	8.2	8.6	9.0	9.5
31SU [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
32SU [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.3	11.4	11.5	11.6	11.7
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	22.2	23.3	24.3	36.2	37.2	38.1	49.0	49.8
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	22.2	23.3	24.3	36.1	37.1	38.0	48.9	49.7
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1
12RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.3	2.4	3.5	4.6	5.7	6.9	9.0	11.1
13RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
14RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4
21RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.3	2.4	3.0	3.6	4.8	5.4	6.1	7.2
22RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	6.9	7.1	7.2	7.4	7.6	7.8	8.0	8.2
23RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	10.0	10.1
24RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS

NIS = Not in Service

Table 17: Alternative IV - Winter Load after Solution Implementation

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8
East Industrial POD [MVA]	52.0	53.4	55.3	54.2	54.6	61.9	64.4	55.7	57.9	60.1	50.8	52.7	54.4	56.1	57.7
East Industrial POD [MW]	49.9	51.2	53.5	51.9	52.7	59.7	62.1	53.8	55.9	58.0	49.0	50.9	52.5	54.1	55.7
East Industrial POD Power Factor	0.959	0.958	0.967	0.958	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
POD Peak Day Temperature [°C]	-25.1	-15.1	-20.5	-24.4	-27.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11E [MVA]	6.7	6.7	6.4	5.8	5.4	4.8	8.9	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3
12E [MVA]	10.8	12.3	13.1	11.8	12.9	13.4	14.0	9.1	9.7	10.3	5.2	5.9	6.5	7.2	7.9
13E [MVA]	NIS	NIS	NIS	NIS	6.8	7.0	7.3	7.7	8.0	8.3	8.7	9.1	9.5	9.9	10.3
14E [MVA]	10.4	10.8	10.5	11.2	10.9	11.4	11.9	6.9	7.4	7.9	2.7	3.2	3.8	4.3	4.9
21E [MVA]	10.8	9.5	10.2	10.0	8.2	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.5	9.6	9.7
22E [MVA]	12.2	13.3	12.6	11.8	4.6	4.8	5.0	5.2	5.4	5.7	5.9	6.1	6.4	6.7	7.0
23E [MVA]	6.0	6.5	8.4	8.9	5.7	6.0	6.3	6.5	6.8	7.1	7.4	7.7	8.0	8.4	8.7
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Summerside POD N-1 Capacity [MVA]	89.0	89.0	89.0	89.0	89.0	89.0	89.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0
Summerside POD [MVA]	58.9	67.7	71.1	79.4	88.6	97.6	84.4	97.7	102.2	111.3	115.4	118.8	121.9	114.8	117.2
Summerside POD [MW]	58.8	67.7	71.1	78.9	88.6	97.6	84.4	97.7	102.2	111.3	115.4	118.8	121.9	114.8	117.2
Summerside POD Power Factor	0.998	1.000	1.000	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	-31.6	-31.6	-30.2	-23.9	-28.2	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11SU [MVA]	17.2	16.9	13.5	10.5	9.8	10.3	10.0	10.6	11.2	11.8	9.7	10.2	10.9	11.5	11.5
12SU [MVA]	7.7	9.4	9.9	11.8	8.7	9.2	9.7	10.2	10.8	11.4	9.2	9.9	10.6	11.3	11.6
13SU [MVA]	NIS	NIS	11.1	13.3	15.0	15.2	9.1	9.5	10.1	10.6	11.2	11.8	12.4	10.6	11.6
14SU [MVA]	NIS	NIS	NIS	7.9	7.7	8.1	9.1	9.5	10.1	10.6	11.2	11.8	12.5	10.6	11.4
21SU [MVA]	8.7	10.4	10.9	8.9	12.8	13.5	8.7	9.2	9.7	10.2	10.8	11.4	12.0	10.2	11.3
22SU [MVA]	18.5	18.4	15.0	13.2	14.3	15.0	10.2	10.7	11.3	11.9	9.8	10.5	11.2	10.5	11.7
23SU [MVA]	NIS	NIS	8.5	11.0	11.3	11.9	9.9	10.5	11.1	11.7	9.6	10.2	10.9	10.7	11.5
24SU [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.7	8.1	8.6	9.0	9.5	10.1	10.6	11.2	11.8
31SU [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
32SU [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.3	11.4	11.5	11.6	11.7
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	19.5	25.9	27.2	28.4	40.5	41.6	42.7	53.6	54.6
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	19.5	25.9	27.2	28.4	40.5	41.6	42.7	53.6	54.6
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	9.3	9.4	9.5	9.7	9.8	10.0	10.2	10.3	10.5
12RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.6	2.8	3.9	5.0	6.2	7.3	9.5	11.6
13RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
14RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4
21RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.7	2.9	3.8	5.0	5.9	6.5	7.7	8.9
22RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	8.8	9.1	9.3	9.5	9.8	10.1	10.4	10.7	11.0
23RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	10.0	10.1
24RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS

NIS = Not in Service

8.5 Effectiveness of Alternative II

Table 18: Alternative II - Summer Load after Solution Implementation

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	63.0	63.0	63.0	63.0	63.0	63.0	63.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
East Industrial POD [MVA]	51.6	55.6	58.2	55.5	56.8	60.5	67.0	71.9	74.3	76.6	78.9	81.0	83.1	85.0	86.9
East Industrial POD [MW]	48.5	51.8	54.5	52.3	53.6	57.1	63.2	67.8	70.1	72.2	74.4	76.4	78.4	80.2	81.9
East Industrial POD Power Factor	0.940	0.932	0.937	0.942	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
POD Peak Day Temperature [°C]	33.7	29.3	34.1	27.9	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11E [MVA]	7.3	7.7	6.7	6.3	6.4	5.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.8
12E [MVA]	8.6	9.8	11.5	9.8	11.5	12.1	12.7	6.8	7.4	8.1	8.7	9.5	10.2	11.0	11.9
13E [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.6	8.0	8.3	8.8	9.2	9.6	10.1	10.5	11.1
14E [MVA]	9.5	9.5	10.9	11.0	11.0	11.5	12.0	7.0	7.6	8.2	8.9	9.6	10.3	11.1	11.9
21E [MVA]	9.2	8.4	11.1	10.4	8.9	9.7	9.8	10.0	10.2	10.3	10.4	10.6	10.7	10.9	11.0
22E [MVA]	11.9	12.2	12.1	10.6	4.5	4.8	5.0	5.2	5.5	5.7	6.0	6.3	6.6	6.9	7.3
23E [MVA]	5.4	6.6	6.7	8.4	5.6	5.8	6.1	8.9	9.2	9.5	9.8	10.2	10.6	11.0	11.4
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
Summerside POD N-1 Capacity [MVA]	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Summerside POD [MVA]	49.7	55.2	64.6	66.4	72.7	84.5	88.9	61.8	65.4	62.8	65.7	68.3	70.7	72.9	74.8
Summerside POD [MW]	49.2	54.8	64.2	66.0	72.6	84.3	88.7	61.7	65.3	62.7	65.6	68.2	70.6	72.8	74.7
Summerside POD Power Factor	0.990	0.992	0.994	0.994	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	33.7	31.2	34.1	27.4	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11SU [MVA]	18.2	18.6	14.4	11.0	10.0	10.5	10.2	6.7	7.2	7.8	8.4	9.0	9.7	10.4	11.2
12SU [MVA]	5.2	6.2	7.9	9.0	7.6	8.0	8.5	6.9	7.4	7.8	8.4	8.9	9.4	10.1	10.7
13SU [MVA]	NIS	NIS	15.6	13.0	15.2	15.4	6.3	6.6	6.9	4.2	4.5	4.8	5.2	5.5	5.9
14SU [MVA]	NIS	NIS	NIS	6.8	6.5	6.8	10.6	8.9	9.4	5.9	6.4	6.9	7.5	8.1	8.7
21SU [MVA]	6.2	8.4	11.6	6.9	9.8	12.9	8.2	8.6	9.0	5.5	6.0	6.5	7.1	7.7	8.3
22SU [MVA]	5.1	8.4	11.6	10.7	11.3	7.4	8.0	6.4	6.9	7.3	7.8	8.3	8.9	9.4	10.0
23SU [MVA]	15.4	19.0	13.6	8.9	10.8	11.4	9.5	5.9	6.5	7.0	7.6	8.2	8.8	9.5	10.2
24SU [MVA]	NIS	NIS	NIS	NIS	5.7	6.0	6.3	4.3	4.6	5.0	5.4	5.8	6.2	6.6	7.1
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	33.2	34.4	46.5	47.6	48.7	49.7	50.7	51.5
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	33.1	34.3	46.4	47.5	48.6	49.6	50.6	51.4
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1
12RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.3	2.4	3.5	4.6	5.7	6.9	9.0	11.1
13RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
14RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
21RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.3	2.4	3.0	3.6	4.8	5.4	6.1	7.2
22RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	6.9	7.1	7.2	7.4	7.6	7.8	8.0	8.2
23RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5
24RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS

NIS = Not in Service

Table 19: Alternative II - Winter Load after Solution Implementation

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	74.8	74.8	74.8	74.8	74.8	74.8	74.8	149.6	149.6	149.6	149.6	149.6	149.6	149.6	149.6
East Industrial POD [MVA]	52.0	53.4	55.3	54.2	54.6	61.9	64.4	69.7	72.0	74.3	76.4	78.5	80.4	82.3	84.1
East Industrial POD [MW]	49.9	51.2	53.5	51.9	52.7	59.7	62.1	67.3	69.5	71.7	73.7	75.8	77.6	79.4	81.2
POD Peak Day Temperature [°C]	-25.1	-15.1	-20.5	-24.4	-27.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
East Industrial POD Power Factor	0.959	0.958	0.967	0.958	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
11E [MVA]	6.7	6.7	6.4	5.8	5.4	4.8	8.9	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3
12E [MVA]	10.8	**12.3**	**13.1**	11.8	**12.9**	**13.4**	**14.0**	6.1	6.7	7.4	8.0	8.8	9.5	10.3	11.1
13E [MVA]	NIS	NIS	NIS	NIS	6.8	7.0	7.3	7.7	8.0	8.3	8.7	9.1	9.5	9.9	10.3
14E [MVA]	10.4	10.8	10.5	11.2	10.9	11.4	11.9	7.4	7.9	8.5	9.0	9.6	10.3	10.9	11.6
21E [MVA]	10.8	9.5	10.2	10.0	8.2	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.5	9.6	9.7
22E [MVA]	**12.2**	**13.3**	**12.6**	11.8	4.6	4.8	5.0	5.2	5.4	5.7	5.9	6.1	6.4	6.7	7.0
23E [MVA]	6.0	6.5	8.4	8.9	5.7	6.0	6.3	9.0	9.3	9.6	9.9	10.2	10.5	10.9	11.2
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
Summerside POD N-1 Capacity [MVA]	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Summerside POD [MVA]	58.9	67.7	71.1	79.4	88.6	**97.6**	84.4	72.7	77.0	74.5	78.0	81.1	83.9	86.5	88.7
Summerside POD [MW]	58.8	67.7	71.1	78.9	88.6	**97.6**	84.4	72.7	77.0	74.5	78.0	81.1	83.9	86.5	88.7
POD Peak Day Temperature [°C]	-31.6	-31.6	-30.2	-23.9	-28.2	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
Summerside POD Power Factor	0.998	1.000	1.000	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
11SU [MVA]	**17.2**	**16.9**	**13.5**	10.5	9.8	10.3	10.0	7.1	7.7	8.3	8.9	9.6	10.3	11.1	11.9
12SU [MVA]	7.7	9.4	9.9	11.8	8.7	9.2	9.7	7.2	7.8	8.4	9.0	9.6	10.3	11.0	11.8
13SU [MVA]	NIS	NIS	11.1	**13.3**	**15.0**	**15.2**	9.1	9.5	10.1	7.6	8.2	8.8	9.4	10.1	10.9
14SU [MVA]	NIS	NIS	NIS	7.9	7.7	8.1	9.1	9.5	10.1	7.6	8.2	8.8	9.5	10.1	10.9
21SU [MVA]	8.7	10.4	10.9	8.9	**12.8**	**13.5**	8.7	9.2	9.7	7.2	7.8	8.4	9.0	9.7	10.3
22SU [MVA]	**18.5**	**18.4**	**15.0**	**13.2**	**14.3**	**15.0**	10.2	7.0	7.6	8.2	8.9	9.6	10.3	11.0	11.9
23SU [MVA]	NIS	NIS	8.5	11.0	11.3	11.9	9.9	7.0	7.6	8.2	8.8	9.5	10.2	10.9	11.7
24SU [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.7	8.1	5.6	6.0	6.5	7.1	7.6	8.2	8.8
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	19.5	36.9	38.3	51.0	52.3	53.5	54.7	55.7	56.7
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	19.5	36.9	38.3	51.0	52.3	53.5	54.7	55.7	56.7
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	9.3	9.4	9.5	9.7	9.8	10.0	10.2	10.3	10.5
12RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.6	2.8	3.9	5.0	6.2	7.3	9.5	11.6
13RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
14RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
21RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.7	2.9	3.8	5.0	5.9	6.5	7.7	8.9
22RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	8.8	9.1	9.3	9.5	9.8	10.1	10.4	10.7	11.0
23RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.4	11.5	11.6	11.7	11.8	11.9
24RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS

NIS = Not in Service

8.6 Effectiveness of Alternative III

Table 20: Alternative III - Summer Load after Solution Implementation

Summer	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
East Industrial POD [MVA]	51.6	55.6	58.2	55.5	56.8	60.5	**67.0**	58.5	60.8	63.0	53.9	55.8	57.7	60.4	62.1
East Industrial POD [MW]	48.5	51.8	54.5	52.3	53.6	57.1	**63.2**	55.2	57.3	59.4	50.8	52.6	54.4	57.0	58.6
East Industrial POD Power Factor	0.940	0.932	0.937	0.942	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
POD Peak Day Temperature [°C]	33.7	29.3	34.1	27.9	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11E [MVA]	7.3	7.7	6.7	6.3	6.4	5.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.8
12E [MVA]	8.6	9.8	11.5	9.8	11.5	**12.1**	**12.7**	7.8	8.3	9.0	3.9	4.6	5.2	5.9	6.7
13E [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.6	8.0	8.3	8.8	9.2	9.6	10.1	10.5	11.1
14E [MVA]	9.5	9.5	10.9	11.0	11.0	11.5	**12.0**	7.1	7.7	8.2	3.2	3.8	4.4	5.1	5.8
21E [MVA]	9.2	8.4	11.1	10.4	8.9	9.7	9.8	10.0	10.2	10.3	10.4	10.6	-0.8	10.9	11.0
22E [MVA]	11.9	**12.2**	**12.1**	10.6	4.5	4.8	5.0	5.2	5.5	5.7	6.0	6.3	6.6	6.9	7.3
23E [MVA]	5.4	6.6	6.7	8.4	5.6	5.8	6.1	6.4	6.7	7.0	7.3	7.7	8.1	8.5	8.9
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Summerside POD N-1 Capacity [MVA]	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Summerside POD [MVA]	49.7	55.2	64.6	66.4	72.7	**84.5**	**88.9**	64.2	67.8	64.9	67.8	70.4	72.8	72.0	73.9
Summerside POD [MW]	49.2	54.8	64.2	66.0	72.6	**84.3**	**88.7**	64.1	67.7	64.8	67.7	70.3	72.7	71.9	73.8
Summerside POD Power Factor	0.990	0.992	0.994	0.994	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	33.7	31.2	34.1	27.4	32.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11SU [MVA]	**18.2**	**18.6**	**14.4**	11.0	10.0	10.5	10.2	10.7	11.2	11.8	8.4	8.9	9.5	10.1	10.8
12SU [MVA]	5.2	6.2	7.9	9.0	7.6	8.0	8.5	8.9	9.4	9.8	8.4	8.9	9.4	10.1	10.7
13SU [MVA]	NIS	NIS	**15.6**	**13.0**	**15.2**	**15.4**	6.3	6.6	6.9	7.2	7.5	7.8	8.2	5.2	5.6
14SU [MVA]	NIS	NIS	NIS	6.8	6.5	6.8	10.6	8.9	9.4	9.9	10.4	10.9	11.5	8.8	9.3
21SU [MVA]	6.2	8.4	11.6	6.9	9.8	**12.9**	8.2	8.6	9.0	9.5	10.0	10.5	11.1	8.4	9.0
22SU [MVA]	5.1	8.4	11.6	10.7	11.3	7.4	8.0	8.4	8.9	9.3	7.8	8.3	8.9	9.4	10.0
23SU [MVA]	**15.4**	**19.0**	**13.6**	8.9	10.8	11.4	9.5	9.9	10.5	11.0	8.6	9.2	9.8	10.5	11.2
24SU [MVA]	NIS	NIS	NIS	NIS	5.7	6.0	6.3	6.7	7.0	7.4	7.8	8.2	8.6	7.0	7.5
Southeast POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Southeast POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	22.6	22.8	23.0	23.2	23.4
Southeast POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	22.6	22.8	23.0	23.2	23.4
Southeast POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11SE [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
21SE [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.3	11.4	11.5	11.6	11.7
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	33.2	34.4	46.8	47.9	49.0	50.0	51.0	51.8
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	33.1	34.3	46.7	47.8	48.9	49.9	50.9	51.7
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1
12RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.3	2.4	3.5	4.6	5.7	6.9	9.0	11.1
13RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
14RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
21RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.3	2.4	3.0	3.6	4.8	5.4	6.1	7.2
22RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	6.9	7.1	7.2	7.4	7.6	7.8	8.0	8.2
23RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.3	11.4	11.5	11.6	11.7	11.8
24RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS

NIS = Not in Service

Table 21: Alternative III - Winter Load after Solution Implementation

Winter	Historical					Forecast									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
East Industrial POD N-1 Capacity [MVA]	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8
East Industrial POD [MVA]	52.0	53.4	55.3	54.2	54.6	61.9	64.4	55.7	57.9	60.1	50.8	52.7	54.4	60.1	61.7
East Industrial POD [MW]	49.9	51.2	53.5	51.9	52.7	59.7	62.1	53.8	55.9	58.0	49.0	50.9	52.5	58.0	59.5
East Industrial POD Power Factor	0.959	0.958	0.967	0.958	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
POD Peak Day Temperature [°C]	-25.1	-15.1	-20.5	-24.4	-27.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11E [MVA]	6.7	6.7	6.4	5.8	5.4	4.8	8.9	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3
12E [MVA]	10.8	12.3	13.1	11.8	12.9	13.4	14.0	9.1	9.7	10.3	5.2	5.9	6.5	7.2	7.9
13E [MVA]	NIS	NIS	NIS	NIS	6.8	7.0	7.3	7.7	8.0	8.3	8.7	9.1	9.5	9.9	10.3
14E [MVA]	10.4	10.8	10.5	11.2	10.9	11.4	11.9	6.9	7.4	7.9	2.7	3.2	3.8	8.3	8.9
21E [MVA]	10.8	9.5	10.2	10.0	8.2	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.5	9.6	9.7
22E [MVA]	12.2	13.3	12.6	11.8	4.6	4.8	5.0	5.2	5.4	5.7	5.9	6.1	6.4	6.7	7.0
23E [MVA]	6.0	6.5	8.4	8.9	5.7	6.0	6.3	6.5	6.8	7.1	7.4	7.7	8.0	8.4	8.7
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Summerside POD N-1 Capacity [MVA]	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Summerside POD [MVA]	58.9	67.7	71.1	79.4	88.6	97.6	84.4	75.7	80.0	77.6	81.1	84.2	87.0	85.6	87.8
Summerside POD [MW]	58.8	67.7	71.1	78.9	88.6	97.6	84.4	75.7	80.0	77.6	81.1	84.2	87.0	85.6	87.8
Summerside POD Power Factor	0.998	1.000	1.000	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	-31.6	-31.6	-30.2	-23.9	-28.2	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11SU [MVA]	17.2	16.9	13.5	10.5	9.8	10.3	10.0	10.6	11.2	11.8	9.7	10.2	10.9	11.5	11.5
12SU [MVA]	7.7	9.4	9.9	11.8	8.7	9.2	9.7	10.2	10.8	11.4	9.2	9.9	10.6	11.3	11.6
13SU [MVA]	NIS	NIS	11.1	13.3	15.0	15.2	9.1	9.5	10.1	10.6	11.2	11.8	12.4	10.6	11.6
14SU [MVA]	NIS	NIS	NIS	7.9	7.7	8.1	9.1	9.5	10.1	10.6	11.2	11.8	12.5	10.6	11.4
21SU [MVA]	8.7	10.4	10.9	8.9	12.8	13.5	8.7	9.2	9.7	10.2	10.8	11.4	12.0	10.2	11.3
22SU [MVA]	18.5	18.4	15.0	13.2	14.3	15.0	10.2	10.7	11.3	11.9	9.8	10.5	11.2	10.5	11.7
23SU [MVA]	NIS	NIS	8.5	11.0	11.3	11.9	9.9	10.5	11.1	11.7	9.6	10.2	10.9	10.7	11.5
24SU [MVA]	NIS	NIS	NIS	NIS	6.9	7.3	7.7	8.1	8.6	9.0	9.5	10.1	10.6	7.2	7.8
Southeast POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Southeast POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	22.6	22.8	23.0	23.2	23.4
Southeast POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	22.6	22.8	23	23.2	23.4
Southeast POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11SE [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
21SE [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.3	11.4	11.5	11.6	11.7
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	19.5	25.9	27.2	28.4	40.8	41.9	43.0	55.6	56.6
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	19.5	25.9	27.2	28.4	40.8	41.9	43.0	55.6	56.6
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	9.3	9.4	9.5	9.7	9.8	10.0	10.2	10.3	10.5
12RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.6	2.8	3.9	5.0	6.2	7.3	9.5	11.6
13RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
14RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7
21RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	2.7	2.9	3.8	5.0	5.9	6.5	7.7	8.9
22RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	8.8	9.1	9.3	9.5	9.8	10.1	10.4	10.7	11.0
23RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	11.3	11.4	11.5	11.6	11.7	11.8
24RV [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS

NIS = Not in Service

9.0 CONCLUSION

EDTI DFO has determined that resolving the deficiencies through distribution means only is not technically viable.

Pending the completion of transmission-related assessment and associated costs, EDTI DFO presently suggests Alternative IV as the preferred alternative to address the identified deficiencies and considerations outlined in this document. EDTI DFO believes that Alternative II, Alternative III and Alternative IV are all technically viable and address the distribution and transmission deficiencies identified in section 5.0. However EDTI anticipates that Alternative III will have significantly higher transmission capital costs for the construction of a new POD rather than additions to existing PODs for Alternatives II and IV. Alternative IV also ensures that any future expansion in Southeast Edmonton will require shorter and more cost effective distribution feeders (that utilize existing distribution ducts) due to the closer proximity of the Summerside POD to the developing Decoteau ASP. In addition, alternative IV is best suited to meet the needs of upcoming customer connections that have not yet been included in EDTI's 2018 forecast.

Should EDTI's preferred alternative be selected, EDTI will be requesting a DTS contract increase from 40 MW to 71 MW at the Summerside POD, and a DTS contract increase from 25.96 MW to 42 MW at the East Industrial POD.

The requested in-service date for the proposed development is May 01, 2019. The proposed ISD allows for EDTI to have the identified deficiencies detailed within this report addressed prior to the first deficiency incurring risk to the connected customers supplied by EDTI.

EPCOR DISTRIBUTION & TRANSMISSION INC.

Distribution Deficiency Report (DDR) for Southeast Service Area

Technical Supplement 2

Revision 0

March 2, 2020

TABLE OF CONTENTS

1.0 INTRODUCTION

This Distribution Deficiency Report (DDR) Technical Supplement 2 provides EDTI's most up-to date load information based on the 2019 forecast results including the 2019 summer actuals, for the East Industrial, Summerside and Riverview POD service areas. The results in Section 2.0 of this technical supplement support the original need and drivers of the P2133 Southeast Edmonton Load and Reliability DDR.

2.0 2019 UPDATED LOAD FORECAST RESULTS

Table 1 and Table 2 below provide an update to P2133 DDR Technical Supplement (3rd September, 2019). Table 1 and Table 2 show the summer and winters forecast respectively for East Industrial POD, Summerside POD and Riverview POD, based on EDTI's 2019 forecast. Additionally, Summerside and East Industrial POD service area 2019 summer actuals have also been included within Table 1.

EDTI notes the following regarding the updated tables:

- Column 2019A in Table 1 represents the 2019 summer actual loading in the East Industrial and Summerside POD service areas.
- Footnotes in Table 1 and Table 2 explain the executed and planned load transfers.
- "PM" in footnotes of Table 1 and Table 2 denotes the Poundmaker distribution feeders.
- The 2019 load forecast does not take into consideration the 2019 summer actuals

Table 1: Summer Non-Coincident Peak Load Demand (Updated Technical Supplement 3rd Sept 2019 Table 1)

Summer	Historical						Forecast									
	2014	2015	2016	2017	2018	*2019A*	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
East Industrial POD N-1 Capacity [MVA]	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
East Industrial POD [MVA]	55.6	58.2	55.5	56.8	56.1	*53.8*	61.9	63.1	64.2	65.4	66.6	67.9	69.2	70.5	71.9	73.3
East Industrial POD [MW]	51.8	54.5	52.3	53.6	52.7	*50.5*	58.1	59.3	60.3	61.4	62.5	63.8	65.0	66.2	67.5	68.8
East Industrial POD Power Factor	0.932	0.937	0.942	0.943	0.939	*0.939*	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
POD Peak Day Temperature [°C]	29.3	34.1	27.9	32.2	27.4	*30.6*	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11E [MVA]	7.9	6.7	6.3	6.4	6.5	*6.4*	10.6	10.6	10.7	10.8	10.8	10.9	10.9	11.0	11.1	11.1
12E [MVA]	10.0	11.5	9.8	11.5	10.4	*9.1*	11.4	12.0	12.6	13.2	13.8	14.5	15.2	15.9	16.6	17.3
13E [MVA]	NIS	NIS	NIS	6.9	9.8	*9.7*	9.9	9.9	10.0	10.0	10.1	10.2	10.2	10.3	10.3	10.4
14E [MVA]	9.7	10.9	11.0	11.0	11.7	*10.9*	12.1	12.3	12.6	12.9	13.1	13.4	13.7	14.0	14.3	14.6
21E [MVA]	8.6	11.1	10.4	8.9	9.2	*9.2*	9.3	9.3	9.4	9.5	9.5	9.6	9.6	9.7	9.8	9.8
22E [MVA]	12.5	12.1	10.6	4.5	4.6	*4.8*	4.7	4.8	4.8	4.9	4.9	5.0	5.1	5.1	5.2	5.3
23E [MVA]	6.8	6.7	8.4	5.6	6.7	*6.7*	6.8	6.9	6.9	7.0	7.1	7.1	7.2	7.3	7.3	7.4
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Coincident Factor	1.00	0.988	0.985	1.04	0.95	*0.95*	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Summerside POD N-1 Capacity [MVA]	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Summerside POD [MVA]	55.2	64.6	66.4	72.7	90.0	*92.0*	91.4	82.3	87.7	92.4	101.5	104.9	107.8	110.3	112.4	114.1
Summerside POD [MW]	54.8	64.2	66.0	72.6	89.5	*91.4*	90.8	81.8	87.2	91.8	100.8	104.3	107.2	109.6	111.7	113.4
Summerside POD Power Factor	0.992	0.994	0.994	0.998	0.994	*0.994*	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
POD Peak Day Temperature [°C]	31.2	34.1	27.4	32.2	31.9	*29.6*	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11SU [MVA]	18.6	14.4	11.0	10.0	11.7	*11.7*	11.9	12.2	12.5	12.7	13.0	13.1	13.3	13.4	13.5	13.6
12SU [MVA]	6.2	7.9	9.0	7.6	8.2	*7.2*	8.7	9.4	10.1	10.7	11.2	11.6	12.0	12.3	12.5	12.8
13SU [MVA]	NIS	15.6	13.0	15.2	18.1	*17.0*	18.3	10.1	10.3	10.6	10.8	10.9	11.1	11.2	11.3	11.4
14SU [MVA]	NIS	NIS	6.8	6.5	12.7	*11.4*	9.5	11.3	12.3	13.2	15.2	15.8	16.3	16.8	17.1	17.4
21SU [MVA]	8.4	11.6	6.9	9.8	12.8	*12.6*	13.4	14.5	15.5	16.3	17.0	17.7	18.2	18.7	19.0	19.4
22SU [MVA]	8.4	11.6	10.7	11.3	14.0	*15.1*	12.0	12.2	13.2	14.1	16.1	16.7	17.2	17.7	18.1	18.4
23SU [MVA]	19.1	13.6	8.9	10.8	10.4	*12.8*	14.8	8.6	8.6	8.7	11.2	11.3	11.3	11.4	11.4	11.4
24SU [MVA]	NIS	NIS	NIS	5.7	6.7	*7.0*	7.4	8.7	9.8	10.8	11.7	12.4	13.0	13.5	14.0	14.4
Coincident Factor	0.91	0.87	1.00	0.94	0.95	*0.97*	0.95	0.95	0.95	0.95	0.96	0.96	0.96	0.96	0.96	0.96
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	18.9	20.8	32.5	34.5	36.3	37.9	39.4	40.7	41.9
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	18.8	20.7	32.3	34.3	36.1	37.7	39.1	40.4	41.6
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
11RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	9.9	11.7	13.3	14.7	15.9	17.0	17.9	18.6	19.3
12RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	4.5	4.7	4.8	4.9	5.1	5.2	5.4
13RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	6.0	6.3	6.7	7.1	7.5	7.8	8.2
22RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	10.0	10.2	10.4	10.5	10.7	10.8	10.9	11.0	11.1
23RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coincident Factor	NIS	NIS	NIS	NIS	NIS	NIS	NIS	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95

Notes:

a) Planned load transfer from 13SU to 22RW in 2020 (5.8MVA)

b) Planned load transfer from 14SU and 22SU to 11RW in 2020 (9.7MVA)

c) Planned load transfer from 23PM to 21RW in 2022 (5.8MVA)

d) Planned load transfer from 33PM to 12RW in 2022 (4.3MVA)

e) Planned load transfer from 23SU to 14SU in 2020 (2.0MVA)

f) Planned load transfer from 14SU to 23PM in 2019 (3.9 MVA)

g) The 2019 forecast does not take into consideration the 2019A values

Table 2: Winter Non-Coincident Peak Load Demand (Updated Technical Supplement 3rd Sept 2019 Table 2)

Winter	Historical					Forecast									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
East Industrial POD N-1 Capacity [MVA]	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8
East Industrial POD [MVA]	53.4	55.3	54.2	54.6	55.9	60.3	61.4	62.5	63.7	64.9	66.1	67.3	68.6	70.0	71.3
East Industrial POD [MW]	51.2	53.5	51.9	52.7	53.9	58.2	59.3	60.3	61.5	62.6	63.8	64.9	66.2	67.6	68.8
East Industrial POD Power Factor	0.958	0.967	0.958	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
POD Peak Day Temperature [°C]	-15.1	-20.5	-24.4	-27.8	-29.3	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11E [MVA]	6.7	6.4	5.8	5.4	6.0	10.0	10.0	10.1	10.2	10.2	10.3	10.3	10.4	10.5	10.5
12E [MVA]	12.3	13.1	11.8	12.9	10.7	10.9	11.4	12.0	12.6	13.3	13.9	14.6	15.3	16.0	16.7
13E [MVA]	NIS	NIS	NIS	6.8	11.1	11.1	11.2	11.3	11.3	11.4	11.4	11.5	11.6	11.6	11.7
14E [MVA]	10.8	10.5	11.2	10.9	11.6	11.6	11.9	12.1	12.4	12.6	12.9	13.2	13.5	13.8	14.1
21E [MVA]	9.5	10.2	10.0	8.2	8.4	8.5	8.5	8.6	8.6	8.7	8.7	8.8	8.9	8.9	9.0
22E [MVA]	13.3	12.6	11.8	4.6	5.0	5.0	5.1	5.1	5.2	5.3	5.3	5.4	5.4	5.5	5.6
23E [MVA]	6.5	8.4	8.9	5.7	6.3	6.3	6.3	6.4	6.5	6.5	6.6	6.6	6.7	6.8	6.8
24E [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS
Coincident Factor	0.90	0.90	0.91	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.96	0.96	0.96	0.96	0.96
Summerside POD N-1 Capacity [MVA]	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Summerside POD [MVA]	67.7	71.1	79.4	88.6	93.9	92.4	83.4	88.9	93.7	102.8	106.3	109.3	111.8	113.9	115.6
Summerside POD [MW]	67.7	71.1	78.9	88.6	93.3	91.8	82.9	88.3	93.1	102.2	105.7	108.6	111.1	113.2	114.9
Summerside POD Power Factor	1.000	1.000	0.994	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
POD Peak Day Temperature [°C]	-31.6	-30.2	-23.9	-28.2	-29.7	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11SU [MVA]	16.9	13.5	10.5	9.8	10.4	10.5	10.8	11.1	11.3	11.6	11.7	11.9	12.0	12.1	12.2
12SU [MVA]	9.4	9.9	11.8	8.7	9.8	10.0	10.7	11.4	12.0	12.5	13.0	13.3	13.6	13.9	14.1
13SU [MVA]	NIS	11.1	13.3	15.0	16.3	16.4	8.2	8.5	8.7	8.9	9.1	9.3	9.4	9.5	9.6
14SU [MVA]	NIS	NIS	7.9	7.7	14.0	9.8	11.6	12.7	13.6	15.6	16.2	16.7	17.2	17.6	17.9
21SU [MVA]	10.4	10.9	8.9	12.8	14.2	14.4	15.5	16.5	17.4	18.1	18.7	19.3	19.7	20.1	20.4
22SU [MVA]	18.4	15.0	13.2	14.3	16.6	14.0	14.3	15.3	16.2	18.2	18.8	19.4	19.8	20.2	20.5
23SU [MVA]	NIS	8.5	11.0	11.3	9.9	14.3	8.0	8.1	8.2	10.7	10.8	10.8	10.8	10.9	10.9
24SU [MVA]	NIS	NIS	NIS	6.9	8.3	8.6	9.9	11.0	12.0	12.9	13.6	14.3	14.8	15.2	15.6
Coincident Factor	1.23	1.03	1.04	1.02	0.94	0.94	0.94	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.95
Riverview POD N-1 Capacity [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
Riverview POD [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	18.9	20.8	32.5	34.5	36.3	37.9	39.4	40.7	41.9
Riverview POD [MW]	NIS	NIS	NIS	NIS	NIS	NIS	18.8	20.7	32.3	34.3	36.1	37.7	39.1	40.4	41.6
Riverview POD Power Factor	NIS	NIS	NIS	NIS	NIS	NIS	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
POD Peak Day Temperature [°C]	NIS	NIS	NIS	NIS	NIS	NIS	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8	-32.8
11RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	9.9	11.7	13.3	14.7	15.9	17.0	17.9	18.6	19.3
12RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	4.5	4.7	4.8	4.9	5.1	5.2	5.4
13RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	NIS	NIS	6.0	6.3	6.7	7.1	7.5	7.8	8.2
22RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	10.0	10.2	10.4	10.5	10.7	10.8	10.9	11.0	11.1
23RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24RW [MVA]	NIS	NIS	NIS	NIS	NIS	NIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coincident Factor	NIS	NIS	NIS	NIS	NIS	NIS	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95

Notes:

a) Planned load transfer from 13SU to 22RW in 2020 (5.8MVA)

b) Planned load transfer from 14SU and 22SU to 11RW in 2020 (9.7MVA)

c) Planned load transfer from 23PM to 21RW in 2022 (5.8MVA)

d) Planned load transfer from 33PM to 12RW in 2022 (4.3MVA)

e) Planned load transfer from 23SU to 14SU in 2020 (2.0MVA)

f) Planned load transfer from 14SU to 23PM in 2019 (3.9 MVA)

3.0 HISTORICAL PEAK COINCIDENT LOADING RESULTS

Table 3 and Table 4 below provide the requested historical peak coincident combined POD load and the associated historical peak coincident factor for the combined load at the Summerside and East Industrial PODs. Note that "E + SU" in Table 3 and Table 4 denotes the combined load for the East Industrial and Summerside POD service areas.

Table 3: Summer Coincident Peak POD Load

Summer	Historical					
	2014	2015	2016	2017	2018	*2019A*
E+SU POD Coincidental Load [MVA]	104.0	113.0	113.0	129.0	138.0	140.5
E+SU POD Non Coincidental Load [MVA]	110.8	122.8	121.9	129.5	146.1	145.8
E+SU POD Coincident Factor	0.94	0.92	0.93	1.00	0.94	0.96

Table 4: Winter Coincident Peak POD Load

Winter	Historical				
	2014	2015	2016	2017	2018
E+SU POD Coincidental Load [MVA]	116.1	114.9	130.4	137.7	141.0
E+SU POD Non Coincidental Load [MVA]	121.1	126.4	133.6	143.2	149.8
E+SU POD Coincident Factor	0.96	0.91	0.98	0.96	0.94

4.0 DISTRIBUTION DEFICIENCY NEED FOR SOUTHEAST EDMONTON

Assuming the preferred alternative is selected from the P2133 Southeast Edmonton Load and Reliability DDR, the following is a list of distribution circuit additions, based on EDTI's present schedule, to address the identified deficiencies in southeast Edmonton over the next 10 years.

- 31SU will be added in 2022 to offload 12E and 14E
- 32SU will be added in 2022 to offload 11SU, 14SU, 21SU and 22SU
- 14RW will be added in 2024 to further offload 21SU and 22SU
- 23RW will be added in 2028 to offload 12SU and 24SU