APPENDIX E: QUESTIONS OF MOSAIC AND RESPONSE OF ELENCHUS AND SASKPOWER

Mosaic submitted the document that included the following seven questions related to the Elenchus report. Elenchus and SaskPower have provided the responses contained in this appendix.

1. *When was the Bary correction first implemented, and what was the original intent?*
    - *Elenchus report states it was to improve intra-class equity; was there ever a case of inter-class subsidization?*
    - *Would SaskPower consider removing Bary correction for entire Power Class?*
2. *Please provide an example of the CRS structure if a 100% load factor were utilized as per the recommendation from Elenchus on page 18.*
3. *Please provide SaskPower's winter/summer coincident peak and non-coincident peak profiles. How does the nature of the Power Class customer base compare to other jurisdictions? Would you consider the Power Class load profile diverse or does it put excessive stress on the SaskPower system?*
    - *Power Class Information Request:*
        - *Customer count*
        - *Total Revenue*
        - *Total Energy*
        - *Total Demand Peak (by non-coincident and coincident peak)*
4. *How would the utility manage the CRS reservation capacity when comparing a new customer versus an existing customer?*
    - *New Customer – would SaskPower build capacity to that site based on reservation capacity provided by customer or by aggregate site consumption? Would SaskPower build excess capacity to allow for potential interruptible service?*
    - *Existing Customer – known excess capacity to customer's facility when self-generation installed, would SaskPower require installation of automatic load shed or transfer trips from utility to customer in the event capacity is no longer available above the Reservation Capacity?*
5. *Is the SaskPower Power Class considered diverse enough to accept that it should be not be assumed all standby customers will require service at the same time during the system peak?*

- *Has an opportunity presented itself to gather the Power Class customers and solicit the potential generation capability which could be funded by the utility as proposed on page 17 of the Elenchus report? This would allow the utility to retain customers and facilitate economic bypass.*
- *Consideration should be made to account for the difference in federal and provincial carbon programs as well.*
- *What would be required within the Power Class to achieve the adequate diversity benefit for the aggregate coincident peak demand as per page 3 in the Elenchus report?*

6. *Backup Power*
   - *Will you consider the statement in the Elenchus report regarding other jurisdictions differentiating between rates for planned and unplanned events?*
     - *If consumer could procure 10% of site requirement from utility to maintain grid interconnectivity and self-generate the rest*
       - *Backup Power (Interruptible) – required during unplanned outage*
       - *Supplemental Power (Firm) – 10% mentioned earlier; site would be configured to maintain essential operations during an unplanned outage*
       - *Maintenance Power (Firm) – scheduled maintenance periods that would be pre-arranged with the utility to ensure the system had available capacity to serve the site*
7. *We support the availability of interruptible service in the event site demand exceeds the Reservation Capacity provided to the utility.*
   - *We do not support the proposed 4x existing demand charge for the interruptible service.*
   - *IT rates could be based on current economic conditions; if excess capacity is available this would facilitate additional revenue for the utility.*

1. *When was the Bary correction first implemented, and what was the original intent?*
   - *Elenchus report states it was to improve intra-class equity; was there ever a case of inter-class subsidization?*
   - *Would SaskPower consider removing Bary correction for entire Power Class?*

SASKPOWER'S RESPONSE:

The Bary Correction was first implemented into SaskPower's rates in 2001 with the oversight and support of the Saskatchewan Rate Review Panel (SRRP). It was done to address the relationship between a customer's load factor and coincident peak that is not recognized in standard rate designs. Demand related costs are allocated to customer classes based on the total coincident peak demand of the class, yet most utilities invoice customers based on each customer's non-coincident peak (billing demand). This approach implicitly assumes that all customers in the class have the same (i.e., the average) coincident factor. As a result, individual customers in a class with below average coincident factors will pay a larger demand charge than the capacity-related costs that they cause individually. Conversely, an above average coincident factor customer will pay less demand charges relative to the capacity related costs they cause. The Bary Correction was inserted into the rates to address this anomaly. Elenchus provides a detailed explanation of the Bary Correction and the rationale for its implementation on pages 1 & 2 of its report.

For clarity, SaskPower defines intra-class as between customers within the same class and inter-class as between customer classes. SaskPower does include some levels of inter-class subsidization within its rates, a standard industry practice. The level of cross subsidization is reflected in a utility's revenue to revenue requirement ratios (R/RR), which is the ratio of the revenues received from a customer class to the revenues required to serve them. A R/RR below 1.00 indicates that a customer class is paying less than the cost to serve while an R/RR above 1.00 indicates that a customer class is paying more than the cost to serve. On a system-wide basis, the ratio must equal 1.00. A range of acceptable R/RR ratios of 0.95 to 1.05 is used in many jurisdictions as being acceptable for rate design and is considered to reflect that a customer is paying their fair share of costs. SaskPower attempts to set its ratios between 0.98-1.02 during rate applications, with residential and farm customers being set to 0.98, Resellers to 1.00 and all other customers classes at 1.02.

SaskPower is currently examining its entire rate design strategies and all options, including the removal of the Bary correction, are being examined. A final decision will be announced during the next scheduled rate application.

2. *Please provide an example of the CRS structure if a 100% load factor were utilized as per the recommendation from Elenchus on page 18.*

SASKPOWER'S RESPONSE:

Please see the table below showing the CRS rate structures at a 100% load factor:

	N22@100%	N23@100%	N24@100%
Basic Monthly	$6,188.90	$7,093.95	$7,615.80
Energy ($/kWh)	$0.04082	$0.04028	$0.03916
Demand ($/kVa)	$30.339	$23.559	$23.396

3. *Please provide SaskPower's winter/summer coincident peak and non-coincident peak profiles. How does the nature of the Power Class customer base compare to other jurisdictions? Would you consider the Power Class load profile diverse or does it put excessive stress on the SaskPower system?*

- *Power Class Information Request:*
  - *Customer count*
  - *Total Revenue*
  - Total Energy
  - Total Demand Peak (by non-coincident and coincident peak)

ELENCHUS' RESPONSE:

Electric utilities across Canada define their industrial and commercial classes in different ways that reflect the types of demands that their customers have. Most utilities attempt to define their large volume classes in a way that groups customers with similar demands into distinct rate classes. As a result, it is not unusual for there to be limited diversity within each industrial and commercial class. When that is done, most customers within the class have load factors and coincidence factors that are close to the average, making adjustments such as the Bary correction less necessary.

When a rate class is fairly homogeneous there is relatively little intra-class diversity. The diversity benefits relate more to intra-class diversity which is captured in the cost allocation study since cost allocation of demand-related generation and transmission costs is based on the coincident peak demands of the customer classes.

Given the inconsistency of both the definition and the make-up of large volume classes across utilities undertaking a comparison would require significant effort and resources.

SASKPOWER'S RESPONSE:

Saskatchewan Power Class customers are usually base loaded due to their processes, meaning that they typically do not vary their load hour by hour, day by day, or even season by season. There may exist some diversity from customer to customer; however, the overall class is viewed as a base loaded entity, and are consistently drawing load at the time of system peak, as indicated by their high coincident peak load factors in the table below:

						2CP		WINTER		SUMMER	
	Customers	Revenue	GWH	NCP KW	NCP LF %	2CP KW	2CP LF%	CP-W KW	Winter LF%	CP-S KW	Summer LF%
Power Class	137	$ 808,842,258	10,149.7	1,784,953	64.9%	1,223,327	94.7%	1,248,575	92.8%	1,198,079	96.7%

It should be noted that although the Power Class' summer peak is lower than their winter, summer deliverability capability is de-rated relative to winter due to higher ambient temperatures. Air cooled equipment (breakers, switches, conductors, etc.) has a reduced capability the higher the ambient temperature. Based on information from SaskPower staff, the capacity of network equipment in the summer can be reduced by as much as 20% to 30% of the winter capacity due to the higher summer temperatures. As a result, even though SaskPower is a winter peaking utility, it is the summer capacity that determines the required installed capacity of certain facilities.

4. *How would the utility manage the CRS reservation capacity when comparing a new customer versus an existing customer?*

   - *New Customer – would SaskPower build capacity to that site based on reservation capacity provided by customer or by aggregate site consumption? Would SaskPower build excess capacity to allow for potential interruptible service?*
   - *Existing Customer – known excess capacity to customer's facility when self-generation installed, would SaskPower require installation of automatic load shed or transfer trips from utility to customer in the event capacity is no longer available above the Reservation Capacity?*

SASKPOWER'S RESPONSE:

For new and existing customers, SaskPower assesses system impacts based on what is requested by the customer. Facilities are installed to service the requested capacity. Transmission facilities provide a step change to installed capacity. As an example, one of SaskPower's standard 138/72-25 kV transformers are 25 MVA. If a customer requests 10 MVA of 25 kV service and the existing 25 kV network in the area can not support it, a step change in transformer capacity would be required. Similarly, the line built to the customer site would be a step change (not just exactly for 10 MVA).

ELENCHUS' RESPONSE:

Non-firm/interruptible service is typically provided on the basis that offering interruptible service is the least cost option for meeting peak demand. For example, in a capacity constrained system expensive system upgrades can be avoided if some customers can be interrupted in high demand periods. Interruptible service has no value to a utility if investment in capacity upgrades cannot be avoided.

Utilities that maintain interruptible service as an on-going option typically do so for one of two reasons.

- The interruptible (or curtailable) rate may be made available to customers that use it to displace alternate types of energy when the interruptible supply is available and lower cost. For example, Manitoba Hydro offers curtailable service at a rate that is based on the value of its power in the export market. Manitoba Hydro reduces it exports when it can sell power to a domestic customer at a rate that is as profitable as exporting the power.
- Interruptible power is more commonly used as a supply tool with industry and the utility engaging in joint planning to minimize the total cost of meeting the needs of customers.

5. *Is the SaskPower Power Class considered diverse enough to accept that it should be not be assumed all standby customers will require service at the same time during the system peak?*

   - *Has an opportunity presented itself to gather the Power Class customers and solicit the potential generation capability which could be funded by the utility as proposed on page 17 of the Elenchus report? This would allow the utility to retain customers and facilitate economic bypass.*
   - *Consideration should be made to account for the difference in federal and provincial carbon programs as well.*
   - *What would be required within the Power Class to achieve the adequate diversity benefit for the aggregate coincident peak demand as per page 3 in the Elenchus report?*

SASKPOWER'S RESPONSE:

Historically, SaskPower has worked with customers to contract for large scale power when an opportunity has existed. Some customers have also installed self-generation for back-up purposes. From a production cost of electricity perspective, small scale thermal electricity generation installed by customers is not cost effective relative to SaskPower building larger thermal generation facilities. New small thermal generation facilities also emit greenhouse gas emissions at a higher rate than larger thermal generation facilities that SaskPower builds. No economic or environmental advantage for Saskatchewan is gained by encouraging smaller scale thermal generation since it is higher cost and has higher emissions.

As far as the Saskatchewan wholesale electricity sector is concerned, there is only the Federal regulator. Federal regulation imposes a cost which SaskPower seeks to mitigate as it can economically, but the cost is primarily unavoidable and is passed along to rate payers. Discriminating between rate payers in applying this cost burden is not desirable; it is inefficient and unfair. The potential advantage of self-generation to avoid paying this cost is a problem but it is better resolved by changes to Federal and Provincial regulation to provide a similar treatment between wholesale generation and self-generation.

As detailed in Question 3, Power Class customers consistently draw load at the time of system peak during the winter and summer seasons, indicating there is little diversity within the class. From the system planning perspective, firm backup requires the same capacity to be available at the peak whether or not the CRS customer has self-generation. Furthermore, since the self-generation is either available or not available, the diversity benefit that is realized with a firm customer is lost. The firm classes (E22/E23/E24) will have less diversity and the CRS classes will have no diversity until there are multiple customers in the class.

Furthermore, the CRS rates were derived based on existing Power Class' profiles, as there is no other historical load data to base their designs from. Since there are no customers currently residing on the CRS rates, determining the actual diversity benefit whenever the number of customers is too low requires an extensive analysis of the maximum coincident peak demands of the class over many years. Therefore, SaskPower currently does not have enough information to assume all standby customers will not require service at the same time during system peak. SaskPower would require at least 3 to 5 years of load data of multiple customers within the class to verify its diversity. Caution should be exercised, however, as diversity does not necessarily correlate with benefit. Costs are allocated to customer classes based on cost causality principles. It is possible that the maximum coincident peak demand of the newly defined class may result in higher demand charges, depending on their consumption at the time of SaskPower's system peaks.

6. *Backup Power*

- *Will you consider the statement in the Elenchus report regarding other jurisdictions differentiating between rates for planned and unplanned events?*
  - *If consumer could procure 10% of site requirement from utility to maintain grid interconnectivity and self-generate the rest*
    - *Backup Power (Interruptible) – required during unplanned outage*
    - *Supplemental Power (Firm) – 10% mentioned earlier; site would be configured to maintain essential operations during an unplanned outage*
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ELENCHUS' RESPONSE:

The Elenchus report implicitly addresses each of these possible service options by observing that the primary rate design principle is that customers should pay a share of the utility's costs that corresponds to the cost they cause. The "cost causality principle".

It follows that if, from a planning perspective, any portion of a customer's load that must be included in the utility's forecast demand for system planning purposes "causes" the related energy and capacity costs that will be required to serve the customer's load. Causal costs should be recovered from the "causing customer" whether the required energy and capacity is required 100% of the time or only during planned or unplanned outages.

Required backup, supplemental and maintenance power as defined in the question will each cause the utility to maintain available capacity and energy unless the customer is technically and economically able to forgo grid-based electricity in the relevant circumstances. The terms and conditions for any of the services need to be designed to send an economic signal to customers that is consistent with the system planning assumptions and is an effective deterrent against gaming the system (e.g., paying a rate for interruptible service only because the customer believes the utility has the capacity to serve it; hence, interruption is not a practical consideration).

SASKPOWER'S RESPONSE:

SaskPower agrees with Elenchus' statement above. The scenarios above entail customers securing minimum interconnectivity to the grid while requiring SaskPower to maintain facilities that have the potential to provide full stand-by services for their self-generated loads at reduced rates. Any rates designed for services must be reflective of the utility's costs (the majority of which are fixed), be recovered based on cost-causality

principles and consistent with the system planning assumptions (currently the maximum peak demand the customer has reached over the previous rolling 2-year period).

7. *We support the availability of interruptible service in the event site demand exceeds the Reservation Capacity provided to the utility.*
    - *We do not support the proposed 4x existing demand charge for the interruptible service.*
    - *IT rates could be based on current economic conditions; if excess capacity is available this would facilitate additional revenue for the utility.*

ELENCHUS' RESPONSE:

Elenchus interprets this question as seeking comment on the merit of SaskPower introducing an interruptible service that could be utilized if demand exceeds the Reservation Capacity provided to the utility.

Elenchus notes that interruptible service is normally introduced by a utility as a means of shaving peak demand. This is done to avoid incurring significant capital costs to increase its generation and/or transmission capacity as would otherwise be required to meet forecast peak firm demand. In that circumstance, interruptible service is the least cost option of meeting future customer demand.

In a circumstance where capacity expansion is not required, enabling customers to replace firm demand with interruptible demand will have the effect of shifting the recovery of causal costs from the customers that switch to the lower interruptible rates to the remaining firm customers.

Also refer to the response to PE #6 at page 11 of Appendix D.