Identification of impediments to forward contracting

A Survey of Industrial Loads undertaken as part of the 2012 State of the Market Report

August 15, 2012

PREFACE

The distinguishing feature of the Alberta market compared to most organized electricity markets is that it is 'energy-only'. In an energy-only market, the private sector bears the risk and decides on retirement of generation and investment in new capacity, mainly driven by revenues derived or expected to be derived from the wholesale market. There is no regulated and centrally administered resource adequacy and planning mechanism. Apart from a price cap and price floor, prices in the spot market are regulated by the forces of competition, within the parameters of the Alberta market design and supporting rules and procedures. Finally, unlike most other organized electricity markets, participants are free to unilaterally engage in strategies to attempt to move the pool price (as long as they do not impede competitive responses) and there is no mechanism to administer prices or offers at some proxy of cost.

Under the circumstances outlined above it is obviously important that competition is doing its job in regulating market outcomes. To that end the MSA is undertaking a state of the market report on competition and efficiency. One element of this is to gain an understanding of whether a perceived low level of participation of industrial loads on the forward exchange and broker markets might be having an adverse impact on efficiency.

The Market Surveillance Administrator is an independent enforcement agency that protects and promotes the fair, efficient and openly competitive operation of Alberta's wholesale electricity markets and its retail electricity and natural gas markets. The MSA also works to ensure that market participants comply with the Alberta Reliability Standards and the Independent System Operator's rules.

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Our Motivation

The Market Surveillance Administrator (MSA) is currently undertaking a state of the market report, envisioned as an assessment of the state of competition within, and the efficiency of, the Alberta wholesale electricity markets. The focus of the report will be on the Alberta power pool and the forward financial market. The MSA has observed a reduction in forward market activity that in part seems to be associated with a low level of forward contracting by industrial loads.

This trend has prevailed over a period where pool price volatility has been increasing. One of the key functions of the forward market is to provide a mechanism for load to hedge against pool price risk. It would seem logical that the demand for hedges should increase alongside market volatility rather than decrease. While the MSA takes no position on what method load should use to hedge risk, there was some concern that this trend may indicate some systematic barrier preventing load from participating as much as it may have liked, and/or that low levels of liquidity may themselves have an adverse impact on efficiency. Inadequate liquidity of forward markets may act as barrier to entry for new suppliers or be a source of competitive disadvantage for small suppliers. To examine these concerns the MSA surveyed industrial loads about their choices and their opinions on forward contracting.

What We Looked At

To better understand the options for hedging available to load and their relative merits, the MSA surveyed the members of the Industrial Power Consumers Association of Alberta (IPCAA) and the Alberta Direct Connect Consumers Association (ADC). The survey questions mainly focus on the information related to the following areas:

- Load's exposure to the pool price risks
- Different tools used by the load to manage pool price risks
- Load's forward contracting activities
- Load's view on the barriers to forward contracting

All responses were received by June 2012. Responses were received from 22 industrial loads and based on the survey results we estimate these account for 24% of typical electricity demand in Alberta. The MSA recognizes that firms that have chosen to join load groups are likely sophisticated market participants and by restricting the survey to ADC and IPCAA members it has excluded other industrial loads with potentially different views.

What We Found

The survey results support the observation of low levels of participation on the forward exchange, the NGX, by certain industrial loads. One significant factor that explains low levels of forward contracting in general is the prevalence of cogeneration among the respondents. Around 90% of their consumption is offset by on-site generation. The MSA believes that this reflects efficiencies resulting from economies of scope rather than barriers to participation in the forward markets.

Of the remaining respondents, a significant number are highly exposed to pool price and predominantly manage production in response to pool price rather than through forward contracts. The forward

contracting that does occur is infrequent, occurs a considerable amount of time before the fact and is dominated by bilateral contracts.

There are significant differences between respondents on whether there are barriers to forward contracts. Some report no barriers at all. For others, barriers are significant and satisfaction with the options available is low.

The MSA's preliminary conclusions are presented in the report but the implications of the survey for the assessment of state of the market warrant further consideration. The MSA is seeking comment from stakeholders on the survey findings and whether additional work would provide greater insight into barriers faced by different customer segments beyond those considered in this survey.

1. Introduction

The participation of consumers in any market, electricity markets are no exception, is an important element in understanding market competition and efficiency, the objective of the Market Surveillance Administrator's (MSA) state of the market report. The MSA has observed a reduction in forward market activity that in part seems to be associated with a low level of forward contracting by industrial loads. Two trade associations, the Alberta Direct Connect Consumers Association (ADC) and the Industrial Power Consumers Association of Alberta (IPCAA) represent some, although by no means all, entities in this segment. These associations are active and sophisticated stakeholders in the Alberta electricity market and the MSA expects their members are fully aware of the options for forward market contracting. The MSA determined that it would be useful to take a sounding from them on the nature of their participation in the Alberta electricity market and if barriers to further participation exist.

In April 2012 the MSA sent a questionnaire to members of ADC and IPCAA with an undertaking to maintain the confidentiality of individual responses. This report summarizes the information obtained from this survey. It is published for information and comment as a part of the work leading to the MSA's 2012 state of the market report. We appreciate the cooperation of the members of ADC and IPCAA and the active support of both associations' Executive Directors in completing this work. The summary and assessment of responses is of course the work of the MSA and should not be assumed to have the endorsement of either ADC or IPCAA.

The MSA received responses from 22 companies, representing an estimated 24% of total load (2080 MW).[1] The typical electricity demand of respondents ranged from less than 10 MW to over 500 MW, and included representatives from across a wide spectrum of industries, including pulp and paper, chemicals, pipelines and oil sands. The survey consisted of 24 questions, a summary of responses to 22 of those questions are shown in Appendix A of this report.[2] The survey is included in Appendix B.

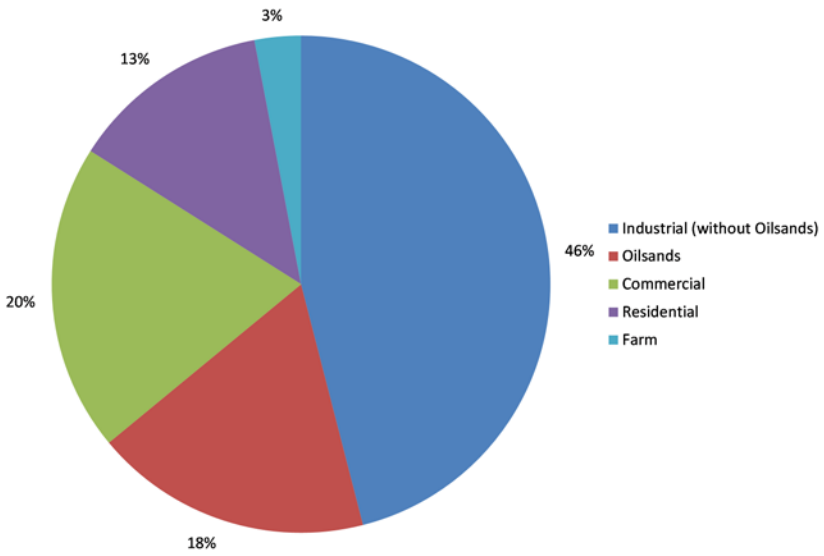
[1] See Appendix A, section A.1. Overall industrial load (including oilsands) makes up 64% of the total load, see Figure 2.1.

[2] One of the remaining two questions is if the respondent consents to be contacted if the MSA wishes clarification. The other solicited additional comments with no quantative component.

Load by customer class:

Based on an analysis of survey results we have estimated that the respondents represent approximately 24% of total load. For purpose of comparison this represents less than half (about 38%) of all industrial load.

Electricity Consumption in 2011, by Customer Class



2. Findings

As expected, the respondents to the survey had very low rates of participation on the forward exchange (NGX) or through brokers. Many respondents did not use forward contracts at all and relied upon other methods. Of those using forward contracts, bilateral transactions were by far the most dominant. Respondents to the survey commonly used more than one method to manage pool price risks. In a few cases respondents indicated the need to manage pool price risks was small, for example where electricity was a small component of overall costs or the respondent was able to pass through some or all of the risk to customers.

We consider some of the findings of the survey in more detail:

- Self-Supply/Cogeneration
- Price responsive load
- Barriers to financial contracting

The MSA findings have relied upon the survey responses summarized in Appendix A along with some of the comments provided by survey respondents.

2.1 Self-Supply/Cogeneration

Nine of the respondents to the survey indicated they used on-site generation to serve electricity demand. Respondents with large loads were more likely to have and use on-site generation. In many cases on-site generation was approximately the same size as load, effectively eliminating much of the need to forward contract. In a few cases, on-site generation was considerably larger than load resulting in the respondent having power for sale. Based on estimates obtained from the survey, total on-site generation and total load for all respondents was approximately equal.

Economies of Scale and Scope:

Economists distinguish between economies of scale and scope as sources of efficiency. In the case of cogeneration, it is economies of scope that are most important. Both are examples of static productive efficiency.

Economies of Scale: Economies of scale occur when it becomes cheaper on average to produce more of a good. Even if economies of scale can be enjoyed for some levels of production, they need not apply for all levels of production: for example, over some ranges average costs may decrease and then increase again after a certain point. Economies of scale generally arise from indivisibilities (inputs that cannot be 'scaled' to certain levels of production).

Economies of Scope: Distinct from economies of scale, economies of scope occur when it is cheaper to produce goods together rather than apart. Economies of scope arise from shared inputs – in this case, fuel that can be used for electricity and steam at the same time.

The survey did not explicitly ask whether the on-site generation was part of a cogeneration system (both power and steam) or produced power alone. Given the scale of the responses it is clear that much of it is cogeneration and that the primary driver is steam requirements rather than a desire to hedge or control electricity costs. Cogeneration has significant efficiency advantages over the separate production of steam and electricity resulting from economies of scope. However, a consequence of this is that a significant amount of Alberta's industrial load does not need to contract on forward financial markets, due to what is sometimes described as vertical integration.

Vertical integration can also be a consequence that loads have found other methods of hedging unattractive. To date, this does not appear to have been the case. However, one respondent indicated that although it does not need steam, it is considering self-supply as a method to avoid projected increases in transmission charges.

The survey did not consider whether there were barriers to building on-site generation or cogeneration. It seems likely that there is some minimum efficient scale and a requirement for some technical expertise. Technical expertise does not seem a significant barrier as Alberta has a number of examples where electricity generators have provided expertise in commissioning and operating on-site facilities. Historically, the most frequently cited impediment to adoption is that it is not economical without a steam requirement.

Vertical and Horizontal Integration:

Economists also distinguish different types of industrial organization. Each may have benefits and costs for the individual firm and society as a whole.

Horizontal Integration: Describes consolidation within an industry where firms are involved in the same part of the production process. For example, if two competing generating firms merged it would be an example of horizontal integration.

Vertical Integration: Describes consolidation within an industry where a firm controls different parts of the production process, either some of the inputs needed for its production process (backward vertical integration) or refines, markets or retails some of the outputs (forward vertical integration). An oilsands operator with cogeneration represents an example of vertical integration, where the firm produces steam and electricity, some of the inputs required by its production process. The other common form of vertical integration in electricity markets is where electricity generation and retailing are combined within a single firm.

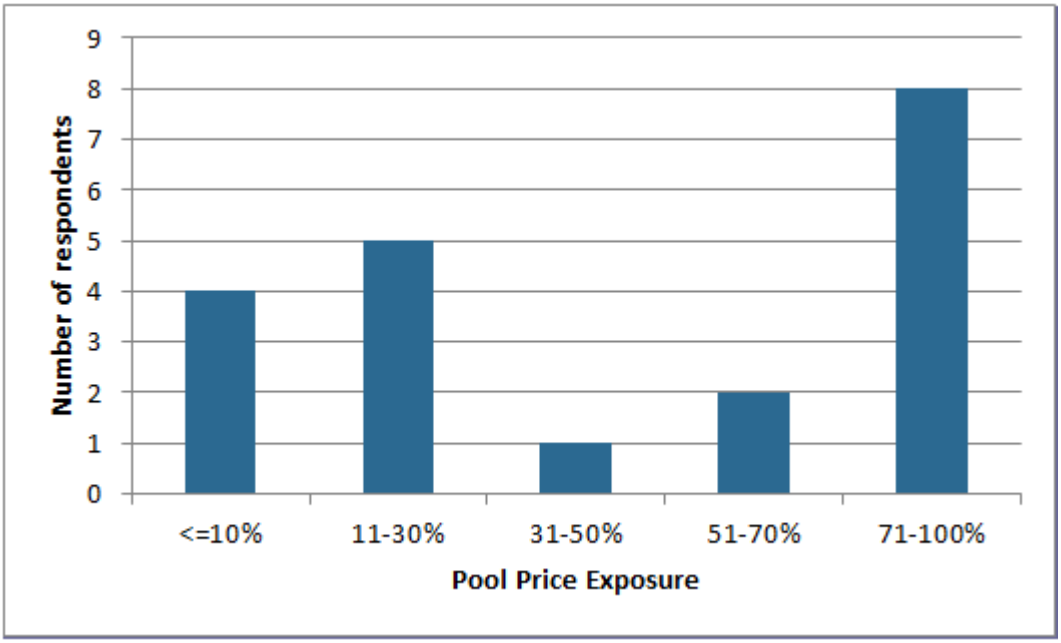
2.2 Price Responsive Load

In electricity markets, prices can be subject to substantial volatility. Despite this, demand for electricity in the short term is not usually very responsive to price increases. Economists describe this in terms of the price elasticity (responsiveness) of demand being highly inelastic. Alberta's electricity market is no exception. Price responsive loads make up only a very small portion of total consumption. However, those loads that are price responsive play an important role in moderating supply-side market power and in consequence the overall level of competition in the marketplace.

Demand response is not feasible for all firms. To be effective it must be paired with flexible production technology that can be ramped up or down in a timely manner in response to variations in price. Further, there are limits on how much demand response can be employed. Firms often have obligations to meet a certain production target within a certain time frame. If pool price persistently settles at a high level, then at a certain point the firm will be forced to return to the market.

The survey indicates that a significant number of respondents (predominantly those without cogeneration) remain highly exposed to pool price (see Figure 2.1). The survey also asked whether companies altered production processes in real time to manage pool price risk. Half of the companies (11 respondents) indicated that they did. Three of these companies also had on-site generation, which may indicate that they varied *electricity* production rather than their conventional output. Most of the other companies that altered production indicated electricity was a large share of operating costs and that much of their electricity demand was exposed to real time pool price.

Figure 2.1: Average Percentage of Electricity Demand in Alberta Exposed to Real Time Pool Price, by Count (20 responses in total)



Some of the respondents indicated that part of the attraction of demand response was that it was feasible without further capital investment, whereas on-site generation or forward contracting both required up-front costs. Those with price-responsive load were also more likely to perceive significant barriers to forward contracting through brokers, the exchange or bilaterals. While not part of the survey questions, one respondent indicated that their market participation went beyond being price responsive and that they were active sellers of ancillary services.

2.3 Barriers to Financial Contracting

Financial contracts seem like a natural way to hedge pool price risk. However, for many of the industrial loads surveyed they prove problematic.

There are three distinct venues for forward contracting in Alberta: an exchange (NGX), through brokers and finally through bilateral contracts. The NGX is an anonymous exchange that functions as a central counterparty, which removes any default risk. The broker's market, also called the over-the-counter (OTC) market, encompasses trades facilitated by third party brokers. Counterparties are usually known to each other and the lack of a central counterparty like the NGX means that there is some risk of default. Some OTC transactions are subsequently cleared and settled through NGX to manage this risk. The final option, the bilateral market, involves contracts directly between firms. For instance, a generator might contract directly with a steel mill to sell electricity at a mutually beneficial price. Instances where a load purchases a contract from a retailer also fall under the heading of bilaterals.

Of the 22 companies responding to the survey, 14 indicated that they had traded financial contracts, 8 said that they had traded contracts in the past 12 months and 5 more reported they did not do so because they had previously fulfilled their contract hedging requirements.

One observation that motivated this survey was that industrial loads seemed to be increasingly absent from the forward market, especially on the NGX. The survey results support this observation. Only a single company was active on the brokers' market (and even then for just 20% of its forward contracting)

and only two companies were active on NGX. Overwhelmingly, bilateral contracts were the most popular option for forward contracting although the MW volume appears to be relatively low.

The survey elicited responses from loads as to the significance of barriers to financial trading on NGX and through brokers. Overall four respondents (three of whom engaged in forward contracting) answered that none of the factors were significant barriers. Of those who traded financial contracts, the most significant barrier to doing so on NGX or through brokers was that company policy prevented trading of financial instruments. For these companies, purchasing bilateral contracts posed no such problems as they tended to be classed as physical rather than financial instruments. Of those who did not trade financial contracts the most significant barriers were prudential requirements or lack of customized contracts. Figures 2.2 and 2.3 summarize the responses received for those who did or did not engage in forward contracting.

Figure 2.2: Perceived Barriers to Contracting Through NGX or Brokers, for Companies Engaging in Forward Contracting

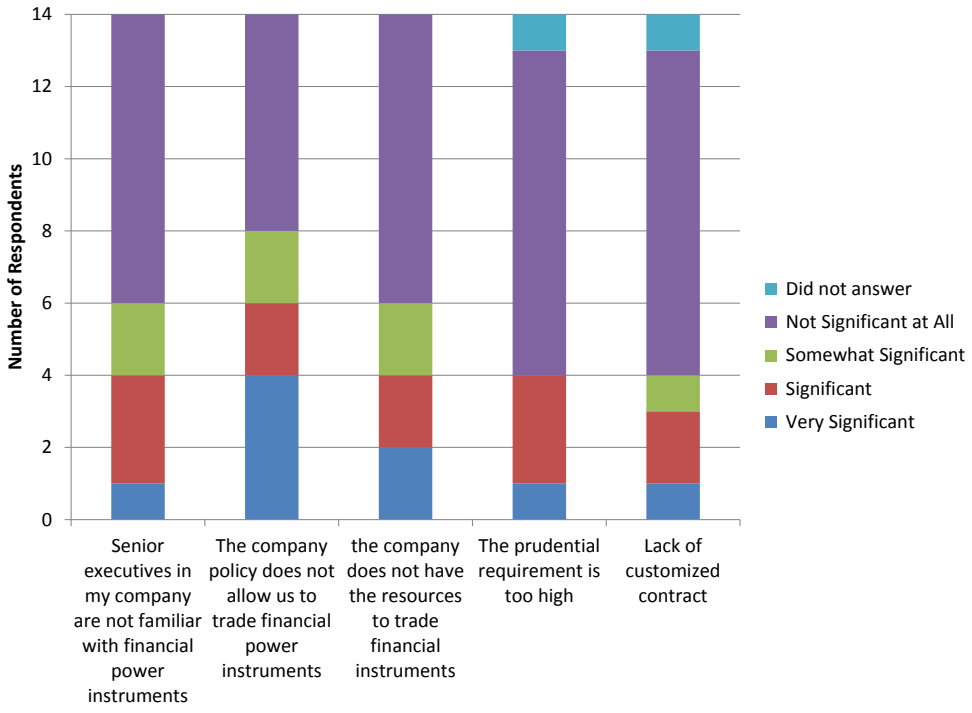
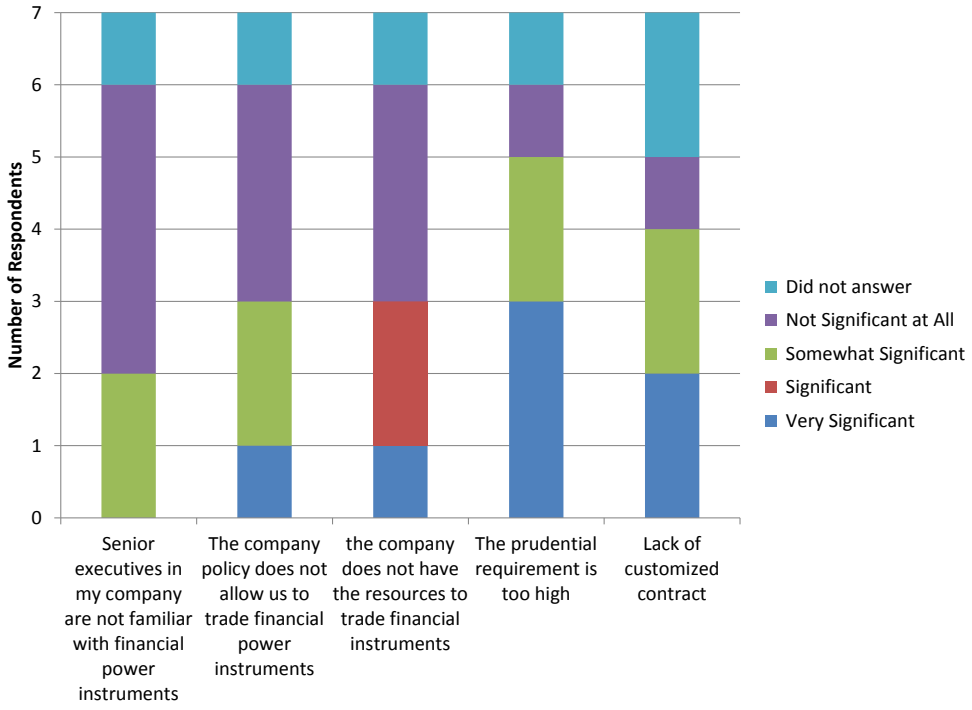


Figure 2.3: Perceived Barriers to Contracting through NGX or Brokers, for Companies not Engaging in Forward Contracting



The survey also examined the perceived significance of barriers to bilateral contracting. Overall, six respondents (five of whom used forward contracts) answered that none of the factors were significant barriers. This included all four respondents who indicated there were also no barriers in response to contracting on NGX or with brokers. From this the MSA concludes that a significant minority of respondents likely faced no barriers at all. Of those that did engage in forward contracting, most reported few significant barriers. Of those who did not engage in forward contracting, the perceived barriers were much more significant. Figures 2.4 and 2.5 summarize the responses received for those who did or did not engage in forward contracting.

Figure 2.4: Perceived Barriers to Bilaterals, for Companies Engaging in Forward Contracting

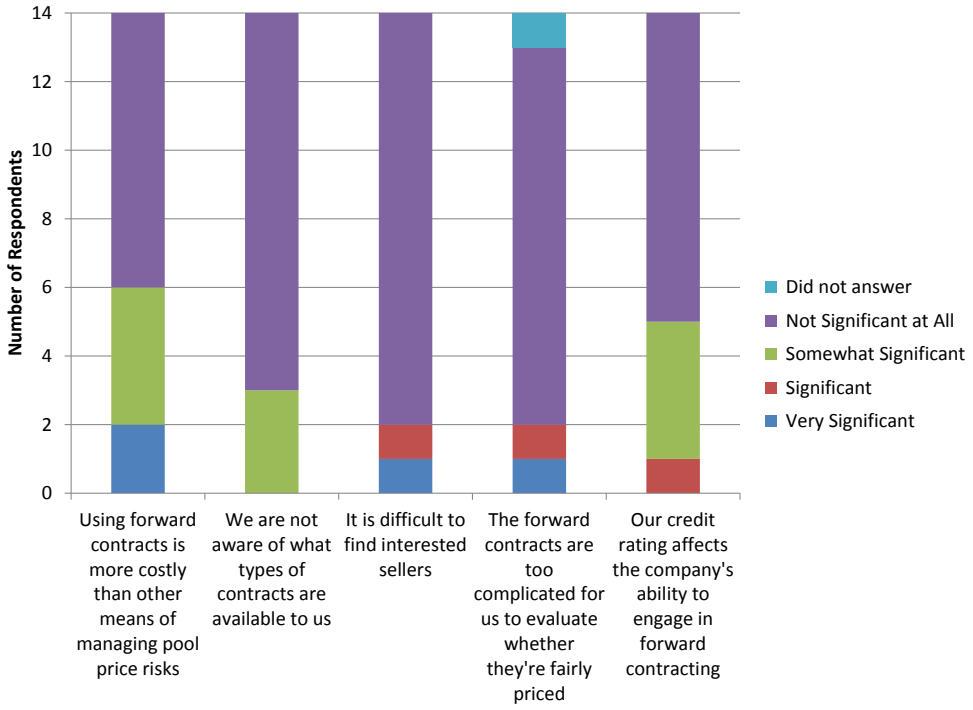
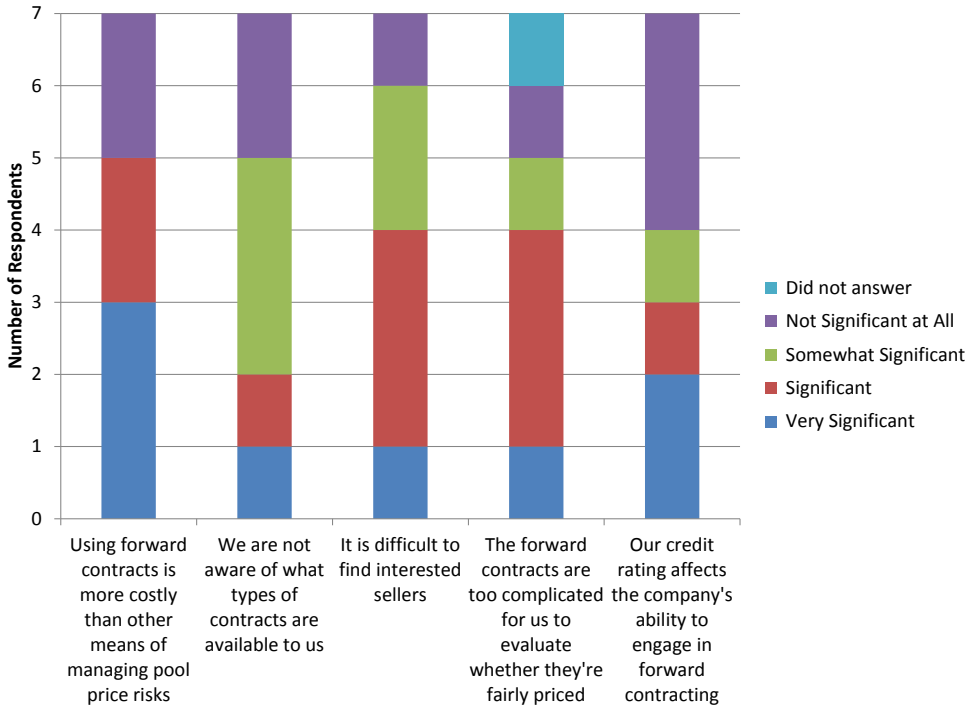


Figure 2.5: Perceived Barriers to Bilaterals, for Companies <u>not</u> Engaging in Forward Contracting



Further survey results indicated that of those forward contracting there was a marked preference for long term contracts negotiated infrequently and a considerable amount of time before the fact. This appears to result in most only rarely entering into contracts. Based on the MSA's observation these types of contracts are thinly traded on the exchange. The benefits of exchange trading may also be limited for loads who transact infrequently. Further, to access the exchange a firm must incur non-negligible costs regardless of the frequency of trading, and put up significant collateral. For many that wished to find counterparties for bilateral deals, only a few reported problems, although the number of counterparties quoting prices was small.

3. Conclusion

The survey results support the observation of low levels of participation on the forward exchange by certain industrial loads. For those with on-site generation the need to engage in further forward contracting is mostly removed. From the survey results, the MSA calculates something like 90% of total consumption is offset. The MSA believes that there is a strong efficiency explanation for the scale of the cogeneration built in the province, and that its proliferation is largely unrelated to the forward market. A significant number of the remaining respondents are highly exposed to pool price and predominantly manage production in response to pool price rather than forward contract. The forward contracting that does occur is infrequent, occurs a considerable amount of time before the fact and is dominated by bilateral contracts. There are significant differences between respondents on barriers to forward contracts. Some report no barriers at all. For others, barriers are significant and satisfaction with the options available is low.

Beyond the survey results themselves the MSA is interested in the implications for the state of the market. Self-supply or reliance on bilaterals may be entirely rational for individual industrial loads. That may also result in a lack of forward market liquidity on the exchange and lower the visibility of market prices. Inadequate liquidity of forward markets may act as a barrier to entry for new suppliers or be a source of competitive disadvantage for small suppliers if these suppliers are unable to engage in bilateral contracting. Lack of participation on the exchange by those surveyed may be less of a problem if other market participants generated liquidity. This could include other industrial loads or retailers. Based on the MSA's observations, neither of these groups appears to be very active. Some of the large industrial loads not included in the survey have significant cogeneration. Smaller industrial and commercial loads may lack the scale to engage in exchange trading and consequently would favour bilaterals (possibly with retailers). The MSA notes that one large retailer is also highly vertically integrated which limits the need to participate on the exchange. Anecdotal evidence suggests smaller retailers favour bilateral contracts.

The MSA emphasizes it has reached no final conclusions and seeks comment from stakeholders as to the significance of the results of the survey and how they relate to the state of competition in the Alberta market. The survey considered only one subset of load. An open question is whether further survey work, perhaps targeted at commercial loads or retailers, would provide an additional insight into barriers or drivers for participation in various markets.

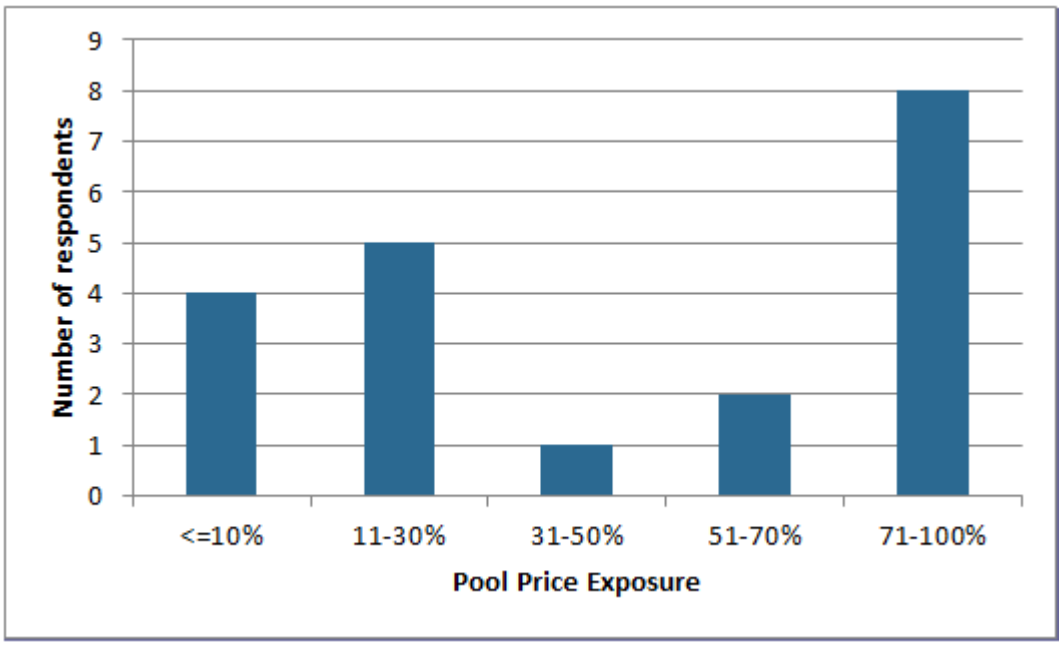
Appendix A: Summary of Responses

In total, the MSA received responses from 22 companies, 9 of which are members of ADC and the remaining 13 belonging to IPCAA. In some cases respondents chose not to provide an answer to some questions. In each section we indicate the number of respondents (n). The following is a summary of the responses the MSA received. In some cases the respondents agreed to be contacted by the MSA in the event that we wanted to clarify or further understand a response.

A.1 What is the typical total electricity demand of your company in Alberta? (n=21)

The majority of respondents came from medium-sized industrial loads (between 11 and 100 MW) with relatively few respondents at the extremes.

Figure A.1: Histogram of Respondents by Typical Total Electricity Demand



From the ranges of typical electricity demand specified we can get an approximate idea of how much load was represented by the survey. For the 21 respondents less than 500 MW we get total electricity demand of between 1038 and 2120 MW. Assuming a value of 501 MW for the single respondent in the >500 MW category, we get a range from 1539 to 2621 MW (with an average of 2080 MW). This represents approximately 24% of total load.[3]

[3] Total Alberta Internal Load (AIL) was 73600 GWh in 2011, with an additional 3473 GWh of demand satisfied by net imports. Assuming annual system losses are 2,580 GWh we can estimate the percentage of total demand of survey respondents as (2.080 GW * 8760 hours) / (73600 GWh + 3473 GWh – 2580 GWh) = 24.46%.

Table A.1: Typical Total Electricity Demand of All Respondents

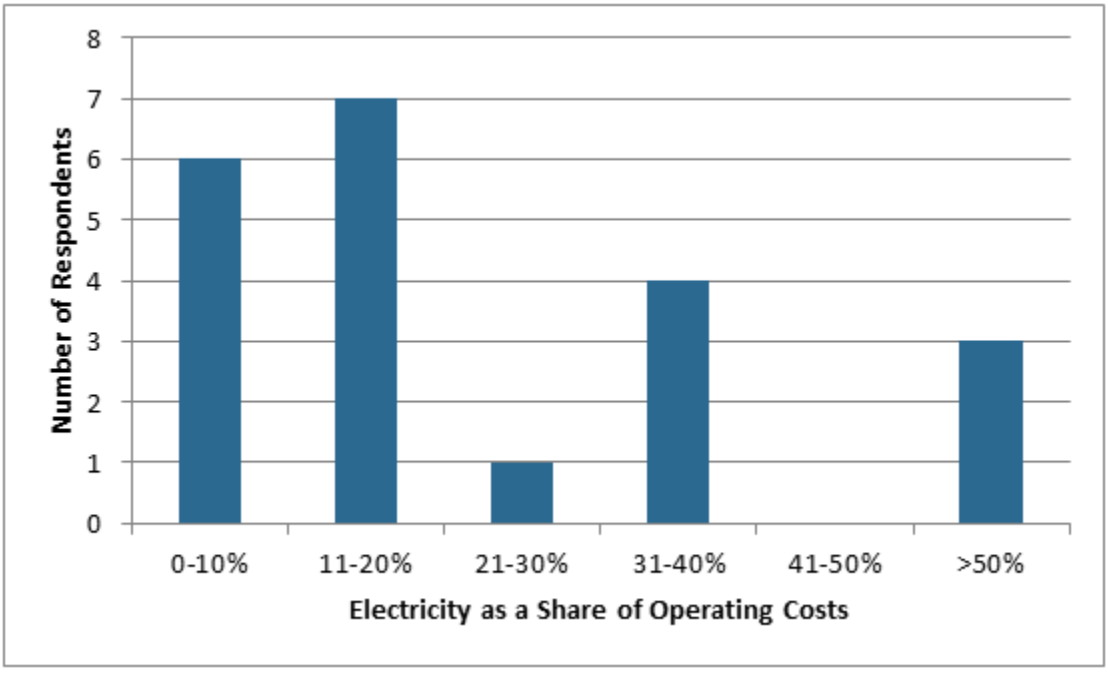
Response	Number of Respondents [A]	Minimum Load [B]	Maximum Load [C])	Estimated Total (min) [A]x[B]	Estimated Total (max) [A] x [C]
0 - 10 MW	2	0	10	0	20
11 - 50 MW	7	11	50	77	350
51 - 100 MW	7	51	100	357	700
101 - 150 MW	2	101	150	202	300
151 - 250 MW	1	151	250	151	250
251 MW - 500 MW	1	251	500	251	500
> 500 MW*	1	501	501	501	501
Total:	**21**			**1539**	**2621**

*For the greater than 500 MW category we have assumed both a minimum and maximum load size of 501 MW

A.2 What percentage is the electricity cost of the total operating cost of your company in Alberta? (n=21)

For the majority of respondents (13 out of 21), electricity made up less than 20% of operating costs. On average, these loads also have higher typical electricity demand (i.e. even though they are large consumers of electricity, it makes up a relatively small proportion of total costs).

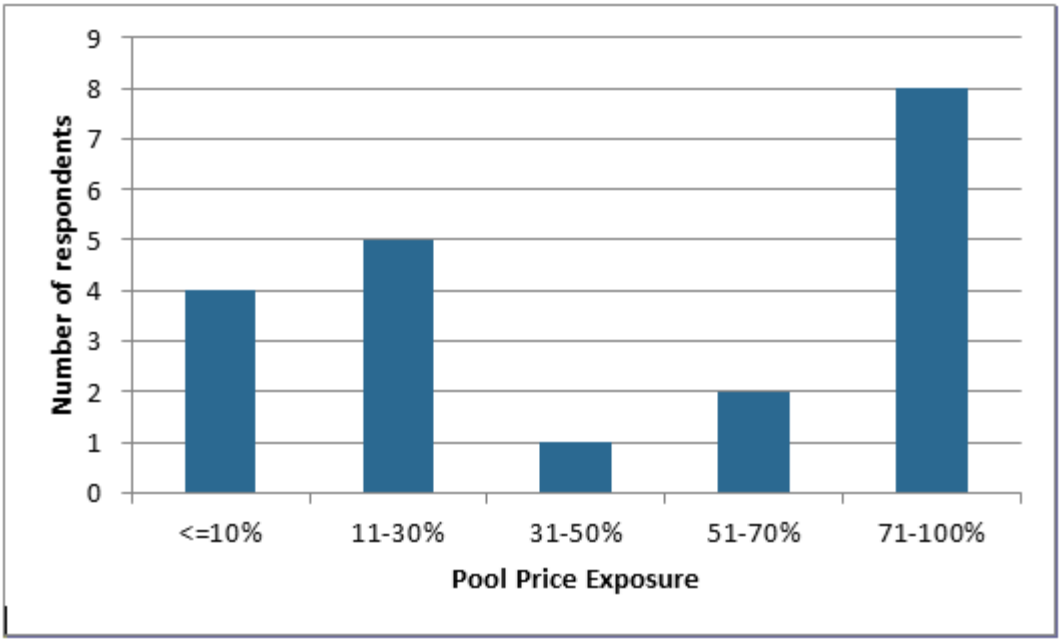
Figure A.2: Electricity Cost as a Percentage of Total Operating Cost of Your Company in Alberta, by Count



A.3 On average what percentage of your company's electricity demand in Alberta is exposed to the real time pool price? (n=20)

Responses to this question either indicated loads were largely hedged against pool price (less than 30% exposed) or largely unhedged (>70% exposure). Only 3 respondents fell inbetween. A disproportionate number of small and medium loads hedge little of their consumption, while the larger loads tend to hedge much more.

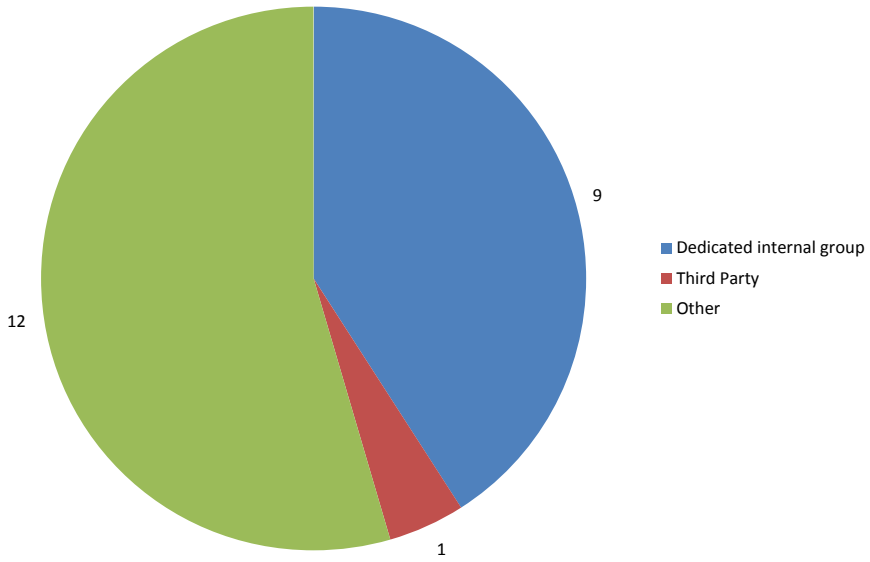
Figure A.3: Average Percentage of Electricity Demand in Alberta Exposed to Real Time Pool Price, by Count



A.4 How does your company manage pool price risks? (n=22)

Nine out of 22 respondents indicated that they have an internal group dedicated to managing price risks, while a further three respondents indicated they managed the risks, but the internal groups doing so were not dedicated to the task. One company directly answered that it hired a third party and a further two respondents indicated they used some external resources. Some of the remaining respondents in the other category indicated they did not manage risks but flowed through costs to customers.

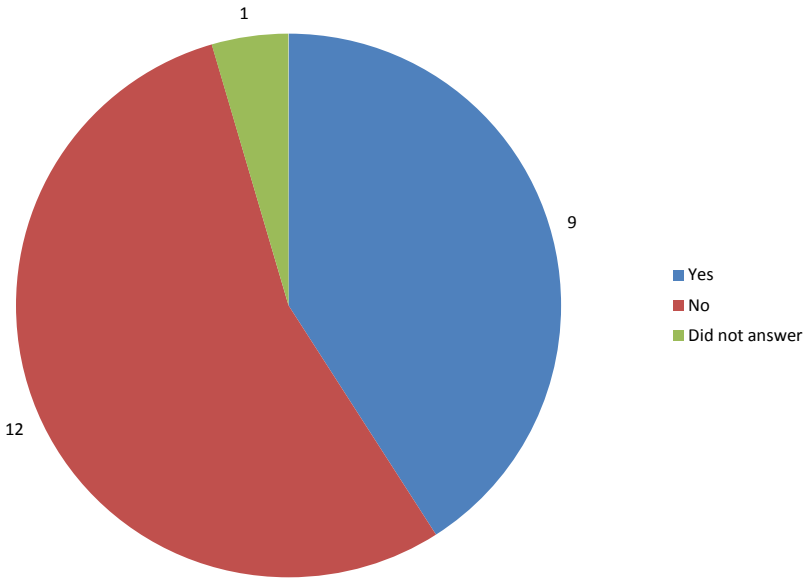
Figure A.4: Management of Pool Price Risk



A.5 Does your company have on-site generation (not including back-up generation) to regularly serve your electricity demand? (n=21)

Nine respondents indicated that they regularly used on-site generation to serve electricity demand. In almost all cases these nine respondents indicated higher than average electricity demand in response to question 1.

Figure A.5: Respondents with On-site Generation Regularly Used to Serve Electricity Demand



A.6 What is the total capacity of your company's on-site generation in Alberta? (n=11)

Respondents to this question included the nine who regularly used on-site generation to serve electricity demand and an additional two respondents that had small amount of generation presumably for back-up purposes. For 8 out of 9 respondents in the first group the size of generation capacity was in the same, or higher size band as electricity demand. In two cases, the amount of generation was considerably higher than typical electricity demand. The MSA estimates total generation of these nine loads (using a similar methodology to that employed in section A.1) to be between 1429 and 2321 MW.

A.7 Does your company manage pool price risks by adjusting production levels in real time based on the observed and anticipated pool price? (n=21)

Eleven respondents indicated they managed pool price risks by adjusting production levels. This included more than half of the respondents who did not regularly use on-site generation to serve demand. An estimate of the number of MW of price responsive load can be obtained by combing the responses to questions 1, 3 and 7. Assuming the load would only be responsive if it was not already hedged, we obtain an estimate of a maximum of 249 MW of price-responsive load. Given the assumptions made in this calculation the MSA would consider this indicative only.

One respondent that indicated it varied output in response to pool price mentioned that it hedges roughly 2/3 of its load through bilateral contracts, but is prevented from going any further by the volatility in the last portion of its demand. For the last third, they indicated that varying output is the best choice to minimize pool price risk.

A number of smaller companies expressed that they vary production levels because it is the only option that does not require extensive capital investment, unlike cogeneration or financial contracts.

A.8 Does your company replace electricity with other fuels to reduce the exposure to pool price risks when the pool prices are high? (n=22)

Question 8 asked if firms substitute other fuels for electricity in periods of high pool price. None did.

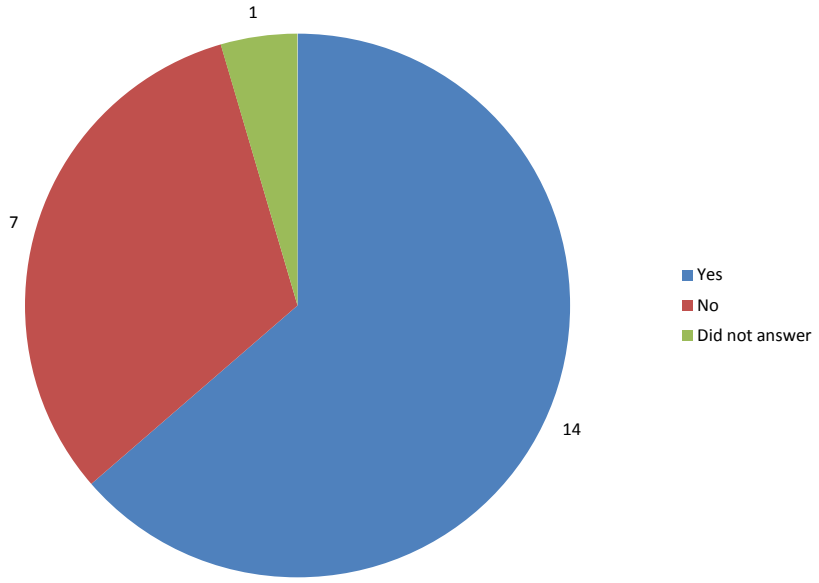
A.9 Does your company use back-up generator(s) to reduce the exposure to pool price risks when the pool prices are high? (n=22)

Question 9 asked if firms use back up generation (as opposed to dedicated generation) to reduce exposure to high pool price. One company, in the 11-50 MW range, answered yes.

A.10 Has your company ever used forward contracts, including contracts provided by retailers to hedge pool price risks? (n=21)

Two thirds of respondents had used forward contracts to hedge pool price risks. Later questions in the survey elicited responses as to the reasons for this choice.

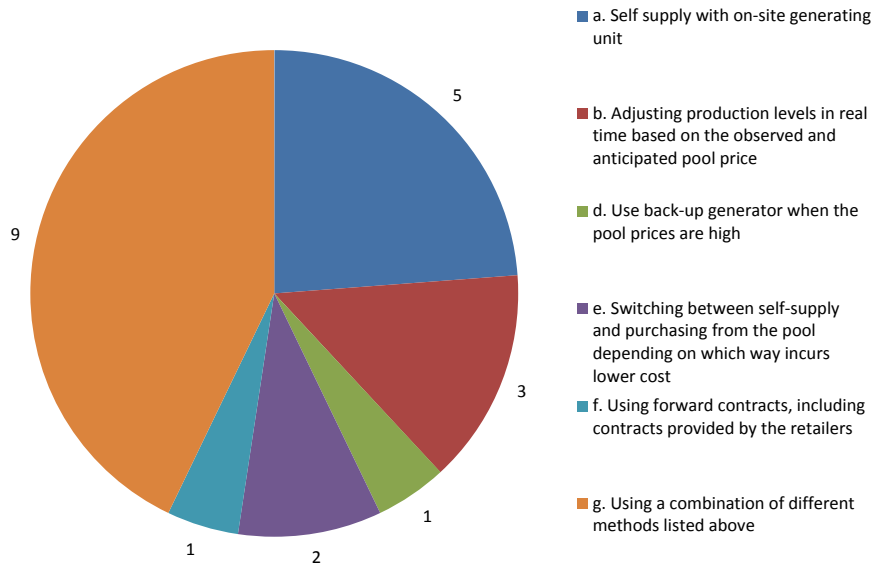
Figure A.10: Historical Use of Forward Contracts



A.11 Which method is the most appealing one in managing your company's exposure to pool price? (n-22)

Of the 22 responses the MSA received, five of the companies rated cogeneration as the most attractive option to hedge pool price risk and a further seven indicated in text responses that it was attractive in combination with other methods.

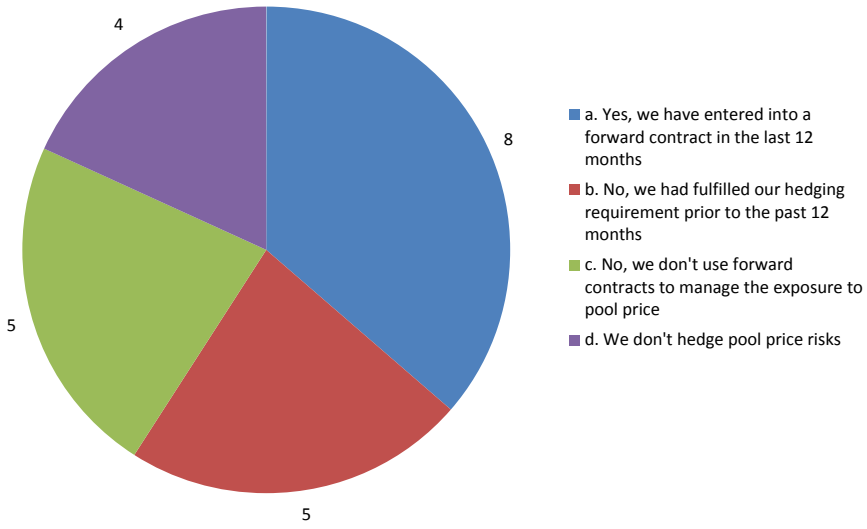
Figure A.11: Most Appealing Method of Managing Pool Price Risk



A.12 In the past 12 months, has your company engaged in forward contracting in Alberta? (n=22)

Of the 14 companies who reported that they had traded forward contracts in response to question 10, eight reported that they had engaged in forward contracting in the past 12 months and five that they did not as they had already satisfied their hedging requirements.

Figure A.12: Forward Contracting Within the Last 12 Months



A.13 What percentage of your company's forward contracting in Alberta is on the following platform (the total has to add up to 100%)? (n=10)

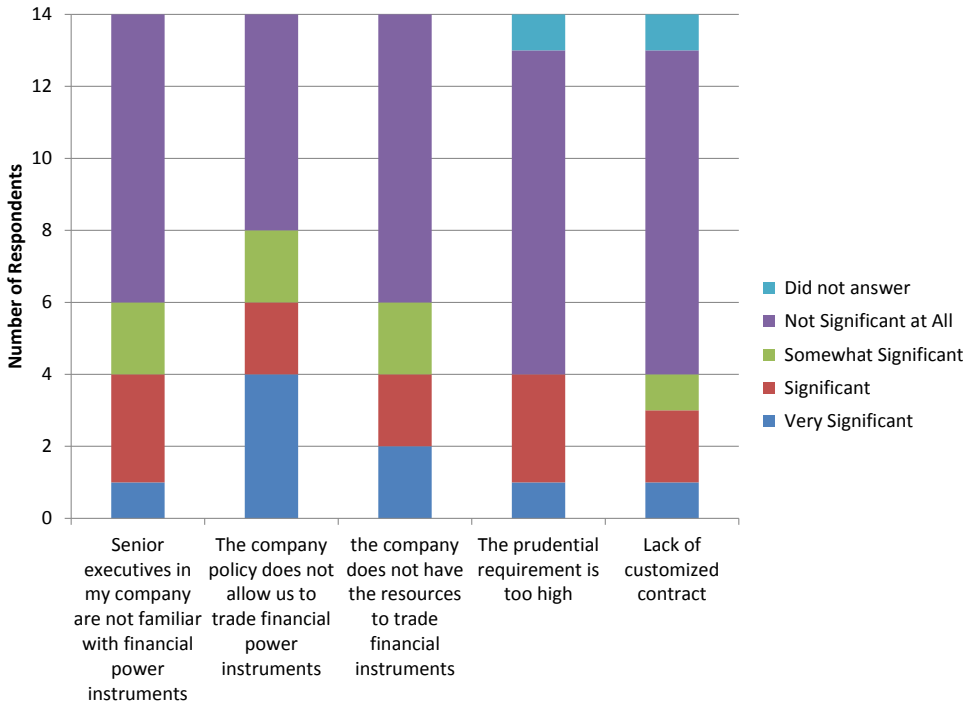
This question asked which platform respondents used to carry out forward contracting: the NGX, the broker's market, or through bilateral contracts (including retailers). Overwhelmingly, bilateral contracts were the most popular option. Seven companies used them exclusively, and a further two used them for over 75% of their forward contracting. Only one company conducted all of its trading on the NGX, and one other for less than 20% of the total. Of the ten, a single company was active in the broker's market and even then for just 20% of its forward contracting.

A.14 How significant is the following, in your view, as a barrier to trading financial swaps on NGX or through brokers? (n=21)

The question examined the perceived significance of a variety of barriers to trading through the exchange or brokers. For this question, we have considered the respondents in two groups: those who engaged in forward contracting (answering 'Yes' to question 10) and those that did not. The next few graphs come in two parts: the first shows the opinions of the 14 who have ever used a forward contract, the second the views of the seven firms that have never used one.

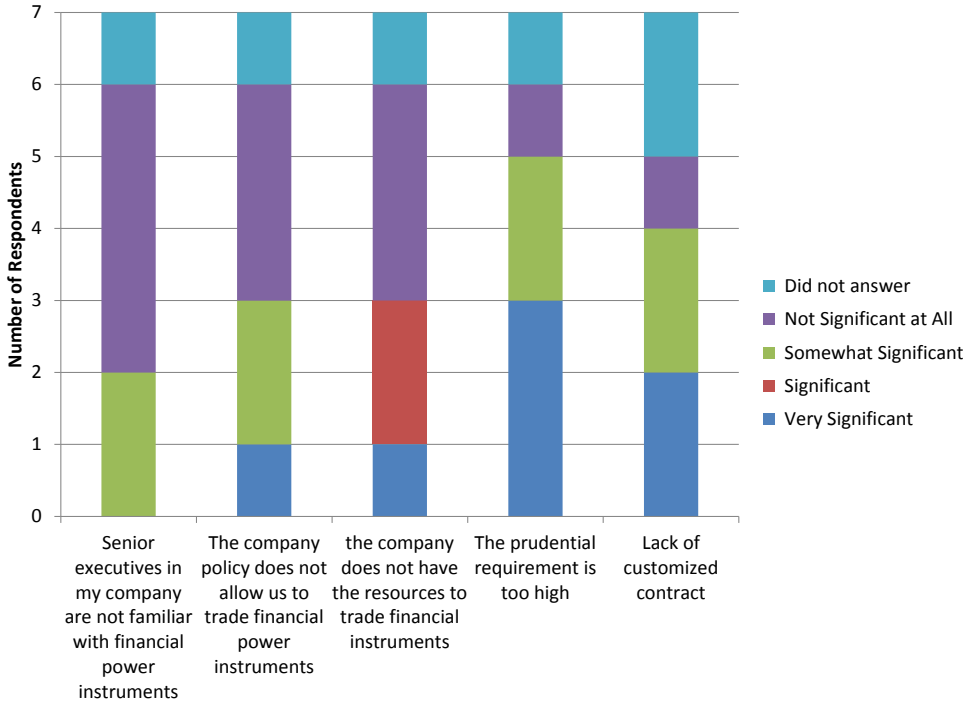
Overall, four respondents answered that none[4] of the factors were significant barriers (three of whom have used forward contracts). Of those who traded financial contracts the most significant barrier to doing so on NGX or through brokers was that company policy prevented trading of financial instruments. Of those who did not, the most significant barriers were prudential requirements or lack of customized contracts.

Figure A.14a: Perceived Barriers to Contracting Through NGX or Brokers, for Companies Engaging in Forward Contracting



[4] To clarify, these are the firms that classified no barrier in the survey as significant. Other firms may have rated individual barriers as insignificant, but not all of them.

Figure A.14b: Perceived Barriers to Contracting Through NGX or Brokers, for Companies <u>not</u> Engaging in Forward Contracting



A.15 How significant is the following, in your view, as a barrier to using forward contracts to manage the exposure to pool price risks outside the NGX or the broker's markets (i.e. transacting directly with a counter party) (n=21)

The question examined the perceived significance of a variety of barriers to trading using bilaterals. Similar to the previous section, responses are classed into two groups based on their response to question 10.

Overall, six respondents (five of whom answered 'Yes' to question 10) answered that none of the factors were significant barriers. This included all four respondents who indicated there were no barriers in response to question 14.

Given the predominance of bilaterals in forward contracting, those engaging in such activity cited few barriers. For those not engaging in contracting there were significant barriers reported.

Figure A.15a: Perceived Barriers to Bilaterals, for Companies Engaging in Forward Contracting

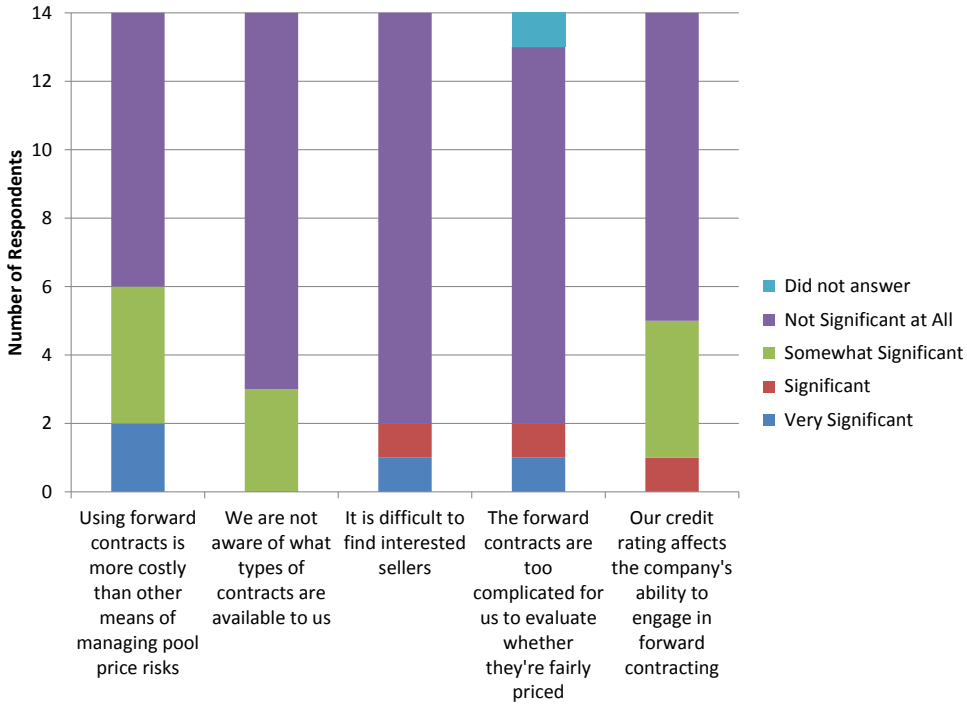
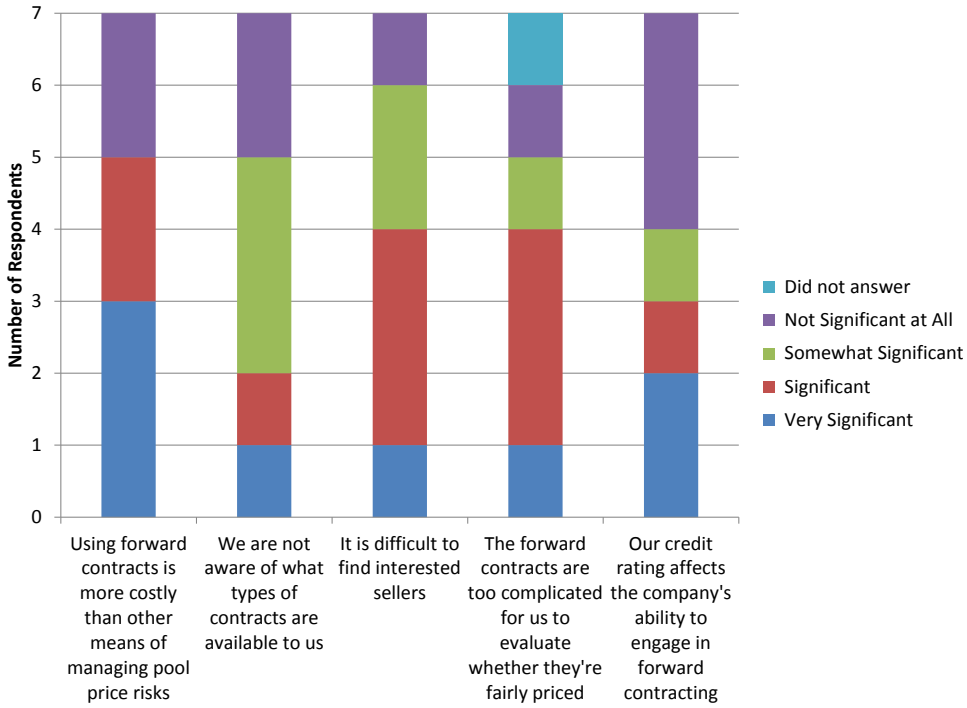


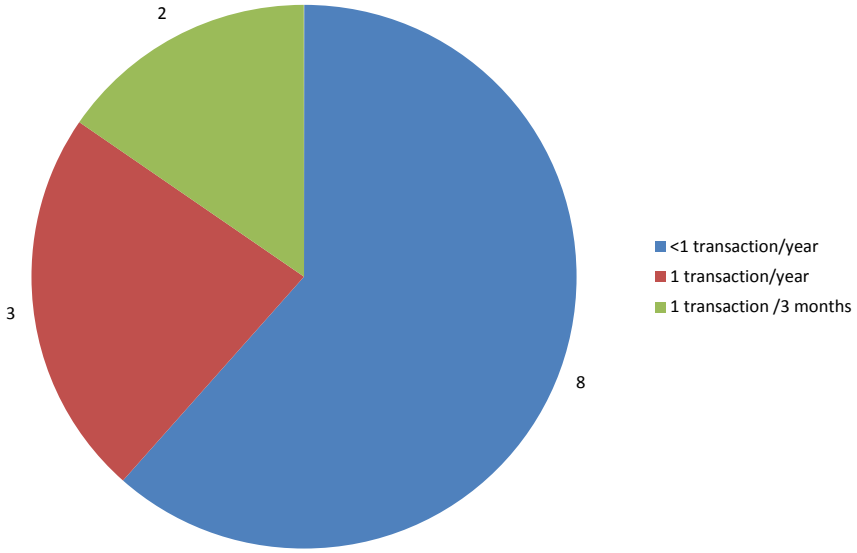
Figure A.15b: Perceived Barriers to Bilaterals, for Companies <u>not</u> Engaging in Forward Contracting



A.16 How often does your company enter into forward Alberta power contracts? (n=13)

Of the thirteen respondents indicating they had engaged in forward contracting (a combination of the responses to questions 10 and 12), the majority engaged in a less than one transaction per year. Only two respondents indicated they engaged in one transaction every three months. One of these noted that they were only a seller of electricity. The other noted that they had moved to shorter term contracting recently as a result of financial constraints.

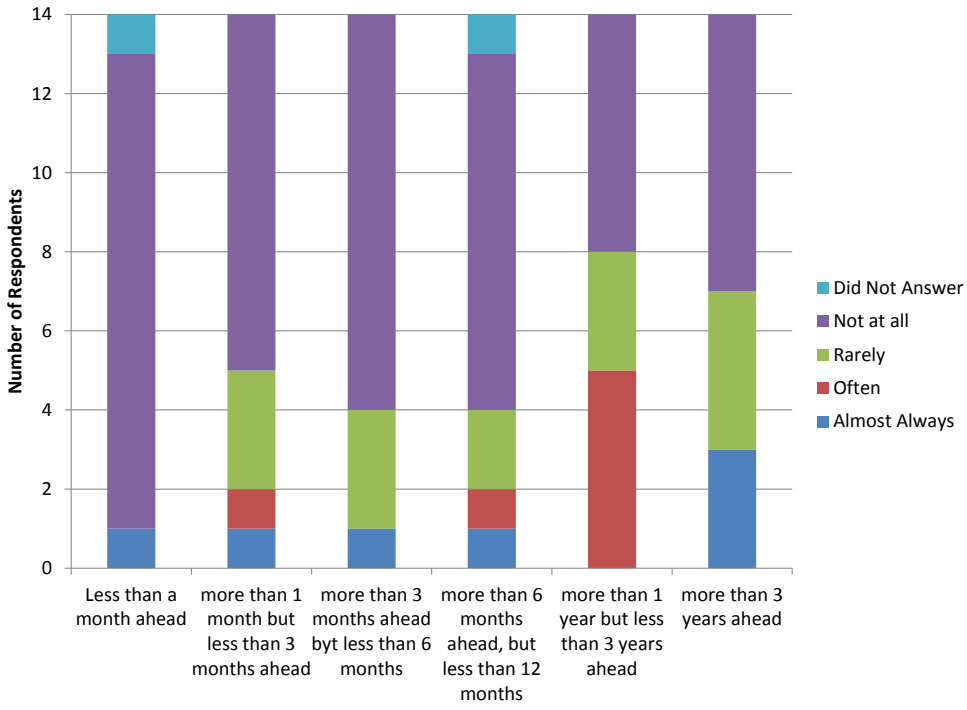
Figure A.16: Frequency of Contracting



A.17 How far ahead prior to real time does your company hedge pool price exposure using forward contracts? (n=14)

Only one company reported that it engaged in trading less than a month ahead. Most respondents indicated interest in contracts at least 6 months out, if not more than a year.

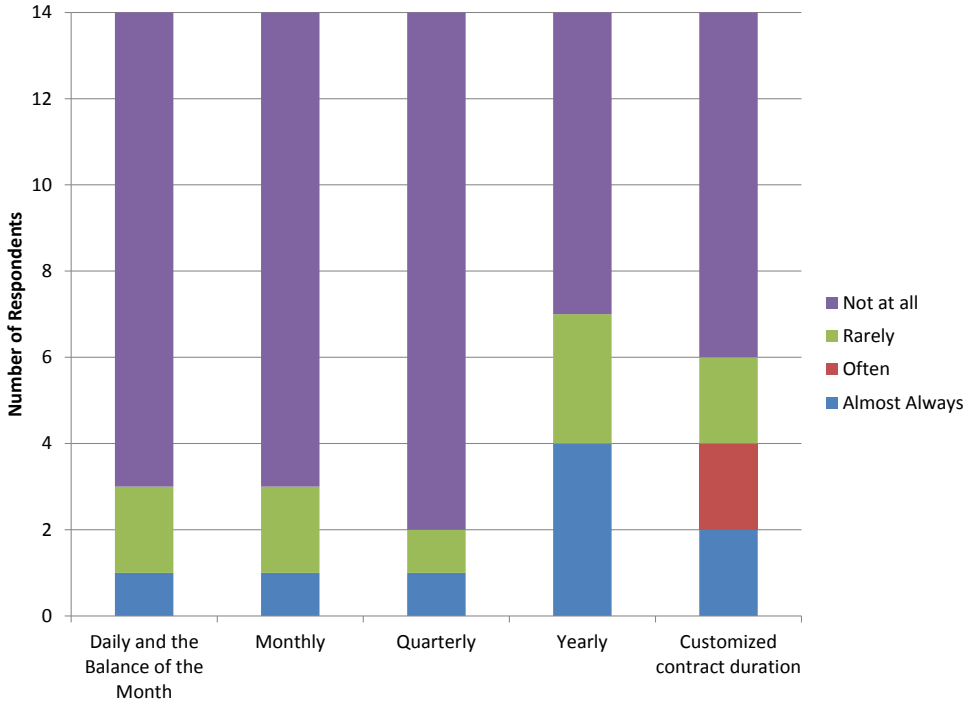
Figure A.17: How Far Ahead are Forward Contracts Used?



A.18 How often does your company use the following contract duration? (n=14)

Standard contract durations less than year were not often used by most respondents. Contracts with custom duration were also popular. One factor cited by a respondent was that due to financial constraints they were forced to shift to comparatively short term contracts.

Figure A.18: What Contract Durations are Typically Used?



A.19 For all forward Alberta Power contracts with duration of less than 1 year outside NGX and the broker's market, what is your estimate of the average number of counterparties per transaction that quoted prices to you? (n=4)

Question 19 asked those who were interested in contracting about the average number of counterparties that quoted prices for short (less than 1 year) contracts. Only four companies reported receiving quoted prices; on average, they received 2.5 quotes.

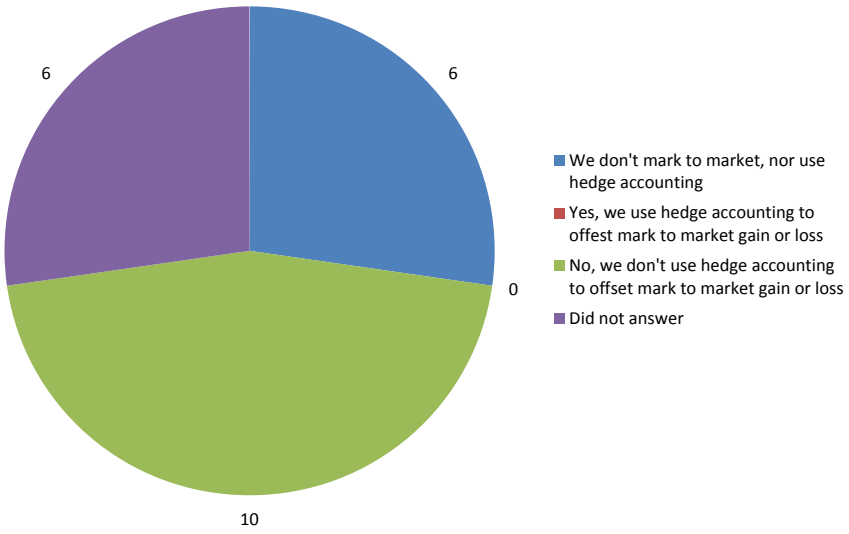
A.20 For all forward Alberta power transaction with duration of equal or greater than 1 year outside NGX and the broker's market, what is your estimate of the average number of counterparties per transaction that quoted prices to you? (n=6)

Question 20 asked those who were interested in contracting about the average number of counterparties that quoted prices for long term (equal or greater than one year) contracts. Only six companies reported receiving quoted prices; on average, they received four quotes.

A.21 Do you use hedge accounting to offset mark to market gain or loss? (n=16)

Question 21 asked if companies used hedge accounting, mark to market, or neither. No member of the sample used hedge accounting, but around half marked to market. Six respondents did not answer this question.

Figure A.21: Use of Hedge Accounting to Offset Mark to Market Gain or Loss



A.22 Did your hedging strategy change recently? (n=13)

Of the 13 respondents to this question, three had recently changed their hedging strategy. The reasons for the change varied in some cases, but were based on perceptions of the market and in other cases on internal constraints.

Appendix B: Survey

A copy of the survey distributed to IPCAA and ADC members follows.

Survey on Forward Contracting by Industrial Loads

April 23, 2012

Table of Contents

1. INTRODUCTION

The objective of the survey is to understand the forward contracting activities of industrial loads and to identify the possible barriers to participation in forward contracting.

The term "Forward Contracts" in the survey is intended to include physical or financial power contracts for the purpose of hedging pool price risks, such as:

- Firm power contracts or unit-contingent contracts directly negotiated with the suppliers, including the retailers;
- Financial swaps traded on Natural Gas Exchange (NGX), through brokers or directly with another party;
- Contract for Difference (CFD)
- Power contracts associated with heat rate hedges;
- Power derivatives, etc.

However, it does not include the Power Purchase Agreements (PPAs) under the Power Purchase Agreement Regulation, as the PPAs do not reduce or limit pool price exposure of the load.

The survey questions mainly focus on the information related to the following areas:

- Load's exposure to the pool price risks
- Different tools used by the load to manage pool price risks
- Load's forward contracting activities
- Load's view on the barriers to forward contracting

Please send the completed questionnaire electronically by May 7, 2012 to:

[redacted] or [redacted](for IPCAA members)

[redacted] (for ADC members/others)

Alternatively you can fax the completed questionnaire to the MSA at 403-232-8343.

If you have questions regarding to the survey, please contact [redacted] or [redacted].

2. QUESTIONNAIRE

1. What is the typical total electricity demand of your company in Alberta?

- 0-10 MW
- 11-50 MW
- 51- 100 MW
- 101 - 150 MW
- 151 - 250 MW
- 251 MW - 500 MW
- >500 MW

2. What percentage is the electricity cost of the total operating cost of your company in Alberta?

- 0-10%
- 11-20%
- 21-30%
- 31-40%
- 41-50%
- >50%

3. On average what percentage of your company's electricity demand in Alberta is exposed to the real time pool price?

- <=10%
- 11-30%
- 31-50%
- 51-70%
- 71-100%

4. How does your company manage pool price risks?

- We have an internal dedicated group specializing in managing price risks
- We hire a third party to manage power price risks for our company
- Other - please specify:

5. Does your company have on-site generation (not including back-up generator) to regularly serve your electricity demand in Alberta?

- Yes
- No

6. What is the total capacity of your company's on-site generation in Alberta?

- 0-10 MW
- 11-50 MW
- 51- 100 MW
- 101 - 150 MW
- 151 - 250 MW
- 251 MW - 500 MW
- >500 MW
- Not Applicable

7. Does your company manage pool price risks by adjusting production levels in real time based on the observed and anticipated pool price?

- Yes
- No

8. Does your company replace electricity with other fuels to reduce the exposure to pool price risks when the pool prices are high?

- Yes
- No

9. Does your company use back-up generator(s) to reduce the exposure to pool price risks when the pool prices are high?

- Yes
- No

10. Has your company ever used forward contracts, including contracts provided by the retailers to hedge pool price risks?

- Yes
- No

11. Which method is the most appealing one in managing your company's exposure to pool price:

- Self supply with on-site generating unit - please elaborate the reasons:

- Adjusting production levels in real time based on the observed and anticipated pool price - please elaborate the reasons:

- Adjusting production process by replacing electricity with other fuels - please elaborate the reasons:

- Using back-up generator when the pool prices are high - please elaborate the reasons:

- Using forward contracts, including contracts provided by the retailers - please elaborate the reasons:

- Using a combination of different methods listed above - please elaborate the reasons:

- Other- please specify methodology and the reasons:

12. In the past 12 months, has your company engaged in forward contracting in Alberta?

- Yes
- No, we had fulfilled our hedging requirement prior to the past 12 months
- No, we don't use forward contracts to manage the exposure to pool price
- We don't hedge pool price risks

13. What percentage of your company's forward contracting in Alberta is on the following platform (the total has to add up to 100%)?

i. On NGX: ___%
ii. Through brokers: ___%
iii. Transacted bilaterally (including with the retailers): ___%

- We don't use forward contracts to manage the exposure to pool price
- We don't hedge pool price risks

14. How significant is the following, in your view, as a barrier to trading financial swaps on NGX or through brokers?

i. Senior executives in my company are not familiar with the financial power instruments

- Very Significant
- Significant
- Somewhat Significant
- Not Significant at All

ii. The company policy does not allow us to trade financial power instruments

- Very Significant
- Significant
- Somewhat Significant
- Not Significant at All

iii. The company does not have the resource to trade financial instruments

- Very Significant
- Significant
- Somewhat Significant
- Not Significant at All

iv. The prudential requirement is too high

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

v. Lack of customized contract

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

vi. If you don't trade financial swaps and none of the above factors are significant, please specify why you don't participant in financial swaps:

15. How significant is the following, in your view, as a barrier to using forward contracts to manage the exposure to pool price risks <u>outside</u> the NGX or the broker's markets (i.e. transacting directly with a counter party)?

i. Using forward contracts is more costly than other means of managing pool price risks

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

ii. We are not aware of what types of contracts are available to us

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

iii. It is difficult to find interested sellers

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

iv. The forward contracts are too complicated for us evaluate whether they fairly priced

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

v. Our credit rating affects the company's ability to engage in forward contracting

- ● Very Significant
- ● Significant
- ● Somewhat Significant
- ● Not Significant at All

vii. If you don't engage in direct bilateral forward contracting and none of the above factors are significant, please specify why you don't engage in direct bilateral forward contracting:

16. How often does your company enter into forward Alberta power contracts?

- ● <1 transaction/year
- ● 1 transaction/year
- ● 1 transaction/6 months
- ● 1 transaction /3 months
- ● 1 transaction /month
- ● >1 transactions/month
- ● Not Applicable

17. How far ahead prior to real time does your company hedge pool price exposure using forward contracts?

i. Less than a month ahead
- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

ii. More than 1 month but less than 3 months ahead
- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

iii. More than 3 month but less than 6 months ahead
- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

iv. More than 6 month but less than 12 months ahead
- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

v. More than 1 year but less than 3 years ahead
- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

vi. More than 3 years ahead

- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

18. How often does your company use the following contract duration?

i. Daily and the Balance of the Month

- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

ii. Monthly

- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

iii. Quarterly

- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

iv. Yearly

- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

v. Customed contract duration:

- Almost Always (____% of the total hedge)
- Often (____% of the total hedge)
- Rarely (____% of the total hedge)
- Not At All

19. For all forward Alberta power contracts with duration of less than 1 year outside NGX and the broker's market, what is your estimate of the average number of counterparties per transaction that quoted prices to you?

- 0
- 1
- 2
- 3
- 4
- 5
- Not Applicable - Please specify:

20. For all forward Alberta power transactions with duration of equal or greater than 1 year outside NGX and the broker's market, what is your estimate of the average number of counterparties per transaction that quoted prices to you?

- 0
- 1
- 2
- 3
- 4
- 5
- Not Applicable - Please specify:

21. Do you use hedge accounting to offset mark-to-market gain or loss?

- ● We don't mark to market, nor use hedge accounting.
- ● Yes, we use hedge accounting to offset mark-to-market gain or loss.
- ● No, we don't use hedge accounting to offset mark-to-market gain or loss.

22. Did your hedging strategy change recently?

- ● Yes - Please specify the factor(s) that drove the changes:

- ● No

23. Do you have additional comments relating to forward contracting?

- ● Yes - please elaborate:

- ● No

24. Do you agree to be contacted by the MSA in the event that we would like to clarify your responses?

- ● Yes

Please provide the contact information: Company: Contact Name: Phone Number: Email address:

- ● No

The Market Surveillance Administrator is an independent enforcement agency that protects and promotes the fair, efficient and openly competitive operation of Alberta's wholesale electricity markets and its retail electricity and natural gas markets. The MSA also works to ensure that market participants comply with the Alberta Reliability Standards and the Independent System Operator's rules.