ALBERTA'S ELECTRICITY POLICY FRAMEWORK:

Competitive – Reliable – Sustainable

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Alberta Department of Energy

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List of Definitions and Abbreviations

AESO	Alberta Electric System Operator (known as the ISO)
AGS	Alberta Government Services
AIES	Alberta Interconnected Electric System
DAM	Day ahead market
Department	Alberta Department of Energy
EUA	*Electric Utilities Act*
EUB	Alberta Energy and Utilities Board
FERC	Federal Energy Regulatory Commission
Integrated Options Paper	*Refinement Options for Alberta's Wholesale and Retail Electric Markets*, released March 10, 2005
ISO	Independent System Operator
Jurisdictional Review Paper	*Research on Models of Retail Electricity Competition other Jurisdictions: An Alberta Department of Energy Discussion Paper*, released November 26, 2004
kW·h	kilowatt·hour
IBOC	Invitation to Bid on Credits
LBCSO	Location Based Credit Standing Offer
LTA	Long Term Adequacy
MSA	Market Surveillance Administrator
Mvar	Megavar (where var = voltamperes reactive)
MW	Megawatt
MW·h	Megawatt·hour
PPA	Power Purchase Arrangement
Retail Options Paper	*Policy Options for the Alberta Retail Market Development: An Alberta Department of Energy Report and Discussion Paper*, released February 1, 2005
RFP	Request for Proposal
RTO	Regional Transmission Organization
RUC	Reliability unit commitment
small consumer market	competitive market for the residential and farm classes of consumers
SMP	System marginal price
STA	Short Term Adequacy
TMR	Transmission Must Run
UCA	Utilities Consumer Advocate
WMPTF	Wholesale Market Policy Task Force

1. Executive Summary

The Government vision is for Alberta to be a global energy leader, using its world class knowledge and expertise to develop the vast energy resources of the province. For electricity, this vision includes creating the right conditions to facilitate an electric industry which is competitive, reliable and sustainable. To achieve this vision, public policy must be developed and implemented in a manner which is balanced and adaptable so investors have confidence that the market is fair, and consumers have confidence their electricity is reliable and reasonably priced.

Alberta's competitive electric market framework has been successful to date. Significant new investment has been made in the industry and a variety of new players are participating in the electricity markets. The Alberta Department of Energy ("the Department") remains committed to a competitive wholesale market model, to a safe, reliable and competitively-priced supply of electricity for Albertans, and to the opportunity for individual Albertans to make electricity purchasing decisions. Periodic reviews of progress made to date and the identification of challenges going forward are a necessary part of this commitment. This work helps to ensure that Alberta's electric market design will continue to be successful and will provide results that are predictable, sustainable and add long-term value for all Albertans.

In early 2004, the Department began a process with stakeholders to review Alberta's competitive market framework. A Wholesale Market Policy Task Force (WMPTF) was established to ensure that the review would have broad stakeholder consultation and input. A separate process was established to consider issues specific to the competitive retail market. These two processes worked in concert during most of 2004 and to this point in 2005.

On March 10, 2005, the Department released a draft discussion paper entitled "*Refinement Option for Alberta's Wholesale and Retail Electric Markets*" (the "Integrated Options Paper"). This paper outlined a number of issues and positions in developing comprehensive refinements to Alberta's market design. The Department received more than 35 responses from individual stakeholders. These comments were carefully reviewed and shared with all stakeholders. The Department also arranged numerous one-on-one meetings with stakeholders to discuss their comments. In parallel with those meetings, working groups were formed to address in more detail the short-term adequacy (STA) and long term adequacy (LTA) issues and options. The Department is also aware that senior executives of several stakeholder organizations met with members of the legislature in response to the Integrated Options Paper. They came to express their views on market design and to provide their assurances that reliability and long-term adequacy would not suffer under the current design. Draft recommendations for refinements to the wholesale market were released May 18, 2005. The Department sincerely appreciates the time and effort that stakeholders have taken to consult, prepare written comments and participate in meetings.

This paper outlines a policy framework which addresses, among other things:

- design of the regulated rate option (RRO) post July 1, 2006
- short-term adequacy

- long-term adequacy
- other inter-related market issues

Regulated Rate Option Design:
The Department has received many comments and suggestions with respect to retail market design matters, which included a number of approaches to the design of the regulated default supply rate for smaller consumers.

Having considered a range of options and experiences elsewhere, the Department recommends that the small consumer market have the benefit of a transitional RRO rate design under which such consumers are gradually transitioned to a New RRO based on a monthly forward hedge during the 2005 to 2010 period. Specifically, during that time frame the rate will be a blended one, and will feature a gradual reduction in the amount of longer term hedges that regulated rate providers purchase on behalf of their consumers, combined with a gradual increase in the proportion of the rate based on monthly forward hedges.

Two Department of Energy reviews will occur prior to 2010 to confirm that the scheduled change in the percentage blend of longer term hedges with the New RRO remains appropriate, given any unforeseen events. It is expected that the reduction in longer term hedges will continue as planned unless there is a compelling case for slowing the transition to the New RRO that cannot be anticipated at present.

At the end of the transition period in 2010, the New RRO will be based on a monthly forward hedge similar to the design of the current natural gas default rate, which is based on the monthly forward natural gas price.

The most significant advantage of this design over any other design considered by the Department is that it fully embodies the 'transitional nature' of moving toward a competitive retail market for small consumers. It accomplishes this by continuing to provide the small consumer market with some degree of price protection by means of a hedged rate containing longer term contract elements, which gradually reduces by 20 per cent each year. Another significant advantage is that the New RRO component will be based on monthly hedging, and thus the need for price true-ups will be minimized.

The Department is also confident that the gradual introduction of the New RRO based on a monthly hedging will give consumers the opportunity to familiarize themselves with retail choice in electricity, knowing there is some price protection built in to the regulated rate design. At the end of the transition period, consumers should be much better prepared to make an informed choice about whether to remain with the New RRO or choose a competitive product. It must be emphasised that the RRO will still be in place; it will simply be made up of a different price mixture after that date.

Short Term Adequacy:
The Independent System Operator (ISO) does not currently have adequate information from day-ahead schedules to ensure that sufficient capacity will be available to meet demand in real time. This

issue was partially addressed by ISO Rule changes implemented in December 2004. In addition, there are times of significant price volatility/instability in the current design. This volatility/instability creates a price signal that is difficult for buyers and sellers in the market place to rely on.

After extensive consultation with stakeholders during one-on-one meetings and STA working group discussions, the common stakeholder view was that enhancing existing market designs and rules would address STA concerns and that implementation of a day-ahead market (DAM) design was not necessary at this time. The Department agrees with this conclusion. As such, the Department recommends refinements to the wholesale market structure that will improve supply visibility and stability for the ISO and thereby enhance system reliability and price fidelity. Specific recommended refinements address:

- Supply "must offer" requirements
- Two hour restatement restrictions
- Payment for marginal generators
- Possible alignment of dispatch and settlement periods
- Unit commitment for supply adequacy
- Communication of unit physical characteristics to the ISO
- Communication of intentions to start generation to the ISO
- Treatment of imports in the same manner as intra-Alberta generators
- Treatment of TMR to resolve its impact on Pool prices
- Communication by loads above a specific level of their curtailment strategy
- Outage coordination to continue to be managed by stakeholders unless certain thresholds are exceeded and
- Rules to address impact of intermittent resources.

Long Term Adequacy:
Alberta's competitive generation market has been successful in attracting over 3,500 MW of new capacity since 1998. During market design discussions with stakeholders, many generation developers provided assurances that they will continue to build new generation in a timely manner to meet Alberta's growing demand. The Department recognizes these assurances and commitments and is encouraged that investors remain confident in Alberta's electric marketplace.

The Integrated Options Paper outlined three potential options for consideration to improve the long-term price signal and facilitate the timely development of new generation to meet the growing demand in Alberta. A majority of stakeholders strongly objected to any long term design option that imposed capacity based contractual obligations on the market. Instead, they were of the view that only incremental changes to the current energy-only market design were necessary.

After much consideration and detailed discussion with stakeholders, and given the assurances referred to above, the Department considers that it is not necessary to introduce capacity-based contractual obligations in the Alberta electricity market at this time.

The Department will work with the ISO and stakeholders to implement a robust and effective monitoring system to ensure that all market participants understand the reserve margin and overall state of capacity adequacy in the province. Specific metrics will be established to monitor timing, location and system impact status of new generation additions using information such as permits, construction progress reports and public announcements. Stakeholders will be consulted in the specific rules and procedures for implementing this measure. This consultation will ensure that adequacy information and metrics are robust, accurate and reflective of the status of generation adequacy in Alberta.

Transmission developments will also be monitored and factored into the adequacy measure. If the monitoring process produces a clear signal that there is a likely adequacy shortfall, the ISO will have direction to ensure adequacy is maintained.

Ensuring adequacy may include a number of options such as ISO authority to tender for reliability contracts. The Department and the ISO will explore appropriate options in consultation with stakeholders as it works toward implementation of long-term adequacy.

Other Market Issues:
Several other market related issues were discussed during the comprehensive review process and need to be addressed. They are as follows:

<u>Operating Reserves Market</u>: The ISO is currently the only buyer of operating reserves. Although the operating reserves market is relatively small, it can have a significant impact on the energy market. The Department supports in principle the concept of a design with multiple buyers and sellers by allowing the self-procurement of operating reserves by load. The Department recommends that the ISO continue to work with stakeholders to determine the desirability of this option.

<u>Transmission Must Run (TMR):</u> The Department acknowledges the current impact of some TMR on Pool price is problematic. It therefore recommends that the calculation of Pool price be modified to make the Pool price neutral of certain TMR services. The Department considers that TMR processes, practices and rules should be simple, transparent, and reasonable so that there is fidelity in the energy price signal, fair compensation for TMR service providers and protection for consumers from overpayment for TMR services.

<u>Interties</u>: To the extent possible, industry suppliers with import capacity should be treated the same as intra-Alberta generators. The Department, therefore, recommends that all imports be required to offer energy and allowed to set Pool price if they are able to respond to an intra-hour energy market dispatch.

<u>Demand Response:</u> Demand response can significantly improve the efficiency of the market. Alberta has a significant amount of industrial demand response in comparison to other jurisdictions, though

it is not clear if this resource is fully utilized under the current design. The Department recommends further investigation to determine specific rules that can be implemented to enhance and factor in demand response in the market.

Balancing Pool Assets: Market participants and investors are interested in what will happen to the Balancing Pool's capacity once the current Market Achievement Plan II contracts expire over the next year. In general, the Department supports the preliminary direction of the Balancing Pool to terminate the Clover Bar PPA and remarket the Genesee and Sheerness capacity. The Department recommends that as the Balancing Pool designs the sale process, consideration be given to more criteria than simply the financial outcome of the sale process. Such criteria should include likely effects of the auction on market participant behaviours, market liquidity, forward prices and the fidelity of the price signal. This broader set of considerations will more fully carry out the mandate of the Balancing Pool to maximize the value of the assets it controls.

Credit: A Credit Subcommittee was established under the WMPTF to consider the credit implications of any material change to the existing market design. The subcommittee will undertake an analysis of the credit implications of the policies recommended in this report, and will make recommendations in a report to the Department and the ISO.

Market Power Mitigation: The Department recommends that certain aspects of the current PPA holding restrictions be retained. Specifically the Department recommends retaining the policy relating to government ownership of PPA capacity and the policy that ensures the PPAs continue to function as intended (with "different" owners and buyers). The Department will also review the roles and responsibilities of the implementing agencies and where necessary, enhance current authorities to ensure the implementing agencies are positioned to undertake their responsibilities. In particular, the Department is reviewing the authority of the MSA to support the MSA's market monitoring and enforcement mandate.

Wind Generation: The variability and non-dispatchable nature of wind presents challenges to system operators and market design. The Department recommends that the ISO continue stakeholder consultations to ensure that rules allow for the integration of wind facilities into market design and the interconnected system in a non-discriminatory and transparent manner. The Department will continue to monitor the ISO's standards development process and industry developments respecting the integration of wind power generation.

Implementation of Recommendations:
The Department expects that the wholesale policy recommendations in this paper will be implemented as expeditiously as reasonable. There is recognition that implementation will require amendments to regulations or ISO rules and the development of some additional software, etc. These developments may present constraints on the implementation timeline.

The Department and the implementing agencies will work together to develop an implementation timetable for these recommendations. This timetable will be developed by August 31, 2005 in consultation with stakeholders.

2. Introduction

During 2004 and the first half of 2005, the Department has been engaged in a comprehensive review of the electricity markets in Alberta. The Department remains committed to competitive markets. This period provided an opportunity to review the performance of the markets to date and identify areas for refinement. The WMPTF was established to ensure that the review would have broad stakeholder consultation and input. A separate process was later established to consider issues more specific to the competitive retail markets. In late 2004, the two processes were merged and the issues were integrated, resulting in the release of a paper entitled "*Refinement Options for Alberta's Wholesale and Retail Electric Markets*" on March 10, 2005 (known as the "Integrated Options Paper"). A subsequent discussion paper on wholesale market refinements was released May 18, 2005. This policy framework paper reflects stakeholder feedback from the previous discussion papers and offers recommendations for some refinements to the current framework for the Alberta wholesale electricity market.

The extensive stakeholder consultation process has involved a broad spectrum of market participants. The Department appreciates the time and effort of stakeholders in preparing responses to draft papers and participating in meetings. In addition, resources from the Market Surveillance Administrator (MSA), the Alberta Electric Systems Operator (AESO, Alberta's independent system operator, or "ISO"), the Utilities Consumer Advocate (UCA) and other government agencies have provided valuable input.

Much progress has been made under the current market design, making Alberta a leader in electricity market restructuring. There has been significant investment in new generation (more than 3,500 MW since 1998) and the wholesale market has become more robust and liquid. An active retail market for large customers has developed, and there continues to be promise of real and steady growth going forward toward an active retail market for smaller retail customers.

Nonetheless, the Department believed it was important to undertake a review of the current market framework. Markets evolve and mature over time. As the architect of electric restructuring, it is the Department's responsibility to ensure that the market framework is efficient and competitive, and that it delivers value to customers. While a review generated debate among stakeholders, the Department has been on common ground with stakeholders regarding the importance of the electric industry as a key instrument of economic health in the province. Electricity is a basic ingredient in Alberta's economy and risks of supply shortages or market failures (series or length of time without competitive activities) will not be tolerated by Albertans.

Connecting to the Transmission Policy

In a competitive market, generation investment decisions are made based on expectations of future market performance. This means that Alberta's electric market framework must provide signals that are predictable and understandable, and it must support future investment in the electricity sector to underpin economic growth. An important part of providing the right signals and supporting investment is assuring suppliers that they can get their product to market to have the opportunity to compete.

Similarly, the framework for load must be predictable and reflect market fundamentals. Existing and future load customers must be able to make reasonable business predictions about prices and access to supply.

To support the new market structure, transmission must be available to all supply and load customers in a non-discriminatory manner and with sufficient capacity to ensure that neither load nor generation is constrained. Transmission remains the agent of reliability and in Alberta's electric marketplace is also the facilitator of the competitive market.

In 2004, the government articulated a new transmission policy and approved a regulation to implement the policy. This new policy fundamentally and comprehensively changed the way that transmission effectiveness and need are to be measured. The Transmission Regulation provides public policy direction to the ISO and the Alberta Energy and Utilities Board (EUB) regarding transmission development and for future development of Alberta's interconnected transmission system to:

- ensure Albertans continue to receive safe, reliable and economic electric service throughout the province;
- facilitate generation development and support Alberta's competitive electricity markets and
- support the development of Alberta's vast resource base.

2.1. Vision and Principles

The Department remains committed to the development of a competitive market for electricity. Its vision and principles were set out fully in the Integrated Options Paper and are reiterated below.

Vision: In 2010, electricity supply in Alberta will continue to be provided at no less than today's level of reliability. All customers will be able to choose their electricity supplier and will be in a position to make informed choices from various providers by balancing their own mix of needs for price, terms, service reliability level (within the bounds of technical feasibility) and other factors. Suppliers using diverse fuel sources will compete for the opportunity to sell their products, based on a straightforward and transparent market framework, minimal barriers to entry, and a level playing field.

The regulatory process will be stable, clear and encouraging of private investment while respecting the basic conventions of customer satisfaction, fair trade, contract law and competitive market forces.

Principles:

1. The market framework must ensure that, over time, reliability is not compromised – the reliable delivery of electricity is the bedrock of Alberta's economy.
2. The market framework must be guided and founded on fair and sustainable market and competitive forces.
3. The market framework must provide market signals to build new supply in a timely manner to meet growing demand while recognizing the lead-time required building new generation.
4. The market framework must provide confidence to investors and customers, and be supported by a clear and stable policy and regulatory framework.
5. The market framework must continue to preclude the exercise of market power and unwarranted transfer of wealth.
6. The market framework must accommodate the current state of restructuring and be flexible and adaptable to support the desired end state without any major government intervention.
7. The market framework and any required refinements must ensure the needs of all market participants, including the residential, farm and small business customers, are satisfied.
8. The market framework and any refinements or transition needed between the current and final states, must be fair, as orderly as possible, and provide certainty to existing and new market participants.

3. Retail Markets: Issues and Recommendations

3.1. Introduction

In the context of the 2004-05 electricity market review undertaken by the Department, three discussion papers on retail market design issues were circulated to stakeholders for comment:

- *Research on Models of Retail Electricity Competition other Jurisdictions: An Alberta Department of Energy Discussion Paper* (the "Jurisdictional Review Paper"), released November 26, 2004
- *Policy Options for the Alberta Retail Market Development: An Alberta Department of Energy Report and Discussion Paper* ("the Retail Options Paper"), released February 1, 2005
- *Refinement Options for Alberta's Wholesale and Retail Electric Markets* ("the Integrated Options Paper"), released March 10, 2005

Within those papers, there were a number of specific retail market design and transitional issues that the Department asked stakeholders to comment on. The Department agrees with the widely held view that the most important of these market features is the design of the regulated rate option (RRO) for smaller consumers after June 30, 2006.

There has been a perception that the regulated rate, as authorised under the current *Regulated Default Supply Regulation*, was going to completely disappear on July 1, 2006 and that the government will therefore force consumers to choose a competitive contract by that date. This is not the case. The Department will ensure that there will be a RRO available to customers after July 1, 2006 and has been seeking stakeholder input regarding how to most effectively design that RRO.

Stakeholder comments provided to the Department indicate that there are diverse positions on the RRO options, but most stakeholders have taken the time and effort to articulate and provide supporting details to clarify their concerns. Equally important, they have demonstrated a willingness to understand the views of others. There has been a genuine effort by stakeholders to assess the costs and benefits of the various approaches, and an interest in doing what is best for the Alberta market.

3.2. Current Retail Competition and Consumer Protection in Alberta

The Department previously acknowledged that large consumer classes are becoming confident in the market place and have a number of retailers, products and services from which to choose. Specifically, statistics demonstrate competition for industrial and large commercial consumers is such that switching rates for those classes reached over 70 per cent (or over 90 per cent of load) in April 2005. A lesser known statistic is that small commercial consumers are being served by a growing number of retailers, given that about 37 per cent (more than 55 per cent of load) were under competitive contracts at that same date.

However, the competitive market for the residential and farm classes of consumers (small consumer market) has been slower to emerge. Only around 7 per cent of the small consumer market had signed a competitive contract as of April 2005. The Department will continue to focus its attention on refining the RRO for the small consumer market, to provide appropriate protections for them as the market develops.

There are a number of barriers and complexities that at least partially account for the fact that the small consumer market has been slow to emerge in Alberta and these have been outlined in the earlier papers issued by the Department. We summarize them again in Section 3.10 of this paper, on page 17. It is the Department's view that it is only within the last 18 month period that there has been significant momentum to bring choice to small mass market consumers, as many of these barriers and complexities are being systematically addressed. Two of the three mass market retailers have just been able to establish their business operations in Alberta within this period.

A key assumption going forward is that, once the retail electricity market has reached an adequate degree of development with healthy, competitive market forces, then the discipline of the market combined with consumer protection legislation as found in the *Fair Trading Act* and the activities of agencies like the UCA, will combine to provide the average small market consumer with an acceptable level of consumer protection. The Department is confident this will be the case when it reviews the development of other more mature competitive markets for retail products and services, such as financial services, long distance, cable, and others.

The key challenge in the interim is to strike an appropriate policy balance for an RRO design recommendation, which will allow for an orderly transition to a competitive retail market, so that consumers and retailers feel comfortable with the choices and opportunities available.

3.3. Transition Period and Regulated Rate Design Considerations

There is a general consensus among industry participants (including consumer representatives) that a move from the current hedged RRO to a design incorporating a New RRO based on monthly forward hedging will stimulate the development of a competitive retail market. This is aligned with the Department's view that, over time, there should be less need for the price protection built in to the present RRO design, as the small consumer market becomes more knowledgeable and able to make informed choices in the market place and as retailers develop product offerings that are attractive to consumers.

The Department has concluded that the following two fundamental objectives must be met when determining the most appropriate RRO design:

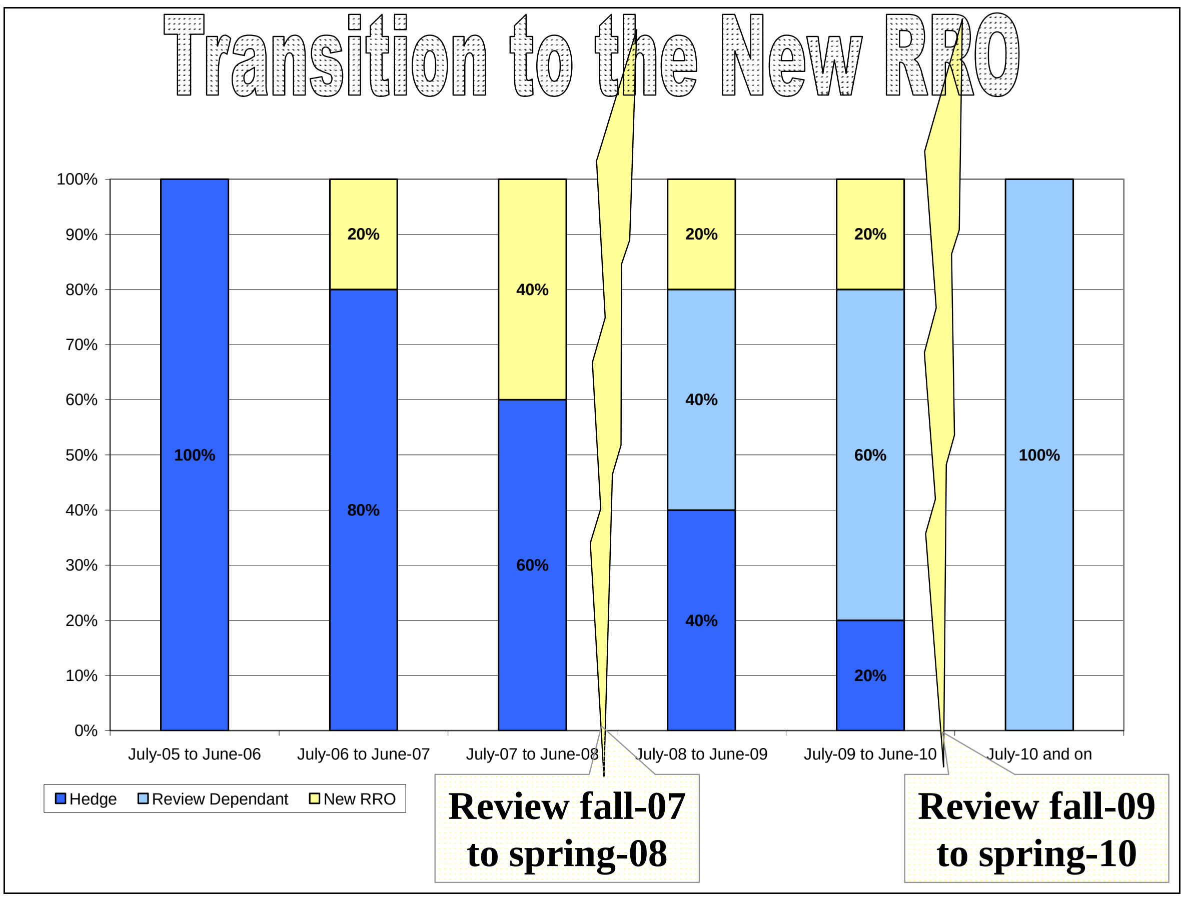
- The design of any New RRO and related policies must afford consumers with appropriate protection during the transition period. This protection will be accomplished by:
  - Providing protection from disruptive price fluctuations
  - Gradually introducing the New RRO
  - Emphasizing consumer education and information
  - Continuing to remove unnecessary entry barriers for both consumers and retailers
  - Ensuring there is no significant negative economic impact moving from one regulated rate design to another

- Any changes in the RRO rate design must make the transition to a New RRO based on monthly hedging within a specific and known timeframe, in order to stimulate retail market development and give consumers a practical understanding of the appropriate price of electricity.

3.4. Recommended Transition Rate Design

Having considered a range of options and experiences elsewhere, and given the fundamental objectives set out in Section 3.3 above, the Department recommends that the small consumer market have the benefit of a transitional RRO rate design under which such consumers are gradually transitioned to a New RRO based on a monthly forward hedge during the 2005 to 2010 period. Specifically, during that time frame the rate will be a blended one, and will feature a gradual reduction in the amount of longer term hedges that regulated rate providers purchase on behalf of their consumers, combined with a gradual increase in the proportion of the rate based on monthly forward hedges (see below).

Figure 1: Transition to the New RRO



Two Department of Energy reviews will occur prior to 2010 to confirm that the scheduled change in the percentage blend of longer term hedges with the New RRO remains appropriate, given any unforeseen events. It is expected that the reduction in longer term hedges will continue as planned unless there is a compelling case for slowing the transition to the New RRO that cannot be anticipated at present.

At the end of the transition period in 2010, the New RRO based on a monthly forward hedge will be similar to the design of the current natural gas default rate, which is based on the monthly forward prices. In Table 1, we set out in table format a more detailed description of the stages of the recommended transition design.

Table 1: Details of the Transition Period

July-05 to June-06:	Continuation of the current RRO as it is today, and the manner in which it is procured (Current Procurement Process).
July-06 to June-07:	80 per cent of the supply requirements for the regulated rate load will be procured and contracted for under the Current Procurement Process. The Current Procurement Process may include in the contract portfolio a blend of longer term contracts, up to June 2010. 20 per cent of the volume must be based on the New RRO, using forward monthly hedging.
July-07 to June-08:	60 per cent of the supply requirements will be obtained under the Current Procurement Process, while the remaining 40 per cent will be based on the New RRO.
Fall-07 to Spring-08:	There will be a review to determine whether the projected percentage blending of the Current Procurement Process and the New RRO is meeting policy objectives. Assuming no change in the percentage blending is necessary or warranted, the percentage blending will proceed in the next two years as originally planned.
July-08 to June-09:	At least 40 per cent of the supply requirements for the regulated rate load will be procured and contracted for under the Current Procurement Process, and at least 20 per cent will be based on the New RRO. The remaining 40 per cent will be allocated to either a continuation of the Current Procurement Process or to the New RRO, dependant on the above mentioned review.
July-09 to June-10:	At least 20 per cent of the supply requirements for the regulated rate load will be procured and contracted for under the Current Procurement Process, and at least 20 per cent will be based on the New RRO. The remaining 60 per cent will be allocated to either a continuation of the Current Procurement Process or to the New RRO, dependant on the above mentioned review.
Fall-09 to Spring-10:	There will be a second review of the effectiveness of percentage blend of the new rate design.
July-2010 and on:	Assuming no changes to the rate structure percentage, the New RRO will make up 100 per cent of the rate design going forward.

The most significant advantage of this design over any other design considered by the Department is that it fully embodies the 'transitional nature' of moving toward a competitive retail market for small consumers. It accomplishes this by continuing to provide the small consumer market with some degree of price protection by means of a hedged rate containing longer term contract elements, which gradually reduces by 20 per cent each year.

The Department is also confident that the gradual introduction of the New RRO based on a monthly hedging will give consumers the opportunity to familiarize themselves with retail choice in electricity, knowing there is some price protection built in to the regulated rate design. At the end of the transition period, consumers should be much better prepared to make an informed choice about whether to remain with the New RRO or choose a competitive product. It must be emphasised that the RRO will still be in place; it will simply be made up of a different price mixture after 2009.

There are a number of other advantages to recommending a New RRO design that more closely resembles the one already in place for natural gas:

- Our analysis indicates that using a monthly rate design, electricity price fluctuations can be *reduced 25 to 50 per cent* over a daily spot market flow-through rate.
- By using a forward looking price model, customers can see prices in advance of their consumption, and may be able, to some extent, adjust their energy consumption and purchasing patterns.
- Alignment of natural gas and electricity pricing approaches will make it easier for consumers to understand and compare natural gas and electricity bills, and for retailers to explain, market and sell bundled energy products.

With respect to the consideration of other approaches in the Integrated Options Paper, as mentioned above the Department narrowed the regulated rate options to three:

- Flow-through
- One-year hedge
- Flow-through with a ceiling

During the stakeholder consultations and the interim period of Departmental analysis, three other options were introduced:

- Three-to-five year hedges
- Gradually Declining hedges
- New RRO based on a monthly hedge

The Department evaluated all of these options against the two fundamental objectives outlined in Section 3.3, and found that the gradual transition to the New RRO most closely met these objectives. A table summarizing in more detail the Department's analysis of options is provided in Appendix 1 on page 50.

3.5. Appropriate Consumer Protection

The Department is of the view that there are five key dimensions to appropriate consumer protection as the electricity market continues to emerge in this province:

1. Consumer Education and Information

Through consumer education and information, the small consumers become better equipped to make their own choices in the electricity market place, whether it is to remain on a regulated rate or choose among different competitive offerings. Education leads to understanding; understanding leads to confidence; and, confidence leads to the courage to enter the market and make one's own choices. The need for effective education during the transition is elaborated upon in Section 3.6 below.

2. Continue to Remove Unnecessary Entry Barriers for Both Consumers and Retailers

Small consumers will be discouraged from signing and renewing contracts, and will avoid entering the market, if the process is confusing and complex and they cannot comprehend the value of entering the market. Committing to a contract must be straightforward and easy to understand so that the customers feel comfortable exercising choice. Similarly, competitive retailers must not face inappropriate barriers or uneconomic complexities which discourage them from offering retail products to all customer classes in all regions of the province.

The Department continues to work with other government agencies and the UCA to reduce inappropriate barriers and reform processes to make the market work more efficiently for all players. These initiatives are set out in some detail under Section 3.10.

3. No Unacceptable Economic Impact in Moving from One Regulated Rate Design to Another

The transition from one rate design to another must be kept to a minimum, given the potential for confusion for the small consumer market. The Department is confident the recommended transitional design will meet this consumer protection goal.

4. Gradual Introduction of a New RRO

A gradual introduction of the New RRO over a period of several years will give the small consumers experience with this rate, and give them more time and a better foundation upon which to base their purchasing decision: whether to stay on the regulated rate or to choose a competitive offering.

5. Moderation of Price Fluctuations

The Department has heard the concerns voiced by some consumer representatives that if the price fluctuation experienced in the current electricity spot market is built into a New RRO rate design then the rate instability could be quite significant. These concerns are legitimate, as is the underlying general concern to protect consumers from too much exposure to spot price variability. The Department is confident the monthly forward hedging feature of the New RRO will dampen this variability.

3.6. Effective Consumer Education

Consumer awareness and educational programs are vitally important if there is to be any real prospect of sustaining the momentum in the emerging retail market. The Department believes that government should continue to work with industry and consumer groups to develop and implement province wide awareness and educational programs for small consumers.

Consumer awareness and education is naturally supported by the design of the recommended option. Gradually declining long-term regulated hedges allows for a gradual change in attitudes as education programs are introduced, and helps avoid the misconception that consumers are being "forced" into the market. A proportionately higher amount of education should be targeted for the earlier years of the transition period to give the consumers the basic knowledge about the market choices, and specifically to decide whether to remain on the RRO or choose a competitive contract. The gradual transition will also allow time for the small consumer market to feel comfortable with the concept that, as in any other retail market, electricity prices do rise and fall based on the fundamentals of supply and demand.

During the past review period, The Department, the Office of the Utilities Consumer Advocate (the "UCA"), the small consumer market retailers and consumer representatives have all engaged in a discussion on the need for a commitment to an education and information program. There is consensus that a program must be implemented soon.

Therefore, the Department is recommending that a committee of stakeholders be formed as soon as possible. The committee would consist of the Department, representatives of retailers, RRO providers and interested consumer groups and would be chaired and organized by the UCA. The committee would have the following mandate:

1. Determine the fundamental messages, and means of delivering such messages that would be contained in an educational program
2. Determine the target market(s) for the educational program, and any differentiated messages by customer class
3. Agree upon the dates that the program is to commence and the period it is to remain in place

3.7. Consideration of Protection for Special Needs Customers

In the course of considering the merits of policy recommendations which address consumer protection needs, the Department conducted some preliminary analysis on the plausibility of a support program for special needs customers such as elderly, people requiring assisted living, etc. The Department will consider suggestions from stakeholders in this regard.

3.8. Need to Monitor the Development of the Retail Market

In the Jurisdictional Review Paper, the Department made it known that there must be a series of robust metrics by which it gauges the progress made as restructuring proceeds. Many stakeholders agree. The Department has responded to stakeholders with recommendations on five key metrics that are currently being tested. The Department will share the results of the test period with stakeholders in June 2005.

These metrics will be used in the future as indicators of the development of the retail market and the collective effectiveness of different initiatives aimed at improving the retail market. At the same time, these metrics will help all industry players to review and understand the state of competition at any point in the evolution of the market and determine whether any further refinements or adjustments are necessary.

The metrics also will be used by the Department as information which will assist in the two transitional rate reviews that are referenced in Section 3.4.

3.9. Components of the Regulated Rate

As the Department carried out its analysis and consulted with stakeholders, it became clear there was another point of general consensus:- the regulated rate design should not be structured so as to make it very difficult for retailers to offer products and services in comparison to that rate.

One of the ways competitive retail offerings can be disadvantaged is if the regulated rate excludes cost components that reasonably should be included in the final RRO price. Historically, for a variety of reasons, not all such components have been built in to that price.

An example of such a component is the cost of prudential requirements as set out in the ISO rules. The *Regulated Default Supply Regulation* grants an exemption to the RRO providers from having to post credit to the ISO. This results in RRO consumers not having to pay for the true cost of wholesale credit. Competitive retailers are not exempt from having to post credit.

Accordingly, the Department is recommending that the Alberta Energy Utilities Board (EUB), in the course of its RRO rate approval process, ensures that in addition to the procurement risk of acquisition remaining with the regulated rate provider as stated in the *Regulated Default Supply Regulation*, the following cost components or their equivalents are included in the RRO going forward:

- prudential requirements for the ISO and any other true costs of wholesale credit borne by RRO providers
- requirements for municipal RRO providers to make payments in lieu of taxes (ENMAX and EPCOR)
- service performance incentives referenced below

With respect to the concept of an incentive, some stakeholders have considered the merits of providing an economic incentive for the RRO providers, to motivate them to seek a higher level of service excellence for RRO customers. The cost of this incentive may be offset by reductions in the current risk management costs paid to RRO providers, as the energy procurement designated in the New RRO based on a monthly hedge reduces the risks to RRO providers. This dollar incentive, the costs of which would be recovered in the RRO rates, would be at risk if the RRO providers fail to meet a minimum standard of performance.

The recommendation to design such an incentive approach has been specifically recommended by the UCA Advisory Council to address service concerns of consumers. The interests representing competitive retailers have also indicated they are supportive in principle, as they understand the benefits of both the RRO and the competitive service providers acting efficiently and effectively to instill confidence in the market.

Accordingly, the Department is recommending that the representatives of the UCA, consumer groups and the EUB continue to seek a consensus approach to the design of such incentives, which would then be implemented as part of the terms and conditions for provision of the RRO.

3.10. Other Initiatives for Improving the Retail Market

There are other market design features which must work in unison to foster an efficient small consumer market. Some of these have been specifically addressed elsewhere in this paper, and are as follows:

- Appropriately reducing the business costs for retailers, particularly relating to the cost of
  - customer acquisition – the cost of marketing and signing contracts
  - billing – the cost of receiving energy and distribution data from many wire owners and managing the production of bills
  - settlement – the cost of settling the market hourly and associated financing costs
  - credit – the multiple layers of credit that affect the retail value proposition
- Customers must have easy access to retailers, retail products and information about price offerings (no switching or exit fees and ease of switching)
- Prices should only be affected by market forces (no retail price caps or rebates)
- Non-discriminatory open access (uniform efficient access) to the distribution systems

During 2003 and 2004, the Department, the EUB and other agencies undertook a series of policy initiatives to appropriately reduce or eliminate some regulatory structures or market inefficiencies that had been impeding both the ability of retailers to provide competitive products and services and the ability of small consumers to understand their choices and enter the electricity market. These projects include *(participating agencies identified in brackets)*:

- Service quality standards for wire-owners and regulated rate providers (EUB)
- Plain language contract for regulated rate eligible customers when they sign retail contracts (UCA, Alberta Government Services (AGS) and the Department)
- Providing retailer access to consumer consumption and other key information at a reasonable price, in a reasonable time, when authorized by the consumer (MSA, EUB and the Department)
- Standardizing the policies and regulations for natural gas and electricity marketing in the province (Electricity and Natural Gas Divisions of the Department)

- Standardizing the data transfer of consumption and distribution data from wire owners to retailers (EUB)
- ISO prudential requirements and other credit issues in the Alberta market (ISO, with participation of the Department and other stakeholders)
- Resolving outstanding settlement issues (ISO, the Department and stakeholders)

Other initiatives contemplated in the future include:

- Benchmark list for retailer products to make it easier for consumers to make an informed choice
- Standardization of switching procedure across wire-owners
- Review of the wire-owner credit requirements and the licensing and bonding requirements for AGS
- Assessment as to whether the cost of wire-owner bad debt should continue to be borne by retailers and RRO providers, or whether it should be borne by distribution companies through their distribution tariffs.

4. Wholesale Markets: Issues and Recommendations

4.1. Introduction

In early 2004, the Department began a process with stakeholders to review Alberta's restructured electric industry to ensure that the competitive market framework continues to provide long-term stability and reasonably priced electricity for Albertans. The WMPTF was established to ensure that the review would have broad stakeholder consultation and input. In addition, regular status updates of the review were presented to the *Electric Utilities Act* Advisory Committee.

The review by the WMPTF was intended to be holistic to avoid making changes that might resolve one issue but result in unintended negative consequences on others. As such, all issues that affect the design of Alberta's wholesale and retail markets were open for discussion. Most of the discussions were dedicated to issues related to the effect the current market design has on the reliability of the system. Such discussions were focused on both the operational aspects of reliability, called short term adequacy (STA), and the planning aspects of reliability, called long term adequacy (LTA).

STA is about keeping the system balanced based on available supply resources and demand requirements. STA becomes a function of LTA which seeks to ensure that sufficient resources continue to come on line to meet the ongoing electricity needs of the province. Other interrelated issues addressed include:

- Operating Reserves Market
- Transmission Must Run Impact On Pool Price
- Interties
- Demand Response
- Balancing Pool Assets
- Credit Implications
- Market Power Mitigation
- Wind Generation

In a competitive market, generation investment decisions are made based on expectations of market performance. This basis for investment decisions means that Alberta's electric market framework must provide signals that are predictable and understandable, and it must support future investment in the electricity sector to provide a foundation for economic growth. In addition, suppliers need confidence they can move their product to market and have the opportunity to compete.

Similarly, the framework for retailers must be predictable and reflect market fundamentals. Existing and future retailers must be able to make reasonable business predictions about prices and access to supply. Load must be assured it will have access to needed electric supply in a predictable fashion and at a price reflective of market fundamentals.

To support the new market structure, transmission must be available to all supply and load customers in a non-discriminatory manner and with sufficient transmission capacity to ensure that neither load nor generation is constrained. Transmission remains the agent of reliability and is also the facilitator of the competitive market.

The Integrated Options Paper outlined a number of issues and positions in developing comprehensive refinements to Alberta's market design. The Department received more than 35 sets of comments from individual stakeholders. These comments were carefully reviewed and shared with all stakeholders. The Department also arranged numerous one-on-one meetings with stakeholders to discuss their comments. The Department is aware that several senior executives of stakeholder organizations met with members of the legislature to express their views on market design and to provide their assurances that reliability and long-term adequacy would not suffer under the current design.

Draft recommendations regarding refinements to the wholesale market were issued May 18, 2005. The Department sincerely appreciates the time and effort that stakeholders have taken to consult, prepare written comments and participate in meetings.

4.2. Short Term Adequacy

There were significant discussions in 2004 on the issue of STA in Alberta. The ISO and the Department issued a series of white papers and held numerous stakeholder meetings over the summer to discuss the issue and potential solutions. This work culminated in an ISO Rule change in December of 2004 which put into place some interim measures to improve short term adequacy.

During the wholesale market review process, the following design principles were established:

- to ensure system reliability. supply offered to the market should be sufficient to meet forecast load requirements plus reserves, plus the single largest contingency,
- to ensure an efficient electricity market, the market structure should be stable enough to provide system reliability through market signals, with minimal market interference,.

The issue of STA can be defined as having two components. The first is referred to as Offer Shortfall, in which the system operator does not always know if there will be enough generation available in the supply stack to meet the load. The system operator does not have that information because there is no certainty of available capacity from day-ahead schedules, there is no market mechanism to commit additional units on a day-ahead basis and there is no coordination of outage scheduling.

The second issue is that there is significant volatility/instability of the merit order. This volatility arises from two sources: dispatch signals which do not recognize physical plant parameters and corresponding market flexibility which allows last minute restatements and does not require adequate dispatch compliance.

The ISO dispatches units on a moment-by-moment basis based on an economic merit order. The merit order is created by energy price/quantity pairs offered on the units. This arrangement ignores the complicated, inter-temporal physical and economic characteristics of different plants. The single-part offer has a detrimental impact on the quality of the price signal and can result in greater physical wear and tear on units, especially units on the margin. Because of this problem, suppliers are motivated to self-dispatch and to refuse dispatch instructions (through restatements) to avoid financial harm. While this is rational behaviour on behalf of the suppliers, it is inconsistent with the need for the price signal to motivate behaviour that provides for a reliable electricity market.

4.2.1. STA Issues and Recommendations

As part of an interim solution to improve STA while the overall market review was still underway, the ISO implemented a rule change on December 22, 2004. Nonetheless, the current market design is still limited in the extent to which it can deal with all of the issues that face participants and the system operator. For some issues, such as ensuring adequate supply for the next day, there are no ways to manage it without impacting the market. For other issues, such as consideration of generators' physical characteristics, market power issues may evolve.

The Department recognizes the fact that every region in the world has political, economic and social differences. The characteristics of the electric grid and generation resource mix varies from one region to another, consequently, no single electric market model will be appropriate for all jurisdictions or regions.

Across North America many jurisdictions are moving toward or have established a day ahead electricity market (DAM) to address many of the STA issues facing Alberta. Reflecting this industry change, the Integrated Options Paper put forward an option for a DAM in Alberta.

In the period following the release of the Integrated Options Paper, the Department met with many stakeholders both individually and in groups and received written submissions on the paper. As well, separate stakeholder working groups were established to consider STA and LTA options. In these meetings and submissions there has been a consistent message about concerns with the applicability of a DAM in Alberta.

Some common concerns expressed include price convergence between the DAM and real-time electricity market, the business case for a change to a DAM (of particular concern was the possible costs that might be faced by market participants) and the possible impact of a DAM on existing PPAs. The common stakeholder view has been that the industry should focus on enhancing existing market arrangements and market systems to address STA concerns.

Consequently, the Department does not believe that a DAM is necessary for Alberta at this time. However, given the evolving nature of electricity markets and a need to remedy STA issues, a DAM may be added at a future date.

Regardless, the ISO has a mandate to provide for the safe and reliable operation of the electric system and to promote a fair, efficient and openly competitive market for electricity. The design of competitive markets for electricity requires a balance between the needs of the market and system reliability requirements. Market rules must support the reliability of the system.

The Department recommends the present energy only market be maintained with modifications and improvements outlined below. The Department recognizes that some changes may need policy and regulations while others will be developed through the ISO Rules process.

1. **Mismatch of dispatch price and settlement price:** The system operator dispatches supply as needed on an instantaneous basis to meet demand (i.e., moment to moment). The system marginal price (SMP), used for dispatch, is calculated every minute. The Pool price, used for settlement, is the average of the 60 calculations of the SMP each hour. The difference in the dispatch and settlement intervals creates a mismatch between dispatch and settlement prices. This mismatch results in a poor quality price signal and motivates participants to self-dispatch or refuse dispatch.

   Recommendation: Alignment of dispatch and settlement periods would create a more stable and efficient merit order. It would prevent the mismatch that results in a poor quality price signal and motivates participants to self-dispatch or refuse dispatch. There is more than one way to accomplish this goal. The Department recommends that the ISO investigate this issue further and make such changes to the dispatch and/or settlement periods or determine the need for load following services such that the stated objective are accomplished. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper.

   - Encourages offer stability in the merit order so that it may be dispatched in a more efficient manner
   - Limits incentive for price-chasing
   - Reduces impact of price-chasing

   In the interim and as a possible alternative to the above, intra-Alberta energy blocks that are dispatched within a settlement hour will receive the greater of Pool price or their offer price for the dispatch period within the hour. Any uplift required to compensate generators for the difference between their offer price and the Pool price will be allocated to load. This measure is likely to be relatively inexpensive to implement. This approach addresses the following STA issues that were identified in the Integrated Options Paper.

   - Limits the incentive for marginal unit price chasing
   - Ensures that generators are not financially disadvantaged due to Pool price determination

2. **Reliability unit commitment (RUC):** The STA steps, introduced in December 2004, have introduced an element of a RUC. They allow the system operator to commit and/or dispatch supply not in the merit order once energy in the supply stack is exhausted or expected to be exhausted. Under this design, reliability is improved but the additional costs associated with committing additional capacity are shared by all load, rather than being directly assigned to load which did not schedule sufficient generation.

Recommendation: The ISO has the authority to direct the start-up of an intra-Alberta generator to ensure supply adequacy. The ISO will commit units if it appears that the supply offered into the merit order cannot adequately respond to real-time dispatches to maintain the supply-demand balance. Rather than being restricted to particularly long lead time units as at present, the concept will be expanded to include all units that cannot adequately respond to a real-time dispatch. Rules for compensation of start up costs will be developed. It is expected that their participation in the energy market will be restricted if compensation is accepted. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper.

- Ensures a mechanism for the ISO to commit units to ensure reliability
- Ensures proper compensation for units that are committed

In addition, intra Alberta generators must provide the ISO with the physical characteristics of their generator(s) including start-up times and ramp characteristics. This information is necessary for the ISO to properly assess the need for and the priority of an out of market unit commitment. Taking into account this information, the ISO will only commit units when it is evident that long lead time units will need to be directed on to maintain the supply-demand balance. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper:

- Provides the information necessary for the ISO to efficiently commit units for adequacy purposes

Further, intra Alberta generators must inform the ISO of their intentions to start their generator(s) prior to initiating start-up. Furthermore, timely provision of start-up times is required, including the changing availability times when a unit shuts down. This provision is necessary to limit market interference by the ISO by ensuring that the ISO is aware of start ups by generators with lead-times. This information is then used by the ISO to properly assess the need to commit generators ahead of time and avoids committing units that were planning to participate in the energy market. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper.

- Provides the information necessary for the ISO to efficiently commit units for adequacy purposes
- Avoids unit commitment directives that would exclude units from the energy market when their intent was to participate
- Reduces ISO discretion in unit commitment for adequacy purposes

3. **Limitation on restatements:** Supply has the flexibility to restate bids up to real time using both locking restatements and energy restatements. While the need for restatements due to operating constraints such as unplanned outages is understood and acceptable, the ability to restate for economic reasons causes supply adequacy uncertainty and can result in poor price signals because there are increasing incentives for suppliers to self dispatch.

Recommendation: The Department recommends that intra-Alberta generators have the ability to restate the price of their offered energy (consistent with current locking restatement format) until two hours before the start of the delivery hour. This means that volume and price for the delivery hour will be fixed two hours ahead of the delivery hour. Within the two hour period, restatements will only be allowed for physical operational reasons or to accommodate "unexpected" supply that may be coming back early from an outage. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper.

- Creates offer stability in the merit order so that it may be dispatched in a more efficient manner
- Prevents real-time price-chasing

4. **Loads not bidding in:** Loads are currently not required to submit bids into the energy market. Very flexible price responsive loads, while a generally good thing, can negatively impact the system operator's ability to maintain a supply-demand balance. There was discussion last year to require price responsive loads of a certain threshold MW amount to notify the ISO of their intended actions.

   Recommendation: The Department recommends there be a requirement for price responsive load above a certain threshold to notify the ISO of its curtailment strategy. Load will not be required to bid into the energy market. However, the ISO will explore products that encourage price responsive loads to bid into the energy market. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper.

   - Provides proper input into the ISO unit commitment assessment
   - Improves system reliability
   - Reduces wholesale price volatility
   - Reduces the amount of needed installed capacity

5. **Greater demand response:** The current market design only promotes load response that is very flexible and can react quickly to prices.

   Recommendation: Even though the current market design only promotes flexible load response that can react quickly to real-time price, demand response in Alberta is as good or better than most jurisdictions. While the Department and the ISO will continue to investigate ways to facilitate demand response, there is no immediate need to move to a DAM for this purpose. Demand response is discussed in more detail in Section 4.4.4 on page 28.

6. **Improved price forecasting:** The ISO currently produces a day-ahead price forecast which was intended to provide a price signal for market participants. It is less useful than intended due to the volume of restatements and lack of binding offers. Under the current real time market, it is questionable whether an improved ISO price forecast will benefit market participants.

Recommendation: Several of the changes proposed in this paper may assist the ISO to improve the quality of price forecasts. Recommendations (later in the paper) on changes to arrangements for TMR and interties in particular will improve price signal accuracy. Additionally, changes that improve the ISO's ability to maintain reliability will also help improve the quality of price forecasts. As uncertainty regarding supply adequacy will be eliminated, price fluctuations that arise as a consequence of such uncertainty should also be reduced, improving the quality of the ISO's price forecasting. The ISO will evaluate information provision to ensure timely and useful price forecasts are provided.

7. **Outage coordination:** While the ISO is mandated to maintain adequacy in Alberta it has very little influence on supply scheduling. The potential for a lack of coordination between market participants in scheduling generator outages increases the risk of having inadequate supply resources to meet system needs.

   Recommendation: The Department recommends generators manage their own outage scheduling until the amount of supply scheduled off-line exceeds a pre-determined level. At that point the ISO would use predetermined criteria to coordinate generation outages. To the extent there are costs incurred as a result of the ISO restricting or rescheduling an outage, the ISO and the affected generation owner shall negotiate in good faith regarding the payment of such costs. The generation owner shall also, in good faith, minimize such costs to the extent possible. This recommendation addresses the following STA issue that was identified in the Integrated Options Paper.

   - Helps to ensure supply adequacy in Alberta while minimizing the market impact

8. **Impact of intermittent resources:** A significant amount of wind power generation has been added over the past several years, with substantial new capacity proposed for development in coming years. In fact, Alberta is the national leader in wind power at this time. As a non-polluting and renewable resource, wind power is desirable from a public policy standpoint, but it does present certain operational and reliability challenges not associated with other generation technologies.

   Recommendation: The attributes of wind generation technology must be considered while maintaining fairness to all market participants. The ISO will make rules to ensure that wind and other intermittent resources are able to participate fairly in the energy market. The rules will consider characteristics of wind generation so that wind may be properly accounted for in any reliability assessment. Wind generation is discussed in Section 4.4.11 on page 35.

9. **Must offer requirements:** There is currently no must offer requirement in the Alberta market, which causes uncertainty about available supply and raises reliability and market power concerns.

   Recommendation: The Department recommends that market participants with supply must submit their energy price quantity pairs for the energy market before gate closure on the day before the delivery day. All available volume must be offered and the total volume may not be restated except for physical operational reasons. In addition, dispatch issued by the ISO must be complied with. Any change or limitations to availability must be immediately communicated to the ISO. "Unexpected" volumes from a unit that comes back from an outage early would be allowed into the market. Market participants are free to offer volumes at any price up to the market price cap. This recommendation addresses the following STA issues that were identified in the Integrated Options Paper.

- Helps to ensure next day adequacy by ensuring all volume is offered
- Mitigates market power issues that evolve from withholding supply

4.2.2. *Summary Remarks*

Implementation of the changes proposed above will enhance the ISO's ability to efficiently manage their responsibility for the safe, reliable and economic operation of the electric system. In particular, the recommendations relating to must offer requirements, two hour restatement restrictions, provision of information detailing unit physical characteristics, outage coordination and unit commitment for supply adequacy will improve the ISO's ability to maintain reliability.

4.3. Long Term Adequacy

4.3.1. *Introduction and Issues*

Since the introduction of competitive wholesale and generation markets in 1996, Alberta has experienced significant growth in installed generation capacity. More than 3,500 MW of new generation capacity has come online, an increase of more than 30 per cent in installed capacity. This capacity represents more than $2 billion in new investment.

As stakeholders are aware, the competitive generation market has earned investor confidence since opening. The new supply supports reliability and competitive energy prices. It is not clear, however, whether this new generation was developed based on clear "stand alone" market signals or drivers from other industries, such as growth in the oil sands, which may not repeat themselves in the future. It is government's role to ensure that the market framework is appropriately shaped to support investment sustainability in the long term. Alberta is not alone in reviewing its market framework to address the requirement for ongoing investment in new supply, as electricity deregulation still is in its early stages where it has been introduced in other jurisdictions in North America. Such jurisdictions are addressing the issue of how to attract the next round of investments for electric capacity both to replace aged and obsolete equipment and to meet growing demand for electricity?

The key concerns for the Alberta market are:

- whether the current energy-only market provides sufficient clear and robust signals so suppliers can take a forward view, correctly anticipate supply needs and build generation in a timely fashion, without having to wait to experience prolonged high prices before building.
- whether the length of contracts entered into by loads are long enough to provide sufficient security for lenders to provide the financing for new projects.

- whether those companies who can finance projects out of their own equity are sufficiently motivated by those market signals to build new generation.

Other concerns came from observations of existing markets world-wide. The development of energy markets is a complex and lengthy process. The Alberta market is only nine years old, and liquidity in the wholesale and retail elements has gained significant momentum within only the last five years. Restructuring challenges in Alberta and other jurisdictions include:

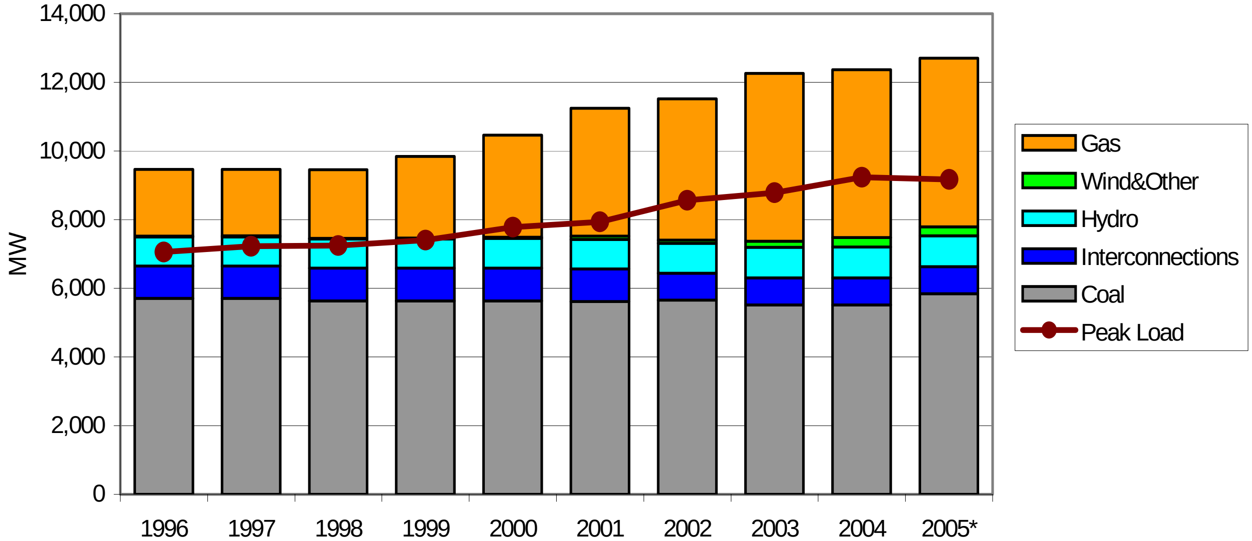
- The failure to provide adequate day-ahead and real time price signals to load so that load can make the economic choice whether to consume, based upon those signals
- The incomplete implementation of market power mitigation elements, especially in markets with thin liquidity, which reduces the confidence that price levels are a function of market fundamentals
- The inability of load to respond to price, which could lead to an understandable imposition of price caps or other market power mitigation mechanisms. These mechanisms constrain wholesale prices below their competitive levels. This constraint leads to insufficient revenue to attract new investment and may even make it difficult to retain some existing generation.
- Imperfect energy and ancillary service markets, which have resulted in portions of the price of energy being charged to all customers through uplift, regardless of their consumption patterns. This uplift further blunts the price signal and results in inefficient consumption and investment decisions. For example, ISOs have retained and continue to use control mechanisms to operate the system for security reasons. These mechanisms are not reflected in the energy or ancillary service prices and which either form uncompensated services from generation or create further uplift (i.e., TMR).
- Other non-price mechanisms such as system wide voltage reductions and rolling interruptions to customers. These mechanisms do not discriminate between load which acquires adequate supplies and those which do not ("free-rider" problem).

4.3.2. Alberta Supply-Demand

As illustrated in Figures 2 and 3, the majority of the capacity additions since 1996 were gas-fired units (primarily cogeneration), with Genesee 3 a recent notable exception. Although the prospect of being able to sell energy into a competitive market can contribute to a decision to build co-generation, the primary driver is "within the fence" of the co-generation owner, to ensure that the plant will meet its processing needs. The Department is of the view that such plants are typically not installed to be timely in meeting the supply requirements of the electricity market.

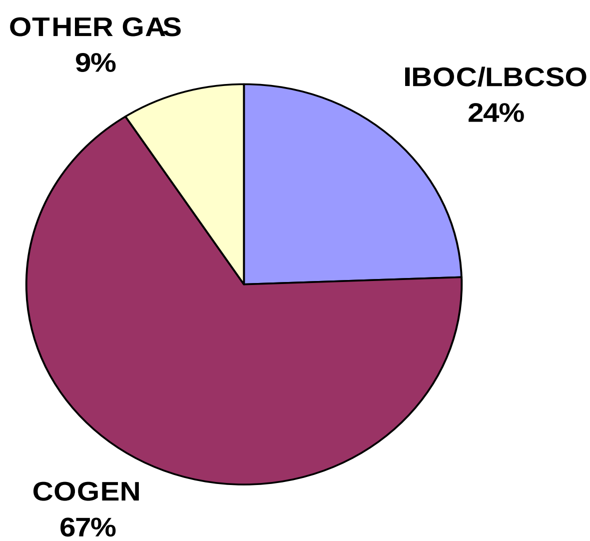
The second largest components of gas generation added were those relating to Invitation to Bid on Credits (IBOC)/ Location Based Credit Standing Offer (LBCSO) contracts. These contracts were initiated by the former Transmission Administrator to provide incentives for generation to build closer to large load centers. These contracts were considered necessary to support the grid in the Calgary area (i.e., to prevent voltage collapse) since new transmission could not be built in a timely manner.

Figure 2: Growth in Alberta Installed Capacity



Prepared by Alberta Energy, 2005 data as of May 2005

Figure 3: Gas Unit Additions (1996-2005)



Source: AESO

As part of the requirements under the *Transmission Regulation*, the ISO released its 10-Year Transmission System Plan 2005-2014 on December 31, 2004. The ISO's forecast indicates that the majority of proposed new generation will be located in the Wabamun and Fort McMurray regions. While this supply addition will provide capacity to meet the growing load in the Province, most of the energy will not be able to serve the growing demand in the Calgary region until transmission upgrades are completed in 2009. While there are other forecasts that suggest different results and timing of supply shortfalls, the Department is concerned that supplies could be tight or require the dispatch of significant amounts of out-of-merit- (TMR) generation in southern Alberta.

4.3.3. LTA Options

After considerable discussion and significant stakeholder input, three long term adequacy options were presented in some detail in section 4.4 of the Integrated Options Paper, and are briefly summarized here:

- **Energy only market:** This option preserves the basic market design currently in effect, but would entail fixing some problems that keep the Alberta energy only market from working more efficiently, such as a poor quality price signal, inadequate demand response, government intervention, etc.
- **Capacity Market:** This option explicitly requires some form of contractual adequacy obligations in addition to the energy market
- **Energy Only Market with Adequacy Contracts:** This option retains the energy only market design and adds to it some form of last resort contracting mechanism to ensure adequacy

Stakeholder feedback on the options showed strong support for continuing with the energy only market design, very little support for the capacity market design, and mixed support for the energy only with adequacy contracts (mostly as a preference to capacity markets). A brief description of each of the three options follows with principle pros and cons of each option. More detail was provided in the Integrated Options Paper, and a comparison of LTA options is provided in Appendix 1 on page 57.

Energy Only Market: From the perspective of most stakeholders, the energy only market is the most market-oriented solution for meeting the province's electricity needs. The main concern of the Department in maintaining this design is the risk that market forces will fail to add capacity on a timely basis, resulting in inadequate supply.

While some period of high prices during scarcity conditions are natural and expected in any market, there is significant risk of government intervention associated with high prices for residential and farm customer classes. Political intervention could lead to the perception of government managing wholesale prices, which would have the effect of damaging the return on investment for generators. This price management would make generators less likely to build. Even the perception of price management could make generators less likely to build. It is the Department's view that these price volatility concerns are more appropriately managed through other measures which could be introduced to protect consumers while the market continues to mature.

Consumer price protection, however, is only a partial answer. Absent sound policy that ensures capacity additions occur in a predictable and reliable fashion, the possibility of service interruptions remains. Most stakeholders maintain that government action to ensure timely capacity additions is not required.

Adequacy Obligations: The majority of stakeholders were strongly opposed to the basic concept of a capacity market or other adequacy obligation, whether modelled on PJM style markets or otherwise. Their concerns are that:

- an adequacy obligation has not yet proven to be effective as a solution to LTA concerns in other markets where it has been implemented; many jurisdictions are retooling these obligations and, in the minds of some stakeholders, with little chance of success
- mandatory capacity contract obligations can materially alter the basic value propositions in this market, by changing risk portfolios and contractual relationships, and imposing risks and costs on players who have neither the desire, forward view, nor the credit capacity to alter their portfolios and take on such risks.
- mandatory capacity contract obligations require some government agency to proactively be involved, with oversight and enforcement capabilities. Involvement may be viewed as a move back towards centralized planning, and could be a significant disincentive to investment in the province.

Energy Market with Some form of Last Resort Adequacy Contracts: While the significant majority of stakeholders support the energy only market design approach with minimal government policy interference, some who have accepted the government's requirement to ensure adequacy have expressed general support for the "last resort" adequacy contract approach.

The advantage of this approach is that it allows the energy only market to operate as it has in the past, with the prospect of a competitively bid adequacy contract as a last resort, and then only for very limited purposes. This design would allow the market and demand response to develop over time with less risk of government intervention to address adequacy problems. The three main concerns stakeholders have expressed with this option are that:

- there would be political/regulatory pressure to use adequacy standby capacity to manage price in the market
- investors may not build capacity until a tender was issued for these units
- stakeholders must clearly understand the rules and signals under which this adequacy approach would be implemented.

Since the tabling of these options, the Department has been working with stakeholders to further explore the merits of an adequacy model that preserves all of the most important features of the energy only market. In turn, there were three refined approaches to a "last resort" adequacy contract approach:

1. Issue a request for proposal (RFP) for capacity from a ***new unit*** (or units) dedicated to only this service;
2. Issue an RFP for capacity from ***an existing unit*** (or units) dedicated to only this service; and,
3. Create a ***new operating reserve product***, under which market participants would procure capacity from the market without any restriction that a unit (or units) is dedicated to supply only this service.

Under each of the options, the capacity would only be dispatched at the price cap to prevent load shedding. It would only be dispatched after all other supply in the energy market is dispatched. The adequacy contract would be compensated at its marginal cost for any energy produced. The revenues associated with the difference between the price cap and the marginal cost would be used as an offset against the fixed costs of the adequacy contract. It is expected that this approach would cause a step increase in the forward price curve by removing capacity from the energy market which would stimulate new capacity to come on line sooner.

Adequacy Contract: Metrics, Monitoring and Trigger Mechanisms
With any adequacy approach, a reliability or adequacy metric, a monitoring process and a triggering mechanism must be designed and implemented. Many jurisdictions have a reliability criterion (i.e., metric) of a loss of load expectation of one day in ten years. This criterion is then translated into a reserve margin requirement. Typically, the reserve margin requirements in various jurisdictions range from 15 per cent to 20 per cent above peak demand.

Under Alberta's previously regulated environment (prior to 1996), the Energy Resources Conservation Board approved a reserve level of approximately 22 per cent. In 2002, the Federal Energy Regulatory Commission (FERC) proposed a minimum reserve margin of 12 per cent in its Standard Market Design (Notice of Proposed Rulemaking RM01-12-000). Subsequently, in 2003 FERC released a white paper proposing that each Regional Transmission Organization (RTO) or ISO would need a regional method of assessing resource adequacy, but would allow each region to determine an appropriate metric. Any metric for Alberta would obviously need to take into account its unique generation mix and load composition, as well as the effects of market design on incentives to build generation.

The Department is of the view that it is essential for the Alberta market to have a 'made in Alberta' metric and reserve margin for adequacy purposes. However, the Department does not believe there is adequate information at this time to specify what that metric and corresponding reserve margin should be. Some stakeholders have suggested that perhaps the number chosen should reflect an average value over a span of years to reflect the lumpiness of generation additions. Such an approach would probably require a floor value and coordinated outage planning to ensure that reliability of supply is not compromised.

The Department puts forth the following as an example of how a trigger mechanism may be structured. This is only an example, and the actual mechanism and its operation should be formed in consultation with stakeholders.

- **Supply-Demand**: The ISO will create and annually publish a 10-year supply and demand forecast. The ISO will consult with stakeholders on the key assumptions in the forecast prior to issuing its forecast to ensure all assumptions are robust and defendable.
- **Adequacy Studies:** The ISO will conduct loss of load probability studies annually that would include determining capacity factors for wind, hydro, tie-line, etc. The ISO adequacy studies will be for load pockets with restricted transmission as well as for the province as a

whole. The forecast will provide the basis for the alert conditions. The first study should be completed by Dec 1, 2005.

- **Adequacy Metric** – two measures could be considered. The first would be a 'soft trigger' metric that could build to a 'hard trigger'. For illustrative purposes assume the following reserve margin targets: for any single year, 12 per cent minimum; for a sample three-year average, 17 per cent minimum.
    - If both conditions are met 4 years out, the ISO will notify industry and the Department that capacity appears to be adequate for the near term future
    - If either condition is not met 4 years out, the ISO will notify the industry and the Department that it has some concerns that there may not be sufficient capacity in the near term future and it will expect the industry to respond.
    - If either condition is not met 3 years out – the ISO will notify industry and the Department that is has significant concern that there may not be sufficient capacity in the near term future and that, unless a material change occurs, it would prepare to issue an RFP in eight months for capacity
    - At two years and four months, if either condition is not met, the ISO would issue an RFP for an adequacy contract to be signed at two years before the year in which capacity is deemed to be insufficient. The amount of purchased capacity would be limited to the least quantity essential to maintain adequacy as reasonable determined by the ISO. Terms of the RFP would be determined based on market needs.

Other Adequacy Tools

Transmission interconnections with neighbouring jurisdictions are essential to a well-functioning power market as they support reliability, price stability, generation development and continued economic growth in Alberta. Albertans benefit from these interconnections by having the ability to import or export power as needed.

The Transmission Policy and Regulation provides certain direction regarding interties. The ISO is required to create long term plans including consideration of interties and is also provided with direction to reinforce the transmission system internal to Alberta so that existing intertie capacity is restored to its design path rating. The Transmission Policy and Regulation also provides a framework for the development of privately funded merchant transmission lines for import and export of electric energy. This approach is starting to generate significant interest in the industry.[1]

Additional intertie capacity may provide an alternative to address long term adequacy. For example, a transmission adequacy criteria could specify that sufficient intertie capacity be available to allow transfers of up to 20 per cent of system peak load (i.e. ~ 2000 MW). This could allow greater exports from Alberta which could stimulate generation development in the province and also enhance system adequacy. Such exports could be recallable in times of system supply shortages.

[1] A consortium of private investors is proposing to build a privately funded 300 km long transmission line (400 MW), between Lethbridge and Great Falls Montana. The transmission capacity auction process was successfully completed on April 15, 2005 and sufficient commercial bids have been received for the project to proceed.

The strongest voices supporting the existing energy only market have come from both generators and representatives of large load. These groups maintain that the existing market design is generally successful. Recognizing that these groups have been the principle beneficiaries of restructuring so far, it is appropriate that they bear the principle risks associated with any market failure.

To accomplish this, it would be appropriate to establish a curtailment priority protocol. In the event of a capacity shortage, which is sufficiently severe to require involuntary load curtailment, large industrial and commercial consumers should be the first to be interrupted. Stakeholder discussion and input will be required to create this protocol in the most appropriate fashion.

4.3.4. Recommendations

As mentioned above in the context of capacity adequacy, a key concern of the Department was that generation financing may be problematic for generation investors that did not have long term contracts. However, the Department has been persuaded by stakeholders that. in Alberta, adequate third party or equity financing will be available to invest in new generation as it is required.

While some companies may not be able to build without long term commitments, there are enough companies that can and will build to keep the current framework sustainable. A number of stakeholders have acknowledged that there is a strong "first mover" advantage in Alberta that will assure a steady stream of new supply.

Several senior executives from Alberta's generating companies have given assurances to members of the legislature that they fully expect to build in Alberta, and that Government does not need to be concerned about supply shortages. Stakeholders have also pointed out that:

- Alberta is an energy producing jurisdiction that built significant infrastructure for exporting its energy
- Significant investment is occurring and will continue to occur in Alberta's energy sector.

The Department acknowledges that these circumstances set Alberta somewhat apart from other North American jurisdictions that seek to secure long term adequacy through capacity markets and long term RFPs.

The Department believes that strong interconnection capacity with neighbouring jurisdictions may, in the long term, contribute to address or significantly mitigate long term adequacy concerns for Alberta. The Transmission Regulations plays an important part in this. Firstly, the Regulation will contribute to reinforce the transmission system to allow the interties to transfer to their capability limits. Secondly, the Regulation also creates the framework for the development of merchant transmission lines to increase transmission interconnection capacity with neighbouring jurisdictions.

Recommendation: After consideration of all options and detailed submissions from a wide range of stakeholders over the past year, the Department agrees that it is not desirable to modify in any fundamental manner the energy-only market design. Therefore, the Department is not proposing recommendations that are perceived to undermine that basic design at this time. The focus of the recommendations will be on collateral policy refinements aimed at improving the current design.

The Department recommends that the ISO develop key indicators to monitor long-term adequacy and to provide an early-warning of adequacy issues in Alberta. Three initial indicators would be: 1) transmission status, 2) generation status and 3) a reserve measurement. Others might be added as experience dictates.

Transmission is critical to the delivery of electricity and much of the potential additional supply cannot reach load until significant transmission expansion has occurred. Therefore the first key indicator of adequacy must be the status, timing and progress of current and future transmission lines.

For example, no new northern generation (i.e., coal-fired generation in the Wabamun area, or gas-fired cogeneration in the oil sands) can reach the Calgary area until the recently approved north-south reinforcement is completed in 2009. If that project were substantially delayed, then access to any northern area generation would be similarly compromised.

The timing and location of generation additions is also a key indicator of future capacity. Approved plant permits, public announcements, construction schedules and similar measurable criteria are significant and visible signs of generation status.

Some form of reliability or adequacy metric would also be a key indicator of Alberta's future supply picture. The Department believes that a metric for reliability is desirable, at least for the next several years. However, as mentioned above, the Department does not believe there is adequate information at this time to specify what that metric and corresponding reserve margin should be.

The Department recommends that the ISO, as part of its obligation to assess and ensure reliability, establish an appropriate metric in consultation with stakeholders. The ISO should consider the example set out under Section 4.3.3, together with further stakeholder input.

Since releasing the Integrated Options Paper, the Department has considered the merits of other approaches to the long term adequacy question which are not based on a policy which mandates an adequacy requirement. One such approach would be to design a load curtailment policy that would require the interruption of service to certain rate classes in the event of an adequacy shortfall.

Recommendation: The Department will ask the ISO to start discussions with stakeholders to establish a load curtailment priority plan which, in the event of supply shortfalls, would allow for the interruption of supply to industrial and large commercial customers, and not allow supply interruptions to residential customers.

Recommendation: The Department considers that strong interconnection capacity with neighbouring jurisdictions may, in the long term, contribute to address or significantly mitigate long term adequacy concerns for Alberta. The Department recommends that the ISO, as part of its obligation to assess and ensure reliability, consider and evaluate the merits of additional intertie capacity, including new interconnections, in its long term plans. Additional intertie capacity and interconnections may allow greater exports from Alberta which could stimulate generation development in the province and also enhance system adequacy. Such exports could be recallable in times of system supply shortages.

4.4. Other Interrelated Wholesale Market Issues

4.4.1. Operating Reserves Market

The operating reserves market is small in size compared to the energy market (e.g., energy - $5 billion annually; operating reserves - $80 million annually), yet it is recognized that this is a very important service to the electric industry. There can be a significant impact on the energy market if operating reserves are not managed properly. The WMPTF June 2004 discussion paper identified a number of issues inherent in the current market, including:

- the impact of the Hydro PPA and Notional Reserve Quantities Agreement between the Balancing Pool and TransAlta Utilities
- complexity of the current structure relative to the size of the market and transparency issues that may create forecast errors and allocation inefficiencies between products and markets
- single buyer design.

Following a request from the MSA for the Balancing Pool and TransAlta to revisit their agreement to address concerns identified in its January 2004 Spinning Reserve Market Event Report, the Balancing Pool and TransAlta entered into a new agreement that came into effect on August 1, 2004. This new agreement is expected to address the concerns outlined in the MSA's report. Since its signing, more rational market clearing prices that better reflect competitive forces have been observed. This issue is considered addressed for the purposes of the WMPTF review.

Market transparency is an important principle for the design of the operating reserves market. The ISO has undertaken to address stakeholder concerns about the level of transparency in this market. In response to receiving requests for making public ongoing forecasts of operating reserve volumes and other historical trading data and concerns expressed by some stakeholders regarding the competing objectives of the ISO's operating reserves procurement role versus its market design role, the ISO has since taken the following actions:

- Communication and public posting of the guidelines for procurement of operating reserves by the ISO's commercial function
- Development and public posting of regularly updated operating reserve volume forecasts and other historical operating reserve trading data
- Other improvements in transparency resulting from a move towards standardization of the over-the-counter agreement.

There is a general consensus that while the current operating reserves market employs complex mechanisms in relation to the size of that market, they are not considered barriers to participating in this market. This issue may require review of the operating reserve market design, depending on opportunities or challenges resulting from energy market design refinements.

Some stakeholders have expressed a desire that load customer self-procurement of operating reserves be considered, including options for third party asset substitution.

Recommendations
Based on mixed stakeholder comments and in keeping with the approach taken with respect to the energy market (i.e. incremental refinements to current market design), the Department recommends taking a similar approach to changes in the operating reserve market design. While the Department supports in principle the concept of a design with multiple buyers and sellers, by allowing the self-procurement of operating reserves by loads, the Department recommends that the ISO continue to work with stakeholders to determine the desirability of this option.

4.4.2. Transmission Must Run (TMR)

TMR services are acquired by the ISO when it is necessary to dispatch or direct generation to operate out of merit to ensure that the interconnected transmission system is operated in a reliable manner. The Transmission Policy and Regulation provide policy direction respecting TMR services.

TMR services are generally expected to be short-term solutions and the ISO is directed to develop a robust transmission system which will minimize the need for TMR in the long term. TMR may, however, be used in emergency or maintenance conditions as a transition mechanism before new transmission is built, or as a long term alternative to transmission development. This long term alternative would apply when transmission reinforcement is uneconomic, such as in remote areas with limited potential for load growth. Where TMR is used, the cost of TMR (or similar) arrangements will be recovered from load customers in the same manner as wire costs as part of the transmission tariff (i.e. regulated costs).

In many circumstances, the need for TMR is location-based and there may be limited competitive alternatives resulting in potential market power abuse.[2] To deal with potential market power concerns, the Transmission Regulation (s. 23) established a cap for compensation for TMR services and directed the ISO to create a cost determination methodology and related terms and conditions.

Table 2 (below) outlines the four key regions in Alberta where TMR services are currently utilized to maintain reliability limits:

There are currently plans for four years of occasional TMR service in the north half of Edmonton and for four years of an additional 200 MW of peak TMR (for a total of 400 MW) requirements in the Calgary area.

In competitive power markets, TMR may be problematic as it represents an out-of-market solution that can distort the price signal for the entire market. Stakeholders indicated that the current treatment where out of merit TMR is bid in at $0 per MW·h artificially reduces Pool price. Some

[2] FERC has recognized that market power mitigation (such as offer caps and other mechanisms to limit the price a must-run generator may charge) may be necessary to restrain the exercise of local market power by must-run generators.

stakeholders consider that this treatment is inequitable for generation owners and distorts the price signal to build new supply, which could contribute to supply shortages. On the other hand, some consumer representatives have expressed support for continuation of the current $0 "offer" treatment.

Table 2: Alberta Transmission Must Run

Region	Maximum TMR	Approximate Average TMR each hour
Rainbow Lake	150 MW	100 MW
Grande Prairie	80 Mvar or 130 MW	40 Mvar Combination of real and reactive power support. Reactive power support normally required while real power support is only required for high load.
Edmonton	210 MW	Standby TMR capacity which is only operated during planned maintenance or forced outages.
Calgary	360 MW	100 MW

The Department is encouraged by the current efforts by all parties to discuss possible refinements to processes, practices and compensation rules and will continue to support such ongoing efforts. In particular, the recent report from the MSA regarding TMR services and the procurement process has assisted further discussions between industry stakeholders, the ISO, MSA, and the Department. Although discussions are ongoing, there appears to be significant agreement on several points regarding TMR process and overarching principles:

1. Processes, practices and rules must be simple, transparent and reasonable to minimize the administrative and regulatory burden associated with TMR.
2. The need for TMR services should be identified as early as possible and defined as broadly as possible to maximize available alternatives.
3. Competitive processes should be used to the extent possible (and practical) and processes should be designed to maximize available alternatives.
4. In non-contestable situations, the process and next steps for acquiring TMR must be transparent.
5. The compensation for conscripted TMR services should be simple, fair and transparent to apply.
6. To promote generation investor confidence, compensation for conscripted TMR services must be codified into the ISO's terms and conditions. This includes provision of a cost of service cap for TMR mandated by the Transmission Regulation.
7. The ISO must act as a rational buyer of TMR services with MSA oversight regarding competitive procurement.
8. The ISO's authority to conscript service should not result in unreasonable compensation for TMR service. Compensation must cover variable operating costs at a minimum and provide for recovery of fixed costs prorated according to joint use of the unit (i.e. TMR and the energy market).

9. Fidelity of Pool price is important and TMR rules and practices should preserve price fidelity and minimize any undue interference in the energy market.

Recommendations
The Department considers that the TMR processes, practices and rules should be simple, transparent, and reasonable resulting in energy price signal fidelity, fair compensation for TMR service providers and protection for consumers from overpayment for TMR services.

The Department acknowledges that the current treatment of TMR in calculating Pool price is problematic and has significant impact on Pool price fidelity. Under the energy-only market design, the Department supports the concept of reconstituting the clearing price for all instances where TMR is employed on an interim or temporary basis. The Department considers that transmission development should eliminate the need for most TMR contracts and remove most congestion areas in the long-run. Where TMR has taken on the role as a cost effective and appropriate long-term alternative to building transmission, the Department does not support reconstitution of Pool price for that quantum of TMR.

The ISO will therefore be required to create processes, practices and rules to address the following:

- TMR impact on Pool price and appropriate methodology for reconstitution
- Dispatch of TMR units in the energy market
- Mitigation of market power for TMR units
- Establishment of open and transparent RFP processes
- Creation of processes to identify the need for TMR services in long term plans

The ISO will also be required to codify the compensation for TMR services into the ISO's tariff and its terms and conditions. This will provide for a cost of service cap for all TMR services as mandated by the Transmission Regulation.

4.4.3. Interties

Export Capacity
Transmission interconnections with neighbouring jurisdictions are essential to a well-functioning power market as they support reliability, price stability, generation development and continued economic growth in Alberta. Albertans benefit from these interconnections by having the ability to import or export power as needed.

As noted previously, the Transmission Policy and Regulation provide certain direction regarding interties. The ISO is required to create long term plans including consideration of interties and is also provided with direction to reinforce the transmission system internal to Alberta so that existing intertie capacity is restored to its design path rating. The Transmission Policy and Regulation also provides a framework for the development of privately funded merchant transmission lines for import and export of electric energy.

Recommendations

The Department recommends that the ISO evaluate additional tie-line capacity with neighbouring systems in its 20-year Transmission Outlook documents and plans. Supporting export capability of surplus energy could stimulate generation development in the province which would directly enhance system adequacy and reliability. Exports would be recallable in times of system supply shortages.

Seams Issues
There are a number of seams issues with neighbouring jurisdictions that have been and continue to be examined, the most pressing of which for several stakeholders is the impact imports have on Pool price.

Currently, import bids are required to be offered in at $0/MW·h and do not set Pool prices. This requirement was imposed because imports are unable to respond within the hour to the SMP, due to inter regional scheduling practices. Allowing imports to set price would better reflect the true cost of energy. This issue could be addressed by simply allowing imports to set price when they are the marginal unit, and to be price-takers when not the marginal unit. One potential concern for this option is that it could give importers greater pricing flexibility and an unfair advantage over in-province generation. A second concern is the system operator's ability to forecast, for scheduling and dispatch purposes, whether imports or exports would be in merit.

Recommendations
To the extent possible, imports are to be treated the same as intra Alberta generators:

- Owners of "firm transmission" must offer energy on a day ahead basis – this energy will be taken into account in the AESO's reliability assessment and must be delivered if issued an energy dispatch
- Energy to be delivered on "non-firm transmission" may be offered up to T-2 and must be delivered if issued an energy dispatch
- Imports will be allowed to set Pool price if they are able to respond to an intra hour energy market dispatch – in the near term this will mean that importers wishing to set Pool price will have to make arrangements for intra Alberta generation to accept an energy market dispatch during the delivery hour
- Imports are subject to the T-2 "lockdown" for price restatements
- Imports with firm transmission must respond to a commitment dispatch.

4.4.4. Demand Response

In competitive markets the interaction between sellers and buyers is critical to ensure efficient price discovery. Inelastic demand and a tight supply situation can create a sellers market whereby market participants may extract economic rents. This situation has been observed in electricity markets. In general, demand response may result in many positive benefits for wholesale electricity markets, including:

- Improve system reliability
- Reduce wholesale price volatility

- Reduce market power (means of market power mitigation)
- Reduce electricity consumption (environmental benefits) and
- Reduce the amount of needed installed capacity.

In order to gain a better understanding of the current amount and potential for demand response to wholesale electricity prices, the Department initiated a study on demand response. The study focused on the real-time response of large industrial and commercial customers to spot prices. The study included a survey of 15 of the top 20 customers in Alberta, representing about 40 per cent of the total large industrial load in Alberta.

The results from the study indicate that there is approximately 630 MW of curtailable load and the potential is estimated to be more than 800 MW from this customer class. The demand response study highlights that the demand response in Alberta is better than most North American provinces or states. Alberta has more than 5 per cent demand response, even without formal demand response programs as in other jurisdictions. Some of the key recommendations from the initial study include:

- Policy changes should be introduced to improve the price fidelity (e.g. settlement and dispatch period, TMR reconstitution, imports set the price)
- Demand response should be treated equivalent to generation (e.g., be able to bid into power pool, provide TMR, and provide ancillary services)
- Reduce deficiencies in market rules that do not provide customers with appropriate value for curtailing (e.g., pay load the Pool price to curtail, refinements to demand ratchets in transmission tariffs to facilitate load shifting).

Stakeholder comments in response to the Integrated Options Paper reiterated that demand response could be a cost effective way of reducing the amount of required reserve capacity. Many also noted that metering technologies, retail options, and price fidelity should be addressed as methods to encourage more demand response.

Recommendations
The Department supports the facilitation of demand response and recommends further study and consultation with stakeholders to identify specific market rule impediments and to evaluate alternatives to improve demand response.

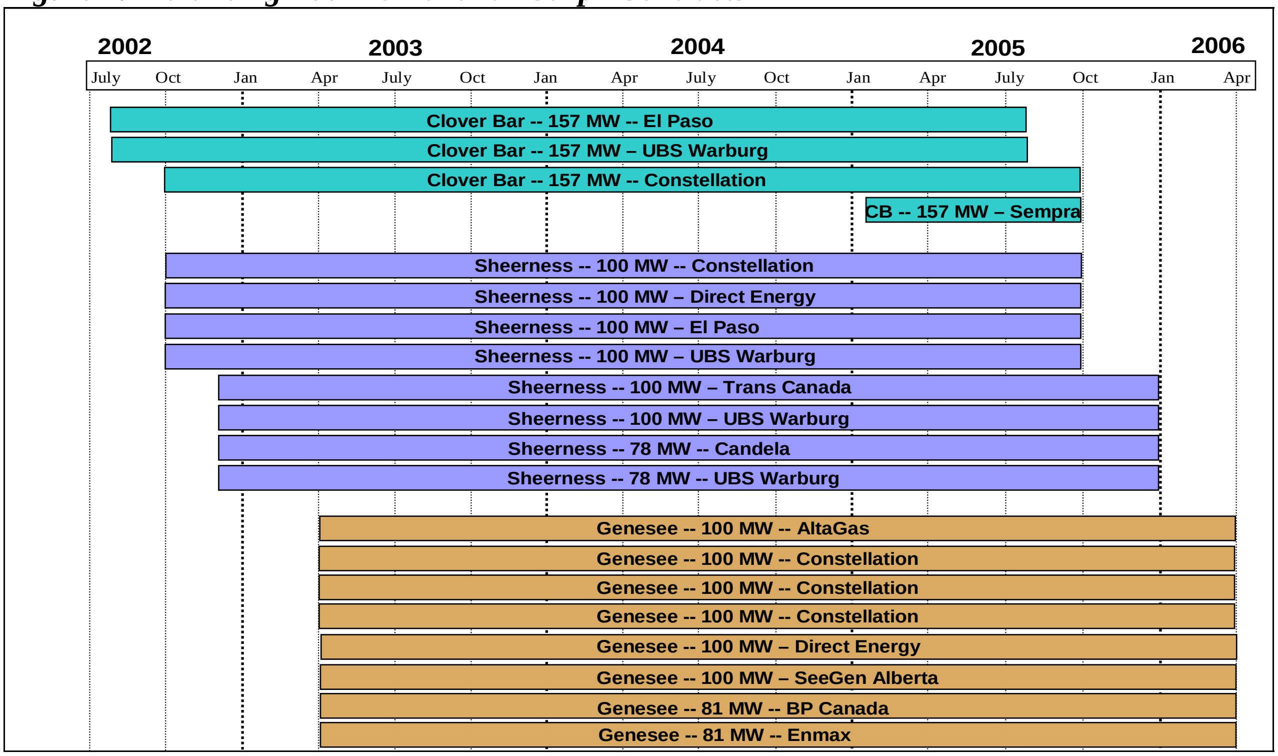
4.4.5. Balancing Pool Assets

The Balancing Pool became the counterparty to the Clover Bar (629 megawatts), Genesee (762 megawatts) and Sheerness (756 megawatts) PPAs following the August 2000 PPA auction. Since that time, the Balancing Pool has conducted Market Achievement Plan (MAP) I and MAP II sales associated with the capacity.

MAP I sales involved the sale of forward firm financial electricity contracts that provided buyers a financial hedge, and left the offer rights with the Balancing Pool. The MAP II sales involved the development of "unit" contracts associated with the Clover Bar PPA and "strip" contracts associated with the Genesee and Sheerness PPAs. The "unit" and "strip" contracts effectively created smaller "derivative" PPAs, providing buyers the offer and marketing rights associated with specified capacity and reducing the Balancing Pool's participation in the market.

With the upcoming expiry of all of the MAP II "unit" and "strip" contracts by April 2006 (see Figure 4, below), an important issue for market participants and investors is to know what will happen to the capacity beyond the expiry of the contracts and what the time line is for implementation.
The Balancing Pool has been considering options and receiving feedback from market participants on potential options to manage the Clover Bar, Genesee and Sheerness capacity on an ongoing basis.

Figure 4: Balancing Pool "Unit" and "Strip" Contracts



The Balancing Pool announced on April 5, 2005 that it provided notice to EPCOR to terminate the Clover Bar PPA, effective October 1, 2005. This was based on the Balancing Pool's assessment of the economics of the Clover Bar PPA over its remaining term and consultations with customer representatives and the Minister of Energy.

Stakeholder comments on the Integrated Options Paper indicated broad support for the termination of the Clover Bar PPA. Comments relating to the future of the Genesee and Sheerness capacity range from support for the sale of the capacity through small, short term products, to full-term PPA sales. Some market participants also suggested that the Balancing Pool hold the Genesee and Sheerness capacity and offer it into the market on a variable cost basis until a full term PPA sale could be completed.

Considering stakeholder comments, the Department has not identified any new information or potential options that would cause the Department to provide policy or regulatory direction at this time to the Balancing Pool to pursue an option that it is not already considering. The proposed direction that the Balancing Pool has set out relating to remarketing of the Genesee and Sheerness capacity, with clear time lines and potential flexible terms and quantities (including potential full term PPA sales) is consistent with the role and mandate of the Balancing Pool that is set out in the EUA and, appears to have general support from market participants.

4.4.6. Credit Implications of Market Design Features

As an essential feature of any market, credit risks must be understood, analyzed and managed in a manner which does not limit or prevent the market from operating in an effective and efficient manner. The Department, the ISO and stakeholders are aware that any contemplated changes in market design must take into account any credit implications that may result. In April of 2004, the WMPTF constituted a separate subcommittee to assess whether or not there were any near term improvements in the ISO's prudential requirement rules and to come to understand credit issues in the electricity industry and seek out opportunities to optimize the amount and uses of collateral.

The subcommittee met on a number of occasions and has undertaken research on a number of topics resulting in a series of reports back to the task force on the ISO prudential requirements, along with some preliminary and informal recommendations.

The subcommittee continues to focus on developing an understanding and performing analysis of the major market design policy options, however, this work could not be further advanced until more detail surrounding the various options under consideration became available.

With the release of this report, the subcommittee will renew consultations with the Department, the ISO and stakeholders to further develop its understanding of the recommendations and the resulting credit implications for all players. This work will proceed in earnest during the period from this paper's initial release until the final policy paper release, and thereafter as need be through the implementation phase.

The Credit Subcommittee will assess the recommendations arising from this report and will analyze implications, seeking stakeholder input where required.

4.4.7. Roles and Mandate of Electric Industry Implementing Agencies

In June 2003, the *Electric Utilities Act* (EUA) created a new implementing agency, the Independent System Operator or "ISO," which was tasked with guiding the key elements of Alberta's electric industry. In addition, the Market Surveillance Administrator (MSA),and the Balancing Pool, were made more independent in the new Act with their own Boards and mandate.

The EUA specifies the mandate and authorities of each implementing agency. The ISO is tasked with important duties including:

- Operation of a fair, efficient and openly competitive power pool that includes establishing and enforcing ISO Rules to guide operation of the pool and financial settlement

- Dispatch of electric energy in an economic manner to satisfy the requirements for electricity in Alberta
- To direct the safe, reliable and economic operation of the interconnected electric system including providing system access and transmission planning and arranging for system expansion and enhancement as needed
- To regulate and administer load settlement including ISO Rules on load settlement processes, procedures, standards and performance incentives.

The ISO has important duties and real authorities including making ISO Rules and operating procedures, setting trading fees, developing an ISO tariff, issuing orders and developing compliance measures and enforcement procedures. A number of sections in the EUA (i.e. 20, 21, 31) make it very clear that market participants are expected to comply with the rules, orders and procedures of the ISO.

Sometimes called "Alberta's electricity watchdog," the MSA is entrusted to protect customer interests in the electric marketplace. The MSA has the mandate to carry out surveillance and investigation of the broad electricity marketplace, overseeing market performance, market participant behaviour and conduct, including the conduct of the ISO and Balancing Pool. The MSA is mandated to referee market performance so it operates competitively and with integrity so market price signals have 'high fidelity.'

A major responsibility for the MSA is to ensure compliance – compliance with expected market behaviour and rules and the law. Unfair, anti-competitive and prohibited behaviour should not and is not acceptable in Alberta's electric industry. To undertake its responsibilities, the MSA has some important powers. The EUA authorizes the MSA to conduct investigations into any matter within its mandate, the right to enter premises to obtain information or documents pertinent to an investigation and obtain a search warrant. Where the MSA identifies contravention of acceptable market behaviour or conduct, a tribunal process was provided in the EUA to serve as a hearing forum into the alleged behaviour. The penalty provisions by tribunal order are effective: a major daily fine and one-time penalty along with sanctions are intended to send a clear message that undesirable behaviour in the electric market will not be tolerated.

The Balancing Pool was established to manage a variety of transition issues relating to the move from a regulated electric industry to a competitive market framework, Unique, the Balancing Pool has an important responsibility related to PPAs and is also entrusted with fiduciary management of the Balancing Pool accounts on behalf of customers until 2021, including payments into and out of the Balancing Pool. To undertake its responsibilities, the EUA provides the Balancing Pool with authority to prudently manage the financial flows in and out of the Balancing Pool.

The EUB, which has a public interest mandate, has a long and respected reputation as Alberta's energy regulator. At its core, public interest requires balance, forward thinking and concern for the best interests of all market participants. These are matters that have always concerned the EUB. Its long established practice of open, public hearings allows interested parties to participate and be heard. As the provincial regulator, the EUB protects the public interest through efficient regulation of regulated entities, approving the services they provide, the rates, terms and conditions and performance standards for those services and, the construction of new facilities by regulated entities. The public interest mandate of the EUB has been recognized in case law and is prescribed in the *Hydro and Electric Energy Act,* section 2; *Alberta Energy and Utilities Board Act,* section15*; and Energy Resources Conservation Act,* section 3.

4.4.8. Implementing Agencies and the Importance They Work Together

The Government, and indeed Alberta customers, expect the implementing agencies to work together to achieve their respective mandates.

Government establishes and is accountable for public policy. The ISO, MSA and Balancing Pool were established to implement government policy. The EUB has a long standing and respected reputation as the electrical sector regulatory authority in Alberta. They are required to ensure that there are long-term, stable and efficient regulatory processes that support and encourage new investment and promotes efficiency. The EUB must ensure that the regulatory process is transparent, fair, open, and results in timely and efficient approvals.

Implementing agencies must work with each other, stakeholders and the government to undertake their responsibilities. At the core, there is an inter-dependency of all parties – implementing agencies, stakeholders and government – for sustained and long-term success of Alberta's electric industry as a whole. Everyone has a common interest in the end goal of a safe, reliable and competitive electric industry.

Implementation of approved market refinements will include an assessment of the current roles, mandates, authorities and accountabilities of each implementing agency. The Department is aware of some expressed concerns about perceived over-lapping authorities and lack of clarity on how the implementing agencies will enforce compliance with their respective mandates. The Department created these implementing agencies and it is our job to ensure each agency is appropriately positioned to undertake their responsibilities in the envisioned manner.

Recommendations

The Department proposes to undertake the following in coming months and will consult with stakeholders to:

- review the current role, mandate and authorities of the ISO, MSA, Balancing Pool and EUB with a view to identify areas for refinement
- clarify how the key implementing agencies and the EUB are to work together to meet their duties and responsibilities and to meet the needs of the electric marketplace
- assist industry stakeholders to manage their consultation efforts by leading a joint government/implementing agency effort to articulate and coordinate the planned initiatives and implementation work government and agencies expect to undertake during the year.

4.4.9. Market Power Mitigation

While there are a variety of definitions for 'market power', it can be simply defined as the ability to cause a sustainable increase (or decrease) in price. Concerns about market power exist in every market - no market is completely immune. Customers ultimately pay the price for market power – the results of market power can be higher prices, inadequate supply or market signals without integrity.

Good market design should provide for an appropriate mitigation framework that allows competitive market outcomes – an outcome where market participants (i.e. owners and customers) make informed production and consumption decisions based on price signals that have "integrity." Developing an appropriate mitigation framework and effective rules and enforcement, is a challenging task. It demands constant monitoring and surveillance. Further, a mitigation framework must continuously balance the needs of market participants and customers and, deliver confidence to both investors and customers that the market is performing in a fair, efficient and openly competitive fashion.

Protecting Alberta electric customers from market power has been a long-standing commitment of government. The need for market surveillance was recognized in early policy and consultative work conducted by the Department. The office of the MSA was established in the 1998 EUA Amendment Act and further strengthened in the EUA of 2003. In addition, the recent EUA clearly sets out government's expectation that the electricity market operates in a fair, efficient and openly competitive manner. Section 5 for example calls for a competitive power pool and efficient market for electricity. Section 6 clearly articulates that market participants are to conduct themselves in a manner that supports the fair, efficient and competitive operation of the market.

Second, the ISO is entrusted to ensure market competitiveness. Sections 16 and 17 make it clear it is the role of the ISO to ensure the safe, reliable and economic operation of the interconnected electric system and promote a fair, efficient and openly competitive market. To support enforcement of ISO Rules as set out in the EUA, the ISO recently completed a consultation process with stakeholders to develop a 'Compliance Monitoring and Enforcement Rule'

Finally, the MSA has a broad mandate in section 29 to carry out surveillance and investigation in respect of all aspects of Alberta's electricity market and to oversee the conduct of market participants, ensure compliance with ISO Rules and to ensure such Rules are sufficient to discourage anti-competitive practices.

As implementation work for the market design refinements is conducted, the Department plans to review the current appropriateness of authorities assigned to the implementing agencies to monitor and enforce market competitiveness. The Department believes that a clear, strong enforcement component is necessary to ensure anti-competitive or other behaviour inconsistent with a fair, efficient and openly competitive market, do not prevail or escape sanction or penalty. Therefore, as implementation work is initiated for approved market design refinements, work will be conducted in parallel to assess the current approach to achieving a fair, efficient and openly competitive electricity marketplace.

The Department proposes to conduct the following work in coming months:

- To review the respective authorities of the ISO and MSA to assess concerns about potential over-laps. An important aspect of this review will be ensuring an effective and collaborative working relationship between the ISO and MSA as concerns market oversight and enforcement

- To review the current authorities provided to the MSA to identify if additional means are appropriate. Additional authorities for the MSA could include provisions used in other jurisdictions and approaches to enhance enforcement efficiency. Stakeholders and the MSA have made suggestions on ways to clarify and strengthen the MSA and the Department will give them consideration during the review.
- To examine if the Balancing Pool has sufficient clarity and authority to undertake its statutory and regulatory duties with a broad perspective to the impact of its decisions and actions on the marketplace, price signal fidelity and investor confidence. Stakeholders were invited to comment on the role and impact of Balancing Pool capacity on the market during the wholesale market review. While an important manager of Balancing Pool accounts, the Balancing Pool is at present a market participant, and should therefore consider how it interacts with the broader market, and

The Department agrees with stakeholders that a mitigation framework needs to be developed in conjunction with the implementation of approved market design refinements. The Department notes that numerous stakeholders commented on the need for consultation in this area due to its critical importance and the implications for market participants and the Department commits to that consultation with stakeholders.

4.4.10. Holding Restrictions

One additional element that could be part of an effective and balanced mitigation framework is "holding restrictions". Currently, "holding restrictions" in effect in Alberta only apply to power purchase arrangement (PPA) capacity and are set to expire on April 1, 2006. This impending expiry date, combined with the termination of the Clover Bar PPA by the Balancing Pool (which will cause some of the existing restrictions to become outdated) and the upcoming remarketing of the Genesee and Sheerness capacity by the Balancing Pool, results in the need for a decision on whether some type of PPA holding restrictions will continue, whether they will be allowed to lapse, or whether they will be replaced with other potentially broader holding restrictions.

Currently, the *Power Purchase Arrangements Regulation* specifies eligibility to hold PPAs. Some of the main restrictions on eligibility include:

- no person can hold more than 1390 megawatts of PPA capacity
- federal and provincial governments cannot hold PPA capacity, and
- an owner of a generating unit subject to a PPA cannot hold (i.e., be the buyer of) that PPA

Stakeholders did not provide extensive comments on holding restrictions but those that provided feedback, suggested either eliminating the existing restrictions or extending the holding restrictions to apply industry-wide.

The Department acknowledges that increases in the control of capacity can expand the ability of market participants to behave strategically. Thus, the existing holding restrictions (only applicable to

PPA capacity) may be deficient and industry-wide restrictions would be more effective in restricting accumulation of control of capacity. However, broadening the holding restrictions also has challenges such as finding an appropriate approach and "threshold" (e.g., percentage of control of capacity) that is not too restrictive to allow commerce to proceed, yet not too lax to allow accumulation of control of capacity to where strategic behaviour becomes problematic.

The Department is not proposing any recommendations at this time concerning industry-wide holding restrictions. Further work is planned as part of the broader mitigation framework. The Department will work with the MSA, ISO, Balancing Pool and stakeholders to define an effective and balanced mitigation framework that ensures a fair, efficient and openly competitive market and, which incorporates the market design refinements and addresses what is appropriate in terms of regulations, rules, conduct and behaviours and, enforcement.

In terms of the existing PPA only holding restrictions, the Department's draft recommendation is that the existing holding restrictions be allowed to expire on April 1, 2006 with the exception that the following provisions be retained:

- Government of Canada and Provincial Governments may not hold PPAs or derivatives of PPAs
- Neither a person or an associate of a person is entitled to hold a PPA or derivative of a PPA if the PPA or derivative is associated with a generating unit owned by the person or associate

4.4.11. Wind (Intermittent) Generation

The Department does not support one type of generation over another but rather allows competitive market forces to determine the appropriate generation mix (e.g. no fuel use policy). As a result, the Department does not support market refinements that will create an uneven playing field or be detrimental to the development of renewable resources. Environmentally friendly power generation benefits all customers with a cleaner environment and reduction in environment-related health problems. It also assists Alberta in meeting environmental emission targets under Clean Air Strategic Alliance (CASA).

In the Integrated Options Paper, a DAM design was presented as a potential option. Most stakeholder comments support a level playing field for wind generation. However, many stakeholders expressed concern about the ability of intermittent generation (e.g. wind) to participate in a DAM and the impact of penalties on existing and future wind generation facilities.

Because of the potential for significant new wind generation in the Southwest region of the province in the near term and the unique characteristics of wind development and operation, the ISO has initiated discussions with stakeholders to establish technical and performance standards for wind power facilities to ensure continued safe and reliable operation of the AIES.

Regarding system reliability, wind is an interruptible source of generation; if the wind is not blowing there is no power. Current technology is unable to provide an economically viable storage system for electricity that can be used in tandem with wind power. Past a certain threshold, this may require the region in which wind power is developed to have either sufficient conventional generation to compensate for the loss of the wind power, or sufficient transmission capacity to import power from other regions (e.g. interties).

The variability of wind generation may create reliability concerns for the system operator, particularly as the amount of wind generation exceeds a certain threshold. The challenges include, control strategies, interconnection standards, volume/forecasting and potential system reliability impacts (e.g. RUC uncertainty and increased need for additional capacity and/or operating reserves). It is important that market rules are appropriate and obligations and responsibilities are defined for all types of generation without creating burdensome or detrimental requirements.

There is currently detailed work being done in other jurisdictions to assess control strategies and address reliability concerns associated with large scale integration of wind resources. Such research and creative solutions should be investigated further to determine if they can be implemented in Alberta. These may include statistical methods (e.g. based on previous day or hour) or monthly netting of actual versus forecasts production. The Department supports the ISO in their continuing efforts to consult with stakeholder regarding the technical requirements for wind generation.

The Department will continue to monitor the ISO's standards development process and industry developments respecting the integration of wind power generation to ensure that these facilities are integrated into the AIES in a non-discriminatory, open, fair and transparent manner.

4.5. Wholesale Market Next Steps

The Department expects that the wholesale policy recommendations in this paper will be implemented as expeditiously as reasonable. There is recognition that implementation will require amendments to regulations or ISO rules and the development of some additional software, etc. These developments may present constraints on the implementation timeline.

The Department and the implementing agencies will work together to develop an implementation timetable for these recommendations. This timetable will be developed by August 31, 2005 in consultation with stakeholders.

5. Summary and Conclusions

The electric restructuring journey in Alberta has progressed from the mid-1990s when discussions were initiated, through extensive policy development, three statutes, a number of regulations and creation of key industry implementing agencies. Experience in other jurisdictions confirms that Alberta has achieved much. Alberta has stayed the course.

The Department remains committed to a market framework that allows for investors and consumers to manage their participation in predictable and sustainable markets while supporting competitive behaviour and sound business decisions.

6. Appendix 1: Analysis of Retail Options

Table A-1: Comparison of Options by Objectives

Option	Transition to a new RRO	Appropriate Consumer Protection	
		Gradual introduction of a new RRO	No rate shock
Flow-Through	• transitions to flow-through rate July 1, 2006 • likely to stimulate retail competition	• may not have sufficient time for consumer education and sufficient retail choice to develop prior to July 1, 2006	• some risk of rate shock, if consumer education and awareness insufficient and an unexpected high price scenario
New RRO based on a monthly hedge	• transitions to New RRO July 1, 2006 • prices are about 24 per cent to 50 per cent more stable than flow-through • likely to stimulate retail competition • converges with Natural Gas regulation	• may not have sufficient time for consumer education and sufficient retail choice to develop prior to July 1, 2006	• some risk of rate shock, if consumer education and awareness insufficient and an unexpected high price scenario
One-year hedge	• transitions to a monthly rate at some point • extends status quo – customer comfort may not encourage switching	• some potential for a transition, not necessarily gradual • essentially a continuation of what's been done • no end in sight	• some risk of rate shock, moving from one year to the next
Flow-through with ceiling	• transitions to a monthly rate at some point • liquidity risk with ceiling implementation • customers may not transition to competitive retail market	• some potential for a transition, not necessarily gradual	• some risk of rate shock if ceiling set too high
3-5 year hedge	• does not transition to a monthly rate • to be reviewed in four years • customers feel protected and may not sign competitive contracts • cannibalises key retailer value proposition • retailers expected to leave jurisdiction	• does not gradually introduce a monthly rate	• substantial risk of rate shock at beginning and end of period, but not during period
Gradually declining hedge	• gradually transitions to a monthly forward based rate July 1, 2010 • customer may not transition to competitive retail market	• a gradual transition to a monthly forward based rate	• some risk of rate shock, if consumer education and awareness insufficient and an unexpected high price scenario in latter years

Based on this comparison the Department has concluded that the *Gradually Declining Hedge Option* is best suited to fulfill all of the objectives combined with the New RRO based on a monthly hedge.

7. Appendix 2: Long-Term Adequacy Options

Table A-2: Comparison of Options across Objectives

Option	Maintain adequate supply to keep the lights on	Risk of sustained high prices	Electricity prices based on market fundamentals with investment risk on suppliers	Minimize government intrusion
Energy only (with fixes, monitoring and trigger mechanism)	• Improved price signal should improve investor confidence • Healthy supply situation means no need for immediate action • Monitoring signals the need for new generation to industry and investors. • Last resort trigger mechanism provides insurance for new generation if needed • Risk that the optimum profitability for generation investment will occur at a reserve margin less than that desired from a public policy standpoint.	• Improved price signal should reduce price volatility and improve investor confidence • Does not mitigate high price risk.	• Will improve market fundamentals, resulting in improved competitiveness of the market.	• Least intrusive option. However, monitoring and a reliability metric may be viewed as intrusive.
Immediate move to Reliability Contracts	• Will meet public policy mandated reliability criteria. • Reserve generation is purchased to maintain reliability.	• Reliability contracts are used for reliability not to manage prices. • Does not mitigate high price risk.	• Would add a very small amount to electricity cost.	• Minimally intrusive option (ISO or Balancing Pool must purchase reliability contracts).
Adequacy Requirements on Load	• Will meet public policy mandated reliability criteria • Loads purchase reserve generation to ensure adequacy (or ISO procures on their behalf).	• Loads have purchased supply – limits exposure to high spot prices.	• Would increase cost a modest amount. • May shift some of the investment risk to load	• Modestly intrusive option must set purchasing requirements for loads.

Based on stakeholder support and assurances from generation investors that new supply will be built in a timely manner, the Department is recommending that the *Energy only Option* (with fixes, monitoring and a trigger mechanism) is the most appropriate option for Alberta's competitive electric market.