

Response to DRWG Questions

Submitted on Behalf of the Industrial Power Consumers Association of Alberta (IPCAA)

This document provides: (i) responses to the two questions posed by the AESO as part of the DRWG Terms of Reference review, as well as (ii) a generic framework for DR outline.

Q1: How can load be enabled and encouraged (incented) to participate in Alberta's electricity markets?

- Initiate a new pricing structure for DR products:
 - Availability Payments to compensate for Technical, Operational and Risk requirements - Standard Offer mechanism;
 - Arming Procurement - Competitive Auctions - minimum obligations;
 - Exercise Payments - Competitive offers and Optionality
 - A more complete structure for pricing and procurement of DR services is attached (Generic Framework for Demand Response)
- DR products should not be limited to price triggers in hourly market;
 - DR services should be contracted in advance and be available for use over a range of economic and reliability opportunities;
- Need transparent DR pricing - outlined in attached generic structure;
- Use DR to enable more competitive generation – i.e. Load Shed Requirement (LSR)
- Consider a re-structured market pricing mechanism to imbalance model with physical bilateral energy contracts

Q2: How to acquire sufficient voluntary demand response to maintain system reliability over the next X years in a manner consistent with the legislation and regulation?

- Voluntary DR should not be considered for maintaining system reliability:
 - System reliability products need to be firm and transparent to the system controllers;
- Design Products based on Supplier capabilities:
 - Duration - Frequency - Response Time
- Need equitable settlement between generation and load
- Compensate loads who curtail based on value of service

GENERIC FRAMEWORK FOR DEMAND RESPONSE

Contract Structure, Pricing Mechanics, and Rules Governing Transactions for Demand Response Programs and Procurement

OVERVIEW

This document is intended to establish a framework for designing and analyzing demand asset opportunities. In the future development of the electricity sector it is critical to identify revenue opportunities available for electricity loads and to understand the nature of any investments needed and risks involved.

This design framework is focused on three components:

- Contract Structure – including buyer and seller rights and obligations and timelines;
- Pricing Mechanics – including availability, arming and exercise payments;
- Rules Governing Transactions – including failure conditions, dispute mechanisms and remedies.

DEMAND RESPONSE PRODUCTS

The range of DR Products for the Alberta electricity market, as illustrated in Figure 1, can be characterized by three dimensions:

1. Response Time:
 - a. Length of time to respond to system control; and
 - b. Nature of response (automated or dispatch instructions)
2. Frequency of Exercise:
 - a. Number of responses expected annually; and
 - b. Any need to establish a maximum number of annual responses
3. Duration of Downtime:
 - a. Length of time supplier is required to remain dispatched down per response; and
 - b. Any requirements for continued service.

DR Design Characteristics

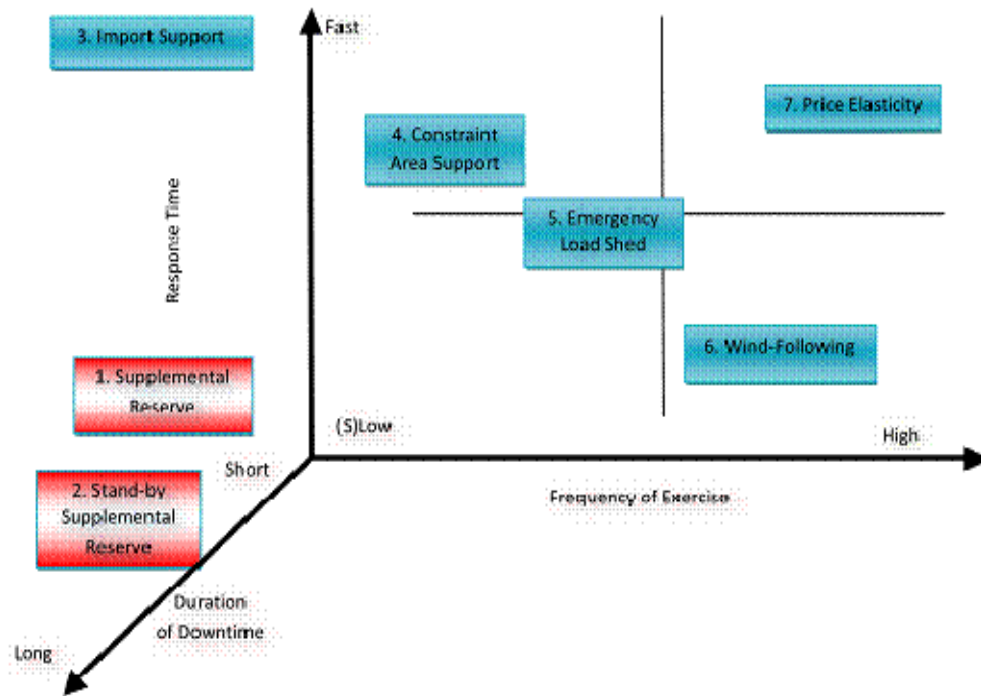


Figure 1: DR Design Characteristics

The characteristics of the various DR products are summarized below:

Demand Response Product	Frequency of Exercise	Response Time	Duration of Downtime
1. & 2. Operating Reserves	Medium	Slow – 10-30 min	Short
3. Frequency Support	Low	Fast – cycles	Short
4. Constraint Area Support	Low	Moderate	Medium
5. Emergency Load Shed	Low	Moderate	Short
6. Wind-following	High	Moderate	Long
7. Price Elasticity	High	Moderate	Long

Table 1: Demand Response Products and Characteristics

Note that Operating Reserve is highlighted in red because it is currently procured by the AESO under a separate contract and pricing mechanism than what is proposed in this document.

FRAMEWORK FOR DESIGNING DR PROGRAMS

This framework is focused on the following three components:

1. Contract Structure
2. Pricing Mechanics
3. Rules Governing Transactions

Potential features for these three components are proposed below:

1. STANDARD CONTRACT FEATURES

No.	Contact Feature	Description
1	Supply Obligations	<ul style="list-style-type: none"> • Amount of demand curtailment (MW) • Timing of demand curtailment (hours, season, etc.) • Response to trigger signal • Treatment of environmental attributes, emission allowances and emission reduction credits associated with DR projects
2	Pricing	<ul style="list-style-type: none"> • Fixed for contract • Monthly • “As offered” • Indexed to pool price • Daily “clearing price”
3	Payment Obligations	<ul style="list-style-type: none"> • Payment structure • Payment schedule
4	Measurement and Verification	<ul style="list-style-type: none"> • Self-policing / Independent third party / Buyer-policed
5	Contract Operation and Administration	<ul style="list-style-type: none"> • Party representatives identified • Record retention/ audit rights • Deliverable report
6	Term of Contract	<ul style="list-style-type: none"> • Minimum/maximum term requirements • Renewal criteria/provisions

2. PRICING MECHANICS

It is contemplated that the products would have three separate pricing streams, as illustrated in Figure 2 below:

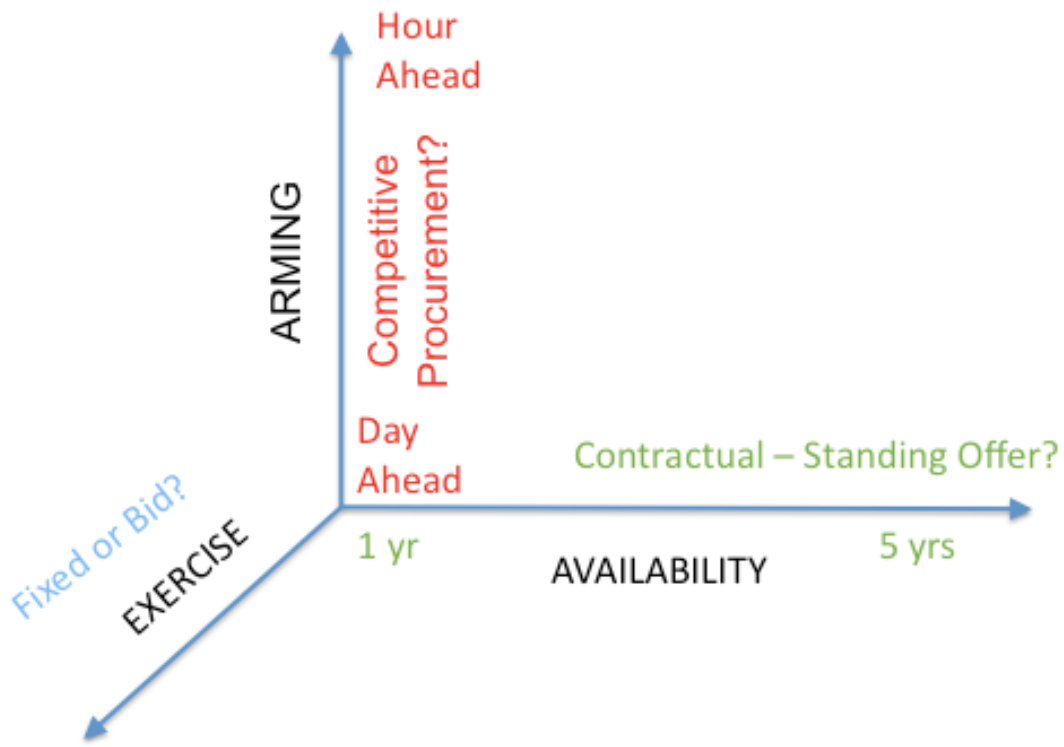


Figure 1 - Pricing Components

1. Availability Payment

This is a payment per MW of capacity under contract. The variables driving this price include:

- Term of Contract (1, 3 or 5 years)
- Minimum Annual Commitment for Arming
- Number of hours per year required to be available for arming
- Payment in \$ per hour of availability
- Possible premium for location/frequency of exercise, etc.

Price discovery would occur using either RFPs or a standing offer program. Two key variables would determine premiums or discounts to the availability payment. These two key variables are Term of Contract and Minimum Commitment, as indicated in Figure 3.

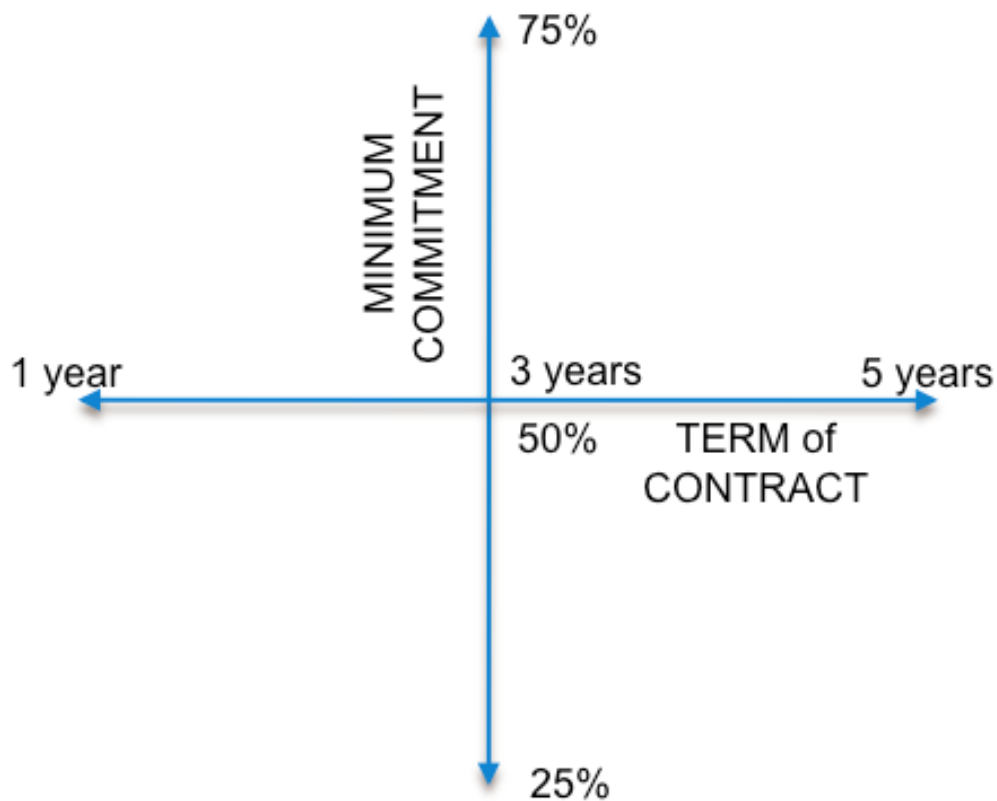


Figure 3

2. Arming Payment

This is a payment per MW of armed DR. It is competitively procured via an auction mechanism at a specific time in advance of real-time – from day-ahead to hour-ahead. Pricing would be either fixed or indexed to the hourly price.

Arming could be procured for extended periods, such as monthly commitments for those products that have a low frequency of response either as standard offers or indexed to the energy price.

3. Exercise Payment

This is a payment per MWh of DR exercised either as a response to a system control event or through an automated trigger. Variables include:

- Payment amount
- Annual limit on exercise events

- Return to consumption time
- Return Obligation (same day)

This payment could be fixed or competitively established at auction.

3. RULES GOVERNING TRANSACTIONS

All DR products would be subject to transactional obligations with respect to availability, arming, and exercise. The AESO would need to see DR as a firm obligation by suppliers to provide the service in lieu of an energy or OR dispatch to generators.

Contract terms for DR would need to include credit and security obligations for the seller to ensure performance, termination and default conditions, failure conditions, force majeure provisions, and dispute resolution procedures.

No.	Contact Feature	Description
1	Credit and Security Requirements	<ul style="list-style-type: none"> • Necessity of credit/security requirements to ensure that contracts are being executed for feasible projects with responsible parties • Could require performance security prior to in-service date of facility • Levels of credit/security requirements
2	Termination and Default Provisions	<ul style="list-style-type: none"> • Events of default • Remedies of default • Liquidated damages for early termination
3	Failure Conditions	<ul style="list-style-type: none"> • What constitutes failure • What are the recourses
4	Force Majeure	<ul style="list-style-type: none"> • Definition of Force Majeure • Procedure and effects of invoking Force Majeure
5	Dispute Resolution	<ul style="list-style-type: none"> • Binding arbitration
6	Control	<ul style="list-style-type: none"> • Buyer right to assign • Creditworthiness of assignee • Seller right and reporting obligations for change of control

One of the complexities of DR products is the ability to demonstrate performance within the time frames of the obligation as DR is the absence of consumption. Measurement and verification both to demonstrate performance and for settlement purposes can become onerous responsibilities.

Obligations and Third Party Agents:

Provision of DR services puts three obligations on the supplier that must be considered for provision of reliable product:

- Technical Obligations:
 - the necessary equipment to be able to arm and exercise the DR service within the timeframes required (may include SCADA and automated relays) and provide transparency to the system controller, if required;
 - the necessary metering equipment to demonstrate compliance with arming and exercise
- Operational Obligations:
 - Staffing required to offer DR services into procurement markets;
 - Operational procedures to manage a DR event including meeting dispatch down instructions and managing the consequences of a load reduction;
 - Procedures for Measurement & Verification and settlement.
- Risks of performance:
 - Ability to meet a dispatch or automated DR trigger event
 - Ability to ensure load is on prior to event
 - Ability to meet the frequency, response time and duration obligation of the contracted service.

For suppliers with significant volumes of DR capability and existing staff that is energy market proficient these obligations can generally be met internally. However with loads that have smaller volumes and/or are not equipped to interact in the energy market the ability to contract with third party agents is essential.

These agents or 'aggregators' generally can meet any or all of the three obligations as they will have system control facilities that can provide on-line interaction with the AESO, they operate 24-hour facilities and provide measurement and verification services for delivered services.

Additionally these aggregators will become the contractual agent for the supply of the DR service taking the performance risk, often through contracting with a larger volume of supply than obligated to the AESO. This risk taking often includes any financial obligations to the AESO for failures to perform.