

Demand Response Working Group

July 23 Meeting

Reliable **Power**

Reliable **Markets**

Reliable **People**



Agenda



1. Project Scope
2. Review of Previous Sessions
3. Highlights of Stakeholder Feedback
4. Preliminary Conclusions
5. Next Steps

“The primary objective of this project is to determine how demand resources can address/support market and system operations in a manner consistent with market objectives and guiding principles. Ultimately, the project will deliver rules and processes needed to remove barriers to demand response participation and facilitate fair, efficient and openly competitive outcomes.”

- Determine barriers to DR
- Identify Opportunities/Options
- Initiate discussion to facilitate possible market enhancements

Current AESO DR Programs

Program	Use	MW Involved
Load Participation in Supplemental Reserves (SUPL)	<ul style="list-style-type: none"> ▪ Participates in the supplemental reserves market ▪ Required to reduce consumption within 10 minutes of being directed ▪ Used in supply shortfall situations ▪ SUPL participants cannot participate in LSS (and vice-versa) 	Approx. 60 MW have been active of late
Load Shed Service (LSS)	<ul style="list-style-type: none"> ▪ To support increased import availability ▪ Load breakers tripped by relay if AIES frequency drops below 59.5 Hz (may occur when inertia trips at high imports), also can be manually curtailed ▪ Used in supply shortfall situations ▪ LSS loads may be price responsive 	Approx. 100 MW contracted (Will vary depending on conditions)

Current AESO DR Programs



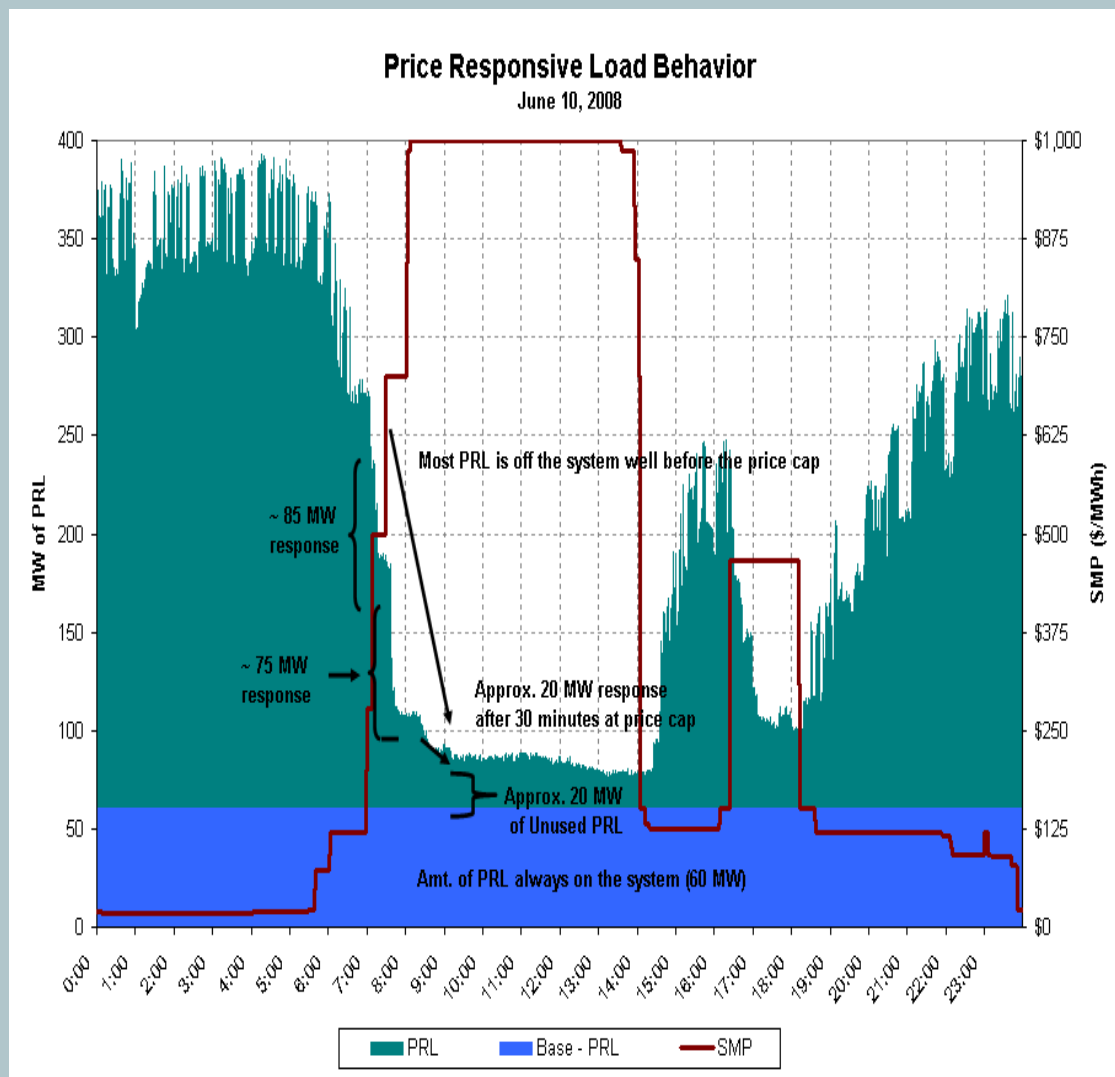
Program	Use	MW Involved
Import Load Remedial Action Scheme (ILRAS)	<ul style="list-style-type: none"> ▪ When armed ILRAS aids in supporting increased import capacity on the BC intertie ▪ Armed only during supply shortfall procedures ▪ Load breakers are tripped by relay should the intertie trip with high imports 	200 – 400 MW only available during system emergencies
Demand Opportunity Service (DOS)	<ul style="list-style-type: none"> ▪ Temporary, interruptible class of transmission service that can apply to an increase in load that exceeds a customer's Contract Capacity under DTS ▪ Used in supply shortfall and transmission constraint situations ▪ Term, 1 hour, and 7 minute products available 	Approx. 100 MW (Will vary depending on conditions)

Current AESO DR Programs

Program	Use	MW Involved
Voluntary Load Curtailment Program (VLCP)	<ul style="list-style-type: none">▪ Have agreed to be cut prior to firm load reductions▪ Used in supply shortfall procedures▪ Manual direction (phone)	Kilowatts (Negligible)
Under-Frequency Load Shedding Scheme (UFLS)	<ul style="list-style-type: none">▪ Safety net for extremely large loss of generation▪ WECC requirement	

Current Price Responsive Load

- Depending on system conditions anywhere from 100 to 300 MW of demand will respond to an increase in price
- These loads do so to avoid high costs associated with the highest priced hours for energy
- There is no requirement for these loads to bid into the market
- Any response is voluntary



Selection of Topics Reviewed

Topic	Description	DR Programs Analyzed / Issue
Reliability Needs and AESO Experience (AESO, Reliability Sub-Group)	A review of where demand fits into the current AESO needs to maintain reliability and a discussion on what additional needs demand would be able to play a continuing role in the operation of a reliable system.	Economic and reliability type DR programs
Market Analysis (AESO, IPCAA, Economic DR Group)	Analysis on what are price drivers and the best ways to highlight high priced hours.	Alberta Market
Historical Data Analysis on the Currently Existing Demand Response	A presentation of the AESO's current experience with demand response, specifically what exists for voluntary price responsive load, the behavior of load shedding service providers, and participation in supplemental reserves.	Voluntary price responsive (PRL) Load shed service (LSS) Supplemental Reserves (SUPL)

Selection of Topics Reviewed

Topic	Description	DR Programs Analyzed / Issue
Impact of PRL on Load Growth	A short analysis on how the behavior of PRL affects month-over-month, and year-over-year load growth.	PRL
Value of Existing Demand Response	An estimate of the impact the existing PRL on the market	PRL
Payments to “Bids” on the Margin	A rework of the payments to suppliers on the margin rule and calculation to better align settlement with the real-time integrated cost of demand.	PRL AESO Rules
Impact of the Price Cap on Existing Demand Response	Determination that most of the existing demand response is off the system by the time the price cap is reached.	PRL

Selection of Topics Reviewed

Topic	Description	DR Programs Analyzed / Issue
Role of Aggregators in Developing a DR Program	Presentations by EnerNOC, C-Power, and ECS on the role Aggregators play in the development and implementation of DR programs.	Economic and reliability type DR programs
Review of Baseline Methodologies	A presentation and paper on why baselines matter and are necessary to develop a reliable and fair DR program	Load baseline methodologies
DR from Supply's Perspective	A review of why suppliers support the development of DR programs and a review of how DR may fit in a fair, efficient, and openly competitive (FEOC) market.	FEOC
DR Value Considerations	The risk-reward spectrum for DR products along with technical issues	Economic and reliability type DR programs

- Expand role for DR in ancillary services where technically feasible
 - Allow DR resources to specify characteristics in their bid such as minimum off time
 - Assess whether small resources can supply OR – no aggregating in AB
- Treat aggregated DR resources equivalently to larger resources
- Change treatment of scarcity prices
 - Increase price cap during an emergency
 - Increase bid cap during emergency but keep offer cap constant
 - Create a demand curve for OR which raises price when reserves are short
 - Set the price during emergencies equal to the cost of resources (such as DR) dispatched during the emergency
- Assess barriers to DR

- How can load be enabled to participate in the Alberta market?
 - Develop a new pricing structure for DR products
 - DR products should not be limited to price triggers
 - Transparent pricing structure
 - Loads need adequate notice of a price event to respond
 - Allow loads to specify a minimum dispatch time, i.e. not minute to minute dispatch
 - Clear message of expected requirements for a DR provider
 - Compensation that provides reasonable financial returns

- How can sufficient voluntary DR be acquired to maintain reliability?
 - Develop products with different terms, such as hourly, monthly or annual
 - Enable availability payments
 - Structure products around DR capabilities
 - Require equitable settlement between supply and load
 - Compensate loads that curtail based on the value of the service

Preliminary Conclusions

- Is there a barrier to increased DR in Alberta?
 - No specific barriers for large loads beyond economic decision
 - May be barriers for smaller loads such as lack of interval meters
 - There may be some barriers for aggregators
 - Market design limits some types of programs

Preliminary Conclusions

- Is there opportunity for more DR in Alberta?
 - AS opportunities such as wind fast ramp
 - New LSSi product will be explored
 - Possible opportunity to facilitate small load response via aggregators

Preliminary Conclusions

- Is there necessity for more DR in Alberta?
 - DR is desirable and supports the development of the FEOC market
 - May facilitate increased utilization of assets such as interconnections
 - Can support integration of wind capacity

Next Steps

