

NOTIFICATION AND ACTIVATION OF HOURLY DR RESOURCES

Demand Response Working Group

Gordon Drake

May 30, 2017

DRWG Goals for Demand Response

Develop DR to ensure it can compete with traditional sources of supply

- Lower cost through competition by increasing participation and expanding opportunities for new technologies and capabilities
- Reduced emissions
- Broader economic benefits to Ontario businesses and residences
- Capable of providing energy, capacity and ancillary services

Develop an auction platform as an alternative to traditional procurements

- Lower cost relative to alternative procurement means
- Provide flexibility to respond to changing system conditions
- Showcase and test auction mechanism in the Ontario market
- Provide a clear, long-term path to the sector

Dispatch of DR Auction Resources

- The costs of procuring DR capacity have fallen thanks to competitive pressures in the auction
- However, the combination of:
 - energy market bid prices (submitted by market participants) and
 - the notification and activation criteria for Hourly DR resources

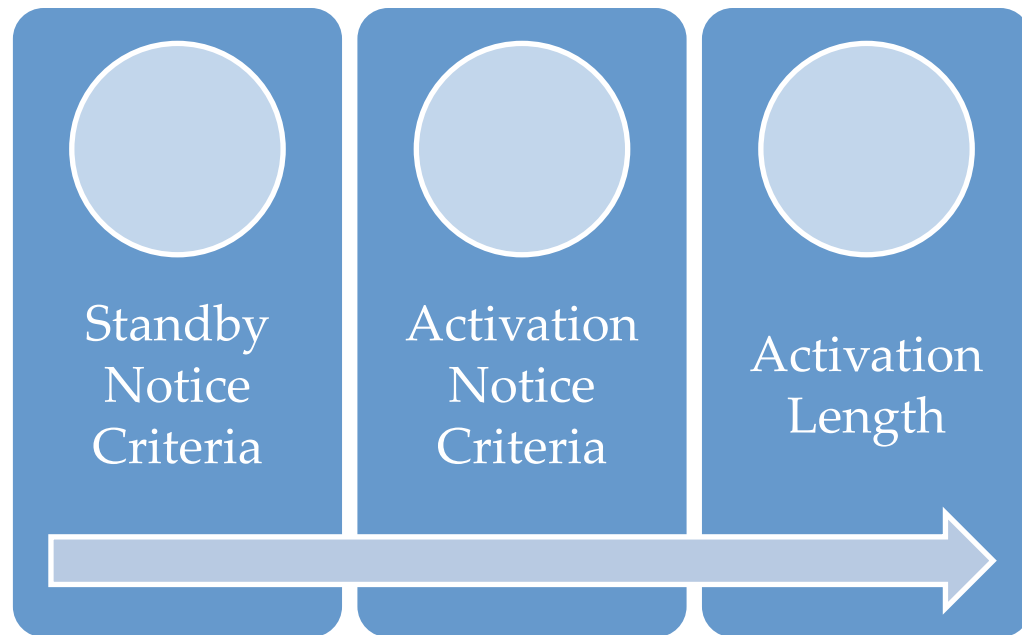
means that the likelihood of dispatching HDR resources in the energy market is remote

Increasing the Economic Dispatch of HDR

- Dispatching DR resources out of merit is inefficient and introduces costs to both ratepayers and DR providers
- Evolving the Hourly DR resource and associated market rules will allow the IESO greater capability to dispatch resources when needed
 - Demonstrates the value of DR as a competitive resource to meet system needs
 - Consistent with the IESO's goal to evolve the DR resource to deliver greater parity with other conventional resources in the market

Increasing the Economic Dispatch of HDR (cont'd)

- Increasing the economic dispatch of HDR can be achieved through modifying parameters, and likely a combination of these parameters



Activities to Date

- At the May 11th webinar, the IESO presented a series of options for stakeholder feedback which combined each of the three parameters
- Participants were asked to rank their preferred options
- The following slides will discuss:
 - The feedback received from stakeholders
 - Historical analysis of the activation frequency under different options
 - A recommended approach to discuss further with DRWG

Notification and Activation of Hourly DR – Feedback

Demand Response Working Group

Mark Hartland

May 30, 2017

Stakeholder Feedback - Improved Utilization of DR

- *At the May 11th Webinar, the IESO presented a series of options that could enhance the economic dispatch of Hourly DR resources and asked that stakeholders rank these in terms of their most and least favourite*
- *The IESO thanks stakeholders for their response to this “**Improved Utilization of DR**” work plan item. These will be considered alongside our analytical findings, to be presented during this DRWG, when providing a recommendation on the preferred option*

Stakeholder Feedback - Improved Utilization of DR

Standby Notice Criteria

- Stakeholders agreed that the standby notice criteria should change from its current 4 hours scheduling at predispatch
- Most stakeholders were in favour of maintaining a standby notice but to schedule based off 1 hour being economic in the predispatch
- A residential aggregator commented that they were indifferent to the standby notice as they do not require as much notice for load reduction
- Another aggregator cautioned the IESO not to assume that all residential DR participants are able to respond without advanced notification

Stakeholder Feedback - Improved Utilization of DR

Standby Notice Criteria

- Establishing a price point to the standby notice is counter to the notion of open market competition and work that is being done in the Market Renewal stakeholder engagement
- Feedback from contributors is that they prefer more notice rather than less notice
- Care must be taken to align standbys with activations or they will be increasingly dismissed by contributors as noise
- Preference from one stakeholder to remove the standby notice (every day is a standby) as resources could use their bid as an indicator for activations

Stakeholder Feedback - Improved Utilization of DR

Activation Notice Criteria

- Some clarification was requested on the single option for the Activation notice criteria. This was correctly interpreted by the stakeholder as “an Activation occurs if dispatching the DR resource is economic in at least one hour in the availability window”
- Stakeholders see value in sending an activation notice when at least 1 hour is economic in predispatch as resources are more likely to be scheduled, and in a more efficient manner

Stakeholder Feedback - Improved Utilization of DR

Activation Length

- Activating DR for the number of hours it is economic best utilizes the value of DR as it exploits its ability to be flexible
- Prefer to maintain the 4-hour block to avoid complications associated with in day adjustments
- Support reducing activation length for 1 up-to 4 hours as it aligns dispatch block with system needs and increases efficiencies in the market
- IESO should dispatch resources when they are needed and for the length that they are required

Historical Analysis of Different Notification and Activation Criteria

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May 30, 2017

Background to Analysis

The IESO has conducted analysis based on proposed amendments to the standby notice, activation notice, and activation length discussed at the May 11 meeting

Goal

- To understand whether adopting any of these changes would increase the likelihood of Hourly DR activations

Considerations

- The objective is to move ahead with changes that have been **discussed and reviewed by stakeholders**, can be **implemented (IT, Rules)** within the timeframe given, and **provide value to the market** as a whole

Standby Notice Options

- No standby – Treat every day in the commitment period as a “standby” day
- Reduce the 4-hour scheduling requirement to 1 hour, standby notice issued when resource is scheduled based on bid price
- Reduce the 4-hour scheduling requirement to 1 hour, standby noticed is sent when an hour in the Availability Window $>$ \$100/MWh in the predispatch

Activation Notice Option

Only one feasible option

Reduce the criteria such that an activation notice is sent when a DR resource is scheduled for **at least 1 hour** in the 3 hour-ahead predispach for an hour within the Availability Window

Feedback received from stakeholders shows support for this proposal as it is likely to remove a barrier for future activations

Activation Length Options

- Maintain the current 4-hour block where the dispatch begins with the first hour scheduled in predispatch
- Align activation block hours with only those hours scheduled in predispatch, up to 4 consecutive hours
 - e.g. if predispatch schedules a resource for 2 consecutive hours, the activation block would be 2 hours, not 4

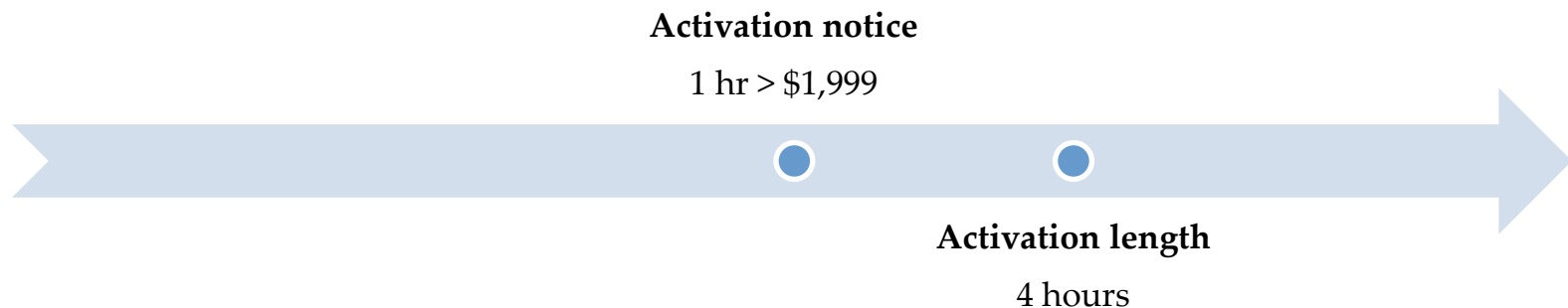
Combination of options considered

	Standby Notice Criteria	Activation Notice Criteria	Activation Length
1)	No standby	PD-3 > \$1,999 for a min of 1 hour	4-hour block scheduled if a min of 1 is economical
2)	No Standby	PD-3 > \$1,999 for a min of 1 hour	All consecutive hrs above price threshold (1 up-to 4)
3)	1 hr > \$100	PD-3 > \$1,999 for a min of 1 hour	4-hour block scheduled if a min of 1 is economical
4)	1 hr > \$100	PD-3 > \$1,999 for a min of 1 hour	All consecutive hrs above price threshold (1 up-to 4)
5)	1 hr > \$1,999	PD-3 > \$1,999 for a min of 1 hour	4-hour block scheduled if a min of 1 is economical
6)	1 hr > \$1,999	PD-3 > \$1,999 for a min of 1 hour	All consecutive hrs above price threshold (1 up-to 4)

Option 1.

Criteria

- **No standby notice required**
- Activation notice if PD-3 > \$1,999 for at least 1-hour
- Length of activation remains at **4-hours**, and starts with the first hour that is economic



Option 1.

Results

	Winter 15/16	Summer 15/16
Standby days	-	-
Activation days	2	3
Total activations across all zones	18	4

Example – Jan 14th 2015

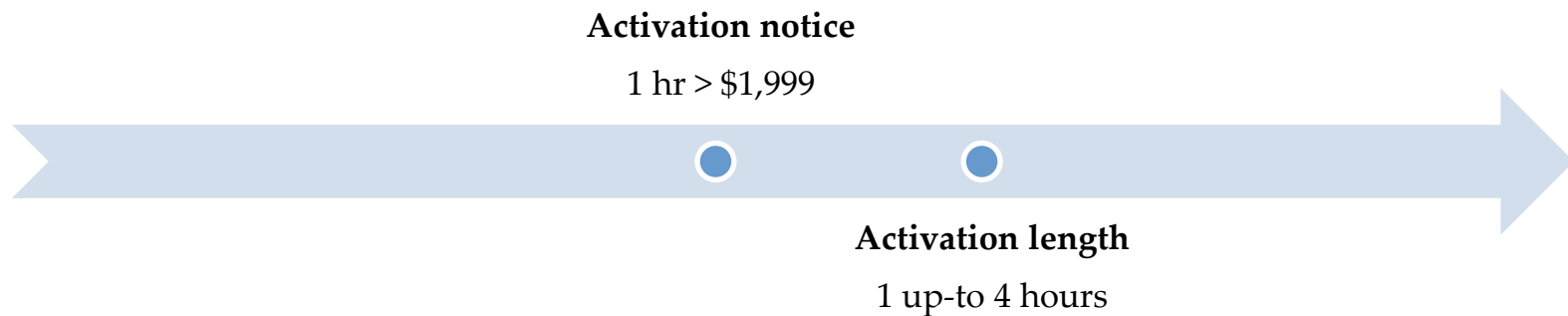
The activation at HE17 leads to the three subsequent hours being scheduled under the \$1,999 price threshold

HE17	\$1,999
HE18	\$500
HE19	\$221
HE20	\$190

Option 2.

Criteria

- **No standby notice required**
- Activation notice if scheduled in 3 hour ahead pre-dispatch for at least 1-hour
- Length of activation is **1 up-to 4 hours** depending on how many consecutive hours are economic



Option 2.

Results

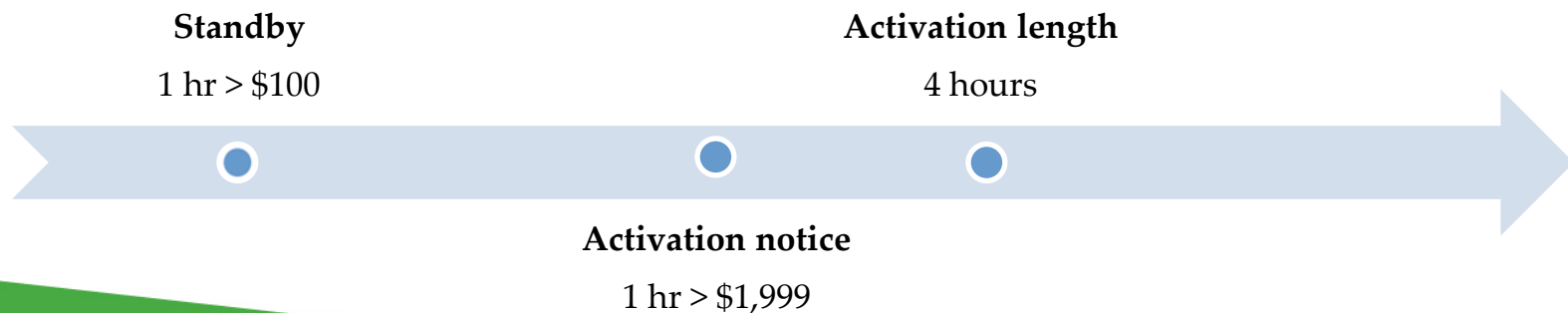
	Winter 15/16	Summer 15/16
Standby days	-	-
Activation days	2	3
Total activations across all zones	18	4

- 10 one hour activations
 - 11 two hour activations
 - 1 three hour activation

Option 3.

Criteria

- Standby notice if **predispatch price prior to 7am > \$100** for any **1 hour** of the commitment window
- Activation notice if scheduled in 3 hour ahead pre-dispatch for at least 1-hour
- Length of activation remains at **4-hours**, and starts with the first hour that is economic



Option 3.

Results

	Winter 15/16	Summer 15/16
Standby days	20	22
Standby + Activation days	2	0
Total activations across all zones	13	0

Example – Jan 14th 2015

HE17 meets the price criteria to activate a 4-hour block. The subsequent hours however are not economic, leading to inefficient scheduling

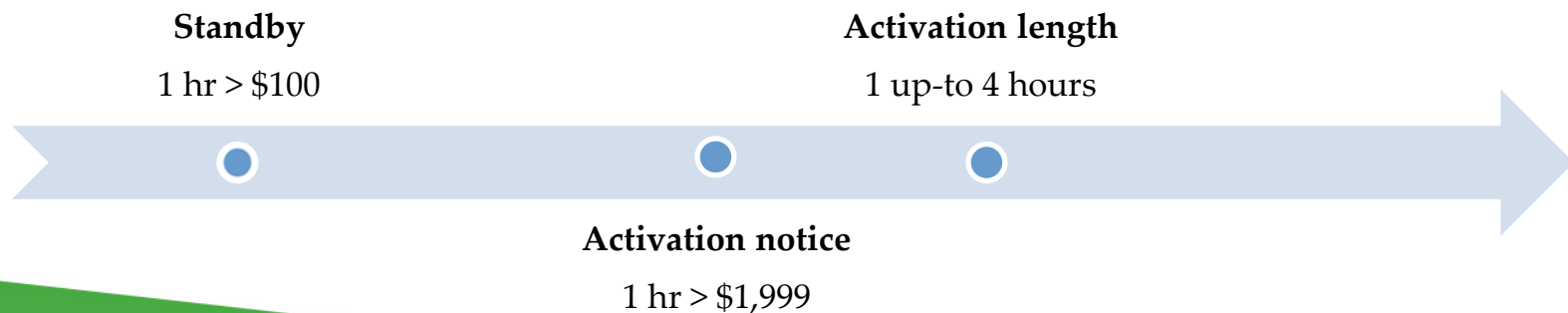
Toronto Zone Activation

HE17	\$1,999
HE18	\$500
HE19	\$221
HE20	\$190

Option 4.

Criteria

- Standby notice if **predispatch price prior to 7am > \$100** for any **1 hour** of the commitment window
- Activation notice if scheduled in 3 hour ahead predispatch for at least 1-hour
- Length of activation is **1 up-to 4 hours** depending on how many consecutive hours are economic



Option 4.

Results

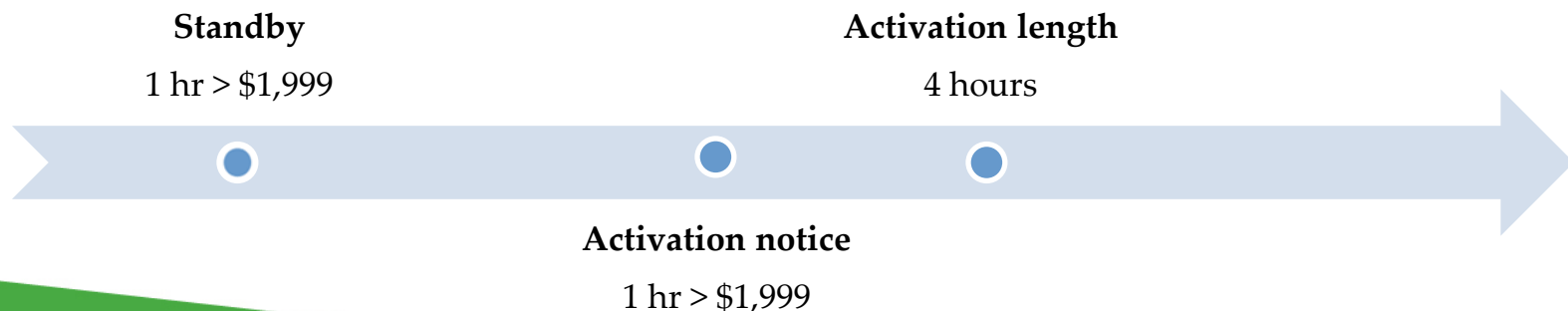
	Winter 15/16	Summer 15/16
Standby days	20	22
Standby + Activation days	2	0
Total activations across all zones	13	0

- 13 single hour activations
 - No activations with two or more consecutive periods

Option 5.

Criteria

- Standby notice if **scheduled in predispatch run prior to 7am** for any **1 hour** of the commitment window
- Activation notice if scheduled in 3 hour ahead pre-dispatch for at least 1-hour
- Length of activation remains at **4-hours**, and starts with the first hour that is economic



Option 5.

Results

	Winter 15/16	Summer 15/16
Standby days	5	3
Standby + Activation days	2	0
Total activations across all zones	4	0

Example – Feb 16th 2015

HE18 meets the price criteria to activate a 4-hour block. HE19 is also economic, however the following two hours are below the price threshold, resulting in inefficient scheduling

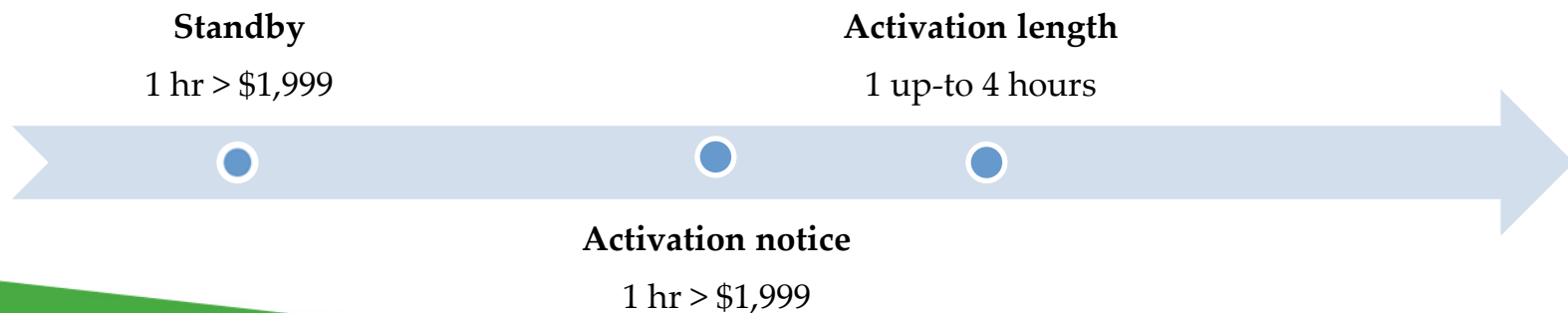
Toronto Zone Activation

HE18	\$1,999
HE19	\$1,999
HE20	\$501
HE21	\$284

Option 6.

Criteria

- Standby notice if **scheduled in predispatch run prior to 7am** for any **1 hour** of the commitment window
- Activation notice if scheduled in 3 hour ahead pre-dispatch for at least 1-hour
- Length of activation is **1 up-to 4 hours** depending on how many consecutive hours are scheduled



Option 6.

Results

	Winter 15/16	Summer 15/16
Standby days	5	3
Standby + Activation days	2	0
Total activations across all zones	4	0

- 4 one hour activations in Toronto, Ottawa, North East, and South West

Improved Utilization of DR – IESO Recommendation

Demand Response Working Group
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May 30, 2017

IESO Recommendation

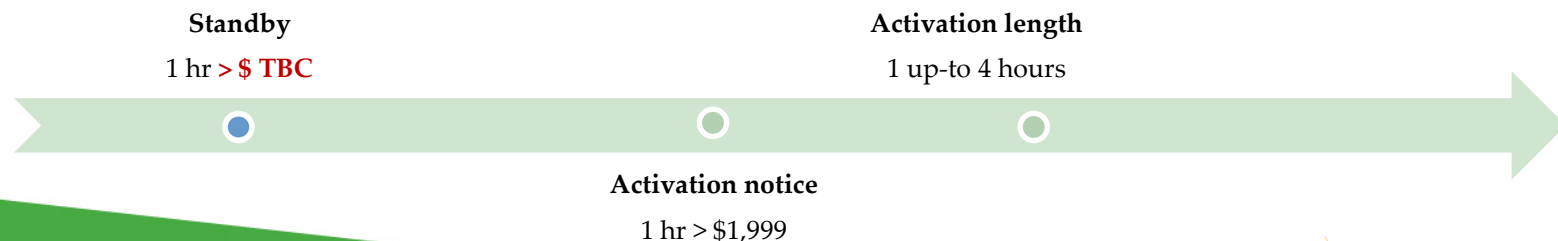
In improving the utilization of hourly DR, the IESO looks to meet the criteria below in coming forth with a recommendation

- Must support efficient dispatch and evolve the effectiveness of the DR resource
- Is likely to increase the number of Hourly DR Activations to demonstrate DR value
- Balances stakeholder and IESO operational needs
- Can be implemented for the next DR Auction in December 2017

IESO Recommendation

*Based on the criteria discussed the IESO recommends that **Option 4.** be pursued further, however we **invite DRWG feedback on the price threshold of the standby notice***

- ✓ Evolves the DR resource
- ✓ Increases Hourly DR Activations
- ✓ Consensus option from vast majority of stakeholders
- ✓ Can be implemented for the next DR Auction



IESO Recommendation – Option 4

Standby notice

- Prior to 7am, a standby notice provides a load with a more accurate indicator of whether it is likely to be activated

Activation notice

- Stakeholders agreed that Activations should be scheduled when **at least 1 hour** is economical in PD-3

Activation duration

- Scheduling an activation only for those hours economical “**1 up-to 4**” is the most efficient from a market efficiency perspective

Standby
1 hr > \$ TBC

Activation length
1 up-to 4 hours

Activation notice
1 hr > \$1,999

Market Surveillance Panel Comments

The OEB Market Surveillance Panel has published their report for the period from November 2015 to April 2016. In the report they voiced their concerns around DR not being activated during periods of peak demand, and how this does not help achieve the Ministry of Energy's conservation policy goals.

“...the IESO is procuring capacity through the DR auction at a time when capacity is not needed. This procurement comes at a significant cost: resources procured through the 2016 and 2017 DR auctions will be paid upwards of \$73 million in total.”

“For DR capacity to be of use, the **activation criteria needs to result in consumption reductions** on those infrequent occasions when those resources are needed.”

Next Steps

Once there is consensus on the approach to be pursued, the IESO will present the proposed changes at the next **Technical Panel** on **June 27th**

The sections that could be impacted within the market rules are *Chapter 7 sections 19.2 – 19.5*