

OPA Demand Response Programs

Market Pricing Working Group
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- OPA is developing a fleet of demand response programs across the industrial and institutional sectors
- Programs are at various stages of development
 - DR1: in-service
 - DR2: final rules being developed
 - DR3: final rules posted, contracts being developed

- OPA demand response program that has been in affect for approximately 1 year
- Registered participants voluntarily reduce their load based on a 3-hour ahead PD strike price
 - Minimum prices \$90 summer and \$80 all other periods.
- No direct IESO involvement at this time, since participation is voluntary and there is no communication to the IESO when participants elect to reduce their load

- This is a contractual load shifting program during the normal business week in summer, both winter and summer, or all seasons (depends on participant's contract)
- Participants will reduce demand during peak hours and consume this energy in off peak hours
- Expected to start in early 2008
- Stakeholder comments (including IESO) are being incorporated into the final program rules
- There will be little to no involvement by IESO in operating this program
 - IESO will, however, be settling the program

- On peak hours for the program:
 - 08:00 to 20:00
- Off peak hours for the program:
 - 20:00 to 08:00
- Participants can sign up for:
 - Min. of 4 hours/day
 - Max. of 12 hours/day
- The minimum amount of load per participant:
 - 5 MW and the maximum is 125 MW

- IESO involvement :
 - Determine the change in the primary demand profile
 - Determine the effect on forecasting
 - Settlement
- What we need to know about the load being shifted:
 - How many MW?
 - Which hours?
 - Location?

DR III – About the program

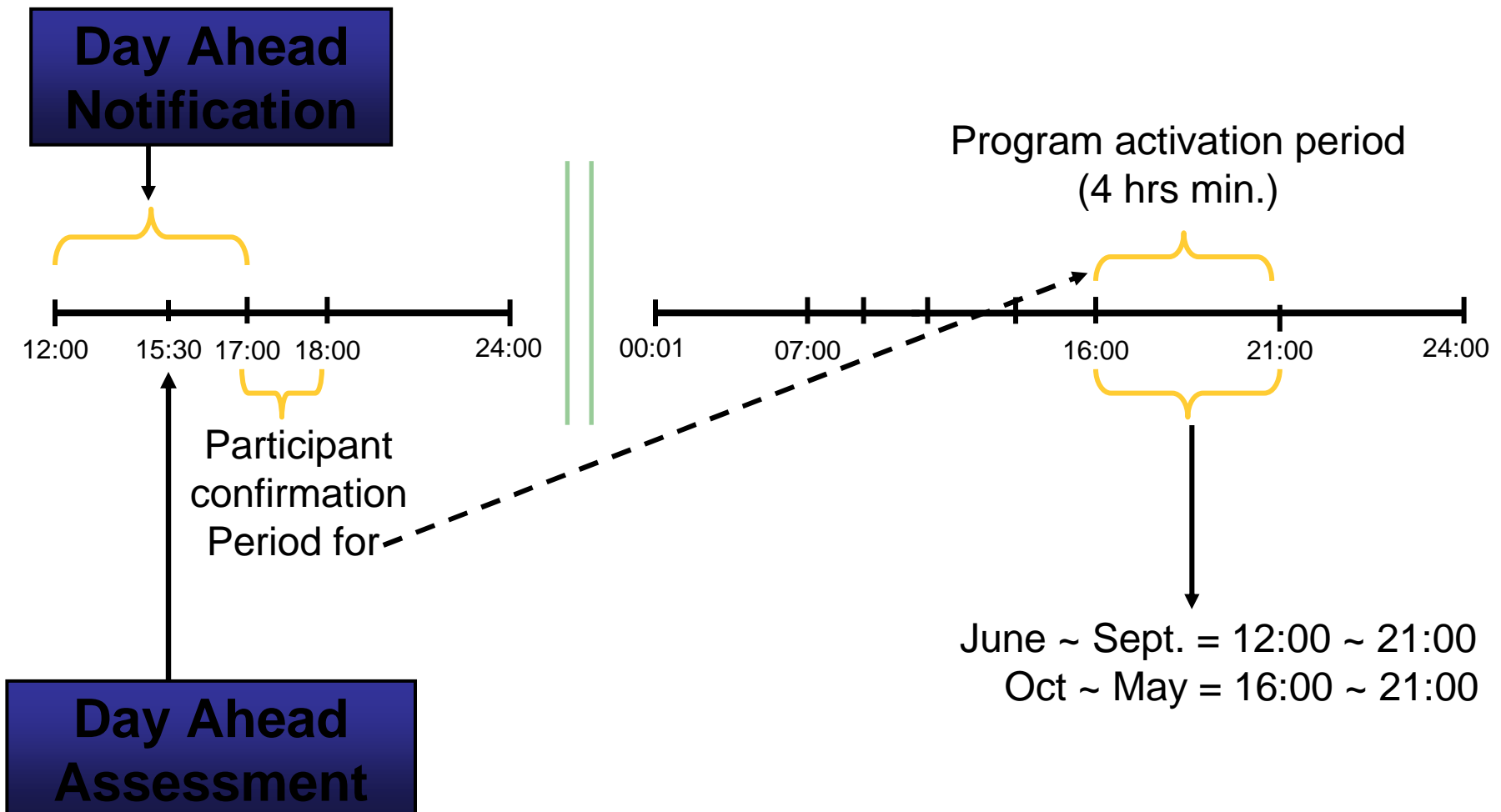
- Final program rules have been posted, contracts are under development
- Will be dispatched and settled by the IESO
- Not a reliability program, but designed to respond to conditions which will provide the greatest benefit to the province
- We'll take a multi-trigger approach to dispatching demand resources under contract to the OPA
 - Global Adequacy
 - Local Area adequacy
 - Voltage limits
 - Security limits

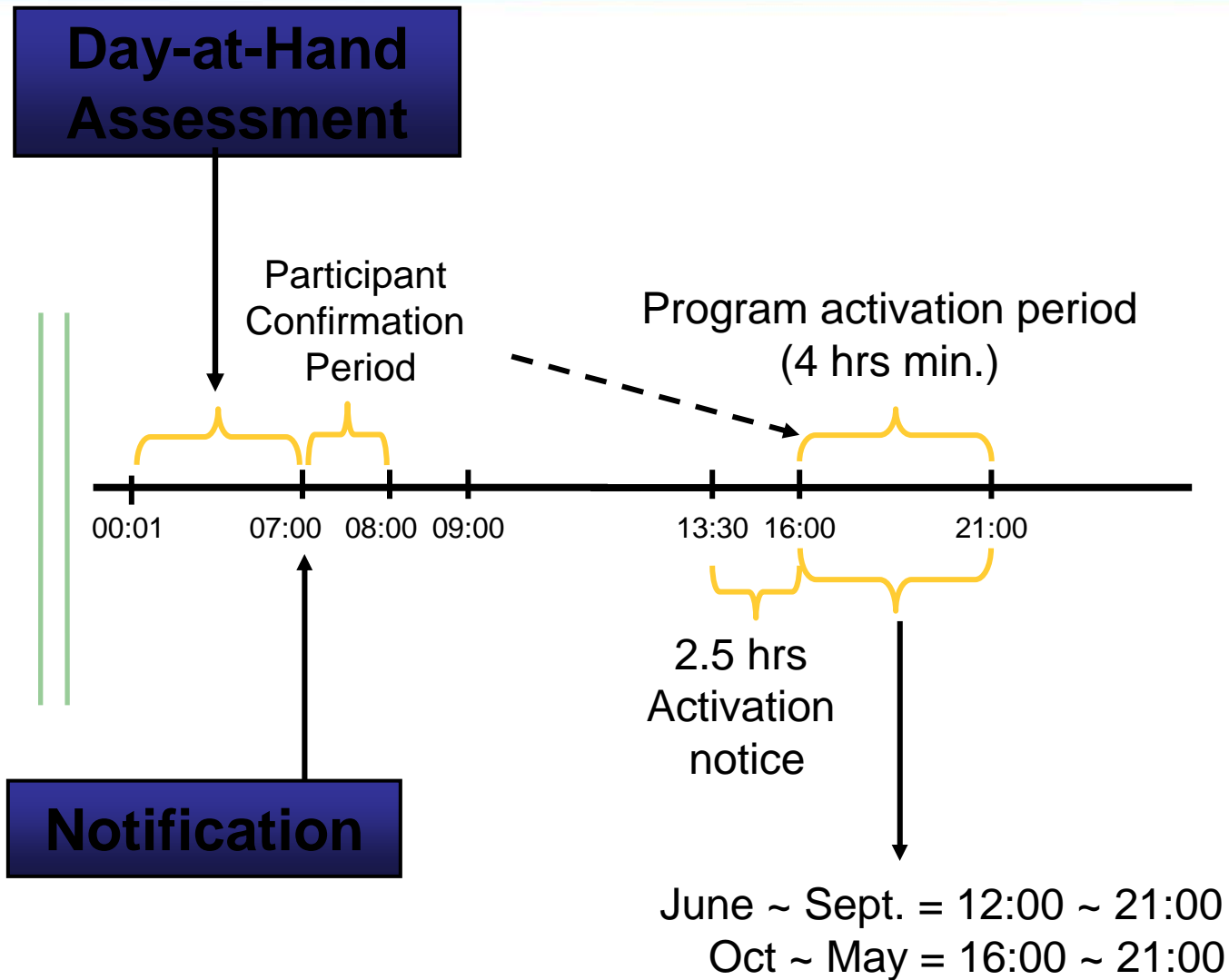
- The OPA has invited electricity users to participate in the program
 - Direct participant: minimum of 5 MW curtailment
 - Aggregator: minimum of 25 MW curtailment
- Participants will sign up for curtailments of either 100 or 200 hours/year.
- Curtailments are for a minimum of 4-hours.
- If needed voluntary participation beyond the 100/200 hours and the 4-hour minimum can be provided.
- Contracts will run for 1, 3, or 5 years

- **Winter:**
 - December 1 to March 31
 - availability window from 16:00 to 21:00
- **Summer:**
 - June 1 to September 30
 - availability window from 12:00 to 21:00
- **Shoulder months:**
 - April, May, October and November
 - availability window from 16:00 to 21:00

Day-Ahead

Next Day





- For the Dispatch day, supply cushion is calculated during three different timeframes starting day-ahead
- First:
 - At the conclusion of the Pre-dispatch of Record at 15:30 day-ahead
- Second:
 - At the conclusion of the day at hand HE 7 pre-dispatch
- Third:
 - If a Standby Notification has been issued, supply cushion is assessed for Activation at the conclusion of each pre-dispatch run from three hours prior to the start of the availability window

Using a Supply Cushion formula:

- We'll attempt to target times when the reduction of demand has the greatest value to the province.
- Supply Cushion =
$$\frac{EO - (ED + OR)}{ED + OR} \times 100$$

Where,

- EO = total amount of available energy offered (including imports)
- ED = total amount of energy forecast
- OR = operating reserve requirements

- Standby notifications:
 - Will be sent either day-ahead or day-at-hand for a dispatch day
 - Day-ahead notifications may be sent between 12:00 and 17:00. Confirmation (if required) must be received by 18:00.
 - Day-at-hand notifications may be sent between 00:01 and 07:00. Confirmation (if required) must be received by 08:00.

- Standby notifications:
 - May be “Fixed” or “Open” notifications
 - Fixed: Participants to provide monthly contracted MW for contracted dispatch period (4 hours)
 - Open: Participants to provide at least monthly contracted MW for contracted dispatch period, but may offer more curtailment MW or hours
 - If a “Fixed” notification is issued day-ahead, and conditions are such that the province would benefit from a greater curtailment (i.e. trigger is met for more than the contracted MW or for more than four hours), then a day-at-hand “Open” notification may be issued
 - If an “Open” notification is issued day-ahead, there can be no further notifications

- Confirmations

- If a participant will provide the monthly contracted MW for the contracted dispatch period, they do not need to provide a Confirmation Notice (it is assumed that they will be providing their contracted MW and hours)
- If, after receiving an “Open” standby notification, a participant wishes to provide more curtailment hours or MW, they must provide a Confirmation Notice
- If a participant cannot provide their monthly contracted MW for the contracted dispatch period, they must provide a Confirmation Notice

- Activations:

- Activation notices must be sent at least 2.5 hours before the curtailment is to begin
 - Summer: the last available time to send an Activation Notice is 14:30.
 - Winter/Shoulder: the last available time to send an Activation Notice is 14:30.
- The supply cushion trigger will be used to target either 100 hours or 200 hours of activation (25 or 50 activation events) per year, depending on the contract terms of a participant
- IESO is not obligated to issue an Activation Notice following the issuing of a Standby Notification
- If, in response to an “Open” Notification, a participant offers curtailment capacity beyond their contracted amounts, we may activate for only the monthly contracted MW and hours as conditions require

- After Activation:
 - Adjust primary demand forecast by the amount of expected load curtailment
- Settlement on behalf of OPA