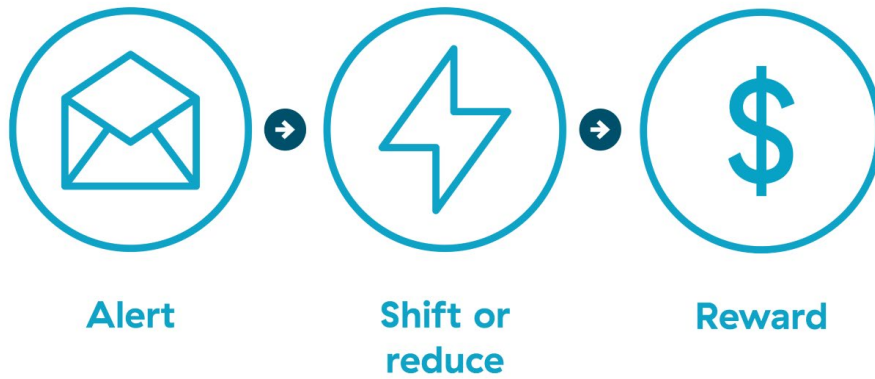

Customer Manual

Demand Response for Refrigeration Trial



Last updated: 2024-03-30

Customer Manual

Energy Management Solutions
Demand Response for Refrigeration

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1 Program Overview

Demand Response for Refrigeration is a trial that encourages load shifting away from peak times on the grid. The program provides incentives to you who are able to reliably shift or shed load in response to event signals from BC Hydro. Demand response programs are one means for BC Hydro to get the most out of our existing grid, support reliability and keep rates low for all.

The program will be offered province-wide during the summer and winter season. You may elect to participate via manual and/or automated methods, depending on your own unique business characteristics.

- Manual demand response
 - No special equipment required
 - You will receive notification from BC Hydro of an event and enact pre-defined actions to shift or shed load within your facility
- Automated demand response (AutoDR)
 - You have equipment capable of receiving an OpenADR signal from BC Hydro
 - You will receive notification and your equipment will automatically respond with a pre-defined action (e.g. reduce set points, dim lighting, turn off equipment)

1.1 How it works

The program has 5 steps:

- Make your plan
- Enrol
- Conduct a test event
- Participate in seasonal events
- Get rewarded

1.1.1 Make your plan

Get started by reviewing your operation for sources of flexibility such as:

- Pre-heating or pre-cooling spaces
- Adjusting refrigeration to colder temperatures before the event and then coasting through the event
- HVAC setpoints that could be changed
- Delaying EV charging
- Process changes or using product or resource storage to keep production going
- Energy storage / batteries
- Dimming lighting
- Turning off unnecessary equipment

You may be able to pre-program alternative operational schedules into some equipment, such as your building management system. These activities will make it easier for you to take action during an event.

1.1.2 Enrol

Enrol in the program by completing the application from the link provided by your Key Account Manager or Regional Energy Manager. You'll need the following information:

- Which sites you want to enroll
- Contact information for two individuals on site that will receive event notices and take action. One will be the primary contact, the other will be the backup contact person.

We'll send you a confirmation email once your application has been reviewed.

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1.1.3 Conduct a test event

Once we have a signed agreement from you, we will arrange a time for a test event. This test is an opportunity for you to test your plan and make any adjustments necessary to ensure you're successful throughout the season.

BC Hydro will notify you of the test time and will provide feedback on the results of the test.

1.1.4 Participate in Seasonal Events

During extreme temperature days or when conditions on the grid warrant, we will send you an email notification of an upcoming event. You will receive it at least 12 hours in advance of the event so you can prepare.

Events will not be longer than 4 consecutive hours and do not occur on holidays or weekends. Refer to section 3 for a list of holidays.

When the event time arrives, enact your plan to reduce energy usage at your facility for the duration of the event.

Within 48 hours after the event, we'll send you an email letting you know the results of the event and how much load you reduced.

You may opt out of events during the season, without direct penalty. However, your incentive is based on your average performance across the season, so this may reduce your overall performance result. You can opt out by replying to the event notification you receive from BC Hydro, at least 2 hours prior to the event start time.

1.1.5 Get Rewarded

After the season is complete, we'll calculate your average load reduction achieved across all events during the season. This amount will determine your financial reward. See section 3 for details on how load reduction achievements and incentives are calculated.

Your incentive will be a bill credit after the season ends.

2 Program Policies

2.1 General Eligibility

To be eligible for the Demand Response for Refrigeration trial, your participating site(s) must meet the following criteria:

1. be operational for a minimum of 12 months prior to application
2. be on the Large General Service (150 kW and over) rate – 1600, 1601, 1610, 1611
3. have an operating smart meter (no manually read meters)
4. have at least one dedicated resource on staff that will receive and respond to demand response events
5. not achieve shifting or shaving load via higher GHG fuel switching (e.g to gas, diesel etc)
6. commit to participating in both summer and winter events
7. successfully complete one test event prior to season start to prove capability

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2.2 Participation & notifications

2.2.1 Seasonal participation

- You must be enrolled to the end of the season in order to be awarded incentives.
- If you close your account mid-way through a season you forfeit any incentives for that season.
- Demand-response events are called based on the ever-changing conditions on our grid. There is no set schedule. However, the majority of peaks on our grid are related to cold winter days and hot summer afternoons.

2.2.2 Site enrolment

- If there are multiple meters at a single site, they will be combined in aggregate, as part of the enrolment. You cannot reduce load on one meter by increasing load to another meter at the same site.
- You may use multiple DR methods (manual and / or auto) per site but may not nominate the same end uses in the same season (i.e. no double counting). Each end use may only be attributed to one method.
- To enrol in AutoDR, you must have eligible equipment that will connect to BC Hydro's Distributed Energy Resource Management System (DERMS). Refer to section 4 – AutoDR

2.2.3 Key Contacts

- You must identify at least one key contact to receive notification
- You must ensure the key contact for event notifications is kept up to date.
- You may change notification personnel at any time by emailing demandresponse@bchydro.com

2.2.4 Minimum load shift

- As this is a trial offer, there is no minimum load shift to be eligible for incentives.

2.2.5 Test Events

- You must successfully participate in one pre-test prior to each season.
 - BC Hydro will schedule the pre-test and advise you of this
 - BC Hydro may hold alternative test dates if you are not able to participate in the initial test date.
 - If you do not pass, you may adjust your plan and test again prior to the season starting

2.2.6 Demand response methods

- Manual DR - you may change the approach (i.e. measures) for demand reduction at any time, without notification to BC Hydro
- You may not use any fuel switching strategies or actions that result in higher GHG emissions than those associated with typical BC Hydro electricity
 - Diesel and other fossil fuel generators are prohibited in this program

2.2.7 Demand response events

- When two events are called on the same day in the winter season, a minimum of 4 hours between the end of the first event and the start of the second event will be provided

2.3 Performance measurement

- You will receive updates after each event on how your site(s) performed. These results will make up your end-of-season incentive payment. Refer to section 3 for more information on calculations.
- The demand reduction will be measured at the BC Hydro revenue meter.
- If you have questions about results of any event, contact your Key Account Manager. If you do not have a key account manager contact demandresponse@bchydro.com.
- In the event that meter data is not available for any particular event by the end of the season, this event will be removed from all calculations.

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- Baselines
 - BC Hydro may, from time to time, change the baseline methodology. You will be notified prior to any changes to the baseline method.
 - The baseline methodology will not be changed mid-season, unless significant issues are identified.
- Opt-outs
 - There is no direct penalty for opting out of an event. However it may affect your seasonal performance assessment, outlined in section 3 below.
 - Opt-outs must be communicated to BC Hydro a minimum of 2 hours prior to the commencement of the event
 - Manual DR – opt-out via email reply to the event notification.
 - AutoDR – opt-out via the AutoDR equipment on-site
 - Opt-outs are excluded from the baseline, event performance and incentive calculations, as outlined in section 3
- Seasonal performance reliability
 - There is no minimum load shift during the event requirement at the enrolled site
 - Reliability is assessed at the end of each season

2.4 Incentive calculations payments

- The program offers an incentive of \$75/kW-year per season
- Incentives are calculated as outlined in section 3
- Incentives are based on the combined results of AutoDR and manual DR, in cases where the customer is participating in both
- Earned incentive payments are made during the billing cycle following the end of each season.
 - Winter season – payments will be made on-bill in the April – June cycle
 - Summer season – payments will be made on-bill in the October – December cycle

2.5 Program withdrawal & closed accounts

- Withdrawal
 - You may withdraw from the program at any time by providing 10 business days' notice to BC Hydro in writing to the email box demandresponse@bchydro.com
 - Withdrawing before the end of a season results in the forfeiture of any incentives for that season
- Closed accounts
 - Any account registered in the program that is closed mid-way through a season will be treated the same as a withdrawal

3 Event Criteria and Calculations

3.1 Event criteria

Summer and winter season have different criteria, as outlined in the table below:

	Summer	Winter
Max. duration (hours / event)	4	4
Max. events per season	20 events	20 events
Max. daily frequency	1	2
Time of day	3-7pm	6am – 10pm
Time of year	May – Sept	Oct – April
Notification	12 hours	12 hours
Ineligible days	Weekends & stat holidays	Weekends & stat holidays

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3.2 Eligible Days

- “Eligible days” are days that are not weekends, holidays or prior event days
 - Holidays, for the purpose of this program are defined as:
 - Statutory holidays include those defined by the Province of British Columbia (<https://www2.gov.bc.ca/gov/content/employment-business/employment-standards-advice/employment-standards/statutory-holidays>)
 - New Year's Day
 - Family Day
 - Good Friday
 - Victoria Day
 - Canada Day
 - B.C. Day
 - Labour Day
 - Thanksgiving Day
 - Remembrance Day
 - Christmas Day
 - Additional ineligible days are:
 - Boxing Day
 - Easter Monday
 - National Day of Truth & Reconciliation
- “Prior Event Days” refers to any day in which a demand response event had already been called

3.3 Baselines

The program uses a baseline methodology to approximate what would have happened at the site, if the demand response event had not been called.

The program uses a 5-in-5 baseline, meaning the site average demand over the 5 eligible days preceding the event are used to form the baseline.

The baseline is the average energy usage per hour (kwh/h), as recorded by the BC Hydro revenue meter, over the same hours as the event, of the 5 eligible days preceding the event.

$$\text{Baseline} = \frac{\sum (\text{meter readings over the event hours, over the last 5 eligible days})}{(\text{total number meter readings})}$$

For example:

Day	Hours	Average Demand (kW)	Status	Baseline day?
Tuesday	5-7pm	200	Non Event	Yes
Wednesday	5-7pm	220	Non Event	Yes
Thursday	5-7pm	175	Previous Event	No
Friday	5-7pm	210	Non Event	Yes
Saturday	5-7pm	200	Non Event	No
Sunday	5-7pm	150	Non Event	No
Monday	5-7pm	150	Stat Holiday	No
Tuesday	5-7pm	200	Non Event	Yes
Wednesday	5-7pm	160	Actual event	
	Baseline kW	206		

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3.4 Actual demand reduction

Event demand reduction is calculated as the average demand over the duration of the event. This calculation is based on the BC Hydro revenue meter data.

$$\text{Actual demand} = \frac{\sum (\text{meter readings over the duration of the event})}{(\text{total number readings})}$$

A negative actual demand reduction (i.e. increase in demand during the event) will count as a negative in the seasonal average demand reduction calculation.

3.5 Seasonal average demand reduction

The seasonal average demand reduction is calculated as follows:

$$\text{Seasonal demand (kw-season)} = \frac{\sum (\text{Actual demand reduction for each event})}{(\text{Total number of events} - \text{number of opt outs})}$$

3.6 Incentives

Customer incentive payments are based on \$75 / kW-season. The incentive payment for the season is calculated as follows:

$$\text{Incentive (\$)} = \$75 / \text{kW-season} * \text{seasonal average demand reduction (kW-season)}$$

4 Automated Demand Response

To be eligible for Automated Demand Response (AutoDR), your equipment must be [OpenADR](#)-compliant. OpenADR is a standardized communications protocol that allows BC Hydro to send event signals directly to your equipment, which will then respond with a pre-set demand response operational schedule.

You will be able to set your own preferences for equipment operation during DR events and will not have to take any action when a demand response event is called. Everything will happen automatically for you.

Not sure if your equipment is OpenADR capable? Check with your equipment manufacturer or consult the [OpenADR Alliance product database](#).

If you are interested in AutoDR and have eligible equipment, please contact us to discuss the details of how to enable your equipment to receive DR signals from BC Hydro.

5 Key Contacts

Need help? Have questions?

Contact your key account manager. If you do not have a key account manager, you can email us at demandresponse@bchydro.com