

# WATER RESTRICTIONS: BEST PRACTICES

On June 5, 2024 the City of Calgary was impacted by a water main break to the feeder main that supplies 60% of the City's water supply. This led to mandatory water restrictions for all citizens and businesses. Calgarians typically use 550 million litres of water on a daily basis with limited room for additional storage. City officials requested that citizens collectively reduced our consumption to approximately 450 million litres/daily. This is a reduction of 18% for this entire period.

Initially, the estimate was that the line would be repaired within a week but inspections of the feeder main identified at least five other areas that were in need of immediate repair. As a result, the water restrictions were in effect for a total of 31 days.

## THE FOLLOWING ITEMS OCCURED AND ARE AREAS TO BE AWARE OF WHEN PLANNING FOR AN EVENT

Water pressure dropped around 10 PSI in monitored fire suppression systems on the first day of the event. There were also fluctuations at some properties for days after the event with some fluctuations of as much as 20 PSI. Based on feedback from operations personnel, a further drop of just 10 PSI could have led to the fire suppression systems failing which could have led to a potential building closure.

- Hourly monitoring of water pressures on the domestic water and fire suppression was completed.
- Buildings identified cavitation points for their domestic and fire pumps in preparation for the pressures dropping to this level forcing these to be shut down.
  - **Cavitation** involves the formation of water vapor bubbles that damage metal components when they collapse back to the liquid state. This in effect damages the pump to the point that it can no longer pump water.



- In at least one case, the sudden drop in water pressure from the City lines activated a sprinkler flow switch causing a fire alarm in this property.
- Building staff in one building discovered sediment coming into their building from the city line. Building staff began monitoring for this.

## The City of Calgary Fire Department implemented a fire ban

- This measure was taken as there was limited water for firefighting.
- The ban included Hot Work projects being shut down. This had a significant impact to construction activities in properties, which pushed back a number of projects and risked delaying tenant occupancy rates.
- As a result of BOMA's communications on delayed projects, CFD released updated bulletins clarifying hot work suspension and what they considered acceptable contractor work. This allowed properties to continue with minor hot work projects and allowed these projects to get back on track.



Work from home was encouraged by the City of Calgary but was not mandated. Only a few tenants complied. The impacts that work from home would have had to commercial properties is unquantified. A couple of impacts we heard that occurred:

- Reduced occupancy negatively impacted on retail sales.
- Fitness centres experienced membership cancellations.

Sharing of water saving tips with tenants that were provided by the City of Calgary and/or through the media helped get the message out to the public on steps to reduce water consumption.

Some buildings shut down charging plugs for EV bicycles and scooters to prevent potential fires from those devices.

## ACTIONS BUILDING OWNERS/MANAGERS CAN TAKE TO REDUCE WATER CONSUMPTION

Although this started as a life safety issue, primarily coordinated through security and life safety management, building operations were soon consulted and provided their expertise in managing this issue.

- Utilizing mechanical cooling where possible as opposed to free cooling to reduce water evaporation.
- Cooling tower setpoints increased to reduce evaporation (this may be part of the mechanical vs. free cool) but condenser water setpoints can typically be increased especially when chiller is operating at partial load.
- Shut off humidification systems.
- Increase conductivity blowdown set points to a maximum of 1,200 mmhos to increase cycles before blowdown
  - Chemical usage can be expected to decrease
  - Monitor heat exchanger equipment for any changes in temperatures
  - Confirm with your water treatment provider before making any changes
- Limit afterhours HVAC requests to fans only.
- Disable or suspend vacant floor HVAC operations.
- Cycle disk filtration on condenser loops where these exist.
- Suspend all non-emergency maintenance work where water would be lost.
- Suspend weekly fire pump testing at the discretion of the Fire Department.
- Suspend all non-emergency drain downs and sprinkler work.
- Close shower rooms.
  - In some cases water should be turned off to the facilities because people will continue to try and use them.
  - Cancel towel services.
- Shut down irrigation systems.
- Suspend watering of plants.
  - Source non-potable water or supplies from outside water restriction zone as an alternate to ensure high value plants are kept alive.
  - Ensure signage is posted advising the source of the water being used to prevent unwanted criticism.
- Tenants with water cooled refrigeration units should be asked to raise the temperature on their units to help conserve water.
- Check bathroom fixtures to ensure that toilets, urinals and sinks are not passing water to drain.
- Close blinds to reduce heat load and subsequent cooling requirements.





- Isolate exterior irrigation.
- Car washes in the buildings should only do cleaning that does not require water.
- Reduced dishwasher and kitchen water use throughout properties. Tenants using compostable dinnerware and running dishwashers only when full.

## ACTIONS BUILDING CLEANING CONTRACTORS CAN TAKE

- Pause any type of cleaning that requires lots of water use such as parkade sweeping/cleaning and scrubbing, carpet and floor scrubbing, exterior power washing and window cleaning.
- Cover sensors of automatic flushers while cleaning the toilets to keep them from flushing.
- Wet wiping only if needed; for spillages and excessive dirt these should be addressed with minimum amount of water followed by disinfectant.
- No glass cleaning.
- Cease wet dusting and only doing dry.
- For carpet spillages, use a product that does not require rinsing.
- Reduce mopping to once per week or only if needed.
- Only spot clean elevators and dry dust them.
- Avoid washing of signs and sidewalks and;
- Use biodegradable products that do not require rinsing.

## LESSONS LEARNED AND CONSIDERATIONS FOR NEXT EMERGENCIES

- Emergencies can last far longer than anticipated. As a result, consideration should be made to move from short term emergency response plans to longer term business continuity plans.
- Consider bringing in expertise from a variety of sources based on the emergency type.
- Communicate regularly with tenants, vendors, contractors and other building users to ensure that everyone understands the scope of the emergency.
- The best response and co-operations we received from Calgary Emergency Management Agency (CEMA) personnel and being able to actively work with them to meet building needs was when we were able to provide them with hard data on building water consumption, specific impacts on building operations due to suspending hot work permits and managing building fire systems.
- Hourly monitoring of fire suppression systems was initiated. In those buildings without on-site staff, this led to bringing in contract security. Due to this, it is suggested that a policy and procedure be developed to assist staff unfamiliar with this procedure.
- It is recommended that property owners and managers, working with their operations staff and fire suppression contractors identify the PSI level by which fire suppression systems need to be turned off.
- In a few reported cases, PSI levels dropped due to back flow preventer seal failures. As a result, building operators may wish to consider inspecting their fire suppression systems to ensure there are no leaks in the system.

- Indoor charging stations for EV's could be reviewed and potentially disabled. Due to the large volumes of water needed to extinguish an EV fire, these stations could pose a risk if there is not sufficient water available to extinguish the fire.
- Prepare a plan for a zero water event. The risk of this is elevated when a primary feeder main goes offline.

## BOMA CALGARY'S ROLE DURING EMERGENCIES

In the last 11 years, numerous BOMA Calgary Public Safety Committee personnel from various building security and life safety departments have participated in and provided expertise to the Emergency Operations Centre (EOC) in the following seven events:

- 2013:  
June 20th - July 1st : Southern Alberta Flood  
Length of Emergency: 13 days
- 2014:  
October 12th - October 13th: Downtown Calgary Power Outage  
Length of Emergency: 19 hours
- 2020:  
March 16th - June 12th: COVID-19 Calgary Pandemic Response  
Length of Emergency: 13 weeks
- 2020 - 2021:  
November 25th - June 24th: COVID-19 Calgary Pandemic Response  
Length of Emergency: 25 weeks
- 2022:  
January 6th - March 31st: CEMA EOC re-activated for the COVID-19 Calgary Pandemic Response  
Length of Emergency: 13 weeks
- 2022:  
June 13th - 20th: EOC activated for the 'significant water event' and potential for flooding in Calgary  
Length of Emergency: 7 days
- 2024:  
June 6th - July 6th: EOC activated for the '16 Avenue Water Main Break' in Calgary  
Length of Emergency: 31 days

In addition, the EOC has requested BOMA Public Safety Committee members to attend annually for Calgary Stampede monitoring a total of seven times

As a result of these events, BOMA Calgary is a trusted partner to provide timely information to emergency responders on what property owners and managers have experienced through these events. With that in mind BOMA members should ensure their emergency contact information is current with BOMA Calgary. This should include the appropriate property employee responsible for emergency response, their phone number and email address to be provided with information that may have an impact on their property.