

HOW PARK SQUARE'S HVAC SYSTEM WORKS, DEFINING OWNERS' RESPONSIBILITIES AND DIRECTIONS FROM THE CCC145 BOARD

Part I: What is the HVAC system?

The HVAC system provides Heating, Ventilation (air change) and Air Conditioning (cooling) throughout our building.

Air Delivery-The essence of Park Square's HVAC system is to introduce air into the building at a point where it is least contaminated, namely on the roof via the penthouse mechanical room, and extract it from where it is most noxious, i.e. from bathrooms and kitchens. After being filtered, the air is pressurized with a large fan and, in winter, warmed. The air is delivered to each floor through a vertical duct beside the elevator shaft and via the three stairwells, then along the corridors and through the main doorway into each apartment. The door, by intention, does not fit tightly in its frame, to allow air passage. If measures have been taken by residents to block the gap around the door, possibly to reduce noise transmission or occasional cooking smells, this thwarts the intentional flow of ventilation air into the apartment.

Heating and Cooling -Heating and cooling are achieved by two or three fan-coil (FC) units in each apartment. Each FC is linked to a pair of vertical water-circulation pipes, one delivering heated or cooled water, the other returning the water to either the boilers or the chiller, according to the season.

The system is switched from heating to cooling and back to heating based on current ambient-temperature forecasts. So our system operates such that we can *only* have either heating or cooling at any one time.

When an FC's thermostat recognizes the need for heating or cooling, it opens a valve linking its coil to the aforementioned delivery pipe, and turns on its fan to one of three speed settings. With water and air now passing through the coil, heat is transferred from water to air in the heating season and from air to water in the cooling season. The fan-driven, recirculated air then heats or cools our apartment spaces. Before it passes through the coil, this recirculated air is filtered to prevent dirt build-up on the coil surfaces as well as to clean the air we breathe.

Air Extraction- Air exits from the building through both intentional and unintentional routes. A certain proportion of the air escapes through all the elements that constitute the shell of our building: exterior walls, balcony doors, and around windows. Air is sucked out of the building through all the bathrooms and via the oven range-hoods. Each pair of bathrooms and kitchen in a rise is connected to a vertical duct terminating on the roof at one of the permanently operating extraction fans.

Part II: Problems and Owners' Responsibilities

Condensation problems during the cooling season - When the system is in cooling mode, the air passing through a chilled coil will release moisture from the air, depositing it onto the fins of the coil. This water is termed condensate. It flows down the fins into a built-in drip-tray and, when this is operating correctly, drains through a P-trap to a drainage pipe.

Our current HVAC system is in good condition and is still within its expected useful life cycle, however, it is possible that at any given time, water will accumulate and overflow from the drip tray. If the drain gets clogged, the water

overflowing from a drip-tray will accumulate on the concrete floor within an FC enclosure. If not detected in time this water can spread sideways across the concrete floor surrounding an FC, likely remaining hidden for a while below a carpet or wood flooring, or downwards through gaps around vertical piping into units below where moisture damage, especially to walls, ceilings and furnishings becomes evident. This water accumulation problem has been exacerbated by extreme heat waves which have occurred over the past several summers.

Freezing problems during the heating season-When the system is in the heating mode, residents are reminded to keep windows and balcony doors firmly shut during sub-zero temperatures to prevent water pipes from freezing and bursting, and can cause flooding, often in several units, and requiring expensive clean-up and repairs.

Owners' responsibilities-the HVAC fan coil unit is considered **an exclusive use-common element**. These are elements designated for the exclusive use of specified units such as balconies, lockers and storage areas, parking spots, heating /cooling units and fireplaces.

While the corporation is responsible to repair and replace damaged and defective common elements, including exclusive use common elements, owners are required to maintain such elements in their units as directed by the Board. This is authorized under Section 9 of the Condominium Act (1998) and is set out in sections 20 to 22 of our Declaration (which can be viewed at www.151baystreet.com). This also sets out owner's liabilities for acts and omissions.

Part III: Directions from the Board

In the past, owners were asked not to interfere with the operation of the HVAC units, specifically not to install their own filters in the units since variation in filter types made the system as a whole less efficient. However, recent experience has shown that regular monitoring of the units by owners and residents is essential to limit incidents and damages from HVAC units. During the extreme heat of the summer of 2021, numerous incidents resulted in costs in excess of \$40,000 for the corporation (collectively, our owners). Many, if not all, of these incidents could have been avoided by early detection of water accumulation.

1. Unit owners and residents are responsible for observing and reporting maintenance and repair issues with HVAC units. Last summer, an Allen key was distributed to every unit for the purpose of opening the in-unit fan coil unit panel to check if there is a water accumulation in your drip pan. For those who are not able to use these Allen keys, there are other types of Allen keys, some can come with handles for easy turning and opening.
2. Because of the speed with which a condensation problem can arise during the summer months, daily observation is recommended. If water is accumulating in the drip tray, immediate action needs to be taken. This could include emptying and cleaning the drip tray and verifying if the P-trap is clear. Owners and residents have a duty to report these imminent problems to the Resident Building Manager.

3. The Board intends to adopt a rule to require owners to purchase at their own expense a moisture detection device that can be placed in the interior of each fan coil unit or more precisely, on the floor of the HVAC unit. These devices are just like our smoke detectors. They sound an alarm when water is detected or the battery needs replacement. And like smoke detectors, the costs range anywhere from \$10-\$30. These sensors could also minimize daily checking. If you don't hear the alarm then you know there's no water leakage in your HVAC unit. These devices should have alarms which can reasonably be heard by residents or have visual alarms for the hearing-impaired and designed for continuous operation of at least six months duration. The Board will display samples of Allen keys and moisture detectors and where to purchase these before the next summer season begins.

4. As part of the bi-annual inspection and replacement of filters, the Board will request our HVAC contractor to undertake a thorough check of the drainage system as well as the condition of cast-iron pipes and to ensure required devices are in place and operational.

5. All damages resulting from owners' and residents' failure to monitor and maintain their fan coil units as well as the cost of repairing such damages shall be borne exclusively by individual owners as set out in the indemnity clause. Owners should purchase their own insurance policy with Water Damage Protection to cover such expenses as well as the contents of the unit, including any improvements or upgrades that have been made to the standard unit as well as living expenses in the event that you need to vacate your unit, among others.

6. The risk of unobserved water overflowing from the pan increases when owners are absent from their unit for extended periods. Owners and residents who will be away from more than three days should advise the Resident Building Manager of their absence as required under Rule 1(D) and make arrangements to have a friend or neighbour check on their units during their absence.

This direction by the Board is common practice with most condos. Although this may seem like a shift in responsibility it is really a correction that should have been attended to earlier and strictly implemented.

Questions and comments on the above should be sent to the Board at board@ccc145.ca