

## DELTA SCHOOL DISTRICT HVAC SYSTEM OVERVIEW

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The Heating, Ventilation and Air Conditioning (HVAC) system used in the Delta School District is a 'state of the art' system utilizing Direct Digital Controls (DDC) in the management of increasingly high efficiency heat and cooling delivery components.

The system enables us to 'dial in' heating parameters to ensure occupant comfort is maximized and energy consumption is minimized. Heating and cooling parameters are established by set points that establish temperature targets through the District.

All locations are programmed to receive a standard temperature of 21°C. This is known as the 'set point'.

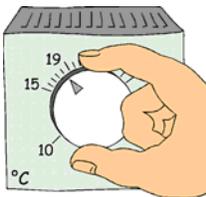


Our current heating temperature set points for occupied buildings are 21°C in classrooms, offices and low activity occupied areas and 18°C in gymnasiums between the hours of 6:00am and 4:00pm.

After 4:00pm, all areas revert to a night set back temperature of 16°C. There are exceptions where a room is programmed for continuing use/occupancy, i.e. staffrooms are scheduled to maintain 21°C until 9:30pm (last break for Custodians).

The HVAC system in every building is over-ridden by the security system. This means that if the building is armed and secure, the HVAC system will not be switched 'ON' or will not heat the building to the set point, but will remain at the 'set back' temperature.

Once the building is occupied in the morning, the system comes 'ON' and starts to pump out heat until the set point is reached. This will normally take some time as the volume of air that needs to be heated is significant. Obviously, the colder the outside temperature, the longer it will take to heat the space. This is because we have to utilize outdoor 'make-up' air to ensure circulated air remains fresh, doesn't stagnate or have high CO<sub>2</sub> concentrations. In extreme cases, it may take up to 45 minutes or longer for an area to reach the set point.



Once the set point is achieved, the heat modulates based on a - 1.5°C variance from the set point. That means a classroom will cool to 19.5°C before the heat comes on again. During summer months, the cooling comes on at 24 °C and cuts out again at 22 °C.

When the system is not providing adequate comfort, we normally receive a call or requisition from the school identifying the concern. Our staff use the DDC to review the location, check the temperature, and system status and confirm their findings. Where a problem is confirmed, a Technician is sent to service the system

If a report comes in saying it's too cold and the temperature is below 21°C but the system is 'ON' (pumping out heat) no adjustment is made. If there are recurring problems, an HVAC technician will be dispatched to the site.

It is only recently (December 2009) that we established the -1.5°C variance as an energy saving initiative. This initiative was approved by the Executive and the Board. Before December 2009, our variance was set at -0.5°C. This means heat would come 'ON' at 20.5°C as opposed to 19.5°C. Cooling used to come on at 22°C. While the old set points provided excellent occupant comfort levels, we can no longer offer the level of system operation previously available.

We still offer a remarkably good program of occupant comfort that is above the standards established by the Ministry or found in most other School Districts.