

Municipal Rebates for Water-Efficient Humidifiers

Many homes in northern climates use humidifiers during the winter months to make their living environment more comfortable. Humidifiers are used to increase the level of humidity of indoor air thus improving thermal comfort, creating a healthier indoor environment, and protecting natural materials from drying out. The volume of water added to the air depends on a variety of internal and external factors but, in general, the objective is to maintain a relative humidity range between 25-35%.

This project focused only on furnace-mounted whole-home humidifiers.

Years ago, reservoir-style humidifiers (e.g., “drum” or “wicking” models) were very popular. While they are very water efficient, there are published concerns that these models may be susceptible to biofouling, such as the growth of bacteria, mold, fungus, or algae because the water contained in the humidifier reservoir doesn’t get properly cleaned or replaced with fresh water. These types of humidifiers are also susceptible to a build-up of scale as water evaporates from the reservoir and leaves its minerals behind to build up on the foam drums and fabric wicks.

Another popular model is the flow-through humidifier. These models do not contain standing water and, therefore, help eliminate potential biofouling problems. In these units, a portion of the water supplied to the top of the unit’s evaporator pad evaporates into the warm furnace air, while the remaining water flows via gravity to a floor drain, i.e., water “flows through” the humidifier. Unfortunately, it is not uncommon for 80% or more of the water supplied to the humidifier to be wasted down the drain.

In Ontario, it is estimated that the use of inefficient humidifiers could waste more than 3 trillion litres of water, 2 million kWh, and 575 tonnes of Greenhouse Gas emissions each year.¹

Because of this tremendous savings opportunity, Peel Region, the Regional Municipality of York, and the City of Guelph initiated a research project in 2009 to evaluate the saving opportunities associated with whole-home furnace-mount humidifiers. The project identified humidifier models that eliminated the potential health concerns associated with containing standing water while wasting little or no water in the process. “Efficient” models would qualify for a rebate from these three municipalities if:

- They contained no standing water or, if they do contain standing water, substantially all of this water must be cleaned or replaced with fresh water at least once every 48 hours.
- The total water discharged to drain cannot exceed 50 litres per day. Since many inefficient models waste between 100 to 200 litres of water per day, limiting water wastage to no more than 50 L/d has the potential to result in considerable water savings.

¹ Based on 10% of the approximately 3 million houses in Ontario having furnace-mounted flow-through humidifiers operating 120 days per year and discharging 100 litres per day to drain.

The initial testing project included four popular furnace-mount whole-home humidifiers. The results showed a significant variation in the water wasted to drain for these four models (the make and model of the test units have been withheld because changes may have been made to these units since testing was completed). Based on the test criteria, the least efficient model would waste 193 litres of water per day (L/d) to the drain; the second least efficient models would waste 181 L/d to drain; the second most efficient unit would only waste 63 L/d, and the most efficient unit would only waste 1.3 L/d to drain.

Humidifier operation for most homeowners is 'out of sight, out of mind' but this testing program verifies that inefficient humidifiers can waste a significant volume of water each day during the winter months for homes in cooler climates. Important to program development, this testing project also found there are water efficient humidifiers available to homeowners.

Technical questions regarding the humidifier testing should be sent to bill@gauley.ca.

Information regarding the municipal rebate programs can be found at:

www.guelph.ca/ourstoconserve

www.watersmartpeel.ca (follow link to Water Smart Indoors)

www.waterfortomorrow.ca
