

General Assumptions for *Kilowatt Way*

Kilowatt Way is an interactive online tool to demonstrate the importance of time-of-use shifting and energy efficiency to residential consumers. In *Kilowatt Way*, a series of assumptions were made to determine the current electricity consumption in the home, as well as energy savings from various behavioural changes and appliance upgrades.

The first step was to determine values for the following three variables:

1. Wattage – the wattages used for each appliance are estimated based on the most common wattages for each appliance.
2. Hours of operation – The hours/day per month each appliance is in use was estimated based on the usage of a typical household.
3. Quantity – the quantity of each appliance was determined by estimating what appliances are common to each room type in an average home.

Some examples of the appliance assumptions include:

- Central Air Conditioning: on average a 2.5 ton central A/C unit is equivalent to approximately 1400 watts when running to cool the our home. For this tool, the Central A/C unit is running for 7.5 each day during the summer months.
- Coffee maker: the average home coffee maker will use about 1400 watts to brew coffee and 5 watts while on standby mode. For this tool, the coffee maker is used for 12 minutes a day every day to brew your coffee.
- Microwave: an average microwave uses 1000 watts to cook food and 10 watts on standby mode (when it's plugged in to keep the clock running).
- Fridge: the range in fridge wattage can change greatly depending on a number of variable including volume, age and temperature setting. For this tool, an average wattage of 150 watts is used when the compressor is turned on to cool the fridge.
- TV/PVR: depending on the size and type of TV (such as LED, LCD, or CRT), the range of wattage can be large. For this tool, 180 watts for a TV and PVR was used to estimate consumption. While not running, the PVR uses an average of 20 watts which is the equivalent to approximately a 50 inch LCD TV being used 4 hours a day in this tool.
- Computer or video game: the average gaming system will use approximately 60 watts. For this tool, it is estimated that the average gamer uses the system for 3 hours a day.

The next step was to scale those variables to each individual user based on these assumptions:

- Scaling – wattage, hours and quantity are all scaled up or down around an average consumption of 800 kWh per month in Ontario. The scaling factors include the number of people in the home, size of the home, and the number of people at home during the day.
- It is assumed that the average household has 2 bedrooms, a kitchen, laundry room, 2 bathroom, and 4 people living in it.

In order to estimate a base household, it is assumed that each household does not have any energy efficient measures in place until the user specifies them in the simulation. Once a base household is modelled, the user can adjust and customize their *Kilowatt Way* home. The user is encouraged to:

- Explore each category to learn what appliances are in their *Kilowatt Way* home
- Add or subtract appliances that are in the home
- Upgrade certain appliances to energy-efficient models (a wattage reduction was calculated by usage EnergyStar values for the specific appliance)
- Adjust the time appliances are used (load shifting was done by moving all usage outside the peak hours)

Please note that *Kilowatt Way's* energy data is an approximation for illustrative purposes only. Any resemblance to actual energy use is purely coincidental.

Please contact marketing@ieso.ca with any questions or concerns regarding *Kilowatt Way*.