Definitions

**HPWH** (pronounced 'hup-wuh')– Heat Pump Water Heater

**ERWH** (pronounced 'err-wuh') **–** Electric Resistance Water Heater

**Heat Source –** A heat source is a component of a HPWH model that has the ability to add heat to a tank. A HPWH can have an arbitrary number of heat sources, though most have between 1 and 3, inclusive. An ERWH typically has 2. A heat source has its own set of properties including, but not limited to, condensity, turn on and turn off logic, and parameters that describe its energy performance.

**Type of Heat Source** – Currently allowing only “resistor” and “compressor”, this setting is intended to allow for the aggregation of total compressor or resistance energy usage. This is a commonly sought quantity for comparison of HPWH's, particularly when simulating yearly timespans.

One caveat: on file input, heat sources of type “compressor” will set the “depressesTemperature” boolean to true. If this particular heat source is a compressor but should not depress temperature, depressesTemperature should be set to false after setting the type; however, typically doTempDepression would be set to False if no temperature depression was intended to be done at all.

**depressesTemperature –** This boolean specifies whether the heat source should cause the temperature to be depressed when it is running. There is no effect when the “doTempDepression” member of the parent HPWH is set to false.

**doTempDepression** - This boolean specifies whether the HPWH should utilize the temperature depression feature. This feature is intended for use with single zone house simulations. It is intended to model the effect of a HPWH cooling the space where it is located. It works by exponentially decreasing the local (ambient and evaporator) temperature of the HPWH to a fixed level below the actual input ambient temperature when a heat source, which has the “depressesTemperature” boolean set to true, is running. When no qualifying heat source is running, the local temperature exponentially returns to ambient using the same time constant. Currently, the total temperature drop is 4.5 F, and the half-life is 9.4 minutes.

**decisionPoint** - This is the value used for the heatSource logics. Each logic represents a condition which may occur based on some value, e.g. if the top third of the tank rises above some temperature. The decisionPoint is the value that is specified.

**Verbosity –** This is the amount of output that will be provided. It has several levels and is discussed in more depth in the “Tips and Tricks” document.

**HPWH\_ABORT –** an error code specified in HPWH.hh which signifies that an error has occurred in the function which returned this value

**Condensity –** a portmanteau of “condenser” and “density”, the condensity is a 12-node model that represents how the condensing coils come in contact with the tank. It is explicitly limited to 12 nodes, and each value is expressed as a fraction (so that the condensity sums to 1). For example, a resistance element would have a condensity such as (0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0) whereas a compressor might be something like (0, 0, 0, 0, 0, 0, 0.2, 0.2, 0.2, 0.2, 0.2, 0).

**Condentropy –** a portmanteau of “condensity” and “entropy”, the condentropy is a derived value based on the condensity. It is not specified separately, but instead represents in some way how spread out the condensity is. This effects the way heat is distributed when the heat source is running.