# SWAT Recommended Supplemental Requirements for Inclusion of "Add-on" Type Climatological or Soil Moisture Sensor Control Devices for Efficiency Specifications

## Background

There are two general classes of smart controls for use in the residential/light commercial sector independent of any classification by sensing capability employed. First, there are stand-alone devices in which smart control is an integrated capability of a single controlling device (i.e. the irrigation controller). Alternatively, smart control can be accomplished by using an "add-on" type of device that modifies an existing automated irrigation system with an irrigation controller to a smart system with the addition of the device, when both devices are appropriately programmed.

In practical terms, the typical add-on configuration involves installing the smart control device to the common and/or control wires for the valves and then programming the non-smart irrigation controller to a summer peak schedule. Smart control proceeds as the smart add-on type device decreases irrigation from that peak point as the environmental parameter(s) sensed indicate and dictate, according to the device's logic, in order to assure scheduling of irrigation through-out the year is accomplished efficiently. Interruption of the irrigation signal may also be accomplished through other means, but the same general configuration applies. The device interrupts the otherwise standing irrigation controller's program.

## Issue

While SWAT tests add-on type climatological and soil moisture sensor-based smart control devices, efficiency specification agencies sometimes mandate that only specific tested *combinations* of product selections qualify for a specification. This typically occurs when it is the combination that is deemed necessary for efficient operation (or any operation) to occur. A current example is that of high-efficiency toilets in which only tested combinations of the toilet and tank qualify as WaterSense as certified by the EPA.

In this particular situation, EPA had initially indicated that the agency considers add-on type smart controller configurations to be in the same class as the above example. In this perspective, theoretically only a specific combination of irrigation controller and add-on type smart product would be considered to meet the certification requirement. Thus *every* combination of controller and add-on found at properties applying for an efficiency specification would have had to go through SWAT testing.

In subsequent discussions, the EPA has come to understand that there is a great deal of practical commonality in the installed configurations of add-ons and indicated its willingness to consider a compromise position in which the following considerations were assured:

- Declared characteristics that irrigation controllers need to have to work properly with an add-on type smart control device.
- That SWAT tests each add-on type device with a certain minimum number of different controllers representative of the majority of the marketplace.

Valid results from testing with the minimum number of controllers would be considered to assure smart control capability so long as the installed irrigation controller had the specified features.

**Proposal and Suggested Language**

An add-on type smart control device shall be considered to satisfy the specification when:

1. The standard irrigation controller used with the add-on type device shall have been declared by the add-on's manufacturer to work successfully with their product.
2. The add-on will have the capability, at a minimum, to be installed as an interrupt type device on the common and/or control wires for the controller.
3. The add-on will have completed an initial SWAT test.
4. The add-on will have the ability to be programmed for different hydrozones (i.e. valve zones) with different watering requirements.
5. The add-on will be capable of providing quality operation with the irrigation controllers a manufacturer declares are compatible with the add-on as evidenced by SWAT testing with a minimum of four common irrigation controllers in addition to the original test. The selection of controllers from the declared compatibility list will be designed to provide for market representation and diversity of controller manufactures. Selection of these will be by the lab conducting the test. The test employed will otherwise match the SWAT test protocol currently in use.

While the actions presented here will evaluate the ability of the add-on device to interrupt the controller per the installation configuration alluded to in item one (above), if the add-on has a ready output to use additional ports on a controller for its intended operation (such as rain or soil moisture interrupt), the lab will monitor and report results for these during the test as well.

**Approval and Posting**

Approval of a completed test and posting of results would be accomplished in a manner similar as to that for existing SWAT-qualified control technologies. The IA will, however, clarify which types of devices are add-ons and which have completed the above supplemental testing.