



ENERGY STAR® Pool Pumps

Draft 2 Connected Criteria

Stakeholder Webinar

October 01, 2014

Call-in Information



- Audio provided via conference call in:

Call in:	+1-877-423-6338 (in the US, Canada)
	+1-571-281-2578 (outside the US, Canada)
Code:	456417#

- Phone lines will remain open during the presentation to allow for open discussion
- Please keep phone lines on mute (*6) unless speaking

Introductions



- **Christopher Kent**
U.S. Environmental Protection Agency
- **Bryan Berringer**
U.S. Department of Energy
- **Douglas Frazee**
ICF International
- **Kurt Klinke**
Navigant Consulting, Inc.

Agenda



- I. Background**
- II. Draft 2 Connected Criteria**
- III. Test Method**
- IV. Timeline and Process**

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Background



- As part of a broader effort to advance the market for connected products that enable both energy savings and smart grid capabilities, EPA is developing connected criteria for pool pumps.
- Once finalized, EPA intends to release this set of optional criteria in a Version 1.1 ENERGY STAR Pool Pumps specification
- Upon release, ENERGY STAR pool pumps that are certified to this optional criteria will be identified as having connected functionality on the ENERGY STAR qualified product list
 - Draft 1 was released on January 15, 2014
 - Web conference was held on February 10, 2014
 - Draft 2 was released on August 15, 2014

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Draft 2 Connected Functionality for ENERGY STAR Pool Pumps - Overview



- The Draft 2 ENERGY STAR Pool Pumps connected proposal was informed by stakeholder comments as well as individual stakeholder conversations
- Relative to Draft 1, the following changes were made:
 - Block Diagram – Section 4.2, Figure 1 : added AMI and SCADA systems as listed examples
 - Communications: EPA clarified that
 - products that enable Open Standards connectivity only outside of the consumer's premises may comply, and
 - products that include a modular communication port that complies with Section 4.3 need not ship with a compatible module

Draft 2 Connected Functionality Overview (cont.)



- Energy Consumption Reporting: revised to indicate that estimated reporting and/or reporting of real-time power is acceptable
- Operational Status: revised to allow reporting of motor speed and/or flow; as some pumps do not estimate flow rate
- Peak Period Avoidance: pumps must retain settings through power outages of 24-hours or less
- Demand Response: EPA has added
 - a table that includes DR latency criterion for various pump types, and
 - a requirement that the Type 3 response not exceed scheduled pumping

Draft 2 Connected Functionality – Demand Response



- DR latency criteria was added in order to:
 - ensure that the CPPS responds to signals that request changes to flow or motor speed within 5 seconds, and
 - ensure that the CPPS responds to signals that request termination of pumping within 300 seconds. This longer latency period is intended to guard against the potential for equipment damage by allowing other controlled equipment such as chlorinators and heaters to be shut-down in an orderly manner.

Draft 2 Connected Functionality – Demand Response (cont)



- Type 3 DR criteria was restructured to enable added flexibility in how this capability is utilized:
 - Draft 1 criterion, that required the CPPS to not exceed the expected daily energy consumption nor decrease pumped volume as compared to scheduled pumping for that day, was viewed as overly restrictive
 - Under Draft 2, Type 3 criteria enables increased rate of pumping limited only by:
 - Completion of daily pumping volume – for CPPS that are controlled based on pumped volume, or
 - Completion of scheduled daily pumping duration – all other CPPS

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Connected Pumps Test Method



- DOE responsible for developing and validating ENERGY STAR Test Methods (TM)
 - Including all “Connected Criteria” test methods
 - Finalized Connected Refrigerators and Freezers TM in May 2013
- DOE developed the Draft Validation Test Method based on
 - Draft 2 Connected Criteria
 - Previous Connected Test Methods, specifically Connected R/F TM
 - Conversations with multiple stakeholders

Connected Pumps Test Method



- Connected TM overview
 - Test setup per Version 1.0 Pool Pumps TM
 - Additional specifications for communications setup
 - Evaluates units for all 3 DR signals
 - Separate test language provided for pumps based on type (i.e., Single-, Multi-, and Variable-speed/flow)
 - Validates all responses for each signal (e.g., signal received during operation vs. standby)
- NOTE: Test language designed to allow for wide variety of software and hardware implementations

Connected Pumps Test Method



- Connected TM Setup
 - Normal setup per Version 1.0 Pool Pumps TM
 - Connected Communications Setup:
 - The CPPS and Utility Equivalent Communication Device shall be set up in accordance with manufacturer installation instructions.
 - Connection shall be made using a wireless connection when available.

Connected Pumps Test Method



- Feedback Request:
 - What types of connections are currently being used or are likely to be used for connecting a pump unit to a utility?
 - Primarily wired or wireless connection types?
 - Will products ship with multiple connection types?

Connected Pumps Test Method

- DR Verification Tests
 - Test Method verifies the following responses to the receipt of a signal based on Signal and Pump Type
 - Each response verification represents a single test

Signal Type	Single-speed	Multi-speed	Variable-speed/flow
Type 1	<ul style="list-style-type: none"> - Pump ceases all operation within 300 seconds 	<ul style="list-style-type: none"> - Pump reduces speed to lowest available speed when operating - Pump remains off regardless of scheduled operation when in standby 	<ul style="list-style-type: none"> - Pump reduces speed to < 1/3 max speed/flow when operating - Pump remains off regardless of scheduled operation when in standby
Type 2	<ul style="list-style-type: none"> - Pump ceases all operation within 300 seconds 		
Type 3	<ul style="list-style-type: none"> - Pump turns on but operates only for originally scheduled duration 	<ul style="list-style-type: none"> - Pump turns on and operates only for normally scheduled duration - Pump increases speed when operating 	<ul style="list-style-type: none"> - Pump turns on and operates only for normally scheduled duration/volume - Pump increases speed when operating

Connected Pumps Test Method



- Next Steps:
 - Depending on stakeholder comments, DOE will update TM
 - DOE will contact manufacturers to discuss
 - Comments and additional changes to TM
 - Validation testing of TM

Additional Comments/Questions?

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Connected Criteria Development Timeline



Draft 2 Connected Criteria	August 2014
Draft 2 Comments due to EPA	September 19, 2014
Final Draft Connected Criteria	October 2014 *
Final Draft Comments due to EPA	November 2014 *
Final Connected Criteria	Nov/Dec 2014 *

* Subject to change depending on input and resources

Contact Information



Please send any additional comments to
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