



# ENERGY STAR Program Requirements for Pool Pumps

## **Certification Body Training** January 29, 2013

**U.S. Environmental Protection Agency**  
**U.S. Department of Energy**



Learn more at [energystar.gov](http://energystar.gov)

# Webinar Details



- Webinar and application materials will be posted to [www.energystar.gov/CBresources](http://www.energystar.gov/CBresources)
  - Audio provided via conference call in:
    - Toll-free: **+1 (877) 423-6338**
    - Toll: **+1 (571) 281-2578**
    - Participant code: **356609**
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- Phone lines will remain open during discussion
  - Please keep phone lines on mute unless speaking

# Agenda

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- 1 Introduction
- 2 Evaluating Pumps for Certification
- 3 Reporting Requirements and Data Submission
- 4 Test Method Q & A
- 5 Next Steps and Questions

# Introduction



	Introduction
	Evaluating Pumps for Certification
	Reporting Requirements and Data Submission
	Test Method Q & A
5	Next Steps and Questions

# Webinar Objectives

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1. Prepare certification body staff to evaluate Pool Pumps for ENERGY STAR certification
2. Describe reporting requirements and data submission processes
3. Address any test method questions



# Certification Timeline

Today:  
Training Webinar

This week: Revised CB  
Applications available

Mid Feb:  
EPA announces  
recognized CBs

March:  
EPA posts QPL

CBs submit  
applications to  
EPA

CBs certify products  
and submit data via  
QPX

**February 15, 2013:**  
*Specification Published*

# Application Process



- Once the revised applications are available, EPA will begin accepting applications for recognition. The application will be posted at [www.energystar.gov/CBresources](http://www.energystar.gov/CBresources)
- Please send a signed application and evidence that you have contacted your accreditation body requesting a scope expansion for the Pool Pumps program to [certification@energystar.gov](mailto:certification@energystar.gov):
- A successful QPX test submission using the Pool Pump web service will also be a pre-requisite for recognition.
- EPA will notify CB's when the QPX is available for test submissions, but you may also check at [www.energystar.gov/qpx](http://www.energystar.gov/qpx)

# Evaluating UPSs for Certification



- 1 Introduction
- 2 Evaluating Pumps for Certification
- 3 Reporting Requirements and Data Submission
- 4 Test Method Q & A
- 5 Next Steps and Questions

# Key Questions for Evaluation



1. Is the model within **scope**?
2. Is the **total horsepower** within the acceptable range?
3. Does the model have **onboard pump controls**?
4. Does the model have the required **informational statement** posted on the unit?
5. Is the model part of a **product family**?



# 1. Scope: Included Products

Q. Does the model meet the **definition** (Section 1) of a **Residential Inground Pool Pump**?

- Definition: a primary filter pump intended for installation with a permanently installed Residential Inground Swimming Pool with dimensions as defined in ANSI/NSPI-5 Standard for Residential Inground Swimming Pools.
- key term – primary filter pump (main pump used to drive total residential pool circulation)

If Yes, continue. 

If No, model is not eligible for the program.





# 1. Scope: Included Products

## Q. Which **Product Type** definition applies?

Single-speed Pump: A pump which has an electric motor that operates at **only one** speed.

- Multi-speed Pump: A pump which has an electric motor that can operate at **multiple, discrete** speeds.
- Variable-speed Pump: A pump which has an electric motor that can operate at **continuously variable** speeds.
- Variable-flow Pump: A pump which has an electric motor that can operate at continuously variable speeds, with **added controls that automatically adjust speed to control flow**.

**Pool pumps usually fall into one of these categories.** 

**If no definition applies, the model is not eligible.** 

# 1. Scope: Excluded Products



Q. Does the product meet any of the following **definitions** (see Section 1) of excluded products:

- **Residential Aboveground Pool Pumps**
- **Residential Auxiliary Pool Pumps**
- **Spa Pumps**

**If Yes, model is not eligible for the program.**



**If No, continue.** ➡

# 1. Scope: Excluded Products



Q. Does the product meet the following description of an excluded product type:

- **Multi-speed pump with manual pump controls that are not sold ready to connect to external pump controls**
- *Example: two speed pump with three way toggle switch – high/off/low –which requires mechanical removal of the switch to access the wires for connection to external pump controls.*

**If Yes, model is not eligible for the program.**

**If No, continue.** →



# 1. Scope: Excluded Products



Q. Is the product **single phase**?

**If YES, continue.** 

Q. Is the product **two or three phase**?

**If YES, model is not eligible for the program.**



## 2. Total Horsepower



Q. Is the **total horsepower** within the acceptable range?

To calculate the total horsepower for a product, utilize the following equation:

$$\text{Total Horsepower} = \text{Rated Horsepower} \times \text{Service Factor}$$

***Example:***

- ***A 1.5 HP rated pump with a 1.65 service factor produces **2.475 HP (Total Horsepower)** at the maximum Service Factor point.***

## 2. Total Horsepower



Model must be  $0.5 >$  and  $\leq 4$  Total HP

If YES, continue. 

*Example: From previous slide, the pump with 1.5 HP rating and 1.65 service factor at 2.475 HP (Total Horsepower) therefore the product is eligible*

If NO, model is not eligible for the program.



# 3. Pump Controls



Q. Does the model have **onboard pump controls**?

**Pump Controls** definition: a switch or variable frequency drive either external to or onboard the pump that is capable of switching between multiple operating speeds.

Examples:



If Yes, check if they meet pump controls criteria (next slide).

If No, continue. →

# 3. Pump Controls



Q. Do the **onboard pump controls** meet the following 3 mandatory criteria?:

1. Pump controls shall have the capability of operating the Pool Pump at a minimum of two speeds.
2. The control's default filtration speed setting shall be no more than one-half of the motor's maximum rotation rate.
3. Any high-speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.

If Yes, continue. 

If No, the product is not eligible for the program.



# 4. Informational Statement



Q. Does the model have the required **informational statement** posted on the unit?

- For Multi-speed, Variable-speed, and Variable-flow pool pumps **without onboard pump controls**, the following statement should be placed permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/4", with the nameplate HP of the pump with the statement,
  - *“This pump must be installed with a multi-, or variable-speed pump motor controller.”*

**If No, the product is not eligible for the program.**



**If Yes, continue.** 



# 5. Product Family

## Q. Is the model part of a **product family**?

A model is determined to be within the same **Product Family** as a representative model if:

- Same manufacturer and same basic design (i.e., identical motor and wet-end design)
- May have differences between models within the same family, as long as it does not impact product performance, including:
  - *Product color*
  - *Rated Horse power (total Horse power is not an acceptable variation)*
  - *Type or presence of union fittings*

**If Yes, the test of the representative model applies to this model.** →

**If No, the model must be tested.**

# Questions

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- The line is now open to receive any questions related to **Evaluating Pool Pumps for Certification.**

# Key Questions for Evaluation



1. Is the model within **scope**? ✓
2. Is the **total horsepower** within the acceptable range? ✓
3. Does the model have **onboard pump controls**? ✓
4. Does the model have the required **informational statement** posted on the unit? ✓
5. Is the model part of a **product family**? ✓

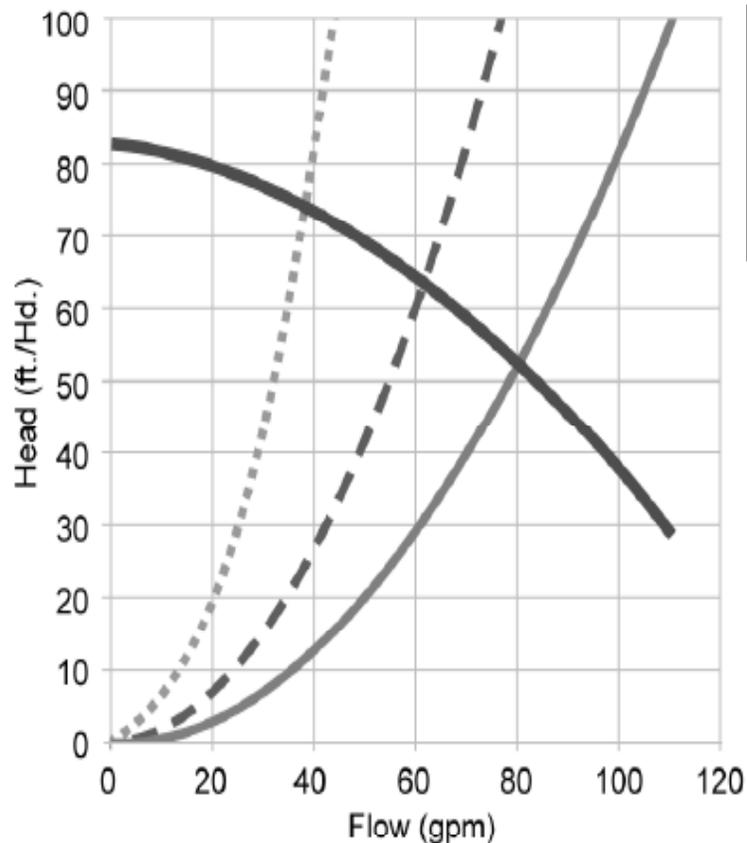
*Model now ready for evaluation against efficiency requirements*

# Pool Curves



- A **pump curve** is a diagram that shows how many gallons of water can be moved by a particular pump given multiple resistances (pressure or head) on the pump.
- A **pool curve** is a diagram that shows how many gallons of water can be moved through a pool's piping given multiple pressures put on the system.
  - Curve A is considered the most typical pool.
  - Curve B is a more restrictive pool and
  - Curve C is a less restrictive pool.
- EPA uses Curve A for qualification purposes but will post the Energy Factor for Curve B and C on the QPL

# Testing Curves



Curves A , B, and C Energy Factor (EF) data must be reported.

Only Curve A EF is used to evaluate the product.

- Curve A:  $H = 0.0167 \times F^2$   
(for approximately 2.0 in./51 mm pipe)
- Curve B:  $H = 0.050 \times F^2$   
(for approximately 1.5 in./38 mm pipe)
- Curve C:  $H = 0.0082 \times F^2$   
(for approximately 2.5 in./64 mm pipe)

Where:  
H is the total system head in feet of head.  
F is the flow rate in gallons per minute (gpm).

# Energy Efficiency Criteria



## Pool Pump Energy Factor Criteria at Pool Performance Curve A

Pump Sub Type	Speed Setting	Energy Efficiency Level
Single-speed Pump	Single Speed	EF $\geq$ 3.80
Multi-speed, Variable-speed and Variable-flow Pump	Most Efficient Speed	

# Questions

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- The line is now open to receive any questions related to the **Evaluation Against Efficiency Requirements.**

# Reporting Requirements and Data Submission



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# Using the QPX



- Each Product Family should have at least one data submission
- Product Family is defined as
  - made by the same manufacturer,
  - Meets the same ENERGY STAR efficiency criteria
  - Same common basic design (identical motor and wet-end design)
- Product models within a family may differ from each other if:
- Differences of one or more characteristics or features that have no impact on product performance with regard to ENERGY STAR qualification criteria
- Acceptable variations within a product family include:
  - Product color
  - Rated Horse Power (Total Horse Power is not an acceptable variation)
  - The type or presence of union fittings

# Reporting Requirements



A successful QPX test submission using the Pool Pump web service will be a pre-requisite for CB recognition.

CBs shall report the following data to EPA which includes both tested and verified data and manufacturer provided information:

- General Characteristics
  - Speed setting, Speed, Motor design, Motor construction, Nameplate HP, Service Factor, Total HP
- ENERGY STAR Efficiency Values for Curve A for qualification
  - Flow, Power and Energy factor
- ENERGY STAR Efficiency Values for Curve B and C
  - Flow, Power and Energy factor

*Fields are specified in the data reporting template (QPX)*

# Questions

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- The line is now open to receive any questions related to **Reporting Requirements and Data Submission**.

# Test Method Q & A



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# Pool Pump Test Method



- DOE finalized the test method for ENERGY STAR Pool Pumps in January 2013
  - Active Mode Data Set for all pumps
    - Report the following values for each speed tested at all 3 test curves (A, B, and C):
      - Motor nominal speed in rotations per minute (RPM)
      - Rate of flow in gallons per minute (GPM)
      - Power in watts
      - Energy Factor in gallons per watt-hour (gal/Wh)
    - Pump performance curve reported for each speed tested
  - Standby Mode Data Set
    - Average Power in watts

# Pool Pump Test Method



- Pump test speeds based on Pump type:

Pump Type	Speeds Tested	# of Active Mode Data Sets Reported
Single-speed	- Rated speed	1
Multi-speed	- All rated speeds	Varies (most likely 2-3)
Variable-speed and Variable-flow	- Minimum - Maximum - Most efficient	3

# Questions

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- The line is now open to receive any questions related to the **Test Method**.

# Next Steps and Questions



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# Contact Information



Please send all questions to:

- Certification: [certification@energystar.gov](mailto:certification@energystar.gov)
- Technical Assistance: [poolpumps@energystar.gov](mailto:poolpumps@energystar.gov)

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# References and Resources

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- Certification Body Resources (including application form):  
[www.energystar.gov/CBresources](http://www.energystar.gov/CBresources)
- ENERGY STAR Pool Pumps specification development:  
Go to [www.energystar.gov/NewSpecs](http://www.energystar.gov/NewSpecs) and Click on “Pool Pumps”