

DOCKETED

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Filer:	Ryan Nelson
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Results of Invitation to Participate: Tub Spout Diverters

Phase II: Appliance Efficiency Pre-Rulemaking
Appliances & Outreach & Education Office
Efficiency Division

Jessica Lopez
Energy Analyst

California Energy Commission: Rosenfeld Hearing Room
July 20, 2017



Agenda

- Purpose
- Information Requested
- Discuss Responses
- General Comments
- Next Steps



Purpose

- The Energy Commission is gathering information for Phase 2 products in its appliance efficiency rulemaking.
- The Invitation to Participate (ITP) is an opportunity for stakeholders to provide information and data that will help shape the Energy Commission's policy regarding Phase 2 appliances.



Purpose

- The ITP requested information and data on the following topics:
 - Commercial and Industrial Fans & Blowers
 - General Service Lamps
 - Spray Sprinkler Bodies
 - Tub Spout Diverters
 - Irrigation Controllers
 - Set-Top Boxes
 - Low Power Modes & Power Factor
 - Solar Inverters



Purpose

- During this workshop, we will discuss the information and data submitted for Tub Spout Diverters.



Respondents to Invitation to Participate

- Kohler
- Lixil Water Technology Americas (LWTA)
- Plumbing Manufacturers International (PMI)
- U.S. Environmental Protection Agency's (EPA) WaterSense® Program



Information Requested

- Product Definition & Scope
- Existing Standards & Standards under Development
- Existing Test Procedures
- Sources of Test Data
- Product Lifetime
- Product Development Trends
- Maintenance, Operation, and Function
- Water Savings & Efficiency
- Costs
- Market Characteristics
- Consumer Acceptance Issues



Product Definition & Scope

- Respondents suggest updating current CA definitions:
 - Tub spout diverter, Showerhead-tub spout diverter combination, and Lift-, Pull-, Turn-, and Push-Type
- WaterSense Definitions: Bath and shower diverter, Tub spout diverter, Tub-to-shower diverter
 - Revision of the definition for “tub-to-shower diverter”
 - Inclusion of roman tub faucets and clawfoot tub faucets
- ASME A112.18.1/CSA B125.1 terms:
 - Diverter, Bath and shower diverter, Tub spout diverters, Tub-to-shower diverters, and Automatic reset diverter



Product Definition & Scope

- Discussion
 - If CA terms are updated, what terms and definitions should replace them?
 - Are there other definitions the Energy Commission should consider?



Existing Standards & Standards under Development

- California currently regulates the leakage rate for tub spout diverters when new and after 15,000 cycles of diverting.
- WaterSense has compiled a Notice of Intent (NOI) to Develop a Draft Specification for Bath and Shower Diverters to reduce the leakage rate.
 - WaterSense anticipates releasing its draft specification for this product category this summer and release its final specification by the end of the calendar year.



Existing Test Procedures

- Current test procedure for tub spout diverters in California: ASME A112.18.1-2012/CSA B125.1-12 Section 5.3.6 and Section 5.6.1.5.
- Respondents noted the database contains many tub spout diverters that appear to be zero leakage, but may not be since the test measurements are rounded to the hundredths of a gpm.



Existing Test Procedures

- Discussion
 - How is leakage volume collected and how is it measured? For example, is the leakage volume collected using a catch can/beaker/graduated cylinder and measured in milliliters?
 - Is there preference to measure or report leakage in mL/min as in ASME/CSA?
 - How many significant digits are retained when converting to gallons/minute from mL/min?
 - Is 0.005 gpm and below considered 0.00 gpm?



Sources of Test Data

- Sources of data include Modernized Appliance Efficiency Database System (MAEDBS) and test reports requested by the Energy Commission.
- Discussion
 - The Energy Commission is interested in receiving additional test data and field studies.



Product Lifetime

- Product lifetime is highly variable depending on use, water quality, and manufacturer.
- Discussion
 - WaterSense estimated ~22.8 years as the product lifetime; is this value representative of the lifespan for a tub spout diverter?



Product Development Trends

- Product development efforts are proprietary.
- Discussion
 - Is there a consumer preference driving manufacturers to develop/redesign a particular type of tub spout diverter?



Maintenance, Operation, and Function

- WaterSense NOI provided the following information:
 - The average duration of a shower is 7.8 minutes.
 - The typical number of showers per capita per day is 0.70 showers per person per day.
- Respondents indicated diverter mechanisms vary by diverter type and by manufacturer.
- Respondents indicated hard water causes diverters to leak over time.



Maintenance, Operation, and Function

- Discussion
 - Are the shower durations and use values representative of California?
 - How does industry define the various diverter mechanisms (e.g. lift-gate, positive shut-off)?
 - Are products tested against other water quality characteristics, other than those in ASME/CSA?



Water Savings and Efficiency

- WaterSense's NOI provides water savings data and field studies related to leakage.
 - Leakage data for a study referenced in the NOI is now available.
- Energy Commission would apply a percentage based on households in California compared to households nationwide to WaterSense data.



Water Savings and Efficiency

- Discussion
 - Can the data be extrapolated to be representative of California savings?
 - The Energy Commission is interested in receiving additional studies showing water savings.



Costs

- Staff requested information for costs per unit, the cost difference between products with and without water-saving features, incremental costs to improve the device, and water delivery costs.
 - No comments were received.
- Discussion
 - The Energy Commission is interested in receiving reliable cost data for tub spout diverters.
 - When considering proposals as part of the ITSP, please identify the least cost pathway to comply.



Market Characteristics

- Installed Base Characteristics
 - Staff assumes existing installed base of 1 unit per household, equivalent to 8.1 million single - detached homes.
- Market Characteristics
 - WaterSense concluded that most “lift-type” diverters and many “pull-type” diverters are characterized as automatic reset diverters.
 - Staff assumes 70 percent are automatic reset diverters, remainder are manual reset diverters.
 - Staff assumes new sales are equivalent to newly built residential home sales, retrofits, remodels, and replacements.



Market Characteristics

- Respondents indicated a significant increase in replacement of tub/shower combinations with shower only installations.
- No comments were received in regards to small businesses.



Market Characteristics

- Discussion
 - The Energy Commission is interested in receiving additional data on current installations of tub spout diverters.
 - Are these values reasonable estimates for California?
 - What is the source of this replacement trend? Is this trend representative of California?
 - Do small businesses in CA play a role in the manufacturing, sale, or installation of these products?



Consumer Acceptance Issues

- Respondents indicated it would be extremely difficult for automatic reset diverters to achieve 0.0 gpm leakage rate.
 - Reducing the leakage rate to zero will prevent automatic reset diverters from resetting to the tub position (hydraulic lock) which in turn, prevents the column of water between the diverter and the showerhead to escape due to no pressure relief.
 - Potential thermal shock to the next user.



Consumer Acceptance Issues

- WaterSense indicated the two decimal point level of precision allows a small of leakage, up to 0.005gpm, that could ensure the automatic reset function is maintained.
- WaterSense concluded that most “lift-type” diverters and many “pull-type” diverters are characterized as automatic reset diverters.



Consumer Acceptance Issues

- Discussion
 - How does an automatic reset diverter function? Explain for different types of diverter mechanisms (e.g. gate, positive shut-off, push button, rotating valve, etc.).
 - Explain what a hydraulic lock is.
 - Is there evidence of thermal shock to users?
 - Is WaterSense's characterization a reasonable assumption?
 - Are there products that can achieve zero leakage and that are automatic reset diverters?



General Comments

- Are there any other topics stakeholders wish to discuss?

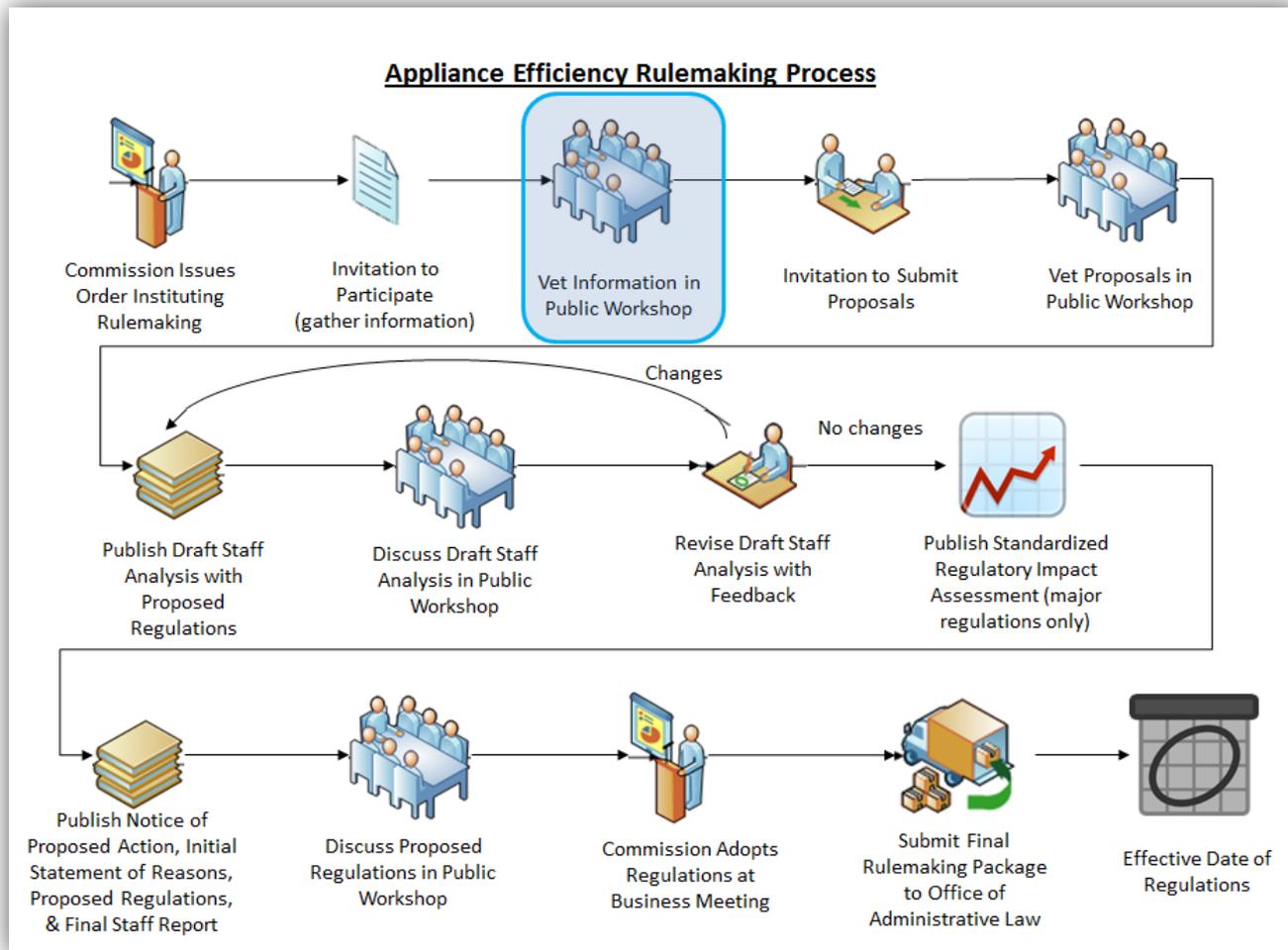


Next Steps

- Following the ITP workshops, the Energy Commission will request proposals for efficiency standards or measures.
- ITSP Webinar to explain proposal process and template on August 1, 2017.
- Proposals may be submitted until September 1, 2017.
- Additional comments on this topic may be submitted to Commission Docket 17-AAER-09.



Public Participation





Discussion & Comments

Jessica Lopez

Jessica.Lopez@energy.ca.gov

(916) 654-1525

Docket #17-AAER-09

docket@energy.ca.gov