GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 38

CODE: Plumbing Code SECTION: 202 & 604.4

PROPONENT: Andrew Morris for the Metropolitan North Georgia Water Planning District DATE: October 30, 2018

EMAIL: amorris@atlantaregional.org

ADDRESS: 229 Peachtree St. NE, International Tower, Suite 100, Atlanta, GA 30303

TELEPHONE NUMBER: (470) 378-1549 FAX NUMBER: (404) 463-3205

CHECK ONE:

- ☒ Revise section to read as follows: See **Attachment A**
- ☐ Add new section to read as follows:
- ☐ Delete section and substitute the following:
- ☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION: This amendment includes a reduction in the maximum flow rates for the following plumbing fixtures: (a) lavatory faucets (private) (1.5 gallons per minute ("gpm") to 1.2 gpm), (b) kitchen faucets (2.0 gpm to 1.8 gpm), and (c) shower heads (2.5 gpm to 2.0 gpm). Relatedly, this amendment includes two additional exceptions to allow for higher flows in certain applications. This amendment does not include any changes or restrictions related to multiple showerheads or body sprays. This amendment is based on the Metropolitan North Georgia Water Planning District's (the "District's") Staff Recommendation Memorandum included as **Attachment B**, which was unanimously approved by the District's Governing Board on May 23, 2018. Please also see the District Staff Supplemental Information Memorandum included as **Attachment C** for additional background.

REASON/INTENT: This amendment is intended to further Georgia's and the District's efforts to promote water efficiency and to reduce water demands from indoor water uses. The Georgia Water Stewardship Act of 2010 specified maximum flow rates for certain fixtures like toilets, and these maximums have been incorporated into current standards by DCA. These maximum water flow rates substantially reduced indoor water use and water supply demands in Georgia. This has resulted in savings to consumers on water and sewer bills, allowed utilities (and rate payers) to defer and/or avoid substantial infrastructure investments to meet future water demands, and enhanced water supply resiliency during droughts by reducing base indoor water demands.

The fixtures covered by this amendment are the top indoor water users in homes after toilets and reflect advancements in plumbing fixture technology and performance since the Water Stewardship Act. Approving this amendment will further reduce future water demands, thereby protecting our limited water resources, especially during times of drought. The District estimates that using fixtures with the flow rates specified in this amendment would result in statewide water withdrawal reductions of approximately 7.7 billion gallons per year (or 21 million gallons daily) by the year 2030 (See **Attachment C**), These saving will help Georgia continue stewarding our water resources to further enhance our water supply resiliency during droughts, support our economic growth, and help maintain Georgia's leadership status both in the southeast and nationwide. This will further benefit both consumers and utilities, as described above.

FINANCIAL IMPACT OF PROPOSED AMENDMENT: The fixtures required by this amendment are widely available today from numerous manufacturers and retailers at prices either comparable to or lower than those fixtures currently required. See the section and related attachments on Fixture Availability and Financial Impact in **Attachment B**. Also see **Attachment B** for supporting information on performance testing and technical considerations. This amendment would result in estimated annual savings for the average household of between $31.76 to $67.98 on water, sewer, and energy bills. See **Attachment C** for details.

Attachment A

Revised Plumbing Code Section

Section 202 General Definitions

High Efficiency Plumbing Fixtures and Fittings

* * * * *

Kitchen faucet or kitchen faucet replacement aerator. A kitchen faucet or kitchen faucet replacement aerator that allows a flow of no more than 1.8~~2.0~~ gallons of water per minute at a pressure of 60 pounds per square inch and conforms to the applicable requirements in ASME A112.18.1/CSA B125.1.

* * * * *

Lavatory faucet or lavatory faucet replacement aerator. A lavatory faucet or lavatory faucet replacement aerator that allows a flow of no more than 1.2~~5~~ gallons per minute at a pressure of 60 pounds per square inch and is listed to the WaterSense High Efficiency Lavatory Faucet Specification.

* * * * *

Shower head. A shower head that allows a flow of no more than the average of 2.0~~5~~ gallons of water per minute at 8~~6~~0 pounds per square inch of pressure and is listed in the WaterSense Specification for Showerheads.

* * * * *

604.4 Maximum Flow and Water Consumption

The maximum water consumption flow rates and quantities for all plumbing fixtures and fixture fittings shall be in accordance with Table 604.4.

Exceptions:

1. Blowout design water closets having a water consumption not greater than $3^1/_2$ gallons (13 L) per flushing cycle.
2. Vegetable sprays.
3. Clinical sinks having a water consumption not greater than $4^1/_2$ gallons (17 L) per flushing cycle.
4. Laundry tray sinks and ~~,~~ ~~S~~service sinks.
5. Emergency showers and eye wash stations.

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY[b]
Lavatory faucet and replacement aerators, private	1.~~2~~5 gpm at 60 psi[f, g]
Lavatory faucet, public (metering)	0.25 gallon per metering cycle[g]
Lavatory, public (other than metering)	0.5 gpm at 60 psi[g]
Showerhead[a]	~~2.5~~2.0 gpm at 80~~60~~ psi[f]
Kitchen ~~Sink~~ faucet and replacement aerators	~~2.0~~1.8 gpm at 60 psi[f, h]
Urinal	0.5 gallon per flushing cycle[f]
Water closet	1.28 gallons per flushing cycle[c, d, e, f]

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m,
1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.

c. For flushometer valves and flushometer tanks, the average flush volume shall not exceed 1.28 gallons.

d. For single flush water closets, including gravity, pressure assisted and electro-hydraulic tank types, the average flush volume shall not exceed 1.28 gallons.

e. For dual flush water closets, the average flush volume of two reduced flushes and one full flush shall not exceed 1.28 gallons.

f. See 2014 GA Amendment to Section 301.1.2 'Waiver from requirements of high efficiency plumbing fixtures'.

g. Private lavatory faucet means those installed in residences, apartments, and private bathrooms in lodging, hospitals, and patient care facilities (including skilled nursing and long-term care facilities. Public lavatory faucet means those installed in all other bathrooms of buildings or occupancies.

h. Kitchen faucets are permitted to temporarily increase the flow above the maximum rate, but not to exceed 2.2 gpm (8.3 L/m) at 60 psi (414 kPa), and must revert to a maximum flow rate of 1.8 gpm (6.8 L/m) at 60 psi (414 kPa) upon valve closure.

Attachment B

District Staff Recommendation Memorandum
As Unanimously Approved by the District Board on May 23, 2018

The memorandum begins on the following page.

Metropolitan North Georgia Water Planning District
International Tower | 229 Peachtree St., NE | Suite 100 | Atlanta, GA 30303

MEMORANDUM

Date: **May 18, 2018**

To: **Members of the Board**

From: **Andrew Morris**
Neela Ram

RE: **Staff's Recommendation on Proposed Amendments to the Georgia State Minimum Standard Plumbing Code on Plumbing Fixture Water Efficiency**

Background. Georgia and metro Atlanta have long been leaders in plumbing fixture water efficiency. In 2010 the Georgia General Assembly passed the Georgia Water Stewardship Act, which addressed plumbing fixture efficiency, among other things. Specifically, the Georgia Water Stewardship Act required that the Georgia Department of Community Affairs ("DCA") establish standards that include, without limitation, high-efficiency plumbing fixtures that use no more than a certain maximum flow rate or flush volume. DCA complied with the Water Stewardship Act by incorporating fixture efficiency requirements at or below the maximum into the Georgia State Minimum Standard Plumbing Code ("Georgia PC"). While Georgia remains a leader in plumbing code efficiency today, advancements in technology now offer Georgia and metro Atlanta another chance to consider how we can continue improving plumbing fixture efficiency and maintain our leaderships status into the future.

DCA is scheduled to begin a major update of the Georgia PC in the second half of 2018, which covers plumbing fixture efficiency standards, among other things. Once the final Georgia PC is adopted by DCA, all local governments must adopt the Georgia PC with an effective date of January 1, 2020. As part of the DCA update process, the Metropolitan North Georgia Water Planning District ("District") may submit proposed amendments to DCA for consideration as part of the Georgia PC.

Staff Recommendation. Based on the research and data outlined in this memorandum, staff recommends that the District pursue changes to the Georgia PC to increase the water efficiency of

showerheads, lavatory faucets (private),[1] and kitchen faucets. This will involve submitting an amendment to DCA substantially in the form of Attachment A.

Reason and Intent. The proposed amendments to the Georgia PC will increase the water efficiency of showerheads, lavatory faucets (private), and kitchen faucets, which are the top indoor water users in the home after toilets.[2] Further progress on water stewardship, through efforts like adopting the proposed efficiency standards, is important to the District and the State of Georgia. This effort will help us build on our successes in using our water reasonably and becoming more resilient through droughts. Our supporting research shows that these more efficient fixtures are widely available from a large variety of manufacturers at comparable prices to fixtures currently required by the Georgia PC. Based on testing, research, and experience of early adopters, the more efficienct fixtures perform well and should not negatively impact drainage systems, including drainline transport.

Description of Proposed Amendments. Staff is proposing the following efficiency standards:

Plumbing Fixture	Current Efficiency Standards	Proposed Efficiency Standards
Showerhead	2.5 gpm or less	2.0 gpm or less + WaterSense
Lavatory Faucet (Private)	1.5 gpm or less + WaterSense	1.2 gpm or less + WaterSense
Kitchen Faucet	2.0 gpm or less	1.8 gpm or less*

*Kitchen faucets would be permitted to include an option to temporarily increase the flow up to 2.2 gpm and then automatically revert upon valve closure.

See Attachment A for a draft of our proposed amendment to the Georgia PC, which is redlined against the current Georgia PC and includes detailed language on the proposed amendments. The attached draft also includes some clarifications to ensure that other fixture types that require higher flow rates are more clearly exempted. If this recommendation is approved by the board, District staff will submit an amendment in the form of, or substantially similar to, Attachment A.

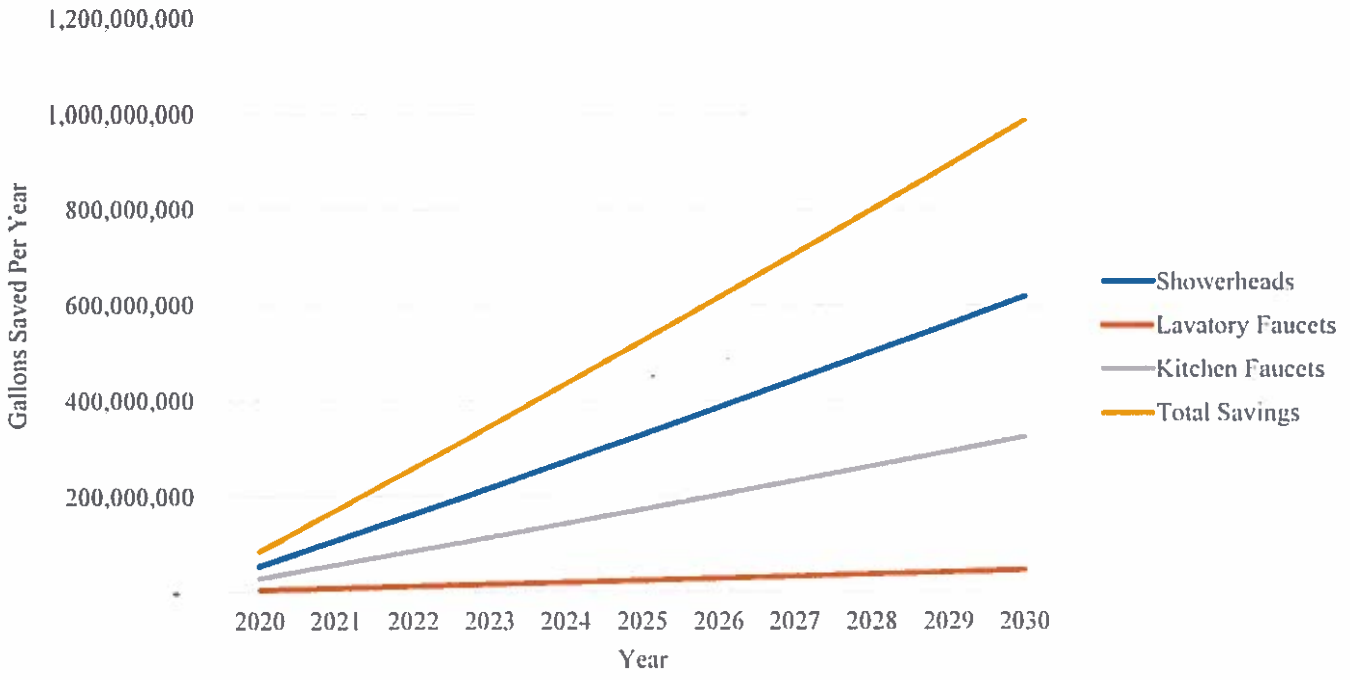
District-Wide Water Savings Estimates by 2030.

If the proposed efficiency standards are adopted, these more efficient fixtures will be installed in all new homes and in existing homes as fixtures are naturally replaced. By 2030, the District would save approximately 1,000,000,000 more gallons per year (or 2.74 million gallons daily) as a direct result of the proposed efficiency standards becoming mandatory as part of the Georgia PC. We recognize that retail stores and new homes already include some fixtures that meet the proposed efficiency standards based on consumer choice. Our savings estimates in Figure 1 are based only on the portion of homes that, absent a change to the Georgia PC, we estimate would not otherwise include fixtures meeting the proposed efficiency standards.

[1] Lavatory faucets (private) means bathroom faucets installed in residences, apartments, and private bathrooms in lodging, hospitals, patient care facilities.

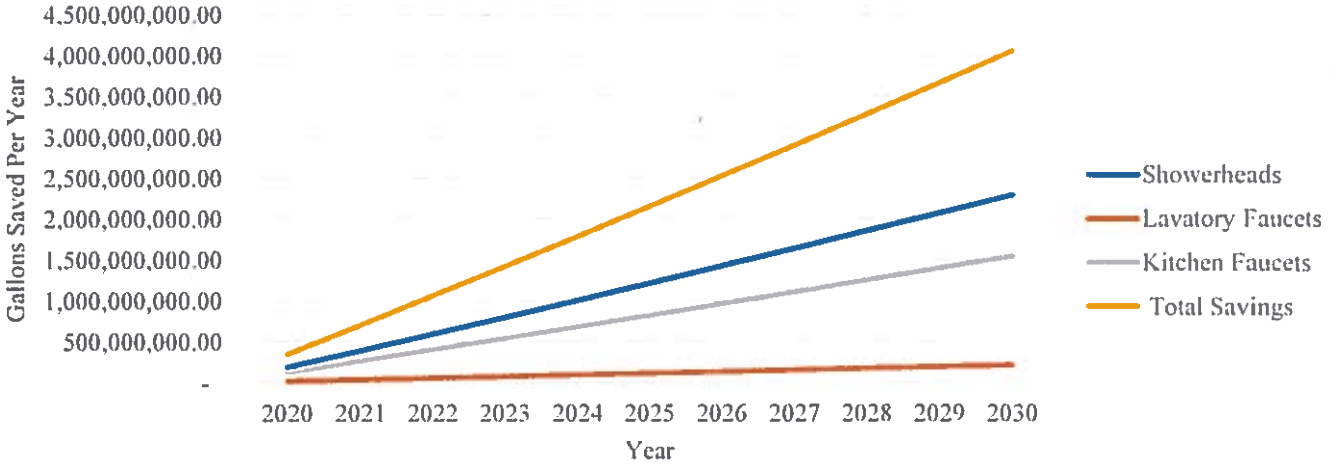
[2] See Figure 1 on page 5 of Residential End Uses of Water, Version 2 Executive Report, Water Research Foundation (April 2016) available at https://www.awwa.org/portals/0/files/resources/water%20knowledge/rc%20water%20conservation/residential_end_uses_of_water.pdf.

Figure 1
Annual Water Savings in the District
Resulting from Georgia PC Changes



Looking more broadly at the estimated water savings, switching completely to showerheads, lavatory faucets (private), and kitchen faucets that meet the proposed efficiency standards, whether due to consumer choice or the requirements in the Georgia PC, will result in significant water savings. Our savings estimates in Figure 2 are based on the total savings from switching to the proposed efficiency standards regardless of whether such changes are due to consumer choice or a change in the Georgia PC. By 2030, the District would save in total approximately 4,000,000,000 gallons per year (10.96 million gallons daily) compared to using fixtures that only meet the current efficiency standards.

Figure 2
Annual Water Savings in District
Resutling From Georgia PC Change
And Consumer Choice



Our calculations of water savings are based on WaterSense data and methodologies. Based on ARC data, US Census data, and information from the National Association of Home Builders, we are assuming that new housing stock will be added at a rate of 1% a year through 2030. To estimate the annual water savings from replacements, we used data from a report commissioned by Plumbing Manufacturers International on the ratio of fixtures sold for replacements versus new construction.[3] These estimates are based on natural replacement rates for these fixtures without a rebate program. Our estimates of water savings are intended to provide a general sense of the magnitude of estimated savings District-wide by 2030. Please let us know if you'd like a copy of our calculations and citations to all of our sources.

Fixture Availability and Financial Impact. Based on our data collection and research, plumbing fixtures that meet the proposed efficiency standards are widely available from a large variety of manufacturers at comparable prices. As a result, there should be no significant cost increases associated with adopting the proposed efficiency standards. Consumers will realize cost savings from lower water and sewer bills as well as lower energy bills associated with avoided hot water heating.

A. *Data on Fixtures in Retail Stores*. District staff visited physical stores, or reviewed offerings online, at a total of 6 retail stores in the District, 3 stores in Columbus, GA, and 3 stores in Dalton, GA. We chose Home Depot, Lowe's, and WalMart based on their high sales volumes and large shares of the marketplace. We chose retail stores instead of plumbing suppliers like Ferguson,

[3] US Market Penetration of WaterSense Showherheads, Lavatory Faucets and Toilets, July 2015, a GMP Research Industry Report commissioned by Plumbing Manufactuers International available at https://www.safeplumbing.org/files/safeplumbing.org/documents/press_release_downloads/9-15-15-WaterSense-market-penetration-study.pdf

Grainger, etc., because retail stores offered the most readily available pricing data. Furthermore, relative pricing differences between fixtures that meet the current versus proposed efficiency standards should show up in retail store pricing if there are price differentials based on the cost of the technologies needed to meet the proposed efficiency standards. See Attachment B for the data we collected from these stores. The retail data includes showerheads, lavatory faucets (private), and kitchen faucets. Based on the retail store data, our observations are as follows:

1. 12 of 12 stores offered showerheads, lavatory faucets (private), and kitchen faucets that meet the proposed efficiency standards.

2. Fixtures meeting the proposed efficiency standards are available from a wide variety of manufacturers, including

Fixture	Manufactures
Showerhead	American Standard, AquaSpa, DANCO, Delta, Glacier Bay, Kohler, Moen, Oxygenics, Peerless, Pfister, Waterpik
Lavatory Faucet (Private)	American Standard, AquaSource, Delta, Giagni, Glacier Bay, Grohe, Jacuzzi, Kohler, Mainstays, Moen, Peerless, Pfister, ProjectSource, Vigo
Kitchen Faucet	American Standard, AquaSource, Delta, Giagni, Glacier Bay, Grohe, Kohler, Kraus, Mainstays, Moen, Peerless, Pfister, ProjectSource

3. When comparing at each store the least expensive fixture meeting the proposed efficiency standard to the least expensive fixture meeting the current efficiency standard, we found that:

- In 7 of 12 stores, a showerhead meeting the proposed efficiency standard was the least expensive option.
- In 11 of 12 stores, a lavatory faucet (private) meeting the proposed efficiency standard was the least expensive option.
- In 10 of 12 stores, a kitchen faucet meeting the proposed efficiency standard was the least expensive option.

4. Overall, the lowest prices observed at any store are as follows:

Fixture	Meets Current Efficiency Standard	Meets Proposed Efficiency Standard
Showerhead	$2.98	$2.27
Lavatory Faucet (Private)	$19.97	$9.97
Kitchen Faucet	$12.97	$12.97

As seen in the table above, when comparing the stores collectively, the lowest price we found for all three fixtures among the 12 stores were those that meet the proposed efficiency standards. Given the low prices available in the marketplace, we believe the pricing differences seen from store to store are a matter of fixture selection by individual stores rather than a true cost difference between fixtures meeting the current versus proposed efficiency standards.

B. *Sample of Fixtures in New Residential Construction.* Staff visited and examined the fixtures in a single-family home development, a townhome development, and three multi-family developments in metro Atlanta constructed within the last two years. See Attachment C for the date we collected. Our observations are as follows:

- 4 of 5 used showerheads rated at 2.0 gpm or lower
- 3 of 5 used lavatory faucets rated at 1.2 gpm or lower
- 3 of 5 used kitchen faucets rated at 1.8 gpm or lower

While this is a relatively small sample size, these results are similar to the data from retail stores showing that fixtures meeting the proposed efficiency standards are becoming widely used. One would expect a developer to choose plumbing fixtures based on up-front costs and other factors that are indirectly valuable to the developer (like marketing advantages and consumers' expectations on style, quality, and performance). Given that none of these residential developments were marketed on their water efficiency based on our review, it's reasonable to conclude that these developers chose fixtures that meet the proposed efficiency standards because they were available at a competitive cost and meet consumers' preferences on style, quality, and performance.

C. *Water and Energy Cost Savings Estimates.*

To determine the average household cost savings, staff looked at three area utilities to estimate cost savings for water and sewer customers in the District comparing a typical household using the current efficiency standards to one using the proposed efficiency standards. By using fixtures that meet the proposed efficiency standards instead of the current efficiency standards, the typical household would save approximately 4,900 gallons per year. This would result in the following estimated savings on their water and sewer bills based on tier 1 residential water rates:

Water & Sewer Utility	Annual Water Savings	Annual Sewer Savings	Total
Cobb	$13.51	$25.80	$39.31
DeKalb	$10.61	$55.73	$66.34
Forsyth	$16.71	$23.79	$40.50

Given that all three of the fixtures included in the proposed efficiency standards also use hot water, there will also be energy savings associated with switching from the current efficiency standard to the proposed efficiency standards. Specifically, this would result in the following estimated savings on their energy bills: (a) for households using natural gas to heat their water, $15.97 per year using the May 2018 average fixed pricing of $0.54 per therm based on data available from

the Georgia Public Service Commission, and (b) for households using electricity to heat their water, $33.40 per year using Georgia Power's retail rate of $0.057 per kWh for the first 650 kWh.

Our calculations are based on WaterSense data and methodologies. They are intended to provide a general sense of the magnitude of estimated household cost savings. Please let us know if you'd like a copy of our calculations and citations to all of our sources.

Performance Testing. In addition to verifying a fixture's efficiency, fixture performance is independently tested by a third-party as part of the WaterSense certification process. The document titled *WaterSense Fixture Certification System Version 2.1* dated January 31, 2016[4] lays out the overall WaterSense certification process. The individual WaterSense fixture specifications provide the substantive performance requirements for each fixture. For example, the WaterSense specification for showerheads requires that showerheads meet both spray force criteria (Section 4.0) and spray coverage criteria (Section 5.0).[5] Requiring that all showerheads and lavatory faucets (private) be WaterSense certified will ensure that fixtures are both efficient and high-performing.

In its *Water Efficiency Management Guide – Residential Kitchen and Laundry* dated November 2017,[6] WaterSense highlights the option of replacing inefficient kitchen faucets with those using 1.8 gpm or less. WaterSense has not chosen to label kitchen faucets because kitchen faucets are used to fill pots and containers, which can take longer with high-efficiency fixtures. However, this potential drawback has been addressed in both a recent model plumbing code[7] and a California efficiency standard[8] by allowing kitchen faucets to be designed to temporarily increase the flow above the maximum rate (but not to exceed 2.2 gpm) and then revert automatically to a maximum flow rate of 1.8 gpm upon valve closure. This optionality is included in the proposed efficiency standards. It's worth noting that based on the retail store data and review of manufacturers' kitchen faucet product lines, many of the kitchen faucets staff reviewed are 1.8 gpm or even 1.5 gpm without this option. This suggests that the potential drawback of slower filling times has not been a practical barrier to consumer adoption and acceptance.

To increase their sales and profits, retailers have an obvious motivation to stock fixtures that consumers want to purchase and that are unlikely to be returned. Given that retailers are not required to sell fixtures that are more efficient than the current efficiency standards, retailers could change the mix of fixtures they are offering if these more efficient fixtures were not satisfying consumers. The large number and variety of efficient fixtures already being stocked by Home Depot, Lowe's, and Walmart based on our data offers strong support for the position that consumers are buying fixtures that meet the proposed efficiency standards and are not returning them in significant numbers.

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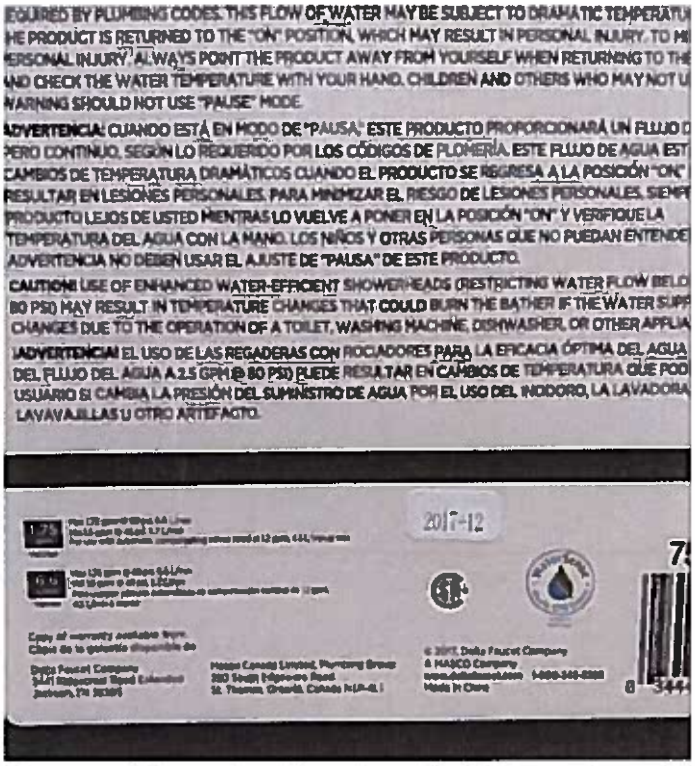
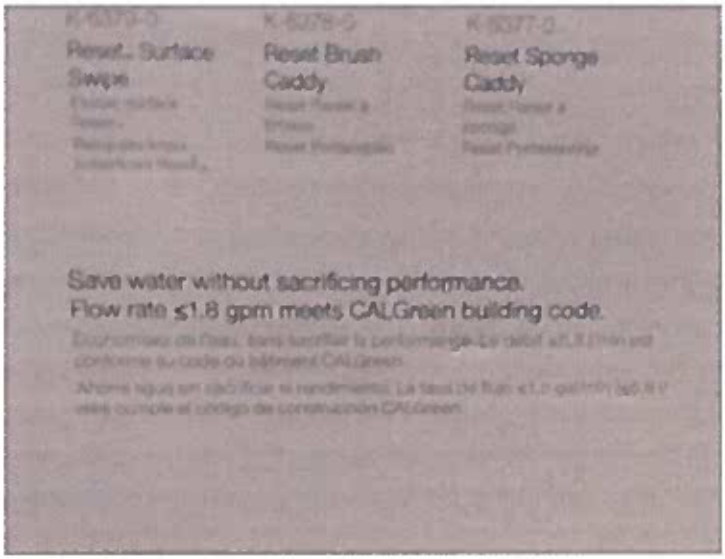
[4] Available at https://www.epa.gov/sites/fixtureion/files/2017-02/documents/ws-certification-fixture-system-v2.1.pdf.
[5] Available at https://www.epa.gov/sites/fixtureion/files/2017-01/documents/ws-fixtures-spec-showerheads.pdf.
[6] Available at https://www.epa.gov/sites/fixtureion/files/2017-10/documents/ws-commercialbuildings-waterscore-residential-kitchen-laundry-guide.pdf.
[7] *See* Chapter 402.4 of the International Association of Plumbing and Mechanical Officials, 2017 Water Efficiency and Sanitation Standard for the Built Environment;
[8] *See* 20 CA ADC § 1605.3(h)(3).

Our retail store data also suggests that many consumers are likely unaware of, and not choosing fixtures based on, fixture flow rates because finding flowrates on fixture packaging is often extremely difficult. See these examples, which are typical in our experience:



Bottom of showerhead box showing 1.75 gpm flow rate

Bottom of lavatory faucet box showing 1.2 gpm flow rate



Back of kitchen faucet box showing 1.8 gpm flow rate

Technical Considerations – Drainlines. In considering high-efficiency fixtures, one should evaluate the potential impacts to drainline transport, blockages, and maintenance. These considerations are most relevant for toilets given their primary role in transporting solid wastes, but this issue is less relevant here because the proposed efficiency standards do not include a new standard for toilets.

Showerheads, lavatory faucets (private), and kitchen faucets do provide some supplemental flows in residential settings along with other appliances like clothes washers and dishwashers. The proposed efficiency standards involve reductions in flow of 20% for showerheads, 20% for lavatory faucets (private), and 10% for kitchen faucets compared to the current efficiency standards.

Even though these supplemental flows can play a role in drainline transport of solids from toilets, it is notable that when WaterSense developed its standard for tank-type toilets of 1.28 gpf, its testing did not include ANY supplemental flows. In describing its test set-up, WaterSense reported that: "[t]o be conservative, and to keep in line with the "more difficult than average" requirement, no simulated supplemental flows (i.e., from showers, baths, laundry, etc.) were introduced to the drainline during testing."[9] If 1.28 gpf toilets are sufficient for drainline transport without any supplemental flows, then reductions to supplemental flows resulting from the proposed efficiency standards should not pose problems. Furthermore, other states and cities have adopted one or more of the proposed efficiency standards or even more efficient standards, and there is no literature or other evidence of drainliune transport problems based on the experiences of these earlier adopters.

[9] WaterSense Response to Issues Raised During Public Comment on April 2006 Draft Specifications for WaterSense labeling of Tank-Type High Efficiency Toilets, November 15, 2006, Appendix A – WaterSense Drainline Carry Testing Results, p. A-3. Available at: https://www.epa.gov/sites/fixtureion/files/2017-02/documents/ws-background-toilets-comment-response.pdf.

Attachment A
Proposed Georgia PC Amendment

DRAFT PLUMBING CODE AMENDMENTS (WITH PROPOSED CHANGES TRACKED AGAINST CURRENT PLUMBING CODE IN GEORGIA)

Section 202 General Definitions

* * * * *

Kitchen faucet or kitchen faucet replacement aerator. A kitchen faucet or kitchen faucet replacement aerator that allows a flow of no more than 1.8~~2.0~~ gallons of water per minute at a pressure of 60 pounds per square inch and conforms to the applicable requirements in ASME A112.18.1/CSA B125.1.

* * * * *

Lavatory faucet or lavatory faucet replacement aerator. A lavatory faucet or lavatory faucet replacement aerator that allows a flow of no more than 1.2~~5~~ gallons per minute at a pressure of 60 pounds per square inch and is listed to the WaterSense High Efficiency Lavatory Faucet Specification.

* * * * *

Shower head. A shower head that allows a flow of no more than the average of 2.0~~5~~ gallons of water per minute at 8~~6~~0 pounds per square inch of pressure and is listed in the WaterSense Specification for Showerheads.

* * * * *

301.1.1 Requirements for high efficiency plumbing fixtures.

The installation of high efficiency plumbing fixtures shall be required in all new construction. Construction means the erection of a new building or the alteration of an existing building in connection with its repair or renovation or in connection with making an addition to an existing building and shall include the replacement of a malfunctioning, unserviceable, or obsolete faucet, showerhead, toilet, or urinal in an existing building. **[NOTE: This language is taken verbatim from OCGA 8-2-3(b)(1), which governs requirements for toilets, showerheads, faucets, and other high-efficiency shower fixtures, but we were not able to locate this language in the current Georgia PC.]**

P2903.2 Maximum Flow and Water Consumption

Exceptions:

1. Blowout design water closets having a water consumption not greater than $3^1/_2$ gallons (13 L) per flushing cycle.

2. Vegetable sprays.

3. Clinical sinks having a water consumption not greater than 4½ gallons (17 L) per flushing cycle.

4. Floor sinks, laundry tray sinks, ~~S~~service sinks.

5. Emergency showers and eye wash stations.

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY[b]
Lavatory faucet and replacement aerators, private	1.2~~5~~ gpm at 60 psi[f, g]
Lavatory faucet, public (metering)	0.25 gallon per metering cycle[g]
Lavatory, public (other than metering)	0.5 gpm at 60 psi[g]
Showerhead[a]	~~2.5~~2.0 gpm at 80~~60~~ psi[f]
Kitchen ~~Sink~~ faucet and replacement aerators	~~2.0~~1.8 gpm at 60 psi[f, h]
Urinal	0.5 gallon per flushing cycle[f]
Water closet	1.28 gallons per flushing cycle[c, d, e, f]

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m,
1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.

c. For flushometer valves and flushometer tanks, the average flush volume shall not exceed 1.28 gallons.

d. For single flush water closets, including gravity, pressure assisted and electro-hydraulic tank types, the average flush volume shall not exceed 1.28 gallons.

e. For dual flush water closets, the average flush volume of two reduced flushes and one full flush shall not exceed 1.28 gallons.

f. See 2014 GA Amendment to Section 301.1.2 'Waiver from requirements of high efficiency plumbing fixtures'.

g. Private lavatory faucet means those installed in residences, apartments, and private bathrooms in lodging, hospitals, and patient care facilities (including skilled nursing and long-term care facilities. Public lavatory faucet means those installed in all other bathrooms of buildings or occupancies.

h. Kitchen faucets are permitted to temporarily increase the flow above the maximum rate, but not to exceed 2.2 gpm (8.3 L/m) at 60 psi (414 kPa), and must automatically revert to a maximum flow rate of 1.8 gpm (6.8 L/m) at 60 psi (414 kPa) upon valve closure.

Attachment B

Retail Store Fixture Offerings

Store Information

Store Name: Home Depot	Store Address: 5300 Windward Pkwy, Alpharetta, GA 30004
Date of Visit: March 30, 2018	Staff Person: Monica Perry



Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	1	15	11	1
Total WaterSense	-----	12	10	1
Brands	Sprite	Glacier Bay, Delta, Moen, Waterpik, Kohler	Glacier Bay, Delta, Moen, American Standard, Kohler	Delta
Lowest Priced	$17.98	$2.27	$9.98	12.00
Second Lowest Priced		$3.97	$19.98	NA
Third Lowest Priced		$19.98	$29.98	NA

Lavatory Faucets

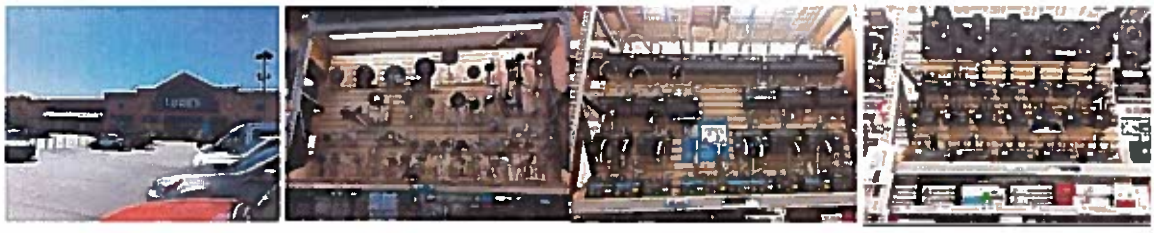
	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	38	0
Total WaterSense	1	38	
Brands	Glacier Bay	Glacier Bay, Delta, Moen, American Standard, Pfister	
Lowest Priced	$28.00	$11.78	
Second Lowest Priced		$18.46	
Third Lowest Priced		$19.98	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	3	33	9
Brands	Glacier Bay, Moen	Glacier Bay, Delta, American Standard, Pfister, Kohler	Moen
Lowest Priced	$39.00	$35.98	$138.00
Second Lowest Priced	$64.00	$36.95	$149.00
Third Lowest Priced	$69.00	$46.97	$168.00

Store Information

Store Name: Lowe's	Store Address: 4925 Windward Pkwy, Alpharetta, GA 30004
Date of Visit: March 31, 2018	Staff Person: Monica Perry



Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	32	14	12	1
Total WaterSense	-----	13	11	1
Brands	Moen, AquaSource, Kohler, Pfister, Jacuzzi, Sprite, Delta, ProjectSource	Moen, Oxygenics, Kohler, Delta	Moen, Oxygenics, Delta	Moen
Lowest Priced	$2.98	$23.48	$27.48	64.00
Second Lowest Priced	$9.98	$29.98	$32.98	NA
Third Lowest Priced	$14.48	$32.98	$34.98	NA

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	109	0
Total WaterSense	-----	105	
Brands	Peerless	ProjectSource, Peerless, Delta, American Standard, AquaSource, Pfister, Moen, Jacuzzi, Giagni, Kohler, Grohe	
Lowest Priced	$59.00	$20.00	
Second Lowest Priced		$24.98	
Third Lowest Priced		$29.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	50	16
Brands		ProjectSource, AquaSource, Delta, Pfister, Peerless, American Standard, Giagni, Kohler, Grohe	Moen, Kohler, Delta
Lowest Priced		$38.99	$78.00
Second Lowest Priced		$49.00	$99.00
Third Lowest Priced		$54.00	$109.00

Store Information

Store Name: Walmart	Store Address: 5200 Windward Pkwy, Alpharetta, GA 30004
Date of Visit: March 30, 2018	Staff Person: Monica Perry

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	0	12	16	0
Total WaterSense	-----	11	16	
Brands		Peerless, Waterpik, AquaSpa	Peerless, Waterpik	
Lowest Priced		$12.97	$2.94	
Second Lowest Priced		$18.84	$6.42	
Third Lowest Priced		$19.97	$8.84	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	4	2	0
Total WaterSense	4	2	NA
Brands	Peerless	Peerless	NA
Lowest Priced	$19.97	$24.97	NA
Second Lowest Priced	$34.97	$26.97	NA
Third Lowest Priced	$39.97	NA	NA

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	1	5	0
Brands	Mainstay	Peerless	
Lowest Priced	$12.97	$34.97	
Second Lowest Priced		$39.97	
Third Lowest Priced		$59.97	

Store Information

Store Name: Home Depot	Store Address: 650 Ponce De Leon Ave, NE, Atlanta, GA 30308
Date of Visit: April 13, 2018	Staff Person: Danny Johnson

Showerheads

	2.5 gpm	2.0 gpm	1.8 gpm & lower
Total Number	0	19	17
Total WaterSense	-----	10	14
Brands		Glacier Bay, Waterpik, Moen, Pfister	Delta, Glacier Bay, Waterpik, Moen
Lowest Priced		$2.97	$9.98
Second Lowest Priced		$3.97	$12.98
Third Lowest Priced		$9.98	$13.98

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	0	87	0
Total WaterSense		87	
Brands		Glacier Bay, Grohe, Moen, Pfister, American Standard, Delta, Kohler	
Lowest Priced		$11.78	
Second Lowest Priced		$18.46	
Third Lowest Priced		$28.00	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	48	14
Brands		Glacier Bay, American Standard, Kohler, Delta, Kraus, Pfister	Moen, Kohler
Lowest Priced		$17.38	$114.00
Second Lowest Priced		$35.00	$119.00
Third Lowest Priced		$39.00	$129.00

Store Information

Store Name: Lowe's	Store Address: 1280 Caroline Street NE Atlanta GA 30307
Date of Visit: April 23, 2018	Staff Person: Neela Ram

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	25	6	9	0
Total WaterSense	-----	6	9	
Brands	AquaSource, Moen, Delta	Delta, Oxygenics, Moen	Oxygenics, Moen	
Lowest Priced	$9.98	$32.98	$32.98	
Second Lowest Priced	$14.98	$49.98	$40.98	
Third Lowest Priced	$21.98		$49.98	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	0	86	0
Total WaterSense		84	
Brands		ProjectSource, Grohe, Moen, Kohler, Delta	
Lowest Priced		$20.00	
Second Lowest Priced		$24.98	
Third Lowest Priced		$29.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	79	0
Brands		Peerless, Grohe, Pfister, Moen, Delta	
Lowest Priced		$29.00	
Second Lowest Priced		$35.99	
Third Lowest Priced		$38.99	

Store Information

Store Name: Walmart	Store Address: 2525 N Decatur Road Decatur, GA 30033
Date of Visit: April 24, 2018	Staff Person: Neela Ram

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	0	6	18	0
Total WaterSense	-----	6	18	
Brands		Peerless, WaterPik	Peerless, WaterPik	
Lowest Priced		$3.97	$23.84	
Second Lowest Priced		$6.42	$24.84	
Third Lowest Priced		$8.84	$29.87	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	0	7	0
Total WaterSense		7	
Brands		Peerless and Mainstays	
Lowest Priced		$9.97	
Second Lowest Priced		$24.97	
Third Lowest Priced		$34.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	5	0
Brands		Peerless, Mainstays	
Lowest Priced		$12.97	
Second Lowest Priced		$34.97	
Third Lowest Priced		$39.97	

Store Information

Store Name: Home Depot	Store Address: 875 Shugart Rd Dalton, GA 30720
Date of Visit: April 13, 2018 (online)	Staff Person: Andrew Morris

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	2	14	12	2
Total WaterSense	-----	11	12	2
Brands	Pfister	Glacier Bay, DANCO, Waterpik, Pfister, Delta	Glacier Bay, Delta, Moen	No brand listed
Lowest Priced	$19.98	$2.27	$9.98	$4.38
Second Lowest Priced	$29.98	$4.82	$12.98	$7.35
Third Lowest Priced		$4.85	$13.98	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	73	0
Total WaterSense	1	73	0
Brands	Glacier Bay,	Glacier Bay, Delta, Moen, American Standard, Pfister, Kohler	
Lowest Priced	$28.00	$11.78	
Second Lowest Priced		$18.46	
Third Lowest Priced		$19.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	52	15
Brands		Glacier Bay, Delta, American Standard, Kohler, Pfister	Moen
Lowest Priced		$17.38	$64.00
Second Lowest Priced		$29.98	$69.00
Third Lowest Priced		$35.98	$99.00

Store Information

Store Name: Lowe's	Store Address: 1212 Cleveland Highway Dalton, GA 30721
Date of Visit: April 18, 2018 (online)	Staff Person: Andrew Morris

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	29	15	8	0
Total WaterSense	-----	13	8	0
Brands	ProjectSource, AquaSource, Jacuzzi, Moen, Sprite, Kohler, Pfister, Delta, HotelSpa	Oxygenics, Kohler, Moen, Delta	Oxygenics, Delta	
Lowest Priced	$2.98	$25.98	$24.98	
Second Lowest Priced	$9.98	$29.98	$29.98	
Third Lowest Priced	$9.98	$31.98	$38.48	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	95	0
Total WaterSense	1	95	0
Brands	Peerless	ProjectSource, Peerless, Delta, Pfister, Moen, Jacuzzi, Giagni, Grohe, Kohler	
Lowest Priced	$59.00	$20.00	
Second Lowest Priced		$24.98	
Third Lowest Priced		$29.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	3	50	20
Brands	Moen	ProjectSource, AquaSource, Delta, Pfister, Giagni, American Standard, Peerless, Kohler	Moen, Kohler
Lowest Priced	$69.00	$31.98	$69.00
Second Lowest Priced	$99.00	$40.48	$69.00
Third Lowest Priced	$199.00	$42.98	$78.00

Store Information

Store Name: WalMart	Store Address: 2545 E Walnut Ave Dalton, GA 30721
Date of Visit: April 18, 2018 (online)	Staff Person: Andrew Morris

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	0	14	10	0
Total WaterSense	-----	14	10	0
Brands		Peerless	Peerless, Waterpik	
Lowest Priced		$3.97	$12.57	
Second Lowest Priced		$6.42	$19.84	
Third Lowest Priced		$8.84	$26.27	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	7	0
Total WaterSense	1	7	0
Brands	Vigo	Peerless	
Lowest Priced	$101.49	$19.97	
Second Lowest Priced		$24.97	
Third Lowest Priced		$26.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	7	0
Brands		Peerless	
Lowest Priced		$29.72	
Second Lowest Priced		$34.97	
Third Lowest Priced		$39.97	

Store Information

Store Name: Home Depot	Store Address: 2891 Sowega Dr Columbus, GA 31909
Date of Visit: April 18, 2018 (online)	Staff Person: Andrew Morris

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	1	11	12	0
Total WaterSense	-----	8	10	
Brands	Waterpik	Glacier Bay, Waterpik, Delta, Kohler, Moen	Glacier Bay, Waterpik, Delta, Moen	
Lowest Priced	$19.98	$2.27	$9.98	
Second Lowest Priced		$3.97	$19.98	
Third Lowest Priced		$19.98	$24.98	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	69	0
Total WaterSense	1	69	
Brands	Glacier Bay	Glacier Bay, Delta, Moen, American Standard, Pfister, Kohler	
Lowest Priced	$28.00	$18.46	
Second Lowest Priced		$19.98	
Third Lowest Priced		$24.86	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	49	17
Brands		Glacier Bay, Delta, American Standard, Kohler, Pfister	MOEN, KOHLER
Lowest Priced		$29.98	$64.00
Second Lowest Priced		$35.98	$64.00
Third Lowest Priced		$36.95	$69.00

Store Information

Store Name: Lowe's	Store Address: 6750 Veterans Parkway Columbus, GA 31909
Date of Visit: April 19, 2018 (online)	Staff Person: Neela Ram

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	18	2	3	0
Total WaterSense	-----	2	3	
Brands	Moen, Kohler, Pfister, AquaSource, Jazz, Sprite	Delta	Oxygenics, Delta	
Lowest Priced	$2.98	$25.98	$24.98	
Second Lowest Priced	$9.98	$29.98	$34.98	
Third Lowest Priced	$14.98		$39.98	

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	0	93	0
Total WaterSense		90	
Brands		Moen, Peerless, Kohler, Delta	
Lowest Priced		$20.00	
Second Lowest Priced		$24.98	
Third Lowest Priced		$29.97	

Kitchen Faucets

	2.2 gpm	1.8 gpm	1.5 gpm and lower
Total Number	2	55	15
Brands	Moen, ProjectSource	Moen, Delta, Kohler, Pfister, Giagni, Peerless	Moen, Delta, Kohler
Lowest Priced	$39.48	$40.48	$74.98
Second Lowest Priced	$69	$42.98	$78.98
Third Lowest Priced		$49.00	$89.98

Store Information

Store Name: WalMart	Store Address: 5448 Whittlesey Boulevard Ste B, Columbus, GA 31909
Date of Visit: March 28, 2018	Staff Person: Neela Ram and Danny Johnson

Showerheads

	2.5 gpm	2.0 gpm	1.8 / 1.75 gpm	1.5 gpm & lower
Total Number	0	6	12	0
Total WaterSense	-----	6	12	
Brands		WaterPik, AquaSpa	Peerless	
Lowest Priced		$29.97	$3.97	
Second Lowest Priced		$34.84	$8.84	
Third Lowest Priced				

Lavatory Faucets

	1.5 gpm	1.2 gpm	1.0 gpm and lower
Total Number	1	7	0
Total WaterSense	1		
Brands	Peerless	Mainstays, Peerless	
Lowest Priced	$59.00	$9.97	
Second Lowest Priced		$19.97	
Third Lowest Priced		$24.97	

Kitchen Faucets

	2.0 gpm	1.8 gpm	1.5 gpm and lower
Total Number	0	8	0
Brands		Peerless	
Lowest Priced		$34.97	
Second Lowest Priced		$39.97	
Third Lowest Priced		$49.97	

Attachment C
Plumbing Fixtures in New Residential Construction

Development Information

Development Name: Copperleaf at Global Forum (townhomes)	Development Address: 2594 Kenwood Glen Terrace, Doraville, GA 30340
Developer Name (if known): Taylor Morrison	Year Built: 2018
Date of Visit: April 24, 2018	Staff Person: Andrew Morris

Showerhead Flow Rate: 1.75 gpm

Lavatory Flow Rate: 1.2 gpm

Kitchen Faucet Flow Rate: Not labeled with brand or flow rate

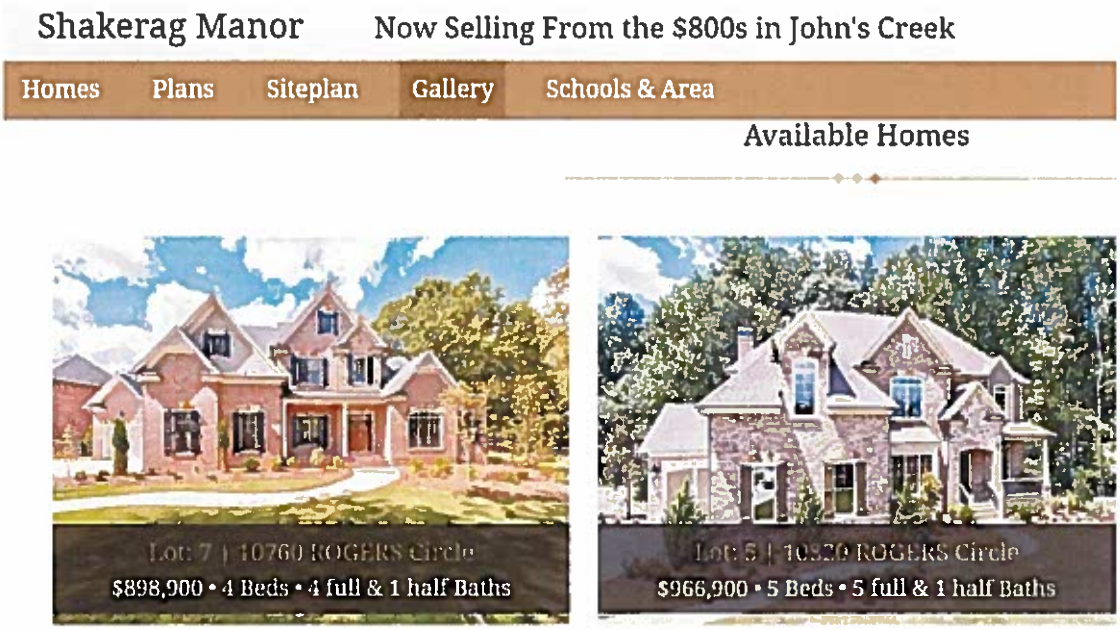
Development Information

Development Name Shakerag Manor (single family)	Development Address: 10860 Rogers Cir, Johns Creek, GA 30097
Developer Name (if known): Peachtree Residential	Year Built: 2017
Date of Visit: January 20, 2018	Staff Person: Andrew Morris

Showerhead Flow Rate: 1.75 gpm

Lavatory Flow Rate: 1.2 gpm

Kitchen Faucet Flow Rate: 1.5 gpm



Development Information

Development Name: Azure on the Park	Development Address: 1020 Piedmont Ave NE Atlanta, GA 30309
Developer Name (if known): Atlantic Realty Partners	Year Built: 2016
Date of Visit: March 20, 2018	Staff Person: Andrew Morris

Showerhead Flow Rate: 2.0 gpm

Lavatory Flow Rate: 1.5 gpm

Kitchen Faucet Flow Rate: 1.8 gpm

Development Information

Development Name: District at Duluth	Development Address: 3465 Duluth Highway 120 Duluth, GA 30096
Developer Name (if known): Residential Group	Year Built: 2017
Date of Visit: April 24, 2018	Staff Person: Andrew Morris

Showerhead Flow Rate: 2.0 gpm

Lavatory Flow Rate: 1.5 gpm

Kitchen Faucet Flow Rate: Not labeled with brand or flow rate

Development Name: Post Midtown Atlanta	Development Address: 33 11th St NE Atlanta, GA 30309
Developer Name (if known): Post Properties	Year Built: 2017
Date of Visit: April 23, 2018	Staff Person: Craig Weis

Showerhead Flow Rate: Not labeled with flow rate

Lavatory Flow Rate: 1.2 gpm

Kitchen Faucet Flow Rate: 1.5 gpm

Attachment C

District Staff Background and Supplemental Information Memorandum

Metropolitan North Georgia Water Planning District
International Tower | 229 Peachtree St., NE | Suite 100 | Atlanta, GA 30303

MEMORANDUM

Date: **October 30, 2018**

To: **Georgia Department of Community Affairs**

From: **District Staff**

RE: **Supplemental Information to Support the District's Proposed Amendment to the Georgia Plumbing Code ("Georgia PC") on Plumbing Fixture Efficiency**

This memorandum is being provided by staff of the Metropolitan North Georgia Water Planning District ("District") staff to the Georgia Department of Community Affairs ("DCA"). This is being submitted to DCA along with the Code Amendment Form dated October 30, 2018 which proposes reducing the maximum flow rates for kitchen faucets, lavatory faucets (private), and shower heads ("Proposed Amendment"). The purpose of this memorandum is to provide supplemental information to assist DCA in evaluating the Proposed Amendment. Specifically, the memorandum covers:

1. Background on the Water Stewardship Act
2. Background on the District
3. State-Wide Water Savings Estimates from More Efficient Fixtures
4. State-Wide Household Cost Saving Information

1. Background on the Water Stewardship Act.

Approving the Proposed Amendment would be consistent with the purpose of, and below the maximum flow rates required by, the Water Stewardship Act. It would also be consistent with the past practice of DCA in lowering maximum flow rates, making technical exceptions, and updating technical standards beyond the Water Stewardship Act when appropriate.

In 2010 the Georgia General Assembly passed SB 370 ("Water Stewardship Act"), which addressed plumbing fixture efficiency, among other things. In passing the Water Stewardship Act, the Georgia General Assembly recognized the imminent need "to create a culture of water conservation in the State of Georgia" and "plan for water supply enhancement during future extreme drought conditions and other water emergencies." [1] The

[1] Section 1 of the Water Stewardship Act.

General Assembly further directed state agencies, like DCA, "to work together as appropriate to develop programs for water conservation and water supply."[2]

The Georgia Water Stewardship Act required that DCA establish standards that include, without limitation, high-efficiency plumbing fixtures that use no more than a certain maximum flow rate or flush volume. These high-efficiency plumbing fixtures were also required to meet the WaterSense specifications, where applicable, to ensure the products meet certain performance standards. For more information, see https://www.epa.gov/watersense. WaterSense did not develop a specification for showerheads until after the Water Stewardship Act was passed. DCA complied with the Water Stewardship Act by incorporating into the Georgia PC fixture efficiency requirements at or below the required maximums with certain technical adjustments and exceptions.

Approving with the Proposed Amendment would be consistent with DCA's past practice of lowering maximum flow rates, making technical exceptions, and updating technical standards. For example:

- The Georgia PC includes a 0.5 gpm maximum standard for public lavatory faucets, which is less than the standard in the Water Stewardship Act of "no more than 1.5 gpm" for faucets that are used in "commercial installations."

- The Georgia PC includes several exceptions to allow for higher flow rates for things like clinical sinks, emergency showers, etc. even though these exceptions are not enumerated specifically in the Water Stewardship Act.

- The Georgia PC excludes the outdated ASME A112.19.2-2008 standard for single flush toilets even though this now outdated standard is specifically referenced in the Water Stewardship Act. The updated standard is A112.19.2-2013/CSA B45.1-13.

2. Background on the District.

The District is the entity responsible for regional planning for watershed and stormwater management, wastewater management, and water supply and conservation management within the 15-county metropolitan area that includes Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Paulding, and Rockdale Counties. The District is governed by a 26-member Governing Board made of 16 elected officials (either County Commission Chairmen or Mayors) and 10 citizen members appointed by the Governor, Lieutenant Governor, and Speaker of the House. For more information, see http://northgeorgiawater.org/.

The District's Governing Board unanimously approved and supported the submission of the Proposed Amendment at its May 23, 2018 meeting to further the District's and the State's successes and leadership on water efficiency. The District is advocating for the Proposed Amendment because it furthers the State's and the District's goal of creating "a culture of water conservation in the State of Georgia."

The District has won numerous awards for its water efficiency and conservation efforts, including the 2013 Platinum Winner of the Hermes Create Awards, the 2014 Telly Award, EPA's 2015 WaterSense Excellence Award, EPA's 2016 and 2017 WaterSense Promotional Partner of the Year Awards, the 2016 SouthFace Fulcrum Award, the 2018 President's Volunteer Service Award, and EPA's 2018 WaterSense Sustained Excellence Award. The State and the District's work on conservation and efficiency has also been favorably mentioned in Justice Clarence Thomas's dissent in the recent Florida v. Georgia opinion. Justice Thomas wrote that: "Metropolitan

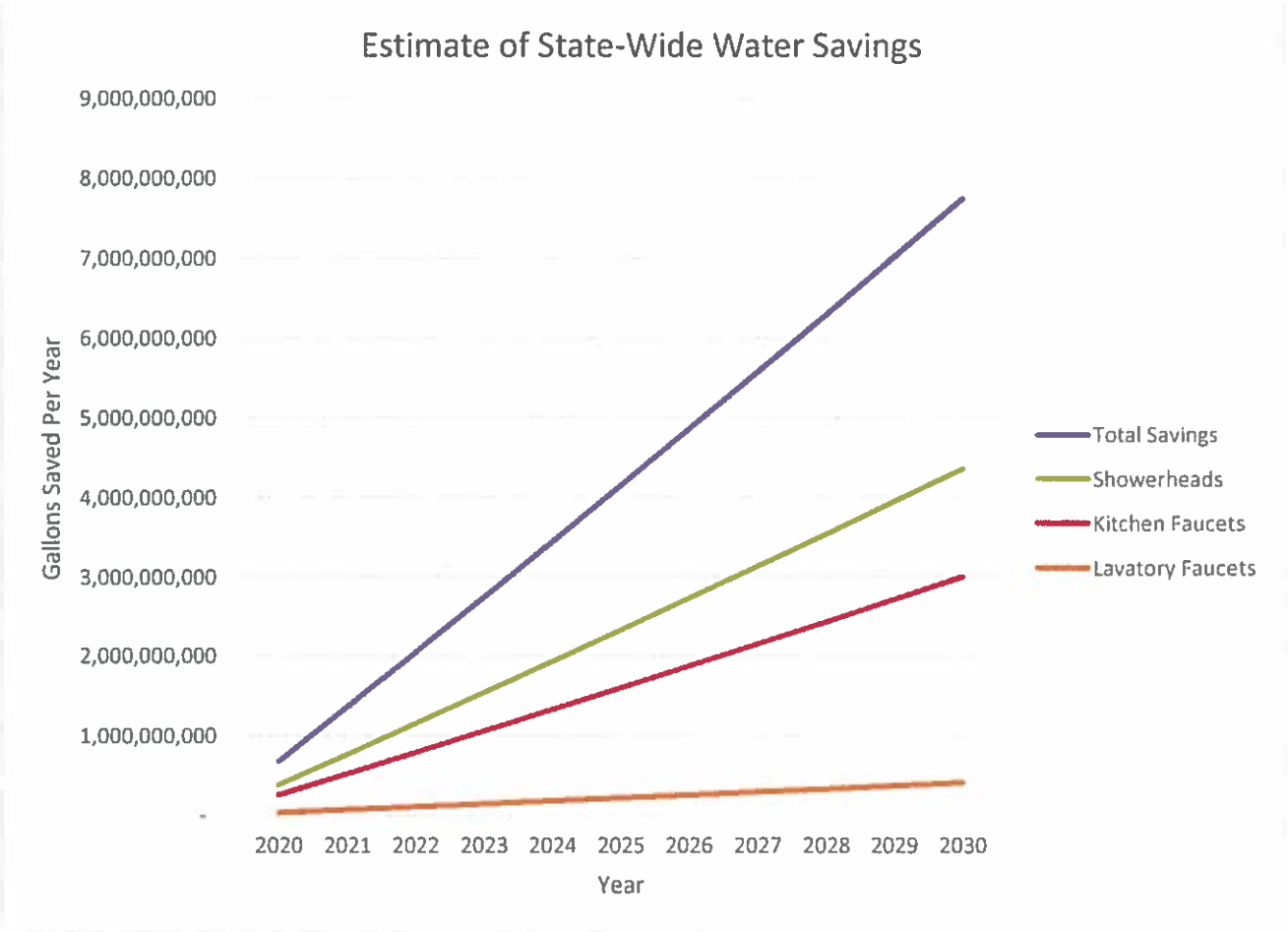
[2] Id.

Atlanta had taken substantial steps to conserve water, reducing its consumption to levels that even Florida's expert admitted demonstrated effective water conservation… (showing that Florida's Basin residents used more water per capita than residents in metropolitan Atlanta)."

3. State-Wide Water Savings Estimates from More Efficient Fixtures.

If the Proposed Amendment is adopted, these more efficient fixtures will be installed in all new homes and in existing homes as fixtures are naturally replaced starting in 2020. By 2030, the State would withdraw approximately 7.7 billion gallons per year less (or 21 million gallons daily) under the Proposed Amendment compared to a scenario where all new and replacement fixtures only meet the maximum in the current Georgia Plumbing Code. See Figure 1. This estimate of water savings is intended to provide a general sense of the magnitude of estimated savings State-wide by 2030 resulting from the use of the more efficient fixtures in the Proposed Amendment. However, we recognize that retail stores and many new homes already include some fixtures that meet or exceed even the proposed efficiency standards based on consumer choice, and as a result some smaller amount of savings will occur regardless of whether the Proposed Amendment is adopted.

Figure 1



Our calculations of water savings are based on WaterSense data and methodologies whenever possible. Based on a 5-year trailing average using US Census data, we are assuming that new housing stock will be added at a rate of 0.8% a year through 2030. To estimate the annual water savings from replacements, we used data from a report commissioned by Plumbing Manufacturers International on the ratio of fixtures sold for replacements

versus new construction.[3] These estimates are based on natural replacement rates for these fixtures without a rebate program. An electronic copy of our calculations will be made available upon request.

4. State-Wide Household Cost Saving Information.

For a more detailed discussion of fixture availability and financial impact, please make sure to review the District Staff Recommendation Memorandum included in Attachment B. The fixture availability and financial impact information strongly supports the conclusion that the fixtures required by the Proposed Amendment are widely available today from numerous manufacturers and retailers at prices either comparable to or lower than those currently required under the Georgia PC.

Based on the statewide scope of the Proposed Amendment, the updated water and sewer cost savings estimates were calculated using the median statewide price for the next 1,000 gallons/month at 5,000 gallons per month from the 2017 Georgia Water and Wastewater Rates Report.[4] Based on the median statewide price, the annual savings are $15.79 for water, $19.19 for sewer, and $34.99 combined. The electric or gas savings, as applicable, remain $32.99 and $15.97 respectively. This means that a household using water and natural gas for water heating would save an estimated $31.76 per year and a household using water, sewer, and electricity for water heating would save $67.98 per year.

[3] US Market Penetration of WaterSense Showerheads, Lavatory Faucets and Toilets, July 2015, a GMP Research Industry Report commissioned by Plumbing Manufactures International available at https://www.safeplumbing.org/files/safeplumbing.org/documents/press_release_downloads/9-15-15-WaterSense-market-penetration-study.pdf

[4] See p. 11 of this report, which is available at: https://efc.sog.unc.edu/sites/default/files/2018/GA2017WaterSewerRatesReport.pdf.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2018 International Plumbing Code SECTION: 604.1

PROPONENT: Elizabeth Hannapel, MPH on behalf of Georgia Department of Public Health DATE: 11/20/2018

EMAIL: Elizabeth.Hannapel@dph.ga.gov

ADDRESS: Georgia Department of Public Health, 2 Peachtree St. NW, 14-205, Atlanta, GA 30303

TELEPHONE NUMBER: (404)463-8908 FAX NUMBER: (404)657-7517

CHECK ONE:
☒ Revise section to read as follows
☐ Add new section to read as follows:
☐ Delete section and substitute the following:
☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
The design of the water distribution system shall include Legionella risk management measures in accordance with ASHRAE 188 and shall conform to *accepted engineering practice.* Methods utilized to determine pipe sizes shall be *approved*.

REASON/INTENT:
Legionellosis is illness caused by *Legionella* bacteria. Common types of legionellosis include Legionnaires' Disease, a severe pneumonia, or Pontiac Fever, a febrile illness. Legionnaires' Disease is fatal for approximately 10% of all cases, and approximately 25% of cases associated with healthcare facilities.[1] *Legionella* bacteria are found naturally in freshwater environments but can become a health concern when growth and spread occurs in human-made building water systems.[2] CDC investigations show that approximately 90% of legionellosis outbreaks were preventable with more effective water management consistent with ASHRAE* Standard 188.[3]

The purpose of ASHRAE Standard 188 is to establish minimum legionellosis risk management requirements for *building water systems*. ASHRAE Standard 188 was developed with the intent of providing code officials and building operators information on how to manage the risk of legionellosis.[4]

Some building types and building water systems covered in ASHRAE Standard 188 are subject to existing regulation in Georgia. For example, healthcare facilities are mandated to "develop and adhere to policies and

procedures that inhibit microbial growth in building water systems that reduce the risk of growth and spread of *Legionella* and other opportunistic pathogens in water" consistent with ASHRAE Standard 188 per the Centers for Medicare & Medicaid Services Requirement to Reduce *Legionella* Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires' Disease (LD). Tourist accommodations, whirlpool spas and hot tubs for public use are subject to Public Health rules and regulations where adopted by local Boards of Health, although those rules and regulations are not specific to legionellosis prevention.

However, many building types and building water systems covered in AHSRAE Standard 188 are not subject to rules and regulations in Georgia, and have been associated with legionellosis cases and outbreaks. For example, correctional institutions, fitness centers, occupational settings, and outpatient healthcare facilities not subject to existing regulation relevant to ASHRAE Standard 188 had associated cases in Georgia during 2015-2017.[5]

Inclusion of ASHRAE Standard 188 into the Georgia State Amendments to the International Plumbing Code is intended to mandate effective water management programs to prevent legionellosis across all building types and building water systems described in ASHRAE Standard 188.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
The code change proposal will increase the cost of plumbing system design and construction only for high-risk plumbing systems and plumbed features as defined in ASHRAE Standard 188.[4]

Increased costs will only occur for water distribution systems in buildings that meet the following:
a. *multiple housing units* with one or more centralized potable water-heater systems;
b. more than 10 stories high (including any levels that are below grade);
c. health care facilities where patient stays exceed 24 hours;
d. building containing one or more areas for the purpose of housing or treating occupants receiving treatment for burns, chemotherapy for cancer, or solid organ transplantation or bone marrow transplantation;
e. building containing one or more areas for the purpose of housing or treating occupants that are *immunocompromised, at-risk,* are taking drugs that weaken the immune system, have renal disease, have diabetes or have chronic lung disease; or
f. building identified by the owner or *designee* as being for the purpose of housing occupants over the age of 65 years.

Increased costs will only occur for the following *building water systems*:
a. open- and closed-circuit cooling towers or evaporative condensers that provide cooking and/or refrigeration for the *HVAC&R* system or other systems or devices in the building;
b. whirlpools or spas, either in the building or on the site; or
c. ornamental fountains, misters, atomizers, air washes, humidifiers, or other *nonpotable* water systems or devices that release water aerosols in the building or on the site.

The costs will vary according to the complexity of the plumbing system. The cost of construction of the plumbing system to eliminate dead legs and provide other design concepts to address temperature and stagnation is estimated to be as high as 10 – 15 percent more for facilities with complex water distribution systems that contain areas serving vulnerable occupants to comply with this standard per ASHRAE representatives. However, CDC has provided online guidance for implementation of ASHRAE Standard 188 at no cost.[6] No or minimal additional cost is estimated for design or construction of simple *building water systems* such as whirlpools or spas, ornamental fountains, etc..

Efforts to mitigate the risk of legionellosis may significantly reduce downstream costs related to healthcare costs for patients that develop legionellosis, remediation for *Legionella* colonization, and legal costs. Direct healthcare costs are estimated to be over $33,000 per hospitalization with an annual cost of hospitalizations in the United States to be over $430,000,000.[7] Environmental sampling and remediation efforts during Georgia public health legionellosis investigations range from tens to hundreds of thousands of dollars.[5] Lawsuits related to legionellosis frequently result in settlements or verdicts in favor of plaintiffs ranging from hundreds of thousands to millions of dollars.[8] It is not possible to predict which systems not conforming to ASHRAE 188 will be associated with legionellosis cases, but efforts to mitigate risk of legionellosis are important for preventing cases and for legal liability.[9, 10]

* American Society of Heating, Refrigerating and Air-Conditioning Engineers

References:

1. "Clinical Features." *Centers for Disease Control and Prevention,* Accessed September 28, 2018, https://www.cdc.gov/legionella/clinicians/clinical-features.html.
2. "Causes and Common Sources of Infection." *Centers for Disease Control and Prevention,* Accessed September 28, 2018, https://www.cdc.gov/legionella/about/causes-transmission.html.
3. "Legionnaires' Disease." *Centers for Disease Control and Prevention,* Accessed September 28, 2018, https://www.cdc.gov/vitalsigns/legionnaires/index.html.
4. "Legionellosis: Risk Management for Building Water Systems." *American National Standards Institute/American Society of Heating and Air-Conditioning Engineers*, 2015.
5. Unpublished data. *Georgia Department of Public Health,* Acute Disease Epidemiology Section, 2018.
6. "Developing a Water Management Program to Reduce *Legionella* Growth & Spread in Buildings." *Centers for Disease Control and Prevention*, 2017, https://www.cdc.gov/legionella/downloads/toolkit.pdf.
7. Collier, S. A., Stockman, L. J., Hicks, L.A., Garrison, L. E., Zhou, F. J., & Beach, M. J. (2012). Direct healthcare costs of selected diseases primarily or partially transmitted by water. *Epidemiology and Infection, 140*(11), 2003-2013.
8. Bernier, T. P., Smith, S. E. (2014). The Standard of Care Defense in Emerging Toxic Tort Claims. *Toxic Torts and Environmental Law.* 24-29.
9. Garrison, L. E., Kunz, J. M., Cooley, L. A., Moore, M. R., Lucas, C., Schrag, S., Sarisky, J., Whitney, C. G. (2016) Vital Signs: Deficiencies in Environmental Control Identified in Outbreaks of Legionnaires' Disease – North America, 2000-2014. *MMWR. Morbidity and Mortality Weekly Report,* 65(22), 576-584.
10. Taylor v. Aria Resort & Casino, LLC, D. Nev. (2015).

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM INSTRUCTION SHEET

1. Do not complete the line entitled "Item No._____".
2. Use a separate form for each proposed code amendment.
3. "Sheet ____ of _____" indicates the number of sheets for each individual proposed code amendment, not the number of sheets for all the amendments submitted.
4. Identify the code and code section that is the subject of the proposed amendment.
5. The proponent's name, address, telephone number and fax number must be filled out completely.
6. Be sure to indicate the type of recommended action in the space referred to as "Check One".
7. If the proposed amendment revises the language of the code section, deletes the entire code section, or deletes the entire code section and offers substitute language, include the language of the present code section and line through the language to be deleted and underline the language of the proposed amendment.
8. Under the "Reason" section, provide the reasoning behind the proposed code amendment. The reason should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.
9. **A Statement of Financial Impact must accompany all proposed code amendments.** The statement should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.
10. **All proposed amendments must be typed and completed in full and the original submitted to the Codes and Industrialized Buildings Section of the Department of Community Affairs NO LATER THAN DECEMBER 15TH.** The proposed code change shall be submitted for review to the State Codes Advisory Committee at their quarterly meeting in January. An incomplete form will be sent back to the proponent for completion. An amendment submitted after the submittal deadline date will be returned to the proponent.
11. The proponent will be notified when the proposed amendment will be considered by the State Codes Advisory Committee.
12. Information concerning submittal of code amendments, including deadline dates for submittal, can be obtained by contacting the Codes and Industrialized Buildings Section at (404) 679-3118. All proposed code amendments should be submitted to:

The Department of Community Affairs
Codes and Industrialized Buildings Section
60 Executive Park South, NE
Atlanta, Georgia 30329-2231

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 1

CODE: IPC SECTION: 608.16.4.2

PROPONENT: Glenn Haller PE DATE: 11/7/2018

ADDRESS: 270 Washington St., Atlanta, GA 30334

TELEPHONE NUMBER: (404)463-5789 FACSIMILE NUMBER: (404)463-5683

CHECK ONE: X Revise section to read as follows: ____ Add new section to read as follows:

____ Delete section and substitute the following: ____ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION: 608.16.4.2 Hose Connections. Sillcocks, hose bibbs, wall hydrants and other openings with hose connection shall be protected by an atmospheric type or pressure-type vacuum breaker or a permanently attached hose connection vacuum breaker. For buildings using nonmetallic pipe, all hose bibbs shall be connected to a code rated metal pipe securely anchored to prevent the hose bibb from breaking at the pipe connection when the hose is pulled at a 90 degree angle.

REASON/INTENT: This has happed on a home with the hose bibb just barely protruding from the siding of the home in Monroe, GA which I witnessed. Water was shut off for the house, sheet rock removed and repairs were made as described above.

FINANCIAL IMPACT OF PROPOSED AMENDMENT: $5 approximately.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM
INSTRUCTION SHEET

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