State of Florida

ORIGINAL

# Public Service Commission

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**-M-E-M-O-R-A-N-D-U-M-**

**DATE:** April 13, 2007

**TO:** Ann Cole, Commission Clerk - PSC, Office of Commission Clerk

**FROM:** Lawrence D. Harris, Senior Attorney, Office of the General Counsel

**RE:** Docket No. 070183-WS

Please file the attached comments in the above docket file.

LDH
Attachments

**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS ON FLORIDA PUBLIC SERVICE COMMISSION PROPOSED RULE 25-30.4325**

Subsection (1), Definitions

- The definitions of "water treatment plant" and "water distribution system" should be consistent with definitions found in F.S. Section 403.866, F.S., says ""Water treatment plant" means those components of a public water system used in collection, treatment, and **storage** [emphasis added] of water for human consumption, whether or not such components are under the control of the operator of such system." Additionally, this sections says, ""Water distribution system" means those components of a public water system used in conveying water for human consumption from the water treatment plant to the consumer's property, including pipes, **tanks** [emphasis added], pumps, and other constructed conveyances." Thus, storage could be considered part of the treatment plant or distribution system depending upon the location and purpose of the storage. For example, storage necessary to achieve a CT value for inactivation of *Giardia lamblia* or viruses should be considered part of the treatment plant, whereas storage necessary to meet peak hour or peak instantaneous demand should be considered part of the distribution system.
- In the definition of "peak demand," peak demand should include a utility's **peak instantaneous**, peak hour, or maximum day demand.
- Section 17.2.1 in *Water Distribution Systems Handbook*, which is incorporated into Rule 62-555.330, F.A.C., as an engineering reference, says the following:

  "A commonly accepted rule-of-thumb for acceptable levels of unaccounted-for water is 15 percent, although this value is highly site specific. The real rule for deciding whether unaccounted-for water exists at an acceptable level is an economic one; the economic savings in water production at least offsets the cost of reducing unaccounted-for water."

  Therefore, "excessive unaccounted for water" should be defined as water produced in excess of **15** percent of the accounted for usage. (We note that subsection (9) allows for economics to be used in deciding whether unaccounted for water is truly excessive.)

Subsection (5)

- Peak demand should be based on **peak instantaneous demand for water systems that use hydropneumatic tanks with insufficient storage capacity to meet peak instantaneous demand for at least 20 minutes; peak hour demand for water systems that use hydropneumatic tanks with sufficient storage capacity to meet peak instantaneous demand for at least 20 minutes; and maximum day demand for water systems that use ground or elevated tanks with sufficient operational equalization storage capacity to meet peak hour demand**. See Rules 62-555.320(19) and 62-555.520(4)(a)3.c, F.A.C., for more details.
- For water systems serving more than 30 to 40 homes, peak instantaneous demand should be estimated as 2.0 gpm/house. For more details, see Section 4-5.b.(3) in the U.S. Army Corps of Engineers' *Design of Small Water Systems*, which is incorporated into Rule 62-555.335, F.A.C., as a guidance document, and page 31 in the American Water Works Association's *Design and Construction of Small Water Systems*, which is incorporated into Rule 62-555.335, F.A.C., as a guidance document.

- According to Section 3.1.2 in *Water Distribution Systems Handbook*, peak hour demand is the highest water demand during any one-hour period of a year and is customarily expressed using a multiplier of **average day demand**.
- Per Table 3.6 in *Water Distribution Systems Handbook*, peak hour demand is commonly **2.5 to 4.0 times average day demand** (or about **1.4 times maximum day demand**).
- Peak hour demand per ERC will vary depending upon household size, domestic water use, and peaking coefficient. According to the U.S. Census Bureau, Florida's average household size in 2000 was about 2.5 persons, but average household size generally will vary between 1.0 and 3.0 persons depending upon location and type of residence. According to reports by the U.S. Geological Survey, Florida's per capita average day water demand from 1990 to 2000 was about 100 to 110 gpcd when considering only domestic water use, but per capita annual average day water demand generally will vary between 80 and 150 gpcd for domestic use depending upon location, water rates, etc. According to *Water Distribution Systems Handbook*, peak hour demand commonly ranges from 2.5 to 4.0 times average day demand. So, on the average, peak hour demand per ERC will be about 0.59 gpm (2.5 persons * 105 gpcd * 3.25 / 1440 minutes/day), but peak hour demand per ERC could range from 0.14 gpm (1.0 person * 80 gpcd * 2.5 / 1440 minutes/day) to 1.25 gpm (3.0 persons * 150 gpcd * 4.0 / 1440 minutes/day).
- When calculating maximum day demand, a fire should not be considered an anomaly. Fires happen, and water systems often must be sized to provide fire protection. Even if a water system has sufficient fire storage, source and treatment facilities must be capable of replenishing the fire storage on a daily basis so that the fire storage is available on any given day. Thus, maximum day demand must include fire-flow demand (fire flow rate times fire flow duration). For more details, see Rules 62-555.320(6) and 62-555.520(4)(a)3.c, F.A.C., and Section 1.1.5.b in the 1997 Edition of *Recommended Standards for Water Works*, which is incorporated into Rule 62-555.330, F.A.C., as an engineering reference.
- According to Section 3.1.2 in *Water Distribution Systems Handbook*, maximum day demand is the highest water demand during any 24-hour period of a year. (It is not the average of the five highest days within a 30-day period of a year.).
- Like peak hour demand per ERC, maximum day demand per ERC will vary depending upon household size, domestic water use, and peaking coefficient. As stated above, Florida's average household size in 2000 was about 2.5 persons, but average household size generally will vary between 1.0 and 3.0 persons depending upon location and type of residence; and Florida's per capita average day water demand from 1990 to 2000 was about 100 to 110 gpcd when considering only domestic water use, but per capita annual average day water demand generally will vary between 80 and 150 gpcd for domestic use depending upon location, water rates, etc. According to *Water Distribution Systems Handbook*, maximum day demand commonly ranges from 1.8 to 2.8 times average day demand. So, on the average, maximum day demand per ERC will be about 604 gpd (2.5 persons * 105 gpcd * 2.3), but maximum day demand per ERC could range from 144 gpd (1.0 person * 80 gpcd * 1.8) to 1,260 gpd (3.0 persons * 150 gpcd * 2.8).

Subsection (6)

- Raw water pumps are often designed to pump for more than 12 hours/day, and up to 24 hours/day, on the maximum day. Alternatively, where drawdown or salt water intrusion is a

concern, well pumps may be designed to pump for less than 12 hours/day on the maximum day.

- What is the intent of paragraph (b)? Does paragraph (b) mean that, for a water system using only aeration or disinfection, all usable storage capacity, regardless of amount, is considered used and useful? If so, why is all usable storage capacity, regardless of amount, considered used and useful?

Subsection (8)

- For a water system served by a single well, why is the system considered 100-percent used and useful regardless of capacity?

General

- In its comments, the Office of Public Counsel refers several times to the "FDEP required size/capacity." Please note that the Florida Department of Environmental Protection has incorporated a number of engineering references into Rule 62-555.330, F.A.C., and these engineering references establish a range of acceptable loading rates and design criteria for various treatment operations/processes. Thus, there often is no specific "FDEP required size/capacity" but instead is a range of acceptable sizes/capacities.
- In its comments, the Office of Public Counsel states that FDEP rules for high service pumps are very similar to FDEP rules for wells. This is not necessarily true. Rules 62-555.315(2) and (3), F.A.C., specify requirements for number and capacity of wells; Rule 62-555.320(15), F.A.C., specifies requirements for number and capacity of high-service pumps.
- In its comments, the Office of Public Counsel has suggested criteria that are inconsistent with Rule 62-555.320(19), F.A.C., for determining allowable finished-water storage capacity. Rule 62-555.320(19)(a) states, "Except as noted in paragraph (b) below, the total useful finished-water storage capacity (excluding any storage capacity for fire protection) connected to a water system shall at least equal 25 percent of the system's maximum-day water demand, excluding any design fire-flow demand."

**25-30.4325 Water Treatment and Storage Used and Useful Calculations**

(1) Definitions.

(a) A water treatment system includes all facilities, such as wells and treatment facilities, excluding storage, necessary to produce, treat, and deliver potable water to a transmission and distribution system.

(b) Storage facilities include ground or elevated storage tanks and high service pumps.

(c) Peak demand for a water treatment system includes the utility's peak instantaneous or hour demand or maximum ~~hour or~~ day demand, excluding excessive unaccounted for water, plus a growth allowance based on the requirements in Rule 25-30.431, FAC, and any fire flow required by local governmental authority ~~that exceeds the storage capacity~~.

(d) Peak demand for storage includes the utility's maximum day demand, excluding excessive unaccounted for water, plus an allowance for fire flow based on the local governmental authority requirement, and a growth allowance based on the requirements in Rule 25-30.431, FAC.

(e) Excessive unaccounted for water (EUW) is potable water produced in excess of 110 percent of the accounted for usage, including water sold, water used for flushing or fire fighting, and water lost through line breaks.

(2) The used and usefulness evaluation of water treatment systems and storage facilities shall include a determination as to the prudence of the investment and consideration of economies of scale.

(3) The used and usefulness of a water treatment system shall be calculated separately from the storage facilities. If the utility believes an alternative calculation is appropriate, such calculation may also be provided, along with supporting documentation.

(4) A water treatment system is considered 100 percent used and useful if:

(a) The system is the minimum size necessary to adequately serve existing customers

plus an allowance for growth, and fire flow if no storage; or

(b) The service territory the system is designed to serve is mature or built out and there is no potential for expansion of the service territory; or

(c) The system is served by a single well.

(5) The used and usefulness of a water treatment system is determined by dividing the peak demand by the firm reliable capacity of the water treatment system.

(6) The firm reliable capacity of a water treatment system is equivalent to the pumping capacity of the wells, excluding the largest well for those systems with more than one well, unless the pumping capacity is restricted by a limiting factor such as the treatment capacity, or draw down limitations, in which case, the firm reliable capacity is the capacity of the limiting component or restriction of the water treatment system. In a system with multiple wells, if a utility believes there is justification to consider more than one well out of service in determining firm reliable capacity, such circumstance will be considered. The utility must provide support for its position, in addition to the analysis excluding only the largest well.

(a) Firm reliable capacity is expressed in gallons per minute for systems with no storage capacity.

(b) Firm reliable capacity is expressed in gallons per day, based on 12 hours of pumping, for systems with storage capacity.

(7) Peak demand is based on peak instantaneous demand for a water system with no storage capacity serving 300 or less connections, ~~a~~ peak hour demand for a water treatment system with no storage capacity serving greater than 300 connections, and ~~a~~ peak day demand for a water treatment system with storage capacity.

(a) Peak instantaneous demand, expressed in gallons per minute, shall be calculated as follows:

1. The average of all days (AAD) in the test year less excessive unaccounted for water

divided by 1440 minutes in a day times ten [((AAD-EUW)/1,440) x 10], or

2. If the actual daily flow data is not available, 2.0 gallons per minute per equivalent residential connection (2.0 x ERC).

(b) ~~(a)~~ Peak hour demand, expressed in gallons per minute, shall be calculated as follows:

1. The single maximum day (SMD) in the test year where there is no unusual occurrence on that day, such as a fire or line break, less excessive unaccounted for water divided by 1440 minutes in a day times two [((SMD-EUW)/1,440) x 2], or

2. The average of the 5 highest days (AFD) within a 30-day period in the test year less excessive unaccounted for water divided by 1440 minutes in a day times two [((AFD-EUW)/1,440) x 2], or

3. If the actual maximum day flow data is not available, 1.1 gallons per minute per equivalent residential connection (1.1 x ERC).

(c) ~~(b)~~ Peak day demand, expressed in gallons per day, shall be calculated as follows:

1. The single maximum day in the test year, if there is no unusual occurrence on that day, such as a fire or line break, less excessive unaccounted for water (SMD-EUW), or

2. The average of the 5 highest days within a 30-day period in the test year less excessive unaccounted for water (AFD-EUW), or

3. If the actual maximum day flow data is not available, 787.5 gallons per day per equivalent residential connection (787.5 x ERC).

(8) The used and usefulness of storage is determined by dividing the peak demand plus required fire flow by the usable storage of the storage tank. Usable storage capacity less than or equal to the peak day demand shall be considered 100 percent used and useful. A hydropneumatic tank is not considered usable storage.

(9) Usable storage determination shall be as follows:

(a) An elevated storage tank shall be considered 100 percent usable.

(b) A ground storage tank shall be considered 90 percent usable if the bottom of the tank is below the centerline of the pumping unit.

(c) A ground storage tank constructed with a bottom drain shall be considered 100 percent usable, unless there is a limiting factor, in which case the limiting factor will be taken into consideration.

(10) To determine whether an adjustment to plant and operating expenses for excessive unaccounted for water will be included in the used and useful calculation, the Commission will consider all relevant factors, including whether the reason for excessive unaccounted for water during the test period has been identified, whether a solution to correct the problem has been implemented, or whether a proposed solution is economically feasible.

(11) To determine the used and usefulness of water treatment systems and storage facilities, the Commission will consider other relevant factors, such as whether flows have decreased due to conservation or a reduction in the number of customers.

Specific Authority: 350.127(2), 367.121(1)(f) FS.

Law Implemented: 367.081(2), (3) FS.

History: New _____.

Rule 25-30-4325.ldh.doc