

**RESOLUTION NO. 736**

**A RESOLUTION OF THE CITY OF GIG HARBOR, WASHINGTON,  
ADOPTING WATER USE EFFICIENCY GOALS.**

**WHEREAS**, state law requires all municipal water suppliers to meet the Washington State Department of Health's Water Use Efficiency Program per Chapter 246-290 WAC; and

**WHEREAS**, this law requires municipal water suppliers with 1,000 or more connections to set water use efficiency goals by January 22, 2008; and

**WHEREAS**, the City of Gig Harbor is a municipal water supplier and has more than 1,000 connections; and

**WHEREAS**, the City staff has prepared a water use efficiency goal setting report with proposed water use efficiency goals; and

**WHEREAS**, the City has made the Water Use Efficiency Goal Setting Report available to the public and provided notice of the public hearing held January 14, 2008, per WAC 246-290-830(4)(d);

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GIG HARBOR, WASHINGTON, AS FOLLOWS:**

Section 1 At 6:00 PM on January 14, 2008, the City Council held a public hearing at the City of Gig Harbor Civic Center on the Water Use Efficiency Goals as noted in the Goal Setting Report and heard public comment; and

Section 2. A summary of the comments from the public hearing shall be incorporated into the Water Use Efficiency Goal Setting Report; and

Section 3. The City Council adopts the following Water Use Efficiency Goals described in the Water Use Efficiency Goal Setting Report, attached hereto as Exhibit A:

- A. Supply side goal: Continue the City's supply side efficiency at less than 6% for a Distribution Leakage Standard. This efficiency will be maintained through continuation of the existing water main replacement program. This program performs annual inspections and replacement of deteriorating water mains each year.

- B. Demand side goal: Decrease demand side consumption by one-quarter of one percent (0.25%) for each year for the next six years; and

Section 4. The City shall review the status in achieving the adopted goals by performing the following steps:

- A. Supply side goal: This goal will be measured annually using the Distribution Leakage Standard calculation presented in the Department of Health publishing 331-375.
- B. Demand side goal: This goal will be measured annually by calculating the volume of water conserved by use of the City's water use efficiency measures.

RESOLVED this 14<sup>th</sup> day of January, 2008.

APPROVED:

  
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CHARLES L. HUNTER, MAYOR

ATTEST/AUTHENTICATED:

  
\_\_\_\_\_  
MOLLY M. TOWSLEE, CITY CLERK

FILED WITH THE CITY CLERK: 1/7/08  
PASSED BY THE CITY COUNCIL:  
RESOLUTION NO. 736



# **Water Use Efficiency Goal Setting Report**

**January 2008**

**Prepared by:  
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## **Section 1 - Introduction**

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, better known as the Municipal Water Law (MWL), to address the increasing demand on our state's water resources. The law established that all municipal water suppliers must use water more efficiently in exchange for water right certainty and flexibility to help them meet future demand. The Legislature directed the Washington State Department of Health (DOH) to adopt an enforceable Water Use Efficiency (WUE) program, which became effective on January 22, 2007. This regulatory program is intended to achieve a consistently high level of stewardship among all municipal water suppliers.

Pressure on the state's water resources comes from many sources, including population growth, in-stream flows, and business needs. As the potential for developing new sources of water within the state diminishes, the efficient use of water is necessary to meet future needs. The WUE requirements are intended to support a common goal of ensuring safe and reliable drinking water through contribution to long-term water supply reliability and public health protection, promoting good stewardship of the state's water resources, and ensuring efficient operation and management of water systems.

The City of Gig Harbor is, by definition, a municipal water supplier. Therefore the City must comply with requirements of Chapter 246-290 WAC. The information contained in this report is intended to assist with setting goals related to WUE and has been made available as required by WAC 246-290-810.

## **Section 2 - Summary of the City of Gig Harbor's Water System**

The City of Gig Harbor was incorporated in 1946 and had a census population of 803 residents in 1950. The City has developed as a residential community through the years with some associated commercial and light industrial growth as well. City limit populations for 1970, 1980, 1990, and 2000 were approximately 1,611, 2,429, 3,236, and 6,465 residents, respectively. These increases reflect the City's growing population base as well as increases in the City's incorporated area through annexation.

The City owns and operates the Class A municipal water system, which serves the majority of the area within the Gig Harbor City limits and Urban Growth Area. The DOH water system identification number is 276009. A copy of the water service area map of the water purveyors located in the City of Gig Harbor is included in Appendix A.

The City and its water utility are governed by an elected Mayor and a City Council. The City water utility is managed within the Community Development Department by the City Engineer and Engineering staff and the Director of Operations and

Operations staff.

The City's water system and retail water service area (RWSA) are unique in that many residents within the City limits and the City's UGA receive water service from adjacent water purveyors. Approximately 4,700 of the 13,456 people (35%) within the City's UGA receive water from the City, and the remaining people within the City limits and UGA receive water from either one of the water purveyors, shown in Appendix A, located within the UGA or service area, or from private wells.

The City provides water service to three customers outside the City's RWSA, including Washington State Department of Correction's Washington Correctional Center for Women (WCCW) facility, the Pierce County Fire District No. 5 Headquarters and the Shore Acres Water System. Additionally, the City has an emergency inter-tie with one purveyor, Peacock Hill Water System.

The City's RWSA encompasses 2,832 acres (approximately 4.4 square miles). At the end of 2006 the City had 1,927 service connections.

### **Section 3 - Existing Water Use Efficiency Program**

A majority of the City's existing water use efficiency program was established by the City's June 2001 Water System Comprehensive Plan. However, some information required for reporting with current WUE program was not required when the 2001 Plan was approved, and therefore does not exist.

#### **3.1 Water use efficiency measures currently implemented and their evaluation.**

The City of Gig Harbor's current per capita water demand is 142 gal/capita/day with a peaking factor of 2.2 from average day to peak day demand. Per capita demand includes water loss from authorized consumption and distribution system leakage. The City utilizes several conservation measures in an attempt to reduce per capita consumption and any lost water. These measures include:

##### **Distribution System Measures**

- Source Meters - Source meters are installed at all active sources and are evaluated and calibrated annually by a City contractor.
- Service Meters - All water users including all public and City facilities have individual service meters. Meters are evaluated and inspected regularly and replaced as necessary. Damaged meters are replaced as soon as they are discovered, and service meters are generally replaced when they have been in use for 10 years. The City allocates annual funding for replacing service meters that are in excess of 10-years old.
- Leak Detection - Leaks in the system mains or laterals are repaired as soon as they are discovered. Leak detection surveys are currently scheduled on

an annual basis. Chronically leaking and old pipes are replaced on a routine, proactive basis. The City's old asbestos-cement pipes are also being replaced on an annual basis as budget allows.

- Water Line Looping - Whenever possible, the City has attempted to create loops within the water lines in order to promote better supply and a more flexible system. This technique also promotes water savings by reducing the need for flushing dead end water lines, which may not get proper circulation during general use.
- Hydrant Metering - The City has implemented a metering policy for their hydrant-flushing program. This effort assists the City with tracking of distribution system leakage.

#### **Public Education/Program Promotion/Public Assistance**

- Water conservation materials published by DOH and DOE are made available to the public at City Hall. These materials include lawn watering schedules, water conservation tips, and information on water saving devices for the home.
- The City building code requires new construction to include low flow toilets and showerheads. Low flow toilet tanks are rated at 1.6 gallons and showerheads are rated at 2.5 gallons per minute. These requirements apply to both new residential and commercial construction.

#### **Water Rate Structuring**

- The City has water billing rates that are intended to encourage conservation. The billing rate is structured such that customers are billed a flat base charge on each bill and then are also billed for consumption per hundred cubic feet (ccf). Billing rates for multi-residential accounts and commercial accounts are slightly higher than the rates for single family residential customers. In the recent past, water rates have increased in 2003, 2006, and 2007. Additionally, the City has evaluated water rates in 2007 and has approved another water rate increase beginning in 2008.

#### **Water Reuse**

- The City reuses treated wastewater at the wastewater treatment plant (WWTP) site. Treated sewage effluent is used in many non-potable water applications. Treatment plant hoses are plumbed so that staff can spray down facilities such as the clarifier and the contact basin. WWTP staff also use treated effluent for pre-chlorination at the clarifier and for mixing polymers for use in sludge thickening.

#### **Program Promotion**

- The City currently uses a billing process that shows consumption history on each customer's water bill. By being able to examine past water consumption histories, each consumer can be more conscious of their water

use patterns and the actual increase in cost compared to the same month in the previous year. This can have a significant positive effect on conservation efforts by getting the customer directly involved in the City's conservation campaign.

### 3.2 Projection of how much water will be saved by implementing the water use efficiency measures.

The future savings achieved by the WUE program measures was estimated on best available information. Table 1 below shows the estimated volume reduction, in million gallons per day, when comparing the average daily demand (ADD) flows.

Table 1 Summary of Water Demand Forecast (MGD)									
Classification	2008	2009	2010	2011	2012	2013	2014	2018	2028
ADD without Measures	1.05	1.10	1.16	1.21	1.26	1.32	1.37	1.62	2.08
ADD with Measures	1.05	1.10	1.14	1.19	1.24	1.29	1.33	1.54	1.89
ADD Reduction	0.00	0.00	0.02	0.02	0.02	0.03	0.04	0.08	0.19

### 3.3 Evaluation of water use efficiency measures.

As part of a water system plan, you are required to evaluate measures. The evaluation focuses on customer demand efficiencies. Measures must be evaluated for cost-effectiveness from the following categories according to WAC 246-290-810(4)(d):

- Indoor residential
- Outdoor
- Industrial/commercial/institutional

For the City's water systems there are three evaluation criteria when determining if a WUE measure is cost effective. They include:

- Water System's Perspective: Determine if the measures are cost-effective. This can be represented by whether the revenue meets the expenditure demands.
- Cost-Sharing Perspective: Evaluate cost-effectiveness if the costs were shared with other entities, such as neighboring water systems and water conservation partners.

- Societal Perspective: Evaluate if it would be cost-effective if all costs and benefits were included, including environmental, recreational or aesthetic benefits.

### 3.4 Distribution leakage information.

The distribution system leakage (DSL) standard is a significant element of the WUE requirements. DSL is defined as the water lost from the distribution system and includes both apparent losses and real losses. Apparent losses include things such as theft, meter inaccuracies, and data collection errors. Real losses are the physical losses from the distribution system and include such things as reservoir overflows and leaking water mains. Because these types of losses are not authorized for use by the water system, they are considered distribution leakage.

The best way to obtain the most accurate assessment of leakage information includes collecting production and consumption meter data.

The equation used to calculate the percent DSL is:

$$DSL = [(TPP - AC) / (TPP)] \times 100$$

where:

- DSL = Percent (%) of distribution system leakage
- TPP = Total water produced and purchased
- AC = Total water authorized for use by the water system (Authorized Consumption)

Historical DSL values are noted in Table 2 below.

Table 2 Historical Distribution System Leakage (DSL)							
Classification	2001	2002	2003	2004	2005	2006	Average
Distribution System Leakage	6.5%	3.1%	3.0%	5.3%	2.8%	3.0%	4.0%

### **Section 4 - Previous Annual Performance Reports**

The City's first annual report is due January 22, 2008. This report has not been prepared to date. The first annual report will be prepared prior to the January 22, 2008 deadline.



## **Section 5 - Water Supply Characteristics**

The City of Gig Harbor has an expanding water system. As the City's customers within the retail water service area grows, new groundwater sources have to be developed to meet its water demands. The City is evaluating all avenues to secure new water supplies to meet projected increases in demand. The City currently receives its water from six active wells. Water rights for these wells are administered by the Washington State Department of Ecology's (Ecology) Southwest Regional Office. Source water protection is regulated by the Washington State Department of Health (DOH).

The production capacity of each water supply source is outlined in Table 3 below:

<b>Table 3 Supply Analysis</b>		
<b>Source Name/Number</b>	<b>Maximum Instantaneous Flow Rate (Qi) GPM</b>	<b>Maximum Annual Volume (Qa) AFY</b>
Well 2	330	209
Well 3	750	538
Well 4	230	0
Well 5	500	336
Well 6	1,000	896
Well 8	30	48

The City's wells are generally in very good condition. Each well is visited daily by City staff, and the mechanical and electrical equipment is maintained regularly. Aquifer levels and daily production records are collected and recorded and reviewed for any indications of reduced well efficiency and variability.

Should an indication of reduced well efficiency or large seasonal variations occur, the City will proceed with additional field diagnostics. Well rehabilitation will be considered in the event of unacceptable losses of well efficiency or variability. Well replacement will be considered if well rehabilitation is not appropriate or is unsuccessful in improving the well's efficiency.

There are currently no indications that any of the City's six active wells are at risk of an unacceptable loss of well efficiency or variability.

The City holds Ecology-certificated rights to annually withdraw a total of 2,265 acre-feet (2.02 million gallons per day, or MGD) of groundwater with a maximum instantaneous withdrawal of 3,240 gpm (4.67 MGD). These rights meet the current production need.

## **Section 6 - Water Demand Forecasts**

### **6.1 Land use and zoning.**

Land use and zoning designations and regulations are important factors in determining future water requirements. Land use and zoning determine the area available for various types of development including both single-family and multifamily residential development, as well as commercial and other types of land use.

Future land use and zoning patterns for the planning area are expected to correspond to existing uses. These patterns were developed based on the projected needs of the area for the next 20 years. The Comprehensive Plan for Pierce County uses a similar approach. This consistency of approach is encouraged by the Washington State Growth Management Act (GMA) and should result in predictable and stable land uses over longer planning periods.

While the City's predominant land use is residential, there is also a significant amount of commercial development along the waterfront and State Route 16, especially in the southern and northern portion of the City limits. The most growth is expected in the northern part of the service area, which is largely undeveloped. Water service was extended to the Gig Harbor North commercial development in 2001, and further development, including St. Anthony's Hospital and Costco, in this area.

### **6.2 Population and water system account projections.**

The population projections used for demand projects are from the City's 2006 Demographic Forecast Allocation Model which is based on Pierce County's buildable lands analysis. This model includes the entire Urban Growth Area (UGA) of the City, and is divided into thirteen Population Sub Areas (PSAs). The retail water service area has two pressure zones and is generally within the UGA, except for two small areas east and west of the central city area. The retail water service area is 2,832 acres, of which 77.4% is in the City limits, 20.5% is outside the City limits in the UGA, and 2.1% is outside the UGA.

Population, number of single-family and multifamily residential units, employment population, and school population were obtained for each PSA from the model for current, 6-year, 10-year, and 20-year estimates. These projections were allocated into the water service area pressure zones based on land use and the existing system. The current Land Use Map was used to approximate the percentage of the population, by customer class, which is located within the water service area where the boundaries of the water service area and UGA overlapped.

Growth rates for each of the City's two pressure zones are shown in Table 4 below.

<b>Table 4 Projected Growth Rates</b>					
<b>Growth Rate</b>	<b>2006-2008</b>	<b>2008-2014</b>	<b>2014-2018</b>	<b>2018-2028</b>	<b>2008-2028</b>
<b>450 Zone</b>					
Single-family	33.4%	75.2%	33.0%	48.4%	245.8%
Multifamily	9.8%	26.9%	16.0%	26.0%	85.4%
Commercial	17.9%	45.6%	23.1%	33.9%	140.2%
Government	21.0%	52.0%	25.5%	37.7%	162.7%
<b>320 Zone</b>					
Single-family	3.5%	10.2%	6.9%	11.7%	31.6%
Multifamily	3.8%	10.9%	7.2%	12.0%	33.2%
Commercial	1.8%	5.4%	3.9%	7.2%	17.4%
Government	4.1%	11.8%	7.8%	12.8%	35.9%

### 6.3 Future Water Demands

Future water system demands are based on projected equivalent residential units (ERUs), which in turn are based on the projected water consumption by customer classification and the projected number of accounts. Table 5 shows the projected ERUs for the City's Retail Water Service Area over the next 20 year planning period. It does not include distribution leakage or wholesale customer demand.

<b>Table 5 Projected ERUs</b>				
<b>Classification</b>	<b>2008</b>	<b>2014</b>	<b>2018</b>	<b>2028</b>
<b>450 Zone</b>				
Single-family Residential	1,007	1,765	2,347	3,484
Multifamily Residential	286	362	420	530
Commercial	778	1,133	1,396	1,870
Government	209	317	398	548
Subtotal	2,280	3,578	4,561	6,431
<b>320 Zone</b>				
Single-family Residential	827	912	975	1,089
Multifamily Residential	357	396	425	476
Commercial	745	785	816	875
Government	195	218	235	265
Subtotal	2,125	2,312	2,451	2,705

**Table 5  
Projected ERUs**

Classification	2008	2014	2018	2028
<b>Total</b>				
Single-family Residential	1,835	2,677	3,322	4,572
Multifamily Residential	643	759	845	1,006
Commercial	1,524	1,919	2,212	2,744
Government	404	535	633	813
<b>Total</b>	<b>4,405</b>	<b>5,889</b>	<b>7,012</b>	<b>9,136</b>

The Average Daily Demand (ADD) for the entire City was based on multiplying the projected ERUs by the planning value of 200 gpd per ERU. The projected Maximum Daily Demand (MDD) is simply the projected ADD multiplied by the MDD/ADD factor of 2.5, as discussed previously. The City has decided to forecast distribution leakage as 5% of the total water system demand. The projected average and maximum daily demands for the City's water system, without Water Use Efficiency (WUE) reduction, and projected total flows both with and without WUE reductions are shown in Table 6. The projected WUE reductions are shown in Table 1 above.

**Table 6  
Projected Retail ADD and MDD Flows without WUE Reduction and  
Projected Total Flows with and without WUE Reduction**

Classification	2008		2014		2018		2028	
	ADD (gpd)	MDD (gpd)	ADD (gpd)	MDD (gpd)	ADD (gpd)	MDD (gpd)	ADD (gpd)	MDD (gpd)
Single-family	366,924	917,310	535,343	1,338,358	664,333	1,660,833	914,453	2,286,132
Multifamily	128,612	321,530	151,753	379,383	169,064	422,659	201,129	502,822
Commercial	304,732	761,829	383,740	959,351	442,308	1,105,769	548,867	1,372,169
Government	80,763	201,909	107,053	267,631	126,628	316,570	162,658	406,646
Wholesale	113,570	293,924	124,710	321,774	132,137	340,341	150,704	386,759
Non-Revenue	52,347	130,868	68,558	171,395	80,762	201,905	104,095	260,238
Total – No WUE Reduction	1,046,948	2,617,369	1,371,157	3,427,892	1,615,231	4,038,078	2,081,906	5,214,765
Total – With WUE Reduction	1,046,948	2,617,369	1,331,157	3,327,892	1,535,231	3,838,078	1,891,906	4,739,765

### **Section 7 - Water Use Efficiency Goals**

On January 14, 2008, the City of Gig Harbor's City Council will hold a public forum to establish the water use efficiency goals. The forum will be held during the

regularly scheduled City Council meeting in the City Council chambers at the City of Gig Harbor Civic Center, 3510 Grandview Street, Gig Harbor, Washington, 98335. The City Council meeting begins at 6:00 PM.

This forum will include a staff report and opportunity for the public to comment on the proposed water use efficiency goals:

**Supply side goal: Continue the City’s supply side efficiency at less than 6% for a Distribution Leakage Standard. This efficiency will be maintained through continuation of the existing water main replacement program. This program performs annual inspections and replacement of deteriorating water mains each year.**

**Demand side goal: Decrease demand side consumption by one-quarter of one percent (0.25%) for each year for the next six years.**

The supply side goal can be measured annually by using the Distribution Leakage Standard calculation in Section 3.4 above.

The demand side goal can be measured annually by calculating the volume of water conserved by use of the City’s water use efficiency measures.

### **Section 8 - Summary of Public Comments on the Proposed Water Use Efficiency Goals**

(To be included after the public forum – see above)

### **Section 9 – Annual Performance Reporting**

Upon completion of the goal setting procedure, the City of Gig Harbor will complete the required DOH performance report, Form No. 331-376, annually. A copy of this report is attached in Appendix B. This report will summarize water production data, authorized water consumption data, distribution leakage data, and the status of the City’s progress in meeting the proposed WUE goals.

This report will be prepared for public review and submitted to DOH annually before July 1 of each year. Notice of availability for public review and notice of completion of this report will also be provided before July 1 of each year.