5. Conservation

This chapter has three purposes: (1) review Anacortes' compliance with State conservation planning requirements, (2) describe Anacortes' recent conservation program, and (3) describe the conservation program that Anacortes will implement from 2008 through 2014.

5.1. Conservation Requirements and Compliance Summary

The conservation requirements that must be addressed in water system plans are contained in the following sources:

- State of Washington Water Use Efficiency Rule (January 2007)
- Department of Health *Water Use Efficiency Guidebook* (January 2011)

The State of Washington recently revised water conservation planning requirements as a result of the 2003 Municipal Water Law. An outgrowth of that law is the Water Use Efficiency Rule (Rule), which was finalized in January 2007. The Rule has several requirements and corresponding compliance dates. Some of the requirements are associated with water system plans, while other requirements are independent of the 6-year water system planning cycle.

There are seven main categories of requirements: (1) meters, (2) data collection, (3) distribution system leakage, (4) goals, (5) efficiency program, (6) demand forecast, and (7) performance reports. Table 5-1 lists the requirements of the Rule and shows that Anacortes is in compliance with current requirements, and is well prepared to comply with upcoming requirements.

Table 5-1 Conservation Requirements and Compliance

CATEGORY	WAC [1] SECTION	COMPLIANCE DEADLINE	REQUIREMENT	ANACORTES IN COMPLIANCE?
1. Meters	246-290-496	Fully metered by January 22, 2017. Submit metering plan by July 1, 2008.	1. Meter all **sources.**	**Yes**, Anacortes meters water produced at the Water Filtration Plant.
			2. Meter all **service connections**.	**Yes**, all of Anacortes' service connections are metered.
2. Data Collection	246-290-100	WSPs[2] submitted after January 22, 2008.	1. Provide monthly and annual **production/purchase** numbers for each source.	**Yes,** provided in Section 4.2.1.
			2. Provide annual **consumption** by customer class.	**Yes,** provided in Section 4.2.2.
			3. Provide "**seasonal variations**" consumption by customer class.	**Yes,** provided in Section 4.2.2.
			4. Evaluate **reclaimed water** opportunities.	**Yes,** provided in Section 7.
			5. Provide annual quantity **supplied to other public water systems**.	**Yes,** provided in Section 4.2.2.
			6. Consider water use efficiency **rate structure**.	Anacortes's rates consist of two components: 1) a base charge and 2) a volume charge with uniform rates. The base component represents a high portion of water billings since much of the expense of running the water system is fixed costs. Anacortes does not use rates as a motivator for water conservation since the volume component is a small portion of water billings and therefore it is felt it does not provide an effective incentive.
3. Distribution System Leakage (DSL)	246-290-820	First report completed by July 1, 2008. First compliance determination made by July 1, 2010.	1. **Calculate** annual volume and percent using formula defined in the Rule.	**Yes,** Anacortes reported to DOH on June 30, 2010 that their 2007-2009 3-year average distribution system leakage was 4.0%, which is under the 10% threshold.
			2. **Report** annually: annual leakage volume, annual leakage percent, and, for systems not fully metered, meter installation progress and leak minimization activities.	
			3. Develop water loss control **action plan** (if leakage is over 10% for 3-year average).	
4. Goals	246-290-830	Goals established by January 22, 2008.	1. **Establish** measurable (in terms of water production or usage) conservation goals and re-establish every 6 years. Provide schedule for achieving goals.	**Yes,** measurable goals were established through a public process. See Section 5.3.1.
			2. Use a **public process** to establish the goals.	
			3. **Report** annually on progress.	**Yes,** Anacortes reports on progress towards meeting the goal to DOH via DOH's website and to its customers via Anacortes' annual water quality report.

CATEGORY	WAC [1] SECTION	COMPLIANCE DEADLINE	REQUIREMENT	ANACORTES IN COMPLIANCE?
5. Efficiency Program	246-290-810	WSPs submitted after January 22, 2008.	1. **Describe existing** conservation program.	**Yes,** see Section 5.2.1.
			2. **Estimate water saved** over the last 6 years due to conservation program.	**Yes,** see Section 5.2.2.
			3. Describe conservation **goals**.	**Yes,** see Section 5.3.1.
			4. Implement or evaluate **1-12 measures**, depending on size. (6 measures for Anacortes based on 6,500 connections.)	**Yes,** Anacortes is required to implement or evaluate 6 measures. Anacortes has chosen to implement 6 measures. See Section 5.3.
			5. Describe conservation **programs for next 6 years** including schedule, budget, and funding mechanism.	**Yes,** see Section 5.3.
			6. Describe how customers will be **educated** on efficiency practices.	
			7. Estimate **projected water savings** from selected measures.	
			8. Describe how efficiency program will be **evaluated** for effectiveness.	
			9. Estimate **leakage from transmission lines** (if not included in distribution system leakage).	**N/A,** all leakage is included in the distribution system leakage number.
6. Demand Forecast	246-290-100	WSPs submitted after January 22, 2008.	1. Provide demand forecast reflecting **no additional conservation**.	**Yes,** see Section 4.3.2.
			2. Provide demand forecast reflecting **savings from efficiency program**.	
			3. Provide demand forecast reflecting **all "cost effective" evaluated measures**.	**N/A.** Since Anacortes is implementing the required minimum number of measures (6), this forecast is not required.
7. Performance Reports	246-290-840	First report completed by July 1, 2008.	1. **Develop** annual report including goals and progress toward meeting them, total annual production, annual leakage volume and percent, and, for systems not fully metered, status of meter installation and actions taken to minimize leakage.	**Yes,** Anacortes' performance reports are submitted to DOH via DOH's website and are provided to its customers via Anacortes' annual water quality report.
			2. **Submit annually** by July 1 to the Department of Health (DOH) and customers and make available to the public.	

1. WAC = Washington Administrative Code
2. WSP = Water System Plan

5.2. Recent Conservation Program

5.2.1. Measures

Anacortes' recent conservation program has consisted of the following conservation measures, the details of which are discussed below:

- Source Meters
- Service Meters
- System Leak Detection and Repair
- Consumption History on Bills – residential customers
- Consumption History on Bills – commercial customers
- Consumption History on Bills – industrial customers
- Public Outreach

Source Meters

Source meters are a critical conservation tool because accurate water production data are used to develop conservation priorities, goals, and programs. Anacortes has two source meters at the Water Filtration Plant. While Anacortes had experienced problems with the meters in recent years, the problems have been resolved. Anacortes plans to calibrate the meters annually.

Service Meters

Service meters at customer connections are another key component of providing accurate water information for conservation planning. Anacortes has meters on all service connections.

Anacortes has a formal meter testing and replacement program focused on meters 2 inches and larger. Most of these large meters are tested (and repaired or replaced as appropriate) every 1 to 5 years. Meters with more consumption are tested more frequently (i.e., every year) and those with less consumption are tested less frequently (i.e., every 5 years). A few of these large meters with relatively low consumption are tested only every 10 years.

Meters that are smaller than 2 inches are not tested on a regular basis. However, Anacortes' billing software is programmed to alert staff if consumption varies significantly from historical use. Significantly lower consumption could be an indication that a meter is not registering properly. Significantly higher consumption could be an indication of a leak.

System Leak Detection and Repair

Operating an efficient physical system that minimizes leaks demonstrates a commitment to sound financial and resource management. Anacortes has an informal leak detection and repair program which relies on a visual method of leak detection. Leaks from buried pipes often become apparent due to wet spots on the ground and greener spots on lawns. When these indicators are present, the areas are investigated for possible leaks. Water quality tests indicating the presence of chlorine can confirm whether the water is indeed a leak from

Anacortes' system. Leaks are promptly repaired. Anacortes is considering developing a formal program that would include annually inspecting a certain portion of the system.

Consumption History on Bills

Customer bills that provide historical consumption data allow customers to understand how their water use varies throughout the year and from year to year. This information helps customers make informed choices about how they manage their water use, including implementing conservation. All of Anacortes' customer bills include historical consumption data.

Public Outreach

Anacortes has implemented a number of public outreach activities aimed at conveying water conservation messages. These activities include the following:

- **School Education:** Anacortes co-funds Powerful Choices for the Environment, which is an environmental education program provided to middle school students. The 4-day program is delivered by environmental education professionals trained in science education and local resource use. The curriculum covers water conservation, as well as other resource issues including local air quality, waste reduction, and energy conservation.

- **Community Events:** Anacortes participates in several community events throughout the year including the annual Waterfront Festival. Participation has typically included exhibiting conservation displays and giving away promotional items containing conservation messages.

- **Web site:** Anacortes posts water conservation materials, including conservation tips, on its Web site.

5.2.2. Estimated Savings

Anacortes staff have not historically calculated or tracked the estimated savings associated with the conservation program. This will change in the future as a systematic tracking method is implemented to track Anacortes' new conservation goal required by the Water Use Efficiency Rule.

5.3. 2008–2014 Conservation Program

The time period for the conservation program described in this section typically mirrors the 6-year planning period of the water system plan, which is 2010–2015. However, the new Water Use Efficiency Rule required Anacortes to adopt an official conservation goal by early 2008. Anacortes chose to adopt a goal that began in 2008 and continued through the end of 2014. Therefore, the goal and this section cover the 7-year time period of 2008–2014. Anacortes funds the conservation program through rates paid by its water customers.

5.3.1. Goals

The conservation program's goals should reflect the drivers behind a utility's pursuit of water conservation. Conservation drivers can include meeting regulatory requirements, minimizing impacts on water resources, decreasing operating costs, deferring capital costs, and obtaining new supply. The conservation driver(s) applicable to any one utility depend on that utility's specific supply situation and cost structures. Anacortes' conservation program is primarily driven by minimizing impacts on water resources.

Anacortes' official goal is to save approximately 30 million gallons over the life of the 7-year conservation program beginning in 2008 and running through the end of 2014. This goal was established using a public process that included conducting a public meeting at the February 4, 2008 City Council meeting.

5.3.2. Measures

Anacortes' conservation program for 2008–2014 consists of the six measures shown in Table 5-2. The details of each measure are discussed below. These measures were selected based on a combination of factors including applicability to Anacortes' service area, customer acceptance, cost effectiveness, and/or savings potential. Anacortes will continue to use source meters, service meters, and system leak detection and repair, although those activities are not counted as official conservation "measures" under the new conservation Rule.

Table 5-2 2008-2014 Conservation Program

MEASURE	RELATIONSHIP TO CURRENT PROGRAM
1. Consumption History on Bills – residential customers	Continuation
2. Consumption History on Bills – commercial customers	Continuation
3. Consumption History on Bills – industrial customers	Continuation
4. Public Outreach	Continuation
5. Toilet Leak Detection – single family customers	New
6. Toilet Leak Detection – multifamily customers	New

Consumption History on Bills

Anacortes will continue to provide consumption history on customer bills for all customer sectors, as described in Section 5.2.1.

Public Outreach

Anacortes will continue its public outreach programs including providing school education, participating in community events, and promoting conservation on its Web site, as described in Section 5.2.1.

Toilet Leak Detection

Anacortes will begin a new program aimed at reducing toilet leaks for its single family and multifamily customers. Anacortes plans to provide free toilet leak detection dye tablets for customers to determine if their toilets leak, and to provide detailed information on how to fix leaks.

5.3.3. Estimated Savings

The estimated savings of the 2008–2014 conservation program are shown in Table 5-3. Upon full implementation of the program at the end of 2014, the program is expected to save approximately 30 million gallons over the life of the 7-year conservation program. It should be noted that these savings are not the full savings Anacortes anticipates achieving between 2008 and 2014 by all the measures listed in Table 5-2; rather, these values reflect the estimated savings from the measures that are readily quantifiable. The savings achieved by the program, and the corresponding progress toward reaching Anacortes' goal, will be estimated by tracking the number of toilet leak detection tablets distributed and multiplying them by their per-unit savings.

Table 5-3 Estimated Savings for 2008–2014 Conservation Program

CONSERVATION MEASURE	PARTICIPANT TYPE	HOUSEHOLDS [1]	PARTICIPANTS [2]	DYE TABLETS [3]	SAVINGS	
					ANNUAL GALLONS PER DAY (gpd) (AT FULL IMPLEMENTATION)	GALLONS OVER PLANNING PERIOD
Toilet Leak Detection - single family customers	Single Family Household	7,463	3,732	17,164	17,075	24,929,760
Toilet Leak Detection - multifamily customers	Multifamily Household	2,074	1,038	3,734	3,322	4,849,536
Total		9,537	4,770	20,898	20,397	29,779,296

1. Households by the year 2014.
2. Households that use the toilet leak detection dye tablets given to them by Anacortes; 50% participation is assumed.
3. Assumes an average of 2.3 dye tablets given to every single family household and 1.8 dye tablets to every multifamily household.

Figure 5-1 depicts how the savings will grow over the course of the 7-year conservation program. The program is generally expected to be implemented evenly over the 7-year planning period.

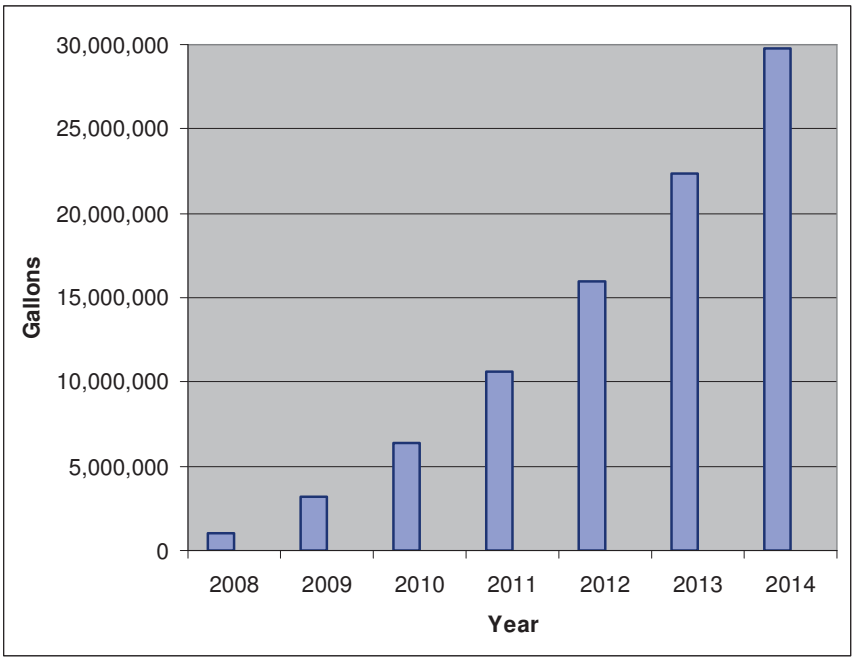

Figure 5-1 Estimated Cumulative Savings for 2008–2014 Conservation Program

5.3.4. Effect on Demand

Anacortes' demand will be reduced by the expected savings from the conservation program. The demand forecast presented in Section 4.3.2 includes two forecasts: one without additional conservation and one reflecting the savings from the conservation program.

The conservation adjustment to the demand forecast was accomplished by reducing the water use factors in 2008–2014 to reflect the estimated savings from the conservation program. The residential water use factor shifts from 183 gpd per residential connection in 2007 to 181.1 gpd by 2014. The commercial water use factor shifts from 594 gpd per commercial connection in 2007 to 587.9 gpd by 2014.

Anacortes plans to continue conservation efforts beyond 2014. However, since the conservation goals beyond 2014 are not defined at this time, the water use factors were simply held constant for all years beyond 2014.