Chapter 2

POLICIES AND CRITERIA

2.1 Introduction

The City of Tumwater's (City's) drinking water utility policies and criteria are provided in this chapter and categorized into the following five sections:

- Service policies.
- Financial Policies.
- Design Standards and Facility Policies.
- Performance Criteria.
- Organizational Policies.

2.2 Service Policies

2.2.1 Customer Service Policies

2.2.1.1 Service Area Agreements

The Department of Health defines three types of water system service areas – retail service area, future service area, and service area. For the City, all three of these service areas have the same boundary and are simply referred to as "service area" throughout this Water System Plan (Plan). The City's service area is shown on Figure 1.2 in Chapter 1.

The City's service area boundaries were initially defined in the 1989 Thurston County Coordinated Water System Plan (CWSP) as the City's urban growth area (UGA) boundary. The City's service area continues to match its UGA apart from minor exceptions along the boundary between the cities of Tumwater and Olympia. The City has coordinated with the City of Olympia to define the boundary between their two service areas.

2.2.1.2 New Customer Connection Process

Per the CWSP, the City is designated the "preferred service provider" and will provide service to all new connections within its service area when the following four threshold factors are met:

- The City has sufficient capacity to serve water in a safe and reliable manner.
- The service request is consistent adopted local plans and development regulations.
- The City has sufficient water rights to provide service.
- The City can provide service in a timely and reasonable manner.

The City establishes specific conditions of water service during its Development Review process. For new developments within reasonable proximity to City services, larger projects are generally required to connect to the water system; however, any new development within 200 feet of an existing water service will be required to connect to the City's system.

For new single family residential services within the City's service area, but not within reasonable proximity of existing water service lines, a priority of service form is provided authorizing the applicant to consider other service providers prior to drilling a new exempt well. In these situations, conditions of approval and future connection to the public water supply are outlined by the City through the process outlined in the 1996 Thurston County CWSP, which new customers can find on the City's Utility Plans & Resources website[1]. These conditions generally include an agreement to connect to the City supply when City service becomes immediately available to the parcel boundary. Additional conditions of service requirements are identified in the City's Development Guide and may be augmented as necessary by the Director of Water Resources & Sustainability.

2.2.1.3 Annexations

- The City will continue to be the priority service provider for properties annexed into the City without existing municipal supply.
- Annexations do not affect the Priority of Service determination outlined in the CWSP as these outlying areas are already incorporated into the City's designated water utility service area, as defined by the CWSP.
- Existing water service providers in areas annexed into the City shall be approached by the City regarding acquisition or the possibility of a satellite water system arrangement, as staffing and financial resources permit.
- City water will not be mixed with water supplied by other systems unless under emergency conditions and if the water supplied by others meets or exceeds federal, state, and local water quality standards.

2.2.1.4 Satellite Management

The City is committed to providing safe and reliable drinking water within approved service area and are willing to consider consolidating any Group A or Group B water systems within the service area. At times this may require the City to obtain funding to upgrade the facility to the City's standards. All consolidations would need to meet the City's connection policies, ordinances, and/or resolutions:

- The City will implement, as feasible, the satellite system management strategy presented in the proposed Satellite System Management Program, which can be found in Appendix G.
- The City is the priority service provider within its service boundary as designated by the 1986 CWSP, updated 1996 or most current version.
- As priority service provider, the City accepts responsibility for providing water service within its service area in the future in accordance with the CWSP.
- Upon request, the City may assist water systems within its service area by operating them as satellite systems, provided they meet conditions for satellite service imposed by the City. The City's preference for satellite management is to acquire the system and operate it as a distinct utility until such time as the system can be connected to the City's main distribution network.

[1] https://www.ci.tumwater.wa.us/departments/public-works/utilities/drinking-water/utility-plans-resources

- The City will operate satellite systems by taking one or more of the following actions: assume ownership, perform operations and maintenance under a contract, or provide a variety of technical assistance activities.

2.2.1.5 Temporary Services

- Compliance with standards may be deferred for temporary water use, so long as the temporary use does not negatively impact the health and safety of the City's customers or the environment.
- Temporary uses are interruptible in the event of a water emergency.
- Temporary services do not include hydrant meters or services for construction activities.

2.2.1.6 Emergency Service

- Compliance with operational standards and policies may be deferred for emergency water use.
- Policy criteria may be waived for emergency service.
- The Director of Water Resources & Sustainability shall determine the need for an emergency water declaration and implement measures outlined in the Water Shortage Response Plan (WSRP) as needed. The Mayor shall confirm and declare a water emergency in accordance with the WSRP.

2.2.2 Supply Policies

2.2.2.1 Quality Protection

- Aquifer protection is one of the City's highest priorities.
- The City will further aquifer protection by continuing to refine its Wellhead Protection Plan (WHPP) for its wellfield capture zones and by continuing to implement and refine its Aquifer Protection Standards for areas outside of the WHPP.
- The goal of the City is to maintain water quality at a level that meets or exceeds the water quality in its natural state, as well as state and federal standards, limiting chemical treatments to the extent practical.
- The City will pursue and maintain an active role in protecting the regional environment by participating in regional studies to identify and protect critical areas as defined in the Growth Management Act (GMA).
- To protect public health and reduce the risk of bacteriologic contamination, the City will disinfect the water system using 12.5 percent sodium hypochlorite.
- The City recognizes the importance of protecting groundwater quality for potable purposes. Conversions to public sewer of medium and high risk systems, as outlined by the 2015 Urban Septic Assessment is a high priority.

2.2.2.2 Quantity

- It is the City's policy to supply all customers within the service area from the City's supply sources, through system acquisition or new source development.
- The City shall consider saturation planning for supply sources so that future water resource limitations can be handled effectively and the impacts of system limitations can be minimized.
- The City will comply with all laws and regulations relating to use of authorized quantities of water.

- The City will pursue the acquisition of water rights to meet or exceed saturation development conditions.
- The City will pursue the capability to produce maximum instantaneous withdrawal rates as designated on relevant water rights through infrastructure design and improvements.
- The City will strive to mitigate for all known impacts of new water rights to the extent practical for the preservation of habitat, instream flows and senior water right holders.

2.2.2.3 Conservation

- The City will promote the efficient and responsible use of water and will conserve during a water shortage.
- The City will implement and maintain a conservation plan based on Water Use Efficiency (WUE) Law regulations.
- Water supplied for irrigation purposes is considered interruptible during emergencies or other periods requiring implementation of the WSRP.
- The City will coordinate with regional partners to promote indoor WUE to the greatest extent practical.
- To maximize beneficial uses of potable water, the City will promote the use of reclaimed water through the development of policies and standards as reclaimed water becomes available for use.
- To minimize water theft, the City shall provide access to automated or card-operated bulk water fill stations and consider placement of hydrant locks which guarantee regional access for emergency services.
- Water system losses greater than 10 percent of total production require prompt assessment of loss and the development and implementation of a leakage/loss control plan, as necessary based on the assessment.
- Concurrent with the water system planning process, the City shall evaluate and adopt WUE goals addressing production, distribution and demand.

2.2.3 Regional Policies

- The City will participate in regional supply activities, including reclaimed water use, as good stewards of resources, within the constraints of cost, reliability, quantity, and water quality.
- The City will supply all customers within its identified service area, which includes the UGA, in accordance with the CWSP and other City policies and standards.
- In the context of coordinated water system planning, the City will work with other regional water service providers to set standards for priority of service and construction or fees in lieu of construction for new water systems in the UGA.

2.3 Financial Policies

- The City will use a rate-setting process which considers the standards established by the American Water Works Association (AWWA) and the U.S. Environmental Protection Agency (EPA).
- Considerations for rates and charges established by the City will include:
  - Cost-based rates which recover current, historic, and future costs associated with the City's water system and services.
  - Use-based rates to promote conservation of the resources and limit water waste.

  - Residential rates shall be charged using an inverted block structure to promote WUE.
  - Equitable charges to recover costs from utility customers commensurate with the benefits they receive.
  - Adequate and stable source of funds to cover the current and future annual cash needs of the water utility; and
  - Easy for the customer to understand.
- The City's current customers will pay the direct and indirect costs of operating and maintaining the facilities through user rates. In addition, the user rates will include debt service incurred to finance the capital assets of the utility attributable to existing customers.
- New customers seeking to connect to the water system will be required to pay a utility connection fee for an equitable share of the historical cost of the system's capital improvement plan. Connection fee revenue will be used to augment the Capital Improvement Program.
- New and current customers will be charged for extra services through a separate ancillary charge based on the cost to provide the service. Ancillary charges can increase equitability and increase operating efficiency by discouraging unnecessary demand for services by the customers. Revenue from ancillary charges will be used to finance annual operations and maintenance.
- The City will maintain information systems which provide sufficient financial and statistical information to ensure conformance with local, state and federal requirements and which help support rate-setting policies and objectives.
- There are two widely used, generally accepted methods for determining the total revenue requirements of a water utility: the cash basis and the utility basis. The water rates may be developed using the cash basis, which is a method commonly used by publicly owned utilities.
- The user charges must be sufficient to provide cash for the expenses of operation and maintenance of the Water Utility, including infrastructure replacement.
- The Water Utility, at a minimum, should maintain an ending fund balance of 20 percent of annual budgeted operating expenditures and debt service payments.
- Customers shall be classified as single-family, multifamily, commercial/industrial, institutional (governmental agencies, including City), and irrigation.
- The criteria used to project demand and size facilities will be based on population and employment projections developed by the Thurston Regional Planning Council.
- For customers residing outside the city limits, surcharges will be applied. Customers outside of the City limits may eliminate rate surcharges by providing the City with a Power of Attorney agreement to petition in favor of annexation.
- The City shall employ a conservation-based rate structure that escalates based on quantity of water used to encourage the efficient use water resources.
- The City provides fire protection services in addition to water services. A separate cost allocation for services and infrastructure relating to fire protection services shall be established.
- The City's standard fees and charges shall be calculated for the service area as a whole. Service location will not cause the rate to vary. Special rates may apply to areas managed independent of the City's primary system, such as but not limited to satellite

management areas or other temporary services not connected to the City's main distribution network.

- The City will charge customers for extra service through a separate ancillary charge based on the cost to provide the service. The charges should be reviewed regularly and updated regularly based on increases in the Consumer Price Index for the Tumwater area.
- The term "connection fees" refers to the one-time fee paid by a property owner when initially connecting to the water system. This fee, as established by Chapter 13.04 of the Tumwater Municipal Code, was developed in order for new customers to bear an equitable share of the historical cost of the system, including but not limited to, infrastructure development, distribution and treatment and water rights acquisition.
- The City will charge for the actual cost of services and equipment required to make a new connection (hookup fee, drop-in fee and/or meter charge).
- The City is open to leases of water facilities for mobile communication and data purposes. Revenues generated from the lease of water facilities shall be dedicated to the Water Fund.

2.4 Design Standards and Facility Policies

This section summarizes the policies for the design, construction, and maintenance of drinking water utility facilities. The City's complete Water Design and Construction Standards can be found in Appendix G.

2.4.1 Source of Supply

- All production sources shall be appropriately secured to minimize trespassing and vandalism to the extent practical.
- Primary sources shall have automatic power back-ups to minimize service interruptions and source losses in the event of an emergency.

2.4.2 Storage

- Location of storage facilities will satisfy the following requirements:
  - Minimize fluctuations in system pressure during normal demands.
  - Maximize use of the storage facilities during fires and peak demands.
  - Improve the reliability of the supply for the water system.
- All storage locations shall be appropriately secured to minimize trespassing and vandalism to the extent practical.

2.4.3 Transmission and Distribution

- All distribution system pipe shall be Class 52 ductile iron pipe.
- Where practical, transmission and distribution mains shall be looped to increase reliability, decrease head losses, and protect water quality.
- All mains shall comply with the generally recognized design criteria from the AWWA as follows:
  - In residential areas, the grid of distribution mains should consist of mains at least 8 inches in diameter. Where the layout of the streets and the topography are not well adapted to the above arrangements, or where dead-ends and poor looping are unavoidable, 10-inch will be the minimum main size.

  - In non-residential areas (primarily commercial and industrial areas) minimum water main sizes shall be 12-inch.
  - Looping requirements and spacing of facilities will be established by the Water Resources & Sustainability Department and implemented by the Community Development Department.
  - Additional considerations may be necessary for on a case-by-case basis dependent upon projected water demand and fire flows for the proposed development.
- All new construction shall be in accordance with City standards for additions to the water system.
- Distribution system design assumes that only adequately sized service lines will be used. All residential service lines will be as required by the City's Development Guide.
- Valve installations shall satisfy the following criteria:
  - Zone valves shall be located at all pressure zone interfaces to allow future pressure zone realignment without the need for additional pipe construction.
  - Isolation valves shall be located wherever necessary to allow individual pipelines to be shut down for repair or installing services. In general, a minimum of four valves shall be provided per cross, and three valves per tee.
  - Air/vacuum release valves shall be placed at all high points or "crowns" in all pipelines.
- Cross Connection Control shall conform to Washington Administrative Code (WAC) 246-290-490 and to the City's Cross Connection Control Plan.
- Distribution lines shall be replaced on a routine schedule prioritized on infrastructure age. Infrastructure in exceedance of estimated life spans shall receive the highest priority for replacement.

2.4.4 Booster Pump Stations

- All existing and future booster stations should be modified/constructed to comply with the following minimum standards:
  - All structures should be non-combustible, where practical.
  - All buildings should have adequate heating, cooling, ventilation, insulation, lighting, and work spaces necessary for on-site operation and repair.
  - Underground vaults and confined spaces should be avoided where possible due to the increased potential of flooding, electrocution, and other hazards.
  - Booster Pump sites shall be appropriately secured to minimize trespassing and vandalism to the extent practical.
  - Each station shall be equipped with a flow meter, inlet and outlet pressure recording and all necessary instrumentation connected to the City's Supervisory Control and Data Acquisition (SCADA) system to assist personnel in operating and troubleshooting.
  - Emergency power capability shall be provided to at least one booster pump station supplying each booster zone.
- Booster stations may be considered where necessary to fulfill the following criteria:
  - Provide supply redundancy to a pressure zone.
  - Improve the hydraulic characteristics of a pressure zone.
  - Improve water quality (i.e., increased circulation).
  - Increase fire flow.

2.4.5 Pressure Reducing Stations

- The City utilizes a standard design, as found in the City's Development Guide, which should be followed for pressure reducing stations. The standard design reduces design costs and minimizes confusion.
- All mainline Pressure Reducing Valves (PRVs) should be placed in vaults that are large enough to provide ample work space for field inspection and repair of the valves. Vaults should be tall enough to allow operating personnel to stand erect.
- Vaults should drain to daylight or be equipped with sump pumps to prevent vault flooding.
- Pressure relief valves should be provided on the low pressure side of the PRV to prevent system over-pressuring in case of a valve failure.
- PRVs installed for individual services shall be placed behind the service meter. Maintenance and/or replacement of these individual PRVs is the responsibility of the property owner.

2.4.6 Control

- The City shall utilize a SCADA system to remotely monitor and control the normal operations of the water utility. Manual controls shall also be maintained at each production, treatment and booster site.
- SCADA must be capable of remotely optimizing the operation of the water system's components in response to reservoir levels, disinfection requirements, system pressures, abnormal system conditions, electrical power rate structure, and water costs.

2.4.7 Maintenance

- Equipment breakdown is given highest maintenance priority, and repairs should be made even if overtime labor is involved.
- Equipment should be replaced when it becomes obsolete.
- Worn parts should be repaired, replaced, or rebuilt before they represent a high failure probability.
- Equipment that is out of service should be returned to service as soon as possible.
- A preventative maintenance schedule shall be established for all facilities, equipment and processes.
- Spare parts shall be stocked for all equipment items whose failure will impact the ability to meet other policy standards.
- Tools shall be obtained and maintained to repair all items whose failure will impact the ability to meet other policy standards.
- Dry, heated shop space shall be available to all maintenance personnel to maintain facilities.
- All maintenance personnel shall be trained in the procedures and techniques necessary to efficiently perform their job descriptions.
- Maintenance shall be performed by the water maintenance staff and supervised by the Operations Manager.
- Hard copy written and/or computerized records and reports will be maintained on each facility and item of equipment showing operation and maintenance history.
- Service meters shall be maintained to promote an accuracy of +/- 3 percent.

2.4.8 Joint Use

- All joint use facilities must comply with the City's policy and design standards.
- Joint use facilities will be pursued only in those areas where such facilities would improve reliability or operating costs.

2.5 Performance Criteria

Performance criteria establish an optimum performance level and a standard of quality and quantity for the water system. These criteria dictate how the water system facilities should work together to as a whole to provide reliable and redundant water service.

2.5.1 Pressure

- A minimum of 40 pounds per square inch (psi) at customer meters shall be provided during normal demand conditions and 30 psi during peak hour demand, not including a fire or emergency. Minimum pressure requirements are set by the Washington Department of Health (DOH) to provide adequate delivery pressures to customers and to avoid risks of contaminant intrusion.
- A maximum distribution system pressure of 130 psi will be provided during normal demand conditions, not including pressure surges. Customers receiving service pressures over 80 psi should follow the provisions of the Universal Plumbing Code (UPC) for pressure reduction with individual PRVs. High system pressures can lead to pipe bursts and other maintenance concerns.
- During fire conditions, the minimum pressure at the fire location is 20 psi in the water main (also ISO criteria). The minimum pressure is set by DOH to avoid poor firefighting conditions from low pressures.

2.5.2 Velocities

- Under normal conditions, the velocity of water in a transmission main should be less than 5 feet per second (fps).
- Under emergency conditions, such as a fire, the velocity of water in the water mains shall be less than 8 fps.

2.5.3 Source of Supply and Pumping

- The capacity of the source of supply, including wells, booster stations, and transmission mains, shall be sufficient to meet maximum day demand (MDD) and to replenish storage used during a fire within 72 hours after a fire. The supply system should be capable of meeting this criterion with the largest supply source out of service.
- The capacity of the source of supply, including wells and booster stations that have reliable back-up power shall be sufficient to meet average day demand (ADD).
- Booster stations shall be capable of supplying MDD with the largest pump out of service.
- Supply spanning vulnerable areas (i.e., rivers, creeks, bridges) shall have redundant facilities to minimize loss of service, fire flow, etc., in the event an emergency would isolate the service area from the production source.

2.5.4 Storage

- Storage within the distribution system must be of sufficient capacity to supplement transmission supply when peaking demands are greater than the MDD rate (equalizing storage) and still maintain sufficient storage for a fire or other emergency condition.
- Equalizing storage must be stored above the elevation that yields a 30 psi service pressure to the highest service in the zone.
- Standby and fire suppression storage must be stored above the elevation that yields a 20 psi service pressure to the highest service in the zone.
- Standby and fire suppression storage volumes shall be stacked.
- Sufficient standby storage will be provided to hold at least 116 gallons per equivalent residential unit (ERU).
- Sufficient fire suppression storage will be provided so that should a fire occur, the supply capacity from the reservoirs will be sufficient to fight the fire while meeting the peak rate of the MDD.
- Sufficient storage for a fire condition is the product of the fire protection water demand and the required duration. Fire flow and duration requirements are shown in Table 2.1.

Table 2.1 Fire Flow and Duration Requirements

Customer Type	Fire Flow (gpm)[1]	Duration (minutes)
Single Family Residential	1,000	120
Multi-family Residential	2,500	120
Mixed Use	3,000	180
Commercial/ Industrial	3,500	180
Public	3,000	180

Note:
Abbreviation: gpm – gallons per minute.

2.6 Organizational Policies

2.6.1 Structure

- The water utility shall be operated as an enterprise utility (financially self-supporting).
- The water utility shall consist of the following divisions:
  - Engineering.
  - Operations and Maintenance.
- Water utility management is accomplished by the Director of Water Resources & Sustainability with the assistance of the Operations Manager
- The water utility shall operate to administer only the municipal water system. Stormwater, wastewater, and other utilities are not administered in the water utility.

2.6.2 Staffing

- The water utility staff level is established by the City Council based on the financial resources of the City and need as identified by utility management.
- Personnel certification will comply with state standards. The Operations Manager shall be a certified Water Distribution Manager III.

2.6.3 Responsibilities

- The water utility has the responsibility for potable water system operation. As reclaimed water becomes available, distribution and management of the associated facilities will also be the responsibility of the water utility.
- Planning, design, operations and maintenance, construction, and customer service relating to system operations will be accomplished by the water utility.
- Financing, customer billing, record management, and customer service relating to billings are not performed by the water utility.

2.6.4 Relationship with Other Departments

- The Finance department is responsible for customer billing, payment collection, project cost accounting, and fund activity reporting.
- The Human Resources Department is responsible for employee records, union labor negotiations, and salary schedules.
- The Fire Department uses water utility facilities for fire protection and establishes fire flow requirements.
- The water utility is responsible for reviewing and processing violations of city water ordinances, in coordination with the City's Code Enforcement team.
- The Fire Department is responsible for hydrant fire flow testing and reporting un-metered water use by the Fire Department for tracking by the water utility, as required by state law. Water use tracking shall not interfere with emergency operations.
- Fire hydrant testing is performed by the Fire Department following infrastructure review by the water utility.
- All Departments shall report to the water utility when violations of City water ordinances, including wellhead protection ordinances, occur, for follow-up by the water utility.