Comprehensive Plan
Citizen Advisory Committee
AGENDA
Thursday, May 26, 2016

HILLSBORO CIVIC CENTER 4:00-6:00 PM
150 East Main Street Conference Room 113B/C

Time	Topic	Lead	Action
4:00	A. Group Photo: Meet in Conference Room 113B/C, then proceed to plaza or lobby (depending on weather).	-	Smile!
4:15	B. Introductions/Welcome	All	I
4:20	C. Minutes Review – April 28 meeting	Nick	I, D
4:25	D. Water Supply & Distribution a. Background Report b. Draft Goals and Policies	Nick	I, D, R
5:10	E. Staff Updates and Upcoming Meeting Schedules/Topics a. Planning Commission and City Council Review Process Update b. Upcoming Meeting Dates	Laura/Nick	I, D
5:20	F. Public Comment	-	I
5:30	G. Adjourn	-	

I=Information, D=Discussion, R=Recommendation

Attachment	Page
1. April 28 meeting minutes	1
2. Staff report for May 2016 meeting	7
3. Water Supply & Distribution	
a. Background Report	9
b. Draft Goals & Policies	25

Next Regular Meeting:
Thursday, June 23, 2016
4:00-6:00pm
Hillsboro Civic Center
Conference Room 113B/C
150 E. Main Street, Hillsboro

For further information on agenda items, contact Laura Weigel, Long Range Planning Manager, at (503) 681-6156 or email at laura.weigel@hillsboro-oregon.gov.

Meeting Summary

Citizen Advisory Committee – Comprehensive Plan Update
April 28, 2016 - 4:00 p.m. – 6:00 p.m.
Hillsboro Civic Center – Conference Room 113B/C
150 East Main Street
Hillsboro, OR 97123

Members Present
Mica Annis, Steve Callaway, Marc Cardinaux, Aron Carleson, Wil Fuentes, John Godsey, Bonnie Kooken, Glenn Miller, Tricia Mortell, Daniel Nguyen, Ken Phelan

Members Excused
Katie Eyre, Bryan Welsh, Ahne Oosterhof, Gwynne Pitts

Staff Present
Colin Cooper, Rob Dixon, Aaron Ray, Laura Weigel

Welcome and Introductions

The meeting was convened, but the planned group photo was postponed to a later meeting due to a number of excused committee members.

Minutes – March 17, 2016

Peter Brandom's name was misspelled in the March minutes. Staff will make the correction.

Community Summit Outcomes and Survey Results

Aaron Ray reported on the Planning Department's recent efforts to seek public input on the Comprehensive Plan update, which consisted of two Community Summits, presence at the Latino Festival, and surveys (online and dot-voting) on the seven Comprehensive Plan topics under the Bolstering Community Involvement and Enhancing Livability and Recreation Core Areas: Public Involvement, Design & Development, Housing, Recreation, Historic Resources, Library Services, and Urbanization. While good weather likely limited the turnout at each Community Summit, staff received substantial feedback from the public, and engaged about 50 people in total.

The surveys asked participants to measure the importance of each Comprehensive Plan goal to them. The three options were “not important”, “somewhat important”, and “very important”, which were then scored to generate a weighted average. Aaron emphasized that the scores won’t be used to make a list of items to remove from the proposed drafts, but instead will be used to help shape implementation measures to reflect the priorities of the public. Staff may also identify issues that should be more effectively communicated.

Aaron shared with the committee the topics that the public found most important for each topic. For **public involvement**, the three topics most important to respondents were:

1. Make information easy to find and easy to understand.
2. Make it easier to find out about planning projects and decisions, either online or in person.
3. Develop a consistent way of communicating with the public about planning and land use decisions.

Design & Development:

1. Design and retrofit major roads to include safe options for walking, transit, and bicycling.
2. Integrate walking, transit, and bicycling commute options into employment areas.
3. Build neighborhoods so that residents can meet their daily needs on foot, via bike, or a short drive.

Historic Resources:

1. Balance regulation to recognize both property rights and the need for historic preservation.
2. Promote adaptive reuse of historic buildings.
3. Design new development in historic areas to integrate and maintain the neighborhood’s character.

Housing:

1. Many different types of housing, including single-family houses, apartments, condos, manufactured homes, and more.
2. Ways to allow people to remain in their homes and neighborhoods as they age.
3. More housing options available for people at all income levels.

Library Services:

1. Enhance access to library resources throughout the community.
2. Promote libraries as valued community gathering spaces.
3. Place new library facilities near transit, walking, and bicycling routes.

Recreation:

1. Expand our network of trails, on-street bicycle lanes, and walking paths.
2. Incorporate public safety into the planning and management of greenways, open space, and trails.
3. Locate recreation opportunities throughout the City.

DRAFT

Urbanization:

1. Consider the economic, environmental, social, and energy consequences of urban growth when developing long range plans.
2. Provide a range of housing choices that serves current and future households of all types.
3. Integrate businesses serving daily needs such as grocery stores and personal services into neighborhoods.

Questions and comments from the committee included:

- The way some of the goals and policies are phrased likely had an impact on how people viewed the topic's importance.
- The committee asked whether the City is addressing assisted living in the Housing section. Staff responded that they believe assisted living is listed as a housing type, but they will double check to make sure it's included.

Final Review of Proposed Draft Goals & Policies

Aaron Ray presented the goals and policies for the seven topics covered thus far to the committee. This is intended to be the final CAC review, so the intent is not to wordsmith necessarily, but to review the final status of the goals and policies and confirm that they reflect the committee's input. The draft goals and polices incorporate all input received, and have been slightly reorganized – for example, a prefix has been added to each policy, which corresponds to the topic (e.g., PI – Public Involvement). The next review phase for the proposed drafts will be at a Planning Commission work session.

Public Involvement

Questions and comments from the committee included:

- PI 1 and PI 2 have very similar goal language. Staff responded that they will reconsider the language used in these goals.
- PI 2 – "cultivate community diversity" is a little unclear. Staff responded that they will also reconsider this.

Design & Development

Revisions to policies D 5 and D 4.4 have been made since the last CAC review. The policies were also reordered and have summaries added.

Questions and comments from the committee included:

- The committee asked what context sensitive parking means. Staff responded that is about making sure there's not too much or too little parking, and putting the right type of parking in the right place.
- In reference to policy D 1.4, the committee asked if there are building limitations in the Hillsboro code (like building mass)? Staff responded yes, but that it is important to ensure that Comprehensive Plan policies are in place to guide these design standards.

DRAFT

- The committee asked what superblocks are, and why it's important to reduce their presence. Staff explained that superblocks are long blocks and corridors that are often unsafe for pedestrians, as there are fewer street crossings.
- The committee asked what four-sided architecture is. Staff replied that four-sided architecture is a design concept that actively designs all façades of a building.
- The committee asked what the meaning of ground floor flexibility is. Staff replied that approaches for ground floor flexibility could include flexible zoning, so that ground floor units can be used for residential or commercial uses, depending on demand. This could allow interim residential uses while commercial demand matures.

Historic Resources

- The committee asked if the City should add trees to the cultural/historic inventory. Staff responded that this would likely be best addressed in urban forestry.

Housing

- In Policy H 4.7, the committee asked about the definition of "viable" and whether it is the appropriate term here. Staff responded that this term can be defined more specifically or that they would examine using a different term.
- The committee noted that on the definitions, "active transportation" calls out energy and climate change, and asked why. Staff responded that this definition was crafted for the Energy and Climate Change section.
- Staff discussed the difficulty in crafting definitions for terms like "tiny house". Staff decided to establish specific parameters for these terms, and wanted to call it out to the committee. The committee generally agreed with the staff recommendation of 400 square feet or smaller.
- The committee noted that for workforce affordable housing, it is difficult to determine what close proximity to employment means. Staff said this is a good point and the language will be specified.

Library Resources

- There were no comments from the committee.

Recreation

- The committee asked what the definition of an educational institution is. Staff replied potentially PCC or Pacific University, but there's no current arrangement. If a private school wanted to colocate with City recreation facilities, it could be possible. Staff discussed the possibility of defining "education institution".
- Staff explained that the Planning Commission recommended changing the verb in Goal R 4 to from "optimize" to "facilitate". The committee disagreed with this sentiment and expressed the desire to restore "optimize", indicating that it does connote the City taking a more active role in achieving adequate funding. Staff indicated that they would convey this feedback to the Planning Commission at their next review.

DRAFT

Urbanization

- Staff described a discussion at Planning Commission regarding Policy UR 1.4, including a disagreement over including corridors in the policy. Generally, there are two camps of urban development and design: node-based and corridor-based. Node-based involves planning for development centered around intersections of activity, while corridor-based involves planning along long stretches of roads. The Metro 2040 Growth Concept, which we extend in the Design and Development section, incorporates both approaches, and therefore staff recommends including both in this policy.
- The committee asked if Policy UR 1.5 could mean that a building potentially out of character with the neighborhood, like a 5-story building in downtown, would not be built. Staff replied that any such development would require a very hard look to determine its acceptability. However, the comprehensive plan isn't intended to be an absolute determination.
- Staff asked if the committee thinks "daily needs" and "public realm" are too similar. The committee responded that they imply different things to them, and that "public realm" goes beyond "daily needs".
- On Policy UR 3.3, the committee noticed that this resembles another policy in the Housing topic. Staff responded that they are duplicative, but the topic under which policies are located helps determine how implementation measures might be crafted.
- The committee asked what the strategies are to assess the risk of gentrification. Staff responded that studying best practices and other similar cases can help mitigate the impacts of gentrification, not necessarily prevent it. The committee suggested changing the second half of the policy to "…and use tools to mitigate the effects of new development and change on vulnerable households." Staff said they will make the change.
- In Policy UR 3.6, the committee indicated that "ESEE" needs a definition. Staff noted the comment.
- The committee noted that the Planning Commission requested a clarification in Policy UR 3.7, but didn't see any clarification. Staff replied that it was a nuanced change to better clarify that it applies to both new development and redevelopment.
- On Goal UR 5, the committee asked if the City sees larger lots being located at the edge. Staff replied that generally yes, because it "softens the edge" between urban and rural land. Ultimately, the City wants to avoid pockets of low density surrounding high density, or vice versa.

The committee then voted on a motion to recommend acceptance of the goals and polices for the topics under the Bolstering Community Involvement and Enhancing Livability and Recreation section as amended in the meeting. The motion passed without opposition.

Upcoming Meeting Schedules and Topics

- The next meeting will take place on May 26th from 4:00-6:00pm in Conference Room 113 B/C at the Hillsboro Civic Center. Water Supply and Distribution will be discussed.

- Future CAC meetings will be at the Hillsboro Civic Center.

DRAFT

Public Comment

No members of the public offered comment at the meeting.

Adjournment

With no additional business to consider, the CAC meeting was adjourned.

DRAFT

MEMORANDUM

To: Comprehensive Plan Update Citizen Advisory Committee (CAC)

From: Long Range Planning Staff

Date: May 20, 2016

Subject: Water Supply & Distribution Background Report and Draft Goals and Policies Review

---

Requested Citizen Advisory Committee Action:
Review and provide feedback on the background reports and draft Comprehensive Plan goals and policies concerning Water Supply and Distribution.

Background:
This month, the committee will examine goals and policies from one new topic:

Core Area	Topic
Building Economy and Infrastructure	• Water Supply & Distribution

Staff is requesting that CAC members read the materials prior to the meeting. It is, of course, preferable that you read the background report in its entirety; however, if you do not, please do read Sections 7 and 8. The CAC meeting will include, if needed, discussion of suggested revisions to the background report, although the meetings will focus primarily on draft goals and policies.

Water Supply & Distribution
Cities are required to address water supply and distribution infrastructure in their Comprehensive Plan as part of complying with Statewide Planning Goal 11, which covers Public Facilities and Services. The City's existing Comprehensive Plan does not include a section devoted to water infrastructure – instead, water supply is dealt with in a variety of locations throughout the plan. As with other public infrastructure-related sections, staff is recommending that Water Supply and Distribution be covered in a distinct section of the updated Comprehensive Plan, to allow a more complete set of goals and policies to be developed.

The Background Report and draft goals and policies for this section were developed collaboratively by an internal working group including staff from the Water Department, Planning Department, and Tualatin Valley Water District (TVWD, a key partner in delivering water services to City residents, particularly in the northern and eastern portions of Hillsboro). The attached materials incorporate input received from the Technical Advisory Committee received at their

May 12 meeting. The attached Background Report and draft goals and policies will be reviewed by the Utilities Commission and TVWD Board of Directors at their August meetings, followed by Planning Commission Review currently anticipated in September.

Cost:
Costs for preparation of these documents includes staff time only.

Attachments:
1. Water Supply & Distribution Background Report and draft goals and policies.

Water Supply and Distribution

Background Report (DRAFT)

Review History

Date	Reviewed By
	Internal Committee – *Comments Incorporated*
5.12.16	Technical Advisory Committee – *Comments shown as tracked changes*

1. Introduction

Safe and reliable drinking water is essential to the health and prosperity of Hillsboro and its residents. Providing quality water—a process that involves the intake, treatment, storage, transmission, and distribution of water—requires significant planning and coordination.

This report examines the topic of water supply and distribution as it relates to land use and transportation planning within the City of Hillsboro. The scope of this report, which is one of a series of background reports identifying key policy questions and recommended updates to the Hillsboro Comprehensive Plan, is limited to the supply and distribution of drinking water. Natural resources, surface water management, and wastewater management are covered at length in separate background reports.

The existing Comprehensive Plan addresses drinking water through the broader topic of public facilities and services, but it does not include specific goals and policies for the supply and distribution of drinking water. The outcome of this report is a set of policy questions and recommendations that will inform the update of the Building Economy and Infrastructure section of the City's updated Comprehensive Plan.

Prepared initially by staff from City of Hillsboro Planning, City of Hillsboro Water, and Tualatin Valley Water District, this background report will be reviewed and refined through a process that includes guidance from a Technical Advisory Committee, Citizen Advisory Committee, the Planning Commission, and City Council.

DRAFT

2. Regulatory Context

2.1. Federal Water Regulation

In 1974, Congress passed the Safe Drinking Water Act to "protect public health by regulating the nation's public drinking water supply."[1] The Act authorizes the United States Environmental Protection Agency (EPA) to set and enforce water quality standards for public water systems.

The Safe Drinking Water Act regulates and influences multiple facets of public water systems including treatment and disinfection; reservoir and distribution system maintenance; infrastructure financing; operator training; and providing information to the public. The Act also promotes the protection of surface water and ground water sources. Furthermore, it requires regulators to conduct on-site inspections and review and approve plans for system improvements.

Under the Safe Drinking Water Act, the EPA has established maximum allowable contaminant levels for more than 85 distinct contaminants, requiring public water systems to test for and report compliance with these levels. The categories of contaminants include microorganisms, disinfectants, disinfection byproducts, inorganic chemicals, organic chemicals, and radionuclides.[2] The EPA has also established non-mandatory standards for an additional 15 contaminants. These guidelines help public water systems monitor and manage aesthetic considerations such as taste, color, and odor.[3]

2.2. State Water Regulation

The Safe Drinking Water Act also allows states to obtain "primacy," giving them the authority to administer the Act so long as the standards adopted are at least as stringent as EPA's standards.[1] Oregon is one such state that has received primacy, and drinking water protection is implemented through a partnership between the Department of Environmental Quality and Oregon Drinking Water Services, which is part of the Oregon Health Authority.

While the Oregon Health Authority regulates the quality of water provided, obtaining and utilizing a water supply source is overseen by the Oregon Water Resources Department. In 1909, the Oregon Water Code established that water belongs to the public and using water requires a permit (or water right). It also established the "prior appropriation doctrine," granting older water uses entitlement to water before newer uses[4]. The Water Resources Department administers and enforces the Water Code, including determination of when access to specific water rights is authorized or denied based on water levels in the rivers.

---

[1] *Understanding the Safe Drinking Water Act*, U.S. Environmental Protection Agency, epa.gov
[2] *Table of Regulated Drinking Water Contaminants*, U.S. Environmental Protection Agency, epa.gov
[3] *Secondary Drinking Water Standards*, U.S. Environmental Protection Agency, epa.gov
[4] Rick Bastasch, *The Oregon Water Handbook: A Guide to Water and Water Management*, (Oregon State University Press, 2006), pg. 55.

DRAFT

2.3. Local Authority

The City of Hillsboro Charter establishes a separate Utilities Commission to oversee the Water Department. The Commission has authority over the operation and management of the City water system, including the acquisition and sale of real property, setting rates for the use and consumption of water, and setting system development charges for new and expanding construction. The Hillsboro Utilities Commission is made up of three to five Hillsboro residents that serve three-year terms. Appointments are made by the Mayor with consent of the City Council.

The Tualatin Valley Water District (TVWD) is a special district that focuses solely on providing drinking water. TVWD is governed by a five-member Board of Commissioners elected to four-year terms by District voters. The Board is responsible for establishing rules and regulations for the District service boundary, including monthly rates and system development charges for new development projects.

Figure 2.1 illustrates the portions of Hillsboro that are located within the service areas of Hillsboro Water and TVWD.

3. Background

Hillsboro's first publicly-delivered water reached residents by way of a wooden pipe in 1913, when the People's Water and Gas Company routed water east from Sain Creek (in the Tualatin River watershed) to Hillsboro's population, then just 2,150 residents. In the 1940s, the City of Hillsboro purchased the existing water system, formed its own Utilities Commission, and constructed an intake at Haines Falls along the Tualatin River as well as 26 miles of 18-inch steel pipeline. The 75 years since the City of Hillsboro began operating its own water system have brought several significant water system projects and upgrades, all of which make Hillsboro's water system an important part of a network that serves over 360,000 customers in Washington County.

TVWD was formed in 1991 when the Wolf Creek Water District and Metzger Water District merged to provide drinking water to their residents and businesses. It operates a network over 75 miles of water mains, serving over 218,000 customers within a 45 square-mile area including unincorporated Washington County, Hillsboro, Beaverton, Tigard, and Portland.

3.1. Supplier

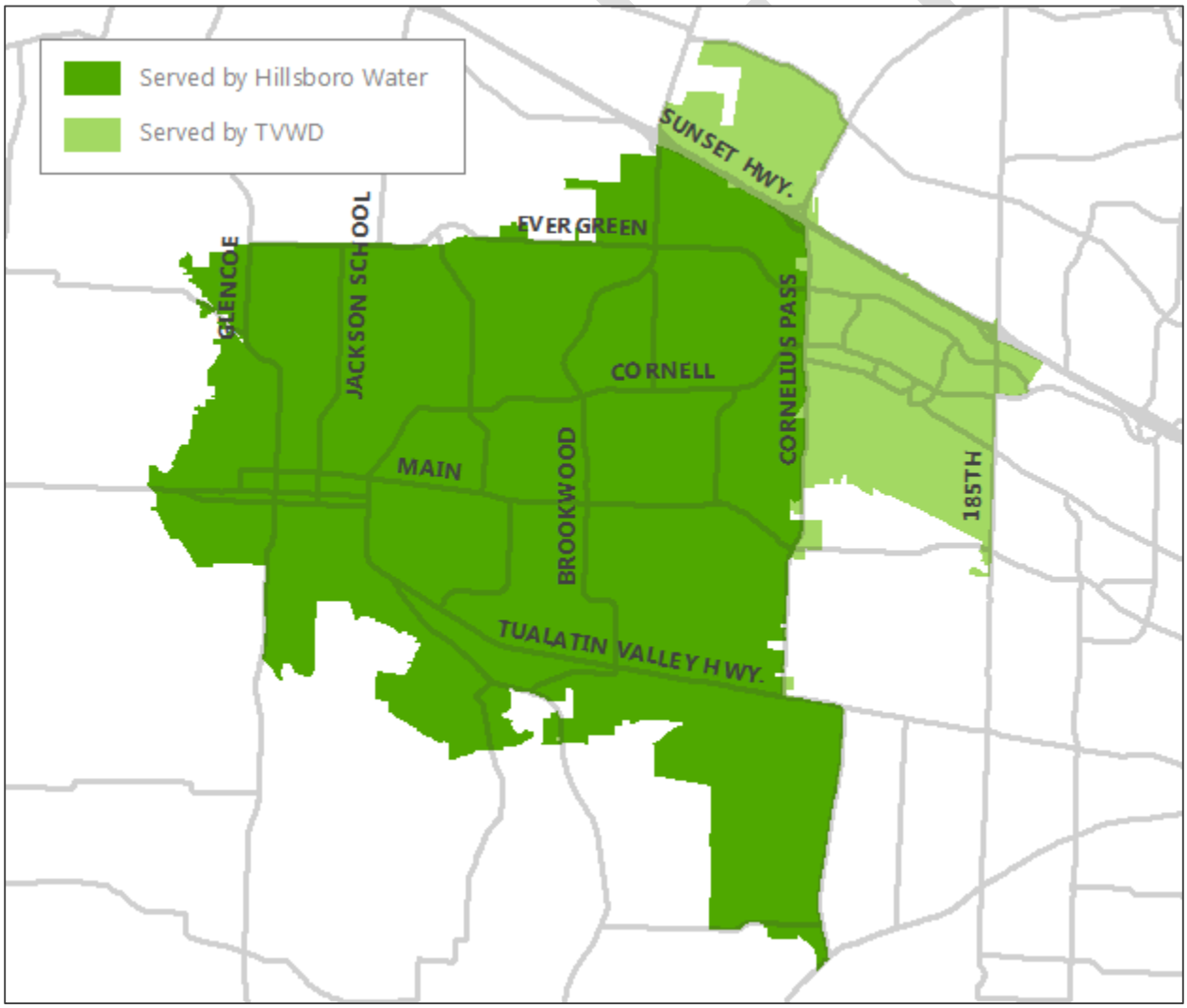
The Joint Water Commission (JWC) is the primary drinking water supplier in Washington County. The JWC was formed in 1976 by the Cities of Hillsboro and Forest Grove, and now includes the City of Beaverton and the Tualatin Valley Water District as partner agencies. These partner agencies collaborate to build, maintain, and operate facilities, as well as share assets to treat and deliver drinking water. This intergovernmental organization is managed by the City of Hillsboro.

Hillsboro residents and businesses purchase their water from one of two JWC member agencies depending on their location within the city (see Figure 2.1). Residents and businesses south of U.S. 26 and west of Cornelius Pass Road or south of S.W. Tualatin Valley Highway and west of S.W. 209th Avenue are served by the Hillsboro Water Department, whereas residents and businesses that are either north of U.S. 26, east of Cornelius Pass Road, or east of S.W. 209th Avenue are served by the Tualatin Valley Water

District. The service boundary between the two water providers is outlined and formalized in Water Service Agreements.

The City of Hillsboro also provides drinking water and services to portions of rural, unincorporated Washington County, including the communities of Cherry Grove, Patton Valley, and Dilley. The City of Hillsboro also wholesales drinking water to the City of Cornelius, the City of Gaston, and the LA Water Co-Op.

Figure 2.1 — Water Service Providers for the City of Hillsboro



3.2. Source

The Joint Water Commission water distributed to Hillsboro residents and businesses is treated surface water from the upper Tualatin River and its tributaries. The upper Tualatin River serves as Hillsboro's water source in the winter and spring months,[5] when water flows are high, and is supplemented by water from Hagg Lake and Barney Reservoir during the summer and fall.[6] The JWC and its individual partner agencies have portfolios of water rights and contracts to ensure ample quantity of water is available at all times.

The Tualatin River begins in the Coast Range Mountains and flows east into the agricultural areas and urban fringes of Washington County before meeting the Willamette River in the City of Tualatin. The JWC withdraws water directly from the Tualatin River south of Forest Grove. The land area that drains water into the JWC's water treatment plant is 212 square miles in size. Flows in the Tualatin River typically decrease in May or June and do not naturally return to high flows until September or October. During this time period, water is released from behind two dams. Without these releases, flows in the Tualatin River would be too low to provide drinking water. The Oregon Water Resources Department determines when the JWC is required to release water stored in Hagg Lake and Barney Reservoir.

Hagg Lake is formed by Scoggins Dam, which was built in 1975 by the U.S. Bureau of Reclamation. Hillsboro contracts with the Bureau for access to water stored behind the dam, which is released into the Tualatin River via Scoggins Creek. The JWC Partners contract with the Bureau for use of the Spring Hill Pumping Plant to divert water from the Tualatin River into the JWC's water treatment plant.

Barney Reservoir, formed by the Eldon Mills Dam, was originally constructed in 1970 and was quintupled in size in 1999. It is located on the Trask River system, and a gravity-fed pipeline diverts water from behind the Reservoir into the headwaters of the Tualatin River. It is owned and operated by the Barney Reservoir Joint Ownership Commission, another local intergovernmental organization that the City of Hillsboro manages. The Barney Commission also includes the Cities of Forest Grove and Beaverton, Tualatin Valley Water District, and Clean Water Services.

As a wholesale customer, TVWD also purchases water from the City of Portland's Bull Run watershed. This watershed is approximately 102 square-mile and collects water from rain and snowmelt that then flows to the Bull Run River and its tributaries. Portland also uses the Columbia South Shore Well Field to augment the Bull Run supply as needed. Approximately 60 percent of TVWD water is from the Portland waters.

Aquifer storage and recovery (ASR) is a supply option that injects treated drinking water into the groundwater aquifer and pumps it out of the aquifer at a later date for delivery to customers. ASR is ideal for areas like the Portland Metro region for two reasons:

1. excess supply is available in the winter and supplies are limited in the summer
2. access to geological formations particularly well-suited to storing groundwater

---

[5] Water Sources: Winter Water Source, Joint Water Commission, jwcwater.org
[6] *Water Sources: Summer Water Sources*, Joint Water Commission, jwcwater.org

The continued expansion of ASR is an industry trend. TVWD has an active and expanding ASR program. During the winter, TVWD stores treated drinking water underground in the aquifer surrounding the Grabhorn Aquifer Storage and Recovery (ASR) well. The stored water is pumped from the aquifer to help meet peak summer demands. TVWD is constructing another ASR well, which is scheduled to be operational in summer of 2017. Hillsboro is investigating the feasibility of developing its first ASR well beginning in 2016.

3.3. Treatment

There are two water treatment plants on the Tualatin River—the Joint Water Commission Water Treatment Plant (JWC WTP) and the Cherry Grove Slow Sand Filter Plant.

The JWC Water Treatment Plant (WTP), which is owned jointly by the JWC member agencies, is located just south of Forest Grove and could treat up to 21.3 million gallons of water per day when completed in 1976. The plant has since been expanded several times to account for Beaverton and TVWD becoming members of the JWC and to meet the growing demands in the region. It now has the capacity to treat up to 75 million gallons per day using a conventional treatment process that includes filtration, sedimentation, and chlorine disinfection. Plans are currently underway to expand this facility to a maximum capacity of 85 million gallons per day by 2019.

The Cherry Grove Slow Sand Filter Plant is owned entirely by City of Hillsboro and is located near Haines Falls. This plant is able to treat up to 3 million gallons of water per day.[7] Historically, this facility served the residents of Hillsboro, but today it is relied upon to serve Hillsboro's customers in rural Washington County.

3.4. Storage

The JWC can store up to 40 million gallons of treated drinking water at its two Fern Hill Reservoirs. These storage tanks are located near the JWC water treatment plant and each has a capacity of 20 million gallons. Fern Hill Reservoir #1 was completed in 1982 and was upgraded in 2006 as part of the project to construct Fern Hill Reservoir #2.

Hillsboro Water also has three storage reservoirs within the city. The largest is Evergreen Reservoir, which was built in 2000 and holds 15 million gallons of water. Crandall Reservoir (completed in 2013) and the 24th Street Reservoir (built in the 1960s) hold an additional 10 million and 6 million gallons respectively.

TVWD has a network of 22 storage reservoirs with a combined total capacity of approximately 60 million gallons of treated drinking water. These reservoirs range in size from 0.125 million gallons to 10 million gallons. As mentioned in *Section 3.2* of this report, TVWD also has ASR wells with potential storage of over 600 million gallons.

[7] *Current Source*, Hillsboro Water, hillsborowatersupply.org

3.5. Transmission and Distribution

The JWC sends water to Hillsboro Water, TVWD, and its other member and wholesale agencies through large pipes referred to as transmission lines. Water from the Fern Hill Reservoirs is gravity-fed to Hillsboro and TVWD through the JWC's South Transmission Line, a 45-inch concrete pipeline constructed in 1975 that runs along the southern portion of the city. In the mid-2000s, the JWC made a significant upgrade to its transmission system capacity by building the North Transmission Line, a 72-inch concrete pipeline that carries treated water pumped from the JWC Water Treatment Plant and passes through Forest Grove and Cornelius before reaching Hillsboro. This line runs north through the western portion of Hillsboro, where it then becomes a 66-inch concrete pipeline that routes water eastward through northern Hillsboro and extends to the TVWD boundary.[8] This addition more than doubled transmission capacity and created a looped transmission system that provides redundancy in the event of an emergency shutdown of one of the lines.

The North-South Intertie is a 42-inch concrete pipeline that was completed in the early 2000s. The South Transmission Line connects to the North-South Intertie near the Jackson Bottom Wetlands Preserve. The North-South Intertie extends north from there to a connection with the North Transmission Line.

Once the treated drinking water reaches the City of Hillsboro through the JWC transmission lines, it becomes the responsibility of either Hillsboro Water or TVWD to deliver water to individual customers. Each of these agencies maintains a network of underground distribution lines to provide water to the city's residents and businesses.

3.6. Sampling and Testing

JWC, Hillsboro Water, and TVWD staff collect water samples on a regular basis from locations throughout the Tualatin River watershed, within the water treatment plant, and within the community. These samples are analyzed for ~~thousands of~~a range of contaminants. Tests for some contaminants with legal limits are required, and other tests are optional but are deemed essential to assure the highest level of water quality.

In connection with the required testing, Hillsboro Water and TVWD both release an annual consumer confidence report specifying the amount of regulated contaminants that have been detected, if any, and whether those amounts are in compliance with the Environmental Protection Agency's Safe Drinking Water Act standards.

The drinking water delivered to Hillsboro and TVWD residents is of exceptionally high quality, as demonstrated in the 2015 Drinking Water Quality Reports.[9,10] (More information on water quality testing is provided under *Section 2.1. Federal Water Regulation*.)

---

[8] *What We Do: Transmission*, Joint Water Commission, jwcwater.org
[9] *2015 Drinking Water Quality Report*, Hillsboro Water, hillsboro-oregon.gov
[10] *2015 Drinking Water Quality Report*, TVWD, tvwd.org

3.7. Demand

Reflecting national trends, local per capita residential water demand has been falling recently. These demands are measured by the average gallons consumed each day by single-family and multifamily customers divided by the number of people living in the service area. Hillsboro's water service area has seen a dramatic drop from 97 gallons per capita per day (gpcd) in 2002 to 66 gpcd in 2014. This trend has manifested itself due to an increased availability of water-efficient appliances, improvements in the plumbing code to reduce small leaks, and a decrease in lot sizes.

This trend has a counterintuitive effect on billing rates. While a customer sees cost savings from using less water, it can lead to an increase of overall rates. This is because most costs associated with providing water service are fixed costs that do not change when the amount of water sold changes. Thus when the number of gallons sold drops, it can lead to an increase in the cost per gallon to continue to cover the fixed costs.

3.8. Future Water Source

It is anticipated that demand for drinking water in Washington County will double over the next 50 years.[11] Effective water conservation programs and newer low-water-use appliances have decreased water use by Washington County homes by 15% to 20% per capita over the past decade, but conservation alone is not enough to meet projected future demands. Without development of a new water supply source, Hillsboro and TVWD will not have the necessary water supplies to respond to increased water demand resulting from projected population growth and development in the region.

A new water source is also needed to increase the resiliency and redundancy of the water supply system in the event of earthquakes, droughts and other potential threats to the system. For example, current water supply infrastructure is not projected to be able to withstand subduction zone earthquakes, and significant upgrades to existing infrastructure cannot occur until a new supply is online. With the addition of a new water supply source, the region will not be entirely reliant on any one source to meet the needs of customers; if one source is limited or unavailable, another source can be relied upon to supply water.

The Willamette River has been studied for several decades and was initially envisioned to become a regional water supply source for the Portland Metro area. When the City of Wilsonville developed the source in 2002 in response to severely limited groundwater supplies, TVWD invested in the intake and portions of the water treatment plant with the intent to develop the source in the future when it had the need for additional supply.

Subsequent studies identified the Willamette River as the highest-rated alternative for supply expansion, both for the City of Hillsboro and TVWD. The City and TVWD partnered in the development of the supply, creating the Willamette Water Supply Program (WWSP). The City Utilities commission approved the WWSP in 2012, and the TVWD Board of Commissioners approved it in 2013. In May 2016, the City of

[11] *Hillsboro*, Willamette Water Supply, ourreliablewater.org

Hillsboro secured water rights on the Willamette River through a deal with the City of Salem. This acquisition ensures that Hillsboro will be able to meet projected water needs well into the future.

Following the approval of the WWSP program, a number of pipeline alignments were evaluated to determine the route of the 30-miles of transmission pipelines that best met the supply needs while avoiding and minimizing, to the extent possible, impacts to the environment and surrounding community. Construction of the first section of the transmission line along the extension of SW 124th Avenue is set to begin in 2016. The majority of pipeline construction is scheduled to occur between 2019 and 2025, with anticipated completion in 2026. The analysis of pipeline alignments may require updating in the future as additional information becomes available and the design continues to progress.

4. Hillsboro 2020 and Hillsboro 2035

The Hillsboro 2020 Vision and Action Plan and the Hillsboro 2035 Community Plan lay out the community's shared vision of Hillsboro's future. As part of the collaborative process that produced these two plans, numerous stakeholders and thousands of members of the public provided input on the issues and opportunities that are important to those who live, work, and play in Hillsboro. Hillsboro 2020 and Hillsboro 2035 serve as the foundation for Hillsboro's new Comprehensive Plan.

4.1. Hillsboro 2020

The following table lists the Hillsboro 2020 actions relating to water supply and distribution as well as the status of these actions.

Table 4.1 — Water-Related Hillsboro 2020 Actions

Action	Action Status
Action 33.1: Take a leadership role in ongoing actions to ensure the adequacy of the regional water supply and delivery system.	Ongoing.
Action 33.2: Active, ongoing support for capital improvement projects to develop and implement adequate water delivery and storage systems.	Ongoing.
Action 33.3: Develop and implement water conservation programs.	Ongoing.

4.2. Hillsboro 2035

The following table lists the Hillsboro 2035 action relating to water supply and distribution as well as the status of this action.

Table 4.1 — Water-Related Hillsboro 2035 Actions

Strategy and Action	Action Status
Action 3C: Develop and enhance Hillsboro's globally competitive infrastructure essential to supporting and attracting traded-sector employers including development ready sites, transportation, workforce, communications systems, water supply and incentives.	To be implemented by 2020.

5. Existing Comprehensive Plan Goals and Policies

With over 210 references to water in Hillsboro's existing Comprehensive Plan, it is important to note that many of the goals and policies that mention water will be covered in other sections of the Comprehensive Plan update.

Goals and policies that refer to waterways, wetlands, floodplains, and groundwater will be covered in the Natural Resources background report; goals and policies that refer to stormwater will be covered in the Storm Water Management background report; and goals and policies that refer to wastewater and sanitary sewer systems will be covered in the Wastewater Collection background report.

At present, the following Comprehensive Plan goals currently address water supply and distribution within Hillsboro's city limits, either directly or indirectly through the broader topic of public facilities and services:

- **Section 2: Urbanization**
  - **Goal 1D**—"Establishing land use designations in particular areas will be based upon the need to…provide for the orderly and efficient extension of public facilities and service."
  - **Policy C**—"Any land use implementation measure adopted by the City or other government agency shall be consistent with and support the need to expand public facilities and services as outlined in this goal, and shall be designed in a manner that accommodates increased public demands for urban services and is responsive to both expected growth in the commercial and industrial sectors and to population growth in the area."
- **Section 3: Housing**
  - **Policy A**—"The development of housing shall be coordinated with the extension of public facilities and services necessary to assure safe, healthy, and convenient living conditions."
  - **Policy L**—"New residential areas shall have water, sewers, storm drainage, street lights and underground utilities."
  - **Policy W**—"In determining residential densities, developers may be given credit for land donated and accepted by the City for needed public facilities."
- **Section 7: Air, Water, and Land Resource Quality**

DRAFT

- **Policy G**—"New development shall be allowed only if urban services such as water, sewer, and streets, are available, and only in accord with the Urban Planning Area Agreement."
- **Policy H**—"All government agencies responsible for assuring air, water, and land resource quality in the planning area shall be contacted when plans affecting waste and process discharges are proposed."
- **Policy I**—"Implementation measures designed to maintain and improve the air, land and water resources and manage land use and development shall be consistent with, and reflective of, the community's desires for a quality living environment, state and federal environmental quality statutes, rules, standards and implementation plans."

- **Section 10: Economy**
  - **Policy B4**—"Public facilities and services necessary to meet the special needs of industrial activities should be planned for those areas designated industrial on the Comprehensive Plan Map and should be provided at a level sufficient to support proposed activities."
- **Section 12: Public Facilities and Services**
  - **Goal A**—"Provide public facilities and services in an orderly and efficient manner consistent with the expansion of urbanization into rural areas."
  - **Goal B**—"Utilize the availability of public facilities and services as a tool for guiding urbanization with the Hillsboro Planning Area."
  - **Goal D**—"Provide that existing land uses are and will continue to be supported by needed public facilities and services."
  - **Goal E**—"Provide that future development is appropriately guided and supported by the provision of public facilities and services in a timely, orderly, and efficient manner."
  - **Policy A**—"The extension of a public facility, utility or service outside the urban area shall occur only in conjunction with an expansion of the Urban Growth Boundary and shall be provided at a level consistent with the intended density and designated land use for the area."
  - **Policy D**—"Public facilities and services shall be provided at a level sufficient to create and maintain an adequate supply of housing and service an increasing level of commercial and industrial activity."
  - **Policy E**—"The ability of residents to pay for public facilities and services at varying densities of development should be a prime consideration in determining appropriate densities and land uses in the planning area."
  - **Policy L**—"Citizens should assist in the development of funding methods and programs for public facility and service projects."
  - **Policy M**—"The City shall promote coordination among the City and other governmental and interested parties including special districts to facilitate the most effective uses of public facilities serving the planning area."

DRAFT

6. Other Plans, Programs, and Reports

6.1. Water System Master Plans and Capital Improvement Plans

Like many other service and infrastructure dependent sectors, drinking water providers develop Master Plans, Facility Plans, and Capital Improvement Plans. Master Plans are high-level evaluations of the current system that identify and define capital improvement needs to serve current and future populations for years to come. A Facility Plan is similar to a Master Plan, but focuses on one building or suite of buildings, such as a water treatment plant. A Capital Improvement Plan is more detailed than the Master Plan. It is typically a five-year budgeting plan that prioritizes capital needs.

The Hillsboro Utilities Commission adopted a Water System Master Plan in 2013. Volume II of the Master Plan was the Long Term Water Supply Study. This Master Plan also included a 20-year Capital Improvement Program through 2029.

Each biennium TVWD updates its six-year Capital Improvement Plan. It includes in-District capital projects appropriated as capital outlay in the Capital Improvement Fund.[12]

The Joint Water Commission adopted a Water System Master Plan in 2009. A 5-year CIP was completed in 2011. The JWC is currently updating the Facility Plan for the WTP in conjunction with the expansion of the facility.

6.2. Water Management and Conservation Plans (WMCP)

Since the JWC and its member agencies are water providers that hold certain water rights, submission of a Water Management and Conservation Plan (WMCP) at regular intervals to the Oregon Water Resources Department is required. WMCPs describe current and projected future water use, conservation efforts and curtailment planning, and strategies for meeting future water supply needs, and are used to determine if established conservation goals are being met, and whether the State will authorize additional diversions of water.

The JWC partners submitted a joint WMCP in 2010 and a 5-year progress report in 2015. TVWD submitted a WMCP in 2014. Hillsboro and TVWD will be submitting a joint WMCP in the coming years as part of the Willamette Water Supply Project.

6.3. Drinking Water Quality Report

Publication of annual Consumer Confidence Reports are a requirement of the Safe Drinking Water Act. These reports describe drinking water sources, the treatment process, and any water quality or operational violations. They also compare the maximum allowable levels of regulated contaminants to the actual levels present in sampled water. Hillsboro and TVWD Consumer Confidence Reports are available online.

[12] https://www.tvwd.org/media/136947/cips.pdf

6.4. Sustainability Plan

In 2010, the City of Hillsboro released a Sustainability Plan that serves as the framework for the City's formal sustainability initiative. The plan provides an assessment of the sustainability of the City's operations and establishes a structure and process for improving the efficiency of those operations. The plan covers a number of different operational areas, including the treatment and transmission of water. More information on energy conservation in the water supply and distribution process is provided in *Section 7.7.*

~~6.4.~~6.5. Source Water Protection Plan

The Joint Water Commission completed a source water protection plan to promote collaboration between agencies and stakeholder organizations to protect, enhance, and preserve the quality of water flowing into the JWC water treatment plant. It was completed in 2014 and includes a 5-year work plan.

7. Issues, Challenges, Trends, and Opportunities

Several issues, challenges, trends, and opportunities play in a role in Hillsboro's future water supply and distribution efforts. A number of these, particularly those relating to land use, are discussed below.

7.1. Seismic Rehabilitation

Earthquakes, especially one on the Cascadia Subduction Zone, are expected to have major impacts to water providers on several fronts, including water supply, treatment, and transmission and distribution.

The U.S. Bureau of Reclamation has identified Scoggins Dam as in need for seismic rehabilitation. Since Hillsboro Water contracts with the Bureau for access to stored water, Hillsboro Water will be required to pay some of the costs associated with the rehabilitation.

The JWC water treatment plant (WTP) has also been evaluated for seismic risk. Although work to implement life and safety improvements is currently underway, full seismic rehabilitation cannot occur until the Willamette River supply is fully operational in 2026 and the WTP can be temporarily taken offline.

Other system facilities are also at risk of damage from seismic activity, including the storage reservoirs and the transmission and distribution networks. Both Hillsboro and TVWD have small stockpiles of pipelines, but not enough to repair an entire system. The JWC owns one emergency water distribution system capable of distributing water in 1.5 gallon sacks.

7.2. Supply Development

Water utilities must anticipate the need for water and have new supply sources fully developed before the increased demands arrive. This is because it takes decades of dedicated work to develop a new supply. Also, a long planning and implementation horizon eases the financial pressure on customers. Beyond the WWSP, Hillsboro and TVWD must monitor anticipated growth in population and commercial

DRAFT

and industrial development and, where needed, plan for development of additional water resources in a way that maintains rates and system development charges at an affordable level.

Aquifer storage and recovery is a good example of cost-effective supply diversification, and will remain an industry trend. The cost of developing an ASR well is significantly lower than the costs to build a similarly sized dam and has fewer negative impacts to fish and wildlife.

7.3. Aging Infrastructure

Nationwide, drinking water utilities have entered the "replacement era". Investment of $1 trillion is needed to maintain, restore, or replace the nation's existing transmission and distribution systems alone[13]. Most utilities have never experienced the need for pipe replacement on a large scale. A significant number of pipes are now reaching the end of their useful life of 50 to 100 years. Hillsboro water service area's oldest pipes were installed in the late 1940s.

It is important to tackle this challenge quickly, as postponing investment only makes the problem worse. Older pipes break more often and cause more damage due to sinkholes and flooding. These emergency fixes are more expensive than planned replacements, and breaks can threaten public health and safety. Hillsboro and TVWD work hard to prudently plan for replacement to limit the financial impacts to customers.

7.4. Regulatory Challenges and Emerging Contaminants

Drinking water regulations are not static. Every six years, the US Environmental Protection Agency (EPA) must review the current standards for water quality contaminants. For example, EPA has been reviewing the current regulations on lead and will likely release the draft of the new regulations on an accelerated timeline due to the events in Flint, Michigan. New regulations focused on monitoring and reporting the presence of bacteria will take effect on April 1, 2016.

In addition, contaminants that are unregulated but anticipated to occur in public water systems across the nation are evaluated for potential regulation every five years. Each review can include up to 30 contaminants and they can be from a variety of sources. The most current review includes 10 toxins produced by algae (which impacted Toledo, Ohio in 2014) and 10 other chemicals. The previous review included hexavalent chromium (resulting from water quality contamination in Hinkley, California), seven hormones, and two viruses including norovirus.

The evaluation of these emerging contaminants will determine if they have a perceived, potential, or real threat to human health. They are often evaluated because a new source or pathway has been discovered or a new detection method or treatment technology has been developed.[14]

---

[13] American Water Works Association, Buried No Longer: Confronting America's Water Infrastructure Challenge, 2011. http://www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf

[14] DENIX Department of Defense, Environment, Safety and Occupational Health Network and Information Exchange. 2011. Chemical & Material Risk Management Program. www.denix.osd.mil/cmrmd/ECMR/ECProgramBasics.cfm

7.5. Meeting Unique Quantity and Quality Needs

The City has a unique customer base compared to other water utilities across the nation. This is due to the large presence of high-volume, technically-sophisticated industrial water users with specific water supply and quality needs. Water providers in the City also work closely with economic development efforts to respond to the specific needs of current and potential future businesses and industries.

The Joint Water Commission and industrial users have developed protocols to communicate when certain water quality characteristics are present and when certain water treatment processes are needed. These water quality changes do not impact water quality for human consumption, but may have great impact on the efficiency of certain industrial processes.

7.6. Local and Regional Collaboration

Successful provision of drinking water requires the collaboration of local governments, stakeholder organizations, regulatory agencies, and the public. Collaborative efforts will continue to be an ongoing trend, as exemplified in the development of the Willamette River supply. Collaboration provides opportunities for innovation and cost-savings.

Recently, regional agencies have focused collaborative efforts on emergency response preparedness; conservation media messaging, campaigns and education; population estimates (since very few water service boundaries follow city boundaries); and demand analysis.

Both Hillsboro and TVWD are active members of the Regional Water Providers Consortium, a "collaborative and coordinating organization to improve the planning and management of municipal water supplies in the greater Portland, Oregon metropolitan region."[15]

7.7. Energy Efficiency and Sustainability

Energy is one of the primary inputs water utilities. Water providers that implement measures that conserve energy and improve energy efficiency are able to operate in a more economically and environmentally sustainable manner.

The purchase of electricity from non-renewable sources increases the amount of greenhouse gases indirectly emitted by water providers. Analysis provided in the City of Hillsboro Sustainability Plan indicates that Hillsboro's share of the JWC Water Treatment Plant's indirect greenhouse gas emissions amounts to 7,617 metric tons of carbon dioxide equivalent, or one-fifth (20 percent) of the City's total direct and indirect operational greenhouse gas emissions.

To offset the impact of indirect operational greenhouse gas emissions, some water providers—including TVWD—purchase Renewable Energy Credits, which are "tradable, non-tangible energy commodities in the United States that represent proof that one megawatt-hour (MWh) of electricity was generated from

[15] *About Us*, Regional Water Providers Consortium, 2016.

an eligible renewable energy resource."[16] Since 2006, 100 percent of TVWD's operational emissions have been offset by the purchase of RECs.

~~7.7.~~7.8. Renewable Energy Development

Drinking water systems provide unique opportunities to develop small-scale renewable energy generation. The site of Hillsboro's Evergreen Reservoir contains solar panels, and Crandall Reservoir has in-conduit hydro-electric generation. Renewable energy generation opportunities will continue to be considered, where feasible and appropriate both economically and operationally.

8. Recommended Plan Updates and Policy Questions to Consider

Hillsboro's existing Comprehensive Plan lacks a specific set of goals and policies that address the supply and distribution of drinking water. This update of the Comprehensive Plan represents an opportunity to set clear land use policies relating to the provision of drinking water.

Based the challenges and opportunities presented in *Section 7*, recommended plan updates include the following:

- Develop a goal and accompanying policy language that specifically addresses water supply.
- Develop a goal and accompanying policy language that specifically addresses water quality.
- Develop a goal and accompanying policy language that specifically addresses water conservation.

DRAFT

[16] *TVWD Greenhouse Gas Emissions for Calendar Year 2013*, Tualatin Valley Water District, 2013.

Water Supply and Distribution

Goals and Policies (DRAFT)

Review History

Date	Reviewed By
	Internal Committee – *Comments Incorporated*
5.12.16	Technical Advisory Committee – *Comments shown as tracked changes*

[NOTE: Goals and policies that refer to waterways, wetlands, floodplains, and groundwater will be covered in the Natural Resources section; goals and policies that refer to stormwater will be covered in the Storm Water Management section; goals and policies that refer to wastewater and sanitary sewer systems will be covered in the Wastewater Collection section; and goals and policies that refer to the extension of public facilities for new development will be covered in both the Urbanization section and the Public Facilities section of the Comprehensive Plan update.]

GOAL 1 Provide a reliable and adequate supply of water to meet current and future needs.

POLICY 1.1 **Coordination.** Coordinate the provision of drinking water with local and regional water agencies and stakeholders.

POLICY 1.2 **Supply development and diversification.** Plan for the development of additional water sources to meet projected water demand and diversify Hillsboro's portfolio of water sources.

POLICY 1.3 **Capital improvement projects.** Support capital improvement projects that enhance Hillsboro's ability to deliver an adequate supply of drinking water to current and future households and businesses.

POLICY 1.4 **Storage and operational facilities.** Provide sufficient opportunity for water storage and operational facilities to ensure supply reliability and serve emergency needs.

POLICY 1.5 **Industrial users.** Plan for the water supply needs of high-volume industrial water users.

POLICY 1.6 **Aging infrastructure.** Plan for the replacement or rehabilitation of existing infrastructure that is near the end of its useful life.

POLICY 1.7 **Resiliency.** Upgrade existing infrastructure to reduce risk posed by seismic events, climate change, and other natural hazards.

GOAL 2 Provide safe, high-quality ~~drinking~~ water to all customers.

POLICY 2.1 **Regulatory standards.** Ensure that Hillsboro drinking water meets all current and future water quality regulatory standards.

POLICY 2.2 **Industrial users.** Support the water quality needs of industrial water users.

DRAFT

POLICY 2.3 **Source protection.** Coordinate with local and regional stakeholders to protect the quality of Hillsboro's current and planned drinking water sources.

GOAL 3 Encourage sustainable practices in the supply and distribution of ~~drinking~~ water.

POLICY 3.1 **Water conservation.** Promote development practices that make efficient and effective use of water while maintaining the financial viability of the municipal water supply and distribution system as the primary source of water to customers.

POLICY 3.2 **Energy conservation.** Promote measures that conserve energy in the water treatment and transmission processes.

POLICY 3.3 **Reuse and Recycling.** Promote the reuse and recycling of water.

POLICY 3.4 **Renewable energy.** Pursue renewable energy generation as part of water facilities when economically and operationally appropriate.

Definitions:

DRAFT