

Water Conservation Plan



City of Toquerville

Updated January 2019



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Part I. Introduction

In response to the rapid growth occurring throughout the State of Utah, Toquerville City (the City) citizens and leaders are concerned for the future cost and availability of the water supply. A similar concern has been demonstrated by the state legislature in the Water Conservation Plan Act (House Bill 71), passed and revised in the 2004 legislative session (Section 73-10-32 Utah Code Annotated). This Water Conservation Plan (WCP) is written to address how water conservation programs and practices will play an important role in meeting our future water needs as well as address the concerns of leaders and citizens of both Our City and the State of Utah.

The City has chosen to complete this water conservation plan as an informative tool to help provide its' users with information of its past usage and knowledge to manage life's most valuable resource. A brochure has been set up to give water user's information of this plan. The City will distribute the brochure to the water users to inform them of various water conservation and management methods.

Part II. Description of City of Toquerville and Water System

The City of Toquerville is located about 30 miles south of Cedar City and less than 20 miles north of St. George. It lies in a valley made up of the converging drainages of Ash Creek and La Verkin Creek. Ten miles to the northwest of Toquerville are the Pine Valley Mountains. To the south are La Verkin City and the City of Hurricane. The elevation of the City varies from 3040 feet on the South end to 3800 feet at the homes along Anderson Junction. State Highway 17 runs through the center of town. This highway is used by tourists to access the National Parks and recreation areas to the East. Toquerville is one of the gateways to eastern Washington County.

Toquerville is located in the upper reaches of the Mohave Desert and has a typical "high desert" climate. Summers are hot and dry, with daytime temperatures reaching 105 degrees and nighttime temperatures around 70 degrees. Spring and autumn temperatures are very comfortable. Winters are mostly mild, with nighttime temperatures averaging about 30 degrees and daytime temperatures in the upper 50's to 60's.

The City has good water available from springs about a mile above town. The water from the springs is used for culinary and irrigation. This water has helped the City sustain itself as an agricultural, gardening, and fruit community. Currently, the water department maintains 4 tanks, and approximately 22 miles of pipeline, 160 fire hydrants, 241 valves, and 623 water meters.

A. Existing Water Connections

The City of Toquerville has over 600 customers (connections) that pay for water. Each of these customers are paying the residential water rate of \$36.21 per month per connection for the first 10,000 gallons. A detailed description of rates is included in Section V of this WCP.

B. Population Projections

The average annual growth rate since the year the year 2000 has been about 3.4%. While growth rates for Washington County are projected to decelerate over the next several decades, it is still expected to see growth rates per decade of 42% from 2015-2025, 31% from 2025-2035, 24% for 2035-2045, 21% for 2045-2055, and 19% for 2055-2065¹. The projected population for the City of Toquerville was determined using these Washington County growth rates. Population data is included in Table II-A.

¹ Data source: 2017 Research Brief prepared by the University of Utah, Kem C. Gardner Policy Institute

C. Projected Water Connections

By using the existing equivalent residential connections and the projected growth rate of Washington County, the number of connections that Toquerville will have in the future can be estimated. This data is included in Table II-A.

Table II-A: Projected Population and Equivalent Residential Connections (ERCs). Data beyond 2017 was estimated based on projected growth rates for Washington County.

YEAR	POPULATION	AVERAGE ANNUAL PERCENT CHANGE	ERCs
2000	916		
2001	922	0.66%	
2002	955	3.58%	
2003	1,002	4.92%	
2004	1,055	5.29%	
2005	1,126	6.73%	
2006	1,226	8.88%	
2007	1,311	6.93%	
2008	1,355	3.36%	
2009	1,370	1.11%	
2010	1,374	0.29%	
2011	1,383	0.66%	
2012	1,400	1.23%	489
2013	1,404	0.29%	500
2014	1,440	2.56%	521
2015	1,484	3.06%	538
2016	1,534	3.37%	567
2017	1,615	5.28%	600
2018	1,682	4.17%	625
2019	1,752	4.17%	651
2020	1,826	4.17%	678
2021	1,902	4.17%	707
2022	1,981	4.17%	736
2023	2,064	4.17%	767
2024	2,150	4.17%	799
2025	2,216	3.09%	823
2030	2,580	3.09%	959
2035	2,984	2.40%	1,109
2040	3,360	2.40%	1,248
2045	3,771	2.07%	1,401
2050	4,178	2.07%	1,552

D. Current Usage

For 2018, a total of 61.2 million gallons (188 acre-feet, or an average 265 gallons per connection per day) was used by residents in the City. The original WCP cited data from 2011, showing the average consumption was 299 gallons per day per connection. By 2013, consumption had decreased to 270 gallons per connection per day and continued to decrease through 2015. However, consumption shows a slight upward trend over the past 5 years due to the increases in 2016, 2017 and 2018 average consumption values of 270, 277, and 265 gallons per connection per day, respectively. Monthly data for 2018 is included in Table II-B. Trends in water usage over the past 5 years are included in Figure II-A.

Table II-B: Monthly residential water usage rates for 2017.

2018	METERS READ	MONTHLY USAGE (GAL)	MONTHLY USAGE (ACRE-FT)	GALLONS PER DAY PER USER
JAN	616	3,678,190	11	193
FEB	613	3,548,835	11	207
MAR	622	3,908,174	12	203
APR	618	4,766,520	15	257
MAY	620	5,068,940	16	264
JUN	628	8,955,646	27	475
JUL	635	6,157,540	19	313
AUG	636	6,675,860	20	339
SEP	640	5,954,150	18	310
OCT	643	5,059,965	16	254
NOV	648	4,042,952	12	208
DEC	669	3,390,630	10	163
2018 Totals	7,588	61,207,402	188	3,185
Average	632	5,100,617	16	265

In 2015, the Utah Division of Water Resources (DWR) estimated the average gallon per capita per day (gpcd) consumption for the State of Utah to be 242 gpcd, with 168 gpcd being attributed to residential consumption². In 2018, Toquerville City averaged 265 gallons per day per connection for residential consumption. Considering the population of Toquerville, this equates to a per capita consumptive rate of 104 gpcd, well below the state average.

The City of Toquerville uses secondary, untreated water for outdoor landscaping and irrigation, provided by the Washington County Water Conservancy district. In the 2015 study, the DWR determined Toquerville residents used an average of 178 gpcd secondary water. Assuming the

² Data source: 2015 Municipal and Industrial Water Use Data, prepared by the Utah Division of Water Resources, published June 2018.

rate of consumption of secondary water has remained constant from 2015 to 2018, the total 2018 consumptive rate (both indoor and outdoor use) was approximately 282 gpcd, exceeding the 2015 state average by 40 gpcd.

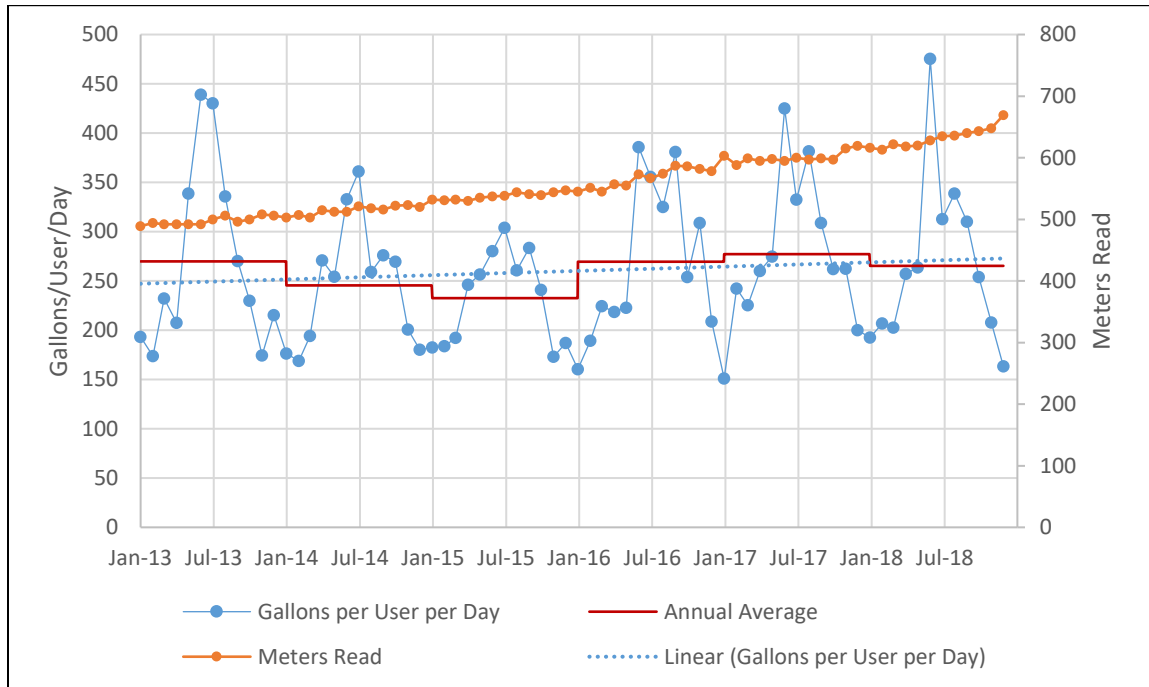


Figure II-A: Trends in residential water use 2013-2018. There is a slight upward trend in per capita consumption.

While the last five years of data show a slight upward trend in the number of treated gallons consumed per connection per day (Figure II-A), residential consumption rates are still well below the state average. Reducing consumption of secondary water will continue to be a focus of this WCP. The City has set water management goals and will continue to provide new and existing users with information on water management in order to reduce the combined indoor/outdoor consumption.

E. Projection of Needed Supply for 2050

It is projected that the City will have a population at or above 4,000 by the year 2050. Assuming that future usage remains consistent with past usage, Toquerville City will need close to 300 gallons per minute to meet the residential demand in 2050. The projected supply needed to meet future demand is shown in Table II-C.

Table II-C: Projected needed supply up to 2050 in gallons per minute (gpm).

YEAR	POPULATION	GPM
2018	1615	116
2020	1826	130
2025	2216	158
2030	2580	184
2035	2984	213
2040	3360	239
2045	3771	269
2050	4178	297

Part III. Water Conservation Goals

A. City Goals

In pursuit of solutions to the problems identified previously, and in light of the variety of conservation measures available to solve these problems, the following goals have been identified:

- Goal #1 – Reduce the city’s per capita water use rate by at least 15 percent in five years. The original (2013) goal in this WCP was to decrease the water-use rate of treated water per capita per day (gpcd) to 188 gpcd. The current indoor water-use rate is 104 gpcd and the combined indoor/outdoor water use is 282 gpcd. The new (2018) goal is to decrease the indoor/outdoor combined usage of 282 gpcd by 15% over the next 10 years, or to approximately 240 gpcd.
- Goal #2 – Maintain a financially viable water system. The water pricing system should encourage customers to reduce use without creating a revenue shortfall.
- Goal #3 – Maintain or improve the appearance of street landscapes, open spaces and yards. Improved irrigation practices and water efficient landscapes can enhance the beauty of the city. Annual surveys of citizen attitudes will measure satisfaction, or lack thereof, with landscapes on city-owned properties and rights-of- way.

B. Measurement of Savings

In order to track progress and measure success, the City will maintain an active account of the water consumed and saved during these goal periods through using modern technology and spreadsheets. The City has Master Meter water meters with Master Meter electronic meter reading equipment.

Part IV. Current Conservation Practices

In order to achieve its goals, the City employs the following practices:

1. The City charges the customers a fee that pays for the operation, maintenance and depreciation of the water system and encourage water conservation. The following section will describe this current water rate.
2. The City employs a full-time water operator which has helped in finding and fixing problems of the water system.
3. The City actively keeps up its' grounds for all City owned property and uses irrigation water for these properties that in is a pressure pipe system with timers used to limit the use of this water.
4. The City works with and utilizes resources provided by the Washington County Water Conservancy District. This includes, but is not limited to:
 - a. The City encourages residents to follow and use the water conservation guidelines and tools provided by the Washington County Water Conservancy District included as part of the County's WCP.
 - b. The District has a program to educate all students in the schools about water conservation. They have a demonstration garden that will be used to educate the public of water conservation tools.
 - c. The District provides administration of Irrigation Association certification testing. In 2003, the District, in partnership with Dixie Applied Technology College (DXATC), USU Extension, and St. George City created a program to educate the landscape professional in water efficient landscape management. The program has offered two courses: Water Efficient Turf Management and Planting for Success.
 - d. Eighty percent of the land owners in Toquerville have irrigation water that is in a modern pressure system. This system is maintained, owned and operated by the Washington County Water Conservancy District. They follow their water conservation plan.
5. The City adopted the following ordinance in 2013. This ordinance is to be updated annually as necessary:

TOQUERVILLE CITY
WATER CONSERVATION PLAN
ORDINANCE NO.2013.01

AN ORDINANCE AMENDING PROVISION OF THE CITY OF TOQUERVILLE MUNICIPAL CODE PERTAINING TO THE ADOPTION OF A WATER CONSERVATION PLAN.

Section 1. Preamble

- A. WHEREAS, the City of Toquerville operates a culinary water system; and
- B. WHEREAS, the city council understands the pressing need to use water in a more efficient manner to allow for future sustained growth of the community;

Section 2. Ordaining Clause

NOW, THEREFORE, IT IS ORDAINED BY THE CITY COUNCIL OF THE CITY OF TOQUERVILLE, UTAH:

Title 14 Chapter 14-200 of the Our City Municipal Code is hereby to read as follows:

Section 3. Water Conservation Plan

The water conservation plan of the City of Toquerville, adopted on the 11th day of April, 2013. The plan will be amended no less than every five years and will continue to play a vital role in the future development of the City of Toquerville, Utah.

Mark Fahrenkamp	Aye_____	Nay_____	Absent_____
Daren Cottam	Aye_____	Nay_____	Absent_____
Brad Langston	Aye_____	Nay_____	Absent_____
Paul Heideman	Aye_____	Nay_____	Absent_____
Ty Bringhurst	Aye_____	Nay_____	Absent_____

Signed:

By___Date___, 2013 Darrin LeFevre, Mayor, Toquerville City

Attest:_____ Renee Garner, City Recorder

6. The City provides new and existing users with information and tips regarding water usage and conservation methods. This information is provided via a brochure (included as Attachment A). Below are the many methods, ideas, and tips to help conserve water that are included in the brochure.
 - a. Xeriscaping is a creative way of landscaping that utilizes water-saving plants and landscapes that can actually save money, time and effort. Beautiful Xeriscape-type plants, landscape designs and ideas can be found at local nurseries, through local landscape designers, or online.
 - b. Plant drought resistant trees and plants. Many beautiful trees and plants thrive with far less watering than other species.
 - c. Limit the lawn area. Less lawn area generally equates with less maintenances. A general rule for a typical residential lot includes: 10 percent of the landscape (lot minus house size) in “hardscaping” (patios, driveways, decks and walks); 50 percent in lawn and turf areas; while the remaining 40 percent is utilized in shrub, garden or other uses.
 - d. Most lawns are either bluegrass or tall fescue. Bluegrass will require more water to keep looking green than tall fescue. New lawns will require more water than established lawns.
 - e. Understand your irrigation system. Locate the time clock and learn how to set it. Know where the shut-off valve is in case of an emergency. Be sure your irrigation system is designed correctly and provides “head to head” coverage.
 - f. Understand how weather affects your lawn. High temperatures and low humidity will cause your lawn to use more water. Wind will also increase water loss. Adjust your irrigation system seasonally according to the weather. Do not water during winter months or rainy weather.
 - g. Learn your soil type. Sandy soils do not hold water as long as clay soils and may require more water to keep lawns looking nice. On the other hand, with proper watering, you can promote deep-root growth in sandy soils that go longer without water than you think.
 - h. Trees and shrubs have a much deeper root system than your lawn. They should be watered deeply, no more than once a week.
 - i. Once a lawn is established, it doesn’t require daily watering. New lawns: irrigate twice a day for the first week, once a day for the next two weeks, and then every other day for the next two weeks. Established lawns: irrigate once every 2-3 days during the summer. In the fall water once every 4-5 days. Set sprinkler run time

to apply a .7 – 1 inch of water each irrigation time. Irrigate in the early morning hours before sunrise.

- j. Fertilization. Fertilizer should be applied in the spring and fall only. Apply no more than one pound of actual nitrogen in one application per 1,000 square feet. The lawn will need about four pounds of actual nitrogen or four applications at the suggested rate.
- k. If there is noticeable run-off, run-off may be corrected by the following suggestions:
 - i. Pre-wet your lawn with a short cycle of 5-10 minutes and come back one hour later and run sprinklers again for an additional 20-30 minutes.
 - ii. Heavy soil will benefit from the addition of organic matter. A light application of organic fertilizer should be applied after aeration.
 - iii. Aerate soil twice a year.
 - iv. De-thatching or aeration will remove thatch build-up, but you need to learn why thatch is accumulating. The most common causes are over-fertilization and mowing too short.
 - v. Aeration may help, but you may also look at changing the area to something else that can be drip-irrigated (shrubs or trees).

Part V. Current Pricing Structure

The following figure was scanned from the City resolution that shows the existing water rates. For further information or clarification, contact Toquerville City.

<u>UTILITIES: RESIDENTIAL UTILITIES</u>	
Culinary Water	\$36.21 Monthly – Base Rate per month for 0- 10,000 gals. Plus \$4.00 per 1,000 gals over 10,000 gals, and \$6.00 over 30,000 gals
– Non Irrigation users w/ no access, Summer Rate	\$36.21 Monthly – March 1st to Nov 1st - Base Rate per month for 0- 20,000 gals. Plus \$4.00 per 1,000 gals over 20,000 gals, and \$6.00 over 30,000 gals
WCWCD Monthly Water Surcharge	\$ 1.75 Monthly for ¾" Meters OR
Sewer, Permanent Residential	\$25.00 Monthly
Garbage	\$11.40 Monthly
BluCan Recycling	\$ 3.00 Monthly
Storm Water Drain Fee (ERU)	\$ 6.00 Per Residence / Monthly
Most standard minimum monthly bills including all of the above would come to \$83.36	
Billing Late Fees (on Monthly Past Due Balance, After 20 th Day)	5%
Plus - Fee for "SHUT-OFF" Notice if Applicable.	\$ 10.00
Water Reconnect Fee (Locked out meter)	\$100.00
Water/ Utility Service Fee, Vacation/ Owner Request Reconnect Fee	\$ 50.00 Minimum 30 days
Water/ Utility Service Fee, Vacation/ Owner Request Disconnect Fee	\$ 50.00 Minimum 30 days
Water/ Utility Service Termination or	
New Application (Simultaneous Moving in or out)	No Fee
Tenant Deposit (Rental Property)	\$300.00 Refundable Deposit
Culinary Water Standby Fee for Non-User (No Meter to Property)	
Application Required -----	\$ 5.00 Monthly
Culinary Water Meter Request, Existing Connection (Building permit)	\$500.00
<u>UTILITIES: COMMERCIAL/PUBLIC UTILITIES</u>	
WCWCD Monthly Water Surcharge	\$ 3.78 Monthly for 1" Meters
Sewer, Transitory Residential, (RV Parks, RV Rental Camp Units	\$13.00 Monthly
Sewer, Commercial, Schools, Churches, Motels	\$32.00 Monthly for first 12,000 gallons*, -additional is \$2.86 per 1000 gallons over 12000
* For sewer commercial, schools and churches, monthly water usage shall be based on the average monthly water use during months of December, January and February of each year. For motels, monthly water usage shall be based on the average monthly water use during the months of May, June and July of each year.	
Resolution 2018.20 Nightly Rental Application, Large Parcel Subdivision Application, Ballfield Rental Application, Appeal Authority Applications and Administration Fees	



Part VI. Water Conservation Projects

To meet future water needs, problems, and measures, the City received funding from the State of Utah to complete water improvements during 2013. These improvements replaced over 150 meters and services where it is believed leakage had been occurring. These improvements account for one-third of the culinary water distribution system, replacing almost 4 miles of 8" diameter and 10" diameter water lines. The City will continue to inventory and inspect all new and older meters to ensure that leakage is kept to a minimum. Future projects will continue to improve conservation efforts.

Part VII. Cost Analysis

A cost analysis conducted in 2013 by Pro Value Engineering determined that it would cost over \$7.0 million dollars to replace the entire water system (in 2013 dollars). A new cost analysis was not performed as part of this updated Water Conservation Plan. However, at an average rate of inflation of 3%, the complete replacement would cost approximately \$8.1 million (in 2018 dollars).

Part VIII. Implementing and Updating the Water Conservation Plan

In order to implement this WCP, the City will focus on the following items:

1. The City will continue to charge the current water rates. These rates may be adjusted as needed to provide enough revenue to keep up with operating costs and to keep users focused on conservation. The current rate structure has been determined to currently achieve both the revenue and user awareness.
2. The City will continue to distribute the attached brochure to current and new users to educate them of water conservation methods.
3. Once, each year, this WCP should be looked at and updated as needed or as changes may require.

Appendix A – Conservation Brochure

For Water Related

Questions contact:

Dana M. McKim

City of Toquerville Recorder

435-635-1094

For System Help,

Contact:

Lance Gubler

Water System Operator



City of Toquerville

212 N Toquer Blvd
Toquerville, UT
84774

Toquerville City Guide to Water Conservation



A Simple Course
to Save our Most
Valued Resource



Utah is the second-driest state in the nation - averaging only 13 inches of water each year. Working together to practice conservation techniques is a huge step toward preserving our most valued resource.

Xeriscape: A way of landscaping that utilizes water-saving plants and landscapes that also save money, time and effort. Xeriscape type plants and landscape designs can be found at local nurseries.

- * Plant drought resistant trees and plants.
- * Limit Lawn Area. A general rule is 10% of landscape in hardscaping (patios, driveways, decks, etc.); 50% in lawn and turf; 40% in shrub, garden and other uses.



Lawns: Most lawns are either bluegrass or fescue. Bluegrass requires more water than fescue to keep looking green.

- * Understand your irrigation system. Know where shut-off valves are located and how to set the timer.
- * Understand how weather affects your lawn. Lawn requires more water in high temperatures and low humidity. Wind also increases water loss. Do not water during winter months or rainy weather.
- * Learn your soil type. Sandy soils do not hold water as long as clay soils. With proper watering you can promote deep-root growth in sandy soils.
- * Fertilization. Fertilizer should only be applied in the Spring and Fall. Apply no more than one pound of nitrogen in one application per 1,000 square feet. Example: 10 lbs of 10-6-4 or 8 lbs of 12-12-12 per application both equal about 1 lb Nitrogen. Lawn will need about four pounds of actual nitrogen or four applications at the suggested rate. Check with local nurseries or landscapers for more specific guidance.

- * Watering. New lawns: irrigate twice a day for first week, once a day for next two weeks, then every other day for the next two weeks. Established lawns: irrigate every 2-3 days during the summer, every 4-5 days in the fall. Set sprinkler time to apply 0.7-1 inch of water each irrigation time. Irrigate early in the morning.

Trees and Shrubs: Use low-water use plants as much as possible. Group plants that have similar water demands.

- * Trees and shrubs should be watered deeply, no more than once a week. They have a much deeper root system.

Run Off: Run off occurs when water is not going into the ground as fast as it is being applied. To help prevent run off:

- * Wet your lawn for 5-10 minutes, then come back an hour later and run sprinklers an additional 20-30 minutes.
- * Aerate lawns twice a year.
- * Apply a light application of organic fertilizer after aeration.
- * De-thatch or aerate to remove thatch build-up.
- * Look at changing areas with run-off to something that can be drip irrigated (shrubs or trees).

