IVINS CITY WATER CONSERVATION PLAN

2023 PRELIMINARY DRAFT



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Ivins City

Water Conservation Plan Update

2023 PRELIMINARY DRAFT

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Adopted by Ivins City Council by Resolution on _____2023.

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Introduction

Ivins City is a growing city with an estimated population of 10,500 residents located in sunny Southern Utah in the high elevations of the Mojave Desert. Ivins is part of a rapidly growing and thriving community in Washington County, Utah. It is known for being at the doorway to Snow Canyon State Park which along with the Red Mountain Wilderness area provides a stunning backdrop for our community.

The arid desert climate, with an average of 8 inches of rainfall each year, makes us constantly aware of the scarcity of precious water.

Water supply is acknowledged to be in limited supply to our area, in fact, in our whole region and state. In compliance with Utah State Code 73-10-31, all water providers must present a plan that identifies existing and proposed water conservation measures. The plan must include a clearly stated overall water use reduction goal and every five years, providers review progress, allow public comment through a public hearing, update the plan, and then adopt it. Ivins City's last plan was adopted in 2018 and thus must adopt an updated plan in 2023.

Description of Ivins City

Ivins City is located on the west side of Washington County wedged between the City of St George and Santa Clara City on the east and Shivwits Indian Reservation on the west. To the north is the Snow Canyon State Park and Red Cliffs Desert Reserve which included the Red Mountain wilderness area. To the south is the BLM managed Santa Clara River Reserve. The city is estimated to be 54 percent developed. This is inclusive of some private properties near the Santa Clara River, which are currently in the unincorporated county that are expected to be annexed at some point in the future when the owners decide to develop.

The City is served by two water systems. Figure 1, on page 2 provides a map of the coverage of the two systems. On the west side of Ivins in the Kayenta area, the residents are served by a private water system called KWU with approximately 412 connections. The remaining part of Ivins is serviced by the City with 4,138 connections (as of June 2023). This water conservation plan only addresses water conservation for the portion of the City served by Ivins City. These connections can be further broken down as 3,939 single family residential, 7 stock water, 95 commercial, 84 institutional, and 351 multifamily residential.

Ivins City has grown up fast over the past two and a half decades. It originally began as a small farming community, an off shoot from Santa Clara City, when an irrigation canal diverted water from the Santa Clara River and brought to the area then called the Santa Clara Bench. Figure 2 on page 3 provides a chart of historical population and how the community began to rapidly grow, starting in the late 80's and has continued to grow at rapid but somewhat linear pace into the present.

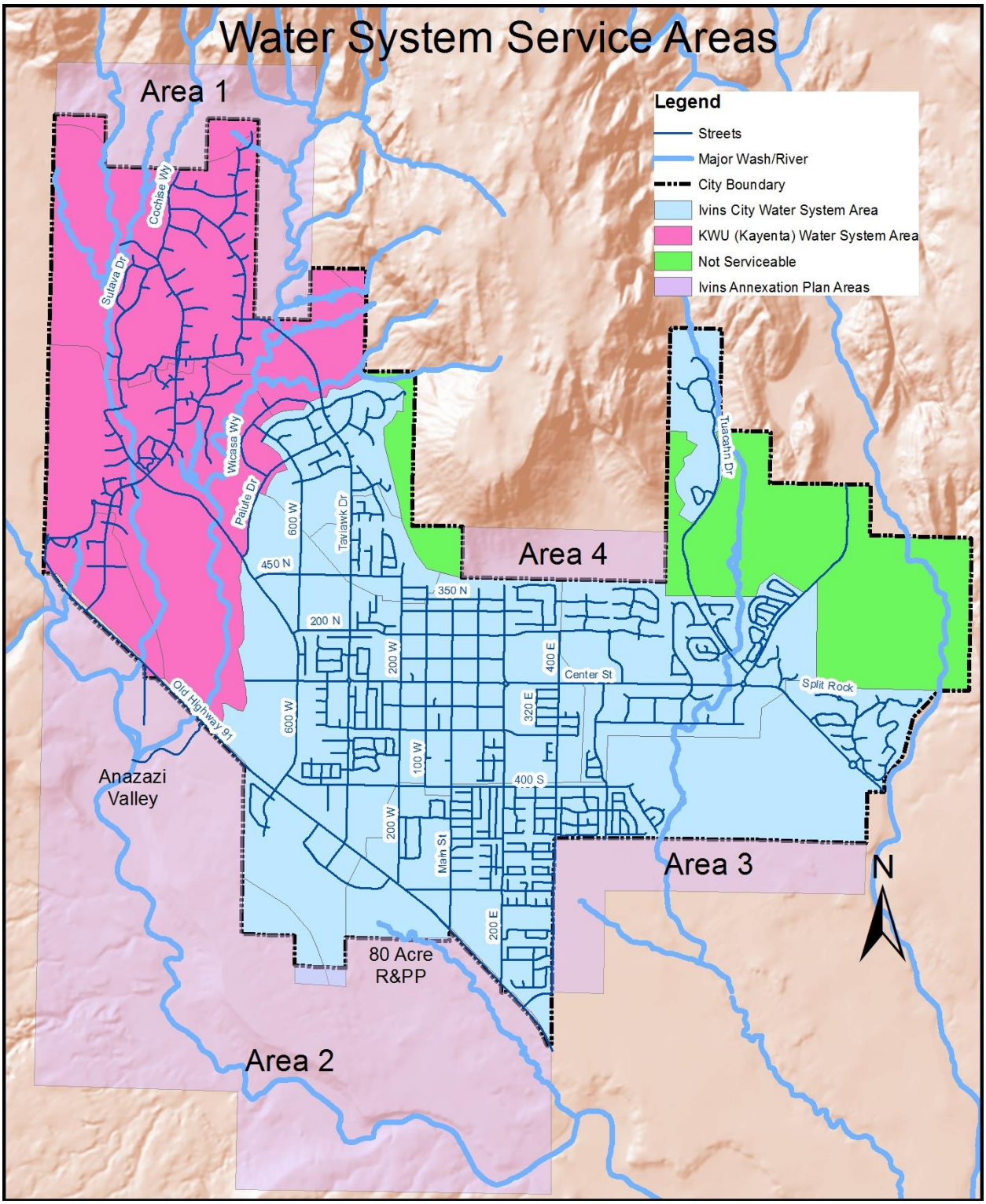


FIGURE 1. IVINS CITY WATER SYSTEM SERVICE AREAS

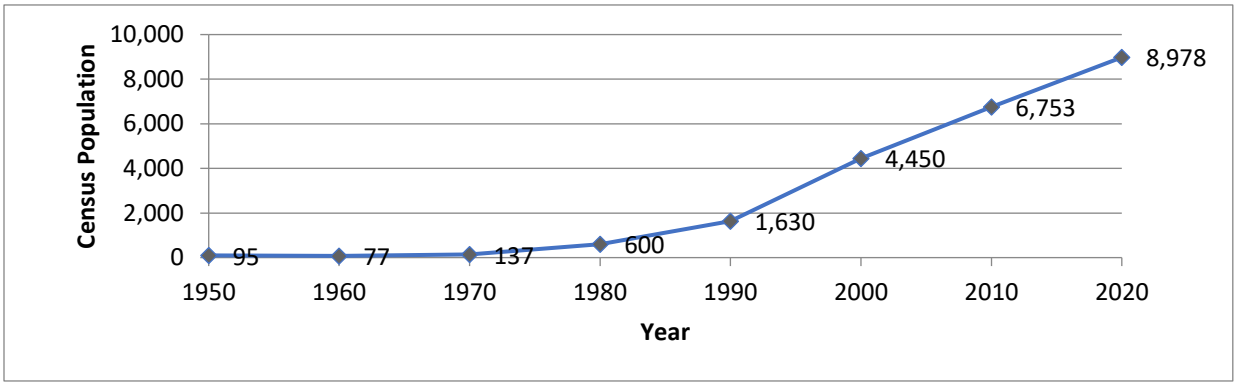


FIGURE 2 HISTORICAL CENSUS POPULATION

Water Supply

The City water supply is a mix of groundwater and surface water sources. The following table provides a list of these sources:

TABLE 1. SUMMARY OF IVINS CITY WATER RIGHTS/WATER SUPPLY AGREEMENTS

Description	Flow Capacity (gpm)	Annual Production (acre-feet/year)
Snow Canyon Compact Water Rights	350	393
Regional Pipeline (RWSA)	2700	Up to 3,000 (depending on supplies)
Gunlock Wells	As needed	614
Ence Wells	600	380
Total		4,387

Furthermore, the City has entered into the Regional Water Supply Agreement in 2006 with the Washington County Water Conservancy District (WCWCD). In this agreement the WCWCD agrees to "provide adequate water to meet the needs of" Ivins City and all other municipal customers in the County that have signed the agreement. A more detailed description of the City's water supply is provided in the Water Master Plan.

Ivins City is currently pursuing the construction of an irrigation system that would provide water to, at the least, a significant portion of the City. The City has 347 acre-feet of irrigation water shares to provide some of the water needed to feed the newly proposed system. The WCWCD has committed that, if the City will build the system, it will find the water sources necessary to supply the system. The WCWCD has also recently indicated that it is interested in constructing a surface water treatment plant somewhere in Ivins that would enhance culinary water supplies.

It is possible that Ivins City will pivot current plans to take advantage of this new source of water. Additional planning efforts are necessary to solidify this plan.

Estimated Growth

It is not hard to convince people that water conservation is important in Ivins when we live in such an arid environment. It is even clearer in this environment of growth as shown in Figure 3.

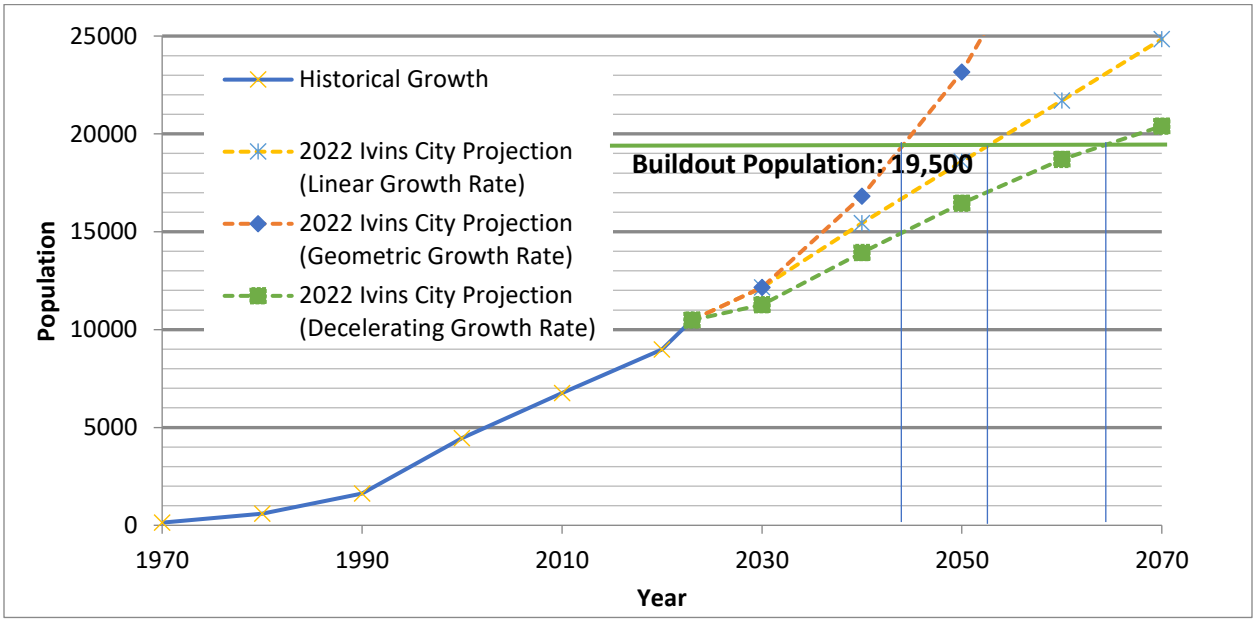


FIGURE 3 GROWTH PROJECTIONS FOR IVINS CITY TO 2070.

Ivins City comprises of 10 square miles and has a current approximation of 54 percent developed. When all the remaining land development occurs, the population is expected to reach an estimated 19,500. Per the projections, we will reach that estimated build out at some point estimated between 2045 and 2065.

Looking at the municipal water system, Ivins City currently serves (as of Dec 2022) 4,268 equivalent residential connections (ERC's). This is based on using the State's method of calculation where the annual average usage of single-family homes is used to evaluate the ERCs of commercial, institutional, and multi-family accounts.

The state has currently approved for Ivins to plan for future system needs using a raw water demand of 0.59 acre-feet per year per ERC. Based on recent data it is possible that this number may decrease further in the future with additional water conservation efforts. It is estimated that the total buildout will require the system to serve 8800 ERCs which equates to 5,200 acre-feet of water that must be supplied. Current supplies are approximately 4,400 acre-feet.

State-Wide Water Conservation Goals

The State of Utah Division of Water Resources (DWRe) is responsible for leading water conservation efforts for the State and to ensure that water providers are complying with the Water Conservation Act. The State has its own plan and its own goals. Most recently, in November 2019, the state developed

Utah's Regional M&I Water Conservation Goals which established region specific goals for nine municipal and industrial (M&I) areas of Utah. Washington County lies within the area identified as Lower Colorado River South.

Proposed Regional M&I 2030 Water Conservation Goals and Future Goal Projections

Region	2015 Baseline (gpcd)	2030 Goal		2040 Projection		2065 Projection	
		Goal (gpcd)	Reduction from 2015	Projection (gpcd)	Reduction from 2015	Projection (gpcd)	Reduction from 2015
Bear River	304	249	18%	232	24%	219	28%
Green River	284	234	18%	225	21%	225	21%
Lower Colorado River North	284	231	19%	216	24%	205	28%
Lower Colorado River South	305	262	14%	247	19%	237	22%
Provo River	222	179	20%	162	27%	152	32%
Salt Lake	210	187	11%	178	15%	169	19%
Sevier River	400	321	20%	301	25%	302	24%
Upper Colorado River	333	267	20%	251	25%	248	25%
Weber River	250	200	20%	184	26%	175	30%
Statewide	240	202	16%	188	22%	179	26%

Note M&I = municipal and industrial; gpcd = gallons per capita per day based on permanent population. Reported per-capita use includes all residential, commercial, institutional, and industrial uses averaged over the permanent population in each region.

FIGURE 4 PROPOSED REGIONAL M&I WATER CONSERVATION GOALS SET BY STATE OF UTAH IN 2019

In 2000, the state established a goal of a 25 percent reduction by 2025. After achieving an 18 percent reduction by 2015, these new goals were established to reduce usage further. As shown on Figure 4, based on a 2015 baseline for our area of 305 gallons per capita per day (gpcd), the State's goal was to reduce usage in our area by 14 percent to 262 gpcd by 2030, to 247 gpcd (19% total) by 2040, and 237 gpcpd (22% total) by 2065.

The State plan indicated that conservation can be achieved by two different change instigators identified as Market and Social Trends and Policy Interventions as graphically shown in the Figure 5 below.

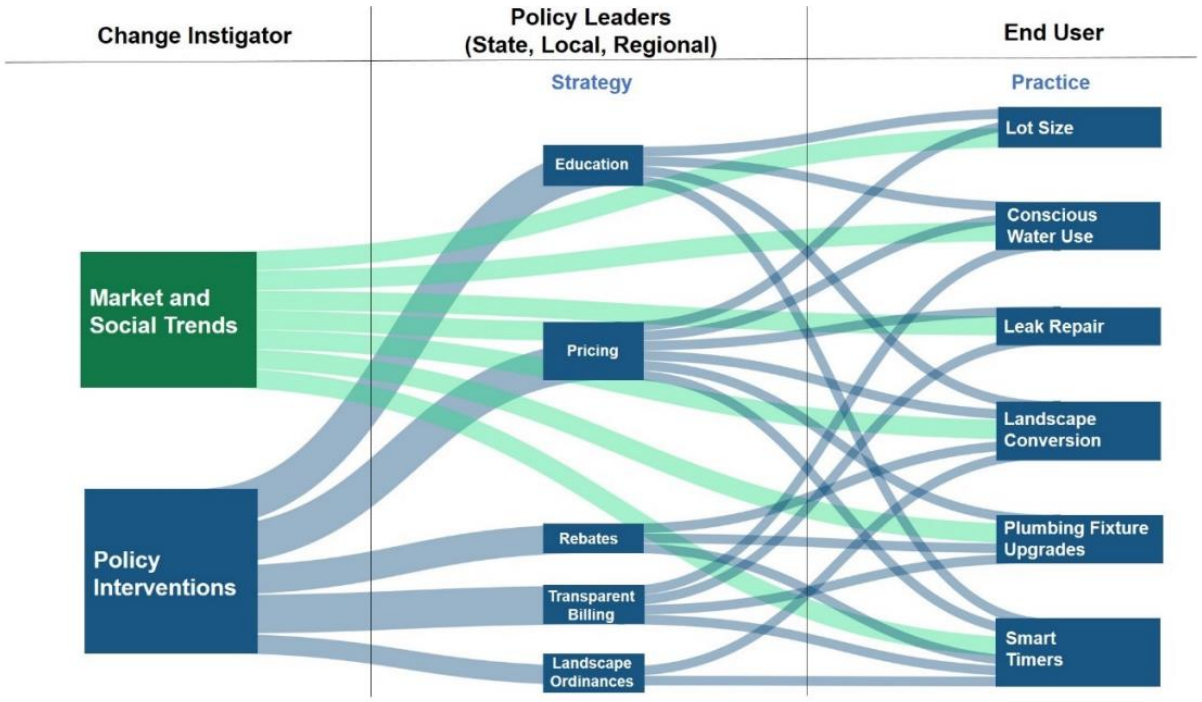


FIGURE 5 CHANGE IN FUTURE WATER USE (EXCERPTED FIGURE FROM UTAH REGIONAL M&I WATER CONSERVATION GOALS, 2019, FIGURE 4-2)

The plan acknowledges that there are likely hundreds of possible water conservation practices but then attempts to create a list of possible water conservation practices that could be used by an agency to promote water conservation. This list is provided as follows:

General

- Educate through demonstration gardens
- Provide landscaping classes
- Distribute educational booklets
- Distribute information mailers
- Create website resources
- Promote mass media messaging
- Target high residential and commercial water users
- Implement business water efficiency management plans
- Increase stakeholder coordination
- Create data management programs
- Provide rebates (indoor and outdoor)
- AWWA M36 water audits to identify and eliminate sources of water loss
- Enhance leak detection and repair
- Water pricing policies
- Ordinances and policies

Indoor

- Provide do-it-yourself water saving kits
- Incentivize shower head replacement
- Incentivize toilet replacement
- Incentivize faucet replacement
- Incentivize washing machine replacement

Outdoor

- Increase landscape watering at night
- Incentivize and educate on landscape conversion
- Implement landscape watering regulations
- Implement lawn installation regulations
- Establish irrigation water budgets
- Raise lawn mower cutting height to better shade grass and deepen roots
- Encourage rainwater harvesting
- Improve wastewater reuse
- Implement water waste fees
- Incentivize smart controllers
- Increase secondary water metering
- Implement irrigation schedules

From this list of possible practices, the plan identified a list of recommended water conservation practices:

General Recommended Practices:

- **Water conservation education.** Continued emphasis and funding of education and outreach must be fundamental components of any water conservation plan.
- **Conservation pricing.** Financial impacts will help motivate water conservation. Important features are lowering base rates, increasing tiers for usage, reviewing funding sources, and using customer feedback technology.

Indoor Recommended Practices:

- **Fixture conversion.** This will happen naturally with new construction and as old fixtures are replaced but may be accelerated through incentives and policies.
- **Other measures**. Fixing indoor leaks and inspiring changes in indoor water use habits will reduce consumption.

Outdoor Recommended Practices:

- **Improved irrigation efficiency.** Secondary metering, smart irrigation controls, and drip irrigation systems will improve irrigation efficiency for any landscape.
- **Water-wise landscaping.** New construction can be water-wise from the beginning, while existing landscapes can be converted.

- **Lot size and density guidelines.** Smaller lot sizes and less irrigated area will reduce the amount of water needed outdoors in new developments.

Washington County Water Conservation

Ivins City is a partner with the Washington County Water Conservancy District (WCWCD) and benefits from many of the programs they have implemented county-wide. The District last updated its water conservation plan in 2021.

The District identifies in their plan 20 conservation programs as shown in the following list that are either implemented or soon to be implemented.

They are listed as follows:

- **Real water loss reduction (system wide).** Find and replace leaks in the distribution system to reduce real water loss.
- **Tiered water conservation rate.** Continually evaluate water rate structure to incentivize conservation. Modifications could include adjusting the tiers or rates.
- **Advanced Metering Infrastructure (AMI).** Support municipal efforts to install AMI systems and make consumption data easily accessible to water users.
- **Weather-based irrigation controller rebates.** Provide a rebate for buying a weather-based irrigation controller.
- **Irrigation equipment rebates.** Offer rebates for converting to high-efficiency sprinkler nozzles, eliminating an irrigation station, and adding pressure reducer valves.
- **Efficient outdoor watering education.** Educate the public on outdoor efficiency initiatives, including workshops, certified landscaper training, plant tagging, speakers bureau, managing water conservation gardens, coordinated outreach to other water providers, local nurseries/landscapers etc.
- **Outdoor water audit.** Offer local water users a free, customized report on how to save water and irrigate responsibly.
- **Tree rebate.** Provide rebates for select water-efficient trees.
- **Public and school education.** Raise awareness of conservation benefits and measures via school programs, speaker's bureau, media coverage, advertising campaigns, and electronic/printed educational materials.
- **School building retrofit.** Offer schools grants to replace fixtures and upgrade irrigation systems.
- **High-efficiency fixture giveaway.** Offer free multifamily residential high efficiency showerhead and commercial pre-rinse spray nozzles to eligible customers.
- **Commercial washing machine rebate.** Provide a rebate for up to 50% of the cost of a high efficiency commercial washer.
- **Commercial toilet and urinal rebate.** Provide a rebate of up to $100 for the installation of an EPA Water Sense labeled high efficiency toilet and/or high efficiency urinal.
- **Residential landscape design consultations.** Help residential customers design a water-efficient landscape that follows the Localscapes principles.
- **Landscape conversion rebate (residential and commercial).** Provide a $2 per square foot incentive to remove turf and permanently replace it with low water use plants or hardscape.

- **Hot water on demand rebate.** Provide up to a $250 rebate to equip homes with efficient hot water on demand systems.
- **Leak devices/flow sensor rebate.** Offer up to $200 for qualifying flow sensors that provide water users instant access to use data.
- **Water audits for hotels/motels.** Provide free audits of indoor (bathrooms, kitchens, ice machines, laundry, cooling towers) and outdoor irrigation water use to hotels and motels.
- **New development standards.** Facilitate the enactment by municipalities of new construction standards requiring water efficient fixtures and landscapes.
- **Customized incentive program for high water users.** Offer site visits and water use analyses to top water users. Provide customized financial incentives for reducing water use.

The District has recently presented the 20-Year Water Supply Plan in the Summer of 2023. This plan has identified that water conservation is essential to providing water for future growth. Ordinances that have been passed by surrounding communities should keep a standard of 0.59 acre-feet per year of water usage per equivalent residential connection (ERC) for all new development. The new plan is also establishing a pathway for existing users to reduce usage from 0.78 to 0.63 acre-feet per year per ERC by 2042. This is a 20 percent reduction in usage.

Ivins City Current Achievements

Ivins City has always been a leader in water conservation in Washington County for many years by demonstrating that a community can be attractive while using less water. The Kayenta area of Ivins has especially been a demonstration of a manner to be water efficient, respect the natural beauty of the desert, and remain an attractive and vibrant place to live.

In 2018, Ivins City recognized that it had already met the State's 2000 to 2025 goal of reducing usage by 25 percent, it passed a water conservation plan that set a goal to reduce water usage by 10 percent for the 10-year period of from 2017 to 2027 setting the target goal at 197 gallons per capita per day (gpcpd).

Due to these aggressive efforts and successes in reducing water usage, in 2019, Ivins was recognized by the Governor's Office earning the Water Efficiency Award.

If you project back to the year 2000, Ivins City has reduced water by an impressive 38 percent.



FIGURE 6 GOVERNOR'S AWARD 2019 FOR WATER EFFICIENCY

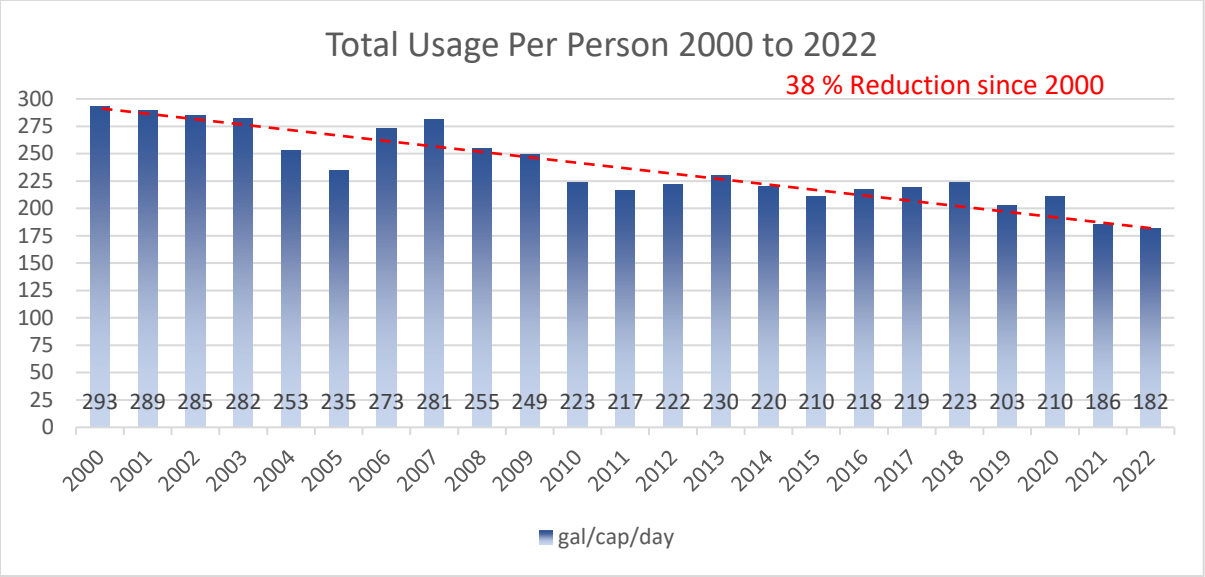


FIGURE 7 TOTAL USAGE PER CAPITA FROM 2000 TO 2022

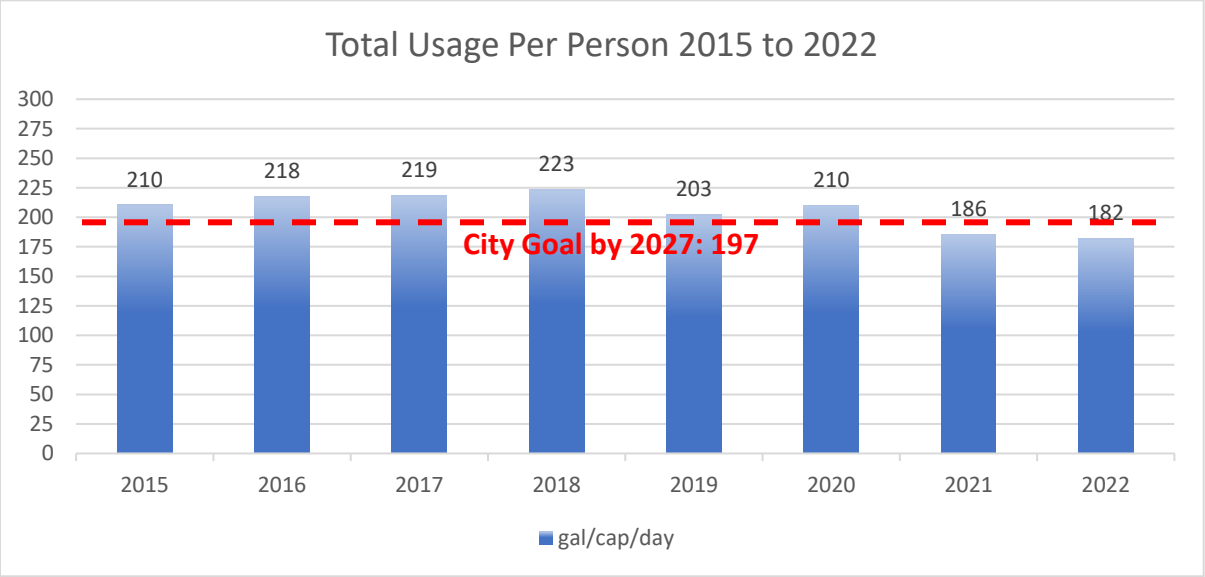


FIGURE 8 TOTAL USAGE PER CAPITA FROM 2015 TO 2022 COMPARED TO CITY GOAL

The Figure 8 chart shows how well Ivins City has performed since setting its last goal. In 2021 Ivins City surpassed its goal in 2022 extended even lower to 182 gpcpd which represents an additional 18 percent reduction.

The State Regional Goal and WCWCD Goal is to reduce water consumption by 14 percent from the period 2015 to 2030. Ivins usage in 2015 was 210 gpcpd, thus, to meet this goal water usage must be reduced to 179 gpcpd or by an additional 2 percent below the 182 gpcpd that has already been achieved.

Ivins City Current Conservation Efforts

Ivins has achieved its goal by implementing its water conservation plan and thus encouraging residents to use less water. We are grateful to the efforts of the WCWCD to implement water conservation audits, assistance, and rebate programs that have certainly contributed to the overall water conservation in Ivins. The WCWCD administers eleven rebate/grant programs and six education/assistance programs for various users to be incentivized to conserve water. We consider their efforts vital to our water conservation planning.

The following is a list of the programs and strategies that have already been implemented by Ivins City.

Water Conservation Education

The following efforts are in place for water conservation education in Ivins City:

- The City's monthly newsletter promotes water conservation in every edition with frequent reminders to reset water timers and tips on ways to conserve water.
- The website has a page dedicated to water conservation including providing a copy of this plan.
- Social media has been used to promote grass removals and irrigation timer adjustments.
- Brochures and flyers are kept at City Hall for residents and are offered for free to encourage water conservation.
- City Hall was constructed with a ultralow water consumption landscaping as a demonstration project.

Water Conservation Pricing

Ivins City has some of the most aggressive water conservation rates in the County. This is partly since Ivins City has very few of its own water rights and purchases most of its water from the City of St George and the WCWCD, therefore, Ivins has higher source water supply expenses than other communities. The following chart shows the water rates as compared to other surrounding communities. The high cost of water may be one of the reasons that Ivins City has some of the lowest water usages.

	Usage Rates ($ per 1,000 Gallons/Month)			
Base Rate	0 to 7000 Gallons	7001 to 15,000 Gallons	15,001 to 30,000 Gallons	30,001 +
$16.91 per month	$2.35	$3.13	$3.88	$5.03

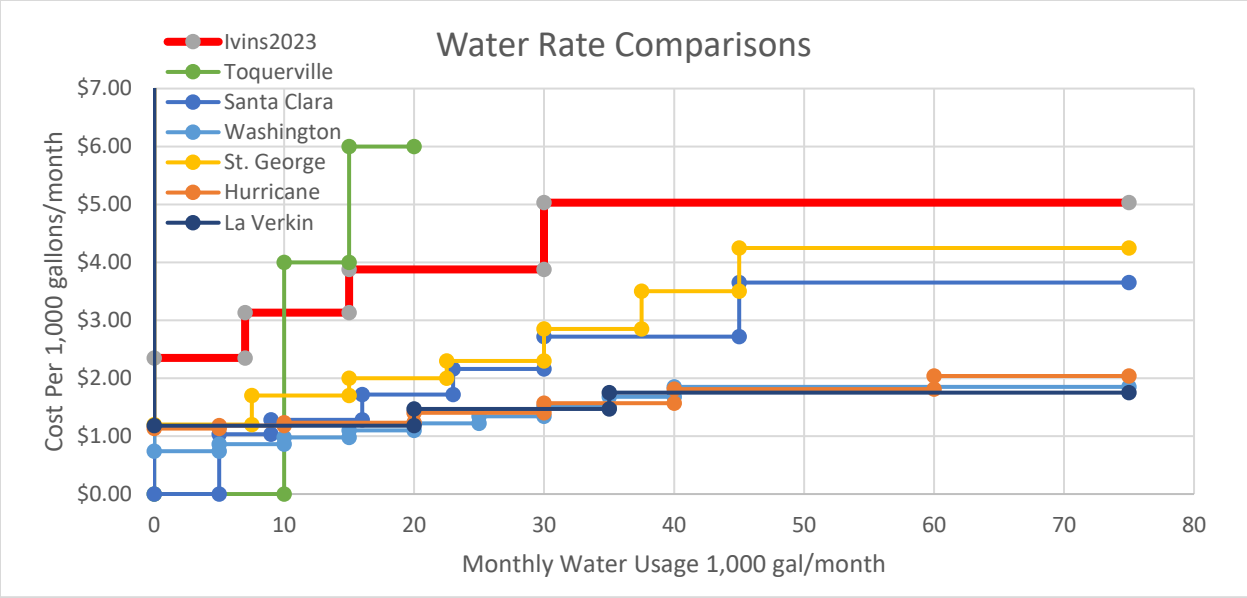


FIGURE 9 WATER RATES AS COMPARED WITH OTHER CITIES IN WASHINGTON COUNTY

In addition to the Ivins City rates, surcharge rates are billed by Ivins City and passed through to the WCWCD to help pay for water conservation programs as follows:

- Homes built before 2023: Add $1.00 per 1,000 gallons for usage above 36,000 gallons per month.
- Homes built on or after January 1, 2023 add $5.00 per 1,000 gallons for usage above the following seasonal limits:

Seasons	Excess Surcharge Limit
Winter (December, January, February)	7,000 gallons/month
Spring (March, April)	15,000 gallons/month
Summer (May, June, July, August, September)	20,000 gallons/month
Fall (October, November)	15,000 gallons/month

Water Conservation Ordinances

Since the last water conservation plan, the City has made adjustments to ordinances to improve water conservation. The following table is a summary of the current ordinances that address water conservation:

Section	Summary
10.01.120	Waste of water is illegal. Waste includes leaky equipment or any other practice that is not a purposeful use of the water.
10.01.125	Sprinkler irrigation of lawns is prohibited between 8 AM and 8 PM.
10.01.126 & 127	Water conservation stages identified to limit water use in an emergency.
11.01.203	Unlawful to overflow water onto public property.

11.01.210	Unlawful to discharge water across the sidewalk.
14.11.101 to 707	Title 14, Chapter 11 Regulations for Landscaping and Water Conservation for Developing Land (Adopted June 2, 2022, See appendix for full ordinance.) • Water efficiency standards for landscapes for all new development. • New construction must significantly restrict grass to only active areas with maximums. • Requires Energy Star and WasterSense labeled appliances and fixtures. • Requires water efficient plant and tree selection. • Requires irrigation system to meet specific design standards including smart timers and drip systems. • Restricts water features and pools.
16.33.102	Car washes are restricted to only hand operated facilities.

Physical System Operations

There are also physical system operations that can aid in water conservation which are as follows:

- **Reducing leaks in the system.** Ivins City has been experiencing a high volume of water leaks in the system. We have leak detection equipment that uses sounds to find leaks but so far it has been almost no use since our system is comprised of mostly PVC pipe, and it is buried in silty sand soils. This combination of pipe material and bedding material makes it very difficult to detect leaks via sounds.
- **Reduce water loss due to meter inefficiencies.** Some water losses are due to old meters or otherwise inaccurate meters. It is important to replace the old meters and defective meters with new, to ensure that an appropriate amount of revenue is being collected. It is also important so that residents respond appropriately to their own potential overuse of water.
- **Tracking non-revenue water usage.** We have started tracking non-revenue water usage which is the water that is used in unmetered situations such as when flushing the system or putting out structure fires. Tracking this number helps identify how much of the water loss is truly due to leaks or meter inefficiencies.

Other Factors Affecting Water Conservation

There are other influences contributing to the lower usage as well. Kayenta represents most of the west, one third of Ivins. They have been leaders in the area in promoting water efficient landscaping and demonstrating how this can be done in a pleasing manner. All new commercial and multifamily developments are required to use water efficient landscaping. Single family residential developments are encouraged, but not required to do so; however, most of the residential construction does use water efficient landscapes because that is what the customer market expects.

There are a few factors that work against Ivins City's water conservation goal. The City's demographics are changing. The City has become a retirement community in the past two decades. This has caused the average household size to decrease from 3.5 persons per household to 2.8. This naturally impacts the ability to reduce the usage of water per person since a landscape, representing 50 percent of total usage, is not dependent on the number of occupants of the home.

Another factor is that 18 percent of the homes in Ivins City are second homes. Second homes may use less water indoors, but they don't use less water outdoors, in fact, a recent study by the WCWCD indicates that second homes may use more water outdoors than primary residences. The lack of onsite care may be the reason for this statistic. These second homes increase water usage in the city but do not add population which hinders the city to achieve goals based on gallons per capita per day.

Water Conservation Reduction Goal

The City has already met its goal to reduce water usage by 10 percent from 2017 to 2027 by decreasing usage to 182 gpcpd. It is also very close to meeting the State and WCWCD goal to reduce usage by 14 percent from 2015 to 2030.

Having achieved much in the past years, it is believed that water usage will continue to decrease per capita especially with the new water conservation ordinance for new development that was passed in 2022 combined with the District more aggressively offering to pay to remove grass and other measures aimed at reducing water usage for existing users.

The city, therefore, is setting the following new goals upon the adoption of this plan:

1. Reduce water usage in gallons per capita per day (gpcpd) by 10 percent for the next 10-year period from 2022 to 2042 setting the target from 182 at 164 gpcpd.
2. Reduce and then maintain system water losses to 7 percent or less.

Proposed 5-Year Water Conservation Strategies

The following strategies are proposed and shall be implemented in the next 5 years upon the adoption of this plan:

Goal #1: Reduce water usage in gallons per capita per day (gpcpd) from 2022 to 2032 by 10 percent from 182 to 164 gpcpd.

Strategy 1A: Continue all current efforts.

- Awareness through monthly newsletter. Include regular monthly articles or reminders regarding water conservation.
- Every newsletter contains a water conservation tip with recommended watering schedules.
- Support WCWCD on all water conservation programs, especially on grass removals.

Strategy 1B: Setup Transparency Billing

- Grant has been awarded already, need to proceed with the project.

Strategy 1C: Water Education Billing

- Explore re-arranging the water bill such that residents that are overusing water may be better notified, more aware and feel a sense of social pressure to reduce.

Strategy 1D: Automated Meter Infrastructure

- Automated Metering Infrastructure allows for metering data to be collected continuously rather than monthly. This allows for more timely leak detection and water waste notifications.
- Estimated costs are $1.2 million. Apply for grants if possible to help fund.

Goal #2: Reduce and then maintain system water losses to 7 percent or less.

Strategy 2A: Reduce water loss due to meter inefficiencies.

- Establish a policy of meter replacement that balances the economics of the cost of the replacement versus the cost of lost revenue as meters age. Increase the replacement cycle when the economics supports it.

Strategy 2B: Reduce water leaks.

- Replace all known defective service piping in the system.
- Improve leak detection efforts using existing sound detection equipment.
- If the above listed efforts do not reduce system water loss, evaluate the usage of zone flow measurements to pin point locations of leaks.

Strategies to Consider for Future

This plan will be updated in 5 years. It may be necessary to improve water conservation efforts further than those listed in this plan. The City may want to consider the following measures.

- Create water budgets for each water account and provide feedback to customers.
    - This involves setting a water budget for each household based on number of residents and size of landscapes.
    - Penalize accounts that exceed water budgets.
- Other ideas
    - Encourage (or require) grey water reuse systems
    - Encourage (or require) recycling showers
    - Encourage (or require) artificial turf installations in certain situations

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