

# Flagstaff's Water Conservation Program - Saving water in the mountains of Arizona

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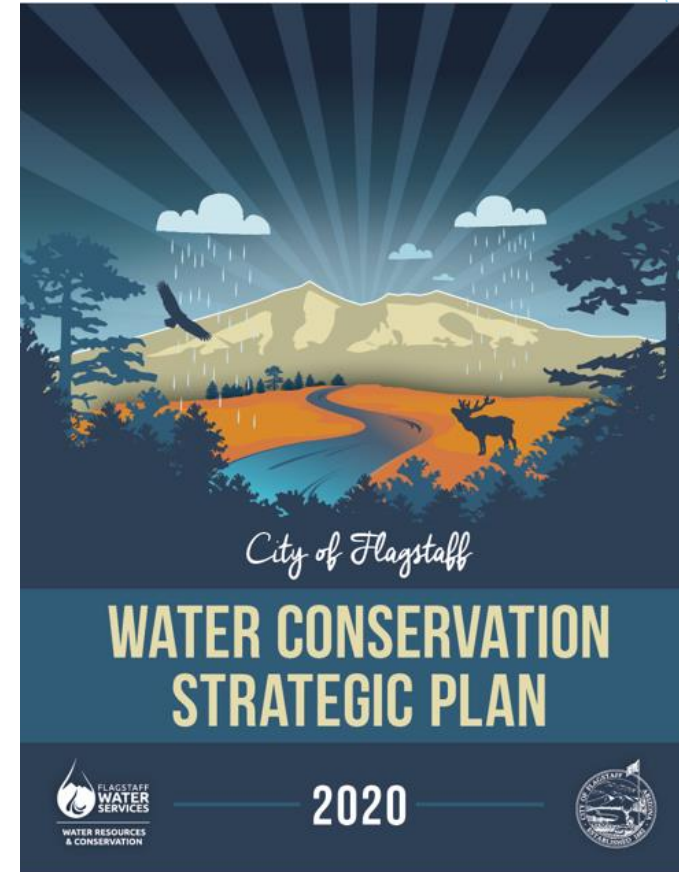
# About Flagstaff, Arizona

- ▶ Elevation 7,000 feet
- ▶ Annual precipitation - 23”
  - ▶ (AZ average is 8”)
- ▶ Population approx 75k
  - ▶ NAU approx. 30k
- ▶ Water Conservation Ordinance since 1988
  - ▶ Every other day watering
- ▶ 1.28 GPF toilets since 2009
  - ▶ Also pint flush urinals
- ▶ 30/70 surface to groundwater ratio on average
- ▶ Gravity-fed sewer system (not combined with stormwater)






# Water Conservation Strategic Plan

- ▶ Maddaus Water Management - modeling effort
  - ▶ Historic consumption, production, weather, economy, building codes
- ▶ Model predicts future water savings by estimating number of participants in conservation programs and organic fixture conversions over time
- ▶ Assessed all current conservation activities as well as a number of new concepts for future programming
  - ▶ Results: removal of rainwater harvesting program, improvement to toilet rebate program. Add: school retrofit program, water budgeting for lawns, innovation fund.
  - ▶ Approximately \$160M in deferred costs
  - ▶ Estimated decrease of ~20 GPCD, mostly outdoors



# Low Water Landscape Rebate

- ▶ Partnership with local Arboretum at Flagstaff to generate plant lists
- ▶ Customized lists for different regions of town
- ▶ Calculation tool to estimate water use post-conversion
- ▶ \$0.25 per square foot converted
- ▶ No artificial turf, no more than 20% rock cover, no spray irrigation (drip is allowed)

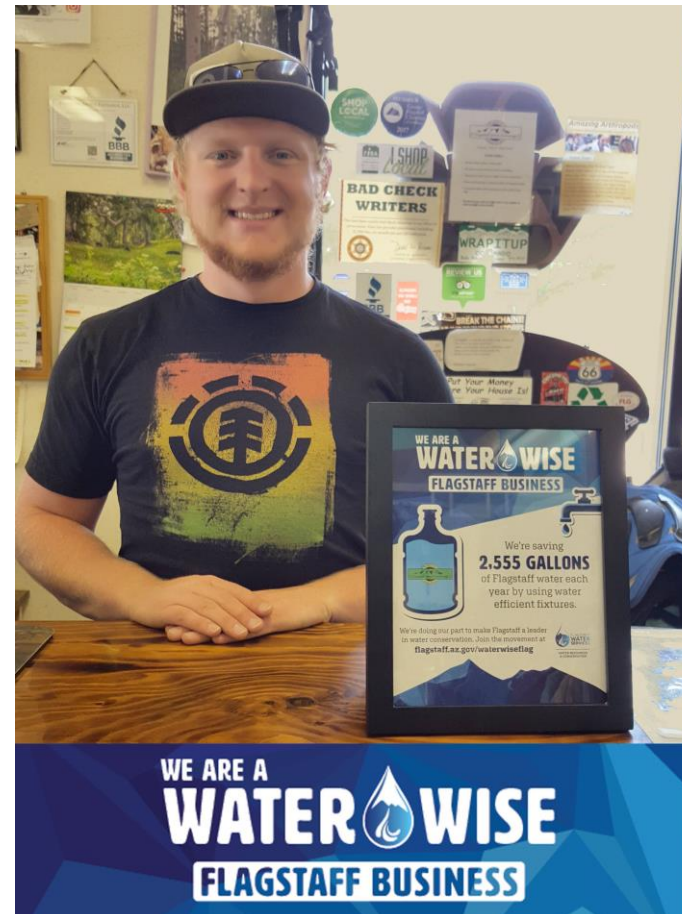
S. ELDEN/BANANA BELT NATIVE PLANT LIST					
TYPE	FLOWER & BLOOM TIME	WATERING (after establishment)	LIGHT NEEDS	SOIL AND HABITAT CONDITIONS	
	Tree or Large Shrub Height: 6 to 30 ft	N/A	Low (Monthly watering except in times of extreme heat or drought)	Part shade or full sun	Sandy soils, clay soils, rich soils
<b>GAMBEL OAK</b> <i>Quercus gambelii</i>					Photo: Wasowski Collection
TYPE	FLOWER & BLOOM TIME	WATERING (after establishment)	LIGHT NEEDS	SOIL AND HABITAT CONDITIONS	
	Tree Height: 30 to 40 ft	Blue to purple berries attract wildlife	Low (Monthly watering except in times of extreme heat or drought)	Part shade or full sun	Sandy soils, clay soils, loam
<b>ROCKY MOUNTAIN JUNIPER</b> <i>Juniperus scopulorum</i>					
TYPE	FLOWER & BLOOM TIME	WATERING (after establishment)	LIGHT NEEDS	SOIL AND HABITAT CONDITIONS	
	Shrub or Small Tree Height: 8 to 20 ft Note: year-round evergreen leaves	Cream or white flowers in spring	Low (Monthly watering except in times of extreme heat or drought)	Full sun	Well-drained soils
<b>MOUNTAIN MAHOGANY</b> <i>Cercocarpus montanus</i>					



# Commercial Partnerships



- ▶ Water Wise Business Certification
  - ▶ Fix all leaks.
  - ▶ Toilets and urinals flush (at minimum) at the federal standard of 1.6 gpf/1.0 gpf, respectively.
  - ▶ Aerator installed on every faucet (based on faucet's primary use)
  - ▶ Incorporate water budget into landscaping practices
- ▶ Commercial Rebates
  - ▶ 50% of fixture costs



# AWE Leaderboard

- ▶ City Council goal 2017-2019: “Become a national leader in Water Conservation”
- ▶ Sample Criteria (G480 Standard):
  - ▶ Dedicated water conservation staff
  - ▶ Water conservation plan
  - ▶ Treat conservation equal to other supplies in long term planning efforts
  - ▶ Public information and education
  - ▶ Meter all service connections
  - ▶ Nonpromotional water rate
  - ▶ Water efficient landscape program
  - ▶ Water efficient codes and standards
  - ▶ Annual water audit & water loss control program
- ▶ As of September - Gold Status!

4.2.5	Develop or support creation, implementation, and maintenance of an enforceable water waste ordinance.	<p>The City has had a Water Conservation Ordinance since 1988 (City Code: 7-03-001-0014, supporting document #17). This ordinance has been updated four times, in 2003, 2004, 2010, and 2016. Water waste is prohibited in the ordinance and is defined as follows:</p> <ul style="list-style-type: none"> <li>• “Wasting Water: To use or expend water thoughtlessly or carelessly. Examples include, but are not limited to, allowing water to run into the street/gutter, allowing water to pool, irrigating during precipitation events, and failing to repair water leaks. The determination of Wasting Water shall be made by a representative of the City of Flagstaff.”</li> </ul> <p>Staff have the authority to issue fines for code violations and the Water Conservation program has employed summer water enforcement staff for about 13 years. Since 2018, staff have used an app to take photographs of violations in the field and an accompanying dashboard allows management to tract total violations (supporting document #19).</p>	1988
<b>4.3 Internal Utility Actions and Requirements</b>			
<i>4.3.1 Metering Practices</i>			
4.3.1	<p>Implement metering practices that promote conservation, including metering of:</p> <ul style="list-style-type: none"> <li>• All water sources</li> <li>• All service connections</li> </ul>	<p>The City has been fully metered on all its sources and service connections since each water supply came online. Meter reads for surface water from Lake Mary and Inner Basin Spring water are recorded as far back as 1949. See 2019 Report to the Water Commission in supporting documents (5).</p> <p>City of Flagstaff is growing a smart meter program and so far we have converted 8% of our meters to smart meters. Our goal is to fully convert about 20,000 meters to smart meters by 2028. We have not made any customer-side software available to customers yet, but we do have the smart meter technology available to city staff.</p>	



Thank you! Questions?

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