Flagstaff Water Demand
Urban Water Demand Roundtable

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Annual water use by Flagstaff

12000
Reclaimed rate model if incentive
Upper Lake Mary
Inner Basin Springs
Inner Basin Wells
Woody Mountain Wells
Lake Mary wells
Local Wells
Reclaimed use
With reclaimed trend
Potable trend

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0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000
Production (acre-ft)

Rate modification
Reclaimed water plant
Inverted rate structure
Low-flow toilets
Permanent conservation
NAU TOTAL WATER DELIVERIES

YEAR


Enrollment 17,529
Enrollment 14,766
Enrollment 13,443

ACRE FEET

0 100 200 300 400 500 600 700 800 900

RECLAIMED
POTABLE

Enrollment

Flagstaff’s Water Supply

1949 - 2012

% of Surface Water v. Groundwater

2012 ~ 11% surface water
~ 89% groundwater

Drought?
Historic drinking water use - GPCD

Gallons per Capita per Day

- Peaked at 186 in 1989
- Decline of 39%
- Low of 111 in 2011

Residential: 56 GPCD - Lowest in State
Non-Residential: 42 GPCD
## Summary Eight Year Water Consumption Averages

<table>
<thead>
<tr>
<th>Category</th>
<th>Average (GPHD/GPAD/GPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Housing Units</td>
<td>212</td>
</tr>
<tr>
<td>Multi Family Attached Housing Units</td>
<td>173</td>
</tr>
<tr>
<td>Apartment Complexes</td>
<td>160</td>
</tr>
<tr>
<td>Industrial/Institutional Uses</td>
<td>5251</td>
</tr>
<tr>
<td>Commercial Uses</td>
<td>861</td>
</tr>
<tr>
<td>Hotel Room Use</td>
<td>106</td>
</tr>
<tr>
<td>Modular Neighborhood</td>
<td>164</td>
</tr>
</tbody>
</table>

**Definitions:**
- **GPHD**: gallons per house per day
- **GPAD**: gallons per acre per day
- **GPD**: gallons per day
Flagstaff’s “Bucket” of Water Supplies

Locally Derived Water Supplies

- Groundwater 9,913 AF/year
- Surface water 2,242 AF/year
- Reclaimed water 2,212 AF/year

100-Year - sustainable volumes

+ groundwater flow computer modeling +
POPULATION PROJECTION

METHOD

Base case
Scenario 1

Regional Plan Projected Growth
150,000

Normal Year
Water Supply

Historical Growth Rate
and Water Use
Total GPCD = 114

Estimated time when growth exceeds existing supplies

Designation = 11,285 AF

Surface water 2,242 AF/year

Additional water
~11,700 AF/year

Groundwater 9,913 AF/year
includes 1,150 AF/year recovered reclaimed


TIME

Acre-feet

25,000
22,200
20,000
15,000
11,000
10,000
5,000
0

**POPULATION PROJECTION METHOD**

**Historical Growth Rate**
- and 20% new Water Conservation
- Total GPCD = 91

**Additional Water**
- 7,840 AF/year

**Groundwater**
- 9,913 AF/year
- includes 1,150 AF/year recovered reclaimed

**Surface water**
- 2,242 AF/year

**Estimated time when growth exceeds existing supplies**
- Designation = 11,285 AF

**Base case**
- Scenario 2
- Regional Plan Projected Growth: 150,000
POPULATION PROJECTION
METHOD

Dry Year – Climate Change
Water Supply

Surface Water Impacted due
to Prolonged Drought

Estimated time when growth
exceeds existing supplies

Designation = 11,285 AF

Additional Water
10,082 AF/year

Groundwater 9,913 AF/year
includes 1,150 AF/year recovered reclaimed

Regional Plan Projected Growth
150,000

Base case
Scenario 2

Acre-feet

TIME

Utilities Energy Usage

- **Water**
  - FY 2010: 15,000,000 kWh
  - FY 2011: 10,000,000 kWh
  - FY 2012: 25,000,000 kWh

- **Wastewater**
  - FY 2010: 5,000,000 kWh
  - FY 2011: 6,000,000 kWh
  - FY 2012: 7,000,000 kWh
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