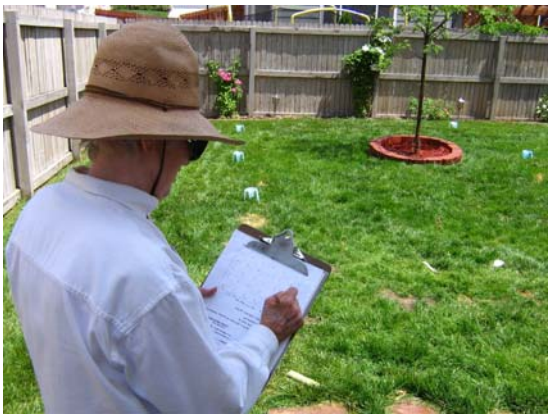


Water Conservation

2006 Annual Report

City of Fort Collins Utilities

Fort Collins Utilities

Water Conservation in Fort Collins

This is the fifteenth annual report to the Fort Collins City Council regarding the City's water conservation efforts. The report provides an update on the provisions of the *2003 Water Supply and Demand Management Policy*, an overview of achievements during 2006 and a description of current water conservation programs.

The *2003 Water Supply and Demand Management Policy* (Attachment 'A') provides general criteria for decisions regarding water supply projects, acquisition of water rights and demand management measures. The Policy sets water use goals to be achieved by 2010; 185 gallons per capita per day (gpcd) for annual water consumption and 475 gallons per capita (gpc) for peak daily demand.

Water Conservation Plan

In 1996, Fort Collins Utilities submitted, and subsequently had accepted, a water conservation plan in response to the State of Colorado's *Water Conservation Act of 1990.* The State of Colorado's *Water Conservation Act of 2004* prompted an update of the City's water conservation plan. The Water Board Conservation and Public Education Committee met with Utilities staff to begin developing a new plan.

The Colorado Office of Water Conservation published a guidance document for developing water conservation plans. Of the nine planning steps outlined, Fort Collins Utilities completed the first five in 2006. Work on the plan will continue in 2007, with a goal of the plan being adopted by City Council and approved by the State by the end of the year.

The nine planning steps include:

1. Profile existing water system
2. Characterize water use and forecast demand
3. Profile proposed facilities
4. Identify conservation goals
5. Identify conservation measures and programs
6. Evaluate and select conservation measures and programs
7. Integrate resources and modify forecasts
8. Develop implementation plan
9. Monitor, evaluate and revise conservation activities and the conservation plan

Weather, Restrictions and Water Use

The first nine months of 2006 were extremely warm and dry with only 5.5 inches of precipitation through September and 11.2 inches for the year. Due to a warm and dry spring, snowpack declined from slightly above average in April to about 70% of average in May. Not surprisingly, 2006 water use was higher than the past several years.

Water use continues to be significantly lower than what it was before the 2002 drought, indicating water users are still practicing conservation measures. No water restrictions were mandated for 2006, although tiered water rates remained in effect.

2006 Accomplishments

The *Water Supply and Demand Management Policy* identifies five tools to accomplish the water use goals. These tools include (1) educational programs, (2) rate structures, (3) incentive programs, (4) regulatory measures and (5) operational measures. Below is an update of the water conservation efforts for each tool.

1. Educational Programs

Educational programs are a strong component of the City's water conservation efforts. Education helps raise public awareness about the City's water supply situation, the need for conservation and ways to conserve. To encourage long-term water conservation and instill water-efficient behaviors among all age groups and sectors, the City's educational programs focus on reaching youth and adults, residences and businesses.

- Customer assistance: responded to calls and e-mails with water use or billing questions and requests for water conservation information. During 2006, staff responded to over 240 requests from residential customers and over 130 requests from commercial customers.

- General outreach: distributed brochures and information about Xeriscape, lawn watering, water restrictions and other conservation topics. Throughout the year, conservation-related articles, brochures and other information were distributed at various City locations and through utility bills, newspapers, newsletters and the Web. During the summer, outreach increased with advertising on bus benches.

- Xeriscape Education: promote the use of low water-using landscapes.
  - Offered a presentation, *Xeric Perennials for a Lasting Impression*, as part of the City's residential Environmental Program Series.
  - Provided tours and garden maintenance support at the City's Xeriscape Demonstration Garden. Tours and a program, *Xeriscape: Good Grief It's Gorgeous*, were offered in June. In July, an open house and garden party was held to coincide with a downtown Thursday Night Market. Master Gardeners provided tours and five nurseries set up displays and answered questions.

  - Displayed Xeriscape exhibits at the main library and several other locations.
  - Co-sponsored the fourth annual *High Plains Landscape Workshop* with over 200 people attending presentations on a variety of landscape topics.
  - Helped coordinate the Twilight Garden Series in conjunction with CSU, offering nine programs on landscaping topics.

- Irrigation Education: educate about wise watering practices.
  - Offered a presentation, *Water-Smart Sprinkler Systems,* as part of the City's residential Environmental Program Series.
  - Provided data to the *Fort Collins Coloradoan* for the daily Lawn Watering Guide. The guide shows how much water a lawn might need if not watered for three, five or seven days.
  - Displayed lawn watering exhibits at the main library and several other locations. These exhibits provided tips for watering wisely.

- Youth Education

  - Presented classroom programs to elementary and junior high students about the history of water in Fort Collins and the West, watershed studies, microbiology and water chemistry.
  - Staff visited classrooms as Dr. WaterWise, bringing a water conservation curriculum to schools. Maps, videos, activity books and teacher's handbooks on a variety of water subjects were distributed to teachers for use during their study of water.
  - Co-sponsored the 2006 Children's Water Festival. This fun event provided water education to 1,600 third graders. Students spent half a day attending classroom presentations, an exhibit hall and a trivia contest at CSU.
  - Sponsored an award at Poudre School District's 2006 Science Fair for a science project involving water.

- Commercial Outreach
  - Provided newsletters, mailings, meetings and seminars on topics of interest to specific businesses, such as restaurants, hotels, car washes, landscapers and large businesses.
  - Sponsored a program, *Water-Smart Irrigation,* and co-sponsored *Room for Savings: Environmental Options for Hotels and Motels,* as part of the City's Environmental Program Series for Businesses.
  - Performed six facility water audits for small commercial customers in conjunction with the ClimateWise program.

2. Rate Structures

Rate structures are an effective tool to help meet water use goals. Providing an economic incentive to use water efficiently has been proven as an effective way to reduce water use. Until January 2003, Utilities residential customers paid a set rate per 1,000 gallons regardless of water use. The rate structures were revised in response to the drought and continue as a means to send a strong conservation message to customers.

- The four-tiered water rates for single-family and duplex customers were changed to three tiers in 2006.

- Seasonal rates, with higher rates from May through September, for commercial and multi-family customers were unchanged for 2006. Commercial rates have a second tier for higher water use.

3. Incentive Programs

Incentive programs typically provide rebates, loans, services or goods to customers to encourage use of more efficient technology.

- A clothes washer rebate program offered a $50 rebate when customers purchased a high-efficiency, ENERGY STAR® qualified clothes washer. The Utilities gave 981 $50 rebates during 2006. The new washers resulted in an estimated water savings of 4.8 million gallons per year.
- The sprinkler system audit program was offered for the eighth summer. With the help of two seasonal auditors and four Master Gardeners, 240 home and five homeowner association audits were performed. Sprinkler systems were evaluated for watering efficiency, and homeowners received a watering schedule and information about proper watering techniques.
- Zero-Interest Loan Program for Conservation Help (ZILCH) loans are available for high-efficiency clothes washers and replacing water service lines. During 2006, two were issued for clothes washers, totaling $1,363.

4. Regulatory Measures

The City of Fort Collins has various regulations in place which encourage efficient water use and dissuade water waste.

- Investigated more than 50 complaints in accordance with the *Fort Collins Municipal Code* wasting water ordinance.
- Reviewed 45 landscape plans for new developments for compliance with the *Land Use Code's* water conservation standards. The plan review is part of the review process prior to City approval of new developments.
- A *Water Supply Shortage Plan* was adopted in 2003. The plan includes a series of measures to be enacted, including water restrictions, for four levels of water shortage. No water restrictions were necessary during 2006.
- A *Restrictive Covenants Ordinance* was adopted in 2003. The ordinance prohibits homeowner association's covenants from banning the use of Xeriscape or requiring a percentage of landscape area to be planted with turf. Although questions arose from residents, no enforcement was needed to uphold this ordinance.
- A *Soil Amendment Ordinance* was adopted in 2003. This ordinance requires that builders add organic matter to the soil before planting turf to encourage deep roots and water penetration. Enforcement includes a visual inspection of each property.

5. Operational Measures

Operational measures are practices and procedures the City implements to deliver and use water in its facilities without excessive losses. The Utilities has been progressive in employing measures that help save both raw and treated water.

- In accordance with the *Colorado Water Metering Act of 1990*, all City water customers have been metered since July 2003.
- Operating since 1993, the City's leak detection program uses sound detection equipment to identify small to moderate leaks so they can be repaired before they become large leaks. During 2006, the Utilities surveyed 150 miles of water main to detect leaks. Pinpointing the exact location of the leaks before they surfaced saved water and reduced excavation and street pavement repair costs.
- The Water Treatment Facility treats backwash water and recycles it to the beginning of the treatment process. Water savings is approximately 450 million gallons a year.

Water Conservation in the Parks Department

Water Use Efficiency

Water consumption data was collected and analyzed throughout the Parks system. Using evapotranspiration (ET) readings, rainfall and water use readings, Parks calculated the landscape area's need for water and the amount of water that was actually applied. They found that:

- 10 parks used over 100% ET
- 34 parks used under 100% ET
- Of the 34, 29 used under 90% ET
- On average, the sites watered 85% of ET

Water Auditing

Several audits were conducted on areas watered at more than 100% of ET. Findings included:

- Acreage was incorrectly assigned
- Adjustments were needed to sprinkler heads and/or controllers
- Irrigation systems were antiquated

Water Usage Baseline

Three sites were selected to investigate new irrigation technology for watering efficiency. Water use data collected from these sites will be used as a baseline for future comparisons. The sites will continue to be monitored in 2007. The sites chosen for improvements include:

- Canterbury/Drake median – soil moisture sensor
- Taft/Drake median – ET controller and Netafim (subsurface irrigation for plants and turf)
- Oak Street Plaza Park – Netafim

Collaboration and Regional Participation

- Participated in the City's Sustainability Team. With the goal of water conservation, the Utilities coordinated a multi-departmental Water Policy Team in 2006 to review the City's policies and regulations that effect water efficiency.
- Participated as a Board member and newsletter editor for the Colorado WaterWise Council, and the Rocky Mountain Section AWWA Water Conservation Committee.
- Participated in the Northern Colorado Industrial, Commercial and Institutional (No. CO ICI) group of water providers to develop an action plan for implementing cooperative commercial water conservation projects. During 2006, work began on a water use benchmarking project targeted to the restaurant, hotel/motel, school and nursing home sectors.

How are we doing?

Water Use Goals

The *Water Supply and Demand Management Policy* states: *The City will implement the necessary water conservation practices and programs to reduce its water use to an average of 185 gallons per capita per day (gpcd) by the year 2010. In addition, the per capita peak daily demand will be reduced to 475 gpcd by the year 2010.* These calculations are based on the total treated water produced for use by City customers (adjusted for large contractual customers and other sales or exchange arrangements) divided by the estimated population of the City's water service area.

Per capita annual consumption is calculated by dividing annual water use by the population served and 365 days, and adjusted for weather. In 2006, the adjusted average demand was estimated to be 156 gpcd, compared with 155 gpcd in 2005.

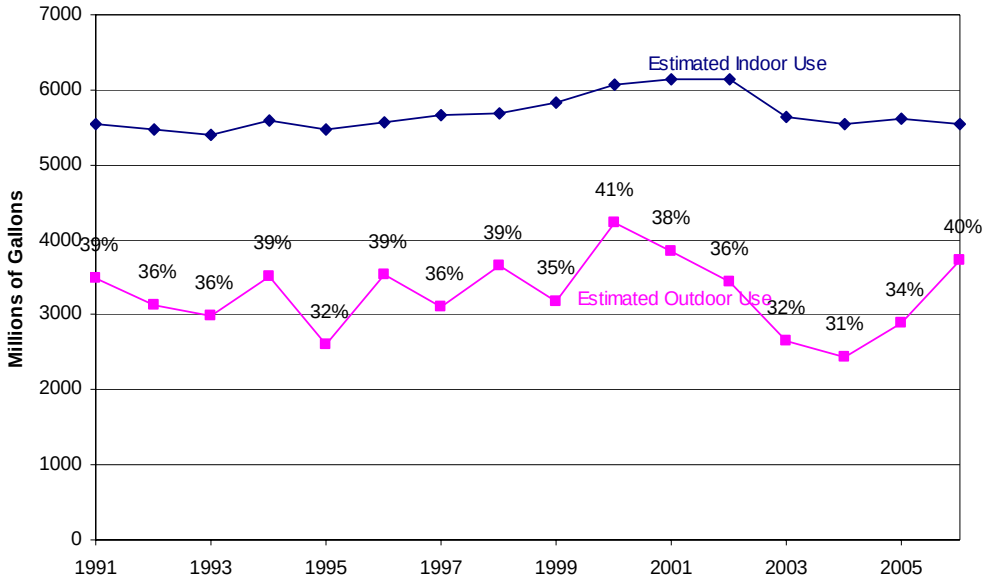
Per capita peak daily demand is calculated by dividing peak day water use by the population served and adjusted for weather conditions. It is statistically derived to represent a peak day that might occur once in 50 years. Year-end records put the 2006 weather-adjusted peak daily demand at 350 gpc. The peak demand in 2005 was 363 gpc.

Evaluating Water Use

The water use trend continues to be lower than pre-drought demand. When adjusted for the hot, dry weather conditions of 2006, demand changed very little from 2005. Tiered and seasonal water rates, and continuing drought awareness, contributed to the trend of decreasing water use. How much of the lower usage can be attributed to the City's water conservation measures is difficult to analyze. Over the last 15 years, low-flow plumbing standards and metered water taps have contributed to reducing the per capita water use. Water use can vary for many reasons, including changes in weather, seasons, household size and income.

Per capita water use estimates can misrepresent water use trends over time. Population is not the sole determinant of water use. Precipitation levels and daily temperatures during the watering season cause water use to vary considerably from year to year. For Fort Collins, the chart below shows the percentage of water used indoors versus outdoors per

year. Indoor water use remains fairly consistent while outdoor water use fluctuates. Close to 40 percent of the annual water use is for outdoor watering between April and October.



Historic Water Use Per Person

(Gallons per Capita per Day[1]**)**

Year	Actual Use (gpcd)	Normalized Average Use (gpcd)	Actual Peak Day Use (gpc)	1 in 50 Normalized Peak Day Use (gpc)
1995	181	205	492	526
1996	203	206	443	527
1997	188	196	496	509
1998	196	201	487	501
1999	185	198	435	473
2000	211	204	440	477
2001	198	198	428	503
2002	183	189	378	411
2003	154	157	346	383
2004	146	150	307	327
2005	155	155	365	363
2006	172	156	353	350

Notes:

1. Values do not include large contractual water use.
2. Normalized values represent average expected use for 1930-1995 weather conditions.
3. 1 in 50 peak use is expected to occur once in 50 years. Log-Pearson type III distribution applied.
4. Actual and normalized use values for 2002-2006 were significantly reduced due to drought-related factors. Water use may increase as the effects of the drought diminish.

Historic Annual Water Use

Year	Service Area Population	Annual Precipitation (inches)	Annual Water Use (MG)	Average Day Use (MGD)	Peak Day Use (MGD)
1995	106,200	20.2	8,069	22.1	55.5
1996	107,800	14.7	9,099	24.9	51.5
1997	111,500	24.8	8,768	24.0	58.9
1998	113,900	16.5	9,350	25.6	59.3
1999	115,900	20.7	9,000	24.7	53.7
2000	118,300	11.3	10,295	28.2	55.9
2001	121,300	12.3	9,978	27.3	55.8
2002	123,700	9.3	9,599	26.2	51.4
2003	125,500	18.2	8,280	22.6	46.9
2004	125,800	18.1	7,984	21.8	42.3
2005	126,900	16.2	8,497	23.3	50.1
2006	127,800	11.2	9,268	25.4	48.9

Number of Accounts by Customer Class

	2002	2003	2004	2005	2006
Single-Family	26,160	26,091	26,168	26,272	26,413
Duplex	1,187	1,189	1,178	1,171	1,171
Multi-Family	1,962	2,013	2,049	2,072	2,094
Commercial	1,890	1,933	1,978	2,027	2,069
City Government	178	176	188	186	194
West Fort Collins WD	1	1	1	1	1
Outside City Customers	1,408	1,323	1,327	1,351	1,370
Total	32,786	32,726	32,889	33,081	33,312

Water Use by Customer Class

(Million Gallons)

	2002	2003	2004	2005	2006
Single-Family	3,432.7	2,886.4	2,554.7	2,802.2	3,203.5
Duplex	167.4	144.1	130.7	137.0	151.0
Multi-Family	1,026.8	933.5	922.1	936.6	995.8
Commercial	3,686.9	3,228.6	3,376.4	3,389.3	3,648.4
City Government	124.5	122.4	108.3	135.4	164.5
West Fort Collins WD	180.5	152.0	145.4	164.0	166.9
Outside City Customers	366.5	285.8	265.4	269.4	302.9
System Losses[1]	613.3	526.8	480.6	663.0	634.6
Total	9,598.7	8,279.7	7,983.6	8,496.9	9,267.6

Note:

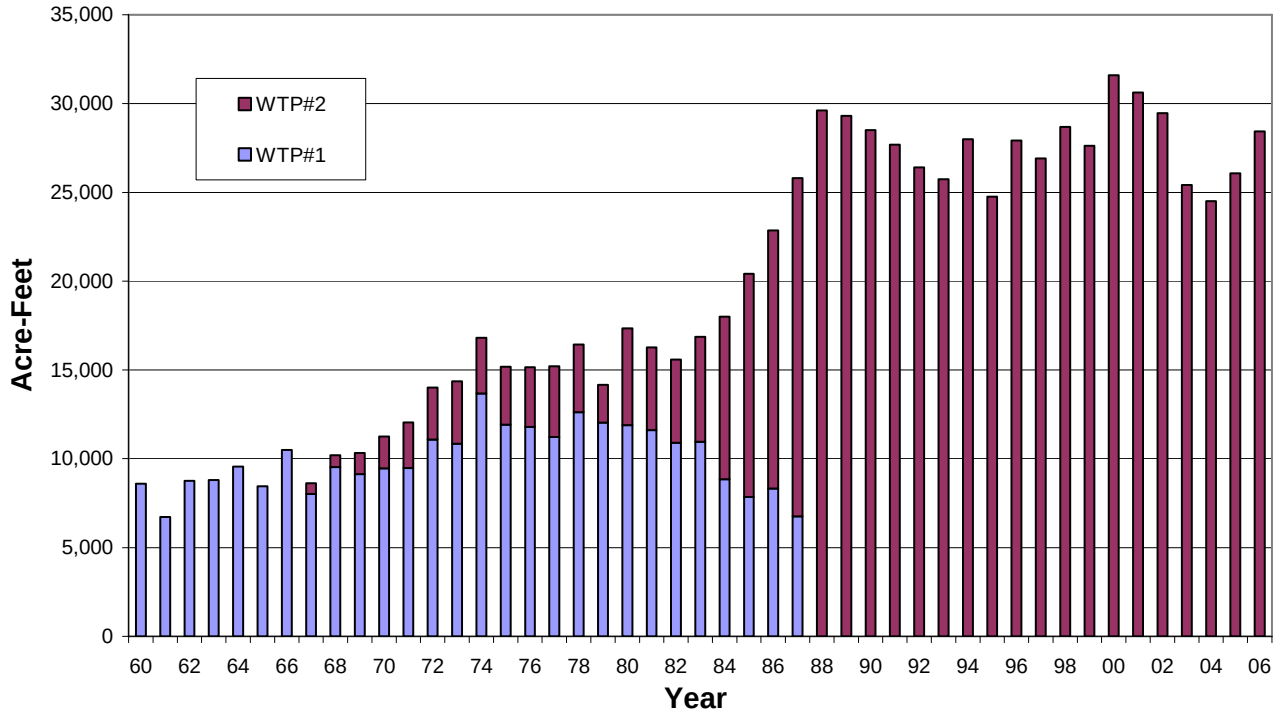
1. System losses estimated at 6% for 2001-2002, calculated for 2003-2006.

Water Use per Account by Customer Class

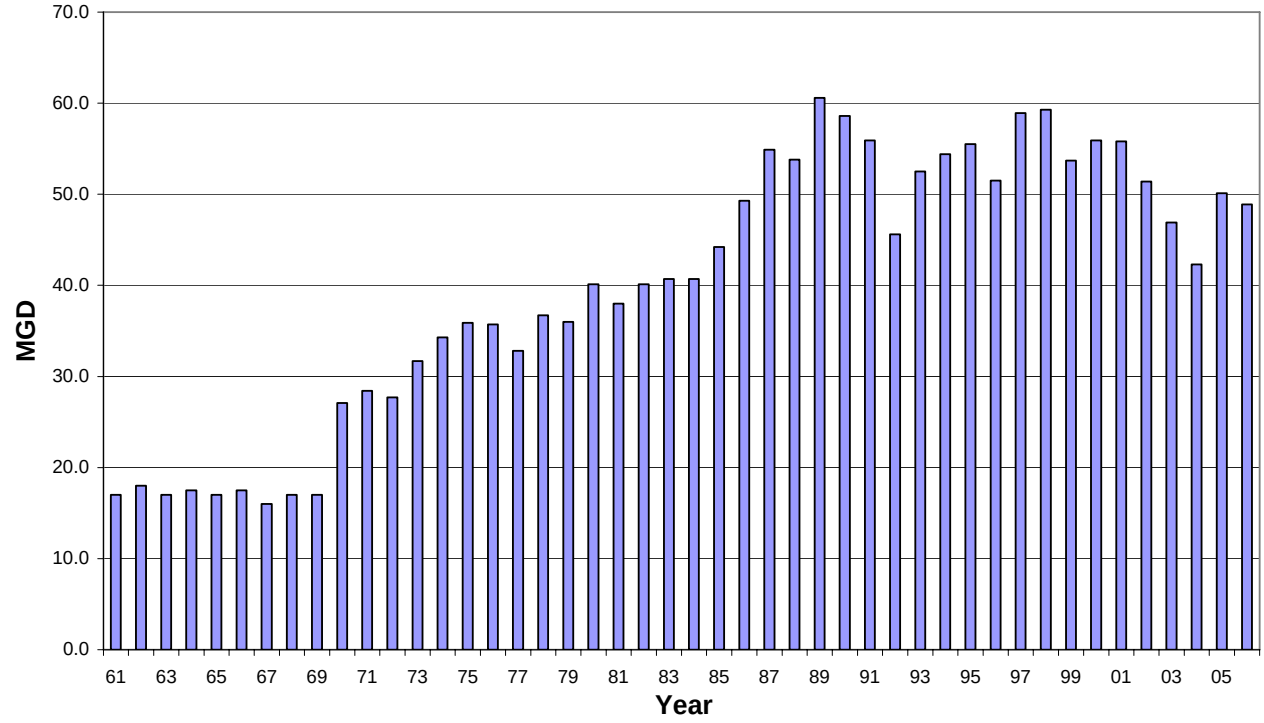
(Gallons per Year)

	2002	2003	2004	2005	2006
Single-Family	131,223	110,626	97,630	106,660	121,285
Duplex	141,025	121,182	110,965	116,958	128,908
Multi-Family	523,265	463,779	449,999	451,987	475,682
Commercial	1,232,407	1,670,684	1,706,679	1,671,721	1,762,374
City Government	698,833	694,648	577,093	726,493	851,554
Outside City Customers	260,401	216,004	199,958	199,470	221,041

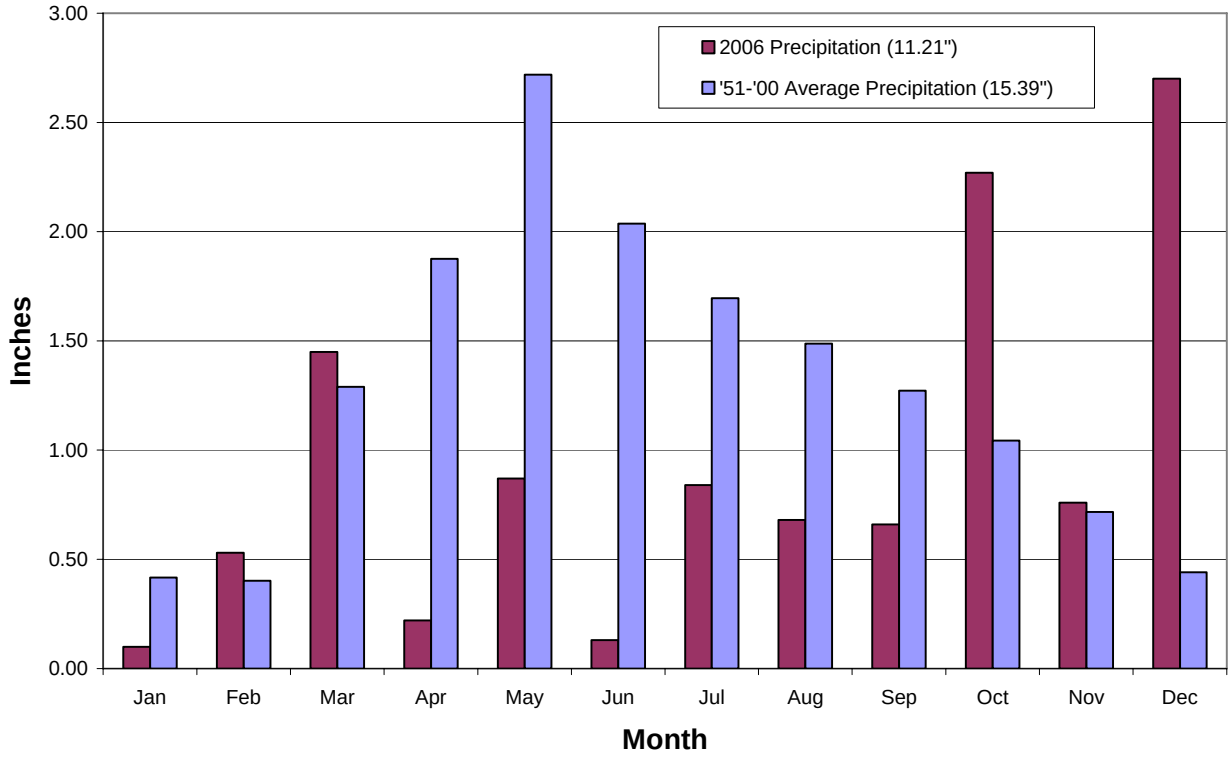
Annual Treated Water Use
1960-2006



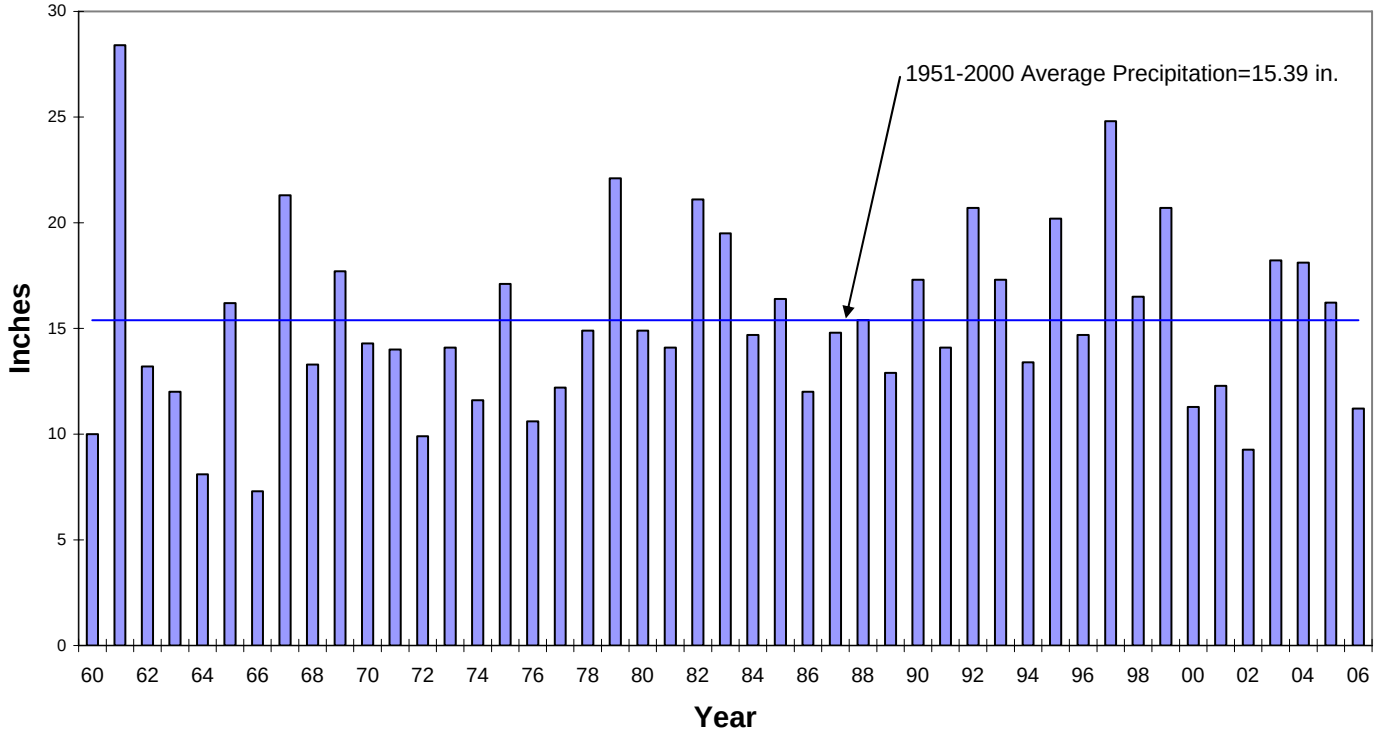
Peak Day Use
1961-2006



2006 Precipitation



Historic Annual Precipitation Fort Collins 1960-2006



Attachment "A"

RESOLUTION 2003-104
OF THE COUNCIL OF THE CITY OF FORT COLLINS
ADOPTING A WATER SUPPLY AND DEMAND
MANAGEMENT POLICY

WHEREAS, a Water Supply Policy was adopted by the City Council in December 1988 to help direct the acquisition, development, and management of the City's water supplies since that time; and

WHEREAS, a Water Demand Management Policy was adopted by the City Council in April 1992, which set water use goals and provided for measures to help meet those goals; and

WHEREAS, there is a need to update the water supply and demand management policies to provide guidance regarding the future development and use of the City's water supplies; and

WHEREAS, the Council has requested that staff develop an integrated water supply and demand management policy; and

WHEREAS, the Fort Collins Water Supply and Demand Management Policy attached hereto as Exhibit "A" and incorporated herein by this reference has been developed over the last several years through discussions with interested citizens, groups, the Water Board and City Council.

NOW THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF FORT COLLINS that the City Council hereby adopts the Fort Collins Water Supply and Demand Management Policy attached hereto, to provide general criteria for City decision making regarding water supply projects, acquisition of water rights, and demand management measures.

Passed and adopted at a regular meeting of the Council of the City of Fort Collins held this 16th day of September, A.D. 2003.

Mayor

ATTEST:

City Clerk

EXHIBIT "A"

Fort Collins Water Supply and Demand Management Policy

September 16, 2003

Policy Objective: To provide a sustainable and integrated approach to (1) providing an adequate and reliable supply of water for the beneficial use by customers and the community and (2) managing the level of demand and the efficient use of a scarce and valuable resource.

1. Demand Management

1. Water Use Goals. The City will implement the necessary water conservation practices and programs to reduce its water use to an average of 185 gallons per capita per day (gpcd) by the year 2010. In addition, the per capita peak daily demand will be reduced to 475 gpcd by the year 2010. These calculations are based on the total treated water produced for use by City customers (adjusted for large contractual customers and other sales or exchange arrangements) divided by the estimated population of the City's water service area.
2. Educational Programs. The City will have a continuous, comprehensive and visible public education program that helps citizens and businesses use water appropriately and efficiently. Examples of such programs include (1) working with the schools to provide water conservation education, (2) promoting the use of xeriscape landscaping for public facilities, businesses, homeowners, and others, (3) helping the public to understand and utilize evapo-transpiration information in determining their irrigation applications, and (4) educating water users on the operation of sprinkler system controllers.
3. Rate Structures. The City will have water rate structures for all classes of customers that provide an economic incentive to use water efficiently. Examples of structures that may be utilized include (1) tiered structures with increasing prices as water use increases, (2) seasonal blocks with higher rates during the irrigation season, (3) water budget approaches based on appropriate targets for individual customers, and (4) flat rate structures.
4. Incentive Programs. When determined to be cost effective, the City will implement incentive programs that will assist customers in replacing outdated plumbing fixtures or landscape features that use excessive amounts of water. Examples for reducing indoor use are rebates for replacing showerheads, toilets and clothes washers with water conserving models. Examples for reducing outdoor use include rebates for expenses related to irrigation scheduling equipment and converting landscape to xeriscape.
5. Regulatory Measures. The City will maintain and/or adopt regulations that promote water efficiency and reduction of water waste while recognizing the benefits of adequate water to maintain an attractive and pleasant environment in the City. Examples include regulations that require the amendment of soils with organic materials and prohibition of homeowner associations banning the use of xeriscape. The City will also review its Land Use Code for potential revisions which would limit bluegrass turf on new landscapes and prohibit landscaping that requires irrigation in

certain areas such as medians, thin strips, and other small areas.

6. Operational Measures. The City will establish practices and procedures to deliver and use water in its facilities without excessive losses. Examples of such practices are the leak detection program to reduce losses through the Utility's water distribution system and the recycling of backwash water at the Water Treatment Facility.

2. Water Supply for Municipal Use

1. Drought Criteria. The reliability of the Fort Collins water supply should be maintained to meet at least the 1-in-50 year drought event in the Cache la Poudre River Basin. Water rights and storage capacity should be acquired ahead of the time it is needed to meet at least the 1-in-50 year drought criteria, so as to provide enough time to seek and obtain water court decrees and diversion or storage facilities, if needed, to use such water.

2. Raw Water Requirements (RWR). The City shall require developers to turn over water rights, or cash in-lieu-of water rights, such that the total water supply available for municipal purposes is adequate to meet or exceed a 1-in-50 year drought over the long term. Cash collected shall be used to purchase additional water rights, acquire or develop additional storage capacity, or enter into other arrangements that will increase the long-term reliability of the City's supply system.

3. Storage Capacity. The City will pursue the acquisition or development of storage capacity which is needed to manage the City's water rights in an efficient and effective manner and which will enhance the City's ability to get through at least a 1-in-50 year drought. New storage capacity in the range of 12,500 to 14,000 acre-feet shall be pursued to (1) help meet return flow obligations incurred from transfers of water rights from agricultural use to municipal use, (2) provide carryover water from wet years to dry years, and (3) provide operational flexibility, some redundancy and reliability. Storage options include the enlargement of Halligan Reservoir, the development of local gravel pits into storage ponds, the acquisition of storage capacity in new or existing reservoirs, or some combination of the above.

4. Use of Existing Supplies. The City will use its existing supplies to meet municipal obligations with the following priorities: (1) to meet water demands by the City's treated water customers, and (2) to meet raw water needs in the City and to meet other obligations of the City. Raw water needs include use for such purposes as irrigation of City parks, golf courses, cemeteries, and other greenbelt areas. Other raw water obligations include primarily water transfers to other entities because of agreements or exchanges made to manage the water supply system more effectively. Water not needed for the above purposes is referred to as surplus water and may be made available to others in accordance with decrees and other policies that may apply.

3. Water Supply Shortage Response Plan

The City will maintain a plan for responding to situations where there are projected water supply shortages, either because of severe drought conditions or because of disruptions in the raw water delivery system. This plan may include measures to temporarily reduce water use through media campaigns, various regulations, restrictions, rate adjustments and others. The plan may also include provisions to temporarily supplement the supply

through interruptible water supply contracts, leases, exchanges and operational measures.

4. Use of Surplus Raw Water

To the extent the City has surplus raw water available after meeting the needs of its treated water customers and meeting other raw water obligations, it will make water available to entities or individuals at a fair rental market price that helps offset the City's cost of owning such supplies. Other objectives or uses of the surplus water include, in no particular order, providing irrigation water to farmers to provide for the continued production of agricultural crops in the Cache la Poudre River Basin and the Northern Colorado Water Conservancy District, helping maintain open space and natural areas supported by Fort Collins, and providing for other uses as opportunities arise.

5. Regional Cooperation

1. Working with Other Municipal Providers. The City will continue to work with the water suppliers throughout the Northern Colorado Front Range to assure that adequate supplies are maintained in the region. When benefits are identified, the City will cooperate with area entities in studying, building, and sharing capacity of water transmission lines, distribution systems, and storage reservoirs. Entities in this area that have many common interests with the City and which the City has the potential to cooperate with include the Soldier Canyon Filter Plant and the associated water districts, the City of Greeley and the Northern Colorado Water Conservancy District. In particular, the City should work closely with water districts that serve Fort Collins residents to encourage similar policies regarding drought protection and to provide mutual assistance during emergency situations.

2. Working with Local Irrigation Companies. The City will continue to cooperate with local irrigation companies regarding the transfer, exchange and use of water in the Cache la Poudre River Basin. As a major shareholder in many of the local irrigation companies, it is necessary and desirable that the City work closely with these companies.

3. Transferring Water Rights from Agricultural to Municipal Use. The City will periodically transfer its water rights from agricultural use to municipal use on those shares that come from areas upon which the City is growing, or from shares where the irrigation of such lands has ceased. For water rights that were derived from irrigated agricultural lands that remain in viable agricultural areas, the City may transfer these water rights to municipal use when a need is identified or other factors make it prudent to do so. To the extent that this water remains surplus to the City's need, the City will continue to support the local agricultural economy by renting this surplus agricultural water back to irrigators under the respective irrigation companies.

6. Raw Water Quality

The City will take a proactive role in protecting the quality of water in the various watersheds from which the City's raw water is derived. The acquisition, development, and management of the City's raw water will be consistent with the City's Drinking Water Quality Policy and other applicable policies related to watershed protection.

7. Stream Flow and Ecosystem Protection

To the extent the City's use of its water rights and water resources are not adversely affected, the City will cooperate with other local groups or agencies to encourage flows

in local streams to protect the ecosystem, in accordance with Colorado water law and the administration of water rights in Colorado.

8. Recreational/Aesthetic Flows

To the extent the City's use of its water rights and water resources are not adversely affected, the City will cooperate with other local groups or agencies to explore projects or measures that would provide flows in streams and water in reservoirs for recreational and aesthetic purposes, in accordance with Colorado water law and the administration of water rights in Colorado.