KING COUNTY

1200 King County Courthouse
516 Third Avenue
Seattle, WA 98104

Signature Report

October 9, 2001

Ordinance 14221

Proposed No. 2001-0391.2 **Sponsors** Irons

AN ORDINANCE approving the Seattle Public Utilities 2001 Water System Plan Update.

PREAMBLE:

K.C.C. chapter 13.24 requires approval of comprehensive plans for water utilities as a prerequisite for granting right-of-way franchises and approval of right-of-way construction permits.

The Seattle Public Utilities 2001 Water System Plan Update (plan) discusses water service to existing and future populations within the retail service area of Seattle Public Utilities (SPU). The retail service area includes approximately five hundred ninety-five thousand people and is comprised of the city of Seattle, the city of Shoreline, part of the city of Lake Forest Park, a few areas of unincorporated King County, the Seattle-Tacoma International Airport and an apartment complex on Mercer Island. SPU's retail service area is composed of single-family and multifamily residences, commercial and retail businesses and industrial customers.

SPU obtains water from the Cedar river, south fork of the Tolt river and the Highline well field. The water obtained from these various sources and used in SPU's direct service area is stored in fifteen reservoirs, nine of which are uncovered.

SPU is currently implementing its One Percent Conservation Program within its direct service area and is working with its wholesale customers to carry out the program. The goal is to reduce consumption by one percent per year for ten years.

SPU is also currently negotiating with its wholesale water customers to renew water supply contracts that will expire on January 1, 2012. The contracts are being discussed with three groups: the Cascade Water Alliance and its members, the Water Suppliers Association and its members and water utilities that are not a member of either organization.

The plan contains a six-year capital improvement program valued at approximately two hundred sixteen million dollars. The improvement program includes water infrastructure, water quality, water supply and water conservation projects.

The King County utilities technical review committee (UTRC) reviewed and conditionally approved the plan on November 8, 2000. The conditions of approval, technical changes to the plan, are reflected in the plan version attached to this ordinance. Revisions to the plan that shall be incorporated into the final 2001 Water System Plan Update are set forth in attachments B, C, and D to this ordinance. The UTRC recommends that the council approve the plan.

The city prepared a determination of non-significance for the plan on July 20, 2000, in accordance with the state Environmental Policy Act.

The city intends to adopt the plan after county approval is obtained.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The Seattle Public Utilities 2001 Water System Plan Update shall be revised as set forth in attachments B, C, and D to this ordinance

SECTION 2. The Seattle Public Utilities 2001 Water System Plan Update, Attachment A to this ordinance, is hereby approved as revised.

Ordinance 14221 was introduced on 7/23/01 and passed by the Metropolitan King County Council on 10/8/01, by the following vote:

Yes: 10 - Mr. von Reichbauer, Ms. Fimia, Mr. McKenna, Ms. Sullivan, Mr. Nickels, Mr. Pullen, Mr. Gossett, Ms. Hague, Mr. Thomas and Mr. Irons
No: 0
Excused: 3 - Ms. Miller, Mr. Phillips and Mr. Pelz

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Pete von Reichbauer, Chair

ATTEST:

Anne Noris, Clerk of the Council

APPROVED this 15 day of October, 2001.

Ron Sims, County Executive

Attachments A. Seattle Public Utilities 2001 Water System Plan Update, B. UTRCResponses dated 9-27-01, C. Revisions to SPU 2001 Water System Plan Resulting From Issues Raised by the UTRC dated 9-27-01, D. April 2001 Long Range Water Demand Forecast and Yield Estimate dated 9-27-01

ATTACHMENT B dated 9/27/01
Revisions to SPU 2001 Water System Plan Resulting From Issues Raised by the UTRC

Issue	Location	Current Text, including revisions proposed to City Council	Revised Text
Monthly billing Response	Page 4-4; Second paragraph	Add new paragraph after paragraph on rate structure	Monthly billing was also suggested during the development of the CPA. Currently, there are no available empirical data quantifying the expected savings from changing to monthly from bi-monthly billing. A cost-benefit analysis undertaken during a previous rate study (using reasonable assumptions on potential conservation savings) indicated it was not cost-effective. However, as the costs and benefits change, and as empirical evidence of its efficacy is obtained, more frequent billing may become cost-effective. SPU will be updating its CPA in 2003 and thereafter every five years. During these updates, SPU will review and identify cost-effective conservation program delivery tools, such as monthly billing, for inclusion in continuing conservation efforts.
Rate Equity	Page 9-10: Section 9.5.2	Rates for water vary by customer class and by season. Rates are set by customer class to reflect differences in cost attributable to variability in demand and economies of scale. SPU uses the system-wide average cost of supplying one hundred cubic feet of water in order to compare water rates over time.	See attached replacement text for section 9.5.2.

Issue	Location	Current Text, including revisions proposed to City Council	Revised Text
Reliability	Page 4-23; First Paragraph	Add new paragraph after first paragraph.	This standard of reliability was established in the 1985 Comprehensive Water System Plan. It was based on a report that examined the risk involved in different reliability standards (*Charles Howard and Associates, Ltd., Risk Analysis: Water Supply Reliability and Risk, August 1984.*). That report confirmed the reasonableness of using the 98% standard, indicating an economic loss to the region because the cost of more frequent curtailments that would accompany a lower reliability standard would outweigh the savings associated with deferring construction of new sources.
Reliability	Page 4-23; Second Paragraph	Revise paragraph inserted with revisions proposed to City Council, which will now follow paragraph above.	While lowering the reliability standard to below 98 percent would increase the firm yield of existing sources and delay the need for new source development, it would not come without impacts to customers and the river systems. A lower reliability standard would increase the frequency and level of curtailments requested or required of customers. Instream flows in the rivers would be lowered to critical flow levels more frequently. Also, because more water would be diverted from the rivers, stream flows would be at minimum levels more frequently and average stream flows would be lower. The converse would occur if the reliability standard were raised above 98%: less water would be used from existing sources and development of new sources would need to be accelerated to meet customers'

Issue	Location	Current Text, including revisions proposed to City Council	Revised Text
			demands. Should further analysis be conducted on lowering the reliability standard it would be important to closely examine: the impact on stream flows and habitat; ability to meet instream flow commitments; frequency, duration and severity of curtailments; and acceptance by DOH that state public health and safety requirements are met.
Non-revenue Water	Page 2-5; Table 2-2	Table 2-2 shows estimate of current purveyor non-revenue water.	Revise table to delete estimate of purveyor nonrevenue water . See Attached Revised Table 2-2
Non-revenue Water	Page 2-5; Table 2-2	Revise footnote explaining non-revenue water. (Item #15 in Table 2 Revisions to SPU 2001 WSP for adoption by Seattle City Council.)	Non-revenue water does not include purveyor distribution non-revenue water. See page 2-12 for further discussion.
Non-revenue Water	Page 2-12; first paragraph	Proposed revision added a second paragraph explaining estimated purveyor non-revenue water. That paragraph would be deleted and the revision here would be added as first paragraph on page 2-12 under Non-Revenue Water.	Seattle system non-revenue water is calculated by subtracting total metered sales (both retail and wholesale) from total water diversions. Conceptually, it consists of non-revenue water within the retail distribution area plus that associated with the regional transmission system. Non-revenue water within purveyors' own distribution systems is not included as Seattle system non-revenue water because, while it is non-revenue to purveyors, it is revenue water to Seattle.

Table 2-2
Water Demand Forecasts with Alternative Conservation Scenarios: 1995-2020
In Annual Average MGD

		Billed Consumption		Non-Revenue	System
		Seattle Retail	Current Purveyors	Water*	Total
1995 (Actual)		72	66	9	147
2000		71	67	12	150
2005		69	66	11	146
2010		67	66	11	144
2015	Scenario 1	72	71	10	153
	Scenario 2	70	70	10	150
	Scenario 3	69	68	10	147
2020	Scenario 1	78	76	9	163
	Scenario 2	74	74	9	157
	Scenario 3	70	70	9	149

Conservation Scenarios:

Scenario 1: No additional investment in programmatic conservation after 2010

Scenario 2: Additional conservation investment after 2010 designed to maintain the level of per capita consumption achieved by the 1% Conservation Program. (This is roughly equivalent to implementing the remaining programs in the "cost effective conservation package" as identified in the CPA.)

Scenario 3: Implementation of remaining programs from the "technical potential" conservation package after 2010 to maximize conservation savings

* Non-revenue water does not include purveyor distribution non-revenue water. See page 2-12 for further discussion

Note: This table will be revised at final printing to reflect a new conservation scenario based on the resolution adopted by Seattle City Council committing the direct service area to 1% conservation after 2010.

Table 2-1.

WATER SYSTEM STATISTICS

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
A. Service Information										
# persons with served directly by Seattle	567,300	574,000	579,100	581,600	584,100	585,700	586,800	588,900	592,200	594,800
# persons served by wholesalers	621,200	633,600	645,900	652,000	658,200	664,000	667,300	674,200	682,600	686,600
Total # of persons served	1,188,500	1,207,600	1,225,000	1,233,600	1,242,300	1,249,700	1,254,100	1,263,100	1,274,800	1,281,400
# of wholesale providers (service districts, cities, towns)	30	30	29	28	28	28	28	27	27	27
B. Water Use										
Total water diversions - daily average (gallons)	170.1	163.2	132.8	140.5	148.9	146.9	148.5	150.6	151.0	144.7
Billed - average daily use for area (gallons)	145.8	144.0	123.2	127.1	139.5	137.7	136.6	133.7	139.1	134.0
Billed - average daily use per person (gallons)	122.7	119.2	100.6	103.1	112.3	110.2	108.9	105.8	109.1	104.6
Non-revenue water (gallons)	24.3	19.2	9.5	13.4	9.3	9.2	11.9	16.9	11.8	10.7
Non-revenue water as % of total diversions	14.3%	11.7%	7.2%	9.5%	6.3%	6.3%	8.0%	11.2%	7.8%	7.4%
C. Number of Connections (Meters)	170,094	170,570	171,098	171,806	172,203	172,730	173,230	173,617	174,193	174,672

9.5.2 Rates

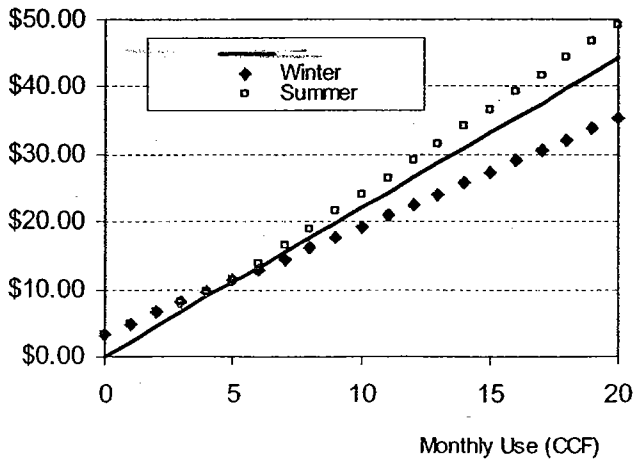
~~Rates for water vary by customer class and by season. Rates are set by customer class to reflect differences in cost attributable to variability in demand and economies of scale.~~ Rates are set to provide sufficient revenue to operate the water system. Rate setting objectives include:

- Revenue stability and sufficiency
- Economic efficiency
- Customer equity
- Promotion of conservation
- Customer understanding.

Rates are set by customer class. The major customer groupings are wholesale and retail. Retail customers are further categorized into residential and commercial classes. The rate structure for each of the customer classes includes a fixed monthly charge (graduated by the size of the service) and a seasonally differentiated commodity (or volume) charge. The combination of fixed and commodity-related charges can be fine-tuned to meet the rate objectives identified above. For example, the fixed charge can be set to recover costs (like billing and meter reading) which are unrelated to the amount of water used. Similarly, seasonal commodity rates can be set to reflect the cost differentials that exist between winter (when stream flows are high and demand is low) and summer (when stream flows are low and demand is high). Setting rates so that the bills of individual customers reflect the cost of serving them is especially important in achieving customer equity because the most commonly used definition of equity is that bills reflect costs.

To encourage conservation in the summer period, the residential commodity rate is structured with two blocks with usage greater than five hundred cubic feet (5 CCF) billed at a higher rate than usage less than 5CCF. The winter commodity rate is just a single rate. This rate structure, coupled with the relatively low fixed monthly charge produces the bill pattern shown below.

Exhibit 9-3A
Residential Water Bills



System-wide rates have been increasing faster than the rate of inflation for the past five years and this trend will continue for at least another five years. SPU uses the system- wide cost…..

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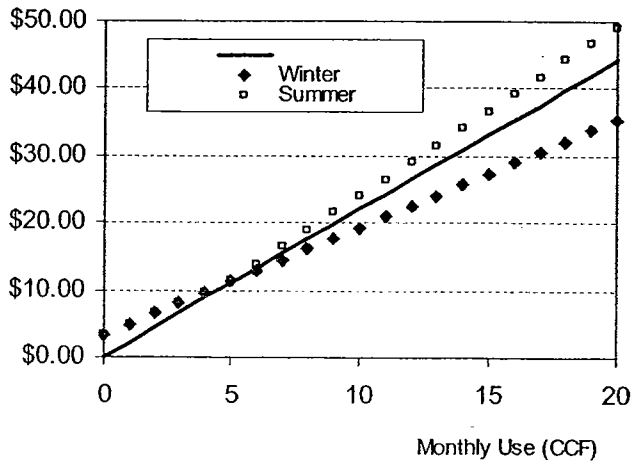
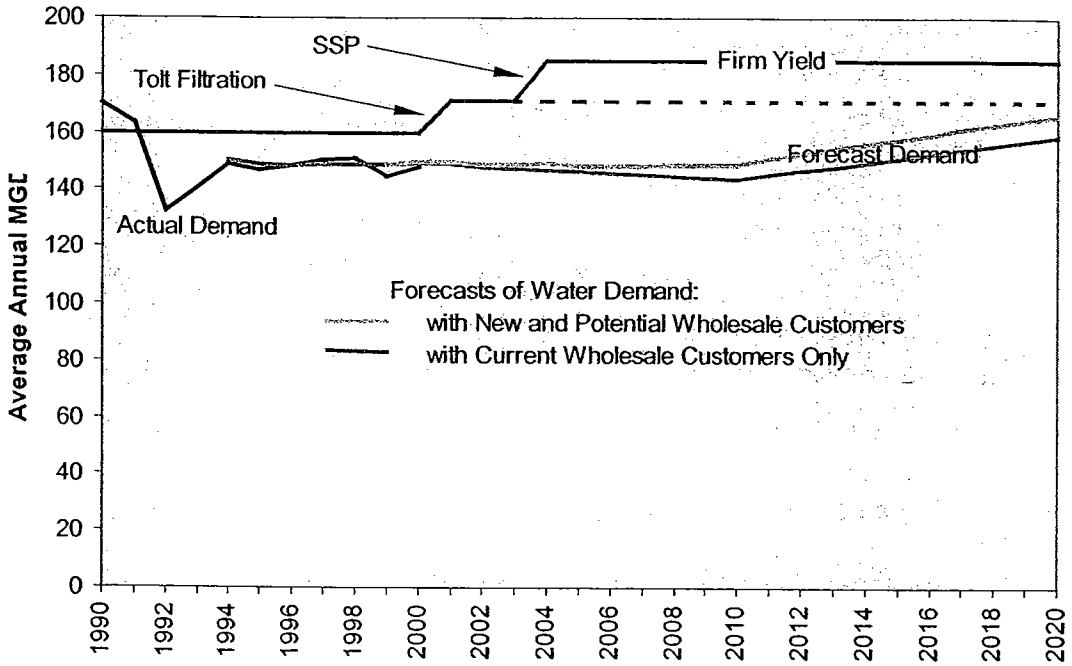


System-wide rates have been increasing faster than the rate of inflation for the past five years and this trend will continue for at least another five years. SPU uses the system- wide cost…..

ATTACHMENT D dated 9/27/01

April 2001

Long Range Water Demand Forecast and Yield Estimate



Yield Estimates

Yield with Tolt Filtration Plant: 171 MGD
Yield with Tolt Filtration Plant and Second Supply Project:.....185 MGD

Components of the Water Demand Forecast

Year	Seattle Retail Sales Net of Conservtn (a)	Current Purveyors Retail Sales Net of Conservtn (b)	Current Purveyors Distribtn Non-Revenue (c)	Current Purveyors Other Sources of Supply (d)	Current Purveyors Purchases from Seattle (e)	New Purveyor Purchases from Seattle (f)	Total System Non-Revenue (g)	Total Demand Current Customers (h)	Total Demand Current & New Customers (i)
1995	72.0	64.2	5.0	3.4	65.8	0.0	9.2	147.0	147.0
2000	70.4	67.0	5.2	5.0	67.3	0.5	12.0	149.7	150.2
2005	69.0	67.2	5.3	6.5	66.0	2.2	11.3	146.2	148.4
2010	67.4	67.2	5.2	6.6	65.8	5.3	10.5	143.7	149.0
2015	70.4	72.2	5.6	6.8	71.0	6.7	9.7	151.2	157.9
2020	73.6	77.3	6.0	6.9	76.4	7.0	9.0	159.0	166.0
			(b) * 7.8%		(b)+(c)-(d)			(a)+(e)+(g)	(b)+(f)

Assumptions for Firm Yield Estimates:

1. Firm yield is based on the 98% reliability standard—one failure occurs in the 64.5 years of historic record
2. Historic weekly inflows from water year 1929 through mid-1993 are used
3. Total system demand is shaped on a monthly demand pattern based on the average of actual deliveries from calendar year 1988 through 1996, excluding drought years 1992 and 1993
4. Sources of supply are operated conjunctively as a single system
5. For existing firm yield (160 MGD), the following assumptions are made:
    - Cedar River System:
      Meet IRPP instream flows at Renton (plus 5 MGD added to firm yield for non-binding aspects)—firm yield the same with Cedar River Habitat Conservation Plan flow commitments
      Chester Morse Lake: 1532'-1560'; Masonry Pool: 1510'-1560'; no flashboards
    - South Fork Tolt System:
      Meet instream flows from 1988 Tolt Settlement Agreement (without treatment project)
      South Fork Tolt Reservoir: 1730'-1765'
      Transmission capacity: 85 MGD
    - Highline Well Field:
      10 MGD withdrawn for 3 months; 5 MGD recharged
6. In 2001, firm yield increases 11 MGD, for a total of 171 MGD, with the addition of the Tolt Treatment Facility, and assumptions change as follows:
    - Cedar River System:
      Meet Cedar River Habitat Conservation Plan instream flow commitments below Landsburg
    - South Fork Tolt System:
      Meet instream flows from 1988 Tolt Settlement Agreement (with treatment project)
      South Fork Tolt Reservoir: 1710'-1765'
      Treatment/Transmission capacity: 120 MGD
7. Seattle participation in Tacoma's Second Supply Project is assumed to begin in 2004 and its addition to the system increases firm yield by 14 MGD, to a total of 185 MGD.
8. Additional details are documented in the report titled *Firm Yield of Seattle's Existing and Alternative Water Supply Sources*, September 1999, by Seattle Public Utilities

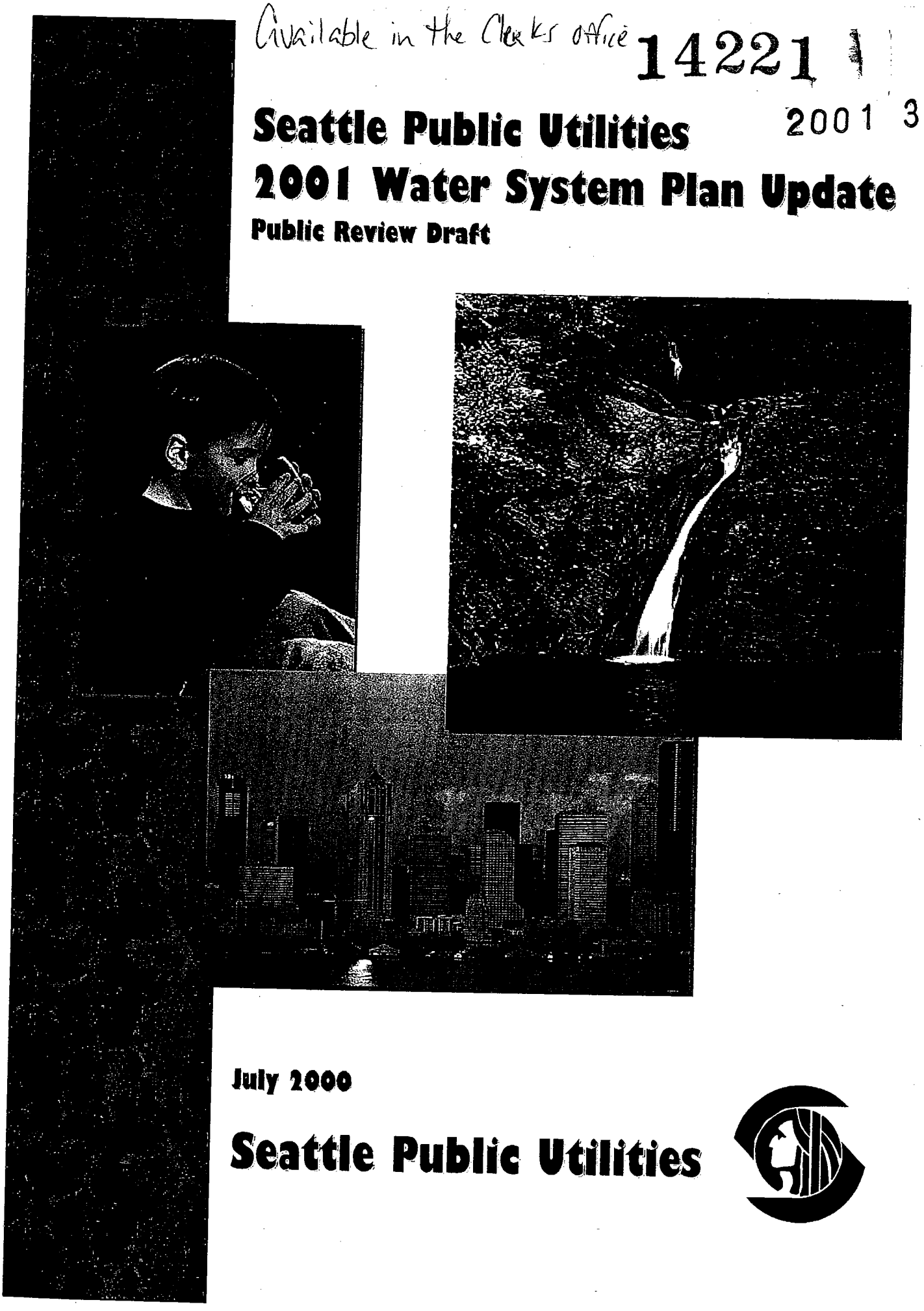
Assumptions for Water Demand Forecast:

1. Forecast of gross retail sales (i.e., Seattle and purveyor retail sales before conservation) is based on the 1997 econometric demand model run.
    - Demographic Growth: Puget Sound Regional Council (PSRC) forecast of households and employment.
    - Household Income: Seattle City Light Long Range Economic & Demographic Forecast (prepared by Dick Conway).
    - Water & Sewer Rates: Actual through 1996. Growth through 2001 as projected in the 1996 Rate Study. (Note: 1996 projection of 2001 revenue requirement was accurate.)
2. New forecast of declining non-revenue water takes into account expected impact of 20 year program to cover all in-city reservoirs.
3. Purveyors provide forecasts of water they expect to obtain from other sources which is subtracted from demand for water from SPU system.
4. Conservation Savings:
    - Old" programmatic and code savings as estimated by SPU conservation staff are subtracted from gross retail sales.
    - "New" conservation refers to programs implemented after 2000 and especially the 1% Conservation Program. Savings from this program are not just estimated and subtracted from forecast demand as is done for "old" conservation savings. This is because the 1% Program is not a set investment in conservation but rather a commitment to implement the package of cost-effective programs identified in the CPA at whatever intensity is necessary to achieve the goal of reducing per capita consumption by 1% a year for ten years. The forecast is therefore disconnected from the econometric model for the period 2000-2010 and a "per capita" methodology is used to forecast demand in that period.
    - *The Per Capita Methodology.* Demand during the period of the 1% Program is forecast as follows. Per capita retail demand factors in the year 2000 are calculated separately for the retail and wholesale customers. For each year of the ten-year program period, the per capita demand factors are reduced by 1% of the original demand factors. The new demand factors are then multiplied by each year's PSRC population forecast to obtain the forecast of retail demand.
    - *Beyond 2010:* For Seattle retail customers, it is assumed the remainder of the "cost-effective" conservation package (from the CPA) will be implemented by 2020. This commitment is not assumed for Seattle's wholesale customers for whom the forecast reflects no new conservation programs after 2010.
5. There's a forecast for Seattle and its *current* wholesale customers and a forecast that includes the incremental demand of new and potential wholesale customers. The new customers are:
    - Ames Lake
    - Covington
    - Issaquah
    - North Bend
    - Sallal
    - Sammamish Plateau
    - Water District 111
6. Forecasts for new wholesale customers are based on data on demand and existing supply they have provided to SPU.
7. It is assumed that Covington will discontinue purchases from SPU when the Second Supply Project comes on line.

Available in the Clerks office 14221

2001 391

Seattle Public Utilities
2001 Water System Plan Update
Public Review Draft



July 2000

Seattle Public Utilities