

City Services Appendix

Capital Facilities Program (CFP) Sections

Background

This *Capital Facilities Section* differs from the City's previous Capital Improvement Program (CIP). Previously, the scheduling of physical improvements was based on anticipated available financial resources and on a priority listing of capital improvement needs for a five or six year period. While some projects in the CIP were incorporated into the Annual Budget, the CIP acted merely as a "wish list" of projects, often with no identified funding sources.

In contrast, this *Capital Facilities Section* sets policy direction for determining capital improvement needs, evaluating proposed capital improvement projects, establishing funding priorities, and guiding funding alternatives.

In the appendix related to this capital facilities section, a sub-section is devoted to each type of public service. Each such sub-section discusses; 1) existing system conditions; 2) future system needs in a manner consistent with the land use, population and employment assumptions, and LOS standards employed by this plan; 3) an identification of needed projects related to the projected growth; 4) projected project costs; and 5) a funding strategy for implementation of the identified projects.

Scope

The scope of the *Capital Facilities Program (CFP)* is city-wide and beyond. It includes all areas within the incorporated city limits, as well as areas surrounding the city which have been identified as Bremerton's urban growth area in accordance with the Growth Management Act.

Transportation and circulation-related facilities are addressed in the *Transportation Element* of the *Comprehensive Plan*. Public and private utilities within the City are addressed in the *Utilities Element*.

The City of Bremerton uses the following definition of a capital improvement project:

A project to create, expand or modify a capital facility. The project may include design, permitting, environmental analysis, land acquisition, construction, landscaping, site improvements, initial furnishings and equipment. The project cost must exceed \$35,000 in 1995 dollars.

Capital improvements are major projects or activities requiring the expenditure of public funds over and above annual operating expenses. They have a life expectancy of more than ten years

and result in an addition to the City's fixed assets and/or extend the life of the existing capital infrastructure. Capital improvements do not include capital outlay items such as equipment or vehicles. An exception for rolling stock could be a purchase necessary to accommodate increased service capacity due to population growth such as emergency medical service units or fire apparatus. Examples are:

- Land or site acquisition;
- Building or structure acquisition, construction or major maintenance;
- Major repairs or renovations to the City's infrastructure (e.g., buildings, structures, etc.);
- Major site improvements;
- Utility installations or major replacements, repairs or improvements to utilities;
- Street construction and improvements; and
- Major design and engineering efforts associated with identified capital projects.

The Municipal Utilities and outside agencies (Bremerton School District, Port of Bremerton, Kitsap Transit, etc.) work under their own definitions of capital improvement projects which may or may not include such things as rolling stock.

Table CFP-1 Types and Providers of Capital Facilities			
Facility Type	Provider	Description	Applicable Plan(s)
Fire and Emergency Services	City of Bremerton Fire Dept.	Provides facilities that support the provision of fire and emergency services.	
Law Enforcement	City of Bremerton Police Dept.	Provides facilities that support the provision of law enforcement services.	
Parks	City of Bremerton Parks & Recreation Dept.	Provides facilities for passive and active recreational activities.	<ul style="list-style-type: none"> • Land Use Element • Parks & Recreation Comprehensive Plan
Streets	City of Bremerton Dept. of Public Works & Utilities	Provides streets, sidewalks, traffic controls, and street lighting.	<ul style="list-style-type: none"> • Transportation Element • Six-Year Transportation Improvement Program (TIP)
Sanitary Sewer	Bremerton Municipal Wastewater Utility	Provides facilities used in collection, transmission, storage, treatment or discharge of waterborne waste within most developed portions of city and some surrounding unincorporated areas.	<ul style="list-style-type: none"> • Utilities Element • Draft 1992 Wastewater Comprehensive Plan
Schools	Bremerton School District	Provides elementary and secondary facilities for instruction in the several branches of learning and study required by the Basic Education Code of the State of Washington.	<ul style="list-style-type: none"> • Bremerton School District Capital Facilities Plan: In Support of the School Impact Fee Program, July 1992
Storm Water Management	Bremerton Municipal Stormwater Utility	Provides facilities that collect and transport stormwater runoff.	<ul style="list-style-type: none"> • Ord. 4454
Water	Bremerton Municipal Water Utility	Provides supply of potable water from system of surface water and wells. Service area includes developed portions of city and surrounding unincorporated areas. Utility also contracts to provide water to additional areas (Tracyton, Rocky Point, PSNS, and Port of Bremerton airport and industrial park).	<ul style="list-style-type: none"> • Water System Comprehensive Plan

Fire and Emergency Medical Services

The City of Bremerton Fire Department is responsible for providing emergency and non-emergency fire, rescue and medical services. The capital facilities used by the Fire Department include station buildings, emergency medical services (EMS) vehicles, Fire Engines (See Figure CF-1)

Emergency Medical Services (EMS)

Inventory of Existing Facilities - EMS

The City has five EMS vehicles. Two units (Medic #2 and Medic #3) each cover half of the city, and when staffing allows Medic 1 is placed into service. Two units (Medic #2-A & Medic 3-A) are maintained as a reserve unit to fill in as needed. Under the City's rotation policy, EMS units are replaced every ten years. Each time a new unit is added, the reserve unit is replaced by the next oldest unit requiring purchase of a unit every two years. (Table EM-1)

Table EM-1 Inventory of Existing Facilities -- Emergency Medical Services		
EMS Vehicle	Service Area	Unit Capacity
Active Units		
Medic # 1	When in service covers from the water to Callow Avenue	1
Medic #2	Callow Avenue to West Bremerton City Limits	1
Medic #3	Callow Avenue to Downtown to East Bremerton City Limits	1
Total Active Units =		3
Reserve Units		
Medic #2-A	City-wide (replacement for Medic #2)	1
Medic # 3-A	City wide (Replacement for Medic #3)	1
Total Reserve Units =		2
Total Units=		5
Source: Bremerton Fire Department		

Forecast of Future Needs -- EMS

Existing Demand

Between 75-80% of Kitsap County CenCom (Central Communications) calls are for EMS, for the City of Bremerton 83.5% is the requests for EMS services. Over the last five years there has been an 8.7% per year increase in CenCom calls. The number of EMS calls inside the city has been increasing even though the population has not grown. This is due to a combination of factors, including an aging population, a concentration of convalescent centers and retirement homes near the hospital, and an economy in which people may tend to call for EMS to avoid the expense of a doctor. The current response time is about 5.18 minutes for all responses. There are deviations in some areas, such as the golf course. These are handled through mutual aid agreements with other fire districts.

Level of Service (LOS)

The level of service for EMS facilities is a function of response time (location) and call volumes (staffing). These in turn are dependent on the number and location of fire stations, the number of fire apparatus units, and the number of firefighters available. The City is developing a LOS monitoring system that measures EMS response time (time needed to respond to a call) and call volumes (the number of calls received from different areas). In the meantime, the need for EMS facilities can be estimated by monitoring response times. The American Heart Association recommends a 4.0 minute EMS response time for Basic Life Support (BLS) and an 8.0 minute response time for Advanced Life Support (ALS). Past these times, a heart patient's chance of survival goes down significantly.

- Current LOS = 5.18 minutes for all BLS and ALS
- Proposed LOS = 4.0 minutes for BLS 8.0 minutes for ALS

Future Demand

Bremerton's population is expected to grow by 3,740 by year 2010, and by an additional 9,260 by year 2024. Using a 5-year trendline, the City is expected to continue to receive about a 19% increase for requests for service by the year 2010. (*Table EM-2*)

Table EM-2 Twenty Year Need: EMS		
Time Period	Demand (Population)	EMS units required @ LOS 4.0/8.0 minute response times
Six-Year Need		
2004*	37,384	2
2004-2010 (new)	3,740	0
Total as of 2010 =	41,122	2
Twenty-Year Need		
2010-2024 (new)	9,260	1
Total as of 2014 =	50,382	3
2004-2024 (new)	13,000	1
* 2004 Population per KCAP population forecast. Source: Bremerton Fire Department, 01/04		

Need for Capital Facility Improvements

The anticipated total need for year 2024 is five EMS units -- three active EMS units and two reserve unit. Mutual aid agreements will satisfy other needs.

Plans of Other Providers

The September 1994 Kitsap County Draft Capital Facilities Element recommends a five-minute response time (from time of call to first unit on site) in urban areas, and a ten-minute response time in rural areas. To provide this LOS, it recommends that stations be located within a five-mile radius of each other, and that a 24-hour career staffed station be located within 10 miles of all areas. It uses replacement schedules for EMS/Aid units based on a five-year replacement cycle, unless otherwise stated.

Proposed Facilities

The City will need one additional EMS unit (staffed) at Station #1 sometime within the next 20 years. Existing EMS units are scheduled to be replaced every ten years, requiring purchasing one unit every two/three years. However, the replacement schedule may be moved up to every two years if call volumes continue to increase.

Six-Year Financing Plan -- EMS

Six-Year Need

The total need for year 2004 is three EMS units -- two active units and one reserve unit. Because the City currently has three units, no additional units will be required to meet the City's need for the next six years. However, three units will need to be replaced within that time. (This includes one unit scheduled to be replaced in 2005.)

Six-year Funding and Projects

The following chart contains the funding sources, capacity projects and non-capacity projects for the next six years. The last portion of the chart reflects the balancing of funding sources and money expended on projects. Any surplus or deficit is indicated. (Table EM-3)

Table EM-3 Six-year Funding and Projects -- EMS							
Funding Sources	2004	2005	2006	2007	2008	2009	Total
General Fund/EMS Levy /ALS Billings	0	1250	0	1300	0	1350	3900
TOTAL SOURCES	0.0	1250	0.0	1300	0.0	1350	3900
Projects							
EMS Unit Replacement	0	125	0.0	130		135	390
TOTAL COSTS	0.0	125	0.0	130	0.0	135	390
Balance							
Surplus or Deficit	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Note: All amounts are times \$1,000 Sources: Bremerton Fire Department							

Operating Costs

The following chart reflects the six-year operating costs for the projects listed in the Six-year Funding and projects chart above. (Table EM-4)

This chart may be completed at a future time to determine the full costs of parks facilities:

Table EM-4 Six-year Operating Costs: Emergency Medical Services						
2004	2005	2006	2007	2008	2009	Total
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Note: All amounts are times \$1,000						

Fire Protection Services

Inventory of Existing Facilities -- Fire Protection

The City has three fire stations, one each located in west, central and east Bremerton. In 2005, Fire Station # 1/ Headquarters will be moved to a new facility located at 911 Park Avenue. The City in partnership with Central Kitsap Fire & Rescue, Kitsap County Fire District #7, Olympic College and the National Guard will complete a drill tower located at 1201 Union Avenue. There are seven fire apparatus and two specialty vehicles. Three of six fire engines are reserve units, on stand-by to replace the three active units. Although there are seven fire apparatus, three engines are not staffed. The ladder truck is staffed by the Engine #1 crew.

In April of 2003, due to funding constraints, the marine program was eliminated. The 26" marine response unit was taken from the water and placed into storage until continuing funding is appropriated.

In April of 2004, three new fire engines and a new ladder truck will be delivered. At that time the fleet will consist of 3 -2004 fire engines and 3-1992 fire engines in reserve. The ladder truck will be a 2003.

(Table FP-1)

Table FP-1 Inventory of Existing Facilities -- Fire Protection		
Facility Name	Address	Unit Capacity
Buildings		
Size (square feet)		
Fire Station No. 1	911 Park Avenue – under construction	15,346
Max Meigs Fire Station No. 2	5005 Kitsap Way	9,389
Ted Tillet Fire Station No. 3	3027 Olympus Drive	7,640
Drill Tower – Jointly owned	1201 Union Avenue	1,500
	Total Buildings =	33,875
Fire Apparatus	Service Area	
Fire Trucks		
Ladder #1	All of City Limits	1
	Total Fire Trucks =	1
Fire Engines		
Engine #1	Downtown Bremerton to Callow Avenue	1

Engine #1-A (Reserve)	Same as Engine #1	1
Engine #2	Callow Avenue to West Bremerton City Limits	1
Engine #2-A (Reserve)	Same as Engine #2	1
Engine #3	East Bremerton to City Limits	1
Engine #3-A (Reserve)	Same as Engine #3	1
Total Fire Engines =		6
Support Vehicles		
		0
Total Support Vehicles =		0
Total Fire Apparatus =		7
Specialty Vehicles		
Marine-20 Fireboat	Sinclair and Dyes Inlets	1
Rescue One	City-wide	1
Total =		2
* In addition to the above, the Department has six support vehicles that will cost under \$15,000 to replace, but no support vehicles costing more than \$35,000 are planned. Source: Bremerton Fire Department, 10/94		

Forecast of Future Needs -- Fire Protection

Existing Demand

The City has three fire stations and four active fire apparatus serving about 38,000 persons -- approximately one station per 12,667 people, and one fire apparatus unit per 9,500 people. The current response time is about 5.18 minutes. The City has an ISO Class 3 insurance rating based on manpower, water supply, etc.

Level of Service (LOS)

The need for fire protection facilities is a function of response time (location) and call volumes (staffing). These in turn are dependent on the number and location of fire stations, the number of fire apparatus units, and the number of firefighters available. Until the City's monitoring system can be further quantified, fire facilities needs can be estimated by monitoring response times.

- Current LOS = 5.1 minutes response time.
- Proposed LOS = 5.5 minutes response time.

Future Demand

The projected population growth within the service area is for approximately 3,410 new people by year 2010, and an additional 9,590 new people by 2024. (Table FP-2)

Need for Capital Facility Improvements

The anticipated total need for year 2014 is seven fire apparatus. No additional buildings will be needed if substantial growth is within the current city limits.

Table FP-2 Twenty Year Need: Fire Protection Apparatus		
Time Period	Demand (Population)	Fire Protection Units Required @ LOS 5.0 minute response time
Six-Year Need		
2004*	37,384	3
2004-2010 (new)	3,740	0
Total as of 2010 =	41,122	3
Twenty-Year Need		
2010-2024 (new)	9,260	4
Total as of 2024 =	50,382	7
2004-2024 (new)	13,000	4
* 2004 population State of Washington OFM forecast. Source: Bremerton Fire Department, 01/04		

Plans of Other Providers

The September 1994 Kitsap County Draft Capital Facilities Plan recommends a five-minute response time (from time of call to first unit on site) in urban areas. To achieve this LOS it recommends that stations be located within a five-mile radius of each other to provide blanket coverage throughout the county. The element uses replacement schedules for most vehicles based on a 20-year replacement cycle, and for rescue vehicles based on a 10-year cycle, unless otherwise stated.

Proposed Facilities

- Buildings
- Fire Apparatus

Because the City currently has seven apparatus, no additional apparatus will be needed. However, the City will need to replace its existing fire engines toward the end of the 10-year period, and additional crews will be needed to staff all seven apparatus. No change in the existing number of stations will be needed if substantial growth is within the current City limits.

Six-Year Financing Plan -- Fire Protection

Six-Year Need

Because the City currently has six fire apparatus, no additional fire apparatus will be required to meet the City's need for the next six years. (Table FP-2)

Six-year Funding and Projects

The following chart contains the funding sources, capacity projects and non-capacity projects for the next six years. The last portion of the chart reflects the balancing of funding sources and money expended on projects. Any surplus or deficit is indicated. (Table FP-3)

Table FP-3 Six-year Funding and Projects -- Fire Protection							
Funding Sources	2004	2005	2006	2007	2008	2010	Total
General Fund							0.0
Bond Issue (2002)	6,000						6,000
Bond Issue (New)							0.0
TOTAL SOURCES	3,800	0.0	0.0	0.0	0.0	0.0	6,000
Projects							
Fire Apparatus Replacement	2,200						2,200
Replace Fire Station # 1	3,800						3,800
TOTAL COSTS	6,000	0.0	0.0	0.0	0.0	0.0	6,000
Balance							
Surplus or Deficit	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Note: All amounts are times \$1,000							

Operating Costs

The following chart reflects the six-year operating costs for the projects listed in the Six-year Funding and projects chart above. (Table FP-4)

This chart may be completed at a future time to determine the full costs of fire facilities:

Table FP-4 Six-year Operating Costs: Fire Protection						
2004	2005	2006	2007	2008	2000	Total
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Note: All amounts are times \$1,000						

Law Enforcement

Inventory of Existing Facilities -- Law Enforcement

The capital facilities used by the Police Department are buildings and vehicles for patrol officers, investigations officers and administrative staff. (Since the cost of vehicles is less than the \$35,000 capital facilities threshold, these costs are included in the Annual Budget but not in the Capital Facilities Element.)

The Police Department is currently spread out over three facilities in three different locations. Administrative functions are concentrated in City Hall, convenient to the Municipal Court. The Patrol Division is housed in the West Precinct and the Special Operations Group is located in another City facility. (See Figure CF-1) (The City currently contracts with Kitsap County for jail services.) (Table LE-1)

Table LE-1 Inventory of Existing Facilities -- Law Enforcement		
Facility Name	Location	Size (Sq.Ft.)
City Hall/Police	239 4th Street	7,085
West Precinct/Patrol Headquarters	4846 Auto Center Way	3,700
Capital Hills Fire Station/Special Investigative Unit (SIU)	3001 6th Street	5,400
Total =		16,195
Source: "Facilities Management Alternative Plans", Department of Public Works and Utilities, 2/14/00		

Forecast of Future Needs -- Law Enforcement

Existing Demand

The City has 62 law enforcement officers operating out of over 16,100 square feet of buildings -- 261 square feet per officer (including support staff).

Level of Service (LOS)

The need for law enforcement facilities can be estimated by projecting the number of officers that will be needed to serve the forecasted population, and calculating the building space needed per officer. Currently, with 62 officers, there is one officer per 599 persons. There is no consensus on staffing levels for local police departments. The ratio of both officers and total police employees to population size is significantly related to crime rates. However, there are many variables that enter into crime rates. Such standards have limited meaning because the actual number required will vary depending on the size of a city, geographic region, and type of city. Even cities of the same population size and type may differ widely in staffing needs

because of differences in demographics, socio-economic characteristics, climate or other unique conditions. Washington State cities as a whole have an average of 1.6 officers per 1,000 population. Bremerton's staffing level is the same as the state average. Compared with available staffing levels from several Washington cities, Bremerton's staffing level falls between Yakima, which has a higher population, and Des Moines, which has a lower population.

<u>City</u>	<u>Population</u>	<u>Officers/1000</u>
Seattle (1989)	531,400	3.06
Yakima	54,843	1.7
<i>Washington average</i>	---	1.6
Bremerton	38,142	1.6
Des Moines	21,330	1.5
Moses Lake	12,190	1.9
Poulsbo	5,415	2.3

The Police Department believes that its current staffing level is too low, given the City's crime rate. The Department recommends that 70 officers could provide a preferred level of service for the existing population. While the City's staffing level is the same as the state average, it may be that escalating crime rates are catching many cities short of staff.

The Police Department considers the existing building space to be inadequate for the current staff level of 62 officers. The existing law enforcement facilities are spread out in three different locations, and building space is not efficiently designed for law enforcement purposes. This is particularly true at the Capital Hill facility, which houses seven officers in 5,400 sq.ft. (771 sq.ft./officer). A more accurate measure of the existing space per officer can be determined by omitting the Capital Hill facility and staff from the calculation. Including the Capital Hill facility and staff, the Current Level of Service is 268 square feet per officer. Without that facility and staff, the Adjusted Current LOS is **212** sq.ft. per officer.

The proposed LOS is lower than the Current LOS, but higher than the Adjusted Current LOS, assuming that the existing facilities will be replaced with a more efficiently designed facility. The Proposed LOS assumes that new facilities will be located in a remodeled existing building rather than in a new facility that could be designed to meet law enforcement needs most efficiently.

- Current LOS = 268 square feet per officer
- Adjusted Current LOS = 212 square feet per officer
- Proposed LOS = 250 square feet per officer

Source: *Level of Service Standards: Measures for Maintaining the Quality of Community Life*, Municipal Research Services Center of Washington, Report No. 31, September 1994.

Table LE-2 Level of Service -- Law Enforcement Officers		
LOS	Officers	Officers per 1,000 Population
1990	58	1.5
1995 *	62	1.6
2000	62	1.6
Preferred *	70	1.8

Both 1995 and Preferred calculations assume an average population of 38,142, consistent with the adopted Kitsap Regional Council (KRPC) population forecast.
Source: Bremerton Police Department, 12/94; City Treasurer, 2/95. Community Development Department 6/01.2003

Future Demand

The projected population growth within the City is for 13,000 new people by year 2023. At the current level of service, the City would need 83 officers by year 2023 -- 21 additional officers. At the Police Department's preferred level of service, the City would need 95 officers by year 2014 - 25 additional officers. (Table LE-3)

Table LE-3 Future Need -- Law Enforcement Officers				
		2000	2023	Total New Officers 1990-2014
Population *		37,165	50,165	13,000
Current LOS (1.6 per 1,000)		62	83	21
Preferred LOS (1.8 per 1,000)		70	95	25

* 2000 population per US Census. 2023 forecast per 2003 Bremerton Comprehensive Plan.

Need for Capital Facility Improvements

To maintain existing staff levels to year 2023 at 250 sq.ft. per officer, the Police Department would need 20,750 square feet -- an increase of 4,115 sq.ft. over 20 years. To maintain the Department's preferred level of service to 2023, it would need 23,750 square feet -- an increase of 7,115 sq.ft. (Table LE-4)

Table LE-4 Future Need: Law Enforcement Building Area (Square Feet)					
Scenario *	1995 Actual	1995 Need	2000	2023	1995-2023 Increase
1995 Officer LOS	16,635	15,500	17,000	20,750	4,115
Preferred Officer LOS	16,635	17,500	19,000	23,750	7,115
* Staff levels per Table LE-3 @ 250 sq.ft./officer.					

The following table shows the future need for Police Department building area by year 2009 and by year 2023 at the proposed LOS of 250 sq.ft. per officer. The year 2009 need is based on continuation of the current Officer LOS (1.6 officers per 1,000 population). The year 2023 need is based on a gradual increase in staff levels after year 2000, with the goal of achieving the Preferred Officer LOS (1.8 officers/1000) by year 2014. (Table LE-5)

Table LE-5 Future Need: Law Enforcement Building Area		
Time Period	Demand (Population)	Square Feet Required @ 250 sq.ft. per Officer
Six-Year Need		
2003 (2000 census)	37,165	15,500
2003-2009 (increase)	3,900	1,560
Total as of 2009 =	41,065	17,000
Twenty-Year Need		
2009-2023 (increase)	9,100	4,095
Total as of 2023 =	50,165	21,095
Total 2003-2023 (increase) =	13,000	5,595
.note: 2003-2009 needed based on current LOS of 1.6 officers per 1,000 pop. 2009-2023 need based on preferred LOS of 1.8 officers per 1,000 pop.		

Proposed Facilities

The City is in the process of developing a City Facilities Management Plan. The goal and objective of this plan are the following:

- Consolidation of Departments to improve communication; coordination; and streamline department management goals and objectives; and
- Economics resulting in less property to maintain; centralize departmental needs; and reduce department manager's lost-time due to existing decentralized departments.

One of the options under consideration includes selling the West Precinct building and the moving City Hall functions. Under this scenario, all police services would be consolidated downtown in a remodeled bank building. There will need to be extensive remodeling of the existing bank facility to meet the varying needs of law enforcement. The City purchased the U.S. Bank facility at Sixth Avenue and Pacific for \$1M. Remodeling the building to accommodate the Municipal Court function and Police Department is expected to cost \$3.9M. The estimated completion of the Public Safety Building project is December 2004. Arai Jackson is the architect firm leading the project. Design phase is in progress for the Public Safety Building. Growth issues, staffing projections and forecasting future requirements are being addressed.

The Public Safety Bond that passed in 2002 that provided for the Public Safety Building, also provided funding to relocate and remodel an existing City facility that would result in a more efficient facility for the Special Operations Group. The 5,000 square foot facility has been acquired and designed for the Special Operations Group. Construction begins in June of 2003.

The City is concerned about the rising costs of providing jail services. However, there is no expectation that it would be cost-effective for the City to construct and staff a new jail facility in compliance with State regulations. Therefore, the City proposes to continue to contract with Kitsap County to provide jail services for the foreseeable future.

Capital Needs and Funding Plan

With the above referenced projects fully funded, the City projects no additional capital needs at this writing.

Parks

The City of Bremerton provides a system of local parks (neighborhood and community parks), regional parks, and open space parks. This system is managed by the City's Parks and Recreation Department with the help of the Bremerton Parks and Recreation Commission. The park system service area consists of all land within the incorporated city limits.

This parks capital facilities program draws upon several planning efforts. The program:

Updates and replaces the City's *Capital Improvement Plan: Parks and Recreation Facilities* adopted in 1995.

Reflects recommendations of the *Park & Recreation Interim Comprehensive Plan*.

Inventory of Park Lands

The following inventory lists local, regional, and open space park lands. Both the number of developed and undeveloped park lands are given.

Local Parks

To assist in analyzing service levels, local parks are divided into two categories: neighborhood and community parks.

Neighborhood Parks: A neighborhood park is a combination playground and park designed primarily for non-supervised, non-organized recreation activities. In addition to their recreation value, they also provide a source of open space and aesthetic quality in the neighborhood. They are generally small in size (about 3-10 acres) and serve an area of approximately one half mile radius. The City's neighborhood parks range in size from less than one acre to more than 21 acres.

Community Parks: A community park is planned primarily to provide active and structured recreation opportunities for young people and adults. In general, community park facilities are designed for organized activities and sports, although individual and family activities are also encouraged. Community parks can also provide indoor facilities to meet a wider range of recreation interests. Where there are no neighborhood parks, the community park can also serve this function. Community parks serve a much larger area and offer more facilities. They usually exceed 20 acres in size and often have sport fields, water bodies, gardens, nature trails or similar facilities as the central focus of the park. Their service area is at least a 1-2 mile radius. The City's community parks range in size from less than one acre to just under seven acres.

The following table includes an inventory of local parks, listed as neighborhood or community parks. Since not all local park lands are developed, both the number of developed and undeveloped park acres are listed. (*Table PK-1*)

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Table PK-1 Inventory of Local Parks					
Map #	Park Name	Address	Developed (Acres)	Undeveloped (Acres)	Total Acres
Neighborhood Parks (includes pocket parks)					
2	Arvon Park	1512 Arvon St	0.24		0.24
3	Bachmann Park	South end of Trenton Ave	0.25		0.25
4	Bataan Park	Sylvan/Olympus Drive	0.83		0.83
12	Forest Ridge Park	110 Summit Ave	21.39		21.39
15	Haddon Park	15th & Lafayette	3.69		3.69
18	Kiwanis Playfield	1701 5th Street	3.51		3.51
19	Lent Landing	Lebo & Reid	1.26		1.26
29	Lower Roto Vista Park	North end of Elizabeth St.	0.66		0.66
22	Matan Park & Community Gardens	Anderson & Bloomington	0.37		0.37
23	McKenzie Basketball Crt	Morrison Court	0.02		0.02
1	Ninth Street Mini-Park	E. 9th St. & Shore Drive	0.03		0.03
26	Pat Carey Vista	Tracyton Beach Rd.	0.23		0.23
28	Roto Vista Park	1800 Warren Ave.	0.70		0.70
32	Smith Playfield	1198 Elizabeth St.	1.14		1.14
33	SR-3 Park	601 Bruen	2.50		2.50
36	Wycoff Memorial Park	Pacific Ave/1st St	0.02		0.02
Total Neighborhood Park Acres =			36.84	0.00	36.84
Community Parks (Local)					
5	Blueberry Park	721 Sylvan Way	1.00	5.97	6.97
8	City Hall Park	4th St/Washington Ave.	0.02		0.02
21	Manette Playfield	1125 Vandalia Ave.	2.58		2.58
30	Sheridan Park	681 Lebo Blvd.	6.40		6.40
35	Warren Ave Playfield	11th & Warren	2.07		2.07
Total Community Park Acres =			12.07	5.97	18.04
Total Local Park Acres =			48.91	5.97	54.88

Regional Parks

Regional parks are recreation areas that serve an entire region. They are usually large in size and often include areas of natural quality suitable for outdoor recreation activities such as golfing, picnicking, boating, fishing, swimming, camping and hiking. If located within an urban area, they sometimes offer a wider range of facilities and activities which serves the entire region. The City's regional parks range from two to 360 acres.

The following table includes an inventory of the City's regional parks. The list of regional parks includes "local parks of regional significance". These are parks that have traditionally served as local parks, but because of special features such as waterfront access have taken on a regional role as well. These parks are listed as a subcategory of regional parks because they have been identified in the 2002 *Kitsap Countywide Comprehensive Park and Recreation Plan* as parks with regional significance which are eligible for countywide funding participation. (Table PK-2)

Table PK-2 Inventory of Regional Parks					
Map #	Park Name	Address	Developed (Acres)	Undeveloped (Acres)	Total Acres
6	Bremerton Boardwalk	East end of 2 nd St.	2.00		2.00
11	Evergreen Park	1400 Park Avenue	14.22		14.22
14	Gold Mountain Golf Complex	7261 W. Belfair Way	360.00		360.00
17	Kitsap Lake Park	1978 Price Road	2.00		2.00
20	Lions Park	408 Lebo Blvd.	17.57		17.57
27	Pendergast Regional Park	1199 Union	40.00	10.00	50.00
		Total =	435.79	10.00	445.79
Local Parks of Regional Significance					
9	East Park	Magnuson Way & Homer Jones	17.60		17.60
24	N.A.D. Marine Park	West end of Shorewood Dr.		27.50	27.50
25	N.A.D. Upper Park	6002 Kitsap Way	53.17		53.17
		Total Local Parks of Regional Significance =	70.77	27.50	98.27
		Total Regional Park Acres =	506.56	37.50	544.06

Open Space

An open space park consists of undeveloped land primarily left in its natural environment, with recreation uses as a secondary objective. It is usually owned or managed by a governmental agency and may or may not have public access. This type of land often includes steep hillsides, wetlands, large forested areas or other similar spaces. In some cases, environmentally sensitive areas are considered as open space and include wildlife habitats, stream and creek corridors, forested areas or unique or endangered plant species. The City's open space lands are often heavily wooded, and development, if any, is usually limited to trails. (Table PK-3)

Table PK-3 Inventory of Open Space			
Map #	Park Name	Address	Size (Acres)
10	EastPark Nature Area	Wheaton Way & Ash	15.53
17	Kitsap Lake Wetlands	1978 Price Road	40.16
34	Stephenson Canyon	between Lewis & Willow	26.49
Total Open Space Acres =			82.18

Other facilities

The City also operates the following facilities: Sheridan Community Recreation Center (that serves the general population), the Bremerton Senior Center and the Glenn Jarstad Aquatic Center. The City also operates and maintains Ivy Green Cemetery. (Table PK-3a)

Table PK-3a Inventory of Other Facilities					
Map #	Park Name	Address	Developed (Acres)	Undeveloped (Acres)	Total Acres
7	Bremerton Senior Center	1140 Nipsic Ave.			
13	Glenn Jarstad Aquatic Center	50 Magnuson Way			
16	Ivy Green Cemetery	1401 Naval Ave.	10.00	4.90	14.90
31	Sheridan Community Recreation Center	680 Lebo Blvd.			
Total =			10.00	4.90	14.90

Total Park Lands

The City has a total of approximately 700 acres of park lands. Of these park lands, approximately 8 percent are undeveloped (not including open space). (Table PK-4)

Table PK-4				
Summary Inventory: All Park Lands (Acres)				
Type	In Place 7/1/03	Undeveloped	Total Acres	% Developed
Local	48.91	5.97	54.88	89.1%
Regional	506.56	37.5	544.06	93.1%
Open Space	82.18		82.18	100.0%
Sub total	637.65	43.47	681.12	93.6%
Other Facilities	10.00	4.9	14.90	67.1%
Total	647.65	48.37	696.02	93.1%

Note: Open Space parks are listed as developed, since there are no plans for further development.

Forecast of Future Park Needs

Existing Demand

With 681.12 (does not include the cemetery) acres of park lands serving 37,165 (2000 Census), the City has 18.33 acres of park lands per 1,000 people. This is a 31.1% increase in park lands since the 1995 City Comprehensive Plan and is due primarily to the additional 170 acres of the Olympic Course at Gold Mountain Golf Complex. Without this addition, park lands would have remained almost static with 13.75 acres per 1,000 people.

Level of Service (LOS)

Developing a statement of LOS for parks, park facilities, and open space is dependent on local values, availability of land, financial resources, and desired service levels. There are often grey areas depending on interpretations of what constitutes open space or even land availability (e.g. should school playgrounds and athletic fields be included in park inventories). Only Bremerton Parks and Recreation lands and facilities will be used for the ensuing discussion.

Past need for park lands has been estimated by comparing the number of existing parks per acre per 1,000 persons with national standards. The National Recreation and Parks Association (NRPA) first released recommended guidelines in 1971, during the growth years of park land inventories. In 1983 NRPA came out with standards that stressed the minimum goals communities should strive to achieve. Most recently, NRPA has encouraged communities to develop a need based, facility driven, and land measured model that meets their community's desires.

Over the next nine months, Bremerton Parks and Recreation Department will be conducting an intensive LOS study to best identify the current and future needs of its citizens. This will involve an in-depth survey, public meetings, special task force, and involvement of the Parks and Recreation Commission. The end result will be a unique set of park standards that reflect Bremerton's needs and desires.

Until this study is completed, the current LOS guidelines will continue to be used. The National Standards set forth by NRPA are 15-24 acres per 1,000 persons for local and regional park lands.

Table PK-5 compares the existing LOS (ELOS) including all park land inventory and the LOS recommended by NRPA. According to the NRPA standards, the overall City LOS falls in the mid-range (18.33 acres).

However, when Bremerton’s 98.27 acres of local parks of regional significance (*Table PK-2*) are added to the 54.88 acres of local parks, the City has only 153.15 acres of parks serving local needs (*Table PK-6*). This is significantly below NRPA recommendations and mirrors what City Council and Parks have known ... more local, neighborhood parks are needed.

Table PK-5			
Level of Service (LOS): All Park Lands			
Type	Acres	Existing LOS	NRPA LOS (Acres/1,000)
Local	54.88	1.48acres	6 - 10 acres
Regional	544.06	14.64acres	5 - 10 acres
Open Space	82.18	2.21acres	3.6 acres
Total =	681.12	18.33acres	15 - 24 acres
Existing LOS = (Acres / 2000 population) x 1000 (2000 pop. = 37,165)			

Table PK-6			
Analysis of Local/Regional Park LOS			
Type	Existing Acres	Existing LOS	NRPA LOS (Acres/1,000)
Local	54.88	1.48acres	6 - 10 acres
Local/Regional Significance	98.27	2.64acres	
Total =	153.15	4.12acres	

Future Demand

The projected population growth within the City is for 13,000 new people by year 2023, for a total population of 50,165, based on the current city limits.

Proposed City Park Facilities

The Parks and Recreation 2001-2002 Interim Comprehensive Plan states that ELOS requires the addition of 34 more acres of land by 2006, particularly in resource conservancies, resource activities, athletic fields and special use facilities.

Under the proposed LOS, an additional 184 acres are needed by 2006 to attain and support an improved standard for resource activities, linear trails, and athletic field facilities. The forecasted population increase will create an additional citywide need for:

- 5 more playgrounds
- 10 more play area acres
- 2 more miles of developed multi-purpose trail
- 400 square foot interpretive space
- 1 restroom
- 2 competitive baseball/softball fields
- 3 additional soccer fields
- 2,120 additional square feet of indoor recreational center space, plus total renovation of existing buildings.

The City recognizes the difficulty in maintaining the recommended LOS, as there are fewer large tracts of undeveloped land left within the developed parts of the City. It will need to seek creative ways of adding park lands within developed parts of the city where vacant land is scarce.

Six-Year Funding and Projects

Table PK-7 contains the funding sources, capacity projects and non-capacity projects for the next six years.

Table PK- 7 Analysis of Local/Regional Park LOS						
	2004	2005	2006	2007	2008	2009
Funding Sources						
General Fund			75			
Park Facilities 112	258	155	135	235	120	130
Convention Center 301	1,400					
Equipment Rental 510	30					
PFD		750			1,200	
Voter Approved Bonds			7,000			
Grant - CDBG	520	73	28	65	80	20
Grant - IAC		901		300	134	860
Grant - DOE		750				
Grant - UPARR		262	17		40	
Grant - Tony Hawk		25				
Unidentified	625	1,734	100	700	66	1,890
State Capital Funding	1,175	850				
Donations	40	25				
Fund 407	185	235	215	180	160	170
Bataan	10					
Blueberry Development				1,000		

Boardwalk	25					
Community Center - New			7,000			
Dog Park						20
Eastpark		300				30
Evergreen Park		1,500				
Gold Mountain Golf Complex	185	235	215	180	160	170
Haddon Park						200
Ivy Green			15			
Jarstad Aquatic Center		200	100	150	200	
Kitsap Lake	5					
Kiwanis		225				
Lions	130	10		10	200	10
Maritime Park incl. Naval Museum	650	2,200				
N.A.D. Park			100			
N.A.D. Marine Park						2,500
Park Maintenance Facility/Lower Shred	600					
Park Plaza at Conference Center	2,400					
Pendergast Regional Park		775			1,200	
Purchase Turf Sweeper	13					
Recurring	140	140	140	140	140	140
Sheridan Park Community Center	25	175				
Vans - Purchase two 15 passenger	50					
TOTAL	4,233	5,760	7,570	1,480	1,900	3,070

Sanitary Sewer

Sanitary sewer facilities are provided by the Bremerton Department of Public Works and Utilities. A complete inventory, analysis of need, and capital improvements program are provided in the December 2003 *Wastewater Comprehensive Plan*. The 2003 Plan addresses the 10-year planning horizon extending between 2004 and 2014. It therefore provides an analysis that satisfies the City 2003-2004 Comprehensive Plan Update's six year concurrency requirement. The City Comprehensive Plan must address service needs for the period from 2003-2009.

Service Area

The *Wastewater Comprehensive Plan* identifies existing and future service areas served by the Wastewater Utility. The Wastewater Plan estimates the population of the service area at 45,210, of which 38,140 are within the city limits and 7,070 outside the city. The plan estimates that approximately 37,000 persons are connected to the sewer system, leaving an unsewered population of 8,210.

The service area covers 13 drainage basins, of which four extend beyond the city limits into unincorporated county areas: Tracyton Beach, Trenton Avenue, Sinclair Park, and Oyster Bay. The Utility provides sewage treatment to the sewered areas in the service area through direct service and through specific contractual agreements with the U.S. Navy and Kitsap County Sewer District No. 1 (Navy Yard City). (*Figure 2-2 "Service Area"*)

Inventory of Existing Facilities

The City sewerage system consists of sewage collection, transmission, treatment, and bio-solids reuse facilities. Included are more than 188 miles of gravity sewers, approximately 16 miles of pressure lines, and 35 pump stations. These facilities convey combined sewage to a secondary wastewater treatment plant located just south of West Hills. Additionally there are 16 combined sewer overflow (CSO) sites located within the sewer collection system. Approximately 60 percent of the system is composed of combined sanitary system. (*Table SS-1*)

Table SS-1 Inventory: Wastewater Treatment Facilities		
Treatment Plant	Address	Average Daily Capacity
Bremerton Wastewater Treatment Plant (1)	1600 Oyster Bay Ave W	(3) 10.1 mgd
Forest Enhancement Sites One & Two (2)	Near Gold Mtn. Golf Course	300 acres

(1) City of Bremerton Final Draft *Wastewater Comprehensive Plan*, April 1992.

(2) City of Bremerton 1993 Biosolids Report to Bremerton-Kitsap County Health District.
 (3) Average flow for maximum month per NPDES permit.

Wastewater Treatment Plant

The existing wastewater treatment plant was designed to have a peak hydraulic capacity of 29.5 million gallons per day (mgd). Normal dry weather peak flow capacity without stormwater inflow is estimated at 8 mgd. Current annual average and maximum monthly flows to the wastewater treatment plant are about 60 percent of the average annual and maximum monthly flows for which it was designed. Stormwater will be reduced from the system over the next several years under the City's CSO Reduction Plan. Rain induced flow has reduced the amount of wastewater treated by 50 percent.

Once stormwater inflow is reduced, the treatment plant will have the capacity to serve approximately 58,000 people. With 9,242 existing connections serving approximately 22,500 people, the plant has the capacity to serve about 35,500 additional people (14,626 connections). (Table SS-2)

Table SS-2 Bremerton Wastewater Treatment System Service Area Capacity			
Measure	Capacity	2003 Demand	1994 Surplus/Deficit
Population	58,000	22,500	35,500
Connections	*23,868	9,242	14,626

Sources: Final Draft *Bremerton Wastewater Comprehensive Plan*, April 1992; Bremerton Dept. of Public Works (11/94).
 * Connections = Population capacity / 2.43 average persons per household size. (A change in average household size would change the number of possible connections.)

Forest Enhancement Program -- Biosolids Utilization

The wastewater treatment plant produces approximately 5.8 million gallons of anaerobically digested biosolids each year. Because biosolids have fertilizer and soil amendment value the City began an active land application (silviculture) program several years ago to utilize the benefits of this wastewater process. Biosolids are used to enhance tree growth and are currently applied to 300 acres of Utility-owned forest land. Since June 1992, 100 percent of the biosolids produced at the treatment plant have been utilized in this beneficial manner.

Future Needs

Existing Demand

There are 9,242 existing connections, including several connections at the Puget Sound Naval Shipyard (PSNS), serving approximately 22,500 people in the service area. The annual average daily flow is 6.0 mgd.

Level of Service (LOS)

The capacity of existing sewer facilities to serve future needs is determined by comparing the gallons of effluent per day now approved by the State, the number of existing connections, and

the number of new people to be served. The number of new people is converted into the number of new residential connections based on assumptions of the number of persons per household, and the number of gallons of effluent generated per capita per day (gpcd). The capacity can also be estimated based on an existing and planned LOS for sewer service.

The calculation of the current LOS excludes stormwater inflow. The proposed LOS is the existing county-wide average.

- Current LOS = 97 gallons per capita per day
- Proposed LOS = 100

Future Demand

City and County estimates of future demand differ. (Tables SS-3 & SS-4)

County Estimate: The *Kitsap County Comprehensive Plan Capital Facilities* element estimates the 1994 population in the "Bremerton Area" sewer service area as 57,475. The County forecasts a 2014 service area population of 81,408 -- an increase of 23,933 persons. The County projects a need for an additional 9,031 connections by year 2014, which it estimates would exceed the capacity of the system by 1,914 connections. (Table SS-3)

City Estimate: The City's *Wastewater Comprehensive Plan* estimates the 2003 service area population at 22,500, of which 16% are outside the city limits. All but 8,210 persons are connected to the sewer system. Assuming 100% of this unsewered population will connect to the system within the next 20 years, there is a remaining capacity to serve an additional 13,000 persons.

The City estimates that the actual 2014 service area population will be 35,500 (rather than 81,408 as forecasted by the County).

Table SS-3 Comparison of City/County Estimates of Sanitary Sewer Service Area Population			
Source of Estimate	1994 Population	2014 Population	1994-2014 Increase
County	57,475	81,408	23,933
City	22,500	35,500	13,000
Difference =	34,975	45,908	10,933
Sources: City of Bremerton Final Draft <i>Wastewater Comprehensive Plan</i> , April 1992. <i>Kitsap County Draft Comprehensive Plan Capital Facilities Element</i> , October 1994, pg. 176. * 2014 population = 58,142 / 84% -- Bremerton Planning.			

The City projects a year 2014 deficit capacity of 11,217 (compared with the County projection of a deficit capacity of 5,072). *Table SS-4*)

Table SS-4 Comparison of City/County Estimates of Wastewater Treatment Plant Demand (Population)					
Source of Estimate	1994 Capacity	1994 Demand	2000 Demand	2014 Demand	Total Deficit or Surplus
County (1)	55,581	37,000	68,245	81,408	-5,072
City (2)	58,000	37,000	58,022	69,217	-11,217
Difference =	-2,419	0	10,237	12,191	6,145

Sources: City of Bremerton Final Draft *Wastewater Comprehensive Plan*, April 1992.
Kitsap County Draft Comprehensive Plan Capital Facilities Element, October 1994, pg. 176.

(1) 1994 Capacity = 20,974 possible connections x 2.65 pph.
 Deficit Capacity = -1914 connections x 2.65 pph.

(2) Year 2000 Demand = 85% of County estimate -- Bremerton Planning.
 Year 2014 Demand (85% of County estimate) -- Table SS-3.

Difference Between City and County Estimates

These estimates of sewer system capacity differ for several reasons:

1994 Population -- The County estimate of the existing service area population is 12,265 higher than the City Wastewater Plan estimate. The City estimate was based on a 1991 count of structures from aerial photos within actual service area boundaries, adjusted to match 1990 Census data. In contrast, the County estimate is based on the population of "transportation analysis zones" (TAZ's), which only roughly correspond with actual service area boundaries.

2000 Population -- The County estimate of the 2014 service area population is 12,191 higher than the City estimate. The City estimate assumes that within the city limits the population will increase by 20,000 (to 58,142), and that the population outside the city will remain 16% (11,075) of the total service area population.

Household Size -- The average household size is used to calculate the number of connections to the system. The County estimate assumes an average household size of 2.65 persons per household (pph), the 1990 county-wide average. The City estimate assumes 2.43 pph, the 1990 service area household size as calculated in the City's Wastewater Plan.

Treatment Plant Design Capacity (Population) -- Due to a mistake in the City Wastewater Plan, the County lists the design capacity of the wastewater treatment plant as 55,300 rather than 58,000 population.

Sewer Facility Connections -- The County estimates the number of existing sewer connections at 13,858, while City records show that there are 9,242 existing connections.

Unsewered Population -- The County forecast does not recognize the existing unsewered population of 8,210. The City estimate is adjusted to add the existing unsewered population to the projected new population to be served.

2014 Demand

Both the City and County estimates identify a probable deficit sewer system capacity by year 2014. Depending on the methodology, the deficit will be approximately 5,000-11,000 persons within 20 years. (Table SS-4)

Six-year Forecast

Over the next six years the City projects an increase of 10,237 persons within the service area. In addition, it is assumed that 30% (2,463) of the existing unsewered population will also hook up to the system by year 2000. In this case, there would still be a surplus capacity to serve 5,725 additional people in year 2000. (Table SS-5)

Table SS-5 Future Need: Sanitary Sewer			
Time Period	Demand (Population in City- County Service Area)	Capacity (Population)	Average Daily Demand @ 100 GPCD
Six-Year Need			
1994 Sewered Population	37,000	21,000	3.70 MGD
Hookups for 30% of Unsewered Population (1)	2,463	18,537	0.25 MGD
1995-2000 New Population (2)	12,812	5,725	1.28 MGD
Total 2000 Sewered Population =	52,275	5,725	5.23 MGD
Twenty-Year Need			
Hookups for 70% of Unsewered Population (3)	5,747	-22	0.57 MGD
2000-2014 New Population (4)	11,195	-11,217	1.12 MGD
Total 2014 Sewered Population =	69,217	-11,217	6.92 MGD
Total 1994-2014 Increase =	32,217	n/a	n/a
Notes: (1) 8,210 x 30%. (2) 58,022 - 45,210. (3) 8,210 x 70%. (4) 69,217 - 58,022.			

Need for Capital Facility Improvements

The Wastewater Plan was developed for an ultimate service area population of 35,500. Therefore, planned improvements will be adequate to serve the projected 35,500 sewered population.

Plans of Other Providers

The Kitsap County Public Works Department Wastewater Division is in the process of preparing a County-Wide Wastewater Facility Plan. The draft plan integrates the individual wastewater plans within the county, and includes recommendations for expanding county facilities to serve projected needs.

Proposed Facilities

The Wastewater Plan recommends four types of improvements at the treatment plant to accommodate projected sewage flows at ultimate plan service area development and to solve some current and anticipated operational problems:

- Infrastructure improvements -- repairs or replacements of existing sewer system facilities to restore structural integrity;
- Regulatory requirements -- improvements needed as a result of new or modified codes, guidelines, or laws initiated from federal, state, and local government;
- Growth and system extensions -- improvements resulting from new development or system extensions;
- Other system improvements -- recommendations that contribute to the improved operation or function of the system but are not a result of infrastructure needs, regulations, or system growth.

Six-Year Financial Plan

It is estimated that the existing sanitary sewer system has 8 million gallons per day (mgd) available capacity, which is sufficient to meet the total need of 5.23 mgd through the next six years. (This assumes removal of stormwater from the system over the next several years under the City's CSO Reduction Plan.)

Six-Year Data

(pending information)

Capacity Balance

The following chart demonstrates how the projects to be developed over the next six years provide the required amount of capacity at the adopted level of service standard to meet the needs of the existing population and projected growth. (*Table SS-7*)

Table SS-7 Capacity Balance Sheet: Sanitary Sewer			
Year / Projects	Maximum Month Demand Required @ LOS	Facility Currently Available	Net Reserve or Deficiency
1994	7.8 MGD	10.1 MGD	2.3 MGD
1995-2000	1.8 MGD		
Total as of 2000	9.6 MGD	10.1 MGD	0.5 MGD*
Projects 1995 to 2000 to increase capacity			
Warren Avenue Stormwater Separation (1995)			**
Callow Avenue Stormwater Separation (2000)			**
	Total as of 2000 =		***
<p>* Contracted Flows to PSNS are 3.1 MGD, which are not anticipated during six year term of finance plan. ** These two projects will eliminate some stormwater inflow to the wastewater system. *** Year 2000 total capacity is not quantifiable at this time. Source: Bremerton Department of Public Works and Utilities, 4/95.</p>			

Operating Costs

It may be useful to consider the impact of each completed capital improvement on the City's future operating budget. An analysis of operating costs is optional; it is not required by the Growth Management Act.

Schools

(1995 Plan element School District to update 2004-05)

Note: The Schools section has not been updated. The following analysis is from the 1995 City Of Bremerton Comprehensive Plan. The School District's ability to provide the services discussed in this section was based on a projected population growth of 20,000 persons between 1995 and 2015. The population projection employed by this Plan (The 2003-2004 Bremerton Comprehensive Plan Update) is substantially less (approximately 13,000 population growth by the year 2023). As a result, it is assumed that the analysis here demonstrates adequate capacity to serve during the period extending to at least 2015. The Bremerton School District will be conducting an update of its capital facilities analysis during 2004-2005. This section will be update when the revised District capital facilities work becomes available.

Bremerton Public School District #100C provides public education in most parts of the City. The exception is a small area in the vicinity of the Bremerton Watershed, which is served by South Kitsap School District #402. The Jackson Park Naval Reservation is jointly served by the Bremerton School District and Central Kitsap Public School District #401.

Only the Bremerton School District is included in this inventory, since such a small fraction of city residents is served by the South Kitsap School District, and no school facilities operated by that district are located within the city limits.

Inventory of Existing Facilities -- Schools

The capital facilities used by the school district are elementary, middle, junior high, and high schools. The district also administers a vocational skills center that serves other school districts. The present school enrollment requires the use of 50 portable classrooms. Crownhill Elementary School is scheduled to be replaced after being destroyed by fire in 1993. In the meantime Crownhill students are being temporarily housed in 20 portables, and fourth and fifth grade students are bussed to another school.

The current grade configuration in the district is based on grades K-5 (elementary); grades 6-7 (middle school); grades 8-9 (junior high); and grades 10-12 (high school). Class size and student to teacher ratio vary by grade. The average class size inn the district is about 28 students per teacher (28:1). The district seeks to maintain the following average class size ratios of students to classroom teachers: Grades K-3, 23:1; Grades 4-5, 28:1; Grades 6-8, 30:1; Grades 9-12, 32:1. Class size is dependent on availability of local levy funds, which must be provided by the voters every two years. (Table SC-1)

School capacity is defined as the number of students a school is designed to accommodate, and includes only permanent facilities. Portables are used as temporary classrooms until new facilities are built, or used to accommodate enrollment fluctuations. Current square footage cannot be directly correlated with existing school capacity. School capacity is determined by the number of teacher stations, which is in turn determined by school design, the educational program, and State funding criteria.

City of Bremerton Comprehensive Plan

City Service Appendix

CS Appendix - 32

Existing Enrollment

The school district has a total enrollment of nearly 6,700 individual students. This includes 486 students in the vocational skills center program and 152 students in the alternative high school program. Some students attend only half-time or part-time in the pre-school program, kindergarten, alternative school, or vocational center. This inventory counts individual students for its enrollment figures. Bremerton enrollment fluctuates significantly depending on homeported/overhaul ship movements.

Elementary school students make up about 50% (3,273) of the total enrollment. The middle school and junior high school have a combined enrollment of 1,675 students. Bremerton High has about 1,237 students including the alternative high school students. Since the vocational skills center is a county-wide educational program, the inventory does not include its enrollment. The district administers the vocational program and has agreements with the other districts to serve their students. (Table SC-1)

Table SC-1 Inventory of Existing Facilities -- Bremerton School District			
School	Existing Student Capacity	Existing Enrollment	Surplus Student Capacity
Elementary (Grades K-5)			
Armin Jahr - 800 Dibb	337	367	-30
Crownhill - 1537 Bertha Ave.	0	472	-472
Kitsap Lake - 1111 Carr Blvd.	550	518	32
Naval Avenue - 900 Olympic	412	487	-75
Olympic View - 2442 Perry	486	513	-27
View Ridge - 3220 Wheaton Way	374	463	-89
West Hills - 520 National Ave So.	561	453	108
Total Elementary School Facilities =	2,720	3,273	-553
Secondary Schools (Grades 6-12)			
Mountain View Middle School - 2400 Perry Ave.	900	924	-24
Bremerton Jr. High - 1300 E. 30th	1,236	751	485
Bremerton High School - 1500 13th	1,500	1,237	263
Total Secondary Facilities =	3,636	2,912	724
Total School Facilities =	6,356	6,185	171
Note: Capacity figures do not include portable classrooms. Source: Bremerton School District No. 100C, 10/94.			

Existing Capacity

Five of the seven elementary schools are over capacity. Only two elementary schools have room for more students -- West Hills and Kitsap Lake. Overall the elementary schools are over capacity by 553 students, or 22 classrooms. After replacement of Crownhill school, they will still be over capacity by 395 students, nearly the equivalent of a new school.

The middle school, built in 1992, is already over capacity. Four portable classrooms were added to begin the 94-95 school year.

The junior high can house an additional 485 students. However, it is nearing forty years old, and is functionally inadequate in terms of technology, energy efficiency, ventilation, and classroom configuration.

The high school can accommodate an additional 263 students.

Fifty portable classrooms are required to accommodate current enrollment. Twenty of these are being used at Crownhill while awaiting State funding to replace the school.

The developing need for a new elementary school in addition to the Crownhill replacement is apparent, as is a potential need for another middle school as larger elementary grades rise to the 6-7 level and population growth targeted for Bremerton begins to appear. The junior high and high schools still have some capacity for the near future. (Table SC-2)

Table SC-2 Bremerton School District Capacity (Summary)			
School Type	1994 Surplus Capacity	Additional Funded Capacity	1995 Surplus Capacity
Elementary (K-5)	-553	* 158	-395
Middle (6-7)	-24	0	-24
Jr. High (8-9)	485	0	485
Senior High (10-12)	263	0	263
Total =	171	158	329
* Crown Hill School is funded for replacement due to fire damage. ** Includes Bremerton Middle School (grades 6-7) and Bremerton Junior High (8-9) Source: Bremerton School District, 10/94.			

School officials also cite a need for supportive facilities -- a central food facility, a new administration building, a maintenance shop, and a bus barn. The district points out that it should be emphasized that any snapshot of facility requirements based strictly on current enrollment is subject to misinterpretation because of the fluctuating Navy population.

Forecast of Future Needs -- Bremerton School District

Existing Demand -- Enrollment

There are 6,185 students in Bremerton's elementary, middle, and high schools.

Level of Service (LOS)

The Bremerton School District has established the standard size for schools as 550 for elementary, 1,000 for middle school/jr. high, and 1,250 for senior high. The overall student to teacher ratio is set at 23 for elementary students and 30 for secondary schools. However, the district is concerned that the use of average classroom size as a standard may be misleading, since classroom size varies by program and contract provisions. (Table SC-3)

Table SC-3 Level of Service -- Bremerton School District			
Measure	Elementary	Middle/Jr.High	Senior High
School Size (Students)	550	1,000	1,250
Classroom Size	23	30	30
Source: Bremerton School District No. 100C, 10/94.			

Future Demand -- Enrollment Projections

The need for new schools is based on projected school enrollment. The Washington State Superintendent of Public Instruction (SPI) provides enrollment projections based on the "Cohort Survival Method". The school district considers the SPI system useful, but inadequate to represent the unique growth conditions of the Bremerton district. For example, 1992 enrollment forecasts based on SPI projections predicted a school population of 8,370 in 1994 -- 2,185 higher than actual 1994 enrollment. The largest single factor in Bremerton enrollment has historically been the fluctuation in naval population, which can be difficult to predict very far in advance.

The Kitsap County Department of Community Development (DCD) has projected county-wide school enrollment based on the current percentage of student enrollment to population. The County estimates that the present Bremerton School District population is 56,786. Based on this estimate, the total enrollment (6,185) is 11% of the total district population. (Table SC-4)

Table SC-4 Bremerton School District Population and School Enrollment		
Total Population	Total Enrollment	Percentage
56,486	6,185	11%
Source: Kitsap County Draft Comprehensive Plan, Part III, September 1994.		

⁷ The Cohort Survival Method uses historic patterns of student progression by grade level to measure the portion of students moving from one grade level up to the next higher cohort or grade. This ratio or survival rate is used in conjunction with current birth rates as a base for state-wide enrollment projections.

County-wide, the percentage of enrollment to population averages about 18 percent, with Central Kitsap the highest (26%) and Bremerton the lowest (11%). The County estimates that the Bremerton School District can expect 6,942 students in year 2000, and 8,710 students by 2014. (This estimate assumes that 18% of Bremerton's future population will be K-12 students. An assumption that students would continue to make up only 11% of the population would lower the projected enrollment.)

The School District points out that the difficulty with making accurate student projections is illustrated by the middle school projected year 2000 enrollment of 1,037 students. The October 1994 actual figure was 1,030, so the District is effectively six years ahead of the County projections already. (Table SC-5)

Table SC-5 Enrollment Projections					
School Level	Existing Capacity	Projected Enrollment 2000	Surplus Capacity 2000	Projected Enrollment 2014	Surplus Capacity 2014
Elementary	2,720	3,674	-954	4,609	-1,889
Middle	900	1,037	-137	1,301	-401
Jr. High	1,236	843	393	1,058	178
Senior High	1,500	1,388	112	1,742	-242
Total =	6,356	6,942	-586	8,710	-2,354
Sources: (1) Table SC-13, <i>Kitsap County Draft Comprehensive Plan</i> , Part III, September 1994, pg. SC-24. (2) Bremerton School District (10/94)					

Need for Capital Facility Improvements

Based on County population projections alone, the Bremerton School District is expected to need one new elementary school by year 2000 (in addition to the Crownhill replacement), and an additional 4.4 elementary schools by year 2014.

However the District feels that population projections alone do not accurately reflect the need for a new middle school by year 2000. The 1992 *Bremerton School District Capital Facilities Plan* recommends that new elementary and middle schools be constructed when demand exceeds supply by 10 percent. The projected year 2000 demand for middle schools will exceed the supply by 15%, but that level has already been reached in 1994. The need for a new middle school by 2000 remains a distinct possibility.

Facility costs are based on average site acquisition/development and construction costs in the school district, excluding any site clean-up costs. The District cautions that the projected facility needs do not include any school modernization or replacement costs, nor do they include any costs for essential support facilities replacement, acquisition, or expansion. In addition, the District points out that environmental cleanup costs are becoming more burdensome. (Table SC-6)

Table SC-6 Projected Facility Needs and Costs				
School Type	Year 2000	Cost	Year 2014	Cost
Elementary (K-5) *	1	\$7.3M	4.4	\$32.3M
Middle (6-7)	1	\$13.7M		
Jr.High (8-9)				
High (10-12)			0.2	\$5.4M
	N/A	21.0M	N/A	37.7M
* Projected needs do not include replacement of Crownhill Elementary School. Source: Bremerton School District, 10/94.				

Plans of Other Providers

The *Kitsap County Comprehensive Plan Capital Facilities Element* projects facility needs for all school districts in the County, including the Bremerton School District. This element is a valuable resource for comparing class size, school size, construction costs, etc. between districts. For example, construction costs for a typical middle school in the Bremerton District (\$13.7M) are much lower than in the neighboring Central Kitsap District (\$21.3M).

Proposed Facilities

Based on outdated enrollment projections, the 1992 *Bremerton School District Capital Facilities Plan* proposes construction of High School #2 in 1993, Elementary #8 in 1994, Elementary #9 in 1997, High School #3 in 1999, and Elementary #10 in year 2000. The recently completed middle school is not listed. The 1992 plan is obviously outdated and overdue for an update.

Six-Year Financial Plan

The School District estimates it will need one new elementary school (in addition to the Crownhill replacement) and one new middle school by year 2000. **If the City were to decide to collect Impact Fees to help offset the costs of schools needed to serve growth, Table SC-7, below would be necessary to document how those schools would be funded.** At present the District points out that it has no approved levy, and the State match percent or timing is an unknown.

Six-year Funding and Projects

The following chart contains the funding sources, capacity projects and non-capacity projects for the next six years. The last portion of the chart reflects the balancing of funding sources and money expended on projects. Any surplus or deficit is indicated. (*Table SC-7*)

The following table is included as background information. It should be completed if the city decides to collect school impact fees.

Table SC-7 Six-year Funding and Projects: Schools							
Funding Sources	1995	1996	1997	1998	1999	2000	Total
State Match							?
Future Levy							?
Insurance							?
Impact Fees							?
TOTAL SOURCES	?	?	?	?	?	?	?
Projects							
Crown Hill School *	5,240						5,240
Elementary #8					7,328		7,328
Middle School #2						13,688	13,688
TOTAL COSTS	5,240	0	0	0	7,328	13,688	26,256
Balance							
Surplus or Deficit	-5,240	0	0	0	-7,328	-13,688	-26,256
Note: All amounts are times \$1,000. Figures are in 1994 constant dollars. * Crownhill school replacement cost does not include any site acquisition/development costs.							

Capacity Balance

The following charts demonstrate how the projects to be developed over the next six years provide the required amount of capacity at the adopted level of service standard to meet the needs of the existing population and projected growth.

Elementary Schools: The construction of one elementary school by year 2000 will meet enrollment needs by year 2000. (Table SC-8)

Table SC-8 Capacity Balance Sheet: Elementary Schools			
Year / Projects	Schools Required*	Schools Available	Net Reserve or Deficiency
1994	7.6	7.0	-0.6
1995-2000 (new)	0.7	0.0	-0.7
Total as of 2000	8.3	7.0	-1.3
Projects			
Elementary #8		1.0	-0.3
Total as of 2000		8.0	0.3
* The capacity of new elementary schools is assumed to be 550 students.			

- Year 1994 Schools Required = $3273 \text{ (existing enrollment)} - 2967 \text{ (existing capacity)} / 550 \text{ (students per school)} + 7 \text{ (existing schools)}$.
- Year 2000 New Schools Required = $3674 \text{ (2000 enrollment)} - 3273 \text{ (1994 enrollment)} / 550 \text{ students per school}$

Middle Schools: According to the following chart, the construction of one middle school by year 2000 would create a surplus of 0.9 middle schools by year 2000. However, the District justifies this need with its goal to begin construction of new middle schools when demand exceeds supply by 10 percent. (Table SC-9)

Table SC-9 Capacity Balance Sheet: Middle Schools			
Year / Projects	Schools Required*	Schools Available	Net Reserve or Deficiency
1994	1.0	1	0.0
1995-2000 (new)	0.1	0	-0.1
Total as of 2000	1.1	1	-0.1
Projects			
Middle School #2		1	1.0
Total as of 2000		2	0.9
* The capacity of new middle schools is assumed to be 1000 students.			
• Year 1994 Schools Required = $-24 \text{ (existing deficiency)} / 1000 \text{ (students per school)} + 1 \text{ (existing schools)}$.			
• Year 2000 New Schools Required = $1037 \text{ (2000 enrollment)} - 924 \text{ (1994 enrollment)} / 1000 \text{ students per school}$			

Operating Costs (Optional)

It may be useful to consider the impact of operating costs of proposed new school facilities. Such an analysis is optional, and is not required by the Growth Management Act.

The following chart may be used to reflect the six-year operating costs for the projects listed in the Six-year Funding and Projects chart above. (Table SC-10)

This chart may be completed at a future time to determine the full costs of school facilities.

Stormwater

The Stormwater Utility was formed by ordinance in 1994 as a funding source for the stormwater program. A Stormwater management plan was completed for the City in August 1996. The mission of the Program is to control flooding, enhance water quality, protect sensitive habitat areas, and optimize the recharge of local aquifers.

Inventory of Existing Facilities

With the exception of a few more recent developments, the existing drainage system within the City can be characterized as a conveyance system of surface drainage swales and a series of pipes which collect and route drainage away from homes and businesses. All drainage facilities eventually are discharged into Sinclair Inlet, Dyes Inlet, or Port Washington Narrows (see Exhibit 4-1.)

The City has a storm drainage system which is partially separated for the sewer collection system. Much of the storm water collection system is combined with the sewer collection system. The City, as part of a compliance decree, adopted Combined Sewer Overflow (CSO) Plan. The purpose of the plan was to identify capital projects that will improve the combined sewer and storm drain collection system to limit CSO's to no more than one per year.

A number of natural drainage facilities exist in the Bremerton drainage system. These natural systems include swales, channels, creeks, ravines, and natural drainage ways that discharge directly to marine waters. Bremerton currently has 14 drainage basins. The basins include those areas outside of the city limits that drain into the City and contribute runoff to some of the City's localized drainage problems.

Inventory of Capital Facilities: Storm Water Basins		
Basin Name	Location - Drainage	Acres
1. Anderson Avenue	N. shores of W. Brem. - Port Wn. Narrows	400
2. Callow Avenue	Central W. Brem. - Sinclair Inlet	650
3. Cherry Avenue	E. Brem. NE of Warren Ave. Bridge - Port Wn. Narrows	250
4. East Park	E. Brem. S of Sylvan Way - Port Wn. Narrows	330
5. Kitsap Lake	W. Brem surrounding Kitsap Lake - Chico Bay	1,550
6. Oyster Bay	NW part of W. Brem - Oyster Bay & Ostrich Bay	1,575
7. Pacific Avenue	SE part of W. Brem incl. Ferry Terminal - Sinclair Inlet	150
8. Phinney Bay	N central part of W. Brem - Phinney Bay	225
9. Pine Road	W part of E. Brem. - Port Wn. Narrows	680

10. Sinclair Park	SW portion of W. Brem -	1,400
11. Stevens Canyon	E. Brem. in vicinity of Wheaton/Sylvan - Port Wn. Narrows	350
12. Tracyton Beach	Along W. edge of city limits in E. Brem - Port Wn. Narrows	60
13. Trenton Avenue	E part of E. Brem - Port Wn. Narrows & Port Orchard Bay	670
14. Warren Avenue	Downtown Bremerton - Port Wn. Narrows	275
Total =		8,564

Forecast of Future Needs

Existing Demand

The City of Bremerton averages 39 to 50 inches per year of precipitation. Most of the precipitation occurs between October and the end of May. For the most part the storm drainage system works well with the exception of the CSO. In the last few years the City has directed much of its efforts to improving the capacity of the system to eliminate the CSO overflows to one per year. The following is a list of CSO projects completed in the last few years.

The East Bremerton CSO Treatment Facility: This facility was built to be used as an interim sewer treatment plant. The treatment plant is automatically activated when combined storm and sewer flows exceed the capacity of the collection system. The combined sewer and storm water is then treated to an acceptable quality and discharged into the Port Washington Narrows.

Residential Downspout Separation Projects: The City has been active with homeowners to disconnect all roof downspouts from the sanitary sewer collection system.

Callow Basin Improvements: These improvements were in three different projects. The first project was a large separation project in the vicinity of Callow Avenue between Burwell and 11th streets. The other two project were upgrades and construction of two sewer pump stations WB-3 and WB-6.

Trenton/Cherry Basin Improvements: These improvements consist of improvement of sewer pipes in selected locations, the reconstruction of a sewer pump station (EB_2) and the improvement of the force main from sewer lift station EB-2. This project is presently under construction as of this writing and is scheduled to be completed in the fall of 2003.

Standard For Construction -- Level of Service (LOS)

The City regulates storm drain activities in BMC 15.04. and floodplain regulations in BMC 17.60. The City's standard for design of storm facilities is the King County standards. The City has also adopted "Standards for work in the Right-of-Way". These are City standards which

contain written standards along with standard drawings to regulate the construction of storm drain related facilities.

Future Demand

The City will be updating the stormwater comprehensive plan in the next few years. Most anticipated development that is anticipated to occur in that period of time will be reconstruction on existing lots or small development that would not significantly effect the capacity of the collection system. The one exception is the anticipated development of the Port Blakeley area west of Kitsap Lake. Due to the magnitude of this development, a storm drain plan would be required of the developer to address both the quality and quantity of storm water being discharged into Kitsap Lake. **At the current time the department anticipates no publicly funded capital costs associated with growth.**

Proposed Facility Improvements

The 1996 Stormwater Plan identified eleven existing flooding problems and recommended solutions to alleviate these problems. These drainage problems were eliminated by CSO sewer separation projects and other maintenance or capital projects. The only existing flooding area is in the Stevens Canyon Basin in the vicinity of Eagle Avenue and Dibb Street and in the Pacific Avenue Basin.

The present Capital Improvements Plan has the following improvements for storm drainage improvements over a multi-year planning period.

Stormwater Capital Improvement Projects and Costs			
Project #	Basin	Project	Cost
CIP #1	All Basins	Upgrade piping and catch basins throughout the storm drainage collection system. (annual cost)	255,000
CIP #2	Stevens Canyon	Piping improvements at Eagle Avenue and Dibb Streets	245,000
CIP #3	Pacific Avenue	Piping improvements along Park Avenue, 5th St to Burwell	250,000
Total =			750,000
Source: Capital improvement Program 2004-2009			

In addition to these storm drain capital projects, CSO project are planned to the sewer collection system to accommodate the storm water that is collected by the sanitary sewer collection system. The following is a list of planned projects.

CSO Capital Improvement Projects and Costs		
Basin	Project	Costs
Anderson Cove	Anderson Cove Basin CSO project, Upgrade of pump station CW-4	1,800,000
Pacific Avenue	Pacific Avenue Project. Miscellaneous upgrades of sanitary sewer and storm drain collection system	1,000,000
	Total =	2,800,000

The City in compliance with State and federal regulation recently submitted application for NPDES Phase II Storm Water permit. The terms and conditions of this permit will focus upon water quality.

Transportation

See Appendix TR and main Transportation Element

Water

The City of Bremerton Water Utility (Water Utility) provides potable water within the City and the surrounding area. A complete inventory, analysis of need, and capital facilities program is provided in the adopted *1999 City of Bremerton Water System Plan Update*. While the 1995 Plan employs projections for years and time-frames that are not identical to those in the City 2003-2004 Comprehensive Plan Update, the projections include a period of time that goes beyond the first six years of the Update and therefore the data can be used to address the concurrency requirement.

Inventory of Existing Facilities

Service Area

The Water Utility serves a population of approximately 56,000 in Bremerton (80% of the water use) and portions of Kitsap County (20% of the water use). This use includes the City's West 517 Zone system (considered a separate system by the Washington State Department of Health (DOH)) and contracts to supply water to the Puget Sound Naval Shipyard (PSNS) and to the City of Port Orchard. The Water Utility also is under contract to provide water and operation and maintenance to the Tracyton and Rocky Point Water Districts. The current service area includes approximately 13,800 acres.

The *Kitsap County Coordinated Water System Plan* also documents water service areas and system responsibilities within those service areas.

Capacity and Water Rights

The Water Utility supply consists of the Union River Reservoir behind Casad Dam and 12 active production wells. Approximately 65 percent of the supply comes from the 2,964-acre Union River watershed, which is 98 percent owned and controlled by the Bremerton Water Utility. Wells in multiple aquifers supply groundwater to the system. Current average daily demand is approximately 8 million gallons per day (MGD).

The current capacity of the water system is 13.8 MGD for an average day demand and 28.1 MGD for a maximum day demand. The Union River supply has such exceptional water quality, it is one of the few surface water systems in the country to be allowed to operate unfiltered by DOH. This does mean, however, that during unusual events such as when high winter rains increase the turbidity (a measure of water clarity) or during a drought, surface supplies may not always be fully available. During these times the City must depend on well supplies to meet demands. The firm yield from the Union river is 5.6 MGD.

All water in use by the City has been properly appropriated through certificates of water rights or registered claims. The agency with regulatory oversight of water rights is the Washington Department of Ecology (Ecology). Bremerton's groundwater rights consist of 12,706 acre-feet/year (ac-ft/yr) annual quantity of primary rights, 1,408 ac-ft/yr annual quantity of supplemental rights, 9,855 gallons per minute (gpm) instantaneous rights, and 880 gpm supplemental rights. Bremerton's surface water rights consist of 40 cubic feet per second (cfs)

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instantaneous rights from the Union River. Historically-used surface water claims of 5,000 ac-ft/yr from Gorst Creek and 3,000 ac-ft/yr from Anderson Creek are maintained for emergency use and potential future use pending required treatment.

Water Quality

The Water Utility provides high quality water which is verified by an extensive monitoring program that goes beyond minimal requirements. The regulatory agencies that provide oversight for drinking water quality are US EPA and DOH. The Water Utility meets all the protective standards set by the federal Safe Drinking Water Act and state laws and regulations.

The Water Utility practices a multiple-barrier approach to protecting water quality from the source to through the distribution system. Bremerton's Union River surface source is of such excellent quality that it is currently approved to remain unfiltered. Groundwater sources are safeguarded by a Wellhead Protection Program. All sources are disinfected with chlorine and chlorine residual is maintained throughout the system. In 1999, the corrosion control facility was completed to adjust the pH of the water to prevent corrosion of internal plumbing.

An annual water quality report is provided to all customers and is available on the City's web site.

Facilities

A summary of the Bremerton water system is provided in Table 1.

Sources currently in use	Union River and 12 production wells
5-Year average day demand	7.8 Million Gallons per Day
Equivalent Residential Unit	200 gallons per day per single family residence
Number of Connections	16,052
Population served	56,000
Miles of Pipe	289 miles
Number of Reservoirs	3 raw water, 17 treated water
Number of Pump Stations	8
Number of Pressure Booster Stations	6
Number of Pressure Reducing Stations	12
Number of Pressure Relief Valves	9 (includes 2 surge anticipators)
Service Area	13,800 Acres (not including the watershed)
Pressure Zones	W256, W440, W517, W650, E240, E398, E490
Disinfection	Chlorine
Treatment	pH adjustment for corrosion control

There are seven pressure zones in the system designated by the overflow elevations in Utility reservoirs. The water system control and alarm is provided through a telemetry system. Operations staff are certified, and the system is operated in compliance with all federal and state regulations.

Fire Flows

One of the major purposes of the water supply and distribution system is to meet fire flow demands. The City's water system must meet Bremerton's fire flow requirements within city limits and Kitsap County requirements in the service area in unincorporated Kitsap County. Both the City and County Fire Marshal's offices have adopted by ordinance Appendix III-A and III-B of the Uniform Fire Code (UFC) for estimating fire flow needs and identifying design criteria for pipelines and fire hydrants. Both authorities allow the nesting of fire suppression storage and emergency standby storage when evaluating reservoir capacity.

Minimum fire flows to be provided by the Bremerton water system have been identified as:

- Residential 1,000 gpm for 2 hours
- Commercial 1,500 gpm for 2 hours

Fire flows required by the UFC are considered minimums for new construction. When evaluating new construction, Bremerton Public Works and Utilities Department personnel determines the ability of the water system to meet fire flow requirements at that location with a minimum of 20 psi residual pressure throughout the distribution system. If the water system cannot provide the required fire flow for the specific project, the developer is required to revise building construction and/or make the necessary improvements to the distribution system to meet the project's fire flow requirements.

The Washington Survey and Rating Bureau rates the fire fighting and protection abilities for municipalities which is then used by insurance companies for setting rates. The water system's capability is 39% of the total rating score. Bremerton's last survey was completed in 1997 and the water system ranked as Class II, an excellent rating.

Forecast of Future Needs

Existing Demand

The average daily water system demand in 2003 was 7.3 MGD. The 5-year average is 7.8 MGD. Figure 1 shows the average day demand (ADD) and maximum day demand (MDD) since 1994.

Figure 1 **Source: Bremerton Public Works and Utilities Department**

As shown in Figure 2, approximately 80% of the water demand is "in-City" demand, and 20% outside the city limits. PSNS is the largest single water user with an average day demand between 2 - 3 MGD.

Figure 2 **Source: Bremerton Public Works and Utilities Department**

Average day demand is affected by the year's rain patterns and other factors. For example, 1993 was a wet summer, resulting in less outside water use. The highest MDD ever recorded in Bremerton was 20 MGD during unusually low temperatures in December 1990 when pipes broke and customers ran water to prevent pipes from freezing. 2001's drought affected Bremerton's surface supply and the Water Utility requested a voluntary 10% reduction in water

use that summer. Customers responded with an 18% reduction in use which averted a need for water restrictions.

Level of Service (LOS) Standard

The estimated 1999 LOS is 200 gallons per equivalent residential unit. The Equivalent Residential Unit (ERU) is the amount of water consumed by a typical full-time single family residence. This value is calculated by dividing the amount of water used by single family accounts that used water in all of the year's billing cycles by the total number of single family accounts.

The value for an ERU is specific to a particular water system and reflects the characteristics of a water system's customer base and weather patterns. ERUs are used by DOH to calculate a water system's capacity. For example, if a system has been determined to have capacity to serve 100 single family homes, it would be able to serve any combination of commercial, industrial, or residential customers equivalent to the needs of 100 single family homes, that is, 100 ERUs. Currently Bremerton has the capacity to serve in excess of 50,000 ERUs. The Puget Sound Naval Complex is equivalent to about 10,000 ERUs.

Bremerton's ERU value of approximately 200 gal/day/ERU is on the low side when compared to other systems in Kitsap County and the state. Reasons for this include:

Smaller urban lot sizes common in the service area use less water for landscaping.

A high rental population – Bremerton is about 60% rental housing while the national average is about 40%. Renters tend to use less water, especially outside.

An effective conservation program. Bremerton has actively worked with customers on conservation since 1992.

An effective public awareness campaign during the summer 2001 drought. Bremerton requested 10% voluntary conservation and customers saved 18% that summer. Customers appeared to continue conservation measures into 2002.

A relatively high sewer rate based on water use.

The ERU values for Bremerton continue to decline. This is due to the reasons listed above plus the implementation of plumbing regulations in 1992 that require newly-installed toilets to use only 1.6 gallons per flush. The City's conservation program is expected to reduce per unit consumption by an average of 3% over the next 10 years. Domestic unit demands are then expected to remain constant.

Future Demand

The 1999 Water System Plan demand projections were based on data from the 1990 census and the 1998 Bremerton Comprehensive Plan. More recent projections are now available using 2000 census data which are somewhat lower than previous projections. Since using the water demand data from the 1999 Water System Plan is more conservative, these data will be used rather than performing an extensive recalculation of demand projections which will occur in for the 2006 Water System Plan Update. Figure 3 presents the population forecast used.

The 1999 Water System Plan identifies needs for a 20-year planning period from 1999 to 2019. During that time it is expected that ADD will increase from 8 MGD in 1999 to 12 MGD by year

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2019. MDD is expected to increase from 14 MGD to 23 MGD during this same time period. Figure 4 presents the demand forecast used.

Figure 3 Source: 1999 City of Bremerton Water System Plan Update

Figure 4 Source: 1999 City of Bremerton Water System Plan Update

Proposed Facility Improvements

Water Utility improvements are discussed in more detail in the 1999 Water System Plan Update. Chapter 9 of this plan outlines a 20-year Capital Improvement Plan (CIP). Each year the Utility fine-tunes its 6-year CIP which is presented at the end of this section.

Water Sources

The Water Utility has sufficient water to meet demands for the next six years. From a water rights standpoint, the Water Utility appears to have sufficient water rights for the near future. However, there are several considerations that affect the Utility's ability to use all the water as indicated in the rights. For instance, several wells need to be rehabilitated or replaced to use the water and hydraulic circumstances do not allow all sources to be used simultaneously. Projects to address these issues are listed in the CIP.

To ensure reliability and redundancy, it is the Utility's goal to be able to meet demands with groundwater only. Future water rights will be from groundwater. The Water Utility has several water rights applications submitted to Ecology:

Change application for five Domsea Wells with a priority date of 1992.

New application in Gorst for 1,000 gpm with a priority date of 1992

One new application for Well 21 with a priority date of 1992

One new application for 1,000 gpm for Well 9 with a priority date of 1994

Processing of new applications has been stalled for many years due to staffing and resources at Ecology. Ecology's focus will be on processing change applications first and it is not known when they will begin on new applications.

Water Quality

Meeting strict water quality standards is a primary objective of the City. Drinking water is regularly tested at the sources and in the distribution system.

To continue to use the unfiltered Union River source, the City should continue to pursue either acquisition or controlling agreements over the remaining 2% of private lands within the watershed, and should vigorously implement the Watershed Control Plan. Responsible operation of the entire water system is critical to maintaining compliance with the non-filtration status of the surface water treatment regulations. Even with these precautions, a drastic change in source quality or changes in regulations could require the City to provide filtration.

Proposals for the upcoming federal Enhanced Surface Water Treatment Rule may require another disinfectant in addition to chlorine. Use of ultraviolet (UV) light currently appears to be the disinfectant of choice at this time and installation of a UV system is in the Utility's CIP.

Storage

The Water Utility was analyzed using hydraulic modeling software program. The evaluation completed for the 1999 Water System Plan indicated that the only immediate storage deficit was in the W440 Zone. This deficit will be eliminated by the construction of a 1-million gallon reservoir in the W650 Zone which is expected to be completed in the fall of 2003. There is a deficit of total storage by 2019 in the three east-side pressure zones which will be addressed by added storage and a possible new well in this area. These projects are included in the CIP.

Distribution System

Improvements in transmission and distribution mains are necessary to improve flows and pressures in certain areas and to replace sub-standard mains. The Utility allocates funds each year to address sub-standard mains. Other larger main improvements are listed in the CIP.

Plans of Other Providers

There are no other providers of potable water within the City. However, there are several nearby water districts, public utility districts and municipalities that may have interests in local surface and groundwater resources. These include: Silverdale Water District, North Perry Avenue Water District, Erland Point Water District, Sunnyslope Water District, and the City of Port Orchard. The Water Utility has service area agreements with each water system with adjacent boundaries.

The *Kitsap County Coordinated Water System Plan (CWSP)*, a regional water supply, transmission, and storage plan, was developed by the Water Utility Coordinating Committee (WUCC) in 1992 to comply with state law. The plan assesses water supply needs in Kitsap County and presents a program to provide water supply and service to users. The plan provides a process and strategy for existing water utilities to define their role in a program consistent with adopted land use policies and projected growth strategy. The CWSP is currently being updated with completion expected by the end of 2003.

Watershed planning for Water Resources Inventory Area 15 (the "2514 process") commenced in 2000. The City of Bremerton is one of the initiating governments for this process. The final plan is scheduled to be completed in 2005.

Six-Year Financial Plan

The following chart contains the funding sources, capacity projects, and non-capacity projects for the next six years.

CITY OF BREMERTON

WATER DEPARTMENT

CAPITAL FUNDING ANALYSIS SUMMARY

	2004	2005	2006	2007	2008	2009	2010	2011	Total
Beginning Balance	\$0	\$728,751	\$1,951,751	\$1,703,751	\$646,751	\$661,751	\$0	\$1,680,900	
Total Capital Projects									
Water Main Replacement Program	100,000	275,000	275,000	300,000	300,000	300,000	300,000	300,000	\$2,150,000
Miscellaneous Supply Improvements	75,000	75,000	100,000	100,000	100,000	100,000	100,000	100,000	750,000
Anderson Creek Wellfield - Eastside Flow & Pressure	600,000	400,000	0	0	0	0	0	0	1,000,000
Water System Security Improvements	50,000	50,000	0	0	0	0	0	0	100,000
Annual Acquisition of Replacment Meters	25,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	375,000
Road Maintenance and Abandonment Plan (RMAP)	25,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	165,000
Pump Station Reconstruction - 2004 PS#4 Westhills	31,500	1,028,000	0	0	0	0	0	0	1,059,500
Stabilization Projects	50,000	460,000	0	0	0	0	0	0	510,000
Misc Equipment Dept 33	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	80,000
Seismic Upgrades	585,000	720,000	200,000	0	0	0	0	0	1,505,000
Source and Pump Station Flow Meters	0	30,000	0	0	0	0	0	0	30,000
Tracyton Water District Improvements Phase II	725,000	0	0	0	0	0	0	0	725,000
West 580 PS#2A, 12" Trans. Main	1,350,000	0	0	0	0	0	0	0	1,350,000
Anderson Creek PS#2 and Well 7&8	85,000	0	0	0	0	0	0	0	85,000
Oyster Bay Facility, yard, roof, tile replacement	0	54,000	0	0	0	0	0	0	54,000
West 650 12" DM, Reservoir #23, 12" DM	200,000	0	0	0	0	0	0	0	200,000
HB Valve	100,000	0	0	0	0	0	0	0	100,000

Ultraviolet Treatment	0	300,000	1,000,000	1,000,000	0	0	0	0	2,300,000
12" Dist Water Main - Shorewood Drive to Res 21	0	330,000	0	0	0	0	0	0	330,000
12" Dist Water Main - Pine to Flagstone	0	0	180,000	0	0	0	0	0	180,000
3000 Road Culvert Replacement	0	20,000	0	0	0	0	0	0	20,000
24" Pipe on C Street from Oyster Bay to National Ave.	0	0	0	0	250,000	1,250,000	0	0	1,500,000
Twin Lakes Diversion Improvement	0	75,000	0	0	0	0	0	0	75,000
Cover for Dewatering Facility	0	0	0	0	0	307,000	0	0	307,000
Loop Main on West Kitsap Lake Road	0	0	380,000	0	0	0	0	0	380,000
Loop Main on Lakehurst Drive & PSE	0	0	0	81,000	0	0	0	0	81,000
Replace Well 18 Pump and Motor	0	0	63,000	0	0	0	0	0	63,000
Bypass Tunnel Below McKenna Falls Weir	0	0	0	50,000	200,000	0	0	0	250,000
Booster Station 3 (Lafayette) & PRV Upgrade	0	0	70,000	0	0	0	0	0	70,000
490 Zone Extension on Sylvan	0	0	0	486,000	0	0	0	0	486,000
12" Main - McWilliams Rd. From Mc Williams Ct. to Pine Rd.	0	0	0	171,000	0	0	0	0	171,000
E. 18th St. Loop	0	0	0	113,000	0	0	0	0	113,000
36" Main Davis Street Connector	0	0	0	126,000	0	0	0	0	126,000
Gold Mountain Gold Course Irrigation	0	0	0	650,000	0	0	0	0	650,000
Storage Improvements W440 & 398 Zones	0	0	0	0	416,000	0	0	0	416,000
Reservoir No. 14 Demolition	0	0	0	0	341,000	0	0	0	341,000
Re-Drill Well #9	0	0	0	0	332,000	0	0	0	332,000
Well #9 Chlorination & Telemetry	0	0	0	0	166,000	0	0	0	166,000
Manette Bridge Water Main 2004 Isolation Valve	136,000	0	0	0	0	0	0	0	136,000
12" Dist Water Main - 13th St & High & Ohio	0	0	0	0	0	640,000	0	0	640,000
Pine Road - Mc Williams to Well 21 12" Water Main	0	0	0	0	0	137,000	0	0	137,000
398-490 Zone Conversion & PRV	0	0	0	0	0	281,000	0	0	281,000
Marine Drive from	0	0	0	0	0	290,000	0	0	290,000

Cedar Dr. North 8" Water Main									
Other Unscheduled Projects	0	0	0	0	0	0	0	0	0
Total Project Costs	\$4,147,500	\$3,897,000	\$2,348,000	\$3,157,000	\$2,185,000	\$3,385,000	\$480,000	\$480,000	\$20,079,500
Less: Funding Sources									
Annual Rate Funded Capital	\$500,000	\$600,000	\$700,000	\$800,000	\$1,000,000	\$1,030,000	\$1,060,900	\$1,092,727	\$6,783,627
System Development Charges	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	800,000
Timber Sales	1,500,000	1,400,000	1,300,000	1,200,000	1,100,000	1,000,000	1,000,000	1,000,000	9,500,000
Sale of Assets	0	1,000,000	0	0	0	0	0	0	1,000,000
Grants	800,000	0	0	0	0	0	0	0	800,000
State Loan - DWSRF	1,960,000	2,020,000	0	0	0	0	0	0	3,980,000
Interfund Loan Payment - Pendergast	16,251	0	0	0	0	0	0	0	16,251
Revenue Bonds	0	0	0	0	0	593,249	0	0	593,249
Total Funding Sources	\$4,876,251	\$5,120,000	\$2,100,000	\$2,100,000	\$2,200,000	\$2,723,249	\$2,160,900	\$2,192,727	\$23,473,127
Additional Capital Funding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Ending Capital Reserves	\$728,751	\$1,951,751	\$1,703,751	\$646,751	\$661,751	\$0	\$1,680,900	\$3,393,627	
Target Funding; Annual Average Capital or 1% of Original Plant Value	\$225,000	\$420,000	\$445,000	\$470,000	\$470,000	\$470,000	\$470,000	\$470,000	
	\$522,977								

Utilities Section

Natural Gas

Cascade Natural Gas Corporation (CNG) builds, operates and maintains natural gas facilities serving Kitsap County. CNG is an investor-owned utility serving customers in sixteen counties in the State of Washington, as well as parts of Oregon.

The Pacific Northwest receives its natural gas from the Southwest United States and Canada. Natural gas is supplied to the entire region via two interstate pipeline systems. The Pacific Gas Transmission Company (PGT) and Northwest Pipeline Corporation (Northwest) each owns and operates its respective regional pipeline network that supplies natural gas to Washington, Oregon and Idaho. (*See Map 1*)

Natural gas can be stored in two ways. First, it can be pressurized and then injected into underground geologic structures which are suitable for gas storage. This is done at Jackson Prairie Gas Storage located south of Chehalis. This gas is used to supplement the region's gas supply in colder weather. Secondly, natural gas can be stored by cooling it to -258 Fahrenheit, where it becomes a dense liquid and can be stored in storage tanks. Such a storage facility exists in Plymouth, Washington.

The Cascade Natural Gas supply and transport system begins at the "gate station", the delivery point of natural gas from the upstream interstate pipeline to CNG's system. Gate stations normally include metering stations, odorizing stations and pressure reduction stations. High pressure lines transport gas to district regulators throughout CNG's service area. Pressure reduction stations are installed at the point of delivery of natural gas from the high pressure transmission lines to the lower pressure distribution systems.

Existing System

The Cascade Natural Gas service area includes all of the City of Bremerton and the adjacent unincorporated areas. Gas is not available at this time to all areas inside the service area. (*See Figure UT-1*)

Connections to CNG's distribution system are initiated by customer demand and requests. As of January 1994 there are over 17,000 users of natural gas in CNG's service area. According to CNG studies completed in 1991, current peak demand is approximately 1,950,000 therms/day.

Proposed System

The location, capacity, and timing of these improvements depend on opportunities for expansion and on how quickly the Bremerton area grows. There are usually several possible routes to connect different parts of the system. The final routes taken will depend on right-of-way permitting, environmental impact, and opportunities to install gas mains with new development, highway improvements or other utilities.

CNG has an active policy of expanding its supply system to serve additional customers. The maximum capacity of the existing distribution system can be increased as required by one or more of the following:

- (a) Increasing distribution and supply pressures in existing lines;
- (b) Adding new distribution and supply mains for reinforcement;
- (c) Increasing existing distribution system capacity by replacement with larger sized mains; or
- (d) Adding district regulators from supply mains to provide additional intermediate pressure gas sources to meet the needs of new development.

Customer hook-up to the distribution system is determined by the WUTC pursuant to its rules. Connection to the system is driven by demand. This means that connections cannot be planned in advance; rather, connections are initiated by customer requests.

CNG's 20-year plan is to continue developing distribution systems and services to meet growth at lowest possible costs. Planned improvements include adding distribution elements when needed. Specific improvements in the Bremerton area include a 10-inch looping line. Existing distribution capacity will be tripled over the next three years with installation of a 37.5 mile long 16" line alongside the existing 8" line that brings supplies to the area from the south.

Electrical Utilities

Puget Sound Energy (formerly Puget Sound Power and Light) serves Kitsap County with electrical power. Power is moved through transmission lines, and voltage is lowered at transmission substations. Voltage is further lowered (stepped down) at distribution stations located in neighborhoods, and carried over distribution lines toward homes and businesses.

Existing System

There are three main access points for receiving power in Kitsap County: at Kitsap Bonneville Power Administration (BPA) 230/115 kiloVolt (Kv) Transmission Station located north of Gorst; at PSE's South Bremerton Substation - also north of Gorst" and Command Point Cable Station 115 Kv Line in Fragaria through underwater cables originating from Puget Power's O'Brien station in Kent.

PSE has divided Kitsap County into North and South subareas for planning purposes. Bremerton is in the North Kitsap subarea, which extends northward of Sinclair Inlet. From the Kitsap BPA station, 115 Kv delivery feeds into Puget Power's South Bremerton, Bremerton, and Valley Junction (east of Silverdale) 115 Kv switching stations. Power then flows from these switching stations through transmission lines to serve subarea distribution substations.

The existing electrical system within the city consists of the following:

- **Transmission Substation:** South Bremerton
- **Distribution Substations:** Bremerton; Sheridan; Rocky Point.
- **Transmission Lines (230kV)** BPA Shelton – South Bremerton
- **Transmission Lines (115kV):** South Bremerton-Valley Junction; Bremerton-Foss Corner; South Bremerton-Bremerton; O'Brien-South Bremerton; Bremerton-US Navy PSNS-BPA Kitsap.
- **Transmission Lines (other):** Presently, there are several de-energized transmission lines intended for future use.
- **Other utilities with facilities in Bremerton:** Bonneville Power Administration.

Existing Capacity

The power utilization factor of all distribution substations is at 81 percent in the North Kitsap subarea, with South Kitsap at nearly 75 percent utilization. The utilization factor is a comparison of current peak system load in Kitsap County during the winter heating season, divided by the design capacity of the substations in the County. The following table illustrates the capacity used during peak winter loads at Bremerton area distribution substations and in the North Kitsap subarea as a whole:

Table UT-2 Existing Capacity: Electrical Utilities		
Distribution Substations	Capacity (MVA)	Winter Load (MVA) (Dec. 21, 1998)
Bremerton	50	21.7
Rocky Point #1	20	15.5
Rocky Point #2	20	14.5
Sheridan #1	20	18.1
Sheridan #2	20	11.6
North Kitsap Subarea Total Loads = Utilization Factor = 81%	445	360.5
MVA = Mega Volt Amperes Source: Puget Sound Energy.		

The electrical system can be expanded as the area load develops. The joint BPA and PSE 230kV project, completed in 2002, is a direct response to the continuing load growth in the County. If additional loads do not develop, or develop more slowly than anticipated, the construction timing of individual projects is simply extended so that the overall plan completion date is deferred. If the electrical load stops growing altogether or decreases, no further construction would be necessary, except for facility maintenance and replacement needs. Likewise, if the load develops faster than anticipated, the timing of the construction of the projects can be accelerated.

Projected Needed Capacity

Puget Sound Energy's 2020 Electrical Facilities Plan for Kitsap County predicts a projected load level in Mega Volt Amperes (MVA's) of 483.7 for North Kitsap. This projected load will be revisited (most likely upwards) in the near future.

PSE's long-range plans are based on electrical growth projections anticipated for the years 2010/2020 and beyond. County population projections produced by the state Office of Financial Management (OFM) are used to determine new load growth for the next 20 years. Puget Sound Regional Council (PSRC) population and employment forecasts are used for load growth beyond 20 years. Projected load is calculated as the existing load, minus conservation reductions, minus demand side management, plus the forecast of new load.

The population and employment forecasts and their distribution produced by the PSRC are used to reflect land use activities, which in turn are used to develop a model for forecasting new load. The location of the population and employment increases is determined by the cities and counties. In Kitsap County, the population and employment is broken down into PSRC Forecast Analysis Zones (FAZ's).

Using these resources, PSE predicts a 223.1 MVA total load growth in the North Kitsap subarea by the year 2020. This forecast was made in mid-1995 and will be revised (most likely upwards) in the near future. (Note: Capacity is measured by MVA, which measures energy, whereas kV measures voltage.)

Proposed System

Puget Sound Energy has identified system and transmission improvements required to serve the forecasted load growth. Based on these system improvements, North Kitsap subarea utilization factor will maintain or slightly increase.

Many improvements are in progress or planned for the future; others have been identified as future improvements to meet the growth demand.

(a) System Improvements in Progress

South Bremerton-Foss Corner 115/230kV Line - These improvements will provide a transmission route from South-to-North Kitsap for a future 230 kV transmission system link between the South Bremerton and Foss Corner Switching Stations. The first leg of this long range project will start by constructing a 115/230 kV line between Bangor substation and Foss Corner. The major portion of the line south of Bangor substation, will be constructed on a right-of-way parallel to the Kitsap-Bangor BPA Line, which was purchased from the BPA.

(b) Future Transmission Improvements

Bremerton Substation Additions -- These additions will provide better protection for the Bremerton Switching Station 115 kV bus and reduce the exposure to faults on the South Bremerton-Valley Junction 115 kV Line. The line would be broken into two segments -- the South Bremerton-Bremerton #2 115 kV line and Bremerton-Valley Junction 115 kV line -- and terminates on separate breakers at the Bremerton Switching Station.

North Kitsap 230kV Plan - This plan will involve further development of Foss Corner 230 kV with additional 230 kV tie lines to points north of Foss Corner. The ultimate plan for Foss Corner includes 2-3 230 kV tie lines and a 230-115 kV transformation. The need for such a plan, based on current growth forecasts for the county, would most likely be triggered beyond the 2020 Planning horizon.

Westsound Transmission Reliability (Submarine Cable) - This project was initially planned to be completed in late 1990s. However, due to budget constraints and other issues, PSE pursued other cost-effective alternatives and deferred the project to future years.

(c) Future Distribution Substations

Werner -- This is one of eight new substations being considered for serving forecasted load growth in the North Kitsap subarea. The Werner Substation would serve new developments in the area south of Kitsap Lake and the west end of Werner Road. A loop-through of the South Bremerton-Bremerton 115 kV Line will be needed.

TELECOMMUNICATION SYSTEM

Telecommunications is the transmission of information by wire, radio, optical cable, electromagnetic energy, or other similar means. For the purposes of this element, telecommunications include telephone, radio communication, cellular telephone and cable television. Telecommunications is often referred to as the medium for the "information highway".

Telecommunication service is regulated by the WUTC, and is subject to various federal laws and regulations administered by the Federal Communications Commission. The telecommunications industry is required to provide service upon demand. Local laws and rules also exist with which telecommunication providers must comply, such as those governing land use and public rights of way.

Telephone

Bremerton is served by US WEST Communications, which has the largest service area in Kitsap County. US WEST's goal is to maintain its routes at 85 percent capacity. When usage exceeds 85 percent, additional facilities are planned, budgeted and installed. US WEST regularly evaluates the capacity of its facilities.

US WEST has approximately 77,000 access lines in Kitsap County. The projected growth rate in the service area for the next three years is approximately 4 percent per year. There is the possibility that this rate could change because of new service offerings. Forecasting beyond three years in a county and telecommunications environment with so much potential for change is very difficult. There are many projects planned to meet the projected growth. Some of these will increase capacity, while others will provide new service capabilities. The capacity increases include additional fiber optic and copper infrastructure in key growth locations, while new service capabilities include new switching technology in central offices and at remote locations.

Radio

Radio communication forms an integral part of an established communications system within Kitsap County. Public sector communications provides services for law enforcement agencies, municipalities, interagencies, fire departments, search and rescue organizations, the American Red Cross, departments of emergency management, Puget Power, medical administration, and maritime enterprises.

An emergency broadcast network has been in place for many years with links throughout the county. Alternative emergency communications exist which are designed to supplement or replace existing public safety communications during times of emergencies or disasters. Emergency communications may include the use of local radio stations and HAM operators who provide a link to federal and state emergency management personnel during emergencies or disasters.

Cellular

Cellular calls use signals to and from mobile phones. Cellular calls are routed by a series of low-powered transmitting antennas through a central computer called the Mobile Telephone Switching Office (MTSO), which connects the call to its destination. Transmitting antennas are located at "cell sites", and their coverage areas are known as "cells". A network of strategically placed antennas allows a "handing off" of the signal as the carrier of the phone travels.

Capacity overload and cellular system expansion is a response to several factors: an increase in the number of customers residing within a designated area; a shift in traffic volumes affecting cellular users; or a record of service inadequacies such as dropped calls or poor quality sound. In these cases, additional antennas are then planned, with site selection influenced by topography and other engineering constraints.

The Bremerton Area is served by two cellular providers: Cellular One and US WEST - New Vector Group.

Cellular One plans to construct four additional cell sites in Kitsap County during the next one to three years in order to increase and enhance coverage. No new sites are planned for the Bremerton area.

US WEST New Vector Group plans to construct eight additional cell sites in Kitsap County during the next one to three years in order to increase and enhance coverage. No new sites are planned for the Bremerton area.

Cable Television

Cable television service is delivered to customers through a complex series of electronic components and many miles of cable installed throughout the community. A central collection point, called a "headend", receives signals by satellite, microwave or broadcast antennas and converts them to VHF frequencies that correspond to those in the tuner of a television set.

Cable television companies are regulated by the Cable Television Consumer Protection and Competition Act of 1992 and enforced by the FCC. Cable companies must enter franchise agreements with local governments, who regulate service rates according to FCC guidelines and formulas.

The City has a "non-exclusive" franchise which allows any qualified cable television company to construct, operate and maintain a cable television system by use of City-owned rights-of-way.