

APPENDIX L

TECHNICAL REPORT ON

POPULATION, HOUSING, AND ECONOMICS

BP CHERRY POINT COGENERATION PROJECT

(REVISED)

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1.0 INTRODUCTION

This Technical Report addresses issues related to Population, Housing and Economics for the BP Cherry Point Cogeneration Project, as outlined in the Potential Site Study (PSS) issued by the Washington State Energy Facility Site Evaluation Council (EFSEC).

The report presents socio-economic baseline data and analysis for the area surrounding the project site, within a 50-mile radius, as recommended in the PSS. It includes a discussion of potential impacts to the local population, workforce, housing market and economy, for both the construction and operations phases of the project.

2.0 STUDY AREA DEFINITION

The entire Cogeneration Project, including the cogeneration plant itself as well as support facilities, the new transmission line, natural gas and water supply lines, and construction laydown areas, would be located on property that BP already owns at Cherry Point. The project would be constructed immediately adjacent to BP's Cherry Point Refinery (Refinery). Both the Refinery and the proposed Cogeneration Project are contained within the 6,500 acre area zoned for Heavy Impact Industrial use described as the Cherry Point Major Industrial Urban Growth Area/Port Industrial Zone in the Whatcom County Comprehensive Plan (1997). BP owns the land for 0.5 miles from the Cogeneration Project site in all directions.

The Cogeneration Project would occupy approximately 33 acres of the 2,500 acre property owned at Cherry Point by BP. The Cogeneration Project represents a conforming land use within the Whatcom County Comprehensive Plan. A stated goal of the Plan is to locate such projects away from population areas. Other industrial facilities within one mile of the project site are the Puget Sound Energy Point Whitehorn Generating Plant, the PRAXAIR Inc. industrial gas plant and the Chemco wood treating plant.

Several small communities and urban centers are located throughout western Whatcom County within a 25-mile radius of the proposed Cogeneration Project site. These include the cities of Bellingham, Blaine, Ferndale, Everson, Lynden, Nooksack and Sumas and the unincorporated community of Birch Bay. The Lummi Indian Reservation is 5 miles south of the site, and the Nooksack Indian Reservation is 23 miles east of the site. Further to the south, crossing into Skagit County, are the communities of Anacortes, Burlington, Mount Vernon, and Sedro-Woolley, as well as a number of smaller incorporated and unincorporated communities.

Several Canadian jurisdictions are within the 50-mile radius of the site, including the large cities of Vancouver and Victoria, British Columbia. The City of White Rock, the Corporation of the District of Delta, the City of Surrey, the Corporation of the Township of Langley, the City of Langley, and the City of Abbotsford are within a 25-mile radius of the Cogeneration Project.

The majority of construction and operations workers are expected to commute no more than 50 miles each way to work. It is possible that Canadian and U.S. workers would comprise the construction and operating workforces for the Cogeneration Project. However, past experience shows that the majority of workers would come from Whatcom or Skagit counties. Therefore, for the purposes of this technical appendix on Population, Housing, and Economics, the project study area has been defined as Whatcom and Skagit counties that have communities within this commuting distance of the project.

It is important to note that BP has a reputation as being actively involved in the community. BP encourages environmental stewardship as well as community involvement by its staff. The Refinery is the largest taxpayer and has been one of the largest employers in Whatcom County for the past 31 years (since 1971). BP also has a proven track record of responsible operations that safeguard employees and the environment.

BP has locally sponsored, and/or supported the many initiatives and programs, including the following:

- Fish habitat improvement, including removal of invasive weed species and riparian planting of native tree and shrub species within the Terrell Creek watershed, as part of the Nooksack Salmon Enhancement Project;
- Designation of the 180-acre Terrell Creek Conservation Easement on BP-owned land as a protection area for a blue heron colony, which BP monitors annually to evaluate and report on colony health;
- Construction of waterfowl habitat and food plots on BP-owned property north of Grandview Road, in association with Ducks Unlimited;
- Development of an interpretative site containing a diversity of native trees and shrubs off Jackson Road, which BP maintains in association with the Bellingham School District;
- Partnership with the Whatcom County PUD to supply and install solar panels on soccer fields in Bellingham;
- Construction of houses for low-income and under-privileged families in Ferndale, through the “Habitat for Humanity” program;
- Partnership programs with county school districts for science education;
- Music and art education programs with the Whatcom Symphony Middle School Outreach Program; and
- Sponsorship of athletic scholarships at Western Washington University.

In addition to these programs, BP is also an active participant with Whatcom County communities in promoting fund raising events through such organizations as the United Way, Red Cross, Literacy Council, and rotary clubs. These and other activities will continue during the construction and operation of the Cogeneration Project.

3.0 Population

3.1 Demographic Characteristics

The unincorporated town of Birch Bay is located about 2 miles north of the Cogeneration Project site. The City of Blaine is about 7 miles north of the Project site, Ferndale lies about 6 miles east, Lynden is about 13 miles east, and the largest city in Whatcom County, Bellingham, is about 15 miles south of the Project site. The communities of Nooksack and Sumas are 19 and 22 miles east of the Project site, respectively. The northern border of the Lummi Indian Reservation is 5 miles south of the project site, and the Nooksack Indian Reservation is approximately 23 miles to the east. Almost the entire population of Whatcom County lives in the western third of the County. The other two thirds of the County is largely National Park and National Forest, with few permanent residents. Whatcom County has 2.8% of Washington State's population.

The cities and communities around the project site each have their distinct characteristics. Blaine is a border town, attracting and catering to large numbers of Canadian tourists and shoppers. Birch Bay has historically been a summer resort, but has an increasing number of permanent residents. Ferndale is home to the heavy industrial area to its east, and one third of its residents work in these industries, but is also an agricultural center supporting dairy and berry farming. The Lummi Indian Reservation has an economy strongly linked to fisheries, including both shellfish and salmon. Lynden is a rural community originally settled by the Dutch, and maintains many traditions and structures from its past. Bellingham is the seat of local government and the cultural and educational center of the county.

Skagit County has a similar population distribution, with most of its population residing in the western third of the county, along an axis formed by Interstate 5. The largest center, Mount Vernon, is approximately 40 miles south of the Cogeneration Project, with Sedro-Woolley and Burlington just to the east and north respectively. Anacortes, the Skagit County's second largest population center, lies some 25 miles west of Mount Vernon, directly on the shores of Georgia Strait. Smaller incorporated communities are located east of Interstate 5 along Highway 20. Skagit County's population is 1.7% of the state total.

Table 1 presents population data from the U.S. Census Bureau [CB] for the year 2000 for Whatcom and Skagit Counties, with Washington State data provided for comparison purposes.

TABLE 1
Demographic Characteristics, Gender and Age Distribution

Jurisdiction	Population 2000	M /F Ratio %	Under 15 %	15 to 64 %	Over 65 %
Washington State	5,894,121	99.1	21.3	67.5	11.2
Whatcom County	166,814	97.2	19.9	68.5	11.6
Unincorporated	76,060	n/a	n/a	n/a	n/a
Incorporated	90,754	n/a	n/a	n/a	n/a
Bellingham	67,171	92.6	14.7	72.8	12.5
Blaine	3,770	94.5	22.1	64.5	14.4
Everson	2,035	93.3	30.4	60.9	8.7
Ferndale	8,758	96.5	27.5	63.0	9.5
Lynden	9,020	89.7	23.1	58.6	18.3
Nooksack	851	96.0	31.9	60.9	7.2
Sumas	960	97.9	27.5	62.4	10.1
Lummi Reservation ¹	4,913	101.1	25.5	64.9	9.6
Nooksack Reservation	547	93.8	39.2	56.7	4.1
Skagit County	102,979	98.0	21.5	63.9	14.6
Unincorporated	44,506	n/a	n/a	n/a	n/a
Incorporated	58,473	n/a	n/a	n/a	n/a
Anacortes	14,557	93.4	19.2	40.1	20.9
Burlington	6,757	97.6	25.6	63.1	11.3
Concrete	790	97.0	28.7	60.2	11.1
Hamilton	309	127.2	25.6	66.4	8.0
La Conner	761	82.5	16.0	62.6	21.4
Lyman	409	98.5	22.3	66.4	11.3
Mount Vernon	26,232	96.2	24.4	63.0	12.6
Sedro-Woolley	8,658	90.3	24.1	61.6	14.3

Source: CB, 2001a

The population densities of Whatcom County and Skagit County in 2001 are 80.5 and 60.0 persons per square mile, respectively (Office of Financial Management [OFM], 2001a). Both counties demonstrate a somewhat greater gender imbalance. Overall, the Whatcom County age distribution shows a similar pattern to that of the state. Skagit County has a larger percentage of its population in the over 65 age group overall. The data on individual communities demonstrate significant variation from county and state averages – the communities on the shores of Georgia Strait in Skagit County for example have over 20% of their populations over the age of 65.

Table 2 shows the racial composition of Whatcom and Skagit Counties and their major communities, along with corresponding data for Washington State. The data show that Caucasians make up 88.4% and 86.5% of the populations in Whatcom and Skagit Counties respectively, as compared to 81.8% for the State. Representation of other races, and Hispanics, is generally low across both incorporated and unincorporated communities in both counties, although Mount Vernon and nearby Burlington are more diverse, with a relatively high proportion of Hispanics and “others”.²

¹ The total population for incorporated communities does not include the populations of reservations, although the Census Bureau does report population data separately for reservations.

² The largest group in the “other” category for Skagit County is in fact non-white Hispanics, whose high numbers are reflected in both categories.

TABLE 2
Current Demographics, Race

Jurisdiction	Population 2000	White	Black	American Indian	Asian	Pacific Islander	Other	Two Or More Races	Hispanic ³
Washington State	5,894,12 1	81.8	3.2	1.6	5.5	.4	3.9	3.6	7.5
Whatcom County	166,814	88.4	.07	2.8	0.6	0.1	2.5	2.7	5.2
Incorporated	90,754	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Bellingham	67,171	87.9	1.0	1.5	4.2	0.2	2.2	3.1	4.6
Blaine	3,770	87.7	1.2	1.1	4.2	0.7	1.3	3.8	4.4
Everson.	2,035	85.1	0.5	2.2	1.0	0.0	8.0	3.2	18.3
Ferndale	8,758	84.8	0.8	2.6	2.4	0.3	5.3	3.8	9.0
Lynden	9,020	93.1	0.3	0.5	2.3	0.0	2.5	1.4	4.7
Nooksack	851	91.5	0.5	1.3	1.6	0.0	3.3	1.8	6.6
Sumas	960	86.1	0.0	3.2	4.2	0.0	4.8	1.7	7.8
Lummi Res.	4,193	43.6	0.4	50.4	0.5	0.0	1.1	3.9	4.1
Nooksack Res.	547	18.5	0.2	68.2	0.0	0.0	1.3	11.9	6.0
Skagit County	102,979	86.5	0.4	1.9	1.5	0.2	7.2	2.4	11.2
Incorporated	58,473	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Anacortes	14,557	92.7	0.3	1.1	1.6	0.1	1.5	2.6	3.2
Burlington	6,757	75.5	0.8	1.1	1.8	0.2	17.7	3.0	25.3
Concrete	790	92.8	0.0	2.5	0.9	0.0	1.1	2.7	2.7
Hamilton	309	91.9	0.0	3.6	0.6	0.6	1.6	2.3	2.9
La Conner	761	90.8	0.8	1.7	0.3	0.0	3.8	2.6	6.2
Lyman	409	95.6	1.0	1.5	0.2	0.0	0.0	1.7	0.7
Mount Vernon	26,232	75.4	0.7	1.0	2.6	0.2	17.1	2.9	25.1
Sedro-Woolley	8,658	92.0	0.3	1.6	0.8	0.1	3.2	2.0	7.2

Source: CB, 2001a

Table 3 provides some comparative data on race over the period 1990-2000 at the State and County levels. All racial groups have grown in absolute size, over the last decade, across the study area. But it is also clear from the data that the non-white and Hispanic groups have grown at very accelerated rates compared to whites. The growth is actually higher than it appears in the table because of the lack of a “two or more races” category in 1990. Therefore the values for 1990 and 2000 are not strictly comparable – the bias is towards making the 1990 numbers in the table larger than they would otherwise be.⁴

³ Hispanics are of any race, thus percentages total to over 100%

⁴ The 1990 and 2000 data at the city and town level are not strictly comparable for a second reason. Annexations and other municipal boundary changes over the period mean that some individuals not counted in a named jurisdiction in 1990 can be counted in that jurisdiction in 2000. Because most of these changes imply increased population for incorporated areas, the bias is towards making the change between 1990 and 2000 appear larger than it is.

TABLE 3
Demographic Trends, Race, 1990-2000

Jurisdiction	Total Population	White	Black	American Indian	Asian	Pacific Islander	Other	Two Or More Races	Hispanic
Washington State									
1990, number	4,746,161	4,209,664	139,797	79,049	206,655	14,671	110,996	n/a	206,978
% of total		88.7	2.9	1.7	4.4	0.3	2.3	n/a	4.4
2000, number	5,894,121	4,821,823	190,267	93,301	322,335	23,953	228,923	213,519	441,509
% of total		81.8	3.2	1.6	5.5	0.4	3.9	3.6	7.5
% change	24.2	14.5	36.1	18.0	56.0	63.3	106.2	n/a	113.3
Whatcom County									
1990, number	122,932	114,926	560	3,894	1,986	144	1,422	n/a	3,542
% of total		93.5	0.5	3.2	1.6	0.1	1.2	n/a	2.9
2000, number	166,814	147,485	1,150	4,709	4,637	235	4,159	4,439	8,687
% of total		88.4	.07	2.8	0.6	0.1	2.5	2.7	5.2
% change	35.7	28.3	105.4	20.9	133.5	63.2	192.5	n/a	145.3
Skagit County									
1990, number	77,945	72,758	204	1,650	697	60	2,576	n/a	4,238
% of total		93.3	0.3	2.1	0.9	0.1	3.3	n/a	5.4
2000, number	102,979	89,070	450	1,909	1,538	163	7,381	2,468	11,536
% of total		86.5	0.4	1.9	1.5	0.2	7.2	2.4	11.2
% change	32.1	22.4	120.6	15.7	120.7	171.7	186.5	n/a	172.2

Source: CB, 2001a and 2001c

Despite growth rates between 1990 and 2000 in the two counties of well over 100% for, as examples, Hispanics, Blacks, Asians and "others", growth is from such a comparatively small base that whites continue to make up a very large percentage of the total population. The two counties are less racially diverse than the State as a whole but both County and State populations are becoming increasingly diverse.

The exception to a strong pattern of growth for non-white populations is Native Americans, whose numbers are increasing at a slower rate than even that for whites. As a result, Native Americans represent a smaller proportion of the total population in 2000 than they did in 1990. And whereas in 1990 American Indians represented 48% and 31% of the non-white population in Whatcom and Skagit Counties respectively, by 2000 these figures had fallen to 24% and 13% respectively.

3.2 Population Growth Trends

Selected population growth data are presented in Table 4. Washington State's population increased 21.1% from 1990 to 2000 with faster growth occurring early in the decade. Population growth rates for the state of almost 3% in each of the early years of the decade decreased to 1.3% in 98/99 and 0.8% in 99/2000 (OFM, 2001b). On the basis of the most recent forecasts (OFM, 2001f), Washington State will grow over the next two decades at rates slower than those prevailing in the early 1990s, but faster than those at the end of that decade. Between 2000 and 2010, the State is expected to grow by 1,122,189 persons, for a percentage change over the decade of 18.8%. Growth during the following decade of 2010 to 2020 is expected to be 1,282,850, or 18.1%.

TABLE 4
Population Growth Trends

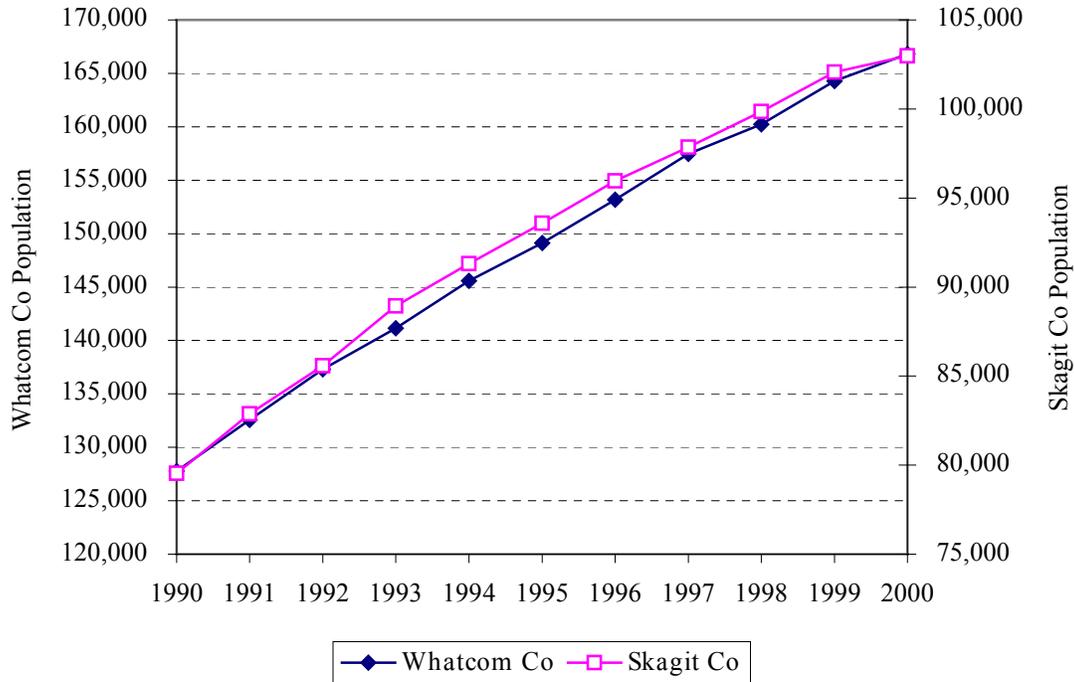
Jurisdiction	Population 1990	Population 2000	Change	% Change 1990-2000 Actual	% Change 2000-2010 Forecast	% Change 2010-2020 Forecast
Washington State	4,866,692	5,894,121	1,027,429	21.1	18.8	18.1
Whatcom County⁵	127,780	166,814	39,034	30.6	22.0	21.1
Unincorporated	59,187	76,060	16,873	28.5	n/a	n/a
Incorporated	68,593	90,754	22,161	32.3	n/a	n/a
Bellingham	52,179	67,171	14,992	28.7	n/a	n/a
Blaine	2,489	3,770	1,281	51.5	n/a	n/a
Everson.	1,490	2,035	545	36.6	n/a	n/a
Ferndale	5,398	8,758	3,360	62.2	n/a	n/a
Lynden	5,709	9,020	3,311	58.0	n/a	n/a
Nooksack	584	851	267	45.7	n/a	n/a
Sumas	744	960	216	29.0	n/a	n/a
Skagit County	79,545	102,979	23,434	33.8	21.3	21.8
Unincorporated	37,841	44,506	6,665	17.6	n/a	n/a
Incorporated	41,704	58,473	16,769	40.2	n/a	n/a
Anacortes	11,451	14,557	3,106	27.1	n/a	n/a
Burlington	4,349	6,757	2,408	55.4	n/a	n/a
Concrete	735	790	55	7.5	n/a	n/a
Hamilton	228	309	81	35.5	n/a	n/a
La Conner	686	761	75	10.9	n/a	n/a
Lyman	275	409	134	48.7	n/a	n/a
Mount Vernon	17,647	26,232	8,585	48.6	n/a	n/a
Sedro-Woolley	6,333	8,658	2,325	36.7	n/a	n/a

Sources: OFM, 2001f, for 1990 Population and Forecasts
CB, 2001a, for 2000 Population

⁵ Only the U.S. Census Bureau reports data on Indian Reservations specifically, therefore for this and many of the following tables, which present data from other sources data on the Lummi and Nooksack reservations, is not available.

CHART 4.1

Whatcom and Skagit County Population Growth



Source: Data shown in Table 11 of this appendix.

As can be seen from Table 4, Whatcom County population growth rate was 30.6% between 1990 and 2000. Chart 4.1 shows the corresponding population change each year throughout the decade. Over three quarters of this growth has been the result of in-migration, a response to the booming economy of the early 1990s (OFM, 2001c). There is, interestingly, not a pronounced trend for migrants to choose the cities. Over the period 1990-2000, the growth rates for incorporated and unincorporated parts of the State were comparable, particularly taking into account the incorporation of a population in excess of 2,500 (OFM, 2001d).

In Skagit County, the pattern of steady growth is repeated. Net migration accounts for almost 80% of this growth. There is pronounced growth in Mount Vernon and Burlington relative to smaller towns and unincorporated areas, which municipal boundary changes do not explain. Thus for both counties, population growth rates during the 1990s have been higher than that for the State as a whole.

Population growth forecasts were last published in 1995. The forecasts used high, medium and low scenarios. In Whatcom County, growth has in fact most closely followed the high scenario between 1990 and 2000. Using the high scenario, growth is forecast at 21-22% over the decades to 2010 and 2020, a rate of growth comparable to the last years of the 1990s. In Skagit County, actual growth to 2000 has most closely followed the medium scenario and if this scenario continues to prevail, growth will be in

the order of 21-22% as well. Slower population growth is attributed to both slowing of migration and an aging population.

Thus, although growth will slow over the coming years if forecasts are correct, it will continue to outpace that of Washington State. Further, the forecasts are comparatively outdated. There is some expectation within Whatcom County, for example, that recent rapid population growth will continue, in response to a some recovery in the economy after reduced demand in the large retail sector following the decline in the value of the Canadian dollar (Bellingham/Whatcom Economic Development Council [BWEDC], 2001b).

Using the high growth forecasts for Whatcom County and the assumed Cogeneration Project schedule, the population is expected to be 185,053 at the time of peak employment during the construction phase of the project in mid-2005. Using the medium growth forecast for Skagit County, the population is expected to be 114,082. These figures represent increases of 18,239 and 11,103 people or 10.9% and 10.8% over the 2000 populations, respectively ⁶.

The Cogeneration Project would become operational some eight months later, early in 2006. At a constant rate of annual growth in Whatcom and Skagit Counties of 1.9% and 1.8% respectively, the population of Whatcom County would grow by approximately 3,500 between 2005 and 2006 and of Skagit County by about 2,000 over the same period⁷.

3.3 Demographic Profile of Canadian Population

The population on the Canadian side of the border is unlikely to experience significant employment, housing or other impacts as a result of the construction and operation of the project.⁸ Nevertheless, information on the communities within a 25-mile radius of the Cogeneration Project is provided here ⁹. These include the Corporation of the District of Delta, the Corporation of the Township of Langley, and the cities of Surrey, White Rock, Langley, and Abbotsford. There are also First Nations reserves in the area.

Table 5 presents demographic data. Total population was 625,203 in 1996, the most recent year for which data has been reported. This figure does not include the estimated 1,416 people on the six First Nations reserves. Population in 2000 has been estimated at 687,662.

⁶ These figures are in fact slightly smaller than those published at the time OFM completed their last forecasts in 1995., because the forecasts as published have been amended to reflect the actual, rather than forecast, 2000 population.

⁷ These figures are in fact not published, but calculated from forecasts for 2005 and 2010, assuming a constant rate of growth over the period.

⁸ Although occasional shortfalls at the state level in particular crafts can result in a small number of Canadians working on construction projects on the American side of the border (Building Trades Council, 2001).

⁹ Given the travel time implications of the border, communities on the Canadian side of the border further than 25 miles from the project site would not, in effect, be within a one-hour commuting distance of the project.

Table 5
Canadian Demographics

Jurisdiction	Population 1991	Population 1996	Population 2000 (Est)	Density Per Km² 2000	Population Growth (%) 1991-2000	Visible Minorities	Visible Minorities (%)
The Corporation of the District of Delta	88,978	95,411	101,433	602	14.0	16,565	17.4
City of White Rock	16,314	17,210	17,371	3,406	6.5	790	4.6
City of Surrey	245,173	304,477	340,094	1,127	38.7	87,150	28.6
City of Langley	19,765	22,523	24,287	2,381	22.9	4,215	18.7
Corporation of the Township of Langley	66,040	80,179	89,351	295	35.3	1,380	1.7
City of Abbotsford	88,928	105,403	115,126	335	29.5	15,455	14.7
Total	525,198	625,203	687,662	607	30.9	126,971	20.2

Sources: BC Statistics [BCS], 2001a for population data
BCS, 2001b for forecasts
Statistics Canada [SC], 2001, for data on visible minorities

The Canadian side of the border is much more urban, densely populated, and ethnically diverse. Population growth rates have been comparable to those in Whatcom and Skagit Counties. The pattern has been very rapid growth over the first half of the decade, slowing during the second half.¹⁰ However, in the coming two decades, these communities just to the south and east of Vancouver are expected to grow faster in percentage terms than anywhere else in the province, largely as a result of a transforming economy – labor migration is forecast from areas dependent on resource extraction to the more heavily urbanized areas where a service-based economy offers more employment opportunity (BCS, 2001b). Growth rates in the lower mainland area of British Columbia are expected to exceed 2% annually in contrast to expectations that annual growth rates south of the border will be less than 2%.

¹⁰ This statement is based on forecast population for 2000 rather than measured population, the figures for which have not yet been released.

4.0 EMPLOYMENT

4.1 Major Industries and Top Employers

Table 6 provides data on employment by sector for Whatcom County. "Services" is the largest sector, with 24.8% of employment. Other strong sectors in the economy are retail trade, government and manufacturing.

TABLE 6
Employment by Sector, Whatcom County

SECTOR	WHATCOM				WASHINGTON	
	EMPLOYMENT ¹¹		% OF TOTAL EMPLOYMENT		% OF TOTAL EMPLOYMENT	
	1990	1999	1990	1999	1990	1999
Total Private	61,779	77,308	87.5	87.0	82.9	84.3
Agriculture, Forestry and Fishing	2,274	2,486	3.2	2.8	1.8	1.8
Construction ¹²	5,907	8,457	8.4	9.5	5.9	6.3
Manufacturing	9,415	10,135	13.3	11.4	14.0	11.3
Transportation and Public Utilities	2,443	3,408	3.5	3.8	4.6	4.7
Wholesale Trade	2,691	4,035	3.8	4.5	5.1	4.9
Retail Trade	15,582	17,402	22.1	19.6	16.8	17.1
Finance, Insurance and Real Estate	4,612	6,179	6.5	7.0	7.9	7.8
Services	18,855	25,206	26.7	28.4	26.9	30.4
Government	8,834	11,505	12.5	13.0	17.1	15.7
Total Employment	70,613	88,813	100.0	100.0	100.0	100.0

Source: Bureau of Economic Analysis [BEA], 2001

The Trade sectors demonstrated they were dependent on cross-border trade with Canada, which rises and falls with the exchange rate. Lower demand in these sectors, given the weak Canadian dollar from 1997 forward, constrained growth in the late 1990s. However, brisk population growth in the County has been a countervailing force, and retail trade has reportedly significantly recovered, now surpassing volumes achieved before the value of the Canadian dollar fell in 1997 (BWEDC, 2001b).

Table 6 also provides information to compare 1999, the most recent year for which sector data is available, with 1990, and to compare Whatcom County with Washington State. The data do demonstrate that although total employment is growing in agriculture, forestry and fishing and in manufacturing, the share of total economic activity of these sectors declined in Whatcom County over the decade to 2000. Qualitative information, as described above, suggests that the smaller share of retail trade in 1999 as compared to 1990 may have proved to be temporary.

¹¹ Employment figures in this table, and the comparable table for Skagit County, are taken from BEA because there is 1999 data available for both counties. WSESD, which also reports sector employment data, has 1999 data for Whatcom County and 1995 data for Skagit County

¹² Both Whatcom and Skagit Counties statistically group mining and construction sectors because of the very small numbers of miners in each county.

While the broad patterns of economic activity are comparable between the County and the State, agriculture, fishing and forestry, construction, and retail trade are more important economic activities in Whatcom County than in the State. Services and government take up significantly larger shares of the overall state economy than they do in the County.

WSESD (2001b) published projections on employment growth by sector for Whatcom County indicate that services and government will grow the fastest (and because these sectors also employ large numbers of people, they will grow the most in absolute terms as well), at rates over 16% over the five-year period 1998-2003. This is significantly higher than expected population growth over the same period. Construction and retail, two sectors closely aligned with population growth, are forecast to grow at an approximate rate of 10%, more or less equal to expected population growth. Other economic sectors will see growth rates of less than 5%.

The distribution of employment by sector is virtually identical in Skagit County, as the data in Table 7 demonstrate. (This table repeats the State level data for purposes of ease of comparison.) "Services" is again the largest sector, with 26.9% of employment. Other strong sectors are retail trade, government and manufacturing. And as is the case for Whatcom County, agriculture, forestry and fishing now provide employment for less than 5% of the Skagit County population.

Table 7

Employment by Sector, Skagit County

SECTOR	SKAGIT				WASHINGTON	
	EMPLOYMENT		% OF TOTAL EMPLOYMENT		% OF TOTAL EMPLOYMENT	
	1990	1999	1990	1999	1990	1999
Total Private	34,060	45,425	84.1	84.3	82.9	84.3
Agriculture, Forestry and Fishing	1,533	1,999	3.8	3.7	1.8	1.8
Construction	3,371	4,519	8.3	8.4	5.9	6.3
Manufacturing	4,941	5,838	12.2	10.8	14.0	11.3
Transportation and Public Utilities	1,782	2,154	4.4	4.0	4.6	4.7
Wholesale Trade	1,337	1,836	3.3	3.4	5.1	4.9
Retail Trade	8,798	11,162	21.7	20.7	16.8	17.1
Finance, Insurance and Real Estate	2,668	3,445	6.6	6.4	7.9	7.8
Services	9,630	14,472	23.8	26.9	26.9	30.4
Government	6,445	8,470	15.9	15.7	17.1	15.7
Total Employment	40,505	53,895	100.0	100.0	100.0	100.0

Source: BEA, 2001

Because the distribution of economic activity across sectors is so similar in Whatcom and Skagit Counties, the observations above on comparison over time and between county and state for Whatcom County largely hold for Skagit County. The one exception seems to be the comparatively larger role of government in the Skagit County economy.

Projections of employment growth by economic sector, as cited above for Whatcom County, are not available for Skagit County. However, it may be reasonable to expect

that the same patterns will be in evidence over the coming years, given the similarity in the economies of the two counties.

For comparison purposes, similar employment data by sector are presented for the Canadian population in Table 8. Data are collected and reported somewhat differently in Canada; therefore the comparison is indicative rather than strictly quantitative. The larger share in the economy of the government sector, for example, is at least partly explained by the fact that provision of health care, which accounts for approximately 10% of employment across the Canadian jurisdictions, is largely a government service in Canada.

Table 8
Canadian Employment by Sector

JURISDICTION	CORPORATION OF THE DISTRICT OF DELTA	CITY OF WHITE ROCK	CITY OF SURREY	CORPORATION OF THE TOWNSHIP OF LANGLEY	CITY OF LANGLEY	CITY OF ABBOTS-FORD
Total Private	79.2	74.2	81.5	79.7	80.3	79.5
Agriculture, Forestry and Fishing	2.6	1.3	3.1	6.0	2.1	9.9
Construction	6.9	7.6	9.5	10.9	9.5	9.3
Manufacturing	12.1	7.6	13.0	11.8	13.8	12.4
Transportation and Public Utilities	11.0	8.1	9.6	8.1	7.1	6.6
Wholesale Trade	6.9	5.6	6.0	7.2	7.0	4.9
Retail Trade	11.5	12.1	12.9	13.4	14.3	12.0
Finance, Insurance and Real Estate	6.9	7.0	5.8	4.8	5.6	4.5
Services	21.4	24.9	21.8	17.6	21.1	17.3
Government	20.8	25.5	18.5	20.3	19.6	20.5

Source: BCS 2001a

Despite the more urban, densely populated character of the Canadian side of the border, economic activity is again predominantly government, services, retail trade and manufacturing as it is in Whatcom and Skagit Counties. Although the order is slightly different than south of the border – again this is largely explained by the medical sector being counted as government rather than services.

Top Employers

BP is significant employer in Whatcom County, with 400 proprietary employees and an average of 400 contract employees. BP's use of contract maintenance employees peaks at 2,400 during periodic major maintenance activities every few years. Other top employers in Whatcom County are St. Joseph Hospital (1,700 full and part time employees), Western Washington University (1,292), Bellingham School District (1,200), Alcoa Intalco Works (925), and the Whatcom County government (700) (BWEDC, 2001a). These employers account for about 11% of the total county employment.

St Joseph Hospital is presently implementing an expansion program in order to better meet forecast increases in demand for hospital services (PeaceHealth, 2001). The Alcoa Intalco Works employment figure has been reduced by the shutdown of its production as a result of high electricity prices in 2000, but startup of portion of the Alcoa Intalco Works production line is currently in progress.

Significant full and part time employers in Skagit County are Affiliated Health Services (1,039), Skagit Valley College (790), Mount Vernon School District (638), Sedro-Woolley School District (590), Draper Valley Farms (500), Island Health Northwest (466), Brown and Cole, Inc, retail food (410), Skagit County government (408), Anacortes School District (374), and Skagit Valley Medical Center (354) (Economic Development

Association of Skagit County [EDASC], 2001a). These largest employers employ about 5,500 people, a third of whom work part time, and account for about 10% of total County employment.

Seasonal employment, predominantly by farms and agro industry, add other entities to the list of major Whatcom County and Skagit County employers. For example, EDASC reports that the Alf Christianson Seed Company had recently hired over 1,000 seasonal workers and Skagit County government had hired over 700 workers.

4.2 Employment and Wages

Tables 9 and 10 repeat some of the data on employment from tables 6 and 7, and introduce income data for Whatcom and Skagit Counties respectively. Washington State data are presented in both tables for comparison purposes. Available data for Whatcom County are from 1999 but for Skagit County employment data are from 1999 and wage data are from 1995. As a result the wage data for Whatcom and Skagit Counties are not strictly comparable. To provide some basis for wage comparisons, the last column in each table gives the percentage of state wage for a given year that each county's average wage represents.

Table 9
Employment and Wages, Whatcom County

SECTOR	EMPLOYMENT 1999	AVERAGE WAGE 1999	STATE AVERAGE WAGE 1999	% OF STATE AVERAGE WAGE 1999
Total Private	77,308	25,185	35,929	70.1
Agriculture, Forestry and Fishing	2,486	24,254	27,299	88.8
Construction	8,457	34,577	42,188	82.0
Manufacturing	10,135	30,903	40,690	75.9
Transportation and Public Utilities	3,408	32,062	43,532	73.7
Wholesale Trade	4,035	30,642	40,078	76.5
Retail Trade	17,402	17,113	22,581	75.8
Finance, Insurance and Real Estate	6,179	37,748	53,001	71.2
Services	25,206	20,485	29,785	68.8
Government	11,505	31,910	36,815	86.7

Source: WSESD, 2001c, for wage data
BEA, 2001, for employment data

In Whatcom County, wages are consistently lower than in the state as a whole, which is to be expected given the large urban concentration in Seattle/Tacoma and particularly the effect of the high technology industry there on average state wages. This is most obviously reflected in Table 9, and for Skagit County in Table 10 below, in data on the services sector. This sector shows the lowest wages at the county level relative to the state.

The comparatively high returns in the agriculture, forestry and fishing sector reflect the importance of high value commercial fishing, which generates average annual wages of over \$50,000. The construction industry pays an average wage second only to finance, real estate and insurance, a reflection of a highly skilled workforce.

Table 10
Employment and Wages, Skagit County

SECTOR	EMPLOYMENT 1999	AVERAGE WAGE 1995	STATE AVERAGE WAGE 1995	% OF STATE AVERAGE WAGE 1995
Total Private	45,425	22,209	27,448	80.9
Agriculture, Forestry and Fishing	1,999	17,119	14,527	117.8
Construction	4,519	31,319	29,865	104.9
Manufacturing	5,838	29,485	37,447	78.7
Transportation and Public Utilities	2,154	28,174	34,876	80.8
Wholesale Trade	1,836	25,674	33,094	77.6
Retail Trade	11,162	14,251	15,546	91.7
Finance, Insurance and Real Estate	3,445	22,719	32,149	70.7
Services	14,472	18,285	25,839	70.8
Government	8,470	27,361	30,833	88.7

Sources: WSESD, 2001g, for wage data
BEA, 2001, for employment data

Skagit County average wages are higher in all sectors than those of Whatcom as a percentage of state wages, but are still significantly lower than those that prevail in Washington State as a whole. This is to be expected, again because of the effect of the Seattle urban area on state figures. The exceptions in Skagit County are the agriculture and construction sectors, both of which are more highly paid than in the state as a whole. Higher average wages in agriculture are a function of high value commercial crops such as berries, and again the lucrative fishery. Construction wages may be comparatively high due to demand relative to the small numbers of available workers in combination with the characteristic high skills and unionization.

Table 11 provides a perspective on employment and income for the two counties over the past decade, and again provides some data on Washington State for comparison purposes. In Whatcom County population has steadily grown over the decade 1990-2000, but the participation rate has fluctuated and the labor force has grown 2/3 as quickly as the population. Although unemployment rates fell in the 1990, they have risen sharply in 2000 and 2001¹³. In Skagit County, the labor force has grown almost as fast as the population, which is a contributing factor to higher unemployment here.

¹³ 2001 unemployment figures are not, for obvious reasons, yet available. However Whatcom County is reported to be experiencing unemployment at over 6%, subsequent to the events of September 11th, which has had a particularly hard impact on Washington State (Business Pulse, 2001)

Table 11
Employment and Income, 1990-2000

Jurisdiction	Population	Labour Force Participation Rate	Unemployment Rate	Number Of Unemployed	Average Wage	Per Capita Income	Median Household Income¹⁴
Washington State							
1991	5,021,335	50.5	6.4	162,290	23,936	20,901	34,374
2000	5,894,121	51.7	5.2	158,458	37,038	30,380	50,152
% Growth	17.4	20.2 ¹⁵	n/a	-2.4	54.7	45.4	45.4
Whatcom County							
1991	132,576	51.9	6.5	4,472	19,866	18,125	32,001
1992	137,298	53.5	7.6	5,583	20,408	18,381	32,594
1993	141,156	53.3	7.8	5,868	20,735	18,487	32,821
1994	145,580	50.9	7.3	5,409	21,567	19,142	33,879
1995	149,114	52.4	7.2	5,626	22,354	19,718	34,605
1996	153,171	51.2	7.5	5,882	23,283	20,836	36,253
1997	157,460	50.0	5.9	4,645	23,909	21,536	37,676
1998	160,220	49.2	5.8	4,572	24,779	22,561	39,242
1999	164,282	50.1	5.2	4,280	25,594	23,228	39,703
2000	166,814	48.9	5.7	4,650	26,295	n/a	41,300
% Growth	25.8	18.6	n/a	4.0	32.4	28.2	29.1
Skagit County							
1991	82,882	48.5	8.3	3,336	19,481	18,696	30,748
1992	85,574	49.5	10.2	4,321	20,107	19,391	31,542
1993	88,938	49.6	11.2	4,941	20,403	19,757	31,698
1994	91,316	51.3	9.1	4,263	21,403	20,443	33,093
1995	93,584	52.0	8.9	4,331	22,219	21,299	33,598
1996	95,962	48.9	9.7	4,552	22,350	22,263	35,252
1997	97,848	48.9	7.1	3,397	23,339	23,259	36,909
1998	99,847	47.8	7.1	3,389	24,118	24,104	38,278
1999	102,071	49.5	6.3	3,183	25,541	25,184	39,998
2000	102,979	50.1	6.9	3,560	26,634	n/a	41,585
% Growth	24.2	28.6	n/a	6.7	36.7	34.7	35.2

Source: WSESD, 2001a, 2001b, and 2001c
 OFM, 2001e for income data

Unemployment rates have fluctuated with economic cycles in both counties over the decade. In each county, rates in 1999 reached levels as low as those seen in 30 years. Fluctuations arise because close to half of private sector workers are in sectors that are seasonal, cyclical or suffering from long term decreases in employment (WSESD, 2001d). Data from Whatcom County in 1997 demonstrate that at least in that year, women, blacks and Hispanics experienced higher unemployment than whites (WSESD, 2001d).

¹⁴ Figures for median household income for the year 2000 are forecasts

¹⁵ % Growth entry in this column is growth in the labor force, not the labor force participation rate

Whatcom County experienced an unemployment rate of 5.7% in 2000, representing approximately 4,500 unemployed persons. Skagit County had an unemployment rate of 6.9%, representing approximately 3,500 unemployed. In both counties, although the unemployment rate has fallen overall over the decade, rapid population growth has meant that the fall has not been sufficient to reduce the number of unemployed – they have in fact increased in number. In comparison, the statewide rate for Washington was 5.2% in 2000 and the total number of unemployed as fallen.

The average annual wage in 2000 was \$26,295 in Whatcom County, and a slightly higher \$26,634 in Skagit County, lower than the average of \$37,038 for Washington State. The per capita income in 1999 was \$23,228 in Whatcom County, and a slightly higher \$25,184 in Skagit County, again lower than the average of \$30,380 for Washington State. The same pattern is repeated for median household income (the income at which half of the households have a higher and half a lower income).

All three income measures have steadily increased over the decade, somewhat faster in Skagit than in Whatcom County. Tables 9 and 10 demonstrated that wages were generally higher as a percentage of state wages in Skagit than in Whatcom County, and the above tables suggest that income is growing faster here as well. In both counties, the wage and income growth rates have been much lower than in the state, indicating a widening gap. However this should be again interpreted in the context that the state figures are disproportionately affected by the phenomenal growth in the high technology industry in the Seattle area over the decade of the 1990s.

It is extremely difficult to compare income across international boundaries, currencies, and costs to the consumer of a typical basket of goods. Different social systems imply different requirements that need to be met out of earned income. Therefore, presenting income figures for Canadian communities in close proximity to the project site is not helpful. For purely indicative purposes however¹⁶, Table 12 presents information on median income as a percentage of state/province median income in both the United States and Canada. The Canadian jurisdictions are part of urban, densely populated urban conglomerations around Vancouver, and generally have higher median incomes than are average for the entire province of British Columbia. Whatcom and Skagit Counties have lower median incomes than does Washington State as a whole, whose income figures are strongly influenced by higher incomes in more heavily urbanized parts of the state.

¹⁶ The data for Washington State are for median household income in 2000, for British Columbia they are for median personal income for 1996.

Table 12
Median Income Indices

JURISDICTION	INDEX (%)
Washington	1.00
Whatcom County	.82
Skagit County	.83
British Columbia	1.00
Corporation of the District of Delta	1.23
City of White Rock	1.07
City of Surrey	.97
Corporation of the Township of Langley	1.04
City of Langley	1.17
City of Abbotsford	.91

Source: Calculated from WSESD data presented in Table 11 and from data available from BCS, 2001.

4.3 Project Construction Workforce and Trades

BP has developed preliminary manpower requirements for the construction phase of the Cogeneration Project assuming an early 2004 construction start date. During the 23-month construction period, monthly employment on site would average 372 people, with peak employment of 706 individuals. There would be a total labor requirement of 8,566 person months, equivalent to 714 jobs of one-year duration.

As Figure 1 demonstrates, the labor force will vary from month to month, rising fairly slowly from an initial core construction team of 45 people, who will mobilize the site, establish health and safety practices and emergency response procedures, work with BP on community relations and source local material and services. The workforce numbers will then rise as increasing numbers of craft workers are needed over a 12-month period to a peak of 706, and then fall over the remaining 11 months until in the 23rd and last month of construction when only 23 people will be employed on site.

Figure 1 Total Workforce Demand

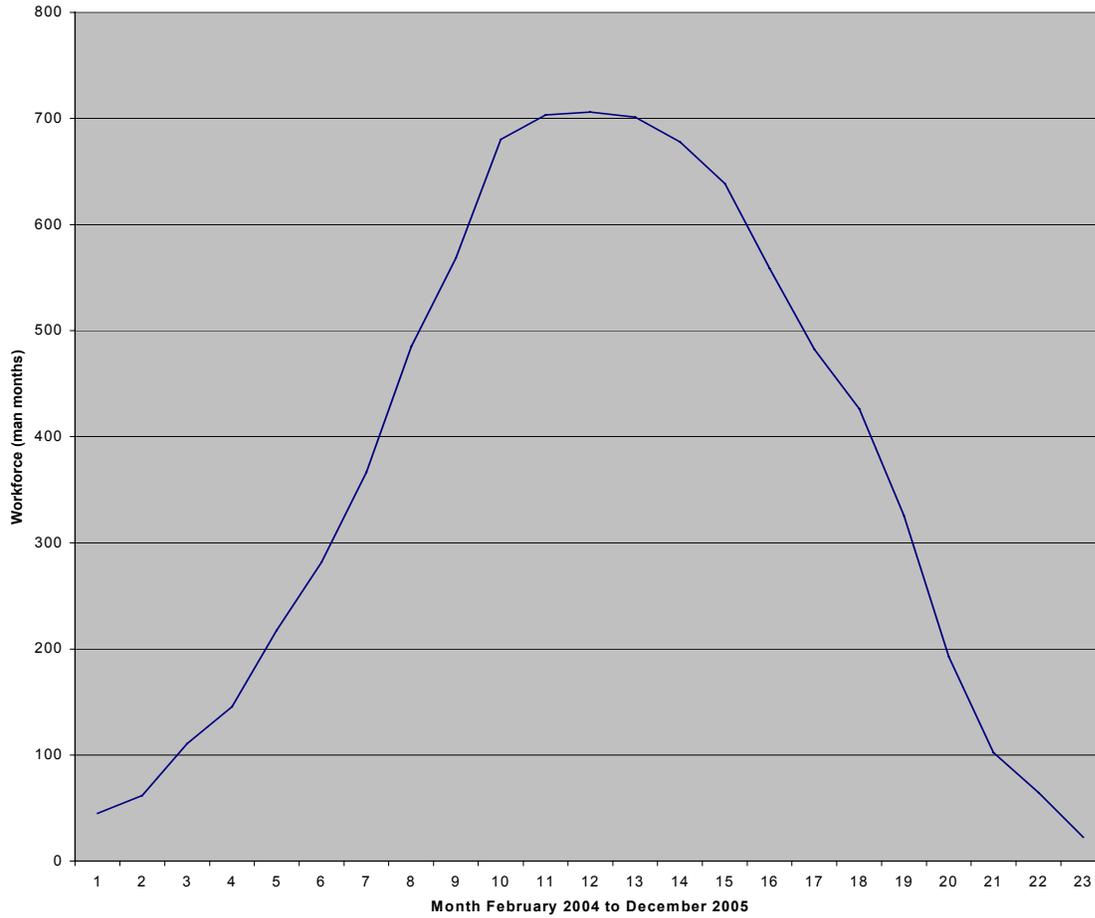


Table 13 provides information on labor force requirements by trade, and Figure 2 shows the distribution of craft and professional field staff over the construction period. Highest craft demand will be for pipe fitters, electricians, carpenters, millwrights and boilermakers in that order. Demand over the construction schedule for individual crafts generally follows that for total labor demand, although there are some departures from this pattern. Demand for carpenters and ironworkers tends to peak earlier for example, while painters and insulation workers are not required until the 19th month.

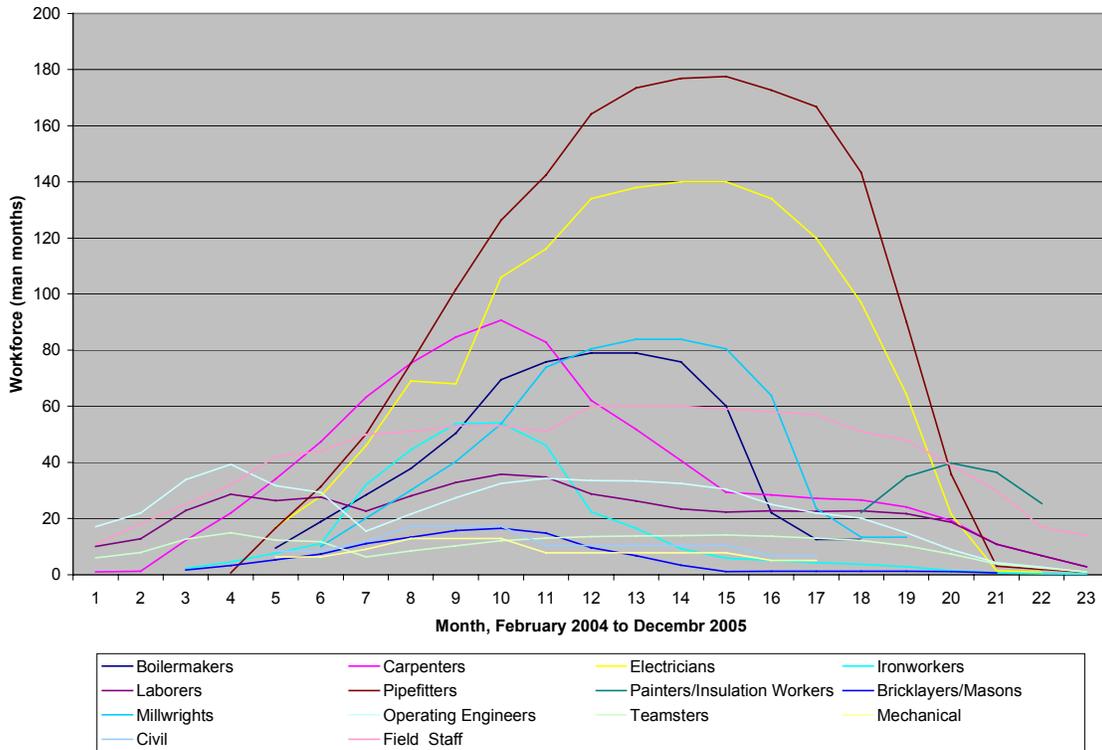
Table 13
Total Workforce Demand, by Trade

TRADE	PROJECT WORKFORCE (PERSON MONTHS)	PROJECT WORKFORCE (NUMBER OF JOBS)
Boilermakers	632	53
Carpenters	845	70
Electricians	1,441	120
Ironworkers	329	27
Laborers	512	43
Pipe fitters	1,851	154
Painters/Insulation Workers	159	13
Bricklayers/Masons	117	10
Millwrights	671	56
Operating Engineers	534	45
Teamsters	236	20
Mechanical ¹⁷	110	9
Civil	146	12
Field Staff	983	82
Total	8,566	714

Source: BP

¹⁷ The “mechanical” and “civil” entries in this table are undifferentiated trades associated with the construction of the natural gas component of the project.

Figure 2
Workforce Demand by Trade



The above numbers refer to direct employment. Such projects also create indirect employment, through disbursements made for materials and services required for construction. Weber and Howell (1982) have estimated that in non-metropolitan areas, such indirect employment can be calculated using a multiplier of 0.3, that is, for every 1 direct construction job, 0.3 of a job is indirectly created. A major reason for a comparatively low multiplier is that materials and services required for construction of large projects are not necessarily available locally (see discussion of construction costs in section 6.1).

Applying the 0.3 multiplier gives an approximate estimate for indirect employment in the study area of 2,600 person months, equivalent to 210 jobs of one-year duration over the life of the construction phase.

The Washington State Input/Output Model (OFM, 1987) provides an alternative multiplier¹⁸, which estimates not simply to the indirect employment in the area local to a given construction project, but to the total number of indirect jobs that such a project could create. This multiplier, of 1.667, would give an approximate estimate for indirect employment overall of 14,300 person months, equivalent to 1,200 jobs of one year duration over the life of the construction phase. Where these jobs would be created will

¹⁸ The wide range in multipliers derives from different methodologies, data sets and assumptions used in their calculation. In fact, multipliers as high as 2.6 have been applied to Washington State energy projects.

depend on the sourcing of procurement materials and other services related to construction. Given the expectation that the bulk of sourcing will occur outside of the study area and outside of the state, most of these jobs would also be created elsewhere.

Such projects are also important sources of induced employment, the employment that results from the increased economic activity that occurs when construction workers and local suppliers and their employees have increased disposable income as a result of the construction activity.

There is much experience in the study area with managing large temporary workforce requirements related to energy development. In 1999 for example, BP's Cherry Point refinery completed several large capital projects concurrently with peak maintenance turnarounds, with peak labor force requirements of approximately 2,400 individuals. In order to manage such requirements, BP works with other local oil refineries in order to schedule turnarounds and other major projects to stagger labor-intensive activity as possible, reducing potential labor constraints at the regional level.

This in turn implies that the construction workforce in the area experiences some moderation in peaks and valleys of demands for labor, and workers have more reasonable expectations of comparatively continuous employment than might otherwise be the case. Induced employment related to the construction industry is thus also more constant over time.

The result is better integration of construction activity into the local economy, with both indirect and induced employment responding to comparatively constant demand for services, albeit from different sources. Rather than mobilizing and demobilizing to service particular projects, the local economy and infrastructure is in place to absorb and respond to the requirements of individual projects. Swings in revenue are experienced by local businesses for example, and are important to the overall economic health of the county, but do not result in constant hiring and firing.

On this reasoning, induced employment to be expected from the construction phase is not considered to be significant, although already employed individuals and their employers are likely to experience increases in income.

4.4 Project Operation Workforce and Trades

During operation of the Cogeneration Project, BP anticipates employing approximately 30 staff on a permanent basis. The primary requirement will be for plant management staff, about one third of the prospective workforce, and for operations and maintenance technicians. The workforce breakdown by skill is shown in Table 14. Staff would work shifts to run the plant 24 hours a day for seven days a week.

Table 14
Operations Total Workforce

POSITION	WORKFORCE
Plant Manager	1
Business Manager	1
Business Analyst	1
Scheduler	1
Plant Engineer	1
Operations Supervisor	1
Operations Foremen	4
Operations Technicians	11
Maintenance Supervisor	1
Maintenance Technicians	6
Health and Safety Specialist	1
Controls Engineer	1
Total	30

Source: BP

The workforce requirement of the Cogeneration Project is based in part on the expectation that BP will operate the plant in association with its refinery operations at Cherry Point. Under this scenario, Refinery resources, including the Human Resource, Purchasing, Engineering, Inspection and Security units presently in place at the Refinery, would extend their services to the Cogeneration Project as well.

In addition to the permanent workforce, maintenance periods varying from two weeks per year to 18 weeks every six years would require additional workforce on a temporary basis, usually between 7 and 28 people per shift over the maintenance period. The maintenance schedule repeats on a six-year cycle, and over this period a total of 50 man months, (equivalent to four jobs of one-year duration) of maintenance work will be required.

Indirect employment as a result of the operation of the Cogeneration Project, using a multiplier of 0.7 on the basis of historical studies completed by Weber and Howell (1982), is estimated at an additional 21 jobs. The multiplier for operations is significantly higher than that for construction because the operations stage of the project implies a permanent increase in employment as opposed to the temporary employment of construction workers who might otherwise experience temporary unemployment.

4.5 Labor Availability

In 2000, the unemployment rate in Whatcom County was 5.7%, equal to 4,650 people and in Skagit County, 6.9%, equal to 3,560 people (see Table 11). In both counties the trend had been downward during the 1990s, but has increased substantially in 2001.

The claims for unemployment insurance by structural workers, which is the term used by the State of Washington for construction workers, represented 26.7% of all claims, equivalent to 2,881 workers in 1999-2000 in Whatcom County (WSESD, 2001f). Similar data for Skagit County is for the year 1996-97. The percentage of claims for unemployment by structural workers represented 25.9% of all claims, equivalent to 2,171 workers. Extrapolating from these not strictly comparable data, an estimate of

approximately 5,000 claims for the two counties would seem reasonable. By comparison, the proportion of unemployment insurance claims made by construction workers statewide in 2000 was 19.2%.

The share of claims by construction workers has stayed consistent with these percentages over the recent past (WSESD 2001d and 2001g). The high proportion of claims is due to the seasonal nature of construction employment; in which large employment increases and decreases in particular months of the year form an employment pattern.

The number of claims, the only published measure by which to estimate unemployment in the construction sector, does not necessarily equate to the number of unemployed construction workers. Claims can be made over short periods of time, until the next temporary construction job is found, and individuals may become unemployed more than once in a given year. The number of unemployed construction workers at any particular point in time, therefore, is considered to be significantly less than the number of claims, that is, significantly less than 5,000 people.

If it were 5,000 people, then the average construction workforce for the Project at 372 workers would be equal to 7% of unemployed construction workers in the two counties. The peak workforce at 706 workers is about 14% of unemployed workers. But the project's potential benefit regarding employment of construction workers is expected to be higher than these percentages suggest because the project is of comparatively long duration and will provide some security of employment to construction workers.

In 2000, there were 8,457 employed construction workers in Whatcom County and 4,519 in Skagit County, for a total of close to 13,000. The average construction workforce for the project at 372 workers is equal to 2.9 % of employed construction workers in the two counties. The peak workforce at 706 workers is equal to 5.5%.

As for the numbers on insurance claims, used to reflect unemployment, some caution is warranted with the data on employed construction workers. In neither case do the numbers describe only full time employment. Given the temporary nature of construction work, the same individual can both show up as "employed" (on a temporary contract for example) and "unemployed" (making a claim when that contract came to an end). Nevertheless, the numbers suggest that there is a sufficient construction labor pool in Whatcom and Skagit Counties to draw on for construction of the Cogeneration Project.

Table 15 shows projected demand in the study area for the trades required for the construction of the project over the period 2000-2008¹⁹. Demand is projected to grow at an annual rate of between 0.2% and 2.1%, depending on the particular trade, but will average 1.2%, over a construction workforce made of up the trades required for this Cogeneration Project (WSESD, 2001e). This is growth approximately equal to that projected for the labor force as a whole, but is higher than the annual growth rate in the number of unemployed.

¹⁹ These numbers are for four counties, of which Whatcom and Skagit are only two, but do make up 75% if the total population

Table 15
Projected Employment, 2000-2008

TRADE	EMPLOYMENT 2000	ANNUAL GROWTH RATE 2000-2008	ANNUAL GROWTH 2000- 2008 (JOBS)
Boilermakers	53	0.2	0.1
Carpenters	2,696	1.6	43.1
Electricians	1,297	0.9	11.7
Sheet metal	308	1.0	3.1
Laborers	2,241	1.6	35.9
Pipe fitters	100	1.4	1.4
Painters	959	0.5	4.8
Insulation workers	104	2.8	2.9
Bricklayers	149	2.1	3.1
Millwrights	217	0.4	0.9
Operating Engineers	117	1.2	1.4
Truck Drivers	1,859	0.9	16.7
Total/Average	10,100	1.2	125.1

Source: WSESD, 2001e

County labor force projections are not available over the period 2004 to 2005, when the Cogeneration Project is to be constructed. Population is forecast to grow at 10.8% in Whatcom County and 10.9% in Skagit County over the period to 2005. The annual growth of 1.2% in construction jobs shown in Table 15 above would produce a growth rate of 5.7% in jobs over the period to 2004, which could imply a bias towards increased unemployment in the construction industry if all other factors were held equal.²⁰ If this were the case, the Cogeneration Project would find labor available on the one hand, and provide a needed source of employment for unemployed workers on the other.

On the basis of the above, the conclusion is that general labor availability is not constrained. The local construction industry should be able to supply the largest fraction of workers. The demand for labor will be comparatively small relative to the:

- Size of the construction workforce;
- Frequency of unemployment insurance claims in the construction industry;
- Expected population (and imputed labor force) growth; and
- Expected demand in the construction industry.

Finally, not all construction jobs are skilled, and new entrants to the labor force as well as workers in other economic sectors are also a source of manpower.

There may be specific shortages, however, related to specific trades. Boilermakers and pipe fitters are in particularly short supply in Whatcom County specifically and in Washington State more generally. As has occurred in the past, local contractors may seek out-of-state tradesmen to work in these areas in the event that Washington state residents are not available in sufficient numbers.

²⁰ For example, labor force participation rates could grow less quickly than population, as they have in fact done in the past, or construction workers could move out of the area or the industry in response to events elsewhere in the state or the economy.

Labor availability for indirect employment is similarly unconstrained, given unemployment rates. As explained in Section 2.3 above, the construction phase of the Cogeneration Project has the potential to create at least 210 indirect jobs. This is significant employment creation, but a small number relative to the total number of unemployed in the two counties.

4.6 Relocated Labor

Whatcom and Skagit Counties have large skilled and available construction workforces; well-organized building trades unions located in Bellingham and Mount Vernon, and non-union employment centers. The skills called for are fairly typical of those employed in other local industrial projects over recent years. The expectation is that between 85 and 90% of the total construction workforce will come from the study area, and that the 10 to 15% balance, perhaps supplied through specialty contractors, would come from other parts of Washington and the western United States. This has been the pattern during scheduled maintenance turnarounds and capital projects which BP has implemented over the years, including projects that have required much larger workforces than called for in this project, and the pattern is not expected to change. Therefore, relocation of workers to the project area would not exceed 106 individuals at the project peak, and will likely average 56 people over the almost two year construction period. This calculation assumes the high estimate of 15% out-of-area hiring.

An alternative way of estimating relocating labor is to look at availability of local labor by trade required for the construction stage of the project. Table 16 looks at the Cogeneration Project construction labor requirements (data from Table 12 converted to person-years) in comparison with total employment in Whatcom, Skagit and two nearby counties for individual crafts (from Table 15). The comparison produces an indication of potential labor shortages by trade.

Again, caution is warranted because employment cannot necessarily be equated to skill availability. For example, construction of the Cogeneration Project will require the equivalent of 53 boilermakers to work for one year, and coincidentally 53 boilermakers in 2000 in the area were employed. The figures are not available on how many boilermakers were not working. However, it is unlikely that as many were unemployed as employed. The Building Trades Council (2001) in Whatcom County reports that there is a shortage of boilermakers both in the county and in Washington State, relative to demand. Also the figures in Table 16 are for generic trades and therefore cannot reflect the availability of very specialized skills within trades.

So the figures are considered indicative of a potential requirement to relocate particularly boilermakers and pipefitters, but also perhaps operating engineers and millwrights. This approach to estimating relocation would indicate a relocation requirement slightly higher, in the order of as many as 150 individuals.

Table 16
Labor Requirements and Employment

TRADE	CONSTRUCTION WORKFORCE REQUIREMENT (JOBS)	EMPLOYMENT 2000
Boilermakers	53	53
Carpenters	70	2,696
Electricians	120	1,297
Laborers	43	2,241
Pipefitters	154	100
Painters/Insulation Workers	13	959
Bricklayers	10	149
Millwrights	56	217
Operating Engineers	45	117
Truck Drivers	20	1,859

Sources: As above for Tables 12 and 15

The indirect workforce associated with the construction stage was estimated at 210 people in section 4.3 above. Whereas construction labor from outside of the study area will be directly recruited, this is unlikely to be the case for indirect labor. Indirect workers are more likely to be locally recruited by local businesses benefiting from increased expenditures by the construction workforce. Using a conservatively high estimate of 15% of indirect labor coming from outside the study area, this is equivalent to approximately 30 people.

Therefore, a total figure of 180 individuals, either direct or indirect workers, could potentially relocate to the study area during construction of the Cogeneration Project.

The operating workforce of 30 people for the Cogeneration Project is very small relative to the local population size. Local people, with the possible exception of specialized technical or management staff, are expected in many cases to fill the potential positions. Relocation due to the operational labor force requirements is not expected to exceed 10 individuals as direct hires, and 5 individuals as indirect hires, for a total potential of 15 during operation of the Cogeneration Project.

4.7 Relocated Labor Family Size

Depending on the type of employment offered workers who live out of commuting distance, the choice as to whether or not to relocate as a commuter on a weekly basis or as a resident in the project area, with or without family, will vary. For example, the construction schedule indicates that only 27 jobs will extend over the 10-month period from September 2004 to June 2005 that represents the school year. Families with children are considered unlikely to relocate unless their children can attend school for at least the full year. If 85% of these jobs will be filled by workers already resident in the study area, only 4 jobs would go to out of area workers who might relocate with their families. As another example, less than 10% of jobs during the construction phase will last for as long a one year, suggesting that relocating workers able to do so will prefer to commute on a weekly basis, leaving family behind. Of the estimated total of 180 direct and indirect hires that could relocate, 20 or fewer are expected to have family members with them.

Average household size in Washington State is 2.65 for house owners and 2.32 for renters. For Whatcom County the figures are 2.63 and 2.31 respectively, and for Skagit County 2.61 and 2.60 (CB, 2001). Using the State figure for renters, for those up to 180 workers who might be expected to temporarily relocate, if all out of area workers did relocate with their families this would represent an additional population of 414 people. If the expected 20 workers relocated with family members, the additional population would be only 46 people.

The movement of a maximum of 414 people into the project area is equivalent to an increase over the present population of Whatcom County of less than 0.25%, and to an increase of 0.23% of the population of Whatcom County's forecast for 2005. This maximum of 414 people also represents less than 2.5% of expected population growth in the County overall for the period 2000-2005.

However, it is unlikely even this very small number would in fact temporarily relocate, given the project's construction schedule. Thus any contribution of the project to temporary population growth in the County will be less than the above numbers suggest.

Any relocating operations personnel and associated indirect hires will move to the County permanently, and therefore may be expected to distribute themselves between owned and rental accommodation according to prevailing housing patterns. Using Washington State family size figures for owners and renters, the relocation of a maximum of 15 workers is likely to result in an increase in the county population of 38 people, representing an increase of .02% to the forecast population in 2005.

5.0 HOUSING

5.1 Housing Availability

In 2000, Whatcom County had a total of 73,893 housing units and Skagit County had 42,681. Both counties saw growth in housing stock comparable to population growth over the decade 1990-2000, although to a lesser degree for Skagit than Whatcom County. Housing is more likely to be privately owned in both counties and vacancy rates are, as expected, higher for rental properties than for owned properties. Housing data are presented in Table 17.

Table 17
Housing

JURISDICTION	TOTAL HOUSING UNITS 1990	TOTAL HOUSING UNITS 2000	% CHANGE 1990-2000	VACANCY RATE OWNERS	VACANCY RATE RENTERS	TOTAL VACANT UNITS	OWNER OCCUPIED	RENTER OCCUPIED
Washington State	2,032,306	2,451,075	20.6	1.8	5.9	79,694	64.6	35.4
Whatcom County	55,742	73,893	32.6	2.2	5.7	2,572	63.4	36.6
Unincorporated ²¹	27,189	35,358	30.0	n/a	n/a	n/a	n/a	n/a
Incorporated	28,553	38,412	34.5	n/a	n/a	n/a	n/a	n/a
Bellingham	22,114	29,474	33.3	2.3	4.6	1,029	48.2	51.8
Blaine	1,144	1,737	51.8	3.8	7.5	94	57.0	43.0
Everson.	567	727	28.2	1.7	7.0	25	66.8	33.2
Ferndale	2,057	3,292	60.0	1.6	6.4	107	65.6	34.4
Lynden	2,167	3,592	65.8	1.5	5.3	99	67.2	32.8
Nooksack	182	296	62.6	2.9	9.8	14	73.2	26.8
Sumas	322	401	24.5	5.6	19.7	48	54.0	46.0
Skagit County	33,580	42,681	27.1	1.9	4.7	1,173	69.7	30.3
Unincorporated	16,197	20,930	29.2	n/a	n/a	n/a	n/a	n/a
Incorporated	17,383	23,249	33.7	n/a	n/a	n/a	n/a	n/a
Anacortes	4,992	6,551	31.2	1.7	6.5	209	68.8	31.2
Burlington	1,816	2,531	39.4	2.4	4.4	87	48.7	51.3
Concrete	313	335	7.0	5.4	6.6	20	52.7	47.3
Hamilton	107	135	26.2	2.2	10.0	5	76.9	23.1
La Conner	332	434	30.7	3.3	18.1	43	55.1	44.9
Lyman	126	173	37.3	3.1	2.6	5	76.4	23.6
Mount Vernon	7,167	9,686	35.1	2.1	4.3	294	57.3	42.7
Sedro-Woolley	2,530	3,334	31.8	2.3	2.7	82	60.2	39.8

Sources: OFM, 2001c for 1990 and 2000 estimates for unincorporated and incorporated housing units
CB, 2001 for 2000 state, county and community housing units and for percentages

Based on calculations using the above vacancy rates, the total number of vacant units in Whatcom County is 2,572, of which about 1,400 (55%) are to be found in the incorporated communities, and over 1,000 of these are in Bellingham alone. Skagit

²¹ For 2000, because figures for unincorporated and incorporated areas are estimates by OFM they do not sum to actual county figures provided by CB.

County has 1,173 vacant units, of which 750 (64%) are found in the incorporated areas. Housing is, therefore, unlikely to be constrained relative to small relocating construction workforce. The numbers of relocating workers would likely not exceed 180 in total, and workers with families would likely not exceed 20. These numbers are not large enough to result in an accommodation shortage even if all relocating workers sought this type of accommodation.

From another point of view, rental housing will attract demand in preference to owner housing for what will be a temporary construction workforce. Again calculating from the vacancy rates in Table 17, approximately 1,500 (60%) units of vacant housing are rental property in Whatcom County and 600 (52%) in Skagit County. Relative to the expected number of relocating workers, there is no significant impact.

Over the past decade, housing construction in the study area has kept pace with population growth. Vacancy rates are in excess of the 4% threshold, which represents a balanced condition (US Department of Housing and Urban Development, 2001). Forecasts of somewhat slower population growth over the 2001-2020 timeframe may constrain new construction somewhat. But again, the small potential for significant numbers of families seeking rental accommodation will mean negligible pressure on the rental market.

In 2000, the average rent in Whatcom County for a two bedroom unfurnished apartment was \$588, slightly less in Bellingham at \$562 (CCI, 2001). Skagit County average rents are not available. They are expected to be somewhat higher than in Whatcom County. The median sales price for existing homes was \$151,800 in Whatcom and \$162,000 in Skagit County. The small number of potentially relocating workers cannot be expected to exert significant pressure on the price of housing stock in either county.

Temporary housing is widely available in Whatcom County, where most of weekly commuting or temporarily relocating workers are expected to seek accommodation. Over 120 facilities are to be found within a 25-mile radius of the project, including at least 21 bed and breakfasts and 15 RV parks. The over 30 hotels and motels, which are members of the Bellingham/Whatcom County Convention and Visitors Bureau (2001), have approximately 1,700 rooms, and there are an additional 30 non-member hotels in the area as well. Most of these facilities offer long-term rates. There are also more than 15 campgrounds available, although these are less likely to be used particularly during the winter when the largest fraction of relocating labor would be seeking accommodation.

5.2 Construction Workforce Housing Needs

As described above, the weekly commuting and temporarily relocating workforce is expected to seek accommodation in the immediate vicinity of the Cogeneration Project, which would not extend into Skagit County. At the peak of construction, a maximum of perhaps 150 construction workers, and another 30 people indirectly employed as a result of the project, could possibly be seeking accommodation at the same time, or a total of 180 including indirect labor. This number is small relative to local availability of accommodation. Much larger relocating workforces, associated with regularly scheduled maintenance turnarounds and capital project activities at BP's Cherry Point Refinery, have been accommodated locally in the past. Of the 180 potentially relocating workers, about 90%, or 160 individuals, are expected to seek temporary accommodation in

facilities such as hotels, RV parks, bed and breakfasts and campgrounds. The balance, approximately 20 individuals, could seek out rental properties

With an estimated total of over 4,000 rooms or other types of available short term accommodation in the project area, if 180 relocating workers sought this type of temporary housing, demand would still not represent 5% of supply. This figure is well within typical vacancy rates of over 10% even in the peak summer months. During the winter months when most of this demand will occur given present construction schedules, rather than exerting pressure on temporary housing, the presence of an out-of-area workforce will in fact benefit owners and employees of temporary accommodation facilities, insofar as they will help to reduce vacancy rates.

To the extent that a small number of workers may choose to bring their families, and seek rental accommodation for periods in excess of one year, existing rental stock within Whatcom County is more than sufficient to meet demand. Nor can this potential small increase in demand be expected to exert pressure on rents.

The very small number of potentially relocating permanent employees that will be required to operate the Cogeneration Project, and any associated relocating indirect hires, will have a negligible affect on local housing availability and prices.

6.0 ECONOMICS

6.1 Construction

At this stage of project definition, the total cost of the Cogeneration Project is estimated to be \$580 million, of which \$465 million would be spent for the materials, services and labor to construct the project and another \$115 million spent for project development, permitting, project management, owner's costs, taxes, contingency etc²².

Until BP finalizes its plans for construction and proceeds to hire an EPC contractor, actual wage rates to be paid for the construction of the project cannot be known. For purposes of this report, Golder has assumed that wage rates would approximate those wages paid in Whatcom County for construction workers.

Table 18 presents data on average wages in Whatcom County for those trades that construction of the Cogeneration Project will require. Average wages for Washington State are presented for comparison purposes.

Table 18
Mean Hourly and Annual Wages by Trade

TRADE	WHATCOM		WASHINGTON		PROJECT JOBS	TOTAL WAGES
	Mean (hr)	Mean (yr)	Mean (hr)	Mean (yr)		
Boilermakers	23.66	49,200	24.16	50,260	53	2,591,200
Carpenters	18.11	37,670	19.50	40,560	70	2,652,596
Electricians	20.61	42,880	21.99	45,740	120	5,149,173
Insulation Workers ²³	17.05	35,470	16.57	34,470	0	
Ironworkers	n/a	42,646	21.58	44,890	27	1,169,197
Laborers	16.95	35,250	16.71	34,750	43	1,504,000
Pipefitters	21.14	43,970	22.91	47,650	154	6,782,373
Painters	17.12	35,610	16.08	33,440	13	471,833
Bricklayers/Masons	n/a	46,712	23.64	49,170	10	455,437
Millwrights	n/a	42,190	21.35	44,410	56	2,359,096
Operating Engineers	17.82	37,080	21.85	45,440	45	1,650,060
Teamsters	15.59	32,420	16.63	34,600	20	637,593
Mechanical	19.84	41,261	21.45	44,609	9	378,226
Civil	19.84	41,261	21.45	44,609	12	502,009
Field Staff	23.66	49,200	27.44	57,080	82	4,030,300
Total					714	30,333,093
Average Wage	18.19	37,830	20.15	41,920		42,493

Sources: BEA 2001

Using the above labor wage rates, it is estimated that of the \$465 million estimated direct construction costs, Golder estimates about \$30 million would be paid as wages. The

²² [Estimated capital costs for the Cogeneration Project will fluctuate throughout its development as the design is finalized and equipment and labor is procured. For example, at present, the change from an air cooling system to the proposed water cooling system may reduce capital costs by approximately \\$30 million. When capital costs decrease or increase, associated economic and socio-economic impacts from the project will also fluctuate.](#)

²³ BP's construction manpower loading groups together painters and insulation workers. Therefore insulation workers are included in the count for painters. The average wages for the two groups are in fact virtually identical.

average project wage is expected to be significantly higher than the average Whatcom County wage of \$26,295.

The percentage of wages spent in Whatcom and Skagit Counties would be most strongly related to the percentage of the workforce that is resident there. Because these workers live in the study area, they could spend up to \$18 million in Whatcom and Skagit counties. The relocating workers, most of whom would be weekend commuters, are expected to spend most of their income in the area of their permanent homes. However, they will spend wages locally on accommodation, food and recreation. Golder estimates the amount of the total wages spent in Whatcom and Skagit counties would be on the order of \$19 to \$20 million.

Sourcing of equipment, materials, and services for the Cogeneration Project has not yet been determined, and cannot be known until tenders are let and the EPC Contractor selected. Given the nature of the project, however, some broad estimates can be provided at this time. Major equipment costs for the project, estimated at \$300 million, would likely be spent out of the study area and the state because suppliers of this equipment are located elsewhere in the United States.

The balance of direct construction cost is \$135 million, to be spent on services and materials related to, for example, architectural designs, engineering, construction of civil works, building materials such as paint, pipe and insulation, and construction management. A small percentage of this may be spent within the study area and State, in the order of 10% perhaps – equal to approximately \$13 million, but again most would likely be spent in other parts of the United States.

BP's total estimated project budget includes a further \$115 million in other costs, of which an estimated \$36 million is attributed to state and local sales, property and other taxes. An \$80 million allowance for Owner's costs and contingency is also provided for.

In summary, although it is not possible at this time to determine the precise percentage of project costs to be spent within the study area, it is estimated that over \$43 million would be spent within Washington State during the construction phase, not including taxes.

The estimate of taxes paid as a result of project construction takes into consideration sales and use tax on equipment and materials purchased, property taxes assessed as construction proceeds, but also sales and use tax resulting from indirect economic effects, or the increased economic activity that results from direct project related expenditures. Sales taxes are distributed over different administrative boundaries and are a function of both the structure of the sales tax regime and of the location of expenditure. Where purchases are made outside Washington State, a use tax is imposed at the applicable sales tax rate in the jurisdiction where the purchased article is first used.

Washington State imposes a 6.5% sales or use tax on products sold or used within the state and Whatcom County imposes an additional 1.1%²⁴. Because the Cogeneration Project is in an unincorporated area, the full amount of this 1.1% will go into county revenue. This total of 7.6% tax on the \$300 million in equipment purchases is equivalent to \$22.8 million, of which \$3.3 million will flow directly to Whatcom County and the balance to Washington State.

In addition however, of the \$135 million estimated costs for services and materials associated with construction, perhaps \$65 million of this will be for materials, which at the 7.6% tax rate would generate a further \$4.9 million in revenue of which \$700,000 would accrue to Whatcom County and the balance to the State.

The fiscal benefit to Whatcom County would be slightly higher than the \$4.1 million the above calculations suggest. State revenue, which includes the taxes paid on the Cogeneration Project, is in part distributed out to counties according to annual plans at the state level. And a Part of expenditures by construction workers as well as by individuals benefiting from indirect employment creation will be subject to applicable sales taxes that will accrue to both the state and the county. Washington State will also benefit from the range of taxes that are imbedded in the prices of consumer items purchased as a result of increased incomes as a result of the project, such as alcohol and gasoline.

In addition, property taxes are applied to construction sites on the basis of an evaluation of work completed to date in each year. The actual amount paid will depend not only on levy rates at the time the construction is underway, but also on the construction schedule relative to the timing of evaluation. The Cogeneration Project is expected to increase the total tax revenue to Whatcom County and the state by several million dollars (see the following section for further information on distribution of property taxes).

These taxes would be a one-time benefit to the County and state, and would be spread over two years. Sales and use taxes in Whatcom County are expected to be approximately \$8.2 million in 2002 (WC 2001c). This could represent, over two years, an almost 25% increase in Whatcom County sales tax revenue. Whatcom County property taxes are expected to generate \$154.8 million in 2002, thus the property taxes paid during the construction phase of the Cogeneration Project will be a significant addition to property tax revenue.

6.2 Operations and Maintenance

The average project wage is expected to be significantly higher than the average Whatcom County wage of \$26,295. As the positions for the operating plant are permanent, it is expected that all personnel would be residents of Whatcom County. The estimated annual payroll of approximately \$1,800,000 would for the most part, be spent in Whatcom County.

²⁴ Comprised of the 1% normally added to state tax by counties, plus an additional 0.1% "criminal justice" tax, as mandated by state law where such an additional tax has been approved by country voters.

In addition, temporary labor will be contracted, predominantly locally, for routine maintenance at an estimated cost of approximately \$200,000, for a total annual labor cost of approximately \$2 million.

Annual operation and maintenance costs, excluding the cost of natural gas, for the Cogeneration Project are estimated at \$18.2 million. Of this, about \$2 million is for labor costs as described above, \$6 million for materials related to maintenance and repair and for water and chemical costs. The potential for purchase of these materials in the study area is limited, and would not likely exceed 5% of the total. A further \$3 million would be spent on contractors hired to complete specialized maintenance activities that cannot be undertaken by permanent staff. Annual property tax to Whatcom County could be up to \$6 million, and insurance and other expenses would cost \$1.2 million.

Tax revenue during operations of the Cogeneration Project will derive from brokerage tax imposed on natural gas purchases, property taxes on the plant, sales and use taxes on materials purchased in the course of operating and maintaining the plant, and sales tax on expenditures by the 30 employees who will take up new jobs created by the project.

Washington State applies a brokerage tax of 3.852% on purchase of natural gas. BP estimates the Cogeneration Project would consume 39,240,000 to 46,110,000 MMBtu HHV of natural gas annually based on a plant utilization factor of 80-94%. Assuming a natural gas price of \$3.00 per MMBtu HHV, the annual cost of fuel would be \$118-138 million and the brokerage tax revenue accruing to the state would be \$4.5-5.3 million annually. This amount would vary with the price and volume of natural gas purchased.

In 2001 Whatcom County levied property taxes of \$149.7 million for property with an assessed valuation of \$11,547 million²⁵. The resulting average property tax rate was 1.292% of assessed value. Assuming an assessed value for the Cogeneration Project equal to its \$465 million construction cost, total assessed value of taxable property in the county would increase by approximately 4%. At the time of project completion, using the 2001 average tax rate, the property tax for the Cogeneration Project could be as much as \$6 million annually. Based on 2001 allocations, roughly \$0.7 million would accrue directly to Whatcom County, \$1.5 million to Washington State, and the balance of \$3.8 million to the county's school districts, fire districts, hospitals, water districts, port districts and to its incorporated cities. These numbers are approximate and will ultimately depend on decisions made by the Whatcom County assessor as to the assessed value of the Cogeneration Project.

Business and Occupation (B&O) and Public Utility taxes will be due to the state of Washington. The B&O tax is levied on the value of products at a rate of 0.484%. A Public Utility tax is levied on the basis of gross operating revenue of public and privately owned power firms at a rate of 3.873%. The total tax paid will depend not only on the tax rate, but on the available exemptions, deductions and credits associated with the operation of the Cogeneration Project as well as the volume of production, the location of sale of the energy, and the price of energy, all of which will also change over time. Nevertheless, these taxes are likely to be in the order of several million dollars.

²⁵ "2002 Annual Tax Booklet", Whatcom County Assessor
<http://www.co.whatcom.wa.us/assessor/taxinfo/taxbook/KWTXBKO2.pdf>

6.3 Overall Economic Benefits

Table 19 provides a summary of very indicative, conservative, economic benefits associated with the construction and operation of the Cogeneration Project. Actual economic benefits are expected to be greater. The table does not include the fiscal effects of indirect employment or of B&O and/or Public Utility taxes, the employment, income or fiscal effects of induced economic activity of the project, or taxes imbedded in sale prices of consumption items. The table also underestimates the benefits to Whatcom County as a result of distribution of state revenue, and does not include benefits to Skagit County as a result of employment of people from this county. The property tax paid during both the construction and operations phases could result in decreased levy rates, which would provide a benefit to ratepayers across Whatcom County.

Table 19
Indicative Economic Benefits

ECONOMIC/FISCAL BENEFIT	WHATCOM COUNTY	WASHINGTON STATE
Construction Phase		
Direct Jobs	606	108
Indirect Jobs	180	30
Increased Direct Wages (\$M)	25	5
Sales and Use Tax (\$M)	4	23.7
Property Tax (\$M)	6	2
Total Construction Jobs	786	138
Total Construction Taxes (\$M)	10	25.7
Operation Phase		
Direct Jobs	30	0
Indirect Jobs	21	0
Increased Direct Wages (\$M)	2	0
Sales Tax (\$M)	0.1	0.4
Brokerage Tax (\$M)	n/a	4.5-5.3
Property Tax (\$M)	4.5	1.5
Total Operations Jobs	51	0
Total Operations Taxes (\$M)	4.6	6.4-7.2

Note: Jobs are expressed in number of jobs of one-year duration, wages and taxes are expressed in millions of dollars. Washington State figures exclude Whatcom County benefits.

The Cogeneration Project will not place additional demands on local social service delivery infrastructure, and thus no impacts on government service costs either from project construction or operation have been identified. The Project is not expected to cause increased pressure on local recreation, fire, police, emergency, medical or educational services. In addition to the employment benefits, there are, as illustrated above, tax revenues that will accrue to both the County and State governments, thus the net fiscal balance will remain positive throughout the project life cycle.

In addition, it is to be noted that BP's intent in proceeding with this project is that it will, through ensuring a supply of energy at reasonable cost to the Refinery, contribute to the continued cost effectiveness and competitiveness of that facility. This in turn will help safeguard the existing employment of over 800 people and resulting socioeconomic benefits to Whatcom County and Washington State. Further, as described above in Section 2, BP plays an important social role in the county, through its memberships in

community organizations, sponsorships of social and community events and donations to non-governmental and cultural organizations.

7.0 ENVIRONMENTAL JUSTICE

7.1 Race

Data on racial distribution in the study area for 1990 and 2000 are presented in Tables 2 and 3 in section 2.1.

The Lummi Indian Reservation, with a population of 4,193 in 2000 (CB, 2001), 50% of whom identify themselves as American Indian, lies approximately 5 miles south of the project site. The Nooksack Indian Reservation, with a population of 547 in 2000 (CB, 2001), lies about 25 miles east of the project site.

7.2 Income and poverty

Data on per capita and household income in the study area for 1990 and 2000 are presented in Table 9 in section 2.2.

Whatcom County in 1997 had a poverty rate of 11.4%, equal to 17,650 people. Fifteen of the 39 counties in the state had lower poverty rates. The state average rate was 10.2%. Poverty rates for children (under 18) at both the county and state levels are half again as high, at 16.3% and 15.2% respectively (CB, 2001b).

Government does not publish poverty and income data by ethnic group at the county level. However, the U.S. Department of the Treasury (2001) uses census data to classify communities and census tracts throughout the country for purposes of eligibility for federal assistance programs under their responsibility. The Lummi Reservation has been identified as a “low income” census tract area, the criterion for which is that more than 20% of the population has income at less than that which establishes the national poverty rate. The Nooksack Reservation has been identified as a “distressed community”, meaning that more than 30% of the population has less than the income which establishes the national poverty rate and meaning that the unemployment rate is greater than 1.5% the national average.

The only other area in Whatcom County to be identified as either low income or distressed is the sparsely populated rural southwest corner south of Bellingham. It is clear therefore that the Indian Reservations are disadvantaged relative to the rest of country jurisdictions, to Washington State and to the Country, with poverty rates two to three times higher and significantly more unemployment.

7.3 Impacts on minority populations

Construction and operation of the Cogeneration Project will not displace any populations or settlements, including any low income or minority people. Nor will it have any disproportionately negative impacts on low income or minority people. On the contrary, construction and operation of the Cogeneration Project may create direct and/or indirect employment opportunities for minority populations.

8.0 MITIGATION

The Cogeneration Project will result in significant economic benefits to Whatcom County and the State of Washington. No mitigation measures are necessary with regard to impacts on population, housing and the economies of either the study area or the State of Washington because no adverse impacts to the population are anticipated.

9.0 CONCLUSIONS

Construction and operation of the Cogeneration Project will bring net overall social and economic benefit to Whatcom County, Skagit County, and the State of Washington:

- The project is more in the nature of an expansion of the Cherry Point Refinery and related facilities, which themselves are located in an area of heavy industrial activity, than it is an intrusion of a new facility into an area that does not have long experience of such operations.
- The construction industry is an important component of the local economy and experiences periods of temporary unemployment, which will be moderated by the implementation of a large construction project with employment of comparatively long duration by construction industry standards.
- BP's previous experience with larger construction workforces in the past, in combination with the availability of labor in the study area indicate that relocating labor that might exert pressure on local resources will be kept to numbers small enough to be easily absorbed.
- There are significant economic, social and fiscal benefits of increased employment during the construction but also during the operations and maintenance phases of the project.
- The project will help to ensure a reliable and economic source of power to the BP Cherry Point Refinery, reinforcing the economic and social role of BP in the Whatcom County community and Washington State.
- There are no negative social or economic benefits to minority or economically disadvantaged groups within the Whatcom County jurisdiction, but rather increased employment opportunities have the potential to benefit these communities.