Socioeconomic Report for the Lower Snake River Wind Energy Project

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Table of Contents

List of Tables

List of Figures

Socioeconomics

Affected Environment

Socioeconomic resources are defined as the people, economy, and institutions within this rural part of Southeastern Washington. The Wind Resource Areas where the turbines will be located straddle Columbia and Garfield counties. The demographic and socioeconomic data for these counties is presented along with select socioeconomic information for adjacent counties in Southeastern Washington. These other counties are also selectively profiled, where appropriate, because this region can potentially be impacted by various phases of the project.

Garfield County (land area of 710.5 square miles) is bounded to the north by Whitman County, (separated by the Snake River), to the west by Columbia County, to the east by Asotin county, and to the south by the Washington/Oregon border. Columbia County is located in between Garfield and Walla Walla. Whitman County lies to the north and the county is bounded by the state border to the south (see Figure 3).

Population and Housing

Population Levels and Trends

All Four WRAs

Columbia and Garfield counties are rural, sparsely populated areas. Table 1 shows the population levels, densities (persons per square mile) and recent annual growth rates.

Table 1 Population Levels, Density and Recent Growth

(Persons / sq. mile) [1]	Population Levels 2000	Population Levels 2008	Absolute Change 2000-2008	Average Annual Growth Rate, % 2000-2008
Columbia	**4,064**	**4,100**	**36**	**0.1%**
Unincorporated	1,279	1,240	(39)	-0.4%
Incorporated	2,785	2,860	75	0.3%
Dayton	2,655	2,730	75	0.3%
Starbuck	130	130	-	0.1%
Garfield	**2,397**	**2,300**	**(97)**	**-0.5%**
Unincorporated	880	775	(105)	-1.6%
Incorporated	1,517	1,525	8	0.1%
Pomeroy	1,517	1,525	8	0.1%
Combined County Total:	**6,461**	**6,400**	**(61)**	**-0.1%**
Washington	**5,894,143**	**6,587,600**	**693,457**	**1.4%**
Population Density (persons per square mile)				
Columbia	4.7	4.7		
Garfield	3.4	3.2		
Washington	88.6	99.0		

Source: Office of Financial Management, State of Washington
Note:
[1] Land area in square miles: Columbia: 868.8, Garfield: 710.5, Washington: 66,544

Columbia County's population has grown slightly since the 2000 Census, averaging 0.1% per year, while Garfield's has been declining (OFM, 2009a). In contrast, Washington's growth averaged 1.4% per year since 2000. Garfield and Columbia are comprised of mostly White populations (96.5% and 94% respectively), with a greater proportion of seniors (persons over the

age of 65) compared to the state. Within Columbia, Hispanics comprised 6.3% of the population, compared to 2% for Garfield and 12% for Washington (U.S. Census Bureau, 2009).

Both Garfield and Columbia counties have lost population since 1960. In 1960, Garfield's population level was 2,976. By 2008, the county had lost 469 residents to stabilize at a level of 2,300, a level representing 77% of the 1960 level (see Figure 1). Columbia's population has declined by 469 residents since 1960, and now stands at 4,100. In contrast, Washington State's population has more than doubled since 1960.

Figure 1 reflects certain key events that influenced the long run trends in population levels since 1960. For Garfield County, declines during the 1970s reflected the population returning to historic levels following completion of work on the Lower Snake River Project. In the late 1960s and early 1970s, the county's population ramped up quickly and peaked at 3,200 as workers and their families migrated to the area to complete the Little Goose and Lower Granite dam projects. Following the completion of these projects, the population declined again as workers left the area. In the early 1980s the national economic recession contributed to population losses. The population then stabilized at around 2,400 through the mid-1980s, then slid to as low as 2,248 in 1990 as the farming sector weakened. The population rebounded to 2,400 again as the broad-based economic expansion contributed to the level once again stabilizing at 2,300, and it has since remained at this level for the most recent decade (Garfield County, 2000).

The bottom portion of Figure 1 expresses the relative growth in population for Garfield, Columbia and Washington since 1960. Expressed as an index value, each County's subsequent year population level is compared to the original 1960 level. The figure shows that while Washington's population has doubled since 1960, Garfield and Columbia's populations have languished and declined to below this base period level. Table 2 shows the components of population growth between 2000 and 2008. The residual net migration is calculated by subtracting the natural increase (births less deaths) from the total population change.

Table 2 Components of Population Growth, 2000 – 2008

		Columbia	Garfield	Washington
1	2000 federal census population level	4,064	2,397	5,894,143
2	2008 population estimate	4,100	2,300	6,587,600
3	(3) = (2)-(1) population change, 2000-2008	36	(97)	693,457
4	Births, 2000-2008	34	(10)	9,847
5	Deaths, 2000-2008	14	2	5,254
6	= (4) - (5), natural increase, 2000-2008	21	(12)	4,593
7	= (3) - (6), residual migration, 2000-2008	15	(85)	688,864

Source: State of Washington, Office of Financial Management

Natural increases (births less deaths) have generally been trending downwards in the last few years for both Columbia and Garfield. These trends are attributable to a combination of lower birth rates coupled with the aging of the population. Both Columbia and Garfield recorded median ages of 45 in 2007, and are older communities (i.e., they have greater proportions of senior citizens compared to the State average). The proportion of Columbia's population aged 65 or greater was 18.5% in 2007, compared to 21.3% for Garfield. In contrast Washington State's population aged 65+ was 11.5% (2007) with a median age of 36. Residual migration (new arrivals less outflow) has been negative for Garfield, particularly since the start of the most recent economic slowdown and recession, and has contributed to the population level's declining

trend. For Columbia County, the last eight years have witnessed a negative natural rate of increase (i.e., deaths exceeding births) but positive residual net migration that has acted to offset the natural losses, and to maintain the population at stable levels (4,100).

Population Projections

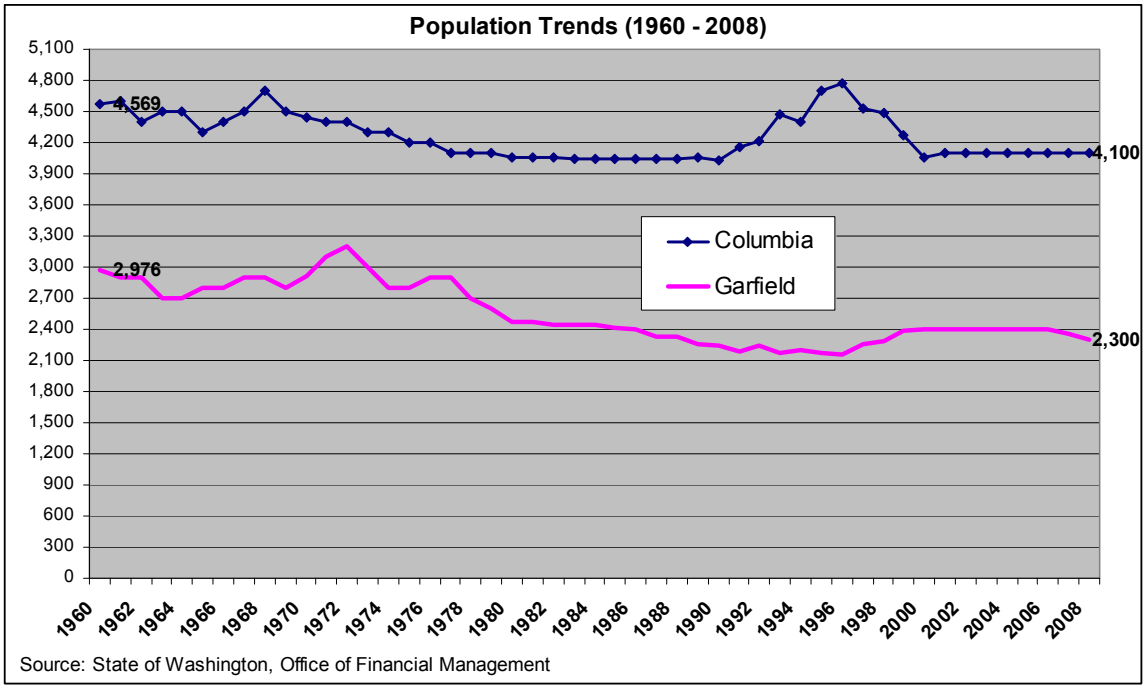
All Four WRAs

Table 3 shows the official population projections from the State of Washington (OFM, 2009). State Demographers expect Garfield's population to grow slightly out to 2030, while Columbia's population is expected to decline slightly.

Table 3 Population Projections

	2010	2015	2020	2025	2030
Levels					
Garfield	2,412	2,480	2,566	2,632	2,683
Columbia	4,103	4,096	4,096	4,096	4,088
Washington	6,792,318	7,255,672	7,698,939	8,120,510	8,509,161
Average Annual Growth Rates (%)					
Garfield	0.1%	0.6%	0.5%	0.4%	0.3%
Columbia	0.01%	-0.1%	0.0%	0.0%	-0.1%
Washington	1.7%	1.3%	1.1%	1.0%	0.9%

Source: State of Washington, Office of Financial Management



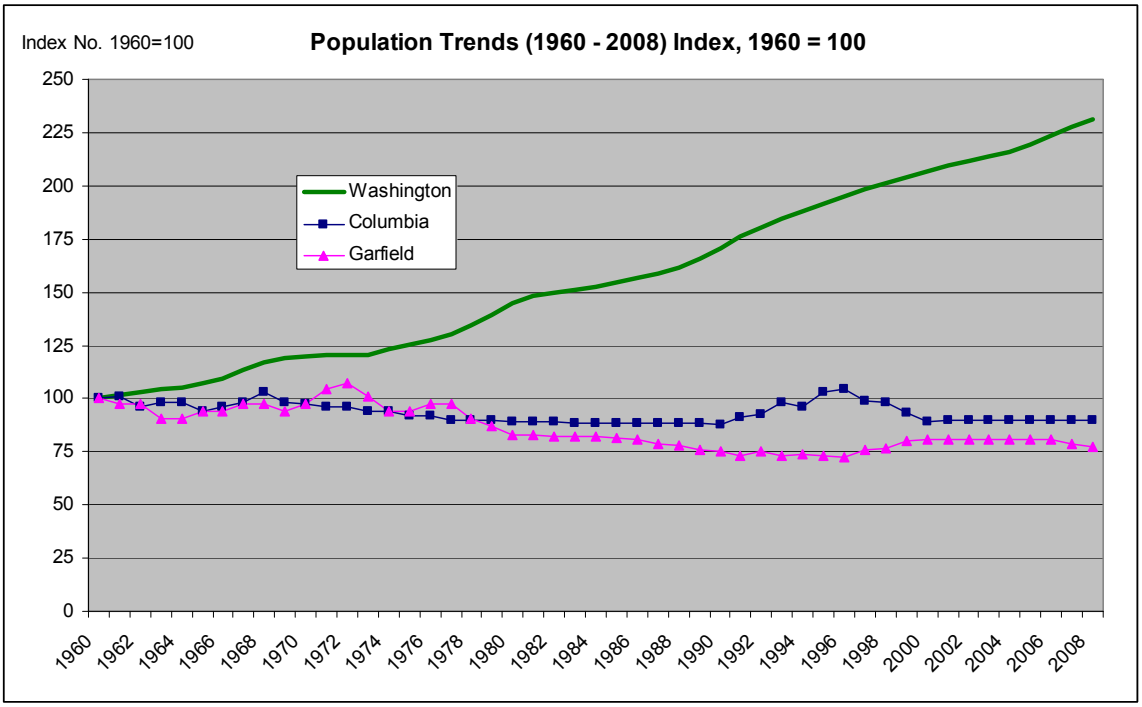


Figure 1 Long Term Population Trends

Housing

All Four WRAs

The quantity and quality of the existing housing stock, particularly the availability of temporary accommodations in the vicinity of the WRAs is necessary to assess the future impacts of temporary and permanent workforce migration to the region of influence during the construction and operational phases of the Project. The location of existing temporary accommodations is important in assessing the capacity of the area to accommodate construction workers, and also

for judging how far they may need to commute to WRAs. Table 4 provides a breakdown of the types of housing units by owner type and vacancy status from the Census 2000.

Table 4 Overview of Housing Stock – Census 2000 Comparison

	Garfield	%	Columbia	%	Washington	%
Total Units	**1,288**	**100.0%**	**2,018**	**100.0%**	**2,451,075**	**100.0%**
Occupied	987	76.6%	1,687	83.6%	2,271,398	92.7%
Owner occupied	730	56.7%	1,171	58.0%	1,467,009	59.9%
Rentals	257	20.0%	516	25.6%	804,389	32.8%
Vacant	301	23.4%	331	16.4%	179,677	7.3%
Distribution of Vacant Units						
For rent	28	2.2%	60	3.0%	50,887	2.1%
For sale only	38	3.0%	34	1.7%	27,255	1.1%
Rented or sold, not occupied	18	1.4%	41	2.0%	11,256	0.5%
For seasonal, recreational, or occasional use	149	11.6%	161	8.0%	60,355	2.5%
For migrant workers	3	0.2%	3	0.1%	1,197	0.0%
Other vacant	65	5.0%	32	1.6%	28,727	1.2%
Total Vacant	301	23.4%	331	16.4%	179,677	7.3%

Source: U.S. Census Bureau – Census 2000

Both Garfield and Columbia counties have a greater share of vacant housing units compared to the state average. The distribution of vacant units by type is shown in the bottom portion of Table 4. Garfield and Columbia also have significant numbers of vacant seasonal and recreational units within their borders.

Table 5 provides a breakdown of housing units by type and shows the growth in units since 2000. On average, Columbia County has added 19 units per annum, while Garfield has added about four units per year. Single family homes account for approximately 75% of the housing stocks for each county, followed by manufactured homes and trailers and multi-family units. Table 7 shows a count of hotels, motels, bed and breakfasts (B&B) and RV (recreational vehicle) and camping site locations in Columbia, Garfield and Walla Walla. The names and addresses of these facilities are also provided in Table 6.

Table 5 Housing Units by Type (2000 – 2008)

			2000 – 2008		Average Annual change	Average Annual change (%)
	2000	2008	Absolute change	Percentage change		
Columbia						
Total	2,018	2,170	152	7.5%	19.0	0.9%
One unit	1,581	1,638	57	3.6%	7.1	0.4%
Two + Units	156	182	26	16.7%	3.3	1.9%
MH/TRSpec[1]	281	350	69	24.6%	8.6	2.8%
Garfield						
Total	1288	1318	30	2.3%	3.8	0.3%
One unit	970	987	17	1.8%	2.1	0.2%
Two + Units	65	65	-	0.0%	-	0.0%
MH/TR/Spec[1]	253	266	13	5.1%	1.6	0.6%

Source: State of Washington, Office of Financial Management, 2008 Population Trends, Forecasting Division, September 2008

Notes:

[1] Manufactured homes, house trailers

Spec = Special housing Special (spec) housing: Unusual living quarters that are not intended for permanent living (e.g., travel trailers, recreational vehicles, boats, boxcars, tents). These are only counted as a housing unit when occupied as permanent living quarters by a person meeting resident criteria. That is, they have no other usual place of residence.

Table 6 Temporary Housing Accommodations in Vicinity of Project

Type	Name	Street Address	City
B&B	Maxwell House Bed & Breakfast the	701 Boyer Ave	Walla Walla
B&B	The Fischer House On Eagan	128 EAGAN ST	Walla Walla
B&B	Whispering Winds of Walla Walla B&B	454 Van Donge Ln	Walla Walla
B&B	Maggie's Garden Bed & Breakfast	714 Arlington	Pomeroy
B&B	The Ridge House	569 Mountain Road	Pomeroy
Hotel	Pataha Flour Mill Retreat Housing	98 Hutchens Hill Rd.	Pomeroy
Hotel	Rather-Be's Retreat Housing and Quilt Shop	382 Highway 12 E	Pomeroy
Hotel	Weinhard Hotel	235 E Main St	Dayton
Hotel	Marcus Whitman Hotel & Conference Center	6 W Rose St	Walla Walla
Motel	Pioneer Motel	1201 Main St	Pomeroy
Motel/Inn	Blue Mountain Motel	414 W Main St	Dayton
Motel/Inn	Dayton Motel	111 S Pine St	Dayton
Motel/Inn	A & H Motel	2599 E Isaacs Ave	Walla Walla
Motel/Inn	Best Western Walla Walla Suites Inn	7 E Oak St	Walla Walla
Motel/Inn	Budget Inn	305 N 2nd Ave	Walla Walla
Motel/Inn	City Center Motel	627 W Main St	Walla Walla
Motel/Inn	Colonial Motel	2279 E Isaacs Ave	Walla Walla
Motel/Inn	Comfort Inn & Suites	1419 W Pine St	Walla Walla
Motel/Inn	Elizabeth Inn	939 Bergevin Springs Rd	Walla Walla
Motel/Inn	Fat Duck Inn	527 Catherine St	Walla Walla
Motel/Inn	Green Gables Inn	922 Bonsella St	Walla Walla
Motel/Inn	Holiday Inn Express Walla Walla	1433 W Pine St	Walla Walla
Motel/Inn	Inn At Abeja	2014 Mill Creek Rd	Walla Walla
Motel/Inn	Inn at Blackberry Creek	1126 Pleasant St	Walla Walla
Motel/Inn	La Quinta Inn Walla Walla	520 N 2nd Ave	Walla Walla
Motel/Inn	Log Inn	526 Wellington Ave	Walla Walla
Motel/Inn	Super 8 Motel	2315 Eastgate St	Walla Walla
Motel/Inn	Travelodge	421 E Main St	Walla Walla
Motel/Inn	Walla Walla Inn	325 E Main St	Walla Walla
RV/Camping	Cameron Court Mobile Home Park	522 W Cameron CT	Dayton
RV/Camping	Tucannon River RV Park	511 Highway 261	Dayton
RV/Camping	The Last Resort RV Park	2005 Tucannon Rd	Pomeroy
RV/Camping	Golden West Estates	1425 Jasper St	Walla Walla
RV/Camping	RV Resort Four Seasons	1440 Dalles Military Rd	Walla Walla
RV/Camping	Fairway Rv Resort	50 George St	Walla Walla
RV/Camping	Blue Mountain RV Park	P0 Box 235	Pomeroy

Table 7 Summary/Tally of Temporary Housing Facilities by Location

Location	Motel/Inn	Hotel	Bed & Breakfast	Hostel	RV & Camping	Total
Dayton, Columbia County	2	1		0	2	5
Pomeroy, Garfield County	1	2	2	0	2	7
Walla Walla, Walla Walla County	17	1	3	0	3	24
Total	**20**	**4**	**5**	**0**	**7**	**36**

Source: Yellow Pages (queried April/May 2009), Welcome to Historic Pomeroy

Economy and Employment

The following section highlights key background information and data describing the economic base, the industries and sectors that make up the fabric of this region. The labor force, employment levels, unemployment rates and long-term trends in employment growth are provided to show how the region has evolved.

Labor Force, Employment and Unemployment

All Four WRAs

Table 8 shows the size of the respective labor forces, employment levels, number of unemployed and the unemployment rates. In terms of the recent decline in economic activity attributable to the recession, Garfield County has fared better compared to both Columbia County's and the State. While Columbia County's unemployment rate has improved slightly since peaking in March, there has been a noticeable decline in the labor force, meaning that people have stopped actively searching for jobs.

Table 8 Labor Force, Employment & Unemployment

	Labor Force	Employment	Unemployment	Unemployment Rate
Columbia County				
2006	1,492	1,365	127	8.5%
2007	1,512	1,414	98	6.5%
2008	1,576	1,465	111	7.0%
Jan-2009	1,725	1,525	200	11.6%
Feb-2009	1,739	1,522	217	12.5%
Mar-2009	1,642	1,419	223	13.6%
Apr-2009	1,542	1,353	189	12.3%
Garfield County				
2006	1,038	983	55	5.3%
2007	1,010	965	45	4.5%
2008	1,014	967	47	4.6%
Jan-2009	1,003	921	82	8.2%
Feb-2009	973	897	76	7.8%
Mar-2009	1,012	925	87	8.6%
Apr-2009	1,010	946	64	6.3%
Washington				
2006	3,319,593	3,156,995	162,598	4.9%
2007	3,391,248	3,237,358	153,890	4.5%
2008	3,476,766	3,290,993	185,773	5.3%
Jan-2009	3,516,751	3,215,240	301,511	8.6%
Feb-2009	3,551,621	3,226,802	324,819	9.1%
Mar-2009	3,538,848	3,200,121	338,727	9.6%
Apr-2009	3,521,019	3,203,128	317,891	9.0%

Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Rates

Figure 2 shows the trends in the unemployment rate since January of 2007. Economic activity started to decline rapidly in the fourth quarter of 2008. By February of 2009, Columbia County's unemployment rate had increased to 12.5%, while Garfield's unemployment rate rose to over 8%. Unemployment rates peaked in March 2009 and have since declined slightly. Garfield's unemployment rate has been below the state average since Q1 2008.

Employment by Industry and Wages

The Washington State Employment Security Department provides data on employment by industry and wages (by North American Industrial Classification Codes or NAICs) for employment covered under the state unemployment insurance program. Table 9 shows a comparison for the industry sectors for Columbia, Garfield and adjacent counties comprising the Southeastern Washington corner. Employment and wages for the adjacent counties are also profiled because these communities have the potential to contribute resources in support of the construction and operational phases of the Project. In addition, resources from this larger region may also potentially be tapped to build and operate the wind farm or to provide temporary or permanent housing accommodations.

Columbia and Garfield's economies are more dependent on a few key sectors compared to other counties and the state. This lack of diversity within the economic base is apparent in the above table that shows employment concentrated in fewer sectors compared to surrounding counties and the state. Figure 3 shows the immediate adjacent counties that could potentially be sourced for labor inputs and other resources in support of the construction and operation of the Project.

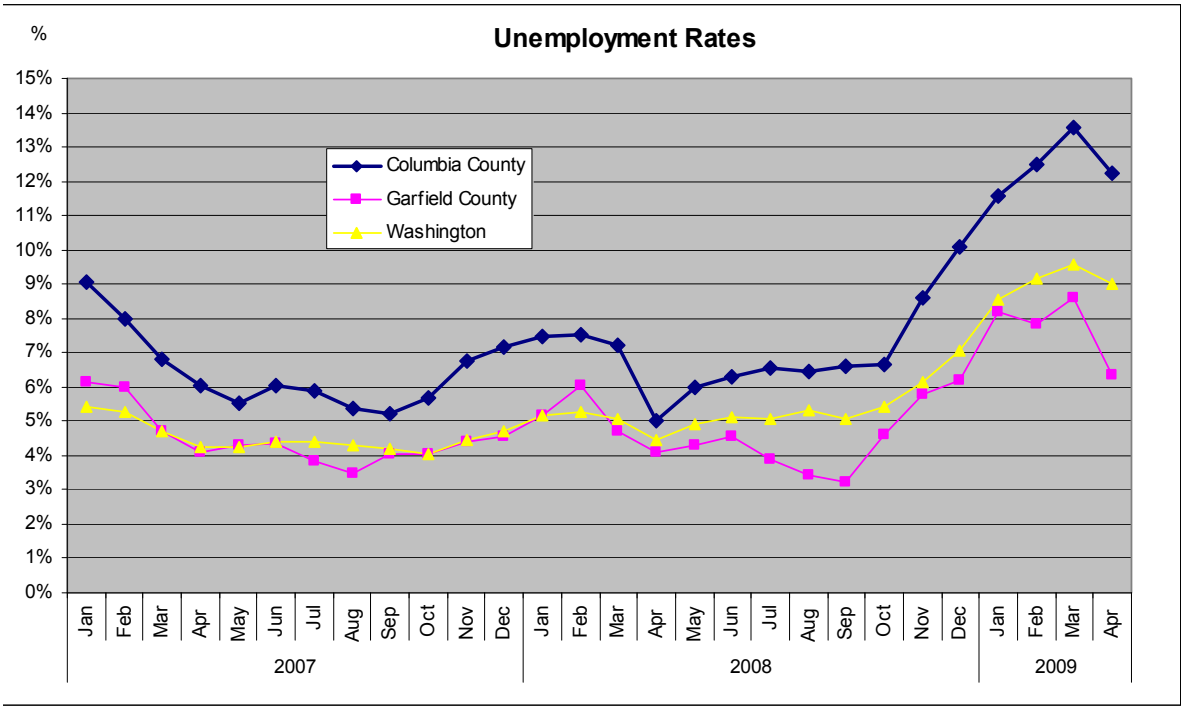
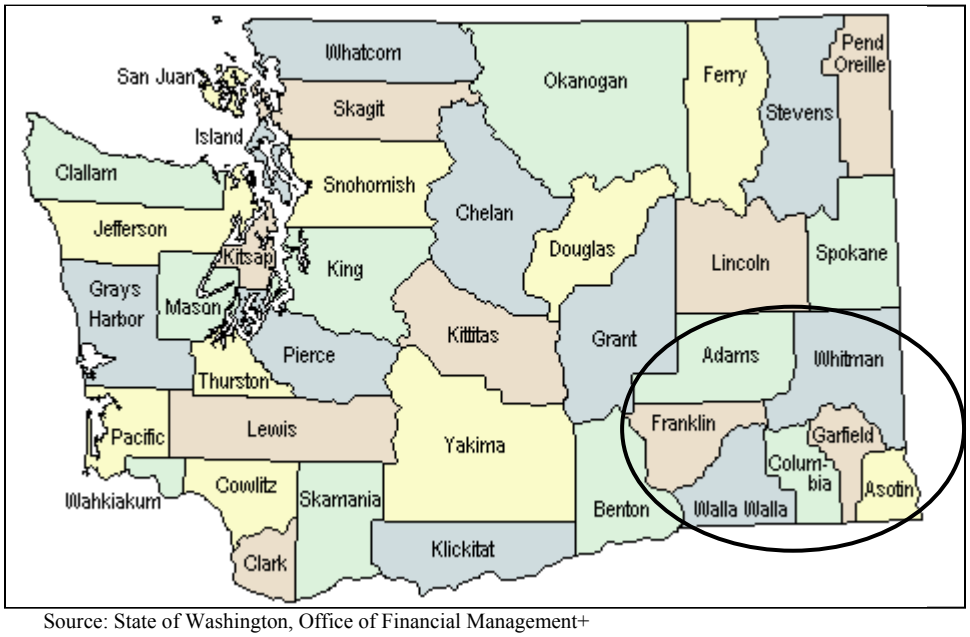


Figure 2 Unemployment Rates



Source: State of Washington, Office of Financial Management+

Figure 3 Counties in Southeastern Washington State

Table 9 Average Employment Levels by Industry (Q3 2008)

NAICS Code	Industry	Columbia	Garfield	Adams	Asotin	Franklin	Whitman	Walla Walla	Group Subtotal:	Washington	Group Subtotal as % of Washington.
	Total	**1,361**	**874**	**7,351**	**5,764**	**29,112**	**16,848**	**27,672**	**88,982**	**3,004,231**	**3.0%**
11	Agriculture, forestry, fishing and hunting	193	62	1,799	79	6,433	543	4,306	13,415	110,716	12.1%
21	Mining	*	0	0	*	*	*	*	0	2,961	0.0%
22	Utilities	*	*	*	*	*	*	*	0	4,948	0.0%
23	Construction	107	17	124	519	1,779	456	1,174	4,176	193,719	2.2%
31-33	Manufacturing	183	*	996	429	3,260	*	3,368	8,236	293,072	2.8%
42	Wholesale trade	59	121	374	82	1,752	662	764	3,814	127,388	3.0%
44-45	Retail trade	76	56	590	800	2,575	1,232	2,530	7,859	321,538	2.4%
48-49	Transportation and warehousing	*	6	336	*	883	255	346	1,826	86,225	2.1%
51	Information	7	*	40	25	212	167	466	917	106,604	0.9%
52	Finance and insurance	26	16	69	125	302	246	702	1,486	98,929	1.5%
53	Real estate and rental and leasing	5	0	35	81	541	274	186	1,122	50,285	2.2%
54	Professional and technical services	18	4	43	158	599	241	373	1,436	161,069	0.9%
55	Management of companies and enterprises	*	0	0	*	0	15	*	15	34,918	0.0%
56	Administrative and waste services	*	0	73	103	817	102	515	1,610	148,754	1.1%
61	Educational services	*	0	*	7	146	10	908	1,071	30,876	3.5%
62	Health care and social assistance	49	*	508	867	1,920	1,309	3,617	8,270	310,623	2.7%
71	Arts, entertainment, and recreation	*	0	*	141	378	157	272	948	51,170	1.9%
72	Accommodation and food services	63	46	500	628	1,575	1,307	1,568	5,687	239,965	2.4%
81	Other services, except public administration	71	17	266	284	1,186	271	1,065	3,160	119,808	2.6%
	GOVERNMENT	440	509	1,560	1,163	4,683	8,019	5,372	21,746	510,663	4.3%
	Federal Government	66	136	41	61	531	277	1,130	2,242	71,206	3.1%
	State Government	51	20	68	122	945	5,779	1,857	8,842	126,877	7.0%
	Local Government	323	353	1,451	980	3,207	1,963	2,385	10,662	312,580	3.4%
	NOT ELSEWHERE CLASSIFIED	64	20	38	273	71	1,582	140	2,188		

Source: State of Washington Employment Security Department
Note: * Employment and wages not shown to avoid disclosure of data for individual employer.

The most important employment sectors for Columbia and Garfield are the Government (federal, state, & local) sectors. The relatively high shares of government employment (32% and 58% respectively) reflects the need to provide public services and to maintain and adequately staff public assets such as schools and hospitals in rural areas. The large share of federal government employment reflects the presence of the U.S. Army Corps of Engineers (which operates the Lower Snake River dams) and the U.S. Forest Service (which oversees the Umatilla National Forest). Local government is primarily K-12 education and county and municipal functions. Wholesale trade is also important to Garfield (14% of average Q3 2008 employment). Within the wholesale trade sector, most employment is concentrated within farm machinery and supplies and grain brokerage (GCCP 2008).

Agriculture employs approximately 9% of the workforce in Columbia and 6.4% for Garfield. Construction and manufacturing are relatively important to Columbia and account for 12.2% and 11.5% of employment respectively. For Garfield, the wholesale and retail trade sectors employed a combined 22% of the total employment compared to 15% for Washington and 10.5% for Columbia County. The combined construction employment for the southeastern counties was close to 4,200 in Q3 2008. Agricultural employment in the region was 13,415 and accounted for 12% of the State's total employment in this sector. Table 10 shows the corresponding wages for the industries highlighted in Table 9. The Q3 2008 average wages were annualized by multiplying the Q3 2008 average wages per employee by a factor of four.

The average annual wage levels for all industries combined were $35,557 and $34,016 for Columbia and Garfield respectively. These wages were below the State average of $47,000, but above the southeastern county regional average of $32,584. In Columbia, the construction, manufacturing, wholesale trade and government sectors pay some of the highest wages in the county. In Garfield, wholesale trade, government and finance were the relatively highest wage paying employment sectors.

Long-Term Employment Trends

All Four WRAs

The long-term trajectory of total employment levels by county and state show that Columbia and Garfield's economies have stabilized at a lower plateau compared to past business cycles and key development and growth stages in their respective histories.

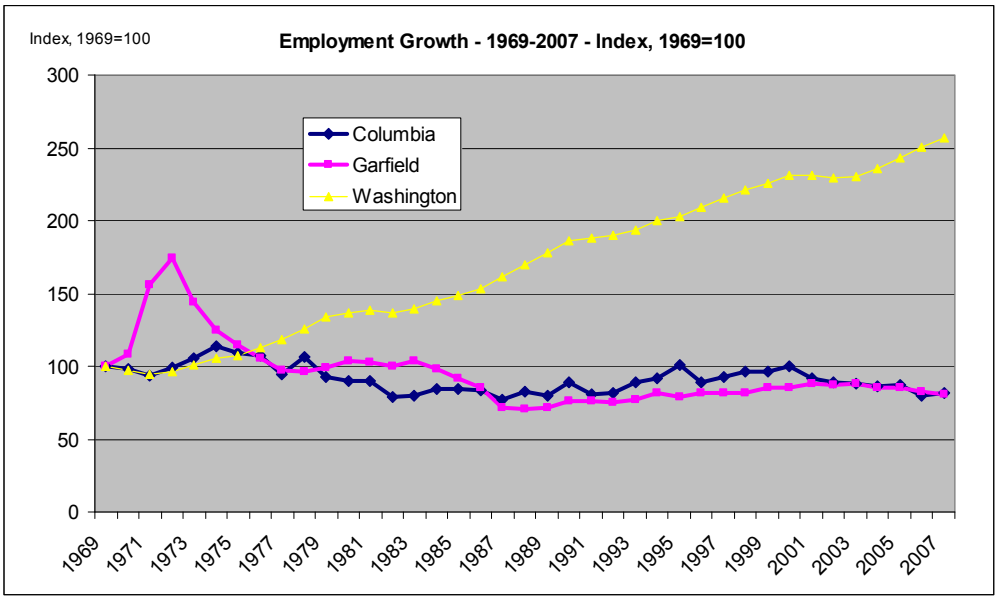
Figure 4 reflects data compiled by the Washington Regional Economic Analysis Project using annual data from the U.S. Commerce Department's Bureau of Economic Analysis (WREAP, 2009). The top panel of Figure 4 is an index comparison of employment growth since 1969. The comparison shows that compared to the base year of 1969, both Columbia and Garfield currently have lower

Table 10 Annual Average Wages for Employment Covered by State Unemployment Insurance

NAICS Code	Industry	Columbia	Garfield	Adams	Asotin	Franklin	Whitman	Walla Walla	Group Average	Washington	Group Average as a % of Washington.
	Total	$35,557	$34,016	$29,765	$27,870	$31,732	$35,586	$33,565	$32,584	$47,006	69.3%
11	Agriculture, forestry, fishing and hunting	$23,260	$24,485	$25,554	$20,061	$21,099	$21,078	$20,255	$22,256	$22,954	97.0%
21	Mining	*	$0	$0	*	*	*	*	*	$56,610	
22	Utilities	*	*	*	*	*	*	*	*	$74,629	
23	Construction	$58,200	$27,409	$37,333	$40,808	$41,785	$35,562	$34,924	$39,431	$49,725	79.3%
31-33	Manufacturing	$48,609	*	$37,777	$32,412	$33,860	*	$42,807	$39,093	$57,305	68.2%
42	Wholesale trade	$38,010	$35,081	$46,310	$40,636	$40,886	$38,193	$35,196	$39,187	$59,622	65.7%
44-45	Retail trade	$18,700	$18,584	$20,190	$25,283	$26,894	$20,455	$23,518	$21,946	$29,160	75.3%
48-49	Transportation and warehousing	*	$24,847	$31,586	*	$37,798	$33,675	$34,937	$32,569	$45,198	72.1%
51	Information	$15,737	*	$22,563	$63,628	$34,874	$26,753	$40,238	$33,966	$108,553	23.6%
52	Finance and insurance	$31,285	$30,738	$27,796	$41,156	$36,299	$35,770	$41,900	$34,992	$68,671	51.0%
53	Real estate and rental and leasing	$17,245	$0	$11,275	$19,700	$41,828	$15,815	$23,220	$21,514	$35,540	60.5%
54	Professional and technical services	$29,073	$8,056	$29,341	$19,620	$44,124	$37,866	$35,732	$29,116	$68,341	42.6%
55	Management of companies and enterprises	*	$0	$0	*	$0	$35,123	*		$82,994	
56	Administrative and waste services	*	$0	$31,096	$21,357	$26,242	$23,864	$20,254	$24,563	$36,926	66.5%
61	Educational services	*	$0	*	$8,314	$26,951	$11,672	$47,102	$23,510	$35,176	66.8%
62	Health care and social assistance	$22,107	*	$36,211	$29,095	$36,231	$28,530	$36,176	$31,392	$40,890	76.8%
71	Arts, entertainment, and recreation	*	$0	*	$15,123	$32,745	$14,805	$19,333	$20,502	$26,634	77.0%
72	Accommodation and food services	$10,154	$5,673	$11,142	$14,161	$13,394	$10,670	$13,160	$11,193	$16,660	67.2%
81	Other services, except public administration	$18,002	$11,429	$15,730	$17,231	$18,627	$16,270	$16,211	$16,214	$25,347	64.0%
	GOVERNMENT	$47,561	$44,438	$38,801	$38,807	$47,945	$42,634	$50,763	$44,421	$52,267	85.0%
	Federal Government	$68,615	$58,118	$44,236	$46,297	$60,972	$47,718	$67,326	$56,183	$59,892	93.8%
	State Government	$40,244	$41,084	$37,621	$37,898	$40,183	$45,588	$46,643	$41,323	$49,802	83.0%
	Local Government	$33,824	$34,113	$34,545	$32,226	$42,679	$34,596	$38,321	$35,758	$47,109	75.9%
	NOT ELSEWHERE CLASSIFIED	$48,624	$28,251	$35,191	$23,803	$55,601	$50,847	$77,552	$45,695	$48,624	

Source: State of Washington Employment Security Department
Note: * Employment and wages not shown to avoid disclosure of data for individual employer.

employment bases, while the State of Washington's employment has more than doubled since this base reference year. The spike in Garfield's employment growth shown in 1972 reflects the development of the Lower Snake River Project. The U.S. Army Corps of Engineer's project involved the construction of a series of hydroelectric dams and navigational locks on the Snake River. Two of the four dam-locks impacted Garfield County—Little Goose Dam near Starbuck (in Columbia County) and Lower Granite Dam north of Pomeroy. Both projects increased the local population and labor force as workers and their families migrated to the area. Little Goose Dam began operating in 1970, while Lower Granite Dam commenced operations in 1975. In addition, the Bonneville Power Administration transmission lines were installed in Garfield in 1973 (Garfield County 2000).



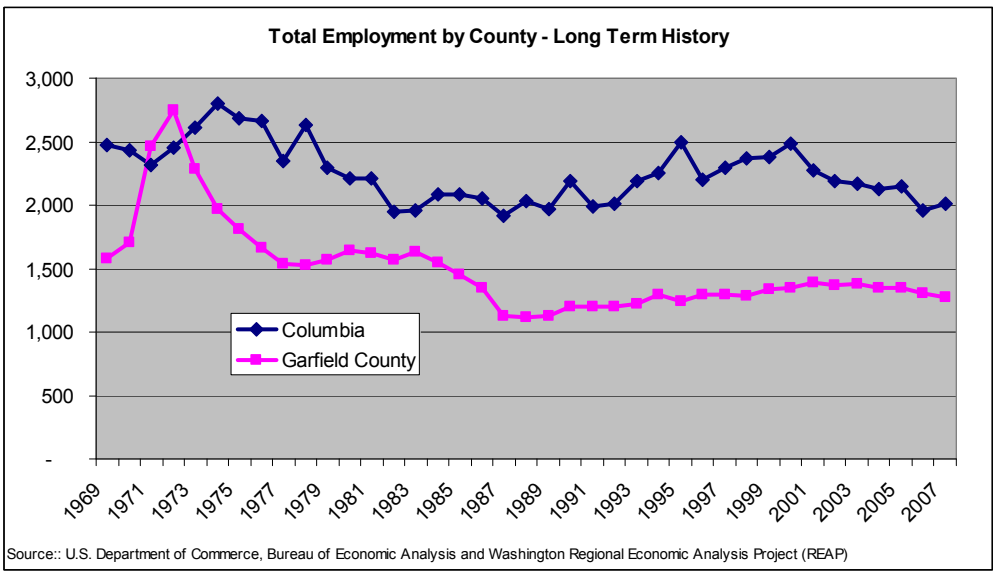


Figure 4 Long Term Employment Trends

Agriculture

All Four WRAs

Agriculture is an important economic sector that defines and distinguishes much of the social and economic character of the rural communities of Garfield and Columbia counties. The distribution of land in farms by type of use is similar for cropland. In Garfield, 57% of the land in farms is devoted to cropland, 41% is for pasture and 2% is for other uses. In Columbia, 59% is cropland, 28% is pasture, 4% is for other uses, and 9% is woodland. The dominant grain crop commodity is wheat although Barley is also important (USDA 2007 a,b,c). Wheat and barley cultivation and production are highly capital intensive and do not require large numbers of seasonal workers compared to other crops (GCCP 2008). Table 11 shows some key farm characteristics for the two counties compared to Washington.

Both Garfield and Columbia have seen an increase in the number of farms between agricultural census years (2002 and 2007), although total farm acreage has declined resulting in slightly smaller farms, on average. According to the 2007 agricultural census Garfield had 239 farms at an average size of 1,290 acres, while Columbia had 283 farms averaging 1,107 acres in size, compared to 381 acres for Washington. Wheat and other grains are grown on larger farms, compared to other crops and livestock rearing that influence the distribution of farm sizes across the state. One third of Garfield's farms were 1,000 acres or greater in size.

Table 11 Farm Characteristics

	Garfield	Columbia	Washington
Number of Farms			
2007	239	283	39,284
2002	198	255	35,939
1997	220	246	40,113
Land in Farms (acres)			
2007	308,212	313,317	14,972,789
2002	312,425	294,661	15,318,008
1997	331,806	320,630	15,778,606
Average Farm Size			
2007	1,290	1,107	381
2002	1,578	1,156	426
1997	1,508	1,303	393
Percent Distribution of Farms by size 2007 (acres)			
1-9	3.3%	6.7%	23.4%
10-49	13.8%	21.2%	37.6%
50-179	18.4%	14.8%	18.6%
180-499	18.8%	21.2%	8.9%
500-999	12.6%	12.7%	4.4%
1,000-1,999	33.1%	23.3%	3.1%
2000 or >			3.9%
Total:	100.0%	100.0%	100.0%
2007 Top Crop Items (acres)			
Wheat for grain, all	68,447	77,970	2,096,350
Barley for grain	11,010	11,591	223,598
Forage land (hay, grass silage, greenchop)	2128	3,499	846,140

Table 11 Farm Characteristics

	Garfield	Columbia	Washington
Dry edible peas	D	11,416	
Vegetables/Apples			343,787 / 165,215

Source: U.S. Census of Agriculture, 2002, 2007
Notes: D = cannot be disclosed

The average value of land and buildings per each farm was $1.1 million for Columbia and $1 million for Garfield in 2007. Net cash farm income was $6.4 million for Garfield and $14.8 million for Columbia (USDA 2007, b & c).

The market value of production is dominated by grain sales in both counties. For Garfield, crop sales, mostly wheat accounted for 88% of the market value of production in 2007, Columbia's crop sales were 91% of the total market value of production. The remaining production values are attributable to livestock sales (primarily cattle and calves). Table 12 shows the change in market value between census years. Between 2002 and 2007 commodity prices rose substantially. For example, between 2002 and 2007, the average annual wheat prices received by farmers in the U.S. increased by 69%, from $3.41 per bushel, to $5.76 per bushel.

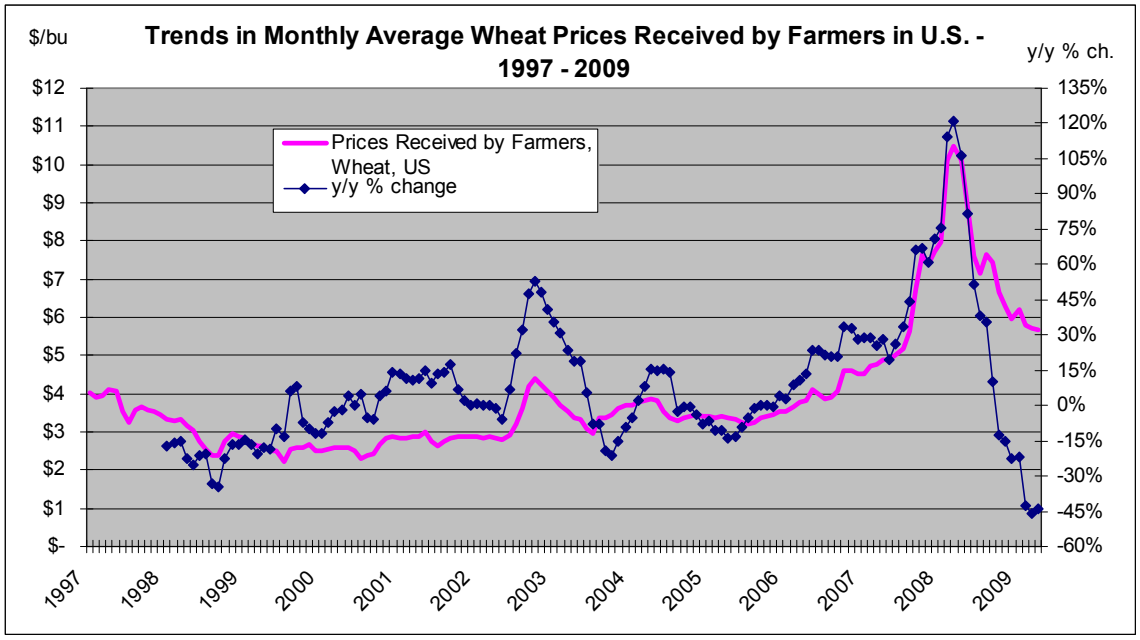
Farm incomes and the agriculture sector of the county economies are sensitive to volatile commodity prices. Figure 5 shows the monthly wheat prices received by farmers in both dollars per bushel and the annual percentage changes in prices. With the onslaught of the most recent recession, commodity prices have collapsed from their recent historically high levels. Farm incomes, that are highly dependent on wheat and other grains sales have been highly variable, in part based on fluctuations in commodity prices, and numerous other factors.

Table 12 Market Value of Agricultural Production (in millions of dollars)

Garfield	2002	2007	Absolute Change	Percent Change
Total value of production	$19.8	$26.4	$6.66	33.7%
Crop sales	$15.7	$23.2	$7.55	48.2%
Grains, oilseeds, dry beans, dry peas	$15.1	$22.7	$7.59	50.2%
Livestock sales	$4.1	$3.2	$(0.89)	-21.6%
Cattle and calves	$3.5	D		
Columbia				
Total value of production	$26.52	$39.82	$13.30	50.2%
Crop sales	$22.701	$36.224	$13.52	59.6%
Grains, oilseeds, dry beans, dry peas	$21.7	$34.1	$12.35	56.8%
Livestock sales	$3.815	$3.595	$(0.22)	-5.8%
Cattle and calves	D	$2.41		

Source: USDA 2007a b c

Figure 5 shows that commodity wheat prices have become more volatile in recent years. The bottom panel of the figure shows the range (minimum, average and maximum) for monthly price histories across a year (USDA 2009).



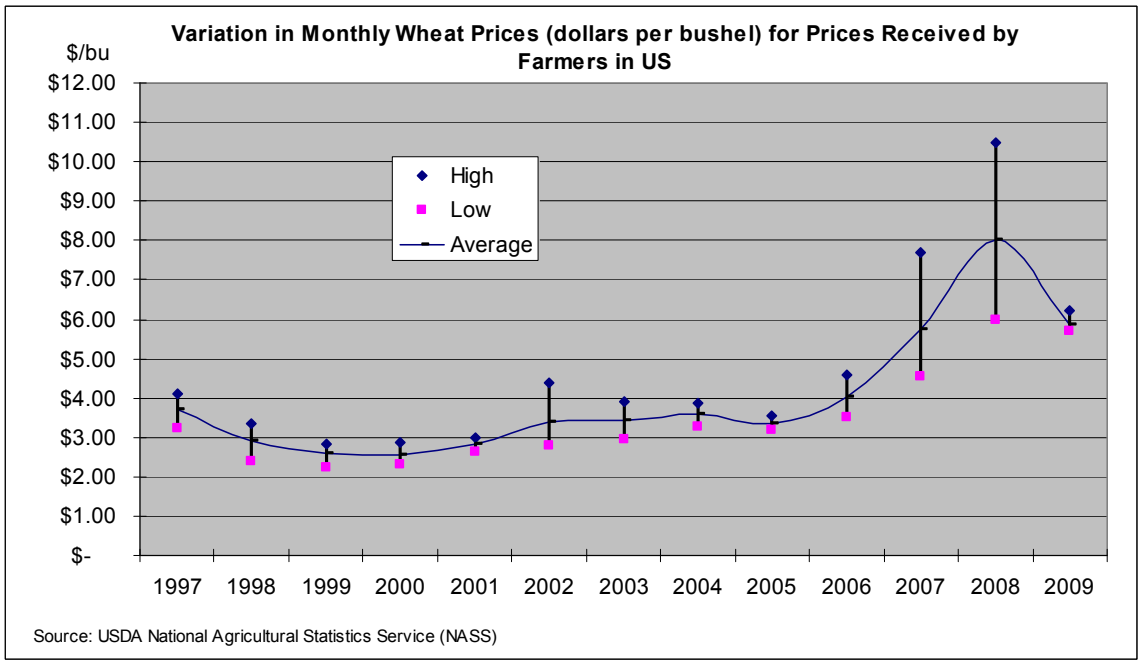


Figure 5 Trends and Variation in Wheat Prices Received by Farmers

Since wheat is such an important crop that could potentially be affected by the Project, Table 13 summarizes key background for wheat acres, yield, production and value for both Columbia and Garfield counties.

Table 13 Wheat acres, yield, production and market value

	Garfield		Columbia	
	2000	2008	2000	2008
Wheat Acres				
Planted All Purposes	78,100	79,000	84,400	90,000
Harvested	75,700	77,000	81,800	89,500
Net Seed Acres	77,800	78,000	84,000	90,000
Wheat Production (bushels)	5,175,000	3,953,300	6,886,000	5,957,500
Yield per harvested acre [bushels per acre]	68.4	51.3	84.2	66.6
Prices Received by Farmers, Wheat, US [average annual price, $/bushel] \1	$2.57	$8.03	$2.57	$8.03
Estimated Market Value of Wheat Production [in millions of $]	$13.29	$31.73	$17.69	$47.81

Source:
U.S. Department of Agriculture, National Agricultural Statistics Service
Note: \1 April 2009 average price for wheat received by U.S. farmers was $5.69/bu.

For the two counties combined, harvested wheat acreage totaled 166,500 in 2008. Wheat production in bushels was 3.95 million bushels for Garfield and close to 6 million bushels for Columbia. Columbia had a slightly higher yield per acre (66.6 bushels per acre) compared to Garfield's yield of 51.3 (bu/ac). Using the average annual prices for wheat received by U.S. farmers, the market value of production for both counties combined was estimated to be $79 million for 2008. Since the 2008 peak, wheat prices have declined. In April 2009, the average price was $5.69 per bushel.

Farms in Garfield and Columbia counties have a greater relative number of operators receiving some form of government payment compared to the state. Table 14 shows the breakdown of government payments in support of agriculture between Garfield, Columbia and the entire state. Garfield received approximately $5.0 million in government payments in 2007, while Columbia received $5.2 million. The payments are broken out between two categories of main federal program areas.

Amounts received from the Conservation Reserve Program, Conservation Reserve Enhancement Program, Wetlands Reserve and Farmable Wetlands programs are reported as one category by the census. These payments accounted for 52-53% of the total payments for both Garfield and Columbia. Garfield and Columbia also have a greater share of farms (49%) that are receiving these forms of conservation payments compared to the state average (41%).

Table 14 Breakdown of Government Payments in Support of Agriculture (2007)

	Garfield	Columbia	Washington
Amount from Conservation Reserve, Wetlands Reserve, Farmable Wetlands, and Conservation Reserve Enhancement Program			
Farms	133	152	3722
% of total farms	49%	49%	41%
Payments ($,000s)	$2,675	$2,816	$68,463
Average payment per farm	$20,113	$18,526	$18,394
Amount from other federal farm programs			

Table 14 Breakdown of Government Payments in Support of Agriculture (2007)

	Garfield	Columbia	Washington
Farms	139	159	5370
Payments ($,000s)	$2,411	$2,441	$69,809
Average payment per farm	$17,345	$15,352	$13,000
Total payments ($,000s)	$5,086	$5,257	$138,272

Source:
USDA 2007 d

The average payment per farm for participation in the conservation programs was $20,113 for Garfield and $18,526 for Columbia in 2007.

Income

All Four WRAs

Table 15a shows income and poverty characteristics for Columbia, Garfield and Washington. In 2007, both Garfield and Columbia counties had at least 14% of their populations living in poverty compared to 11.4% for the state[1]. In 2007, median household income for both Garfield and Columbia was 71% of the Washington average (Census Bureau 2009). Table 15b shows the decile distributions of family income for both Columbia and Garfield from the U.S. Department of Housing and Urban Development (HUD). The extremely low, very low, and low poverty level family incomes are also shown corresponding to the number of persons per family (HUD 2009).

Growth in total personal income has been relatively faster for the two counties in recent years, and has contributed to the faster relative growth in per capita incomes for both Garfield and Columbia, evident in 2007. However, per capita incomes are still significantly below the state average. For Garfield and Columbia counties, per capita incomes were 64% and 80% of the state average in 2007, respectively (BEA 2009).

Figure 6 compares the long-term historic growth in per capita income for Garfield, Columbia and Washington since 1969. In the early 1970s, as Lower Snake River navigational improvements and the development of hydroelectric projects and electric transmission infrastructure was completed, per capita income growth exceeded the state average. Per capita income growth was close to the state average, and at times exceeded it up until the mid 1980s when growth started to languish. Growth since this time has lagged the state average growth trajectory and has contributed to the disparities in income between the counties and the state average. Since farm income is a high portion of total personal income for the area, volatility in farm income has contributed to the greater variation seen in Figure 6 for Garfield and Columbia compared to the

[1] Families and persons are classified as below poverty if their total family income or unrelated individual income was less than the poverty threshold specified for the applicable family size, age of householder, and number of related children under 18 present. The Census Bureau uses the federal government's official poverty definition. If the total income of a person's family is less than the threshold appropriate for that family, then the person is considered poor, together with every member of his or her family. If a person is not living with anyone related by birth, marriage, or adoption, then the person's own income is compared with his or her poverty threshold. The poverty thresholds are updated every year to reflect changes in the Consumer Price Index. The poverty thresholds are the same for all parts of the country they are not adjusted for regional, state or local variations in the cost of living. The specific thresholds used for tabulation of income for particular years are shown at http://www.census.gov/hhes/www/poverty/threshld.html.

smoother trajectory for the state of Washington that reflects greater diversity of the economic base.

Table 15a Income and Poverty Characteristics

	2000		2005		2007	
All Ages in Poverty [1]						
State/County	**Number**	**%**	**Number**	**%**	**Number**	**Percent of Population**
Washington	567,575	9.6%	732,049	12.0%	722,589	11.4%
Columbia County	488	12.2%	547	13.6%	560	14.3%
Garfield County	292	12.6%	328	14.3%	280	14.0%
Median Household Income, $ [2]						
	Level		**Level**	**% growth 00-05**	**Level**	**Percent Growth 05-07**
Washington	$44,846		$49,372	10.1%	$55,628	12.7%
Columbia County	$35,584		$36,599	2.9%	$39,699	8.5%
Garfield County	$34,619		$36,992	6.9%	$39,649	7.2%
Total Personal Income (in millions, $) [3]						
	Level		**Level**	**% growth 00-05**	**Level**	**Percent Growth 05-07**
Washington	$187,853		$245,765	30.8%	$265,738	8.1%
Columbia County	$112		$109	-3.1%	$131	20.4%
Garfield County	$58		$46	-21.4%	$54	18.5%
Per Capita Income [4], $						
	Level		**Level**	**% growth 00-05**	**Level**	**Percent Growth 05-07**
Washington	$31,780		$36,227	14.0%	$41,203	13.7%
Columbia County	$27,604		$25,796	-6.5%	$33,067	28.2%
Garfield County	$24,266		$20,206	-16.7%	$26,397	30.6%

Source: [1], [2]
Census Bureau 2009: U.S. Census Bureau, Small Area Income and Poverty Estimates, http://www.census.gov/did/www/saipe/data/statecounty/index.html
[3], [4]
BEA 2009

Table 15b 2008 Distribution of Family Income by Decile Ranges – HUD

	Garfield		Columbia	
Decile	**Income Level**	**Cumulative Percent**	**Income Level**	**Cumulative Percent**
Decile				
1ST	.	10%	$17,700	10%
2ND	$25,100	20%	$27,800	20%
3RD	$35,200	30%	$36,700	30%
4TH	$43,000	40%	$47,500	40%
MEDIAN	**$53,000**	**50%**	**$55,900**	**50%**
6TH	$64,100	60%	$63,500	60%
7TH	$75,000	70%	$77,400	70%
8TH	$85,100	80%	$89,600	80%
9TH	$107,400	90%	$110,400	90%
9.5TH	$135,700	100%	$136,100	100%
Income Thresholds	**Garfield County**			
No. of Persons	**Extremely Low**	**Very Low**	**Low**	
1 Person	$11,150	$18,550	$29,700	
2 Person	$12,700	$21,200	$33,900	
3 Person	$14,300	$23,850	$38,150	
4 Person	$15,900	$26,500	$42,400	
5 Person	$17,150	$28,600	$45,800	
6 Person	$18,450	$30,750	$49,200	
7 Person	$19,700	$32,850	$52,600	
8 Person	$21,000	$35,000	$55,950	
	Columbia County			
No. of Persons	**Extremely Low**	**Very Low**	**Low**	
1 Person	$11,750	$19,550	$31,300	
2 Person	$13,400	$22,350	$35,750	
3 Person	$15,100	$25,150	$40,250	
4 Person	$16,750	$27,950	$44,700	
5 Person	$18,100	$30,200	$48,300	
6 Person	$19,450	$32,400	$51,850	
7 Person	$20,750	$34,650	$55,450	
8 Person	$22,100	$36,900	$59,000	
	Washington			
No. of Persons	**Extremely Low**	**Very Low**	**Low**	
1 Person	$14,050	$23,400	$37,450	
2 Person	$16,050	$26,750	$42,800	
3 Person	$18,050	$30,100	$48,150	
4 Person	$20,050	$33,450	$53,500	
5 Person	$21,700	$36,150	$57,800	
6 Person	$23,300	$38,800	$62,100	
7 Person	$24,900	$41,500	$66,350	
8 Person	$26,500	$44,150	$70,650	

Source: HUD 2009

Note: Extremely Low based on 30% of Median Family Income (MFI) Limits, Very low based on 50% Income Limits, Low based on 80% Income Limits

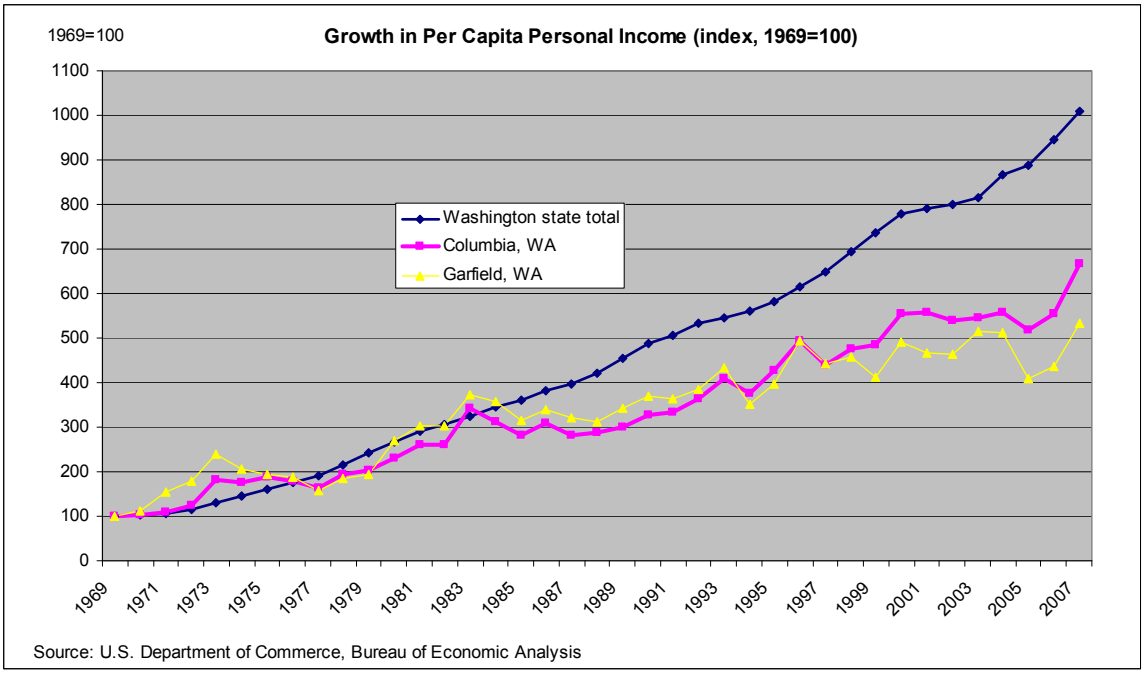


Figure 6 Per Capita Income Growth

Retail Sales

All Four WRAs

Taxable retail sales are the revenue base to which the effective sales tax rates are applied to determine sales tax revenues. Table 16 shows data for taxable retail sales as reported on the excise tax return for cities and counties in the State of Washington.

Table 16 Taxable Retail Sales (in millions of dollars)

	2000	2008	% change
Columbia County			
Unincorporated Columbia County	$6.09	$8.60	41%
Dayton	$22.69	$28.23	24%
Starbuck	$0.44	$0.57	30%
Total:	$29.22	$37.40	28%
Garfield County			
Unincorporated Garfield	$1.25	$2.85	129%
Pomeroy	$13.36	$13.63	2%
Total:	$14.61	$16.48	13%
Washington	$85,368.4	$114,008	34%

Source: Department of Revenue, Washington State, Statistics & Reports, Taxable Retail Sales

In Garfield County, the combined 2009 local sales/use tax rate is 7.5%, and 7.9% for Columbia County. In 2008, Garfield's taxable retail sales were $16.5 million, compared to a combined $37.4 million for Columbia (DOR 2009).

In Washington State, the Revised Code of Washington, (RCW 82.08.02567) exempts from taxation sales related to machinery and equipment used in generating electricity from renewable sources. The sales tax shall not apply to sales of machinery and equipment used directly in generating electricity using wind, or to sales of or charges made for labor and services rendered in respect to installing such machinery and equipment. Machinery and equipment means industrial fixtures, devices, and support facilities that are integral and necessary to the generation of electricity using wind as the principal source of power (RCW 2009). While the exemption is set to expire on June 30, 2009, Senate Bill SB 6170, -2009-10 Environmental Tax Incentives renews the sales tax exemption for these facilities effective July 1, 2009 (SB 6170).

Figure 7 shows the comparative growth in retail sales for Garfield, Columbia and Washington since 1994. Starting in 2007, Columbia County experienced a rise in taxable retail sales to a new higher level plateau. It is likely that this rise reflected contributions related to wind farm development in the County as the Hopkins Ridge Project came on line in 2005. For Columbia, the rise in taxable sales from close to $30 million in 2006, to over $40 million in 2007 reflected large increases in the following sectors (construction, wood product manufacturing, primary metal manufacturing, wholesale trade, and real estate and rental and leasing). Despite the impact of the recession in 2008, the new higher level of the taxable retail sales base appears to have been sustained.

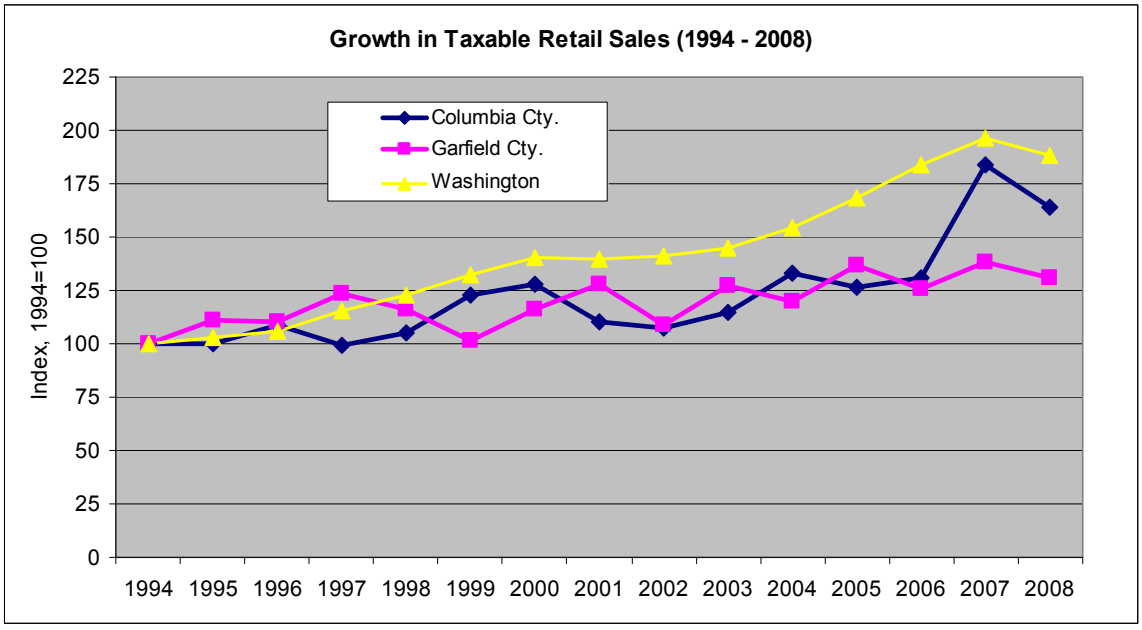


Figure 7 Growth in Taxable Retail Sales

It is important to note that Washington State changed from an origin-based system for local retail sales tax to a destination-based system effective July 1, 2008 with the passage of Substitute Senate Bill 5089 (“Streamlined Sales Tax”). Prior to July 1, 2008, Washington retailers collected local sales tax based on the jurisdiction from which a product was shipped or delivered - the "origin" of the sale. Starting July 1, 2008, retailers must collect based on the destination of the shipment or delivery - the "destination" of the sale. The rule change only affects shipments

and deliveries to locations within Washington State. The destination-based sales tax applies to businesses that ship or delivers goods they sell to locations within Washington. Under the new rules, if a retailer delivers or ships merchandise to a buyer in Washington State, the sales tax is collected based on the rate at the location where the buyer receives or takes possession of the merchandise. There is no change for deliveries outside the state or over-the-counter sales where customers take home goods from the store location. The change does not affect deliveries to locations; outside the state of Washington, wholesale sales, services, sales of motor vehicles, trailers, semi-trailers, aircraft, watercraft, modular homes, and manufactured and mobile homes, towing companies. Sales tax will continue to be based on the seller's location even if the seller delivers the items to customers (DOR 2009).

It is likely that increases in taxable retail sales from other purchases that don't qualify for the (RCW) Chapter 82.08.02567 tax exemption (from sales related to machinery and equipment used in generating electricity from renewable sources) will be created by the Project. The big ticket machinery and equipment (i.e., the turbines, nacelles, towers, and rotors, etc.) will likely qualify for the exemption. However, purchases for items and supplies needed by construction workers, such as restaurant meals, groceries and water, hotel rooms, clothing, vehicles, gasoline, retail entertainment venues, and other consumables used to support their contract tenures in fabricating the project would be considered taxable retail sales. In addition, portions of landowner revenues from turbine lease payments will also be spent (recycled back into the local economy) on retail items and these sales will increase the taxable retail sales base. In some communities hosting wind farms, spinoff economic development resulted from retail and wholesale trade businesses that either expanded, or from new establishments that have were created, to support construction workers and their families/dependents during their contract tenures. This economic activity has expanded the taxable retail sales base in these communities (DOE 2004).

Local Government and Sources of Revenue

All Four WRAs

Table 17 shows the 2007 total revenues and expenditures for each county. Both Columbia and Garfield receive the majority of their resources used to sustain county functions from intergovernmental transfers. Property taxes are the next largest source of revenues.

Table 17 Summary of County Revenues and Expenditures 2007

	Columbia	%	Garfield	%
Revenues				
General Property Taxes	$1,303,590	17.3%	$482,100	7.1%
Sales & Use Taxes	$256,838	3.4%	$104,091	1.5%
Other Local Taxes	$284,806	3.8%	$82,858	1.2%
Licenses & Permits	$153,783	2.0%	$43,663	0.6%
Charges & Fees for Services	$506,032	6.7%	$103,023	1.5%
Interest & Investment Earnings	$215,370	2.9%	$358,145	5.3%
Fines & Forfeits	$119,060	1.6%	$109,798	1.6%
Rents,InsPrem,Internal,Contrib,Misc	$125,732	1.7%	$231,662	3.4%
Intergovernmental Revenues	$4,579,908	60.7%	$5,259,980	77.6%
Total Revenues	$7,545,119	100.0%	$6,775,320	100.0%
Operating Transfers-In	$1,728	0.0%	$0	0.0%

Table 17 Summary of County Revenues and Expenditures 2007

	Columbia	%	Garfield	%
Total Resources	$7,546,847	100.0%	$6,775,320	100.0%
Beginning Fund Balance	$2,687,343		$6,226,089	
Expenditures				
Law & Justice Services	$1,298,283	18.0%	$883,131	13.4%
Fire & Emergency Services	$479,719	6.6%	$468,096	7.1%
Health & Human Services	$483,663	6.7%	$465,788	7.1%
Transportation	$1,885,796	26.1%	$2,011,568	30.6%
Natural Resources	$815,672	11.3%	$176,359	2.7%
General Government	$1,203,401	16.7%	$739,580	11.2%
Utilities	$155,238	2.2%	$47,748	0.7%
Capital	$895,714	12.4%	$24,653	0.4%
Debt Service-Interest	--		$1,724,065	26.2%
Total Expenditures	$7,217,486	100.0%	$6,540,988	99.3%
Operating Transfers-Out	$0	0.0%	$42,830	0.7%
Total Uses	$7,217,486	100.0%	$6,583,818	100.0%

Source: Washington State Auditor, Local Government Financial Reporting System (LGFRS)

In terms of expenditures required to sustain county services, the largest common categories for the counties are for transportation, law and justice, and general government services. In 2007 Garfield also devoted over 26% of its expenditures to meeting debt service.

Related to the issue of sales and use taxes flowing to rural counties is the Engrossed Substitute Senate Bill 6050 (ESSB 6050), creating the City-County Assistance Account (CCAA). The account receives funds from a portion of Real Estate Excise Tax (REET) revenues, which are divided equally between cities and counties for distributions. Similar to the formerly used Motor Vehicle and Excise Tax (MVET) equalization, funds flowing to eligible cities and counties from the CCAA provide unrestricted revenues to jurisdictions according to a statutory formula that takes into account population and relative need. Local officials and others sometimes refer to these distributions as "6050" funds (JLARC 2008).

The formula providing distributions to cities and counties is complex and includes several elements and benchmarks based on state average per capita amounts. If a city or county is property (i.e., assessed value) or sales and use tax deficient, compared to the state average, there is an equalization adjustment to account for the deficiency. The formula encompasses the following elements: (1) Population, (2) Local sales and use tax revenues (3) Local (optional) sales and use tax imposed, (4) Levels of specific appropriations for local government assistance ("backfill" amounts), (5) Assessed property valuations (applies only to cities). Under the formula, cities and counties generally qualify for distributions if they have either low per capita sales tax revenues relative to the state average and/or if they previously received a "backfill" amount. Cities may also qualify if they have low assessed per capita property valuations relative to the state average. However, some cities may become ineligible for a distribution if they have assessed per capita property valuations above the threshold percentage of the state average, regardless of their sales tax revenues (JLARC 2008).

Another complicating factor is that the current CCAA distributions are based on assessed values for the previous two years, and not the prior year as the ESSB 6050 mandates. The Statute

directs the DOR to determine or certify distribution amounts by March of each year, using the prior year's data. Annual information on assessed property valuations, which is an element in the distribution formula, is not final by this date. Consequently, the DOR uses assessed valuations that are two years old and not the prior year's data as required by statute (JLARC 2008).

For the purpose of assessing CCAA impacts from this Project, there is no perceived impact from the wind farms that would alter this funding equalization. The thresholds and factors that determine this funding stream would not be changed by the Project. Consequently, as a result of this Project and other wind projects, the CCAA funding will not be jeopardized in the future (Dixon Personal Communication 2009).

Impacts and Mitigation

Preferred Alternative

This section describes the anticipated socioeconomic impacts from the proposed Lower Snake River Wind Project preferred alternative. Based on cumulative wind power generation capacity already in place, the proposed Project's commissioning (at full buildout) will more than double Washington's total installed wind capacity (DOE 2008)[2]. Key issues related to socioeconomic resources have been voiced by project participants and stakeholders. Among the socioeconomic issues that will be discussed in this section are economic impacts and jobs, agricultural impacts, tax and fiscal impacts, recreation and tourism, property values and the environmental benefits of clean energy enabled by wind farm development. These discussions apply to all WRAs.

Construction Impacts

The construction of the Project will be a continuous endeavor. The activities will proceed uninterrupted and could potentially last for up to five years because of the proposed wind farm's large scale. Construction activities will not be intermittent, but will happen continuously and employ resources in a constant, steady fashion over this period.

Population and Housing

Population

The proposed Project will temporarily increase the region's population levels. Part of the Project's construction workforce will temporarily migrate to Garfield and Columbia counties for the duration of their tasks. These workers will add diversity to the composition of the population base and will contribute to stabilizing some of the declining trends in population growth documented in the supplemental report exhibits for Garfield and Columbia. It is estimated that several hundred workers (250, see Table 21) will be directly employed during each construction phase. A large number of these workers will temporarily migrate to, and reside in Garfield, Columbia and surrounding counties in order to be as close as possible to the Project's Wind Resource Areas. In past projects up to 30% of the total construction workforce were hired locally from the surrounding region. Therefore a conservative estimate is that up to 175 construction workers may relocate to the area for the length of the construction period based on

[2] According to the AWEA project database, Washington's cumulative wind generation capacity at year end 2007 was 1,163 MW, placing the state 5th in the U.S. in terms of developed capacity.

past projects. Given the large size of the Project and multi-year construction period it is likely that some workers migrating to the area will bring their families and dependents with them, based on observations from past wind energy projects in Washington. Assuming that all 175 workers have families / dependents (as a worst case scenario) and that the average family size is 3 people, the construction period increase in total population migration to the region could total 525 persons. A potential of 175 school aged children could also be part of the migration to the region during this construction phase that could last for 5 years. These school aged children would likely become be enrolled in either the Garfield (Pomeroy) and/or Columbia (Dayton) school districts.

Workers who migrate to the region will temporarily increase the so-called "transient" population levels of the combined two county regions. The temporary population increase will be noticeable within Garfield and Columbia counties given their relatively small populations compared to the surrounding seven county Southeastern regions. During peak construction 250 workers may be commuting to the WRA work sites from area permanent residences (i.e., the local native residents working on the Project), and hotels/motels, B&Bs, RV & campground sites, and apartments rented in both Garfield, and Columbia. For addresses and locations of the temporary housing accommodations, refer to Table 6 above. It should be noted that in past wind projects in Columbia County (i.e, Hopkins Ridge), a few workers commuted from as far away as Walla Walla (See discussion under housing below).

Housing

The Project is expected to increase the demand for the permanent and temporary housing stock and accommodations in the region. It is estimated that approximately 175 workers (= 250 less 75 permanent residents) will require housing during their contract tenures. The estimate assumes that 75 workers will be sourced from the region and will already be permanent residents. The 175 workers migrating to the region will place demands on temporary housing accommodations (B&Bs, hotels/motels, RV camp sites) and also on vacant and seasonal housing units, lasting for a multi-year period. Assuming as a worst case scenario that all 175 non-local workers migrated with a family size of 3 persons, it is possible that the demand for hotel/motel rooms could reach 350. This assumes that these worker families would require two rooms and that no apartment units would be immediately leased. The estimates are presented as maximums for conservative planning purposes. Based on past project experience there is usually a combination of hotel/motel rooms and apartments being leased concurrently. The region has sufficient temporary and permanent housing capacity to accommodate these workers and their families/dependents. The demand will provide a stimulus to regional hotels/motels/B&Bs, and RV sites and will also generate hotel bed taxes to the region.

In Columbia County, it was reported that hotel/motel and RV / camping sites experienced record occupancy and utilization during the construction of the Hopkin's Ridge and Marengo I & II projects. It is likely that during the LSR project similar changes to occupancy and utilization will occur. For Hopkins Ridge and Marengo, some workers lived in area hotels and also rented apartments and paid market rates out of their per diem budgets (Dickenson 2009). While all local hotels/motels experienced record demand, some workers temporarily resided as far away as Walla Walla and commuted approximately 30 miles to the project sites. Within Columbia, Garfield and Walla Walla a list of hotels/motels and RV camping sites and rental units are

provided in in Table 6. These facilities are expected to receive a positive lift in occupancy and utilization from the temporary demand for housing expected during the construction phase. This temporary incremental demand will likely persist for several years.

Table 18 shows the estimated population, housing and pupil enrollment impacts for both the construction and operational periods. The estimates are presented in one section and one table for comparative purposes and to consolidate on tables. The assumptions used were conservative, and based on worst case scenarios in order to provide maximal demand indicators for resource planning purposes.

Table 18 Short-Term and Permanent Population, Housing and Pupil Enrollment Impacts

	Short-term Construction Period (n=5)	Long-term Operational Phase (n = 50)
Total workers	250	89
Local from area [a]	75	45
Non-local (migrating to region)	175	45
Average family size:	3	3
Total population migration:	525	135
Hotel rooms required (maximum) [b]	350	n.a.
Apartment units required (maximum) [c]	175	45
School enrollment (pupils, maximum)	175	45

Notes:
[a] assumes 30% of construction workers would be local, and 50% of operational workers would be local in origin.
[b] assumes two rooms per worker family
[c] assumes no doubling or sharing of occupancy based on 1 apt. unit per family
n.a. = not applicable

Economy and Employment - Economic Impacts

Building a wind farm at the proposed large scale will employ hundreds of workers over a multi-year period. The construction of the LSRWEP will result in a direct, positive short-term increase in economic activity within Garfield and Columbia counties and the Southeastern Washington region. The expansion in economic activity resulting from the construction phase will last for five years spanning 2010 to 2014. Employment, income and output will be stimulated during each phase of the project.

The supply chain supporting wind farm construction and erection is extensive and can stimulate economic development in a wide area. For example, a review of firms supporting and comprising the wind development industry, and discussions with Washington State wind farm project participants shows an extensive and varied array of suppliers. The national suppliers run the gamut from companies providing such items as rammed aggregate pier foundation systems, to specialized mobile ready mix concrete plants, to trucking companies providing trailers for extra wide loads etc., to electrical contractors providing transmission interconnect services, turbine manufacturers, specialized cranes, rotors and blades, gear and tower manufacturing, LED FAA obstruction lights for marking wind turbines, blade automation systems, electrical systems, specialized sky lifts for inspecting, cleaning and maintaining wind turbines, foundation specialty

contractors and EPC and balance of plant (BOP) general contractors (NAWP 2009). As the above few examples illustrate literally hundreds of industries can both directly participate in, and be indirectly stimulated by these projects.

It is important to note that given the specialized nature of the infrastructure and components, the majority of the capital goods and wind farm components will be manufactured and procured from outside of the region. The economic activity during construction will reflect mostly labor installation/erection and assembly and the purchase of locally available materials to support the multiple construction phases.

To provide an indication of the site assembly effort associated with wind farm construction, Table 19 shows the breakdown in man hours and approximate full-time equivalent labor associated with construction site services for a typical 100 MW wind farm (DOE 2004).

Table 19 Site Services and Approximate Manpower Associated with a Typical 100 MW Windfarm[a]

	Man hours	Percent of Hours	Estimated FTE per Year \a
Turbine & Tower Installation Services	121,080	28.9%	60.5
Concrete construction services	72,000	17.2%	36.0
Equipment transportation services	42,650	10.2%	21.3
Project management services	36,775	8.8%	18.4
Engineering and surveying services	25,300	6.0%	12.7
Vendor field services	20,535	4.9%	10.3
Road building services	18,940	4.5%	9.5
Underground cable installation services	17,250	4.1%	8.6
General labor services	15,000	3.6%	7.5
Local material delivery services	12,500	3.0%	6.3
Electrical installation services	8,770	2.1%	4.4
Concrete services	6,800	1.6%	3.4
Equipment repair & fueling services	6,000	1.4%	3.0
Inspection and testing services	5,000	1.2%	2.5
Food preparation & delivery services	3,500	0.8%	1.8
Housing and lodging services	3,000	0.7%	1.5
Real estate & legal services	2,800	0.7%	1.4
Communication system services	1,120	0.3%	0.6
Total:	419,020	100%	210

Source: DOE 2004

\a applies a 2000 man hour year to estimate full-time equivalents (FTE) based on a forty hour man week and 50 weeks.

The above estimates of full-time equivalent (FTE) jobs corresponding to the site services were based on an equivalent labor factor of 2000 man hours per worker per year. This factor was based on a 40 hour work week for 50 weeks. Some workers work 50-60 hour weeks so the FTE jobs estimates can be slightly lower. Assuming a 50 hour man week, the full-time jobs equivalents is equivalent to 168 jobs for all the listed site services performed over a man year.

This discussion focuses on isolating local increases in economic activity within the Southeastern Washington region. This region has been defined as the combined areas of Asotin, Garfield, Columbia, Walla Walla, Whitman, Franklin and Adams counties. Anecdotal reports from other

completed projects in Washington relate that construction workers and contractors have made extensive use of existing resources within local/host regions and purchase supplies, materials and equipment that are readily available locally. These purchases have stimulated the demand for goods and services in communities and can stimulate additional economic development, especially where the projects are large scale and involve multi-year construction phases and upgrades (Strand 2009).

A review of recently completed projects can assist in projecting the anticipated economic activity and regional stimulus from the LSRWEP.

Table 20 shows key project indicators and available economic impact measures for completed projects in Washington State with the exception of the Desert Claim Wind Project shown in the first column. The Desert Claim Wind Project has not yet been constructed. The estimates, based on an initial project configuration are subject to modification based on final permitting. However, for discussion purposes the estimates have been included for comparative purposes. The table shows key attributes and relationships that can be used to compare and benchmark the likely impacts to be expected for the Lower Snake River Wind Energy Project. For example, the number of construction phase jobs per MW of nameplate capacity is close to 1.0 (based on the four completed projects in Washington), but is expected to be slightly higher based on recent estimates for the Desert Claim Wind Project. The four completed projects displayed in Table 20 totaled 681 MW in nameplate capacity. The proposed LSRWEP (1,432 MW) will more than double this installed capacity (not including the Desert Claim Wind Project).

While the LSRWEP project phasing is not specifically known at this time, it is assumed, for discussion purposes that the Project construction will take place in five phases. The impact estimates are based on pro-rating the total cumulative impacts equally over a five year period, where each construction phase will last from 9-12 months in duration. Actual construction phasing will be determined by a variety of factors. Since it is the convention in economic impact studies to report economic impacts estimates on an annual basis, the LSRWEP impacts are first presented for the entire Project (cumulative over 2010 – 2014) and are also presented on an annual basis. The reason for this presentation is to make the LSRWEP impact estimates easily comparable to past completed projects that have focused on annual impacts.

Table 20 Washington State Wind Farms – Key Project Attributes and Economic Impacts

Project Name/Location	Desert Claim Wind Project Kittitas Cty, WA	Wild Horse Wind, Kittitas Cty, WA	Hopkins Ridge Wind Farm Columbia Cty, WA	Big Horn Wind Power Project Klickitat Cty, WA	Nine Canyon (I, II & III), Benton Cty, WA
Project Size (MW)	190	228.6	156.6	200	95.9
Turbines (No.)	95	127	87	133	63
Average turbine capacity (MW)	2.0	1.8	1.8	1.5	1.5
Total Construction Employment (No.)	282	250	175	200	
Local Construction Employment (No.)	160	83			
Full-time employees (O&M)	25	25	22	11 (75% [8] local hires)	
Local Construction Spending, Mils.$	$17.3	$8.4			
Year Online	2010	2006	2005	2006	2003
Total annual property taxes	$1,259,236	$1,300,000	$807,310	$1,100,000	
Annual Energy Produced Equivalent (households):	49,932	60,000	40,000	60,000	25,203
Construction jobs per MW nameplate	1.48	1.09	1.12	1.00	
Local spending per MW	$91,053	$36,745			
Annual property taxes per MW	$6,628	$5,687	$5,155	$5,500	
Project Area (acres)	5200	8,600	11,000	15,000	
Acres per MW	27	38	70	75	
Project footprint (acres)			108	70	
Project footprint / total acres (%)			1.0%	0.5%	
Annual visitors	n.a.	18,000	2250		
Number of leases			11	5	
Average annual output (MWh)	499,320		456,000		
Average capacity factor	30%		33.2%		
Information Sources (See below)	14,15	1,2,3	1,4,5,9,13	6,7,8,10,11	12

Information Sources:
1 Wind Power and Economic Development February 2009, Renewable Northwest Project
2 AWEA
3 PSE, <<057_Wild Horse_English.pdf>>, http://www.efsec.wa.gov/wildhorse.shtml
4 PSE, http://www.pse.com/energyEnvironment/energysupply/pages/EnergySupply_ElectricityWind.aspx?tab=2&chapter=5, "Wind Power-Creating Benefits for Columbia County - Puget Sound Energy"
5 Economic Impact of Wind Energy Projects in Southeast Washington, Entrix, March 6, 2009
6 PPM Energy Press Release, http://www.iberdrolarenewables.us/rel_05.10.28a.html
7 http://www.iberdrolarenewables.us/rel_07.05.21.html, press release
8 http://www.thedalleschronicle.com/news/2007/05/news05-22-07-01.shtml

Table 20 Washington State Wind Farms – Key Project Attributes and Economic Impacts

Project Name/Location	Desert Claim Wind Project Kittitas Cty, WA	Wild Horse Wind, Kittitas Cty, WA	Hopkins Ridge Wind Farm Columbia Cty, WA	Big Horn Wind Power Project Klickitat Cty, WA	Nine Canyon (I, II & III), Benton Cty, WA

9 www.ecy.wa.gov/climatechange/CATdocs/wpc_JobsAnalysis.pdf
10 http://seattletimes.nwsource.com/html/localnews/2003070559_wind19m.html
11 http://www.rnp.org/News/pr_YesOn937_SignaturesJul06.htm
12 http://www.energy-northwest.com/generation/nine_canyon.php
12 http://www.energy-northwest.com/generation/documents/Nine_Canyon_Facts_09.pdf
13 PSE Wind Power - Creating benefits for Columbia County, 4153_008 08/08
14 Economic Impacts of the Desert Claim Wind Project - A Report to the enXco Company, ECONorthwest, April 21, 2009
15 Kittitas County Economic Impacts from the Proposed Desert Claim Wind Power Project, Feb. 25, 2009, Central Washington University
16 Economic Impacts of Wind Energy Projects in Southeast Washington, Entrix Inc., March 2009

Table 21 shows the LSRWEP attributes and total construction cost estimate data used as inputs to the economic impact analysis.

Table 21 Lower Snake River Wind Energy Project Attributes and Estimated Construction Costs

Project Feature / Attribute	Value / Information
Project Location	Garfield & Columbia counties
Construction Year	2010 (First Phase)
Project Size Nameplate Capacity MW	1,432
Number of Turbines	795
Turbine size (MW)	1.80
Construction Cost ($/KW-e)	$2,700
Estimated total cost (millions, $)	$3,866
Number of construction phases	5
Terminal construction year	2014

Key:
KW-e = Kilowatt of electricity
*See Section 1.4.3.1 Turbines for a discussion of the range of turbine sizes.
Source: RES/PSE

A range of economic impact estimates are presented. The range is based on construction costs spanning a low of $2,000 /kw-e to a high of $2,700 /kw-e. Total economic impacts consist of direct, indirect and induced effects that account for the project's total spending stimulus on other economic sectors and households throughout the lower Southeastern region of Washington State. Indirect impacts relate to the additional spending stimulus that is triggered initially by the direct construction expenditures. The direct or first round of expenditures affect suppliers and other firms comprising the regional supply chain for wind infrastructure. Induced impacts account for spending by households earning incomes from both directly impacted businesses and indirectly affected industries.

Since construction capital costs by detailed project components were not available, the Jobs and Economic Development Impact Model (JEDI) was applied in the absence of adapting a feasibility study (Goldberg, 2004). The JEDI model is based on actual Wind Project parameters and variables. The user can apply average or benchmark wind farm cost and project indicators (called default values) with which to estimate order of magnitude economic impacts. The user also has the ability to adjust the default values based on the particular region. The JEDI model was used in conjunction with other actual data on economic impacts for completed projects in Washington State shown in Table 19 above. One of the features of the JEDI model is that it provides a default cost allocation used to apportion the total project cost (installed cost) to the major capital equipment cost, labor, development costs and balance of plant categories.

The cost estimates using the JEDI model assumed that no turbines, blades, or towers will be manufactured within the region. The regional direct construction expenditures providing the direct economic stimulus were based on construction procurement on concrete, equipment, roads and site preparation, as well as labor associated with the foundation erection and construction site services for the balance of the plant. Also included are other professional, technical services and site permitting expenditures.

The JEDI model allows an analyst to provide basic project information as source inputs (i.e., the project's state, county or region, size (MW), & year of construction). The key variable determining the total size of the economic impacts is the project cost (where total cost = $/KW x Project Size (MW) x 1000). These inputs, together with regional economic impact multipliers for the specified region (i.e., the combined region of Asotin, Adams, Whitman, Garfield, Columbia, Franklin and Walla) supplied by IMPLAN, (Impact Analysis for Planning, MIG, Inc., see box below) were then used to calculate order of magnitude impacts (IMPLAN 2009). A user can also apply local impact expenditure shares that have in part been determined based on other projects' implementation and assessment (Goldberg 2004). These procedures were followed in estimating the order of magnitude impacts shown below.

What is IMPLAN (Impact Analysis for Planning)?
IMPLAN is an analytical software tool used to estimate socioeconomic impacts originally developed by researchers at the U.S. Forest Service. The model is now owned and administered by the Minnesota IMPLAN Group, Inc. (Minnesota IMPLAN Group, Inc. 2000). The IMPLAN software is an input-output based model that describes the inter-industry relationships between industries and commodity purchases within a local economy. The model relies on county- and state-level data sets that are continually updated by the U.S. Government and by MIG, Inc. IMPLAN is used to measure the multiplier impacts or total economic impacts associated with a given project's spending relationships or linkages to a region's vendors, suppliers, households, and government entities. A multiplier describes the response of the regional economy to a stimulus (e.g., construction period spending associated with a project's local capital expenditures and payroll) that is a change in final demand. The multiplier process represents the predictive part of the model. The model supplements the traditional input-output framework with a social accounting matrix that takes into account non-industrial transactions such as the payment of taxes by businesses and households. The model can, therefore, also be used to conduct a fiscal impact analysis (Minnesota IMPAN Group 2000). The model has been used in numerous infrastructure projects to estimate economic impacts during both construction and facility operations.

The economic impact multipliers were calculated for the seven county Southeastern Washington region using the IMPLAN economic input-output model for this geographic area. The multipliers were supplied at the North American Industrial Classification code (NAIC) two digit level of aggregation. A multiplier represents the summary indicator that captures the complete ripple effects resulting from the initial direct expenditure. The IMPLAN predictive model is the set of input-output multipliers which "predict" total regional activity based on a change in consumption (IMPLAN 2009).

The output and earnings multipliers applicable to the Southeastern Washington region were 1.5 on average. The aggregate multiplier is an average of all of the constituent industries that may be impacted. The multiplier is equal to the total impact divided by the direct impact stimulus, so a $1,000 stimulus to demand for the region, would result in a $1,500 total change in economic activity. The range of multipliers per each constituent industry sector varied. The size of the multiplier reflects the extent of the supply chain that would be linked to the direct project activities within the counties studied. A larger multiplier would have been associated with total Washington State impacts and for national impacts, but the region of influence chosen for this analysis were the combined counties of Asotin, Adams, Franklin, Walla Walla, Whitman, Garfield and Columbia (See Figure 3).

Table 22 displays the estimated economic impacts based on a range of total project installation costs.

Table 22 Estimated Economic Impacts During Construction Phases-Lower Snake River Wind Energy Project

	Low (Cost = $2,000 / kw-e)			High (Cost = $2,700 / kw-e)		
	Jobs	Earnings[a]	Output	Jobs	Earnings[a]	Output
Estimated Impacts – All Construction Phases						
Direct	937	$44.5	$126.9	1,265	$60.0	$171.3
Construction Sector	885	$42.4	$122.2	1,195	$57.2	$165.0
Other Industry Sectors	52	$2.1	$4.7	70	$2.8	$6.3
Indirect	316	$11.1	$34.2	426	$15.0	$46.1
Induced	358	$11.8	$34.3	483	$15.9	$46.3
Total Impacts	1,611	$67.3	$195.3	2,174	$90.9	$263.7
Estimated Impacts per Construction Phase [b]						
Direct	187	$8.9	$25.4	253	$12.0	$34.3
Indirect	63	$2.2	$6.8	85	$3.0	$9.2
Induced	72	$2.4	$6.9	97	$3.2	$9.3
Total	322	$13.5	$39.1	435	$18.2	$52.7

[a] Earnings are total labor income. Total labor income includes the sum of employee compensation and proprietor income.
[b] Assumes a total of five construction phases with each phase lasting from 9 to 12 months in duration.

Employment Impacts

The Project's five construction phases are estimated to generate a grand total of between 1,611 and 2,174 jobs, over a five-year period spanning from 2010 to 2014. On an annual average basis, or per each individual 9-12 month construction phase, it is estimated that between 322 and 435 total jobs will be generated within the region. The jobs estimates include the full multiplier or ripple effect estimated with the IMPLAN economic input-output model multipliers reflecting the economic structure of the southeastern Washington region. Both indirect and induced employment that will be generated in other linked industries and sectors is also shown in Table 22. The jobs estimates represent both full and part time employment.

The direct construction workforce per each construction phase is estimated to be 253 workers under the $2,700/kw-e cost scenario. The direct construction labor force will be comprised of the following activity based teams and disciplines; engineering, surveying and design personnel, road construction, foundation construction, electrical collection system workers, substation construction, wind turbine assembly and erection, plant energization and commissioning and construction punchlist (See Table 1-4 for a breakdown). The construction workforce will be comprised of project managers and engineers, field technical staff, skilled labor, equipment operators and unskilled labor.

During the construction of the Hopkins Ridge Project, 175 jobs were created with approximately 25% (44) being filled by local residents (PSE 2008). It is expected that similar local opportunities will be available for workers within Garfield and Columbia counties, as well as the surrounding and adjacent counties referenced. It has been the practice in past projects for the developers/sponsors to hire local workers when these workers are available and have the capacity to contribute to various phases of the project's installation.

Industrial Output Impacts

The Project's five construction phases are estimated to generate a grand total of between $195 million to $264 million in cumulative industrial output over a five-year period spanning from 2010 to 2014. On an annual basis, or per each individual 9-12 month construction phase, it is

estimated that between $39 million to $53 million will be generated within the region. Total industrial output represents the total value of goods and services produced in the economy. The output estimates include the full multiplier or ripple effect estimated with the IMPLAN economic input-output model multipliers reflecting the economic structure of the southeastern Washington region.

Labor Income Impacts

The Project's five construction phases are estimated to generate a grand total of between $67 million to $91 million in labor income. Labor income represents the income earned corresponding to the industrial production generated by the Project, and is a component of the income equals production identity. When labor income, plus other forms of income such as rents, interest and profits are combined, then under the Gross Domestic Product /National income identity accounting framework, total income should equal the total value of industrial production. The total industrial production should be equal to the total income earned by producers. On an annual basis, or per each individual 9-12 month construction phase, it is estimated that between $13.5 million to $18 million in income will be generated within the region. Labor income includes both employee compensation earnings and proprietor income. Employee compensation includes workers' wages and salaries as well as other benefits such as insurance and retirement. Proprietor's income includes payments received by small business owners or self-employed workers.

Anecdotal reports from observers of past wind farm developments in Columbia County relate that the ripple effects were very much a part of past projects (i.e., Hopkins Ridge and Marengo). For example, workers rented apartments during the construction period and also purchased furniture and appliances from local businesses during their tenures. Local hotel/motel occupancy was at an all time high between the months of March and October. Local firms supplied general contractors and specialty subcontractors with numerous supplies ranging from gasoline and tires for cars, trucks and equipment, cement, rental equipment, office supplies, work clothes and gear. On the Stateline Project, the contractor even purchased several trucks from a local dealership (Strand 2009).

Estimating with exact precision just how many consumables will be purchased locally depends on the particular developer's relationship with a particular general contractor and subcontractor, or the particular EPC contractor or a BOP service provider. However, it is clear from past projects that developers and contractors make extensive use of local resources and purchase supplies and materials that are readily available, and also hire local workers where the local capacity exists to perform services and sub-contracts.

Taxes

In Washington State, the Revised Code of Washington, (RCW 82.08.02567) exempts from taxation sales related to machinery and equipment used in generating electricity from renewable sources. The sales tax does not apply to sales of machinery and equipment used directly in generating electricity using wind, or to sales of or charges made for labor and services rendered in respect to installing such machinery and equipment. Machinery and equipment means industrial fixtures, devices, and support facilities that are integral and necessary to the generation of electricity using wind as the principal source of power (RCW 2009). While the exemption is set to expire on June 30, 2009, Senate Bill SB 6170, -2009-10 Environmental Tax Incentives renews the sales tax exemption for these facilities effective July 1, 2009 (SB 6170).

However, it is likely that construction period sales/use tax and other tax revenues (such as payroll) will be generated from other activities that are not covered under the RCW renewables exemption. These other sales and use and other temporary tax revenues can be expected to arise from the mobilization of resources and concentration of workers within the region across the entire supply chain likely to be impacted. Taxes related to such items as hotel stays and purchases on other consumables and equipment that will fall outside of the RCW renewable exemption will be included. Given the scale of the total industrial output expected to be generated annually across the region, sales and use taxes generated from the Project activities during the construction period could potentially range between $1.2 million to $1.58 million.

Agriculture

Agricultural impacts during construction are discussed below under Facility Impacts.

Project Facility Impacts

Preferred Alternative

This section discusses the likely impacts during the operational phase of the Project. The design life of the Project infrastructure is expected to be 25 years. The operational period impacts are presented on an annual basis, and have not been summed and presented in cumulative present value terms. Most of the operational period impacts will recur annually over this 25 year period.

Population and Housing

Population

Project operations are expected to result in a small increase in the region's permanent resident population. Wind farms employ a small number of permanent staff. Some of the operational and maintenance staff will be hired from within the area while some permanent workers may relocate to Garfield, Columbia or immediately adjacent counties. For the Hopkins Ridge and Marengo projects (total 367.2 MW of installed capacity), permanent employment to operate the facilities totaled 39 workers (Entrix 2009). Observers in Columbia County have noted that the permanent workers who are involved in plant operations and maintenance (O&M) are generally younger and are starting families in the region.

For the proposed Project up to 89 direct local permanent staff are projected to be required for the daily management and O&M of the facility. Based on past projects, it is possible that a large share of these workers will be hired from the region. It is likely that workers who do migrate from outside the region will have families and dependents. Assuming that one half of the 89 workers (or 45 rounded) workers migrated from outside the region, and had an average family size of 3 persons the net change in population attributable to the permanent workforce will be 135 persons. A potential of 45 (= 135/3) school aged children may become pupils and enroll in either the Garfield (Pomeroy) and/or Columbia (Dayton) school districts.

Some stakeholders have wondered about the potential long-term impact to population levels to communities that are hosting wind farms. Questions about a potential negative population effect or "chilling effect" on long-term population net migration have been voiced. To address these concerns the following table was prepared that shows the composition of population growth or change in counties that have already installed wind generation capacity, some of which has been operating for a number of years.

The top portion of Table 23 shows the components of population growth between 2000 and 2007 for Washington counties with installed wind generation capacity. Net or residual migration is the portion of change that is attributable to new residents coming into an area. While some of the wind farms have been operating for only a few years (i.e., Big Horn and Wild Horse), Stateline and Nine Canyon came online in 2001 and 2002. These counties experienced positive net migration between 2000 and 2007. While numerous factors can influence net migration to a region, if the chilling effect were present, and posed a material risk to population growth in these areas, one can expect to see some evidence of this effect in the smaller counties net migration levels. However, these effects are not visible. The ratios of net migration to the total population change are also shown to normalize the summaries for county population size. The bottom portion of Table 23 shows other counties without wind farm assets for comparison.

Table 23 Population Growth and Wind Farms by County - Components of County Population Change (2000 to 2007) & Wind Project Developments

Counties with Wind Farms					
County	**Walla Walla**	**Benton**	**Columbia**	**Klickitat**	**Kittitas**
Estimated Births	4,971	15,192	229	1,567	2471
Estimated Deaths	3,751	7,129	312	1,190	1,726
Natural Increase	1,220	8,063	-82	378	746
Net Migration	1,900	12,362	118	361	4192
Total Change	3,120	20,425	36	739	4938
Net Migration / Total Change	60.9%	60.5%	328%	49%	85%
Project Name	Stateline Wind Energy Project	Nine Canyon Wind Farm	Hopkins Ridge	Big Horn Wind Power Project	Wild Horse Wind Power Project
Year Online	2001	2002	2005	2006	2006
Adjacent or Contiguous Counties (without Wind Farms)					
County	**Franklin**	**Grant**	**Whitman**	**Skamania**	**Chelan**
Estimated Births	9,273	9,940	2,887	712	6,448
Estimated Deaths	2,013	3,924	1,563	498	4,141
Natural Increase	7,260	6,016	1,324	214	2,308
Net Migration	10,793	1,786	636	614	2,276
Total Change	18,053	7,802	1,960	828	4,584
Net Migration / Total Change	59.8%	22.9%	32.4%	74.2%	49.7%

Sources: State of Washington Office of Financial Management, 2007 Data Book, AWEA project database

Housing

Workers migrating to the area to operate and maintain the wind farm are expected to number up to one half of the permanent operational workforce high estimate of 89. Assuming a family size of 3 persons, it is possible that between 105 and 135 (½ x 69 x 3, and ½ x 89 x 3) persons may be permanently migrating to the area placing incremental demands on area housing facilities. It is expected that the upward potential total demand for 45 housing units can be accommodated by the region's permanent housing stock, and therefore the housing impact will be minor. Table 5, the area vacant housing units by type for Garfield and Columbia showed a combined number of 632 vacant units (Garfield 301 and Columbia 331). The region has sufficient permanent residential capacity to accommodate the workers and their families who may relocate to the area.

Economy and Employment – Economic Impacts

Employment Impacts

Wind generation infrastructure is characterized by relatively high capital costs, but relatively lower longer-term operational and maintenance costs compared to other sources of power generation relying on fossil fuels. Fewer workers are required to operate and sustain the assets over the plant's useful life. A review of past projects in Washington shows a small number of permanent workers hired to operate and sustain the plant and equipment (See Table 20).

The Project is projected to require up to 89 direct local permanent staff for the day to day management and operation and maintenance of the facility. Because of the very large scale of this project a low-high permanent employment range is provided in Table 24 (between 69 and 89 direct jobs). It is also expected that annually recurring operational spending on both maintenance and spending associated with wages will generate additional jobs within the region. The indirect and induced jobs anticipated during project operations were estimated with IMPLAN multipliers for the region and are shown in Table 24. The Project can potentially support between 105 and 136 long-term permanent jobs (across the region) after multiplier effects are taken into account.

Industrial Output Impacts

The operation of the facility will involve direct spending on salaries, supplies and equipment and specialty sub-contracts to sustain the assets over their useful lives. The annual operational and maintenance (O&M) spending anticipated with a project of this size was estimated by relying on actual project data compiled by the Berkeley Laboratory database. The Berkeley data show that O&M costs have been falling rapidly. For capacity weighted average O&M costs, O&M costs per MWh were $20/MWh in the 1990s and fell to $9/MWh in the 2000s (DOE 2008). To estimate the annual O&M low and high cost ranges for the LSRWEP, the average unit costs of $7/MWh and $9/MWh were applied to the project's power output. To estimate the annual power produced in a steady state year (i.e., with all turbines installed) a thirty percent capacity factor was used.

Table 24 Estimated Annually Recurring Economic Impacts from LSRWEP During Facility Operations

	Low	High
Employment (No. Jobs)		
Direct	69	89
Indirect	19	24
Induced	17	23
Total	105	136
Earnings ($)		
Direct	$5,391,775	$6,954,608
Indirect	$1,343,743	$1,733,234
Induced	$1,426,230	$1,839,630
Total	$8,161,748	$10,527,473
Industrial Output ($)		
Direct	$26,343,072	$33,869,664
Indirect	$7,151,308	$9,194,538
Induced	$6,680,745	$8,589,529
Total	$40,175,124	$51,653,731

The industrial output impact estimates also applied the IMPLAN multipliers for the region to estimate total impacts including ripple effects. Table 24 shows that the direct O&M spending can be amplified to generate an annually recurring total of $41.2 to $51.7 million in industrial output throughout the region. The anticipated economic impacts are expected to recur annually and to last for the duration of the useful life of the project.

Labor Income Impacts

To estimate earnings associated with the Project's permanent direct employment payroll, the range of low to high employment estimates were multiplied by a fully loaded annual wage rate (including benefits) adapted from the Desert Claim Wind Farm economic impact study. To estimate the total earnings including indirect and induced impacts, the IMPLAN multipliers for the region were used. During a steady state year (i.e., after all 795 turbines have been installed (by 2014-2015) it is estimated that Project operations will generate between $8.2 million and $10.5 million in income to the region on an annually recurring basis.

Landowner Revenues

Wind turbines function as a source of supplemental revenue for landowners in rural areas. This supplemental income can be particularly meaningful in the context of wide fluctuations in agricultural incomes and can provide a stable, consistent source of income to offset declines in other land based income sources.

Wind developers tend to lease land from landowners rather than purchase the land outright, although in some instances easements are purchased. Each lease contract with each developer can include unique and differing terms and clauses and is usually negotiated on a separate individual basis with the landowner. However, there are some common terms, structures, and clauses that are characteristic of these lease contracts (Entrix 2009).

Turbines and the associated infrastructure (foundations, roads, transmission lines, etc) have a combined footprint that can remove productive acreage on both a temporary and permanent basis. During the development and construction phases, landowners are generally compensated based on a dollar-per-acre lease agreement. Once the project becomes operational, payments to landowners are usually made on a percentage of the gross revenues basis, or are paid based on the production of the wind project in dollars per megawatt generated ($/MW). The landowner is typically still able to farm or allow grazing on all areas surrounding the turbines. Landowners who sell easements for wind energy projects typically receive a one-time, upfront payment (Entrix 2009).

Publicly available data originally sourced from various projects shows that landowner lease payments can vary between the equivalent of $2,000 to $7,000 dollars per turbine per year (AWEA 2009). Using this range of payments per landowner per turbine per year, the total potential range of revenues for each WRA were calculated. The calculations were based on multiplying the annual payment per turbine per year by the total number of turbines within each WRA. The sum total of the payments per each WRA are the total landowner revenues (as a range) for the entire Project. The range of potential landowner revenues would be contingent upon the final negotiated lease amount, or the effective payment per turbine per year per landowner. The range of payments per each WRA does not correspond to any one particular landowner's property. The range of the total value of payments are intended to show the range in the total value (a function of the total number of turbines) that would potentially accrue to all

landowners. The estimates should not be added together, but are meant to show how much total landowner revenue could vary (per payment range per turbine per year) for the entire Project.

Figure 8 shows the estimated total annual revenues per each WRA for the LSRWEP based on the WRA distribution of total turbines (795) and average payments per turbine per year varying between a low of $2,000 to a high of $7,000 per turbine. Figure 8 shows that total landowner revenues can potentially reach up $5.6 million per annum at a lease payment equivalent to $7,000 per turbine.

The landowner revenues from leases can offset volatile agricultural land based income and will also have an annual economic impact on Garfield and Columbia counties and the surrounding region. A large portion of these annual revenues will be spent on both discretionary and necessary purchases and the remainder will be saved and invested or used to pay taxes. It is likely that up to 70% of the annual revenues will be recycled and spent within the regional economy and will also generate annually recurring positive multiplicative impacts. Table 25 shows approximate estimates for these total economic impacts on total output in the region using the regional multiplier from the IMPLAN economic input-output model.

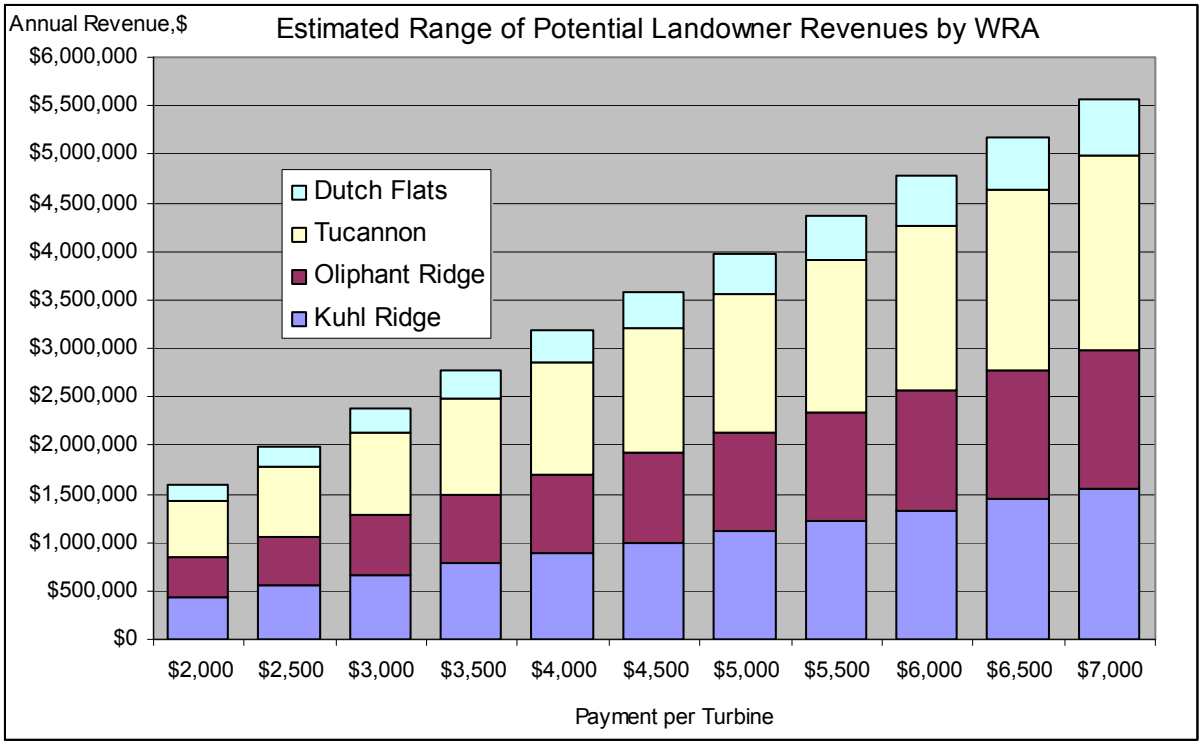


Figure 8 Hypothetical Range of Potential Landowner Total Revenues by WRA

Table 25 Annual Economic Impact from Landowner Revenues

	Industrial Output	
	Low	High
Direct	$1,113,000	$3,895,500
Indirect	$302,144	$1,057,505
Induced	$282,263	$987,920
Total	$1,697,407	$5,940,924

Property Values

To assess the question of whether wind farms, or more precisely the presence of wind turbines in rural communities have the potential to impact residential property values a literature search was performed. The question of property value impacts has been studied rigorously in only a few communities around the country. This literature review isolated useful studies based on applying the following criteria. The objective criteria was applied to filter out irrelevant and poorly constructed studies, and to ensure that stakeholders will consider studies that are of a sufficiently high quality, have met peer review standards, and reflect conclusions drawn from environments that are similar to the rural areas of Southeastern Washington. The criteria applied consisted of the following:

1. The studies selected for review applied statistical methods to actual arm's length sales transfers. Actual market data (i.e., sales transfer observations) for homes sold under normal conditions where each buyer and seller are on an equal footing and under no compulsion or pressure to transact, are the accepted, recognized indicia of market value. The literature review applied the criterion of whether the studies relied on actual market data in selecting studies for review.

2. In addition, the studies selected were also peer reviewed by professionals within the industry and with experience in the methods applied.

3. The studies profiled for stakeholder review involved actual case studies for established wind farms with operating histories. This criterion allows for an objective assessment of whether windmill visibility has indeed impacted property values because there is a market history of sales transactions available for analysis.

4. The studies selected for review were based on the potential impacts from wind turbines located in rural environments with surrounding farming communities. Studies completed for environments such as coastal zones with high density urban communities are of a different nature and would include many confounding variables, so they were excluded.

Numerous factors can potentially impact property values. The particular studies chosen for review applied accepted statistical methods consisting of trend analysis, multiple regression/hedonic analysis and surveys. Hedonic analysis is a multiple regression technique that isolates the individual marginal contribution to value (i.e., market price) for each variable within a group or basket of independent variables. The method is widely applied to estimate the effects from environmental variables in conjunction with other real property determinants such as structural, land/property-related, neighborhood, and macroeconomic characteristics.

In general, the tested hypothesis for these studies is whether a given wind farm's proximity to rural properties (i.e., those within the viewshed) has a measurable or statistically significant impact on property values. In other words does a view of the wind turbine impair the aesthetic value of the home? Or, does the presence of the wind farm/turbine/tower etc. influence other variables/characteristics that can impact values? Studies evaluating the impacts of rural wind farms on residential property values were reviewed because these regions are closest in nature and character to the proposed Project site in Garfield and Columbia counties. The review covers both simple and complex techniques that have studied this question. The most recent study

summaries are presented first. It should be noted that where some of the criteria above are not entirely met by a referenced study, the particular shortcoming is noted below.

Hoen/Wiser 2008

Hoen and Wiser reviewed a sample of studies that have been widely cited. The studies were divided into categories based on the following concerns of potential purchasers:

(1) Area Stigma: Concerns over the potential "industrialization" of area.
(2) Scenic Vista Stigma: Concerns over a potential decrease in the quality of scenic vistas from homes.
(3) Nuisance Effects: Potential health/well-being concerns of nearby residents.

The authors concluded that regarding Area Stigma, that there was no statistical evidence that homes near wind facilities are stigmatized by those facilities as compared to other homes in the region. Regarding the Scenic Vista Stigma, the authors concluded that no statistical evidence that homes with a view of wind turbines have different values than homes without such views. Regarding Nuisance, they found no statistical evidence that homes within ¼, ½and 1 mile of the turbines sell for different values than those located further away. The authors stated that one cannot rule out isolated cases where property values are negatively impacted, but any such impacts within the sample reviewed were not widespread nor statistically identifiable.

Hoen Study 2006

In assessing the impacts of a 20 turbine, 30 MW windfarm's visibility on residential property values in Madison County, New York, Hoen applied an econometric (hedonic) model using 280 arm's length residential sales for homes within a five mile radius of the windfarm. The study is significant in that each home was actually visited to ground truth the particular view from that location, and the author used both GIS measured distance and a measure of relative visibility from the property as independent variables. The latter independent variable was constructed using a field visit method and assigned a score to each turbine in relation to the homeowner's property. A zero (no view) up to a 3 (full view) was assigned and summed across turbines to provide a range of 0 to 60 score for each property. Sales data spanned a period of four years before and after the year the windfarm was constructed—i.e., between 1996 and 2005. The results of the analysis were broken down into three distinct sets, to isolate the visibility weighted location specific cases. Sets were divided into the entire sample (5 mile radius), and also within a 1 mile range, and home sales transacted after the completion of construction in 2001.

The analysis of 280 home sales within 5 miles of the Fenner windfarm, in Madison County, New York failed to uncover any statistically significant relationship between either proximity to, or visibility of the windfarm and the sale price of homes. Furthermore the analysis failed to uncover a relationship even when concentrating on homes within a mile or that sold immediately following the announcement and construction of the windfarm. Therefore Hoen concluded that for this community, a view of the windfarm does not produce either a universal or localized effect, adverse or not. Hoen added the caveat about extrapolating from these results by stating that to the extent that other communities are similar in nature to the Fenner rural farming community, the results should be transferable (Hoen 2006).

REPP Study 2003

The Renewable Energy Policy Project (REPP), funded partially through the US Department of Energy, National Renewable Energy Lab, and U.S. Environmental Protection Agency; released a

comprehensive study which is cited frequently in recent wind development literature on property values. The purpose of the study was to empirically examine data from all wind projects which came on-line in the U.S. after 1998 with a 10 MW or greater installed capacity, and test the accuracy of claims that wind developments negatively impact property values. At the time, no systematic study of wind farms and their relationship to property value changes had been undertaken (REPP 2003).

Using statistical methods to measure the variability of price fluctuations of properties located within both view shed areas and comparable (e.g., control) areas; REPP tested the difference in price appreciation over time between the two areas, i.e., one within viewshed, and those outside of Wind Farm area.. Price changes were measured before and after projects came online over a minimum span of five years. In all, they analyzed ten projects, combining a total of thirty time series. Where certain data was lacking (e.g., quarterly sales data), formal interviews with both realty professionals and county assessors were undertaken to confirm the accuracy of provided information collected independently by the authors. The method applied was based on simple regression analyses of price (dependent variable) on a time trend (independent variable) to determine how property values changed over time in the view shed and the comparable community outside (or before the project came on line). The coefficient on the independent variable (in this case the slope of the line) represented the monthly change in average price for the area and time period studied. The two price appreciation slopes were compared to examine if indeed the presence of the Wind Farm within the viewshed had negatively suppressed or impacted the rate of price appreciation.

Of the thirty analyses, the vast majority of twenty-six property values increased at a faster rate within the view shed compared to the respective control areas. In the few isolated tests where properties within the view shed underperformed, values did not reach a reasonable statistically significant level to alter the results. While the study did not create a hedonic model accounting for all potential factors that can influence property values (as did Hoen in 2006), the comprehensive data marshaled and compared in the study is meaningful in that it is inconsistent with claims that wind farms universally impair property values.

Grover Study (ECONorthwest) 2002

To study the potential property value impacts associated with a wind farm in Kittitas County, Washington, ECONorthwest surveyed tax assessors in other counties with wind projects to determine the potential effects of wind farms on property values. They also conducted a review of the available academic literature for additional information on property value effects. This property value research was conducted as an updated planning review document for a proposed wind farm development within Kittitas County.

County assessors were interviewed in six counties where adjacent properties had views of wind turbines. Based on a nationwide survey conducted of tax assessors in other areas with wind power projects, ECONorthwest found no evidence supporting the claim that views of wind farms decrease property values.

Environmental Benefits from the Project

The following exhibits describe some of the environmental benefits and energy savings associated with the Project. The Project's renewable energy production will avoid air emissions, fossil fuel use and depletion and water consumption. As a renewable energy resource wind energy can displace the air pollutant emissions associated with other forms of fossil fuel based

electricity generation comprising a region's power generation mix. Facility operations will also result in water savings by avoiding the consumption associated with thermal based power generation options to deliver the equivalent power. The environmental benefits are described in the socioeconomic analysis section of the EIS because these benefits will have a positive impact on stakeholders (i.e., the health and welfare of human receptors) and resource usage and costs in the region.

Avoided Emissions

In the Northwest Power Pool region, coal and natural gas accounted for 34.4% and 10.6%, respectively, of the region's generation capacity in 2004. Hydroelectric power accounted for 49% of the region's generation resource mix (eGrid 2007).

Table 26 shows the non-baseload output emission rates for carbon dioxide (CO_2) and the criteria air pollutants nitrogen oxide (NO_X), sulfur dioxide (SO_2) and mercury (Hg) for Washington State. The avoided emissions attributable to the Project assume that the LSRWEP will operate at an effective 30% capacity during a steady state year in which the entire nameplate capacity of 1432 MW is installed. To estimate the displaced emissions associated with the Project's power output, a non-baseload emission factor was applied to calculate the avoided emissions associated with the incremental power contributions of the LSRWEP to the regional power load curve. A baseload emission factor was not applied because this factor would have overstated or inflated the emissions displaced from the Project based on the dispatch order and average assumed capacity factor of the project.

During facility operations (at full buildout) the LSRWEP wind farm will displace 2.9 million tons of CO_2 per year, 2,960 tons of SO_2, 4,640 tons of NO_X and 24 tons of Hg on an annual basis. Columns 3 and 4 place the emission reduction benefits in perspective. In 2004, the state of Washington emitted 18.3 million tons of CO_2 (eGrid 2007). The LSRWEP Project's avoided CO_2 emissions will represent 16% of the state total, 36% of the statewide SO_2 emissions, and 21% of NO_X emissions.

Table 26 Air Pollutant Emissions Displaced by LSRWEP Wind Farm

Air Pollutant	Emission Rates [lb/MWh] \a	Tons Displaced by LSRWEP Project	Washington State Emissions 2004	LSRWEP / Washington State Emissions, %
CO_2	1,532	2,882,685	18,275,216	15.8%
SO_2	1.573	2,960	8,203	36.1%
NO_X	2.466	4,640	22,501	20.6%
Hg	0.013	24	661	3.7%

Notes:
\a Non-baseload output emission rates for NWPP (Northwest Power Pool) WECC Northwest Region.
Estimates baed on annual electricity production during a steady state year with a 30% capacity factor. Estimated MWh (i.e., @ 2015) = [1432 MW] x [.30 capacity factor] x (24x365)=3,763,296.

Source: eGrid2006 Version 2.1 (April 2007) Year 2004 Summary Tables

Avoided Fossil Fuel Use and Depletion

Facility operations will also avoid the consumption of fossil fuels used in the generation of equivalent energy through thermal based power generation systems. To put these energy savings benefits in perspective, energy equivalent calculations are provided based on the equivalent Btu content of the Project's electricity output during a steady state year. Table 27 shows the results of the calculations.

Table 27 Fossil Fuel Energy Equivalents and Market Values for Lower Snake River Wind Energy Project Electricity Production

	Energy Type	Annual Value	Unit
	Crude oil (barrels)	2,213,856	barrels
	Annual gallons	92,981,960	gallons
	Gallons per day:	254,745	gpd
A	Market value of crude oil	$151,826,258	Dollars
	Gasoline	103,551,338	gallons
B	Market value of gasoline	$196,499,020	Dollars
	Heating oil or diesel fuel	92,376,733	gallons
C	Market value of heating oil	$163,044,935	Dollars
D	Market value of diesel fuel	$163,506,818	Dollars
	Natural gas	12,490,628,358	cubic feet
E	Market value of natural gas	$69,822,613	Dollars
	Propane	141,102,923	gallons
F	Market value of propane	$117,820,940	Dollars
	Coal	636,639	short tons
G	Market value of coal	$26,738,825	Dollars

Notes:
a \ based on 6/2/09 WTI, Cushing Oklahoma spot price
b \ based on 6/2/09 New York Harbor, regular
c \ based on 6/2/09 Heating Oil No. 2, New York Harbor
d \ based on 6/2/09 Low Sulfur No. 2 Diesel fuel , New York Harbor
e \ based on Feb 09, Electric power price $5.59/Mcf
f \ based on 6/3/09 Mont Belvieu, TX
g \ based on 5/29/09 Uinta basin $/short ton price
Source: Market prices sourced from U.S. DOE/EIA (2009)

The Project's annual electricity production is estimated to be 3.76 million MWh. This energy is equivalent to 2.2 million barrels of crude oil with a recent market value of $152 million. Alternatively, the Project's output will be equivalent to 12.5 billion cubic feet of natural gas with an estimated annual market value of $69.8 million. The Project's output will displace 636,639 short tons of coal equivalent on an annual basis with a market value of $27 million. Since the above forms of energy are non-renewable resources, the energy savings associated with the Project's output are valuable because they avoid and defer future resource depletion.

Avoided Water Consumption

Thermal based power generation systems also consume large amounts of water. Water is an integral part of electric-power generation and is used extensively for cooling and emissions scrubbing in thermoelectric generation (DOE 2006). Since the Project's renewable energy output will avoid fossil fuel based power production, the water savings associated with the wind farm's equivalent energy are estimated. Table 28 shows the estimated annual water savings associated with nuclear, natural gas and coal fired electricity generation calculated by using the Project's annual steady state production at full buildout.

Table 28 Water Use by Thermoelectric Power Plants and Estimated Water Savings Associated with LSRWEP

Plant Type	Consumption – Water Intensity (Gal / MWh)	Avoided Water Consumption from LSRWEP Wind Power (Gal)
Nuclear	400 – 720	2,107,445,760
Natural Gas Combined Cycle	100 – 180	526,861,440
Coal IGCC*	200	752,659,200

Notes:
*IGCC = Integrated Gasification Combined-Cycle, includes gasification process water.
Source: DOE 2006

The LSRWEP Project will avoid the consumption of hundreds of millions of gallons of water. The estimated water savings were calculated based on water consumed (i.e., water lost to the evaporative cooling process) and not based on water withdrawals which may be returned to surface supply or underground sources.

Agricultural Impacts

This section discusses potential agricultural impacts during construction and operations together to consolidate on the use of tables. The Project footprint will displace a relatively small amount of acreage used for growing wheat and other crops. The displacement of these acres will have a minor impact by reducing agricultural income to each county. During the construction phase this impact will be temporary, and during facility operations the loss of these acres will be permanent lasting for the twenty five year useful life of the Project. The Entrix report also measured the "opportunity cost" of the wind farm footprints for Columbia County projects (Entrix 2009). This section applies LSRWEP preliminary data on potentially displaced acres, and actual county data on wheat yields and market values in a similar manner to estimate these likely impacts associated with the LSRWEP footprint.

It should be noted that stewardship practices are applied by wind project developers to mitigate the construction related agricultural impacts. During the construction phase, the landowners receive a one time payment which is called an installation fee. This fee is intended to cover all damage to agricultural crops and grazing lands associated with installation of WTGs. In addition, the project developers are required to restore all lands temporarily impacted by construction to their original use. Landowners without WTGS are compensated for the actual crop damage associated with roads, transmission lines, etc. All landowners are compensated for the loss and or damage to agricultural crops and all temporarily disturbed areas are restored by the developer upon completion of construction (Hughes 2009).

Table 29 shows data that was used to assess impacts to this resource. Rows 1-10 of the table show the total project footprint area acres by Wind Resource Area (WRA) that would be impacted during both construction and operations. Since wheat is the dominant crop and a high valued use of agricultural lands, the opportunity cost of the wind farm's land footprint during both construction and operations (in dollar terms) was estimated by measuring market values for wheat production for this land.

Table 29 Agricultural Impacts

		Wind Resource Area				
		Kuhl Ridge	Oliphant Ridge	Tucannon	Dutch Flats	Total
Estimated Impacted Agricultural Acreage						
1	**Construction (temporary, acres)**					
2	Row crops		26.6	0.07		26.7
3	CRP grassland \a	n.a.	n.a.	n.a.	n.a.	n.a.
4	Winter wheat	191.2	238.0	305.7	131.3	866.2
5	Total acres:	191.2	264.6	305.8	131.3	892.8
6	**Operations (permanent, acres)**					
7	Row crops		20.5			20.5
8	CRP grassland \a	n.a.	n.a.	n.a.	n.a.	n.a.
9	Winter wheat	194.0	251.1	240.9	130.5	816.5
10	Total acres	194.0	271.6	240.9	130.5	837.0
Estimated Market Value Associated with Footprint Impacted Acres (in dollars)						

Table 29 Agricultural Impacts

		Wind Resource Area				
		Kuhl Ridge	Oliphant Ridge	Tucannon	Dutch Flats	Total
11	**Construction (temporary)**					
12	Row crops		$2,834	$8		$2,841
13	CRP grassland \a	n.a.	n.a.	n.a.	n.a.	n.a.
14	Winter wheat \b	$76,398	$95,090	$122,152	$52,457	$346,096
15	Total:	$76,398	$97,924	$122,159	$52,457	$348,937
16	**Operations (permanent)**					
17	Row crops		$2,180			$2,180
18	CRP grassland \a	n.a.	n.a.	n.a.	n.a.	n.a.
19	Winter wheat \b	$77,526	$100,332	$96,260	$52,140	$326,257
20	Total:	$77,526	$102,512	$96,260	$52,140	$328,437
21	PV @ 5%, *n* =25	$1,092,653	$1,444,793	$1,356,678	$734,856	$4,628,980
22	Annual operational market value as a percent of total market value for Columbia + Garfield Agricultural Production \c	0.12%	0.15%	0.15%	0.08%	0.50%

Notes:
n.a. = not available, see text below.
\a There is no adjustment to the annual CRP lease payment that is triggered by the wind turbine footprint. The CRP enrollee's annual payments are not impacted (Hamilton 2009).
\b Winter wheat market value was based on a market price of $6/bu or $400/ac. Row crops were valued using $106.5/ac.
\c Ratio reflects row 20 divided by [$26.4 + $39.82 million].

Rows 11-21 show the estimated market values for these impacted acres during both construction and operations. To estimate the market values for wheat, a recent market price of $6/bu was used. The yield per acre applied was the average bushels per harvested acre or 66.6 (bu/ac) which was equivalent to an approximate gross market value of $400 per harvested acre. Row crop market values were estimated using a price of $106.5 per acre.

Since only a partial or limited number of CRP acre enrollments is known at this time, it is not reported. The location of some of the known CRP lands was obtained from the USGS 2001 land cover dataset and may not represent the total acreage of CRP lands within the project (Refer to Land Use Section). The Farm Service Agency was contacted for CRP data within the project area; however, due to the fact that the Food, Conservation and Energy Act of 2008 prohibits disclosure of the information requested, it was unavailable for inclusion. Accordingly, no CRP acreage has been reported in the above table.

However, it should be noted that there is no adjustment made to the annual CRP lease payments corresponding to the CRP enrollee's contract for land that would host the wind turbine footprint. The CRP enrollee's annual payments, despite a potential reduction in CRP acres, will not be affected (Hamilton 2009). Table 14 showed the average payments per farm for operators enrolled in this program varied between $18 and $20 thousand per farm for Garfield and Columbia counties. However there would be no financial impact to CRP enrollees.

The total cumulative values associated with the footprint acres needs to be placed in the context of an estimated $79 million dollar market value for wheat production in Columbia and Garfield for 2008. The construction period (temporary) estimated footprint value would be equivalent to 0.4% of the total value of this production if in fact all of these footprint acres were used in wheat production. Row 22 of the table shows the ratio of the annual estimated market value of the displaced acreage during facility operations to the total market value of combined agricultural production for Garfield and Columbia counties in 2007. This ratio shows that the agricultural

market impact would be minor on a permanent or long-term basis. Row 21 shows the cumulative present value of twenty five years worth of annual production for the operational footprint applying $400 per acre. The present value of this production using a 5% discount rate would be equivalent to $ 4.6 million over the useful life of the Project. The market value impacts are all expressed on a gross basis and do not reflect the netting out of operational costs of production.

Wind Farm Income Offsets to Agricultural Impacts (per acre comparison)

Over the long term, the loss of productive agricultural acreage and the resulting income will be offset by the landowner lease payments received per each footprint acre. These payments per acre will compensate the landowner for the loss of productive acreage. A calculation of landowner revenues per WRA using average payments per turbine (as a proxy) varying from between $2,000 to $7,000 per turbine showed that landowner revenues would vary between $1.6 and $5.6 million per year (for all WRAs combined). These amounts translate to between $500 and $1,800 dollars per average footprint acre. These amounts show that landowner lease revenues from turbines will compensate for and more than offset the loss of any agricultural production associated with the Project footprints. The comparisons show that income from wind expressed on a per acre basis will more than compensate for the potential agricultural impacts because the comparison was on a gross basis. Net farm income per acre is much lower after production and operational expenses are taken into account. Assuming even a lower band annual lease payment per acre, the wind farm income would more than compensate for any potential losses. Wheat prices would have to rise to record levels not seen in several years in order to make the opportunity cost of the land equivalent between wind and agricultural income.

The landowner lease revenue payments will also provide a stable supplementary source of income with which to also offset the swings in average agricultural incomes.

Aerial Applications

Comments were received concerning the Project's potential to interfere with aerial applications of chemicals in support of agriculture. According to crop consultants in the Columbia County (Dayton area) regarding aerial application of herbicides in or near wind facilities, it has been observed that aerial applicators continue to still fly and work within the operating wind project areas. Generally, air applicators apply insecticides and herbicides prior to harvest. When the crops are tall, ground applications are difficult. When the crops are small, the application of choice is usually by ground equipment. Ground application is usually more timely, cost efficient and more effective. Timing is critical when applying chemicals. Weather can be a big factor and is variable from year to year and affects the decision on the type of application to be deployed. There are some additional safety protocols that need to be followed when the aerial applicators fly near the towers. However, these issues and safety protocols are similar for the applicators when flying near any structure and/or wires. More structures have the potential to increase the risks to the applicator and decrease their efficiency. Aerial application of chemicals occurs at a height less than 300' which makes the application less effective than ground application. Standard ground application is usually based on 20" from ground level (Tornberg 2009).

Conservation Reserve Program Impacts

The Conservation Reserve Program involves the payment of a contractually stipulated amount (usually over a 10-15 year contract period) to a land owner who takes acres out of agricultural production and plants some kind of vegetative cover for conservation, environmental and land/soil enhancement purposes (Hamilton 2009).

Conservation Reserve Program (CRP) lands are also present in the Project Area, within the Kuhl Ridge WRA. The CRP, which is administered by the USDA Farm Service Agency, is a voluntary program for agricultural land owners. Owners of eligible agricultural land who enroll in the program receive annual rental payments and cost-share assistance in return for establishing a cover of resource-conserving vegetation on enrolled farmland for 10 to 15 years. The vegetative cover acts to reduce stormwater runoff and sedimentation, thereby improving local water quality and retaining valuable agricultural soils (USDA Farm Service Agency 2007). There are 558 acres of land within the Kuhl Ridge WRA that are enrolled within the Soil CRP program (USGS 2001).[3]

According to the U.S. Department of Agriculture's FSA Handbook Agricultural Resource Conservation Program for State and County Offices- Paragraph 282 Wind Turbines (Page 12-25) A Policy – states,

> "Commodity Credit Corporation (COC) may authorize the installation of windmills, wind turbines, wind-monitoring towers, or other wind-powered generation equipment on CRP acreage on a case-by-case basis. COC may approve up to 5.0 acres per contract of wind turbines on CRP acreage provided the environmental impacts have been considered according to subparagraph 242 F. For authority over 5 acres, COC shall submit a request in writing to the Conservation and Environmental Programs Division (CEPD) through the State Office according to subparagraph 31 A. The 5.0-acre per contract threshold is a cumulative figure that is calculated by totaling the square footage of land area devoted to the footprint of the wind generating device and any firebreak installed around the footprint. Access roads, transformers, and other ancillary equipment will not be considered in calculating the 5.0-acre per contract threshold (USDA 2008),"

Under the program policy for wind turbines, CRP contracts that involve wind turbine lands will not have an economic impact on the contract holder. Even though a small amount of footprint acreage may be effectively taken out of the CRP contractually allotted acreage, there are no financial impacts to the CRP enrollee. The statutory policy rationale recognized that wind farm development would take place on CRP and non-productive lands, and that the CRP program should not act to deter wind power development. Accordingly, the lease would not be terminated or renegotiated and the contractual payments would not be reduced ratably. As long as environmental impacts have been considered (according to subparagraph 242 F) the contract will not be terminated or the payments lowered. If the land area is larger than the above 5.0 acres per contract of wind turbines, the land owner may petition the FSA for a variance and can still enjoy the incumbent annual payment benefits of the existing contract under this policy (Hamilton 2009).

According to the Washington State FSA Office, CRP landowners should contact the FSA office for clarification on the above policies once they are approached by the wind farm developers (Hamilton 2009).

[3] The Farm Service Agency was contacted for CRP data within the project area; however, due to the fact that the Food, Conservation and Energy Act of 2008 prohibits disclosure of the information requested, it was unavailable for inclusion.

Recreation and Tourism

The potential impacts to recreation and tourism were evaluated in the March 2009 report entitled Economic Impacts of Wind Energy Projects in Southeastern Washington (Entrix 2009). This report provided an overview of the existing recreational and tourism resources available and the various programs related to hunting that have been implemented by the sponsors. The Entrix analysis was based on interviews, data collection, and analysis of post-construction trends in recreation and tourism in Columbia County as well as other studies.

Tourism

The research found that a large number of tourists traveled along State Highway 12 and stopped in Dayton. The existing wind farms are visible to tourists / scenic drivers on Highway 12 just east and west of town. There was no evidence to suggest that the Projects have discouraged tourists from traveling that route, although there was some evidence that the wind turbines have attracted new tourists as many people are curious about renewable energy systems and are interested in viewing wind turbines.

The research also showed that wind energy has attracted tourism at other locations. For example, the PSE Wild Horse Renewable Energy Center near Ellensburg, Washington hosted over 17,000 visitors in 2008. The Dayton Chamber of Commerce has begun marketing the area using themes of wind energy projects and alternative energy. Furthermore, PSE operates free tours of the Hopkins Ridge Project. Visitors interested in viewing the operation can schedule tours through the Dayton office of PSE. Tours have been provided to visitors passing through Dayton and numerous organized groups including classes from local schools and colleges, class reunions, church groups, and senior citizen groups. While most visitors have come from Washington State, visitors have come from as far away as New Hampshire, Hawaii, New York, Virginia, Arizona, Montana and Florida. PSE is promoting the package that visitors stay for a Project tour continue on for lunch at a local restaurant. The Weinhard Hotel in Dayton has partnered with PSE to market a wine and wind tour as a tourist attraction for its guests. PacifiCorp anticipates starting a similar program at their Marengo I and II facilities (Entrix 2009). Table 30 shows data provided by PSE on the annual number of tourists visiting the Hopkins Ridge Wind Farm.

Table 30 Visitors to Hopkins Ridge Wind Farm

Year	Annual, No.	Cumulative (from 9/05)
2005 (Sept-Dec)	224	224
2006 (Jan-Dec)	701	925
2007 (Jan-Dec)	612	1,537
2008 (Jan-Dec)	713	2,250
2009 (Jan-Apr)	114	2,364

Source: PSE

Hunting

A portion of the public and private lands leased by PSE and PacifiCorp for the Hopkins Ridge and Marengo Projects were formerly available for hunting through a state managed "Feel-Free-to-Hunt" Program (Program) whereby private land owners allowed hunting access in return for state assistance in planning or implementing practices for enhancing wildlife habitat. The Program posts signs on properties that define the boundaries and establish safety zones in which no shooting is allowed. The state also provides extra enforcement against violations. Often, once wind farm construction begins, the entire leased project area is closed to the public due to theft and liability concerns. However, closing access to large tracts of hunting areas can cause

unanticipated problems for lease-holding farmers. Without regulated hunting in these areas, wildlife populations can increase, causing potential damage to crops. Additionally, if area access is prohibited, poachers and other violators can find refuge from law abiding hunters and enforcement agencies. Both PacifiCorp and PSE have hunting programs to allow access to the wind project lands. The PacifiCorp program was implemented just before the 2008 hunting season, and therefore little information was available on the program at the time of analysis. More information is available on the PSE program at Hopkins Ridge, which has been implemented since 2006. Prior to wind project construction at Hopkins Ridge, approximately 7,000 acres of the 11,500 acre project area were available for hunting through the state-managed Program. During the construction phase the entire project area was closed to the public (Entrix 2009).

In 2006, PSE began the "Access-With-Written-Permission" program (AWWP) for the Hopkins project area. Under the AWWP program the number of acres available for hunting increased to approximately 8,000 acres, a net gain of 1,000 acres. In the first year, PSE granted 838 permits to hunters and fishermen from five different states. In 2007 that number increased to 876 permits. Over 600 permits had already been granted for 2008 by late July and many more were expected. The permitting process is free and involves providing photo identification, a vehicle description including license plate number, and a fishing and/or hunting license number. Once the appropriate paperwork has been filed and the applicant has watched a three minute video provided by PSE outlining safety in the wind farm area, access is granted. Permit holders are provided a map of the available hunting areas and the permit is valid until March 31st the following year. Hunters are primarily seeking elk, deer, and upland game birds in the project areas and fishermen are primarily seeking steelhead. There have been no reported violations of the AWWP program (Entrix 2009).

In summary, the data from the "Feel-Free-to-Hunt" program and the Hopkins Ridge "Access with Written Permission" program suggest that individuals are continuing to access the hunting lands in the controlled access Hopkins Ridge Project areas. Due to this program and the expected implementation of similar programs in the Marengo Projects, as well as the availability of alternative hunting lands elsewhere in the vicinity, it is expected that the Project's impacts on hunting recreation in the area will be limited.

Entrix also reviewed a number of other wind farm studies that attempted to measure the effect that wind energy development have had on recreational use and tourism, including one study from Scotland that surveyed visitors on the effects of large scale commercial wind farms. The studies suggested a weak leak between recreation and wind farm developments, and some even indicate that wind developments can potentially increase tourism.

Environmental Justice

Executive Order 12989, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," addresses the potential disproportionate human health and environmental impacts that a project may have on minority and low income communities. Environmental effects of a project on minority and low income communities or Native American populations must be disclosed. Under this order, agencies must evaluate projects to ensure that they do not disproportionately impact any such community. If such an impact is identified, appropriate mitigation measures must be implemented.

To comply with the order, this section examines and assesses the communities and their characteristics within the Project area (i.e., Garfield and Columbia counties). Minority populations are comprised of individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander (API); Black, not of Hispanic origin; or Hispanic (CEQ 1997). The State of Washington Office of Financial Management groups minorities into an all other category not including white non-Hispanic. Hispanic is considered a minority and can be of any race. Accordingly, a "minority" aggregate ratio was created by adding the following groups shown in Table 31 (Black, Indian, API and Two or More Races). Table 31 shows the racial composition, income and poverty indicators for Garfield and Columbia counties.

Table 31: Racial Composition – Columbia and Garfield Counties

	2000		April 1, 2008 Est.		2000		April 1, 2008 Est.	
	Columbia	%	Columbia	%	Garfield	%	Garfield	%
Total	4064		4,100		2397		2,300	
White	3941	97.0%	3,965	96.7%	2347	97.9%	2,249	97.8%
Black	9	0.2%	10	0.2%	0	0.0%	0	0.0%
Indian	41	1.0%	41	1.0%	9	0.4%	9	0.4%
Asian or Pacific Islander (API)	19	0.5%	23	0.6%	17	0.7%	18	0.8%
Two or More Races	54	1.3%	61	1.5%	24	1.0%	24	1.0%
Minority Aggregation:	123	3.0%	135	3.3%	50	1.2%	51	1.3%
All ages in poverty \a	488	12.0%	560	14.3%	292	12.6%	280	14.0%

Source: State of Washington, Office of Financial Management

Both counties are predominately white and have poverty indicators that exceed the state average. Guidance from CEQ states that minority populations should be identified where either: a) the minority population of the affected area exceeds 50 percent or b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Table 31 shows that the counties do not meet these criteria.

The poverty level proportions are determined by examining the family's income compared to income thresholds that are determined by family size and composition (i.e., the number of related children under the age of 18 years). If a family's income is less than the threshold income for that family's size and composition, the family is considered to be poor.

The background data indicates that environmental justice issues do not appear to be of concern or of relevance to the Lower Snake River Wind Energy Project. Obviously however, to ensure that any potential minority communities (who are obscured and hidden by the County averages, although this is unlikely) would not be disproportionately affected by any of the Project activities, appropriate safeguard and mitigation strategies will be adopted and implemented by the Project sponsor/developer(s). For example, at the WRA level, all measures will be taken to ensure that any minority or disadvantaged communities (who are concealed or hidden within the average statistics, but who may appear at the ground level) are not disproportionately affected by the project activities. The appropriate safeguards may potentially include tailored public outreach and mitigation techniques (if necessary) to ensure that any identified communities are not disproportionately affected by any of the Project components during both construction/installation and operations. Conducting a comprehensive public outreach process to

obtain feedback within the WRAs will help ensure that environmental justice considerations are included within the Project design and final footprint selection.

Property Taxes

Wind farms in rural parts of Washington State have contributed significant portions to the host county assessed values, their tax bases. For instance, in Columbia County, the host of both the Hopkins Ridge and Marengo projects, the assessed value of wind farms was $69.5 million or 17.8% of the total assessed value of $389.9 million in 2007. In 2008 wind farm assessed value represented 23% of Columbia County's total assessed value and these assets are estimated to rise to close to 35% of the property tax base in 2009. It is clear that wind farms have made substantial contributions as new sources of annual property tax revenue to their host communities. Property taxes are ad valorem taxes, meaning that the annual taxes paid reflect both the personal property and real property components of the wind farm's assessed value. In this document property taxes are synonymous with ad valorem taxes.

The contributions from wind farms have a positive impact on county and municipal services and taxpayers within these communities because they provide new resources and lower effective tax burdens. Not only do wind farms bring in new sources of annually recurring revenues, but they also result in lower effective taxes for other taxpayers who contribute to the tax base. The so called "redistributive effect" is very much alive and visible. For example, in Columbia County, tax rates or mill rates (per $1,000 of assessed valuation) were reduced across all tax code areas, thus lowering the tax burdens for other taxpayers on the tax roll (Miller 2009).

Under Washington State property tax policies, each year's taxing district budget may be increased by no more than 1%, (unless the public votes for a larger increase) plus the amount of assessed value allowed for new construction and the increases sanctioned under state assessed utility valuation. While the assessed values may increase annually, the levy can increase by only 1% ((based on budget based assessments) and millage rates (rate per thousand of assessed valuation) are downward adjusted accordingly to comply with this policy (Olson 2009). With the installation of wind farm assets and increases in assessed values, the net result (consistent with the levy lid policy) has been a progressive across the board reduction in mill (tax) rates in communities such as Columbia County, as new assessed values are added to the tax rolls.

Since the LSR Project would cross two counties, the utility central assessment method is applied by the State of Washington's Department of Revenue to determine the taxable assessed value of the assets. The Department of Revenue uses an apportionment method that takes into account the utility's entire operations throughout the state. According to WAC 458-50-100,[4] "In general, the Department shall apportion the value of all public utility companies to the various counties in such a manner as will reasonably reflect the true cash value of the operating property located within each county and taxing district. Since it is impossible to determine with mathematical precision the precise value of each item of property located within each county and taxing district, the department shall apportion the value of operating property on the following basis;…(5) Electric light and power companies – The ratio that cost (historical or original) of operating property situated within each county and taxing district bears to the total cost (historical or original) of all operating property within the state as of January 1 of the assessment year.." (DOR 2009).

[4] See http://apps.leg.wa.gov/WAC/default.aspx?cite=458-50-100

The following tables provide order of magnitude annual property tax estimates for Columbia and Garfield counties. The estimates are based on approximate estimates with information known at this time. To locate the applicable local tax districts within each county, tax maps from the Washington Department of Revenue were superimposed on the Project footprint GIS maps. This analysis enabled a count of the turbines within each tax district. The turbine counts were used to allocate the total estimated project value within each tax district per each county.

Historic annual tax payments associated with other wind farm assets installed throughout Washington were also used as a reference. This latter data was used to test whether the estimated tax payments were within realistic ranges given the size of the Project (i.e., the No. of turbines and MW) and the estimated asset values. For example, based on annual tax payments for the listed projects shown in Table 20, the average annual property tax payment per MW of installed capacity was $5,742, while the average annual property tax payment per turbine was $10,105. These figures were used to check the reasonableness of the estimates presented below.

Columbia County Estimates

The tax estimates for Columbia County were also vetted with Ms. Christine Miller, the County Assessor who has had experience with the taxation of wind farms and their integration within the tax rolls for the Hopkins Ridge and Marengo projects.

Table 32 shows the estimated annual ad valorem taxes associated with the Project component to be installed in Columbia County. The estimates assumed that 351 out of the 795 Project total turbines will be installed in Columbia County. The estimates also assumed that over a five year construction period, an equal amount of capacity (MW) would be installed each year. The hypothetical five year construction period is for working discussion purposes and is used as a parameter to complete the impact assessment analysis. For the first year, the tax estimates assume that 70 turbines (= 1/5 x 351 = 126 MW of capacity) would represent the completed construction or project value within the county.

Table 32 Columbia County Annual Property Tax Estimates

Recipient of Funds	Estimated Project Value in District	Levy rate/1000	Steady State Taxes (at full buildout)	Estimated Year 1 Taxes
County Current Expenses	$512,115,623	1.32880	$680,497	$136,099
Road District 1	$512,115,623	1.49103	$763,580	$152,716
Fire District 1	$180,687,968	0.95204	$172,021	$34,404
Fire District 2	$27,951,730	0.92500	$25,855	$5,171
Fire District 3	$303,475,925	0.65590	$199,051	$39,810
Hospital District COLUMBIA	$512,115,623	0.49995	$256,033	$51,207
Library RL	$512,115,623	0.34419	$176,267	$35,253
Port COLUMBIA	$512,115,623	0.33220	$170,123	$34,025
School 100				
#100 M&O-Waitsburg	$29,948,282	1.39579	$41,801	$8,360
#100 Bond-Waitsburg	$29,948,282	1.15696	$34,649	$6,930
School 2				
#2 Dayton M&O	$376,350,077	1.07957	$406,294	$81,259
#2 Capital Tech Bond	$376,350,077	0.05685	$21,395	$4,279
School 35				
#35/37 Pres/Star M&O	$91,841,398	0.07098	$6,519	$1,304
#35/37 Pres/Star Bond	$91,841,398	0.05256	$4,827	$965
School 44				
#44 Bond-Garfield	$13,975,865	0.01163	$163	$33

Table 32 Columbia County Annual Property Tax Estimates

Recipient of Funds	Estimated Project Value in District	Levy rate/1000	Steady State Taxes (at full buildout)	Estimated Year 1 Taxes
#44 M&O-Garfield	$13,975,865	0.02144	$300	$60
County Total:			$2,959,375	$591,875
Applicable State Levies				
#2 General	$463,457,212	1.90000	$880,569	$176,114
#35 General	$24,329,714	1.90000	$46,226	$9,245
#35/37-1 General	$1,102,897	1.90000	$2,096	$419
#37 General	$2,125,632	1.90000	$4,039	$808
#44 General	$114,503	1.90000	$218	$44
#100 General	$20,985,665	1.90000	$39,873	$7,975
State Total:	$512,115,623		$973,020	$194,604
Applicable Local Voted Levies				
Hospital Bond Joint	$512,115,623	0.35785	$183,263	$36,653
Grand Total:			**$4,115,658**	**$823,132**

It is estimated that annual property tax payments to Columbia County will be in the vicinity of $0.8 million for the first year and rise to close to $4 million per year upon full buildout and integration of the entire Project to the tax rolls. The mill rates shown (per $1,000 of assessed valuation) reflect lower rates that have been downward adjusted based on the applicable tax policies (i.e. the Levy Lid) and budget based policies for Washington State and Columbia County.

Garfield County Estimates

Table 33 shows the estimated annual ad valorem taxes associated with the Project component to be installed in Garfield County. The estimates assumed that 444 out of the 795 Project total turbines will be installed in Garfield County. The estimates also assumed that over a five year construction period, an equal amount of capacity (MW) would be installed each year. So for the first year, the tax estimates assume that 89 turbines (= 1/5 x 444 = 160 MW of capacity) would represent the completed construction or project value within the county.

Table 33 Garfield County Annual Property Tax Estimates

District	Estimated Total Assessed Value in District	Levy Rate/1000	Steady State Taxes (at full buildout)	Estimated Year 1 Taxes
State Property Tax	$647,804,377	1.8127044	$1,174,278	$234,856
County	$647,804,377	0.9580142	$620,606	$124,121
Road District #1	$647,804,377	1.3036498	$844,510	$168,902
Hospital District-Reg.	$647,804,377	0.2984802	$193,357	$38,671
Hospital District-Special	$647,804,377	0.7481056	$484,626	$96,925
Fire District	$647,804,377	0.6148560	$398,306	$79,661
Port Garfield	$647,804,377	0.2650277	$171,686	$34,337
School District 110-M&O	$647,804,377	0.6149397	$398,361	$79,672
School District 110-Bond	$647,804,377	0.3353043	$217,212	$43,442
Grand Total:			$4,502,941	$900,588

It is estimated that annual property tax payments to Garfield County will be in the vicinity of $0.9 million for the first year and rise to close to $4.5 million per year upon full buildout and integration of the entire Project to the tax rolls. The mill rates shown (per $1,000 of assessed valuation) reflect lower rates that have been downward adjusted based on the applicable tax policies (i.e. the Levy Lid) and budget based policies for Washington State and Garfield County.

School District Funding, Equalization & Public School Impacts

In Columbia County, the local School District and M&O and any Bond levies are distributed monthly from the funds collected at the county level. In terms of state funds for schools that are allocated based on the equalization principle, the money received is based on the county's assessed value, and usually varies inversely with these values, (i.e,, the greater the assessed value the less money the school districts receive from the state equalization payment) (Miller 2009).

Stakeholders have noted that with the installation of wind farm assets in so-called "property poor" counties, there is the potential for a short-term financial impact to local school districts from state transfers that are based on equalization (Spacek 2009). As the commercial or non-residential value of the tax base expands over time with the installation of the wind farm assets, it is expected that equalization formulas tied to old (lower) assessed valuations per pupil will change. For capital construction, State assistance varies with the amount of assessed valuation for property tax purposes in each school district. The more wealth (property value) per pupil the district has, the lower the percentage of state assistance. Accordingly the state transfers can be expected to fall in the short term but be offset over the longer term by the new expanded tax payments that will flow to the school districts from the locally generated revenue contributions of the wind farm assets put in place.

Local school district funding is expected to be impacted because the new wind farm assets can change the school district levy equalization amount by reducing the percentage of funds transferred from the state. So in the short-term the school district's share of equalized revenues can be reduced. However, observers have noted that over the longer term horizon, upon completion of the projects, there is a long-term positive impact from the expanded tax rolls and increases in annual tax payments with reduced levy rates. In other words, the wind farm property enables school district budgets to be met by locally generated non-residential portions of the new expanded tax base. In addition, since wind farms have generated employment, school district pupil enrollments has stabilized and have also increased that can also help local school district financing and the flow of funds because state apportionment formulas are based on enrollments. . It is estimated that during the construction period, 175 school aged children could potentially move to the area and enroll in either the Pomeroy &/or Dayton school districts. During operations it is estimated that 45 school aged children will become permanent residents and will enroll in area public schools (See Table 2-57 above). Over the long term, the wind farm's expansion of the non-residential tax base allows a community to be less dependent on equalization based transfers from the State because locally derived tax revenues compensate for transfers (Mosio, 2009).

Table 34 shows the historic school district funds per fiscal year for the Dayton School District in Columbia County. The table also shows the wind farm projects and dates (year online) for comparison at the top of the appropriate year column.

Table 34 General Fund Revenues and Other Financing Sources for the Dayton School District by Percent and Per Pupil

	Marengo I&II (2007, 2008)	Hopkins Ridge (2005)			
	Fiscal Years				
	2007-2008	2006-2007	2005-2006	2004-2005	2003-2004
Dayton Enrollment, FTE	480.4	509.5	531.6	541.22	587.6
Total Revenues	$5,405,475	$5,311,450	$5,118,179	$5,026,879	$5,179,822
Total Revenues per pupil	$11,252	$10,425	$9,629	$9,288	$8,816
Total Expenditures	$5,454,181	$5,168,695	$5,156,143	$5,208,187	$5,197,108
Total Expenditures per pupil	$11,354	$10,145	$9,700	$9,623	$8,845
Revenue Breakdown (Percent and Per Pupil)					
Local taxes percent	15.9%	15.3%	14.8%	15.2%	14.5%
$/pupil	$1,787	$1,597	$1,421	$1,409	$1,277
Local support non-tax percent	3.5%	3.6%	3.9%	3.0%	2.7%
$/pupil	$399.0	$375.4	$379.7	$275.9	$240.0
State general purpose apportionment, percent	50.3%	51.8%	52.0%	53.1%	52.6%
$/pupil	$5,655	$5,395	$5,007	$4,934	$4,639
State Special Purpose, percent	18.8%	17.0%	16.3%	15.7%	13.9%
$/pupil	$2,112	$1,771	$1,569	$1,460	$1,223
Federal General Purpose, percent	3.3%	3.5%	3.6%	3.6%	3.4%
$/pupil	$371	$360	$343	$330	$302
Federal Special Purpose, percent	8.1%	8.7%	9.3%	8.8%	10.0%
$/pupil	$911.5	$910.8	$898.0	$818.0	$882.3
Other Financing Sources, percent	0.2%	0.1%	0.1%	0.7%	2.9%
$/pupil	$18	$15	$11	$61	$252

Source: OSPI 2009

While Dayton has experienced a trend of declining pupil enrollment, revenues and expenditures per pupil have increased over the years. The share of total revenues coming from the State General Purpose Apportionment Fund fell between fiscal years 2003/2004 and 2007/2008 (from 53% to 50%). However, this portion of revenue was more than offset by the share of revenues coming from local taxes (rising from 14.5% to 16%) and the State Special Purpose Fund that rose from 14% to 19% of the total revenues over this period. Per pupil revenues and expenditure amounts have all increased over the years.

The Project is likely to have a net beneficial impact on public schools. Based on the large scale of the proposed Project, with a multi-year construction period, it is anticipated that a large number of construction workers will bring their families and dependents into the area thereby raising public school enrollments by an estimated maximum of 175 students during this phase (See Table 18). During facility operations, enrollment may increase by up to 45 pupils from permanent employees and their dependents. These pupil enrollments would be a positive impact in light of the declining trends. School district revenues derived from the locally generated annual property tax payments are expected to increase. Data from Columbia County show that wind energy developers have contributed a growing proportion of the total amounts collected for the School 2 M&O taxing district. In 2007, developers paid 20.5% of the total dollars collected, and this ratio is expected to rise to 39% in 2009 (Miller 2009).

It has been noted that there are lags in terms of school district state apportionment funds that are transferred to the counties hosting new wind farm assets. The lags are based on the fact that the tax payments associated with the wind farms' new assessed values arise a year after the new assessment, but the apportionment formulas change before the new commercial property derived funds arrive.

Other Taxes - Facility Operations

Sales and use taxes would also be generated during facility operations. These taxes would be generated based on annual operational and maintenance expenditures to sustain the facility assets and from permanent employee payroll. Payroll and social insurance taxes will also be generated.

Stakeholders have inquired about the impact on taxable retail sales. Figure 7 showed that based on the past history for Columbia County it is probable taxable retail sales will expand in both Garfield and Columbia counties from the LSRWEP expenditures over both the construction and operational phase of the project. Regarding the sale (and taxation) of the Project's power production, Puget Sound Energy is not contemplating a sale through a Power Purchase Agreement (PPA), or otherwise, of the power generated from the LSRWEP project. The project is being developed to meet the energy needs of PSE customers (Anderson 2009).

Public Services & Fiscal Impacts

The expected Project-related demands (per project phase and by WRA) on public services are described in detail in Section 2.12 Public Services and Utilities. Given the history of projects in the state it is likely that Project assets will generate annual tax revenues that will more than offset annual incremental municipal expenditures attributable to construction phase demands and facility operations. As Section 2.12 outlines it is expected that there will be increased demands placed on roads, public schools, and public safety. However, the increased ad valorem revenues anticipated will more than compensate for the increased demand related costs from the Project.

Franchise Fees

There are no franchise fees at either the state or local level beyond recompense to the county for review of the plans for and inspection of installation of infrastructure in the county rights-of-way. This amount is considered de minimis. In Washington, counties may not assess fees in the guise of "franchise fees" beyond the actual costs incurred by the jurisdiction in relation to the granting and implementation of the franchise itself. Doing otherwise is generally viewed by the Washington courts as an unlawful tax (Anderson 2009).

Insurance Costs

Columbia County reported that the construction and operation of the Hopkins Ridge and Marengo facilities did not have any impact on the County's insurance policy. Insurance premiums did not increase due to the presence of the wind farms (Richter, 2009).

End of Design Life Impacts

All Four WRAs

The estimated design life of the major project assets (i.e., the turbines, transformers, substations and supporting infrastructure) is anticipated to be 25 years. Several options are available at the end of the Project's design life. Among these options are repowering (with newer model

turbines), decommissioning, or continuing to operate the plant if the plant is not fully depreciated and can function effectively. Decommissioning will be carried out in compliance with the requirements of the Garfield and Columbia County Zoning Ordinance and the conditions of approval in the CUPs issued by both counties.

If the Project is upgraded at the end of its useful life, there would be a positive economic impact to Garfield and Columbia from the repowering. Construction/repowering workers will be required to build and upgrade the plant and will result in a positive increase in employment, incomes and output to the region.

Decommissioning would also involve mobilizing a demolition or dismantling workforce and will make use of specialized contractors, equipment and personnel. These short-term non-recurrent activities will provide a one-time economic stimulus to the region. As materials are removed and dismantled, there are opportunities for salvaging and resource recovery as well as the beneficial reuse of equipment and infrastructure in other locations, and potentially in other purposes.

However, decommissioning will result in a small reduction in permanent employment related to long-term operation and maintenance (O&M) of the facilities. Unless these employees were deployed elsewhere in the State, there would be a net loss of long-term O&M wind energy jobs in Washington. Long-term permanent employment associated with the Project was estimated at 22 jobs. Decommissioning would also reduce the long-term ad valorem property taxes associated with the Project that would flow to Garfield and Columbia counties. While the land would still be taxed, the counties would lose the larger annually recurring tax revenues associated with the assessed value of the wind farm assets that reflects both real and personal property assessed values.

Cumulative Impacts

Cumulative impacts analysis considers the past, present, and reasonably foreseeable future actions (projects) that could potentially have direct or indirect impacts in combination with the proposed action on socioeconomic resource areas.

As the LSRWEP develops and comes online it is likely that the host communities (Garfield and Columbia counties) will become more self sufficient in relation to how public services are financed. As the local property tax base grows and expands, the non-residential local portion of the tax base will comprise a greater share of the total assessed valuation. Table 17 Summary of County Revenues and Expenditures 2007 showed that transfers (intergovernmental revenues) are at high proportions of total revenue requirements to fund county services for both Garfield and Columbia. It is likely that these transfers will fall as the local property tax base expands. The wind farm assets additional to the tax base will benefit the community by lowering the effective tax rates across the board and allowing income to remain with taxpayers. This redistributive effect can potentially result in higher disposable incomes that can sustain future economic growth. As the local tax base grows and broadens, the cumulative impact on school districts is also expected to be beneficial. Less reliance on State transfers will be required to fund expenditures at levels that meet State goals and national standard requirements. As a consequence State General Funds can be freed up to equalize other so-called “property poor” regions in other parts of the state.

The radius considered under cumulative impacts considers a wide area or swath of historically agricultural lands that will also support wind energy development. Potential cumulative impacts

relate to a reduction in total arable lands to be offset by non-farm income from wind farm landowner leases. The relative size of the total areas (combined acreage) in relation to permanent footprints shows results in a small loss of agricultural income. However, it is likely that this loss will be more than compensated by stable, consistent sources of landowner revenues from turbine leases.

The cumulative impacts from the Project's annual renewable power output, estimated at 3.76 million MWh per year (steady state) would have a beneficial impact on the contributions to the Northwest Power Pool and the WECC region. Renewable, clean energy will contribute to less long-term reliance on fossil fuels and imports from outside the state and country. The Project's energy supply will have a beneficial cumulative impact on residential, industrial and commercial end users. Electric power is necessary to sustain future economic growth and is a raw input to numerous productive and manufacturing processes. As regional and state renewable energy capacity increases, there is also a beneficial cumulative impact in terms of energy security, independence, and diversification that the wind project assets' collectively contribute to over the long-term horizon.

The power to be produced at the LSRWEP will be available for inclusion into the energy portfolio of PSE. PSE's portfolio reflects a diverse mix of generation assets including low cost hydropower (approximately 42% of power supply mix) (PSE 2009). The costs of the power from the LSRWEP will be blended into the total electricity generation costs of the utility. The blending of costs, into a diversified supply portfolio, will likely have a neutral impact on the cost of power to consumers (utility rate payers) within the region (Entrix 2009).

Mitigation

There appears to be sufficient temporary housing in the region to accommodate the temporary construction workforce during each phase of the construction. Reports from past projects show that some workgroups lease apartments in small groups, while others use hotels/motels and RV camping sites. The available housing units have been profiled in above exhibits. The incremental demand for housing during any one man month is unlikely to require mitigation or special measures. Reports from past projects relate that the placement of temporary roads in rural areas used for agricultural production does require careful consideration and planning. This planning for compatible land use is part of the landowner lease negotiation process and can be considered part of the sustainable project design and does not require separate mitigation.

Given the changes that the installation of wind farm assets can have on county and school district finances, it is recommended that close coordination between project/sponsors developers and county and school district officials be maintained so that the county and school districts are aware of the likely dates when project phases are completed and the assets are commissioned and become part of the tax rolls. If sufficient notice is provided then school districts can proactively budget to accommodate any future likely changes given notice of the dates when they would fall within the upcoming fiscal year.

No Action Alternative

Under the No Action Alternative the Wind Resource Areas would not be exploited for their wind energy potential. The socioeconomic impacts described in this section would not occur. The WRA lands would continue to be used according to their existing uses, mainly agricultural. The loss of agricultural income from displaced production would not occur. However, the annual lease payments to landowners hosting wind turbines would also be foregone. Therefore select

landowners would forego a stable source of annually recurring income and the counties would lose annual property taxes that have the potential to lower the effective tax burden for other taxpayers. The gains to regional employment and income during the construction and operational phases would not be realized. Under the No Action alternative, the demand for electricity that would have been satisfied by the Project's nameplate 1432 MW would have to be supplied from other generation sources. To the extent that other fossil fuel generation sources would provide the power, the No Action would result in greater air pollutant emissions, water consumption, and the depletion of non-renewable fuel supplies used in the production of electricity meeting demand within the NEPP/WECC region.

Significant and Unavoidable Impacts

There are no significant and unavoidable impacts identified from the Project phases related to socioeconomic resources. The impacts identified can be mitigated.

References

Anderson 2009 Email from Erin L. Anderson , Esq., Stoel Rivers LLP to Ian Miller, Ecology & Environment Inc., 6/9/09.

AWEA 2009 Wind Energy for Your Farm on Rural Land – Introduction to Wind Energy, American Wind Energy Association Factsheet, http://www.awea.org/pubs/factsheets/WindyLandownersFS.pdf

BEA 2009: U.S. Department of Commerce, Bureau of Economic Analysis, Local Area Personal Income http://www.bea.gov/regional/reis/default.cfm?selTable=CA1-&section=2

Census Bureau 2009 U.S. Census Bureau, Small Area Income and Poverty Estimates, http://www.census.gov/did/www/saipe/data/statecounty/index.html

CEQ 1997 Council on Environmental Quality, 1997, Environmental Justice Guidelines Under the National Environmental Policy Act, Council on Environmental Quality, Executive Office of the President, Washington D.C. http://ceq.hss.doe.gov/nepa/regs/guidance.html

Columbia County 2009 Columbia County 2009 Tax Levy Sheet

Dickenson 2009 Phone conversation between Jennie Dickenson, Port of Columbia and Ian Miller Ecology & Environment Inc., 6/1/09.

Dixon Personal Communication 2009 Email from Katie Dixon (E&E) to Ian Miller (E&E) summarizing review of REET document and implications by Grant Morgan (Garfield County) and Columbia County officials, July 22, 2009.

DOE 2004 From Snack Bars to Rebar: How Project Development Boosted Local Businesses Up and Down the Wind Energy 'Supply Chain' in Lamar, Colorado, Craig Cox, March 2004, Conducted on behalf of Bob Lawrence & Associates, for U.S. DOE under Grant Number SF22339

DOE 2006 Energy Demands on Water Resources – Report to Congress on the Interdependency of Energy and Water. U.S. Department of Energy, December 2006.

DOE 2008 U.S. Department of Energy Efficiency and Renewable Energy Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2007, May 2008.

DOR 2009 Washington State Department of Revenue, Statistics & Reports, Taxable Retail Sales,

http://dor.wa.gov/content/aboutus/statisticsandreports/TID/statisticsreports.aspx?query=statesalesnaics

DOR 2009 Destination-based Sales Tax, http://dor.wa.gov/Content/FindTaxesAndRates/RetailSalesTax/DestinationBased/MoreSST.aspx

DOR 2009 c Apportionment of Electric Utility Value Workgroup Final Report. Report sent via email from Neil Cook of DOR to Ian Miller of Ecology & Environment, Inc., 4/15/2009.

Entrix 2009 Economic Impacts of Wind Energy Projects in Southeast Washington, Prepared for Southeast Washington Economic Development Association by Entrix, Inc., Vancouver, WA, March 6, 2009.

GCCP 2008 Garfield County & City of Pomeroy Comprehensive Plan, Adopted April 21, 2008.

Garfield County 2000 Garfield County Profile, September 2000, Labor Market and Economic Analysis Branch, Greg Weeks, Director, Washington State Employment Security.

Golderg 2004 Job and Economic Development Impact (JEDI) Model: A User-Friendly Tool to Calculate Economic Impacts from Wind Projects, Preprint, M. Goldberg, MRG & Associates, National Renewable Energy Laboratory, March 2004, NREL/CP-500-35953.

Grover 2002 Dr. Stephen Grover. Economic Impacts of the Kittitas Valley Wind Project: A Report for the Phoenix Economic Development Group. ECONorthwest. November 2002.

Hamilton 2009 Phone conversation between Rod Hamilton, Farm Program Chief, Washington State Farm Service Agency (FSA) Office and Ian Miller, Ecology & Environment Inc., June 10, 2009.

Hoen 2006 Hoen, Ben. Impacts of Windmill Visibility on Property Values in Madison County, New York. Bard Center For Environmental Policy, Bard College, Annandale-on-Hudsen, NY. April, 2006.

Hoen & Wiser 2008 The Impact of Wind Facilities on Residential Property Values, What We Know And What We Don't Know, Ben Hoen & Ryan Wiser, Lawrence Berkeley National Laboratory, benhoen2@earthlink.net, rhwiser@lbl.gov, 10 Area Preliminary Results, June2008

HUD 2009 U.S. Department of Housing and Urban Development, HUD User Data Sets, FY 2009 Income Limits, Median Family Incomes, Tables for 1999

and Estimated FY2008 Decile Distributions by Area in pdf, http://www.huduser.org/intercept.asp?loc=/datasets/il/il08/FY2008_Medians.pdf

Hughes 2009 Email correspondence between Katie Dixon, Ecology & Environment Inc. and Nicole S. Hughes, Renewable Energy Systems Americas Inc., 6/17/09.

IMPLAN 2009 Email correspondence between IMPLAN (Impact Analysis for Planning, MIG, Inc. and Ian Miller of Ecology & Environment, Inc. regarding purchase and transfer of aggregrated regional economic impact multipliers for Southeastern Washington State, June 1, 2009.

JLARC 2008 State of Washington Joint Legislative Audit & Review Committee (JLARC), Review of Distributions From the City-County Assistance Account Report 08-10 December 3, 2008, Joint Legislative Audit and Review Committee 1300 Quince St SE PO Box 40910 Olympia, WA 98504.

Miller 2009 Introduction to Property Tax Benefits from Wind Development Projects in Columbia County, Prepared by Christine Miller, Columbia County Assessor, 341 E. Main Street, Dayton, WA, 99328, 5/13/2009.

Mosio 2009 Phone conversation between Paula Mosio, Business Manager, Dayton School District and Ian Miller, Ecology & Environment Inc., July 1, 2009.

NAWP 2009 North American Wind Power, April and May 2009 issues.

OFM 2009a Office of Financial Management, State of Washington, Official April 1, 2008 Population Estimates, http://www.ofm.wa.gov/pop/april1/default.asp

OFM 2009 State of Washington, Office of Financial Management, Population Projections, Medium Scenario, http://www.ofm.wa.gov/pop/gma/default.asp

Olson 2009 Property Taxes in Washington, April 2009, by Glenn Olson, Deputy County Administrator, Clark County.

OSPI 2009 OSPI State of Washington, Superintendant of Public Instruction, School District & ESD Financial Reporting Summaries (FY 03-04 – FY 07-08), Section Three, School District Financial Reports, General Fund Expenditures, Revenue, and Ending Total Fund Balance Per Pupil by County (Excel), and Percent and Per Pupil of General Fund Revenues and Other Financing Sources by County (Excel), http://www.k12.wa.us/safs/PUB/FIN/0708/fs.asp

PSE 2008 Wind Power – Creating Benefits for Columbia County – Puget Sound Energy, 4153_008 0808. www.pse.com.

RCW, 2009 Revised Code of Washington (82.08.02567), Exemptions — Sales related to machinery and equipment used in generating electricity. (Expires June 30, 2009), http://apps.leg.wa.gov/RCW/default.aspx?cite=82.08&full=true#82.08.020

REPP 2003 The Effect of Wind Development on Local Property Values, Analytical Report , May 2003, REPP, Renewable Energy Policy Project, George Sterzinger, REPP Executive Director, gsterzinger@repp.org, Fredric Beck, REPP Research Manager, fbeck@repp.org, Damian Kostiuk, REPP Research & Communications Specialist, dkostiuk@repp.org

Richter 2009 Phone conversation between Sharon Richter, Columbia County Auditor and Ian Miller, Ecology & Environment Inc., 6/10/09.

SB 6170 Washington State legislature, Senate Bill 6170, Environmental Tax Incentives, http://apps.leg.wa.gov/billinfo/summary.aspx?bill=6170

Spacek 2009 Phone conversation between Mr. Kim Spacek, Superintendant of the Pomeroy School District and Ian Miller, Ecology & Environment Inc., 6/26/09.

Strand 2009 Phone conversation between Ian Miller of Ecology & Environment Inc. and Debbie Strand of Strand Consulting, May 27, 2009.

Tornberg 2009 Email correspondence from Larry Tornberg, PSE, to Katie Dixon and Ian Miller, Ecology & Environment Inc., July 7, 2009.

U.S. Census Bureau, 2009 American Factfinder query for Garfield and Columbia counties, Washington. http://factfinder.census.gov/home/saff/main.html?_lang=en

USDA 2007a United States Department of Agriculture, National Agricultural Statistics Service, 2007 Census of Agriculture, County Profile, Columbia, Washington, www.agcensus.usda.gov.

USDA 2007b United States Department of Agriculture, National Agricultural Statistics Service, 2007 Census of Agriculture, County Profile, Garfield, Washington, www.agcensus.usda.gov.

USDA 2007c United States Department of Agriculture, National Agricultural Statistics Service, 2007 Census of Agriculture, County Profile, Washington, www.agcensus.usda.gov.

USDA 2007d United States Department of Agriculture, National Agricultural Statistics Service, 2007 Census of Agriculture – County Data.

USDA 2009 United States Department of Agriculture, National Agricultural Statistics Service (NASS), prices received, wheat by year, US, Dollars per bushel, http://www.nass.usda.gov/Charts_and_Maps/Agricultural_Prices/pricewh.asp

U.S. DOE/EIA 2009 U.S. Department of Energy Information Administration, http://www.eia.doe.gov/

Washington Regional Economic Analysis Project, http://www.pnreap.org/Washington/

Washington State Employment Security Department, Quarterly Census of Employment and Wages, QCEW Quarterly Data (xls), State of Washington, Covered Employment Classified By Industry, Third Quarter 2008 (Preliminary), http://www.workforceexplorer.com/cgi/dataanalysis/?PAGEID=94&SUBID=149