



**Pacific
Connector**
GAS PIPELINE

Pacific Connector Gas Pipeline, LP

Resource Report No. 5

Socioeconomics

Pacific Connector Gas Pipeline Project

June 2017

Socioeconomics Location of Information to Satisfy Minimum Filing Requirements	
Requirement	Section
1. For major aboveground facilities and major pipeline projects that require an environmental impact statement, describe existing socioeconomic conditions within the project area – Title 18 Code of Federal Regulations (CFR) part (§) 380.12 (g)(1)	5.2
2. For major aboveground facilities, quantify impact on employment, housing, local government services, local tax revenues, transportation, and other relevant factors within the project area – 18 CFR § 380.12 (g)(2-6)	5.3

Information Often Missing	
Requirement	Section
Evaluate the impact of any substantial immigration of people on governmental facilities and services and describe plans to reduce the impact on local infrastructure.	5.3.4
Describe on-site workforce requirements, including the number of construction personnel who currently reside within the impact area, who would commute daily to the site from outside the impact area, or who would relocate temporarily and permanently within the impact area.	5.3, 5.3.2, 5.3.3
Estimate total worker payroll and material purchases during construction and operation. .	5.3.2
Estimate project-related ad valorem and local tax revenues.	5.3.8
Determine whether existing housing within the project area is sufficient to meet the needs of the additional population.	5.3.3
Describe the number and types of residences and businesses that would be displaced by the project, procedures to be used to acquire these properties, and types and amounts of relocation assistance payments.	5.3.6
Describe impacts on local traffic due to construction- and operation-related traffic and worker commuting. Address impacts on marine traffic where applicable (e.g., LNG import/export facilities).	5.3.5
Evaluate the effects of the project on minority and low income populations in consideration of Executive Order 12898.	5.3.9
Conduct a fiscal impact analysis evaluating incremental local government expenditures in relation to incremental local government revenues that would result from construction of the project. Incremental expenditures include, but are not limited to, school operating costs, road maintenance and repair, public safety, and public utility costs.	5.3.4, 5.3.8 5.3.10

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List of Abbreviations

AADT	Average Annual Daily Traffic
ACS	American Community Survey
BEA	Bureau of Economic Analysis
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
CEQ	Council on Environmental Quality
CT	Census Tract
CPI	Consumer Price Index
CPR	Cardio-Pulmonary Resuscitation
Dth/d	dekatherms per day
ESD	Education Service District
FD	Fire Department
FERC	Federal Energy Regulatory Commission
GDP	Gross Domestic Product
HDD	Horizontal Directional Drilling
INGAA	Interstate Natural Gas Association of America
JCEP	Jordan Cove Energy Project, L.P.
LNG	Liquefied Natural Gas
MBF	Thousand Board Feet
MMBF	Million Board Feet
MP	Mile Post
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NFS	National Forest System
NR	Not Reported
O&C	Oregon and California Railroad Revested Lands Program
ODF	Oregon Department of Forestry
ODOT	Oregon Department of Transportation
ODR	Oregon Department of Revenue
OED	Oregon Department of Employment
PCGP	Pacific Connector Gas Pipeline, L.P.
PILT	Payment in Lieu of Taxes

POD	Plan of Development
RFPD	Rural Fire Protection District
RV	Recreational Vehicle
SD	School District
SH	State Highway
SMPE	South Mist Pipeline Extension
SRS	Secure Rural Schools and Community Determination Act
TMP	Transportation Management Plan
TMPNFL	Transportation Management Plan for Non-Federal Lands
TUP	Temporary Use Permit
USDA	United States Department of Agriculture
USGS	United States Geological Survey

5. SOCIOECONOMICS

5.1 INTRODUCTION

Pacific Connector Gas Pipeline, LP (“PCGP”) is seeking authorization from the Federal Energy Regulatory Commission (“FERC” or “Commission”) under Section 7 of the Natural Gas Act (“NGA”) to construct and operate a new approximately 235-mile-long, 36-inch-diameter natural gas transmission pipeline (“Pipeline”) capable of transporting approximately 1,200,000 dekatherms per day (“Dth/d”) of natural gas from interconnections with two existing interstate natural gas pipelines (Ruby Pipeline LLC’s Ruby Pipeline and Gas Transmission Northwest LLC’s GTN Pipeline) near Malin, Oregon, to the proposed Jordan Cove Liquefied Natural Gas (“LNG”) export facility (“LNG Terminal”) being developed by Jordan Cove Energy Project, L.P. (“JCEP”). The Pipeline and the LNG Terminal are referred to, collectively, as the “Project.”

This Resource Report describes the existing socioeconomic conditions in the area of the Pipeline and quantifies the expected impacts of the Pipeline on employment, housing, public services and facilities, transportation, tax revenues, and property values in counties traversed by the Pipeline. This Resource Report used the most recent data available from federal reporting agencies at the time it was written to evaluate existing socioeconomic conditions.

5.2 EXISTING SOCIOECONOMIC CONDITIONS

The Pipeline will be located in four counties in Oregon: Coos, Douglas, Jackson, and Klamath. Information on existing socioeconomic conditions in these counties (“Pipeline project area”) was obtained from publicly available federal, state, and local sources. Data sources include the U.S. Census Bureau, U.S. Bureau of Economic Analysis (“BEA”), U.S. Bureau of Labor Statistics (“BLS”), and the Oregon Employment Department (“OED”). Table 5.2-1 provides a summary of selected demographic and socioeconomic statistics for Oregon and the Pipeline project area.

5.2.1 Population

Population and demographic characteristics in the Pipeline project area are shown in Table 5.2-1. Most of the Pipeline traverses sparsely populated rural areas with low population densities of approximately 0 to 89 persons per square mile. Between milepost (“MP”) 2.09 and MP 3.08 and between MP 4.93 and MP 5.27, the Pipeline will be installed under the North Slough and Haynes Inlet respectively and will be within 0.6 mile of the cities of North Bend and Coos Bay. Population density averages 2,457 persons per square mile in the city of North Bend and 1,515 persons per square mile in the city of Coos Bay. At MP 202.0, the Pipeline crosses within one mile of the City of Klamath Falls, which has an average population density of 1,188 persons per square mile (Census Bureau 2016).

**Table 5.2-1
Socioeconomic Conditions in Oregon and the Pipeline Project Area**

State/ County	2015 Population ¹	Percent Population Change (2010-2015) ²	Per-Capita Income (2015) ³	Median Household Income (2015) ¹	Civilian Labor Force (2016) ⁴	Unemployment Rate (2016) ⁴	Top Two Employment Industries (2016) ⁵
Oregon	3,939,233	2.8%	\$43,783	\$51,243	2055114	4.9%	Federal Government (15%) Health Care & Social Assistance (13%)
Coos	62,775	-0.4%	\$38,475	\$38,605	26578	6.5%	Local Government (19%) Retail Trade (13%)
Douglas	107,194	-0.4%	\$35,977	\$41,312	45739	6.5%	Local Government (13%) Health Care & Social Assistance (13%)
Jackson	208,363	2.5%	\$40,698	\$44,028	101266	5.9%	Health Care & Social Assistance (17%), Retail Trade (16%)
Klamath	65,972	-0.6%	\$35,216	\$40,336	29434	6.9%	Health Care & Social Assistance (15%), Local Government (14%)

Sources:
¹ Census Bureau, 2016.
² Census Bureau, 2016; Census Bureau, 2011.
³ Bureau of Economic Analysis, 2016.
⁴ Bureau of Labor Statistics, 2017.
⁵ Oregon Employment Department, 2017.

In 2015 Coos County had a population of 62,775. From 2000 to 2010 Coos County's population remained relatively stable, growing only 0.4 percent (from 62,779 in 2000 to 63,043 in 2010). Between 2010 and 2015 the county's population decreased by 0.4 percent. In 2015, the county's population was comparable to its 2000 level. The largest cities in Coos County are Coos Bay and North Bend, with respective 2015 populations of 16,062 and 9,583. The county seat is Coquille, population 3,846 in 2015 (Census Bureau 2016; Census Bureau 2011; Census Bureau 2001).

In 2015 Douglas County had a population of 107,194. Between 2000 and 2010 Douglas County's population grew 7.2 percent, increasing from 100,399 in 2000 to 107,667 in 2010. Similar to patterns in Coos County, Douglas County's population fell by 0.4 percent between 2010 and 2015. The county seat is Roseburg; the combined population of Roseburg and Roseburg-North in 2015 was 28,376 (Census Bureau 2016; Census Bureau 2011; Census Bureau 2001).

Jackson County had a population of 208,363 in 2015. Between 2000 and 2010 Jackson County's population grew 12.1 percent, increasing from 181,269 in 2000 to 203,206 in 2010. Between 2010 and 2015 the county's population increased by 2.5 percent. The county seat is Medford, which had a population of 77,579 in 2015. Ashland is the county's second largest city, with a 2016 population of 20,556 (Census Bureau 2016; Census Bureau 2011; Census Bureau 2001).

Klamath County had a population of 65,972 in 2015. The county's population grew 4.1 percent between 2000 and 2010; increasing from 63,775 in 2000 to 66,380 in 2010. Between 2010 and 2015 the county's population fell by 0.6 percent. The county seat is Klamath Falls, which had a population of 21,261 in 2015 (Census Bureau 2016; Census Bureau 2011; Census Bureau 2001).

5.2.2 Income and Employment

Income. Personal income measures the income that individuals receive through earnings, asset ownership (i.e., investments), and transfer receipts (i.e., income received for services not currently rendered). Per-capita personal income in the Pipeline project area is lower than the statewide average; in 2015 per-capita personal income was \$43,783 in Oregon, \$38,475 in Coos County, \$35,977 in Douglas County, \$40,698 in Jackson County, and \$35,216 in Klamath County (see Table 5.2-2).

Earnings, which include proprietor, self-employment and wage income, typically account for a large portion of personal income. In 2015 earnings contributed approximately 48 percent to personal income in Coos County, 47 percent in Douglas County, 52 percent in Jackson County, and 49 percent in Klamath County. In all four counties the contribution of earnings to personal income was lower than the Oregon state average of 61 percent. Transfer receipts, which include retirement and pension benefits, disability and unemployment insurance benefits, medical payments, and veterans' benefits, accounted for 34 percent of personal income in Coos and Douglas counties, County 26 percent in Jackson County, and 33 percent in Klamath County. In all four counties the contribution of transfer payments to personal income was higher than the Oregon state average of 20 percent. Investment income, or dividends, interest and rent, accounted for 18 percent of personal income in Coos County, 19 percent in Douglas County, 22 percent in Jackson County, and 18 percent in Klamath County. In all four counties the contribution

of investment income to personal income was comparable to the Oregon state average of 19 percent (Bureau of Economic Analysis 2016).

Table 5.2-2
Per-Capita Personal Income in Oregon and the Pipeline Project Area, 2015¹

Income	Oregon	Coos County	Douglas County	Jackson County	Klamath County
Net Earnings ²	\$26,467	\$18,317	\$16,839	\$21,158	\$17,295
Dividends, Interest, Rent	\$8,455	\$7,002	\$6,854	\$8,897	\$6,265
Transfer Receipts ³	\$8,861	\$13,156	\$12,284	\$10,643	\$11,656
Total Per Capita Personal Income	\$43,783	\$38,475	\$35,977	\$40,698	\$35,216

¹ Source: Bureau of Economic Analysis, 2016.
² Total earnings less deductions for government social insurance.
³ Includes retirement and pension benefits, disability insurance benefits, medical payments, income maintenance benefits, unemployment insurance benefits, and veterans' benefits.

Industry Employment. Major sources of employment in the Pipeline project area include the Retail Trade, Health Care, Accommodations and Food Services, Manufacturing, and Local Government sectors. In 2016, these sectors combined to account for 60 percent of the wage and salary employment in Coos County, 56 percent in Douglas County, 62 percent in Jackson County, and 59 percent in Klamath County (Oregon Employment Department ["OED"] 2017).

In rank order, the five most important industry sectors in Oregon, based on wage and salary employment levels, which exclude self-employment and farm workers, are: 1) Health Care and Social Assistance, 2) Retail Trade, 3) Local Government, 4) Manufacturing, and 5) Accommodation and Food Services. Compared to the statewide average, the Health Care and Social Assistance sector employs a greater share of workers in Jackson and Klamath counties, a comparable share of workers in Douglas County, and a lower share of workers in Coos County. Retail trade employs greater portions of the workforces in all Pipeline project area counties than the state average. Local Government employs a greater proportion of workers in Coos and Klamath counties, a comparable portion in Douglas County, and a lower proportion of workers in Jackson County than the state average. Manufacturing employs a greater share of workers in Douglas County, and lower shares of workers in Coos, Jackson, and Klamath counties compared to the state average. The Accommodation and Food Services sector employs a greater share of workers in Coos and Jackson counties, a comparable share of workers in Klamath County, and a lower share of workers in Douglas County compared to the state average. (OED 2017).

Employment in the Pipeline project area has not fully recovered from the 2008 financial crisis and recession. Between 2006 and 2016, wage and salary employment decreased 5 percent in Coos and Klamath counties, decreased 6 percent in Douglas County, and increased 2 percent in Jackson County. . During this time, the greatest job losses were in the Administrative and Waste Services, Local Government and Construction sectors in Coos County; in the Manufacturing, Local Government and Construction sectors in Douglas County; in the Construction, Retail Trade and Administrative and Waste Services sectors in Jackson County; and in the Manufacturing, Construction and State Government sectors in Klamath County. Job losses in all counties were offset by employment gains in the Health Care sector.

Employment in the Construction sector has fallen across the Pipeline project area during the past decade. Historically, Construction has made a relatively small contribution to

local labor markets. Between 2006 and 2016, Construction accounted for between 3 and 5 percent of total wage and salary employment in the Pipeline project area. During this time employment in the Construction sector decreased 24 percent in Coos County (from 1,059 to 810 workers), 34 percent in Douglas County (from 2,055 to 1,363 workers), 32 percent in Jackson County (from 5,772 to 3,930 workers), and 40 percent in Klamath County (from 1,344 to 808 workers).

In 2016 annual wages averaged \$37,083 in Coos County, \$38,731 in Douglas County, \$40,321 in Jackson County, and \$36,823 in Klamath County. These wage levels are below the statewide average annual wage rate of \$49,452. Wages in the Construction industry tend to be higher than industry averages. In 2016 annual Construction wages averaged \$44,881 in Coos County, \$44,176 in Douglas County, \$44,532 in Jackson County, and \$45,951 in Klamath County. These wage levels are below the statewide average annual wage rate of \$55,876 for the Construction sector. Between 2006 and 2016, nominal wages in the Construction sector increased approximately 30 percent in Coos County, 27 percent in Douglas County, 25 percent in Jackson County, and 51 percent in Klamath County (OED 2017).

Tables 5.2-3 through 5.2-6 illustrate trends in annual employment and wages in Coos, Douglas, Jackson, and Klamath counties.

Table 5.2-3
Annual Employment and Average Annual Wages by Industry,
Coos County, 2006 and 2016¹

Industry Sector	2006		2016	
	Annual Employment	Average Annual Wages	Annual Employment	Average Annual Wages
Total Sector Employment²	23,663	\$28,102	22,457	\$37,083
Agriculture, Forestry, Fishing, Hunting	1,002	\$37,820	875	\$46,267
Mining	71	\$50,892	25	\$57,738
Construction	1,059	\$34,640	810	\$44,881
Manufacturing	1,594	\$35,658	1,734	\$45,776
Wholesale Trade	447	\$33,544	373	\$42,225
Retail Trade	3,077	\$23,847	2,946	\$27,637
Transportation, Warehousing & Utilities	992	\$38,689	900	\$45,217
Information	284	\$31,537	178	\$40,413
Finance & Insurance	523	\$37,838	439	\$59,405
Real Estate Rental & Leasing	261	\$21,435	210	\$26,309
Professional & Technical Services	427	\$34,204	413	\$45,675
Mgmt. of Companies & Enterprises	163	\$32,015	121	\$50,230
Administrative & Waste Services	2,243	\$15,492	1,518	\$27,127
Education Services ³	107	\$19,046	125	\$28,253
Health Care & Social Assistance	1,940	\$28,121	2,551	\$37,076
Arts, Entertainment & Recreation	141	\$14,509	133	\$17,313
Accommodation & Food Services	2,373	\$14,365	2,463	\$20,027
Other Services	710	\$19,107	751	\$21,822
Public Administration				
Federal Government	340	\$54,554	329324	\$62,960
State Government	1049	\$23,585	1,068	\$32,763
Local Government ⁴	4,845	\$33,970	3,720	\$48,716
Unclassified	6	\$17,995	5	\$30,142

¹ Source: OED, 2017.
² Sectoral employment may not sum to totals due to rounding.
³ Includes private education services only.
⁴ Includes public education.

**Table 5.2-4
Annual Employment and Average Annual Wages by Industry,
Douglas County, 2006 and 2016¹**

Industry Sector	2006		2016	
	Annual Employment	Average Annual Wages	Annual Employment	Average Annual Wages
Total Sector Employment²	39,609	\$31,409	37,366	\$38,731
Agriculture, Forestry, Fishing, Hunting	1,415	\$31,486	1,545	\$39,680
Mining	109	\$44,596	147	\$51,822
Construction	2,055	\$34,848	1,363	\$44,176
Manufacturing	6,194	\$40,108	4,566	\$48,151
Wholesale Trade	688	\$33,316	636	\$46,439
Retail Trade	4,878	\$22,341	4,510	\$26,971
Transportation, Warehousing & Utilities	1,779	\$35,406	1,640	\$45,351
Information	404	\$34,786	280	\$45,405
Finance & Insurance	818	\$36,135	793	\$51,582
Real Estate Rental & Leasing	494	\$21,786	331	\$25,961
Professional & Technical Services	904	\$35,494	835	\$44,950
Mgmt. of Companies & Enterprises	544	\$59,070	459	\$83,746
Administrative & Waste Services	1,445	\$21,216	2,441	\$26,596
Education Services ³	265	\$18,676	236	\$24,324
Health Care & Social Assistance	4,259	\$36,246	4,768	\$48,704
Arts, Entertainment & Recreation	284	\$15,114	316	\$18,986
Accommodation & Food Services	3,313	\$12,640	3,098	\$15,780
Other Services	1,242	\$19,746	1,709	\$21,668
Public Administration				
Federal Government	1,431	\$62,135	1,457	\$67,708
State Government	1,163	\$25,706	1,150	\$38,388
Local Government ⁴	5,909	\$30,716	4,033	\$40,326
Unclassified	9	\$15,931	NR ⁵	NR ⁵

¹ Source: OED, 2017.
² Sectoral employment may not sum to totals due to rounding.
³ Includes private education services only.
⁴ Includes public education.
⁵ NR = Data not reported to OED.

**Table 5.2-5
Annual Employment and Average Annual Wages by Industry,
Jackson County, 2006 and 2016¹**

Industry Sector	2006		2016	
	Annual Employment	Average Annual Wages	Annual Employment	Average Annual Wages
Total Industry Employment²	83,504	\$31,694	85,172	\$40,321
Agriculture, Forestry, Fishing, Hunting	2,703	\$29,614	2,281	\$33,426
Mining	194	\$37,487	113	\$48,132
Construction	5,772	\$35,614	3,930	\$44,532
Manufacturing	6,628	\$35,332	7,674	\$46,394
Wholesale Trade	2,483	\$39,128	2,450	\$50,256
Retail Trade	14,347	\$25,476	13,502	\$30,096
Transportation, Warehousing & Utilities	2,644	\$39,742	3,170	\$48,231
Information	1,608	\$39,431	1,251	\$50,222
Finance & Insurance	2,516	\$44,618	2,185	\$63,502
Real Estate Rental & Leasing	1,273	\$25,260	1,069	\$30,354
Professional & Technical Services	2,149	\$37,569	2,362	\$51,705
Mgmt. of Companies & Enterprises	1,736	\$54,231	1,115	\$82,237
Administration & Waste Services	4,015	\$21,282	3,386	\$27,962
Education Services ³	587	\$23,014	772	\$30,210

Industry Sector	2006		2016	
	Annual Employment	Average Annual Wages	Annual Employment	Average Annual Wages
Health Care & Social Assistance	11,118	\$39,565	14,157	\$51,790
Arts, Entertainment & Recreation	1,485	\$19,689	1,512	\$26,178
Accommodation & Food Services	7,770	\$13,670	9,253	\$17,507
Other Services	3,169	\$20,539	3,631	\$25,936
Public Administration				
Federal Government	1,627	\$56,520	1,791	\$66,132
State Government	2,183	\$31,419	1,694	\$39,312
Local Government ⁴	7,474	\$35,965	7,850	\$45,727
Unclassified	15	\$22,245	22	\$40,339

¹ Source: OED, 2017.
² Sectoral employment may not sum to totals due to rounding.
³ Includes private education services only.
⁴ Includes public education.

**Table 5.2-6
Annual Employment and Average Annual Wages by Industry,
Klamath County, 2006 and 2016¹**

Industry Sector	2006		2016	
	Annual Employment	Average Annual Wages	Annual Employment	Average Annual Wages
Total Industry Employment²	23,924	\$31,120	22,644	\$36,823
Agriculture, Forestry, Fishing, Hunting	854	\$28,330	952	\$34,990
Mining	NR ⁵	NR ⁵	19	\$47,151
Construction	1,344	\$30,362	808	\$45,951
Manufacturing	2,544	\$38,558	1,863	\$46,507
Wholesale Trade	795	\$34,318	786	\$40,968
Retail Trade	2,970	\$23,529	2,858	\$25,308
Transportation, Warehousing & Utilities	484	\$45,126	486	\$48,976
Information	286	\$30,146	148	\$36,516
Finance & Insurance	560	\$37,074	453	\$49,700
Real Estate Rental & Leasing	291	\$21,176	196	\$29,155
Professional & Technical Services	558	\$32,063	661	\$41,636
Mgmt. of Companies & Enterprises	NR ⁵	NR ⁵	379	\$49,929
Administration & Waste Services	NR ⁵	NR ⁵	1,254	\$24,769
Education Services ³	130	\$17,996	173	\$35,469
Health Care & Social Assistance	2,900	\$35,734	3,339	\$45,251
Arts, Entertainment & Recreation	335	\$13,159	196	\$13,723
Accommodation & Food Services	2,438	\$14,145	2,200	\$17,277
Other Services	776	\$17,361	932	\$20,225
Public Administration				
Federal Government	911	\$52,421	868	\$60,518
State Government	1,039	\$35,106	788	\$38,544
Local Government ⁴	3,002	\$34,010	2,915	\$42,120
Unclassified	NR ⁵	NR ⁵	NR ⁵	NR ⁵

¹ Source: OED, 2017.
² Sectoral employment may not sum to totals due to rounding.
³ Includes private education services only.
⁴ Includes public education.
⁵ NR = Data not reported to OED.

Tourism and Recreation-Related Employment. Recreation-based tourism, including fishing, hunting, camping, biking, hiking, canoeing, and off-road vehicle use, contributes to economic activity and employment in the Pipeline project area. Resource Report 8 provides a detailed description of recreational activities available in the counties crossed by the Pipeline.

The travel industry is not represented by a single sector, but includes businesses in several industries, primarily in the Accommodation and Food Services, Transportation, Retail, and Arts, Entertainment and Recreation sectors. According to a 2016 study commissioned by the Oregon Tourism Commission, travel spending by overnight visitors contributed \$260.9 million to Coos County's economy, \$232.6 million to Douglas County's economy, \$528.3 million to Jackson County's economy, and \$140.7 million to in Klamath County's economy in 2015 (see Table 5.2-7) This spending supported an estimated 3,120 jobs in Coos County, 3,050 jobs in Douglas County, 5,290 jobs in Jackson County, and 1,900 jobs in Klamath County (Dean Runyan Associates 2016). Travel-related employment as a portion of total employment is higher in all counties within the Pipeline project area compared to the statewide average.

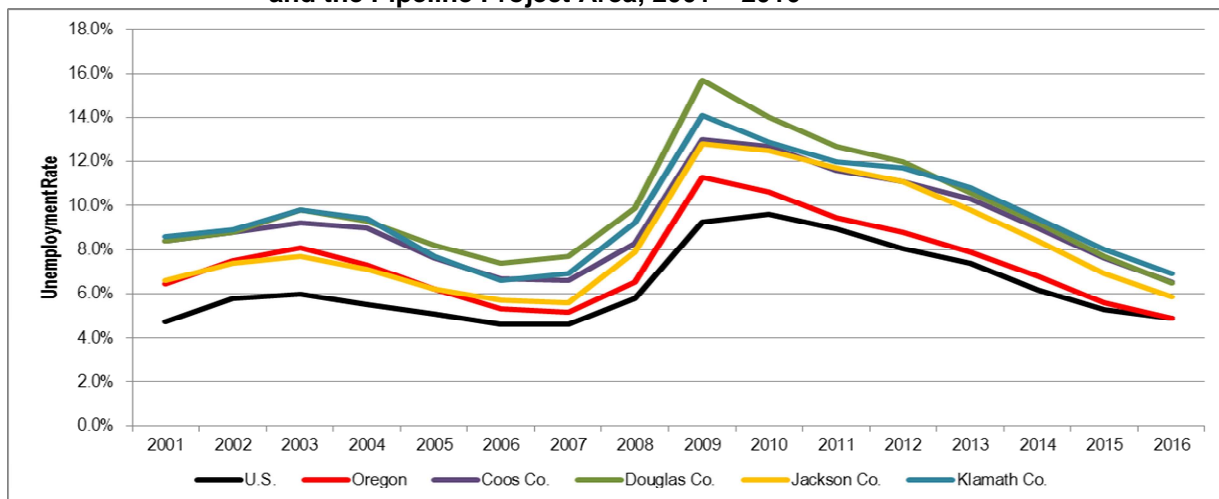
**Table 5.2-7
Travel-Related Spending, Earnings and Employment in Oregon
and the Pipeline Project Area, 2015**

Area	Spending (million \$s)	Average Annual Earnings	Average Annual Employment	Percent of Total Employment
Oregon	\$10,797.0	\$26,777	105,500	5.9%
Coos County	\$260.9	\$22,821	3,120	14.1%
Douglas County	\$232.6	\$21,148	3,050	8.4%
Jackson County	\$528.3	\$25,009	5,290	6.4%
Klamath County	\$140.7	\$24,000	1,900	8.6%

Source: Dean Runyan Associates, 2016.

Unemployment Rates. Between 2001 and 2016 unemployment rates in Coos, Douglas, Jackson, and Klamath counties were above the statewide and national unemployment rates (see Figure 5.2-1). During this time, unemployment rates ranged between 6.5 percent and 13.0 percent in Coos County, 6.5 percent and 15.7 percent in Douglas County, 5.6 percent and 12.8 percent in Jackson County, 6.6 percent and 14.1 percent in Klamath County, 4.9 percent and 11.3 percent in Oregon, and 4.6 percent and 9.6 percent in the United States. Impacted by the national recession following the 2008 financial crisis, unemployment rates in the Pipeline project area counties peaked in 2009. Unemployment rates in all jurisdictions have fallen since that time, and by 2016, unemployment rates in Pipeline project area counties were at or near their lowest levels since 2001 (BLS 2017).

**Figure 5.2-1
Unemployment Rates in the United States, Oregon
and the Pipeline Project Area, 2001 – 2016**



5.2.3 Housing

The Census Bureau’s 2015 American Community Survey (ACS) provides the most recent estimates of housing units in the Pipeline project area. According to the 2015 ACS, renters occupy approximately 35 percent of the occupied housing units in Coos and Klamath counties, 33 percent of the occupied housing units in Douglas County, and 39 percent of the occupied housing units in Jackson County. Vacancy rates for rental units tend to be higher in the Pipeline project area than in the state as a whole. According to the 2015 ACS, rental vacancy rates average 4.2 percent across Oregon, 6.7 percent in Coos County, 5.5 percent in Douglas County, 4.3 percent in Jackson County, and 9.4 percent in Klamath County (see Table 5.2-8). The portions of owner-occupied housing units in the Pipeline project area are slightly higher than that for the State of Oregon. Median home values and median rents in the Pipeline project area are lower than the respective statewide medians (Census Bureau 2016).

**Table 5.2-8
Housing Characteristics in Oregon and the Pipeline Project Area, 2011 - 2015^{1,2}**

Housing Characteristic	Oregon	Coos County	Douglas County	Jackson County	Klamath County
Total Housing Units	1,695,183	30,482	49,018	91,782	32,825
Owner Occupied Housing Units	61.3%	65.0%	67.4%	62.0%	64.8%
Renter Occupied Housing Units	38.7%	35.0%	32.6%	38.0%	35.2%
Median Value, Owner Occupied Units	\$237,300	\$170,500	\$169,700	\$218,100	\$151,500
Homeowner Vacancy Rate	1.7%	2.7%	2.0%	2.0%	2.8%
Median Gross Monthly Rent	\$907	\$709	\$751	\$886	\$723
Rental Vacancy Rate	4.2%	6.7%	5.5%	4.3%	9.4%

¹ Source: Census Bureau, 2016.

² Due to the small sample sizes of county-level surveys, the ACS aggregates five years of county survey data to report estimated vacancies and costs for owner and rental housing.

Temporary housing options include daily, weekly, and monthly rentals in motels, hotels, recreational vehicle (“RV”) parks, and rental houses and apartments. An internet search

of online directories for hotels, motels and other small lodging establishments, and local chambers of commerce websites found 1,656 hotel/ motel/small inn rooms and 1,984 RV sites in Coos County; 1,833 hotel/motel/small inn rooms and 2,800 RV sites in Douglas County; 4,614 hotel/motel/small inn rooms and 2,498 RV sites in Jackson County; and 1,537 hotel/motel/small inn rooms and 1,733 RV sites in Klamath County (see Table 5.2-9). These are conservative estimates of the availability of short-term housing in the Pipeline project area in that they do not include vacation properties, small lodging facilities that do not have an internet presence, and commercial lodging and RV facilities in communities that are beyond the immediate vicinity of the Pipeline, but within potential commuting distance. See ECONorthwest's report: Jordan Cove Energy Project and Pacific Connector Gas Pipeline: Potential Economic Effects on Tourism and Recreation for a detailed discussion of lodging occupancy trends in the Pipeline project area (ECONorthwest 2017a).

**Table 5.2-9
Temporary Housing Options in the Pipeline Project Area**

Locality	Rental Housing Units ¹	Rental Vacancy Rate ¹	Hotel & Motel Rooms ²	RV Hook-ups ³
Coos County				
Bandon	795	11.7%	592	349
Coos Bay/North Bend/Charleston	5,024	6.0%	969	1,178
Coquille	914	4.3%	27	70
Dispersed ⁴	--	--	68	387
Douglas County				
Canyonville	418	6.5%	420	231
Green	805	8.2%	--	--
Reedsport	936	606%	140	414
Roseburg/Roseburg North	5,685	5.3%	945	176
Myrtle Creek	742	11.5%	11	217
Winston	775	6.2%	32	100
Dispersed ⁵	--	--	285	490
Jackson County				
Ashland	4,566	5.5%	1,224	491
Central Point	2,567	5.5%	235	177
Eagle Point	1,254	10.0%	--	91
Medford	15,310	3.5%	2,575	280
Phoenix	861	7.0%	88	31
Shady Grove/Trail	418	0.0%	69	273
Talent	1,254	7.6%	25	64
White City	805	7.0%	112	45
Dispersed ⁶	--	--	286	946
Klamath County				
Klamath Falls	5,411	9.1%	1,384	357
Merrill/Malin	224	15.6%	26	40
Dispersed ⁷	--	--	183	1,303
¹ Census Bureau, 2016. ² Ashland Chamber of Commerce, 2017; Bay Area Chamber of Commerce, 2017; City of Medford Chamber of Commerce, 2017; City of Roseburg Visitors and Convention Bureau, 2017; Klamath Falls Chamber of Commerce, 2017; TripAdvisor, 2017; ECONorthwest 2017a. ³ RV Park Reviews, 2017; ECONorthwest 2017a. ⁴ Dispersed areas include lodging facilities and/or RV parks in and near Allegany, Lakeside, Myrtle Point, and Powers.				

Locality	Rental Housing Units ¹	Rental Vacancy Rate ¹	Hotel & Motel Rooms ²	RV Hook-ups ³
⁵ Dispersed areas include lodging facilities and/or RV parks in and near Curtin, Diamond Lake, Elkton, Glide, Idleld Park, Oakland, Reedsport, Scottsburg, Steamboat Falls, Sutherlin, and Winchester Bay. ⁶ Dispersed areas include lodging facilities and/or RV parks in and near Applegate, Butte Falls, Gold Hill, Jacksonville, Prospect, and Sutherlin. ⁷ Dispersed areas include lodging facilities and/or RV parks in and near Chemult, Chiloquin, Crater Lake, Crescent Lake, and Fort Klamath.				

5.2.4 Public Services and Facilities

Public Utilities and Municipal Services. Several public agencies and private companies provide water, electric, sanitation, and waste disposal services in Coos, Douglas, Jackson, and Klamath counties. Table 5.2-10 lists providers of water, electrical power, heat, and sanitation services in the Pipeline project area, and Table 5.2-11 identifies landfills and recycling facilities in the Pipeline project area.

**Table 5.2-10
Water, Sanitation, Electric Power, and Heat Providers in the Pipeline Project Area**

County	Water & Sanitation	Electric & Heat
Coos	Bandon Public Works Department Coos Bay-North Bend Water Board Coos Bay Sanitary Service Coos County Solid Waste Department Glide Water Association Lakeside Water District North Bend Sanitation SRCA Water District Wadsworth Garbage Collection	Amerigas Propane City of Bandon Electric Dept. Coos Curry Electric Cooperative, Inc. Ferrellgas Pacific Power – Southern Oregon Northwest Natural Gas
Douglas	City of Canyonville Public Works Dept City of Roseburg Public Works Dept. City of Myrtle Creek Public Works Dept. City of Winston Public Works Dept. Douglas County Public Works Dept. Roberts Creek Water District Roseburg Disposal Roseburg Urban Sanitary Authority Southern Oregon Sanitation, Inc. South Umpqua Disposal Company South Umpqua Water Association Umpqua Basin Water Association Winston-Dillard Water District Winston Sanitary Services	AmeriGas Propane Avista Utilities Douglas Electric Cooperative Ferrellgas Pacific Power – Southern Oregon Suburban Propane
Jackson	City of Ashton Public Works Dept. City of Central Point Public Works Dept. City of Eagle Point Public Works Dept. City of Medford Public Works City of Medford Water Commission City of Talent Public Works Dept. Hiland Water Rogue Valley Sewer Services Southern Oregon Sanitation	Ashland Municipal Electric Utility Amerigas Propane Avista Utilities Blue Star Gas Ferrellgas Pacific Power – Southern Oregon Suburban Propane WP Natural Gas
Klamath	Bly Water & Sanitary District City of Klamath Falls – Waste Mgmt NW City of Klamath Falls Water Division City of Merrill Public Works Dept. Crescent Water Association	AmeriGas Propane Avista Utilities Cascade Natural Gas Ed Staub & Sons Petroleum Inc. Klamath Natural Gas Service Pacific Klamath Energy Inc.

County	Water & Sanitation	Electric & Heat
		Pacific Power – Southern Oregon

Table 5.2-11

Landfills and Recycling Facilities in the Pipeline Project Area

County	Facility	Location
Coos	Bandon Disposal & Recycling	Bandon
	Coos County Solid Waste - Beaver Hill Disposal Site	Coos Bay
	Public Disposal & Recycling	Coos Bay
	Reedsport Transfer Site	Reedsport
	West Coast Recycling & Transfer	Coos Bay
Douglas	Canyonville Transfer Station	Canyonville
	Douglas County Disposal and Recycling Center	Roseburg
	Glide Transfer Station	Glide
	Myrtle Creek Transfer Station	Myrtle Creek
	Roseburg Landfill and Transfer Station	Roseburg
	Reedsport Transfer Station	Reedsport
	Sunrise North Side Donation & Recycling Center	Roseburg
Jackson	Ashland Recycling Center	Ashland
	BottleDrop Oregon Redemption Center	Medford
	Dry Creek Landfill	Eagle Point
	ECS Regenesys	Medford
	Recology Ashland	Ashland
	Rogue Disposal & Recycling	Medford
	Rogue Transfer & Recycling	White City
	Southern Oregon Sanitation	Eagle Point, Shady Cove
	Valley View Transfer Station	Ashland
Klamath	Bonanza Transfer Station	Bonanza
	BottleDrop Oregon Redemption Center	Klamath Falls
	Klamath County Landfill	Klamath Falls
	Klamath Recycling	Klamath Falls
	Klamath County Solid waste	Klamath Falls
	Merrill Transfer Station	Merrill

Public Safety. In general, public services in the Pipeline project area are proportional to the number of cities, towns and unincorporated communities in the county and the size of the county. Public safety service providers in the Pipeline project area include law enforcement agencies, fire departments, hospitals and other medical facilities, and emergency response centers. There are seven police/sheriff departments in Coos County, six in Douglas County, 10 in Jackson County, and four in Klamath County. There are 16 fire agencies in Coos County, 26 in Douglas County, 15 in Jackson County, and 14 in Klamath County (Oregon Office of State Fire Marshall 2017). Manpower, including paid and volunteer personnel associated with fire departments (“FD”) and rural fire protection districts (“RFPD”) in the Pipeline project area, is shown in Table 5.2-12. Manpower, including the number of officers at sheriff’s offices and police departments in the Pipeline project area, is shown in Table 5.2-13. Most police departments in the Pipeline project area supplement their law enforcement staffs with reserve officers.

**Table 5.2-12
Manpower Associated with Fire Agencies in the Pipeline Project Area**

Fire Agency¹	District Size (sq. miles)²	Town	Staff Size²
Coos County			
Bandon RFPD	160	Bandon	3 paid, 20 volunteer
Bridge RFPD	35	Myrtle Point	7 volunteer
Charleston RFPD	8	Coos Bay	3 paid, 35 volunteer
Coos Bay Fire & Rescue	11	Coos Bay	16 paid, 25 volunteer
Coquille FD	80	Coquille	4 paid, 38 volunteer
Dora-Sitkum RFPD	18	Myrtle Point	10 volunteer
Fairview RFPD	209	Coquille	18 volunteer
Greenacres RFPD	11	Coos Bay	1 paid, 8 volunteer
Hauser RFPD	26	North Bend	17 volunteer
Lakeside RFPD	13	Lakeside	25 volunteer
Millington Fire District #5	14	Millington	1 paid, 17 volunteer
Myrtle Point FD	50	Myrtle Point	3 paid, 17 volunteer
North Bay RFPD	30	North Bay	1 paid, 31 volunteer
North Bend Fire District	5	North Bend	1 paid, 25 volunteer
Powers FD	22	Powers	9 volunteer
Sumner RFPD	17	Coos Bay	19 volunteer
Douglas County			
Azalea Volunteer FD	50	Azalea	1 paid, 6 volunteer
Camas Valley Volunteer RFPD	300	Camas Valley	7 volunteer
Canyonville South Umpqua FD	15	Canyonville	30 volunteer
Days Creek RFPD	20	Days Creek	7 volunteer
Douglas Co. Fire District #2	2,600	Roseburg	94 paid, 31 volunteer
Elkton RFPD	14	Elkton	17 volunteer
Fair Oaks RFPD	NR ³	Sutherlin	NR ³
Gardiner RFPD	2	Gardiner	13 volunteer
Glendale RFPD	8	Glendale	13 volunteer
Glide RFPD	25	Glide	6 paid, 24 volunteer
Kellogg RFPD	20	Oakland	15 volunteer
Lookingglass RFPD	80	Roseburg	23 volunteer
Milo RFPD	18	Days Creek	9 volunteer
Myrtle Creek FD	10	Myrtle Creek	40 volunteer
North Douglas Co Fire & Emergency	53	Drain	5 paid, 65 volunteer
Oakland RFPD	100	Oakland	20 volunteer
Reedsport Volunteer Fire District	5	Reedsport	32 volunteer
Riddle Fire District	15	Riddle	26 volunteer
Roseburg Fire District	11	Roseburg	41 paid
Scottsburg RFPD	12	Scottsburg	18 volunteer
Sutherlin FD	6	Sutherlin	3 paid, 13 volunteer
Tenmile RFPD	25	Tenmile	1 paid, 17 volunteer
Tiller RFPD	4	Tiller	11 volunteer
Tri-City Fire District #4	12	Myrtle Creek	1 paid, 25 volunteer
Winchester Bay RFPD	1	Winchester	15 volunteer
Winston-Dillard Fire District	50	Winston	3 volunteer
Jackson County			
Applegate RFPD #9	181	Jacksonville	7 paid, 36 volunteer
Ashland Fire & Rescue	7	Ashland	34 paid, 1 volunteer
Butte Falls Volunteer FD	NR ³	Butte Falls	NR ³
Colestin RFPD	28	Ashland	21 volunteer
Evans Valley Fire District #6	26	Rogue River	2 paid, 56 volunteer

Fire Agency¹	District Size (sq. miles)²	Town	Staff Size²
Greensprings Fire & Rescue	200	Ashland	20 volunteer
Jackson Co. Fire District #3	167	White City	70 paid, 28 volunteer
Jackson County RFPD #4	75	Shady Cove	3 paid, 15 volunteer
Jackson County RFPD #5	115	Phoenix	28 paid, 30 volunteer
Jacksonville FD	2	Jacksonville	NR ³
Lake Creek RFPD #9	107	Eagle Point	2 paid, 12 volunteer
Medford Fire & Rescue	56	Medford	83 paid
Prospect RFPD	10	Prospect	10 volunteer
Rogue River RFPD	70	Rogue River	17 paid, 10 volunteer
Rogue Valley Internat'l Airport FD	2	Medford	5 paid
Klamath County			
Bly RFPD	7	Bly	11 volunteer
Bonanza RFPD	140	Bonanza	3 paid, 27 volunteer
Central Cascades Fire & Emergency	30	Crescent Lake	8 volunteer
Chemult RFPD	2,000	Chemult	3 paid, 17 volunteer
Chiloquin Agency LK RFPD	105	Chiloquin	2 paid, 28 volunteer
Crescent RFPD	874	Crescent Lake	5 paid, 15 volunteer
Keno RFPD	44	Keno	2 paid, 21 volunteer
Klamath County Fire District #1	192	Klamath Falls	61 paid
Klamath County Fire District #3	10	Sprague River	13 volunteer
Klamath County Fire District #4	10	Klamath Falls	2 paid, 7 volunteer
Klamath County Fire District #5	69	Bonanza	11 volunteer
Malin RFPD	87	Malin	2 paid, 14 volunteer
Merrill RFPD	50	Merrill	25 volunteer
Rocky Point Fire & Emergency	118	Klamath Falls	1 paid, 13 volunteer
¹ Source: Oregon Office of State Fire Marshal, 2017. ² Source: Oregon Office of State Fire Marshal, 2016. ³ NR = Not Reported.			

**Table 5.2-13
Manpower Associated with Law Enforcement Agencies in the Pipeline Project Area**

Agency	Total Paid Staff	Law Enforcement Officers
Coos County		
Coos County Sheriff's Office	103	75
Bandon Police Department	7	6
Coos Bay Police Department	38	22
Coquille Police Department	8	7
Myrtle Point Police Department	6	5
North Bend Police Department	24	16
Powers Police Department	1	1
Douglas County		
Douglas County Sheriff's Office	146	109
Myrtle Creek Police Department	9	7
Reedsport Police Department	15	11
Roseburg Police Department	42	37
Sutherlin Police Department	17	12
Winston Police Department	10	9
Jackson County		
Jackson County Sheriff's Office	160	115
Ashland Police Department	41	28

Agency	Total Paid Staff	Law Enforcement Officers
Butte Falls Police Department	2	2
Central Point Police Department	29	23
Eagle Point Police Department	13	9
Jacksonville Police Department	6	4
Medford Police Department	161	104
Phoenix Police Department	11	7
Rogue River Police Department	6	5
Talent Police Department	10	8
Klamath County		
Klamath County Sheriff's Office	90	87
Klamath Falls Police Department	69	36
Malin Town Marshal	1	1
Merrill Police Department	2	2
Sources: Internet search and telephone interviews with sheriff's offices and police departments.		

Medical Services. There are three hospitals in Coos County, two hospitals in Douglas County, three hospitals in Jackson County, and one hospital in Klamath County (Oregon Association of Hospitals and Health Systems 2017). The number of hospital beds and hospital occupancy rates in the Pipeline project area are provided in Table 5.2-14. Bay Area Hospital in Coos Bay, Southern Coos Hospital in Bandon, Mercy Medical Center in Roseburg, Asante Rogue Regional Medical Center and Providence Medford Medical Center in Medford, and Sky Lakes Medical Center in Klamath Falls are Level III Trauma System Hospitals that receive helicopter transport. Coquille Valley Hospital in Coquille, Lower Umpqua Hospital in Reedsport, and Asante Ashland Community Hospital in Ashland are Level IV trauma hospitals. Emergency medical providers with helicopter medical evacuation services are also available in Medford.

Table 5.2-14
Number of Hospital Beds and Hospital Occupancy Rates in the Pipeline Project Area, 2015

Hospital	City	Staffed Beds	Occupancy Rate
Coos County			
Bay Area Hospital	Coos Bay	129	48.4%
Coquille Valley Hospital	Coquille	17	30.2%
Southern Coos Hospital & Health Center	Bandon	19	9.2%
Douglas County			
Lower Umpqua Hospital	Reedsport	16	17.8%
Mercy Medical Center	Roseburg	129	60.5%
Jackson County			
Asante Ashland Community Hospital	Ashland	37	32.6%
Asante Rogue Regional Medical Center	Medford	307	75.8%
Providence Medford Medical Center	Medford	138	55.1%
Klamath County			
Sly Lakes Medical Center	Klamath Falls	100	54.8%
Total		892	59.0%
Source: Oregon Association of Hospitals and Health Systems, 2017.			

Educational Services. There are 33 school districts in Coos, Douglas, Jackson, and Klamath counties. The October 1 student enrollments in these districts for the 2016-2017 school year are provided in Table 5.2-15.

**Table 5.2-15
October 1 School District Enrollments in the Pipeline Project Area,
2016 - 2017 School Year**

County/ School District	Enrollment
Coos County Total	10,139
Bandon School District ("SD") 54	723
Coos Bay SD 9	3320
Coquille SD 8	990
Myrtle Point SD 41	568
North Bend SD 13	4,419
Powers SD 31	119
Douglas County Total	14,113
Camas Valley SD 21J	196
Douglas County SD 15	214
Douglas County SD 4	5,942
Douglas Education Service District ("ESD")	7
Elkton SD 34	258
Glendale SD 77	277
Glide SD 12	712
North Douglas SD 22	312
Oakland SD 1	578
Reedsport SD 105	701
Riddle SD 70	389
South Umpqua SD 19	1,487
Sutherlin SD 130	1,364
Winston-Dillard SD 116	1,434
Yoncalla SD 32	242
Jackson County Total	29,889
Ashland SD 5	2,924
Butte Falls SD 91	189
Central Point SD 6	4,617
Eagle Point SD 9	4,103
Medford SD 549C	14,081
Phoenix-Talent SD 4	2,651
Pinehurst SD 94	9
Prospect SD 59	233
Rogue River SD 35	989
Southern Oregon ESD	93
Klamath County Total	9,565
Klamath County SD	6,579
Klamath Falls City Schools	2,986
Source: Oregon Department of Education, 2017.	

5.2.5 Transportation

The approximate 235-mile Pipeline will traverse several major and local transportation routes and highways between Coos Bay and Malin. The Pipeline project area is accessible by U.S. interstate highways, National Forest System ("NFS") roads, BLM

roads, state highways, county roads, and private roads. Resource Report 8 (see Appendix A.8) provides a list of the roads that will be crossed by the Pipeline and a list of the roads that will be used for ingress/egress to the construction right-of-way. The primary roads that will be used to access the construction right-of-way are provided below and are listed by county. Road names are based on DeLorme Streets and Atlas USA (2015) software.

In Coos County, the primary roads that will be utilized during construction and operation include segments of the following: U.S. Highway 101, Jordan Cove Road/Trans-Pacific Parkway, North Bay Drive, E. Bay Drive, Kentuck Way, Willanch Way, Noah Butte Road, South Coos River Highway, Catching Slough Road, Stock Slough Road, Old Wagon Road (East Side/Sumner Road), Sumner-Fairview Road, South Sumner Road, Fairview-Laverne Park Road, Coquille-Fairview Road, Fairview-Middle Creek Road, Middle Creek Road (Lee Mc-Kinley Road), Lone Pine-Dora Road, Myrtle Point- Sitkum Road, Elk Mountain Loop Road, Elk Creek Road, Weaver-Sitkum Tie Road, Big Creek Road, State Highway ("SH") 42, Sandy Creek Road, and North Rock Creek Road. Numerous other local, private, and BLM roads will be utilized to access the construction right-of-way from these primary roads.

In Douglas County, segments of the following roads will be utilized as primary travel routes during construction and operation of the Pipeline: SH 42, Coos Bay Wagon Road, Weaver Creek Road, Lower and Upper Signal Tree roads, Westside Road, Upper Camas Road, Kirkendahl Road, Wildcat Road, Ireland Road, Benedict Road, Olalla Road, Hoover Hill Road, Squaw, Kent Creek, Willies Creek and Rice Creek roads, Old Highway 99 South, Weigle Road, Dole Road, Interstate 5, Clarks Branch Road, Richardson Ridge Road, North Myrtle Road, Bilger Creek Road, Little Lick Road, South Myrtle Road, Days Creek Road, Woods Creek Road, SH 227, and West and East Fork Stouts Creek roads. Other local, private, BLM, and Forest Service roads would be utilized to access the construction right-of-way from these primary roads.

The primary roads that will be utilized during construction and operation in Jackson County include segments of the following: State Highways 62 and 227, Forest Service Road 3220, Forest Service Road 3230, Forest Service Road 32, Loper Lane, West Trail Creek Road, Ragsdale Road, Old Trail Creek Road, Old Ferry Road, Indian Creek Road, Butte Falls Highway, Crowfoot Road, Worthington Road, North Obenchain Road, Salt Creek Road, SH 140, Grizzly Road (Forest Service Road 2815), Big Elk Road (Forest Service Road 37) Brown Mountain Road (Forest Service Road 3705), Daily Creek Road (Forest Service Road 3720), and Dead Indian Memorial Road. In addition to these roads, numerous other local, private, and BLM roads will be utilized to access the construction right-of-way from these primary roads.

In Klamath County, the primary roads that will be utilized during construction and operation of the Pipeline include segments of the following: SH 140, Dead Indian Memorial Road, Clover Creek Road, SH 66, Weyerhaeuser Timber Company Access Road, McLaughlin Lane, Kerns Swamp Road, U.S. Highway 97, Joe Wright Road, Tingling Road, Old Midland, Spring Lake Road, Homedale Road, Cross Road, SH 39, Matney Way, Wong Road, Hill Road, Taylor Road, Dodds Hollow Road, Pope Road, SH 50, Harpold Road, Transformer Road, Drazil Road, Pickett Road, North Malin Road, Maupin Road, Malin Loop Road, More Lock Road, Louder Road, Rajnus Road, and Stastny Road. Numerous other local, private, and BLM roads will be utilized to access the construction right-of-way from these primary roads.

5.2.6 Property Values

Approximately 31.3 percent of the Pipeline length will cross public lands - 17.2 percent is managed by the BLM, 13.0 percent is managed by the Forest Service, 0.1 percent is managed by the Bureau of Reclamation, and 1.0 percent is managed by the State of Oregon, various counties and cities. The remainder of the Pipeline length (68.7 percent) would cross privately owned lands. As reported in Table 5.2-8, in 2015 the median value of occupied housing units was \$170,500 in Coos County, \$169,700 in Douglas County, \$218,100 in Jackson County, and \$151,500 in Klamath County.

5.2.7 Timber Clearing

The Pipeline will cross approximately 79.7 miles of mature forested lands and 67.3 miles of recently harvested forested lands. Land ownership of forested lands includes privately-owned timberland, state lands, NFS lands, and BLM lands. Approximately 1,060.2 thousand board feet ("MBF") was harvested in the 4-county Pipeline project area in 2015, with an average annual harvest of 960.2 MBF between 2007 and 2015 (Oregon Department of Forestry ["ODF"] 2016).

5.2.8 Tax Revenues

Federal Tax Revenues. Easements are required for temporary (construction) and permanent rights-of-way on public lands. An easement grants the right to construct, operate, and maintain pipelines and to establish permanent rights-of-way. On BLM and NFS lands, a Right-of-Way Grant or authorization for construction and operation of proposed facilities is required. Revenues to the BLM and the Forest Service are generated through the Right-of-Way Grant.

There are specific rules for acquisition of easements on public lands. Easements on public lands are granted with stipulations and attachments as required for the particular project. The easement agreement will require annual rental payments determined by the authorized officer in accordance with the applicable regulations. These payments typically increase over time based on the Consumer Price Index ("CPI"). The agreement is renewable for an additional term(s) under regulations in effect at the time of renewal.

Payments to Counties Under the Secure Rural Schools Act. Many counties across the United States are compensated for the tax-exempt status of federal lands within their borders. Historically, Oregon counties with NFS lands and certain BLM lands, including lands that are part of the Oregon and California Railroad Revested Lands Program ("O&C Lands"), have received a portion of federal revenues, primarily from timber sales. O&C Lands account for the vast majority of BLM revenue sharing in southern Oregon. Payments from timber harvests in national forests and on O&C lands go directly to counties to support local government services, particularly schools and roads. Resource Report 8 describes the BLM and NFS lands, including O&C and Coos Bay Wagon Road lands, which are crossed by the Pipeline.

Due in large part to efforts to protect northern spotted owl habitat and other environmental values, timber harvests in the Pacific Northwest were restricted in the early 1990s. To protect counties with O&C lands from the adverse impacts of declining timber revenues, Congress enacted the Secure Rural Schools and Community Self-Determination ("SRS") Act in 2000 as a temporary program of federal payments to

counties based on historic, rather than current, timber revenues. Authorization for SRS payments originally expired at the end of fiscal year (“FY”) 2006, but through several reauthorizations, Congress extended the SRS Act through FY 2015, with significant cuts in payment levels. Between FY 2001 and FY 2006 SRS payments to all counties in the Pipeline project area increased approximately 7 percent. Between FY 2006 and FY 2015, SRS payments fell 70 percent in Coos County (from \$7.7 million to \$2.3 million), 66 percent in Douglas County (from \$29.2 million to \$9.7 million), 72 percent in Jackson County (from \$18.1 million to \$5.2 million), and 64 percent in Klamath County (from \$2.7 million to \$970,611) (see Table 5.2-16).

At the present time, the SRS Act has not been reauthorized. Until its reauthorization, and starting with FY 2016 payments (payable in 2017), the Forest Service and BLM will make payments to counties under The Act of May 23, 1908, commonly called the 25 percent payments (Department of Agriculture [“USDA”] 2017). Federal payments made under the 25 percent payment program are limited to roads and schools.

Table 5.2-16

Official Payments Made to Counties Under the Secure Rural Schools Act, FY2001 – FY2015¹

Year ²	Coos County	Douglas County	Jackson County	Klamath County
SRS Acres	151,520	796,033	503,336	69,505
FY 2001	\$7,218,320	\$27,382,541	\$17,038,296	\$2,544,328
FY 2002	\$7,276,066	\$27,601,601	\$17,174,602	\$2,564,682
FY 2003	\$7,363,379	\$27,932,820	\$17,380,697	\$2,595,458
FY 2004	\$7,459,103	\$29,295,947	\$17,606,647	\$2,629,199
FY 2005	\$7,630,662	\$28,946,754	\$18,011,599	\$2,689,671
FY 2006	\$7,706,969	\$29,236,221	\$18,191,715	\$2,716,568
FY 2007	\$7,691,152	\$29,176,221	\$18,154,381	\$2,710,992
FY 2008	\$6,164,519	\$26,173,084	\$16,372,544	\$2,444,911
FY 2009	\$6,242,645	\$23,681,339	\$14,735,289	\$2,200,420
FY 2010	\$5,626,087	\$21,342,441	\$13,279,952	\$1,983,094
FY 2011	\$2,863,698	\$10,874,472	\$5,767,050	\$1,160,166
FY 2012	\$2,682,266	\$11,535,677	\$6,232,140	\$1,226,343
FY 2013	\$2,648,387	\$11,251,925	\$5,581,881	\$1,103,917
FY 2014	\$2,534,939	\$10,484,310	\$5,496,514	\$1,061,354
FY 2015	\$2,328,659	\$9,863,519	\$5,167,461	\$970,611

¹ Source: BLM, 2017. Includes O&C and Coos Bay Wagon Road payments.
² Fiscal year payments are made in the following calendar year.

Payments in Lieu of Taxes (“PILT”). Counties containing federal lands receive PILT payment from the federal government to help offset losses in property tax revenues due to nontaxable federal lands within their boundaries. PILT payments are made annually for tax-exempt federal lands administered by the BLM, the National Park Service, the U.S. Fish and Wildlife Service (all agencies of the Interior Department), the Forest Service (part of the U.S. Department of Agriculture), and for federal water projects and some military installations. PILT payments are based on several factors, including population and federally-owned acres, and are adjusted up or down depending on other federal payments based on commodity revenues.

PILT payments to counties in the Pipeline project area have increased significantly over the past several years. For FY 2016, PILT payments were \$440,436 to Coos County, \$611,888 to Douglas County, \$825,848 to Jackson County, and \$811,684 to Klamath County (Department of Interior 2017). O&C counties that have received SRS payments

have received minimal PILT payments. Without SRS payments, PILT payments to O&C counties will increase. However, payments to O&C counties under a combination of timber revenues and full PILT will be lower than the payments these counties would have received through a combination of SRS and minimum PILT (Oregon Office of the Governor 2013).

Table 5.2-17
PILT Payments to Counties in the Pipeline Project Area, FY2001 – FY2016¹

Year ²	Coos County	Douglas County	Jackson County	Klamath County
FY 2001	\$10,335	\$144,920	\$70,519	\$330,367
FY 2002	\$10,900	\$152,759	\$74,344	\$348,281
FY 2003	\$12,295	\$172,317	\$83,730	\$390,756
FY 2004	\$12,815	\$180,023	\$87,360	\$409,560
FY 2005	\$13,371	\$187,830	\$91,147	\$427,306
FY 2006	\$13,670	\$192,091	\$93,214	\$437,002
FY 2007	\$13,550	\$190,405	\$92,395	\$432,959
FY 2008	\$21,617	\$303,757	\$147,399	\$690,911
FY 2009	\$341,996	\$1,458,577	\$858,090	\$788,685
FY 2010	\$82,526	\$552,605	\$294,238	\$733,229
FY 2011	\$186,673	\$552,566	\$294,474	\$733,099
FY 2012	\$239,514	\$569,310	\$303,896	\$725,704
FY 2013	\$378,821	\$553,203	\$765,726	\$735,376
FY 2014	\$415,574	\$604,935	\$861,934	\$803,514
FY 2015	\$422,921	\$605,438	\$766,509	\$803,801
FY 2016	\$440,435	\$611,888	\$825,848	\$811,684

¹ Source: Department of Interior, 2017.
² Fiscal year payments are made in the following calendar year.

State Tax Revenues. The State of Oregon does not impose sales and use tax. Local tax revenues accrue as a function of personal property taxes rather than sales and use taxes. Personal property tax is described below under local tax revenues.

Oregon's state income tax is progressive. There are four brackets for single taxpayers and married couples filing separate returns. The tax rate is 5 percent on the first \$3,350 of taxable income, 7 percent on taxable income between \$3,351 and \$8,400, 9 percent on taxable income between \$8,401 and \$125,000, and 9.9 percent on taxable income of \$250,001 and above. For married couples filing jointly, the rates remain the same but the tax brackets are doubled (Oregon Department of Revenue ["ODR"] 2017a).

The state of Oregon levies a lodging tax that applies to all transient lodging in the state, including hotels and motels, RV sites in parks and campgrounds, cabins, short-term rental apartments and duplexes, and any other dwelling units that are used for temporary overnight stays. The current lodging tax rate of 1.8 percent will drop to 1.5 percent in July 2020 (ODR 2017b). Revenues from the state lodging tax are used to fund Oregon Tourism Commission programs.

Local Tax Revenues. Tax revenues for counties in the Pipeline project area are shown in Table 5.2-18. Property taxes include tax on real estate, land, and personal property. The protocol for personal property tax is that when equipment or materials are situated in a county, the owner of the equipment or materials files a "confidential personal property form" which notifies the county of what equipment/materials are being used, when it was purchased, and its original cost. Counties use this information to calculate depreciation and assessed valuation. On average, the annual personal property tax rate

is \$12.45 per \$1,000 of value in Coos County, \$11.29 per \$1,000 of value in Douglas County, \$14.63 per \$1,000 of value in Jackson County, and \$11.81 per \$1,000 of value in Klamath County (ODR 2016a). Property taxes are levied based on the property’s location on January 1. School districts receive 43 percent of the property taxes collected in Coos and Jackson counties, 49 percent of the property taxes collected in Douglas County, and 50 percent of the property taxes collected in Klamath County (Coos County 2016a; Douglas County 2015; Jackson County 2016a; Griffith 2017). The amount distributed to individual schools varies depending on the school’s location in the county.

**Table 5.2-18
County Government Tax Revenues in the Pipeline Project Area, FY2016**

Revenue Type	Coos County ¹	Douglas County ²	Jackson County ³	Klamath County ⁴
Property tax	\$10,150,562	\$9,628,905	\$41,248,304	\$12,527,141
Other taxes	\$373,677	NR ⁵	NR ⁵	\$1,470,964
Intergovernmental Transfers	\$29,188,456	\$40,276,259	\$82,404,563	\$23,682,220
Licenses, fees, fines, forfeitures, and permits	\$4,311,496	\$1,571,451	\$4,257,881	\$1,499,150
Charges for services	\$2,132,755	\$10,899,007	\$18,775,415	\$3,877,796
Timber sales	\$5,081,975	NR ⁵	NR ⁵	NR ⁵
Interest on investments	\$239,689	\$1,762,954	\$2,417,455	\$729,486
Other revenue	\$849,807	\$5,056,629	\$168,413	\$206,158
Total	\$52,328,417	\$69,195,205	\$149,272,031	\$43,992,915
Sources: ¹ Coos County, 2016b. ² Douglas County, 2016. ³ Jackson County, 2016b. ⁴ Klamath County, 2016. ⁵ NR = Not Reported.				

The intergovernmental revenue category is made up of payments from the federal and state governments to the counties. These revenues include PILT payments, which help local governments maintain public services such as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations.

Local Lodging Tax, In addition to the state lodging tax, municipalities in the Pipeline project area assess city and/or county lodging taxes to transient lodging. Local lodging tax rates range between 5 percent and 9 percent of the total cost of lodging (see Table 5.2-19).

**Table 5.2-19
Local City and County Room Tax in the Pipeline Project Area**

County/ Municipality	Local Tax Rate
Coos County	
Bandon	6% city tax
Coos Bay	7% city tax
Coquille Indian Tribe	8% tribal tax
Lakeside	7.5% city tax
North Bend	7% city tax
Douglas County	
Reedsport	5% - 7% city tax
Roseburg	8% city tax

County/ Municipality	Local Tax Rate
Sutherlin	5% city tax
Winston	5% city tax
Jackson County	
Ashland	9% city tax
Central Point	9% city tax
Medford	9% city tax
Phoenix	6% city tax
Rogue River	6% city tax
Shady Cove	6% city tax
Talent	6% city tax
Klamath County	
County-wide	8% county tax
Source: ODR 2016b.	

5.2.9 Environmental Justice

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority and low-income populations (defined as those living below the poverty level). Federal agency responsibility under this order is equally applied to American Indian programs. The Council on Environmental Quality (“CEQ”) provides guidance for addressing environmental justice (CEQ 1997). In 2015 racial minorities comprised 26.5 percent of the population of the United States, 14.9 percent of the population in Oregon, 11.6 percent of the population in Coos County, 7.2 percent of the population in Douglas County, 8.3 percent of the population in Jackson County, and 11.5 percent of the population in Klamath County. In 2015 persons of Hispanic origin comprised 17.1 percent of the population in the United States, 12.3 percent of the population in Oregon, 5.9 percent of the population in Coos County, 5.2 percent of the population in Douglas County, 11.8 percent of the population in Jackson County, and 11.6 percent of the population in Klamath County. In 2015 low-income populations comprised 15.5 percent of the population of the United States, 16.5 percent of the population in Oregon, 18.3 percent of the population in Coos County, 19.3 percent of the population in Douglas County, 19.0 percent of the population in Jackson County, and 19.3 percent of the population in Klamath County (Census Bureau 2016). Table 5.2-20 provides details for minority, low-income, and vulnerable (i.e., children, elderly, disabled, non-English speakers) populations within the four counties and 19 census tracts that would be crossed by the Pipeline.

Methodology to Identify Minority, Low-Income and Vulnerable Populations.

Minority populations are members of one of the following racial groups: Black/African-American, American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islanders, “other” races, or multi-racial (CEQ 1997). The sum of these racial minority populations is considered to be the aggregate racial minority population for counties and census tract groups. Persons of Hispanic/Latino origin are considered to be an ethnic minority and may be of any race and are identified as a separate minority subcategory. The Census Bureau defines low-income populations as individuals whose income in the past 12 months fell below the poverty level. Minority, low-income, children, elderly, disabled, and non-English speaking populations were identified using the Census Bureau’s 2011 - 2015 American Community Survey 5-Year Estimates.

Table 5.2-20
Minority, Low-Income, Children, Elderly, and Disabled Populations in Pipeline Project Area Counties and Census Tracts¹

Population Variable	United States	Oregon	Coos County	Coos County Census Tracts ³					
				Census Tract 1	Census Tract 2	Census Tract 5.02	Census Tract 8	Census Tract 9	Census Tract 11
PCGP miles		235.23	51.41	6.46	9.29	0.39	3.05	13.07	19.15
Population (2015)	316,515,021	3,939,233	62,775	5,351	2,633	2,567	2,836	7,525	5,766
Median Household Income	\$53,889	\$51,243	\$38,605	\$42,000	\$45,509	\$34,913	\$40,764	\$38,694	\$31,160
Population Category as Percent of Total Population									
White	73.6%	85.1%	88.4%	92.5%	91.5%	93.2%	96.1%	91.1%	91.4%
African American/Black	12.6%	1.8%	1.2%	0.8%	0.4%	1.1%	0.0%	0.1%	0.0%
American Indian/Alaska Native	0.9%	1.2%	2.8%	3.1%	5.2%	1.2%	0.3%	2.4%	3.3%
Asian	5.1%	4.0%	1.3%	0.1%	0.0%	2.6%	1.1%	0.4%	0.7%
Native HI & Other Pacific Islander	0.2%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
Some Other Race	4.7%	3.4%	2.1%	2.4%	0.0%	0.9%	0.0%	2.7%	0.7%
Two or More Races	3.0%	4.1%	4.0%	1.0%	2.9%	1.0%	2.5%	3.5%	3.9%
Total Racial Minorities ²	26.5%	14.9%	11.6%	7.5%	8.5%	6.8%	3.9%	9.6%	8.6%
Hispanic Origin (any race)	17.1%	12.3%	5.9%	4.6%	3.4%	2.3%	1.8%	4.1%	3.5%
Persons in Poverty ³	15.5%	16.5%	18.3%	13.6%	19.1%	30.5%	12.9%	12.9%	21.0%
Disability	12.4%	14.4%	22.9%	28.3%	22.3%	25.7%	20.5%	25.7%	24.8%
Children (under 18 years of age)	23.3%	21.8%	18.6%	14.3%	14.1%	16.1%	18.2%	15.9%	17.0%
Elderly (over 64 years of age)	14.1%	15.4%	23.3%	29.6%	27.9%	21.7%	21.8%	24.0%	24.2%
Non-English Speakers at Home	21.0%	15.1%	5.2%	5.2%	3.6%	3.1%	2.3%	5.0%	2.0%

¹ Source: Census Bureau, 2016.
² Due to rounding error, total minority populations may not equal the sum of individual minority populations.
³ Percent of people whose income in the past 12 months was below the poverty line.

**Table 5.2-20 (cont'd.)
Minority, Low-Income, Children, Elderly, and Disabled Populations in Pipeline Project Area Counties and Census Tracts¹**

Population Variable	Douglas County	Douglas County Census Tracts ³			Jackson County ²	Jackson County Census Tracts ³		
		Census Tract 1700	Census Tract 1800	Census Tract 2100		Census Tract 25	Census Tract 26	Census Tract 27
PCGP miles	66.30	26.02	10.70	29.58	55.94	20.28	15.26	20.40
Population (2015)	107,194	3,414	4,159	4,202	208,363	2,584	2,632	6,539
Median Household Income	\$41,312	\$46,192	\$44,519	\$41,898	\$44,028	\$66,652	\$43,458	\$38,121
Population Category as Percent of Total Population								
White	92.8%	91.3%	88.35	95.3%	91.7%	92.5%	95.1%	94.5%
African American/Black	0.3%	1.0%	0.0%	0.0%	0.7%	0.9%	0.0%	0.8%
American Indian/Alaska Native	1.5%	0.9%	5.4%	1.1%	0.8%	1.9%	0.8%	0.9%
Asian	0.8%	1.7%	0.0%	0.2%	1.0%	1.3%	0.0%	0.0%
Native HI & Other Pacific Islander	0.1%	0.0%	0.0%	0.0%	0.3%	1.4%	0.0%	0.0%
Some Other Race	0.7%	0.0%	1.7%	1.1%	1.5%	0.7%	0.5%	1.3%
Two or More Races	3.8%	5.0%	4.6%	2.3%	4.0%	1.4%	3.7%	2.4%
Total Racial Minoritiess ²	7.2%	8.7%	11.7%	4.7%	8.3%	7.5%	4.9%	5.5%
Hispanic Origin (any race)	5.2%	3.2%	6.5%	6.4%	11.8%	1.4%	3.6%	5.0%
Persons in Poverty ³	19.3%	20.0%	21.8%	14.5%	19.0%	9.8%	17.7%	17.9%
Disability	21.8%	22.8%	16.6%	30.9%	17.1%	12.6%	20.5%	25.0%
Children (under 18 years of age)	19.7%	16.3%	16.7%	10.9%	21.2%	15.5%	17.8%	16.4%
Elderly (over 64 years of age)	22.9%	23.8%	20.8%	28.7%	19.5%	26.6%	26.6%	22.3%
Non-English Speakers at Home	3.7%	2.8%	5.9%	1.3%	9.6%	3.0%	1.4%	5.1%

¹ Source: Census Bureau, 2016.
² Due to rounding error, total minority populations may not equal the sum of individual minority populations.
³ Percent of people whose income in the past 12 months was below the poverty line.

**Table 5.2-20 (cont'd.)
Minority, Low-Income, Children, Elderly, and Disabled Populations in Pipeline Project Area Counties and Census Tracts¹**

Population Variable	Klamath County	Klamath County Census Tracts ³						
		Census Tract 9703	Census Tract 9705	Census Tract 9706	Census Tract 9707	Census Tract 9708	Census Tract 9709	Census Tract 9715
PCGP miles	61.32	29.20	3.81	4.06	14.53	6.33	2.60	0.79
Population (2015)	65,972	3,078	1,580	1,614	1,967	2,387	3,931	4,097
Median Household Income	\$40,336	\$42,747	\$37,417	\$42,976	\$42,207	\$50,385	\$44,191	\$32,094
Population Category as Percent of Total Population								
White	88.5%	94.5%	91.7%	89.4%	89.1%	97.2%	91.2%	80.9%
African American/Black	0.9%	0.0%	0.0%	0.6%	0.3%	0.8%	1.0%	0.4%
American Indian/Alaska Native	3.4%	2.6%	3.6%	0.0%	0.3%	0.0%	4.4%	4.9%
Asian	1.2%	0.5%	0.0%	0.6%	1.2%	0.5%	0.5%	0.7%
Native HI & Other Pacific Islander	0.2%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Some Other Race	1.8%	0.7%	2.0%	9.2%	7.7%	0.2%	1.1%	1.2%
Two or More Races	4.1%	1.7%	2.0%	0.3%	1.2%	1.3%	1.7%	11.9%
Total Racial Minorities ²	11.5%	5.5%	8.3%	10.6%	10.7%	2.8%	8.8%	19.1%
Hispanic Origin (any race)	11.6%	6.1%	5.9%	37.5%	30.4%	6.9%	4.5%	12.1%
Persons in Poverty ³	19.3%	14.7%	11.7%	15.7%	14.4%	14.7%	17.7%	20.7%
Disability	19.6%	16.1%	17.3%	13.3%	17.7%	16.7%	20.3%	27.7%
Children (under 18 years of age)	21.7%	18.1%	17.9%	26.9%	21.9%	22.0%	19.1%	22.2%
Elderly (over 64 years of age)	18.7%	29.0%	30.8%	16.7%	18.6%	18.4%	21.4%	16.7%
Non-English Speakers at Home	8.1%	8.1%	6.1%	36.0%	26.9%	3.1%	2.4%	12.9%

¹ Source: Census Bureau, 2016.
² Due to rounding error, total minority populations may not equal the sum of individual minority populations.
³ Percent of people whose income in the past 12 months was below the poverty line.

Population Percentage Evaluation Criteria. In accordance with CEQ guidance, the potential environmental justice concerns associated with the Pipeline were evaluated against two criteria thresholds:

- A 50 percent criterion population analysis to determine the census tracts along the Pipeline where minority, low-income, and/or vulnerable individuals comprised 50 percent or more of the population.
- A “meaningfully greater” criterion population analysis in which minority, low-income, and vulnerable populations in census tracts were compared to state-wide reference populations. Within the current analysis, minority, low-income, and vulnerable populations in a county or census tract that were equal to or greater than 120 percent (1.2 times) of the state-wide relevant population were considered to be meaningfully greater populations. This criterion level was selected because it is commonly used for NEPA compliance by federal agencies.

If a census tract within the Pipeline project area met either of these criteria, it was assumed that there was a potential for environmental justice populations to experience disproportionate effects.

Minority Populations of Concern. None of the 19 census tracts along the Pipeline has minority, low-income, or vulnerable populations exceeding 50 percent of the total census tract population. With the exception of Klamath County Census Tract 9708, all census tracts have minority, low-income, or vulnerable populations that exceed 120 percent of the respective statewide population. Table 5.2-21 lists the census tracts with populations exceeding one or more of the meaningfully greater criteria. In order of their frequency of occurrence within Pipeline project area census tracts, meaningfully greater populations include elderly and disabled individuals, American Indian/Alaska natives, low-income individuals, Hispanic and non-English speakers, and other racial minorities. Reflecting the region’s elderly population, the most common disabilities are ambulatory, independent living, and cognitive difficulties (Census Bureau 2016).

Klamath County Census Tract 9706 includes the town of Malin, a small agricultural community near the California state line. In 2010, 66 percent of Malin’s 731 residents were Hispanic (Census Bureau 2016). Census Tract 9707 covers an area adjacent to and north of Malin. In 2015 census tracts 9706 and 9707 had median household incomes of \$42,976 and \$42,207, respectively – above the median household income of \$40,336 in Klamath County and below the median household income of \$51,243 across Oregon (Census Bureau 2016).

**Table 5.2-21
Meaningfully Greater Minority, Low-Income and Vulnerable
Populations in Pipeline Project Area Census Tracts**

Census Tract ("CT")	PCGP Miles	Meaningfully Greater Population Criteria
Coos Co. CT 1	6.46	American Indian/Alaska Native, Disability, Elderly
Coos Co. CT 2	9.29	American Indian/Alaska Native, Disability, Elderly
Coos Co. CT 5.02	0.39	Low-income, Disability, Elderly
Coos Co. CT 8	3.05	Disability, Elderly
Coos Co. CT 9	13.07	American Indian/Alaska Native, Disability, Elderly
Coos Co. CT 11	19.15	American Indian/Alaska Native, Low-income, Disability, Elderly
Douglas Co. CT 1700	26.02	Low-income, Disability, Elderly
Douglas Co. CT 1800	10.70	American Indian/Alaska Native, Low-income, Elderly
Douglas Co. CTt 2100	29.58	Disability, Elderly
Jackson Co. CT 25	20.28	American Indian/Alaska Native, Native Hawaiian/Other Pacific Islander, Elderly
Jackson Co. CT 26	15.26	Disability, Elderly
Jackson Co. CT 27	20.40	Disability, Elderly
Klamath Co. CT 9703	29.20	American Indian/Alaska Native, Elderly
Klamath Co. CT 9705	3.81	American Indian/Alaska Native, Native Hawaiian/Other Pacific Islander, Disability, Elderly
Klamath Co. CT 9706	4.06	Some other race, Hispanic origin, Non-English speakers at home
Klamath Co. CT 9707	14.53	Some other race, Hispanic origin, Disability, Elderly, Non-English speaker at home
Klamath Co. CT 9709	2.60	American Indian/Alaska Native, Disability, Elderly
Klamath Co. CT 9715	0.79	American Indian/Alaska Native, Two or more races, Low-income, Disabled

American Indian Populations. As a portion of total population, American Indian/Alaska Native populations in Coos (2.8 percent), Douglas (1.5 percent) and Klamath (3.4 percent) counties are higher than those of the United States (0.9 percent) and Oregon (1.2 percent). Table 5.2-20 shows American Indian/Alaska Native populations as a portion of the total population in the census tracts traversed by the Pipeline.

American Indian populations are highest near American Indian reservations and tribal headquarters in Coos and Klamath counties, all of which are outside the Pipeline project area. In Douglas County, American Indian populations are relatively high in the southwestern part of the county, where the Pipeline is located. These populations may be members of the Cow Creek Band of Umpqua Indians or members of other tribes.

Executive Order 12898 also requires that federal agencies ensure that public documents, notices, and hearings are readily available to the public. The mailing list for the Pipeline was initiated prior to starting field surveys and is continuously updated as changes in landowner status are identified. All affected property owners along the Pipeline received the same correspondence regardless of minority or income status. For Docket No. PF17-4, PCGP has sent correspondence to and been in communication with six Native American Tribes, identified as potentially having an interest in the Pipeline. They are: the Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians; the Confederated Tribes of the Grande Ronde; the Confederated Tribes of Siletz Indians; the Cow Creek Band of Umpqua Tribe of Indians; the Coquille Indian Tribe; and the Klamath Tribes.

PCGP held four public open houses in communities along the Pipeline route to allow interested parties to learn about the Pipeline and to provide input on issues they would like considered. Representatives from FERC attended all four meetings in order to provide an additional opportunity for interested parties to discuss issues and comment on the Pipeline. The dates and locations of the open houses were published in local newspapers. Affected landowners and other stakeholder groups were invited to attend the open houses by regular mail, email, and phone communication.

5.3 GENERAL CONSTRUCTION AND OPERATION IMPACTS

The majority of the potential socioeconomic impacts from the Pipeline will be related to construction and the associated influx of temporary workers. As discussed in Resource Report 1 and summarized in Section 5.3.2 below, the construction workforce is expected to average 646 workers a month over a two-year construction period, and peak at 4,131 workers in the middle of the first construction season. PCGP expects that workers who reside in the Pipeline project area will comprise approximately half of the construction workforce and that non-residents (non-local workers) will comprise the other half. Construction-related effects will be temporary and their magnitude will be affected by the number of workers and turn-over in the construction workforce as different portions of construction are completed. Due to the transient nature of pipeline construction, dependents are not expected to accompany non-local workers to the Pipeline project area.

Potential impacts from worker influx could include temporary increases in demands placed on short-term housing and public services. Workers will use local transportation networks, creating a short-term increase in traffic along specific routes. Where construction activities cross roadways, short-term disruptions of normal traffic patterns could occur. Beneficial effects of the Pipeline will include increased job opportunities through employment with construction contractors, increased revenue from purchases of local materials, and increased expenditures in local communities by PCGP and its contractors. With the exception of on-going tax revenues, socioeconomic effects will largely be limited to the duration of construction activities. This section addresses potential impacts related to the Pipeline and proposed mitigation measures.

5.3.1 Local Population Impacts and Mitigation

As main construction of the Pipeline will be completed within two years, potential population impacts associated with construction activities will be temporary. Project-related population increases in any particular location will be minimal as five (or more) construction spreads will work concurrently along the approximate 235-mile Pipeline route. Section 5.3.2 discusses the estimated construction workforce that will cause a short-term population increase in the Pipeline project area. Given the limited period of time required to complete most construction tasks, the majority of non-local construction workers are expected to relocate to the Pipeline project area temporarily without family members and return to their place of residence following construction. Therefore, construction of the Pipeline is expected to have an insignificant impact on population levels and trends in the Pipeline project area and no mitigation is deemed necessary.

Local population impacts associated with the Jordan Cove LNG Terminal in Coos County are addressed in Resource Report 5 for the Terminal. The Pipeline will have a cumulative or incremental impact on temporary population increases in Coos County with respect to the Jordan Cove LNG Terminal construction activities. However, the potential cumulative population increase associated with the Pipeline is expected to be minor and insignificant as construction of the Pipeline will occur after the peak workforce requirements for the Jordan Cove LNG Terminal.

Operation of the Pipeline is expected to require 15 permanent employees, including six operations technicians in the Coos Bay in Coos County, five employees in the Medford pipeline office in Jackson County, and four employees at the compressor station near Malin in Klamath County (ECONorthwest 2017b). Employees and their families are expected to live within driving distance of the employee's work location. Given the small size of the operational workforce, operation of the Pipeline will not affect population levels or trends in the Pipeline project area and no mitigation is deemed necessary.

5.3.2 Employment Impacts and Mitigation

Mainline construction is scheduled to begin in 2021. During the prior year, a small construction workforce (approximately 15 workers) will focus on smaller areas, such as completing the HDDs, right-of-way clearing operations, and potentially in the Klamath Basin and other site-specific areas where complex construction situations could occur. Mainline and facility construction is scheduled to begin in January 2021 and end in December 2022. During this two-year period, the construction workforce will average 646 workers per month. Employment during both years of mainline construction will follow the same seasonal trends; the monthly workforce will increase during the first five months of the year, peak during the middle of the construction season (June through September), and taper off toward the end of the year. The construction workforce will peak at 4,131 workers in July and August 2021. The peak construction workforce in 2022 will be lower than the previous year, with approximately 1,900 workers in June 2022. A small construction workforce (approximately 15 workers) will complete post-construction activities and reclamation in 2023. Utilization of two full construction seasons will ensure that the in-service date is achieved.

The construction workforce will be distributed across five (or more) construction spreads in the Pipeline project area and will not be concentrated in any single county. Monthly employment for Pipeline construction will average 176 workers in Coos County, 142 workers in Douglas County, 262 workers in Jackson County, and 66 workers in Klamath County. Peak construction workforces will include 976 workers in Coos County, 1,389 workers in Douglas County, 1,484 workers in Jackson County, and 356 workers in Klamath County (ECONorthwest 2017b).

The Pipeline is scheduled to begin operations in late 2022. Operation of the Pipeline will require 15 permanent employees: six workers in Coos County, five workers in Jackson and four workers in Klamath County.

PCGP estimates that construction of the Pipeline and associated compressor and meter station will cost approximately \$2.46 billion (ECONorthwest 2017c). The amount of spend in the four counties will be determined for the final version of this Report. The impact of this spending on the combined economy of Coos, Douglas, Jackson, and Klamath counties was evaluated using an IMPLAN model developed specifically for the

Pipeline. The IMPLAN model estimates the following economic impacts associated with a project:

- **Jobs:** The annual average number of employees, both payroll and self-employed, for either full- or part-time work.
- **Labor Income:** The sum of wages, salaries and benefits for payroll employees, and earnings by self-employed workers and owner-operator businesses.
- **Output:** The value of all spending associated with a project or the total value of all production components. Output equals *Value Added* plus *Intermediate Expenditures*, which include spending on goods and services that are used to create the final product.
- **Value Added:** The measure of how much a project contributes on a net basis to a local economy. Value added is also known as *gross domestic product* or GDP; a common measure of the size of an economy.

Table 5.3-1
Economic Impacts of Pipeline Construction^{1,2} (to be provided in final application)

Impact Component	2018	2019	2020	2021	2022
Employment (Jobs)	TBD	TBD	TBD	TBD	TBD
Labor Income	\$TBD	\$TBD	\$TBD	\$TBD	\$TBD
Value Added	\$TBD	\$TBD	\$TBD	\$TBD	\$TBD
Output	\$TBD	\$TBD	\$TBD	\$TBD	\$TBD

¹ Levy, 2013.
² Estimates include the total impacts of construction, including direct, indirect and induced impacts.

An IMPLAN model was also developed to estimate the economic impacts of PCGP operations in the Pipeline project area. Annual operational impacts were estimated over the Pipeline’s expected 50-year life, based on projected employee compensation for Pipeline workers. The analysis estimated that operations would support 15 total jobs and generate approximately \$3.1 million in annual labor income. As a result of approximately \$1.1 million in annual spending, the Pipeline project area’s economy (gross domestic product or “GDP”) would be approximately \$935 million higher during each year of Pipeline operations (see Table 5.3-2). These impacts include the direct, indirect and induced impacts of operations. Operation of the Pipeline is not expected to cause a reduction in long-term economic productivity or local employment opportunities.

Table 5.3-2
Economic Impacts of Pipeline Operation, 2023 – 2073^{1,2}
 (to be updated in final application)

Impact Component	Annual Impact (2023 – 2073)
Employment (Jobs)	9
Labor Income	\$813,000
Value Added	\$935,000
Output	\$1,107,000

¹ ECONorthwest 2017.
² Estimates include the total impacts of construction, including direct, indirect and induced impacts.

Because of the Project's scale, the economic impacts associated with construction and operation are expected to be statewide. Accordingly, ECONorthwest developed two IMPLAN models to estimate the economic impacts of Pipeline construction and operations on Oregon's economy. ECONorthwest estimated that total output (spending) in Oregon on construction would be approximately \$2.9 billion over the 53-month construction period (July 2019 – November 2023 for both construction of the Pipeline and LNG Terminal). As a result of this spending, Oregon's GDP would be approximately \$1.36 billion higher and labor income would be approximately \$1.06 billion higher during the 4.4 years of construction. On average, employment in Oregon would experience 2,753 more jobs per year between 2019 and 2023 (ECONorthwest 2017c).

ECONorthwest estimates that during its first full year of operations (2024), the Pipeline will support a total of 180 indirect jobs in Oregon at an average annual compensation rate of \$53,200 per job. Although the IMPLAN model's constraints preclude estimating total spending and GDP growth due to Pipeline operations, ECONorthwest estimates that the state's economy (GDP) will be at least \$11.3 million higher in 2024. These statewide impacts will reoccur each year the Pipeline operates (ECONorthwest 2017d).

ECONorthwest's analysis of the statewide economic impacts of Pipeline construction and operations are consistent with the analysis of the Pipeline's impacts in the Pipeline project area. The statewide economic impacts are higher than the regional impacts because they are based on higher project spending levels and a broader geographic area in which the impacts would occur.

Construction of the Pipeline is expected to contribute to increasing employment in the Pipeline project area. Due to the small size of the Pipeline's operational workforce, Pipeline operations are not expected to affect unemployment rates in the Pipeline project area. Because the Pipeline's potential impacts on employment are expected to benefit communities in the Pipeline project area, no mitigation is deemed necessary. PCGP will attempt to maximize the number of local workers hired, given union agreements and contractor hiring practices at the time of construction.

Tourism and Recreation-Related Employment. PCGP's Recreation Management Plan describes the procedures PCGP will take prior to, during, and following construction to manage recreation on lands impacted by the Pipeline, including PCGP's actions to prevent resource damage, provide continued safe public access, and avoid potential user conflicts. The Recreation Management Plan is provided as Appendix S to the Plan of Development ("POD") in Appendix F.1 to Resource Report 1. Resource Report 8 details the potential impacts to recreational resources associated with the Pipeline and describes proposed mitigation measures.

As described in Resource Report 8, much of the Pipeline is in areas located away from popular recreation sites. Therefore, most forms of recreation and employment associated with recreation-based tourism will not be impacted by construction. Construction could, however, result in short-term impacts to dispersed recreation sites within the vicinity of the Pipeline. Such impacts will include noise, dust, increased traffic volumes, and traffic congestion during periods of active construction along each Pipeline spread, and could temporarily affect recreationists' choice of a recreation site location. Following construction and restoration, operations are not expected to impact recreational activities in the Pipeline project area. Based on the experience of natural gas pipelines operating elsewhere in the western United States, including Nevada,

Oregon, Utah and Wyoming (FERC 2010), operation of the Pipeline is not expected to have long-term impacts on travel-related economic activity and employment in the Pipeline project area.

5.3.3 Housing Impacts and Mitigation

Construction workers who reside outside the Pipeline project area (non-local workers) are not expected to commute daily to worksites, but are expected to remain in the Pipeline project area during the work weeks of their employment period. PCGP will not provide temporary construction camps along the Pipeline route to house non-local employees. Therefore, non-local construction workers will require short-term housing in the vicinity of the Pipeline.

Assuming that 50 percent of the construction workforce will live outside the Pipeline project area, between 2021 and 2022 the non-local workforce is expected to average 323 workers and peak at 2,066 workers. Previous pipeline experience suggests that approximately 30 percent of non-local workers (up to 620 workers on the Pipeline) will provide their own housing in accommodations such as recreational vehicles or pop-up trailers (Entrega 2004). The remaining non-local workers (up to 1,446 workers) will require short-term housing in the Pipeline project area. These workers will work in five or more construction spreads distributed across the Pipeline project area. The number of non-local construction workers needing short-term housing is expected to average 62 in Coos County, 50 in Douglas County, 92 in Jackson County, and 23 in Klamath County. Because family members are not expected to accompany non-local workers to the Pipeline project area, most non-local Pipeline workers will secure temporary housing in facilities such as hotels and motels, short-term apartments, RV parks, and campgrounds within commuting distance of the Pipeline.

There are ample short-term housing opportunities in the Pipeline project area to accommodate the Pipeline's non-local workforce: approximately 1,656 motel/hotel/small inn rooms and 1,984 RV sites in Coos County; approximately 1,833 motel/hotel/small inn rooms and 2,800 RV sites in Douglas County; approximately 4,614 motel/hotel/small inn rooms and 2,498 RV sites in Jackson County; and approximately 1,537 motel/hotel/small inn rooms and 1,733 RV sites in Klamath County (see Table 5.2-9).

Utilizing multiple construction spreads disperses the need for temporary housing accommodations across communities in the Pipeline project area and minimizes the potential impacts on local short-term housing markets. The average number of non-local workers likely to require short-term housing in each county represents approximately 2 percent of the hotel/motel/small inn rooms and RV sites in Coos, Douglas and Jackson counties, and 1 percent of the hotel/motel/small inn rooms and RV sites in Klamath County.

The demand for short-term housing by Pipeline construction workers is expected to peak at 342 workers in Coos County, 486 workers in Douglas County, 519 workers in Jackson County, and 125 workers in Klamath County. Although employment will peak at different times in each county, employment levels across the Pipeline project area will be highest between July and September. The peak demand for short-term housing associated with Pipeline construction represents approximately 10 percent of the hotel/motel/small inn rooms and RV sites in Coos and Douglas counties, 7 percent of the hotel/motel/small inn

rooms and RV sites in Jackson County, and 4 percent of the hotel/motel/small inn rooms and RV sites in Jackson County.

Although construction will coincide with the peak summer tourism season in southwest Oregon, adequate temporary housing is expected to be available throughout the Pipeline project area. During periods of peak demand, some communities, especially those in Coos and Douglas counties, could experience lower vacancy rates and upward pressure on rental rates for lodging. In the event that short-term housing became limited in the immediate Pipeline vicinity, workers could have to commute greater distances to secure lodging.

Pipeline construction could temporarily affect the availability and cost of short-term housing in the Pipeline project area, but no significant or sustained impacts on local housing markets are expected to occur. At the present time, it is not possible to predict the communities in which construction workers will stay while employed on the Pipeline as lodging locations would be influenced by individual worker preferences for lodging attributes such as quality of accommodations, rental rates, and commuting time to worksites. Overall, the supply of temporary housing in the Pipeline project area is more than adequate to support a temporary influx of 323 to 2,066 non-local workers. The Pipeline is expected to have a net economic benefit due to the use of vacant housing units, hotel/ motel/small inn rooms, and campsites/RV sites; and to provide a temporary but substantial increase in local spending that will benefit local communities. Therefore, no mitigation for short-term housing impacts is deemed necessary. The Pipeline's small operational workforce is not expected to have an impact on housing markets in the Pipeline project area and no mitigation is deemed necessary.

Cumulative housing demands associated with construction of the Jordan Cove LNG Terminal are expected to be insignificant because the peak workforce for the Jordan Cove LNG Terminal will occur prior to construction of the Pipeline. Therefore, temporary housing units occupied by the Jordan Cove LNG Terminal workforce will be available during construction of the Pipeline in Coos County.

5.3.4 Impacts on Public Services and Facilities and Mitigation

The Pipeline will be a buried pipeline transporting natural gas that does not require basic utility services. During construction, power and phone lines will be utilized at the construction yards, where existing power and telephone lines are available. The compressor station will be fueled by natural gas supplied by the Pipeline. The compressor station and Jordan Cove Meter Station will require telephone and electric utilities, which are readily available at each location.

Approximately 2,700 cubic yards of solid waste will be removed from each construction spread over the two-year construction period. With five or more construction spreads, the total volume of solid waste is expected to approximate 13,500 cubic yards. PCGP will require that contractor(s) remove and dispose of all solid waste generated from the Pipeline at approved solid waste disposal facilities, which will be selected from among the facilities identified in Table 5.2-11. The selection of disposal facilities will be based, in part, on the capacities available to accept construction materials, which will be disposed in multiple small loads throughout construction.

Construction of the Pipeline could result in localized temporary impacts on police, fire, and medical services. With implementation of PCGP's emergency and safety plans (described below), potential Pipeline-related impacts on community services are expected to be minor. Given the police, fire, and hospital infrastructures in the Pipeline project area (described in Section 5.2.4), response times to emergency situations are expected to be acceptable. The Pipeline's non-local workforce is expected to place minimal incremental demands on public safety services. The Pipeline's peak non-local workforce could result in temporary population increases of less than 1 percent in all counties in the Pipeline project area. Relative to existing populations and service infrastructure levels, the magnitude of the potential population influx associated with the Pipeline's non-local workforce is not likely to strain the capacities of existing county services. Because families do not typically accompany non-local construction workers to temporary job sites, construction of the Pipeline is not expected to result in an increase in school enrollments in the Pipeline project area. To the extent that some construction workers may temporarily relocate with their families, any increase in school enrollments within any particular district would be minimal.

Other construction-related impacts on local services could include an increased demand for permits for vehicle load and width limits, as well as emergency medical services to treat injuries resulting from construction accidents. PCGP will work with local law enforcement, fire departments, and emergency medical services to coordinate effective emergency responses. Cell phone access is available throughout the Pipeline project area. PCGP will utilize satellite phones or other communication technology, as necessary, to ensure adequate communication in the event of an emergency (e.g., accidents and fire) as well as for general communications.

PCGP will implement the following plans to reduce demands on local service providers:

- A health and safety program that will include training on-site supervisory personnel in first aid, cardio-pulmonary resuscitation ("CPR") and automated external defibrillators ("AED").
- Emergency response procedures that all PCGP employees will follow in the event of an emergency during construction and operations. PCGP's Emergency Response Plan for the Pipeline will be distributed to PCGP employees and contractors, as well as First Responders, applicable state agencies and federal land management agencies that could be required to respond to emergencies along the Pipeline.
- A fire prevention and control program consistent with the Oregon Department of Fire Protection Program as well as BLM and Forest Service requirements.

The POD for the Pipeline describes PCGP's health and safety, emergency response and fire prevention plans, which were developed in consultation with the BLM and Forest Service. The Emergency Response Plan is Appendix H to the POD; the Safety and Security Plan is Appendix K to the POD; and the Fire Prevention and Suppression Plan is Appendix V to the POD.

Upon implementation of these plans, including the establishment of clear lines of communication between PCGP and local service providers, the potential impacts to local emergency services are expected to be short-term and minor during construction and insignificant during operations. During construction, PCGP will be responsible for ensuring that its construction contractors implement the Emergency Response, Safety and Security, and Fire Prevention and Suppression plans. Due to the short duration of

construction, PCGP does not anticipate the need for additional medical or other public service providers to implement these plans.

In the event of a pipeline accident, the party deemed responsible for the accident would be responsible for response cost and damage compensation. During an actual emergency response, either the Pipeline construction contractor or the Pipeline operator would provide emergency response support to respond to the incident. Ultimate liability and financial responsibility would be determined subsequent to the event.

The portion of the Pipeline requiring utilities is limited to the meter stations and the compressor station. There are existing utilities in proximity to the meter and compressor stations. Other than water required for strength testing and dust control, the Pipeline will not require public water or sewers. The Pipeline has no wastewater treatment requirements and will not result in the construction or expansion of wastewater facilities or existing stormwater drainage systems. The Pipeline will generate minimal amounts of solid waste that could be accommodated by existing landfills and recycling programs. The Pipeline will comply with all federal, state, and local statutes and regulations related to wastewater, stormwater, waste disposal, and other applicable local services.

In Oregon, solid waste is typically defined as municipal solid waste or demolition solid waste that must be disposed of in a landfill. As such, construction activities may produce the solid waste materials described below.

Solid Human Waste from Porta Potties. To meet good working conditions and requirements, each construction crew will have a porta-potty that will be emptied one to two times per week depending on crew size. Including construction trailers at yards, each construction spread is expected to require between 12 and 25 porta-potties. Sanitary waste will be disposed by a licensed service contractor according to state laws.

Woody Debris. Merchantable timber will be sold or given to the landowner. Woody debris or slash will be lopped and scattered across the right-of-way or chipped and returned to complement the soil after construction. Slash will be treated on-site according to appropriate silviculture practices stipulated by private landowners, as well as BLM, Forest Service, and ODF requirements. Slash will be treated to reduce the risks of fire, insects, and disease, to prepare the site for future productivity, and to minimize the risk of material entering streams. Stumps and large woody debris may be used as barricades to prevent access to the right-of-way. Some appropriately sized large woody debris may be given to other agencies as mitigation for use in fish habitat projects. Woody debris may also be burned according to private landowner, BLM, Forest Service, and ODF requirements or regulations. PCGP does not anticipate the need to haul woody debris material to a landfill. PCGP has developed a Right-of-Way Clearing Plan (Appendix U to the POD), an Erosion Control and Revegetation Plan (Appendix I to the POD), and a Prescribed Burning Plan (Appendix U to the POD) in consultation with the BLM and Forest Service that describe in detail the practices that will be implemented to clear timber and treat woody debris/slash.

Paper, Wrappings, and Garbage. Paper waste may be generated in the construction trailer. Construction workers will be required to remove anything waste they bring onto the site. Paper, pop bottles, cans, etc. may be generated during the construction of the Pipeline, and each pipe storage and contractor yard will have large dumpsters which will

be hauled to a landfill at least once a week depending on the peak or decline of the construction schedule.

The minor amount of waste material generated by the Pipeline will not affect existing disposal facilities in the Pipeline project area.

The Pipeline's small operational workforce is not expected to place increased demands on public services and facilities in the Pipeline project area and no mitigation is deemed necessary.

5.3.5 Transportation Impacts and Mitigation

The roads identified in Appendix A.8 to Resource Report 8 and summarized in Section 5.2.5 above will be used to move construction equipment, materials, and personnel to the construction right-of-way from the various contractor and pipe storage yards, as well as from various residential centers in the Pipeline project area where construction personnel reside, either permanently or temporarily during their employment on the Pipeline. The number of additional vehicles on these roads will be based on workers' origins and their various destinations.

Movement of construction equipment and materials and the daily commuting of workers to the various Pipeline work areas could potentially result in short-term impacts on the transportation network in the Pipeline project area. Construction impacts to the existing road network will vary depending on the conditions and capacities of the roadways and transportation routes used. A minor short-term increase in commuter traffic could be experienced on some local roads.

Temporary impacts on traffic could result from the daily commuting of the workforce to construction sites on each spread. PCGP estimates that the workforce at each spread will average 200 to 400 workers per day, with one spread peaking at 800 to 900 personnel (ECONorthwest 2017b). The majority of workers will travel to construction yards from various locations early in the morning and return in the evening during non-peak traffic hours. PCGP expects that crew buses will transport approximately 80 percent of workers, (on average, between 160 and 320 workers per spread, and a peak of 720 workers from contractor yards to work sites along the right-of-way and back again at the end of the day. Remaining workers (an average of 40 to 80 workers per spread and a peak of 180 workers) will use local roads and highways to move between work sites on the construction right-of-way on a daily basis. PCGP expects that between 20 and 40 percent of non-bused workers will carpool, with approximately two workers per vehicles. Because construction is scheduled to occur simultaneously at multiple locations, PCGP expects that individual workers will make between two and three trips per day from the contractor yards to work sites along the Pipeline route. Based on these assumptions, on average, 85 to 93 worker vehicles (including crew buses) will travel on access roads during the 2021 – 2022 construction season.

In addition, between three and four pipe stringing trucks will make approximately two roundtrips per day between the pipe storage yards and work sites for the duration of construction. PCGP expects that approximately three water trucks and three dump trucks will make up to six roundtrips per day to deliver materials and equipment to the right-of-way and control fugitive dust. Another five fuel/lube/maintenance trucks and five equipment trucks are expected to make approximately one roundtrip per day between

the storage yards and work sites. The routes taken by these 20 vehicles will vary depending on the location of construction activity. Appendix A.1 to Resource Report 1 provides a list of equipment that will potentially be used to construct the Pipeline.

Project traffic will be dispersed along the Pipeline route and impacts on local traffic levels are expected to be low because five construction spreads will work concurrently on different Pipeline segments. Within each spread, the various construction activities (e.g., clearing, trenching, stringing, etc.) will occur sequentially, which will further disperse construction personnel along Pipeline segments, thereby minimizing traffic impacts at any given location. Project-related traffic during operations will be minimal, occurring on a sporadic rather than regular basis, and will have an imperceptible impact on traffic volumes on roads in the Pipeline project area.

In response to public concerns that construction vehicles might have negative effects on the communities of Shady Cove and Trail by disrupting traffic on SH 62, peak Pipeline-related traffic through these two communities was compared with existing traffic levels. In 2015, the most recent year for which Oregon Department of Transportation (“ODOT”) traffic data are available, average annual daily traffic (“AADT”) on SH 62 varied between 6,200 and 6,400 vehicle passes in central Shady Cove and included 3,700 vehicle passes in Trail (ODOT 2017). Based on the peak vehicle estimates, construction could result in a peak of between 220 and 260 vehicle roundtrips per day through Shady Cove and Trail. These traffic levels would increase traffic on SH62 in the vicinity of Shady Cove and Trail between 5.6 percent and 14.1 percent (see Table 5.3-3).

Based on the schedule outlined in Resource Report 1, peak construction traffic impacts on SH 62 could occur for five months in 2021 (May through September), when clearing, construction, and horizontal directional drilling (“HDD”) will be conducted concurrently along the spread. Traffic impacts would be lower throughout the remainder of construction, during which time traffic on SH 62 in the vicinity of Shady Cove and Trail could increase between 2 percent and 9 percent. Project-related traffic during operations is expected to have an imperceptible impact on traffic volumes on segments of SH 62 passing through Shady Cove and Trail.

**Table 5.3-3
Estimated PCGP Construction Traffic Impacts on SH62 near Shady Cove and Trail**

SH 62 Location Description	Milepost	2015 AADT ¹	Estimated Increase in AADT	
			Low ²	High ³
1.83 miles north of SH 234	15.46	7,900	5.6%	6.6%
0.05 mile south of Brophy Way	18.35	5,500	8.0%	9.5%
0.03 mile north of Indian Creek Road in Shady Cove	19.81	6,200	7.1%	8.4%
0.02 mile north of Rogue River Drive in Shady Cove	20.11	6,400	6.9%	8.1%
Northern city limits of Shady Cove	21.10	4,200	10.5%	12.4%
0.05 mile south of Tiller-Trail Highway (SH 227)	22.37	3,700	11.9%	14.1%

¹ Source: Oregon Department of Transportation, 2017.
² Based on 220 construction-related vehicle roundtrips per day.
³ Based on 260 construction-related vehicle roundtrips per day.

Construction at road crossings could also affect traffic (see Appendix A.8 to Resource Report 8 for a list of road crossings and the proposed crossing method). Road crossings are installed using either open cut or conventional bore techniques. Crossings of paved highways will typically be made by conventional boring at a minimum depth of 5 feet. Potential traffic impacts associated with road crossings will be mitigated as follows:

- The construction workforce will generally commute during off-peak hours. Because construction work is generally scheduled to take advantage of all daylight hours, workers will commute to and from the site in off-peak hours.
- To maintain safe conditions and minimize impacts to road surfaces, construction workers will use only designated public roads and approved access roads on private lands for access to the right-of-way and compressor station.
- Construction equipment will remain on-site during construction. Construction equipment will be dropped off in one location on the right-of-way and move generally in a linear direction along the construction right-of-way as work progresses, minimizing traffic on local roads. The amount of equipment moved by hauling from site to site will be minimized to the extent possible due to physical barriers.
- PCGP will require the majority of construction workers to use pipe storage and contractor yards as the primary parking area for their personal vehicles. Workers will be transported from contractor yards by buses provided by the contractor. Transporting workers by bus will reduce traffic and eliminate the need for most personal vehicles to be parked along the right-of-way or along roadsides near the right-of-way. However, inspectors and some workers, such as welders, superintendents and foremen, may be required to drive their own vehicles to the right-of-way, depending on their specific job and responsibilities.
- PCGP will notify the appropriate landowner or agency 7 days in advance of any planned road work. In some instances, unforeseen changes to the construction schedule may limit the advance notice to agencies and landowners. At a minimum, a 48-hour notice will be provided in these cases.
- When a crossing requires an open cut of a road, PCGP will attempt to maintain at least one lane of traffic with detours around construction by utilizing plating over the open portion of the trench or other suitable methods. In a worst-case scenario, the open cut construction method may require the road to be closed for approximately 24 hours. Traffic control measures such as flaggers, signs, lights, and barriers will be used during construction to ensure public safety and to provide for efficient movement of traffic through or around work areas and to provide safe working conditions for construction workers. Advanced signage may be utilized in some situations which will provide notice of construction activities and expected delays. Where road closures occur, emergency vehicles will always be provided access and alternate access to homes would be evaluated.
- PCGP will implement additional traffic control measures as determined during the ODOT and county permit processes.
- PCGP will apply for all necessary permits to cross and/or use roads required by ODOT, BLM, Forest Service, or county jurisdictions. Mitigation specified in these permits will be applied.
- PCGP and its contractors will comply with local road and bridge weight limits or restrictions as well as BLM, Forest Service, ODOT, local, and private hauling permit requirements regarding weight and size restrictions.
- Roads will be kept free of mud and other debris that may be deposited by construction equipment. Track-driven equipment will cross roads on tires or equipment pads to minimize road damage. Any roadways damaged by construction activities will be repaired.
- PCGP will negotiate temporary and permanent road use agreements or easements to utilize private, BLM, and Forest Service roads during construction and operations, where necessary (see the Transportation Management Plan [TMP]/Appendix Y to

the POD, and the Transportation Management Plan for Non-Federal Lands [TMPNFL], provided as Appendix H.8 to Resource Report 8). Both the TMP and TMPNFL contain additional information regarding the use and restoration of private and federal roads.

During construction of the Klamath Falls Compressor Station, a maximum of 50 people, including PCGP's inspectors, will be working at the site. Construction of the compressor station is scheduled for 2021/2022 at the same time as the mainline Pipeline construction. However, any minor increase in traffic on the local roads will be short-term and adequately mitigated with the mitigation measures summarized above.

Operation and periodic maintenance of the Klamath Falls Compressor Station will not impact traffic flow or patterns on any of the roadway systems required to access the station.

Roads utilized during construction will be maintained and restored to equal or better condition than prior to construction. The primary roads are paved or graveled and will not require improvement. In some cases, narrow roads or two-track roads that will be utilized to access the right-of-way from the primary roads will be improved to provide suitable access for construction. Landowner approval and environmental clearances (see Resource Report 1 and the TMP/Appendix Y to the POD) will be obtained, as necessary, prior to conducting the improvements. The road list provided in Appendix A.8 to Resource Report 8 includes the name and location (milepost crossing) of proposed road crossings and indicates which roads require improvement. The type of road improvement that will be required is noted in the table including the acres of disturbance that will be required to complete the identified improvement. Additional maintenance requirements for roads on federal lands are listed in Appendices C and D to the TMP. Proposed access roads are illustrated on 7.5-minute USGS topographic quadrangle maps provided in the Mapping Supplement (see Appendix G.1), as well as in the TMP (see Appendix Y to the POD). On BLM and NFS lands, road use and improvements will require a temporary or special use permit as part of the Right-of-Way Grant.

The TMP, included as Appendix Y to the POD, addresses:

- Responsibilities of PCGP and contractors for use and maintenance of federally-authorized roads;
- Maintenance responsibilities and specifications;
- Road restrictions;
- Road improvement and specified roadwork/design requirements;
- Construction methods including safety and traffic flow management; and
- Road use fees.

PCGP will consult with appropriate county road or public works departments as well as ODOT, as necessary, to develop road crossing and traffic control plans for the specific Pipeline activities. These consultations will address the specific mitigation measures that will be appropriate for Pipeline activities. PCGP will obtain the required road crossing permits from the ODOT, cities, and counties. For private access roads, access easements or agreements will be negotiated on a case-by-case basis and specific landowner-requested mitigations will be addressed in the agreements.

5.3.6 Property Value Impacts and Mitigation

PCGP will acquire easements for temporary construction and permanent operation on private lands. Utility easements acquired on private lands are contractual documents with specific terms and compensation based on property type and other factors identified through landowner negotiations. These utility easements are perpetual unless abandoned and quit claimed by the company.

Easement agreements between PCGP and landowners specify compensation for damage to property during construction, loss of use during construction, loss of renewable and nonrenewable or other resources, and allowable uses of the permanent right-of-way after construction. The easement acquisition process is designed to provide fair compensation to the landowner for the right to use the property for construction and operation. Appraisal methods used to value land are based on objective characteristics of the property and any improvements. The potential impact a pipeline may have on the value of a tract of land depends on many factors, including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Property taxes are generally based on the actual use of the land. Construction of the Pipeline will not change the general use of the land. However, operation of the Pipeline will preclude construction of aboveground structures within the permanent right-of-way.

Subjective evaluations are generally not considered when assessing property values but may affect individual decisions when a property is offered for sale. These decisions are often based on the purchaser's plans for the property such as use for agriculture, future residential development, a second home, or commercial/industrial development. If the presence of a pipeline interferes with those future plans, the potential buyer may decide against acquiring the property with a pipeline easement.

In 2001, the Interstate Natural Gas Association of America ("INGAA") conducted a study of four communities across the United States and determined that the presence of a pipeline had no significant impact on the sales price or demand for properties located along natural gas pipeline corridors. The study concluded that neither the size of the pipeline (diameter) nor the product carried by a pipeline had any significant impact on a property's sale price (INGAA Foundation 2001).

Building upon its 2001 study, in 2016 the INGAA conducted a study evaluating the impact of underground, FERC-regulated interstate natural gas transmission pipelines on residential property values in six communities across the United States. The study found no measurable impact on the sales price of residential properties (single-family homes and townhomes) located along or in proximity to a natural gas pipeline compared to residential properties not located along or in proximity to the same pipeline. The study also found that there is no impact on the demand for properties located along natural gas pipeline easements nor is development in areas with natural gas pipelines hindered. In addition, the study concluded that the presence of a natural gas pipeline has no effect on homebuyers' ability to obtain a mortgage or acquire property insurance. Finally, the study found no indication that the premiums paid for insurance policies would increase because of a property's proximity to a natural gas pipeline (INGAA 2016).

Other studies investigating property values near natural gas pipelines are consistent with the findings noted above. In 2008, Dr. Eric Fruits of Portland State University conducted

a hedonic price study to evaluate the impact of the South Mist Pipeline Extension (“SMPE”) on residential sales in Clackamas and Washington counties, Oregon. Based on sales price data for 10,642 single-family residential properties located within one mile of the pipeline, the study found that proximity to the pipeline had no statistically or economically significant impact on residential property values. The study results suggest that the positive amenity potential associated with pipeline proximity (e.g., as a greenbelt or buffer) exceeds the perceived costs associated with potential safety or environmental risks (Fruits 2008).

A 2008 market study conducted by PGP Valuation of Portland, OR also assessed the impacts of the SMPE on property values. Using a sales comparison methodology, the study analyzed properties encumbered by SMPE right-of-way easements. The SMPE was installed in 2003 and 2004. PGP Valuation’s analysis of property sales between 2004 and 2008, and interviews with buyers and brokers, found no measurable long-term impact on property values resulting from high-pressure natural gas pipelines. Additionally, the study found that the variations in short-term values were either not substantial or non-existent; and that residential properties were not impacted by the pipeline easement any more or less than other property types (Palmer 2008).

PCGP will make every effort to negotiate a fair agreement with an affected landowner to obtain an easement for the Pipeline. The potential impact that construction has on the value of any particular property is a damage-related issue and would be negotiated between PCGP and the individual landowner on a case-by-case basis.

The Pipeline is not expected to displace any residences or businesses. PCGP believes that agreements regarding damages between the company and individual landowners will mitigate potential property value impacts and that no further mitigation will be required.

5.3.7 Timber Clearing Impacts

Timber harvested from the construction right-of-way and associated temporary extra work areas (“TEWA”) could have potential impacts on mill output. PCGP estimated that approximately 29,948 MBF of merchantable timber will be cleared from federal lands (Chapman 2017). Harvesting this amount of timber from 847 acres of federal lands yields an average volume of 35.4 MBF per acre. Applying this ratio to the 1,986 acres of mature forest land that will be harvested during construction of the Pipeline suggests that approximately 70.2 million board feet (“MMBF”) will be harvested. This total likely represents an overestimate because some portion of the trees will be retained for restoration (large woody debris and stream restoration). A total harvest of 70.2 MMBF represents approximately 6.6 percent of the total harvest in the Pipeline project area in 2015 and 7.3 percent of the annual average harvest between 2007 and 2015. Taking into account the possibility that the projected log volume from federal lands might substitute for other sources of logs, the relatively small harvest volume associated with construction of the Pipeline is not likely to result in higher mill output. Any impacts to local economies from decreased timber productivity due to clearing of the Pipeline right-of-way are expected to be minimal.

5.3.8 Tax Revenue Impacts

The Pipeline will generate revenues to federal, state, and local governments during construction and operations. Federal revenues will accrue through right-of-way lease fees on BLM and NFS lands and federal income taxes on earnings. State revenues will accrue through income and lodging taxes, and local revenues will accrue through property and city lodging taxes.

During mainline construction (2021 – 2022), the Pipeline will generate approximately \$246,328 in federal temporary use permit (“TUP”) fees. TUP fees are calculated by multiplying the number of BLM and Forest Service acres in the construction right-of-way and TEWAs in each county by the BLM linear right-of-way rental schedule for each year of construction. The BLM’s rental schedule is adjusted annually based on fair market values and changes in GDP and inflation (BLM 2017b). The Pipeline is expected to generate approximately \$89.4 million in federal income tax and \$40.3 million in state income tax on construction payroll earnings. Workers securing short-term housing accommodations during construction are expected to generate approximately \$374,277 in state lodging tax. \$475,851 in local lodging tax (payable to cities) in Coos County municipalities, \$383,934 in Douglas County municipalities, \$809,582 in Jackson County municipalities, and \$203,941 in Klamath County municipalities. Property tax on approximately \$728 million worth of non-expendable equipment and materials either purchased in or brought into Oregon is estimated to generate approximately \$10.9 million in tax revenues to local governments (see Table 5.3-4).

**Table 5.3-4
Estimated Direct Tax Impacts
Associated with Construction of the Pipeline**

Tax Source	Estimated Direct Tax Impact
Federal Temporary Use Permit fees ¹	\$246,328
Federal Income Tax on Payroll Earnings ²	\$89,444,484
Oregon State Income Tax on Payroll Earnings ²	\$40,250,018
State Lodging Tax ³	\$374,277
Local Lodging Tax	
Coos County municipalities ⁴	\$475,861
Douglas County municipalities ⁴	\$383,934
Jackson County municipalities ⁴	\$809,582
Klamath County municipalities ⁴	\$203,941
Personal Property Tax ⁵	\$10,918,845
<p>¹ TUP fees are based on a 2 year construction schedule, the number of federal acres in the construction right-of-way and TEWAs in each county (154 acres in Coos County, 311 acres in Douglas County, 484 acres in Jackson County, 122 acres in Klamath County), and the BLM linear right-of-way fee schedules for 2021 and 2022 (BLM 2017b). For simplicity, the analysis assumes a one-time payment.</p> <p>² The construction workforce is expected to include approximately 2,800 workers between 2021 and 2022. The analysis assumes a construction payroll of \$536,666,907, an average federal income tax rate of 17 percent, and an average state income tax rate of 9 percent that deducts federal income tax from taxable income.</p> <p>³ Applies the State of Oregon's 1.5 percent lodging tax rate to 725 workers securing lodging for 280 days in 2021 and 255 workers securing lodging for 280 days in 2022 at the per diem rate of \$91 (General Services Administration 2017) .</p> <p>⁴ Estimated local lodging tax is based on the number of non-local workers expected to secure lodging in each county (see Section 5.3.3), a per diem lodging rate of \$91, and city lodging tax rates of 7 percent in Coos and Douglas counties and 8 percent in Jackson and Klamath counties.</p> <p>⁵ Based on \$728 million in non-expendable material and equipment purchases. This is an annual tax based on \$15 on \$1,000 of value. This number is likely to be overstated as additional material and equipment purchases may be for supplies, which are expendable.</p>	

Over the course of the Pipeline's anticipated 50-year life, it would generate approximately \$2.5 million from the federal right-of-way grant fee (see Table 5.3-5). Similar to TUP fees, right-of-way grant fees are based on the number of BLM and NFS acres in the Pipeline right-of-way and the current BLM linear right-of-way schedule. During each year of operations, the Pipeline would generate approximately \$517,721 in federal income taxes and \$232,975 in state income taxes on payroll earnings. The estimated \$20 million in annual property taxes represents the annual average over the initial 20 years of operations.

**Table 5.3-5
Estimated Direct Tax Impacts
Associated with Operation of the Pipeline**

Tax Source	Estimated Direct Tax Impact
One-Time Tax Revenue Estimate	
Federal Right-of-Way Grant ¹	\$2,520,098
Annual Tax Revenue Estimates	
Federal Income Tax on Payroll Earnings ²	\$517,721
State Income Tax on Payroll Earnings ²	\$232,975
Property Tax ³	\$20,000,000
¹ Based on the number of federal acres in the Pipeline right-of-way in each county (66 acres in Coos County, 127 acres in Douglas County, 183 acres in Jackson County, 56 acres in Klamath County), and a 50-year projected life. For simplicity, the analysis applies BLM's 2023 linear right-of-way fee schedule to all years of Pipeline operations and assumes a one-time payment. ² Based on estimated labor income of \$3,106,328 during first year of operation. ³ Based on property taxes estimated by ECONorthwest 2017b.	

During operations, PCGP will pay property taxes based on the value of the installed pipeline and associated aboveground facilities and the number of pipeline miles in each county. ECONorthwest estimated Pipeline property taxes based on 2016 tax rates and the number of pipeline miles in all taxing jurisdictions crossed by the Pipeline (see Table 5.3-6). Over the initial 20 years of operations, the Pipeline is expected to generate approximately \$4.7 million in average annual property taxes in Coos and Douglas counties and approximately \$5.3 million in average annual property taxes in Jackson and Klamath counties (ECONorthwest 2017b). Property tax payments will vary annually due to pipeline depreciation and changing tax rates in the taxing jurisdictions where the Pipeline will be located. The following figures do not include the value of facilities such as meter or compressor stations and subsequent additional property taxes.

**Table 5.3-6
Estimated Annual Property Tax Impacts in the Pipeline Project Area**

County	Pipeline Miles	Property Taxes
Coos	51.36	\$4,657,322
Douglas	66.39	\$4,653,748
Jackson	55.88	\$5,345,989
Klamath	61.60	\$5,342,941
Total	235.23	\$20,000,000
Source: ECONorthwest 2017b.		

Despite the uncertainty of future SRS payments to counties, the Pipeline will not affect SRS distribution levels as the permanent right-of-way accounts for less than 1 percent of SRS acreage in the Pipeline project area. The 304 acres of permanent right-of-way in Coos County are equivalent to 0.2 percent of the SRS acreage in Coos County; the 401 acres of permanent right-of-way in Douglas County and 339 acres of permanent right-of-way in Jackson County are equivalent to 0.1 percent of the SRS acreage in those counties; and the 371 acres of permanent right-of-way in Klamath County are equivalent to 0.5 percent of the SRS acreage in Klamath County. The actual amount of SRS land affected by the Pipeline will be even lower as not all of the right-of-way is on O&C lands, nor is all of the right-of-way timbered.

Currently, there are no proposals for federal land disposal, acquisition, or exchange as part of mitigation for the Pipeline. Therefore, there are no impacts to PILT revenues to the counties. If proposals for disposal, acquisition or exchange of federal land are part of mitigation, county PILT revenues would either increase or decrease depending on the action.

Construction and operation of the Pipeline is anticipated to have beneficial direct impacts on local economies through federal, state, and local taxes. Overall, local governments are not expected to experience increased expenditures due to Pipeline construction and operations that would offset revenues derived from the Pipeline. Spending related to construction and operations will generate additional (indirect and induced) economic benefits to local economies. The economic benefits to the local economies are positive and therefore no mitigation is deemed necessary.

5.3.9 Environmental Justice Impacts and Mitigation

As described in Section 5.2.9, most of the census tracts crossed by the Pipeline have meaningfully greater racial/ethnic minority, low-income, and/or vulnerable populations, especially elderly, disabled, and/or American Indian/Alaska Natives. The analysis of minority, low-income and vulnerable populations is inherently conservative in that the Pipeline is predominantly located in rural areas. Because the Pipeline would cross 0.4 mile of Coos County Census Tract 5.02 and 0.8 mile of Klamath County Census Tract 9715, it is likely that the percentages of minority, low-income and vulnerable populations that actually occur near the Pipeline in these two census tracts are less than the percentages derived from the analysis. Although there are meaningfully greater minority, low-income, and vulnerable populations in the remaining census tracts (excluding Klamath County Census Tract 9708), construction and operation of the Pipeline are not expected to cause a disproportionate share of adverse environmental or socioeconomic impacts on any minority, low-income, or vulnerable group. Given the relatively short duration of construction and the transient nature of the Pipeline workforce, the potential socioeconomic impact on local minority and vulnerable populations would be minor and short-term.

Along the entire Pipeline route, potential adverse impacts that could be associated with construction and operation would be mitigated through settlements between PCGP and individual landowners. The Pipeline could create beneficial employment opportunities for under-advantaged groups, including minority and low-income populations. Furthermore, completion of the Pipeline would result in an increase of property tax revenues which would benefit local communities. Therefore, additional mitigation is not deemed necessary to address environmental justice concerns.

5.3.10 Financial Efficiency Analysis

The Forest Service directs that projects involving timber sales include a financial efficiency analysis that compares the anticipated costs and revenues that are part of Forest Service monetary transactions (Forest Service 2002). Accordingly, a financial efficiency analysis for the Pipeline was prepared to evaluate the costs and revenues that would result from the direct use of federal assets (land, timber, and roads). The analysis includes revenues that can be directly quantified based on existing fee schedules and does not include government administrative revenues that would be generated from fees

charged to process the application and monitor the right-of-way, nor does it include non-market economic costs or benefits that are not part of federal monetary transactions.

The Pipeline would result in two sources of direct government revenue: 1) PCGP’s payment for timber that would need to be cut, and 2) PCGP’s rental payments for construction access and the right-of-way. The Pipeline would result in three sources of offsetting government costs: 1) the value of lost timber productivity along the right-of-way, 2) the value of non-merchantable trees that would need to be cut prematurely (lost timber growth), and 3) the incremental cost of future maintenance for existing roads that PCGP may upgrade above their existing federal maintenance level. These costs and benefits were projected over a 50-year time period, where appropriate, and discounted using a real discount rate of 4 percent. As shown in Table 5.3-7, the projected net present value of the Pipeline based on this analysis is \$7.77 million in 2015 dollars. As noted above, this analysis does not account for costs and benefits that are not assigned monetary values by the federal government, or potential impacts to federal lands including impacts to recreation, the Pacific Coast Trail, Landscape Scale Restorations, and Riparian Reserves.

**Table 5.3-7
Financial Efficiency Analysis of the Pacific Connector Gas Pipeline Project**

Revenue/Cost Component	Timing	Present Value in Start Year 2020 (2015\$ million)
Revenues		
Timber Revenue ¹	2021-2022	\$5.25
Temporary Use Permit and Right-of-Way Revenue ²	2021-2073	\$2.67
Costs		
Lost Timber Productivity ³	2021	-\$0.0041
Lost Timber Growth ⁴	2021	-\$0.0583
Incremental Road Maintenance ⁵	2023 - 2073	-\$0.0831
Net Present Value		\$7.77

¹ Timber revenues were calculated based on the pond value of the estimated timber volume, less the costs of logging and hauling the timber to the mill, slash disposal, and road work. Timber volumes and other values used in this estimate are based on preliminary estimates prepared by PCGP.

² The analysis assumes that Temporary Use Permits would be required for construction for 2 years and the right-of-way would be required for 50 years. Revenues are estimated based on federal 2020 – 2023 Right-of-Way Rental Schedule values per acre for the affected counties (BLM 2017b). For simplicity, the analysis assumes that PCGP would make a one-time payment rather than annual payments over the life of the Pipeline.

³ Lost timber productivity was estimated based on the soil expectation value of the lands that would be permanently lost to timber production, and is based on an average soil expectation value of \$14.30 per acre (Levy 2008a).

⁴ Lost timber growth accounts for the value of non-merchantable trees that would be cleared in the right-of-way. This value is based on the projected value of these trees at merchantable age. Premature harvest of these trees represents foregone revenue for the federal government and is considered a cost (Levy 2008b).

⁵ Non-design improvements, such as turn-outs, widening, or blading/grading, to existing roads on NFS and BLM lands would likely be necessary and may change the maintenance level of the existing road (by, for example, adding base and gravel to an existing road surface of native materials) and, as a result, impose an incremental maintenance cost on the government. The analysis assumes that all roads on federal lands used by PCGP for construction access would be upgraded from native materials to gravel and, therefore, result in costs at the upper end of the range of possible outcomes. Incremental cost increases are assumed to be \$343 per mile per year (Levy 2008a).

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