

GOLDENDALE ENERGY STORAGE HYDROELECTRIC PROJECT

Federal Energy Regulatory Commission Project No. 14861

Klickitat County, Washington

DRAFT LICENSE APPLICATION Appendix I: Socioeconomics Report

For:

FFP Project 101, LLC



October 2019

Economic and Fiscal Impact Analysis of the Goldendale Pumped Storage Project

For ERM

October 30, 2019

Prepared for:

ERM

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

Prepared by

Highland Economics, LLC
2344 NE 59th Ave
Portland, OR 97213
503-954-1741



Highland Economics

CONTENTS

Contents.....	i
1 Introduction	1
2 Approach and Key Assumptions	2
3 Economic impact Results	6
3.1 Construction & Planning	8
3.2 Operations	10
4 Fiscal Impacts	11
5 Summary	13
6 References	14

1 INTRODUCTION

The Goldendale Project (Project) is a pumped storage energy project proposed for development in Klickitat County, Washington. The Project would be located approximately 20 miles southeast of Goldendale, WA near the Columbia River, which forms the border between Oregon and Washington. This Project, with total construction expenditures of approximately \$2.853 billion (2019 dollars)¹ and a total annual operating budget of approximately \$16.6 million, would increase demand for local labor, materials, and services—generating economic activity throughout the nation, but particularly in Klickitat County and the states of Oregon and Washington.²

Economic activity would be generated as the Project and its suppliers hire workers from the local area and throughout the region to build and operate the project; purchase materials, rent and purchase equipment; and pay sales, property and income tax. Additionally, using their income from the Project, workers would also support local businesses through purchase of goods and services and would support local and state governments through tax payments. All of this economic activity would result in money circulating and re-circulating in the local economy, creating a multiplier effect and directly and indirectly supporting jobs, income, and tax revenues.

The purpose of this study is to estimate the fiscal and economic impacts of the Project. The scope of the study is to assess the total (direct, indirect, and induced) income, employment, and tax impacts of the construction and operations phases.³ Construction is expected to last approximately 5 years (HDR, 2019), while the Project is expected to have a potential operating life that exceeds 80 years (Rye Development, 2019).

Total estimated job and income impacts are the sum of the following:

- Direct impacts (jobs/income to construction/operations workers at the Project site)
- Indirect impacts (jobs/income resulting from purchase of goods/services for the site—including everything from legal and environmental services to tires, equipment, and electricity)
- Induced impacts (jobs/income resulting from increased household spending—as employees earn increased wages due to the Project, they spend their increased income at stores, on healthcare and real estate, and at service establishments such as restaurants. These expenditures result in increased jobs/income at these businesses.)

¹ The 2019 Goldendale Energy Storage Project Conceptual Arrangement Summary Report (HDR, 2019) estimated construction costs of \$2.575 billion and operating costs of \$15 million in 2016 dollars. This analysis inflates costs from 2016 to 2019 dollars using the composite Bureau of Reclamation cost trend index (US Bureau of Reclamation, 2019).

² Economic activity would also be supported elsewhere in the nation, dispersed geographically based on location of supplies to the Project.

³ The scope of this project does not include assessing the net economic benefit of the Project (i.e., the net value of the Project as measured by the difference between Project revenues, or other benefits and Projects costs), which is an entirely different economic metric (economic activity can be low for a Project with high economic net benefit and vice versa). The scope of this analysis also does not include addressing any possible effects of the Project on economic activity due to any potential changes in aesthetics, recreation, or natural resources.

Tax revenue impacts to the federal, state, and local governments were also assessed, focusing on Project property taxes, Washington sales/use taxes, and Oregon income taxes.⁴

2 APPROACH AND KEY ASSUMPTIONS

The size of the economic impact of the Project depends on two key factors: 1) the total Project expenditures, and 2) where these expenditures will occur—i.e., the extent to which Project expenditures are used to hire local workers, purchase local services, and local materials versus used to purchase goods/services from other locations. Together, these two factors determine the amount of money that will be flowing into the local and state economies because of the Project and the associated economic activity supported. There is uncertainty in these two factors as the analysis is based on preliminary engineering studies of construction and operation. As such, all results in this analysis are presented as a range.

The analysis uses the IMPLAN economic impact modeling software and database to estimate economic impacts. IMPLAN is an input-output economic model that is commonly used by economic professionals and government agencies to estimate how a change in demand for goods/services (such as from the Project) translates into direct and ripple effects on jobs and income at the county-level and state-level.

The analytical approach to the economic impact analysis can be summarized in four steps:

1. **Determine the magnitude of the expenditures on labor, materials, and equipment.** Data on expenditures are from the 2019 Conceptual Arrangement Summary report for the Project dated April 5, 2019 (HDR, 2019). Supporting, additional detailed data were provided through personal communication from Project engineering consultants to categorize expenditures into labor, equipment, and materials.
2. **Estimate the proportion of the labor and materials/services that are sourced from Klickitat County, the states of Oregon and Washington, or elsewhere.** Information on this aspect of the analysis is based on the following sources of information: research on the types of firms and their locations that provide specialized material/equipment, information from the Project engineering consultant on the location of vendors and expected sourcing of materials, and data from the IMPLAN regional economic models on the proportion of each type of material/service that is estimated in the model to be purchased locally. Regarding the proportion of local employment, please see the expanded section below for a detailed discussion on the data sources consulted to estimate the proportion of labor that may be sourced from Klickitat County.

⁴ We did not estimate the property taxes, vehicle license fees, or business license fees that may be paid by project employees or businesses supplying inputs to the Project as we expect only a small increase in these taxes associated with economic activity supported by the project (i.e., we expect that these taxes will be paid by state residents and businesses at similar values without the Project).

3. **Allocate materials/services to IMPLAN sectors.** As expenditure information is available at a very aggregated level, this analysis also uses aggregated IMPLAN sectors. For example, consumable / temporary materials used in construction were modeled using the industry expenditure pattern for the power/communication structure construction sector.

4. **Run the IMPLAN economic models for each geography and for each phase (construction and operations).** All values used in the IMPLAN analysis were sourced from the 2019 Conceptual Arrangement Summary report for the Project, which is in 2016 values. All economic and fiscal impact results presented in this report are provided in 2019 dollars.

There are a number of key assumptions and estimates that affect economic impact results. First, there are several important assumptions regarding Project labor, as summarized in **Table 1**. These include the estimated average annual compensation (wages plus benefits) per employee during construction and operations. This is an important assumption as the engineering cost data provided estimates of total labor costs, but not direct Project jobs. The analysis estimates direct Project jobs based on the direct labor costs divided by the estimated average annual employee compensation. Other important assumptions include the proportion of construction workers who are not from Klickitat County who work at the Project during the week (and support local economic activity by paying for lodging and food in the county) and then travel back to their home residences during weekends. **Table 2** provides information on the distance to and population of communities and cities in Klickitat County and surrounding areas, which is part of the basis for the Project labor assumptions.

Table 1: Key Labor Assumptions/Estimates

Labor Component	Mid-Point Value	Data Sources
Construction Trade and Skilled Labor		
Total Compensation, Life of Project	\$270,500,000	Estimate from Project consulting engineer.
Annual Average Compensation Per Worker (Wages+Benefits)	\$112,000	Davis-Bacon 2019 prevailing wage and fringe benefit rates for Klickitat County and the Dalles/Hood River for construction equipment operators range from \$47.40 to \$60.17 (wage rates range from \$33.05 to \$45.82 and fringe rate is \$14.35). Mid-point is approximately \$54 per hour or \$112,000 per year assuming 2080 annual hours of compensation. This is in the range of values from the WA State Quarterly Census of Employment and Wages (Q1 2019) of wages paid to heavy construction workers.
% from Klickitat County	10%	Estimates from Project consulting engineer, Quarterly Census of Employment and Wages data on employment in Klickitat County, population of and distance to surrounding urban areas outside of communities, and data on historic construction employment in Klickitat County.
% from Elsewhere in WA/OR	85%	

ECONOMIC IMPACTS OF THE PROPOSED GOLDENDALE PUMPED STORAGE PROJECT

Labor Component	Mid-Point Value	Data Sources
Construction Professional Services Labor (Engineering/Highly Trained)		
Total Compensation, Life of Project	\$117,300,000	Estimate from Project consulting engineer.
Annual Average Compensation Per Worker (Wages+Benefits)	\$132,500	WA State Quarterly Census of Employment and Wages (Q1 2019) estimates show average wages of \$101,920 paid to engineers. On top of this, we assume 30% fringe benefits, based on national average data from the Bureau of Labor Statistics (Bureau of Labor Statistics, 2019).
% from Klickitat County	0%	Estimates from Project consulting engineer, Quarterly Census of Employment and Wages data on employment in Klickitat County, population of and distance to surrounding urban areas outside of communities, and data on historic construction employment in Klickitat County.
% from Elsewhere in WA/OR	33%	
Operations Labor		
Total Compensation, Life of Project	\$8,300,000	Estimate from Project consulting engineer.
Annual Average Compensation Per Worker (Wages+Benefits)	\$155,000	WA State Quarterly Census of Employment and Wages (Q1 2019) estimates show average wages of \$119,340 for utility workers. On top of this, we assume 30% fringe benefits, based on national average data from the Bureau of Labor Statistics (Bureau of Labor Statistics, 2019).
% from Klickitat County	40%	Estimates from Project consulting engineer, Quarterly Census of Employment and Wages data on employment in Klickitat County, population of and distance to surrounding urban areas outside of communities, data on historic construction employment in Klickitat County.
% from Elsewhere in WA/OR	60%	
Non-Resident Construction Labor		
Percent non-resident employees overnighing in Klickitat County	25%	Size and distance of communities in Klickitat County relative to other cities in region; size of overnight accommodations industry in Klickitat County relative to other cities in region.
Food and lodging expenses for construction workers overnighing in Klickitat County.	\$137.25	Per diem rates for lodging and food per the General Services Administration for Klickitat County for 2020 (U.S. General Services Administration, 2019).

Table 2: Regional Communities: Population and Distance to Goldendale Pump Storage Site

Location	Approximate Distance to Site	Approximate Drive Time to Site	2018 Population
Klickitat County			22,107
Goldendale, WA	19	25	3,497
White Salmon, WA	45	50	2,619
Elsewhere in Washington			7,513,484
Toppenish, WA	70	70	8,894
Yakima, WA	90	90	93,884
Ellensburg, WA	120	120	20,977
Kennewick, WA	120	120	82,943
Vancouver, WA	120	120	183,012
Oregon			
Hood River, OR	50	50	7,806
The Dalles, OR	30	30	15,668
Boardman, OR	70	70	3,405
Umatilla, OR	80	80	7,171
Portland, OR	120	120	653,115
Rest of Oregon			3,503,548

Source: (US Census Bureau, 2019) and (Google Maps, 2019).

Other key assumptions regarding sources of materials and equipment are presented in **Table 3**. All estimates are based on information from the Project consulting engineer and data in the IMPLAN input-economic model on the percentage of local sourcing in relevant economic sectors (i.e., the regional purchase coefficient). As highlighted in Table 2, due to the magnitude and specialized nature of the labor, material, and equipment requirements, the vast majority are expected to be sourced from outside Klickitat County, and much will be sourced from outside even Oregon and Washington. However, as shown in the next section, the economic impact in Klickitat County and the two surrounding states are still quite sizable given the magnitude of the Project.

Table 3: Key Material/Equipment Sourcing Assumptions

Component	% Total Cost	Sourcing	
		% from Klickitat County	% from Elsewhere WA/OR
Construction			
Labor (see detail in Table 1 above)	14%	7%	69%
Construction equipment, contractor purchased	28%	0%	8%
Construction equipment, rental	11%	5%	95%
Materials, permanent, incorporated into structures	13%	0%	50% ^a
Materials (temporary/consumables)	3%	0%	50%
Materials for making concrete (sand and gravel, etc.)	4%	30%	50%
Contractor Bonds, Insurance, Taxes, & Profit	11%	0%	15%
Owner’s Indirect Costs (engineering/planning studies, corporate overhead, bonds, taxes, insurance)	17%	0%	15%
Total	100%	2%	32%
Operations			
Labor	25%	40%	60%
Service Contracts	50%	0%	100%
Consumables/Inventory	12.5%	0%	50%
Equipment/Materials	12.5%	0%	0%
Total	100%	10%	71%

a/ Of the permanent materials, 10% are assumed to be manufactured in Oregon or Washington and 40% are assumed to be purchased through Oregon and Washington wholesale sectors (but manufactured elsewhere).

3 ECONOMIC IMPACT RESULTS

Results of the economic impact analysis are presented in terms of employment and labor income benefits to resident households—i.e., for the Klickitat County impact results, only jobs and income projected to benefit county residents are included, and for the state impact results, only jobs and income projected to benefit state residents are included. Labor income includes employee compensation (workers’ wages and benefits such as health, disability, life insurance, retirement payments, and employer-paid payroll taxes) as well as proprietor income. Direct Project employment represents full time jobs, while employment in other sectors represents both full-and part-time jobs.

In interpreting employment results, it is important to note that the number of jobs estimated to be supported by the project is not necessarily the number of *new* jobs that would be created due to the Project. It could be that instead of hiring new people, businesses that supply the Project with goods and services may increase the hours of their current employees. This may especially be true for service sectors that employ significant numbers of part-time employees. The employment estimates in this analysis reflect the current mix of full and part-time employment in each sector in Klickitat County (and

OR/WA).⁵ For some indirectly impacted sectors, such as lodging and food services, much of current employment may be part-time. If this is the case, many of the indirect/induced jobs estimated in this analysis for such sectors would also be part-time, or may reflect the number of jobs that shift from part-time to full-time.

As estimates of the magnitude and type of Project construction and operations expenditures are conceptual, the economic impact results are presented as a range to reflect uncertainty. Figures 1 and 2 summarize total economic impact results, presenting the mid-point of the potential economic impact range (the full range of potential impacts are presented in the subsections below). Figure 1 summarizes the annual economic impacts in the study area during five years of construction and approximately 80 years of expected operations in Klickitat County. In Klickitat County, during each of the five years of construction the Project may directly and indirectly support approximately 210 jobs and \$11.9 million in annual income, and during operations the Project may directly and indirectly support approximately 25 jobs and \$3.6 million in annual income.

Figure 1: Total (Direct, Indirect, Induced) Jobs and Income Supported in Klickitat County, Mid-Point Estimates

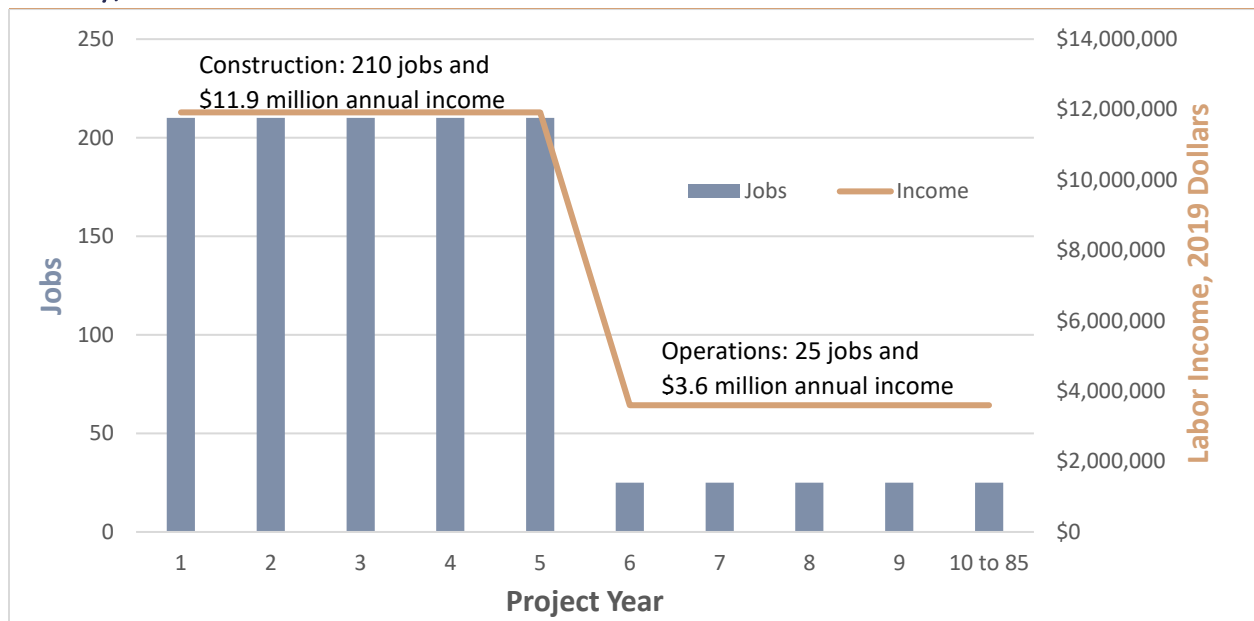
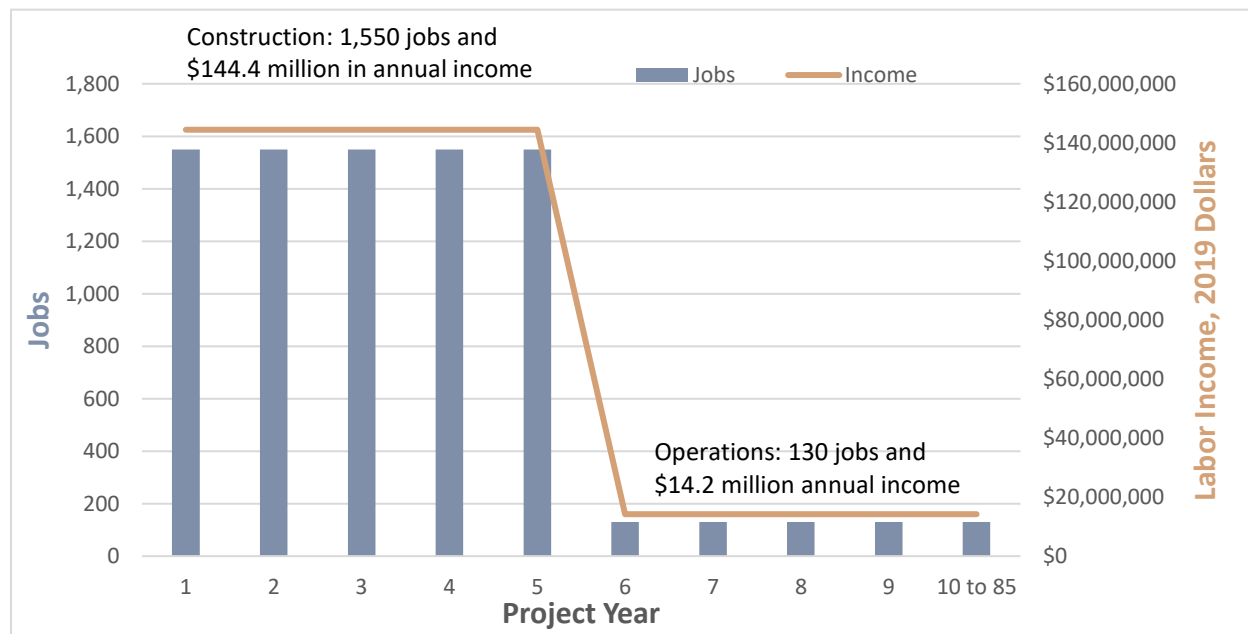


Figure 2 presents the same data for all of Washington and in Oregon (including Klickitat County). **In the two-state region, in each of the five years of construction the Project may directly and indirectly support approximately 1,550 jobs and \$144.4 million in annual income, and during operations the**

⁵ IMPLAN employment estimates are based on the current relationship between total employment (full and part-time jobs) and economic activity. Employment in IMPLAN models increases linearly with increased economic activity within each sector. So, for example, if economic output in the lodging industry increases by 10%, IMPLAN results indicate that employment would also increase by 10%.

Project may directly and indirectly support approximately 130 jobs and \$14.2 million in annual income.

Figure 2: Total (Direct, Indirect, Induced) Jobs and Income Supported in Washington and Oregon¹, Mid-Point Estimates



1/Includes impacts for Klickitat County.

The subsections below present more detailed economic impact results for construction and operations phases.

3.1 CONSTRUCTION & PLANNING

Table 4 summarizes estimates of direct Project construction and planning employment and income by worker residency. **Table 5** presents total economic impacts (direct, indirect, and induced) in Klickitat County and elsewhere in Washington and Oregon. Employment over the project life in these tables is presented in terms of “job-years”. One job-year is one job for one year. As Project construction is estimated to last approximately 5 years (HDR, 2019), for every five job-years, there would be, on average, one construction job lasting approximately five years (although employment levels would vary across the five construction years, and some technical services jobs are being supported now in the Project planning phase⁶).

Table 4 shows *direct* employment and income for people directly involved in planning and constructing the Project. In total over the five year period this amounts to approximately 3,000 to 3,600 job-years

⁶ For simplicity, technical engineering and planning jobs during the planning phase are modeled as occurring during the construction phase as the 2019 Conceptual Arrangement Summary Report that provides data on Project expenditures does not specify planning phase expenses versus construction phase expenses.

and \$600 million to \$734 million in total labor income supported. On an average annual basis, this equates to or approximately 600 to 700 jobs and \$120 million to \$147 million in labor income annually. Of these, Klickitat County residents may fill 40 to 50 jobs and receive approximately \$4.9 million to \$6.0 million in annual labor income. Residents from elsewhere in Washington or in Oregon may fill approximately 420 to 520 jobs and receive approximately \$52 million to \$63.6 million in annual labor income. In total, in all of Oregon and Washington, residents may fill approximately 460 to 570 jobs and receive approximately \$57 million to \$70 million in annual income directly from the Project. Residents elsewhere in the Nation may fill other jobs, largely technical engineering and management positions.

Table 4: Construction and Planning: Direct Project Jobs (Full-Time Equivalents) and Labor Income (2019 \$'s)

Phase/Type of Impact by Worker Residency	Impact Over Project Life (Job-Years and Labor Income)			Annual Average Impact
	Low	Mid	High	
All Workers				
Employment	3,000	3,300	3,600	600 to 700
Labor Income*	\$600,200,000	\$666,900,000	\$733,600,000	\$120,000,000 to \$146,700,000
Klickitat County Residents				
Employment	220	240	270	40 to 50
Labor Income	\$24,300,000	\$27,100,000	\$29,800,000	\$4,900,000 to \$6,000,000
Elsewhere WA/OR Residents				
Employment	2,100	2,300	2,600	420 to 520
Labor Income*	\$260,100,000	\$289,000,000	\$317,900,000	\$52,000,000 to \$63,600,000

*This includes contractor proprietor income or profits, which, based on national averages (from IMPLAN data) estimated to account for approximately 90 percent of the \$310 million in estimated contractor overhead and profit (contractor profits, bonds, insurance, and taxes). For OR/WA, an estimated 15% of contractor proprietor income is included.

Table 5 presents *total economic impacts* (direct, indirect, induced) in Klickitat County and elsewhere in Washington and Oregon during planning and construction. In total over the five-year period there may be approximately 900 to 1,100 job-years and \$53.6 million to \$65.6 million in total labor income supported in Klickitat County. Elsewhere in Washington and in Oregon, an additional 6,000 to 7,300 jobs years and \$596 million to \$729 million in labor income may be supported. On an average annual basis this equates to or approximately 190 to 230 jobs and \$10.7 million to \$13.1 million in labor income annually in Klickitat County. For elsewhere in Washington and in Oregon, this equates to approximately 1,200 to 1,500 jobs and \$119 million to \$146 million in labor income annually.

Table 5: Construction & Planning: Summary of Total Economic Impacts (Direct, Indirect, Induced) in Study Area

Geography/ Type of Impact	Impact Over Project Life (Job-Years and Labor Income)			Annual Average Impact
	Low	Mid	High	
Klickitat County				
Total Employment (Part and Full-Time Jobs)	900	1,000	1,100	190 to 230
Total Labor Income	\$53,600,000	\$59,600,000	\$65,600,000	\$10,700,000 to \$13,100,000
Elsewhere OR/WA				
Total Employment (Part and Full-Time Jobs)	6,000	6,700	7,300	1,200 to 1,500
Total Labor Income	\$596,300,000	\$662,600,000	\$728,900,000	\$119,300,000 to \$145,800,000
Total OR/WA				
Total Employment (Part and Full-Time Jobs)	6,900	7,700	8,400	1,390 to 1,730
Total Labor Income	\$649,900,000	\$722,200,000	\$794,500,000	\$130,000,000 to \$158,900,000

3.2 OPERATIONS

Table 6 summarizes estimates of *direct* project employment and income by worker residency during both operations. There would be approximately 40 to 60 direct employees at the Project during operations, earning \$7 million to \$9.6 million annually in labor income. Of these, approximately 15 to 20 may be Klickitat County residents (earning approximately \$2.8 million to \$3.8 million), with the remainder residing elsewhere in Washington or in Oregon.

As highlighted in **Table 7**, adding the secondary (indirect and induced impacts) to the direct impacts, results in an estimated *total economic impacts* in Klickitat County during operations of 20 to 30 jobs and \$3.0 million to \$4.1 million in labor income annually. In all of Washington and Oregon (including Klickitat County), total economic impacts during operations are estimated to be approximately 110 to 150 jobs and \$12 million to \$16.3 million in labor income annually.

Table 6: Operations: On-Site, Direct Project Jobs (Full-Time Equivalents) and Labor Income (2019 \$'s)

Phase/Type of Impact by Worker Residency	Annual Average Impact
All Workers	
Employment (Jobs)	40 to 60
Labor Income	\$7,000,000 to \$9,600,000
Klickitat County Residents	
Employment (Jobs)	15 to 20
Labor Income	\$2,800,000 to \$3,800,000
Elsewhere WA/OR Residents	
Employment (Jobs)	25 to 40
Labor Income	\$4,200,000 to \$5,700,000

Table 7: Operations: Summary of Total Economic Impacts (Direct, Indirect, Induced) in Study Area

Geography/ Type of Impact	Annual Average Impact
Klickitat County	
Total Employment (Part and Full-Time Jobs)	20 to 30
Total Labor Income	\$3,000,000 to \$4,100,000
Elsewhere in OR/WA	
Total Employment (Part and Full-Time Jobs)	90 to 120
Total Labor Income	\$9,000,000 to \$12,200,000
Total in OR/WA	
Total Employment (Part and Full-Time Jobs)	110 to 150
Total Labor Income	\$12,000,000 to \$16,300,000

4 FISCAL IMPACTS

In addition to the employment and income impacts presented above, the project would contribute to tax revenues in local and state jurisdictions. In particular, property taxes would increase in Klickitat County, sales/use taxes⁷ would increase in Washington State and Klickitat County and income taxes would increase in Oregon. This analysis does not estimate the impact on property taxes, vehicle license fees, or business license fees that may be paid by project employees or businesses supplying inputs to the Project as it is likely that there would be only a small increase in these taxes associated with

⁷ Use tax is a tax on the use of goods and services in Washington for which sales tax has not been paid. Use tax would be applicable for Project goods/services that are purchased from another state that does not have a sales tax (such as Oregon) or that has a sales tax lower than Washington's (in which case, the use tax would equal the difference between the Washington State sales tax and the sales tax in the other state).

economic activity supported by the Project (i.e., it is likely that these taxes would be paid by state residents and businesses at similar values without the Project). Taxes paid by the Project, its suppliers, and its employees are challenging to estimate for a number of reasons, including the size of the Project, uncertainty regarding material sourcing and expenditures, and uncertainty regarding potential property tax abatement agreements. That said, this section provides an overview of some of the key taxes that would apply to the Project and the potential magnitude of associated tax revenues to state and local jurisdictions.

Klickitat County property taxes are assessed at \$10.05 per \$1,000 of assessed value. According to the County assessor, for energy facilities, property taxes are assessed on the full construction value the first year after construction, and then are assessed based on the net profit of the facility. As such, the first year after project construction, property taxes paid to Klickitat County by the Project may be as much as \$20 million to \$30 million. Thereafter, the value would fluctuate based on the net profitability of the Project. These property taxes would support local jurisdictions and county services in Klickitat County.

Sales and use taxes in unincorporated portions of Klickitat County total 7.0%, of which 0.5% goes to Klickitat County and 6.5% goes to the State (Washington State Department of Revenue, 2019). Based on historical data on sales and use taxes paid by the power and communications construction sector (as estimated by IMPLAN), total sales and use taxes paid by the Project may be approximately \$12.3 million during construction. Sales taxes paid by suppliers may be as much as \$25.5 million, for a potential total of \$37.8 million in tax revenues during construction. The fraction of this that may go to Klickitat County would be \$2.7 million. Based on historical data on sales and use taxes paid by the power generation sectors (as estimated by IMPLAN), total annual sales and use taxes paid by the Project may be approximately \$0.5 million to \$1 million during operations.

While Oregon does not have a sales tax, it does have an income tax. On average, Oregon residents pay approximately 6% of their total adjusted gross income to the state in income tax (Oregon Department of Revenue, 2019 Edition). During construction an estimated \$270 million would be paid to workers residing in Oregon or outside Klickitat County in Washington. Conservatively assuming that half of these wages would be paid to workers residing in Oregon (for wages of approximately \$135 million), and assuming 6% of these wages would be paid in income tax, this would equate to approximately \$8 million in state income taxes, or approximately \$1.6 million in income tax annually in each of the five years during construction. During operations, income tax to Oregon may be approximately \$300,000 annually. These values account just for the potential income tax paid by Project workers. Total income tax to Oregon would also include tax paid on income to Project suppliers based in Oregon.

Thus, during construction, taxes may increase by a total of approximately \$60 million to \$70 million in Washington State, or approximately \$12 million to \$14 million annually over the five years of construction. Income tax to the State of Oregon during construction would likely total upwards of \$8 million (\$1.6 million annually). During operations, taxes would increase by a smaller amount.

5 SUMMARY

With construction expenditures of over \$2.8 billion and an estimated operating budget of approximately \$16.6 million, the Goldendale Project will increase demand for labor, materials, and services in Klickitat County and the states of Oregon and Washington.⁸ *Direct* employment and income for people involved in planning and constructing the Project is estimated to total over the five-year construction period approximately 3,000 to 3,600 job-years⁹ and \$600 million to \$734 million in total labor income. On an average annual basis, this equates to approximately 600 to 700 jobs and \$120 million to \$147 million in labor income annually. Of these, Klickitat County residents may fill 40 to 50 jobs and receive approximately \$4.9 million to \$6.0 million in annual labor income. In total, residents from Washington or in Oregon may fill approximately 460 to 570 construction and planning phase jobs and receive approximately \$57 million to \$70 million in annual labor income.

Including ripple effects in other sectors, *total economic activity* supported by the Project in Klickitat County during construction is estimated to total 900 to 1,100 job-years and \$53.6 million to \$65.6 million in total labor income. In total, in all of Washington and in Oregon, 6,900 to 8,400 jobs years and \$650 million to \$795 million in labor income will be supported. On an average annual basis this equates to or approximately 190 to 230 jobs and \$10.7 million to \$13.1 million in labor income annually in Klickitat County. In total in Washington and in Oregon, this equates to approximately 1,390 to 1,730 jobs and \$130 million to \$159 million in labor income annually.

During operations, there would be approximately 40 to 60 *direct* Project employees, earning \$7 million to \$9.6 million annually in labor income. Of these, approximately 15 to 20 may be Klickitat County residents (earning approximately \$2.8 million to \$3.8 million annually), with the remainder residing elsewhere in Washington or in Oregon. Adding the ripple effects (or indirect and induced effects) in other sectors, results in an estimated *total economic impact* in Klickitat County during operations of 20 to 30 jobs and \$3.0 million to \$4.1 million in labor income annually. For all of Washington and Oregon, total economic impacts during operations are estimated to be approximately 110 to 150 jobs and \$12 million to \$16.3 million in labor income annually.

In terms of fiscal impacts, during construction, taxes may increase by a total of approximately \$60 million to \$70 million in Washington State, or approximately \$12 million to \$14 million annually over the five years of construction. Income tax to the State of Oregon during construction would likely total upwards of \$8 million (\$1.6 million annually). During operations, taxes would increase by a smaller amount.

⁸ Economic activity would also be supported elsewhere in the nation, dispersed geographically based on location of supplies to the Project.

⁹ A job year is one job lasting one year. So five job-years equals one job lasting each of the five years of the construction period.

6 REFERENCES

- Bureau of Labor Statistics. (2019). *Quarterly Census of Employment and Wages*. Klickitat County. Washington. Retrieved from <https://www.bls.gov/cew/>
- Google Maps. (2019). *Google Maps*. Retrieved from Google: <https://www.google.com/maps>
- HDR. (2019). *Goldendale Energy Storage Project Conceptual Arrangement Summary Report*.
- Oregon Department of Revenue. (2019 Edition). *Oregon Personal Income Tax Statistics: Characteristics of Filers*. Salem: Oregon Department of Revenue.
- Rye Development. (2019). *Goldendale At a Glance*. Retrieved from Rye Development: <https://www.ryedevelopment.com/projectstor/goldendale-washington/>
- U.S. General Services Administration. (2019). *FY Per Diem Rates for Washington*. Retrieved from U.S. General Services Administration: <https://www.gsa.gov/travel/plan-book/per-diem-rates/per-diem-rates-lookup>
- US Bureau of Reclamation. (2019, August 29). *Bureau of Reclamation Construction Cost Trends*. Retrieved from US Bureau of Reclamation: <https://www.usbr.gov/tsc/techreferences/mands/cct.html>
- US Census Bureau. (2019). *QuickFacts United States*. Retrieved from US Census Bureau : <https://www.census.gov/quickfacts/fact/table/US/PST045218>
- Washington Employment Security Department. (2019). *Labor Market Info: Laborforce, All Areas Historical Estimates*. Retrieved from Washington Employment Security Department: <https://esd.wa.gov/labormarketinfo/labor-force>
- Washington State Department of Revenue. (2019). *Local Sales & Use Tax Rates*. Retrieved from Washington State Department of Revenue: <https://dor.wa.gov/get-form-or-publication/publications-subject/local-sales-use-tax-rates-excel-format>