Kilkich Area Plan

Draft Technical Memorandum #3 Transportation, Housing Market and Energy Resilience Assessment

March 19, 2026

Contents

Introduction

The Kilkich Area Plan will provide a plan for the development of the Kilkich property to include a variety of housing types and transportation options associated with a livable community. The project will build upon transportation and land use recommendations from the Coquille Indian Tribe (CIT) 2018 Empire Comprehensive Plan (Empire Plan). This includes infrastructure, facility and environmental improvements that support CIT Member interests. The Plan will include a set of prioritized improvements for future funding and implementation, and update the 2019 CIT Comprehensive Land Use Plan.

The purpose of Technical Memorandum #3 (TM #3): Transportation, Housing Market, and Energy Resilience Assessment is to:

1) Analyze existing transportation conditions
2) Prepare a preliminary housing market analysis for the North and South Parcels
3) Assess energy resilience

Existing Transportation Conditions

The existing transportation conditions section evaluates existing transportation networks relevant to the Kilkich Area Plan, including study intersections and roadway segments both within and adjacent to the Kilkich Parcels. It includes the following assessments:

- Traffic Analysis
- Safety Analysis
- Multimodal Analysis

Analysis methods in this section are in accordance with methodologies identified in *Technical Memorandum #2: Methodology and Assumptions Memorandum (TM2)*. Analyses are informed by and conducted in accordance with the Oregon Department of Transportation (ODOT) Analysis Procedures Manual (APM) and Transportation Planning Analysis Unit (TPAU), as well as relevant state, regional, and local planning standards.

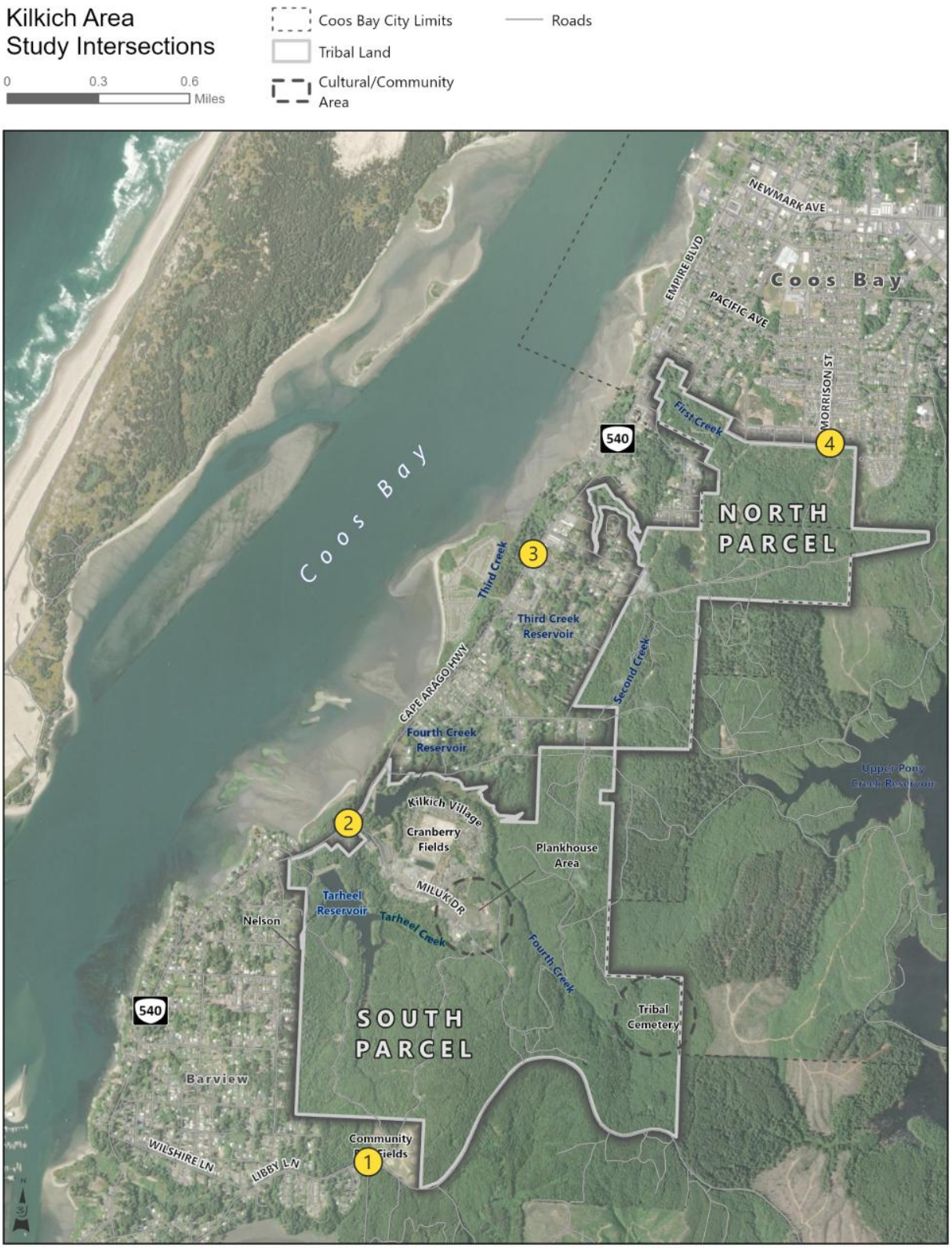
Study Facilities

The study facilities for the existing conditions assessment include four study intersections evaluated in the traffic operations and safety analyses, and roadway segments relevant to the Kilkich Area Plan evaluated in the multimodal analysis. The study intersections are illustrated in Figure 1 and include:

1. Terramar Road and Barview Charleston Area Park at Libby Lane
2. Miluk Drive at Cape Arago Highway
3. Spaw Lane at Cape Arago Highway
4. S Morrison Street at Marshall Avenue

The multimodal analysis covers collector and arterial roadways relevant to the Kilkich Area Plan, including the Cape Arago Highway segment along Tribal Lands from the South Parcel Boundary to the City of Coos Bay limits, S Morrison Street from Newmark Avenue (OR 540) to Marshall Avenue, and Libby Lane from Wilshire Drive to Barview Charleston Area Park access. These segments are shown in Figure 1. Additionally, Miluk Drive is included in the multimodal analysis due to its function as a primary access route to lands owned by the Coquille Indian Tribe, though it is functionally classified as a local street.

Figure 1. Study Area and Intersections



Traffic Analysis

The traffic analysis evaluates peak hour traffic operations of the study intersections under existing conditions to identify potential capacity constraints and to help inform the future development of alternatives.[1] This section summarizes the traffic analysis results and compares them to state, county, and city mobility targets.

Existing Conditions

Intersection conditions, including lane configurations and traffic control devices, were identified from aerial imagery and verified through field observations. These conditions are shown in Figure 2. Note that intersection 4, S Morrison St and Marshall Ave, has no existing traffic control devices. The intersection is analyzed as an AWSC intersection per analysis methodology outlined in the 7th Edition of the Highway Capacity Manual.

The results of the traffic operations analysis are summarized in Table 1 and detailed in

Figure 3. These results include existing (2025) 30th highest hour (30HV) traffic volumes for each approach by movement, adjusted in accordance with methodologies outlined in *TM2*, as well as intersection operations at the study intersections.[2] All study intersections currently operate within their respective intersection mobility targets as defined by ODOT, Coos County, and City of Coos Bay. Detailed Synchro reports for are provided in Attachment 1.

Table 1. Traffic Operations Summary

#	Intersection	Traffic Control	Jurisdiction	Mobility Standard	PM Peak Hour Operations
1	**Terramar Rd and Park/ Libby Ln**	TWSC	Coos County	V/C ≤ 0.85	V/C = 0.01, LOS = A
2	**Cape Arago Hwy/ Miluk Dr**	TWSC	ODOT	V/C ≤ 0.80 (OHP), V/C ≤ 0.75 (HDM)	V/C = 0.09
3	**Cape Arago Hwy/ Spaw Ln**	TWSC	ODOT	V/C ≤ 0.80 (OHP), V/C ≤ 0.75 (HDM)	V/C = 0.02
4	**S Morrison St/Marshall Ave**	Assumed AWSC	City of Coos Bay	LOS ≤ D	LOS = A

TWSC = Two-way Stop Control, AWSC = All-way Stop Control, V/C = Volume-to-Capacity Ratio, OHP = Oregon Highway Plan, HDM = Highway Design Manual

A queuing analysis was conducted at the study intersections for the weekday PM peak hour. All approaching movements show 95th-percentile queues of less than one vehicle. At Cape Arago Highway and Miluk Drive, the southbound and westbound left turn lanes provide 55 feet and 60 feet of storage, respectively. These storage lengths are adequate for the southbound and westbound PM peak hour left turn movements. All other approaching movements

[1] Traffic operations during future conditions will be evaluated in TM4.

[2] A historical adjustment factor of 1.08 was applied to traffic counts collected before 2025. A seasonal adjustment factor of 1.23 was applied to all counts regardless of collection date to reflect 30th Highest Hour Volumes.

at the remaining three intersections do not have dedicated turn lanes and operate as single-lane approaches without dedicated turn lanes.

Figure 2. Existing Lane Configurations and Traffic Control Devices

Figure 3. Existing PM Peak Hour Traffic Volumes

Safety Analysis

The safety analysis documents crash trends and patterns at the study intersections in alignment with Chapter 4 of the APM.[3]

ODOT provided the most recent five years of crash data between January 1, 2019, and December 31, 2023. For the analysis, crashes within 250 feet of the study intersections were analyzed for the five-year period.[4] Based on the reported crash data within this period, there were no fatal or suspected serious injury crashes at any of the four study intersections. Additionally, based on the reported crash data, no crashes occurred at the intersection of S Morrison Street and Marshall Avenue.

Intersection crash data is summarized by crash severity in Table 2 and by crash type in Table 3. Injury classes are defined as Injury A (Suspected Serious Injury), Injury B (Suspected Minor Injury), and Injury C (Possible Injury). Per the methodology described in *TM2*, observed crash rates were compared to 90th percentile crash rates from Exhibit 4-1 in the APM, which provides 90th percentile intersection crash rates per Million Entering Vehicles based on the land use context (i.e. rural or urban) and intersection traffic control (i.e. number of intersection legs and stop-control/signalization). More detailed information on the crash rate calculations is available in Attachment 2.

Table 2. Study Intersection Crashes by Severity

#	Location	Severity					Total Injury Crashes	Total Crashes
		Fatal	Injury A	Injury B	Injury C	PDO[1]		
1	**Terramar Rd and Park/ Libby Ln**	0	0	1	1	0	2	2
2	**Cape Arago Hwy/ Miluk Dr**	0	0	0	0	2	0	2
3	**Cape Arago Hwy/ Spaw Ln**	0	0	2	1	1	3	4
4	**S Morrison St/Marshall Ave**	0	0	0	0	0	0	0

[1] PDO = Property Damage Only crashes

[3] Oregon Department of Transportation. (2025). Analysis Procedures Manual (Chapter 4). Oregon Department of Transportation.

[4] 250 feet was determined based on an examination of crash data and intersection conditions.

Table 3. Study Intersection Crashes by Collision Type and Critical Crash Rate

#	Location	Collision Type			APM Exhibit 4-1 90th Percentile Rate	Observed Crash Rate
		Rear-end	Fixed	Non-Collision		
1	Terramar Rd and Park/ Libby Ln	0	1	1	0.475	0.44
2	Cape Arago Hwy/ Miluk Dr	1	1	0	0.475	0.10
3	Cape Arago Hwy/ Spaw Ln	2	1	1	0.475	0.15
4	S Morrison St/Marshall Ave	0	0	0	1.080	0.00

[1] Non-collision crashes typically involve overturned vehicles.

Over the 5-year period, the intersection of Terramar Road and Libby Lane had two reported crashes, resulting in one class B injury and one class C injury, both single-vehicle crash events (e.g., crash with a fixed object or other non-collision). The intersection of Cape Arago Highway and Miluk Drive also had two reported crashes, including a rear-end crash and a crash with a fixed object, which both resulted in property damage only (PDO). The intersection of Cape Arago Highway and Spaw Lane had four reported crashes, including two rear-end crashes, a fixed-object crash, and a non-collision crash (overturn). The rear-end crashes were both injuries (one class B and one class C), the non-collision crash resulted in a class B injury, and the fixed object crash resulted in property damage only. The intersection of S Morrison Street and Marshall Avenue did not have any reported crashes.

As shown in Table 2, the observed crash rates for the study intersections, based on data from the 5-year period, do not exceed the critical crash rate. Neither the intersection of Cape Arago Highway and Miluk Drive nor the intersection of Cape Arago Highway and Spaw Lane are included on the 2023 ODOT Safety Priority Index System (SPIS) list. The remaining two study intersections are not on ODOT facilities and therefore are not considered in the SPIS ranking.

This safety analysis will be supplemented with additional analysis as part of the upcoming Cape Arago Highway Corridor Plan.

Multimodal Analysis

The multimodal analysis performs a qualitative and quantitative evaluation of pedestrian and bicycle facilities associated with the study area. This section summarizes the findings of the two key components of the multimodal analysis, which are:

- **Qualitative Multimodal Analysis (QMA):** A context-based evaluation of roadway characteristics affecting pedestrian, bicycle, and transit travel. Roadway segments are assessed using qualitative criteria and assigned ratings of Excellent, Good, Fair, or Poor.

- **Level of Traffic Stress (LTS) Analysis**: A quantitative evaluation for pedestrians and bicyclists consisting of:
  - Pedestrian Level of Traffic Stress (PLTS)
  - Bicycle Level of Traffic Stress (BLTS)

QMA and LTS findings are based on existing site conditions as reviewed via aerial street-level imagery and verified through a field visit and site observations. For Cape Arago Highway, the findings are also compared to data from the Oregon Transportation Safety Data Explorer, including the Bicycle LTS scores and the Pedestrian and Bicycle Vulnerable Road User (VRU) Assessments.

The multimodal analysis covers collector and arterial roadways relevant to the Kilkich Area Plan, including the Cape Arago Highway segment along the Tribal Lands shown in Figure 1, S Morrison Street, and Libby Lane. Additionally, Miluk Drive, a local street, is included in the multimodal analysis due to its function as a primary access route to lands owned by the Coquille Indian Tribe.

Table 4 summarizes the roadway segments within the study area that are included in this multimodal analysis. Segments of these roadways were defined based on changes in multimodal facility types along the corridor.

Table 4. Analysis of Roadway Segments

ODOT Functional Classification[5]	Roadway	From	To
Minor Arterial	**Cape Arago Highway**	South Parcel Boundary	Miluk Dr
	Cape Arago Highway	Miluk Dr	Empire Blvd / Wisconsin Ave
Major Collector	**Libby Lane**	Wilshire Ln	Terramar Road
	Morrison Street	Newmark Ave	Marshall Ave
Local Street	**Miluk Drive**	Cape Arago Hwy	450 feet east of Cape Arago Hwy
	Miluk Drive	450 feet east of Cape Arago Hwy	Mexeye Loop West
	Miluk Drive	Mexeye Loop West	Plank House Loop

Qualitative Multimodal Analysis (QMA)

The QMA documents the following attributes of study segments:

- **Pedestrian facilities:** Facility type, separation/buffers, lighting, and facility condition
- **Bicycle facilities:** Facility type, buffers, pavement condition, obstructions, adjacent traffic speeds

[5] Functional classification is presented as defined by the Federal Functional Classification map for Coos County, last updated in 2023 and available on ODOT's website < https://www.oregon.gov/odot/Data/Documents/County_Coos_01_of_03.pdf>

- **Transit service:** Services and stop locations

These facilities are described for each segment identified in Table 4 in the following sections.

Minor Arterial Facilities

Cape Arago Highway (OR 540) includes a range of pedestrian and bicycle facilities that vary in type and condition along the corridor. For people biking, the highway includes paved shoulders on both sides and is designated as part of the Oregon Coast Bike Route (OCBR). For people walking, an intermittent side path is present on the east side that extends from approximately 325 feet south of Miluk Drive to the City of Coos Bay boundary. Based on field observations, the side path appears to be in poor condition and there is limited separation between motor vehicle space and bicycle and pedestrian space. Approximately less than 30 percent of the side path extent between Miluk Drive and the City of Coos Bay boundary is separated from the roadway with a grass buffer or curb.

Transit service is provided by Coos County Area Transit along their Blue Line. The Blue Line operates between North Bend and Charleston on one-hour headways between approximately 7:00 am and 6:00 pm Monday to Friday. Stops are provided on Cape Arago Highway but appear unmarked based on Google Streetview. On Miluk Drive, a sheltered stop is located within the Ko-Kwel Wellness Center parking lot.

A description of multimodal facilities for each minor arterial segment is provided below from south to north.

Cape Arago Highway from South Parcel Boundary to Miluk Drive

Pedestrian Assessment	• No dedicated pedestrian facilities along this segment.
Bicycle Assessment	• Paved six-foot shoulders on both sides of the road. Based on a Google Streetview, the pavement appears to be in good condition and limited obstructions exist throughout the segment. • The posted speed limit of the adjacent travel lanes is 40 miles per hour (mph).
Transit Assessment	• Bus stops are located along this segment near Hollywood Lane and Windy Lane.

Cape Arago Highway from Miluk Drive to Empire Boulevard/Wisconsin Avenue

Pedestrian Assessment	• An approximately 10-foot-wide side path is available for pedestrians along the east side of this segment but is in poor condition. • Near the southern extents of this segment, the side path is separated from the roadway with a curb. This curb transitions to a landscaped buffer south of Tarheel Road. This buffer varies between 4 and 8 feet in width. At many locations north of Sandstone Lane, the side path is immediately adjacent to the roadway without any physical or visual barriers. In these places, the side path is observed to be used by vehicles as a shoulder or parking area.
Bicycle Assessment	• This segment provides a paved shoulder on both sides of the road; however, shoulder width varies from approximately one foot to four feet. Bicyclists may use the side path as an alternative. • The posted speed limit of the adjacent travel lanes is 40 mph.
Transit Assessment	• Bus stops are located along this segment near Lowell Lane and Kellogg Lane.

Major Collector Facilities

The major collector roadways include facilities managed by Coos County and the City of Coos Bay. Libby Lane from Wilshire Lane to Terramar Road is a county-managed facility and Morrison Street from Newmark Avenue to Marshall Avenue is a city-managed facility. Both segments are two-lane roadways that primarily serve residential areas. A description of multimodal facilities for each segment is provided below.

Libby Lane from Wilshire Lane to Terramar Road

Pedestrian Assessment	• No dedicated pedestrian facilities are provided along this segment.
Bicycle Assessment	• No dedicated bicycle facilities are provided along this segment. • The posted speed limit is 30 mph.
Transit Assessment	• No bus service is provided along this route.

Morrison Street from Newmark Avenue to Marshall Avenue

Pedestrian Assessment	• No dedicated pedestrian facilities are provided along this segment.
Bicycle Assessment	• No dedicated bicycle facilities are provided along this segment. • The posted speed limit is 25 mph and streetlights are present.
Transit Assessment	• No bus service is provided along this route.

Local Facilities

Miluk Drive is a local street that is the primary access road to Coquille Indian Tribe facilities in the Kilkich Area.

Miluk Drive from Cape Arago Highway to 450 feet east of Cape Arago Highway

Pedestrian Assessment	• No dedicated pedestrian facilities are provided along this segment.
Bicycle Assessment	• No dedicated bicycle facilities are provided along this segment. • The posted speed limit is 25 mph.
Transit Assessment	• Bus service travels along this segment but has no stops. The nearest stop is in the Ko-Kwel Community Center parking lot.

Miluk Drive from 450 feet east of Cape Arago Highway to Mexeye Loop West

Pedestrian Assessment	• An approximately 5-foot sidewalk is available on the north side of the roadway. The sidewalk is not buffered from the roadway. Based on field observations, the sidewalk is in good condition.
Bicycle Assessment	• No dedicated bicycle facilities are provided along this segment. • The posted speed limit is 25 mph.
Transit Assessment	• A bus stop is located on Miluk Drive in the Ko-Kwel Community Center parking lot.

Miluk Drive from Mexeye Loop West to Plank House Loop

Pedestrian Assessment	• Approximately 5-foot sidewalks are available on both sides of the roadway. Sidewalks are not buffered from the roadway. The sidewalks are in good condition.
Bicycle Assessment	• No dedicated bicycle facilities are provided along this segment. • The posted speed limit is 25 mph.
Transit Assessment	• Bus service travels along this segment but has no stops. The nearest stop is in the Ko-Kwel Community Center parking lot.

QMA Summary

The results of the QMA are summarized in Table 5. Ratings of "Poor" were given where facilities were not present or in inoperable conditions. Ratings of "Fair" were given where facilities were present, but they present challenges to users such as facility gaps, varying widths, or deteriorating conditions. Ratings of "Good" describe facilities that are present and would not likely present functional challenges to users. Ratings of "Excellent" describe facilities that are comfortable for users of all ages and abilities, which is typically characterized by continuous facilities, adequate buffers from adjacent traffic, and adequate width of facilities for passing, and are in good physical condition.

Table 5. QMA Results Summary

Roadway	From	To	Pedestrian Assessment	Bicycle Assessment	Transit Assessment
Cape Arago Highway	South Kilkich Parcel Boundary	Miluk Dr	Poor	Poor	Fair
Cape Arago Highway	Miluk Dr	Empire Blvd / Wisconsin Ave	Fair	Fair	Fair
Libby Lane	Wilshire Ln	Terramar Road	Poor	Poor	Poor
Morrison Street	Newmark Ave	Marshall Ave	Poor	Fair	Poor
Miluk Drive	Cape Arago Hwy	450 feet east of Cape Arago Hwy	Poor	Fair	Fair
Miluk Drive	450 feet east of Cape Arago Hwy	Mexeye Loop West	Fair	Fair	Fair
Miluk Drive	Mexeye Loop West	Plank House Loop	Good	Fair	Fair

Across the study area, most road segments are rated "Poor" to "Fair" for both pedestrian and bicycle travel, reflecting frequent gaps in facilities and varying infrastructure condition. No segments received an "Excellent" rating, indicating that no portions of the study area network provide a comfortable experience for users of all ages and abilities. Along Cape Arago Highway, there are paved shoulders and a side path available in some locations, but facilities are generally inconsistent overall, with varying conditions or inconsistent separation from adjacent traffic. The studied collector streets lack dedicated pedestrian and bicycle facilities entirely. Dedicated pedestrian facilities are present along portions of Miluk Drive.

Level of Traffic Stress Analysis

The Level of Traffic Stress (LTS) analysis was conducted in accordance with Chapter 14 of the APM, which provides LTS methodology for evaluating bicycle and pedestrian facilities within urban and rural environments. This methodology classifies four levels that a person walking or biking can experience on the roadway, ranging from LTS 1 (minor traffic stress) to LTS 4 (high traffic stress). A road segment that is rated LTS 1 generally has low traffic volumes and travel speeds and is suitable for all users, including children. A road segment that is rated LTS 4 generally has high traffic volumes and travel speeds and is perceived as unsafe by most adults. Per the ODOT APM, LTS 2 is considered a reasonable target for pedestrian and bicycle facilities due to its acceptability for most adults.

Pedestrian LTS (PLTS) and Bicycle LTS (BLTS) values are derived from APM tables that consider a range of roadway characteristics, including speeds, condition, traffic, and physical buffers, among others. When multiple stress values apply to a segment, the highest (most stressful) value is assigned. The results of the LTS analysis are summarized in

Table 6.

Table 6. LTS Analysis Results Summary

Roadway	From	To	Pedestrian LTS		Bicycle LTS	
			North/East Side	South/West Side	North/East Side	South/West Side
Cape Arago Highway	South Kilkich Parcel Boundary	Miluk Dr	4	4	4	4
Cape Arago Highway	Miluk Dr	Empire Blvd / Wisconsin Ave	4	4	4	4
Libby Lane	Wilshire Ln	Terramar Road	4	4	3	3
Morrison Street	Newmark Ave	Marshall Ave	4	4	1	1
Miluk Drive	Cape Arago Hwy	450 feet east of Cape Arago Hwy	4	4	1	1
Miluk Drive	450 feet east of Cape Arago Hwy	Mexeye Loop West	2	4	1	1
Miluk Drive	Mexeye Loop West	Plank House Loop	2	2	1	1

As presented in Table 6, all arterials and collector roadways within the study area have pedestrian level of traffic stress scores of 4. This is attributed to a lack of dedicated pedestrian infrastructure along these roadways or pedestrian infrastructure that provides inadequate protection from the adjacent vehicular traffic.

Bicycle level of traffic stress scores vary across the study roadways with some low-stress routes available; however, a connected, low-stress bicycle network currently does not exist between the Coquille Indian Tribe's facilities on the Kilkich property and the neighboring communities of Coos Bay, North Bend, Barview, and Charleston.

Maps showing the PLTS and BLTS scores for study roadways are shown in Figure 4 and Figure 5, respectively.

ODOT's Active Transportation Needs Inventory (ATNI)[6] provides BLTS scores for state facilities. As shown in Figure 6, both segments of Cape Arago Highway have a BLTS score of 4 in the ATNI, which is consistent with findings in this analysis.

[6] ODOT ATNI - Evaluation Criteria and Prioritization

Figure 4. Pedestrian LTS

Figure 5. Bicycle LTS

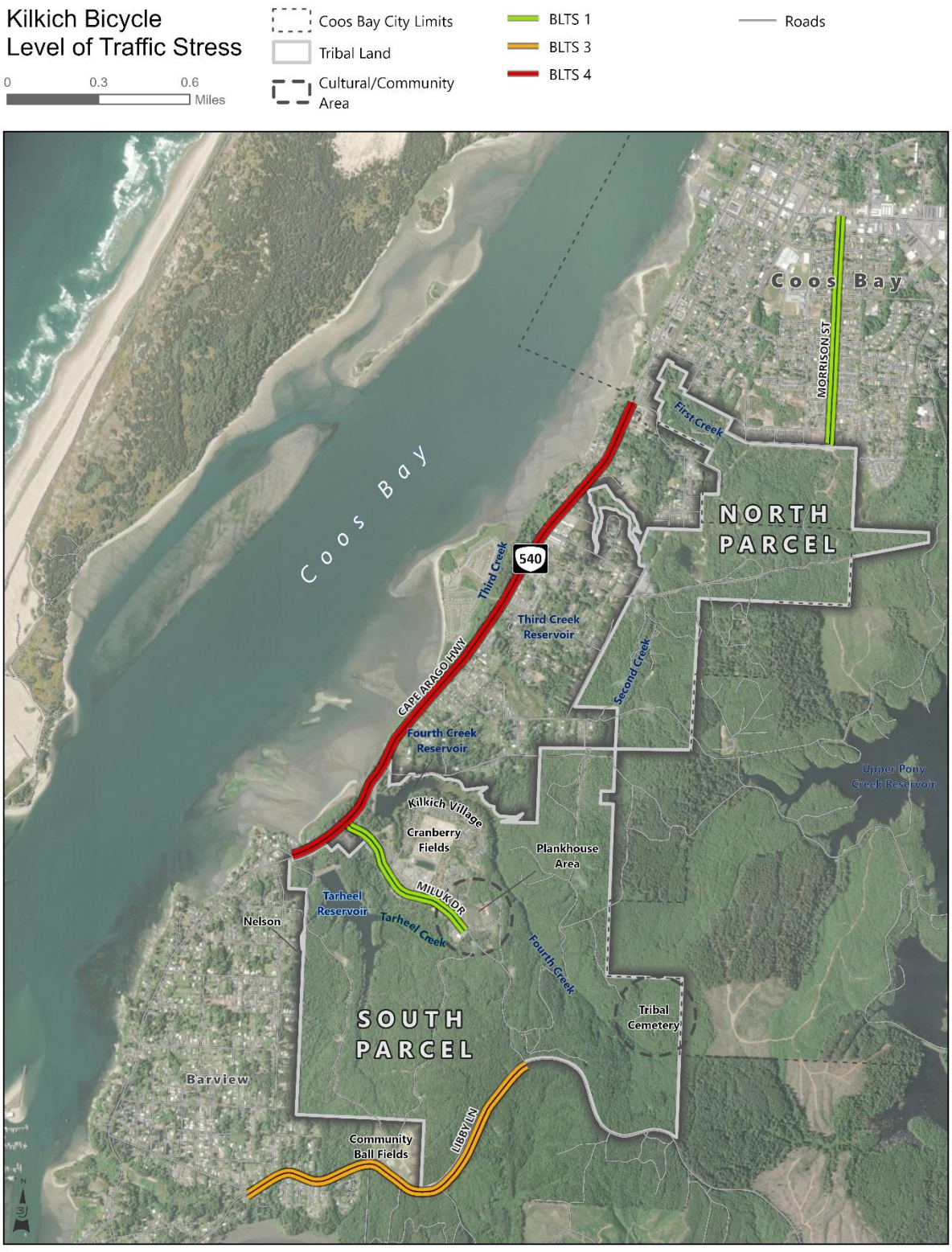


Figure 6. ODOT Active Transportation Needs Inventory BLTS

Vulnerable Road User Assessment

ODOT performs a Vulnerable Road User (VRU) Assessment of its facilities to assess the approximate risk to pedestrians and cyclists associated with using each of its facilities. This risk score is based on 13 risk factors associated with a given roadway segment spanning a range of geometric, operational, and contextual parameters. Risk scores are reported on a scale of 0 to 80. Figure 7 and

As shown, the segments of Cape Arago Highway north of Spaw Lane to the City of Coos Bay boundary and south of Tarheel Lane to Wildahl Road are classified as “medium” risk and the segment from Tarheel Lane to Spaw Lane is “high” risk for both pedestrians and bicyclists.

show the VRU Assessment of pedestrians and bikes, respectively, along Cape Arago Highway.

As shown, the segments of Cape Arago Highway north of Spaw Lane to the City of Coos Bay boundary and south of Tarheel Lane to Wildahl Road are classified as “medium” risk and the segment from Tarheel Lane to Spaw Lane is “high” risk for both pedestrians and bicyclists.

Figure 7. Vulnerable Road User Assessment – Pedestrian Risk

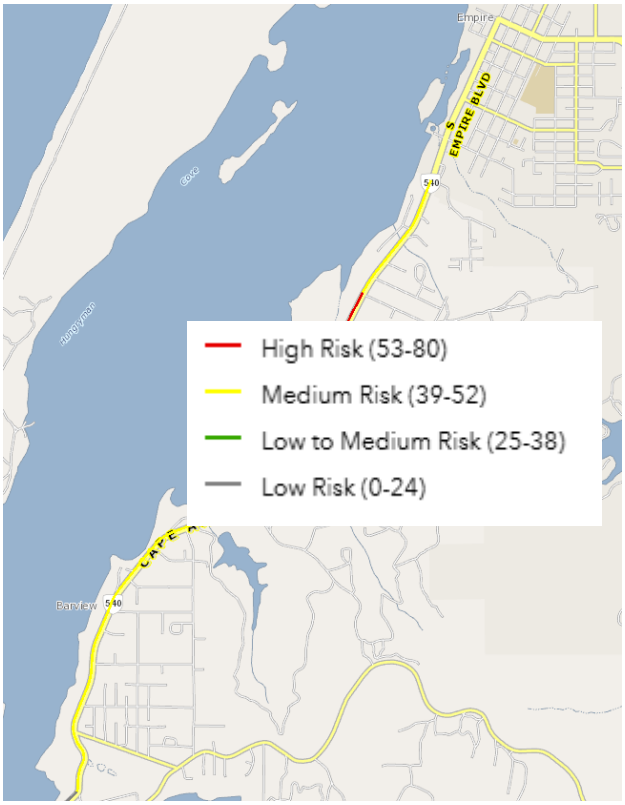
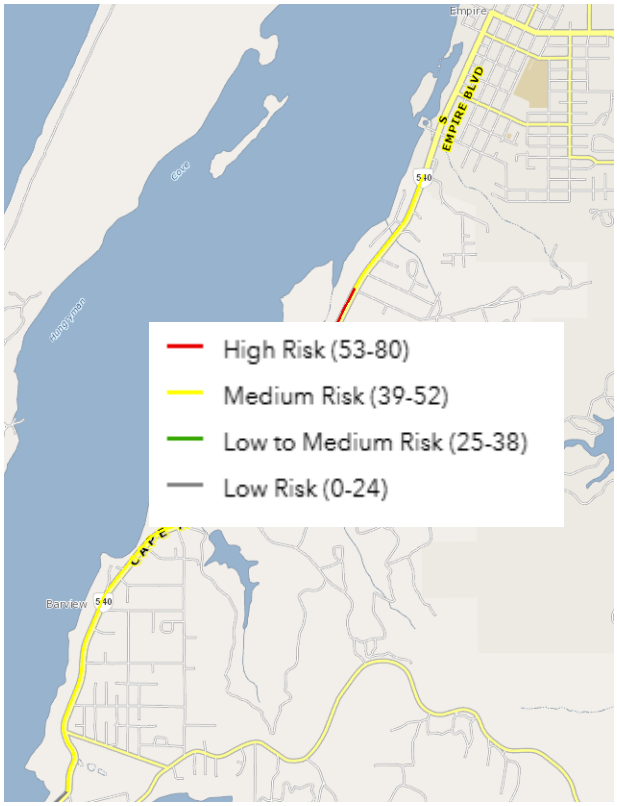


Figure 8. Vulnerable Road User Assessment – Bike Risk



Housing Requirements and Market Analysis

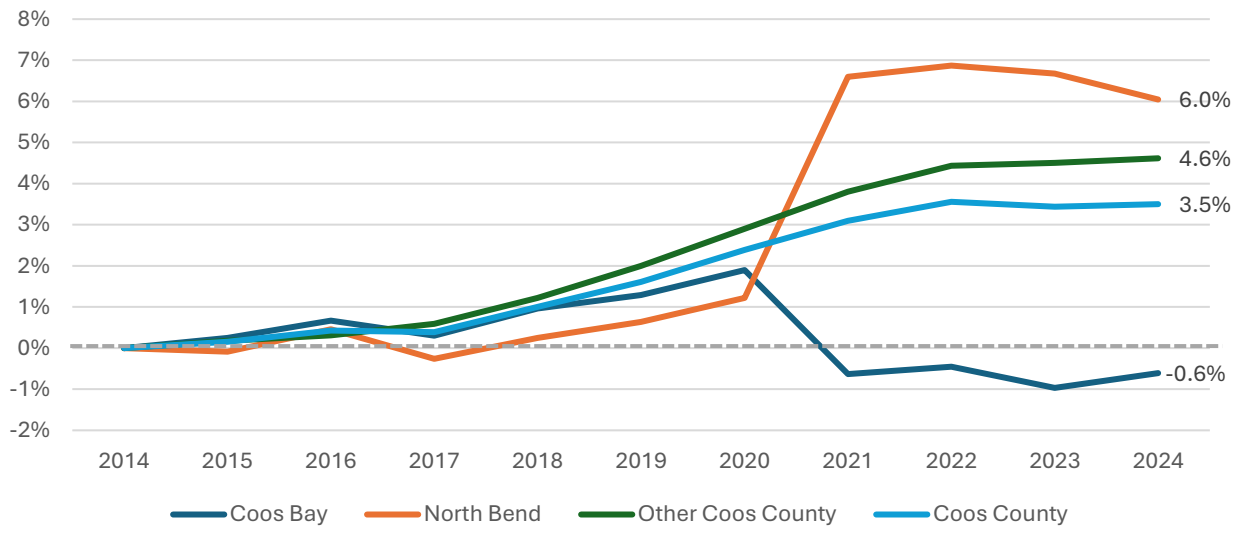
There is a significant need for new housing in Coos County. Many housing units are old and in need of repair, and there has been limited building activity in recent years. The two Kilkich properties adjacent to the city of Coos Bay present an opportunity for the Coquille Tribe to address Tribal member needs as well as community needs by building new housing on these two sites. The Tribe is interested in understanding the types of housing needed and feasible to support Tribal members and the broader community. The analysis below includes data that identifies the most needed housing types, current housing market conditions, and the target rent and home prices for market rate and subsidized housing.

Housing Need

Population and Households

Between 2014 and 2024, population growth in Coos County, North Bend, and Coos Bay was relatively limited. Coos County added just under 2,200 residents over this period, an increase of three percent. While North Bend's population grew by six percent, Coos Bay lost 0.6 percent of its population between 2014 and 2024. Much of North Bend's population growth occurred between 2020 and 2021. It has since leveled off, seeing a slight decline between 2022 and 2024. Although Coos County and North Bend County have not seen significant population growth over this period, the lack of development activity since 2007 means that there is likely pent-up demand in the market.

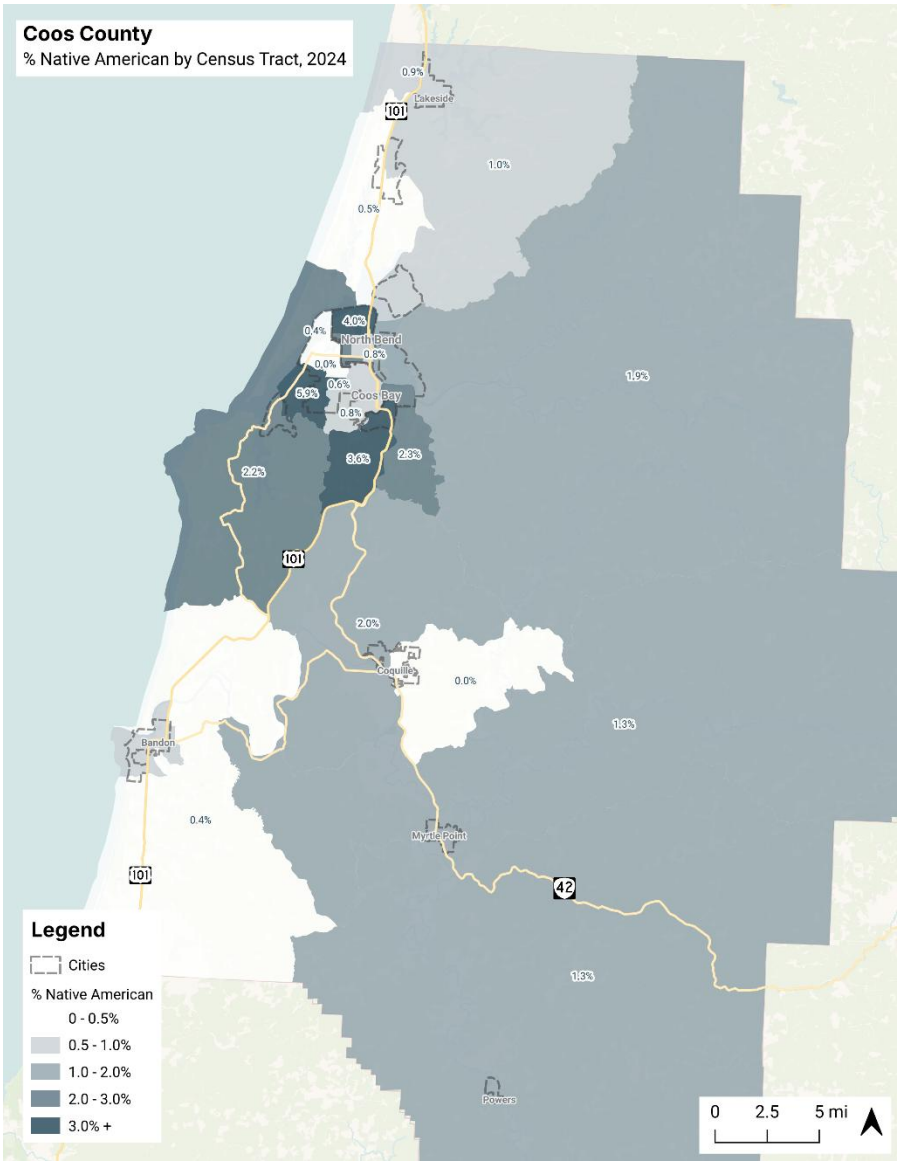
Figure 9. Cumulative Population Growth, 2014 to 2024



Source: US Census Bureau 2024 Five-Year ACS, Table DP05.

Figure 10 below shows the share of Native American residents for each Census tract in Coos County. The Census tract that includes the Kilkich sites has higher share of Native American residents (5.9 percent) than any other tract in the county.

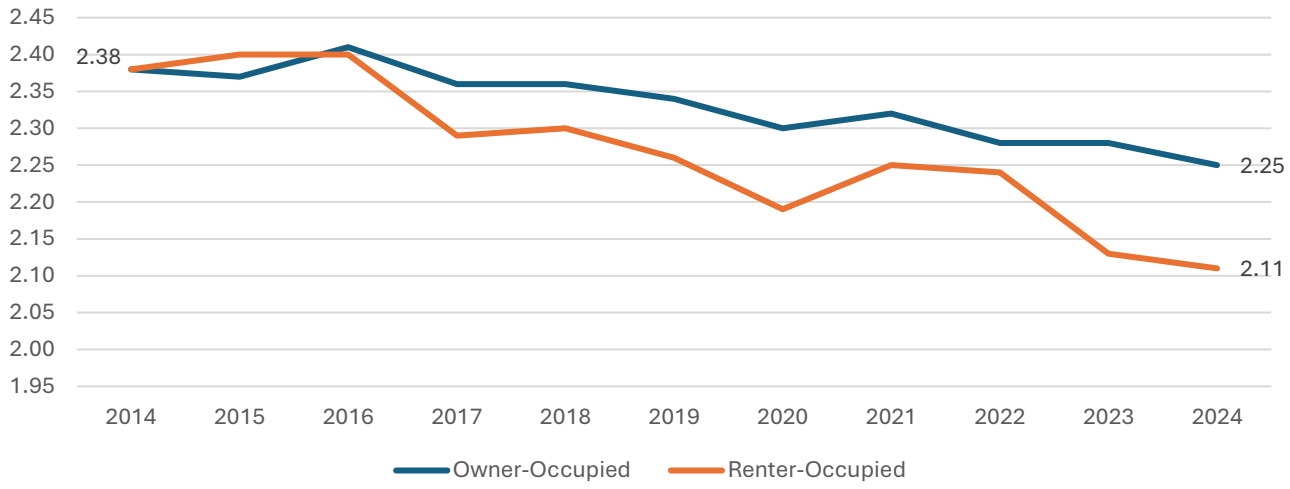
Figure 10. Share of Native American Residents by Census Tract in Coos County



Source: US Census Bureau 2024 Five-Year ACS, Table DP05.

In Coos County, renter households are smaller than owner households on average as of 2024. While in 2014 both renter and owner households had an average of 2.38 people, as of 2024 renter households have an average of 2.11 residents and owner households have 2.25 residents.

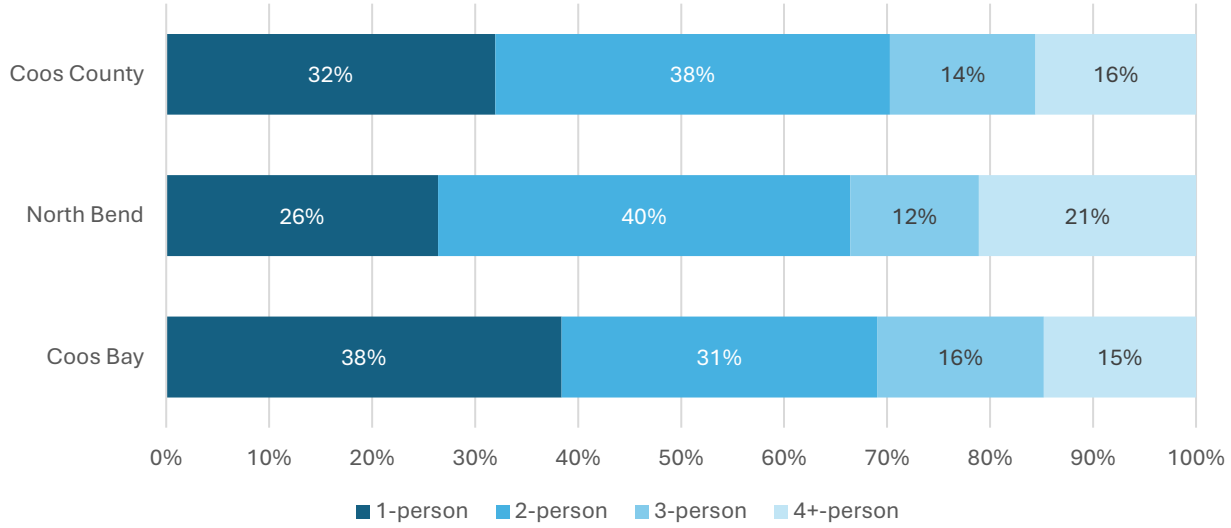
Figure 11. Average Household Size by Tenure in Coos County



Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

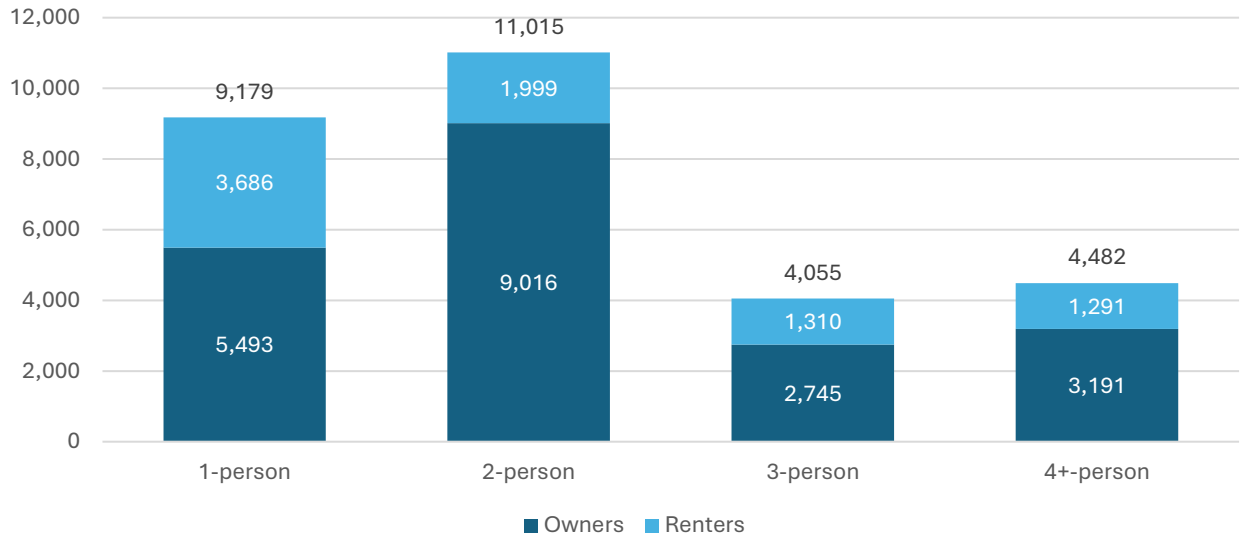
The plurality (38 percent) of Coos County households have two people per household. Nearly one third of households in the county have just one person, including 38 percent of households in Coos Bay. Countywide there are over 9,000 households, 40 percent of whom are renters, with a single occupant.

Figure12. Share of Occupied Units by Number of Residents



Source: US Census Bureau 2024 Five-Year ACS, Table S2501.

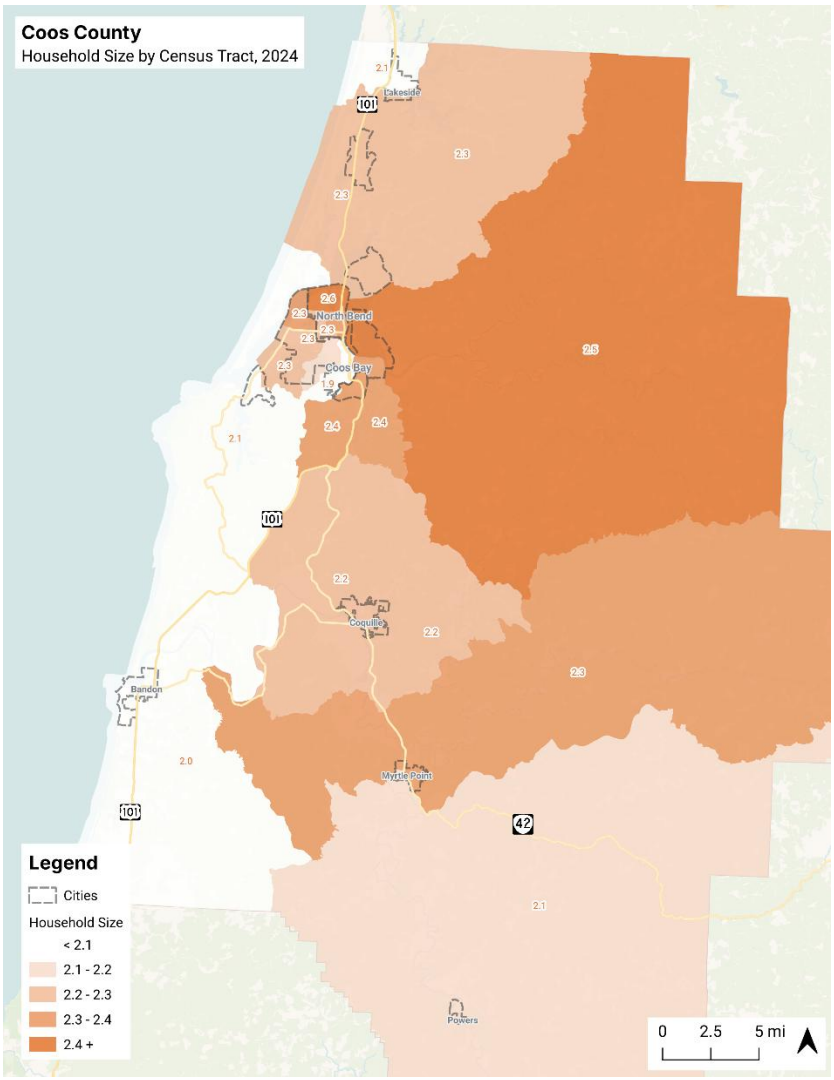
Figure 13. Households by Number of Residents and Tenure in Coos County



US Census Bureau 2024 Five-Year ACS, Table S2501.

The Census tract that includes the Kilkich sites has an average household size of 2.3 residents, slightly higher than the overall county average, while just south in the area near Barview the average household size is 2.1. Larger households are more concentrated east of Coos Bay and in the northern part of North Bend, as shown in Figure 14 below.

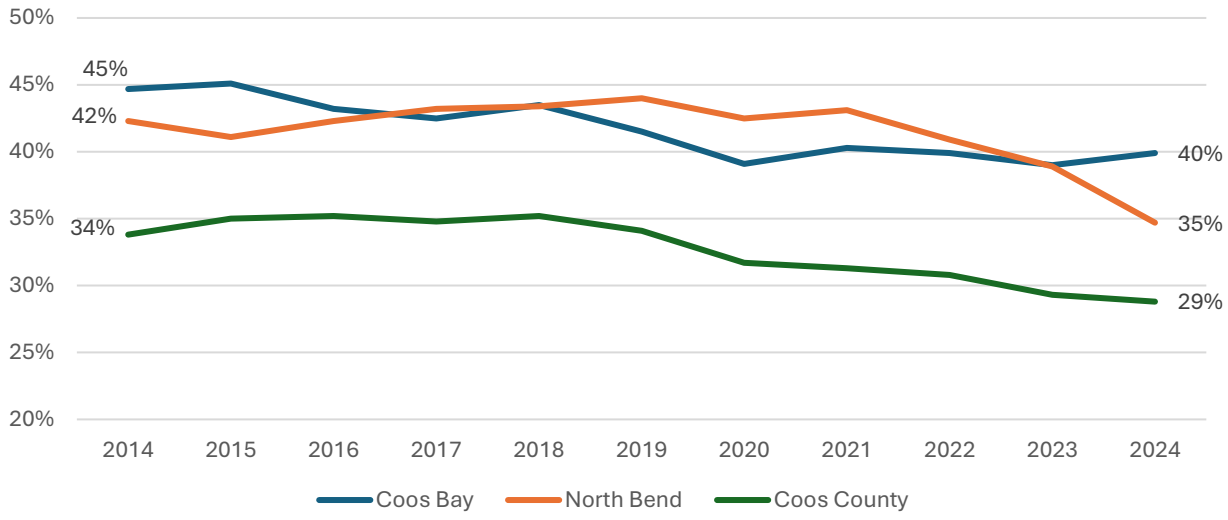
Figure 14. Household Size by Census Tract in Coos County



Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

Countywide, just under 30 percent of households rent their homes. The same is true for 40 percent of Coos Bay households and 35 percent of North Bend households. The share of renter households has been steadily decreasing since 2014, when 34 percent of Coos County households rented their homes.

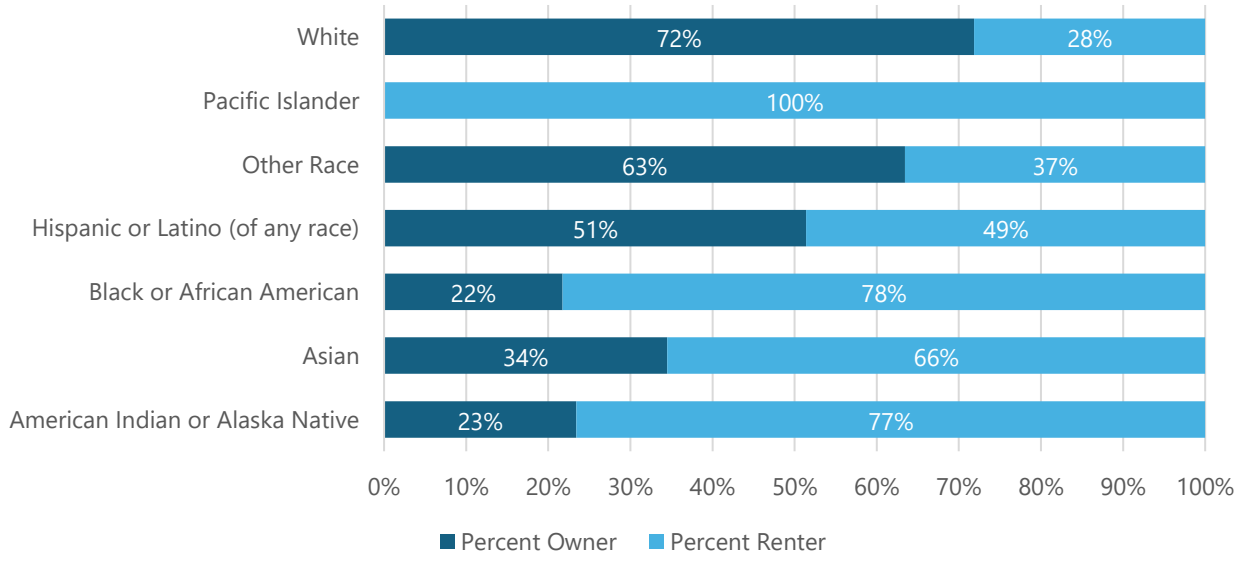
Figure 15. Share of Renter Households, 2014 to 2024



Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

According to data from the US Department of Housing and Urban Development, American Indian and Alaska Native (non-Hispanic) households are significantly more likely to rent than white, other race, Hispanic or Latino, and Asian households. Countywide, 77 percent of the approximately 940 American Indian or Alaska Native households rent their homes.

Figure 16. Housing Tenure by Race and Ethnicity in Coos County

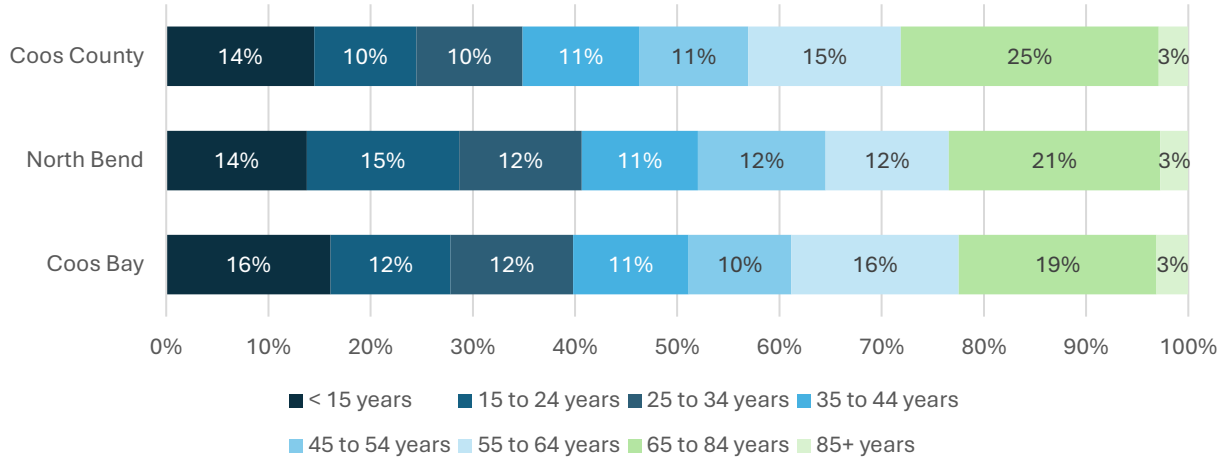


Source: US Department of Housing and Urban Development 2018-2022 CHAS, Table 9.

The median age in Coos County is 48.6, while the median is 44.1 in Coos Bay and 43.4 in North Bend. In Coos County, 28 percent of residents are 65 or older. Providing opportunities to age in

place is an important goal for the Tribe, which will require housing typologies that are accessible, affordable, and do not require significant maintenance or repair.

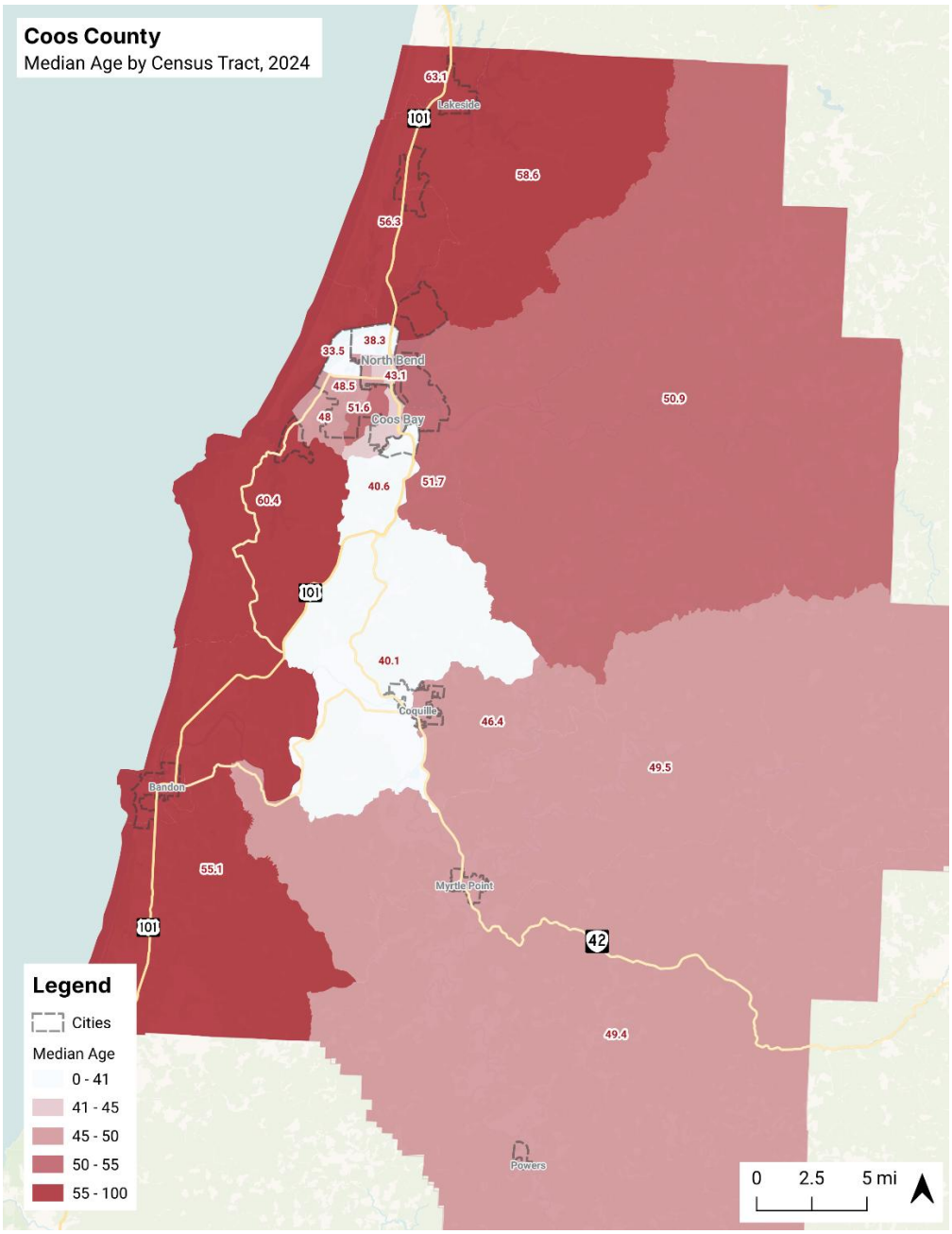
Figure 17. Share of Residents by Age Group



Source: US Census Bureau 2024 Five-Year ACS, Table DP05.

The median age in Coos County varies significantly by Census tract. The North Bend population skews younger than other parts of the county. The Census Tract that includes the Kilkich sites has a median age of 48, though the tract just south of the sites has a median age of 60.4 indicating a higher concentration of seniors in this area.

Figure 18. Median Age by Census Tract in Coos County



Source: US Census Bureau 2024 Five-Year ACS, Table DP05.

In Coos County, 61 percent of households are family households and 39 percent are non-family households. However, 55 percent of renter households are non-family, with 44 percent of all renter households consisting of a single resident. Renters are also more likely to have children under 18 years old – while 27 percent of the county's 8,286 renter households have children, the same is true for 20 percent of the county's 20,445 owner households. More than half of the owner households in Coos County are married-couple families. Countywide, 32 percent of all households are people living alone and 17 percent are people 65 years or older living alone.

Figure 19. Share of Households by Type in Coos County

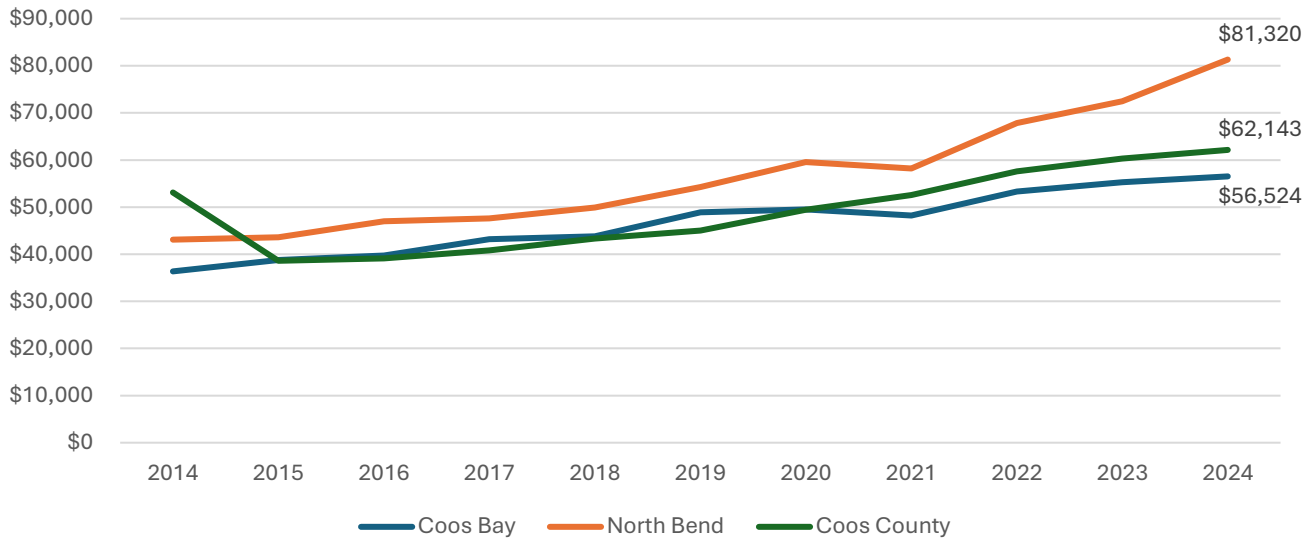
	All	Owner-Occupied	Renter-Occupied
Family Households	**61%**	**67%**	**45%**
Married-Couple Family	44%	54%	20%
Other Family	16%	13%	25%
With Related Children Under 18	22%	20%	27%
Non-Family Households	**39%**	**33%**	**55%**
Householder Living Alone	32%	27%	44%
65 Years or Older	17%	18%	16%

Source: US Census Bureau 2024 Five-Year ACS, Table S2501.

Income and Cost Burden

The median household income in Coos County is $62,143 as of 2024. Between 2014 and 2024, the median income increased by 55 percent countywide, 89 percent in North Bend, and 17 percent in Coos Bay.

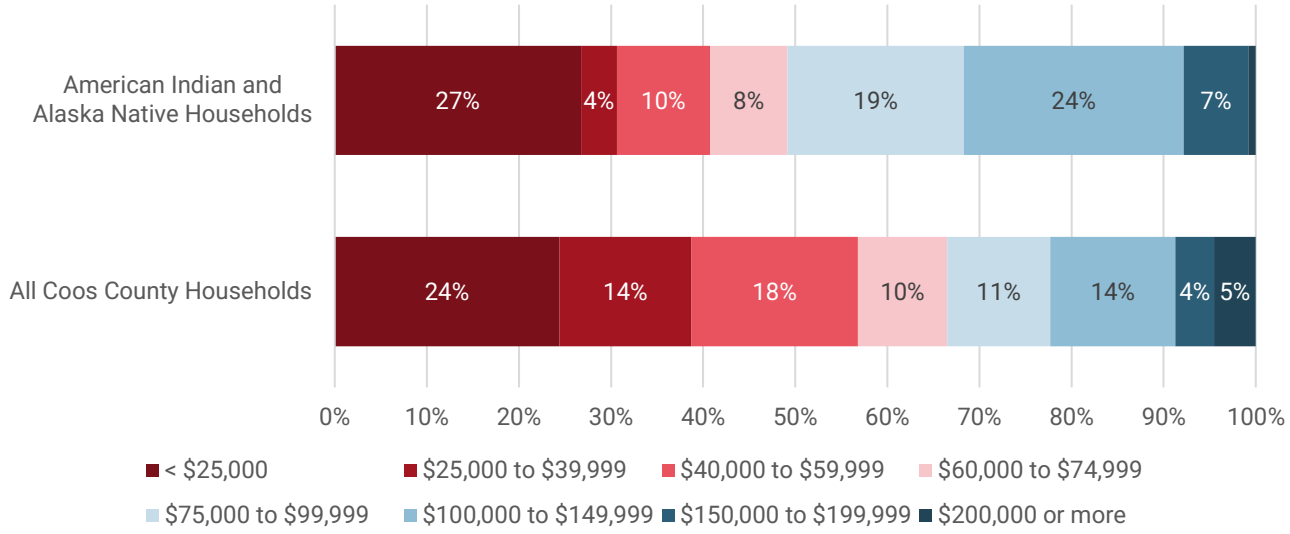
Figure 20. Median Household Income, 2014 to 2024



Source: US Census Bureau 2024 Five-Year ACS, Table S1901.

In 2021, the US Census Bureau produced five-year estimates for special populations, including American Indian and Alaska Native households. Figure 21 below shows the distribution of household incomes for all households countywide compared to the distribution for American Indian and Alaska Native households. Just over half of American Indian and Native American households made at least $75,000 per year in 2021, compared to one third of all households countywide. However, a slightly higher share of American Indian and Alaska Native households made less than $25,000.

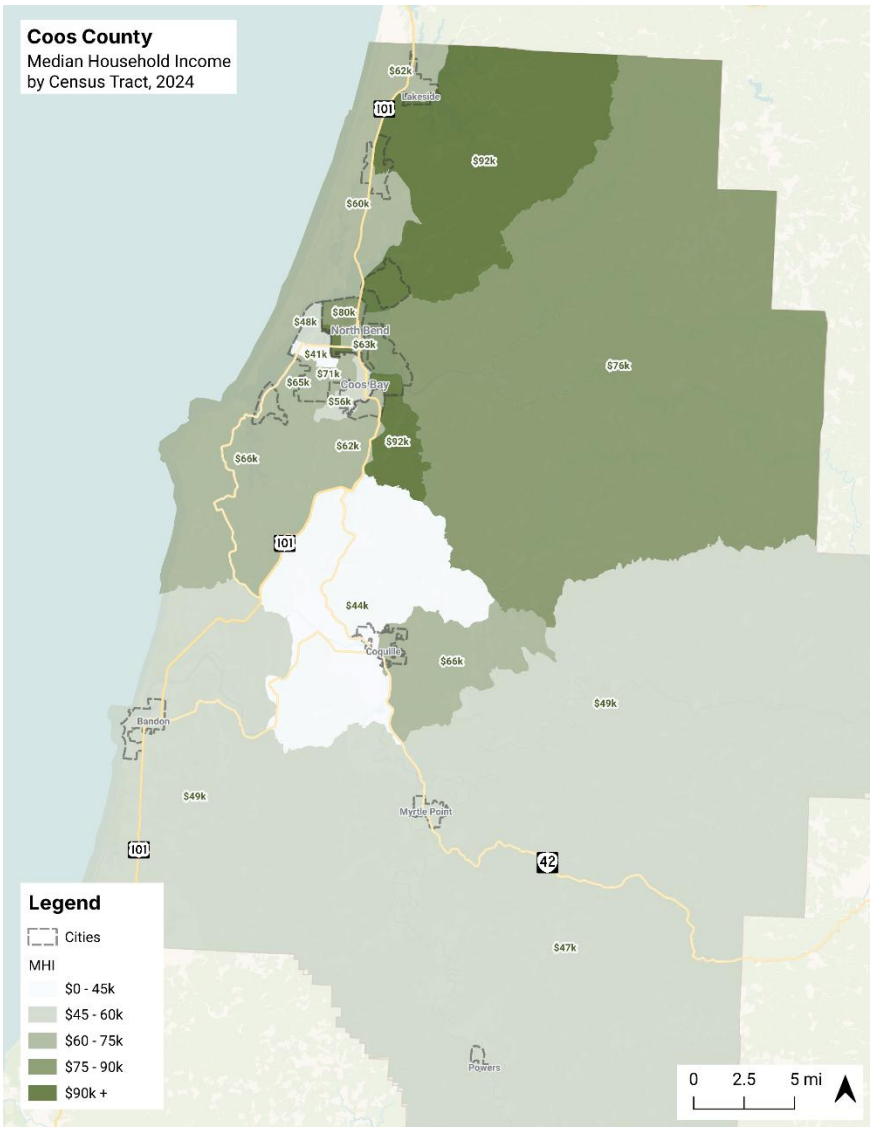
Figure 21. Income Distribution for American Indian and Alaska Native Households Compared to All Households in Coos County (2021)



Source: US Census Bureau 2024 Five-Year ACS, Table B19001.

In the Census tract that includes the Kilkich sites, the median household income is $66,000 annually, slightly higher than the county median. Southeast of the sites, in the tract that includes the city of Coquille, the median income is just $44,000.

Figure 22. Median Household Income by Census Tract in Coos County



Source: US Census Bureau 2024 Five-Year ACS, Table S1901.

As of 2025, the area median income (AMI) for a family of four in Coos County is $83,100. Area median income is a measurement used by the HUD to measure housing affordability and cost burden. Typically, subsidized housing is affordable to households making less than 60 percent AMI. The tables in Figure 23 and Figure 24 below show HUD income and maximum housing costs (including rent and utilities) by family and unit size for 2025.

Figure 23. Income Limits by Household Size and Percent AMI in Coos County, 2025

% AMI	1-Person	2-Person	3-Person	4-Person	5-Person	6-Person	7-Person	8-Person
20%	$11,640	$13,300	$14,960	$16,620	$17,960	$19,280	$20,620	$21,940
30%	$17,460	$19,950	$22,440	$24,930	$26,940	$28,920	$30,930	$32,910
35%	$20,370	$23,275	$26,180	$29,085	$31,430	$33,740	$36,085	$38,395
40%	$23,280	$26,600	$29,920	$33,240	$35,920	$38,560	$41,240	$43,880
45%	$26,190	$29,925	$33,660	$37,395	$40,410	$43,380	$46,395	$49,365
50%	$29,100	$33,250	$37,400	$41,550	$44,900	$48,200	$51,550	$54,850
55%	$32,010	$36,575	$41,140	$45,705	$49,390	$53,020	$56,705	$60,335
60%	$34,920	$39,900	$44,880	$49,860	$53,880	$57,840	$61,860	$65,820
70%	$40,740	$46,550	$52,360	$58,170	$62,860	$67,480	$72,170	$76,790
80%	$46,560	$53,200	$59,840	$66,480	$71,840	$77,120	$82,480	$87,760

Source: US Department of Housing and Urban Development

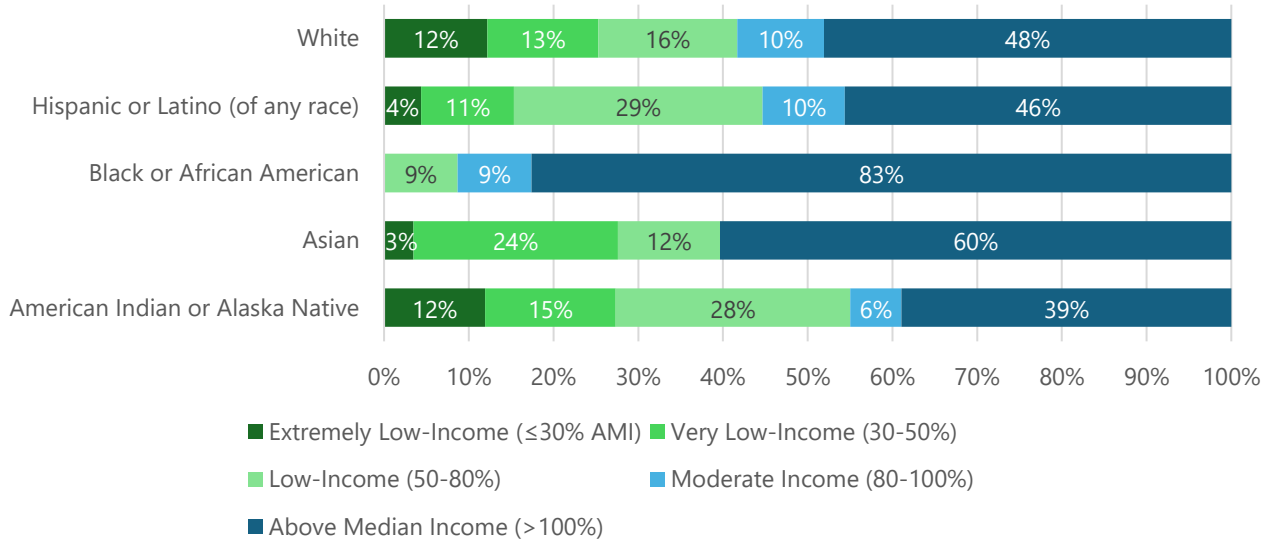
Figure 24. Housing Cost Limits by Unit Size and Percent AMI in Coos County, 2025

% AMI	75% of 0-Bed	0-Bed	1-Bed	2-Bed	3-Bed	4-Bed	5-Bed
20%	$218	$291	$311	$374	$432	$482	$532
30%	$327	$436	$467	$561	$648	$723	$798
35%	$381	$509	$545	$654	$756	$843	$931
40%	$436	$582	$623	$748	$864	$964	$1,064
45%	$490	$654	$701	$841	$972	$1,084	$1,197
50%	$545	$727	$779	$935	$1,080	$1,205	$1,330
55%	$600	$800	$857	$1,028	$1,188	$1,325	$1,463
60%	$654	$873	$935	$1,122	$1,296	$1,446	$1,596
70%	$763	$1,018	$1,091	$1,309	$1,512	$1,687	$1,862
80%	$873	$1,164	$1,247	$1,496	$1,729	$1,928	$2,128

Source: US Department of Housing and Urban Development

As of 2022, 55 percent of American Indian and Alaska Native households in Coos County had incomes below 80 percent AMI, a higher share than any other racial group. White and American Indian or Alaska Native households in Coos County have the highest share of households making less than 30 percent AMI ($24,930 for a family of four). Along with Asian households, American Indian and Alaska Native households are also most likely to make less than 50 percent AMI.

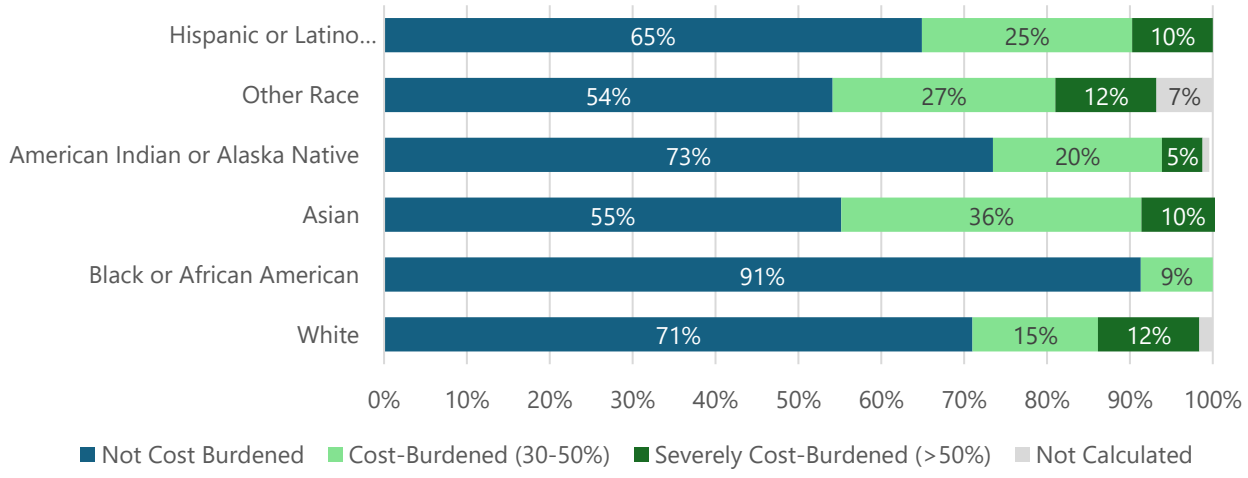
Figure 25. Coos County Households by Income, Race, and Ethnicity



Source: US Department of Housing and Urban Development 2018-2022 CHAS, Table 1.

Despite the fact that American Indian and Alaska Native households are less likely to make above the median income, they have a relatively low level of cost burden compared to other racial and ethnic groups. While 25 percent of American Indian and Alaska Native households in Coos County spend more than 30 percent of their incomes on rent, the same is true for 45 percent of Asian households, 39 percent of other race households, and 35 percent of Hispanic or Latino households. This is likely due to Tribal housing programs.

Figure 26. Cost Burden by Race and Ethnicity

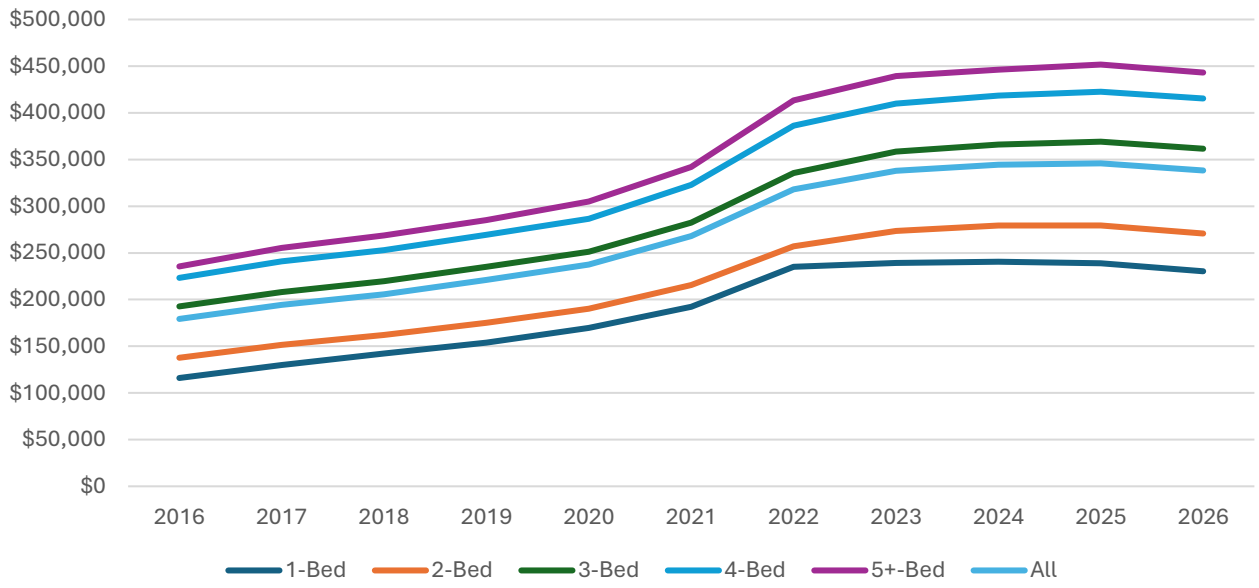


Source: US Department of Housing and Urban Development 2018-2022 CHAS, Table 9.

Rent and Home Prices

According to the Zillow Home Value Index (ZHVI), which is based on the sales of homes priced between the 30th and 60th percentiles, between January 2016 and January 2026 the typical home price in Coos County increased by 89 percent, from $179,278 to $338,386. The price of one-bedroom homes nearly doubled over the same period. A decade ago, Coos County home buyers could find homes of all sizes for less than $250,000. As of 2026, it would be challenging to find homes with more than one bedroom at the same price. However, home price increases have slowed since 2022, increasing by just 6 percent over the past four years.

Figure 27. Typical Home Price by Bedroom in Coos County, 2016 to 2026

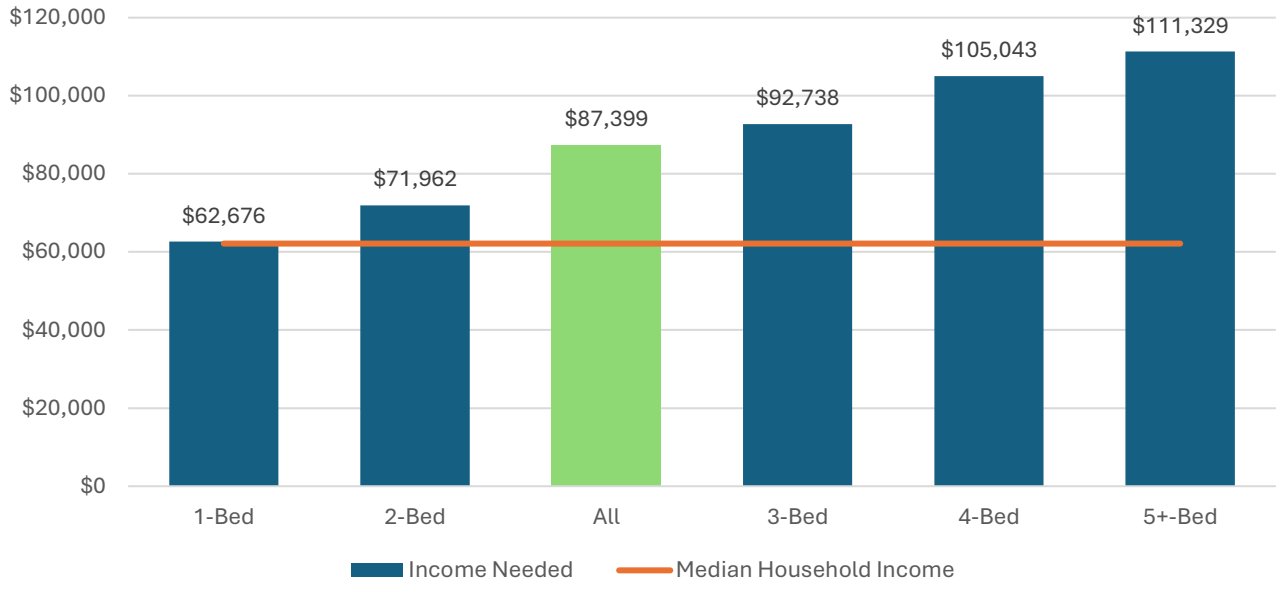


Source: Zillow Home Value Index (ZHVI). Prices are as of January 31st of each year.

As of February 2026, there are 66 single family homes and one townhome currently for sale in Coos County. The median price of the single-family homes currently on market is $703,450 while the median home size is 2,311 square feet. The townhome that is currently for sale is 1,060 square feet and priced at $579,000. Since February 2026, 162 single family homes and six townhomes have sold in Coos County. The average home price for single-family homes is $550,768 while the average home size is 1,876 square feet. The average price for the recently sold townhomes is $436,167 with an average home size of 1,637 square feet.

Figure 28 below shows the income needed to afford a home in Coos County based on the Zillow Home Value Index, assuming a property tax rate of 0.6 percent (the median in Coos County) and an interest rate of 6.01 percent. While a household making the median income ($62,143) could afford a typical one-bedroom unit in Coos County, it could not afford a larger home to accommodate children, elders or other larger household needs. To afford a three-bedroom home, a household would need an income 49 percent higher than the countywide median.

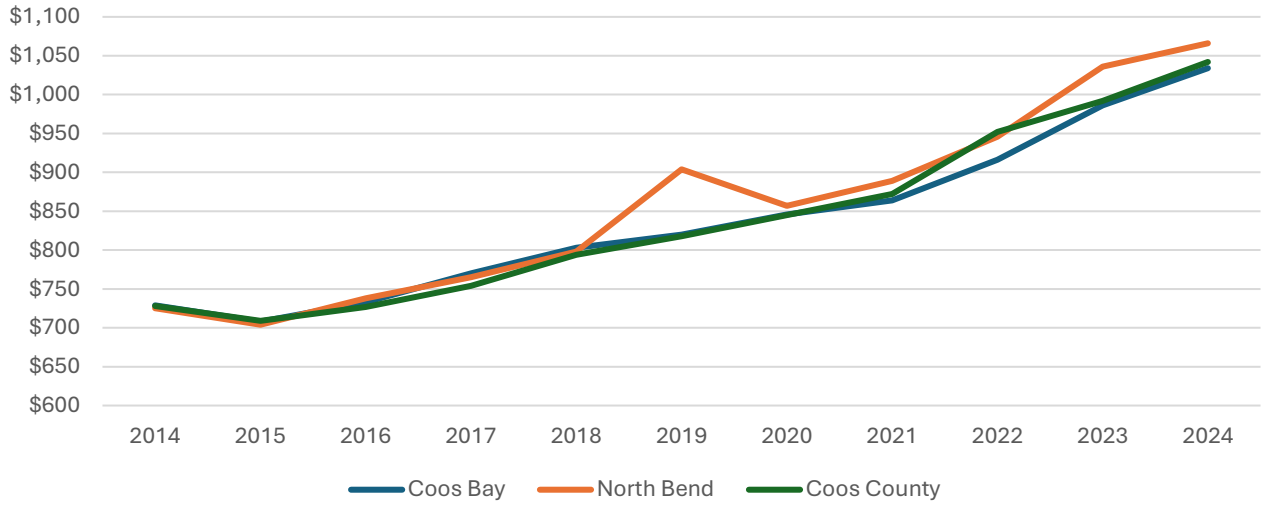
Figure 28. Income Needed to Afford a Typical Home in Coos County



Source: Zillow ZHVI, Coos County, Freddie Mac, Leland Consulting Group.

According to the US Census Bureau, the median gross rent in Coos County was $1,042 as of 2024. Between 2014 and 2024 the median gross rent increased by 43 percent in Coos County, 47 percent in North Bend, and 42 percent in Coos Bay.

Figure 29. Median Gross Rent, 2014 to 2024

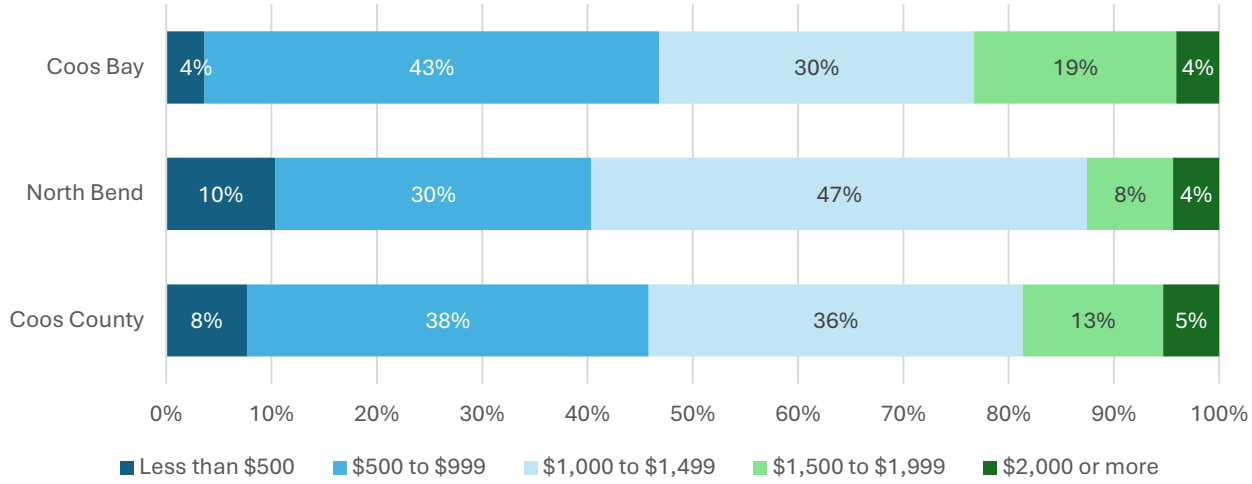


Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

Countywide, 5,577 of the 7,569 occupied rental units (74 percent) rent for between $500 and $1,500 per month. The income needed to afford the countywide median gross rent is $41,680, or 67 percent of the median income. Most of the rental units in Coos County are relatively old and not necessarily well-maintained. As of February 2026, there is just one rental listing for an apartment

built in 1990 or later on Homes.com – a three-bedroom unit in Coos Bay renting for $1,750 ($1.59 per square foot).

Figure 30. Share of Rental Units by Gross Median Rent



Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

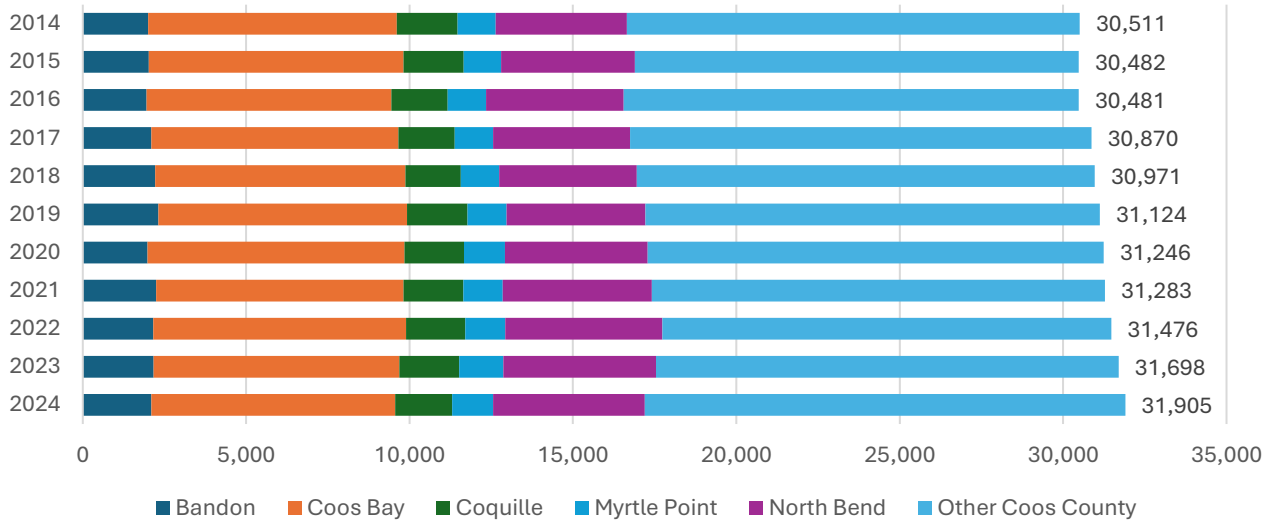
While rental affordability is not necessarily a major challenge in Coos County, the lack of new, high-quality rental housing could lead to housing instability and sub-standard living conditions for lower-income renters.

Housing Inventory

Existing Housing

Coos County has a total of 31,905 housing units, 38 percent of which are located in either Coos Bay or North Bend. Between 2014 and 2024, the county saw a five percent increase in the number of homes, while North Bend saw a 15 percent increase and Coos Bay lost two percent of its housing stock.

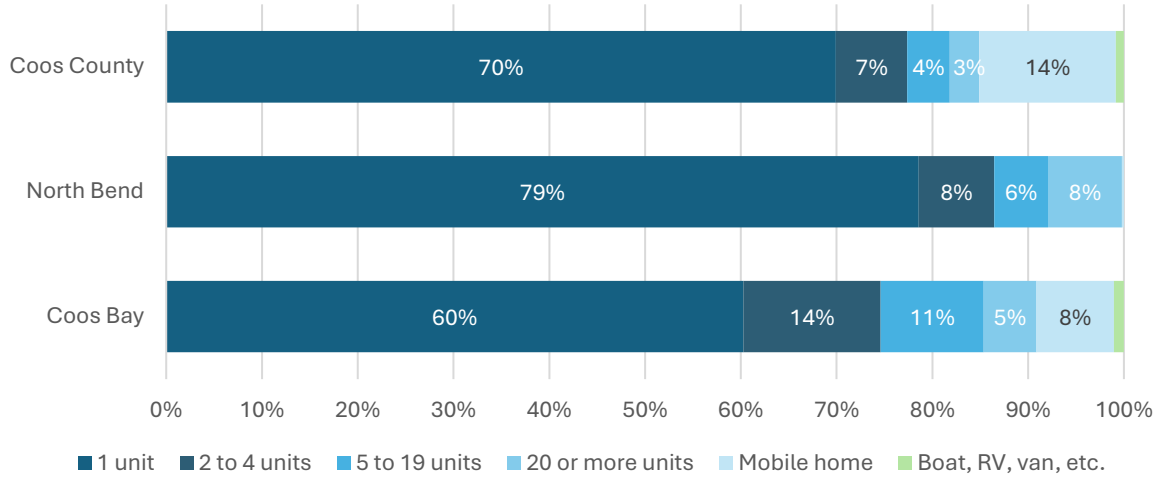
Figure 31. Housing Units by Location



Source: US Census Bureau Five-Year ACS, Table DP04.

In Coos County, 70 percent of homes are single-unit and 14 percent are mobile homes. Coos Bay has a higher share of multifamily housing – 14 percent of homes there are in two- to four-unit structures, and an additional 16 percent are in multifamily structures with at least five units.

Figure 32. Housing Units by Type

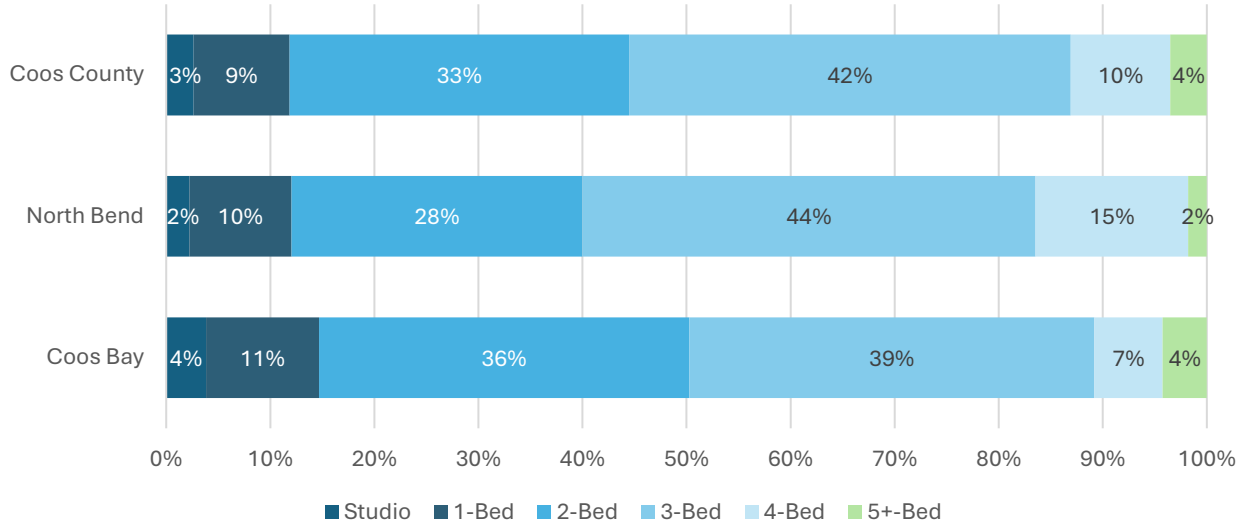


Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

In Coos County, one third of the housing units (10,413 homes) have two bedrooms and 42 percent (13,534 homes) have three bedrooms. Although nearly a third of all households countywide have just one resident, just 12 percent (3,783 homes) are studio or one-bedroom units. While larger units can facilitate multigenerational living and support families, they can be challenging to maintain for seniors interested in aging in place. Figure 33 below shows housing units by number of bedrooms

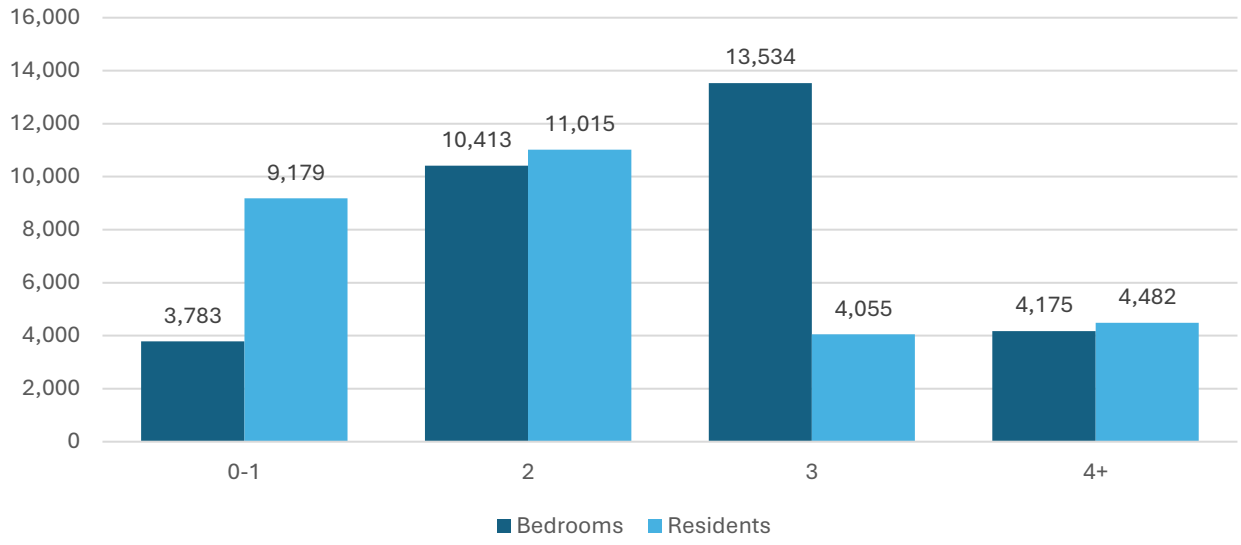
and households by number of residents. While there is an under-supply of studio and one-bedroom units, there are far more three-bedroom units than three-person households.

Figure 33. Share of Housing Units by Number of Bedrooms



Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

Figure 34. Number of Bedrooms per Unit and Number of People per Household in Coos County

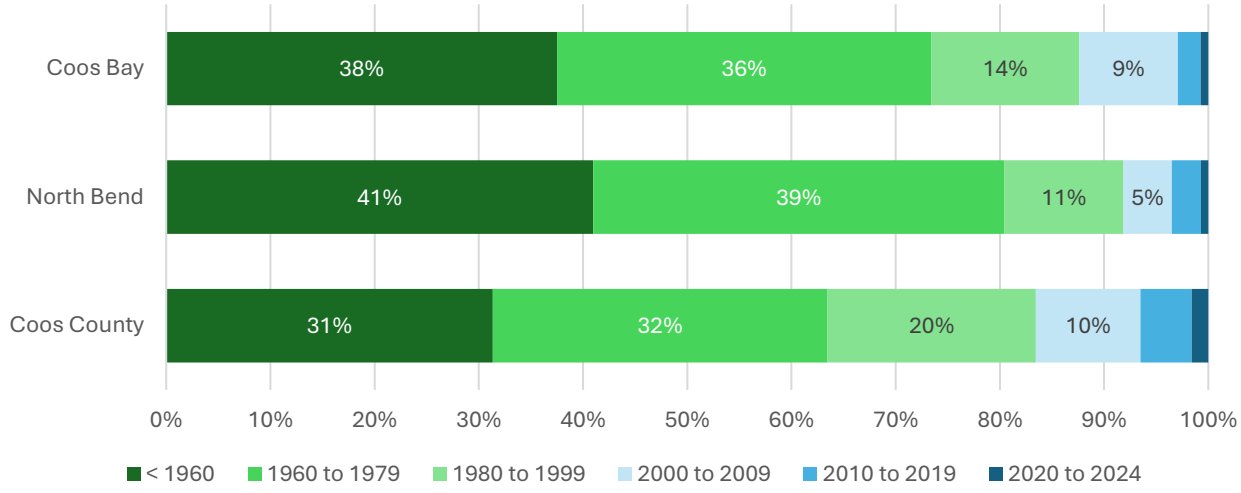


Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

Most of the existing housing in Coos County is relatively old. Countywide, 31 percent of units were built before 1960, and another 32 percent were built between 1960 and 1979. Just three percent of housing units in Coos County were built in 2010 or later. Typically, older homes are less expensive, but many require significant maintenance and upgrades to address the impacts of time and coastal conditions. The lack of new homes can also push the price of older homes higher, which can have

negative impacts on affordability and household stability, in addition to adding more existing and ongoing deferred maintenance costs, as well as costs for utilities such as heat.

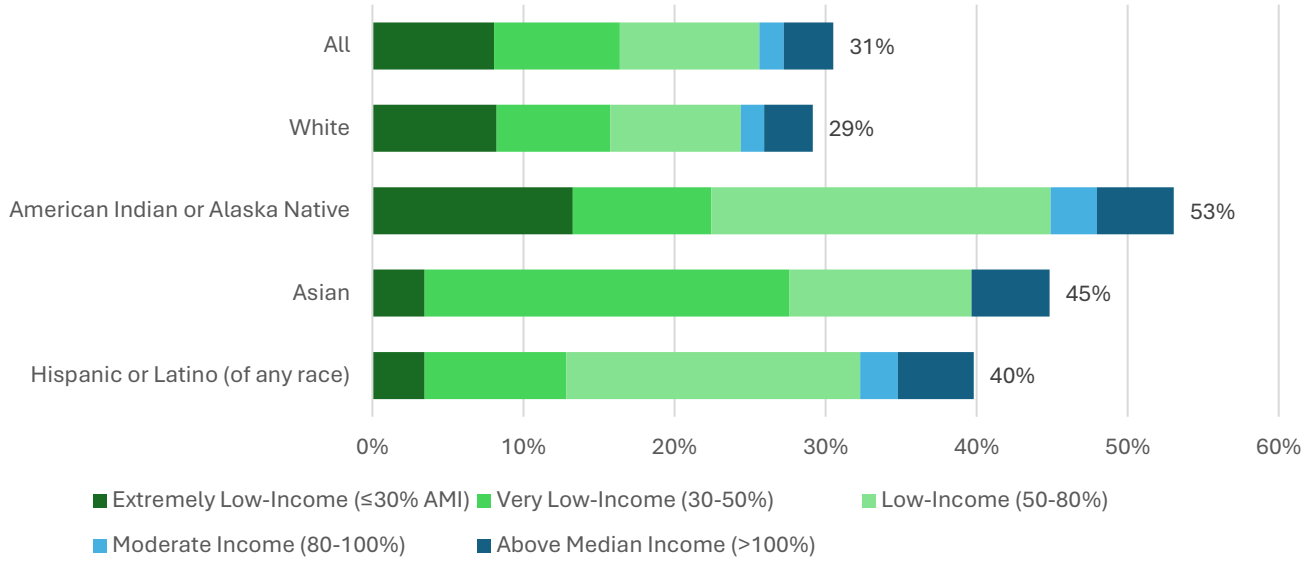
Figure 35. Share of Housing Units by Year Built



Source: US Census Bureau 2024 Five-Year ACS, Table DP04.

Countywide, 124 (0.4 percent) of occupied housing units lack complete plumbing facilities, 642 (2.2 percent) lack complete kitchen facilities, and 131 (0.5 percent) have no telephone service available. In Coos Bay, 727 (3.9 percent) of occupied homes lack complete kitchen facilities. American Indian or Alaska Native households are the most likely to live in housing with at least one of the four housing problems identified by the US Department of Housing and Urban Development (HUD). Along with kitchen facilities, plumbing facilities, and telephone service, cost burden (when households spend more than 30 percent of their income on housing) is the fourth problem identified by HUD. While households making below 80 percent AMI are the most likely to experience one of these problems, five percent of American Indian or Alaska Native households making more than median income experience at least one of these problems.

Figure 36. Share of Households by Race and Income with at Least One of the Four Housing Problems

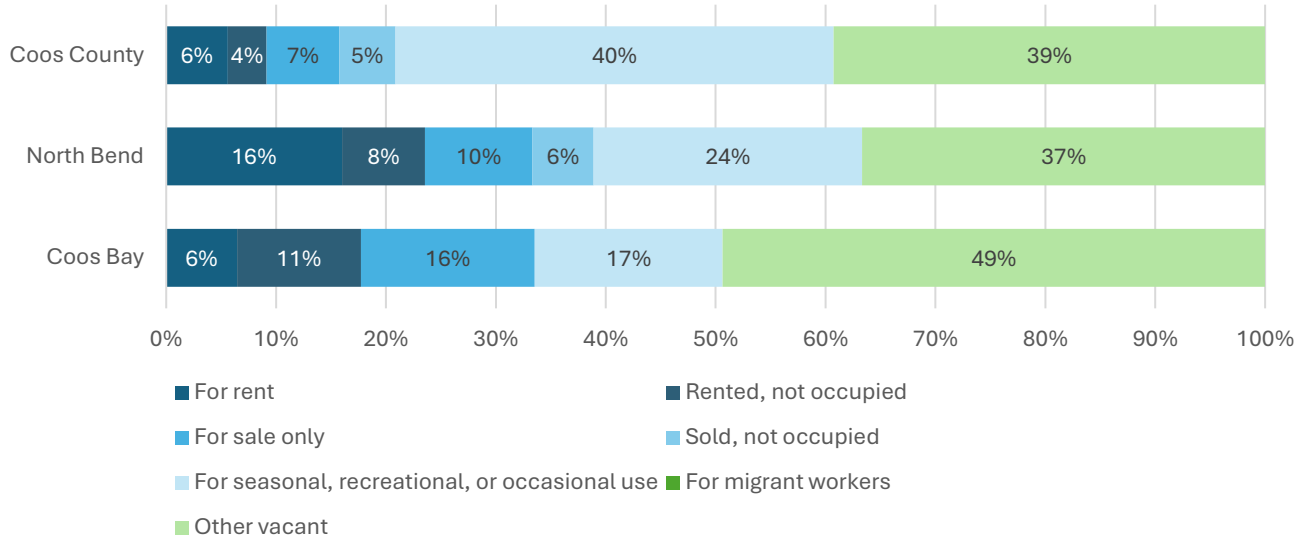


Source: US Department of Housing and Urban Development 2018-2022 CHAS, Table 1.

Countywide there are 3,174 vacant units, representing around ten percent of the total housing units. Just 388 of these (1.2 percent of total housing units) are currently for rent or for sale. The housing vacancy rate in Coos Bay is six percent, with 107 units (1.4 percent of the total housing units) currently for rent or for sale.

In Coos Bay, the most common vacancy status according to the US Census Bureau is “other vacant.” This can include homes that are in the process of being renovated or repaired, homes in foreclosure, homes being held in the settlement of an estate, homes where the owner is elderly and living in a nursing home or with family, and units being used as storage. Because of the county’s proximity to the ocean, there is also a high share of seasonal or vacation homes. While these homes make up 40 percent of vacant units countywide, Coos Bay and North Bend have much smaller shares of seasonal homes.

Figure 37. Share of Vacant Units by Type

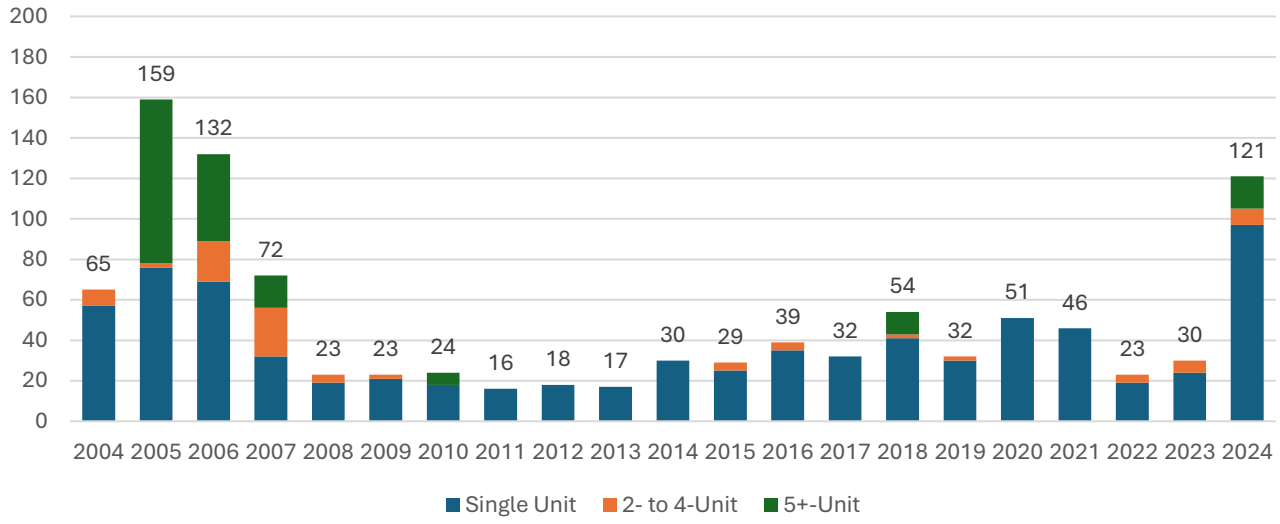


Source: US Census Bureau 2024 Five-Year ACS, Table B25004.

Permitting and Development Activity

Between 2004 and 2024, 1,036 housing units were permitted in Coos County. Permitting activity dropped off significantly at the start of the Great Recession in 2008, and permitting stayed below 60 units per year until 2024. Since 2014, 430 of the 487 units permitted (88 percent) were in single-unit structures. However, in 2024 eight units in two- to four-unit structures were permitted along with 16 units in five-plus unit structures.

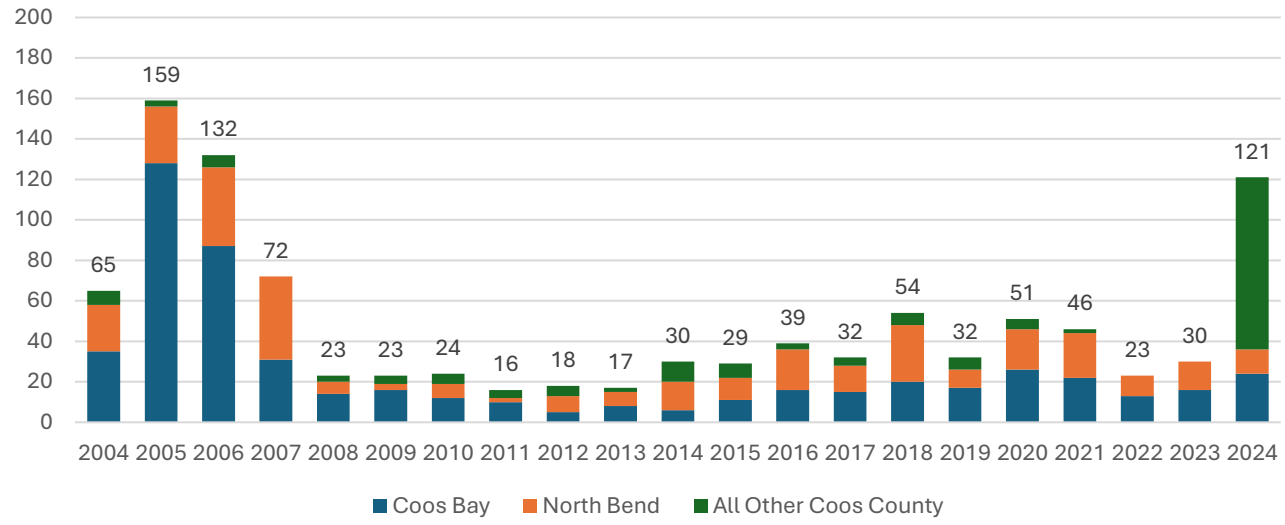
Figure 38. Housing Units by Type in Coos County



Source: US Census Bureau SOCDS Building Permit Database.

Since 2014, 186 units have been permitted in Coos Bay, 173 in North Bend, and 128 in the rest of Coos County. Of the 121 units permitted in 2024, 85 (70 percent) were outside of Coos Bay and North Bend.

Figure 39. Housing Permits by Location



Source: US Census Bureau SOCDS Building Permit Database.

Since 2010, just two multifamily buildings with a total of 21 units have been built in Coos County. Five rental condo units were built in Bandon in 2024, and 16 apartments were built in the Ayers Building in Coos Bay in 2025. The townhomes at 318 11th Street SE in Bandon are an average of 1,152 square feet per unit while the Ayers Building apartments are 649 square feet on average.

Figure 40. Bandon Townhomes (Left) and the Ayers Building in Coos Bay (Right)

Source: CoStar.

Prior to 2024, the most recent multifamily rental housing built in Coos County was The Colony at Bandon Cove, an 18-unit apartment completed in 2007.

Tribal Housing

An inventory of Tribal housing will be included in the final draft memo pending on the availability of data.

Housing Types

Appropriate Typologies

Because of the aging housing stock and limited new construction activity in Coos County, there is a need for housing across the board. This includes rental housing – both market rate and affordable – as well as affordable opportunities for homeownership. Native residents especially could benefit from more attainable homeownership options. In addition, smaller units are needed to meet the demand of single-person households and help seniors age in place without requiring them to perform significant maintenance and upkeep. In order to meet this demand, we recommend the following housing types:

- Garden-style rental apartments, both affordable and market rate
- Middle housing, including cottage clusters, duplexes, tri-plexes, and four-plexes
- small-lot single family homes

Garden-Style Apartments

Garden-style apartments are typically two- to three-story apartment buildings that are wood frame and do not require an elevator. They are generally built at a density of 25 to 35 dwelling units per acre and include surface parking. There is a significant lack of new apartments in Coos County, including both market rate and subsidized affordable apartments, and new apartments could help residents transition out of older, potentially sub-standard homes into newer units with complete kitchen and plumbing facilities. The Alderwood Apartments in North Bend, shown below in 40, are an example of garden-style apartments. These apartments were built in 1975 at a density of 21 dwelling units per acre. Subsidized apartments can also help key needs populations as they may also benefit from shared social and/or health services, day-care, elder home aids, and other amenities on-site such as integrated community art and gathering spaces, gardens, and other community services, based on populations.

Figure 41. The Alderwood Apartments in North Bend, Oregon

Source: CoStar.

Middle Housing

Middle housing is a broad term that typically includes buildings with up to four or six units as well as cottage clusters. It provides opportunities for attainable homeownership because the unit sizes are generally smaller than traditional single-family homes. They also provide opportunities for multigenerational living. While attainable homeownership is an important goal for the Tribe that this type of housing can help meet, middle housing can also provide opportunities for family-sized rental housing. In terms of dwelling units per acre, middle housing is typically much higher density than garden-style apartments. Because of this, it is sometimes measured using dwelling units per lot rather than per acre.

Figure 42 below shows Cully Grove, a cottage cluster development in the Cully neighborhood of NE Portland. Each of the 16 units in Cully Grove is 1,600 square feet. The homes share communal outdoor space that includes a community garden. The total site area is 1.85 acres, with an overall density of around nine dwelling units per acre. The homes feature accessible entryways, designed to help residents age in place. Cottage clusters are common in land trust models where home buyers own the home but the land is owned by a separate entity, to ensure future affordability in perpetuity.

Figure 42. Cully Grove Cottage Housing in Portland, OR

Source: Communitecture.

Other middle housing types include duplexes and small apartment buildings with up to four or six units. These can be "stacked flats" with similar sized units on upper and lower floors, townhome-style structures with shared walls, or be larger units with smaller attached accessory dwelling units (ADUs, otherwise known as "Granny Flats"). By allowing multiple units in a single building, these middle housing types can support multigenerational living, as well as family members or others with disabilities still maintain a sense of independence while being close to their family support systems. In addition, units are often 1,000 square feet or less, providing affordable homeownership opportunities as well as options for smaller households.

Figure 43 below shows a four-plex in Coos Bay, built in 2006. Each two-bedroom rental unit is just over 800 square feet. It is an example of a stacked-flats configuration.

Figure 43. A Four-Plex Building in Coos Bay

Source: Redfin.

Figure 44 below is a four-unit development in Portland, which includes 876-square foot units in two separate structures on a corner lot. Each unit has a street-level entrance.

Figure 44. Four Unit Recently Built Development in Portland, OR

Source: Redfin.

Small Lot Single Family Homes

Small lot single family homes are detached houses built close together. They are generally smaller than traditional single-family homes and one to two stories in height. Small lots require less maintenance of outdoor space while still providing room for private gatherings. Because these homes are located closer together, they foster community interactions and walkability. Small lot single-family homes can help to address the shortage of new smaller homes in Coos County and provide opportunities for aging in place. The homes in Figure 45 below are located in the McCormick Village subdivision in Port Orchard, Washington. The lots in this subdivision are an average of 3,233 square feet (0.07 acres) and the homes are built at a density of 13.5 dwelling units per acre.

Figure 45. Small Lot Single Family Homes in Port Orchard, WA

Source: Residences at McCormick Village.

Target Rents and Home Prices

In Coos County, 55 percent of American Indian and Alaska Native households make less than 80 percent AMI, with 27 percent making less than 50 percent AMI. In addition, 27 percent of American Indian and Alaska Native households are cost burdened. Nearly three quarters of American Indian and Alaska Native households are renters, and households making the median income in Coos County cannot afford the typical home price. Because of this, a mix of subsidized affordable and attainable rental and ownership options for housing are needed. While the subsidized affordable housing will likely be apartments affordable to households making less than 60 percent AMI,

attainable rental and homeownership options should be smaller units at market rate. This section discusses the target rent and home prices for both subsidized and attainable market rate units.

Subsidized Affordable Apartments

The subsidized affordable housing type recommended for the Kilkich area is garden style apartments with studio, one-bedroom, and two-bedroom apartments priced for households making less than 60 percent AMI. Figure 46 below shows the target rents, based on HUD maximum homeownership costs, for apartments with up to two bedrooms in that affordability range. Target rents range from $436 for a studio apartment priced for a household making 30 percent AMI to $1,122 for a two-bedroom unit for a household making 60 percent AMI.

Figure 46. Target Rents for Subsidized Affordable Apartments

% AMI	0-Bed	1-Bed	2-Bed
30%	$436	$467	$561
40%	$582	$623	$748
50%	$727	$779	$935
60%	$873	$935	$1,122

Source: US Department of Housing and Urban Development.

Attainable Market Rate Housing

Rental Housing. Because there are so few new rental apartments in Coos County, it is not clear what the market rent would be for rental apartments or middle housing units. According to the US Census Bureau, the median gross rent for all rental homes in Coos County is $1,042. However, this includes a mix of home types and ages that can impact rental rates. One of the more recently built apartment complexes, built in 1995, is currently renting three-bedroom units for between $1,750 and $2,000 per month. An income of at least $70,000 would be needed to afford a unit at this price without cost burden. As of 2021, 51 percent of American Indian and Alaska Native households had incomes of $75,000 or more. Figure 47 below shows the maximum monthly rent Coos County households making between 60 and 120 percent AMI could afford. While apartments affordable to those making less than 60 percent AMI would likely need significant subsidy, smaller market-rate studios and one-bedrooms could potentially have market rents attainable for households making 80 percent AMI or more.

Figure 47. Maximum Monthly Rent Affordable to Households Making between 30 and 100 Percent AMI

% AMI	0-Bed	1-Bed	2-Bed
60%	$873	$935	$1,122
80%	$1,164	$1,247	$1,496
100%	$1,455	$1,559	$1,870
120%	$1,746	$1,871	$2,244

Source: US Department of Housing and Urban Development.

Homeownership. Figure 48 below shows the maximum home price affordable to one- to three-person households making between 50 and 120 percent AMI. The typical market price for homes in

Coos County is $338,386, which a three-person household making 120 percent AMI could afford without experiencing cost burden. However, for smaller households and those making less than 120 percent AMI, these homes are out of reach. While it would be challenging to provide ownership opportunities for households making less than 80 percent AMI without significant subsidy, there could be opportunities to build smaller homes in middle housing and small-lot single family configurations that would be affordable to households making between 80 and 120 percent AMI.

Figure 48. The Maximum Home Price Affordable to Households Making 50 to 120 Percent AMI

	Maximum Home Price				
	50% AMI	**60% AMI**	**80% AMI**	**100% AMI**	**120% AMI**
1-person	$83,505	$108,950	$159,840	$210,730	$261,620
2-person	$101,649	$130,723	$188,870	$247,018	$305,165
3-person	$119,793	$152,495	$217,900	$283,305	$348,710

Source: Zillow ZHVI, Coos County, Freddie Mac, Leland Consulting Group.

Natural Hazard Vulnerabilities & Mitigation Strategies

Introduction

This assessment uses available information from existing reports to identify assets, hazards, and mitigation strategies to move toward energy resilience in the Kilkich Area. Specific sections of the assessment include:

- A prioritized inventory of energy assets (property, people, information, operations) in the Kilkich Area that need to be protected.
- An inventory of natural hazards (flood, earthquake, wildfire) that may impact the Kilkich Area and systems that would be impacted by those hazards such as water quality, power, transportation, and structures.
- Identify mitigation strategies to reduce exposure to each hazard and vulnerability and a set of actions to implement identified strategies.

The Coquille Indian Tribe (CIT) currently relies primarily on external electricity providers, leaving Tribal infrastructure and services vulnerable to power disruptions, rising energy costs, and broader grid instability associated with natural hazards. At the same time, much of the regional electricity supply in the Pacific Northwest is derived from hydroelectric generation, which has historically contributed to adverse impacts on salmon populations—an important First Food and a culturally significant resource for the Tribe.

Recognizing these concerns, the Tribal Council has identified energy sovereignty and energy resilience as strategic priorities. In particular, the Council has expressed interest in two potential pathways: (1) developing renewable energy resources that could be sold to Pacific Power or other

utilities, and (2) constructing a co-generation facility capable of producing electricity and heat for Tribal facilities.

Building upon the Coquille Resilience Management Plan (2025), this memorandum assesses current energy vulnerabilities and outlines potential strategies to improve energy resilience while advancing Tribal sovereignty over energy resources. While each pathway offers distinct advantages, both approaches could reduce the Tribe's reliance on external power sources and provide greater stability during natural hazard events.

Baseline Information

Sources of baseline information include the following:

- 2025 Coquille Resilience Management Plan
- 2023 Coquille Indian Tribe Natural Hazard Mitigation Plan
- 2023 Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan

The Coquille Indian Tribe's existing energy system is largely dependent on electricity supplied by regional utilities, including Pacific Power. This reliance on external power infrastructure creates several challenges for Tribal energy security.

First, the Pacific Northwest power system is vulnerable to disruptions caused by natural hazards, including severe storms, wildfire events, tsunamis, and extreme weather. Such events can lead to prolonged outages that affect Tribal government operations, health services, emergency response capabilities, and community well-being.

Second, electricity costs have and are still increasing across the region. As energy demand grows and infrastructure upgrades are required, Tribal communities may face increasing financial burdens associated with electricity consumption.

Third, the regional energy system relies heavily on hydroelectric generation. While hydroelectric power has historically provided reliable and relatively low-cost electricity, dam infrastructure has had significant ecological consequences for salmon populations. For the Coquille Indian Tribe, salmon represent an essential First Food and hold deep cultural, ecological, and subsistence importance. Reducing dependence on hydroelectric power aligns with Tribal stewardship values and broader restoration efforts.

For these reasons, Tribal leadership has identified energy sovereignty and resilience as critical long-term goals.

Plan and Policy Review

Coquille Resilience Management Plan (2025)

The primary source of baseline information from the Coquille Indian Tribe (CIT) is the Resilience Management Plan (CRMP). The CRMP outlines how the Coquille Indian Tribe will proactively

strengthen climate resilience while advancing Tribal sovereignty, cultural preservation, and environmental stewardship. It responds to increasing threats such as flooding, sea-level rise, wildfires, and ecosystem changes by integrating resilience and energy sovereignty into Tribal governance and long-term planning. The plan prioritizes Tribally owned renewable energy development, workforce training, food and water sovereignty, land acquisition, and improved land and resource management to ensure long-term economic security and community well-being. It also emphasizes restoring ecosystems, protecting fisheries and forests, investing in resilient infrastructure, reducing pollution through responsible consumption, and advocating for Tribal leadership in policy decisions. Grounded in cultural values and Traditional Ecological Knowledge, the plan serves as a strategic roadmap for building a self-determined, sustainable future for the Tribe and its lands and waters.

The Energy Action Plan is one element of the CRMP that suggests phased long-term actions that will support self-sufficiency and energy sovereignty for the Tribe. See Table 6 below for the Energy Action Plan phases and associated actions under the three overarching goals: Establish Energy Resilience, Strengthen Economic Resilience, and Achieve Energy Sovereignty.

Table 6: Coquille Indian Tribe Energy Action Plan

Phase 1: Resilience hubs, Deep Conservation, Internal Capacity, Energy Networking		
Establish Energy Resilience	***Strengthen Economic Resilience***	***Achieve Energy Sovereignty***
a) Develop solar plus storage resilience hubs and facilitate residential Solar for All b) Integrate long-duration energy storage into Master Planning c) Infuse energy awareness into staff training, member communications and Learning Center curricula d) Expand access to residential energy conservation technology	a) Deepen energy conservation measures and facility upgrades b) Integrate energy transportation, and water conservation into Master Planning c) Investigate tribal member apprenticeship pathways for on-the-job training during the construction of resilience hubs and residential Solar for All d) Investigate clean tech manufacturing, energy market participation, and clean fuels production	a) Continue planning for Virtual Power Plan and campus Microgrid at Kilkich b) Investigate the establishment of an electric utility and fueling terminals c) Strengthen staff energy capacity and increase representation in energy sector deliberations d) Explore collaborations with Good Neighbors and other Sovereign Nations
Phase 2: Transportation Security, Net Zero Energy Nation, Power Flow Control		
Establish Energy Resilience	***Strengthen Economic Resilience***	***Achieve Energy Sovereignty***
a) Secure grid network and master metering for Kilkich campus Microgrid and Virtual Power Plant (VPP) b) Extend resources for energy isolation readiness to all Coquille People c) Develop long-duration energy storage d) Operate and maintain Tribal microgrids	a) Net Zero Energy Nation: Generate as much electricity and fuel as we use each year b) Provide fuel for transportation, electricity for the Tribal fleet and staff c) Pursue energy enterprises identified during Phase 1 d) Identify and support clean energy career and enterprise pathways for Coquille people	a) Investigate the expansion of Virtual Power Plan and Microgrid aggregation and operations beyond Tribal facilities b) Progress toward the establishment of an electric utility c) Maintain a strong and consistent representation in energy sector deliberations d) Deepen collaborations with Good Neighbors and other Sovereign Nations
Phase 3: Grid Scale Resilience, Circular Energy Economy, Energy Market Revenue		
Establish Energy Resilience	***Strengthen Economic Resilience***	***Achieve Energy Sovereignty***
a) Extend resources for secure fueling and vehicle charging to all Coquille People b) Contribute to regional grid resilience with Virtual Power Plan networking, large-scale generation, and energy storage c) Contribute to regional transportation and fuels resilience with clean fuels production	a) Beyond Net Zero: Generate as much electricity and fuel as we use each year, plus internal resources to meet winter and summer peak demands b) Participate in profitable clean fuel and electrification economies for the road, rail and maritime sectors c) Engage in profitable clean energy markets	a) Provide Virtual Power Plan and Microgrid aggregation and operations beyond Tribal facilities b) Establish an electric utility c) Maintain a strong and consistent representation in energy sector deliberations d) Strengthen networks with Good Neighbors and other Sovereign Nations

Source: Coquille Resilience Management Plan.

Coquille Indian Tribe Hazard Mitigation Plan (2023)

The Coquille Indian Tribe Hazard Mitigation plan outlines a risk-based approach to reducing hazard impacts through proactive mitigation planning. The report includes a hazard and risk assessment with a hazard identification overview of the tribal planning area and hazard profiles for the hazards evaluated. It also provides a hazard vulnerability overview, an asset inventory and critical facilities analysis, and a mitigation action plan.

Seventeen potential hazards were identified and assessed in the plan, including avalanche, coastal erosion, dam failure, drought, earthquake, expansive soils, extreme heat, coastal storms (flood, hailstorm, and hurricane), land subsidence, landslides, snow, tornadoes, tsunamis, wildland fires, and coastal storm winds.

From these identified hazards, the Coquille Indian Tribe hazard mitigation steering committee prioritized seven for focused mitigation planning: dam failure, earthquakes, coastal storm winds, floods, landslides, tsunamis, and wildland fires.

Coquille Indian Tribe Emergency Operations Plan (2017)

The Coquille Indian Tribe Emergency Operations Basic Plan is comprised of three elements: the Basic Plan, the Emergency Support Function Annexes and the Incident Annexes. The purpose of the Basic Plan is to define the legal authority, organizational structure, roles and responsibilities, and operational procedures the Coquille Indian Tribe will use to prepare for, respond to, and recover from emergencies, including coordination through the Emergency Operations Center, use of the Incident Command System, collaboration with partner agencies, and ongoing training and plan maintenance. The Emergency Support Function Annexes focus on critical tasks, capabilities, and resources provided by emergency response agencies for CIT throughout all phases of an emergency. The Incident Annexes supplement the Basic Plan to identify critical tasks particular to specific natural and human-caused/ technological hazards identified in the most current Coquille Indian Tribe Hazard Risk Assessment.

The Coquille Indian Tribe Emergency Operations Basic Plan outlines the framework for how the Tribe prepares for, responds to, and recovers from emergencies and disasters. The plan includes an Immediate Action Checklist and outlines its relationship to other tribal, local, state, and federal emergency plans, along with legal authorities and emergency powers. It then describes the community context, including geography, demographics, infrastructure, and potential hazards, as well as planning assumptions about emergency conditions. The plan defines the roles and responsibilities of tribal leadership, emergency management staff, and supporting partners, organized through Emergency Support Functions such as transportation, communications, public health, search and rescue, public safety, and recovery. It also details operations for incident response, including response priorities, incident levels, communication procedures, resource management, protection of vulnerable populations, and transition to recovery. Finally, the plan explains the command and control structure using the Incident Command System and Emergency Operations Center coordination, and concludes with guidance on plan maintenance, training,

exercises, evaluation, and community preparedness to ensure the plan remains effective and sustainable.

The Energy and Utilities (ESF 12) Emergency Support Function Annex is supported by the CIT Property and Projects Department, Kilkich Maintenance, CIHA Maintenance, and area utilities. Their responsibilities related to energy and utilities include:

- Working with local energy facilities to restore damaged energy utility infrastructure and accompanying systems.
- Coordinating temporary emergency power generation capabilities to support critical facilities until permanent restoration is accomplished. Critical facilities may include primary and alternate EOCs, hospitals/critical care facilities, designated shelters, government offices/facilities, water/sewage systems, and other essential community services.
- Supporting the preparation and maintenance of ESF 12 – Energy and Utilities, as well as supporting plans, procedures, and annexes.

Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan (2023)

Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan seeks to create a disaster-resilient Coos County. Effective February 27, 2023 through February 26, 2028, this plan assesses natural hazards and disaster risks affecting Coos County and its communities and outlines strategies to reduce those risks. It documents local conditions including geography, environment, population, economy, infrastructure, and critical facilities and identifies major hazards such as coastal erosion, drought, earthquakes, flooding, dam failure, landslides, tsunamis, wildfires, and severe storms. The plan analyzes how these hazards affect individual communities, cities, ports, and hospitals throughout the county and establishes mitigation goals and priority actions to reduce vulnerability and strengthen resilience. It also describes ongoing and completed mitigation efforts, identifies new projects to address risks, and provides a framework for maintaining and updating the plan through community engagement, public outreach, and coordination with local partners and federal agencies.

The plan outlines 10 Natural Hazards including Coastal Erosion, Drought, Earthquake, Flood, High Hazard Potential Dam Failure, Landslide, Tsunami, Wildfire, Wind Storm, and Winter Storm. The plan also includes Community Risk Profiles for:

- Unincorporated Coos County
- City of Bandon
- City of Coquille
- City of Coos Bay
- City of Lakeside
- City of Myrtle Point
- City of North Bend
- City of Powers
- Port of Bandon
- Port of Coos Bay
- Bay Area Hospital
- Southern Coos Hospital
- Haynes Drainage District

The jurisdictions and facilities which impact the Kilkich Area are the Cities of Coos Bay and North Bend, the Bay Area Hospital (located in Coos Bay), the Port of Coos Bay and the Haynes Drainage District.

Energy Use

Current

The Coquille Resilience Management Plan Appendix E. Current Energy Sources, Energy Consumption and Future Energy Needs includes an assessment of Kilkich energy consumption. From 2021-2024 CIT gathered energy use data for Kilkich facilities including average use per year, peak load and peak load month. The Ko-Kwel Wellness Center, Learning Shishda Haws, Kilkich Admin building, residential area, and Plankhouse have the highest energy consumption, ranging from 437 to 74 (mWh/yr). Most facilities experience peak loads during winter heating hours, with the exception of the Plankhouse facilities, which peak during summer gatherings and special events. When planning for energy resilience, peak loading hours that do not correspond with renewable energy generation hours must be met with energy storage, load shedding or a combination of the two.

Annual energy use for 90 Kilkich residences was captured for the year ending May 2008 and a three-year average from 2015-2018. 2008-2018, CIHA actively facilitated energy efficiency upgrades for residences resulting in a 30% decrease in average household energy use.

There is a solar photovoltaic (PV) system installed on the CIHA Warehouse and the energy it generates is used on site or credited to the Office or Garage.

Due to limited supply chain access to more populous areas in the state, Kilkich is vulnerable to supply chain disruptions for fuel, water and electricity.

Forecast

Forecast energy and fuel needs take into consideration population growth, increased transportation electrification, conservation measures and greater temperature extremes. Population anticipated to directly correlate with the availability of new housing. While new housing plans had not been established at the time of the Coquille Resilience Management Plan, it assumes that population growth will result in housing stock increases of 25% from the 2025 inventory under a 5-year planning interval.

Vehicle electrification is expected to dominate growth in electricity demands based on recorded consumer trends and reinforced by Tribal transportation decarbonization and resilience goals.

Hazards, System Vulnerabilities & Mitigation Strategies

History of Hazards

Federal Disaster Declarations

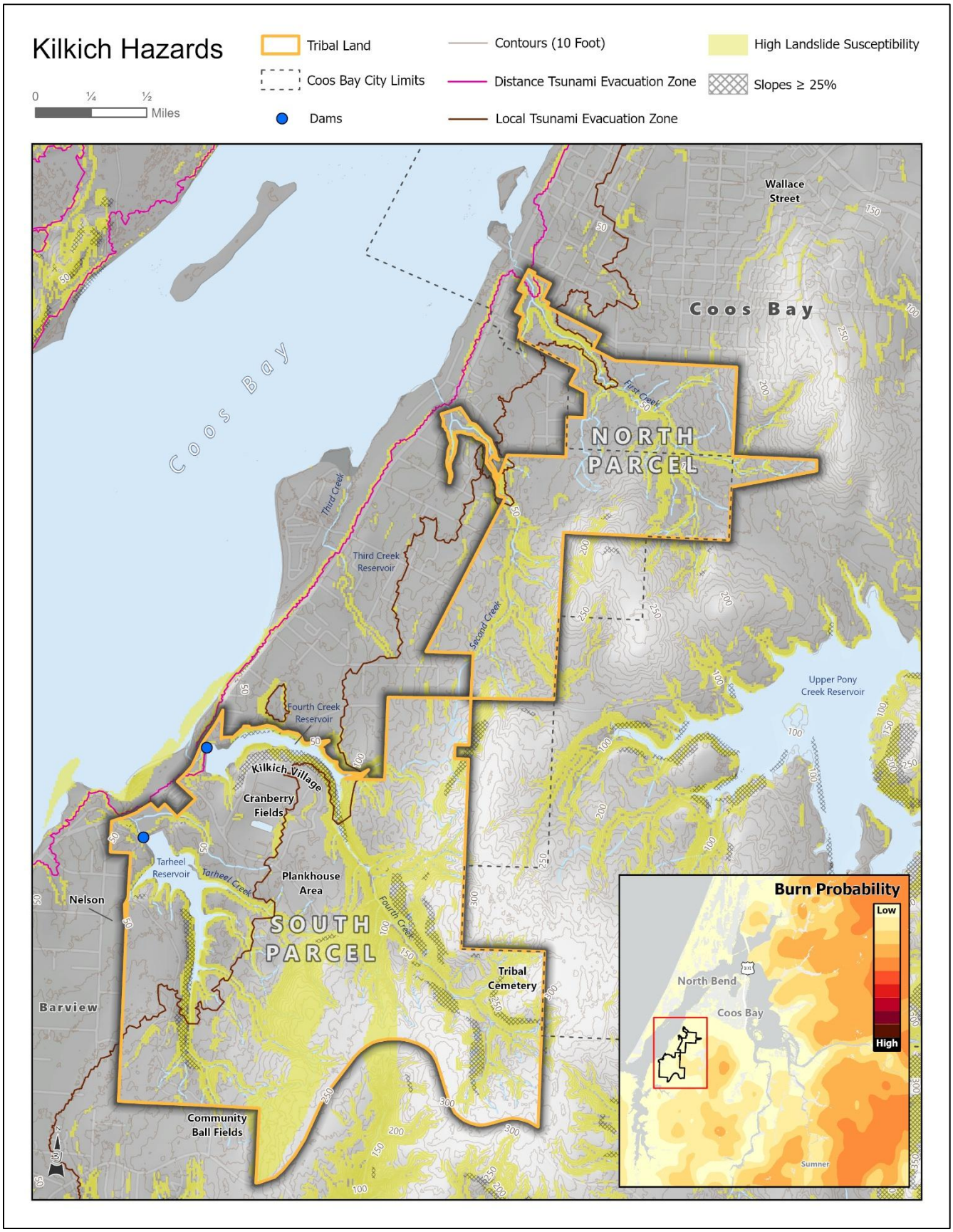
Reviewing past events can provide a general sense of the hazards that have caused significant damage in the county. Disaster trends indicated by declarations can help inform hazard mitigation project priorities. President Dwight D. Eisenhower approved the first federal disaster declaration in May 1953 following a tornado in Georgia. Since then, federally declared disasters have been approved within every state as a result of natural hazard related events. As of April 2021, FEMA has approved a total of 38 major disaster declarations, four emergency declarations, and 57 fire management assistance declarations in Oregon (sixteen occurring in 2020). When governors ask for presidential declarations of major disaster or emergency, they stipulate which counties in their state they want included in the declaration based on data and coordination provided by county emergency management staff.

Since 1955, Coos County has had fourteen major disaster declarations. Eleven of these were related to severe wind or storm events resulting primarily in flooding, landslides, and wind damage. One declaration was related to a distant tsunami event triggered by the 2011 Tohoku Earthquake in Japan.

Kilkich Vulnerabilities and Mitigation Strategies

The Coquille Indian Tribe Hazard Mitigation Plan (2023) identifies seventeen potential hazards that could impact the Tribally owned lands. The following section outlines the six natural hazards identified as the greatest threats to the Kilkich Area as well as the associated structures and critical facilities put at risk by these hazards. Figure 49 illustrates the topography as well as natural hazards that could impact the Kilkich North and South Parcels. While energy sovereignty is the Coquille Indian Tribe's long-term goal, in the short term the Tribe's goal is to be prepared for three weeks of energy isolation as soon as possible.

Figure 49. Kilkich Area Natural Hazards and Topographic Map



Potential Multi-hazard Mitigation Strategies

- Develop an Emergency Resilience Hub on Kilkich that includes shelter, equipment and supplies.
- Develop a campus of solar canopies.
- Develop backup energy storage service at Ko-Kwel Wellness Center, Kilkich Administration Building and Shishda Haws.
- Update the Coquille Indian Tribe Emergency Response Plan (last updated in 2017).
- Create an Integrated Resource Management Plan.
- Develop Mutual Aid Agreements.
- Promote Disaster Resilient Development.

Coastal Storm: Wind

According to National Weather Service data, the Tribal Planning Area is at equal risk of a windstorm event. All CIT critical facilities located within the planning area are equally susceptible to this hazard.

Potential Mitigation Strategies:

- Utilize underground utility lines and backup generators for critical infrastructure.
- Manage vegetation in areas within and adjacent to rights-of-way at risk of tree failure and property damage and avoid creating corridors within vegetated areas.
- Evaluate potential impacts from future climate conditions and losses due to wind.

Dam Failure

Two critical dam facilities, Fourth Creek and Tarheel Dams have been identified in the potential dam failure hazard. No Tribal structures have been identified in the potential dam failure flood zone; all Tribal facilities on Kilkich Tribal Lands are situated upstream from these dams. In addition, there are no other Tribal structures situated downstream of the dams with high or significant hazard ratings.

Potential Mitigation Strategies:

- Explore mitigation opportunities for critical infrastructure in high hazard dam failure areas.
- Routinely evaluate the condition of flood control structures.
- Evaluate potential impacts from future climate conditions and losses due to dam failure and inundation.

Earthquake

All of CIT's critical facilities are located in moderate to high earthquake zones. A total of 26 facilities worth over $53 million are situated in a high hazard area and 10 facilities worth over $163 million are in moderate zones. Facilities and structures in the high hazard include all facilities on Kilkich Tribal Lands (offices, warehouse, health center, police station, community centers, and two dams/reservoirs). In the event of a major Cascadia Subduction seismic event, Oregon's southern

coastal communities should anticipate between three and six months without electricity or public water services. Longer periods of six to eighteen months of isolation can be expected if damage significantly impacts the Willamette Valley or other population—and resource-intensive areas.

Potential Mitigation Strategies:

- Inspect and retrofit any Tribal buildings that do not meet current Building Code.
- Promote public education regarding earthquake hazards.
- Evaluate potential impacts from future climate conditions and losses due to earthquake.

Landslide
Using USGS digital data and slope inclinations, slopes throughout the Tribal Planning Area are identified as having a high to moderate risk of slope failure. There are no CIT critical facilities situated in the high landslide potential area. Kilkich Tribal Lands are within the area with Areas with low or no slope failure exposure. Tribally-owned facilities in these areas would have low risk of loss due to landslides.

Potential Mitigation Strategies:

- Create maps that show alternative transportation routes in the event of on a landslide.
- Develop a vegetation management plan.
- Evaluate potential impacts from future climate conditions and losses due to landslides.

Tsunami
Kilkich is located partially within the forecast tsunami zone and also contains highlands for sheltering during tsunami warnings. There are 30 critical facilities (worth over $230 million) situated within the Tsunami Hazard Area. Identified facilities at risk include 15 critical facilities on Kilkich Tribal Lands worth $150 million.

Potential Mitigation Strategies:

- Develop elevated weather tight battery enclosures.
- Develop solar and storage facilities located at higher elevations.
- Maintain and develop new and easy to read signage and maps of tsunami hazard zones and evacuation routes.
- Limit future development of critical facilities in tsunami inundation zones.
- Repair tsunami siren for distant tsunami notification.
- Evaluate potential impacts from future climate conditions and losses due to tsunami.

Wildfires
There are no CIT critical facilities situated in high wildland fire hazard areas although the Coquille Forest land and the Seq-wet Se Forest land are in high hazard areas which are timber producing lands that total more than 9,000 acres valued at over $24 million dollars. There are 23 facilities totaling more than $150 million situated in moderate fire hazard zones including all Tribal offices

and facilities on Kilkich tribal lands (offices, warehouse, health center, police station, community centers, and two dams/reservoirs).

Potential Mitigation Strategies:

- Develop and provide funding or incentives for defensible space in wildland fire hazard areas.
- Create a community fire plan.
- Continue to conduct current fuel management programs and new and emerging fuel management techniques.
- Evaluate potential impacts from future climate conditions and losses due to wildfire.

Kilkich Critical Facilities

A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the public, such as preserving the quality of life of the Tribe and fulfilling important public safety, emergency response, and disaster recovery functions. Tribally owned and operated critical facilities in the Kilkich Area include:

- Kilkich Administrative Office
- Ko-Kwel Wellness Center Coos Bay
- Shishda-Haws Fitness and Rehabilitation Center
- Police Station
- Omashi Haws
- Cemetery and Columbarium
- Community Center
- Library and Culture Office
- Plankhouse (Building, Kitchen, Bathrooms and Showers)
- Tarheel Dam
- Fourth Creek Dam

Other Critical Infrastructure and Facilities

Bay Area Hospital

According to the Coos Bay Multi-Jurisdictional Natural Hazard Mitigation Plan, the Bay Area Hospital has the highest vulnerability to wind storms, earthquakes, winter storms, local tsunamis and wildfire smoke. Earthquakes and landslides pose the risk of significant disruptions to transportation routes including supply chain and patient transport, as well as the destruction of older building stock and community infrastructure. Winter and wind storms pose the risk of power outages and road closures. Wildfire smoke puts pressure on the hospital's HVAC system and wildfires can cause transportation disruptions.

Electricity
Transmission lines are vulnerable to climatic events. The lines that serve Kilkich are subject to wildfire prevention or response safety shutdowns, coastal landslides, severe wind, and ice storm damage. The coastal distribution network is additionally exposed to seismic, flood and tsunami events.

Supply chain constraints continue to trend upward for critical electrical infrastructure components such as transformers and substations. Unless spare parts are already on hand, replacement times for common transformers and substations currently exceed two years.

Fuel
Oregon relies on imported fuels delivered by truck, rail, ship and pipeline. Costal deliveries are subject to disruptions from heavy rain, and severe winds, resulting in delivery highway landslides and down trees. Public sector license fuel capacity is notably limited on the southern coast, with most supplies located at municipal airports.

Kilkich current fuel resilience measures include generators and fuel storage. There are 4 permanently installed diesel generators located at critical facilities within Kilkich with various quantities of fuel storage. Additionally, there are fixed fuel storage tanks which hold 1,265 gallons of diesel, and additional 480 gallons stored on a mobile trailer.

Water
Municipal utilities provide the water supply and wastewater treatment for Kilkich. According to the Coos Bay North Bend Water Board, fuel storage for the water treatment system backup generator is sufficient for 7 hours of limited operations. Pump stations have similar storage arrangements for backup generators. The availability of backup energy resources for sewer treatment has not been determined at this time.

Phase 1 of the Energy Action Plan includes an investigation into the Tribe's development of elevated storage for water and energy storage. Solar canopies in Phase 1 can also be designed for fresh rainwater capture and retrofitted with water collection and treatment for on-site use during water utility service disruptions.

Action Plan

The following actions support increased energy resilience for the Coquille Indian Tribe by strengthen infrastructure, improving preparedness and reducing vulnerability to natural hazards. Actions are organized by hazard type and focus on maintaining reliable power, protecting critical facilities, and ensuring continuity of essential services during and after natural hazard events. These actions build off the Action Plan included in the Coquille Indian Tribe Hazard Mitigation Plan.

Multi-Hazard Energy Resilience

- Develop an Emergency Resilience Hub on Kilkich with shelter for Tribal members and employees, supplies, and equipment.

- Develop a campus of solar canopies.
- Develop backup energy storage service at Ko-Kwel Wellness Center, Kilkich Administration Building and Shishda Haws.
- Update Tribal planning documents to incorporate strategies for protecting and restoring energy systems during natural hazard events, including the Emergency Operations Plan (last updated in 2017) and Comprehensive Plan.
- Create an Integrated Resource Management Plan.
- Promote Disaster Resilient Development.
- Identify and prioritize critical facilities (e.g., emergency services, healthcare, communications, water systems) that require reliable backup power during emergencies.
- Develop and seek funding for resilient energy infrastructure such as backup generators, battery storage, and renewable energy systems to support emergency operations.
- Assess vulnerabilities in existing electrical infrastructure and develop mitigation strategies to reduce outage risks during disasters.
- Establish partnerships and mutual aid agreements with local, state, federal, and utility partners to coordinate energy restoration and emergency response.
- Develop emergency fuel supply and logistics plans to ensure generators and critical equipment remain operational during prolonged outages.
- Implement a public education and awareness program to inform Tribal members and employees about energy preparedness, including safe generator use and strategies for reducing energy disruptions during disasters.

Wildfire

- Develop and implement a community wildfire protection plan that includes measures to protect electrical infrastructure and energy systems in wildfire-prone areas.
- Promote the creation and maintenance of defensible space around buildings, electrical equipment, and energy infrastructure to reduce wildfire damage.
- Identify opportunities to underground or harden power lines in high wildfire risk areas where feasible.
- Coordinate with utility providers to improve wildfire-related power shutoff planning and rapid restoration procedures.

Tsunami

- Install standardized, easy-to-read signage identifying tsunami hazard zones, evacuation routes, and evacuation assembly areas to ensure rapid evacuation during an event.
- Identify evacuation sites that can support emergency power needs for lighting, communications, and shelter operations.
- Evaluate opportunities to provide backup power or mobile energy resources at designated evacuation and shelter locations.

Dam Failure

- Identify critical facilities and energy infrastructure located within dam failure inundation zones.
- Evaluate relocation, flood protection, or backup power solutions for facilities at risk of power loss or damage during a dam failure event.
- Develop contingency plans to ensure continuity of power and essential services if dam-related flooding disrupts energy infrastructure.

Earthquake

- Promote public education and outreach on earthquake preparedness, including how to safely respond to power outages and energy disruptions.
- Assess critical facilities for seismic vulnerability and implement structural retrofits where necessary to protect electrical and energy systems.
- Secure non-structural components of energy systems (generators, fuel tanks, electrical panels, and equipment) to prevent damage during earthquakes.
- Develop emergency power and rapid restoration strategies to maintain essential services following a major seismic event.

Energy Resilience Assessment

Current Energy Resilience Context

The Coquille Resilience Management Plan (2025) identifies infrastructure resilience as a central component of Tribal hazard mitigation and community preparedness. Energy infrastructure is particularly important because it underpins essential services such as emergency communications, healthcare, water systems, and government operations. Key resilience challenges include:

- Dependence on a centralized regional grid system
- Limited local energy generation capacity
- Exposure to outages caused by severe weather or wildfire
- Rising electricity costs and long-term price uncertainty

Strengthening energy resilience can help ensure that Tribal facilities remain operational during emergencies while reducing long-term exposure to external energy market volatility.

Strategic Pathways to Energy Sovereignty

The Tribal Council has identified two primary pathways that may advance energy sovereignty while improving resilience:

1. **Renewable Energy Development and Power Sales**

One potential pathway involves developing tribally owned renewable energy projects and selling the electricity to Pacific Power or other regional utilities. Potential renewable energy technologies include:

- Utility scale solar photovoltaic (PV) installations on Tribal lands or facilities
- Community-scale solar arrays
- Photovoltaic (PV) plus battery energy storage systems (BESS)
- Small-scale wind generation

Developing renewable energy generation assets would allow the Tribe to participate in regional electricity markets while generating revenue through power purchase agreements with utilities such as Pacific Power. Potential benefits include:

- Long-term revenue generation through electricity sales
- Reduced reliance on hydroelectric power
- Alignment with ecological stewardship and climate goals
- Opportunities for federal incentives and grant funding
- Potential for workforce development and local job creation

If paired with battery energy storage systems, renewable generation could also support microgrid applications that provide backup power during outages.

2. **Development of a Co-Generation Facility**

A second pathway under consideration is the development of a co-generation (combined heat and power) facility to supply electricity and thermal energy directly to Tribal facilities. Co-generation systems produce electricity while capturing waste heat for use in building heating, hot water systems, or industrial processes. This approach can significantly improve overall energy efficiency compared to conventional power generation.

Potential fuel sources for a co-generation system could include natural gas, biomass, or other locally available fuels. Potential benefits include:

- Increased reliability for Tribal buildings and critical facilities
- Reduced dependence on external electricity providers
- Greater control over local energy infrastructure
- High energy efficiency compared to conventional generation

However, co-generation systems using fossil fuels would not be renewable and could produce greenhouse gas emissions. As a result, careful consideration of long-term environmental and economic tradeoffs would be necessary.

Complementary Strategies to Improve Energy Resilience

Regardless of which primary pathway the Tribe pursues, several complementary strategies could strengthen overall energy resilience.

- Microgrids for Critical Infrastructure
    - Developing microgrids for key facilities—such as Tribal government buildings, emergency services, and community centers—would allow these facilities to operate independently from the main grid during outages. Microgrids often combine solar generation, battery storage, and backup generators to maintain reliable power supply during emergencies.
- Energy Efficiency Programs
    - Improving energy efficiency in Tribal buildings can reduce overall electricity demand and lower operational costs. Potential measures include:
        - Building insulation upgrades
        - High-efficiency lighting systems
        - Heating and cooling system upgrades
        - Smart building energy management systems

Reducing energy demand can make local generation strategies more feasible and cost-effective.

Federal Funding and Technical Assistance

Several federal programs provide financial and technical support for Tribal energy development. These resources could support feasibility studies, project planning, and infrastructure development. Key programs include:

- U.S. Department of Energy Office of Indian Energy grants
- Clean energy incentives under the Inflation Reduction Act
- USDA rural energy programs
- Bureau of Indian Affairs climate resilience funding

Leveraging federal funding can significantly reduce the financial burden associated with energy infrastructure development.

Recommended Next Steps

To advance energy sovereignty while minimizing financial and operational risks, the Tribe may consider the following next steps:

1. Review the Tribal energy assessment to evaluate electricity demand, infrastructure needs, and renewable resource potential.
2. Perform feasibility studies for both renewable energy development and a potential co-generation facility, including financial and environmental analyses.
3. Identify priority resilience needs for critical infrastructure that may require backup power or microgrid capabilities.

4. Engage with regional utilities and partners, including Pacific Power, to explore interconnection requirements and potential power purchase agreements.
5. Pursue federal planning grants and technical assistance to support energy planning and project development.

Appendix A. Infrastructure Existing Conditions for Kilkich North and South Parcels

In addition to the stated objectives for TM#3, the CIT requested a high-level assessment of local infrastructure and how the North and South Parcels might be serviced when development occurs. The following is a preliminary assessment of local with sewer, water, and surface stormwater facilities, as well as franchise utilities.

Sewer

Wastewater Collection for both the North and South parcels is provided by the Charleston Sanitary District. The primary infrastructure for the district consists of an existing 21-inch diameter line in Cape Arago Highway which connects to the Coos Bay Wastewater Treatment Plant II, located at the intersection of Cape Arago Highway and Fulton Ave. The wastewater plant was recently constructed and began operation in 2020 with the Coos Bay Wastewater Treatment Plant I remaining operational to provide additional treatment for solid wastes.

The City of Coos Bay has indicated that the existing Wastewater System is at approximately 50% capacity, but additional studies are required to determine capacity to fully accommodate future housing needs.

Based on the existing topography of the North and South Parcels, the sites are generally suitable for construction of infrastructure that could connect to the existing 21-in diameter line in Cape Arago, utilizing a fully gravity system.

The North Parcel has more direct access to existing infrastructure on the north and west sides where adjacency to existing development and infrastructure could facilitate connections. One consideration for development of this parcel is the presence of First Creek and Second Creek which could provide a barrier for connection to existing sanitary infrastructure by gravity mains.

The South Parcel is a served by an existing 8-inch diameter line in Miluk Drive which could provide more direct sanitary sewer access for the Kilkich Village area and northwestern areas of this parcel. One consideration, particularly the northeast sections of this parcel, is that access to existing sanitary infrastructure in Cape Arago Highway would require crossing Fourth Creek. This may not be suitable and alternate paths through neighboring parcels may need to be considered.

Additionally, there is existing sanitary infrastructure in Libby Lane west of the parcel at Nathan Drive that could potentially be utilized. This infrastructure is not directly adjacent to the parcel and thus would require off-site sanitary infrastructure to be constructed in Libby Lane to make that connection.

Water

Drinking Water for both the North and South Parcels is provided by the Coos Bay-North Bend Water Board.

The primary infrastructure that serves the North and South Parcels consists of an existing 8-12-inch water main along Cape Arago Highway. The existing drinking water infrastructure in Cape Arago Highway connects to the Wisconsin Pump Station. This pump station was recently upgraded and the Water Board has indicated that there are additional upgrades being planned for the future.

Based on the existing topography of both the North and South Parcels, there is significant elevation change which would result in a pressure drop for any expanded development within the parcels. Any additional extensions of the mains further into the North and South parcels would require additional studies and modeling to determine suitable upgrades to serve development. Likely upgrades could consist of additional water pump stations, additional reservoirs constructed at higher elevations, or a combination of both.

For the North Parcel, the existing main adjacent to the north and west sections of the parcel is 12 inches and could provide a connection with less of a pressure drop than the south and east sections of the parcel.

For the South Parcel and Kilkich Village, there are additional existing 8-12-inch water mains in Miluk Drive and the Mexeye Loop which provide additional drinking water access. However, Kilkich residents have also noted that there are some issues with reduced pressure in the existing system.

Additionally, there is existing water infrastructure in Libby Lane west of the parcel at Mobilane Road that could potentially be utilized. This infrastructure is not directly adjacent to the parcel and thus would require off-site water main infrastructure to be constructed in Libby Lane to make that connection.

Surface Stormwater

Generally, the surface stormwater management system within the North and South Parcels and in the adjacent areas are managed through roadside ditches and cross culverts where necessary at intersections, with the main exception being a piped storm system for Kilkich Village.

The existing topography generally slopes towards the coast including the ditch system along Cape Arago Highway as well as the creeks that convey surface water within the parcels towards the coast.

Future development within either of these parcels would need to be studied on a case-by-case basis to understand the runoff management requirements of the area as well as the water quality requirements. On-site improvements would be utilized to meet those requirements. Infrastructure that addresses these requirements could be detention basins, energy dissipation facilities and/or biofiltration methods such as swales and planters.

In addition to addressing permanent runoff increases from additional impervious areas, construction stormwater runoff would need to meet Oregon Department of Environmental Quality (DEQ) requirements and prevent erosion from reaching downstream water bodies.

Franchise Utilities

Electrical Power for both the North and South Parcels is provided by Pacific Power, with the major substation being located at Penny Rd and Spaw Blvd. As developments are proposed, electrical loading for the proposed uses would be evaluated and incorporated into the existing system. This may require upgrades to the surrounding transmission system to accommodate additional electrical load.

Natural gas for the area is provided by Northwest Natural, however there does not appear to be existing infrastructure adjacent to the North and South Parcels. Off-site infrastructure would need to be constructed to extend the existing gas lines for these parcels.