DRAFT: Workforce Development Plan
Arctic Strategic Transportation and Resources Project
North Slope, Alaska

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Prepared for:

Office of Project Management and Permitting
Alaska Department of Natural Resources
Jeff Bruno, Project Lead
550 West 7th Avenue, Suite 1430
Anchorage, Alaska 99501

Prepared by:

Northern Economics
800 E Dimond Blvd Suite 3-300
Anchorage, Alaska 99515

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REVISION HISTORY AND APPROVAL

REV	REV DATE	DESCRIPTION	PREPARED BY	CHECKED BY	APPROVED BY
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Authorization Signatures	
Paul Ramert, AES Alaska Project Manager	Date
Amanda Henry, AES Alaska Deputy Project Manager	Date
Jeff Bruno, OPMP ASTAR Project Lead	Date

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ACRONYMS

A.A.S.	Associate of Applied Science
AHFC	Alaska Housing Finance Corporation
ALARI	Alaska Local and Regional Information
ANWR	Arctic National Wildlife Refuge
ASTAR	Arctic Strategic Transportation and Resources
AVTEC	Alaska Vocational Technical College
B.S.	Bachelor of Science
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
CDL	Commercial Driver's License
CWAT	Community Winter Access Trails
DCCED	Department of Commerce Community and Economic Development
DEED	Department of Early Education
DMV	Department of Motor Vehicles
GAAR	Gates of the Arctic National Park
GED	General Educational Development
IT	Information Technology
NCES	National Center for Education Statistics
NPR-A	National Petroleum Reserve in Alaska
NSB	North Slope Borough
NSBEP&CR	North Slope Borough Economic Profile & Census Report
O.E.	Occupational Endorsement
QCEW	Quarterly Census of Employment and Wages
TVEP	Technical Vocational Education Program
U.C.	Undergraduate Certificate
UA	University of Alaska

Executive Summary

This section will provide an overview of the key findings and recommendations developed in the Workforce Development Plan.

Introduction

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1.0 Overview and Goals of the ASTAR Workforce Development Plan

1.1 Introduction

This workforce development plan has been prepared as part of the Arctic Strategic Transportation and Resources (ASTAR) project. This project serves communities of Alaska's Arctic by developing strategies that strengthen community infrastructure. As part of that effort, ASTAR uses community scoping and analyses of existing data to identify projects and public needs. The workforce development plan summarizes the existing labor market in terms of industries, occupational skills, and professional pathways in order to provide strategies on how to improve workforce development. In addition, it provides an overview of the educational and training opportunities that are currently available.

The primary purpose of this plan is to offer suggestions, goals, and strategies that help public and private entities provide resources and services that meet the needs of community residents. The workforce development strategies provided in this plan rely on community perspectives and comments, as well as identifying and evaluating future projects of interest that may have an impact on residents of Alaska's Arctic. The plan compares the existing workforce with projections of future demand to determine which industries could experience shortages in labor, and which occupations should be a priority for focus in the future.

1.2 Need for an ASTAR Workforce Development Plan

The need for a workforce development plan arises from the expected growth of North Slope Borough (NSB) funding and numerous planned infrastructure projects. ASTAR has undertaken a large scoping effort to identify community needs and projects that will most benefit NSB residents. Those project libraries serve as the basis for this plan, which is driven, in part, by anticipated increases in National Petroleum Reserve in Alaska (NPR-A) mitigation impact grant funding. ConocoPhillips' Greater Mooses Tooth-1 project alone will generate an estimated $1 billion in revenues over the project life, 50 percent of which will become NPR-A mitigation funds that can be spent at the discretion of the NSB (Bureau of Land Management [BLM] 2014). These funds will generate economic growth in the borough but will also create direct demand for labor in numerous fields and occupations in order to complete construction of new roads, utilities, public buildings, and facilities.

Currently, local government provides more than 60 percent of all jobs in the NSB, which means that employment rates and household incomes are sensitive to fiscal health of the borough and the State of Alaska. Additionally, the rate of unemployment in many rural NSB communities is high relative to State of Alaska and national averages. However, there are resources available to help NSB residents earn college degrees, licenses, and endorsements for pursuing jobs—and this plan outlines those programs and facilities. It also provides goals and strategies to prepare educators, public officials, local governments, and other organizations on how to best serve the NSB workforce. In the short term, there will be a need for technical and labor-oriented positions in civil construction, as well as individuals with licenses for operating commercial trucks and heavy equipment. Infrastructure construction projects will provide connectivity between communities and lead to growth in other sectors. In the long-term, there will be an increased demand for retailers and restaurants, health care, mechanics, repairmen, information

technology (IT) professionals, and more. This plan is necessary to provide a timeline of these events and match this demand to the resources that are available to NSB residents.

1.3 Goals of the Plan

This workforce development plan is a component of a larger collaborative effort for the ASTAR project, led by the Alaska Department of Natural Resources. ASTAR's mission is to identify, evaluate, and advance opportunities to enhance the quality of life and economic opportunities in North Slope communities through responsible infrastructure development. This plan shares in that mission, and also seeks to prepare the NSB workforce for the future using these three goals:

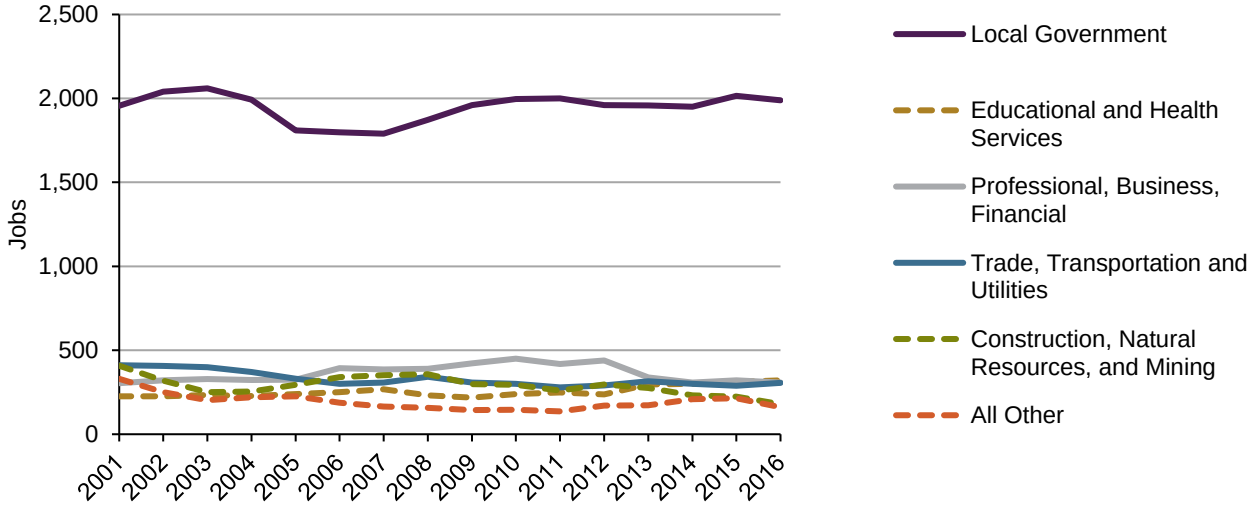
1. Anticipate areas of future industry growth in the NSB by reviewing ASTAR project libraries;
2. Identify key occupations in the future and assess the current workforce ability to meet those demands;
3. Summarize the existing workforce development resources to provide goals and strategies for developing a responsive and adaptive workforce in the future.

2.0 ASTAR Regional Workforce

2.1 Industries

Figure 1 shows trends in employment in the NSB over time and by industry. Local government is the single largest employer, providing 1,988 jobs in 2016, and has remained constant since 2009. Educational and health services is the second largest industry, at 321 jobs in 2016, followed closely by professional, business, and financial activities (307 jobs) and trade, transportation, and utilities (305). Construction, natural resources, and mining jobs in the NSB have decreased over time, reaching a low of 179 workers in 2016.

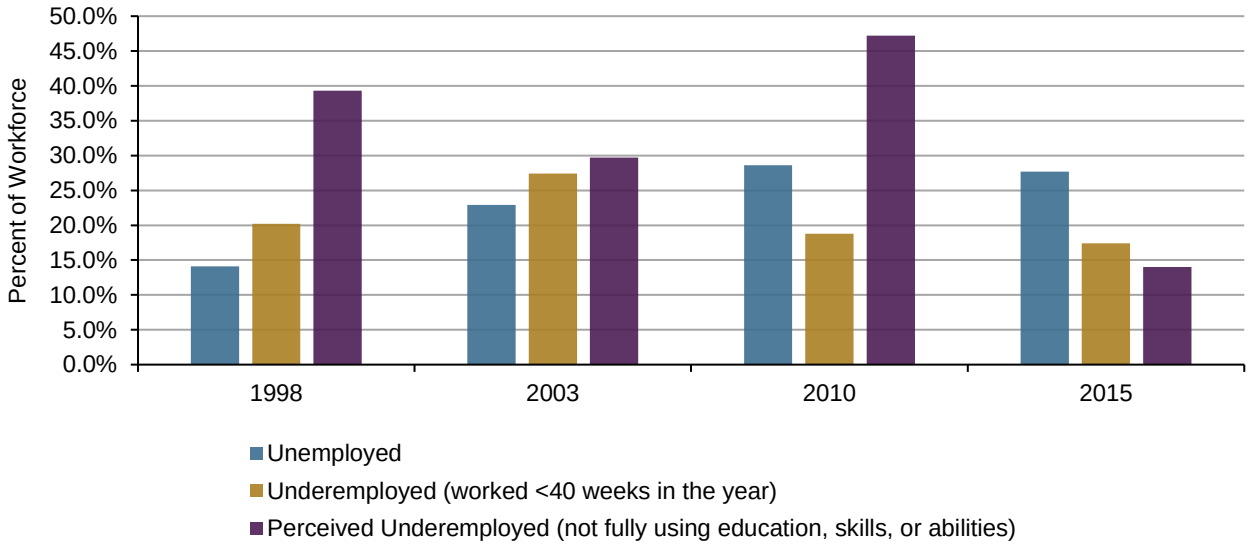
Figure 1. North Slope Borough Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

Figure 2 summarizes historic levels of unemployment, underemployment, and perceived underemployment collected for the North Slope Borough Economic Profile and Census Report (NSBEP&CR). In 2015, levels of underemployment reached the lowest levels attained in each of the last four censuses, while unemployment remained relatively high at 27.7 percent for the NSB. Reductions in underemployment demonstrate that more residents are working year-round, which indicates growth in permanent and long-term industries, rather than employment in individual projects. The strong reduction in perceived underemployment suggests that NSB workers also feel their education, skills, and abilities are being more fully utilized. Both measures are positive signs for the NSB workforce; however, unemployment remains relatively high compared to state and national averages. This is discussed further in Section 2.3.

Figure 2. North Slope Borough Unemployment Summary



Note: These data include only those individuals responding to the survey and these questions.

Data Source: NSBEP&CR (2015)

To better understand the long-term trends for the borough, the workforce plan must evaluate each industry, and even specific projects, that are anticipated in the future. The following sections provide additional data and discussion on important industries in the NSB.

2.1.1 Healthcare

Healthcare is also an important source of employment, particularly in Utqiaġvik which has the borough's only hospital. Section 2.2.1 includes a discussion of professional licenses, of which most (67 percent) are healthcare licenses such as nursing, dental, or chiropractic care. Outlying communities in the NSB have clinics for non-emergency care, but Utqiaġvik is a regional hub for both healthcare and educational services.

At present, rural clinics often cannot support a dedicated physician or specialists, so doctors' appointments are often conducted in video calls over the internet. Internet service is a limitation in many NSB communities, and outages, slow speeds, and data limitations are all barriers to the ability of providers to serve patients in rural Alaska communities. Furthermore, the medical industry has shifted

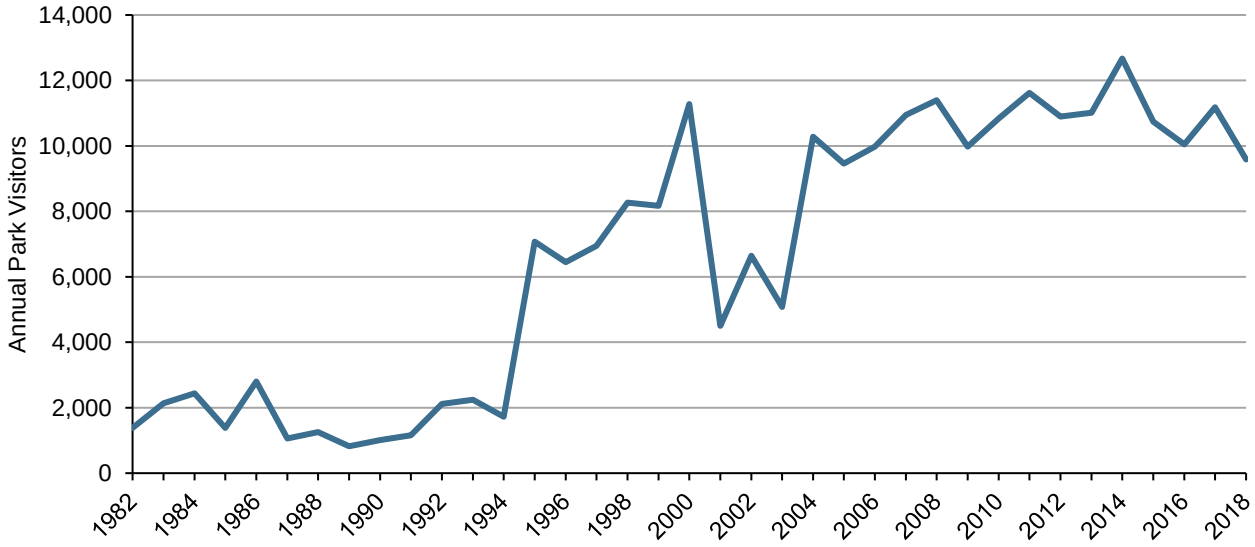
to electronic recordkeeping, but some clinics in Alaska's tribal health system with traditional satellite-based internet connections are not able to move away from paper health records (Alaska Public Media 2019). Additional discussion on the role of internet connectivity in rural Alaska is provided in Section 4.2.5.

2.1.2 Tourism

Tourism provides numerous economic and employment opportunities in other parts of Alaska, and a similar industry could arise in the NSB. Business opportunities could include tour guiding, flight seeing, guided wildlife viewing, adventure getaways, guided hunting and fishing, river float trips, and more. The NSB includes portions of the Arctic National Wildlife Refuge (ANWR), Gates of the Arctic National Park (GAAR), and the Noatak National Preserve. The Alaska Visitor Statistics Program (2016, 2017) estimates that visitors to Alaska's "Far North", which includes the NSB, spent an average of $2,431 per person per trip in 2016, and that spending from visitors generated 375 jobs in 2017.

Figure 3 shows the number of annual visitors to GAAR from 1982 to 2018 and illustrates a growth trend. Much of the park's visitation is derived from Dalton Highway access, and about 40 percent of the visitors are non-Alaskans on bus tours that stop at ranger stations along the highway (National Park Service 2000). Approximately 40 percent of GAAR park visitors in 1999 were visitors at the Coldfoot Visitor Center, which includes both tour bus travelers and other visitors. Anaktuvuk Pass is one of three primary access points for tourists and other visitors to see the remote interior of the park. There are multiple tour companies that offer combination flightseeing and walking day-tours in Anaktuvuk Pass. Hiking between the village and the Dalton Highway is also popular for backpackers, who can arrange for a one-way flight and highway transportation back to Fairbanks.

Figure 3. Gates of the Arctic National Park Recreational Visitors



Note: data include guided and non-guided tour visitors and visitors to Anaktuvuk Pass Ranger Station, Bettles Ranger Station, Coldfoot Pass Ranger Station, and Fairbanks Headquarters.

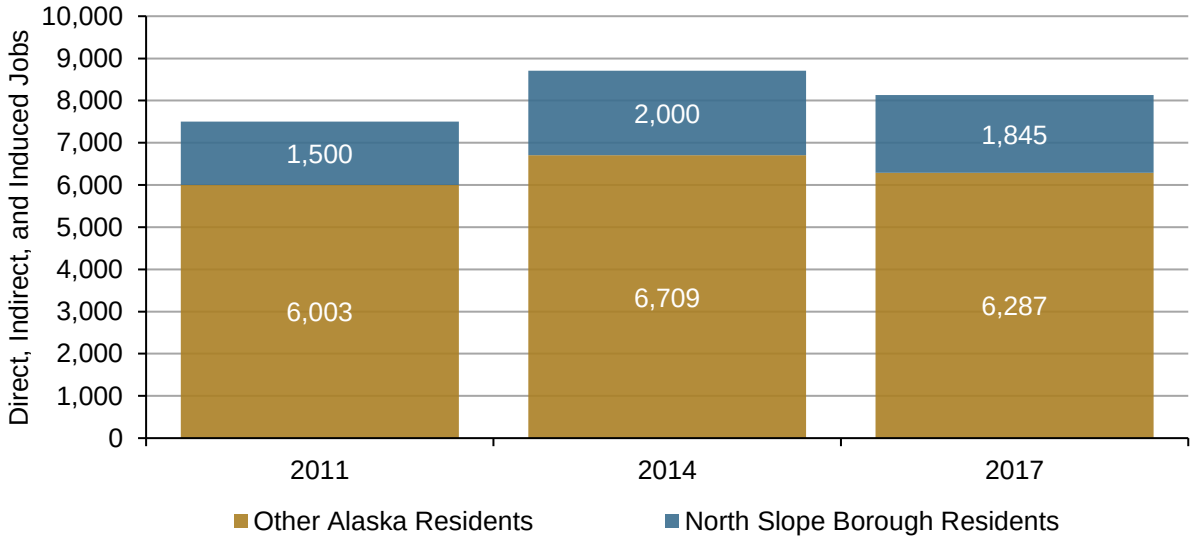
Data Source: National Park Service (2019)

ANWR is also an important resource for attracting visitors, with most people visiting the interior areas of the refuge by chartered flights to observe and photograph wildlife, or to hunt and fish in remote areas. An Environmental Impact Statement for the Coastal Plain oil and gas leasing area reviewed visitation and recreational use of the project area in 2017. In total, there were 3,000 visitors who traveled by air to the coastal plain project area; 1,600 of those travelers went on chartered polar bear viewing expeditions and the remainder used air taxi service to go on river floats (850), backpacking (300), hunting (100), and camping (40) (BLM 2018). Their analysis also showed rapid growth in the polar bear viewing industry, which made up about 25 percent of recreational visits in 2013 but more than 50 percent in 2017. In 2017, more than 2,000 visitors traveled to Kaktovik to see the endangered species in person (Alaska Public Media, 2018).

2.1.3 Oil and Gas

Despite a thriving oil and gas industry in Alaska, very few NSB residents have historically been employed by the large oil producing companies on the oil fields. However, there is evidence to suggest that some jobs held by NSB residents are generated by oil and gas economic activity. Figure 4 shows estimates of job impacts from the oil and gas industry in Alaska, and includes direct, indirect, and induced jobs. Indirect and induced jobs are created through spending of "Primary" oil producing companies and their employees, which trickles through other businesses and establishments. These are typically jobs in other fields and support industries like retail stores, restaurants and hotels, auto repair businesses, transportation services, and many others. The number of NSB residents with oil and gas related jobs ranged from 1,500 to 2,000, as estimated by McDowell Group (2011, 2014, 2017).

Figure 4. Estimated Job Impacts of Oil and Gas Industry for Alaskans



Data Source: McDowell Group (2011, 2014, 2017)

2.2 Occupations

Figure 5 shows the top ten occupation groups for the NSB from 2001 to 2016. Office and administration is the number one major occupational group in the NSB and has experienced five consecutive years of growth, with 780 workers in 2016. In 2016, office and administrative positions made up more than

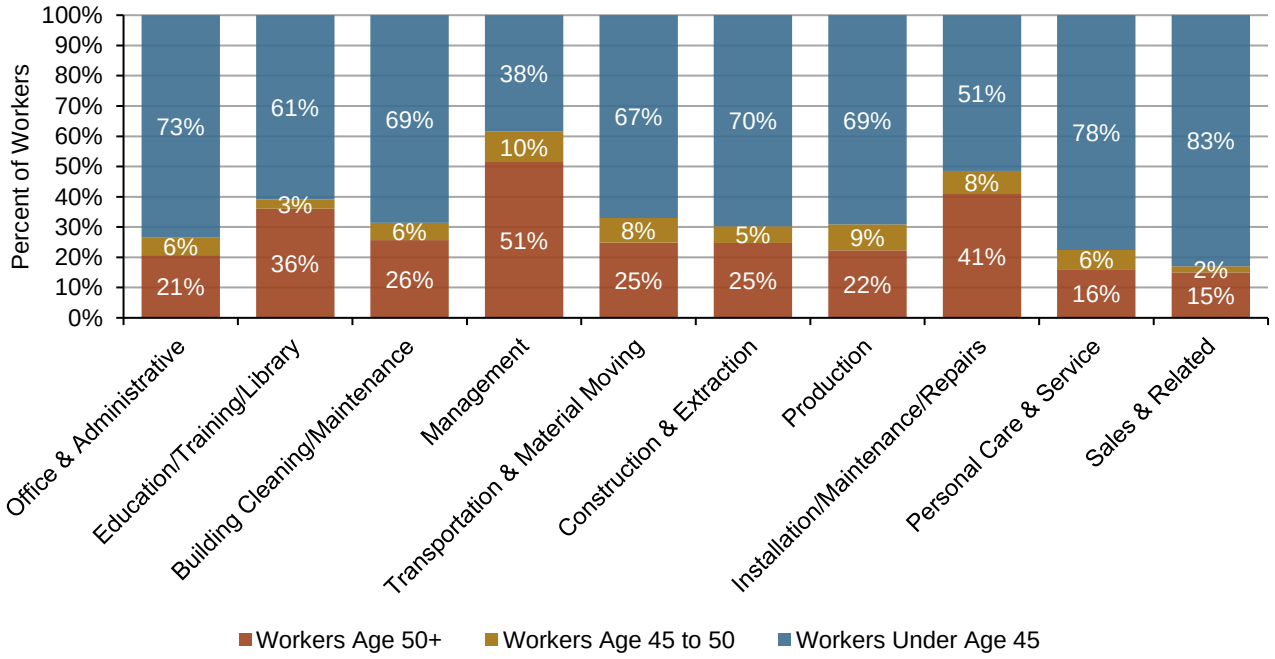
26 percent of all jobs in the borough, which likely relates to the high rate of government employment in NSB cities. The number of workers in education, training, and libraries decreased from a high of 391 in 2002 to a low of 247 in 2010—a change of 34 percent. This is somewhat surprising since most schools in the borough have positive trends in student enrollment. The number of these workers increased in 2013, 2014, and 2015 but decreased in 2016 to a total of 266. These numbers could be influenced by hiring practices, since teachers are often recruited from other parts of Alaska, as well as other states, and turnover rates are high compared to other industries.

Workers in the production group include primarily power plant operators, water and wastewater operators, and welders—and their numbers have increased by 3.5 percent each year, on average. As communities upgrade their utility infrastructure and more homes install indoor plumbing systems, there will be additional city or borough government jobs to maintain power generating and water treatment systems. Welders are commonly used in the construction industry but might also be employed to repair and construct buildings or government owned heavy equipment. Positive trends in the production occupations will likely continue in the future.

In the construction and extraction industry there have been steady declines in the number of workers, reaching a low of 182 workers in 2016, a decrease of nearly 57 percent from 2001. These job losses are likely influenced by reductions in NPR-A mitigation funding, which is commonly used to fund construction projects when money is available. From fiscal year 2012 to 2018, NPR-A funding was relatively low and most available money was used to support borough and city government operations which may contribute to losses in the construction sector. For further discussion on NPR-A funding refer to Section 4.1. The number of general maintenance and repair workers has also seen decreases; however, they are far more gradual than changes in the construction industry. These losses, however, are likely related to an aging workforce and retirement, as discussed later in this section.

Figure 5 shows the distribution of workers by age for the top ten occupational groups. Management occupation positions have a high rate of older workers, about 60 percent in 2016, which is not surprising because managerial work often requires a higher level of experience. Other occupations like education, training, and library or installation, maintenance, and repairs also have higher rates of older workers that could contribute to shortages in the workforce as individuals reach retirement age. These occupations could be candidates for recruiting efforts and public outreach to raise awareness about future needs. Promoting employment opportunities to students and young people might encourage long term sustainability in the existing job market. These efforts could include holding job fairs, radio, and internet marketing campaigns, and social media pages to provide current information to individuals.

Figure 5. NSB Worker Age Distribution of Top 10 Major Occupational Groups, 2016



Note: Top 10 major occupational groups are listed in descending order from left to right.

Data Source: DOLWD (2019b)

Table 1 shows the top 20 individual occupations in the NSB in 2016, with columns for the number of male and female workers, and workers over the ages of 45 and 50. While it is expected that older workers will remain in management and supervisory positions into later ages, there are many vocational and labor-based trades with a high portion of current workers near retirement. We note that general maintenance and repair workers, heavy trailer and truck drivers, bus drivers, and carpenters all have more than 30 percent of their workers at or above 50 years of age. These occupations may be priorities for recruiting and awareness efforts to ensure there are not shortages of trained workers in these positions.

Table 1. Top 20 Detailed Occupations in the North Slope Borough, 2016

Occupation	2016 Workers	Female	Male	Workers Age <45	Workers Age 45–50	Workers Age 50+
		Percent (%) of Total Workers				
1. Janitors and Cleaners, Except Maids and Housekeeping Cleaners	175	25%	75%	65%	6%	29%
2. Office and Administrative Support Workers, All Other	135	67%	33%	78%	5%	17%
3. Maintenance and Repair Workers, General	104	13%	88%	51%	10%	***39%***
4. Teacher Assistants	102	84%	16%	61%	3%	***36%***
5. Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	101	91%	9%	73%	4%	23%
6. Construction Laborers	88	8%	92%	85%	2%	13%
7. Executive Secretaries and Executive Administrative Assistants	85	84%	16%	68%	9%	22%
8. Bookkeeping, Accounting, and Auditing Clerks	81	77%	23%	67%	5%	28%
9. Water and Wastewater Treatment Plant and System Operators	73	5%	95%	78%	5%	16%
10. Office Clerks, General	72	83%	17%	85%	3%	13%
11. Power Plant Operators	68	7%	93%	65%	13%	22%
12. Laborers and Freight, Stock, and Material Movers, Hand	62	26%	74%	85%	2%	13%
13. First-Line Supervisors of Office and Administrative Support Workers	60	80%	20%	63%	10%	27%
14. General and Operations Managers	57	42%	58%	32%	9%	***60%***
15. Recreation Workers	56	41%	59%	84%	4%	13%
16. Stock Clerks and Order Fillers	51	31%	69%	80%	8%	12%
17. Heavy and Tractor-Trailer Truck Drivers	50	8%	92%	56%	10%	***34%***
18. Bus Drivers, School or Special Client	45	47%	53%	51%	16%	***33%***
19. Education, Training, and Library Workers, All Other	41	61%	39%	98%	0%	2%
20. Carpenters	39	0%	100%	59%	5%	***36%***

Data Source: DOLWD (2019b)

2.2.1 Professional Licenses

Table 2 shows a count of professional licenses by type for NSB residents, with a subtotal for each category and percentages representing the share of the total. Nursing licenses are the most common, at 34, making up more than a quarter of the total. Healthcare licenses account for two-thirds of all licenses and range in scope from dental care and physicians, to therapy, chiropractic care, and pharmaceutical technicians. Social service and veterinary licenses are also present in Utqiaġvik, though they are less common. Construction-related professional licenses are also important, making up an additional 16.3 percent of the total. Most of these licenses are for general construction contractors, although there are also electrical administrators, and a single license in the architects, engineers, and land surveyors' group.

There are 129 active professional licenses held by residents of Utqiaġvik; no licenses are held by residents of other NSB cities. This likely means that individuals must travel from NSB villages to Utqiaġvik for medical and dental care, veterinary services, and social services like counseling or therapy. Villages may also rely on telemedicine and healthcare by phone or internet since there are no license holders outside of Utqiaġvik. Similarly, there are no licensed electrical administrators or construction contractors outside of Utqiaġvik, so civil construction projects in other NSB villages will rely on bringing in skilled workers to help with certain components of the work. There are also some NSB residents who hold commercial driver's licenses with the Alaska Department of Motor Vehicles. These residents can work on construction projects or may support economic development in the oil and gas industry, which predominantly uses the Dalton Highway to move freight to oil fields on the North Slope.

Table 2. Professional Licenses Registered to Utqiaġvik Residents

License Types		Count	Percent (%) of Total
Healthcare	Nursing	34	26.4
	Dental	19	14.7
	Pharmacy	12	9.3
	Medical	6	4.7
	Nurse Aides	4	3.1
	Massage Therapists	4	3.1
	Physical and Occupational Therapy	3	2.3
	Physician Assistants	2	1.6
	Dispensing Opticians	1	0.8
	Chiropractic	1	0.8
	Healthcare Total	**86**	**66.7**
Social Service	Social Workers	5	3.9
	Professional Counselors	5	3.9
	Prescription Drug Monitoring Program	1	0.8
	Social Service Total	**11**	**8.5**
Veterinary	Veterinary	2	1.6
	Euthanizing Domestic Animals	1	0.8
	Veterinary Total	**3**	**2.3**
Construction	Construction Contractors	13	10.1
	Residential Contractor Endorsement	5	3.9
	Electrical Administrators	2	1.6
	Architects, Engineers and Land Surveyors	1	0.8
	Construction Total	**21**	**16.3**
Other	Barbers and Hairdressers	5	3.9
	Geology	2	1.6
	Big Game Guides and Transporters	1	0.8
	Other Total	**8**	**6.2**
Total		**129**	**100.0**

Data Source: DCCED (2019d)

2.3 Workforce Demographics

This section provides a summary of demographic data for the NSB and each of its cities and describes characteristics of the workforce. Population estimates, unemployment, and educational attainment data are taken from the most recent NSBEP&CR (2015). The borough census is conducted independently from the decennial census and Alaska Department of Labor and Workforce Development (DOLWD) data estimates. Annual employment by industry is derived from the Quarterly Census of Employment and Wages (QCEW) which is published by the US Bureau of Labor Statistics and modified using place of residence from Alaska permanent fund dividend applications. These modified data are available online from DOLWD as the Alaska Local and Regional Information (ALARI) database to allow for analysis over a continuous time period from 2001 to 2016. Each of the following subsections includes figures that show current employment and trends in employment over time using ALARI data, in addition to public school enrollment collected by the State of Alaska Department of Early Education and Development (DEED).

In the NSB communities, unemployment rates ranged from 11.7 to 23.8 percent in 2014, as shown in Table 3. These rates are relatively high compared to the State of Alaska and national averages of 6.7 percent and 5.5 percent; however, most of the rural communities are small and exceptionally remote (NSBEP&CR 2015). A weighted average across all communities shows that more than 40 percent of all households in the NSB were included in the 2015 census survey sample, and that the weighted average rate of unemployment was 20.6 percent. Some communities such as Nuiqsut and Point Hope have a high rate of temporary seasonal workers and part time-workers, which could contribute to underemployment rates in the borough.

Table 3. North Slope Villages Employment and Census Sample Size, 2014

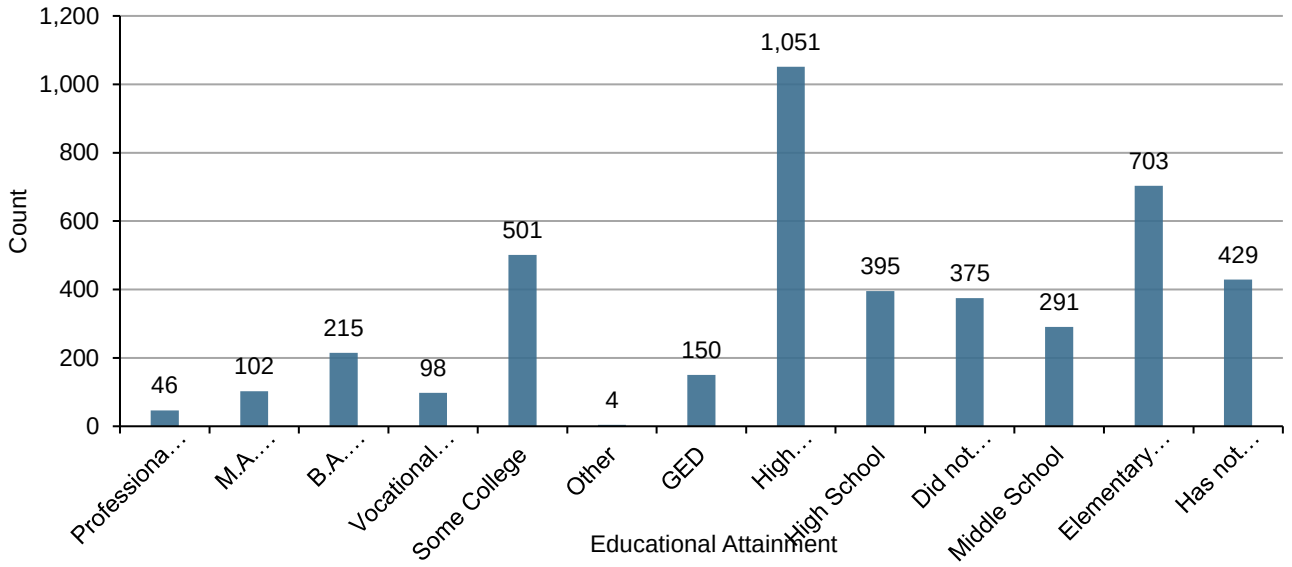
Community	Permanent Full Time	Temporary Seasonal	Part-Time	Unemployed	Retired	Sample Size (n)	Estimated Village Households	Percent Sampled
Anaktuvuk Pass	50.0%	13.8%	6.3%	18.8%	11.3%	82	122	67.2%
Atqasuk	51.7%	13.3%	3.3%	11.7%	20.0%	62	92	67.4%
Barrow	58.5%	6.3%	3.6%	20.7%	10.7%	528	1836	28.8%
Kaktovik	55.6%	11.1%	3.7%	22.2%	7.4%	56	147	38.1%
Point Hope	37.6%	14.9%	8.9%	23.8%	14.9%	138	230	60.0%
Point Lay	60.3%	8.8%	2.9%	23.5%	4.4%	69	79	87.3%
Wainwright	54.8%	8.1%	6.5%	23.4%	7.3%	130	196	66.3%
Nuiqsut	46.7%	15.0%	5.6%	14.0%	18.7%	105	149	70.5%
Weighted Average by Households	55.3%	8.4%	4.4%	20.6%	11.2%	NA	NA	41.0%

Data Source: NSBEP&CR (2015)

Figure 6 shows educational attainment for individuals in the NSB. More than 1,200 adults have earned either a high school diploma or GED, and many individuals have completed a college degree. NSBEP&CR (2015) reports that the proportion of high school graduates has increased between 2003

and 2015, which could lead to increased demand for post-secondary education as more high school graduates seek college education. Higher levels of educational attainment are a positive sign for workforce development and would ultimately lead to lower unemployment rates and higher earnings for NSB residents as they start working in higher paying industries.

Figure 6. Highest Educational Attainment of Adults in North Slope Borough, 2015



Data Source: NSBEP&CR (2015)

2.3.1 Utqiaġvik Demographic Profile

Utqiaġvik (formerly Barrow) is the largest city in the NSB, with 5,256 permanent residents in 2018 (Table 4). It serves as a hub for travel and services, since it has a large enough population to sustain businesses not present in many of the outlying villages. Utqiaġvik also has the region's only hospital and Alaska State Trooper post. From 2010 to 2015, the community grew by 17 percent and the trend is expected to continue in the future.

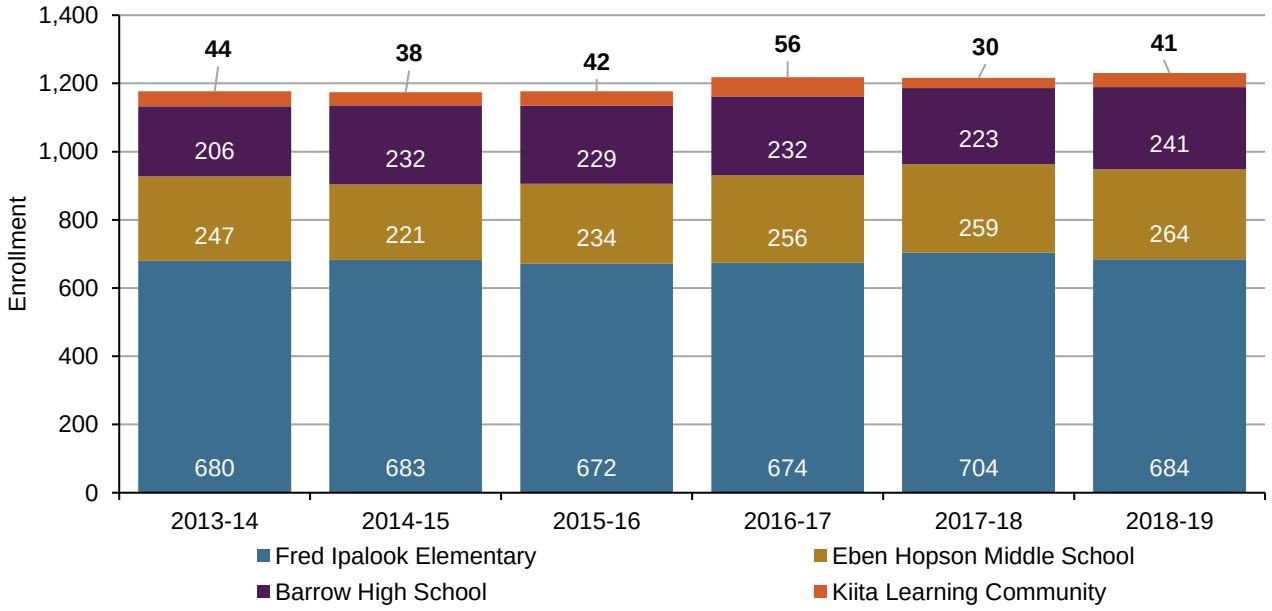
Table 4. Utqiaġvik Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Utqiaġvik	4,212	4,437	4,617	4,717	4,825	4,933	NA	5,041	5,256

Source: NSBEP&CR, 2015; NSB staff, 2019

In Utqiaġvik, total public-school enrollment has remained relatively constant at nearly 1,200 students per year, as shown in Figure 7. Enrollment has grown by about 4.5 percent over the last five years, and much of that growth can be attributed to higher enrollment of Barrow High School students.

Figure 7. Utqiaġvik Primary and Secondary Public-School Enrollment



Note: The Kiita Learning Community is an alternative high school.

Source: National Center for Education Statistics (NCES), 2019; DEED 2019.

Table 5 shows the number of workers for the top 20 occupations in Utqiaġvik in 2016. Most workers are associated with office, administrative, or secretarial positions. Many other residents work in public service fields like teaching and counseling, or training sectors.

Table 5. Utqiaġvik Top 20 Occupations in 2016

Occupation	Number of Workers
Office and Administrative Support Workers, All Other	107
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	79
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	72
Executive Secretaries and Executive Administrative Assistants	63
First-Line Supervisors of Office and Administrative Support Workers	57
General and Operations Managers	50
Maintenance and Repair Workers, General	47
Teacher Assistants	44
Water and Wastewater Treatment Plant and System Operators	41
Bookkeeping, Accounting, and Auditing Clerks	40
Laborers and Freight, Stock, and Material Movers, Hand	38
Managers, All Other	35
Carpenters	34
Office Clerks, General	33
Construction Laborers	30
Counselors, All Other	27
Education, Training, and Library Workers, All Other	26
Administrative Services Managers	26
Security Guards	25
Maids and Housekeeping Cleaners	23

Data Source: DOLWD (2019b)

Local government is the single largest employer in Utqiaġvik, providing more than half of all jobs (Table 6). Educational and health services makes up 15 percent of jobs, and trade, transportation and utilities comprises 10 percent of jobs.

Table 6. Workers by Industry, Utqiaġvik, Percentage of Total, 2016

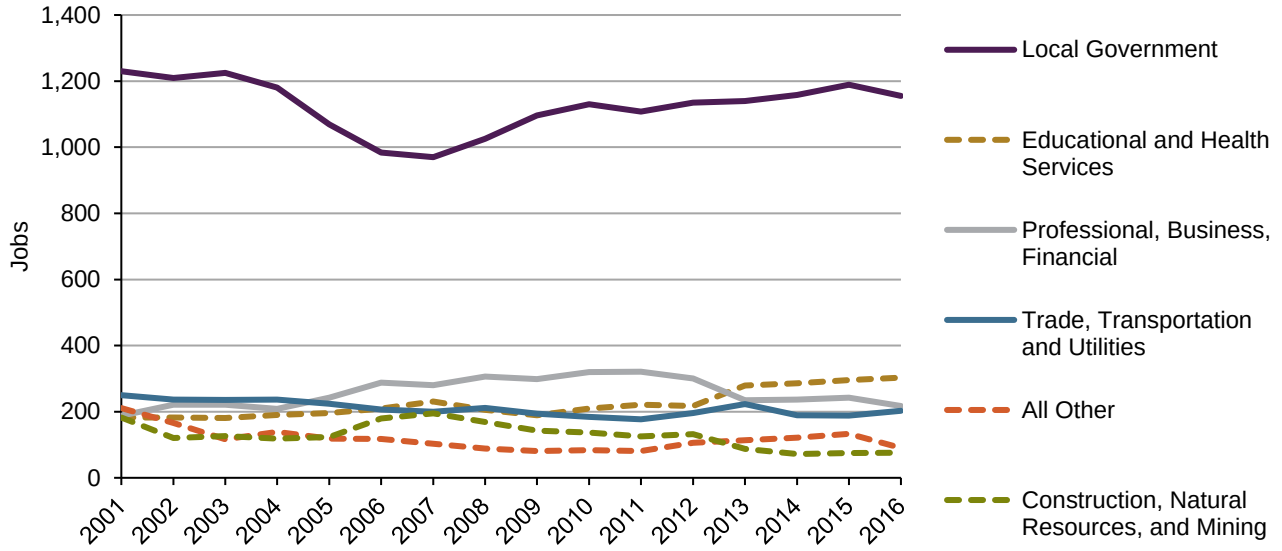
Industry	Count	Percent of Total
Local Government	1,155	56.5
Educational and Health Services	303	14.8
Trade, Transportation, and Utilities	203	9.9
Professional and Business Services	157	7.7
Financial Activities	60	2.9
Construction	57	2.8
Leisure and Hospitality	45	2.2
Natural Resources and Mining	19	0.9
Other	15	0.7
State Government	14	0.7
Information	11	0.5
Manufacturing	5	0.2
Total	2,044	100.0
Unemployed Individuals*		297

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 8 shows trends in employment in Utqiaġvik over time and by industry. Local government is the single largest employer, providing 1,155 jobs in 2016, and employment has generally grown since 2007. Educational and health services are also important industries in Utqiaġvik, at 303 jobs in 2016, which is the highest observed levels in the reported data. A long period of growth in this field might be attributed to the fact that Utqiaġvik is the largest city in the borough, and residents of other villages and cities may travel here to receive dental and medical care. Other important industries include professional, business, and financial services, and trade, transportation and utilities. However, these fields have seen declines in employment over time.

Figure 8. Utqiaġvik Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.2 Anaktuvuk Pass Demographic Profile

Anaktuvuk Pass is an interior city of the NSB within the Brooks Range and had 376 permanent residents in 2018 (Table 7). The community can be accessed year-round by plane, and ATVs and snowmachines are used for local travel (DCCED, 2019a). From 2010 to 2015, the community grew by 21 percent and the trend is expected to continue in the future.

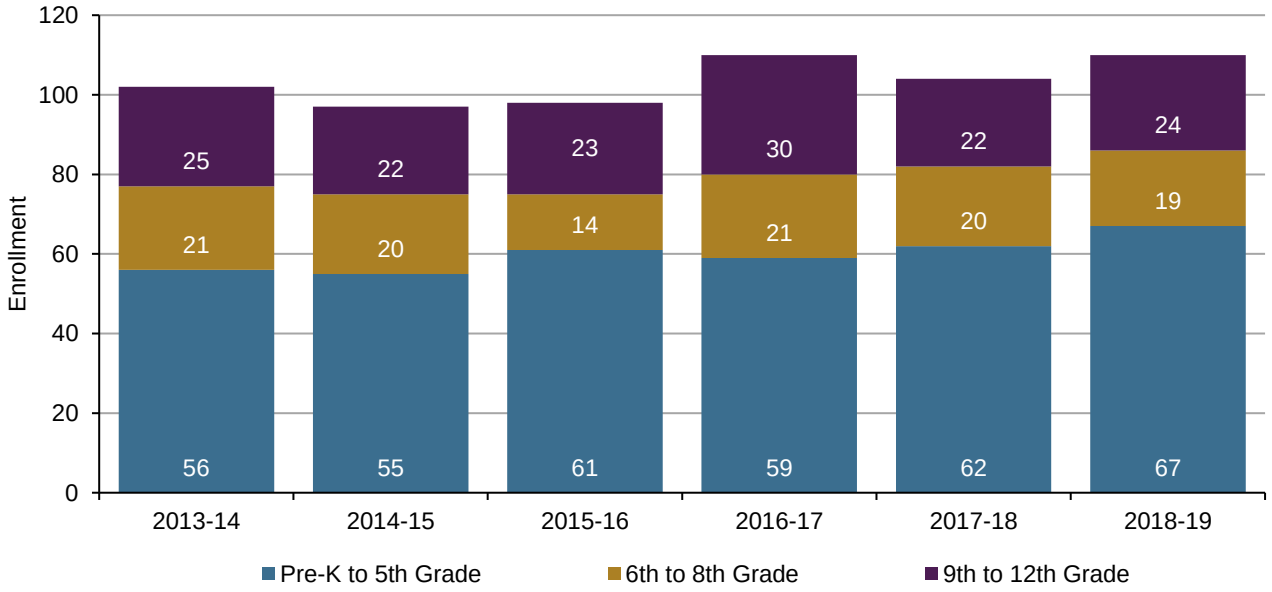
Table 7. Anaktuvuk Pass Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Anaktuvuk Pass	324	325	344	358	375	393	NA	393	376

Data Sources: NSBEP&CR (2016), NSB staff (2019)

Student enrollment at Nunamiut School in Anaktuvuk Pass has increased slightly, as shown in Figure 9, averaging 104 students over the last five years.

Figure 9. Anaktuvuk Pass Primary and Secondary Public-School Enrollment



Data Sources: NCES (2019), DEED (2019)

Table 8 shows the number of workers for the top occupations in Anaktuvuk Pass in 2016. Most workers are associated with janitor and custodial duties, educational or teaching positions, maintenance and repair workers, and retail.

Table 8. Anaktuvuk Pass Top Occupations in 2016

Occupation	Number of Workers
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	14
Teacher Assistants	8
Maintenance and Repair Workers, General	8
First-Line Supervisors of Retail Sales Workers	7
Retail Salespersons	7
Education, Training, and Library Workers, All Other	6
Recreation Workers	6
Heavy and Tractor-Trailer Truck Drivers	6
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	5
Power Plant Operators	5

Data Source: DOLWD (2019b)

Local government is the single largest employer in Anaktuvuk Pass, providing about 77 percent of all jobs (Table 9). Trade, transportation, and utilities is the second largest employment industry (10 percent), followed by professional and business services (6.7 percent).

Table 9. Workers by Industry, Anaktuvuk Pass, Percentage of Total, 2016

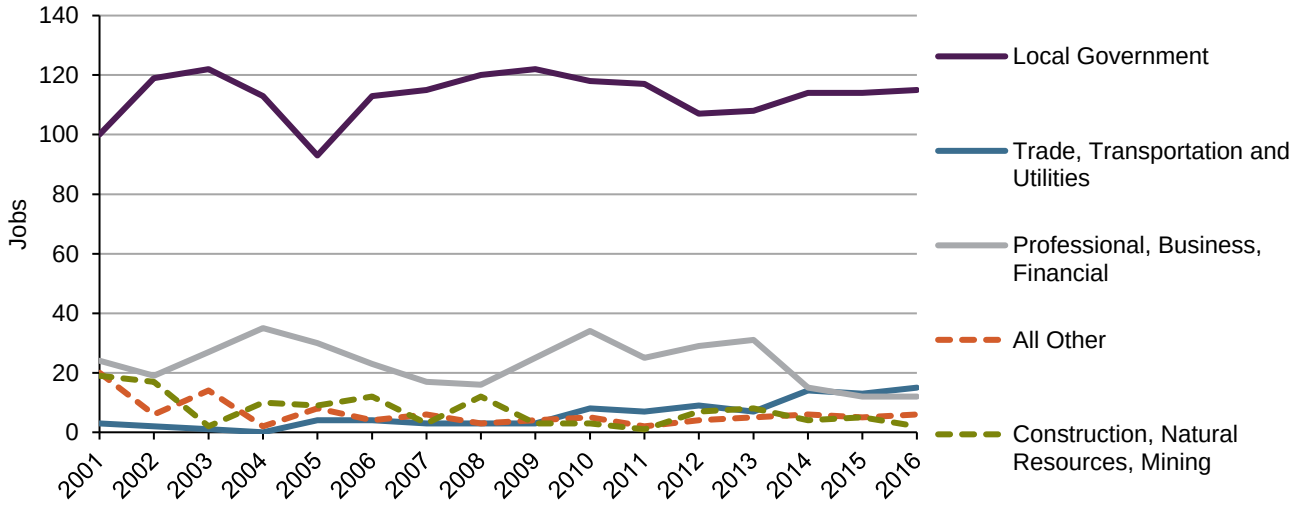
Industry	Count	Percent of Total
Local Government	115	76.7
Trade, Transportation, and Utilities	15	10.0
Professional and Business Services	10	6.7
Natural Resources and Mining	2	1.3
Manufacturing	2	1.3
Financial Activities	2	1.3
Educational and Health Services	2	1.3
Leisure and Hospitality	2	1.3
Total	150	100.0
Unemployed Individuals*		71

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 10 shows trends in employment in Anaktuvuk Pass over time and by industry. Local government is the single largest employer, providing 115 jobs in 2016, though there has been significant variation in employment levels from year to year. Currently professional, business, and financial services employment is the second largest industry in Anaktuvuk Pass; however, it has only recently overtaken trade, transportation, and utilities, an industry that has experienced significant reductions since 2013.

Figure 10. Anaktuvuk Pass Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.3 Atqasuk Demographic Profile

Atqasuk is an inland city of the NSB, with 261 permanent residents in 2018 (NSBEP&CR 2016). From 2010 to 2015, the community grew by 6.5 percent and the trend is expected to continue in the future. For community services, Atqasuk has a clinic, library, and water treatment facility (DCCED 2019a).

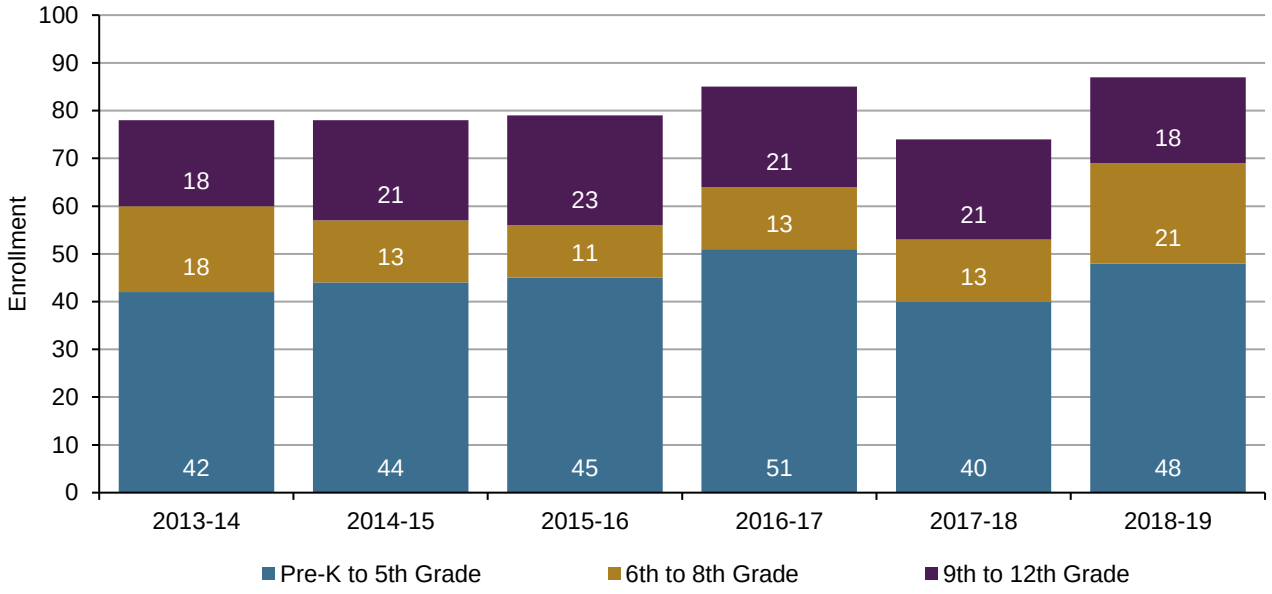
Table 10. Atqasuk Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Atqasuk	233	244	235	248	248	248	NA	248	261

Data Sources: NSBEP&CR (2016, NSB staff (2019)

Enrollment at Meade River School in Atqasuk increased in the 2018–19 school year to its highest levels in the last six years (87 students), as shown in Figure 11. Enrollment in the previous year was the lowest in the period, at 74 students, but enrollment increases in the elementary and middle school cohorts have created a 12 percent overall rate of growth since 2013–14.

Figure 11. Atqasuk Primary and Secondary Public-School Enrollment



Data Sources: NCES (2019, DEED (2019)

Local government is the single largest employer in Atqasuk, providing 83 percent of all jobs (Table 11). Construction makes up 8 percent of jobs, and trade, transportation, and utilities comprise 6.3 percent of jobs.

Table 11. Workers by Industry, Atqasuk, Percentage of Total, 2016

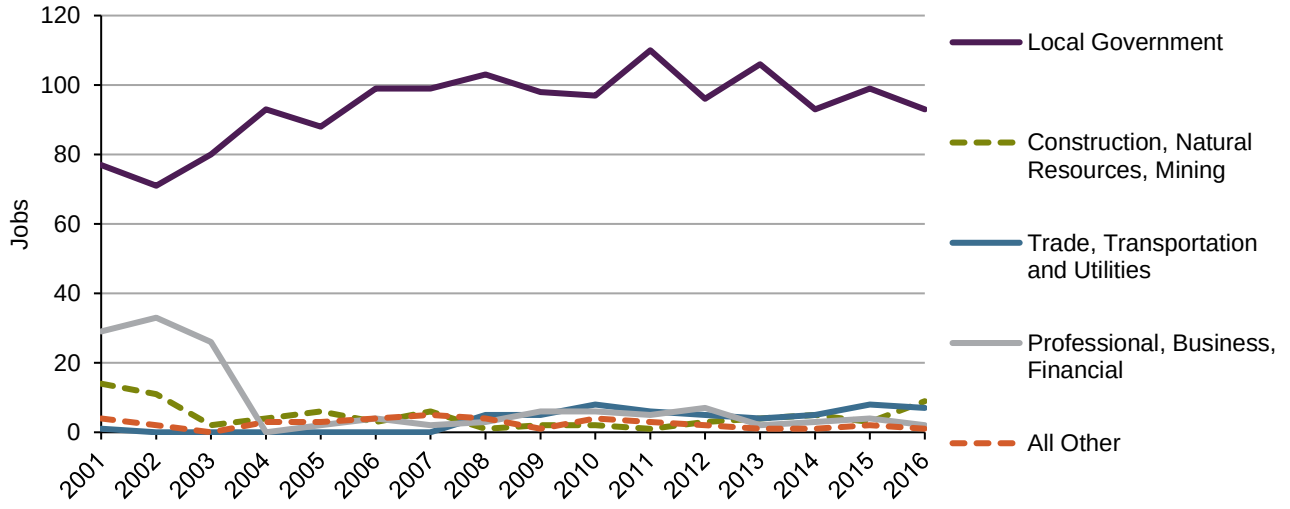
Industry	Count	Percent of Total
Local Government	93	83.0
Construction	9	8.0
Trade, Transportation, and Utilities	7	6.3
Professional and Business Services	2	1.8
Educational and Health Services	1	0.9
Total	112	100.0
Unemployed Individuals*		8

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 12 shows trends in employment in Atqasuk over time and by industry. Local government is the single largest source of employment, providing 93 jobs in 2016, but employment appears to be on a downward trend despite significant variations from year to year. There are few other reported sources of employment in Atqasuk. In total there were only 19 additional jobs in all other industries in 2016. It is possible that residents rely on a subsistence lifestyle or earn income from other sources.

Figure 12. Atqasuk Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.4 Nuiqsut Demographic Profile

Nuiqsut is one of the few cities in the NSB where most homes have running water, natural gas, and electricity (Kuukpik 2019). Located near the Alpine oil and gas field, the community negotiated for free natural gas for use in homes and community buildings (COPA 2015). There were 481 permanent residents living in Nuiqsut in 2018 (Table 12).

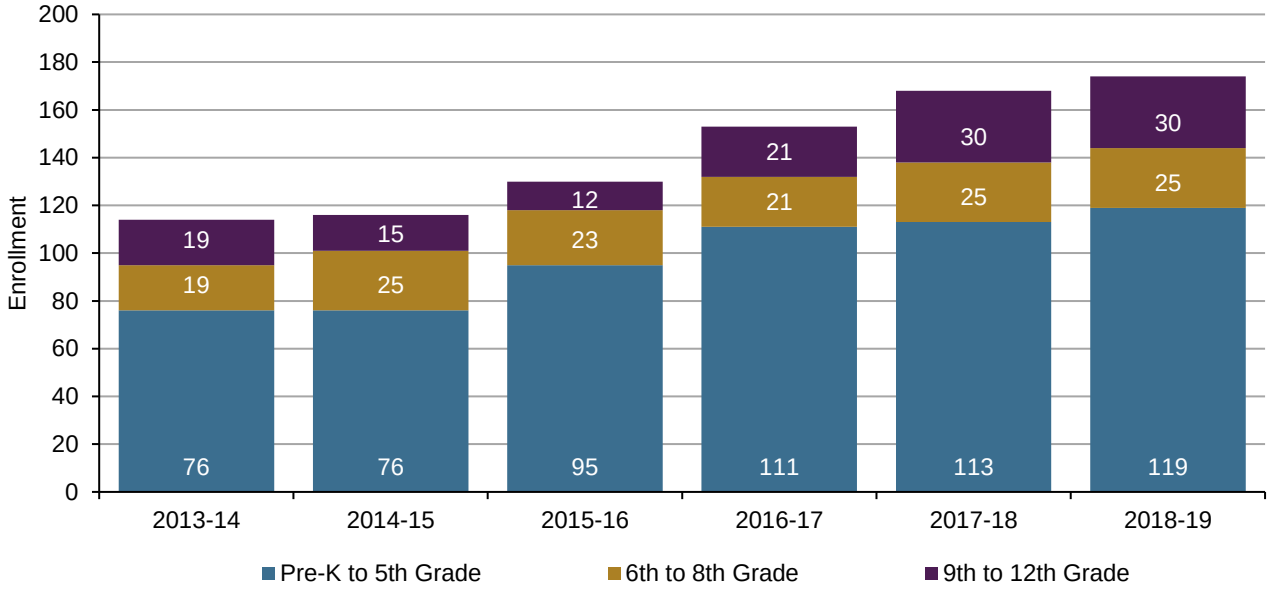
Table 12. Nuiqsut Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Nuiqsut	402	434	428	452	449	446	NA	446	481

Data Sources: NSBEP&CR (2016), NSB staff (2019)

Student enrollment at Nuiqsut Trapper School has increased in each of the last six years, reaching total enrollment of 174 in the 2018–19 school year, as shown in Figure 13. Over the last six years, enrollment has increased by 53 percent, and much of the growth can be attributed to increases in elementary school students, which could be an indication of increased secondary enrollment in the future.

Figure 13. Nuiqsut Primary and Secondary Public-School Enrollment



Data Sources: NCES (2019), DEED (2019)

Table 13 shows the number of workers for the top occupations in Nuiqsut in 2016. Workers associated with bookkeeping, accounting, auditing made up nearly 25 percent of the reported jobs. There are a significant number of other office or administrative workers, teaching assistants, laborers, maintenance workers, janitorial staff, and other occupations.

Table 13. Nuiqsut Top Occupations in 2016

Occupation	Number of Workers
Bookkeeping, Accounting, and Auditing Clerks	25
Heavy and Tractor-Trailer Truck Drivers	10
Teacher Assistants	9
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	9
Maintenance and Repair Workers, General	9
Executive Secretaries and Executive Administrative Assistants	7
Recreation Workers	6
Office Clerks, General	6
Power Plant Operators	6
Home Health Aides	5
Construction Laborers	5
Laborers and Freight, Stock, and Material Movers, Hand	5

Data Source: DOLWD (2019b)

Local government is the single largest employer in Nuiqsut, providing 62 percent of all jobs (Table 14). Trade, transportation, and utilities makes up 8.8 percent of jobs, followed by construction with 6.7 percent.

Table 14. Workers by Industry, Nuiqsut, Percentage of Total, 2016

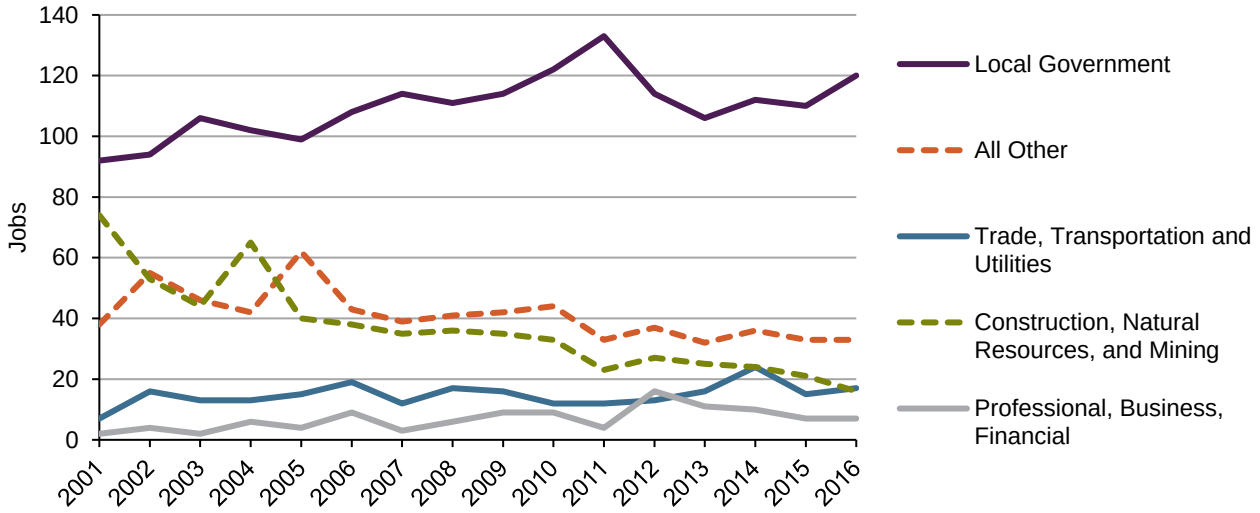
Industry	Count	Percent of Total
Local Government	120	62.2
Other	29	15.0
Trade, Transportation, and Utilities	17	8.8
Construction	13	6.7
Professional and Business Services	7	3.6
Natural Resources and Mining	3	1.6
Leisure and Hospitality	2	1.0
Information	1	0.5
Educational and Health Services	1	0.5
Total	193	100.0
Unemployed Individuals*		40

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Local government is the single largest employer in Nuiqsut, providing 120 jobs in 2016, and shows a trend of growth in the long run despite a significant decrease in jobs from 2011 to 2013 (see Figure 14). There have also been steep declines in employment in the construction and natural resources and mining industries reaching a low of 16 workers in 2016. Employment in trade, transportation, and utilities and professional, business, and financial services has remained relatively constant over time.

Figure 14. Nuiqsut Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.5 Point Hope Demographic Profile

Point Hope is a coastal city in the NSB, with 749 permanent residents in 2018 (Table 15). Its geography is favorable for a subsistence lifestyle which depends on marine mammals like whales and seals for food (Manilaq Association 2019).

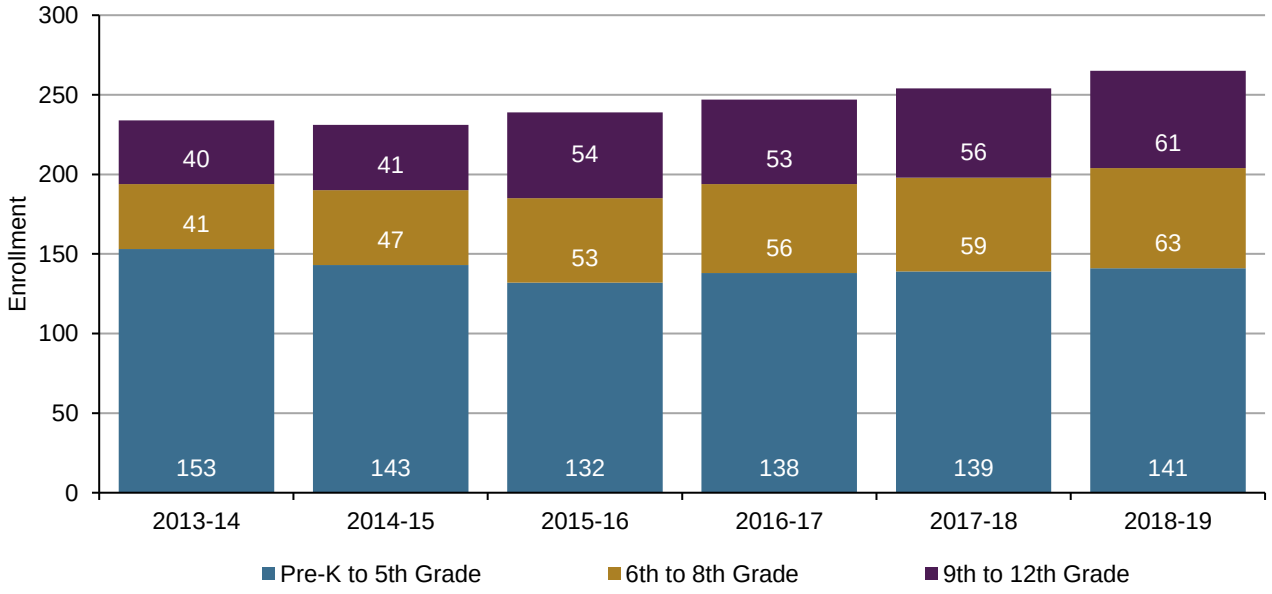
Table 15. Point Hope Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Point Hope	674	656	668	683	697	711	NA	711	749

Data Sources: NSBEP&CR (2016), NSB staff (2019)

Student enrollment at Tikigaq School in Point Hope has seen a modest increase of 13 percent over the last six years, reaching a high of 265 students in the 2018–19 school year, as shown in Figure 15. However, elementary student enrollment has decreased over that time period, which could indicate future declines in enrollment as fewer students replace graduating cohorts.

Figure 15. Point Hope Primary and Secondary Public-School Enrollment



Data Sources: NCES (2019), DEED (2019)

Table 16 shows the number of workers for the top occupations in Point Hope in 2016. Most workers are associated with construction, general labor, maintenance, or plant operations. There are also a significant number of jobs in the janitorial, teaching and education, secretarial, office, and administrative sectors.

Table 16. Point Hope Top Occupations in 2016

Occupation	Number of Workers
Construction Laborers	26
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	23
Teacher Assistants	19
Office Clerks, General	16
Power Plant Operators	14
Laborers and Freight, Stock, and Material Movers, Hand	12
Reservation and Transportation Ticket Agents and Travel Clerks	11
Maintenance and Repair Workers, General	10
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	9
Water and Wastewater Treatment Plant and System Operators	9
Education, Training, and Library Workers, All Other	8
Automotive and Watercraft Service Attendants	8
Bookkeeping, Accounting, and Auditing Clerks	7
Office and Administrative Support Workers, All Other	7
Chief Executives	5
Cooks, Institution and Cafeteria	5
Stock Clerks and Order Fillers	5

Data Source: DOLWD (2019b)

Local government is the single largest employer in Point Hope, providing about 61 percent of all jobs (Table 17). Trade, transportation, and utilities makes up 14 percent of jobs, followed by construction (10.6 percent) and professional and business services (5.0 percent). Point Hope is one of the more economically diverse communities in the borough in terms of employment industries.

Table 17. Workers by Industry, Point Hope, Percentage of Total, 2016

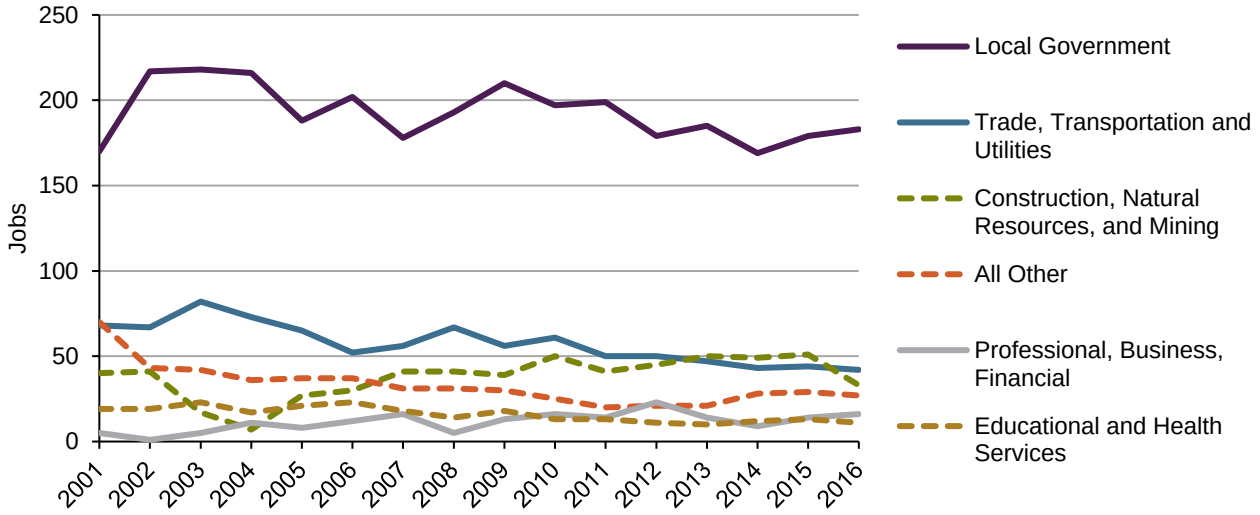
Industry	Count	Percent of Total
Local Government	183	60.8
Trade, Transportation, and Utilities	42	14.0
Construction	32	10.6
Professional and Business Services	15	5.0
Educational and Health Services	11	3.7
Leisure and Hospitality	8	2.7
Information	5	1.7
Manufacturing	2	0.7
Natural Resources and Mining	1	0.3
Financial Activities	1	0.3
State Government	1	0.3
Other	0	0.0
Total	301	100.0
Unemployed Individuals*		75

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 16 shows trends in employment in Point Hope over time and by industry. Local government is the single largest source of employment, providing 183 jobs in 2016, and appears to be declining slowly over time. Trade, transportation, and utilities is the second largest industry and has also seen gradual declines over time, however, employment in the construction and natural resources and mining industries was greater from 2013 to 2015. Employment in most other industries is small and has remained relatively constant over time.

Figure 16. Point Hope, Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.6 Wainwright Demographic Profile

Wainwright is a coastal city in the NSB, with 555 permanent residents in 2018 (Table 18). It is located on a thin peninsula that separates the Bering Sea from a large tidal lagoon (DCCED 2019a).

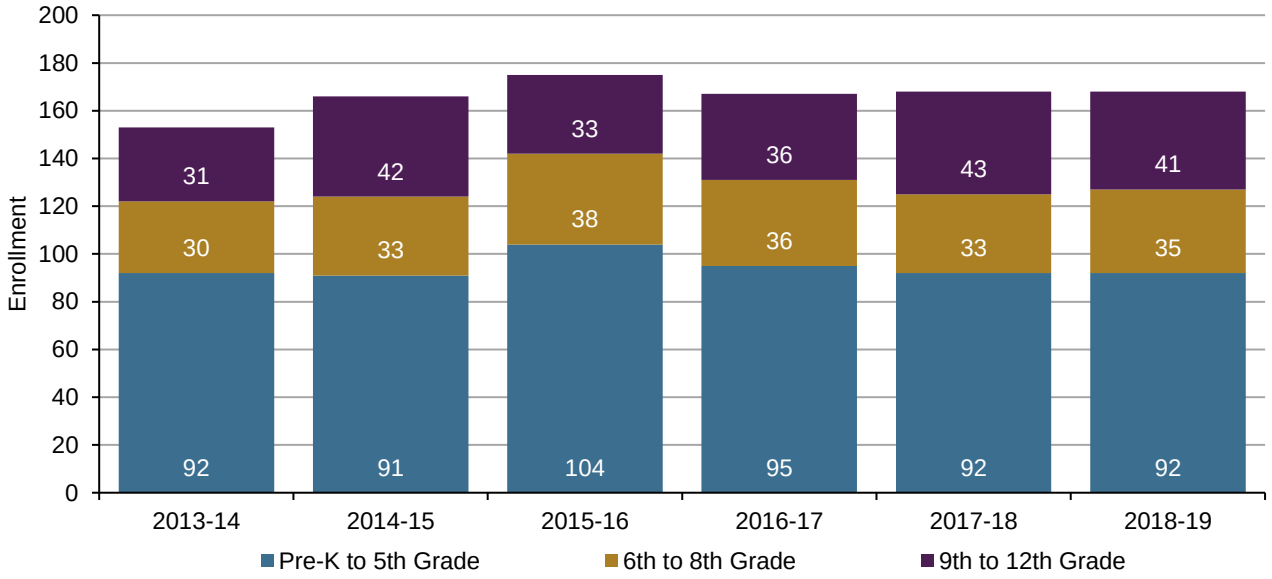
Table 18. Wainwright Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Wainwright	556	572	565	543	550	557	NA	557	555

Data Sources: NSBEP&CR (2016), NSB staff (2019)

Student enrollment at Alak School in Wainwright averaged 166 students over the last six years, with a total of 168 students in the 2018–19 school year. Over the last six years, student enrollment has increased by nearly 10 percent.

Figure 17. Wainwright Primary and Secondary Public-School Enrollment



Data Sources: NCES (2019), DEED (2019)

Table 19 shows the number of workers for the top occupations in Wainwright in 2016. Most workers are associated with janitorial and cleaner positions. Many other residents work in retail fields as stock clerks and cashiers or maintenance, construction, industrial and plant operations, and a variety of other sectors.

Table 19. Wainwright Top Occupations in 2016

Occupation	Number of Workers
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	23
Recreation Workers	11
Cashiers	11
Stock Clerks and Order Fillers	11
Maintenance and Repair Workers, General	11
Office Clerks, General	8
Power Plant Operators	8
Medical Assistants	7
Teacher Assistants	6
Personal Care Aides	6
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	6
Office and Administrative Support Workers, All Other	6
Construction Laborers	6
Gas Compressor and Gas Pumping Station Operators	6
Maids and Housekeeping Cleaners	5
Landscaping and Groundskeeping Workers	5
Bus Drivers, School or Special Client	5
Heavy and Tractor-Trailer Truck Drivers	5

Data Source: DOLWD (2019b)

Local government is the single largest employer in Wainwright, providing 67 percent of all jobs (Table 11). Professional and business services is the second largest industry of employment (11.4 percent), followed by trade, transportation, and utilities (6.8 percent), and construction (5 percent).

Table 20. Workers by Industry, Wainwright, Percentage of Total, 2016

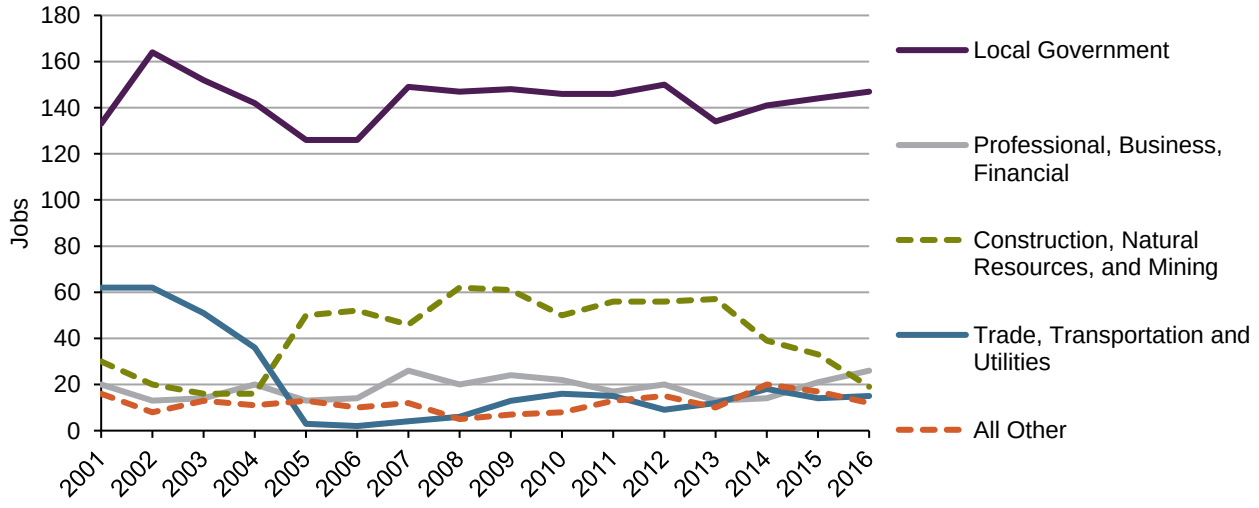
Industry	Count	Percent of Total
Local Government	147	67.1
Professional and Business Services	25	11.4
Trade, Transportation, and Utilities	15	6.8
Construction	12	5.5
Leisure and Hospitality	8	3.7
Natural Resources and Mining	7	3.2
Educational and Health Services	2	0.9
Information	1	0.5
Financial Activities	1	0.5
Other	1	0.5
Total	219	100.0
Unemployed Individuals*		

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 18 shows trends in employment in Wainwright over time and by industry. Local government is the single largest source of employment, providing 147 jobs in 2016, and has remained relatively constant over time. Historically, there have been as many as 62 workers in the construction and natural resources and mining industries. However, there were declines from 2013 to 2016 when professional, business, and financial services became the second largest source of employment at 26 workers. Most other sources of employment have remained relatively constant over time.

Figure 18. Wainwright Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.7 Kaktovik Demographic Profile

Kaktovik is a coastal city in the NSB, located to the east of Utqiaġvik and with 246 permanent residents in 2018 (Table 21). The community lies within ANWR near calving grounds for the porcupine caribou herd, which is an important source of food for Kaktovik residents (DCCED 2019a).

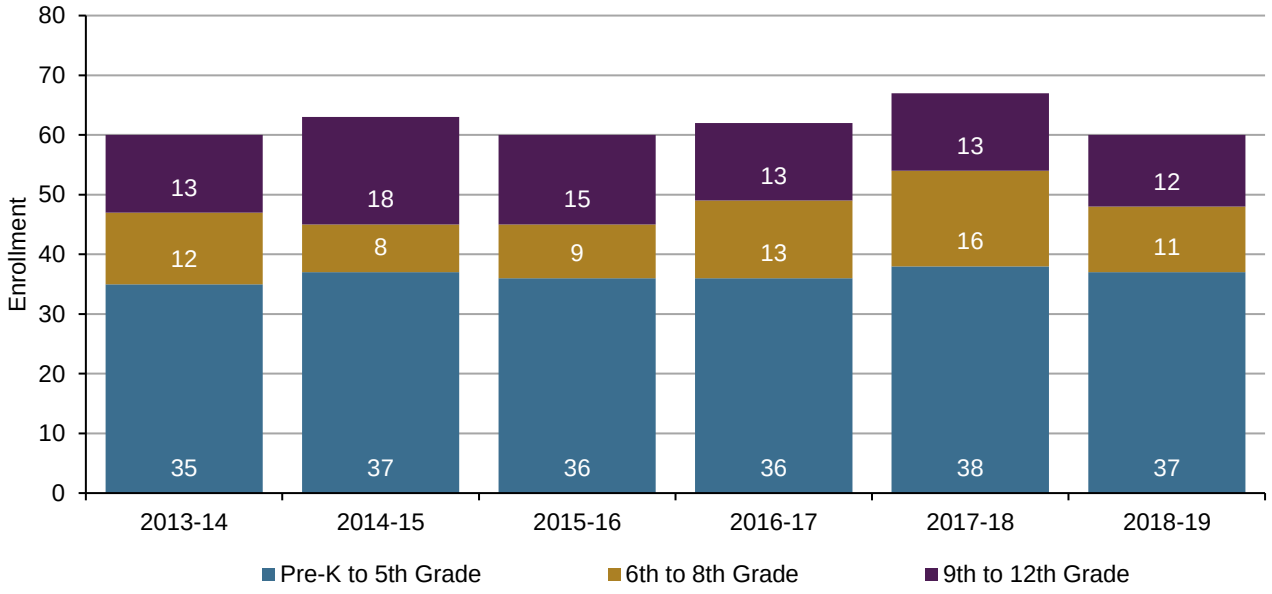
Table 21. Kaktovik Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kaktovik	239	247	245	262	262	262	NA	262	246

Data Sources: NSBEP&CR (2016), NSB staff (2019)

Student enrollment at Harold Kavelook School in Kaktovik has remained constant over the last six years, with no growth between the 2013–14 school year and the 2018–19 school year. The 2017–18 school year had the largest total student enrollment in the period, at 67 students, but elementary school enrollment remained at about the same level as prior years.

Figure 19. Kaktovik Primary and Secondary Public-School Enrollment



Data Sources: NCES (2019), DEED (2019)

Table 22 shows the number of workers for the top occupations in Kaktovik in 2016. Most Kaktovik workers are construction laborers, maintenance workers, plant operators, or truck drivers. There also jobs in administrative and executive roles, as well as teaching assistants.

Table 22. Kaktovik Top Occupations in 2016

Occupation	Number of Workers
Construction Laborers	13
Chief Executives	9
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	7
Maintenance and Repair Workers, General	7
Executive Secretaries and Executive Administrative Assistants	6
Power Plant Operators	6
Heavy and Tractor-Trailer Truck Drivers	6
Teacher Assistants	5

Data Source: DOLWD (2019b)

Local government is the single largest employer in Kaktovik, providing 67.2 percent of all jobs (Table 23). Construction is the second largest employment industry making up 12 percent of jobs, followed by financial activities with 10.4 percent.

Table 23. Workers by Industry, Kaktovik, Percentage of Total, 2016

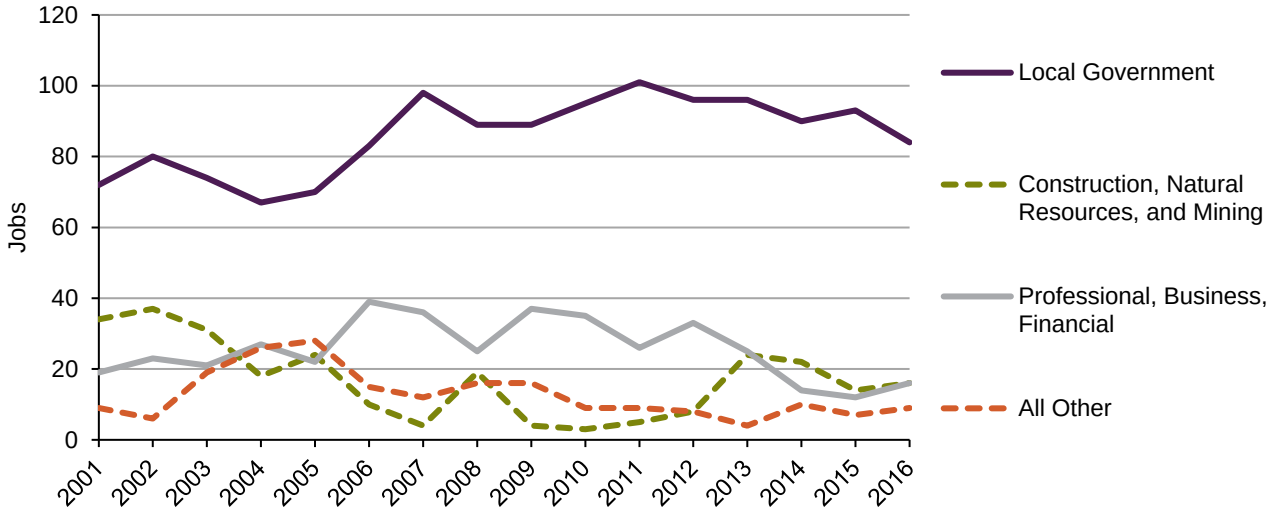
Industry	Count	Percent of Total
Local Government	84	67.2
Construction	15	12.0
Financial Activities	13	10.4
Leisure and Hospitality	4	3.2
Trade, Transportation, and Utilities	3	2.4
Professional and Business Services	3	2.4
Other	2	1.6
Natural Resources and Mining	1	0.8
Total	125	100.0
Unemployed Individuals*		

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 20 shows trends in employment in Kaktovik over time and by industry. Local government is the single largest source of employment, providing 84 jobs in 2016. The number of local government workers in Kaktovik saw a period of growth until 2011, but the number of workers decreased in every year since then, except for 2015. Kaktovik saw a period of strong employment in the professional, business, and financial industries from 2006 to 2012 but there were steep declines in 2013 and 2014. Employment in the construction and natural resources and mining industries has been sporadic, and included 16 workers in 2016.

Figure 20. Kaktovik Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.3.8 Point Lay Demographic Profile

Point Lay is a coastal community in the NSB, with 287 permanent residents in 2018 (Table 24). From 2010 to 2015, the community grew by 42 percent and the trend is expected to continue in the future. Point Lay is also one of the youngest NSB communities, having been settled in the 1930s. The area is subject to coastal erosion and the village has been relocated twice (NSBD 2019).

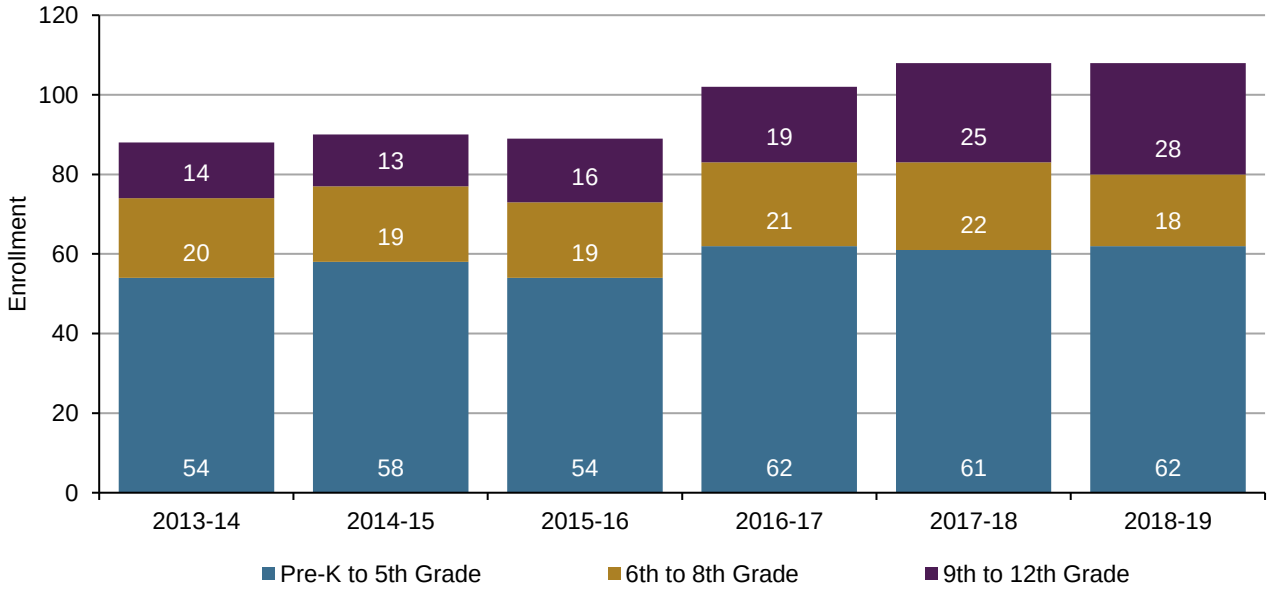
Table 24. Point Lay Commissioner Certified Population Estimates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Point Lay	189	196	196	215	242	269	NA	269	287

Data Sources: NSBEP&CR (2016), NSB staff (2019)

Student enrollment at Kali School in Point Lay saw two years of strong growth in the 2016–17 and 2017–18 school years reaching a total of 108 students, as shown in Figure 21. Over the last six years student enrollment has increased by nearly 23 percent, with increases in elementary student enrollment that could indicate continued growth in the future.

Figure 21. Point Lay Primary and Secondary Public-School Enrollment



Data Source: NCES (2019), DEED (2019)

Residents of Point Lay are primarily of Iñupiat descent, making up about 90 percent of the population (Table 25). Caucasian residents represent about seven percent of the population, and the remainder includes all other Alaska Native and other ethnicities.

Table 25. Point Lay Ethnic Profile, 2015

Ethnicity	Percentage (%)
Iñupiat	89.7
Caucasian	7.3
Other Ethnicities	3.0

Data Source: NSBEP&CR (2016)

Local government is the single largest employer in Point Lay, providing more 85 percent of all jobs (Table 26). While there are some jobs in construction and other industries, Point Lay is heavily dependent upon local government for employment opportunities.

Table 26. Workers by Industry, Point Lay, Percentage of Total, 2016

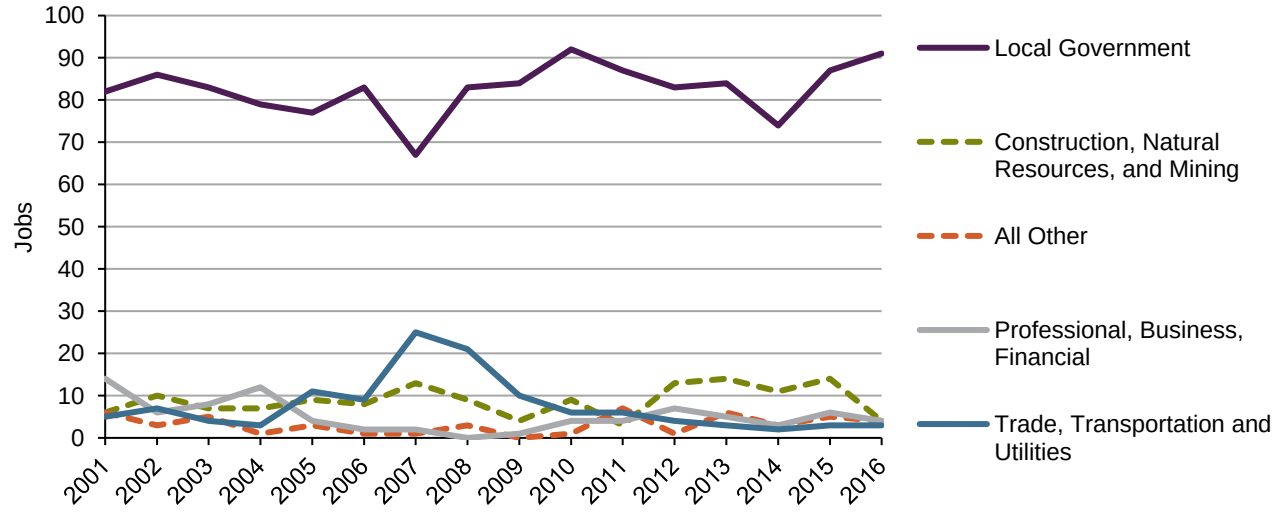
Industry	Count	Percent of Total
Local Government	91	85.8
Construction	4	3.8
Professional and Business Services	4	3.8
Trade, Transportation, and Utilities	3	2.8
Information	1	0.9
Educational and Health Services	1	0.9
Leisure and Hospitality	1	0.9
Other	1	0.9
Total	106	100.0
Unemployed Individuals*		22

*Note: Unemployment obtained from ACS 5-year estimates.

Data Sources: DOLWD (2019b), USCB (2017)

Figure 22 shows trends in employment in Point Lay over time and by industry. Local government is the single largest source of employment, providing 91 jobs in 2016. The construction and natural resources and mining industries have historically been the second largest source of employment, with as many as 14 workers in 2013 and 2015. However, employment in most industries decreased in 2016—there were only 15 workers reported in industries outside of local government.

Figure 22. Point Lay Workers by Industry, 2001–2016



Data Source: DOLWD (2019b)

2.4 Workforce Trends and Forecast

Table 27 summarizes current trends in NSB occupational groups and also provides a forecast trend. At present, only two occupational groups exhibit growth in employment in the NSB: office and administrative workers and production workers, which includes power plant and water/wastewater treatment operators and welders. Employment in both of these groups is linked to jobs supported by

burough and city governments, which provide more than 50 percent of jobs in each of the NSB communities. Labor demand for plant operators will likely continue to grow with the demand for improved power generation systems and water treatment, but the number of office and administrative positions will likely level off over time.

The number of building, ground cleaning, and maintenance workers has remained constant in recent years, but the data show that many workers are reaching retirement age and demand for new workers will likely increase in the future. The data also show that elementary school enrollment is increasing in several NSB communities, which will increase the number of teachers needed in the borough. Decreases in sales and retail are likely due to competition from online retailers like Amazon, which offer increasingly competitive pricing; job losses will likely continue in this sector.

Current declines in skilled labor fields such as transportation and material moving, construction and extraction, and installation, maintenance, and repair work are likely linked to a lack of funding for construction projects. However, expected increases in NPR-A mitigation funding, discussed later in this plan (see Section 4.0), will likely increase the demand for labor in the future.

Table 27. ASTAR Region Workforce Forecast

Major Occupational Groups	Current Trend (Number of Workers)	Forecast Trend (Number of Workers)
Office and Administrative	⇧	⇔
Education, Training, and Library	⇩	⇧
Building and Ground Cleaning and Maintenance	⇔	⇧
Management	⇔	⇔
Transportation and Material Moving	⇩	⇧
Construction and Extraction	⇩	⇧
Production	⇧	⇧
Installation, Maintenance, and Repair	⇩	⇧
Personal Care and Service	⇔	⇔
Sales and Related	⇩	⇩

⇧ = growing ⇩ = declining ⇔ = no change

3.0 ASTAR Project Identification

One of ASTAR's objectives is to compile and evaluate infrastructure projects to identify those that offer the greatest benefit to NSB communities. The projects identified are organized in a series of Project Library binders, one for each community plus one binder for regional projects, which provide titles and descriptions for each project. The projects were identified from stakeholder meetings, comprehensive plans, and other organizations to reflect a broad picture of potential future development in the NSB. Table 28 shows how many projects were identified for each geography and assigns each to one of four main categories: road construction, utilities construction, building construction, and other civil construction. Projects that do not fit into these groupings, such as studies and planning documents or capital purchases, are assigned to a fifth category, "Miscellaneous Other".

Table 28. ASTAR Project Library Counts by Geography and Type

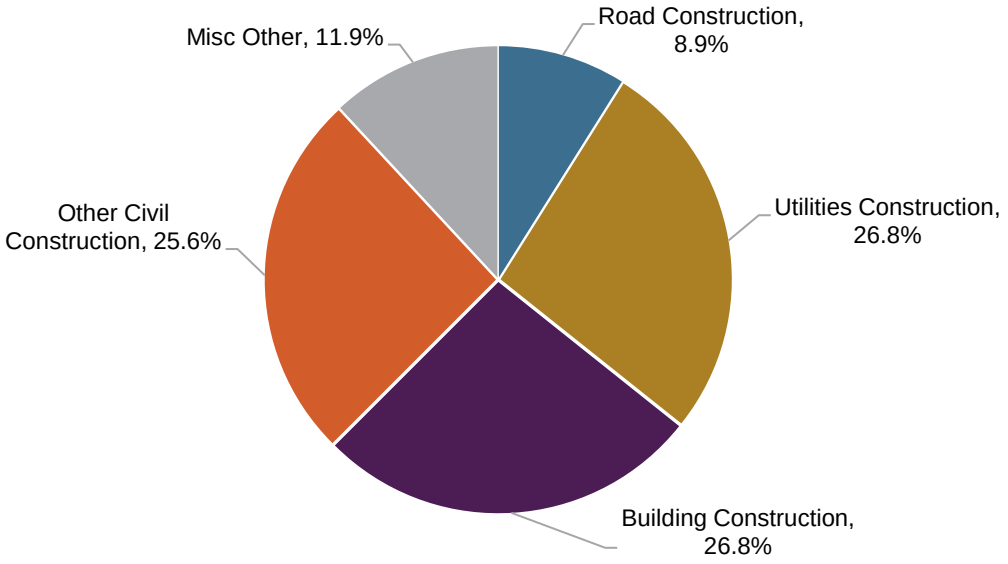
Category	Regional	Anaktuvuk Pass	Wainwright	Kaktovik	Point Lay	Point Hope	Utqiaġvik	Atqasuk	Total
Road Construction	6	0	3	1	2	1	2	0	15
Utilities Construction	3	6	5	6	9	6	3	7	45
Building Construction	0	4	4	2	16	7	8	4	45
Other Civil Construction	3	5	6	5	8	8	5	3	43
Miscellaneous Other	3	1	1	4	10	1	0	0	20
Total	**15**	**16**	**19**	**18**	**45**	**23**	**18**	**14**	**168**

Data Sources: Alaska Department of Natural Resources (2019)

Figure 23 shows the distribution of ASTAR library projects across the five categories. The ASTAR project inventory has been compiled from a range of sources and is a good indicator of future demand for labor in the NSB. Utilities and building construction each make up nearly 27 percent of the total project inventory, or 54 percent combined. Construction projects in these categories will require workers with vocational education and training. Carpenters, electricians, plumbers, general laborers and contractors would all be in high demand if communities were to pursue building new multi-purpose community centers, addressing housing shortages, or relocating and renovating other community buildings. Similarly, utility upgrades and installations would require heavy equipment operators, commercial truck drivers, welders, engineers, and field supervisors.

Other civil construction projects, like airport improvements, snow fence construction, erosion revetment, or boat ramp construction also make up more than one quarter of the total ASTAR inventory. Many of these unclassified construction projects will likely require general labor or heavy equipment operators. For example, snow fence construction and the Community Winter Access Trails (CWAT) would be implemented with local resources and labor. But it is likely that highly specialized projects like dredging or sheet-pile erosion protection will require equipment and labor be imported to the NSB, probably through a skilled contractor. These projects will contribute to economic growth in the borough, but to a lesser degree than other types of construction. There is an established need for civil infrastructure in each NSB community, in addition to regional projects, that provides a strong basis for identifying priority occupations of focus for future workforce development.

Figure 23. ASTAR Project Library Composition



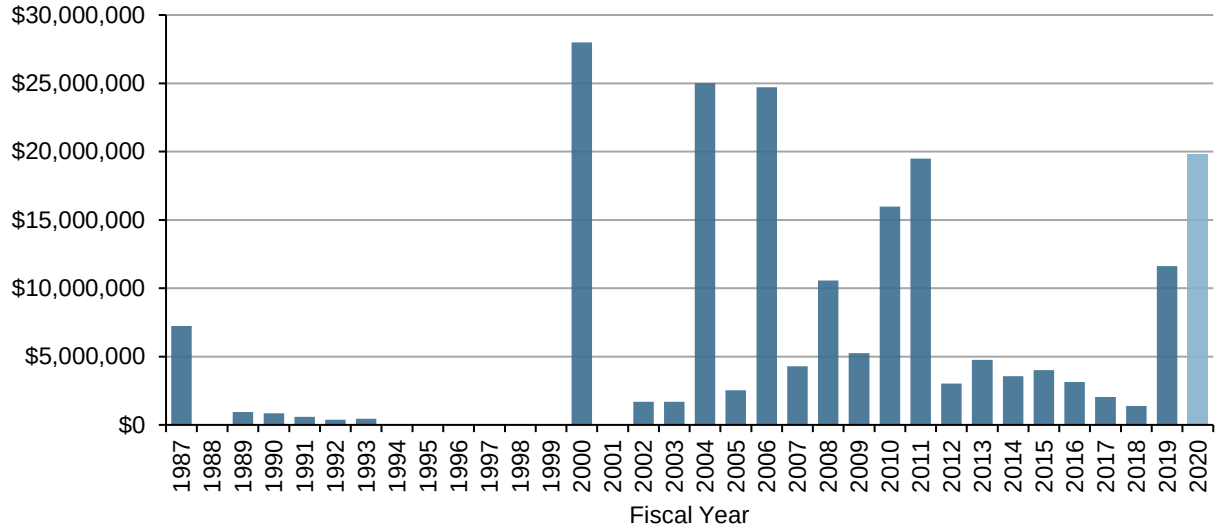
Data Source: DCCED (2019c)

4.0 ASTAR Regional Workforce Needs Assessment

4.1 Economic Development and NPR-A Mitigation Funding

Some of the projects identified in the ASTAR libraries were sourced from the NPR-A Impact Grant Program. This program, authorized in 1980, requires that 50 percent of the revenues earned from leases issued for oil and gas development in the NPR-A be used to the benefit of Alaskans most directly impacted by the developments (DCCED 2019). Although the first lease sales were in the early 1980s, NPR-A revenues were insignificant until a major discovery of the Alpine fields in 1994. A subsequent lease sale in 1999 generated $28 million in revenue for the NPR-A mitigation fund, as shown in Figure 24. Funding for the program has varied dramatically from year to year because it is derived from a combination of lease sales, rentals, bonuses, and royalties.

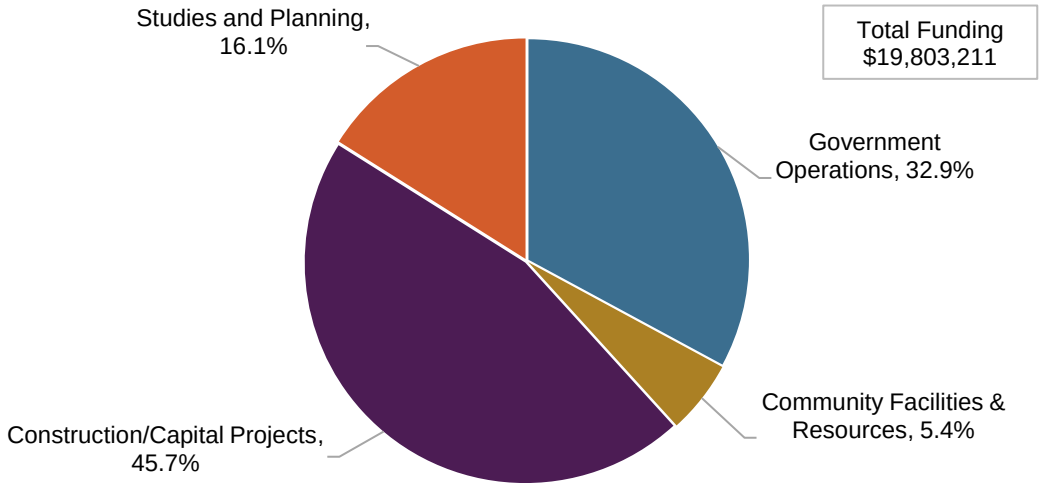
Figure 24. Historic NPR-A Funding Since Inception, with FY 2020 Recommended Allocation



Data Source: DCCED (2019)

Over time, NPR-A funds have been distributed to either the NSB or individual communities including Atqasuk, Utqiaġvik, Nuiqsut, Wainwright, and more recently Anaktuvuk Pass. The awards are used for a wide variety of purposes; historically, as much as 84 percent has been used for capital and construction projects. However, the majority is typically put toward funding the maintenance and operations of governments (both borough and city) and public resources like community centers, school programs, counselors, and recreational facilities. Figure 25 shows the proposed allocation of NPR-A funds for FY 2020, from a total of $19.8 million. Over $9 million of the recommended funding is slated for construction and capital projects including a new playground in Nuiqsut, a new heating system for an administrative building in Utqiaġvik, and continued funding of the CWAT program.

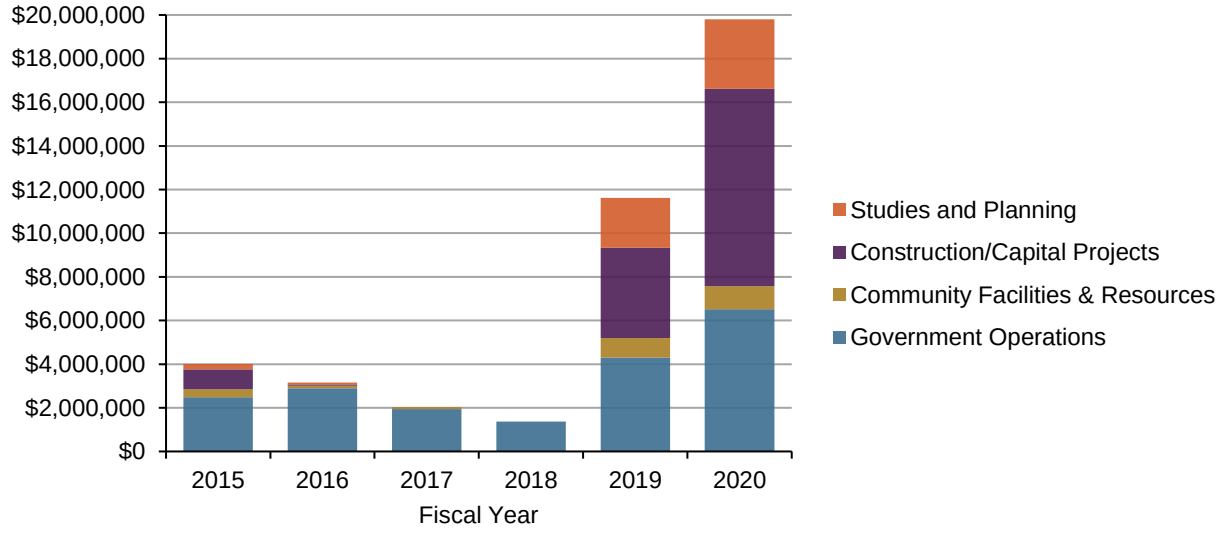
Figure 25. Distribution of Recommended NPR-A Funds in FY 2020



Data Source: DCCED (2019)

Figure 26 shows the historic distribution of NPR-A funds over the last five years, as well as the FY 2020 recommendation. The figure clearly demonstrates that government operations receive priority allocation, especially during years with lower funding amounts. As the amount of available funding grows, so does the share that is allocated toward construction projects, capital purchases, environmental studies, and planning documents. Until recently, the oil and gas activity in the NPR-A has been mostly exploratory and pre-development, but as of October 2018, ConocoPhillips began producing oil at its Greater Mooses Tooth-1 project. Peak production was estimated at 30,000 barrels per day, which would generate more than $1 billion in revenues over the project life (BLM 2014).

Figure 26. Historic Distribution of NPR-A Funds and FY 2020 Recommendation

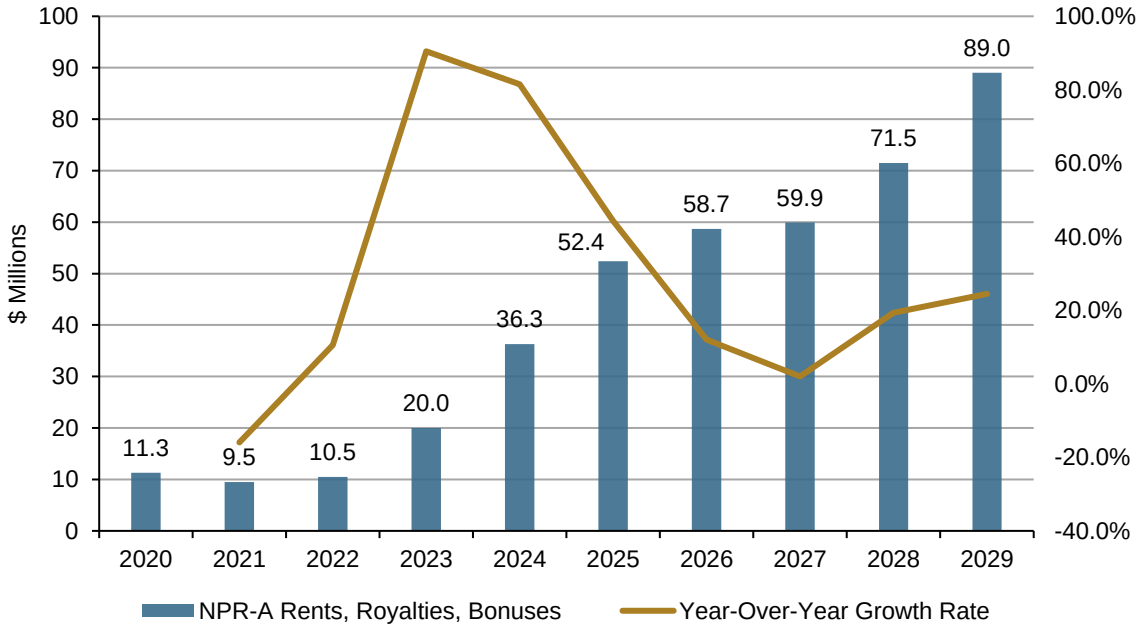


Data Source: DCCED (2019)

4.2 Project Labor Needs

The State of Alaska is entitled to 50 percent of NPR-A revenues which, in the past, have been distributed to the NSB and its cities. It is reasonable to assume that as oil production increases, a larger share of NPR-A funds will be distributed towards capital and construction projects. This in turn will have the potential to drive economic growth and create demand for skilled labor. Each year the Alaska Department of Revenue (DOR) constructs forecasts of rents, royalties, and bonuses collected from oil and gas producers operating in the NPR-A (see Figure 29). Production-based royalties will increase over time as projects like ConocoPhillips' Greater Mooses Tooth-1 approach peak production. Initially, revenues are expected to decrease from 2020 to 2021, but DOR's forecast shows growth in the state's 50 percent share of NPR-A revenue from 2022 through the end of the forecast in 2029, when revenue is estimated at $89 million. The year-over year rate of growth reaches more than 90 percent when revenue is expected to nearly double between 2023 and 2024.

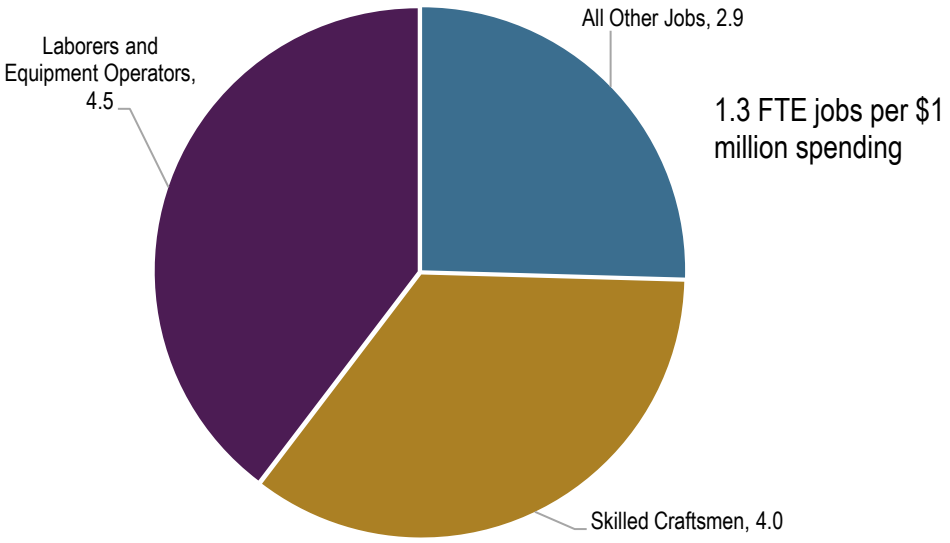
Figure 27. NPR-A Rents, Royalties, and Bonuses State of Alaska Revenue Share Forecast



Data Source: DOR (2019)

This analysis assumes that construction projects in the NSB require, on average, 1.3 full time equivalent (FTE) workers per million dollars of spending. This assumption is based on estimates from prior planning analyses in the NSB, and is used to estimate the number of jobs that will likely be created given the high rate of NPR-A revenue growth forecasted by DOR. Of the construction industry jobs created, about 40 percent will be represent laborers and equipment operators (including drivers), 35 percent will be skilled craftsmen like electricians, carpenters, and plumbers, and the remaining 25 percent represent administrative and other types of workers. For a detailed discussion of priority occupations for the NSB, refer to Chapter 6.0.

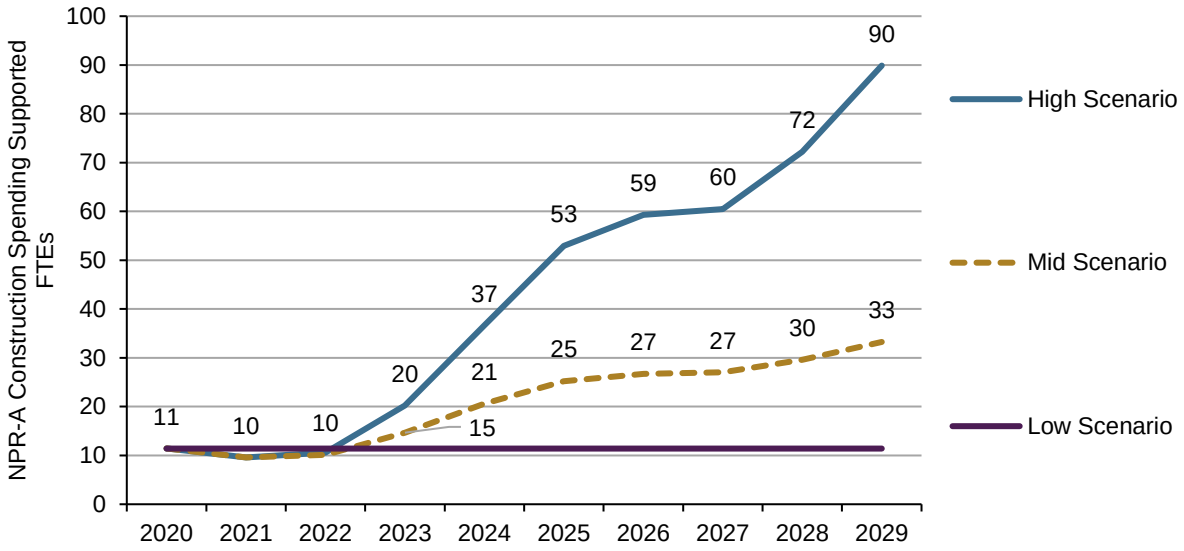
Figure 28. NPR-A Construction Spending Assumed Job Output



Note: Job output estimates derived from prior NSB construction projects

Using an assumed output of 1.3 jobs per million dollars of construction spending, the proposed 2020 NPR-A budget would generate a total of 11.4 construction industry jobs. Figure 27 shows three labor demand projections scenarios which share a common starting point in 2020 but diverge to reflect uncertainty the future collection of NPR-A revenues. The low scenario assumes that allocated construction spending in 2020 (about $9 million) remains constant and continues over the next 10 years, continuously supporting 11.4 FTE jobs. The mid and high scenarios reflect growth in oil production, and therefore revenues, using DOR's forecast. The high scenario uses the year-over-year rate of forecasted growth in revenue collection (shown in Figure 27) to escalate construction spending in each year, starting with the $9 million 2020 allocation. The mid scenario is similar but applies only half the rate of growth predicted by DOR and therefore represents an intermediate estimate of future labor demand in the construction industry. The high scenario projects demand for about 90 FTE workers by 2029, while the mid scenario projects demand of more than 33 workers.

Figure 29. NSB Construction Industry Labor Demand Projection



The actual demand for workers in different occupations will vary depending on the type of construction project and time of year. Estimates in this analysis are based on calculations of man-hours converted to FTE jobs. Construction projects are more likely to take place during the summer, so employers will probably want to hire more individuals to work only during the construction season. Averaged over the course of the year, these seasonal jobs are modeled as FTE jobs. The following sections describe the different types of construction projects identified within the ASTAR project libraries and discuss which occupations will be most important to meet labor demand.

4.2.1 Road Construction Projects

There are 15 road construction projects included in the ASTAR project libraries, and five of them are regional projects that would connect isolated NSB cities. The CWAT program has demonstrated a demand for overland transportation options in the borough, but permanent roads would be major construction projects likely occurring over multiple years. Construction of new roads requires planning, engineering and design, resource development, earthwork, and excavation. Pre-development activities like environmental studies and route design would likely be contracted to specialized firms outside of the borough, but construction activities would generate substantial demand for laborers, truck drivers, and heavy equipment operators.

One major constraint to the construction of new roads in the NSB is a lack of developed aggregate sources. The ASTAR libraries include projects to identify and develop gravel sources for the communities of Anaktuvuk Pass, Wainwright, and Point Hope. The only alternative to locally sourced gravel for coastal communities is to haul it by barge in the summer, which is costly and inefficient since barges are often lightered in multiple trips to allow for unloading on the shallow Bering Sea coast. Developing gravel sources would require heavy equipment operators to excavate and load the materials to trucks. Commercial truck drivers would be needed to transport the material to stockpiles or the jobsite, and supervisors would be needed to oversee both aggregate production and road construction. Aggregate

quarries and gravel pits are considered mines and are therefore subject to regulation through the Mine Safety and Health Administration (MSHA). This means that workers will need to meet the safety certifications of MSHA rather than what would typically be required from the Occupational Safety and Health Administration. At this time there are no MSHA training courses offered in the borough, so major development of gravel quarries would require employers to coordinate training opportunities with training providers and state administration.

4.2.2 Utility Repairs and Upgrades

The ASTAR libraries for each of the communities included projects identifying the need for various new public utilities, as well as repairs and upgrades to existing systems. These projects include power generation system upgrades, sewer system major repairs, new street lighting infrastructure, water system upgrades, wastewater treatment facilities, and other work related to buried utilities and overhead transmission lines. Major regional projects include the in-state natural gas pipeline project, as well as potential spur connections to Anaktuvuk Pass and Kaktovik to provide affordable energy.

Each of these utility-based projects would require skilled vocational workers, including electricians, plumbers, welders, carpenters, water and wastewater system operators, and heavy equipment operators.

4.2.3 Community Buildings and Infrastructure

There are 45 projects in the ASTAR libraries that would require construction of either residential or commercial buildings. Many administrative organizations like local governments, public utilities, local wildlife departments, school districts, and many other groups do not have a dedicated facility and are spread out throughout the buildings in a community. Many of the identified projects seek to provide new or renovated facilities to allow for centralized operation of important public facilities. There are also projects identifying the need for community centers or multi-purpose buildings, and washeterias to help alleviate the housing shortage observed in many villages. New residential construction might also contribute to the need for skilled labor in the NSB. In 2018, an estimated 27 percent of homes in the NSB were overcrowded or severely overcrowded and historic construction rates will not keep up with projected growth in population (AFHC 2018). The construction of buildings would drive demand for various occupations including electricians, HVAC technicians, carpenters, licensed general contractors, roofers, and general laborers.

There are also some outdoor recreational facility projects, like trails and baseball fields, that would require minor earthwork to complete. These projects, along with expansion to snow fencing and continued funding of the CWAT program, would likely create seasonal opportunities for employment in heavy equipment operating and general labor positions.

Various resources identified the need for airport facility construction in six of the NSB communities (all except Utqiaġvik). The scope and magnitude of these projects varies dramatically, from a complete relocation in Kaktovik to lighting/power upgrades and passenger facilities construction in Anaktuvuk Pass. Work that requires runway relocation or resurfacing will certainly require heavy equipment operators and other workers, but the occupational requirements for each airport project will vary with the scope of work.

4.2.4 Marine Infrastructure

There are several marine infrastructure projects that have been identified by ASTAR, the largest of which would be a regional port facility to allow the borough to efficiently receive barges and larger vessels at a permanent facility. In most coastal communities, barges are lightered from offshore with smaller vessels to unload critical supplies like fuel, equipment, and building materials. Although the location of the regional port has not been identified, it is likely that it would be built in a strategic location to allow multiple communities to receive its benefits. Depending on the exact location, the port may also drive the need for additional road connections and other transportation infrastructure. Wainwright, Point Lay, and Point Hope each have suggested plans for constructing either boat docks or ramps that would allow residents to more easily and reliably use their boats. These communities rely on marine resources like whales for food, which has been an important element of their culture for centuries. Enhanced marine transportation infrastructure could also help to connect the often-isolated communities of the NSB.

Another issue of growing importance for coastal communities is coastal erosion mitigation and protection. ASTAR identified projects to construct sheet pile or armor rock seawalls for Utqiaġvik, Point Hope, and Wainwright. These measures would serve to protect existing infrastructure like homes, landfills, roads, and utility systems from storm surges and flooding. These projects, like road construction projects, would require the development of aggregate resources, especially if the projects are based on placing armor rock.

4.2.5 Telecommunications

A subsea fiber optic line, constructed by Quintillion, provides telecommunications opportunities to several NSB communities and to the oil and gas industry (Figure 30). The new infrastructure has dramatically increased internet speeds and bandwidth for companies and residents in the borough. Quintillion acts as a wholesaler, selling capacity to local service providers like GCI, who then provide internet access to residents (KUAC 2016). The subsea line was costly to construct and is part of a multi-phase project that could ultimately connect Asia to Alaska and Europe. In September 2019, Quintillion partnered with a consulting firm, APTelecom, to begin pre-selling data service on the planned transpacific fiber line—a strong indication that companies will continue to invest in telecommunications infrastructure in northern Alaska (Quintillion 2019). Additionally, there are plans for a ground-based station in Utqiaġvik, that will communicate between fiber networks and satellites. The station will become part of ATLAS Space Operations' FREEDOM network, which provides data communications access for commercial clients and the government. The Arctic is a strategic location for developing ground-based sites because many satellites pass over the polar regions during their orbit.

Figure 30. Alaska Communities Connected to Quintillion Fiber Optic Transmission Line

Source: Quintillion, 2019

As an additional benefit, spur lines were constructed from Quintillion's arctic sub-sea line for Point Hope, Wainwright, and Utqiaġvik. Improved telecommunications in the NSB could contribute to economic growth in the region by providing additional opportunities to residents. For example, educational institutions in Alaska and throughout the world now offer courses on the internet. Students can participate in real time via webcam, submit assignments online, and work collaboratively with their peers via email and web-based thread discussions. Over time, human capital in the NSB could improve through education and access to other online resources like the Alaska Staff Development Network, providing opportunities for teacher recertification and professional development.

4.3 Workforce Development Resources

4.3.1 Educational Institutions

Iḷisaġvik College, incorporated in 1995 and accredited in 2003, is Alaska's only tribal college and provides educational opportunities to NSB residents. Figure 31 shows enrollment of village students at the college, which ranged from 231 to 432 from 2012 to 2018. There are currently 57 degree-seeking village students, and the college also offers adult education services and technical and career oriented training programs.

Figure 31. Iḷisaġvik College Village Student Enrollment in Utqiaġvik

Northern Economics has requested enrollment data from the college through communication managed by ASRC Energy Services Alaska, Inc. If the college provides this data, it will be included here.

Sources: Iḷisaġvik College, 2016, 2017, 2018.

In addition to traditional associate and bachelor's degrees, Iḷisaġvik College has programs for NSB residents to gain professional certificates and endorsements, as shown in Table 29.

Table 29. Occupational Education Iḷisaġvik Program Offerings

Program	Offerings
Adult Education	Open Enrollment
Commercial Driver Training	CDL Endorsement
Heavy Equipment Operation	Endorsement
Construction Laborer Training	Certificates, Endorsements and Apprenticeship Opportunities
Emergency Services	Fire science and medical
Accounting	Certificate or Associate
Allied Healthcare and Dental Therapy	Certificate or Associate
Behavioral Health	Certificate, Associate, Bachelor's
Business Management	Certificate, Associate, Bachelor's
Iñupiaq Studies and Indigenous Education	Certificate or Associate
Information Tech	Endorsement, Certificate, or Associate
Industrial Safety	Endorsement
Office Management	Certificate or Associate

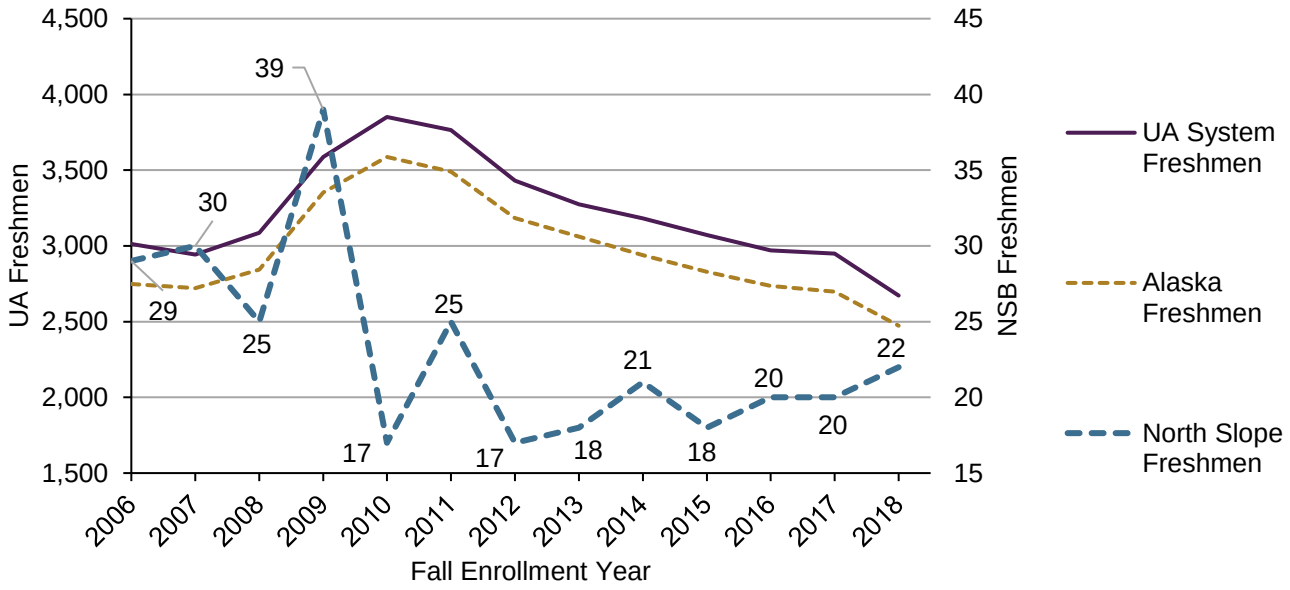
Source: Iḷisaġvik College, 2019.

The Yuut Elitnaurviat (People's Learning Center) has several educational programs potentially available to residents of the NSB, including free adult education, commercial driver training, construction laborer training, aviation maintenance, and an Alaska State Trooper sponsored public safety academy (Yuut Elitnaurviat, 2019.). Although the facility is located in Bethel, there could be cultural appeal for NSB residents looking to receive an education at a rural institution.

Another resource available to NSB residents is the University of Alaska system (UA), which has three primary campuses (Anchorage, Fairbanks, and Southeast) available to students. In addition, the university continues to expand its use of distance learning with online classes for a variety of associates, bachelor's, certificate, and masters degree programs. There are also two early outreach programs to encourage middle and high school students from rural alaska to pursue college degrees. Both the Rural Alaska Honors Institute (RAHI) and Geoforce Alaska program have participants from the NSB. RAHI is a competitive program targeting rural Alaska high school students who are interested in college, providing them an opportunity to experience life at college during a six-week course at UAF. There is no cost to students, who receive free transportation to UAF, room and board, and tuition while earning 8–10 college credits. To date, more than 1,700 students have participated. Geoforce Alaska is a program that provides 8th and 9th grade students from the NSB and Northwest Arctic Borough an opportunity to explore geoscience over the course of four summer sessions. Students travel to field sites in Alaska as well as the lower 48 states, learning the fundamentals of geology and other Science, Technology, Engineering and Math (STEM) disciplines. Geoforce Alaska is also free to students who are accepted, and students in the program have demonstrated a 67 percent rate of college matriculation. Both programs encourage students in the NSB to pursue post-secondary education, and expose them to life skills needed to join the workforce.

Figure 32 compares trends in UA freshman enrollment with the enrollment of Alaska residents, as well as enrollment of freshmen coming from the NSB (plotted on the right axis for emphasis). Systemwide enrollment increased from 2006–2010 when it reached a maximum, then declined to all time lows in 2018. In 2010, UA enrollment of NSB freshmen declined from a maximum of 39 students (in 2009) to a low of 17 students. The number of incoming NSB freshmen varies from year to year but shows indications of growth, reaching 20 students in 2016 and 2017, and 22 students in 2018.

Figure 32. University of Alaska System First-Time Freshman Enrollment



Sources: University of Alaska, 2019; Murphy, 2019.

There are technical college programs at both the Anchorage and Fairbanks UA campuses. The offerings range from automotive and aviation maintenance to leadership programs, along with several other vocational programs as shown in Table 30. These programs represent a mixture of one-year certificate courses, two-year associate degrees, and four-year bachelor's degree programs.

Table 30. University of Alaska Technical College Program Offerings

Program	College	Offerings
Air Traffic Control	UAA	Minor in Air Traffic Control; A.A.S. in Air Traffic Control
Applied Technologies Leadership	UAA	B.S. in Applied Technologies Leadership
Architectural & Engineering Technology	UAA	A.A.S. in Architectural & Engineering Technology
Aviation Administration	UAA	B.S. in Aviation Technology; Minor in Aviation Administration; A.A.S. in Aviation Administration
Computer Networking & Technology	UAA	A.A.S. in Computer Networking & Technology; O.E. Certificate in Cisco-Certified Network Associate
Hospitality Administration	UAA	Bachelor of Arts in Hospitality Administration
Apprenticeship Technologies	UAA/UAF	A.A.S. in Apprenticeship Technologies
Automotive Technology	UAA/UAF	A.A.S. in Automotive Technology; U.C. in Automotive Technology
Aviation Maintenance	UAA/UAF	A.A.S. in Aviation Maintenance; U.C. in Aviation Administration

Program	College	Offerings
Construction Management	UAA/UAF	B.S. in Construction Management; A.A.S. in Construction Management
Culinary Arts	UAA/UAF	A.A.S. in Culinary Arts; A.A.S. in Culinary Arts and Hospitality; Baking and Pastry Arts Certificate; Culinary Arts Certificate
Diesel Power Technology	UAA/UAF	A.A.S. in Diesel Power Technology; U.C. in Diesel Power Technology
Occupational Safety and Health	UAA/UAF	B.S. in Occupational Safety and Health; A.A.S. in Occupational Safety and Health
Professional Piloting	UAA/UAF	B.S. in Professional Piloting; A.A.S. in Professional Piloting
Welding & Nondestructive Testing	UAA/UAF	A.A.S. in Welding & Nondestructive Testing; Welding O.E. Certificate; Nondestructive Testing O.E. Certificate; Advanced Welding O.E. Certificate in
Applied Accounting	UAF	Minor of Applied Accounting; A.A.S. in Accounting; Accounting Technician Certification; Bookkeeping Technician of O.E.
Applied Business	UAF	Minor of General Business; Minor of Recreation and Guiding Management; A.A.S. in Business; Applied Business Management Certificate; Administrative Assistant of O.E.; Supervision and Personnel Management of O.E.
Dental Assistant	UAF	A.A.S. in Dental Assistance; Dental Assistance Certificate Program
Drafting/Design Technology	UAF	A.A.S. in Drafting Technology; Drafting Technology Certificate Program
Early Childhood Education	UAF	Minor in Early Childhood Education; A.A.S. in Childhood Education; Early Childhood Education Certificate
Fire Science	UAF	A.A.S. in Fire Science; Summer Firefighter Academy; Minor in Fire Science with IFSAC/Proboard Firefighter Certification and EMT Certification
Human Services	UAF	Minor in Human Services; A.A.S. in Addictions Counseling, Behavioral Health, or Interdisciplinary Degree; Dependency Counselor Certificate Training Programs
Information Technology	UAF	Minor in Computer Information Technology; A.A.S. in Computing Technology, Network and Cybersecurity, or Network and Systems Administration; Information Technology Specialist Certificate
Law Enforcement	UAF	Law Enforcement Academy O.E.
Medical Assistant	UAF	A.A.S. in Medical Assisting; Medical Assistant Certificate
Medical Reimbursement	UAF	Health Care Reimbursement Certificate; Medical Billing O.E.; Medical Coding O.E.
Medical/Dental Reception	UAF	Medical/Dental Reception Certificate; Medical Reception O.E.
Nurse Aide/Nursing	UAF	B.S. in Nursing; Nurse Aid O.E.; Pre-Nursing Qualifications Certificate
Paralegal Studies	UAF	Minor in Paralegal Studies; A.A.S. in Paralegal Studies
Paramedicine	UAF	Minor in Arctic Skills; State of Alaska EMT I Certificate; A.A.S. in Paramedicine
Radiologic Technology/ Phlebotomy	UAF	A.A.S. in Radiologic Technology; Phlebotomy Certification Preparatory Program

Bachelor of Science (B.S.) Associate of Applied Science (A.A.S); Occupational Endorsement (O.E.); Undergraduate Certificate (U.C.)

Source: UAA Community and Technical College, 2019; UAF Community and Technical College, 2019.

4.3.2 Vocational Training Programs

There are numerous vocational programs available in Southcentral Alaska, including those provided by state agencies, labor unions, and private companies. To be eligible for some training programs listed

below an applicant must have a GED (General Educational Development) or high school diploma. It is also important to note that certificates from the state as well as specialized training are needed to practice in certain skilled trades.

Alaska Training Clearinghouse

http://live.laborstats.alaska.gov/atc/index.cfm

Summary or Purpose: Alaska Training Clearinghouse is an online tool for exploring postsecondary training available in Alaska. The information can be approached from three directions: by training provider; training program (by program name, training provider and education category; each of which can be filtered by borough/census area); and occupations with related training programs.

NSB Resources and general job-finding

Employment Training Program

https://www.governmentjobs.com/jobs/537030-0/etp-employment-training-program

Contact: NSB Department of Human Resources, Utqiaġvik, AK

Summary or Purpose: The policy of the Employment Training Program is to provide jobs that might not otherwise be available to residents with the need to acquire skills and to support a variety of agencies, programs, and departments within the community. Positions are temporary, with an average 10-week duration.

North Slope Training and Education Consortium (Iḷisaġvik)

http://labor.alaska.gov/awib/forms/RTC_Inventory_Booklet.pdf

Contact: Iḷisaġvik College, Workforce Development, Utqiaġvik, AK

Summary or Purpose: The Arctic Training Cooperative-Savaat Center and Iḷisaġvik College collaborate with other North Slope agencies and businesses in assessing their human resource and training needs so that they can provide industry appropriate short and long-term courses. They also recruit and train new students and unemployed/underemployed residents who, after training, will be able to apply for positions in these same organizations. By working in partnership with these entities, they can synchronize comparable trainings in order to maximize funds.

Alaska Works Partnership

https://www.alaskaworks.org/

Contact: Alaska Works Partnership Fairbanks Office/Training Center, Fairbanks, AK

Summary or Purpose: Alaska Works Partnership was created by Alaska's Building and Construction Trade and their apprenticeship training trusts to give Alaskans access to jobs and careers in the construction industry. Programs offered by the Alaska Works Partnership include the following:

- Rural Apprenticeship Outreach provides rural community members with information on apprenticeship application deadlines, construction training opportunities, and provides educational apprenticeship information.

- Alaska Construction Academy offers courses to learn basic construction occupation skills.

- Helmets to Hardhats connects active duty military, veterans, National Guard and reservists to trade apprentice opportunities and targeted training to join the construction workforce.

- Women in the Trades focuses on providing unique outreach and training events to inform girls and women about construction work, apprentice opportunities, and provides pre-apprentice courses for exploring a trade.

- Building Maintenance courses offer basic skills training in several occupations that prepare students by teaching a variety of skills required for maintaining community buildings and homes.

Fairbanks Pipeline Training Center

http://www.fptcalaska.com/

Contact: Fairbanks Pipeline Training Center, Fairbanks, AK

Summary or Purpose: The focus of the Fairbanks Pipeline Training Center is on providing training opportunities for Alaskans to enter into registered construction apprenticeship programs for careers in the oil and gas and construction industries. The center offers training programs structured to meet market demands in all sectors of the Alaska's oil and gas industry, including the construction, operation and maintenance of mainline pipelines, gathering lines, pump stations, flow stations, gathering stations, compressor stations, and other oil and gas facilities.

Alaska Vocational Technical Center (AVTEC)

https://avtec.edu/avtec

Contact: Alaska Vocational Technical Center, Seward, AK

Summary or Purpose: AVTEC's primary goal is to train a diverse and effective workforce that supports the economic growth and stability of Alaska. Programs offered by AVTEC include Alaska Maritime Training Center, Business and Office Technology, Combination Welding, Construction Technology, Culinary Arts, Diesel/Heavy Equipment Technologies, Industrial Electricity, IT, Plumbing and Heating, Qualified Member of Engine Department Oiler, and Refrigeration.

Northern Industrial Training

https://www.nitalaska.com/courses/professional-truck-driving/

Contact: Northern Industrial Training, Anchorage and Palmer, AK

Summary or Purpose: Northern Industrial Training offers a wide variety of vocational training programs, including Construction Equipment; Health, Safety and Environmental Technician; Mechanics; Professional Truck Driving; and Welding.

Alaska Apprenticeship Training Coordinators Association

http://aatca.org/

Contact: Alaska Apprenticeship Training Coordinators Association, Anchorage, AK

Summary or Purpose: The Alaska Apprenticeship Training Coordinators Association is composed of the Joint Administered Training Committees of more than 16 different union construction crafts. These Committees engage in providing training for the majority of construction apprentices in Alaska. Additionally, they offer enhancement classes for journeyman craftsmen and Construction Academy courses for men and women to prepare them for applying to an apprenticeship or a career in the trades. Training programs include Insulators, Boilermakers, Bricklayers, Carpenters, Electrical Workers, Ironworkers, Laborers, Millwrights, Painters, Piledrivers and Divers, Plasters/Cement Masons, Plumbers/Fitters, Roofers, Sheetmetal Workers, and Teamsters.

Alaska Operating Engineers/Employers Training Trust

http://www.aoeett.org/index.cfm

Contact: Alaska Operating Engineers/Employers Training Center, Palmer, AK

Summary or Purpose: The trust is responsible for the Alaska Operating Engineers/Employers Training Center that offers a training program for heavy equipment operators. The center offers four different apprenticeship programs, as well as journey-level skill improvement courses.

Alaska Department of Environmental Conservation Operator Training and Certification Program

https://dec.alaska.gov/water/operator-certification/small-water-system-certification/

Contact: Alaska Department of Environmental Conservation Operator Training and Certification Program, Juneau, AK

Summary or Purpose: Small water systems are defined by State of Alaska regulations as systems that regularly serve 25-500 people and have fewer than 100 service connections. The Operator Training and Certification Program offers a Small Untreated and Small Treated correspondence course for individuals to meet the eligibility requirement to become a State of Alaska certified small system operator.

Alaska Energy Authority

http://www.akenergyauthority.org/What-We-Do/Rural-Energy-Assistance/Training-Utility-Assistance/Power-Plant-Operator-Trainings

Contact: Alaska Energy Authority, Anchorage, AK

Summary or Purpose: Alaska Energy Authority offers an entry-level course that provides individuals the necessary skills to operate and maintain a power plant. This training program includes engine maintenance, troubleshooting and theory, electrical systems and generators, introduction to electrical distribution systems, diesel electric set operation, control panels, paralleling generator sets, load management, fuel management, waste heat recovery, plant management, power plant safety. In addition, Alaska Energy Authority offers an advanced Power Plant Operator training course that prepares the student with the necessary knowledge and skills to diagnose and repair failures in power plants. The program includes review of electrical fundamentals, testing equipment, basics of computerized engine control systems, sensors and actuators, electronic signatures and waveforms, diagnostics, and testing.

Alaska Training Cooperative

https://www.uaa.alaska.edu/academics/college-of-health/departments/center-for-human-development/alaska-training-cooperative/

Contact: UAA College of Health's Center for Human Development, Anchorage, AK

Summary or Purpose: The Alaska Training Cooperative, administered under the UAA College of Health's Center for Human Development, promotes career development opportunities for direct service workers, supervisors, and professionals in the field engaged with Alaska Mental Health Trust Authority beneficiaries, including Alaskans with mental illness, developmental disabilities, chronic alcohol or drug addiction, Alzheimer's disease and related dementia, and traumatic brain injuries. The cooperative offers a variety of training options and delivery methods to meet training needs throughout the state: face-to-face, online/web-delivered, blended, and web-based trainings.

4.4 Education and Training Capacity

Although there are many workforce development resources in the state of Alaska, many are based in Fairbanks or the Southcentral region and are not readily available to NSB residents. Individuals who are interested in certain skilled trades may have to leave the borough to receive necessary training or experience. Table 31 shows 14 priority occupations for the NSB; these are groups of occupations that require action to ensure that future needs of the labor market are met and employment opportunities are provided to residents. Many of the workers in these occupations can receive necessary training within the borough, as shown in the first column of the table. The table also shows which programs are available in the UA system, either in Anchorage or Fairbanks, as well as other programs which are summarized in Section 4.3.2. The borough does not currently have programs dedicated to training heavy equipment and diesel mechanics, utility operators, or computer network architects.

In 2018, Iḷisaġvik College and DOLWD established a process for creating apprenticeship programs, with the college acting as the official sponsor coordinating between local employers and the department of labor (Tribal College Journal 2018). This arrangement simplified the process for reporting and allows program participants to simultaneously earn college credit and work full time. In addition to existing programs, the college could explore creating apprenticeship programs for priority occupation trades in the construction industry. Skilled craftsmen like electricians, plumbers, and welders typically complete apprenticeships, which are organized through labor unions based in Interior or Southcentral Alaska. Leaving the NSB for an extended period to complete an apprenticeship or earn a college degree may be

difficult for residents, many of whom have family commitments or strong ties to a subsistence lifestyle (Tribal College Journal 2018).

Table 31. Priority Occupation Training Capacity

Priority Occupations	NSB Program Available	UA System Program Available	Other AK Programs Available
Commercial Truck Drivers	✓	✓	✓
Heavy Equipment Operators	✓		✓
Heavy Equipment and Diesel Mechanics		✓	✓
Carpenters	✓	✓	✓
Electricians			✓
Plumbers			✓
Welders		✓	✓
General Maintenance and Repair Workers	✓		✓
Water and Wastewater Utility Operators		✓	✓
Linemen and Electrical Utility Workers			✓
Computer Network Architects		✓	
Information Technology Technicians	✓	✓	✓
Middle and High School Teachers	✓	✓	
Teaching Assistants	✓	✓	✓

Given the availability of educational programs and other resources, the borough can implement some broad workforce development strategies and goals, as described in Section 5.0. Each of the priority occupations listed in Table 31 are also discussed in detail in Section 6.0 of this plan, with a description of typical duties, educational or training requirements, and occupation-specific strategies for development.

5.0 ASTAR Regional Workforce Development Strategies

Based on the ASTAR project libraries, a needs assessment of those projects, and other data sources, the long-term workforce development strategies for the ASTAR region are:

- Promote local hiring practices when construction projects move forward.

- Provide information to the public on jobs, potential earnings, required training, and references to educational programs. Outreach could include job fairs, a dedicated website, Facebook page, radio advertisements, or other media.

- Monitor funding and appropriation of NPR-A funds to anticipate needs in the labor market.

- Monitor the status of major infrastructure projects such as additional telecommunications networks or the Alaska LNG pipeline.

- Forge relationships with labor unions and potential employers to provide technical career pathways (apprenticeships) and networking opportunities for NSB residents.

- Utilize existing resources to assist rural communities with workforce development; including the Alaska Works Partnership and the Alaska Apprenticeship Training Coordinators Association.

- Cooperate with the healthcare industry and other stakeholders to combine efforts for bringing improved internet connectivity to rural communities.

Construction projects will be the largest source of new employment in the NSB, due to an increase in expected NPR-A mitigation funding. If these projects are led by contractors from Southcentral Alaska, the NSB should encourage them to hire local workers as heavy equipment operators, craftsmen, and skilled laborers. This will provide opportunities for NSB residents to improve their educations and skills (human capital), while earning much higher wages than they could in other industries. Additionally, the borough should provide information to the public to help them learn what jobs are available and what education and skills are required for occupations. Marketing efforts could include job fairs and outreach on the internet or radio.

Local stakeholders should monitor the status of NPR-A funding, as well as major private projects like the Alaska LNG pipeline and projects from Quintillion Fiber to anticipate future needs in the labor market. Building professional relationships with major employers will strengthen existing workforce development resources in the NSB and help individuals to find work. Many of the occupational workers needed to complete construction projects including, electrical workers, plumbers, carpenters, and sometimes heavy equipment operators must complete an apprenticeship. Partnering with labor unions and state agencies like the Alaska Works Partnership or the Alaska Apprenticeship Training Coordinators Association will help to connect individuals with the resources they need to start a career in the construction industry. Navigating through these organizations and requirements can be overwhelming and providing transparent information to the workforce will help encourage professional growth and development.

Borough and city governments should communicate with and encourage private companies to provide better internet connectivity in the ASTAR region. These efforts could also be supported by healthcare providers, who rely on the internet for telemedicine appointments and consultations as well as storage of medical records. Better internet connectivity would also allow NSB residents to work from home in professional service occupations like accounting, tutoring, graphic design, or as IT specialists. It is likely that IT technicians will be needed to install, maintain, and operate physical components of network systems in each community. Increased internet use among residents would also increase demand for general IT support service in maintaining and repairing residential hardware and software.

NSB workforce development efforts could be partially supported by applying for funds from two grant programs; the Alaska Technical Vocational Education Program (TVEP) and the State Training and Employment Program. Both programs are administered by the State of Alaska and provide funding to organizations and institutions to support technical and vocational programs. Iḷisaġvik College is a recipient of TVEP funding, along with Yuut Elitnaurviat People's Learning Center, and several other rural education centers that provide vocational training specific to regional labor demands.

6.0 Priority Occupations in the ASTAR Region

This section provides a brief summary for occupations that are a priority for future development in the NSB. Additional details on duties and responsibilities, educational requirements, and typical career paths can be found online in the Bureau of Labor Statistics (BLS) Occupational Outlook Handbook (BLS 2019). Each subsection includes discussion on how the occupations are relevant to the NSB, along with specific strategies for workforce development.

6.1 Commercial Truck Drivers

Commercial truck drivers may operate highway vehicles like tractor-trailers, buses, passenger vans, water or concrete trucks, and hauling trucks (light end dumps and side dumps). These occupations may support oil and gas companies or other freight transportation companies and construction companies.

Educational and other Requirements

- High school diploma or GED
- CDL

Recommended Strategies

- Promote local hiring practices when civil construction projects move forward in the NSB.
- Continue to support driving programs at local institutions like Iḷisaġvik College.
- Forge connections with major freight shipping companies and support recruiting effort in NSB communities.
- Establish employment opportunities for operators during the construction off-season in snow maintenance, gravel pit development, and oil and gas industry support.

6.2 Heavy Equipment Operators

Equipment operators will typically know how to operate a range of vehicles including excavators, front-end loaders, road graders, end-dump trucks, dozers, forklifts, and cranes. These workers will be needed to support construction projects in residential and commercial building construction, as well as road projects, earthmoving, seawall protection, port infrastructure, and airport runways.

Educational and other Requirements

- High school diploma or GED
- CDL

- Endorsement or vocational program (preferred)

Recommended Strategies

- Promote local hiring practices when civil construction projects move forward in the NSB.
- Market high wage employment opportunities in heavy equipment operating and the option to work seasonally.
- Communicate with the Alaska Operating Engineers/Employers Training Trust to allow NSB residents to attend training programs and earn apprenticeships.
- Establish employment opportunities for operators during the construction off-season in snow maintenance, gravel pit development, and oil and gas industry support.

6.3 Heavy Equipment and Diesel Mechanics

Mechanics are responsible for inspecting vehicles and equipment, performing diagnostics, repairs, general maintenance, and overhauls. There is an existing demand for heavy equipment mechanics in the NSB, with several active job listings online at the time of development of this workforce plan. As additional construction projects move forward in the borough, there will be increased demand for heavy equipment mechanics to support fleets of equipment.

Educational and other Requirements

- High school diploma or GED
- CDL (preferred)
- Associate degree or vocational training program (preferred)

Recommended Strategies

- Promote local hiring practices when civil construction projects move forward in the NSB.
- Communicate with the Alaska Operating Engineers/Employers Training Trust to allow NSB residents to attend training programs and earn apprenticeships.

6.4 Carpenters

Carpenters must be knowledgeable in basic mathematics, building codes, construction methods, and hand tools to construct wood frame structures for roofs, stairs, cabinetry, millwork, and moldings. Carpenters support both residential and commercial building construction projects and must be able to read technical drawings to interpret and construct various structures.

Educational and other Requirements

- High school diploma or GED
- Apprenticeship, associate degree, vocational endorsement (preferred)

Recommended Strategies

- Promote local hiring practices when civil construction projects move forward in the NSB.
- Communicate with the Alaska Apprenticeship Training Coordinators Association, Alaska Works Partnership, AVTEC, and other groups to help NSB residents enroll in training programs and earn apprenticeships.

6.5 Electricians

Electricians must install, maintain, and repair electrical systems for homes and commercial buildings. They can read and interpret technical drawings, understand electrical components, use diagnostic tools, and adhere to national and local building codes. Electricians may also be important in the NSB for the numerous planned public utility projects for street lighting and power system upgrades.

Educational and other Requirements

- High school diploma or GED
- Apprenticeship and Alaska Journeyman Electrician License
- Associate degree, vocational endorsement (optional)

Recommended Strategies

- Promote local hiring practices when civil construction projects move forward in the NSB.
- Communicate with the Alaska Joint Electrical Apprenticeship and Training Trust to create venues for NSB residents to earn apprenticeships.

6.6 Line Installers and Repairers

Linemen and electricians require similar training and experience, but linemen work with high voltage electrical systems and telecommunications cables. Linemen are responsible for installing new equipment, testing diagnosing regulators and other equipment, climbing power poles, driving light commercial vehicles, and operating truck-mounted bucket lifts. Workers may be required to work suspended in the air for overhead power lines and may work irregular hours to make repairs to damaged systems during outages. Linemen will be required for major upgrades to public infrastructure like street lighting projects, which are identified in several of the ASTAR project libraries.

Educational and other Requirements

- High school diploma or GED
- Apprenticeship
- Associate degree, vocational endorsement (optional)

Recommended Strategies

- Monitor the status of electric utility upgrades and funding for street lighting and other public infrastructure projects.
- Recruit workers and promote awareness about future employment opportunities.

- Communicate with the Alaska Joint Electrical Apprenticeship and Training Trust to help NSB residents to earn apprenticeships.

6.7 Plumbers

Plumbers install pipes for transporting both water and gas for residential and commercial buildings and may have some experience in soldering and welding. Some NSB residents lack indoor plumbing, and plumbers will be required to install new systems for those homes. Some communities like Nuiqsut already have access to natural gas but more communities may need plumbing for home heating, especially if the Alaska LNG project moves forward.

Educational and other Requirements

- High school diploma or GED
- Apprenticeship
- Trade school or other training (optional)

Recommended Strategies

- Communicate with the UA Local 367 Plumbers and Steamfitters union to provide venues for NSB residents to earn apprenticeships.

6.8 Welders

Welders use a variety of equipment and methods to manufacture, repair, cut, and join metals. Welders are used in the construction industry for repairing equipment, joining large sections of pipe, joining structural components of buildings, and other tasks. Specialized welders may also earn certificates to allow them to work in underwater/marine environments, or hazardous or confined spaces, and typically will earn higher wages. Welders must be familiar with cutting torches and several different types of welding equipment, in order to weld different types of metals in different applications. Construction of a natural gas pipeline would create demand for many welders, especially those with previous experience.

Educational and other Requirements

- High school diploma or GED
- Technical or vocational training (preferred)

Recommended Strategies

- Promote local hiring practices when civil construction projects move forward in the NSB.
- Monitor status of major infrastructure projects like Alaska LNG, to anticipate needs of the labor market for specialized/skilled craft workers.

6.9 General Maintenance and Repair Workers

Maintenance and repair workers use hand and power tools to repair and perform routine maintenance on mechanical and commercial equipment, appliances, and buildings. General contractors are also licensed

in the state of Alaska and can repair basic electrical and plumbing systems or renovate buildings. The NSB workers in these occupations are aging and will there will likely be a shortage of skilled laborers.

Educational and other Requirements

- High school diploma or GED
- Vocational program (optional)
- State of Alaska Contractor License (General Contractors)

Recommended Strategies

- Promote awareness of aging workforce and conduct recruiting and outreach efforts.
- Continue to support vocational programs at local institutions like Iḷisaġvik College.
- Communicate with the Alaska Works Partnership to promote awareness about their training center in Fairbanks and professional development opportunities.

6.10 Water and Wastewater Utility Operators

Operators that specialize in the treatment of water and wastewater systems may be responsible for monitoring water quality, inspecting equipment, recording various measurements, cleaning and maintaining equipment, and reporting to government agencies. There are several utility upgrade projects identified in the ASTAR libraries, which may require more water and wastewater utility operators to handle the upgraded systems. Additionally, the existing utility operators will need additional training to understand and correctly operate the new equipment.

Educational and other Requirements

- High school diploma or GED
- Certificate, associates or bachelor's degree (preferred)

Recommended Strategies

- Monitor the status of utility upgrade projects and determine if additional training will be required for workers.
- Work with the Alaska Department of Environmental Conservation to enroll workers in their Operator Training and Certification Program.

6.11 Power Plant Operators and Distributors

Power plant operators and distributors are responsible for monitoring and maintaining electrical generation equipment, taking measurements, and regulating power flow. In the future there could be a transition from existing diesel power generating systems to natural gas or renewable energy sources like wind turbines. These transitions may require additional training and education for operators of the new systems and may require additional workers.

Educational and other Requirements

- High school diploma or GED
- Vocational training or some college (preferred)

Recommended Strategies

- Monitor the status of utility upgrade projects and determine if additional training will be required for workers.
- Work with the Alaska Energy Authority to enroll workers in their power plant system training programs.

6.12 Computer Network Architects

Computer network architects are responsible for installing, maintaining, and repairing data communications hardware and infrastructure including local area networks, modems, routers, servers, and fiber optic transmission lines. These workers will be needed to create residential and business systems for NSB residents that are integrated with new spur lines connected to the subsea fiber optics placed by Quintillion Fiber.

Educational and other Requirements

- Bachelor's degree in Computer Science, Electrical Engineering, Information Technology, or equivalent

Recommended Strategies

- Identify college programs in Alaska that can meets the educational requirement of a computer architect position.
- Coordinate with private telecommunications companies like Quintillion Fiber and GCI to develop regional network infrastructure.
- Coordinate with healthcare providers and other businesses to meet commercial telecommunications needs.
- Recruit businesses and individuals to develop a regional telecommunications support industry.

6.13 Information Technology Technicians

IT technicians set up and support personal computers, software, wi-fi networks, telephone networks, and other electronic devices. IT technicians will help NSB residents gain affordable internet access as spur connections are made to subsea fiber optic lines. Health care professionals will also require routine IT support to transition to online record keeping and telemedicine appointments in rural communities.

Educational and other Requirements

- Associate degree (preferred) or vocational training endorsement

Recommended Strategies

- Support growth of the Iḷisaġvik College Information Tech program.
- Coordinate with private telecommunications companies like Quintillion Fiber and GCI to develop regional network infrastructure.

6.14 Middle and High School Teachers

Middle and high school teachers give lessons and instruction to students in core subjects, design curriculum, maintain gradebooks, and provide skills needed for attending college or entering the job market. In the NSB communities, teachers may work with a wider range of student grades than they would in a large city. High school teachers would traditionally specialize in a single subject, but village teachers throughout Alaska are often responsible for teaching all subjects. NSB school enrollment data show rapid growth in elementary school cohorts for Nuiqsut, Point Hope, and Point Lay, which means that there will a greater demand for middle and high school teachers as today's elementary students grow older. The turnover rate among rural Alaska teachers is high and retaining workers is difficult throughout rural Alaska.

Educational and other Requirements

- Bachelor's Degree
- State of Alaska teaching certificate

Recommended Strategies

- Promote education and certification of residents to increase the number of NSB residents who become teachers, to offset the need for outside workers and decrease turnover rates.
- Offer competitive salaries, signing bonuses, and other incentives to retain teachers.

6.15 Teaching Assistants

Teaching assistants work alongside a teacher in the classroom, often with young elementary and preschool age children or special education students. Teaching assistants may focus on student behavior, help to prepare lessons or other class activities, or supervise students during lunch and recess. Teaching assistants in the NSB are aging, with more than one third at 50 years of age or older.

Educational and other Requirements

- High school diploma or GED
- Some college (1–2 years preferred)
- First aid/CPR training or endorsement (preferred)

Recommended Strategies

- Spread awareness about the aging teaching assistant workforce and steady growth of elementary school enrollment in NSB communities.
- Ensure that first aid/CPR trainings are available to NSB residents, especially prior to hiring periods before the start of each school year.

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