

Transportation and Infrastructure

Much of the infrastructure within the planning area is in the Arctic Coast Region, reflecting the high concentration of oil and gas activities on the North Slope. Generally, the infrastructure includes ice roads, gravel roads and pads for drill sites, production facilities, camps, pipelines, and support infrastructure. Major transportation resources in the planning area include the Deadhorse Airport, the Dalton Highway, running north to south, and the Spine Road, a major gravel road running east to west in the Arctic Coast Region providing industrial access to the oil fields.

Transportation

Transportation throughout the region varies significantly between the winter and summer months. Due to the sensitivity of the region's ecosystem and tundra, many oil and gas exploration and development activities are limited to the winter months when ice roads are built, allowing for the use and transport of large, heavy vehicles or drilling rigs. During the winter months, ice roads, ice pads, and air strips are constructed of snow and ice to supplement the transportation system across the North Slope. Ice roads and pads limit adverse impacts on the environment and the underlying tundra, decrease demand for limited gravel resources, and provide a cost-effective method for industry to access exploration and development sites.

Ground transportation throughout the North Slope planning area is centralized around the Dalton Highway, the Spine Road, and a number of small industry associated roads. The James Dalton Highway was originally built in 1974 as a haul road to provide industrial access to the newly discovered oil field in Prudhoe Bay and allowed for the construction of the Trans-Alaska Pipeline System (TAPS). The Alaska Department of Transportation and Public Facilities (ADOT/PF) is responsible for maintaining the highway and its associated structures. The primary purpose of the Dalton Highway was to support oil and gas industry activities; however, it is open to use by the public and also serves as an important transportation link for residents of local communities. The Alaska Legislature designated the Dalton Highway corridor a special use site, or Legislatively Designated Area (LDA), under AS 19.40. Numerous restrictions and stipulations are laid out in this statute and in the James Dalton Highway Master Plan, including motorized use within and outside of the highway corridor. The entirety of the corridor adjacent to the Dalton Highway from the southern planning boundary to Toolik Lake is federally owned lands managed by BLM. These lands are subject to Public Land Order 5150 and were unavailable for State selection under its statehood entitlement. Section 906(e) of the Alaska National Interest Lands Conservation Act (ANILCA) allowed the State to file future selection applications (so called top filings) on lands previously unavailable for selection; which the state did on the lands subject to PLO 5150. The lands within PLO 5150 are the highest priority selections for the state. This plan establishes management intent for these lands in anticipation of their conveyance to the state.

There are some 413 miles of industrial roads within the Arctic Coast Region, with the Spine Road being the main and most important road. The Spine Road extends out to the east and the west from Deadhorse and serves as a critical piece of infrastructure linking many of the oil and gas operations and developments on the North Slope. Although this road traverses state land, it is a private easement built and maintained by private companies in support of ongoing exploration and development activities. The Spine Road and other ancillary infrastructure is critical to development and operation of the oil and gas field. Although general public access within the oil field is restricted, when conditions allow and it is safe to do so, some limited use by local residents is allowed. For instance, residents from the communities of Nuiqsut and Utqiagvik are connected to the Spine Road during the winter via ice road or trail. More recently, the North Slope Borough has developed several hundred miles of improved snow trails as part of its Community Winter Access Trails program (CWAT). This seasonal trail system links several borough communities to the Dalton Highway. This seasonal access allows for transportation of goods to the communities reducing high barge and airfreight costs.

Air transportation is the primary, year-round mode of transportation throughout the North Slope. Each North Slope community has a designated airport that provides passenger and cargo services as well as Search and Rescue and emergency services. Most air transportation is centralized around the Deadhorse Airport and a number of small airstrips in the region. There are four airports in the Arctic Coast region, of which two are owned by the state and two are privately owned. The state owns the Deadhorse Airport and a heliport in Prudhoe Bay. The Deadhorse Airport is the main airport in the region and provides passenger, cargo, freight and fuel services that support activities in and around Prudhoe Bay. The Ugnu-Kuparuk Airport and Northstar Heliport are privately owned and operated, and exclusively service the oil and gas industry. Outside of the Arctic Coast Region, unrestricted airstrips are located at Galbraith Lake, Chandalar Shelf (Dietrich Camp), Franklin Bluff, the Kavik River Camp, the Toolik Field Station, Point McIntyre, Happy Valley, Sagwon, Echooka, Barter Island, Seal Island and Brown Low Point. Restricted airstrips are found at Point Thomson, Oliktok, Kuparuk, Badami, Alpine, Alpine CD-3, Cape Simpson, and Cape Lisburne.

Marine transportation opportunities are limited to the Arctic Coast and Arctic Tidelands Regions of the planning area. Although none of the North Slope communities have port facilities, barges are used to deliver freight to coastal communities during the summer. Currently, barges deliver goods to the communities of Wainwright, Utqiagvik, Prudhoe Bay, and Kaktovik. The oil and gas industry primarily use marine transportation barging during new facility construction and for oil spill response. Smaller vessels are used for routine access and maintenance operations. During facility construction, the oil and gas industry barges pre-built modules to the North Slope; these pre-built modules are offloaded onto massive transport crawlers and driven to location. Due to the harsh climatic conditions of the region and the formation of sea ice along the coast, marine transportation is seasonally limited; however, due to longer ice-free periods marine traffic is increasing.

ADNR initiated the Arctic Strategic Transportation and Resources (ASTAR) project in 2017. The mission of ASTAR is to “identify, evaluate, and advance opportunities to enhance the

quality of life and economic opportunities in North Slope communities through responsible infrastructure development.” When fully completed the information gathered will be compiled into a strategic plan that prioritizes community needs and looks to identify infrastructure opportunities that enhance quality of life and offer the greatest cumulative benefit to the North Slope region. While not fully completed, this plan incorporates information gathered to date through the ASTAR planning process.

Infrastructure

Community infrastructure across the North Slope varies greatly between communities. While none of the villages are connected to the state road system via permanent road, all of the villages have roads. Airports provide a vital year-round link for these remote communities. Electrical power is generated through either diesel or natural gas and each community has associated infrastructure serving the homes and facilities within the villages. All community schools are within the North Slope Borough school system. All villages have solid waste sites for disposal of refuse. For additional information about North Slope communities, visit the Department of Commerce, Community, and Economic Development Alaska Community Database online at <https://dcra-cdo-dcced.opendata.arcgis.com/>.

Aside from the Arctic Coast, Arctic Tidelands, and Dalton Corridor regions, industrial infrastructure throughout the remainder of the planning area is limited and sparsely distributed geographically. Infrastructure in the Dalton Corridor region is primarily related to the maintenance of the Dalton Highway and the Tran-Alaska Pipeline System (TAPS). Infrastructure in the Arctic Coast and Arctic Tidelands regions include, but are not limited to, ice roads, roads, pipelines, utility lines and facilities, drill pads, operation camps and facilities, shoreline transportation facilities, and airports; all of which are necessary to the industry activities in the region. Much of the infrastructure found in the Arctic Coast and Arctic Tidelands regions is critical to the oil and gas industry but also plays an integral role in state and national interests and security. Where pipelines intersect with potential or existing municipal selections for conveyance to the Borough, AS 38.35 pipeline ROW leases shall be retained in state ownership.

Oil pads, oil wells, pipelines, facilities

Most of the oil and gas field infrastructure on the North Slope is located on state lands within twenty miles of the arctic coast. Since oil and gas exploration and development began, more than 7,300 wells have been drilled and thousands of miles of pipelines have been installed to move oil, gas, and water to and from the field. The Arctic Coast Region is also home to a number of processing facilities, operational plants and facilities, hotels, and man camps. Much of this infrastructure either directly or indirectly supports oil and gas activities within the region. Facilities related to exploration or production are typically located on a pad – an elevated flat surface comprised of locally sourced materials (sand and rock). Currently, over 350 pads are located on state lands. Most of these pads are currently being used for oil and gas exploration and development activities, but some pads are not currently used or needed – including a number of pads with reserve pits. ADEC manages these sites through its Solid Waste Program and Contaminated Sites Program in conjunction with the NRO.

The 800-mile Trans-Alaska Pipeline System (TAPS) originates at Pump Station 1 in Prudhoe Bay and transports oil to the Valdez Marine Terminal. This pipeline runs generally parallel to the Dalton Highway and traverses a variety of terrain, crossing the Brooks, Alaska, and Chugach Ranges, with the highest point found at Atigun Pass. Of the 800-miles of pipeline, some 380 miles are buried while the remaining 420 miles are found above ground due to the presence of permafrost. Since TAPS was completed in May 1977, over 18 billion barrels of North Slope crude oil have passed through the pipeline. Oil and gas activity trends indicate that development throughout the region will likely increase in the future. Several large projects, including Nanushuk, Liberty, and Arctic Coastal Plain projects are expected to begin producing within the next few years. With the continuation and expansion of oil and gas industry activity in the region, the demand for natural resources, viable transportation options, and infrastructure will also increase.

Although still in the planning phase, the proposed Alaska Liquefied Natural Gas project (AKLNG) will originate near the Prudhoe Bay Unit Central Gas Facility. Also still in the planning phase is the Alaska Stand Alone Pipeline (ASAP) project which aims to act as a backup to the AKLNG project.

Dismantlement, Removal, and Restoration (DR&R)

Oil and gas exploration and development is essential to the Alaska economy and the relatively clean track record for the North Slope demonstrates that responsible resource development is possible. The oil fields of the North Slope are still rich in hydrocarbons and development of natural gas is a focus of the State. However, eventually there will come a point where infrastructure reaches the end of its operational life or production costs exceed production value and continued operation is no longer economically viable. This inevitable reality presents a unique challenge for the State and for oil and gas lessees. As existing infrastructure on the North Slope ages and approaches the end of its operational life, the DR&R of such infrastructure is becoming a focus. DR&R plans should be developed prior to the end of operational life to provide predictable and agreed upon outcomes for industry, the State, and local communities. Decisions made need to be clearly documented to ensure that responsible parties and the State understand rehabilitation expectations, and in some cases, expectations regarding long-term maintenance.

Spill, Contaminated, and Solid Waste Sites

Spills, contaminated sites, and solid waste sites are present within the Plan boundary. Spill and contaminated sites are areas impacted by a release of oil or hazardous substances, and are regulated under 18 AAC 75 and also by ADEC's Prevention Preparedness and Response Program (PPRP). Some spills have been transferred to ADEC's Contaminated Sites Program (CSP). Solid waste sites within the planning area include municipal landfills, as well as oil and gas-related disposal sites, and are regulated under 18 AAC 60.

Contamination and solid waste sites are cataloged within existing ADEC databases where known. These sites may be associated with oil and gas operations, early statehood military and other activities, municipal landfills, grind and inject facilities, treatment facilities, drilling waste monofills, and reserve pits. Much of the Prudhoe Bay oil and gas unit, within

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the NSAP Arctic Coast Region, is subject to the Environmental Protection Agency (EPA) Resource Conservation Recovery Act (RCRA) regulations per Administrative Orders On Consent (Orders), EPA Docket No: RCRA-10-2007-0222 and EPA Docket No: RCRA 10-99-0179. Where the Orders apply, ADEC and EPA may coordinate their regulatory efforts in consultation and coordination with ADNR and other landowners.

Information on known spill, contaminated, and solid waste sites can be obtained through the following resources:

ADEC Contaminated sites database online at:

<https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search>

ADEC Solid Waste Sites map:

<https://www.arcgis.com/home/item.html?id=c3b5562dcd204114a30a1619ae8f5cee>

ADEC Solid Waste database of facilities:

<https://dec.alaska.gov/applications/eh/swims/search.aspx>

ADEC Spills database:

<https://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch>

ADNR Records: ADNR information regarding spills in the planning area, contact dnr.nro.spill@alaska.gov.

Abandoned and Derelict Vessels

Commercial and residential goods are transported into the area seasonally via tug and barge to support communities and oil and gas industry. Other smaller vessels are used by local residents for hunting, fishing, and in support of subsistence whaling activities. This area has the potential for abandoned and derelict vessels (ADVs) on state or municipal tide and submerged lands.

Goals

Industrial Infrastructure. Prioritize and encourage shared infrastructure and facilities within industrial areas to reduce the cost and footprint of new infrastructure.

Community Connectivity. Encourage opportunities for community connectivity through the development of new transportation routes, as well as through opportunities to plan industry infrastructure to support community access and use.

Regional Transportation. Encourage the use and development of shared ground, air, and marine transportation routes and facilities that provide for both community and industry needs.

Economic Development. Contribute to Alaska’s economy by improving access to various resources throughout the region to stimulate economic growth, generate job opportunities and develop community connectivity.

DR&R and Long-term Sustainability. Maintain current standards for DR&R as use of infrastructure components decline. Encourage the development and acceptance of DR&R plans prior to the end of operational field life that recognize the needs of local communities, multiple use land management, and minimize long-term management obligations or acquisition of liability by the State.

Spill, Contaminated, and Solid Waste Sites. Identify these sites early in planning or adjudicating projects to avoid complications or delays. Consistently address site response, characterization, and closure.

Pollution Liability Prevention. Prevent releases of hazardous substances or contamination and avoid the acquisition of pollution liability for the state. Clearly document existing liabilities and work with responsible parties prior to expiration of their authorization to characterize and clean contamination to an unrestricted use standard when technically practicable.

Contamination Management. Ensure sites are cleaned with a goal of achieving unrestricted use.

Spills and Releases. When possible, a responsible person shall investigate, contain, and perform a cleanup of hazardous substance and oil and achieve site closure per 18 AAC 75.315 in consultation with ADNR.

Safety and Well Being. Prioritize use of appropriate safety measures to encourage the well-being of Alaskans.

Abandoned and Derelict Vessels. Prevent and deter the abandonment of derelict vessels in the waters of the state and on state, municipal, and private property.

Objectives and Management Guidelines

Objective A. Industrial Transportation. All transportation systems should be constructed in such a way that minimizes potential adverse impacts to the environment and surrounding resources to the maximum extent practicable without jeopardizing other resources and activities.

- **Guideline A-1. Protection of the Environment.** In the siting of regional and industrial facilities, consideration is to be given to the effect of the proposed project or improvement on the natural environment, fish and wildlife species, and habitats identified in this plan as significant. ADF&G shall be consulted prior to the issuance

of an authorization to determine whether significant impacts to fish or wildlife resources or their associated habitats are anticipated and can be mitigated.

- **Guideline A-2.** The siting of facilities is prohibited within one-half mile of the banks of the Colville, Canning, Sagavanirktok, Kavik, Shaviovik, Kadleroshilik, Echooka, Ivishak, Kuparuk, Toolik, Anaktuvuk, and Chandler Rivers, as measured by the ordinary high water mark.
- **Guideline A-3.** Development within the Dalton Highway corridor shall comply with the provisions of AS 19.40.
- **Guideline A-4.** To the maximum extent practicable, infrastructure for seasonal exploration activities including pads, roads, and airstrips shall be temporary in nature and constructed of ice.
- **Guideline A-5.** Gravel roads, pads, and airstrips may be permitted on a case-by-case basis where year-round infrastructure is warranted, in consultation with DOG and ADF&G.

Objective B. Community Transportation. Transportation throughout the region should accommodate and balance the needs of resource development, subsistence uses, and community connectivity.

- **Guideline B-1.** When designing or authorizing transportation systems that may affect communities, consider the potential impacts on subsistence use, health and safety, and cultural preservation.
- **Guideline B-2.** Restrictions on tundra travel should take into consideration potential unanticipated consequences, such as, increased air traffic or increased need for gravel roads and infrastructure.
- **Guideline B-3.** When designing or authorizing transportation systems that may impact North Slope communities, consult with DOG, ADF&G, ADEC, ADOT/PF, and ADNOR Northern Regional Land Office.

Objective C. Facilities and Infrastructure. All facilities should be sited and constructed in such a way that minimizes potential adverse impacts to the environment and surrounding resources to the maximum extent practicable without jeopardizing other resources and activities.

- **Guideline C-1.** When designing or authorizing transportation systems that may affect communities, consider the potential impacts on subsistence use, health and safety, and cultural preservation.
- **Guideline C-2.** All new pipelines and other types of linear infrastructure should be co-located to minimize the area of resource disturbance and be built to specifications to not impede fish and wildlife movements.
- **Guideline C-3.** All new facilities should be sited and designed to avoid maternal polar bear denning site habitats to the greatest extent practicable.

- **Guideline C-4.** When considering authorizations within the planning boundary, adjudicators should consult the ADEC contaminated sites map for more information regarding the locations and extent of known and potential sites.
- **Guideline C-5.** To avoid potential relocation costs due to climate change induced sea-level rise and diminished winter sea ice, minimize placement of infrastructure in coastal areas susceptible to sea-level rise, to the extent practicable

Objective D. Dismantlement, Removal, and Restoration. Ensure the long-term health and sustainability of state land and resources, the environment, and fish and wildlife populations and habitat in the region by implementing and enforcing current State of Alaska approved standards, policies, and procedures related to contamination and the dismantlement, removal, and restoration (DR&R) of oil and gas infrastructure.

- **Guideline D-1.** All sites undergoing DR&R will be remediated to the satisfaction of the State, with a goal of achieving unrestricted use.
- **Guideline D-2.** The North Slope Borough shall be consulted along with state and federal agencies when determining which transportation facilities should be removed and remediated. In some cases, these facilities may be left in place provided it is requested by the borough and they are not contaminated. Where this occurs, an easement must be granted for the borough's continued management of the facility.
- **Guideline D-3.** If environmental regulators make a remedial decision that results in residual contamination remaining in the environment in concentrations that are safe for some, but not all uses, then DMLW may adjudicate a Restricted Use Authorization (RUA) regarding proposed Institutional Controls (ICs), such as land use restrictions and/or engineering controls, as a Best Interest Finding under AS 38.05.035(e). If the proposed ICs are determined to be in the best interest of the state, the RUA will provide ADNR's written consent to the proposed ICs and authorize ADNR signature on an environmental covenant per AS 46.04.300. An environmental covenant does not change obligations, rights, or protections granted or imposed under law other than under AS 46.04.300 - 46.04.390 unless otherwise provided in the environmental covenant.

Objective E. Spill, Contaminated, and Solid Waste Sites. Ensure coordination between agencies responsible for mitigation of contaminated sites.

- **Guideline E-1.** ADNR has the lead responsibility for determining cleanup standards and the approval of cleanup plans on state land before permittees or lessees are released from further liability. ADNR will coordinate clean-up requirements with AOGCC and ADEC. This includes active and inactive reserve pits, contaminated sites, and hazardous releases to state land.
- **Guideline E-2.** AOGCC, ADNR and ADEC shall consult to determine if proposed DR&R of a facility or site is appropriate and if so, what coordination and timeframe within which it is appropriate for DR&R to occur.

Objective F. Safety and Well Being. Ensure long term health and safety of Alaskans by prioritizing projects that either construct, upgrade, or rehabilitate existing health & safety facilities as well as those that improve or provide access to these facilities.

- **Guideline F-1.** When considering projects ADNR should consult the ASTAR Strategic Plan to understand the opportunities that would enhance the quality of life and offer the greatest cumulative benefit.

Objective G. Abandoned and Derelict Vessels. Mitigate the potential impacts of these vessels to State tide and submerged lands and the habitats they support.

- **Guideline G-1.** When notified of an abandoned or derelict vessel, DMLW will identify the vessel owner and take steps to have the responsible party recover the vessel and minimize the impacts to public resources. Where the vessel cannot be recovered, DMLW will work with the responsible party to develop a plan to address the vessel that minimizes impacts to public resources.

Objective H. Other Guidelines affecting Transportation and Infrastructure. Nearly all of the resource guidelines found within Chapter 2 either directly or indirectly affect transportation and infrastructure in the planning area. The most commonly affected resource sections include Public Access, Fish and Wildlife Habitat, Materials, Water Resources, Subsistence and Harvest, Subsurface Resources, and Recreation and Tourism; however other resources addressed in this chapter's sections should also be considered.