

Alaska LNG reviews pipeline route with government agencies

By Larry Persily lpersily@kpb.us
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(This update, provided by the Kenai Peninsula Borough mayor's office, is part of an ongoing effort to help keep the public informed about the Alaska LNG project.)

Alaska is vast, with a lot of open ground, but it seems like transportation projects in the state — be it roads, railroads or pipelines — can't help but cross over or under each other while traversing the same natural corridors.

Preliminary plans for the proposed 800-mile North Slope natural gas pipeline south to Cook Inlet show it would cross the trans-Alaska oil pipeline 12 times, the Dalton Highway 22 times, the Parks Highway 12 times, Alaska Railroad tracks four times, and the Elliott and Kenai Spur highways one time each.

And don't forget the natural transportation routes. The line would cross the Nenana River in four locations. Just once for the Yukon River. All told, the mid-May 2015 version of the proposed pipeline route includes 446 waterbody crossings. Some are rivers, some creeks, some smaller than that. Some are much larger, such as almost 30 miles across Cook Inlet.

More than two dozen Alaska LNG team members and contractors met with 60 federal, state and municipal agency personnel May 12 in Anchorage to discuss the project's latest revisions to the proposed natural gas pipeline route from the North Slope to Nikiski on the Kenai Peninsula.

PROJECT TEAMS ADJUST PIPELINE ROUTE

The project teams reported they have made multiple adjustments to the pipeline route since filing the [first draft route](#) with the Federal Energy Regulatory Commission in February 2015. It's all about finding the best path for the pipeline to move North Slope gas 800 miles across the state to reach the liquefaction plant in Nikiski. The project is in undergoing engineering and design, working toward a late-summer 2016 FERC application. The federal agency regulates LNG plant construction and operations, and will prepare the project's environmental impact statement.

While seeking feedback from government regulatory agencies at the all-day session May 12, the Alaska LNG team listed the optimal engineering criteria for pipeline route selection: stable ground, good drainage, and flat or gentle slopes. "We try to stay on the high ground every place we can," a team leader said. All the while, the team is aiming for the shortest distance between two points while avoiding — as much as possible — fault lines, wetlands, frost-heave soils, power lines, fiber optic cables, visual impacts, cultural sites and private land.

The pipeline execution team reported they would like to keep the 42-inch-diameter, high-pressure gas line at least 200 feet away from the trans-Alaska oil pipeline, particularly to allow gas line construction equipment to maneuver a safe distance from the aboveground oil line. But some pinch points will require closer spacing.

“In many cases, the oil line (built in the mid-1970s) picked the best spot, and we have to pick the next best spot,” a team member said. The challenge is to find the preferred route within the constraints of geology, terrain and environmental considerations.

Several stretches along the route are still under review, with project teams working to find the best way to manage geological, environmental and historic preservation issues.

FINDING THE BEST CROSSING POINT

One example is the effort to find the best place to cross from the west to the east side of the Nenana River in the area where the Parks Highway, Alaska Railroad and a steep canyon all come together, about 120 highway miles south of Fairbanks near the entrance to Denali National Park and Preserve. This is near where the Moody Bridge crosses 174 feet above the canyon floor. No surprise, the span also is known as “Windy Bridge.” The Alaska LNG team would prefer to stay away from steep, failing slopes, keep outside of the national park, and run the line east of the tourist commercial area known as “Glitter Gulch.”

“We’ve got some additional work to do ... the answer is still in front of us,” a team member said at the routing workshop. While at the same time working to minimize impacts on highway traffic during construction, especially during the busy summer season, and preserving the scenic views along the highway and at viewpoints that are so important to visitors — and Alaskans.

The Alaska LNG pipeline execution team is working with their counterparts at the Alaska Gasline Development Corp. during the route selection, sharing information in an effort to avoid duplication of efforts as the two projects look for the best way past problem areas. The state corporation is designing a smaller-volume pipeline project as a backup for Alaskans to consider if the producer-led Alaska LNG project does not move forward.

Alaska LNG teams include staff assigned by all four commercial partners in the effort: North Slope oil and gas producers ExxonMobil, BP and ConocoPhillips, and pipeline partner TransCanada. The state of Alaska would also be an investor in Alaska LNG.

Another area still under review by the pipeline team is Atigun Pass, the highest point on the route at 4,739 feet above sea level in the Brooks Range. The pass is about 175 miles south of the start of the pipeline at the gas treatment plant proposed for Prudhoe Bay. The intent is to thread the gas line over the pass, while keeping a safe distance from the Dalton Highway, the oil line and steep slopes.

ABOVE GROUND vs. BELOW GROUND

Crossing the Yukon River, about 180 miles south of Atigun Pass, also needs more ground sleuthing, the team reported, particularly geophysical and geotechnical studies to learn every possible detail of ground and subsurface conditions. As of mid-May, the team was assessing the option of directional drilling and pulling the pipe underneath the river, at a point west of the existing oil pipeline bridge and downstream from deep shoreside bluffs. But that could change as the team learns more, and a bridge crossing is an option.

Horizontal drilling and pulling pipe also would be used to run the line beneath highway and river crossings along the route, along with possible open cuts and burying the pipe.

Although most of the gas line would be buried, several sections of the route would need to be above ground, much like the oil line. Such construction, with the pipeline supported on horizontal steel beams between two vertical columns, would allow the line to span fault lines, staying out of harm's way.

The most serious earthquake risk is the Denali Fault, which crosses the Parks Highway near Cantwell, just 35 miles south of where the gas line crosses the Nenana River near Denali National Park. A 7.9-magnitude earthquake in 2002 tested the oil pipeline, which crosses the fault about 130 miles to the east of the gas line route. The oil pipe survived the quake, thanks to its elevated support structure.

Other aboveground stretches for the gas pipeline would include the 60-some miles between the Point Thomson gas field and the gas treatment plant at Prudhoe Bay, where gas from both fields would be cleaned of carbon dioxide and other impurities. The first draft routing submitted to FERC in February indicated the line would be buried in this area, but the team reported at the May 12 workshop that it had decided aboveground construction is a better option to avoid drainage problems of surface and subsurface water flowing north to the Beaufort Sea.

Along with Atigun Pass, the Yukon River and Glitter Gulch, another area still under review by the pipeline team is the Deshka River crossing, about 65 miles north of where the line would enter Cook Inlet for its final stretch to Nikiski.

Field crews have found multiple cultural sites along the river, with its rich history of subsistence fishing. Historic-use sites along the Deshka are so plentiful the area looks like it "could have been a subdivision," a pipeline team member said. Alaska LNG is working with its cultural team and the State Historic Preservation Office to find the best river-crossing location.

COOK INLET CROSSING

Another routing question raised in Alaska LNG's February filing with FERC is where the pipeline should cross Cook Inlet to reach Nikiski. For now, the project is focusing on what it calls the western route, running the pipeline on the west side of Cook Inlet until Milepost 764 from Prudhoe Bay, then going underwater for almost 29 miles, coming up on the east side of the inlet just 7 miles or so to the liquefaction plant site in Nikiski's industrial area.

On its west side approach, the line would stay away from the Beluga power plant, ENSTAR natural gas line, and drilling pads and access roads. A barge landing would be built on the west side to bring in equipment and supplies, just as a barge landing would be built on the east side for the same purpose — including delivery of the huge modules that would become the liquefaction plant.

On the west side, the team is looking at a couple of sites about a mile apart for the pipeline to enter the water, considering shoreline terrain and how far the buried pipe would have to run before reaching water deep enough (30-foot depth) for pipe-laying barge access.

For landfall on the east side of Cook Inlet, the line would likely come up at a location called Boulder Point, though the team is also looking at another spot just a couple of miles farther up the Kenai Peninsula coast (near Seneva Lake) with lower bluffs at tidewater. Just as with the west side location, the shortest distance to deep water is a consideration.

An alternate path across Cook Inlet, called the eastern route, is not now under active review, team members said at the May 12 meeting. That route would have the pipeline veer east after the Deshka River, cross the Susitna River and come to Port MacKenzie across the inlet from Anchorage. From there, the line would run through Upper Cook Inlet to the Kenai Peninsula, several miles northeast of the preferred crossing route.

Onshore problems with the eastern route, team members told regulatory agencies, include crossing through an old artillery range with unexploded ordinance and proximity to power lines and tower guy wires. Offshore, the concerns are numerous: submarine cables in the pipeline's path; sharp turns in the route needed to avoid the dredged channel for Anchorage port traffic; critical feeding habitat of endangered beluga whales; and scouring along the seabed that could undermine the pipeline.

In gathering data for the Cook Inlet crossing, the project teams have learned a lot about the currents and siltation, and will be surveying for obstacles and mapping the seabed this summer as route-selection work continues.

The teams reported May 12 that currents along the preferred crossing route run 6 knots at the surface and 4 knots on the bottom. Water depth along the route would be 140 feet at the deepest point; generally about half that for most of the route.

To cross Cook Inlet, the pipeline would be lowered from barges to the sea floor. Each heavily concrete-coated section of 40-foot-long, 42-inch-diameter pipeline would weigh 33 tons — the pipeline's weight would keep it in place on the bottom.

SUMMER 2015 FIELD WORK

Alaska LNG contractors have a busy [2015 summer field season](#) planned of soils testing, borehole drilling, stream surveys, wetlands mapping, geophysical work, cultural

resource surveys and other data gathering as the project works toward submitting its next round of draft environmental reports to FERC in the first quarter of 2016.

The summer work will include “ground truthing” data obtained by LiDAR (Light Detection and Ranging), which maps out surface data and details with an airborne laser. Teams will walk the ground to verify LiDAR data at more than 100 sites along the pipeline route, particularly looking at slope stability and geophysical hazards.

Additional Alaska LNG workshops for government agencies are planned for June, August and September to cover in more detail route selections and construction methods for waterbody crossings, wetlands and Cook Inlet, along with the dredging that would be required to bring in construction barges.