

Mileage-based tariff benefits Alaskans

By: Bill White, *Researcher/Writer, Office of the Federal Coordinator*

April 8, 2011

Alaskans who draw North Slope natural gas from the proposed large-volume pipeline would pay only a tiny fraction of the multibillion-dollar project's construction and operating cost.

That's because of long-standing federal and state laws that say gas shippers should pay for only the proportion of the pipeline system they use. These policies are designed to hold down prices that consumers along the pipeline pay and to keep small gas shippers from being discriminated against.

The gas taken off in the state won't be free - Alaskans still would pay many millions of dollars annually to receive gas shipped from Prudhoe Bay or other North Slope fields.

But Alaskan customers' proportion of the overall cost of building, running and maintaining a massive gas pipeline system would reflect that perhaps only 2 percent to an optimistic 8 percent of the gas shipped from Prudhoe would come off the pipeline within Alaska. Compared to the rest of the gas, the Alaska-bound gas would travel only a relatively short distance. Utilities and other customers in Chicago or elsewhere would pay the other 90+ percent of the costs.

Similar pricing strategies are found throughout the economy. Someone who goes to a movie once a month pays just a small slice of the cost of building a multiscreen theater and stocking it with movies and popcorn. An Internet bandwidth hog downloading at blistering speeds pays much more than the grandpa checking e-mail via pokey dial-up.

The structure of pipeline user fees - or tariffs - for the project could mean that Alaskans would pay no more for North Slope gas than Southcentral Alaskans pay today for Cook Inlet gas.

Further, the price of gas deliveries from a major pipeline certainly would be less than the price of gas from a smaller, non-subsidized "bullet" pipeline designed to deliver gas only to Alaska consumers and industry.

Alaska's small volume

Two consortia have proposed a major pipeline to take North Slope gas to markets outside of Alaska:

- Alaska Pipeline Project, a TransCanada and ExxonMobil venture that has two alternatives. One would pipe gas to Alberta for connection to the North American gas pipeline grid. The other would pipe gas to Valdez, where someone else would liquefy the gas for export on tankers.
- Denali - The Alaska Gas Pipeline, a BP and ConocoPhillips venture that would have shipped gas to connect with the pipe network in Alberta. In May 2011, Denali announced it is ending efforts on its project.

The pipelines proposed to Canada are nearly identical in many ways. The construction estimates range from \$32 billion to \$41 billion, including a powerful plant at Prudhoe Bay to purify and pressurize the gas before it enters the pipeline. Other similarities include the length - roughly 1,700 miles long - and the volume carried - about 4.5 billion cubic feet of gas daily.

And all three pipeline projects - including the route to Valdez - would let Alaskans take gas from the pipe at multiple locations.

Federal and state law both require that Alaska takeoff points be engineered into the pipeline. But, and this is an important point, Alaskans would be on their own in getting gas from the big trunk line to home furnaces, power plants or other industrial users.

Federal regulations also require that the price of shipping gas to Alaska points on the trunk line "be based on the costs to make such in-state deliveries and shall not include costs to make deliveries outside the State of Alaska."

How much gas would Alaskans want?

[APP](#) and [Denali](#) used the same study by Northern Economics of Anchorage. From that study, APP concluded that about 375 million cubic feet a day would come off its trunk line within Alaska, assuming large industrial customers come on board. Denali says about 340 million. That would be roughly 8 percent of the projected North Slope gas flow, though the percentage would be much less if the only customers are gas utilities and electrical power plants.

The amount of gas actually bound for Alaska destinations would depend on many variables, including how much gas Cook Inlet fields are still producing and what, if any, new industrial users – from a gas liquefying plant to a remote mine – materialize. The Northern Economics study estimated Alaska utilities would need just 40 million to 100 million cubic feet a day from the North Slope to supplement Cook Inlet supplies and to serve Fairbanks, with any additional Alaska demand coming from future industry that doesn't exist today.

This gas for Alaskans could provide a cheaper source of heat and electricity in Fairbanks than the fuel oil the community uses now. It could answer Southcentral's chilling concern that Cook Inlet gas fields are petering out. And, in the eyes of some, it could spark new industry - from LNG and fertilizer exports to mine startups and gas-liquids processing.

How the pipeline would work

As was said, Alaskans would use a small amount of the North Slope gas, so they would pay a small share of the pipeline project's cost.

In 2010, APP and Denali independently estimated the tariffs they would charge to ship gas from Prudhoe Bay to Alaska gas-takeoff points along the pipeline.

APP would allow takeoff at Livengood, at Fairbanks, near Fairbanks or Delta Junction (for a spur pipeline someone else could build to the state's population center around Anchorage), at Tok and, for the Valdez route, at Glennallen and Valdez.

Denali's takeoff points would be at the same locations, minus Glennallen and Valdez.

APP and Denali calculated similar estimates for how much they would charge to pipe gas to those Alaska locations. (APP estimated the same tariff for all Alaska destinations, while Denali proposed a separate price for each location.)

The tariffs would cover the pipeline owners' construction and operating costs, debt payments, taxes and other expenses, plus a profit on their investment. The rates could vary depending on such factors as:

- Whether the gas shipper negotiates a rate with the pipeline owner or takes the rate set by pipeline regulators.
- How many years the shipper wants to reserve space in the pipeline.
- How much a shipper would pay to pipe gas that exceeds the volume for which it contracted.
- Whether the shipper wants to be a regular user of the pipeline or an occasional user. Regular users pay lower tariffs and sign contracts committing them to pay for a fixed amount of pipeline space even if they don't use it all, called ship-or-pay contracts. Occasional users, typically smaller shippers, pay higher tariffs and hope that space is available when they have gas to ship.

For illustration purposes, we'll use APP's proposed negotiated tariff for an Alaska-destination shipper that has reserved space in APP's \$41 billion pipeline for 25 years. That shipper would pay an estimated tariff of \$0.83 for every million BTUs of gas shipped (roughly the same as a thousand cubic feet of gas, or mcf, a term that's more commonly used in public). The tariff to move 100 million cubic feet of gas a day would cost about \$83,000.

By contrast, those shipping gas all the way from Prudhoe Bay to Alberta would pay \$2 to \$2.50 per mcf. On a volume of 4.4 billion cubic feet, this daily cost would come to about \$10 million a day.

Is that \$10 million vs. \$83,000 split fair?

The Federal Energy Regulatory Commission thinks so.

FERC oversees tariffs on interstate gas pipelines. In a landmark 1955 decision, FERC's predecessor agency, the Federal Power Commission, said:

"It is a simple economic fact that the delivery cost of natural gas increases in close proportion to the length of the transmission line of any given size. From this Proponents and the Staff reason that it is unreasonable, unduly discriminatory and preferential to charge customers located nearer the source of gas supply with the same burden of transmission costs as are assessed to customers situated 100, 200, or even 600 miles farther from the source."

FERC has reiterated this preference for mileage- and volume-based rates, for most pipelines, many times since 1955 as a way to keep costs low and fair to consumers.

Tariff not the total cost

The tariff North Slope gas shippers pay to reserve space in a pipeline from Prudhoe Bay isn't the full cost of moving the gas to Alaskans or any destinations outside the state.

Other costs include:

- Treating the produced gas to get it ready to place in the pipeline.
- Shipping the gas into Prudhoe Bay if it comes from a different gas reservoir, such as the Point Thomson field.
- Paying North Slope producers for their gas to cover their production costs, a profit and taxes.
- Building spurs from the main pipeline to deliver gas to Fairbanks and to Southcentral.
- Building a local pipeline distribution network in Fairbanks to connect the spur line to homes and businesses.

These costs won't come cheap, and together they would dwarf the \$0.83 per thousand cubic feet cost of moving North Slope gas from Prudhoe Bay to a valve to serve Fairbanks or other Interior Alaska off-take points.

Treating gas: APP estimates it will charge roughly \$1.20 to \$1.50 per mcf to clean and compress the gas at Prudhoe Bay. They plan a gigantic complex costing well over \$10 billion to cleanse the gas of such impurities as carbon dioxide and water.

Gas from other fields: APP estimates the cost of piping gas about 60 miles from Point Thomson to Prudhoe at \$0.20 to \$0.25 per mcf.

Getting gas to Southcentral: The Alaska Natural Gas Development Authority, a state agency, estimated in 2008 that a spur pipeline from Interior Alaska to Southcentral communities would carry a tariff of about \$2.35 per mcf.

It's unclear how much it would cost to hook up Fairbanks to natural gas; a short spur line would be needed plus an extensive network of pipes to flow that gas to homes, businesses and government buildings. A gas utility or some other entity would have to take on that job. The U.S. Department of Energy in 2006 estimated construction costs of \$8,800 for every 1,000 feet of distribution pipeline in Fairbanks. Operating and maintaining the network would cost \$3 per mcf - more than double the Anchorage-area cost. Converting a home's oil boiler to a gas furnace would cost up to \$3,000. Even with the build-out costs, gas likely would be far cheaper than heating oil for Fairbanks, the department concluded.

Paying North Slope producers: As for acquiring the gas itself from producers, those petroleum companies haven't said publicly what price they'd find acceptable. Some economists and public officials have speculated that the gas might cost a minimum of \$2 per mcf.

Add these costs together, and you get a price of roughly \$7 per thousand cubic feet to deliver natural gas from the North Slope to the Southcentral Alaska local gas utility, ENSTAR Natural Gas Co. Of course, the ultimate price could be different, depending on the final cost of building the large-volume North Slope pipeline system and the cost of building a spur line to Southcentral, among other factors.

That \$7 compares with the \$6.96 per thousand cubic feet that ENSTAR pays today for its gas supply (the weighted average under several supply contracts).

And \$7 likely is quite a bit less than obtaining gas from the medley of other possible future sources of gas for Southcentral: new Cook Inlet discoveries; peak winter withdrawals from the \$180 million gas storage facility under construction near Kenai; importing LNG; or building a small "bullet" line that pipes Prudhoe Bay gas to the Interior and Southcentral exclusively for Alaska consumers and industry.

Another state agency, the Alaska Gasline Development Corp., is studying the bullet line project. It's still refining its numbers. But the AGDC preliminarily estimated in March 2011 that it would cost \$11.49 to \$17.06 per thousand cubic feet to deliver gas to the ENSTAR pipeline network in the Anchorage area. The smaller number is for a pipe carrying 500 million cubic feet a day that assumes a large appetite for gas from new industrial customers; the higher number is for a line at 250 million cubic feet a day. Both numbers include paying North Slope producers \$2 per mcf for their gas.

Those prices could be lowered with a state subsidy - a big one. How big? In February 2011, [Alaska economist Roger Marks estimated](#) a subsidy of at least \$4.2 billion would be required to lower the bullet line tariff to approximate the price ENSTAR now pays for Cook Inlet gas. The subsidy estimate applied to the 500 million cubic-feet-a-day line; the smaller pipeline would need a larger subsidy. Marks did his report for the Office of the Federal Coordinator.

Economies of scale matter

Bullet line gas would cost so much more than gas drawn from a main trunk line for a simple reason: economies of scale.

Economies of scale are why Toyota builds Highlander SUVs in giant assembly plants rather than in a back-alley garage, why airlines fly 150 passengers at a time rather than one, and why the per-barrel cost of oil production from the huge Prudhoe Bay field is lower than at the tiny Badami field to the east.

For North Slope gas, the larger \$32 billion to \$41 billion pipeline system running at its full capacity of 4.5 billion cubic feet a day would move a given volume of gas much more cheaply than an \$8.4 billion bullet line that carries 500 million cubic feet a day (the AGDC's preferred option).

Those efficiencies of the larger-scale pipe, combined with the regulators' slant toward mileage- and volume-based shipping rates, result in the lower tariffs Alaskans would pay for gas from a large-volume pipeline compared with unsubsidized bullet line rates.

A bullet line arguably could deliver North Slope gas sooner to Alaskans than a large-volume pipeline. A question for policy makers is whether that potential benefit outweighs the expensive gas that it would deliver to Alaskans due to high long-run tariffs or a big up-front subsidy.