

Unprecedented Opportunities For

Pipeline Construction

Continue To Grow

By Rita Tubb, Managing Editor

Underground Construction's pipeline construction survey figures indicate that new and planned pipeline construction in North America remains strong. This year's figures show 46,072 miles of oil and gas pipelines are under construction or planned at this time. In light of the nation's growing demand for natural gas it is not surprising that of these, 21,461 miles account for natural gas pipelines in the U.S. that are both under construction and planned.

In looking at where significant efforts are currently under way to expand the nation's gas pipeline capacity, the Rocky Mountain States of Colorado, Utah and Wyoming are high on the list.

Natural gas reserves in these three states account for nearly 22 percent of the total gas reserves in the U.S. Pipeline capacity that exports natural gas from Colorado, Utah and Wyoming was 8.489 Bcf/d in 2005. Efforts to increase the pipeline infrastructure in these three areas are expected to add roughly 1.5 Bcf/d of capacity to transport natural gas from the region by the end of 2008.

Another area of significance is Northeast Texas. In its report, *Natural Gas Year-In-Review 2006*, the Energy Information Administration (EIA) notes that the addition of new pipeline mileage in that area grew by 44 percent in 2006. This increase in construction activity was primarily driven by the needs of gas producers in the Rocky Mountain States of Colorado and Wyoming and in the Barnett Shale area of northeast Texas. Moreover, the continuing development of new natural gas supplies in these two regions has increased the need for additional natural gas pipeline transportation capacity to the Northeast and Midwest regional markets.

The EIA report states that almost half (21 of the 45) natural gas pipeline projects completed in the U.S. during 2006

were located in these two regions. Projects completed in the Rocky Mountain area accounted for 25 percent of all new natural gas pipeline capacity (3.2 Bcf/d) installed during the year, while those completed in the Northeast Texas area constituted another 25 percent (3.1 Bcf/d).

While the Rocky Mountain area accounts for several major projects, that is not to say new pipelines and expansions are not being planned, approved and constructed elsewhere. Following is a discussion of some of the major projects under construction and planned both in the Rocky Mountain region and throughout North America. Additional information is provided in *Underground Construction's* sister publication, *Pipeline News*.

New pipeline infrastructure

Among the efforts planned to expand pipeline capacity from the Rocky Mountain region is a National Fuel Gas Co. proposal to build the \$700 million West-to-East Pipeline that would stretch for 324 miles from southeastern Ohio to Corning, NY. This proposal is one of about six pipeline projects on the drawing board to link up with the Rockies Express Pipeline - one of the largest natural gas pipelines to be constructed in North America - being developed by Kinder Morgan Energy Partners, Sempra Energy and ConocoPhillips to carry natural gas to eastern markets.

Rockies Express (REX) is a \$4.4 billion, 1,678-mile pipeline designed to link gas producers in the region near Rio Blanco County, CO, with customers in the eastern United States. The first 328-mile segment of the project, which runs from the Meeker Hub in Rio Blanco County, CO, to the Wamsutter Hub in Sweetwater County, WY, to the Cheyenne Hub in Weld County, CO, is in service with capacity of 500,000 Dth/d. REX West, the segment from the Cheyenne

Hub to Audrain County, MO is on schedule for an in-service date of Jan. 1 2008. Construction on REX West is under way in Colorado, Wyoming, Nebraska, Kansas and Missouri. REX East, from Audrain County, MO to Clarington, OH, is in the permitting stage with a scheduled in-service date of Dec. 31, 2008.

The National Fuel pipeline will also link up with the Millennium Pipeline being developed by affiliates of NiSource Inc., KeySpan Corporation and DTE Energy.

Precision Pipeline Solutions is constructing the 187-mile Millennium Pipeline in two phases. Phase one involves the construction of a 182-mile, 30-inch diameter pipeline from Corning to Ramapa, NY, which replaces and upgrades an existing pipeline.

Phase II will involve crossing the Hudson River to provide a link to the New York City metropolitan market. The project cost is estimated at \$350 million and it will have a capacity of 524 MMcf/d. The pipeline is planned to be in service by November 2008.

The National Fuel proposal also faces competition from other major pipeline projects, including the 375-mile Northeast Express Project proposed by the operators of the Rockies Express pipeline. That extension would run from Clarington, OH, to Princeton, NJ and be open in 2011.

The Williams Cos., a Tulsa-based pipeline company, has also proposed the 250-mile Rockies Connector Pipeline from Clarington to York County, PA. As planned, it would carry about 688 MMcf/d of gas and could be open by late 2010.

In addition, Spectra Energy is proposing to build a new natural gas pipeline system - the Bronco Pipeline - to connect Rocky Mountain natural gas supplies with under-served western markets. The proposed interstate natural gas system will be more

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than 650 miles long and have an initial capacity of more than 1 Bcf/d. It is expected that construction will cost in excess of \$3 billion.

The planned pipeline route will access supply basins in Wyoming, Utah and Colorado and stretch westward, interconnecting with several pipelines en route to its terminus near Malin, OR.

Based on preliminary market needs and assessments, the project is planned to be in-service as early as 2011.

Other significant projects include the Southeast Supply Header (SESH) that is being built for Southeast Supply Header

LLC, a joint venture of Sempra Energy and CenterPoint Energy. Consisting of 270-miles of 42- and 36-inch diameter pipe, the SESH will begin near the Perryville Hub in Northeast Louisiana and interconnect with the Gulfstream Natural Gas System LLC pipeline in Mobile County, AL.

The new line's capacity is projected to reach 1 Bcf/d and begin service by midsummer 2008.

Willbros U.S. Construction has been awarded a contract by Midcontinent Express Pipeline LLC – a joint venture between Kinder Morgan Energy Partners and Energy Transfer Partners – to construct 257

miles of the Midcontinent Express Pipeline through Oklahoma and Texas. The remaining 303 miles of the 560-mile project have not yet been awarded.

The 560-mile pipeline will run from North Central Texas, crossing Oklahoma and Arkansas before terminating in Coahoma County, MS, at a new interconnect with Texas Gas Transmission LLC. As proposed, the pipeline will have an initial capacity of up to 1 Bcf/d.

The project is expected to be completed in late 2008.

Boardwalk Pipeline Partners, Energy Transfer Partners and ONEOK Partners have formed a joint venture to construct the Gulf Crossing interstate natural gas pipeline that will originate in Southern Oklahoma and extend through northern Texas and terminate in northern Louisiana.

This project will consist of 355 miles of 42-inch pipeline with a design capacity of approximately 1.5 Bcf/d. The cost of this project is expected to be approximately \$1.1 billion and it is anticipated to be in service during the fourth quarter of 2008, subject to regulatory approval.

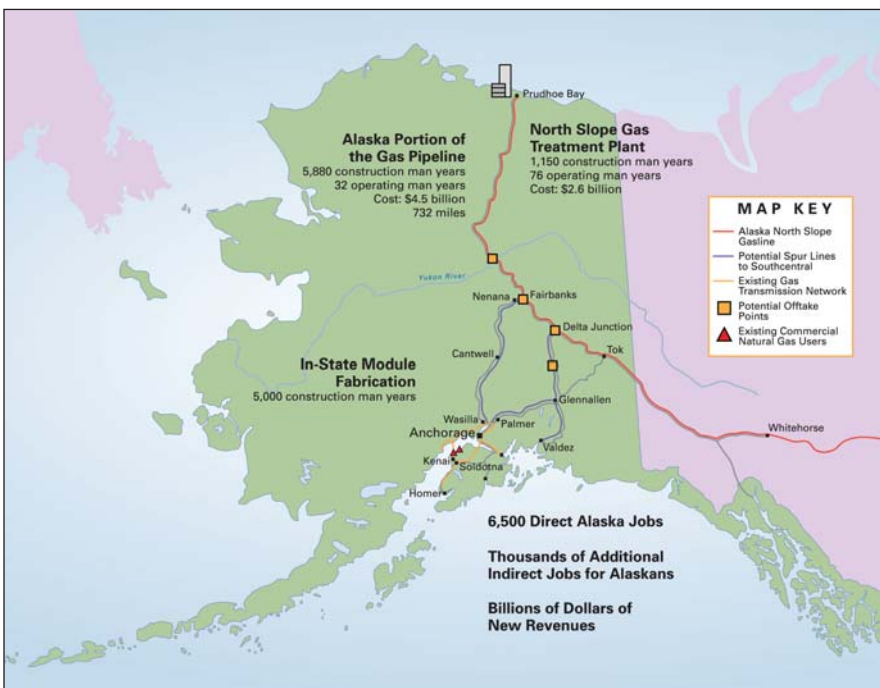
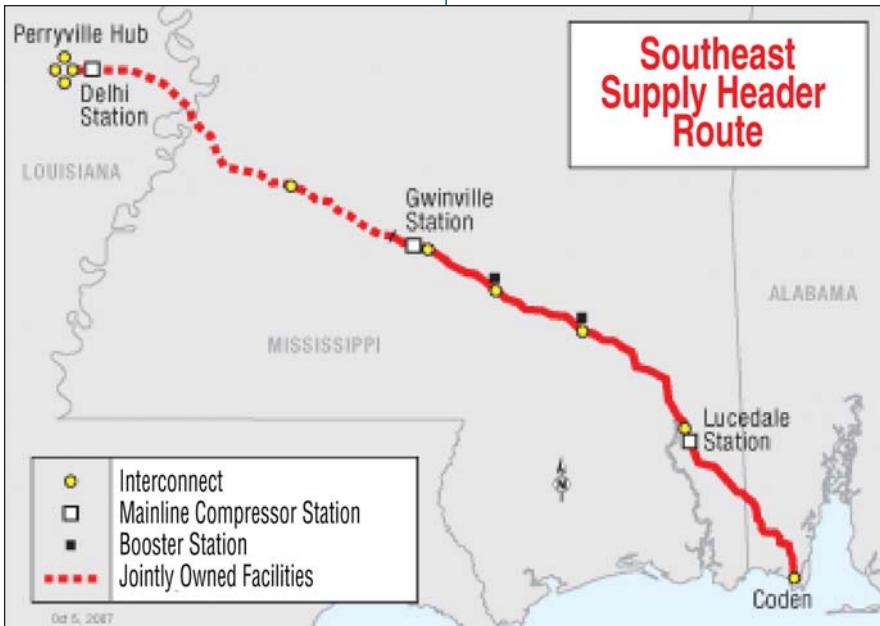
Still awaiting a construction start date are the long awaited Alaska Gas Pipeline Project and Mackenzie Valley Pipeline proposal.

One interesting development involving the Alaska Gas Pipeline Project came about in November when Alaska Gov. Sarah Palin reported that five companies submitted applications by the Nov. 30 deadline for the exclusive right to build a natural gas pipeline to transport North Slope gas to market. The applicants are Alaska Gasline Port Authority, AEnnergia LLC, TransCanada, Sinopec ZPEB and Alaska Natural Gas Development Authority. There was no mention of ConocoPhillips, which sent out a news release on Nov. 30 announcing the submission of its application. Each application will be reviewed to determine whether it has complied with requirements to be considered for the award of the AGIA license.

After the respective applications are reviewed and approved, the Legislature will then have 60 days to approve the commissioners' proposed action. The review process is online at www.gov.state.ak.us/agia.

If actually approved in 2008, as planned, it is possible that the Alaska Gas Pipeline could start flowing gas in 2016. If built, the pipeline will run approximately 2,140 miles from Prudhoe Bay to Alberta, Canada. From here, up to 4 Bcf/d of Prudhoe Bay natural gas will enter the nation's existing pipeline infrastructure. The estimated cost of building the pipeline is more than \$20 billion.

Equally ambitious is the long awaiting Mackenzie Gas Project. As proposed, the 758-mile natural gas pipeline system would run along the Mackenzie Valley of Canada's Northwest Territories to connect northern



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onshore gas fields with North American markets.

Although still awaiting approval from Canada's National Energy Board (NEB), a preliminary plan has been developed based on four years of construction activity for the pipeline and related services.

While construction of neither project is imminent, industry watchers are hopeful that one or both projects will ultimately come to fruition.

Massive crude line

While North American natural gas pipelines continue to make news, TransCanada has entered into contracts or conditionally awarded approximately \$3.0 billion for major materials and pipeline construction that will start in the spring of 2008 on its 2,148-mile Keystone Pipeline. Designed to transport crude from Hardisty, Alberta to U.S. Midwest markets at Wood River and

Patoka, IL, and Cushing, OK, the project involves the conversion of approximately 537 miles of existing Canadian mainline pipeline facilities from natural gas to crude oil transmission service and construction of 232 miles of pipeline, pump stations and terminal facilities at Hardisty, Alberta. The U.S. portion of the project calls for the construction of roughly 1,379 miles of pipeline and pump stations. It is expected that on start-up in late 2009 the pipeline will be capable of delivering 435,000 bopd to Wood River and Patoka, IL. It will be expanded to 590,000 bopd and extended to Cushing, OK, in late 2010.

Construction is also under way to



complete Minnesota Pipeline Company's MinnCan Project. The \$300 million, 304-mile pipeline will deliver Canadian crude to Minnesota refineries. The line which will follow an existing pipeline right-of-way starts in Clearbrook, MN, and extends south-southeast to Rosemont, MN. Completion is scheduled in late 2008. ■

Study Forecasts Massive Spending On Onshore Pipeline Projects Through 2012

A study by analysts Douglas-Westwood titled *The World Onshore Pipelines Report 2008-2012* forecasts that \$180 billion will be spent on onshore pipeline projects worldwide through 2012.

The report estimates a 16% increase in the pipeline mileage installed from 2008-2012, compared to the historic five year period 2003-2007. Nearly 75% of this expenditure is expected to be spent in Asia, Eastern Europe, the FSU and North America. Almost 70% of this expenditure is projected to be spent on gas pipelines. Asia stands out as the largest forecast market – by length of pipeline construction – accounting for \$42 billion of forecast capital expenditure.

The status of forecast pipeline projects shows a split between planning (47%), under construction or ordered (40%) and approved (13%).

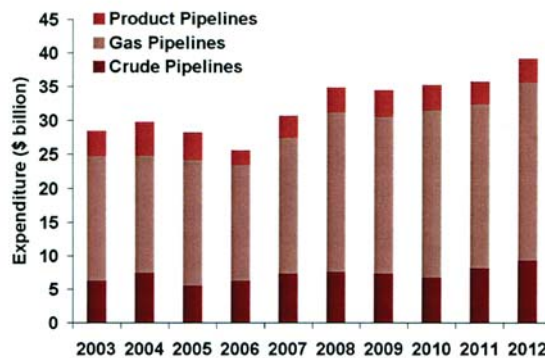
The report notes that inevitably some of the projects in the planning phase will be cancelled. Analysis on a project-by-project basis has resulted in more than 55,925 miles of announced pipeline projects being “slipped out” of the forecast period. Likewise some new projects will certainly come to fruition over the forecast period – compensating somewhat for project slippage.

The report also reviews all aspects of onshore oil and gas pipelines from design, materials, techniques and components through to construction, operations and maintenance. It describes pipeline design and how routes are selected, safety considerations, sizing, flow and pressure control and storage. The choice of pipeline materials is discussed and major pipeline components are reviewed from coatings and fittings to pumps and compressors. Construction techniques and associated issues are explained from stringing, welding and trenching to backfilling, cleaning, sizing, quality control and testing. Operations and maintenance content includes a review of control, integrity, corrosion protection and repairs.

The study identifies existing pipeline projects then examines the market drivers and prospects. Expenditure is broken down into the main areas of land and right-of-way, line pipe and fittings, pipeline construction, pump station and equipment and other (including delivery systems, communications, vehicles etc.).

The report is available from Douglas-Westwood Limited and additional material, including charts and tables on countries, sectors and markets is available from Publications Manager Georgie MacFarlan at georgie.macfarlan@dw-1.com Web: www.dw-1.com/products.

A \$180 billion market for Onshore Pipelines Projects through to 2012



Onshore Pipelines Market – Total Project Costs by Product 2003-2012 (\$ billions)

Source: “The World Onshore Pipelines Report 2008-2012” – Douglas-Westwood Ltd