

Customers, New Infrastructure And Maintenance Remain A Top Priority

by Rita Tubb, Managing Editor

The nation's growing demand for natural gas is putting pressure on the gas distribution industry to take on costly new infrastructure projects and commit to major outlays to maintain the nation's 1.9 million miles of distribution mains and 775,255 miles of services.

For this reason, near-term new construction spending and spending to rehabilitate, repair and replace existing systems, is expected to rise. The latest survey figures from *Underground Construction* and sister publication *Pipeline & Gas Journal*, indicate gas utility spending to serve new customers and rehabilitate, repair and replace the nation's mains and services, meters, valves, regulators, cathodic protection, SCADA networks and peak-shaving facilities will total about \$11.8 billion in 2008, compared to \$10.5 billion in 2007.

These spending demands come at a difficult time for the distribution sector. Over the past decade, several powerful trends have led to a realignment of the nation's highly fragmented natural gas distribution industry. The U.S. Energy Information Administration (EIA) reported in August 2007 that the number of companies operating

in the distribution sector had shrunk from 2,000 in the mid-1900s to less than 300 companies that owned and operated LDCs by 2006.

Legislative and regulatory changes, higher natural gas prices, energy-efficiency gains as well as increased competition have created new risks and potential rewards for LDCs. Furthermore, creation of merchant services has allowed LDCs to take advantage of new business opportunities.

As a result of this changing business climate, today's LDC can be a holding company that owns part, all or a majority of other companies' outstanding stock.

Another result is the multi-utility company formed as a result of a merger between a utility networking company such as a natural gas LDC and an electric utility. These mergers, according to the EIA, offer benefits to customers in terms of reduced prices and improved service, which may not have been achieved otherwise.

While some trends offer strong business opportunities, the industry is also facing newly proposed legislation under P.L.109-468 that calls for minimum standards for integrity management programs for distribution pipelines by Dec. 31, 2007. However,

Department of Transportation's Office of Pipeline Safety (OPS) representative, Damon Hill, said that due to a delay he did not anticipate any action until mid 2008.

But all of this comes at a time when the LDCs are also hard-pressed to meet the nation's growing gas demand. The U.S. consumed 21.86 Tcf of natural gas in 2006 and the EIA reported total natural gas consumption increased 4.6 percent in 2007 because of increases in the residential, commercial and electric power sectors. In 2008, the continuation of near-normal weather is expected to slow year-over-year consumption growth to 0.4 percent in the residential sector. Meanwhile, consumption growth is expected to increase by 1.5 percent in the commercial and electric power sectors. Industrial sector consumption

declined by 0.9 percent in 2007, but is projected to increase by 0.4 percent in 2008.

Higher prices

Natural gas prices increases since 1999 have had a negative impact on gas consumers as well as the LDCs supplying their gas.

While there are programs that provide assistance to consumers affected by higher gas prices, the rising number of LDC gas customers in arrears and shrinking markets caused by greater efficiencies in consumption along with the outright reduction in market volumes have hindered the distributor's cost-recovery plans.

To see how the industry is dealing with these challenges, LDC's were asked to comment on proposed integrity management legislation, the cost of finding and repairing leaky mains and a host of other questions. The comments and cost figures from industry participants on these and other topics follow.

Cast iron, steel replacement, repairs

To the question on long-term programs to replace structurally deficient older steel and cast iron mains and services in existing systems, most respondents said they have programs under way to replace bare steel and cast iron mains, some of which were installed in the early 1900s, with corrosion-free plastic pipe.

Of those reporting ongoing and planned replacement programs, most point toward completion dates between 2010 and 2015.

Others indicated long-term programs that had been in place for some time. A representative of an Arkansas company with 151,000 customers said its replacement program began in the early 1990s. Today, with less than two miles to be replaced, areas with the densest population are being worked first.

A small percentage of the respondents reported ongoing or planned programs with completion dates stretching as far out as 2050.

Still others don't plan to begin replacement programs until a later date. A company in the Mid-Atlantic region with 410,000 customers reported its replacement of cast iron and unprotected steel pipe would not begin until next year.

In-service pipe failure

For several years, the response to questions on causes of plastic pipe failures in service have identified third-party damage excavation as the major cause.

NATURAL GAS DISTRIBUTION PIPELINE ANNUAL MILEAGE

Year	No. of Records	Distribution Main Mileage	Distribution Number of Services	Distribution Estimated Service Mileage
1984	1,538	750,168	41,258,268	454,369
1985	1,610	784,852	44,309,528	498,697
1986	1,562	780,401	45,036,343	472,555
1987	1,542	802,335	45,848,965	512,360
1988	1,590	866,639	48,246,973	504,981
1989	1,558	838,237	47,591,804	544,450
1990	1,504	945,964	48,755,074	566,763
1991	1,569	890,876	52,665,539	589,345
1992	1,545	891,984	50,103,974	594,105
1993	1,570	951,750	52,009,967	590,917
1994	1,586	1,002,669	56,816,569	685,091
1995	1,524	1,003,798	55,518,341	669,746
1996	1,481	992,860	54,644,300	651,869
1997	1,466	1,002,942	54,865,221	640,800
1998	1,458	1,040,765	55,755,294	666,722
1999	1,469	1,035,946	56,538,415	697,563
2000	1,446	1,050,802	57,690,459	675,084
2001	1,450	1,102,235	58,442,340	720,501
2002	1,424	1,136,440	59,906,285	748,879
2003	1,430	1,107,392	60,238,425	758,287
2004	1,471	1,154,661	62,357,696	764,456
2005	1,445	1,134,482	61,663,938	759,172
2006	1,380	1,214,439	63,537,522	775,255

FY 2006 data continues to be updated as reports are obtained by PHNMSA Office of Pipeline Safety

Supporting the high number of pipe failures due to third-party damage is a report from the OPS that has jurisdiction over ensuring the safety of natural gas distribution networks. According to the latest OPS summary report on distribution pipeline incidents by cause, of the 134 incidents in 2006, 32.1 percent were caused by third-party excavation damage. Third party excavation damage also resulted in three deaths, nine injuries and an estimated \$5.6 million in property damage costs. Other primary causes cited in the report were due to fires and explosions and failure due to a car, truck or other vehicle.

As to incidents in 2007, OPS reports that through Oct. 31, distribution-operator incidents totaled 105 and accounted for 25 injuries and six deaths.

Main costs

The latest figures provided by survey participants on main costs report that 2-4- inch diameter PE pipe is used in the gas utility industry and accounts for 95-98 percent of all new main installations in developed areas. The following figures reflect the average cost per foot and pipe diameter reported to install plastic and steel mains: Plastic main installation costs ranged from \$2 to \$8.56 for 2-inch; \$5.17 to \$29 for 3-inch; \$4 to \$30 for 4-inch; and \$8 to \$19.35 for 6-inch.

Companies reporting protected steel main installations costs offered the following: \$3.72 to \$14 for 2-inch; \$6.59 to \$43 for 3-inch; \$7.76 to \$20.50 for 4-inch; and \$8 to \$23 for 6-inch.

Repairing leaking mains

Although most of the LDCs surveyed said they do not track the average cost for finding and repairing leaky mains on a per leak basis, the following were given as the highest costs for finding and repairing leaky mains, regardless of size: \$872-\$2,768.

One LDC with 2,600,000 customers gave \$2,398 as its average repair cost per leak, regardless of size.

A gas utility in Ohio with 1,400,200 customers gave \$1,652 as its cost for finding and repairing leaky mains, regardless of size.

Impact of integrity management

To the question on what impact proposed integrity management legislation would have on the LDC, most said they expected to see a financial and operational impact. Other commonly cited impacts were increased documentation and manpower requirements. They also anticipate an increase in maintenance costs which will ultimately lead to higher rates for the consumer.

Another commonly cited concern was an expected mandate that would require the use of excess flow valves.

The previously mentioned Mid-Atlantic utility with 410,000 customers indicated the legislation would require each company

to know their system much better insofar as size, kind, age and location.

What's needed

From an equipment and technology standpoint, respondents said they would most like to see trenchless and keyhole technology improvements. Others indicated a need

for improved steel pipe insertion technology and tooling and paving removal and restoration improvements.

On the wish list of several gas utilities was an improved leak-detection method, a more accurate line-detection method for plastic pipe and improvements in location technology. ■

NEW & REPLACEMENT MAINS & SERVICES, 2004- 2008						
		2008	2007	2006	2005	2004
Miles of Main	New	14,808	14,109	13,444	12,750	12,113
Miles of Main	Replacement	16,972	16,094	15,187	12,128	11,770
Total		31,780	30,203	28,631	24,878	23,883
Miles of Service	New	13,750	13,143	12,243	11,313	11,012
Miles of Service	Replacement	19,050	18,300	17,555	16,112	15,800
Totals		32,800	31,443	29,798	27,425	26,812
COMBINED TOTALS		64,580	61,646	58,429	52,303	50,695
U.S. GAS UTILITY EXPENDITURES 2004-2008						
Estimated Spending (\$000)		2008	2007	2006	2005	2004
New Construction		4,041,050	4,001,624	3,896,680	3,572,900	3,512,340
3Rs		7,800,702	6,560,320	5,046,400	4,814,411	4,747,112
TOTALS		11,841,752	10,561,944	8,943,080	8,387,311	8,259,452