

that an additional \$277 million is realized by avoiding the likelihood of this more significant accident.

The rule will also result in avoiding significant costs associated with unexpected interruptions in natural gas supply. The 2000 Carlsbad accident resulted in curtailment of supply of natural gas to California. RSPA/OPS estimates that this resulted in an impact on the California economy of \$17.25 million per day. The total benefit afforded by this rule in avoiding future economic impacts of this type is estimated to be \$1 billion over the next 20 years.

Another benefit to be realized from implementing this rule is reduced cost to the pipeline industry for assuring safety in areas along pipelines with relatively more population. The improved knowledge of pipeline integrity that will result from implementing this rule will provide a technical basis for providing relief to operators from current requirements to reduce operating stresses in pipelines when population near them increases. Regulations currently require that pipelines with higher local population density operate at lower pressures. This is intended to provide an extra safety margin in those areas. Operators typically replace pipeline when population increases, because reducing pressure to reduce stresses reduces the ability of the pipeline to carry gas. Areas with population growth typically require more, not less, gas. Replacing pipeline, however, is very costly. Providing safety assurance in another manner, such as by implementing this rule, could allow RSPA/OPS to waive some pipe replacement. RSPA/OPS estimates that such waivers could result in a reduction in costs to industry of \$1 billion over the next 20 years, with no reduction in public safety.

#### Costs

Comments submitted in response to the draft regulatory analysis pointed out that the costs to do much work associated with pipeline integrity assessments, *e.g.*, excavating pipe for direct examination, are much higher in urban areas than they are in rural locations. The comments suggested that use of a single set of unit costs (*i.e.*, costs per-mile) to represent all pipeline was unreasonable. RSPA/OPS accepts that work in urban areas is more costly. In the final regulatory analysis, RSPA/OPS has used different unit costs for work on long-distance pipelines, traversing largely rural areas, and for shorter transmission pipelines owned by gas distribution companies, which are generally in urban areas. RSPA/OPS

has relied on comments submitted by INGAA, whose members consist of operators of long-distance pipelines, and the American Gas Association (AGA) and American Public Gas Association (APGA), whose members are gas distribution companies, for the unit costs used in the final regulatory analysis.

RSPA/OPS analyzed two scenarios in the draft regulatory analysis, varying the amount of pipeline that operators are expected to modify to accommodate in-line inspection. This approach was taken, because of industry comments that significant amounts of pipeline would likely be modified and the costs for that work. Some pipe already can accommodate in-line inspection tools. Some can be modified to accommodate the in-line inspection tools with relatively simple modifications. Others require much more extensive retrofits. RSPA/OPS was uncertain whether operators would incur the significant costs to modify this "hard-to-pig" pipeline or, instead, rely on direct assessment for those pipeline segments. One of the analyzed scenarios assumed that only the piping that can easily be modified would be changed. The other scenario was based on the assumption that a portion of the pipe requiring more extensive changes would also be modified.

Comments submitted in response to the draft regulatory analysis strongly supported the premise that operators will modify much hard-to-pig pipeline. Discussions at public meetings and at the Technical Pipeline Safety Standards Committee indicated a strong preference for pigging, and a full intent, on the part of the industry, to pursue that approach in most cases. This is, in part, because pigging provides an operator with much more information about the pipeline. Faced with these comments, RSPA/OPS believes it would be unreasonable to continue to analyze a scenario in which no hard-to-pig pipe is changed. As demonstrated by the two scenarios considered in the draft regulatory analysis, costs are much higher during the baseline assessment period when hard-to-pig pipe is assumed to be modified.

Initial experience with direct assessment, however, indicates higher costs for using this method than originally estimated, making reassessment costs lower if a larger proportion of affected pipeline is pigged. This adds an economic incentive to modify pipeline for pigging and further supports eliminating the "Limited Modification" scenario.

We have estimated the cost for operators to identify pipeline segments

that can affect HCAs at approximately \$15.05 million, the cost to develop the necessary programs at approximately \$104.13 million and an annual cost for program upkeep and reporting of \$12.91 million. An operator's program begins with a baseline assessment plan and a framework that addresses each required program element. The framework indicates how decisions will be made to implement each element. As decisions are made and operators evaluate the effectiveness of the program in protecting HCAs, the program will be updated and improved, as needed.

The final rule requires a baseline assessment of covered pipeline segments through internal inspection, pressure test, direct assessment or use of other technology capable of equivalent performance. The baseline assessment must be completed within ten years after December 17, 2002 (the date the Pipeline Safety Improvement Act of 2002 was signed into law), with at least 50% of covered segments being assessed within five years.

After this baseline assessment, the rule further requires that an operator periodically reassess and evaluate the pipeline segment to ensure its integrity. The interval in which reassessments must be performed varies with the operating stress levels in the pipe. Pipelines operating at greater than 50 percent of specified minimum yield strength (SMYS) must be reassessed at least every 10 years. Pipelines operating between 30 and 50 percent SMYS must be reassessed every fifteen-years. Pipelines operating below 30 percent SMYS require reassessment on a twenty-year interval.

RSPA/OPS believes that the higher the operating pressure of a pipeline, the greater the potential risk the pipeline poses to the general public. That is because a failure of a pipeline operating at a higher pressure will result in a larger impact area and potentially more significant consequences. It is under this assumption that RSPA/OPS has established the shortest assessments intervals for pipelines that operate at or above pressures of 50 percent of SMYS. By basing the assessment interval according to pipeline pressure, operators will have to focus their safety resources on pipelines that pose the greatest danger. RSPA/OPS believes that varying the assessment interval according to the risk provides the greatest safety reward per dollar operators will expend.

The Pipeline Safety Improvement Act of 2002 requires reassessment of all pipelines in HCAs every seven years. To meet this requirement an operator must conduct some assessment at that