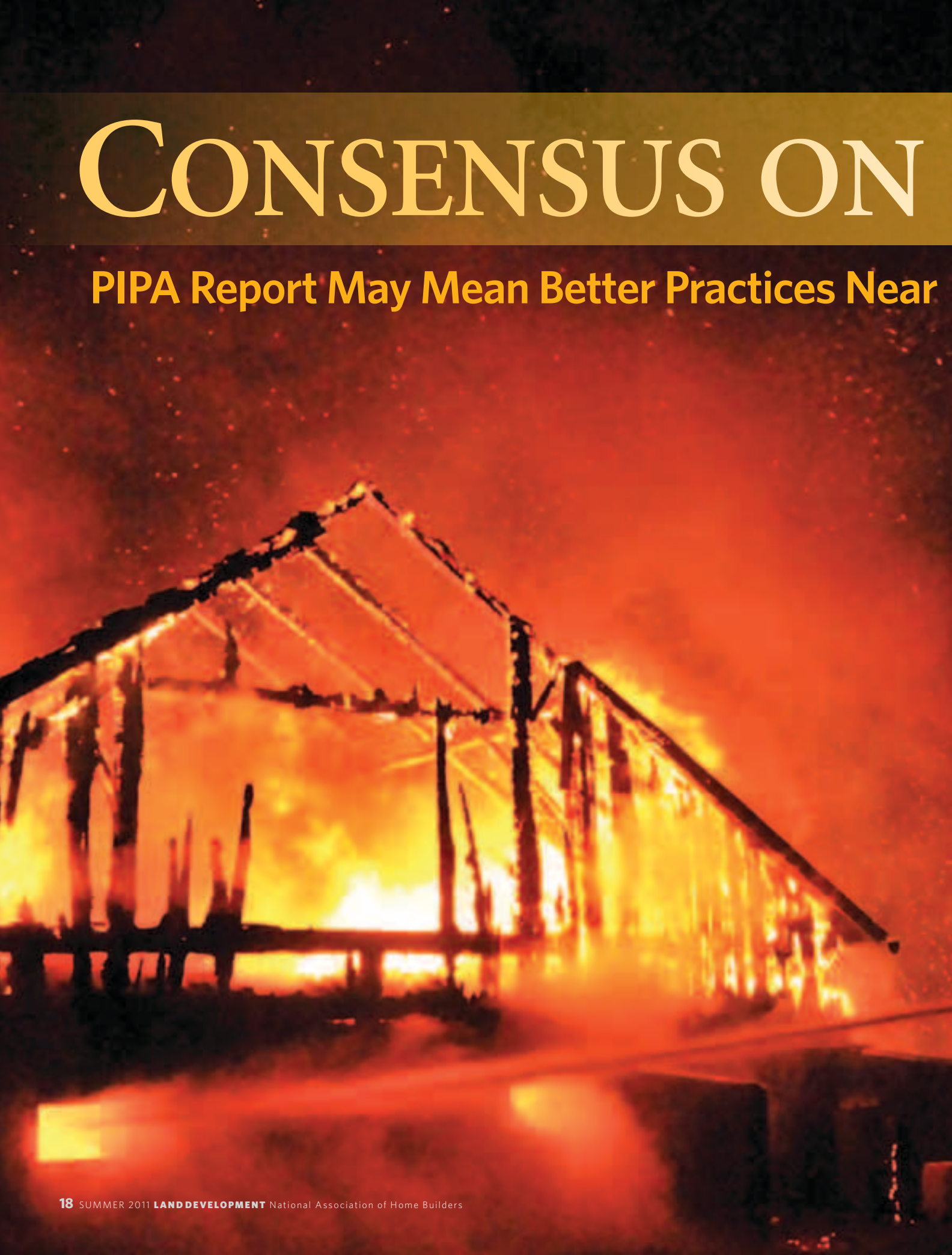
Consensus on

PIPA Report May Mean Better Practices Near



SAFETY

Hazardous Pipelines

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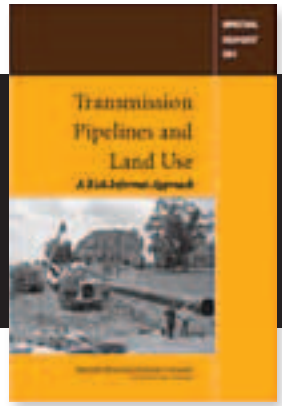


BY BRUCE BONCKE

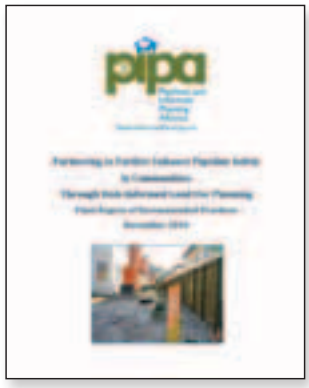
IN 2002, Congress passed the Pipeline Safety Improvement Act, which required the Secretary of Transportation, in conjunction with the Federal Energy Regulatory Commission (FERC), to conduct a study of the effects population encroachment can have on pipelines conveying potentially hazardous materials. The National Academies Transportation Research Board (TRB) then formed a committee to study Risk-Informed Land Use guidance near existing and future transmission pipelines.

As they were looking for committee expertise on land use and zoning practices, the TRB reached out to NAHB as a resource and stakeholder on these issues. As chair of the NAHB Land Development Committee at the time, I volunteered to serve on the TRB Committee. While serving on a National Academies committee was an honor in itself, I also learned an extensive amount about hazardous materials pipeline safety. In 2004, the committee finished TRB Special Report 281; Transmission Pipeline and Land Use – A Risk Informed Approach. Some of what I learned and what NAHB staff learned as they helped in this process is included in this article.

Background

The term "hazardous materials" for purposes of this article, primarily includes petroleum and natural gas distribution pipelines. These pipelines transport about 66 percent of the ton-miles of oil and refined petroleum and nearly 100 percent of the natural gas consumed in the United States. In addition to these distribution statistics, energy demands for the combination of these two fuels have increased by about 70 percent over the past 20 years. Although the relative demands may shift between petroleum and natural gas in future years, 50 percent of housing now relies on natural gas for heating energy. Clearly, the housing industry has a heavily vested interest in the increased demand on aging infrastructure and the need for safety.

One of the most significant recommendations of the TRB report called for the Office of Pipeline Safety (OPS) and the pipeline industry to develop risk-informed land use guidance and best practices by stakeholders. The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) formed the Pipelines and Informal Planning Alliance (PIPA) to perform that task. The historic PIPA effort was a 130-member coalition made up of representatives from the pipeline safety agencies, local city and county governments, the public, developers, fire marshals, pipeline operators, and state and federal regulators. NAHB was the only organization representing the building industry. NAHB was asked to participate in this effort as a highly regarded resource and stakeholder. The association was represented by its staff and by me—we served on the Steering Committee and all three Task Groups—Protecting Pipelines, Protecting Communities and Communications.



There was, admittedly, a mission in NAHB's involvement in this important activity. It was to keep the dreaded and often arbitrary words "setback" and "mandatory" out of the vocabulary and to help develop a risk-informed basis for land-use decisions. Also a high priority were the issues of property rights, takings and potential loss of land or housing value.

On December 16, 2010, PHMSA released PIPA's Report, "Partnering to Further Enhance Pipeline Safety In Communities Through Risk-Informed Land Use Planning." The report offers nearly 50 recommended practices for use by local communities, developers and pipeline operators to use to reduce safety risks that result from growth of communities near pipelines. The recommendations offer options on how land-use planning and development decisions can protect existing pipeline infrastructure as well as the growing communities themselves. The report also provides recommendations on how communities can gather information about local transmission pipelines; how local planners, developers and pipeline operators should communicate during the various phases of new development to understand pipeline risks; and how to minimize pipeline excavation damages during site preparation and construction.

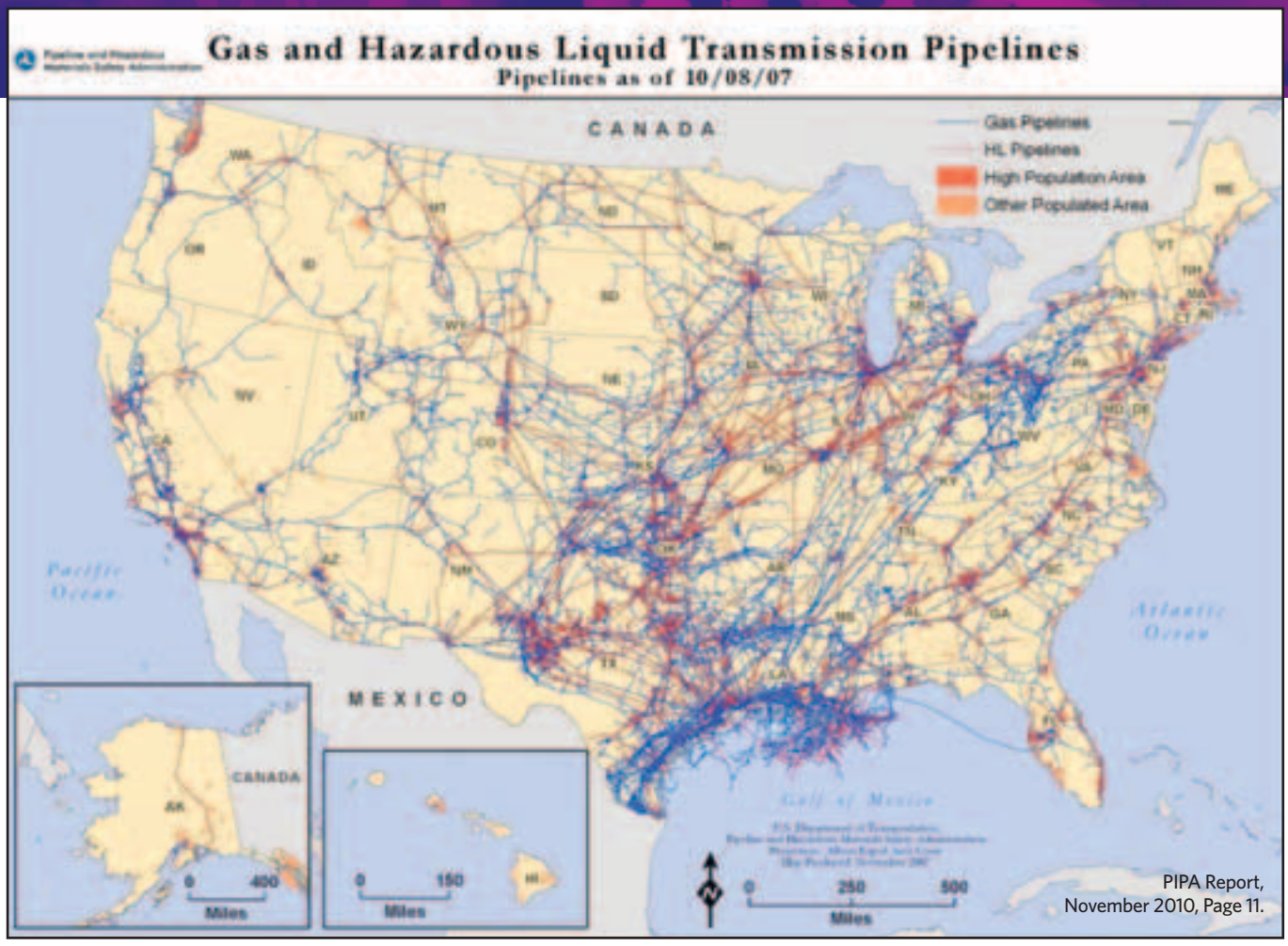
In my opinion, the result was "mission accomplished" for our objectives on behalf of the building industry. However, through our involvement in both the TRB and the PIPA efforts, we also learned there is a very clear need to educate all stakeholders, including NAHB members and developers, on the risks, and land use practices that can minimize those risks.

The Situation

PHMSA regulates approximately 2.3 million miles of pipeline infrastructure, and the age of these facilities often goes back decades. Population growth and development have posed increasing challenges with these facilities in several ways. First, the demand for more energy creates the need for either increased use of existing facilities or expansion into developed areas. Second, new development often occurs close to existing natural gas or petroleum transmission pipelines.

Over the past few decades, much of the population growth has been in areas of the country with significant amounts of hazardous materials pipelines. About 10 years ago, OPS implemented an Integrity Management Program, a regulatory approach that requires pipeline operators to comprehensively assess, identify and address the safety of pipeline segments located in areas where the consequences of a pipeline failure could be significant. This program has proven to be very valuable; however, it did not incorporate land-use measures.

During the TRB effort, the committee observed land development and building activities that ranged from those with much respect for the pipeline, for easements, and for levels of risk, to truly frightening scenarios. In one location, we saw homes located quite near a high volume/high flow petroleum pipeline that ruptured during construction of the homes. Six unfinished homes were doused with over 20,000 gallons of gasoline, which by some miracle did not ignite and caused no injuries. However, a tragically ironic incident occurred just as the PIPA Report and Recommendations were being reviewed—the San Bruno, California pipeline explosion that killed eight people and sickened or injured many others occurred, further emphasizing the need for the effort.



PIPA Report, November 2010, Page 11.

Throughout both the TRB and PIPA efforts, we also observed land-use choices that put high risk individuals close to pipelines. One of the most striking of these was a "tot lot" placed near a high pressure natural gas pipeline.

Another observation was the chronic risk of private homeowner encroachment on pipeline easements. It seems that, long after the initial developer/builder is gone, that extra land in the back yard (which is, in reality, a hazardous pipeline easement) becomes a good location for a pool, shed or other use, sometimes without any regard for risk. For example, while serving on the TRB Committee, a builder in my own community, in response to a home buyer request, excavated beyond the property boundary into a clearly marked and maintained natural gas pipeline easement. No surveying occurred; no dig alert 811 notification was requested; and, perhaps not surprisingly, he hit the 12-inch high pressure natural gas pipeline—fortunately without a catastrophic incident.

Sometimes poorly informed land use practices put individuals too close to pipelines. (Picture from PIPA report, page 16)

What's Needed

To achieve good, risk-informed planning, we have to start with good up-front information and communication, which can be challenging. Unfortunately, many communities have little knowledge or awareness of risky facilities. Pipeline operators generally will acquire the rights to the minimum amount of easement or right-of-way needed to construct and maintain a transmission pipeline. Operators generally are not bound to consider land use issues beyond that operational boundary. If they were, the land cost effect on energy distribution would likely be significant. Likewise, developers are generally not bound to consider pipeline issues beyond the property boundary issues of an easement line or right-of-way line, yet they routinely do so with similar easements such as sewer or water facilities. This is because, while one of these utilities could mean great operational risk, rarely would the potential catastrophic risk that hazardous material pipelines can carry be present.

MAP COURTESY PHMSA. PHOTO COURTESY PIPA

Obtaining accurate location of pipelines and easements also can be challenging. While good resources exist, such as the National Pipeline Mapping System (NPMS) through PHMSA, sources are only as good as the original location data. Many old easements, particularly in open space areas, were defined by physical features, such as oak trees or streams that might not even exist anymore. Others are poorly marked, and some owners have even granted rights to operators to locate facilities anywhere on their properties. On some sites, there may be multiple pipelines owned by a variety of companies, unclear land title records, and inadequate or dated information on the owners.

A developer who chooses a site that has a natural gas or hazardous materials pipeline on or close to it likely will have many challenges starting with knowing the pipeline exists in the first place, then ascertaining where those lines are located and to whom they belong. And the developers are dealing with these issues at the same time they are undertaking the usual challenges such as layout/land planning, yield, land-use cost and marketing.

BRYAN/ WIKIMEDIA COMMONS

A repair project at a Pacific Gas and Electric facility went awry just before the San Bruno pipeline explosion in California last September. Both lives and homes were lost as a result.

PIPA Effort and Recommendations

The goal of the PIPA initiative was to find ways to reduce risks and improve the safety of affected communities and transmission pipelines by improving the way communities plan land use and new development near transmission pipelines. To achieve this goal, a coalition and consensus-based effort between PHMSA and the many PIPA stakeholders resulted in the adoption and implementation of PIPA-developed

In Northlake Forest, Cypress, Texas, the developer worked with officials to incorporate the pipeline right-of-way as green space and common area.

recommended-practices related to risk-informed land-use planning near transmission pipelines.

Developers are not transmission pipeline experts, and pipeline experts are not developers. Still, pipeline risks can best be addressed with proper risk-informed planning and design. For this reason, involving the pipeline operator early in the development process should ensure adequate time to incorporate the operator's safety concerns into project design. Establishing good communications between pipeline operators and developers is much more effective than practices such as establishing fixed-distance setbacks from transmission pipeline rights of way. Many of the PIPA Recommended Practices may appear to be "common sense," but in practice the concept of "risk-informed" planning has generally not been considered and will prove enlightening to local governments and developers.

Accessing the PIPA Final Report will give developers and builders a good perspective on the issues. The PIPA report also has some valuable guiding principles for the building/development industry. The details of Recommended Practices and graphical examples of both good and bad practices are more extensive than can be included in this article. However, a few examples include:

- Obtain information on the pipeline and the risks it may involve. In addition to safety, the risks can also affect marketing of a project.
- Consider the risk characteristics of the project end user. Careful land use planning for youth, elderly or other hard-to-evacuate users should be emphasized.
- Incorporate low-use or passive recreation areas in plans associated with these pipeline corridors. The combined use of these areas can be low-risk amenities to projects. Nature areas and walking trails are excellent combined uses.
- Plan high density extremely cautiously when close to hazardous pipelines and integrate parking or landscape areas to provide additional separation and risk reduction.
- Avoid designing site drainage infrastructure, such as swales and ponds/detention areas that may have potential for future erosion in the vicinity of hazardous pipelines.
- Include good location and operational/owner information on plans, and educate buyers or end users about the presence of these facilities.

Many other excellent recommendations and practices are covered in the final PIPA report. As a conclusion, I want to draw attention to a significant concept within the final PIPA recommendations that could affect all stakeholders and particularly the development industry. It is the concept of creating a "Consultation Zone" and possibly a "Planning Area" along an existing hazardous material pipeline on a property under development consideration. (This can be found under Recommendations BL04, BL05, BL06 and a Model Ordinance in Appendix B of the PIPA report.)

The concept of communication-based Consultation Zones is fundamental to risk-informed land-use planning, yet it was one of the most highly debated issues in the PIPA effort. The Consultation Zone is an area with a width to be determined by the community based on the type and operating characteristics of the pipeline. The operator, developer and community would exchange information to conduct risk-informed land-use planning. The Planning Area could take this effort a step further by establishing appropriate and/or inappropriate land uses close to pipelines based on operating characteristics and risk information.

What Consultation Zones or Planning Areas do not do is recommend setbacks or mandate land uses outside of a risk-informed procedure. The recommendations in the PIPA report are not code or regulations unless a local jurisdiction chooses to adopt them into code. However, developers or builders working in a community considering adopting the recommendations in PIPA's report need to proactively work with the community and pipeline operators to assure that a risk-informed process is followed. **LD**

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References

PHMSA Pipeline Safety Communication Site, PIPA Study / Report **www.pipelineinformedplanning.com**

Pipeline Location Mapping: **NPMS: www.npms.phmsa.dot.gov**

OPPOSITE: JESSIE ELDORA/ ISTOCKPHOTO. PHOTO ABOVE COURTESY ESRI