EXECUTIVE SUMMARY

SUBJECT: Transportation Research Board (TRB) report titled "*Transmission Pipelines and Land Use: A Risk-Informed Approach"* and the Office of Pipeline Safety Implementation Plan.

REQUIRED BY: This report to Congress on the study of population encroachment and rights-of-way is required by Section 11 of the Pipeline Safety Improvement Act of 2002, Public Law No. 107-355.

BACKGROUND: The Pipeline Safety Improvement Act (PSIA) of 2002 requires the Secretary of Transportation, in conjunction with the Federal Energy Regulatory Commission (FERC) and other appropriate Federal and state agencies and local governments, to undertake a study of land use practices, zoning ordinances, and preservation of environmental resources with regard to pipeline rights-of-way and their maintenance. The Act also requires the Secretary of Transportation to promote the adoption of practices, laws, and ordinances by Federal agencies and state and local governments in reducing the risks and hazards associated with encroachment on pipeline rights-of-way.

Prior to the passage of the PSIA, the Research and Special Programs Administration's Office of Pipeline Safety (RSPA/OPS) had been working with the Transportation Research Board (TRB) on a similar issue. The contract was expanded and RSPA/OPS requested that TRB conduct the study. TRB convened an expert committee of 12 members from academia, pipeline industry, local governments, and consultants to provide recommendations to RSPA/OPS.

SUMMARY HIGHLIGHTS: The report is complete and ready for the Secretary of Transportation to provide to Congress. TRB has made the following recommendations:

Recommendation 1: RSPA/OPS should develop risk-informed land use guidance for application by stakeholders.

Recommendation 2: The process for developing risk-informed land use guidance should:

- involve the collaboration of all stakeholders;
- be conducted by persons with expertise in risk analysis, risk communication, land use management, and developing regulation;
- be transparent, independent, and peer reviewed; and
- incorporate learning and feedback to refine the guidance over time.

Recommendation 3: The transmission pipeline industries should develop best practices for the specification, acquisition, development, and maintenance of pipeline rights-of-way.

RSPA/OPS has developed an Implementation Plan that addresses both mandates and highlights how RSPA/OPS in conjunction with FERC and other Federal partners will develop a decision framework and guidance that balances the need to protect pipelines and the public and be consistent with national energy policies, homeland security issues, and other Federal policies.

Transmission Pipelines and Land Use: A Risk-Informed Approach
Research and Special Programs Administration, Office of Pipeline Safety
Implementation Plan

Background of Study

The Pipeline Safety Improvement Act (PSIA) of 2002 requires the Secretary of Transportation, in conjunction with the Federal Energy Regulatory Commission and in consultation with appropriate Federal agencies and state and local governments, to undertake a study of land use practices, zoning ordinances, and preservation of environmental resources with regard to pipeline rights-of-way and their maintenance. The Act also requires the Secretary of Transportation to promote the adoption of practices, laws, and ordinances by Federal agencies and state and local governments to reduce the risks and hazards associated with encroachment on pipeline rights-of-way.

The purpose of the study is to gather information on land use practices, zoning ordinances, and preservation of environmental resources—

(1) to determine effective practices to limit encroachment on existing pipeline rights-of-way;
(2) to address and prevent the hazards and risks to the public, pipeline workers, and the environment associated with encroachment on pipeline rights-of-way;
(3) to raise the awareness of the risks and hazards of encroachment on pipeline rights-of-way; and
(4) to address how to best preserve environmental resources in conjunction with maintaining pipeline rights-of-way, recognizing pipeline operators' regulatory obligations to maintain rights-of-way and to protect public safety.

Prior to passage of the PSIA, the Research and Special Programs Administration's Office of Pipeline Safety (RSPA/OPS) requested the Transportation Research Board (TRB)[1] to:

- Examine evidence of the risks to the public of increased development and population in proximity to pipelines.
- Understand how these risks vary on the basis of differences in product, pipeline characteristics, and other features.
- Explore the feasibility of establishing development setbacks that local governments might use to regulate encroaching development around existing pipelines.

Following enactment of the PSIA 2002, the TRB study was modified to assist RSPA/OPS in meeting the legislative mandates of the Act.

[1] The TRB is a division of the National Research Council, which serves as an independent adviser to the Federal Government and others on scientific and technical questions of national importance. The National Research Council is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The TRB is one of six major divisions of the National Research Council, and its mission is to promote innovation and progress in transportation through research.

TRB Report Recommendations & RSPA/OPS Comments

The TRB study is now complete and the results, conclusions, and recommendations emerging from the study have been documented in TRB Special Report 281, "*Transmission Pipelines and Land Use: A Risk-Informed Approach*."

The TRB provides the following recommendations:

Recommendation 1: RSPA/OPS should develop risk-informed land use guidance for application by stakeholders. The guidance should address:

- Land use policies affecting the siting, width, and other characteristics of new pipeline corridors.
- The range of appropriate land uses, structures, and human activities compatible with pipeline rights-of-way.
- Setbacks and other measures that could be adopted to protect structures that are built and maintained near pipelines.
- Model local zoning ordinances, subdivision regulations, and planning policies and model state legislation that could be adopted for land uses near pipelines.

Such a risk-informed guidance system should include three interrelated components:

1. A decision framework informed by risk analysis.
2. Guidelines based on the analysis.
3. Alternative actions that could be taken on the basis of the guidelines.

Recommendation 2: The process for developing risk-informed land use guidance should:

a) involve the collaboration of a full range of public and private stakeholders (e.g., industry and Federal, state, and local governments);
b) be conducted by persons with expertise in risk analysis, risk communication, land use management, and development regulation;
c) be transparent, independent, and peer reviewed at appropriate points along the way; and
d) incorporate learning and feedback to refine the guidance over time.

Recommendation 3: The transmission pipeline industries should develop best practices for the specification, acquisition, development and maintenance of pipeline rights-of-way. In so doing, they should work with other stakeholders. With regard to the specific maintenance issue of clearing rights-of-way to allow for inspection, the Federal Government should develop guidance about appropriate vegetation and environmental management practices that would provide habitat for some species, avoid threats to pipeline integrity and allow for aerial inspection.

RSPA/OPS Implementation Plan

RSPA/OPS agrees with the intent and objectives of the TRB recommendations and has initiated activities, which are summarized in this Implementation Plan, to produce broad-based guidance and to document effective practices that will assist Federal agencies and state and local governments in making decisions that can affect pipeline safety. The mandate of PSIA and the recommendations of TRB are fully consistent with the risk-informed and data driven strategic approach to pipeline safety that RSPA/OPS has adopted, and are consistent with the on-going RSPA/OPS initiatives to provide pipeline safety stakeholders with the information and tools necessary to carry out their respective roles and responsibilities.

The decision framework and guidance that RSPA/OPS will produce in conjunction with the Federal Energy Regulatory Commission (FERC) and other Federal partners will address the wide range of planning scenarios confronted by local decision-makers, including:

1. Decisions related to the siting of new pipelines.
2. Decision related to land-use planning around remote pipelines.
3. Decisions related to protecting the safety of existing pipelines.

Accordingly, the decision framework and guidance will address all of these scenarios. RSPA/OPS believes that any pipeline, regardless of its proximity to population centers, can be kept safe based on executing the optimum mix of management, technology, mitigation and educational programs. Therefore, our guidance will provide Federal, state, and local officials with multiple options and strategies for reducing risk associated with population encroachment on pipeline rights-of-way.

By working closely with FERC and our other Federal partners, RSPA/OPS will also assure that the decision framework and guidance produced will be consistent with national energy policies, homeland security issues, and other Federal policies. In addition, the land use and risk identification efforts will be coordinated with ongoing efforts to identify and reduce potential impact to unusually sensitive areas.

These recommendations are consistent with RSPA/OPS initiatives over the last two years of providing Federal, state and local officials with pipeline technical assistance through our Community Assistance and Technical Services (CATS) program and guidance on damage prevention. Although considerable progress can be made and valuable guidance can be provided to Federal, state, and local officials in the short term, RSPA/OPS will not minimize the importance or difficulty of this effort. Federal, state, and local officials face tough decisions, and our decision framework and guidance must address multiple, and sometimes competing goals and objectives. We must protect the public from the rare pipeline accidents that do occur, and also protect the pipelines from the effects of increasing development near pipelines. But we must also provide these protections in a way that still allows the efficient and economic expansion and upgrading of our national

pipeline infrastructure required to meet energy supply and distribution needs critical to our nation's economic health. Accordingly, this Implementation Plan also calls for longer-term analyses and activities to strengthen the RSPA/OPS risk information base and to provide the full range of tools and data required by officials to make these difficult decisions.

The RSPA/OPS Implementation Plan includes an internal component that continues and expands RSPA/OPS' risk-informed Federal pipeline safety program. The RSPA/OPS Implementation Plan also includes a multi-stakeholder shared responsibility component under which RSPA/OPS would team with a wide variety of public and private stakeholders to reduce the risks associated with local planning decisions.

The RSPA/OPS Implementation Plan is comprised of three phases:

1. *Short-Term Activities,* in which RSPA/OPS, working with FERC and other Federal partners, produces a risk-based planning decision framework and guidance for application by Federal, state, and local officials along with relevant supporting risk information. During this initial phase, RSPA/OPS will also convene the Pipelines and Informed Planning Alliance (PIPA), comprised of Federal, state, local, and private stakeholders.
2. *Intermediate-Term Activities,* in which PIPA identifies and pilot tests noteworthy best practices and policies, documents and presents this information in a form useful to Federal, state, and local officials, and promotes adoption of these practices throughout the country.
3. *Longer-Term Follow-on Activities,* in which RSPA/OPS continues to develop its internal risk assessment programs, fund additional Research and Development projects, and carry out other activities recommended by PIPA.

<u>Short-Term Activities</u>

By the Fall of 2005, working with FERC and other Federal partners, RSPA/OPS will:

- Identify the types of planning decisions that could benefit from risk information.
- Define the relevant risk information that is needed to support these types of decisions (e.g., causes of pipeline incidents, relative likelihood of various causes, factors that impact level of consequences, etc.), and the relative sensitivity of possible decision outcomes to these risk factors.
- Develop a risk-based planning decision framework and guidance in its application to assist Federal, state, and local officials. This product will reflect RSPA/OPS knowledge of pipeline risks, taking into account uncertainties and local variabilities in risk data and models. The guidance will provide multiple risk-management options including but not limited to setbacks, consequence mitigating designs and practices, enhanced communications, and accident prevention strategies.

- Confer with FERC and other Federal and state partners to define the goals, objectives, and scope of PIPA and identify a broad-based set of Federal, state, local, industry, and private stakeholders to participate in PIPA.
- Define stakeholder roles and responsibilities.
- Invite stakeholder representatives and determine initial PIPA membership.
- Establish a Steering Group for PIPA.
- Schedule initial PIPA meeting.
- Develop a web-based communication system to facilitate interactions among and provide an interactive document repository for PIPA members.

Intermediate-Term Production Activities

By the Spring of 2006, RSPA/OPS and PIPA will:

- Identify (and pilot test if necessary) effective best practices to limit encroachment on existing pipeline rights-of-way.
- Identify effective risk communication practices.
- Identify effective practices to best preserve environmental resources in conjunction with maintaining pipeline rights-of-way.
- Identify model local zoning ordinances, subdivision regulations, and planning policies and model state legislation that could be adopted for land uses near pipelines.
- Identify vegetation and environmental management practices that would provide habitat for some species, avoid threats to pipeline integrity and allow for aerial inspection.
- Document and present these effective practices in a form useful to Federal, state and local officials.
- Develop and implement a plan that promotes the adoption of these practices by Federal, state and local officials.
- Provide other information and tools, as identified by PIPA, to assist pipeline stakeholders in carrying out their shared responsibilities for pipeline safety.

Longer-Term Follow-on and Research Activities

During Calendar Year 2005 and beyond, RSPA/OPS will develop a long-term Risk Assessment Research and Development program that will supplement its current data collection and risk management programs. This program will improve RSPA/OPS's detailed technical understanding of the threats to pipelines, develop a better understanding of the physical mechanisms that cause pipeline incidents to lead to adverse safety and environmental effects, develop more detailed risk analyses, and help identify improved risk prevention and mitigative options. This information will be used to update Federal pipeline safety regulations and will provide new and better guidelines and information to help local planners.

It is anticipated that PIPA will also identify a variety of other longer-term activities that could be undertaken by RSPA/OPS, either by itself or in conjunction with the various stakeholders. RSPA/OPS will incorporate these recommendations, as appropriate, into existing programs and utilize them to build CATS efforts with state and local governments.