Informative Reference Documents Relative to Pipelines and Risk-Informed Land Use Planning

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Document	Abstract
TRB Special Report 219: Pipelines and Public Safety, Damage Prevention, Land Use, and Emergency Preparedness	Issue Date: 1988 Geographical: U.S. Format: Report, published Prepared by: Transportation Research Board (TRB) Link: http://onlinepubs.trb.org/onlinepubs/sr/sr219/SR219_00.pdf Brief: TRB recommended collaboration on damage prevention and public and emergency preparedness programs, and land use measures. Instead of recommending specific development setbacks, report points out a number of changes in land development review and regulation that would reduce the risk of pipeline damage. Differences in local conditions argue against establishing definitive standards or limits on specific land uses near pipeline rights-of-way.
Pipeline Safety Improvement Act (PSIA) of 2002	Issue Date: December 2002 Geographical: U.S. Format: Federal, Public law 107-355 Prepared by: U. S. Federal Law Link: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107_cong_public_laws&docid=f:publ355.107.pdf Brief: The PSIA of 2002 mandates significant changes and new requirements to ensure the safety and integrity of pipelines. Among other requirements, it requires pipeline operators to prepare and implement pipeline integrity management programs. It also requires the U. S. Secretary of Transportation 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.

TRB Special Report 281 - Transmission Pipelines and Land Use: A Risk-Informed Approach -	Issue Date: September 2004 Geographical: U.S. Format: Report, published Prepared by: Transportation Research Board (TRB) Link: http://onlinepubs.trb.org/onlinepubs/sr/sr281.pdf Brief: This report was a scoping study on the feasibility of developing risk-informed land use guidance near existing and future transmission pipelines. Report was required by the Federal Pipeline Safety Improvement Act (PSIA) of 2002. The U. S. Secretary of Transportation was required to undertake, in conjunction with other appropriate agencies, 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 required the Secretary 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. The Secretary contracted with the TRB to conduct the study.
An Interstate Natural Gas Facility on My Land? What Do I need to Know?	Issue Date: Indefinite Geographical: U.S. Format: Brochure Prepared by: U. S. Federal Energy Regulatory Commission (FERC) Link: http://www.ferc.gov/for-citizens/citizen-guides/citz-guide-gas.pdf Brief: One role of the U. S. Federal Energy Regulatory Commission (FERC) is to evaluate if interstate natural gas pipeline projects proposed by private companies should be approved. The Federal government does not propose, construct, operate, or own such projects. FERC's determination whether to approve such a project may affect you if your land is where a natural gas pipeline, other facilities, or underground storage fields might be located. We want you to know: How the Commission's procedures work; What rights you have; How the location of a pipeline or other facilities is decided; and What safety and environmental issues might be involved.
Dealing with Public Risks Involved in Land Use Planning	Issue Date: June 2001 Geographical: U.S. Format: Symposium Paper (*for Purchase*) Prepared by: Public Entity Risk Institute Link: http://www.riskinstitute.org/peri/ Brief: A collection of Issues and Ideas papers from a June 2001 PERI Symposium focuses on land use planning issues that raise fiscal, safety, and legal risks to local communities in a variety of critical areas. To purchase, follow link, go to Resource Library, select topic "Land Use Planning", and search on title.

The Liquid Pipeline Industry in the United States: Where It's Been, Where It's Going	Issue Date: April 2004 Geographical: U.S. Format: Report Prepared by: Association of Oil Pipe Lines Link: http://www.aopl.org/posted/888/Final_Rabinow_print_40804.57626.pdf Brief: Prepared for the Association of Oil Pipe Lines by Richard A Rabinow. The outlook for the liquid pipeline industry in the U. S. is for improving environmental and safety performance, albeit at the same time that the public's expectations continue to rise rapidly, with little tolerance for operational incidents. Issues relating to rights of way will become even more contentious and expensive.
Takings Law in Plain English	Issue Date: May 2006 Geographical: U.S. Format: Website Prepared by: Institute for Local Government Link: http://www.cacities.org/index.jsp?zone=ilsg&previewStory=20212 Brief: One of the most contentious areas of land use law involves the question of what type of public agency action constitutes a "regulatory taking." The law of takings derives from 12 words in the 5th Amendment of the U.S. Constitution: ". . . nor shall private property be taken for public use without just compensation." Simply defined, a taking occurs when a public agency either condemns property to build public projects (also referred to as eminent domain) or physically occupies or damages property. The Takings Clause does not prohibit these activities; it merely requires that the public agency pay property owners "just compensation." This website provides a discussion of concepts and issues related to regulatory takings.

Regulatory Takings Developments Since Lucas	Issue Date: August 2006 Geographical: U.S. Format: Paper Prepared by: William R. Padget, Esquire Link: http://www.finkellaw.com/CM/PublishedWorks/Regulatory%20Takings%20Since%20Lucas%20Paper.pdf Brief: "In the last decade since the Supreme Court issued its ruling in Lucas v. South Carolina Coastal Council,1 which changed landscape of modern takings analysis, the Court has decided a number of other major takings cases. Now, with the benefit of hindsight, it seems as though Lucas may have been the high point for property rights activists in the realm of Takings by government entiti. Since Lucas…Supreme Court's recent interpretation…has provided important clarification on the limits imposed upon government entities when restricting landowner's use and enjoyment of their property. These limitations on government powers are becoming more important as states and municipalities seek to more comprehensively regulate land use through new strategies such as "Smart Growth" and will have particular application as landowners and state and local governments attempt "Smart Rebuilding" in the wake of the 2005 Hurricane season.
Second Anniversary of Kelo and the State of Property Rights in America	Issue Date: June 2007 Geographical: U.S. Format: Paper, web page, opinion Prepared by: Reason Foundation, Adrian Moore Link: http://communities.justicetalking.org/blogs/day26/archive/2007/06/26/2nd-Anniversary-of-Kelo.aspx Brief: On the second anniversary of the U.S. Supreme Court's Kelo vs. New London decision, a look at what it has wrought for property rights and justice. "Kelo lit a fire under the private property rights movement and set into motion a wave of policy reform that is still ongoing. Even though the decision to condemn the middle-class homes of Susette Kelo and her neighbors to make way for private developers was an utter affront to freedom, it actually ended up being one of the best things that could have ever happened to the property rights movement."

Planning for the Unexpected: Land Use Development and Risk	Issue Date: February 2005 Geographical: U.S. Format: Book (*for purchase*) Prepared by: American Planning Association (APA) Planning Advisory Service Link: http://myapa.planning.org/APAStore/Search/Default.aspx?p=2438 Brief: "Typical plans include only about half of the elements necessary for a safe, hazard-resistant community. How does your plan stack up? Does it manage environmental, capital, economic, social, and institutional risks? Can it adapt to emerging risks? This report describes the tools planners have to identify and manage risks related to land use." Table of Contents includes: 1. Assessing Risk in Land-Use Planning; 2. A Risk Management Framework; 3. Examining Four Programs to Manage Risks; 4. Putting It All Together: Establishing a Risk-Management-Based Approach to Planning in Your Community
API Guidelines For Property Development	Issue Date: 2004 Geographical: U.S. Format: Booklet (*for purchase*) Prepared by: American Petroleum Institute (API) Link: www.api.org Brief: API Guidelines for Property Development. To increase awareness about how to conduct land development and use activity along pipeline rights-of-way.
Building Safe Schools: Invisible Threats, Visible Actions	Issue Date: December 2005 Geographical: U.S. Format: Report Prepared by: Center for Health, Environment and Justice Link: http://www.childproofing.org/documents/building_safe_schools.pdf Brief: To better inform policy discussions surrounding the siting of schools, a survey of the laws, regulations and policies related to the siting of schools on or near sources of environmental pollution in all fifty states was conducted. The Child Proofing Our Communities Campaign (CPOC) was established by the Center for Health, Environment and Justice (CHEJ) in 2000 as part of a nationwide coalition of grassroots groups working on school-based environmental health issues. The campaign aims to connect local efforts across the country, raise awareness of toxic threats to children's health, and promote precautionary approaches most protective of children.

Expanding Natural Gas Pipeline Infrastructure To Meet The Growing Demand For Cleaner Power: Final Report Of The Keystone Dialogue On Natural Gas Infrastructure	Issue Date: March 2002 Geographical: U.S. Format: Report Prepared by: The Keystone Center Link: http://208.72.156.157/~keystone/files/file/about/publications/Final-Gas-Pipeline-Report.pdf Brief: This report is the result of a year-long Policy Dialogue convened and facilitated by The Keystone Center, a nonprofit dispute resolution and public policy organization. The Dialogue process brought together a diverse and high-level group of people to address issues relating to interstate natural gas pipeline infrastructure. Participants included individuals from consumer groups, energy-producing companies, environmental organizations, government agencies, industry associations, the pipeline industry, tribes, and utilities. The Dialogue focused on three broad topics relating to natural gas pipeline infrastructure: (1) natural gas pipeline infrastructure needs, (2) the challenges of siting new or expanded pipeline infrastructure, and (3) the safety, integrity, and reliability of natural gas pipeline infrastructure.
California Department of Education: Guidance Protocol for School Site Pipeline Risk Analysis	Issue Date: February 2007 Geographical: U.S. Format: Report, website Prepared by: URS Corporation, for the California Department of Education, School Facilities Planning Division Link: http://www.cde.ca.gov/ls/fa/sf/protocol07.asp Brief: This Pipeline Risk Analysis Protocol has been prepared only as recommended guidance for use by California local educational agencies (LEAs) and the California Department of Education (CDE) in the preparation and review, respectively, of risk studies conducted for proposed school sites and projects. It is intended to provide a consistent, professional basis for determining if a pipeline poses a safety hazard as required in the California Code of Regulations (CCR) Title 5 section 14010(h) - Standards for School Site Selection. Its sole purpose is to help LEAs reasonably document the estimated safety risk in context of those regulations, which will then be reviewed by CDE if the LEA is seeking approval of the school project.

Washington Model Pipeline Ordinances	Issue Date: April 2007 (updated) Geographical: U.S. Format: Website Prepared by: Municipal Research and Services Center of Washington Link: http://www.mrsc.org/subjects/PubSafe/PipeSafetyModel.aspx#Model Brief: In 2000 Washington state legislation was passed, now codified at RCW 43.110.070, requiring that: The municipal research council shall, by June 30, 2001, develop and periodically update, for the consideration by local governments: (1) A model ordinance that establishes setback and depth requirements for new hazardous liquid and gas pipeline construction; and (2) A model franchise agreement for jurisdictions through which a hazardous liquid or gas pipeline is located. The task of drafting the documents was entrusted to Municipal Research & Services Center. MRSC worked with representatives of concerned local governments in this state to produce documents that should provide a basis for responsible local government regulation of transmission pipelines in the State of Washington.
Setbacks and Zoning for Natural Gas and Hazardous Liquid Transmission Pipelines	Issue Date: August 2004 Geographical: U.S. Format: Paper Prepared by: Jim Doherty, Legal Consultant for Municipal Research & Services Center Link: http://www.mrsc.org/subjects/pubsafe/setbacks.pdf Brief: A summation of available information concerning transmission pipeline setbacks and land use regulation. This paper contains: a brief introduction, excerpts from a prepublication copy of TRB Special Report 281, and a concluding section containing the author's own recommendations. Attached are copies of the MRSC model setback ordinance, and code provisions enacted by Austin, Texas.

Washington Gas Pipeline Regulation – Proximity Considerations	Issue Date: April 2009 Geographical: U.S., Washington State Format: Regulation Prepared by: Washington Utilities and Transportation Commission Link: http://apps.leg.wa.gov/WAC/default.aspx?cite=480-93-020 Brief: Note that language of current regulation may differ. **WAC 480-93-020** Agency filings affecting this section **Proximity considerations.** (1) Each gas pipeline company must submit a written request and receive commission approval prior to: (a) Operating any gas pipeline at greater than five hundred psig if the gas pipeline is within five hundred feet of any of the following places: (i) A building that is in existence or under construction prior to the date authorization for construction is filed with the commission, if the building is not owned and used by the petitioning gas pipeline company in its gas operations; or (ii) A high occupancy structure or area that is in existence or under construction prior to the date authorization for construction is filed with the commission; or (iii) A public highway, as defined in RCW 81.80.010(3). (b) Operating any gas pipeline at greater than two hundred fifty psig, up to and including five hundred psig, if the gas pipeline is within one hundred feet of either of the following places: (i) A building that is in existence or under construction prior to the date authorization for construction is filed with the commission, if the building is not owned and used by the petitioning gas pipeline company in its gas operations; or (ii) A high occupancy structure or area that is in existence or under construction prior to the date authorization for construction is filed with the commission. (2) For proposed new construction of pipelines having the characteristics listed in subsection (1)(a) or (b) of this section, each gas pipeline company must demonstrate to the commission that it is not practical for the gas pipeline company to select an alternate route that will avoid such locations and that the gas pipeline company has considered the possibility of the future development of the area and has designed its gas pipeline accordingly. (3) During the review process, each gas pipeline company must provide maps and records to the commission showing the exact location of the gas pipeline and the shortest direct distance to the places described in subsection (1)(a) and (b) of this section. Upon request of the commission, the gas pipeline company must provide the maintenance, construction, and operational history of the pipeline system and an aerial photograph showing the exact location of the gas pipeline in reference to places listed in subsection (1)(a) and (b) of this section.

Land Use Planning for Pipelines	Issue Date: August 2007 (posted update) Geographical: U.S., Washington State Format: Report Prepared by: Washington Utilities and Transportation Commission Link: http://www.wutc.wa.gov/webimage.nsf/1fd8daa538d4adba8825704d00643802/9fe01a11e8383ff888257097005d6218!OpenDocument Brief: The presence of a pipeline forms a relationship between pipeline operator, local government and property owner. How this relationship is managed can affect directly the safe operation of the pipeline and consequently the public health and safety of the surrounding community. In 2004 and 2005, a group of [Washington] city, county, state and industry representatives conducted a series of workshops throughout the state for local government officials, talking in particular with planning, permitting and public works sections. The purpose of these workshops was to exchange ideas and explore the range of tools available to manage and make effective decisions concerning land use in proximity to transmission pipelines.
Municipal Code of Edison, NJ, Township	Issue Date: as of April 2009 (current code may differ) Geographical: U.S., Edison Township, NJ Format: Municipal code Prepared by: Edison Township, NJ Link: http://clerkshq.com/default.ashx?clientsite=Edison-nj Brief: Excerpt from Edison, NJ, Municipal Code (local laws), Chapter XXXVII, Zoning: **37-4.21 Interference with Pipelines.** a. *Definitions.* As used in this chapter: *Distribution line* means a pipeline other than a gathering or transmission line. *Gathering line* means a pipeline that transports gas from a current production facility to a transmission line or main. *Pipeline* means any conduit through which natural gas, petroleum, oxygen or other flammable or combustible products or any of their products is conveyed or intended to be conveyed. The definition of "pipeline" shall include compressor plants and other facilities integrated **with** pipeline operations. *Service line* means a distribution line that transports natural gas from a common source of supply to a customer meter or the connection to a customer's piping, whichever is farther downstream, or to the connection to a customer's piping if there is not a customer meter. The "customer meter" is the meter that measures the transfer of gas from an operator to a customer. *Transmission line* means a pipeline subject to pressures of one hundred twenty-five (125) or more pounds per square inch gauge, other than a gathering line, that: 1. Transports gas from a gathering line or storage facility to a distribution line in a storage facility to a

	distribution center or storage facility; 2. Operates at a hoop stress of twenty (20%) percent or more of SMYS (specified minimum yield strength); 3. Transports gas within a storage field. b. No building or land disturbance shall be permitted within seventy-five (75) feet of any distribution, gathering or transmission line, as defined in paragraph a. above. c. No building or structure or part thereof which is used for the manufacturing, processing, generation or storage of corrosive, highly toxic, oxidizing, pyrophoric, water-reactive, highly combustible, flammable or explosive materials that constitute a high fire, explosion or health hazard, including loose, combustible fibers, dust and unstable material, shall be constructed within one hundred twenty-five (125) feet of any distribution, gathering or transmission line. d. *Exceptions and Exemptions.* This subsection shall not apply to: 1. Any building, land disturbance or construction involved in the crossing of a pipeline to provide access to a property when no other reasonable access is permitted and the crossing of a pipeline to provide utility services to a parcel of land; 2. Any work done to any building, land disturbance or construction on a pipeline by or on behalf of the owner or operator of any pipeline. e. The approving board may permit the encroachment upon the buffer area provided for in this subsection upon a demonstration that the strict application of this section would result in particular and exceptional practical difficulties or undue hardship caused by reason of exceptional narrowness, shallowness or shape of the property or by reason of exceptional topographic conditions or physical features uniquely affecting a property or by reason of extraordinary and exceptional situations uniquely affecting a property or the structures lawfully existing thereon. (1999 Code § 17.08.210)
Effectiveness of U.S. And International Pipeline Regulations With Regard to Land Use Planning	Issue Date: September 1995 (Initial Study Completed) Geographical: U.S. Format: Report Prepared by: New Jersey Institute of Technology (NJIT) and Columbia University Link: http://transportation.njit.edu/nctip/publications/intregulations.html Brief: The transmission pipeline incident in Edison, NJ in March, 1994 raised public concerns about the safety of siting of transmission pipelines in proximity to populated areas. One response was a contract by the U. S. Department of Transportation (USDOT) to NJIT to study this and other issues regarding pipeline safety. The research performed by NJIT included a review of current USDOT regulations and policy with regard to siting of pipelines and related land use; a review of regulations of major industrialized countries related to same; an analysis of the USDOT's incident database vis-à-vis proximity to neighboring land uses; and a review of local land use regulations related to proximity to transmission pipelines. The basic findings were: 1. The U.S. pipeline regulations are appropriate to minimizing risk while maintaining the viability of

	the pipeline industry. 2. All the regulations reviewed (i.e., US and international) approach the siting and regulation of pipelines in urban areas in a similar fashion. 3. Analysis of the USDOT incident database indicates that, in general, pipelines are sited in rural or underdeveloped areas, and damage resulting from an incident in highly developed areas is generally less than in rural areas due to the regulations restricting the allowable operating stresses in more densely populated areas.
City of Austin, TX - Hazardous Pipelines Ordinance	Issue Date: Geographical: U.S. Format: Municipal code Prepared by: City of Austin, TX Link: *http://www.amlegal.com/nxt/gateway.dll/Texas/austin/thecodeofthecityofaustintexas?f=templates$fn=default.htm$3.0$vid=amlegal:austin_tx$anc=* Brief: The City of Austin enacted an ordinance that regulates structures built near a pipeline for the transmission of a "hazardous liquid", as defined by Title 49, Code of Federal Regulations, Section 195.2, that has an inside diameter of eight inches or more.. The ordinance -- approved by the Austin City Council on April 10, 2003 -- is designed to ensure greater public safety. The ordinance requires special construction standards, determined by the Fire Department, for new structures within 200 feet of a pipeline. In addition, uses requiring special evacuation assistance are prohibited within 500 of such a pipeline unless it is a structure within 200-500 feet of the pipeline and the Fire Chief makes a safety recommendation to City Council. In those cases, the City Council makes the final determination. The ordinance doesn't apply to natural gas lines since at the time the ordinance was originally drafted there were no gas transmission pipelines in the city's jurisdiction. There are now, and consideration may be given at some point to include them. Follow the link above to access the Austin City Codes, then point to Titles 25-2-516 and 25-4-134 for the current code language.
Independent Safety Review of the Onshore Section of the Proposed Corrib Gas Pipeline	Issue Date: January 2006 Geographical: UK Format: Study and Report Prepared by: Advantica (Drs. Michael Acton and Robert Andrews) Link: http://www.mayogasinfo.com/download/Advantica_Report.pdf Brief: This report, prepared for The Minister for Communications, Marine & Natural Resources, Dept of Communications, Marine and Natural Resources, Dublin 2, Ireland, presents the detailed findings of the review of the onshore section of the proposed Corrib gas pipeline, which ranges from a general consideration of the process followed in selecting the preferred design option, to detailed analysis of highly technical aspects of the engineering design and risk assessment. Quantified risk assessment (QRA) techniques were used to evaluate the levels of risk to the public, and deemed to be acceptable according

	to recognized and relevant international criteria. However, there appears to be no formal framework in Ireland for decisions on the acceptability of different levels of risk, which should be in place to enable potential developers to gauge whether or not a proposed project is likely to be permitted and to ensure consistency of decisions made on safety issues. The report recommended that consideration be given by the Irish Government to establishing a risk-based framework for decisions on proposed and existing major hazard pipelines and related infrastructure, to ensure transparency and consistency of the decision-making process. See related Power Point presentation: http://www.dcenr.gov.ie/NR/rdonlyres/4CA02A2D-8FA0-4F76-8372-1839D95FA773/0/AdvanticaPresentationonDraftReport.pdf
Cross-country Pipeline Safety Assessment - India	Issue Date: 2003 Geographical: India Format: Report Prepared by: H.N. Mathurkar (Scientist and corresponding author) and Dr. A. Gupta (HOD, National Environmental Engineering Research Institute (NEERI)), Nagpur, India Link: www.iitk.ac.in/che/jpg/papersb/full%20papers/M%20-%2055.doc Brief: Pipeline safety assessment studies were carried out at the design stage of a cross-country natural gas pipeline for implementation of various safety measures. The pipeline is one of the longest cross country natural pipelines proposed in India. This paper quantitatively evaluates the risk involved based on the actual population data along the pipeline route for the entire stretch of the pipeline. Risk-based design decisions can be implemented easily and at relatively minimal cost at the design stage. Risk level for the pipeline was computed through the use of event tree analysis, consequence analysis, vulnerability analysis and individual risk computation. Pipeline design parameters such as pipeline thickness, depth of cover, routing, locations of sectionalizing valves and site specific surrounding population density were considered for arriving at the risk level for the pipeline. Mitigation measures and design modifications were implemented to bring the undesired risk to acceptable level.
Commentary on the Risk Analysis for the Proposed Emera Brunswick Pipeline Through Saint John, NB	Issue Date: October 2006 Geographical: U. S. Format: Report Prepared by: Richard B. Kuprewicz, President, Accufacts Inc. Link: http://pstrust.org/library/docs/accufacts_report_fd_ra.pdf#search="accufacts" Brief: This document is based on an evaluation of information readily available and in the public domain. Accufacts Inc. was asked to comment on the Risk Analysis ("RA") performed on the proposed Emera Brunswick Pipeline route through Saint John, New Brunswick by the Saint John Fire Department. In a previous independent report concerning this proposed high pressure gas transmission pipeline through the city of Saint John, Accufacts concluded: "For most gas transmission

	pipelines, the large thermal impact zones generated from early (within minutes) ignition sets the "controlling case" defining the potential impact zone. Accufacts must advise that over reliance on Emergency Response Planning ("ERP") utilizing Emergency Planning Zones to reduce risk will prove highly ineffective during the high heat flux stages of early ignition for a pipeline rupture. As clearly demonstrated in this report, no credit for risk reduction should ever be taken in risk analysis for such efforts." "This document will illustrate in further detail the harsh realities associated with this statement."
Guidance On Land Use Planning as Required by Council Directive 96/82/EC (Seveso II)	Issue Date: 1999 Geographical: European Communities (EC) Format: Guidance Document Prepared by: Institute For Systems Informatics and Safety: M.D. Christou & S. Porter (Editors) 1999 Link: http://mahbsrv.jrc.it/downloads-pdf/Landuse2.pdf Brief: European Commission Council Directive 96/82/EC … on the control of major-accident hazards involving dangerous substances (the Seveso II Directive) aims at the prevention of major accidents and the limitation of their consequences for man and the environment, with a view to ensuring high levels of protection throughout the [European] Community (EC) in a consistent and effective manner. Article 12 of the Directive requires that the objectives of preventing major accidents and limiting their consequences be taken into account by [EC] Member States in their land-use policies and/or other relevant policies. This requirement recognizes that planning policies can be directed towards the need, in the long term, for appropriate distances between establishments covered by the Directive and residential areas, areas of public use and areas of particular natural sensitivity or interest. The Land-use planning provisions within the Seveso II Directive reflect the Council of Ministers' request, following incidents at Bhopal (1984) and Mexico City (1984), that the land-use planning implications of limiting the consequences of major-accidents should be taken into account in the regulatory process. The incidents at Bhopal and Mexico City clearly showed how the consequences of an accident can become much worse where there are residential areas in the vicinity. Indeed the Seveso accident (1976) itself involved the evacuation of over 600 people and as many as 2000 were treated for dioxin poisoning. This guidance document is intended to assist with the interpretation of the requirements on land-use planning contained within the Seveso II Directive and, where relevant, on the provisions on land-use planning laid down within the UN/ECE Convention on the Transboundary Effects of Industrial Accidents [March 1998]. (Also see related Power Point presentation (www.unece.org/env/teia/water/pipeline/haguepresentations/SessionIII-1MichaelStruckl.pps), which notes: Seveso II directive Article 4: Exclusions – This Directive shall not apply to the following: .....d) the transport of dangerous substances in pipelines, including pumping stations, outside establishments covered by this Directive.) Also see website paper that presents Draft Terms of Reference for a European Working Group on Land-use planning in the context of Article 12 of the Seveso II Directive. (http://landuseplanning.jrc.it/index.html)

Land Use Planning Guidelines in the Context of Article 12 of the SEVESO II Directive 96/82/EC (as Amended by Directive 105/2003/EC)	Issue Date: September 2006 Geographical: European Communities (EC) Format: Guidelines Prepared by: European Commission Joint Research Centre, Institute for the Protection and Security of the Citizen, Hazard Assessment Unit (Edited by: M. D. Christou, M. Struckl And T. Biermann) Link: http://mahbsrv.jrc.it/downloads-pdf/LUP%20Guidance-2006.pdf Brief: This document represents existing best practice drawn from the cumulative knowledge of experts in this field. Its use is not mandatory, but it can be used by [EC] Member States to achieve compliance with the legislation. The document is intended to give guidance for risk assessment in Land Use Planning (LUP) in general as far as the major accident potential of industrial establishments is concerned. The main aim in this respect was to combine the understanding of the land use planners and the risk assessment experts in a coherent view. In this respect it may offer, especially to land use planners not familiar with industrial risk assessment considerations, a quick and comprehensive information resource. It will also assist with the use of the risk/hazard assessment database which the Major Accident Hazards Bureau (MAHB) was assigned to develop and which shall provide proposals for key factors in this respect. By defining best practice of risk assessment in Land Use Planning the underlying principles of the risk/hazard assessment database are described.
UK Health and Safety Executive (HSE) Newsletter: Implementation of the Fundamental Review of Land Use Planning (IFRLUP)	Issue Date: Autumn 2005 Geographical: UK Format: Newsletter Prepared by: UK Health and Safety Executive (HSE) Link: http://www.hse.gov.uk/landuseplanning/ifrlup/images/news4.pdf Brief: Newsletter from the UK Government Health and Safety Executive (HSE). Addresses HSE's Implementation of the Fundamental Review of Land Use Planning (IFRLUP). Describes the HSE's land-use planning decision tool, Planning Advice for Developments Near Hazardous Installations (PADHI+). Identifies that the use of PADHI+ by planning authorities (Pas) will not be optional – but advice that PADHI+ will generate will still belong to HSE and HSE will continue to support PAs at appeals where the advice was a significant factor in a planning decision.

UK Health and Safety Executive's (HSE) Website on Major Accident Hazard (MAH) pipelines.	Issue Date: Current Geographical: UK Format: Website Prepared by: UK Health and Safety Executive (HSE) Link: http://www.hse.gov.uk/pipelines/hseandpipelines.htm Brief: The Health & Safety Executive (HSE) regulates health, safety and integrity issues for all natural gas and other applicable pipelines in Great Britain, in territorial waters and the UK continental shelf. This site concentrates on Major Accident Hazard (MAH) pipelines. There are links to various documents under the categories of: Programmes of Work; Legislation; HSE Approved Codes of Practice and Guidance; Further Guidance; Inspection; and Standards.
Canadian Energy Pipeline Association (CEPA) Website	Issue Date: Current Geographical: Canada Format: Website Prepared by: Canadian Energy Pipeline Association (CEPA) Link: http://www.cepa.com Brief: Website of the Canadian Energy Pipeline Association (CEPA). Link to the CEPA Publications website is: http://www.cepa.com/index.aspx?site_guid=20B417BE-EDD6-497C-AFCA-B0D26BFF93FE&page_guid=4E05CD71-929E-40D1-94E7-DB904C3942A1, which includes a link to access the Canadian Standards Association (CSA) Plus 663, Land use planning for pipelines: A guideline for local authorities, developers, and pipeline operators.
Planning Public Forums: Questions to Guide Local Officials	Issue Date: 2007 Geographical: U. S. Format: Publication Prepared by: Institute For Local Government | Collaborative Governance Initiative Link: http://www.cacities.org/resource_files/25304.ILG_PlanPubForums.pdf Brief: The Institute for Local Government is the nonprofit affiliate of the League of California Cities, and more recently of the California State Association of Counties (CSAC). The Institute draws on research and experience to provide practical information and support to local public officials in service to their communities. The Collaborative Governance Initiative (CGI) is a program of the Institute that identifies and charts new forms of civic engagement in California and provides useful information and resources to local officials who wish to apply these strategies to local public decision and policy-making. Ultimate goals of this initiative include: • Greater capacity by cities and counties to engage residents in inclusive and effective public involvement processes. • Enhanced trust and confidence in government.

	• More politically informed and engaged residents. This publication seeks to provide guidance to local officials on whether and how to plan public forums as an approach to involving the broader community in public decision-making.
An Ounce of Prevention: Best Practices for Making Informed Land Use Decisions	Issue Date: Current Geographical: U. S. Format: Website Prepared by: Public Entity Risk Institute Link: http://www.riskinstitute.org/peri/ Brief: Website of the Public Entity Risk Institute. Follow their Resource Library link by Topic. Select the Land Use and Planning topic. A list of related reference publications are available, including (as of this entry): • An Ounce of Prevention: Best Practices for Making Informed Land Use Decisions • Planning for the Unexpected: Land Use Development and Risk • An Introduction to Dealing with Public Risks Involved in Land Use Planning Symposium • Dealing with Public Risks Involved in Land Use Planning • The Links Between Land Use Planning and Risks to Local Governments
National Pipeline Mapping System	Issue Date: Current Geographical: U. S. Format: Website Prepared by: Pipeline and Hazardous Materials Safety Administration (PHMSA) Link: http://www.npms.phmsa.dot.gov/ Brief: The National Pipeline Mapping System (NPMS) is a geographic information system (GIS) created by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS) in cooperation with other federal and state governmental agencies and the pipeline industry. The NPMS consists of geospatial data, attribute data, public contact information, and metadata pertaining to the interstate and intrastate gas and hazardous liquid transmission pipelines, liquefied natural gas (LNG) plants, and hazardous liquid breakout tanks jurisdictional to PHMSA. The NPMS is built from data submitted by pipeline, LNG plant, and breakout tank facility operators. Since 2002, transmission pipeline and LNG plant facility operators are required to submit mapping information to the NPMS and to update their submissions annually. Breakout tank operators are able to submit data to the NPMS on a voluntary basis. PHMSA uses the NPMS as a tool to support various regulatory programs, pipeline inspections, and authorized external customers.

Land Use Planning In Proximity to Natural Gas and Hazardous Liquid Transmission Pipelines in Washington State	Issue Date: June 2006 Geographical: U. S. Format: Report Prepared by: Municipal Research & Services Center (MRSC) Link: http://www.mrsc.org/artdocmisc/landusegas.pdf Brief: This report is focused on land use in proximity to existing pipelines. The presence of a major pipeline forms a relationship between the pipeline operator, safety regulators, local government, property owners and developers. How this relationship is managed can affect directly the safe operation of the pipeline and consequently the public health and safety of the surrounding community. None of these relationships, however, speaks directly to managing land use activities which can contribute to the occurrence of a pipeline incident and the exposure to harm of those living and working near a pipeline in the event of an incident. While pipeline safety involves a great many components and players, the procedural processes used to review proposed land use actions are the one area in which local governments can exert the most influence in protecting health and safety of its citizens. there is a demonstrated need to ensure that land use decisions and land development activities occurring within the vicinity of transmission pipelines are informed by early (i.e., pre-planning) consultation with pipeline operators, local government and developers. Effective communication can result in decisions which reduce the probabilities and consequences of transmission pipeline incidents. This report is for local government decision-makers and administrators, especially those involved in land use planning and permitting. However, all parties affected by land use adjacent to pipelines should review this report.
PHMSA Stakeholder Communications Website - Pipeline Operator Awareness Programs	Issue Date: Current Geographical: U. S. Format: Website Prepared by: Pipeline and Hazardous Materials Safety Administration (PHMSA) Link: http://primis.phmsa.dot.gov/comm/PublicEducation.htm Brief: Current federal pipeline safety regulations require pipeline operators to develop and implement public awareness programs consistent with the requirements of the Pipeline Safety Improvement Act (PSIA) of 2002 and the guidance provided by the American Petroleum Institute (API) Recommended Practice (RP) 1162, "Public Awareness Programs for Pipeline Operators". Under the regulations, pipeline operators provide the affected public with information about how to recognize, respond to, and report pipeline emergencies. The importance of using one-call notification systems prior to excavation is emphasized for all stakeholders. Emergency officials and local public officials are provided information about the location of transmission pipelines to enhance emergency response and community growth planning. Pipeline operators must review their programs for effectiveness and enhance the programs as necessary. Operators must include in their programs activities to advise affected municipalities, school districts, businesses, and residents of pipeline locations. Of significance is the requirement that operators must review their programs for effectiveness and enhance the programs as necessary.

BASF Professional Vegetation Management Magazine Article	Issue Date: 2004 Geographical: U. S. Format: Article (BASF In-house online magazine) Prepared by: BASF Professional Vegetation Management (ProVM) Link: http://www.vmanswers.com/magazines.aspx?pid=688 Brief: Black Out 2003 - FERC Report recommends electric utilities take more aggressive steps to trim and clear trees near transmission lines. This article summarizes a report released in March 2004 by the Federal Energy Regulatory Commission (FERC), which found that a massive power outage that occurred in August 2003, which left millions of people without lighting, refrigeration and air-conditioning, was triggered by overgrown trees. Had all of the trees that contributed to the August 14, 2003, outage, the report states, "been adequately pruned or removed prior to the event, the blackout would likely have not occurred." The report was prepared for the FERC by CN Utility Consulting of Novato, CA, and included active feedback from 55 utility companies throughout North America. It is considered the largest and most comprehensive utility industry vegetation management study ever completed. After determining that the line to ground faults that precipitated the blackout were a result of inadequate vegetation management practices, the FERC report recommends that industry standards be substantially improved to prevent future outages. The original FERC report can be accessed at http://www.ferc.gov/industries/electric/indus-act/reliability/veg-mgmt-rpt-final.pdf. More information on electric system reliability can be found at http://www.ferc.gov/industries/electric/indus-act/reliability.asp#reports.
Utility Vegetation Management and Bulk Electric Reliability Report	Issue Date: September 2004 Geographical: U. S. Format: Report Prepared by: Federal Energy Regulatory Commission (FERC) (via task force and input from CN Utility Consulting) Link: http://www.vmanswers.com/magazines.aspx?pid=688 Brief: Electric transmission owners and operators conduct vegetation management to prevent physical contact between transmission lines and nearby vegetation that could cause a transmission line to fail. On August 14, 2003, an electric power blackout affected large portions of the Northeast and Midwest United States and Ontario, Canada. President George W. Bush and Prime Minister Jean Chrétien established a joint U.S. – Canada Power System Outage Task Force (Task Force) to investigate the causes of the blackout and how to reduce the possibility of future outages. On April 5, 2004, the Task Force issued a Final Blackout Report stating that one of the four primary causes of the blackout was inadequate vegetation management (tree pruning and removal).

Research and Development in Natural Gas Transmission and Distribution	Issue Date: March 2007 Geographical: U. S. Format: Report Prepared by: American Gas Foundation Link: http://www.gasfoundation.org/ResearchStudies/researchgas.htm Brief: The purpose of the study is to determine the current and projected R&D budgets of government agencies, the pipeline industry, manufacturers, and research consortiums; the focus of their funded research, and the prudent and correct levels of investment and research for the future for the natural gas transmission and distribution pipeline sectors. The study will attempt to gauge the natural gas industry's investment in R&D in comparison with similar type of industries and determine if the level of investment is sufficient to address the industry needs. Due to uncertainties of disjointed approaches that currently exist, the industry is at possible risk of underinvestment in R&D that could negatively impact customers and the safe, reliable, and cost effective delivery of natural gas to residential and business consumers.
Example Easement Language	Issue Date: Unknown Geographical: U. S. Format: Example document Prepared by: Gallatin Valley Land Trust and City of Billings and Yellowstone County, Montana Link: http://www.gallatin.mt.gov/public_documents/gallatincomt_plandept/uploadedpdfs/appendix%20n.pdf Brief: Two examples taken from documentation used by the Gallatin Valley Land Trust (easement agreement), and the City of Billings and Yellowstone County (encroachment permit) to acquire trail rights-of-way. Each easement is tailored to meet the needs of the Grantor and the Grantee.
Judgment Regarding Pipeline Easement	Issue Date: March 1998 Geographical: U. S. Format: Judgment Prepared by: Minnesota Supreme Court, Court of Appeals Link: http://caselaw.lp.findlaw.com/scripts/getcase.pl?court=mn&vol=sc\9803\cx962319&invol=1 Brief: Opinion and judgment by the State of Minnesota Supreme Court for Northern Pipeline Company regarding its right to replace a pipeline anywhere within the boundaries of a property covered by a blanket easement. Judgment hinged upon the timing of when the easement was acquired relative to the effective date of Minnesota Statute § 300.045.

Judgment Regarding Encroachment on Pipeline Right-of-Way	Issue Date: May 2007 Geographical: U. S. Format: Judgment Prepared by: Court of Appeals of the State of Kansas Link: http://www.kscourts.org/Cases-and-Opinions/opinions/ctapp/2007/20070518/96103.htm Brief: Southern Star Central Gas Pipeline, Inc. (Southern Star) appealed a district court's decision denying its petition for possession, ejectment, and trespass based upon an alleged encroachment on Southern Star's pipeline easement owing to the proximity of a garage constructed too close to the pipeline. Southern Star claimed the district court erred by not enforcing Southern Star's easement rights and by not requiring the removal of the garage. The appeals court disagreed and affirmed the district court's ruling.
Development and Implementation of Risk Assessment Methods	Issue Date: December 2001 Geographical: China Format: Paper Prepared by: Advantica Technologies Ltd Link: http://66.102.1.104/scholar?hl=en&lr=&q=cache:NqojiUQhnaQJ:www.advanticatechinc.com/Library_Items/Technical_Papers/Papers/papers/ready%2520for%2520site/Development%2520and%2520Implementation%2520of%2520Risk%2520Assessment%2520Methods%2520for%2520Natural%252 Brief: Presented at China Gas 2001 International Conference with Special Focus on Gas Safety, Chongqing, China, November 21/22, 2001. The possibility of accidental [pipeline] releases can never be discounted, and it is important that pipeline operators have an understanding of the causes and potential consequences of such releases in order to help manage the risks involved. The development of techniques to allow quantified risk assessments of natural gas pipelines and associated facilities to be undertaken has accelerated in recent years, supported by mathematical modeling and experimental validation. These techniques offer operators the opportunity to optimize safety by targeting areas where risk can be reduced most cost-effectively, and to optimize the use of assets by avoiding inappropriate restrictions on operations. Risk assessment techniques have been developed by Advantica for a broad range of gas industry applications, including offshore platforms, reception terminals, high and low pressure pipelines, compressors, gas storage and LNG sites. This paper describes the background to the development of these techniques, the framework that has been established in the UK for decision-making based partly on results of quantified risk analysis (QRA) and techniques developed and applied by Advantica for both transmission and distribution pipelines.

Model simulates pipeline, tank-storage failures	Issue Date: September 1983 Geographical: U. S. Format: Bibliographical citation Prepared by: U. S. Department of Energy Link: http://www.osti.gov/energycitations/product.biblio.jsp?osti_id=6819773 Brief: There is an important need for accurate mathematical models to predict the source rates and resulting safety impacts of accidental releases of materials from gas or liquid pipelines and from cryogenic storage tanks. Two major types of hazards can develop after a structural failure of a pipeline or hydrocarbon storage tank: a combustion hazard or a toxic chemical hazard. Both of these types of hazards can affect the safety of personnel in the vicinity of the structural failure. A flammable vapor cloud can form after a pipeline or tank fracture and, if an ignition source is present, the cloud can detonate, or explode. In the case of a crude oil or gas-pipeline failure, a toxic cloud may also develop due to the presence of hydrogen sulfide (H/sub 2/S).^Even in low concentrations, inhalation of H/sub 2/S may cause physical impairment or death. The existence of these two potential hazards--a flammability hazard or a toxic chemical hazard--prompts the need to conduct safety analysis studies of facilities and transport systems that carry pressurized fluids and gases. However, the simulation modeling of the flammability or toxicity concentration limits due to the structural failure of a pipeline or storage tank is quite difficult. Complicating factors include the two-phase (gas and liquid) flow caused by a pressurized liquid pipeline break, and the gravitational settling of a cold, dense gas if a cryogenic liquid such as liquefied natural gas (LNG) is spilled.
The Role of Energy Pipelines and Research in the United States: Sustaining the Viability and Productivity of a National Asset	Issue Date: 2006 Geographical: U. S. Format: Report Prepared by: Interstate Natural Gas Association of America (INGAA) Link: http://www.ingaa.org/cms/28/4854.aspx Brief: This report surveys the contributions of oil and gas pipelines in meeting the Nation's energy needs, the critical role that research played in making those contributions possible up until now, and how research will be necessary in the future to meet the challenges facing pipelines. Continued, even increased, dependence on pipelines is clear. Future demand for oil and natural gas will grow, requiring greater capacity for distribution across the nation and into communities, but regional patterns of supply and demand will shift, requiring reconfigured pipeline movements. Research is essential to improve pipeline safety, supply reliability, environmental performance, security and efficiency as the system encounters higher capacity utilization and higher bars for performance. Report was written by Cheryl J. Trench, President, Allegro Energy Consulting and Thomas O. Miesner, Principal, Miesner LLC.