



**Partnering to Further Enhance Pipeline Safety  
In Communities  
Through Risk-Informed Land Use Planning  
Final Report of Recommended Practices  
November 2010**



The Pipelines and Informed Planning Alliance is sponsored by the United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety.

The initial PIPA effort was conducted by approximately 130 stakeholder participants representing a wide range of interests, organizations, and viewpoints on pipelines and community planning. Appendix A of this report lists the initial PIPA participants.

Our thanks go out to all of the PIPA participants and the many other unidentified individuals who may have supported the PIPA effort in one way or another.

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The PIPA logo was created by Sven Upsons and provided courtesy of The Danielle Dawn Smalley Foundation, Inc., Crandall, Texas.

PIPA information may be found online at [PipelineInformedPlanning.com](http://PipelineInformedPlanning.com).



#### **BL04 Adopt Transmission Pipeline Consultation Zone Ordinance**

**Practice Statement** Local governments should adopt land development procedures requiring property developers/owners to consult with transmission pipeline operators early in the development process, so that development designs minimize risks to the populace living or working nearby and are consistent with the needs and legal rights of the operators.

**Audience** Local Government

#### **Practice Description**

Local governments should adopt ordinances requiring that property developers/owners must review their proposed projects with the transmission pipeline operators for any application for a land use or development permit within a transmission pipeline “consultation zone”. This applies for developments in either urban or rural areas.

Local developers are not transmission pipeline experts; therefore, they should consult with the pipeline operator to determine whether a proposed land use or development will impact the integrity of the nearby transmission pipeline or the future safety of persons or property. If the transmission pipeline operator is involved early in the development process, there should be adequate time to incorporate the operator’s concerns into the design.

During the consultation, the pipeline operator and the property developer/owner should develop a mutually agreeable timeline for the operator’s review of the proposed project. If the pipeline operator and property developer/owner cannot reach agreement on pipeline-related issues, the operator can provide input to the local government planning and zoning organization regarding potential impacts of the proposed project, *before* the project is approved and permits are issued.

The goal of this recommended practice is to avoid situations where transmission pipeline operators learn of proposed land use and development projects only after the design is complete or construction begins. In those situations, it is often difficult or impossible to make cost-effective changes that may be needed to enhance public safety and ensure operator access to the pipeline facilities.

Section 2 of the Model Ordinance in [Appendix B](#) includes requirements for property developers/owners to notify and provide development information to transmission pipeline operators when applying for a land use permit for property within the consultation zone.

#### **References:**

- [Whatcom County, Washington, Proposed Pipeline Safety and Development Changes, Docket #ZON2007-00014 \(2008\)](#)
- [Washington Model Pipeline Ordinances, Municipal Research & Services Center, Seattle](#)
- [“Land use planning for pipelines: A guideline for local authorities, developers and pipeline operators” Canadian Standards Association \(CSA\) 2004](#)

## **BL05 Define Transmission Pipeline Consultation Zone**

**Practice Statement** Local governments should define a “consultation zone” to provide a mechanism for communication between property developers/owners and operators of nearby transmission pipelines when new land uses and property developments are being planned.

**Audience** Local Government

### **Practice Description**

Local governments should define a consultation zone to provide a mechanism to initiate communication between property developers/owners and operators of nearby transmission pipelines when new land uses and property developments are being planned. Optimally, the consultation zone distance should be measured from the transmission pipeline centerline and should be based on specific pipeline characteristics and local conditions.

The intent of this recommended practice is to initiate a dialogue between the property developer/owner and the transmission pipeline operator when new land use or property development is planned near a transmission pipeline. This dialogue will serve to: (1) protect the transmission pipeline by promoting adequate consideration of the potential safety impacts of the proposed land use or property development on the pipeline; and (2) raise awareness of the potential safety impacts of the transmission pipeline on the proposed land use or development so they can be taken into account during planning and design.

For proposed new land uses and developments within the consultation zone, the property developer/owner should be required to initiate consultation with the transmission pipeline operator as early as possible in the development planning process. The local government and the property developer/owner should consult local land records to determine if transmission pipelines are located in the proposed development area. In addition, the National Pipeline Mapping System (NPMS), <http://www.npms.phmsa.dot.gov/>, may be utilized, with the caution that the accuracy of pipeline locations in the NPMS vary from pipeline to pipeline and may be as much as +/- 500 feet. Also, neither local land records nor the NPMS should ever be used in lieu of calling the one-call center to have the actual position of transmission pipelines and other underground facilities located and marked prior to excavation. In most cases an excavator can generally dial 811 to contact the one-call center.

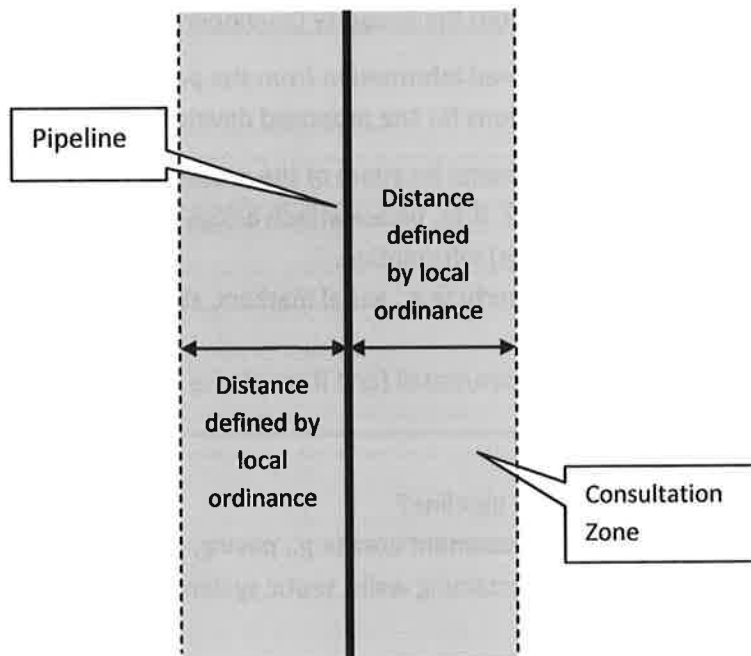
Once consultation has begun, specific considerations to further enhance safety and protect communities where new development is planned near transmission pipelines may be taken into account. Several additional considerations are discussed in PIPA recommended practices BL06 and ND11 through ND23. Recommended Practice BL06 addresses the development and implementation of a “planning area”.

A consultation zone distance should be measured from the transmission pipeline centerline. So that consultation zone requirements are appropriately applied to proposed land uses and developments, a site-specific distance based on the characteristics of the pipeline (e.g., pipeline diameter, operating pressure, potential spill volumes, transported commodities, unrestrained flow characteristics of transported commodities) and the area surrounding the pipeline (e.g., topography, population density, vegetation, structures, etc.) should be determined. Local governments should work with the pipeline

operators to determine site-specific pipeline characteristics when developing their consultation zone distances.

Absent site-specific information, it is suggested that a standard consultation zone distance, on either side of the pipeline centerline, of 660 feet be used for natural gas transmission pipelines. For hazardous liquid pipelines, also absent site-specific information, it is suggested that a standard consultation zone distance in a range from 660 to 1,000 feet be considered. However, in either case it is recommended that communities develop and utilize site-specific distances for consultation zones, based on the unique characteristics for the pipeline and the area surrounding the pipeline. As noted, the transmission pipeline operator can be helpful and should be consulted in assisting local governments to better understand the pipeline characteristics when they develop site-specific consultation zone distances.

Generally, consultation zone distances larger or smaller than the standard distances may be warranted. High/low operating pressure, large/small pipe diameters, type of product carried and local topography can influence the potential impact on nearby development. Related information on refining planning area distances (see PIPA Recommended [Practice BL06](#)) is provided in [Appendix I](#). Additionally, American Petroleum Institute Recommended Practice ([API RP 1162](#), Public Awareness Programs for Pipeline Operators, First Edition, December 2003, includes recommendations for collaboration among pipeline operators, property owners/developers and emergency response officials that may be helpful in developing criteria for a planning area. API RP 1162 applies within 660' of a hazardous liquid pipeline.



Local requirements should be clear that the consultation zone is only intended to:

- Alert the transmission pipeline operator that a development near its pipeline is being planned;

- Help protect transmission pipelines by promoting adequate consideration of the potential safety impacts of the development on the transmission pipeline; and
- Raise awareness of the potential safety impacts of the transmission pipeline on the development.

Satisfying these objectives may help to avoid costly changes in land use and development plans at a later date and potential damage to the pipeline.

#### Relationship to Practice BL04

PIPA Recommended Practice BL04 encourages local governments to enact ordinances, regulations, or procedural recommendations that require property developers/owners to consult with transmission pipeline operators as part of the land use planning and permitting process, when development is planned within a consultation zone. The definition of a consultation zone, as provided here in Recommended Practice BL05, helps to simplify the determination of when such consultations should be initiated. Verification that the requirements for consultation are met should not impose an undue burden on the landowner, developer, or pipeline operator.

#### Relationship to Pipeline Operator Public Awareness Programs

The purpose for and size of a consultation zone does not affect the requirements for transmission pipeline operators to develop and implement pipeline public awareness programs as defined by PHMSA pipeline safety regulations.

#### Information the Transmission Pipeline Operator may need from the Property Developer/Owner

During consultation, a transmission pipeline operator may need information from the property developer/owner in order to discuss appropriate considerations for the proposed development.

1. What is the street address (or if not available, the general location) of the property.
2. Is the property encumbered by a pipeline easement? If so, please attach a copy of the easement or provide the recording (volume and page) information.
3. Is there visual evidence of a pipeline on subject property (e.g., aerial markers, above-ground appurtenances, etc.)?
4. Will the proposed development of the property require/entail (and if so, please describe briefly):
  - a. Road crossings over the pipeline?
  - b. Other utility lines crossing over or under the pipeline?
  - c. Permanent structures or paving within the easement area (e.g., paving, parking lots, buildings, pedestrian paths, signage, poles, retaining walls, septic systems, basketball/tennis courts, etc.)?
  - d. Extensive landscaping (including irrigation systems) within the easement area?
  - e. Changing the amount of cover (by adding or removing dirt) within the easement area?
  - f. Construction equipment crossing the pipeline?
  - g. Blasting, seismic vibration testing, pile driving, or similar event which produces significant shock and/or sound waves?

- h. Significant excavation (underground parking structures or building foundations, core samples, rock/mineral quarries, dams, etc.)?
  - i. Impounding water or building drainage ditches or other drainage facilities?
  - j. Fencing running parallel to (within 100 feet) or crossing the pipeline?
  - k. Storing materials, equipment, vehicles, or other items within the easement area (e.g., construction materials, junk or scrap heaps, cut timber, boats, military equipment, etc.)
5. What is the approximate distance of the proposed building closest to the pipeline?
  6. Has the pipeline operator been previously contacted regarding this development? If so, by whom.
  7. Provide a site plan if available.

Information Transmission Pipeline Operators may provide during Consultation

Some examples of information that transmission pipeline operators may provide to local governments and/or property developers/owner to assist them in developing consultation zone distances or planning specific developments:

1. Pipeline diameter and wall thickness
2. Age of pipeline
3. Depth of cover
4. Typical operating pressure and maximum allowable operating pressure
5. Material transported and typical daily flow rate
6. Estimated worst case spill volume in the area of the development

**References:**

- California Department of Education, Guidance Protocol for School Site Pipeline Risk Analysis, 2007
- American Petroleum Institute (API) Recommended Practice (RP) 1162, Public Awareness Programs for Pipeline Operators.
- References on Potential Gas Pipeline Impacts:
  - Gas Research Institute GRI-00/0189, A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines, 2000
  - 49 CFR 192.5, 49 CFR 192.903
  - ASME B31.8-2004, Managing System Integrity of Gas Pipelines

## **BL06 Implement New Development Planning Areas around Transmission Pipelines**

**Practice Statement** Local governments should consider implementing “planning areas” to enhance safety when new land use and property development is planned near transmission pipelines.

**Audience** Local Government

### **Practice Description**

Local governments should consider implementing “planning areas” to enhance safety when new land use and property development is planned near transmission pipelines. A planning area can provide for the application of additional development regulations, standards, or guidelines to ensure safety when development occurs in close proximity to a transmission pipeline. PIPA recommended practices ND11 through ND23 describe additional considerations for use within a planning area.

Risk is defined as the product of the probability of an incident occurring and the consequences of that incident. Existing pipeline safety regulations focus on reducing pipeline risk by prescribing strict design, construction, operation and maintenance, and inspection requirements for pipeline operators. However, transmission pipeline operators have direct control only over activities within their easements or rights-of-way.

Land use planning regulations that address the development of property near a pipeline easement are generally developed and implemented by local governments (cities, towns, townships, counties, parishes). Such measures can help reduce the potential consequences and, thereby, the potential risks of transmission pipeline incidents. Local governments should make informed, risk-based decisions on how to manage land use and property development near transmission pipeline rights-of-way. These decisions should be balanced with other planning considerations to avoid placing undue burdens on land use and property development near transmission pipelines.

A planning area distance should be measured from the transmission pipeline centerline. So that planning area requirements are appropriately applied to proposed land uses and developments, a site-specific distance based on the characteristics of the pipeline (e.g., pipeline diameter, operating pressure, potential spill volumes, transported commodities, unrestrained flow characteristics of transported commodities) and the area surrounding the pipeline (e.g., topography, population density, vegetation, structures, etc.) should be determined. Local governments should work with the pipeline operators to determine site-specific pipeline characteristics when developing their planning area distances.

A planning area should not be construed as an unsafe area and the planning area distance is not intended to be used as a fixed setback distance. Rather, a planning area is a corridor in which additional measures, such as those described in PIPA recommended practices ND11 through ND23, may have potential benefits in protecting transmission pipelines, mitigating the immediate consequences of a transmission pipeline incident, and facilitating emergency response to a potential transmission pipeline incident.

Absent site-specific information, it is suggested that a standard planning area distance, on either side of the pipeline centerline, of 660 feet be used for natural gas transmission pipelines. For hazardous liquid pipelines, also absent site-specific information, it is suggested that a standard planning area distance in a



range from 660 to 1,000 feet be considered. The suggested standard distances are intended to apply to common pipeline sizes and pressures and don't take into account the possibility of flow of liquid or heavier than air gases. Thus, in either case it is recommended that communities develop and utilize site-specific distances for planning areas, based on the unique characteristics for the pipeline and the area surrounding the pipeline. As noted, the transmission pipeline operator can be helpful and should be consulted in assisting local governments to better understand the pipeline characteristics when they develop site-specific planning area distances.

Generally, planning areas larger or smaller than the standard distances may be warranted. High/low operating pressure, large/small pipe diameters, type of product carried and local topography can influence the potential impact of a transmission pipeline incident on nearby development. More information on further refining planning area distances is provided in Appendix I. American Petroleum Institute (API) Recommended Practice (RP) 1162 includes recommendations for collaboration among pipeline operators, property owners/developers and emergency response officials that may be helpful in developing criteria for a planning area. PHMSA and state pipeline safety regulators may also be consulted. API RP 1162 applies within 660' of gas transmission and hazardous liquid pipelines.

**References:**

- Gas Research Institute GRI-00/0189, A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines, 2000
- 49 CFR 192, subpart O (Gas Transmission Pipeline Integrity management)
- 49 CFR 195. 450, 49 CFR 195.452 (Liquid Pipeline Integrity Management)
- ASME B31.8-2004, Managing System Integrity of Gas Pipelines
- NISTIR 6546 Thermal Radiation from Large Pool Fires



**ND06 Require Consideration of Transmission Pipeline Facilities in Land Development Design**

**Practice Statement** Whenever development is proposed on property containing transmission pipeline facilities, local governments should require that the submitted land development plans address in detail the steps necessary to safely integrate the transmission pipeline into the design of the project.

**Audience** Local Government, Property Developer/Owner

**Practice Description**

Many states and/or local governments have a list of issues that must be addressed as part of the land development process, such as the availability of potable water, sewer, adequate roads, environmental constraints, etc. The land development process should require an analysis of how the development design can safely integrate any existing transmission pipeline facilities.



## **ND17 Reduce Transmission Pipeline Risk in New Development for Residential, Mixed-Use, and Commercial Land Use**

**Practice Statement** New development within a transmission pipeline planning area (see PIPA Recommended [Practice BLO6](#)) should be designed and buildings located to reduce the consequences that could result from a transmission pipeline incident and to provide adequate access to the pipeline for operations and maintenance.

**Audience** Local Government, Property Developer/Owner

### **Practice Description**

While transmission pipelines have an admirable safety record, it is prudent to design buildings and related facilities in a manner that mitigates the potential impacts on people and property from a transmission pipeline incident. Locating structures away from the pipeline right-of-way (ROW), minimizing surface and subsurface encroachments on the ROW, designing alternate escape routes, and incorporating more stringent building fire safety measures are examples of mitigation techniques that may improve public safety and limit damage to buildings or infrastructure in the event of a transmission pipeline incident.

Buildings and associated structures should not be allowed on the transmission pipeline ROW as this places building occupants in close proximity to the pipeline and could result in interference with pipeline operations and maintenance.

Roads, driveways, utilities, lot boundaries, landscaping, finished grades, green space, and fences should be planned to ensure adequate access to the transmission pipeline ROW to avoid interference with pipeline operations and maintenance activities and allow access for emergency response to transmission pipeline incidents (see PIPA Recommended [Practice ND23](#)).

The landowner or developer should consider what is allowed by the pipeline right-of-way agreement with respect to the siting of aboveground facilities such as compressor stations, metering stations, valves, pipeline markers, and cathodic protection systems (see PIPA Recommended [Practice ND18](#)). The developer or landowner and local government should work with the transmission pipeline operator to ensure that current or potential future locations of these facilities would not create interference between the development and the operation and maintenance of the pipeline and facilities. Also, development of the property should consider the current or potential future location of these facilities.

In the event of a transmission pipeline incident, evacuation of a building or shelter-in-place may be necessary. Evacuation routes should be considered during the design of a development to ensure that the potential impacts of a transmission pipeline incident will not compromise a necessary evacuation. For example, buildings should have a safe means of egress with exits located where they would not be made inaccessible by the impacts of a pipeline incident. Similarly, cul-de-sac streets should not be designed crossing a transmission pipeline as the only route of ingress or egress could be blocked during a pipeline incident.

High-rise buildings such as hotels, dormitories, apartment complexes, and office buildings may not lend themselves to a timely evacuation. Specific emergency plans addressing transmission pipeline incidents should be developed for these buildings and integrated with overall emergency plans for the site. Site emergency plans should be developed in coordination with the transmission pipeline operator (see PIPA Recommended Practice ND23).

Several codes have been issued to address these concerns, including:

- NFPA 1 – National Fire Protection Association (NFPA): Fire Code
- NFPA 101 – NFPA: Life Safety Code
- NFPA 5000 – NFPA: Building and Construction Safety Code
- IBC – International Code Council (ICC): International Building Code
- IRC – ICC: International Residential Code
- IFC – ICC: International Fire Code

These codes provide minimum standards for means of building egress, including capacity, quantity, arrangement, location, protection, and marking of means of egress. Minimum standards for emergency plans are also provided, where applicable.

Enhanced fire protection of buildings (i.e. automatic sprinklers, water screens, exposure protection, air handling/ventilation systems, etc.) and/or enhanced fire endurance (non-combustible construction, window limitation, etc.) may also be implemented to further mitigate the impact of a potential transmission pipeline incident. NFPA 1, Fire Code, provides minimum standards for separation distances for various occupancies based on fire endurance (in hours), and incorporates many other NFPA codes and standards (by reference) for fire protection. NFPA 5000 and IBC provide minimum standards for fire endurance for various buildings. Enhanced fire protection and fire endurance measures may be implemented for all categories of buildings considered under this recommended practice.

Local government agencies and property developers should consider modeling of fire, explosion, or toxic release impacts that could occur during a transmission pipeline incident for the specific land use under consideration. Egress models should also be considered. If appropriate, land use development and facility design should take this modeling into account to minimize potential impacts. The model should be fit-for-purpose and the model user should have appropriate expertise.

**References:**

- NFPA 1: Fire Code
- NFPA 101: Life Safety Code
- NFPA 5000: Building Construction and Safety Code
- International Code Council (ICC): International Building Code
- ICC: International Residential Code
- ICC: International Fire Code

## **ND19 Reduce Transmission Pipeline Risk through Design and Location of New Industrial Land Use Development**

**Practice Statement** New industrial land use development within a transmission pipeline planning area (see PIPA Recommended [Practice BL06](#)) should be designed and buildings located to reduce the consequences that could result from a transmission pipeline incident and reduce the potential of interference with transmission pipeline operations and maintenance.

**Audience** Local Government, Property Developer/Owner

### **Practice Description**

The risks from a transmission pipeline incident may be compounded and more complex if the storage of or processes involving flammable liquids or gases, toxic chemicals, explosives, or other hazardous substances are compromised as a result of the incident. Such materials are often found in industrial land uses such as manufacturing and storage, including freight, train, and marine terminals.

The design for industrial land use development in proximity to transmission pipelines should consider the need for more complex emergency response requirements and should include coordination with the transmission pipeline operators and emergency responders. For example, if flammable liquid or gas storage tanks are to be included in the development, they may need to be located farther from the transmission pipeline or otherwise designed to prevent the escalation of risks from a pipeline incident. The National Fire Protection Association standard NFPA 1, "Fire Code", provides standards on spacing of hazardous materials to minimize an escalation of a hazard, but does not specifically address transmission pipelines.

Onsite power plants, gas plants, water supplies, water treatment plants, and other critical infrastructure could also escalate the risks if compromised during a transmission pipeline incident. Specific site emergency response plans should also consider impacts to these infrastructures. The potential for hazardous liquid or heavier-than-air gas migration into water supplies, drainage channels, culverts, ditches, etc. should be evaluated. For additional precautions concerning water supplies and water treatment plants see PIPA Recommended [Practice ND16](#).

Local government agencies and property developers should consider modeling of fire, explosion, or toxic release impacts that could occur during a transmission pipeline incident for the specific land use under consideration. Egress models should also be considered. If appropriate, land use and development design should take this modeling into account to minimize potential impacts. The model should be fit-for-purpose and the model user should have appropriate expertise.

It should be noted that transmission pipeline operators are required to provide emergency liaison and consultations by existing pipeline safety regulations. Gas and liquid transmission pipeline operators must maintain, modify as appropriate, and follow the plans, procedures and programs they are required to establish under Title 49 Code of Federal Regulations, Parts 192 and 195, respectively.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) has formed partnerships, funded research, development and training programs, and published supplementary documents to assist transmission pipeline operators, emergency response personnel, and others in developing emergency





response plans. For more information, local governments and property developers/owners can contact the PHMSA Community Assistance and Technical Services representatives.

**References:**

- NFPA 1: Fire Code
- NFPA 101: Life Safety Code
- NFPA 5000: Building Construction and Safety Code
- International Code Council (ICC): International Building Code
- ICC: International Residential Code
- ICC: International Fire Code
- 49 CFR 192, 49 CFR 195

## **ND20 Reduce Transmission Pipeline Risk through Location, Design, and Construction of New Institutional Land Use Developments**

**Practice Statement** New development of institutional facilities that may be difficult to evacuate within a transmission pipeline planning area (see PIPA Recommended [Practice BLO6](#)) should be designed and the facilities located and constructed to reduce the consequences that could result from a transmission pipeline incident. Such facilities should also be located to reduce the potential of interference with transmission pipeline operations and maintenance activities. Emergency plans for these facilities should consider potential transmission pipeline incidents.

**Audience** Local Government, Property Developer/Owner

### **Practice Description**

Property development that includes institutional facilities should place these facilities in locations on the property to reduce the consequences that could result from a transmission pipeline incident. This includes facilities such as schools, daycare facilities, hospitals, nursing homes, jails and prisons, and other potentially difficult to evacuate facilities. The location of these facilities should also be designed to reduce the potential of interference with transmission pipeline operations and maintenance.

In the event of a transmission pipeline incident, evacuation of a building or shelter-in-place may be necessary. Evacuation routes should be considered during the design of the development to ensure that the potential impacts of a transmission pipeline incident will not compromise a necessary evacuation. For example, buildings should have a safe means of egress with exits located where they would not be made inaccessible by the impacts of a pipeline incident. Similarly, cul-de-sac streets should not be designed crossing a transmission pipeline as the only route of ingress or egress could be blocked during a pipeline incident.

Institutional facilities may be difficult to evacuate facilities may not lend themselves to timely evacuation. Specific emergency plans addressing transmission pipeline incidents should be developed for these buildings and integrated with overall emergency plans for the site. Site emergency plans should be developed in coordination with the transmission pipeline operator (see PIPA Recommended [Practice ND23](#)). Several codes have been issued to address these concerns, including:

- NFPA 1 – National Fire Protection Association (NFPA): Fire Code
- NFPA 101 – NFPA: Life Safety Code
- NFPA 5000 – NFPA: Building and Construction Safety Code
- IBC – International Code Council (ICC): International Building Code
- IRC – ICC: International Residential Code
- IFC – ICC: International Fire Code

These codes provide minimum standards for means of building egress, including capacity, quantity, arrangement, location, protection, and marking of means of egress. Minimum standards for emergency plans are also provided, where applicable.

Enhanced fire protection of buildings (i.e. automatic sprinklers, water screens, exposure protection, etc.) and/or enhanced fire endurance (non-combustible construction, window limitation, etc.) may also be implemented to further mitigate the impact of a potential transmission pipeline incident. NFPA 1, Fire Code, provides minimum standards for separation distances for various occupancies based on fire endurance (in hours) and incorporates many other NFPA codes and standards (by reference) for fire protection. NFPA 5000 and IBC provide minimum standards for fire endurance for various buildings. Also, consider standards for outside air intake sources for buildings near transmission pipelines.

Local government agencies or property developers should consider modeling of fire, explosion, or toxic release impacts that could occur during a transmission pipeline incident for the specific land use under consideration. Egress models should also be considered. If appropriate, facility design should take this modeling into account to minimize potential impacts. The model should be fit-for-purpose and the model user should have appropriate expertise.

It should be noted that transmission pipeline operators are required to provide emergency liaison and consultations by existing pipeline safety regulations. Gas and liquid transmission pipeline operators must maintain, modify as appropriate, and follow the plans, procedures and programs they are required to establish under Title 49 Code of Federal Regulations, Parts 192 and 195, respectively.

In addition, the Pipeline and Hazardous Materials Safety Administration (PHMSA) has formed partnerships, funded research and training programs, and has published supplementary documents to assist transmission pipeline operators, emergency response personnel, and others in developing emergency response plans. For more information, local governments and property developers/owners can contact the [PHMSA Community Assistance and Technical Services representatives](#). Information will also be available as part of ongoing public awareness efforts by transmission pipeline operators.

**References:**

- [NFPA 1: Fire Code](#)
- [NFPA 99: Standard for Health Care Facilities](#)
- [NFPA 101: Life Safety Code](#)
- [NFPA 5000: Building Construction and Safety Code](#)
- [International Code Council \(ICC\): International Building Code](#)
- [ICC: International Fire Code](#)
- [49 CFR 192.616, § 192.903, § 192.905, 49 CFR 195.440](#)
- [American Petroleum Institute \(API\) Recommended Practice \(RP\) 1162, Public Awareness Programs for Pipeline Operators](#)

## **ND21 Reduce Transmission Pipeline Risk through Design and Location of New Public Safety and Enforcement Facilities**

**Practice Statement** New development of emergency responder facilities within a transmission pipeline planning area (see PIPA Recommended [Practice BL06](#)) should be designed and the facilities located and constructed to reduce the consequences that could result from a transmission pipeline incident. Such facilities should also be designed and located to avoid the potential of interference with pipeline operations and maintenance. Planning for these facilities should include emergency plans that consider the effects of a transmission pipeline incident.

**Audience** Local Government, Property Developer/Owner

### **Practice Description**

Facilities that house and serve emergency responders and critical emergency response communications that are located within a transmission pipeline planning area (see PIPA recommended [Practice BL06](#)) should be designed and located to minimize the impacts of a transmission pipeline incident on their emergency response capabilities. Police, fire, hazardous materials, emergency rescue and other emergency responder facilities, including structures, parking lots, offices, communications and dispatch centers, serve a critical role in public welfare during emergencies, including transmission pipeline incidents. Access to and egress from such facilities should be planned and implemented to avoid any impairment of the ability of emergency personnel to respond to pipeline incidents in order to address public safety issues.

If such facilities or utilities necessary for operation of such facilities are located within the planning area, then in order to reduce the risk of a transmission pipeline incident affecting the facilities (i.e. impair/interrupt capabilities), specific emergency response plans should be developed and integrated with existing overall emergency and/or relocation plans for these sites. The emergency response plans for the site should be developed in coordination with the transmission pipeline operator, as necessary.

Enhanced fire protection of buildings (i.e. automatic sprinklers, water screens, exposure protection, air handling/ventilation systems, etc.) and/or enhanced fire endurance (non-combustible construction, window limitation, etc.) may also be implemented to further mitigate the impact of a potential pipeline incident. NFPA 1, Uniform Fire Code™, provides minimum standards for separation distances for various occupancies based on fire endurance (in hours) and incorporates many other NFPA codes and standards (by reference) for fire protection. NFPA 5000 and IBC provide minimum standards for fire endurance of various buildings.

Local government agencies or developers may consider modeling of fire, explosion, or toxic release impacts that could occur during an incident for the specific land use under consideration. Egress models may also be considered. If appropriate, facility design should take this modeling into account to minimize potential impacts. The model should be fit-for-purpose and the model user should have appropriate expertise.

It should be noted that transmission pipeline operators are required to provide emergency liaison and consultations by existing pipeline safety regulations. Gas and liquid transmission pipeline operators must

maintain, modify as appropriate, and follow the plans, procedures and programs they are required to establish under Title 49 Code of Federal Regulations, Parts 192 and 195, respectively.

In addition, the Pipeline and Hazardous Materials Safety Administration has formed partnerships, funded research and programs, and has published supplementary documents to assist transmission pipeline operators, emergency response personnel, and others in developing an emergency response plan.

**References:**

- NFPA 1: Fire Code
- NFPA 101: Life Safety Code
- NFPA 1201: Standard for Providing Emergency Services to the Public
- NFPA 5000: Building Construction and Safety Code
- International Code Council (ICC): International Building Code
- ICC: International Fire Code
- 40 CFR 355
- 49 CFR 192 and 49 CFR 195

## **ND22 Reduce Transmission Pipeline Risk through Design and Location of New Places of Mass Public Assembly (Future Identified Sites)**

**Practice Statement** New development of places of potential mass public assembly within a transmission pipeline planning area (see PIPA Recommended [Practice BL06](#)) should be designed and the facilities located and constructed to reduce the consequences of a potential transmission pipeline incident, the risk of excavation damage to the pipeline, and the potential of interference with transmission pipeline operations and maintenance. Planning for these facilities should include emergency plans that consider the effects of a potential pipeline incident.

**Audience** Local Government, Property Developer/Owner

### **Practice Description**

Places of potential mass public assembly (e.g., amusement parks, stadiums, amphitheaters, highway rest stops, churches, and other large public assemblies), should be constructed or located to mitigate the impact of a potential transmission pipeline incident and provide emergency plans for potential pipeline incidents.

Large public assembly areas and facilities may not lend themselves to a timely evacuation. Specific emergency plans addressing transmission pipeline incidents should be developed and/or integrated with existing overall emergency and/or relocation plans for these sites. The emergency plans should include coordination with the transmission pipeline operator, as necessary.

In the event of a transmission pipeline incident, evacuation or shelter-in-place may be warranted. Evacuation routes should be considered during the design of the development to ensure that the potential impacts of a transmission pipeline incident will not compromise a necessary evacuation. For example, buildings should have a safe means of egress with exits located where they would not be made inaccessible by the impacts of a pipeline incident.

Several codes have been issued to address these concerns, including:

- NFPA 1 – National Fire Protection Association (NFPA): Fire Code
- NFPA 101 – NFPA: Life Safety Code
- NFPA 5000 – NFPA: Building and Construction Safety Code
- IBC – International Code Council (ICC): International Building Code
- IRC – ICC: International Residential Code
- IFC – ICC: International Fire Code

Enhanced fire protection of buildings (i.e. automatic sprinklers, water screens, exposure protection, air handling/ventilation systems, etc.) and/or enhanced fire endurance (non-combustible construction, window limitation, etc.) may also be implemented to further mitigate the impact of a potential transmission pipeline incident. NFPA 1 provides minimum standards for separation distances for various occupancies based on fire endurance (in hours) and incorporates many other NFPA codes and standards

(by reference) for fire protection. NFPA 5000 and IBC provide minimum standards for fire endurance of various buildings.

Areas covered under this recommended practice should include “identified sites” per the gas transmission pipeline integrity management regulations (49 CFR 192.903), such as an outside area or open structure that is occupied by twenty (20) or more persons on a regular basis (50 days or more in any 12-month period). Such identified sites may include, but are not limited to, beaches, playgrounds, recreational facilities, camping grounds, outdoor theaters, stadiums, recreational areas, parks, areas outside a rural building such as a religious facility, amusement parks, stadiums, amphitheaters, agricultural gathering areas, and other large public assemblies.

Local government agencies or developers may consider modeling of fire, explosion, or toxic release impacts that could occur during an incident for the specific land use under consideration. Egress models may also be considered. If appropriate, facility designs should take this modeling into account to minimize potential impacts. The model should be fit-for-purpose and the model user should have appropriate expertise.

It should be noted that transmission pipeline operators are required to provide emergency liaison and consultations by existing pipeline safety regulations. Gas and liquid transmission pipeline operators must maintain, modify as appropriate, and follow the plans, procedures and programs they are required to establish under Title 49 Code of Federal Regulations, Parts 192 and 195, respectively.

In addition, the Pipeline and Hazardous Materials Safety Administration has formed partnerships, funded research and programs, and has published supplementary documents to assist transmission pipeline operators, emergency response personnel, and others in developing an emergency response plan.

Owners and operators of areas covered under this practice, whether public or private, should inform area users of the transmission line operator's public awareness message as well as any specific site emergency plan required by local public authorities for the area.

**References:**

- NFPA 1: Fire Code
- NFPA 101: Life Safety Code
- NFPA 102 Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures
- NFPA 5000: Building Construction and Safety Code
- International Code Council (ICC): International Building Code
- ICC: International Fire Code
- 49 CFR 192.903, 49 CFR 195.450

