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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Canopies / permanent (Categorized as weather and environmental shelters such as those over gas stations and emergency room/ hospital entrances, and drive-through covers for banks, pharmacies, fast-food restaurants, etc.)	No		Structures may interfere with emergency response, maintenance, inspection, and repair activities. Canopies may entrap gases and vapors that could find ignition sources from vehicle or pedestrian activities. Concrete under canopies could cause gas to migrate to building in the event of a failure.
Carports, permanent	No	No type of permanent structure permitted. See also "Structures".	Access for transmission pipeline maintenance, inspection, and repair activities preclude this use.
Catch Basins (Storm sewer inlet)	No		Access for transmission pipeline maintenance, inspection, and repair activities preclude this use.
Cathodic Protection Devices	Yes, but consent is required	Cathodic protection facilities may be installed provided they are coordinated with other utilities and all interference problems are eliminated. Their use should be approved by the transmission pipeline operator's cathodic protection department.	To ensure adequate cathodic protection for all transmission pipelines, routine testing should be scheduled and performed by qualified personnel to prevent interference issues.
Cemetery	No		Access for transmission pipeline maintenance, inspection, and repair activities preclude this use.
Concrete Slabs (Categorized as for foundation, typically poured for permanent structure, equipment, or storage location)	No	Not recommended except where they may be installed to provide for transmission pipeline protection from third-party damage (submit plans for review) or for easement across ROW (such as for driveways or roads). (See also Roads, Driveways, Road Crossing, and Structures)	Access for transmission pipeline maintenance, inspection, and repair activities preclude this use.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Construction Equipment	Yes, but consent is required	When excavation is to take place within the operator's specified distance, the excavator exercises such reasonable care as may be necessary for the protection of any underground facility in or near the excavation area. Methods to consider, based on certain climate or geographical conditions, include: hand digging when practical (pot holing), soft digging, vacuum excavation methods, pneumatic hand tools, other mechanical methods with the approval of the facility owner/operator, or other technical methods that may be developed. Hand digging and non-invasive methods are not required for pavement removal. Provide for transmission pipeline operator supervision while work is in progress. Give 48 hours prior notice before performing work. Call one-call number for utility locating.	The transmission pipeline operator should perform an engineering evaluation to determine the effects of any proposed equipment use. Placement of additional dirt cover and/or mats, timber bridges or other protective materials over the pipeline facilities, as deemed necessary by the pipeline operator, may be required for the duration of any loading to ensure the pipeline does not incur damage.
Culverts	Yes, but consent is required	Separation per operator policy must be maintained between transmission pipeline and culvert, with culvert above pipeline. Plans must be approved by transmission pipeline operator's operation or engineering.	Transmission pipeline operator should require additional safety measures to protect transmission pipeline during culvert installation, including hand-digging when in transmission pipeline vicinity.
Cuts and Fills	Yes, but consent is required	Some cutting and filling may be permitted over transmission pipeline. Review with transmission pipeline operator's operations or engineering department as applicable.	Cut and fill material must not interfere with transmission pipeline maintenance, inspection, or repair activities. Cut and fill material must not lead to erosion issues.
Dams	No		Access for transmission pipeline maintenance, inspection, and repair activities preclude this use.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Driveways	Yes, but consent is required		Transmission pipeline operator engineering review required for all proposed streets, roads and driveways to ensure transmission pipeline cover is adequate to support the load from the road crossing. Additional cover, concrete, or other forms of mechanical protection may be required to ensure the transmission pipeline does not incur damage as a result of this use and traffic loads.
Dumps	No		This use would not allow transmission pipeline operator easy access for transmission pipeline maintenance, inspection, and repair activities
Erosion Control	Yes, but consent is required	Structures or materials to prevent soil erosion due to wind or water may be located on the transmission pipeline ROW provided: 1) They do not interfere with the installation, operation or maintenance of the transmission pipeline. 2) The design has been approved by the transmission pipeline operator's engineering and environmental departments. 3) The facilities have taken into account the effect of the environment of the area.	Placement of structures and material must allow for transmission pipeline maintenance, inspection, and repair activities to be conducted by the operator, as well as allow for emergency response access.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Exploration - Geologic and Geophysical	Yes, but consent is required	Subject to proper indemnification and site cleanup. Must be approved by transmission pipeline operator's operations or engineering department. Also see Blasting, Construction Equipment, and Wells.	3D seismic studies, depth of cover, transmission pipeline operating stress levels, and other factors must be considered. The vibrations used to create the sound waves for these exploration activities are quite intense and may compromise the integrity of the transmission pipeline, leading to leaks if not properly evaluated.
Fences - Parallel to ROW	Yes, but consent is required	(general) No masonry or brick fences are allowed. In addition, fences and transmission pipeline should be separated by adequate distance to allow for potential future repairs. Adequate access to and around transmission pipeline facilities must be maintained.	Fences must not interfere with access for transmission pipeline maintenance, inspection, and repair activities.
Fences - Perpendicular to ROW	Yes, but consent is required	(general) No masonry or brick fences are allowed. Adequate access to and around transmission pipeline facilities must be maintained. Transmission pipeline company retains the right to require the installation of a gate in the fence with a corporation lock where necessary to maintain such access. Gates should be wide enough to allow transmission pipeline operator's equipment to gain access for repairs and emergencies. Fence posts must not be installed directly over transmission pipeline. Fences should be installed to allow for easy removal during emergency response. One-call notification required for fence construction.	Fences must not interfere with access for transmission pipeline maintenance, inspection, and repair activities. Additional requirements may be imposed to protect transmission pipeline from damage during construction.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Flammable Material	No	Managed burns for controlling vegetation may be performed by organizations such as BLM or DNR or by farmers, but this activity must be coordinated with transmission pipeline operator to ensure public safety. No combustible material is to be stored on the easement.	For safety reasons no flame or fire associated with an incineration process or with flammable material storage is allowed due to the combustible material transported in the transmission pipelines.
Flood Control	Yes, but consent is required		Transmission pipeline operator engineering review can be made to consider buoyancy and ensure transmission pipeline is adequately protected.
Flooding	Yes, but consent is required	If there is a possibility of periodic flooding, buoyancy of transmission pipeline must be considered.	Intentional flooding is prohibited because it can cause stresses on the transmission pipeline leading to integrity issues; buoyancy must be considered.
Golf Courses	Yes, but consent is required	May be allowed if no permanent structures are placed on ROW.	Cover must be adequate and must allow for maintenance, inspection, and repair activities.
Highways	Yes, but consent is required	Easements should be granted for highway construction although operator may request reimbursement for the cost of protecting, upgrading or relocating the pipeline so that it complies with all applicable regulations and requirements. Where a highway is widened to take in an area where the transmission pipeline operator has a prior ROW, the pipeline operator may require reimbursement for that portion of the work that falls in the area where the company has prior rights.	Pipeline cover must be adequate to support the load from the highway to ensure the transmission pipeline does not incur damage. Review by the transmission pipeline operator's engineering group is required for all proposed streets, roads, and driveways to ensure transmission pipeline cover is adequate to support the load from the road crossing. Additional cover, concrete, or other forms of mechanical protection may be required to ensure the transmission pipeline does not incur damage as a result of this use and traffic loads.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Hiking Trails	Yes, but consent is required	Provided reasonable access to facilities is maintained. See also Landscaping and Cuts and Fills.	Trails must be placed to allow transmission pipeline maintenance, inspection and repair activities to be conducted.
Horseback Riding Trails	Yes, but consent is required	Provided adequate access to facilities is maintained. See also Cuts and Fills.	Trails must be placed to allow transmission pipeline maintenance, inspection and repair activities to be conducted.
Incinerators	No		For safety reasons, no flame, fire, or flammable material is allowed.
Junk Yards	No		This use would not allow transmission pipeline operators easy access for pipeline maintenance, inspection, and repair activities
Landscaping	Yes, but consent is required	Provided reasonable access to transmission pipeline facilities is maintained. See Cuts and Fills for earthwork requirements. In addition, shrubs should not interfere with transmission pipeline patrolling or inspection activities. See Tree Farms for tree limitations.	With prior approval from transmission pipeline operator, flower beds, lawns, and gardens may be permitted within the ROW, provided that the plantings do not interfere with the maintenance, inspection and operation of the transmission pipeline and related facilities.
Leach Fields	No	(General) Piping leading to leach field may cross the transmission pipeline (see Pipelines). The entire leach field must be outside of the ROW. Before being granted permit for piping, owner must show proof of permit that installation will meet all State and local water quality requirements.	Leach field would be subject to damage by passage of heavy equipment. Therefore, repair activities preclude this use. Also, there are integrity concerns that water can cause transmission pipeline corrosion and lead to failures.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Loading Ramps	No	See also Concrete Slabs	Stresses on transmission pipeline can lead to integrity issues; also, this use does not allow for transmission pipeline maintenance and inspection activities.
Marinas	No	Marinas may not be installed on transmission pipeline ROW at river crossings.	This use would not allow the transmission pipeline operator access for pipeline maintenance, inspection, and repair activities.
Masonry Work	No		This use does not allow for access for transmission pipeline emergency response and maintenance.
Mini Golf Courses (putt-putt courses)	No	May be allowed with prior consent if no permanent structures are placed on ROW and green space for transmission pipeline easement is included.	Use must not interfere with transmission pipeline maintenance and inspection activities. This use may define the area as a HCA, thus imposing additional integrity management requirements for the gas transmission pipeline operator. In addition, no permanent structures are to be placed on the ROW.
Mobile Home Parks	No		Structures are not recommended because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities. Also, they increase the risk for transmission pipeline operators.
Mobile Home – Single Unit	No	No permanent structure may be installed on ROW.	No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities. Also, they increase the risk for transmission pipeline operators.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Model Airplanes	Yes, but consent is required	Model airplanes may be flown over the ROW, but no permanent facilities may be located on the ROW.	Transmission pipeline operator must know of this activity to ensure there is no interference or danger when performing aerial leak patrols.
Orchards	No		Tree root structures may be deep and extend beyond tree canopies. These roots can be severe and damage transmission pipeline coating, leading to corrosion and leaks.
Parking	Yes, but consent is required	A private property owner may park vehicles used in his work (such as farm equipment) on the transmission pipeline ROW but not over the pipelines. Use of the easement as a commercial or other publicly used parking lot, whether paved or unpaved, should be discouraged and not be allowed without review. The transmission pipeline company will not accept liability for damages to the parking facility caused by the exercise of its rights under the easement, and reserves the right to prohibit vehicular parking on its easement at any time.	Transmission pipeline companies conduct maintenance activities on a frequent basis. Parking vehicles on the ROW may interfere with some of these maintenance practices.
Parks	Yes, but consent is required	The ROW may be used as part of a park area, but permanent structures may not be located on the ROW. Specific plan review required.	Use must not interfere with transmission pipeline maintenance and inspection activities. This use may define the area as a HCA, thus imposing additional integrity management requirements for the pipeline operator. In addition, no permanent structures are to be placed on the ROW.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Patios	No		No structures are allowed because they interfere with transmission pipeline emergency response and repair activities and increase risk for transmission pipeline operators.
Pipelines	Yes, but consent is required	Permits generally are granted for other pipelines to cross a transmission pipeline ROW, provided: 1) Crossing is kept as close to a right angle as possible. 2) The crossing pipeline maintains clearance approved by operator above the transmission pipeline below the transmission pipeline. Pipeline crossings above the transmission pipeline should be strongly discouraged. 3) Installation makes provisions for future use of transmission pipeline ROW. 4) Precautions are taken to protect both facilities from interference problems due to cathodic protection. 5) Crossing pipeline meets all Federal, State and local requirements with respect to safety and environment. 6) Parallel encroachments are not allowed. (See "Utilities Parallel")	Significant design, construction, and maintenance code activities are performed to ensure the safety of the public and employees near transmission pipelines. These design, construction, and maintenance activities also ensure the integrity of the pipelines. Additional construction requirements may be imposed to protect the transmission pipeline and allow future maintenance activities to be performed.
Play Equipment	Yes, but consent is required	No permanent structure may be installed on ROW. Play equipment without embedded footings or foundations may be allowed.	Use must not interfere with transmission pipeline maintenance and inspection activities. This use may define the area as a HCA, thus imposing additional integrity management requirements for the pipeline operator. In addition, no permanent structures are to be placed on the ROW.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Ponds	No		This use would not allow the pipeline operator access for transmission pipeline maintenance, inspection, and repair activities
Porches	No		No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities. Also, they increase the risk for transmission pipeline operators.
Power Lines	Yes, but consent is required	Power lines may be installed across the ROW provided: 1) Poles or towers are not located on the ROW. 2) Wires have adequate clearance to permit working on the transmission pipeline. 3) Parallel encroachments of above or below ground power lines are not allowed (See "Utilities – Parallel"). 4) Power lines are not located within 200 feet of a blow-down stack. 5) Buried power lines meet transmission pipeline operator standards.	Engineering review and field monitoring can be performed to ensure no corrosion issues develop and lead to failures.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Private Landowner Crossing of Pipeline	Yes, but consent is required	Where a private landowner crosses the transmission pipeline with a buried structure, a consent letter usually will be required. Permits usually will be granted for crossing provided: 1) Crossing structure is kept as close to a right angle as possible. 2) Crossing structure maintains at least one-foot clearance above the transmission pipeline or two feet below the transmission pipeline. Crossings above the transmission pipeline should be strongly discouraged. 3) Installation makes provisions for future use of the ROW. 4) Precautions are taken to protect both facilities from interference problems due to cathodic protection. 5) Crossing structure meets all Federal, State and local requirements with respect to safety and environment. 6) Parallel encroachments are not allowed. (See "Utilities Parallel").	Additional construction requirements may be imposed to protect the transmission pipeline and allow future maintenance activities to be performed.
Pumps	No		Failure of equipment could elevate risks; permanent structures do not allow for easy access for transmission pipeline emergency response.
Pump Islands (Categorized as fuel pumps for automobile service stations - general transportation refueling stations)	No		No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities. Also, they increase the potential consequences if a failure occurs.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Quarries and Strip Mining	No	Quarrying activities not on but in proximity to the ROW should be brought to the attention of the transmission pipeline company for assessment of potential impacts to the integrity of the ROW and transmission pipeline facilities. (See Blasting)	This activity limits access for transmission pipeline emergency response.
Railroads	Yes, but consent is required	Railroad crossings are permitted, provided the railroad company agrees to pay the cost to upgrade or protect the transmission pipeline. Clearances must be provided as required in Cuts and Fills.	Transmission pipeline cover must be adequate to support the load from the railroad crossing to ensure the pipeline does not incur damage; vibrations need to be properly evaluated for cyclic fatigue to ensure the integrity of the pipeline is not compromised, leading to leaks. Review by the transmission pipeline operator's engineering group is required for all proposed railroad crossings to ensure the pipeline cover is adequate to support the load from the crossing. Additional cover, concrete, or other forms of mechanical protection may be required to ensure the pipeline does not incur damage as a result of this use and traffic loads.
Recreation Areas	Yes, but consent is required	ROW may be used for general recreation that does not require the use of any permanent structures or facilities.	Use must not interfere with transmission pipeline maintenance and inspection activities. This use may define the area as a HCA, thus imposing additional integrity management requirements for the pipeline operator. In addition, no permanent structures are to be placed on the ROW.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Retaining Walls	Yes, but consent is required	Provided adequate access to facilities is maintained and Cuts and Fills criteria is maintained. All retaining walls on the ROW must be approved by transmission pipeline operator's operations or engineering department.	Transmission pipeline cover must be maintained to protect the pipeline, and the use would have to allow for pipeline maintenance and emergency response activities to be completed.
Rifle Ranges	No	Limited use may be allowed to access rifle range area across the ROW but no permanent facilities may be located on the ROW.	Transmission pipeline systems include above ground facilities that may incur damage from rifle range fire.
Road - Parallel	Yes, but consent is required	Plans must be approved by the transmission pipeline company's operations or engineering groups. Road easement is subordinate to the transmission pipeline company's easement. In addition, road and pipeline should be separated by adequate distance to allow for potential future repairs.	Use must allow for transmission pipeline maintenance, inspection, and emergency response activities.
Road Crossings – Private	Yes, but consent is required	Consent usually will be granted for private roads across the ROW provided: 1) Assurance is given the road will remain a private road. It must be so marked and signs must be maintained. 2) Road must not be given a hard surface. 3) Cut and Fill requirements must be maintained. 4) Road owner must agree to pay cost of protecting or upgrading the transmission pipeline if the road should be paved or status is changed to a public road.	Review by the transmission pipeline operator's engineering group required for all proposed streets, roads, and driveways to ensure pipeline cover is adequate to support the load from the road crossing. Additional cover, concrete, or other forms of mechanical protection may be required to ensure the transmission pipeline does not incur damage as a result of this use and traffic loads.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Road Crossings - Public	Yes, but consent is required	Consent generally will be granted for a public road or street across the ROW provided: 1) Developer pays for cost of protecting, upgrading or relocating the transmission pipeline. 2) Pipeline company retains prior rights on roads dedicated to the state, county or city.	Review by the transmission pipeline operator's engineering group required for all proposed streets, roads, and driveways to ensure pipeline cover is adequate to support the load from the road crossing. Additional cover, concrete, or other forms of mechanical protection may be required to ensure the pipeline does not incur damage as a result of this use and traffic loads.
Septic Tanks	No		Access for pipeline repair activities preclude this use
Service Stations	No		No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.
Signs	No	Signs, except pipeline markers, are not permitted on the ROW.	Foundation or embedded footings could damage the transmission pipeline coating, leading to integrity and corrosion issues.
Sprinkler Systems (underground)	Yes, but consent is required	Crossings of transmission pipeline must be kept to a minimum. Sprinkler heads should be set outside of the ROW. Due consideration must be given to cathodic protection interference.	There is concern that water can cause corrosion and lead to failures (transmission pipeline operator's operator engineering department review and field monitoring is necessary to ensure no corrosion issues are identified). There is concern that third-party damage will result and sprinkler systems will interfere with pipeline maintenance and vegetation management activities.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Stock Piles - Storage of Earth	Yes, but consent is required	See Cuts and Fills.	This material storage can't interfere with transmission pipeline maintenance, inspection, repair, or emergency response activities. In addition, stock piles must not lead to erosion issues.
Storage	No	The ROW cannot be designated as storage area. However, small amounts of non-combustible materials or equipment may be stored on the ROW by the property owner provided it does not interfere with access to the transmission pipeline.	This material storage can't interfere with transmission pipeline maintenance, inspection, repair, or emergency response activities. In addition, storage must not lead to erosion issues.
Structures	No	Permanent structures (i.e. any facility or structure, the foundation or any other portion of which lies below the ground surface, or is otherwise not readily moveable) are not allowed. Small outbuildings (e.g. sheds, playhouses) on blocks or without foundations may be permitted on a case by case basis.	No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.
Subdivisions	Yes, but consent is required	The area over the transmission pipeline ROW may be subdivided provided: 1) No permanent structures may be located on the ROW. 2) Streets or roads are laid out to cross the pipeline at a right angle. Parallel encroachments are not acceptable. 3) The requirements for Road Crossings, either private or public, are met. 4) The ROW is not used for a utility corridor. 5) Developer or person subdividing the property submits approved subdivision plans. 6) Necessary consents are issued by the transmission pipeline operator.	Transmission pipeline operators can work with planners and developers to minimize risks to transmission pipelines and communities within green spaces; early communication between all stakeholders is critical to ensure all factors are considered.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Swimming Pools (built-in and above ground)	No	Small, plastic "kiddy" type pools would be allowed. These types of portable pools are considered temporary and can be easily moved for pipeline activities if necessary.	No permanent structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.
Tanks	No	Above or underground.	Access for transmission pipeline maintenance, inspection, emergency response, and repair activities preclude this use
Temporary Material Storage Non-earth Material	Yes, but consent is required		This material storage can't interfere with transmission pipeline maintenance, inspection, emergency response, or repair activities. In addition, storage must not lead to erosion issues.
Tennis Courts	No		Access for transmission pipeline maintenance, inspection, and repair activities preclude this use
Trails	Yes, but consent is required	Adequate precautions should be taken to prevent erosion. See Cuts and Fills.	Trails must be placed to allow transmission pipeline maintenance, inspection and repair activities to be conducted.
Trash Burners	No		For safety reasons, no flame, fire, or flammable material is allowed.
Tree Farms	No	Must provide access to transmission pipeline facilities. In addition, shrubs should not interfere with pipeline patrolling or inspection activities.	Trees have root structure that may damage transmission pipeline coating or pipeline integrity; tree canopy may interfere with aerial leak patrol activities.
Underground Structure	No	Other than "other" pipelines and related facilities. (See Pipelines)	Access for transmission pipeline repair activities precludes this use.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Utilities – Crossing Perpendicular	Yes, but consent is required	Consent to common use generally will be granted for crossings of overhead or underground utilities provided: 1) Overhead lines must provide adequate clearance for working on the transmission pipeline. Poles, anchors or supports may not be located on the ROW. 2) All underground lines must be installed with minimum one foot of clearance between the pipeline and the utility if crossing is above the pipeline and two feet of clearance if crossing is below the pipeline and must be at same depth completely across the ROW. Crossings above the pipeline are strongly discouraged. Underground electric lines of less than 600 volts and all buried telephone lines, must be encased in plastic conduit across the entire width of the ROW. Underground electric lines of over 600 volts must be encased in rigid steel pipe across the entire width of the ROW. 3) The crossing utility operator must pay for any protection or upgrading of the pipeline facilities, and a temporary relocation clause may be used to allow construction or maintenance of the pipeline. 4) Utility crossings must be designed to meet all applicable federal, state and local codes and requirements, and assurance provided that due consideration has been given to the effect of the project on the surrounding area. 5) Buried electric cables, splices should be discouraged within the ROW.	Adequate separation and interference protection with other utility activities and the transmission pipeline must be performed. Interference protection that is not effective may lead to transmission pipeline corrosion and integrity issues. Activity must allow transmission pipeline maintenance, inspection, emergency response, and repair activities to be conducted.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Utilities – Running Parallel	No	Parallel encroachment of any utilities, either overhead or underground may be allowed in some cases for short distances. In general, parallel encroachments are to be strongly discouraged. Easement agreements may not allow absolute prohibition of such encroachments.	Interference protection that is not effective may lead to transmission pipeline corrosion and integrity issues.
Utilities – Crossing in Operator Easement	Yes, but consent is required	The transmission pipeline company generally will grant rights of way for utilities across company-owned lands provided: 1) Easement will not interfere with present or future use of land by the pipeline company. 2) The pipeline company retains the right to have the crossing utility relocate at its own expense at a future date, if such relocation becomes necessary to permit utilization of the land by the pipeline company. 3) Crossing utilities must be installed and maintained in accordance with all applicable codes and requirements. 4) Adequate consideration must have been given to the effects of the crossing utility on the environment of the area. 5) Buried electric cables, splices should be discouraged within the ROW	Adequate separation and interference protection with other utility activities and the transmission pipeline must be performed. Interference protection that is not effective may lead to transmission pipeline corrosion and integrity issues. Activity must allow transmission pipeline maintenance, inspection, emergency response, and repair activities to be conducted.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Utilities - Crossing Outside of Operator Easement	Yes, but consent is required	Where a utility crosses the transmission pipeline on a public road, the utility normally has equal rights with the pipeline facility. However, every effort should be made for the pipeline company and the utility company to work together to provide a minimum of one foot of clearance between the utility and the transmission pipeline if the utility crosses above the pipeline or two feet if the utility crosses below the pipeline, and that the same depth be maintained completely across what would normally be the transmission pipeline ROW. The same criteria for underground electric lines as set forth in "Utilities – Crossing" should also be requested. Engineering review by the transmission pipeline company is required even if no consent is issued.	Adequate separation and interference protection with other utilities and transmission pipelines must be performed. Interference protection that is not effective may lead to transmission pipeline corrosion and integrity issues. Activity must allow transmission pipeline maintenance, inspection, emergency response, and repair activities to be conducted.
Vaults	No		No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.
Wading Pools	No	Small, plastic "kiddy" type pools would be allowed. These types of portable pools are considered temporary and can be easily moved for pipeline activities if necessary.	No permanent structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.
Weighing Stations	No		No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.

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Use/Activity	Acceptable Use or Activity?	Additional Restrictions or Comments	Origin/ Rationale for Determining Acceptable Activity
Wells	No		Drilling activity could damage transmission pipelines and lead to integrity issues.
Wrecking Yards	No		No structures are allowed because they interfere with transmission pipeline emergency response, maintenance, inspection, and repair activities.

Appendix E: Seven-Step Communication Model

Seven-Step Model for Communicating Acceptable Uses and Activities on Transmission Pipeline Rights-of-way to Land Owners and Other Stakeholders

Introduction

Typical communications from transmission pipeline operators to stakeholders regarding rights-of-way (ROW) activities occur for one of three reasons: 1) information exchange; 2) education opportunity; or 3) to cause a change in behavior. However, in reality most communications regarding ROW activities or uses are performed with the intention of causing certain behaviors to happen. Consider the following examples for various stakeholder audiences and the associated behavior expectation.

- Landowners: When letters regarding anticipated ROW clearing are sent to the landowner, the purpose of the communication is to inform the landowner ahead of the actual event occurring. This in turn should:
  - Prevent the landowner from being surprised by the presence of individuals on their property;
  - Provide appropriate contact information;
  - Prompt landowners to think about fencing or gates that may have to be accessed;
  - Help the landowner think about children or planned family activities; and
  - Allow the landowner to prepare appropriately for domestic and farm animals that could be impacted by the event.
- Excavators: Communications to excavators to educate them about 811 or Call Before You Dig are intended to ensure they will call for facility locates before digging.
- Real Estate Agents/Brokers: Communications to real estate agents and brokers about pipeline facilities identified by pipeline markers are intended to promote information about pipeline location early so that potential buyers can receive appropriate information. Potential buyers should then make more informed decisions, including contacting the pipeline company for more information.
- Local Government Planning and Zoning Organizations (including permitting, public works, emergency officials, elected officials, etc.): Information or education events for these audiences are meant to allow them to factor the relevant pipeline information into their activities and cause them to change their behavior accordingly or as necessary.

Education can help lay a foundation for heightened awareness and increased knowledge. However, better training, media or advertising efforts will only go so far in many cases. While persuasive communication campaigns can prompt action and should be utilized, these efforts may not sustain desired actions. It is important to understand that information can lead to awareness, but awareness may not lead to a behavior change. According to subject matter experts, if you are communicating for a change in behavior, a concept called *social marketing* should be used. Social marketing utilizes various research components:

- Formative research

- Pretest research
- Monitoring research
- Evaluation research

Social marketing provides a few more strategies to overcome or reduce barriers to behavior change, and is used to change perceptions and to help build a new social norm. Social marketing is:

1. Using product-marketing strategies to promote ideas like safety, health and conservation;
2. Influencing a target audience to voluntarily accept, reject, or modify an action; and
3. For the benefit of individuals, groups, or society as a whole.

Understanding what behavior is expected and what currently exists is important to changing the behavior. In order to maximize the opportunity created with each communication, considerable thought should be given to what behavior needs to change on the transmission pipeline ROW, what behavior is desired, or what behavior on the ROW should be maintained by the specific stakeholder.

The PIPA Communications Task Team efforts included a focus on researching the art and science of effective communication techniques. As various techniques were considered for communicating a particular message, it became apparent that each technique required a basic understanding of why the message is necessary, who will receive it, and what will be communicated, in concert with other considerations.

A model or process was developed for communicating acceptable uses and activities on pipeline rights-of-way to stakeholders. This seven-step model is applicable in any circumstance related to transmission pipelines, including a new or existing transmission pipelines being constructed or operated in either newly developed areas or in rural areas. The model is for use when communicating acceptable ROW uses and activities to land owners and other stakeholders. Generally throughout this discussion, examples are given from the perspective of a transmission pipeline company. However, the same tools and guiding principles of the model can be used by any stakeholder, for example:

- Fire marshals may use it as they communicate to other fire marshals or emergency responders;
- Trade associations, such as the Associated General Contractors of America (AGC) or the National Utility Contractors Association (NUCA), may use it to communicate more effectively within their organization and among their members;
- Local government planning and zoning organizations may use it to communicate with developers; and
- Regulatory agencies and others may use it when communicating to public stakeholders.

The seven steps of an effective communications model include:

1. Identify the problem (or need) the communication will solve (or address).
2. Determine which stakeholder/s receives the communication.
3. Identify draft message to be communicated.
4. Develop final message and delivery system based on marketing strategy best suited for the desired outcome.
5. Implement communications.
6. Measure effectiveness.
7. Identify and implement changes if necessary.

Seven Step Communication Model

Step 1 – Why?

1.00 Identify the problem (or need) the communication will address.

Step 1 in the PIPA seven-step communication process specifically addresses "why" the communication is needed. Before effective communication can occur, one must identify the problem or need that the communication will address. This "begin with the end in mind" approach lays the foundation for an effective communication effort and defines why stakeholder communication is necessary.

Transmission pipeline companies utilize many types of communication in an effort to protect the public, the environment, and their pipeline assets. Their communication methods include such things as direct mailers, radio and television spots, personal contact, and group meetings. While all of these methods can be effective, without careful design and delivery, they typically will not cause the desired change in behavior. Facilitating behavior change requires a socially-engineered message that targets a specific audience over an extended period of time. For example, it is not unusual for direct mailers to be discarded without being read. Mailers from transmission pipeline operators may satisfy regulatory guidelines or mandates, but they do not necessarily serve the intended purpose of increasing transmission pipeline awareness and safety, which is why they were distributed in the first place.

The PIPA participants sought input regarding the best practices in communication techniques from various authors and consultants.

- Gary Melling (President & CEO; EPIC Software Corporation) and Sarah McCaffrey (USDA Forest Service) addressed the importance of understanding the audience and defining the purpose of the communication program, answering the stakeholders' frequently asked question, "What's in it for me?"
- Greg Winter (Cornerstone Strategies, Inc.) defined "social marketing" steps which include describing the background, purpose, and focus of the communication program.
- Martha Monroe (University of Florida – Communications Research) echoed many of the communication points noted by the others and added that in order to communicate more effectively, barriers to behavior change must be identified. Once initially identified, messages and communication strategies can be crafted to promote the ideal behavior, which gives all stakeholders a role in transmission pipeline protection.
- Ms. McCaffrey also suggested a central depository to ensure easy access to information, consistent message and information exchange, and to promote a sharing of effectiveness lessons (i.e., a lessons learned center).

Many other professional and technical publications were found to provide similar insights into best communication practices. For example, the "Damage Prevention Best Practices", published

by the Common Ground Alliance (www.commongroundalliance.com), identify that an effective damage prevention program must include a comprehensive strategic marketing and advertising plan. Without a plan, and the budget to support it, the intended messages will likely be lost in today's information overload.

Stephen Covey's "7 Habits for Highly Effective People" suggests that we begin with the end in mind. By doing so we satisfy the first communication element of why the communication is necessary in the first place. Transmission pipeline companies want to effectively communicate acceptable right-of-way activities and uses, to help ensure pipeline reliability and engage all stakeholders in that effort. Right-of-way communication promotes safety and reduces risks to people and the environment.

Step 2 – Who?

2.01 Determine Which Stakeholders Receive the Communications.

The second step of the seven step communication model is defining who should receive each type of communication. Who is the audience? There's no such thing as the "general public." Each group of stakeholders has different concerns, belief systems, perceptions and misconceptions. The priorities of each group will affect and help determine the most effective message.

2.02 Compile Information.

Knowledge about your audience is very important. Begin by compiling all the information available about your stakeholders. This information can help identify behavioral clues and barriers to communicating with them. Review your stakeholders' behaviors to ensure that your information about them remains accurate. Priorities change, economies rise and fall and new personalities come into the mix. The right message delivered to the wrong person will not be effective.

Stakeholders are motivated by different factors and may be motivated by multiple issues. For example, a landowner may be concerned about the loss of trees on his property. Another may be concerned about the quality of the restoration activities following ROW maintenance. Others may be concerned about financial impacts on property values, lost crops and the security of their livestock. Emergency responders are concerned about adequate training and appropriate emergency response information.

Be sure to look at all the factors before categorizing stakeholders by a single issue. If your stakeholder audience is too broad, it can impact your effectiveness. Narrowing your stakeholder audience may be required to improve your chance of success. This may be why transmission pipeline operators such as El Paso, Northern, Marathon, and Williams report initial success with specifically designed publications for specific audiences, such as handbooks for developers. Knowing the concerns of your audience and specifically identifying the barriers that may prevent your audience from understanding your message can be time well spent.

If individual stakeholder contact is possible, using information resources readily available can enhance your success. For example, you might research the following:

- Has the specific stakeholder attended meetings before?
- Has the stakeholder raised specific issues in other meetings? If so, what are those issues?
- Are there financial or other topical issues specific to this individual?
- Is the stakeholder a community leader, law enforcement officer or emergency responder? If the stakeholder is a community leader, could they be impacted socially by their response to the communication?
- Has the stakeholder received media attention regarding ROW issues in the past?
- What methods of communication delivery have been used for this stakeholder before?

Step 3 – What?

3.00 Identify the draft message to be communicated.

Start to formulate your draft message. Think about the end result. Do you want a behavior change or do you simply want to provide information? Ask yourself, what is the purpose of the message? What is the goal? What do you want to accomplish?

Create several messages, then review and refine them. Pick the one that works best for you. Try the selected message on several associates. Value their opinion and feedback. Keep in mind that this is only a draft, a place to start. There will be more refinement through the process.

Remember, the objective of the message needs to be identified and then related to the audience. Philip Kotler calls this the "Positioning Statement". He defines it as "the act of designing the organization's actual and perceived offering in such a way that it lands on and occupies a distinctive place in the mind of the target market – where you want to be."[9]

Step 4 – Strategy

4.01 Develop the final message and delivery system based on a marketing strategy best suited for the desired outcome.

Once the need (the why), the audience (the who), and the basic message (the what) have been identified, then it is time to get into the details of designing a strategy to refine the message and deliver it in a way that the audience will understand and pay attention to it. This is the critical step that can either make or break any communication effort. For relatively simple efforts, such as notifying a property owner that work will be done on the transmission pipeline right-of-way on their property on a certain date, developing a communication strategy may be easy and straightforward. For more complex efforts it may be necessary to hire outside consultants to help design the strategy. For example, outside consultants may be needed to ensure that

[9] Greg Winter, SME, Social Marketing, Cornerstone Strategies, Handout entitled "Quick Reference Guide" by Nancy Lee and Philip Kotler

municipalities know the location of the transmission pipelines that run through their jurisdictions and how this could impact future planning decisions.

Below are some of the basic parts of a strategy that should be considered. As with the design of any good strategy, each piece can potentially affect all the other pieces, so a process to revisit each decision should be in place.

4.02 Identify budget needed compared to budget allocated.

In a perfect world a communication strategy would be designed to ensure the best possible outcome, then the money necessary to implement that strategy would be allocated. In the real world, however, budget constraints often require decisions to be made about how to implement the best possible strategy with the money that is available. The difference between the basic budget needed to communicate successfully and the budget available needs to be kept in mind so more money can be sought if necessary, or so that the communication can be cancelled if a basic successful strategy cannot be afforded.

4.03 Identify audience barriers and benefits.

It is very important to understand the targeted audience. Knowing barriers and misconceptions that can affect your specific stakeholder audience is essential. Understanding how the stakeholder may perceive risk can also provide insight to assist with more effective communication messages. Significant questions, such as whether or not there are barriers that make it difficult for the audience to receive the message, impact the understanding of the message, prevent trust in the person delivering the message, or affect whether or not the stakeholder will do what the message asks, should be answered. Identifying whether or not there are benefits that the audience may receive through this communication that they may not realize or understand could be helpful. Knowing whether or not incentives should be built into the effort to help overcome the barriers or increase the benefits could add value to the communication effort.

These types of questions or barrier determination efforts need to be considered and addressed. For more complex projects it may be necessary to undertake surveys or focus groups to make sure that the communicator's assumptions about the audience are correct. It is important to try to bring forward any hidden issues.

4.04 Determine how the message is to be delivered.

How the message is delivered is an important consideration for the success of the communication program. Research indicates that one of the most effective methods for behavior change is one-on-one interpersonal communications with a person the stakeholder trusts. The use of interactive demonstrations is a delivery method that will appeal to most adults and heighten their learning experience. The use of expert information coupled with stories and examples that relate to the audience member is also effective. Communicating the message to the stakeholder multiple times in different formats (direct mail, radio ad, news story, presentation at professional association, etc.) can help get the message noticed and understood, and reinforce its importance. This may have been one of the reasons that a

Marathon Pipeline Company radio talk show addressing ROW clearing efforts, in which multiple callers could ask questions of multiple people, appears to have been successful. However it is important to employ media methods that the specific stakeholder audience actually uses. [10]

There are several methods of implementation that can be considered in communicating to inform stakeholders regarding right-of-way (ROW) activities and uses. Some of those listed below can be used in combination.

Written	**Verbal**	**Graphic**
Letters	Face-to-Face meetings	Billboards
Magazines	Telephone Calls	Bus Signs/Bus Stand
Brochures	TV Spots	Banners
Door Hangers	Radio	Pipeline ROW Markers
Emails	Trade Show Booths	Signs at excavation sites
Bill stuffers/Mailers	Professional presentations	Mascots
Pipeline ROW Markers	Town Hall meetings	
Newspaper Notices	Specific stakeholder meetings	
Give-A-Ways		

Information about methods of delivery that increases the likelihood that the information will reach a reader should be used. For example, subject matter experts indicate that graphics used in documents and presentations should be vivid, visually interesting, and relevant to the subject. Recognition and incentives can enhance the effectiveness of the communication[11]. An actual example of recognition being successful was demonstrated when the CEO of Explorer Pipeline met on the ROW with stakeholders. Williams Pipeline Company indicates initial success with website information through the use of incentives. Another approach shows that some members of the public may open mail that comes in a handwritten envelope more readily than other methods of addressing.

4.05 Determine where and when the message is delivered.

The timing and setting in which a message is delivered also should be accounted for. Once the audience is well understood, these decisions should be easier to make. For example, if audience research shows that a local community has a general lack of trust for local government, but universally supports their state champion basketball team, the decision on whether to hold a public meeting in the city council meeting room or the high school gymnasium may be easier and more important. Similarly, if your message is targeted at an agricultural audience you would know that a message delivered during the height of the harvest season (whether at the

[10] Sarah McCaffrey, SME, USDA, Forest Service Researcher
[11] Martha Monroe, SME, University of Florida and Sarah McCaffrey,USDA

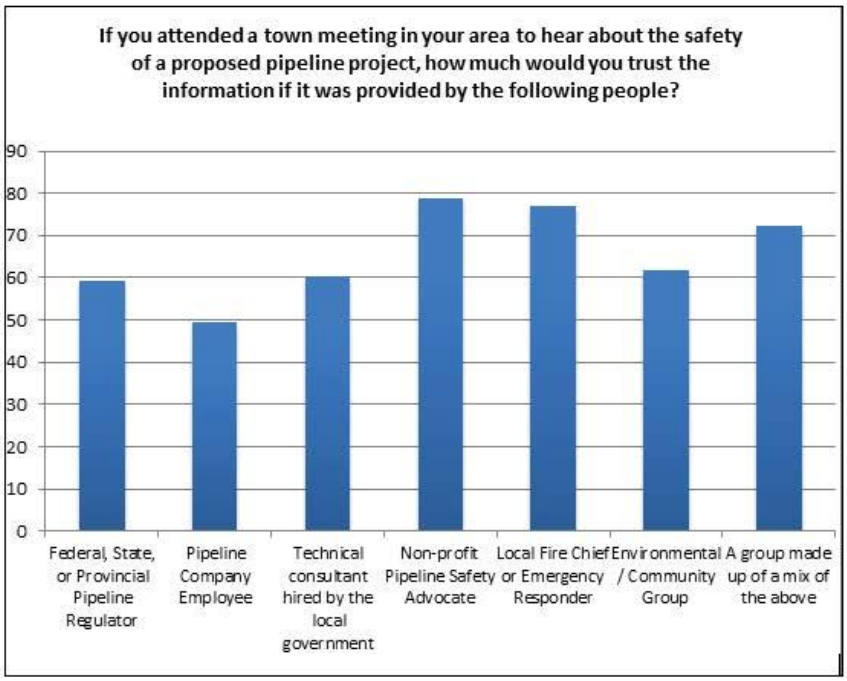
gymnasium or the city council room) has little chance of success. Historical pipeline performance in the area can also affect communication needs.

4.06 Determine who should deliver the message.

One factor that is essential for stakeholder communications is trust. Research shows that people trust and feel most comfortable when talking to other people most like themselves. This is especially so if those delivering the messages are also recognized as community leaders with "expert" knowledge related to the subject[12]. A message from a trusted source, such as a community leader, resonates with most stakeholders. Enlisting these individuals can mean the difference between communications that succeed and those that fail. That is why, when possible, it makes most sense to have contractors talk to other contractors, emergency responders talk to emergency responders, planners talk to other planners, etc.

Audience research can also help decide who would be the best person to deliver the message. For example, the graph below shows the results of an actual survey question asked of people concerned with a proposed pipeline in Arizona. If you were a pipeline company trying to deliver the message, these results would help you understand that having your own employees deliver the message may be a problem or a waste of valuable resources. But, holding the town meeting with a mix of communicators, including your employees, may help increase the acceptance and understanding of the message. Research indicates that few surveys that focus on determining landowner perceptions regarding ROW activities or preferred methods of contact have been performed by transmission pipeline operators through industry trade groups.

[12] Terri Larson, Subject Matter Expert,Fleishman-Hillard



4.07 Select a measurement strategy and measure success.

It is imperative for the success and continued funding of any communication strategy to measure whether the effort is being successful. An evaluation process should be incorporated and planned in advance. The definition of success (i.e., metrics) should be clear and understood. If the measure of success is real behavior change (for example – using the one-call system), then the method designed as part of the strategy should measure that behavior change and not measure items that are not indicators of success (for example – the level of stakeholder attendance at a damage prevention workshop). Awareness of what one should do may not necessarily translate into doing it. Often, people will say they support something but then turn around and behave in a totally different manner. However, research does indicate that asking for a commitment from the stakeholder audience member can elevate action to the desired behavior[13].

Measurement strategies can be employed in a variety of ways. Some examples are:

- Surveys
- Focus Groups
- Feedback Cards

[13] Martha Monroe, SME, University of Florida

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- Telephone Calls
- Personal Contact
- Interviewing
- Case Studies
- Conversations before/after presentations
- Exercises
- Observations

Several measurement strategies, including focus groups, provide the opportunity to test the message and explore how the message is understood by the target audience. Measured results on the quality or effectiveness of the message can then be obtained. From the measured results, message and delivery methods can be tailored, edited and adjusted to better reach and impact the intended audience.

For major efforts it is also important to make sure that the measurement can take place in a timeframe that allows the communication efforts to be changed if not successful. This will help avoid wasting time, good will and money. Whenever possible, the strategy should be test marketed on a small subset of the intended stakeholder audience to verify desired results.

4.07 Modify the draft message to final form based on marketing analysis, recommended practices, specific areas of concern, or other resources.

Once all of the above considerations have been thoroughly researched and decided upon the initial draft message can be reshaped and packaged to ensure that it best fits the strategy of who, where, when, and how.

Step 5 – Communications

5.00 Implement Communications

Up to this point the focus of the communication effort was to determine "why", "who", "what" and the strategy ("the how", when, where, and who delivers) of the message. Keep in mind, the audience or stakeholder has already been identified as you drill down through the steps in the communication model.

It is important to determine the most effective way to communicate the message. You should consider what barriers have been identified, how the stakeholder will perceive risk, and how these elements will affect your implementation strategy. The decision to select one or several communication methods has been based upon the audience, the change in behavior desired, cost of the communication and what barriers will impact the manner in which the message is received. Obviously, the implementation must be effective. The message must be heard and understood for the desired action to be taken and implemented by the intended recipient. The change in behavior (whatever behavior you have identified) needs to be achieved for an effective use of resources.

The method used to communicate will depend primarily on the message to be sent. For instance, if a transmission pipeline company has a routine excavation activity planned on your

property or in your community, they will most likely send a letter or give the landowner a quick call on the telephone. If, however, the pipeline company has a large transmission pipeline project planned, they may hold town hall meetings, meet with local officials, allocate special websites, create special brochures and prepare news bulletins or press releases.

Remember, good communicators are trustworthy, engaging, caring of their audience and accessible. There are many different ways to communicate. The differences depend on many things, including the audience receiving the message the strategy and the purpose and goal of the message.

Step 6 – Metrics

6.00 Measure Effectiveness.

Peter Drucker was a writer, management consultant and social ecologist who explored how humans are organized across all sectors of society. He stated, "Efficiency is doing things right; effectiveness is doing the right things." The practice of measuring effectiveness is all about making sure that you are doing the right things, in the right way, and that you continue to do so. Mr. Drucker also noted, "There is nothing so useless as doing efficiently that which should not be done at all". If you are doing communications in a manner that should not be done at all, you waste both the stakeholder's and your own resources.

Measurement is needed for several reasons, including to:

1) Identify what is working well or poorly with the communication
2) Verify that the purpose of the objective is or can be met
3) Ensure effective use of resources

Identifying what is working well or poorly with the communication will help you know the culprits (or barriers) getting in the way of the communication or the learning experience. It also determines whether or not the learning process is effective.

Too often in developing a purpose for a communication, the objectives or measurement methods are not made "SMART". SMART program effectiveness measurements and metrics are those that are[14]:

S – Specific (to your target)
M – Measurable
A – Attainable or Actionable
R – Relevant
T - Timely

When you can measure and review what may or may not need to be changed through the use of metrics, you can improve how you use your resources. For example, if feedback determines the

[14] Dave Trimble, ProSci Senior Partner, "How to Measure Success: Uncovering The Secrets of Effective Metrics" and Georgia Bozeday, Rush Neurobehavioral Center, "Executive Function Skills", University of California TV learning series by Tribune Media Service.

specific message to be unclear, changes to the message can be shared with multiple users, such as transmission pipeline trade associations, trade agencies, or others using the message, thus assuring a more effective use of resources. In the same way, you may be able to: improve the type of consultant resources utilized for specific items; eliminate waste by sending out more effective documents, including letters or calendars; share lessons learned; and cause a change in behavior that lasts.

Several specialized techniques or recommended practice consensus documents have indicated the importance of measuring effectiveness. Some of these include:

- Common Ground Alliance (CGA) Best Practice 8-9 emphasizes the need to measure public education success; Section 9.0 of the CGA Best Practices addresses Reporting and Evaluation.
- Steps 10 and 11 in the American Petroleum Institute's Recommended Practice (RP) 1162, "Public Awareness Programs for Pipeline Operators", address tracking progress and program evaluation. Information included with the API document appendices also provides guidance on obtaining meaningful measurement data.
- Social marketing to facilitate a change in behavior includes effectiveness metrics, testing of these metrics, and monitoring.
- Practical program evaluation includes measuring effectiveness.

Step 7 – Continuous Improvement

7.00 Identify and Implement Changes If Necessary.

As Hunter Thompson, author, journalist, and creator of "Gonzo Journalism" put it: "Anything worth doing is worth doing well!" So it is with communicating.

Communicating well in a formal setting requires a well thought out plan that essentially follows the first six steps of this seven-step model. The seventh step is designed to implement identified changes, if necessary, based on the result of those first six steps.

If the monitored results indicate that the communication effort was effective, then there would be no need for further changes. Or in other words, if the recipients clearly heard and understood the message, then the communications model efforts are complete and no further communication may be required. But given the nature of both communicators and recipients, and the fact that all human communication activities are impacted by the weaknesses of the human condition (communication barriers), changes to the communication may be and are likely to be required. A complete implementation of Step 7 will need to be undertaken in all but a few cases.

The recommended practices for carrying out Step 7 of sound communications efforts are as follows: [15]

[15] cf. M. Monroe; S. McCaffrey; G. Winter

- Monitor all measured results. If the communication was successful, great! No need to proceed further. If it was not successful, then proceed to the following additional recommended practices:
- Develop a feedback loop to compare measured results with assumptions on which initial decisions were based. (E.g.: Was the problem correctly identified? Were the correct recipients identified? Was the correct message chosen? Was the delivery system appropriate?)
- Identify changes needed to correct initial assumptions
- Implement the necessary revisions
- Re-communicate the message and continue to re-measure

Conclusion

To communicate effectively, you should make each of these 7 steps part of your routine habits. Aristotle said "We are what we repeatedly do. Excellence, then, is not an act but a habit." Practicing these steps repeatedly, over and over again, until they become second nature, will help improve your effectiveness. Your stakeholders will be more likely to receive and understand your information and educational messages that are designed to change their behavior.

While reviewing effective communications, it was also noted that several elements need to be implemented in the PIPA effort in order to make the most of the PIPA resources. To implement these items would help ensure that all of the PIPA resources were well spent. Thus, it is suggested that:

1) A centralized repository for PIPA information that can found through the internet easily and by any individual or stakeholder be developed and maintained.
2) A graphics specialist be employed to assist with the final PIPA document.
3) A marketing and communications agency be employed to serve as a consultant for writing the final PIPA report and test messages and findings.
4) Professional services be engaged to develop a formalized plan dedicated to educating each of the stakeholder audiences on the outcome of this PIPA initiative and to sustain future PIPA efforts. This is especially needed for the larger property developers, contract ROW agents, and local government stakeholder audiences.

Appendix F: Barriers to Effective Communication

For communication to be effective it must be a two-way dialogue. However, personal experiences affect the way messages are received, making it essential to understand barriers to effective communication and how to better communicate with key stakeholders. The following section looks at communication barriers from the perspective of a transmission pipeline company communicating with key stakeholder audiences. You may find that some, all, or none of these communication barriers are present in your actual situation. You are encouraged to communicate openly with stakeholders around transmission pipeline development.

The following sections will provide tactics and tools to potentially address these following communication barriers.

Local government planning and zoning organizations (including permitting organizations, public works, emergency officials, elected officials, etc.)

1. Disinterest
2. Lack of resources
3. Lack of authority
4. Political pressure
5. Competing interests or projects
6. Information overload, clutter
7. Inadequate information regarding pipeline safety
8. Method/manner of communication (e.g., face-to-face versus mass mailing)
9. Lack of time and/or is too busy to pay attention
10. Difficult to reach

Property developers (including subcontractors/excavators, architects and designers)

1. Disinterest or lack of priority
2. Don't want to present reality of easements
3. Lack of knowledge
4. Information overload, clutter
5. Misinformation
6. Difficult to reach; method/manner of communication (e.g., face-to-face versus mass mailing)
7. Lack of time and/or is too busy to pay attention
8. Lack of coordination with pipeline companies in planning process

Real Estate Agents/Brokers (residential and commercial)

1. Disinterest or lack of priority
2. Don't want to present reality of easements
3. Lack of knowledge
4. Information overload, clutter
5. Misinformation
6. Difficult to reach; method/manner of communication (e.g., face-to-face versus mass mailing)

7. Lack of time and/or is too busy to pay attention

Home Owners/Buyers/Sellers (including landowners and farm owners)

1. Disinterest
2. Information overload, clutter
3. Inadequate information regarding pipeline safety
4. Misinformation (e.g., word of mouth from uninformed, biased neighbors)
5. Mistrust of government, authorities, companies, etc.
6. Method/manner of communication (e.g., face-to-face versus mass mailing)

Leading Practices for Transmission Pipeline Operators to Engage Stakeholders

Pipeline operators should create internal ambassador programs to train personnel about the importance of working with stakeholders and other pipeline operators. The safety of a transmission pipeline, a company's reputation, and the success of a project depend upon a good working relationship with all key stakeholders. Effective outreach can in turn advance communication among all stakeholders. Following are suggested leading practices for transmission pipeline operators to engage stakeholders.

Local government planning and zoning organizations

1. Offer continuing education credits to certified planners through existing association workshops, such APA. (Their certification is voluntary, so not all planners are certified; but they need CEUs to maintain certification).
2. Target and educate planners through trade show booth and speaking engagement opportunities at annual association conferences, such as American Planning Association, National Association of Counties, and National League of Cities.
3. Look at outreach opportunities through local and state chapters of planning associations, such as workshops, conferences, etc.
4. Consider enlisting the use of an elected official, with established credibility to reach stakeholders.
5. Inform planning and zoning officials about the National Pipeline Mapping System (NPMS).

Property developers

1. It is in the best interest of transmission pipeline operators and property developers to begin working together as early as possible. In fact, it's never too early for a transmission pipeline operator to approach a property developer. Often times, the transmission pipeline company is not brought into the communication loop until very late in the project. This can lead to project scope and design changes and costly delays. Transmission pipeline companies should get on local government planning department notification lists and contact developers as soon as projects are announced.

2. Encourage property developers that when scoping property for potential development, they should look specifically for transmission pipeline facilities/easements/markers on the property.

Real estate Agents/Brokers (residential and commercial)

1. Target and educate the real estate community through trade show booths and speaking engagement opportunities at annual conferences of trade associations, such as the National Association of Realtors.
2. Use regular realtor association meetings and newsletters (local, regional and national) to educate the real estate community about the benefits of full and early disclosure of transmission pipeline easements.
3. Invite real estate agents in a community to attend breakfast or lunch workshops on transmission pipeline easement disclosure. Coordinate with the national association to offer CEUs if/where possible.

Home Owners/Buyers/Sellers

In addition to information already delivered to homeowners through public awareness programs and other stakeholder outreach, transmission pipeline operators should:

1. Target local area newspaper real estate sections with pre-written articles on how to know where transmission pipeline easements and other encumbrances are located on the property.
2. Determine if there are centralized websites for all MLS listings in affected communities, such as www.har.com in Houston. Determine if there is a checklist of items for homeowners to use before buying property. If so, ask to add a new bullet item – "Have you checked to see if there are transmission pipeline easements located on the property?"
3. Conduct direct mail campaigns targeted to specific events or seasons. For example, in the early spring consider a campaign focused on digging, planting, etc.
4. Work with homeowner associations to include articles/information in association newsletters.
5. Purchase ads in local newspapers; point readers to a website for more information.
6. Host emergency response drills along highly visible transmission pipeline rights-of-ways (ROWs) to increase awareness.

CGA Best Practices Version 6.0

The Common Ground Alliance (CGA) has identified and validated existing best practices performed in connection with preventing damage to underground facilities. The collected best practices are intended to be shared among stakeholders involved with and dependent upon the safe and reliable operation, maintenance, construction and protection of underground facilities. The following best practices could be applied when attempting to engage stakeholders. As noted, some of them could be applied when attempting to effectively communicate risk, as discussed in the next section. However, not all practices are appropriate in all situations.

- To Engage Stakeholders:

  7-2: Incentives - Damage prevention programs include incentives to promote compliance with laws and regulations.

- To Engage Stakeholders and Effectively Communicate Risk:

  8-1: Use of a Marketing Plan - An effective damage prevention education program includes a comprehensive, strategic marketing/advertising plan.

  8-2: Target Audiences and Needs - An effective damage prevention education program includes identification of target audiences and their individual needs.

  8-3: The Use of Structured Education Programs - An effective damage prevention education program is structured to accommodate the needs of individual audiences.

  8-4: Target Mailings - An effective damage prevention education program communicates vital damage prevention, safety, and emergency response information to target audiences through periodic mailings.

  8-5: The Use of Paid Advertising - An effective damage prevention education program includes paid advertising to increase damage prevention awareness and practices.

  8-6: The Use of Free Media - An effective damage prevention education program utilizes all available free media.

  8-7: The Use of Giveaways - An effective damage prevention education program uses promotional giveaway items to increase damage prevention awareness.

  8-8: Establishing Strategic Relationships- An effective damage prevention education program establishes strategic relationships.

  8-9: Measuring Public Education Success - An effective damage prevention education program includes structured annual or biennial (every two years) measurement(s) to gauge the success of the overall program.

Guidance for Communicating with Transmission Pipeline Companies

Property Developers, Real Estate Agents and Local Government Officials

Some stakeholders have reported challenges in communicating with transmission pipeline companies. Whether real or perceived, they are valid concerns and should be addressed. As an example, some developers don't know where to start if they need information from a transmission pipeline operator. Additionally, they may get different responses from each operator.

This guidance was developed primarily for property developers, real estate agents and local government officials (i.e., professional staff rather than elected officials) to use when communicating with transmission pipeline companies. However, other audiences could possibly benefit from this information as well.

1. It is important to recognize that various transmission pipeline companies are structured and organized differently. There are small companies and large companies; some large companies may own multiple transmission pipeline systems in many different states.

   There are independent transmission pipeline companies, as well as publicly-owned companies. There are intrastate transmission pipelines (wholly within a state) and interstate transmission pipelines (traversing state boundaries); both are regulated by different entities and may have different regulations and requirements.

   Different department names and titles can add to some confusion. While one transmission pipeline operator may refer to a department as "the land department", another operator may refer to the same function as "the right-of-way group." A transmission pipeline company many have a company headquarters, with regional division offices and many field compressor or pump station locations.

   Frequently, transmission pipeline ownership changes as pipeline systems are sold from one company to another. Regardless of the company name listed on the transmission pipeline marker, the emergency phone number noted on the marker should always work.

2. Don't know who to contact in the transmission pipeline company? Your best bet is to start by calling the land or right-of-way department. If they are difficult to reach, an alternative is to contact the local area operations office. You should ask for a supervisor or operations manager. If that person cannot address your question, he/she can direct you to the appropriate office and provide contact information.

   If you can't locate the main company phone number, look on the transmission pipeline marker for the emergency contact number. This phone number is answered around the clock, and, while the operations control personnel won't be able to answer your specific questions, they should be able to provide the main company phone number.

3. If you're considering developing property that has a transmission pipeline on it, you should ask for a copy of the construction and property guidelines. Most transmission pipeline companies will provide a brochure on construction and property guidelines and, in some cases, it may be found on the company's website. Generally, the brochure addresses the requirements for crossing a transmission pipeline easement and your legal and professional responsibilities with respect to underground facilities. A transmission pipeline company land or right-of-way agent can provide this information.

4. Often, you may receive different information from different transmission pipeline operators. Please remember that transmission pipeline companies are willing to work with property developers and local government officials; however, they may not be obligated to disclose private, sensitive or confidential business information.

5. Lastly, and most importantly, transmission pipelines companies are dependent on the property developer to make the initial contact when the developer is pursuing property with a transmission pipeline easement. Transmission pipeline companies ask that you call at the

earliest possible opportunity. (It's never too early.) To avoid costly project delays, a property developer should contact the transmission pipeline company before bidding/selling a project.

Communicating Pipeline Risk and How Risk is Managed

All activities involve a degree of risk – from walking outside during a lightning storm to driving in rush-hour traffic. Risk is inherent, including in pipeline transportation. In fact, no form of energy transportation is completely without risk. However, transmission pipelines are the safest, most reliable mode of transportation for energy products, according to the National Transportation Safety Board.

Transmission pipeline development that impacts a stakeholder's property can be a very personal issue, and may quickly escalate feelings of anger, fear and distrust if not addressed in a timely manner by the transmission pipeline company. The communications vehicle and messaging needs are different for each audience; everyone filters situations based on their own personal history and involvement. There is no cookie-cutter approach to communicating risk.

Risk Communications:

Successful communication of risk combines the ability to explain the probability (likelihood) and the potential consequences of an incident, and to then build upon that explanation to address concerns. Risk communication can be defined as a science-based approach for communicating effectively in high-concern, high stress, emotionally charged, or controversial situations. The probability of an incident may be extremely low, whereas the potential consequences may be very high; therefore, successful risk communication[16] illustrates both ideas and stresses the value in providing information to stakeholders that they need to make their own informed decisions about transmission pipeline safety.

Perception is an important part of reality for most of us. If a stakeholder perceives a risk is present, then that perception leads to concerns. It's therefore important to engage in open, transparent communications with stakeholders. Do not deny or minimize the presence of risk, and do not ignore the impact that emotions can have on the perception of risk. Stakeholders are more likely to trust others when the communication lines are open and moving in both directions.

The more concerns that are present, the harder the challenge of communicating risk. Overcoming that challenge requires:

- Two-way communications
- Communicating project risk
- Anticipating public reactions and preparing accordingly

[16] For more information about risk communications, go to www.petersandman.com.

Leading Practices to Communicating Risk

Whether or not a hazard is actually dangerous, people are likely to react and respond more strongly if the hazard is considered unfamiliar or unfair, and if the people behind the hazard are perceived as untrustworthy or unresponsive. Following is a list of factors that may impact a stakeholder's perception of risk.[17]

1. Controllability – Almost everybody feels safer driving a car as opposed to riding in the passenger seat. When prevention and mitigation are in the individual's hands, the risk (though not the hazard) is much lower than when they are in the hands of someone else.
    - Nearby neighbors can help ensure the transmission pipeline ROW remains secure by keeping a watchful eye. Enlist their support by asking them to inform the transmission pipeline company of any unusual activities.
    - Consider forming a citizen's advisory board to help build trust between community and transmission pipeline operator. Ideally facilitated by a third party, these forums provide transmission pipeline operators with direct input from the community. Refer to the American Chemical Council's Responsible Care website (see the Responsible Care link at http://www.americanchemistry.com). Guidance is provided on how to set-up a citizens advisory board.
    - Transmission pipeline operators should provide company ambassador training to land agents, given their prominent role in communicating with the community.
2. Familiarity – Exotic, high-tech facilities tend to provoke more concern than familiar risks (your home, your car, the food in your kitchen). Transmission pipeline operators should:
    - Participate in community events. Go to events where the people are, such as county fairs. While open houses at transmission pipeline company facilities are helpful, more people are likely to be reached at a community event than at a pre-arranged event hosted by the transmission pipeline operator.
    - Become a familiar sight in the community. Participate in community relations, such as sponsoring the local little league and awarding local scholarships.
    - Add the company name and logo to transmission pipeline company vehicles so residents will become more accustomed to seeing the name in the community.
3. Fairness – People who perceive that they must endure greater risks or property impacts than their neighbors, without access to greater benefits, naturally feel they have been put into an unfair situation — especially if the rationale for so burdening them looks more like politics than science.

[17] Factors adapted from (Sandman, P., August 2004. Risk communication: Evolution and Revolution; www.petersandman.com)

- Neighbors are an important part of doing business. Transmission pipeline companies realize they wouldn't be able to operate their pipelines without the tacit consent of communities. While transmission pipeline companies compensate landowners for land use, it is often times not enough to satisfy all neighbors. Transmission pipeline companies should strive to be reasonable and endeavor to communicate verbally and with action how much they care about being good neighbors. They should also strive to communicate the benefits of pipeline transportation and safety statistics as compared to other modes of transportation.

4. Catastrophic potential – Risks from activities viewed as having the potential to cause a significant number of deaths and injuries grouped in time and space (e.g., deaths and injuries resulting from an airliner crash) are judged to be greater than risks from activities that cause deaths and injuries scattered or random in time and space (e.g., automobile accidents).

   - Although it may seem counter-intuitive to many, when a transmission pipeline operator provides more information to stakeholders – including information about the potential hazards related to a release of some pipeline products into the environment – it promotes a solution-oriented dialogue.

   - Transmission pipeline operators should be willing to fully outline the consequences of an incident, to discuss the likelihood of an incident, and to explain in plain language all the measures being taken to mitigate or eliminate those factors that could lead to a release of transmission pipeline products into the environment. Further, stakeholders have a right to know an operator's safety record and what that operator is doing to correct any deficiencies that may have contributed to past incidents.

5. Understanding – Poorly understood risks (such as the health effects of long-term exposure to low doses of toxic chemicals or radiation) are judged to be greater than risks that are well understood or self-explanatory (such as pedestrian accidents or slipping on ice).

   - Stakeholders are often afraid of the unknown and what they don't understand. Transmission pipeline operators should:
     - Develop a communications campaign to educate stakeholders.
     - Host an open house and invite stakeholders to tour company facilities.
     - Use the media as an outlet to reach, communicate with and educate stakeholders.

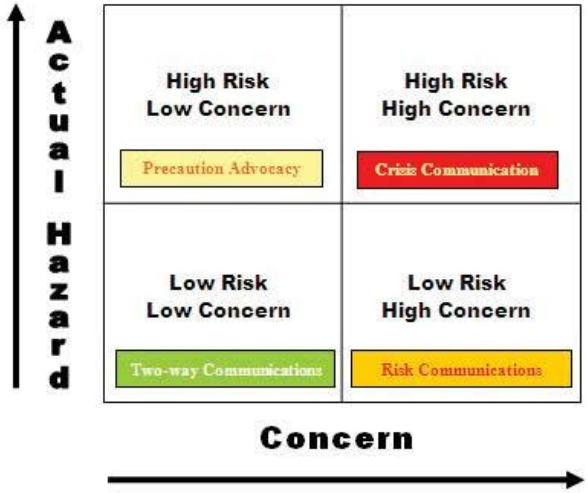
6. Uncertainty – Risks from activities that are relatively unknown or that pose highly uncertain risks (e.g., risks from biotechnology and genetic engineering) are judged to be greater than risks from activities that appear to be relatively well known to science (e.g., actuarial risk data related to automobile accidents). Transmission pipeline operators should:

   - Address how transmission pipelines are operated and the steps that operators take to manage and mitigate risk. (Refer to examples below.)

   - Point to National Transportation Safety Board statistics on various modes of transportation. Cite studies that show transmission pipelines are the safest form of transportation.

   - Emphasize operational history (i.e. operated safely since 1965 without incident).

7. Effects on children – Risks from activities that seem to pose a threat to future generations (e.g., adverse genetic effects due to exposure to toxic chemicals or radiation) are judged to be greater than risks from activities that do not (e.g., skiing accidents).
    - Transmission pipelines near schools and day care centers will attract more attention. Be prepared to talk about what is being done to manage and mitigate risk.
    - Implement an on-going school program to educate students about pipeline operations and safety.
    - Develop working relationship with school administrators. Offer to jointly develop emergency evacuation plans.
8. Trust – Risks from activities associated with individuals, institutions or organizations lacking in trust and credibility (e.g., industries with poor environmental track records) are judged to be greater than risks from activities associated with those that are trustworthy and credible (e.g., regulatory agencies that achieve high levels of compliance among regulated groups). See the figure below.
    - Transmission pipeline companies should demonstrate that they are a part of the community too. Particularly, if their employees live and work in the community.
    - Trust has to be earned. Transmission pipeline companies should build trust before it is needed. Ideally, companies should bank trust so that it is available when needed.
    - Residents are more likely to trust their neighbors versus transmission pipeline companies.
    - Face-to-face communication is more believable than mass mailings or other impersonal communications.
    - Build trust and credibility by partnering with advocacy groups and associations, such as the Smalley Foundation or the Pipeline Safety Trust.



9. Media attention – Risks from activities that receive considerable media coverage (e.g., transmission pipeline incidents or leaks at nuclear power plants) are judged to be greater than risks from activities that receive little media coverage (e.g., on-the-job accidents).
    - The media often helps set the public agenda. It can also help educate transmission pipeline stakeholders. Given its broad reach, media attention also causes others outside the project area to become an active participant.
    - To balance media coverage, transmission pipeline companies should still perform other outreach, such as speaking engagements, neighborhood newsletters, etc.
    - Put a face on the story. Transmission pipeline companies are no better than their people. Managers and field personnel who are involved in their communities and strive to put themselves in the shoes of transmission pipeline neighbors are more likely to be treated fairly in media coverage than a company spokesperson with no connection to the host communities.
    - Reach out to newspaper editorial boards. They can serve a useful role and offer statements of opinion on issues that are beneficial.
10. Accident history – Risks from activities with a history of major accidents or frequent minor accidents (e.g., leaks at waste disposal facilities) are judged to be greater than risks from those with little or no such history (e.g., recombinant DNA experimentation).
    - Good or bad – honesty is an absolute must. The transmission pipeline operator should know and acknowledge its safety history.

- If the transmission pipeline operator has a less than perfect safety record, the operator should explain what has been done to address past incidents.

11. Personal stake – Risks that personally and directly affect individuals (or their families) (e.g., living near a waste disposal site) are judged to be greater than risks from activities that appear to pose no direct or personal threat (e.g., disposal of waste in remote areas). The transmission pipeline operator should:
    - Understand stakeholder viewpoints and concerns. They will vary greatly within a community. Listen to all and respect their opinions.
    - Don't marginalize neighbors with concerns as being simply NIMBY ("not in my back yard"). Address their concerns and provide information that is as free as possible of jargon and transmission pipeline industry "shop talk."
12. Human vs. natural origin – Risks generated by human action, failure or incompetence (e.g., industrial accidents caused by negligence, inadequate safeguards, or operator error) are judged to be greater than risks believed to be caused by nature or "Acts of God" (e.g., exposure to geological radon or cosmic rays). The transmission pipeline operator should:
    - Educate stakeholders and help them become familiar with transmission pipeline operations.
    - Encourage company personnel to become a part of the community and get involved.
    - Address how transmission pipelines are operated and the steps that operators take to manage and mitigate risk. (Refer to examples below.)
    - Host an open house and invite stakeholders to tour company facilities.

Additional resources for transmission pipeline operators

Defer to the experts. Bring in skilled and trained communicators, such as skilled public relations practitioners and public relations agencies, as necessary to train company leaders and managers in effective response during a crisis situation. This training might also include field employees.

Also, there are a host of resources on the internet. Two notable experts, include:

- www.petersandman.com – Peter M. Sandman is a risk communication speaker and consultant in the United States and has also worked extensively in Europe, Australia, and elsewhere.
- www.centerforriskcommunication.com – The Center for Risk Communication is a pioneer in the development and use of advanced communication methods based on decades of university-level behavioral-science research and practice. Research and experience clearly prove that one of the most important keys to communication success is an organization's ability to establish, maintain, and increase trust and credibility with key stakeholders, including employees, regulatory agencies, citizen groups, the public and the media.

Some companies have developed software in which you can plug in assessment factors and it will help you figure out how to reduce stakeholders' concern. Peter Sandman and others have risk management software products available which can be found on the Internet.

Mitigating/Managing Risk: Common Ground Alliance Best Practices 5.0

As noted above in the section entitled "Leading Practices for Transmission Pipeline Operators to Engage Stakeholders", the CGA has identified and validated existing best practices performed in connection with preventing damage to underground facilities. Several of those best practices are noted to have potential for application when attempting to effectively communicate risk. However, as noted, not all practices are appropriate in all situations.

Overarching Recommendations

1. There isn't a one-size-fits-all communications campaign that will work for all situations. As the situation changes, the communications program will need to change as well. For instance, if the project is controversial, you will likely need to change your communications strategy to acknowledge and address stakeholder concerns before you can delve too deeply into details about the actual project.
2. In this 15-second attention span world, messages must communicate clearly, concisely and quickly to each unique audience. Given that the message is designed to respond to existing perceptions, it must be believable, persuasive and compelling. Communication materials should be:
    a. Simple yet memorable
    b. Professionally designed
    c. Highly visual and engaging
3. It generally takes about seven exposures before someone actually "receives" a message. Repetition of a consistent message is an effective way to influence and change behavior. While the message remains consistent, it should be conveyed in a variety of ways to help ensure the receiver doesn't tune out.
    a. Instead of developing another brochure, consider using untraditional/new forms of communications, such as digital media. You can create blog conversations to reach specific stakeholders.
    b. Broaden the variety of communications tactics you use. Rely on various forms of communications; don't just use one form of communication. Select the best communication method based on the audience you are trying to reach. Following are examples of communications tactics that transmission pipeline operators might use for each audience.

        Local Government Planning and Zoning Organizations

        - Have right-of-way agents conduct face-to-face visits with planning and zoning departments or other local government contacts (e.g., county clerk in smaller

counties). In smaller communities/counties, those may be contracted or volunteer positions.

- Identify state chapter of national associations, such as of National Association County Offices (NACO) and American Planning Association (APA). Participate in annual meetings, host hospitality suites or secure booth space.
- Reach members in these associations through electronic publications, websites and e-mail blasts.
- Implement transmission pipeline industry public awareness communications required by federal regulations (e.g., API RP 1162).

Property Developers

- Participate in home builders' association meetings, especially in smaller communities.
- Although it may be difficult to identify property developers who might impact transmission pipeline facilities, visit the places where you know they must visit for information (e.g., planning offices). Have communications materials on display and accessible.
- Work with local government planning departments to intersect with developers when project documents (e.g., plats) are filed.
- It is a highly recommended that face-to-face communications be used for this audience, although it may initially be difficult if a developer is not located locally.
- Utilized targeted mailings.
- Develop collateral materials to use in engaging stakeholders (e.g., brochures, web-sites, newsletters, etc.
- Approach national associations, such as the National Association of Home Builders (NAHB), the Society of Industrial and Office Realtors (SIOR), and the National Association of Industrial and Office Properties (NAIOP), for conference/trade show opportunities, speaking engagements and including articles in their trade publications.

Real Estate Agents/Brokers

- Participate in monthly realtor association meetings, especially in smaller communities.
- Present information on upcoming projects and on recommendations.
- Visit major local real estate offices, answer questions and provide communications materials.
- Work with national, regional and local realty associations to include articles.
- Have presence at national, regional and local real estate association trade shows.
- Utilize targeted mailings.

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Home Owners/Buyers/Sellers

- Recognize that face-to-face communication is preferred.
- Place key messages in homeowner association (HOA) newsletters. Attend HOA monthly meetings and pursue speaking opportunities.
- Hold open houses.
- Utilize local media.
- Participate in and have presence in local community events (e.g., community fairs); Pick events to match the community (i.e., pick the right tool to reach the audience). For example, a county fair in a large county is probably a useful venue. Go to their community events, where the people are, instead of hosting a transmission pipeline event.
- Recognize audience characteristics and situations (e.g., existing development, recent incidents, etc.).
- Implement transmission pipeline industry public awareness communications required by federal regulations (e.g., API RP 1162).

4. Make the PIPA effort successful. To ensure a successful outcome, an organized entity should be established to lead the PIPA effort beyond the final report. The momentum should be continued in order to truly affect change. The initial PIPA effort should be viewed as a long-term project, with on-going outreach and education. It will take time to influence opinions and shift outcomes. Developing and publishing a report is only the first step.

   To that end, efforts should be made to ensure that partnerships and the collaborative spirit developed during the initial PIPA effort continue. The transmission pipeline industry should continue to collaborate and partner with various organizations such as property developers and real estate agents and brokers. Together, stakeholders are better positioned to achieve more effective results than would otherwise be possible. Establishing a unified entity to facilitate this recommendation will help to ensure that all parties remain focused on the pursuit of common goals.

   Resources should be allocated to "mind the store". Having one focused entity will ensure that someone is responsible for managing continuation of the initiative. It will also provide a centralized location to serve as an information depository and a recognized primary point of contact in these matters, and it will help to ensure that all stakeholders share a common and consistent message.

Appendix G: ROW Acquisition and INGAA Commitment

Summary Example of a Transmission Pipeline Operator's Right-Of-Way Acquisition Process

The following summary is one example of a transmission pipeline operator's right-of-way acquisition process, but practices may vary among transmission pipeline companies. At the end of this Appendix is a commitment by member companies of the Interstate Natural Gas Association of America (INGAA) to land owners describing the negotiation values the INGAA members strive to employ and which landowners can expect.

General Route Evaluation - Project Feasibility Analysis Phase

In the initial phase of a transmission pipeline project, the pipeline company will gather necessary geographical, environmental, jurisdictional, and land records data to identify and evaluate potential routes. The data is mined from various mapping systems, statutory agencies, local government's planning and zoning departments, as well as aerial and ground reconnaissance. The pipeline operator will analyze the needs of end users and supply sources to determine the type, size and operating pressure of the transmission pipeline. They will also develop a preliminary cost estimate and schedule for the project. This phase ends with an evaluation of the project's feasibility.

A transmission pipeline project connects an energy supply to an energy market. Simply stated, they connect point "A" to point "B". To evaluate potential routes from "A" to "B", the company collects this data:

1. **Origination and Termination Points** – The type of facilities, the type and amount of product to be transported and the pressure at which they operate are critical to determining the size and physical requirements of the transmission pipeline as well as the need for ancillary facilities such as aboveground valves, metering stations, underground storage, surge tanks and compressor stations. The product transported, the size of the line, and the type of facilities will dictate the size of right-of-way and whether additional property needs to be purchased.
2. **Identification of Terrain** – The type of terrain can impact the type of construction equipment, the construction schedule, and the need for special permits such as environmental, waterway jurisdiction, road jurisdiction, and foreign utility crossings. The permits may place certain requirements on how and when the transmission pipeline is constructed.
3. **Preliminary Cost Estimate** – In order to evaluate the project's feasibility, a preliminary cost estimate is created. This estimate includes the cost of the pipe, construction forces needed for installation, compressor stations or pump stations to move the product, and many other costs related to safely building the pipeline and placing it in service. The costs related to acquiring easements for various routes are also considered. The fair market value of the required property is typically used during the preliminary cost estimate.

4. **Scheduling –** The acquisition of right-of-way, the constructability of the route, the lead time to obtain permits, and public opposition have the greatest impact on the duration of the project. The required in service date may influence route selection.
5. **Project Feasibility –** The routes are evaluated for constructability, risk, and return on investment. The pipeline company decides whether to go forward with a transmission pipeline project.

Operator's Due Diligence Phase

If the pipeline company decides to move forward with the project, they engage in a more detailed phase by validating the preliminary cost estimate on a limited number of routes. At this point, they walk the route and their Land Agent reaches out to landowners. They also perform records research, a title search, land surveys, in depth environmental evaluations, and archeological evaluations.

1. **Records Research and Development -** Right-of-way acquisition requires expert records research. The quality, format, and recording practices of land documents vary depending on when and where they were created. The development of accurate, legally binding land documents is vital since the terms and conditions of the agreement between the transmission pipeline company and landowner continues in perpetuity. Good recordation practices are key to preventing future issues.
2. **Title Research and Curative Matters –**A title search involves obtaining a legal description of the property and determining the chain of title to identify all records that may affect the title. Records that may affect the title include but are not limited to mortgage, lien, tax payments, flood zone status, property leases, copy of the deed and property zoning. When there is a lien holder with a significant financial interest or the property is at risk, there is the potential for mortgage subordination. The transmission pipeline operator may be required to satisfy and make payments to the lien holder. The operator will obtain a limited title certificate which identifies the owner of the property and any liens against the property discovered in the search.
3. **Land Surveys –** Generally, before an easement agreement is negotiated, the land is surveyed in order for the parties to have a legal description and plat of the location and size of the desired right-of-way on the property. Of the survey types listed below, the last three are mainly used for transmission pipeline route selection.

    - ALTA Survey or Extended Title Insurance Coverage Survey
      This type of survey is made for the purpose of supplying a title company and lender with survey and location data necessary for the issuing of title and/or mortgage insurance. A detailed map is required to be done to American Land Title Association (ALTA) specifications. Specifications of this type of survey include (but are not limited to) determining property lines, location of improvements, identifying all easements, utilities and other conditions affecting the property. ALTA surveys are very comprehensive surveys and typically cost thousands of dollars and take weeks to complete. The ALTA Survey is most often performed on commercial properties.

- Boundary Survey
  A boundary survey establishes the true property corners and property lines of a parcel of land. Boundary surveys are typically performed to obtain building permits, to resolve property disputes, and for erecting fences. Easement lines may also be located, if requested, with this type of survey.
- Elevation or Floodplain Survey
  Elevation surveys determine the elevation of various sections of a building or land. Typically these are used to aid in building plans and to determine if a property is in a flood zone.
- Lot Survey, (aka Site Plan Survey or Plot Plan Survey)
  This is a combination of boundary and topographic surveys for preparation of a site plan to be used for designing improvements or developments, and obtaining government building permits.
- Route Survey
  This is a reconnaissance survey, preliminary survey, and location survey for a linear type feature, such as a road, railroad, canal, pipeline, or utility line.
- Topographic Survey
  A topographic survey is a land survey locating natural and manmade features such as buildings, improvements, fences, elevations, land contours, trees, streams, etc. This type of survey may be required by a government agency, or may be used by engineers or architects for the design of improvements or developments on a site.
- Wetlands Delineation & Location Survey
  A wetlands delineation and location survey is completed when construction work is to be done on or near a site containing defined wetlands. Depending on the local, state, or federal regulations, wetlands are usually classified as areas that are completely inundated with water more than two weeks during the growing season.

Environmental, Archeological Studies & Endangered Species

Based on site conditions, additional environmental, archeological or endangered species studies may be required. A wetland is an example of an environmental condition that requires additional evaluation and permits. Depending on Local, State, or Federal regulations, wetlands are usually classified as areas that are completely inundated with water more than two weeks during the growing season. The site specific definition for wetlands in a given geographical region can be obtained from the Local or State Conservation Commission or Wetlands Regulatory Commission. If the area is delineated as a wetland, a Wetlands Delineation & Location Survey is required.

The site may require an archaeological study to determine if the construction may directly or indirectly affect archeological and historic properties/structures. Geotechnical borings are taken in the areas of archaeological sensitivity for information about the soil and fill layers. The information is used to identify the archaeologically sensitive areas for the current alignment and screen out areas of prior disturbance that would have no potential for intact remains.

If the area contains species on the federally endangered or threatened species list, additional studies and permits may be required.

Permit requirements will be reviewed in depth. The operator may begin contacting permitting jurisdictions and collecting necessary information for permit applications. The permits may require the operator to access the land to acquire the data.

Land Agent Background

Solid preparation of all stakeholders leading up to the negotiation phase creates an atmosphere of mutual understanding of the party's current and future needs. In order to be effective, land agents background should include knowledge of:

- Transmission pipelines
- Agriculture and ranching practices
- Land title and condemnation laws
- Land values
- Documents and Instruments
- Right-of-way easement and special provisions and clauses
- Typical landowner concerns, reactions and responses during acquisition process
- Negotiating with all types of people
- Company policies
- Company code of conduct & rules of negotiations

Condemnation Process

Eminent domain law and legal procedures vary, sometimes significantly, between jurisdictions. Usually, the condemnation process follows steps similar to these:

- The operator attempts to negotiate the purchase of the easement for fair value.
- If the landowner rejects the offer, the operator files a court action to exercise eminent domain, and serves or publishes notice of the hearing as required by law.
- A hearing is scheduled, at which the operator must demonstrate that it engaged in good faith negotiations to purchase the easement, but that no agreement was reached. The operator must also demonstrate that the easement is for a public interest, as defined by law. The landowner is given the opportunity to respond to the operator's claims.
- If the operator is successful in its petition, proceedings are held to establish the fair market value of the easement. Payment to the landowner may first be used to satisfy any mortgages, liens and encumbrances on the property, with any remaining balance paid to the landowner. The operator obtains an easement. In certain jurisdictions, right of entry may be granted prior to the landowner receiving payment.
- If the operator is not successful, or if the landowner is not satisfied with the outcome, either side may appeal the decision.

Public Relations

Public relations are an important element to successful land acquisition. Valuable public relations build a community's understanding of the purpose and status of the transmission pipeline project. Operators are wise to know the general attitude of the landowners and the community near the pipeline. They can tailor their communications to provide information that addresses their concerns. Providing timely and focused educational pipeline safety and project information can improve an operator's reputation and acceptance as a good neighbor. Providing material in languages identified among stakeholders may improve acceptance for the project. Pipeline operator's communication with respect to land acquisition should follow the PIPA seven-step communication model (BL10) to be most effective.

Landowners often reach out to government officials for objective information and support. Government officials should be contacted as early as reasonable in the acquisition process. Depending on the scope and visibility of the project, local officials who may be contacted include:

- Elected County Representatives
- County Road Department Head
- County Planning and Zoning Department Head
- Elected City Representatives (Mayor, City Manager, City Council, etc...)
- Municipal Road Department Head
- Municipal Planning and Zoning Department Head

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APPENDIX G *PIPA Report, November 2010*

INGAA Member Company Commitment to Landowners

Interstate Natural Gas Association of America

Recognizing the importance of building a good relationship with landowners, a transmission pipeline association, Interstate Natural Gas Association of America (INGAA), gathered a team of member companies to develop a document describing the negotiation values they strive to employ and which landowners can expect.

The following text is from INGAA's web site, http://www.ingaa.org/?ID=6845

Given the unprecedented level of energy infrastructure development that is occurring across the United States, it now is more important than ever that pipeline companies engage with landowners in a respectful, informative and clear manner. INGAA is committed to leading an industry that builds and maintains strong positive relationships with landowners.

In order to address these landowner issues the INGAA Board of Directors endorsed a document entitled "America's Natural Gas Transporters' Commitment to Landowners." In doing so, each INGAA member company embraced the following core principles:

1. **Respect and Trust -** Positive, lasting relationships are built on mutual respect and trust. We will strive to understand issues from the Landowners' perspective and help them understand ours.
2. **Accurate and Timely Information -** Providing natural gas transportation and storage services to the nation may create concerns. We will provide Landowners with information regarding the importance of energy infrastructure, the reason and need for the proposed project, and the processes in place governing easement acquisition, certification, construction, operation and maintenance of our facilities, and the particulars of individual projects.
3. **Negotiate in Good Faith -** We will listen and strive to understand, and negotiate in good faith. We will make every attempt to reach agreement with landowners in an honest, fair and reasonable fashion.
4. **Respect the Regulatory Compact -** Final approval for a project is not a certainty and our interactions with landowners will reflect that understanding. Prior to a Federal Energy Regulatory Commission decision, actions taken to negotiate easements or options are at the company's risk as there is no guarantee the project will be approved. We will communicate clearly that federal eminent domain cannot be exercised unless a Certificate is granted by the Federal Energy Regulatory Commission and will distinguish clearly when, and if, eminent domain is exercised pursuant to state law.
5. **Responding to Issues -** We will respond to Landowner concerns in a timely fashion. To enhance direct communications and timely responses, we will provide Landowners with a single point of contact within the company to answer any question or concern and to provide general or project-specific information.

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6. **Outreach -** We will engage with and promote awareness on the part of affected stakeholders early in the planning process. In broadening our outreach, we will develop relationships with, and introduce our industry to, those who might not have otherwise known about its benefits to the community and our dedication to safely providing these services.
7. **Industry Ambassadors -** Each company employee and representative is an ambassador for the industry. We will ensure our employees and representatives interact with stakeholders in accordance with these commitments.
8. **Ongoing Commitment to Training -**We believe in continuous improvement in all aspects of our business. With the demand for natural gas increasing and many new people entering the industry, we will train our representatives to interact positively and productively with Landowners and other stakeholders.

Appendix H: Acronyms

Acronym	Name
AGA	American Gas Association
AGC	Associated General Contractors (of America)
ALTA	American Land Title Association
AOPL	Association of Oil Pipe Lines
APGA	American Public Gas Association
API	American Petroleum Institute
APWA	American Public Works Association
ASME	American Society of Mechanical Engineers
ATV	all-terrain vehicle
BLM	U. S. Department of Interior, Bureau of Land Management
CEO	Chief Executive Officer
CEU	continuing education unit
CFR	Code of Federal Regulations
CGA	Common Ground Alliance
CSA	Canadian Standards Association
DNA	deoxyribonucleic acid
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
GPA	Gas Producers Association
HCA	high consequence area
HUD	U. S. Department of Housing and Urban Development
ICC	International Code Council
INGAA	Interstate Natural Gas Association of America
IRWA	International Right of Way Association
LA DNR	Louisiana Department of Natural Resources
MLS	multiple listing service
NACo	National Association of Counties
NAHB	National Association of Home Builders
NAIOP	National Association of Industrial and Office Properties
NALGEP	National Association of Local Government Environmental Professionals
NAPSR	National Association of Pipeline Safety Representatives
NAR	National Association of Realtors
NARUC	National Association of Regulatory Utility Commissioners
NASFM	National Association of State Fire Marshals
NATaT	National Association of Towns and Townships

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NFPA	National Fire Protection Association
NLC	National League of Cities
NIMBY	not in my backyard
NPMS	National Pipeline Mapping System
NTSB	National Transportation Safety Board
NUCA	National Utility Contractors Association
NPDES	National Pollutant Discharge Elimination System
PHMSA	Pipeline and Hazardous Materials Safety Administration, U. S. Department of Transportation
PIPA	Pipelines and Informed Planning Alliance
PIR	potential impact radius
PST	Pipeline Safety Trust
ROW	right-of-way (or, rights-of-way)
TRB	Transportation Research Board of The National Academies
TSA	Transportation Security Administration, U. S. Department of Homeland Security
TX RRC	Texas Rail Road Commission
USDA	U. S. Department of Agriculture
USFS	U. S. Forestry Service
USFWS	U. S. Fish and Wildlife Service
VUPS	Virginia Utility Protection Service
WUTC	Washington Utilities & Transportation Commission

Appendix I: Calculation of Site-Specific Planning Area Distances

The information in this Appendix is intended to provide local governments with some concept of the basic criteria used by transmission pipeline operators for pipeline integrity management. Transmission pipeline operators mitigate the probability portion of the risk equation through implementation of design, operation, maintenance and integrity management practices on pipeline facilities that they control (see 49 CFR 192, especially Subpart O, 49 CFR 195.450 and 195.452).

The recommended default distance for a planning area is 660 feet on either side of the centerline of a natural gas transmission pipeline, and a range of from 660 feet to 1,000 feet on either side of the centerline of a hazardous liquids transmission pipeline. However, it is recommended and communities are encouraged to develop and utilize site-specific distances for planning areas, based on the unique characteristics for the pipeline and the surrounding environment (topography, population density, vegetation, structures, etc.).

Different approaches to determining site-specific planning area distances should be considered for gas and hazardous liquid transmission pipelines, as described in the sections below. These engineering methods are best done through consultation with the pipeline operator, as they require pipeline-specific information and other information necessary for risk-informed decision making by local governments. For example, if multiple pipelines are located in a right-of-way, then the characteristics of each pipeline should be considered in calculating the site-specific planning area. Similarly, the pipeline operator is likely to already have site-specific topographical data to use in determining the flow paths for release liquids.

Planning Area: Natural Gas Transmission Pipelines and Other Gas Transmission Pipelines

A site-specific planning area for a natural gas transmission pipeline may be defined using the *potential impact radius* (PIR) model used in the gas transmission pipeline integrity management regulations (49 CFR 192.903). The PIR is defined as the radius of a circle within which the potential failure of a pipeline could have significant impact on people or property.

Note that the PIR model is based only on a simple and defendable approach to sizing the ground area potentially affected by a worst-case ignited rupture of a high-pressure natural gas pipeline, wherein the dominant hazard is thermal radiation from a sustained fire. Based on this model, a simple equation has been developed that relates the diameter and operating pressure of a pipeline to the size of the area likely to experience high consequences in the event of an ignited rupture failure. (See Gas Research Institute GRI-00/0189)

A PIR is determined by the formula:

[r = 0.69* (square root of ($p*d^2$))] – **or** – [r = 0.69 ($\sqrt{(pd^2)}$)]

[read: "r is equal to 0.69 times the square root of (p times d squared)"], where:

> 'r' is the radius, in feet, of a circular area surrounding the point on the pipeline of a potential failure

'p' is the pipeline's maximum allowable operating pressure (MAOP) in the pipeline segment, in pounds per square inch

'd' is the nominal diameter of the pipeline in inches

Note that 0.69 is the factor for natural gas. This number will vary for other gases depending upon their heat of combustion. An operator transporting gas other than natural gas must use section 3.2 of ASME/ANSI B31.8S–2001 (Supplement to ASME B31.8; incorporated by reference, *see* §192.7) to calculate the impact radius formula.

Using the formula noted above, the following table provides PIR distances (in feet) for natural gas transmission pipelines, based on different combinations of pipeline diameters and MAOP. For example, a 30-inch pipeline with MAOP of 1,000 psig has a PIR of 655 feet. In this case, a site-specific planning area could be defined extending 655 feet on either side of the pipeline.

	Pipeline Diameter (inches)								
Pipeline MAOP (psig)	6	8	10	12	16	24	30	36	42
	PIR or Planning Area Distance from Pipeline Centerline (in feet)								
200	59	78	98	117	156	234	293	351	410
400	83	110	138	166	221	331	414	497	580
600	101	135	169	203	270	406	507	608	710
800	117	156	195	234	312	468	585	703	820
1000	131	175	218	262	349	524	655	786	916
1200	143	191	239	287	382	574	717	860	1004
1400	155	207	258	310	413	620	775	929	1084

Planning Area: Liquid Pipelines

Determining a site-specific planning area for a hazardous liquid pipeline is potentially much more complex because of the flow characteristics of released liquids and the effect of the terrain surrounding the pipeline on the flow path of the release. A site-specific planning distance for hazardous liquid pipelines may be defined based on a pipeline- and location-specific analysis considering the following three elements:

1. How much liquid might be spilled?
2. Where would the spilled liquid go?
3. What locations would be impacted?

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The fundamental factors to be considered in an analysis to establish the planning area distance for hazardous liquid pipelines are listed below.

1. "How much liquid might be spilled?" – This can be derived from pipeline flow rates, spill detection time, pipeline shutdown time, and drain down volume from various locations along the pipeline (the pipeline operator should be consulted for this information).
2. "Where would the spilled liquid go?"
   - Overland flow – this can be affected by factors such as:
     - Soil cover type / vegetation (flow resistance)
     - Soil absorption / permeability (seepage and retention)
     - Topography / contour / elevation (direction of flow, speed of flow, retention areas and volumes)
     - Drainage systems such as culverts, streams, gullies, farm tiles, roadside ditches
     - Flow barriers such as railroad and road embankments, curbs, dikes, bulkheads
     - Fluid properties such as viscosity, density, vapor pressure
   - Vapor cloud extent, if any – especially for highly volatile liquid pipelines – this can be affected by considerations such as:
     - Heavier than air vapors settling in low spots
     - Vapor dispersion – dangerous for how far downwind?
3. "What locations would be impacted?" – The answer to this question is affected by factors such as:
   - thermal impact from fire,
   - blast overpressure from explosion,
   - toxicity, asphyxiation effects, etc.,
   - environmental effects from spill
   - water supply impacts

Various engineering models and computer software programs have been developed to support analysis based on these elements. The hazardous liquids pipeline operator may utilize one or more models to determine the effects and impact areas of a pipeline release. These models consider a multitude of site-specific factors, which should be evaluated in their as-modified (i.e. post-development) condition. The user of the model should have expertise in hazard analysis. Assembling the information needed to perform an analysis needed to define a site-specific planning area should be a collaborative effort by the pipeline operator and local community government. There may also be other sources for information and impact models that a community may use.

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, 195.452 (Liquid Pipeline Integrity Management)

- ASME B31.8-2004, *Managing System Integrity of Gas Pipelines*, 2005.
- NISTIR 6546 Thermal Radiation from Large Pool Fires
  http://www.fire.nist.gov/bfrlpubs/fire00/PDF/f00177.pdf

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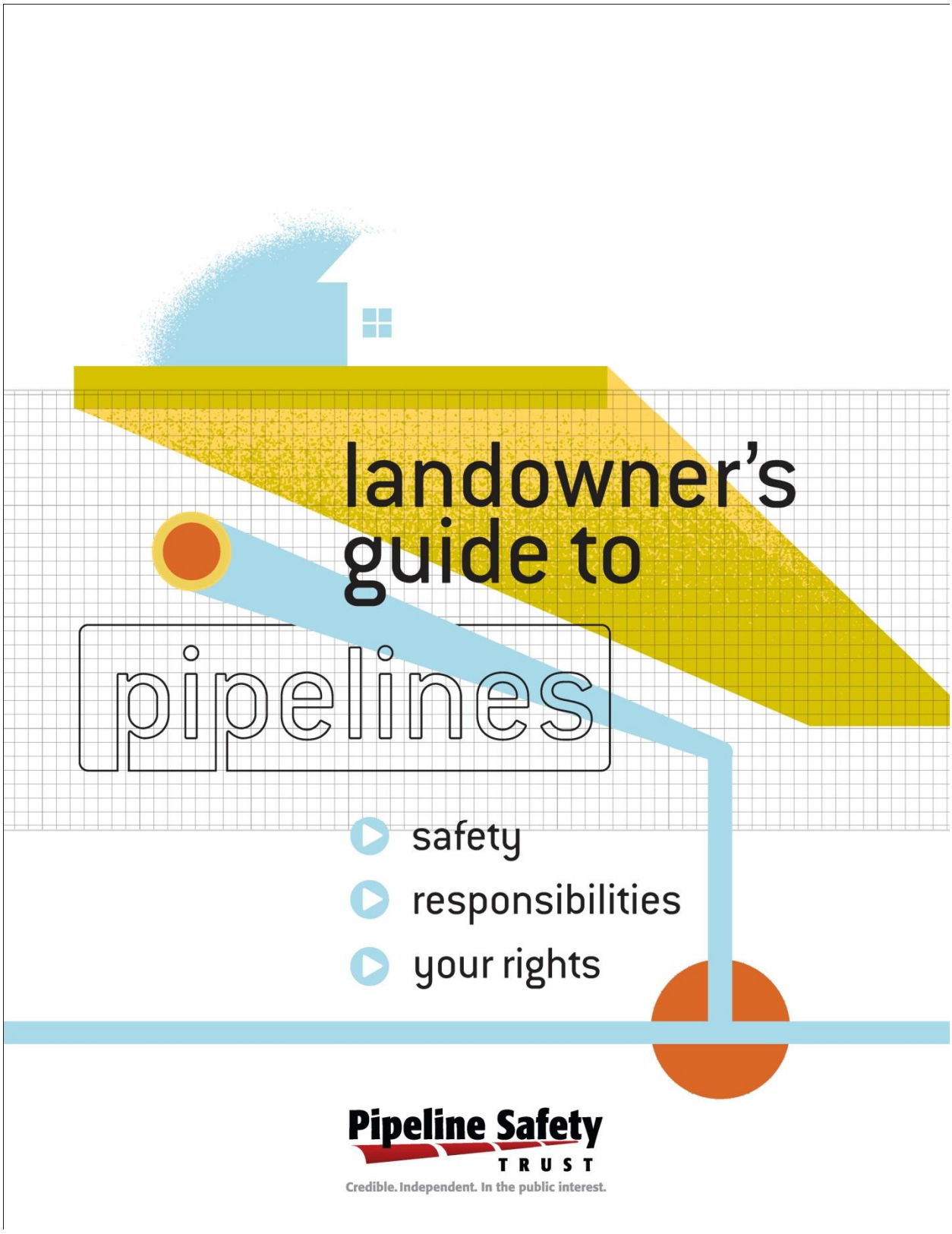
landowner's
guide to
pipelines
safety
responsibilities
your rights
Pipeline Safety
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Contents

Preface

This Guide is intended to provide a landowner basic information about the pipeline system, how pipelines are operated and regulated, what rights and responsibilities you may have as a current or future landowner with a pipeline on your property, and where to find more information. We describe all the different types of pipelines in this guide, but much of the discussion about property rights, easements, and eminent domain is more pertinent to the large transmission and gathering pipelines, than to the small distribution lines that deliver gas to our homes and businesses.

These are complex issues in a very complicated regulatory system. If you have specific questions about your legal rights and responsibilities, please contact a qualified, experienced attorney in your state who is familiar with the issues involved. If you already have a pipeline on your property, please familiarize yourself with the terms of the easement allowing the pipeline's presence. Understand what limitations the easement may impose on your use of the property and what obligations it may impose on the pipeline company during construction and operation and after abandonment of the line.

While we hope this guide provides you with enough information to better understand pipelines so you can protect yourself, your family and your property, in many ways we are only scratching the surface in this guide. If you find that you want to know more, below are some great places to start.

- The Pipeline Safety Trust website - *www.pipelinesafetytrust.org*
- The Pipeline and Hazardous Materials Safety Administration's stakeholder communication website - *www.primis.phmsa.dot.gov/comm/*
- Or to join the discussion regarding pipeline safety nationwide, and learn about news regarding pipelines from across the country, go to the following website to join the Safepipelines news and discussion group - *www.tech.groups.yahoo.com/group/safepipelines/*

This Landowner's Guide was made possible in part by a Community Technical Assistance Grant from the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration. This grant program provides local governments and community groups with up to $50,000 "for technical assistance in the form of engineering or other scientific analysis of pipeline safety issues and to help promote public participation in official proceedings." You can learn more about this grant program and what other communities have done with this grant money by visiting *www.primis.phmsa.dot.gov/tag/*.

Introduction to Pipelines

There are over 2.5 million miles of pipelines in the United States. Who regulates pipelines and under what set of regulations depends on what the pipeline carries, how much it carries, and where it goes. Pipelines are categorized into several types:

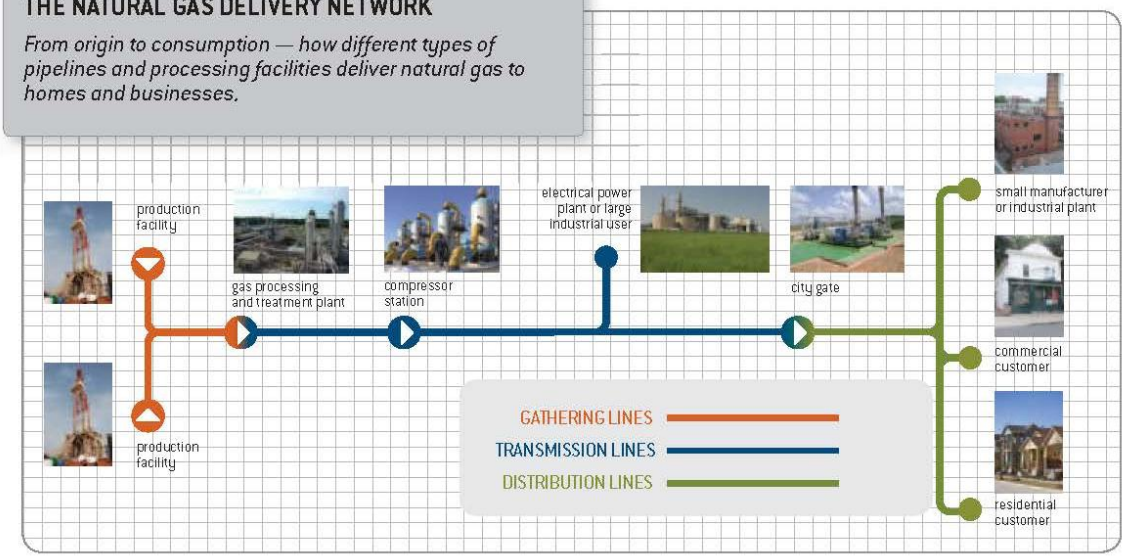
- **Hazardous Liquid pipelines** carry crude oil and refined fuels such as gasoline, diesel and jet fuel.
- **Natural Gas pipelines** carry natural gas.
- **Transmission pipelines** are the large lines that move gas and liquids long distances around the country, often at high pressures.
- **Distribution pipelines** are smaller lines that deliver natural gas to our individual homes and businesses.
- **Gathering pipelines** transport gas and crude oil away from the point of production (wellhead) to another facility for further refinement or to transmission pipelines.
- **Interstate pipelines** are lines that cross state boundaries.
- **Intrastate pipelines** are those that operate entirely within one state. Some large pipelines that cross state boundaries are classified as intrastate if the pipeline ownership changes at the state line.

THE CURRENT U.S. PIPELINE SYSTEM

- 175,000 miles of onshore and offshore Hazardous Liquid pipelines;
- 321,000 miles of onshore and offshore Gas Transmission and Gathering pipelines;
- 2,066,000 miles of Natural Gas Distribution mains and service pipelines

THE NATURAL GAS DELIVERY NETWORK

From origin to consumption — how different types of pipelines and processing facilities deliver natural gas to homes and businesses.



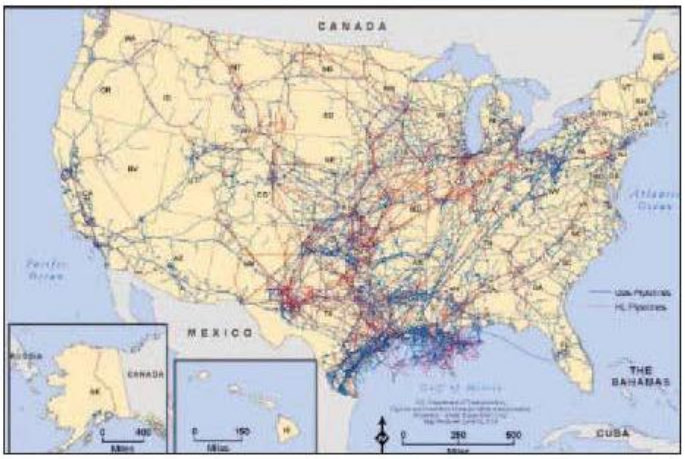
How Do Pipelines Work?

Natural Gas Pipelines

Natural gas is moved through transmission pipelines as a result of a series of compressors creating pressure differentials – the gas flows from an area of high pressure to an area of relatively lower pressure. Compressors are powered by electric or natural gas fired engines that compress or squeeze incoming gas and push it out at a higher pressure. Natural gas is compressed in transmission pipelines to pressures typically ranging from 500 to 1400 pounds of pressure per square inch. Compressor stations are generally built every 50 to 100 miles along the length of a transmission pipeline, allowing pressure to be increased as needed to keep the gas moving. The "city gate" is where a transmission system feeds into a lower pressure distribution system that brings natural gas directly to homes and businesses. The city gate is typically the location where odorant is added to the gas, giving it the characteristic smell of rotten eggs.

Hazardous Liquid Pipelines

Gathering lines bring crude oil out of production areas and to larger transmission lines that often take the crude oil to refineries. Once the crude oil has been refined, transmission lines carry the refined products to end-users or to storage and distribution facilities for transportation to consumers. The product is pushed through the pipeline by large pump stations situated every 20-100 miles along the line depending on the product, terrain and pressure the pipeline is operating at. Most liquid fuels move through the pipeline at between 3 to 8 miles per hour. It is estimated that the cost of transporting the crude oil and then the refined products through the pipeline network adds about two and a half cents to the cost of a gallon of gas at the pump.



HAZARDOUS LIQUID AND GAS TRANSMISSION PIPELINES

A national network of transmission pipelines moves fuel to millions of people every day.

Who is Responsible for Regulating Pipeline Safety?

Regulating the Construction, Operation, Inspection and Maintenance

Ultimately the U.S. Congress has responsibility for setting the framework under which pipeline safety regulations operate in the country. The U.S. Department of Transportation through the Pipeline and Hazardous Materials Safety Administration (PHMSA) is then primarily responsible for issuing and enforcing the minimum pipeline safety regulations for the country. The federal pipeline safety laws do allow for states to accept the responsibility to regulate, inspect, and enforce safety rules over intrastate pipelines within their borders under an annual certification from PHMSA. If a state receives such intrastate authority they can set regulations that are more stringent than what PHMSA sets as long as the state rules do not conflict with the federal regulations. PHMSA also can enter into an agreement with the state pipeline regulator to carry out the federal inspection regulations on portions of interstate pipelines as well. Local governments are not allowed to create regulations regarding the operations of pipelines.

Regulating Development Near Pipelines

State and local governments can regulate development near pipelines with their land use authority. When pipelines need to cross government lands, state and local governments can negotiate terms of the easement or franchise relating to pipeline locations, availability of information and maintenance of the right-of-way. They can also enact regulations governing the types of structures that can be built near existing pipelines, requiring consultation with the pipeline operator, establishing setbacks or a variety of other land use permit requirements. Very few local governments have used their planning, permitting and zoning authorities to try to increase safety around pipelines, but as more and more neighborhoods grow up around pipelines this authority will become increasingly more important. In 2010, the Pipelines and Informed Planning Alliance released a national report providing local government with recommended practices for considering the use of their land use authorities. That report can be found at: *www.pstrust.org/planningnearpipes.htm*.

Pipeline Inspections

Pipeline inspections are done by both the pipeline company and by the pipeline regulators. The majority of physical inspections are done by the pipeline companies. The requirements governing such pipeline inspections vary depending on the pipeline's contents, location and other factors. Inspections by pipeline companies take many forms, each

THE REGULATIONS

The overarching pipeline safety statutes that Congress has passed can be found in:
U.S. Code, Title 49, Subtitle VIII, Chapter 601

The minimum federal regulations adopted by PHMSA can be found in: Title 49 of the Code of Federal Regulations (CFR), Parts 190-199

WANT TO KNOW WHAT AGENCY IN YOUR STATE REGULATES PIPELINES, AND WHAT AUTHORITY THEY HAVE?

Go to pstrust.org/resources/regs/state_pol.htm to find out

MARKERS IN A RESIDENTIAL SETTING

Easily identifiable markers help homeowners know where major pipelines are placed, and where pipeline operator permission may be needed to do almost any type of construction, excavation, or landscaping.

with a different purpose. Some of those inspection techniques include:

- aerial fly-overs looking for leaks and activities that might damage the pipeline
- trucks driving the right-of way or an inspector on foot with leak detection equipment
- internal inspections performed by a "smart pig" (see photo below) – a machine that travels through the pipeline, loaded with a variety of sensors that can detect corrosion, dents, scratches or other weaknesses in the pipes
- physically digging up the pipeline and inspecting it

State and federal regulators also perform inspections, but these regulatory inspections mainly involve review of the company's paperwork to see if they are following the regulations, as well as some spot-checking of facilities and construction work. For more information about the types of inspections undertaken by regulators, visit: *www.primis.phmsa.dot.gov/comm/reports/operator/OperatorInspGlossary.html*

Emergency Response and Spill Response Planning

Federal regulations require emergency response plans for both liquid and gas pipelines, and also require that operators share those plans with local first responders. These emergency response plans contain information about what the pipelines contain, and how pipeline company personnel and emergency response agencies such as fire and police departments will implement pre-planned response in case of an emergency.

Hazardous liquid pipeline operators are also required to have spill response plans that detail how they will respond to clean up a spill if one should happen. The Oil Pollution Act of 1990 expressly allows states to institute additional spill response planning requirements for oil pipelines and facilities, but only a few have done so.

KENTUCKY SPILL

In the past five years, an average of over four and a half million gallons of hazardous liquids have spilled from pipelines each year, and more than sixty percent of that is never recovered. This picture shows the result of one such spill into the Kentucky River.

Who is Responsible for Siting New Pipelines?

For nearly all new pipeline siting, the pipeline company decides on a general route they prefer for their proposed pipeline, and possibly some alternative routes. Once they feel fairly confident with the feasibility of their chosen route, the more formal process with various government agencies begins. That process is not consistent for all types of pipelines, but varies greatly based on the type of pipeline and where it is to run. Pipelines that will cross international or state boundaries (interstate lines) have different siting processes than those that will stay within just one state (intrastate lines).

Siting of new interstate natural gas pipelines: For new interstate gas lines, once the pipeline company has a pipeline proposal and route in mind they must apply to the Federal Energy Regulatory Commission (FERC) for approval. That approval comes in the form of a Certificate of Public Convenience and Necessity from FERC. Before that approval is granted, FERC undertakes a complete environmental review that normally includes development of an environmental impact statement. The process is quite extensive and includes many opportunities for landowners to become involved. Many who have been through the FERC process question whether FERC's mission to provide energy to consumers across the nation sometimes trumps individual property owners' concerns and protection of the environment. There is a citizen's guide to the FERC process on its website: *www.ferc.gov/for-citizens/citizen-guides.asp*.

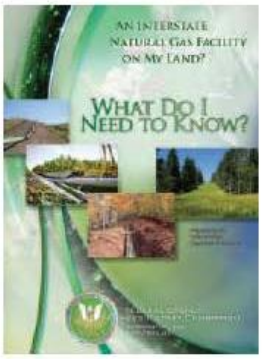
Siting of New Interstate Hazardous Liquid Pipelines

There is no complete federal permitting process for the routing of interstate hazardous liquids pipelines. If a pipeline crosses an international border (Canada or Mexico), then the U.S. State Department takes the lead on the proposal in a process similar to the one described for FERC above. If the pipeline does not cross an international border then the responsibility for approval of the pipeline route falls on the individual states, and if the state has no agency in charge of pipeline siting then the responsibility falls to the regular land use authority of local governments along the proposed route.

Siting of Intrastate Natural Gas and Hazardous Liquid Pipelines

The federal government plays no role in the siting of pipelines that are entirely within the borders of a single state. Several states have agencies charged with siting various energy facilities; in some instances that includes intrastate pipelines. If the state has no agency in charge of pipeline siting then the responsibility falls to the regular land use authority of local governments along the proposed route. Check with your state's pipeline regulator to find out if your state has an energy facility siting agency, and whether it has authority over pipeline siting decisions.

The construction phase of pipeline installation is a critically important time to ensure the long-term integrity of the pipeline. The following pages discuss a few of the issues dealt with during the construction phase that affect pipeline safety. These various safety precautions pertain mainly to gas transmission and regulated gathering pipelines. Some gathering and production lines are not required to follow these standards.



ONE SOURCE OF INFORMATION

The Federal Energy Regulatory Commission (FERC) provides a guide to help citizens understand and become involved in the process to locate and construct new interstate natural gas pipelines.

Pipeline Safety Requirements During Design and Construction

Choosing Pipe

Pipe sections are fabricated in steel rolling mills and inspected to assure they meet government and industry safety standards. Generally between 40 and 80 feet in length, they are designed specifically for their intended location in the pipeline. A variety of soil conditions and geographic or population characteristics of the route will dictate different requirements for pipe size, strength, wall thickness and coating material. Not all pipe is steel. Some low pressure gathering, transmission and distribution pipelines use other materials such as other metals, and nonmetallic material, such as plastic or composites.

Pipe Burial

Mechanical equipment, such as wheel trenchers or backhoes, is used to dig the pipe trench. Occasionally, rock drilling and blasting is required to break rock in a controlled manner. The material that is excavated during trenching operations is temporarily stockpiled on the non-working side of the trench. This material will be used again in the backfill operation. In some limited locations, horizontal directions drilling (HDD) as well as boring is used to place pipe.

The trenches are dug deep enough to allow for an adequate amount of cover when the pipe is buried. Federal regulations require that transmission pipelines and regulated type A gathering lines be buried at least 30 inches below the surface in rural areas and deeper (36 inches) in more populated areas. In addition, the pipeline must be buried deeper in some locations, such as at road and railroad crossings (36 inches) and crossings of navigable bodies of water (48 inches), and may be less in other locations such as when it is installed in consolidated rock (18 to 24 inches). The depth of burial must be according to these regulations at the time of burial, but there is nothing that requires this depth be maintained over time.

Welding of Steel Pipelines

To carry out the welding process, the pipe sections are temporarily supported along the edge of the trench and aligned. The various pipe sections are then welded together into one continuous length, using manual, semiautomatic or automatic welding procedures.

As part of the quality-assurance process, each welder must pass qualification tests to work on a particular pipeline job, and each weld procedure must be approved for use on that job in accordance with federally adopted welding standards. Welder qualification takes place before the project begins. Each welder must complete several welds using the same type of pipe as that to be used in the project. The welds are then evaluated by placing the welded material in a machine and measuring the force required to pull the weld apart. It is interesting to note that a proper weld is actually stronger than the pipe itself.

For higher stress pipelines over 6 inches in diameter, a second level of quality-assurance ensures the quality of the ongoing welding operation. To do this, qualified technicians sample a certain number of the welds (the sample number varies based on the population near the pipeline) using radiological techniques (i.e., X-ray or ultrasonic inspection) to ensure the completed welds meet federally prescribed quality standards. The X-ray technician processes the film in a small, portable darkroom at the site. If the technician detects certain flaws, the weld is repaired or cut out, and a new weld is made. Another method of weld quality inspection employs ultrasonic technology.

Coatings

Several different types of coatings may be used to coat the pipe at the factory and the joints made in the field, with the most common at this time being fusion bond epoxy or polyethylene heat-shrink sleeves. Prior to application, the bare pipe is thoroughly cleaned to remove any dirt, mill scale or debris. The coating is then applied and allowed to dry. After field coating and before the pipe is lowered into the trench, the entire coating of the pipe is inspected to ensure that it is free from defects.

Lowering and Backfilling

Once the pipeline is welded and coated, it is lowered into the trench. Lowering is done with multiple pieces of specialized construction equipment called sidebooms. This equipment acts in tandem to lift and lower segments of the assembled pipeline into the trench in a smooth and uniform manner to prevent damaging the pipe.

Once the pipeline is lowered into the ground, the trench is backfilled, to ensure that the pipe and its coating are not damaged. This is generally accomplished with either a backhoe or padding machine depending on the soil makeup.

Care is taken to protect the pipe and coating from sharp rocks and abrasion as the backfill is returned to the trench. In areas where the ground is rocky and coarse, the backfill material is screened to remove rocks or the pipe is covered with a material to protect it from sharp rocks and abrasion. Alternatively, clean fill may be brought in to cover the pipe. Once the pipe is sufficiently covered, the coarser soil and rock can then be used to complete the backfill.

As the backfill operations begin, the excavated material is returned to the trench in reverse order, with the subsoil put back first, followed by the topsoil. This ensures the topsoil is returned to its original position.

Valves and Valve Placement

A valve is a mechanical device installed in a pipeline and used to control the flow of gas. Some valves have to be operated manually by pipeline personnel, some valves can be operated remotely from a control room, and some valves are designed to operate automatically if a certain condition occurs on the pipeline. If a pipeline should fail, how quickly the valves can be closed and the distance between the valves are some of the main determinations for how much fuel is released.

Operating Pressure

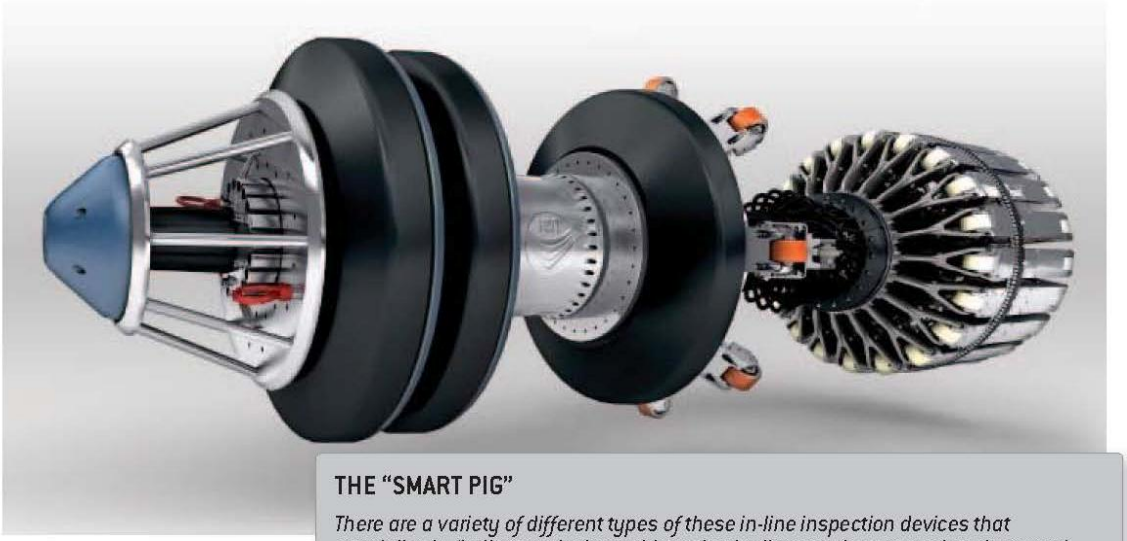
Maximum allowable operating pressure (MAOP) for natural gas pipelines, and Maximum operating pressure (MOP) for liquid pipelines, are the maximum internal pressure at which a pipeline or pipeline segment may be continuously operated. These pressures are set at levels meant to ensure safety by requiring that the pressure does not cause undue stress on the pipeline. How this pressure is determined is defined in federal regulations and is based on a number of different factors such as the location of the pipeline, pipe wall thickness, previous pressure tests, and the pressure ratings of various components.

Testing

Generally, but with certain exceptions, all newly constructed transmission pipelines must be hydrostatically tested before they can be placed into service. The purpose of a hydrostatic pressure test is to eliminate any defect that might threaten the pipeline's ability to sustain its maximum operating pressure plus an additional safety margin, at the time of the hydrostatic test. A pipeline is designed to a specified strength based on its intended operating pressure. Hydrostatic pressure testing consists of filling the pipeline with water and raising the internal pressure to a specified level above the intended operating pressure. Critical defects that cannot withstand the pressure will fail. Upon detection of such failures, the defects are repaired or the affected sec-

tion of the pipeline is replaced and the test resumed until the pipeline "passes".

Hydrostatic testing is not the only means for detecting pipe defects. For example, inline inspection (ILI) technologies are used that permit the identification of specific types of defects, such as corrosion. But because not all lines can be inspected with ILI tools and because of the need to find types of imperfections that are not currently detected by ILI technology, hydrostatic testing is an accepted method for demonstrating the fitness of a pipeline segment for service.



THE "SMART PIG"

There are a variety of different types of these in-line inspection devices that specialize in finding particular problems in pipelines such as corrosion, dents and gouges. They got named pigs because some of the early versions made a squealing noise as they moved through the pipeline.

Pipeline Safety Requirements During Operation

Corrosion Protection

Unprotected steel pipelines are susceptible to corrosion, and without proper corrosion protection every steel pipeline will eventually deteriorate. Corrosion can weaken the pipeline and make it unsafe. Luckily, technology has been developed to allow corrosion to be controlled in many cases to extend pipeline life if applied correctly and maintained consistently.

Here are the three common methods used to control corrosion on pipelines:

- Cathodic protection (CP) is a system that uses direct electrical current to counteract the normal external corrosion of a metal pipeline. CP is used where all or part of a pipeline is buried underground or submerged in water. On new pipelines, CP can help prevent corrosion from starting; on existing pipelines, CP can help stop existing corrosion from getting worse.
- Pipeline coatings and linings are principal tools for defending against corrosion by protecting the bare steel.
- Corrosion inhibitors are substances that can be added to a pipeline to decrease the rate of attack of internal corrosion on the steel since CP cannot protect against internal corrosion.

Supervisory Control and Data Acquisition System (SCADA)

A SCADA is a pipeline computer system designed to gather information such as flow rate through the pipeline, operational status, pressure, and temperature readings. Depending on the pipeline, this information allows pipeline operators to know what is happening along the pipeline, and allows quicker reactions for normal operations, and to equipment malfunctions and releases. Some SCADA systems also incorporate the ability to remotely operate certain equipment, including compressor and pump stations, valves, allowing operators in a control center to adjust flow rates in the pipeline as well as to isolate certain sections of a pipeline. Many SCADA systems also include leak detection systems based on the pressure and mass balance in the pipelines.

Right-of-way Patrols

Regulations require regular patrols of pipeline right-of-ways to check for indications of leaks and ensure that no excavation activities are taking place on or near the right-of-way that may compromise pipeline safety. For transmission pipelines, these patrols are often accomplished by aerial patrols, but federal regulations do not require them to be done by aerial inspection.

Leakage Surveys

Regulations also require regular leakage surveys for all types of natural gas pipelines along the pipeline routes. Personnel walk or drive the route using specialized equipment to determine if any gas is leaking and to then quantify the size of the leak. Very small leaks are a normal part of most gas pipeline systems.

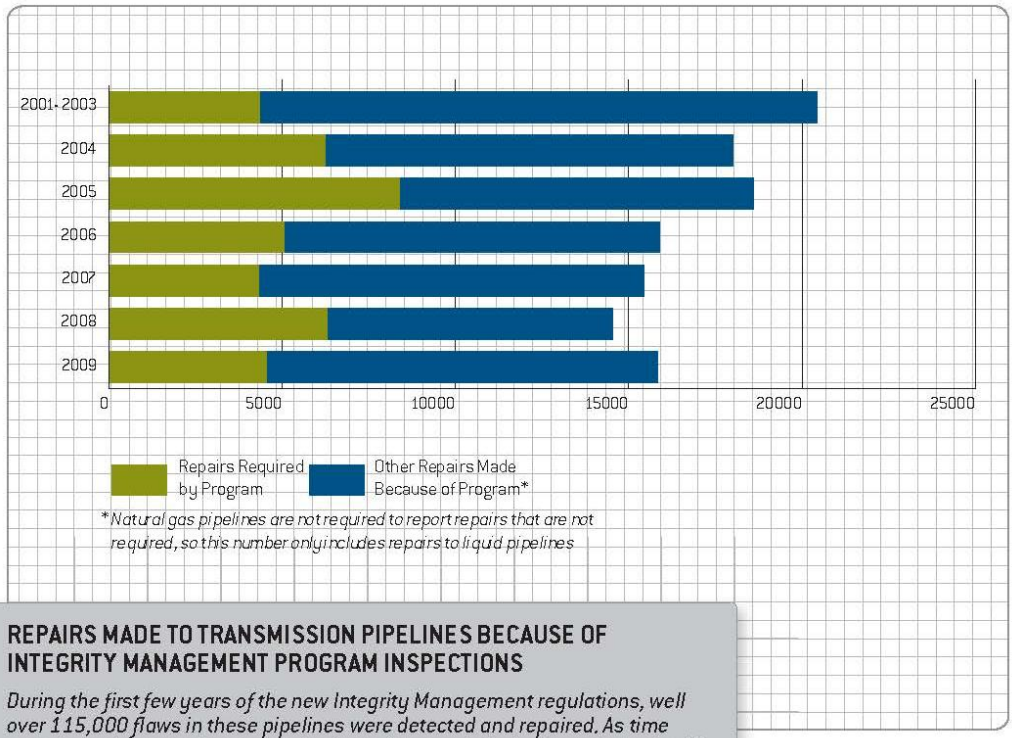
Odorization

All distribution pipelines, and some natural gas transmission and gathering lines (those mainly in highly populated areas), are required to be odorized so leaking gas is readily detectable by a person with a normal sense of smell.

Integrity Management

Integrity Management refers to a relatively new set of federal rules that specify how pipeline operators must identify, prioritize, assess, evaluate, repair and

validate - through comprehensive analyses - the integrity of their pipelines. Some form of integrity management now applies to both transmission and distribution pipelines, although gathering lines are exempt from these requirements. For gas transmission pipelines, integrity management requires that lines that could affect High Consequence Areas (mainly more populated areas) have to be re-inspected by their operators every seven years. For hazardous liquid pipelines integrity management requires that lines that could affect High Consequence Areas have to be re-inspected by their operators every five years. For natural gas transmission pipelines the re-inspection interval in High Consequence Areas (mainly more populated areas) is every seven years. This re-inspection is done mainly with internal inspection devices called smart pigs, but may also be done through pressure tests or direct assessment. Once inspected, the rules require that operators respond to certain anomalies found on their pipeline in certain ways within certain timeframes. In the first 9 years of this program, these rules required over 39,000 repairs be made to gas and liquid transmission pipelines that fall within High Consequence Areas. Unfortunately, only about 7% of the gas transmission pipelines, and 44% of hazardous liquid pipelines nationwide are required to do these important inspections.



REPAIRS MADE TO TRANSMISSION PIPELINES BECAUSE OF INTEGRITY MANAGEMENT PROGRAM INSPECTIONS

During the first few years of the new Integrity Management regulations, well over 115,000 flaws in these pipelines were detected and repaired. As time goes by and companies are required to re-inspect their pipelines there should be a decrease in the number of flaws found.

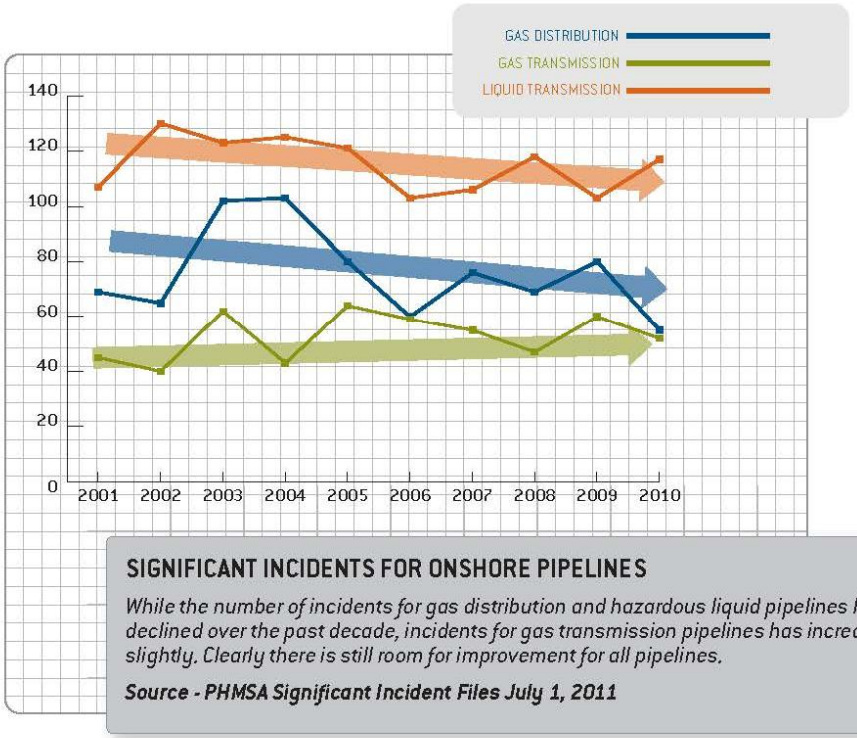
Source - PHMSA Integrity Management Performance Measure Reports

What is the Risk of Having a Pipeline Nearby?

Risk is one of those things that one person cannot really define for another, since each person thinks about risks in their own personal way. While some feel that skydiving is a risk worth taking, others won't even go up in the airplane. In other words, it is not possible for us to say whether a particular pipeline is safe enough or not. All we can do is to try to provide enough information so individuals can make that decision on their own, and then work with others in their community to set policies based on the beliefs of as many people as possible.

We believe that risk is made up of two different factors, both of which need to be carefully considered when deciding how risky an activity is. Those factors are the probability that an event will occur (chance a pipeline will rupture or leak), and the possible consequences if it does. We have already talked about the various things that pipeline operators are required to do to keep their pipelines safe and therefore reduce the probability of an event occurring.

One other measure that helps shed light on the probability of an occurrence is the past incident rates for pipelines. Past performance cannot accurately reflect future incidents since many factors could change over time, but such data can provide trend lines that point to needed changes in pipeline operation, mainte-



SIGNIFICANT INCIDENTS FOR ONSHORE PIPELINES

While the number of incidents for gas distribution and hazardous liquid pipelines has declined over the past decade, incidents for gas transmission pipelines has increased slightly. Clearly there is still room for improvement for all pipelines.

Source - PHMSA Significant Incident Files July 1, 2011

SIGNIFICANT INCIDENTS - ALL PIPELINES

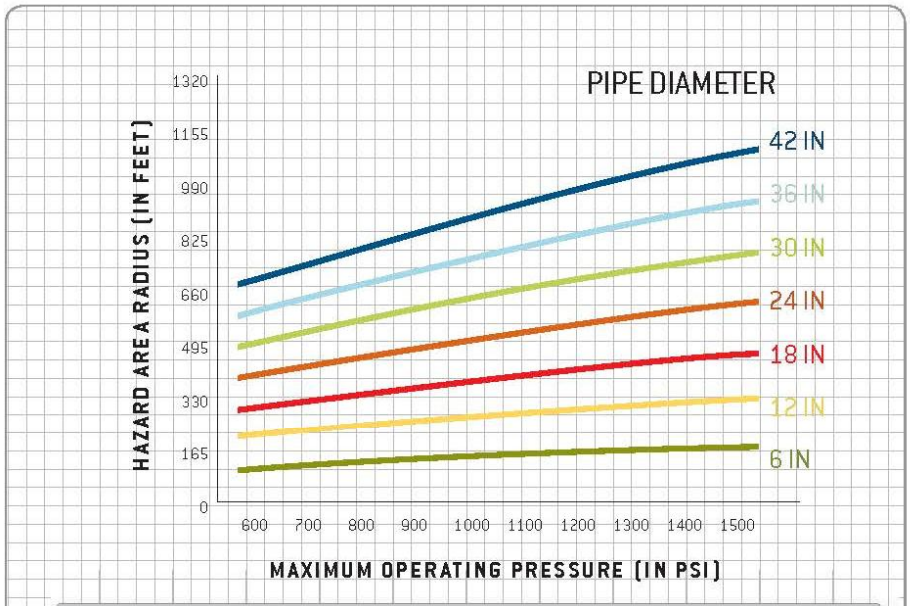
Year	Number	Fatalities	Injuries	Property Damage
2001	233	7	61	$73,474,036
2002	258	12	49	$119,785,942
2003	298	12	71	$157,792,526
2004	312	23	56	$305,016,957
2005	338	13	47	$1,424,864,671*
2006	256	19	34	$149,562,237
2007	269	15	50	$145,945,618
2008	279	9	58	$544,236,667
2009	271	13	65	$167,390,724
2010	256	22	107	$982,521,711
Totals	2770	145	598	$4,070,591,089

** $466.5 million of this figure is damage done to distribution pipelines from Hurricane Katrina*

Source - PHMSA Significant Incident Files July 1, 2011

nance, public outreach and regulations. In this section are some graphs that show the number of significant incidents occurring on the different types of pipelines in the past ten years nationwide. These graphs also indicate the trend lines for incidents during this period. We have also included graphs that show the causes of the incidents, so it is easier to tell which incidents were within the control of the pipeline operator.

The charts and graphs in this section should provide some measures of the probability of a pipeline incident happening and some of the consequences if it does. It is fairly clear from the data that the chance of a pipeline failing in any particular spot is very, very small, but of course if you ask the families of the 145 people who were killed by pipeline incidents over the past ten years they would tell you that the consequences are huge.



HOW THE POTENTIAL IMPACT AREA AROUND A GAS TRANSMISSION PIPELINE IS DETERMINED

This chart shows how a combination of operating pressure and the size of the pipe determines the most dangerous area around a pipeline if it should rupture completely.

Source: A Model For Sizing High Consequence Areas Associated With Natural Gas Pipelines by Gas Research Institute and C-FER Technologies, 2000

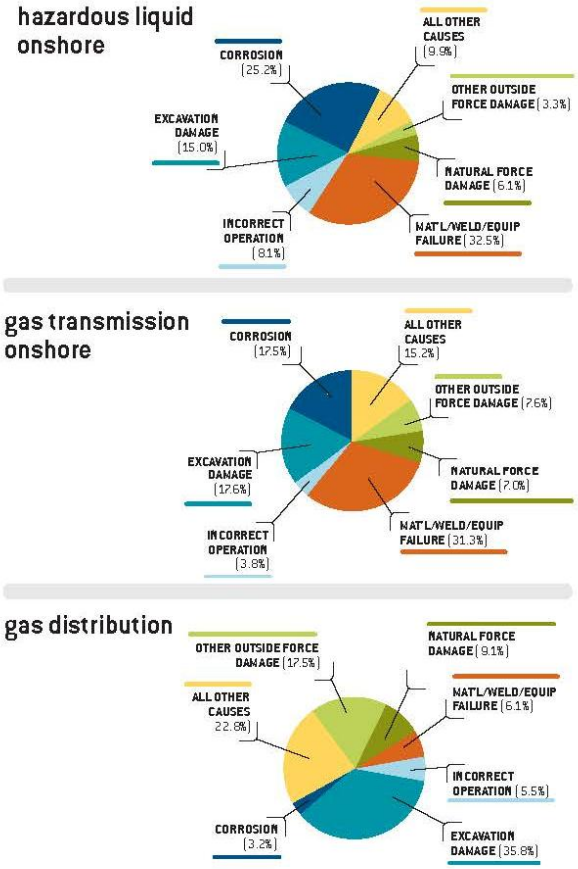
POTENTIAL IMPACT AREA

This picture shows how a neighborhood could be impacted by a "worst case scenario" from a typical gas transmission pipeline.

So what are the possible consequences of pipeline failures, and how can they be quantified?

For natural gas pipelines, it is a little easier to calculate the area around a pipeline that would be impacted if there were a complete failure. In 2000, the Gas Research Institute contracted with C-FER Technologies to produce **A Model For Sizing High Consequence Areas Associated With Natural Gas Pipelines** that became instrumental in helping define potential impact zones around natural gas pipelines. While the model is complex, the basic idea is that by considering the diameter of the pipeline and the pressure at which it is operating, it is possible to predict the impact area around the pipeline that could lead to a fatal exposure in the event of a catastrophic failure. Above is the chart of the model that predicts these different zones.

Another way to consider the actual consequence of a pipeline incident is to review previous incidents. The National Transportation Safety Board investigates many of the most significant incidents and the reports of their investigations can be found at: *www.ntsb.gov/Publictn/P_Acc.htm*



CAUSES OF SIGNIFICANT INCIDENTS NATIONALLY FROM 2001-2010

Material, welding and equipment failure are the leading cause of incidents for transmission lines, whereas excavation damage is the leading cause for gas distribution lines.

Source - PHMSA Significant Incident Files July 1, 2011

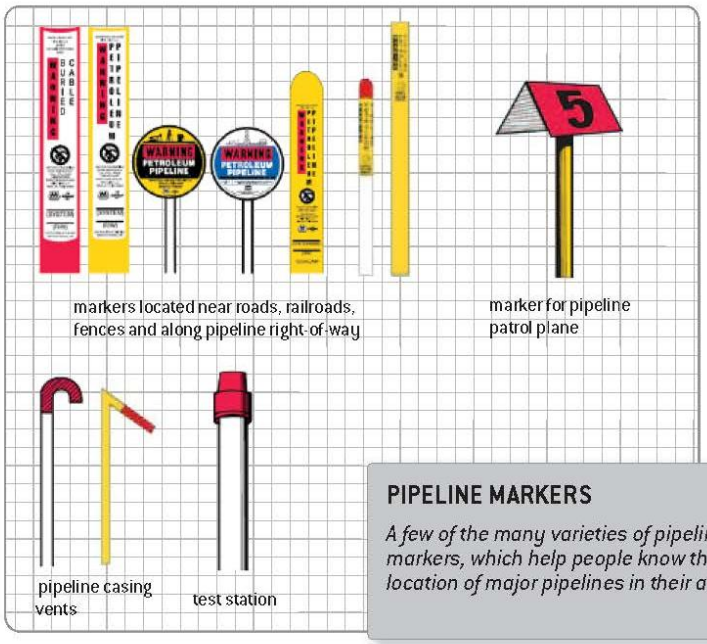
Where to Find More Information?

PHMSA makes incident, inspection and enforcement records of pipeline operators available on its website. You can find out information about the pipeline near you, or about all pipelines operated by a particular company. To find that information visit the PHMSA website at: www.*primis.phmsa.dot.gov/comm/reports/operator/Operatorlist.html*

You can also find a map of pipelines near you on the National Pipeline Mapping System at *www.npms.phmsa.dot.gov/PublicViewer/*. While the mapping system allows you to find the pipelines that may be in your neighborhood, the system is not very detailed because the exact location of many pipelines have not been mapped, and the government does not want anyone to be able to use these maps to possibly do harm to the pipelines – on purpose or accidentally.

You can also find pipelines by learning to recognize the pipeline markers that companies are required to put along their rights-of-way. Pipelines are often not in the center of the right-of-way, and pipeline markers only show the general vicinity of the pipeline location and may not be directly above the pipeline. If you are planning to dig for any reason, the only real way to know where the pipeline is located is to use the nation-wide "Call Before You Dig - 811" system for having utilities located and marked on your property. You will need to call 811 at least 2 days ahead of digging, and the call center will explain how the system works in your area.

PHMSA's CATS (Community Assistance and Technical Services) representatives are located within each of five geographic regional locations. Their assignments include responding to inquiries or complaints from landowners with pipeline concerns. To contact the CATS representative for your community please refer to the list on the following page. The links for each region lead to PHMSA's web page for each regional office.



PIPELINE MARKERS

A few of the many varieties of pipeline markers, which help people know the general location of major pipelines in their area.

PHMSA Community Assistance & Technical Services (CATS)		
Region / States Covered	**Office Location**	**CATS Contact Information**
Central Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin	Kansas City, MO	**Elizabeth Komiskey:** Elizabeth.komiskey@dot.gov Phone: (202) 288-1818 **Harold Winnie:** harold.winnie@dot.gov Phone: (816) 329-3800
Eastern Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia	West Trenton, NJ	**Karen Gentile:** Karen.gentile@dot.gov Phone: (609) 989-2252 **Alex Dankanich:** alex.dankanich@dot.gov Phone: (202) 550-0481
Southern Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, and Tennessee	Atlanta, GA	**Joe Mataich:** joseph.mataich@dot.gov Phone: (404) 832-1159 **Mike Khayata:** michael.khayata@dot.gov Phone: (404) 832-1165
Southwest Arkansas, Louisiana, New Mexico, Oklahoma, and Texas	Houston, TX	**John Jacobi:** john.jacobi@dot.gov Phone: (713) 272-2839
Western Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming	Lakewood, CO	**Bill Flanders:** bill.flanders@dot.gov Phone: (907) 271-6518 **Tom Finch:** thomas.finch@dot.gov Phone: (720) 963-3175
PHMSA Headquarters	Washington, DC	**Christie Murray:** Christie.murray@dot.gov Phone: (202) 366-4996

For the most up to date contact info go to www. http://www.phmsa.dot.gov/public/contact

Preventing Damage to the Pipeline

One of the best ways to protect yourself and your family if you live near a pipeline is to learn how to become the eyes and ears on the ground to help protect the pipeline from damage. This means not only behaving responsibly yourself on and near the pipeline easement, but also making sure that when you see something happening that might damage the pipeline, or notice anything that indicates a problem with the pipeline, you contact the pipeline operator.

Rules vary among operators and from easement to easement, so make sure you understand what activities are allowed on the pipeline easement on your property. Typically, pipeline operators restrict construction of buildings, landscaping within easements to grasses and small shrubs, and may prohibit other types of construction as well (fences, patios, pools, septic systems, new roads or driveways) that could damage the pipeline or restrict access to it in the future. More and more local governments are beginning to regulate the uses of land near pipelines, sometimes restricting uses for hard to evacuate structures (hospitals, nursing homes, schools, day care facilities and the like), establishing setbacks, and requiring consultation with the pipeline operator as a condition of issuing a development permit.

811 Know what's **below.** **Call** before you dig.

Many pipeline ruptures are the result of excavation damage. Sometimes the pipeline is damaged badly enough by the excavation to rupture immediately, and sometimes, the damage creates a flaw in the pipeline that ruptures months or years later. Many state laws require reporting of any contact with a pipeline. If you accidentally nick, ding or dent a pipeline, or see it happen, please report it to the pipeline operator or to your local 811 call center.

There is a nationwide utility locator system available for free to anyone planning any kind of excavation. By calling 811 at least 2 days before any planned digging, you can make arrangements for a utility locator to come identify and mark any buried utilities, including cables, pipelines for fuel, water, and sewer. It saves lives, prevents property damage, and in most states, it's the law. Even if you think you know where the utilities are located on your property, use the 811 call system to have them located and be sure.

If you see someone excavating near a pipeline right-of-way (ROW), look

PIPELINE WARNING SIGN

Most of these signs indicate a phone number to call in case of emergency.

around to see if the utilities have been located and marked. If there is no sign of markings, contact the pipeline operator or the call center (811) immediately. The pipeline company's contact information can be found on each of the pipeline markers, or you may receive informational materials in the mail as part of a pipeline's public awareness campaign. Keep the contact information handy, so you can use it if you need to.

When a site has had the utilities located and marked, those markings will typically be spray painted on the ground, sometimes staked and flagged, and sometimes a pipeline operator will temporarily fence both sides of a right-of-way to keep adjacent construction equipment off the pipeline.

Recognizing a Pipeline Leak

While pipeline emergencies are rare, it is important to know how to recognize signs of leak if one should occur. The best ways for you to detect a spill in your neighborhood is to use your senses of sight, smell, and sound. You may have a leak if :

- you see dead or discolored vegetation that is otherwise green along a pipeline ROW, see pools of liquid not otherwise usually present along the pipeline ROW, see a cloud of vapor or mist not otherwise usually present along the pipeline ROW, see dirt blowing up from along a pipeline ROW, or see a sheen of petroleum products in a water body near a pipeline ROW
- you smell an unusual odor or scent of petroleum along a pipeline ROW
- you hear an unusual hissing or roaring sound along a pipeline ROW

Responding if a Leak Occurs

If you have detected the signs that a leak may have occurred, you should take the following actions :

- Leave the leak area immediately. Walk into the wind away from possible hazardous fumes.
- Do not touch, breath or make contact with leaking liquids.
- Do not light a match, start an engine, use a telephone (even a cell phone), switch on/off light switches or do anything that may create a spark.
- From a safe location, call 9-1-1 or your local emergency response number and the pipeline company. Call collect, if needed, and give your name, phone number, a description of the leak and its location.
- Warn others.
- Do not drive into a leak or vapor cloud area.
- Do not attempt to operate valves.

UTILITY MARKINGS

These temporary markings locate buried utilities, including pipelines, so they can be protected during a planned excavation. Call 811 before you dig to have underground utilities marked for free.

Major Issues for Property Owners Near New Pipelines

If a new pipeline is planned for your area, and the operator wants to cross your property, you will want to learn about lots of issues you've likely never thought about before:

- What is an easement and how does the pipeline company get one?
- What is an easement worth?
- When can an operator use eminent domain to take my property, even over my objections?
- How will a pipeline restrict my future use of the property, and how will it affect my ability to resell the land?
- Is it safe? How can I make sure it stays safe?
- Why do they (and do they really) have to cut down all the trees?
- Will they restore the surface after construction?
- How long will the pipeline be there? What happens when the operator stops using the pipeline?
- What notice will I get before entry onto the property for safety inspections, repairs and maintenance?

You will likely have many more questions. While this booklet can provide some basic information, it is not comprehensive or intended to provide you with legal advice. If a pipeline company wants to come across your property, we urge you to seek out the advice of a qualified, experienced attorney in your state who is familiar with these issues. Each landowner has individual circumstances, so you should seek independent advice early in the process of negotiating a right-of-way or easement with the operator to understand what your options and rights are during negotiations and in a situation where an agreement is not reached. Pipeline operators may have eminent domain authority in some instances.

When a Pipeline is Planned to Cross Your Property:

The pipeline operator will determine the route it wants the pipeline to take, and depending on the type of pipeline and whether your state exercises any pipeline siting authority, there may be little you can do to influence that route selection. If it is an interstate natural gas line, the Federal Energy Regulatory Commission (FERC) will determine the final route. State processes govern some other types of lines, and some lines are not subject to any governmental permitting or routing processes at all. If the pipeline is early in the planning stages, you may be able to work with the operator to adjust the route, or you may participate in the routing processes with the state or FERC.

Once the route has been determined, or perhaps beforehand, the pipeline operator's right-of-way agent will contact each property owner in the path of the proposed pipeline to begin discussions aimed at obtaining an easement for the construction and operation of the pipeline.

There is no substitute for experienced legal advice early in a situation like this. Here, with very brief descriptions, are the types of issues you should be considering:

What Rights Will the Pipeline Operator Have?

The easement agreement should specify exactly what the operator may do on the easement, e.g., install, operate, test, maintain, inspect, etc. Make sure you understand, and have written into the agreement, how and where the operator will access the easement. The concerns of a rancher with miles of easement and limited access from roads will be very

different in this instance than those of an urban lot owner. You may also want to request notice of upcoming inspections or tests, and limitations on the times of day during which the easement will be accessed, except in an emergency situation. FERC rules contain some limitations and notice requirements for repairs and replacement projects of interstate gas pipelines, but they may not apply in all situations, and including specific items of importance to you in your easement will better protect you. If the FERC rules are stricter, they will apply as well.

How Will the Easement Limit Your Use of the Property?

Many perfectly functional landowner/operator relationships have soured over trees: disagreements, lack of understanding, ignorance, over-reaching, miscommunication – however the parties choose to characterize it, the arguments typically start over an operator's decision to cut trees in a right-of-way. Make sure that the easement language is clear and explicit in terms of what landscaping and agricultural activities will be permitted in the right-of-way, whether the operator will have the right to remove or trim trees and over what area, and what compensation will be paid for trees destroyed or damaged during construction, maintenance, repair and/or replacement activities.

Typically, an easement will prohibit the construction of any structures within the right-of-way. You may be able to negotiate a clause allowing the installation of a patio or other surface facilities not requiring excavation with written consent of the operator, and the understanding that they may be removed or destroyed if the operator needs access to the pipeline for repairs, inspections, or maintenance.

Temporary Construction Easement?

There may be, in addition to the permanent easement for the pipeline, a temporary construction easement wider than the permanent easement to allow the operator sufficient space to maneuver equipment and pipe sections. The size, location and duration of this temporary easement should be clear.

What Will Be Put in the Right-of-way?

The easement agreement should specify whether any surface facilities will be placed within the easement, whether more than one pipeline or other utilities may be placed in the easement, the operator's restoration plan and timetable following construction and following any future construction, maintenance or repairs that require surface disturbance within the easement. It may be in the landowner's interest to try to negotiate limits to the substances that may be carried in the pipeline, depth the pipeline is buried at and how that depth is maintained, and specifics regarding what will happen if the company in the future wants to replace the pipeline with a larger pipeline.

What About Contractors Working for the Pipeline Company?

The landowner will want to restrict the allowable activities of contractors working for the pipeline company. Common restrictions prohibit the carrying of firearms, fishing gear, and the leaving of any trash by the operator's employees or contractors.

Cleanup, Restoration and Abandonment

The easement agreement should make clear that the operator will be responsible for any damages that result from actions of its contractor, the operator or its employees, and that responsibilities of the operator for restoration of the easement also apply to restoration following activities of contractors of the operator. In agricultural areas the type of soil and how it will be replaced, and the introduction and control of noxious weeds are important things that need to be defined in the easement agreement.

Although it may not happen while you own the property, pipelines are sometimes abandoned when they are no longer useful. Make sure that your easement agreement defines what constitutes abandonment (typically non-use for two years), says whether the operator must remove the pipe and restore the surface, and most importantly, that the easement automatically terminates upon abandonment.

Damages and Liability

If the disruption of your property during construction and/or maintenance and repairs causes you economic damage, e.g. lost or delayed crops, damage to drainage infrastructure, destruction of fencing, etc., you may want to negotiate in the easement how those damage claims will be handled so that you don't have to spend money to hire an attorney to sue for later damages. In at least one state, many of these rules exist in state statute, governing everything from inspections during construction to crop deficiencies to restoration requirements. (Iowa code chapters 479 and 479B)

To protect a landowner, an easement agreement should include an indemnity agreement that the operator will indemnify the landowner in any lawsuits relating to the presence of the pipeline or other facilities on the easement.

Costs of Negotiation

Some states require pipeline operators to pay a certain amount of the landowner's costs during negotiations, for an attorney to review an agreement, surveying, appraisal, or other costs. These requirements will rarely cover the actual costs of negotiation. A landowner can seek additional reimbursement from the pipeline company. It is always better to have the advice of an attorney well before you get to the stage of reviewing a draft that is close to final. Each property is different; each owner has different interests. There are many issues that are not included in this guide that you might need to consider. An attorney's early advice can help you identify the issues important to you and negotiate terms that will protect your interests.

Value of an Easement

Operators sometimes pay landowners for an easement based on the length of the easement in a price per linear foot or rod. Sometimes, owners are paid for the area taken on a price per acre or square foot. There are innumerable variations in the value of an easement, depending on the zoning of a parcel, the development potential, whether timber or standing crops are on it, whether a home is present, etc. The rules vary slightly from state to state, but typically, an owner is entitled to compensation for the value of the land taken, and the lost value to the remainder due to the easement.

When Negotiation Fails: Eminent Domain

In some circumstances, pipeline companies have the power to take an easement or full title to your property over your objections, by using the power of eminent domain. State governments frequently treat pipeline companies like power companies and other public utilities and give them the power of eminent domain - the right to take property for a public benefit after paying just compensation. Not surprisingly, the use of eminent domain by pipeline companies is controversial, particularly where individual property owners believe that eminent domain should not be available for use by a private for-profit pipeline company, where the pipeline operator has chosen a particularly sensitive route, or is perceived as being unreasonably reluctant to shift a chosen route to avoid a home or particular feature.

See the links in the acknowledgments at the end of the guide to find more detailed information about eminent domain law in several states.

When Do Pipeline Operators Have Eminent Domain Authority?

Operators of interstate natural gas lines that have obtained a certificate of public convenience and necessity from FERC are granted the power of eminent domain by federal law. Many states also grant eminent domain authority to transmission pipeline operators, others to both transmission and gathering lines. In some cases, the authority comes from the operator's status as a regulated utility under a state utility commission or public service commission. In others, the operator must obtain designation as a public utility to acquire eminent domain authority. For example, in Pennsylvania, operators of gathering lines do not have the power of eminent domain unless they are designated as public utilities by the state.

Does the Operator Have to Negotiate With the Landowner Before Beginning an Eminent Domain Proceeding?

In most cases, an operator must at least submit an offer to the landowner before beginning a condemnation proceeding. The state law requirements vary about providing appraisals, undertaking good faith negotiations and other requirements before an eminent domain action is filed.

Many landowners have reported right-of-way agents using the threat of eminent domain to try to force people to sign agreements more quickly. While the abilities and style of right-of-way agents varies greatly it should be recognized that the right-of-way agent is representing the interest of the pipeline company, not the landowner. Landowners should insist on being given enough time to have an attorney review any proposed agreement, and then work with that attorney to decide what is in the best interest of the landowner.

How is the Compensation Owed to the Landowner Measured in Eminent Domain Proceedings?

The rules vary slightly from state to state on how to measure the amount of compensation owed, but it is typically the value of the land covered by the easement plus the lost value to the remainder from the creation of the easement. Opinions about those values, of course, may vary widely between the operator's appraiser and the landowner's. Their methodology may vary as well as the value attributed to various features and there are frequent disagreements over the

loss of value to the remaining property due to the creation of the easement.

Are There Ways to Challenge an Eminent Domain Proceeding?

There are restrictions on the use of eminent domain, but not very many of the legions of landowners dealing with pipeline operators will fall into the gray areas where it is arguable whether eminent domain is being lawfully used. The details of eminent domain law in each of the states are beyond the scope of this simple guide. If you think there is some question about whether eminent domain is being properly used to acquire an easement or full title to your property, or if you are told that eminent domain will be used unless you agree to an easement agreement you can't live with, you need to find an experienced eminent domain attorney to hear your circumstances and advise you.

What is the Process for an Eminent Domain Proceeding?

The process for eminent domain proceedings is slightly different in each state. In rough outline and in general terms, each side will prepare an appraisal of the property and an assessment of the compensation owed the landowner. That information will then go to the court hearing the case. In some states, it will be heard by a judge, in others, by a jury, and in yet others, by a panel of individuals appointed by a court. The person or group hearing the case will then decide on the compensation owed the landowner, compensation will be paid and the interest in property sought by the operator will be awarded to it.

It's important to note that (unless the eminent domain proceeding is successfully challenged) the result of an eminent domain proceeding is the determination of how much compensation an owner is due before the interest in property is awarded to the operator. It is not likely that any other issues that may be important to an owner– notice before access, timing or location of access, maintaining depth of cover, indemnification, restoration timing and standards, etc. would be dealt with in an eminent domain proceeding.

TYPICAL TRANSMISSION PIPELINE RIGHT-OF-WAY

More often than not pipeline companies keep their rights-of-way clear of trees and vegetation so they can inspect them from the air for leaks, people digging improperly, and other possible threats to their pipelines. This clearing, especially if it has not been done for a while, is often a source of conflict between the property owner and the pipeline company.

Other Financial Concerns

Although the potential effect on property values and insurance rates and availability are likely to be some of the biggest landowner concerns (following safety) relating to a new pipeline project, there is precious little publicly available information on these subjects, most of it published by or paid for by the industry.

Insurance

Since the early 2000s, FERC has relied on the same one-paragraph description of homeowner insurance rates to respond to any community concerns raised in comments to a project's EIS:

> "Homeowner insurance rates are generally set on a county-wide basis, with individual rate adjustments made to reflect the age and value of the property and the claims record of the owner; insurance rates are not based on the surrounding landscape or structures at the local level. Properties in the vicinity of an industrial facility may be older and not as well maintained, which can affect the availability of insurance coverage or the insurance rates."

Recent anecdotal evidence provided to the Pipeline Safety Trust suggests that insurance underwriters are, in fact, reacting to the presence of transmission lines, particularly gas transmission lines, near residential properties and raising rates, or in some instances, suggesting that insurance might not be available for a new buyer of a property where a transmission line was recently constructed. This is a relatively new phenomenon, and while it may be true that some underwriters do not consider the presence of a transmission line to be a rate factor, at least some do. You may want to consider this as one of the things you discuss with a pipeline company seeking an easement over your property, or discuss with your insurer if you are buying a property.

Property Values

Similarly, there are a number of paired-sale studies that suggest that there may be limited long-term loss of property value due to the presence of a transmission line. It is difficult to determine the extent to which those published studies reflect transactions involving knowing buyers who were fully aware of the presence of the pipeline. One reason that there is limited available information about changes in property values agreed to by the industry is that, in the settlement of eminent domain cases, operators typically require a confidentiality agreement from the affected landowner, promising not to disclose the amount of the payment received by the landowner for the loss in value of the property.

The circumstances of every piece of property are different: different sizes, different uses, different distances to residences from the pipeline, different effects on access, landscaping, etc. In some instances, the risk of a pipeline on the property may make very little difference. In others, it may be unacceptably high. What is important in an eminent domain case or in negotiations is whether an appraiser will provide you with evidence that the stigma of the presence of the pipeline reduces the value of the property when an easement is granted or taken.

Resale

If you have a pipeline on or near your property, you may need to disclose the presence of that pipeline to potential buyers when you sell. One California firm has advised that by receiving a letter from PG&E following the September, 2010 San Bruno explosion notifying owners that they are within 2000 feet of a natural gas transmission pipeline, an owner then has knowledge of a material fact about their property which they must disclose to subsequent purchasers. Two of the major firms providing real estate disclosure forms in California have now included reference to that PG&E notification in their forms. Check your own state's disclosure laws to determine if you need to specifically disclose the presence of a pipeline on or near your property, beyond the disclosure of an easement, which should already show up in a title search.

PIPELINE SAFETY IS LIKE A THREE LEGGED STOOL

Industry, regulators, and the public each serve a vital function in ensuring pipeline safety.

Pipeline Safety: a Shared Responsibility

If you have made it this far in this guide, then you have taken an important step to help ensure that pipelines near you will be as safe as possible by educating yourself about how they work, who's in charge, and what needs to be done to ensure the public's safety is being looked after. We believe that pipeline safety is like a three-legged stool with the industry, regulators and public each serving as one leg of the stool and each playing a crucial role. If any leg of the stool falters, pipeline safety is at risk.

The industry uses its vast resources to install, operate and maintain safe pipelines. The regulators verify through inspections and data collection that the minimum safety regulations are appropriate and are being met, and when necessary, use enforcement authority to ensure compliance. The public, including elected officials, serve as the watchdogs to push for greater regulation and enforcement when necessary, and to make sure complacency doesn't set in.

The public can only do its job if there is adequate transparency in what the industry and the regulators are doing. Adequate performance, inspection, and enforcement data needs to be easily publicly available so compliance can be verified. Adequate information about the specifications, contents, and routes of proposed pipelines also need to be easily available so people living in potentially affected neighborhoods can decide for themselves if adequate safety precautions have been taken. The information that decision makers use to make pipeline safety decisions also needs to be available to the public so they can decide whether their officials are making decisions with full knowledge of the impacts and with the public's safety and welfare in mind.

While a large amount of information is publicly available and verifiable, there is still important information missing, which may lead to mistrust of the process and the results. With the current ability to electronically post nearly unlimited materials online, industry and government could create more trust by posting information that they are already required to prepare, instead of creating barriers by expecting the public to go through a formal public information request process. The industry, in particular, provides very little information about their particular pipelines and the associated operations, maintenance and inspections. Both state and federal regulators could make that information available to the public, or the industry could do so voluntarily, and help reduce the perception that they are reluctant to provide information.

Being a landowner with what is often an unwanted pipeline on your property is difficult. People feel put out by the restrictions on the use of their property, activities of the pipeline company, lack of information, or by what may seem to be one-sided communication. Too often these things lead a property owner to distrust the pipeline company representatives or close the door on communication. Unfortunately the pipeline is not going away, so the best way to protect your interests is to learn what you can about pipelines, what your pipeline easement agreement requires, and who to call if there is a problem. We hope this guide has helped begin that process.

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- These individual members of OCA who provided the following specific information about eminent domain laws in their states:

Alabama: Casey Pipes
www.pipelinesafetytrust.org/library/docs/alabama.pdf

Florida: John W. Little III
www.pipelinesafetytrust.org/library/docs/florida.pdf and *pipelinesafetytrust.org/library/docs/floridahandbook.pdf*

Kansas: David M. Rapp
www.pipelinesafetytrust.org/library/docs/kansas.pdf

Michigan: Alan Ackerman and Darius Dynkowski
www.ackerman-ackerman.com/what-we-do/frequently-asked-questions/

Missouri: Robert Denlow
www.denlow.com/PracticeAreas/Missouri-Condemnation-Procedures.asp

Nebraska: William G. Blake
www.pipelinesafetytrust.org/library/docs/nebraska.pdf

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www.pipelinesafetytrust.org/library/docs/nevada.pdf

New York: Michael Rikon
www.pipelinesafetytrust.org/library/docs/newyork.pdf

Oregon: Jill Gelineau
www.pipelinesafetytrust.org/library/docs/oregon.pdf

Pennsylvania: Michael F. Faherty
www.pipelinesafetytrust.org/library/docs/pennsylvania.pdf

South Carolina: Keith M. Babcock
www.pipelinesafetytrust.org/library/docs/southcarolina.pdf

Tennessee: J. Kevin Walsh
www.pipelinesafetytrust.org/library/docs/tennessee.pdf and *pipelinesafetytrust.org/library/docs/TNArticle.pdf*

Texas: H. Dixon Montague
www.pipelinesafetytrust.org/library/docs/texas.pdf

Utah: Kevin E. Anderson
www.pipelinesafetytrust.org/library/docs/utah.pdf

Virginia: Christi A. Cassel
www.pipelinesafetytrust.org/library/docs/virginia.pdf

We also thank the more than 50 landowners who volunteered their time by responding to a survey asking what sorts of information they would like to see in a guide like this. We hope this guide provides you answers to some of your questions and help in finding resources for the rest.

Want More Information?

Pipeline Safety Trust homepage
http://pstrust.org/

Pipeline safety information for individual states
http://primis.phmsa.dot.gov/comm/States.htm

Information for local governments regarding planning near pipelines
http://primis.phmsa.dot.gov/comm/pipa/LandUsePlanning.htm

Glossary of pipeline terms
http://primis.phmsa.dot.gov/comm/glossary/index.htm

National pipeline incident data
http://primis.phmsa.dot.gov/comm/reports/safety/PSI.html

Information on individual pipeline operators
http://primis.phmsa.dot.gov/comm/reports/operator/Operatorlist.html

from origin to consumption
land owners with pipelines on their properties may be affected by pipelines throughout all stages of the fuel transportation system

production facility

gas processing and treatment plant

compressor station

city gate

Pipeline Safety TRUST

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Response to Letter No. 18
Carol Dominguez

18.1 Please refer to the Responses to Comments 23.30 through 23.41. The materials submitted with the commenter's letter have been incorporated into the administrative record for the proposed Project.