

6.0 EMERGENCY PREPAREDNESS AND RESPONSE

Emergency preparedness and response plans and programs are developed and implemented by companies to ensure they have sufficient response capabilities and resources in place to address potential emergencies, including the unlikely event of spills and releases. Energy East will use TransCanada's existing emergency management program (EMP) and will develop specific emergency response plans (ERPs) for the Project in accordance with TransCanada's EMP. These project-specific ERPs demonstrate Energy East's commitment to emergency response preparedness, as well as its oil spill-response capabilities and mitigation activities.

Energy East ERPs will be developed for:

- the pipeline and pump stations
- tank terminals
- marine terminal

Marine transportation ERPs will be the responsibility of the vessel owner/operators and certified response organizations such as Atlantic Emergency Response Team (ALERT) Inc. All vessels visiting the Canaport Energy East marine terminal must meet the requirements of Energy East's Tanker Acceptance Program, Canadian regulations and international conventions before berthing.

Energy East ERPs will be developed in consultation with emergency service agencies, including local, provincial and federal agencies, and local Aboriginal groups. ERPs for the Canaport Energy East marine terminal will meet the requirements of the *Canada Shipping Act, 2001* for oil handling facilities to have an Oil Pollution Prevention Plan and an Oil Pollution Emergency Plan. Energy East will file final ERPs with the Board and distribute them to applicable emergency service agencies, as necessary, before Project commissioning.

6.1 REGULATORY FRAMEWORK

In addition to being implemented in the context of TransCanada's EMP, each of the project-specific ERPs will meet or exceed all applicable regulatory requirements, including those listed in Table 6-1.

Table 6-1: Applicable Regulatory Requirements (CA Rev. 0)

Topic	Regulator or Overseeing Body	Regulatory Enactment/Guidance Document
Onshore Emergency Preparedness and Spill Response	National Energy Board (NEB)	<i>Onshore Pipeline Regulations</i> SOR /99-294
	Environment Canada (EC)	<i>Environmental Emergency Regulations</i>
	Canadian Standards Association (CSA)	CSA Z662-15

Section 6
Emergency Preparedness and Response

Energy East Pipeline Ltd.
Consolidated Application

Table 6-1: Applicable Regulatory Requirements (CA Rev. 0) (cont'd)

Topic	Regulator or Overseeing Body	Regulatory Enactment/Guidance Document
Onshore Emergency Preparedness and Spill Response (cont'd)	Fisheries and Oceans Canada (DFO)	<i>Fisheries Act</i>
	Transport Canada (TC)	<i>Transportation of Dangerous Goods Act</i>
	Provincial Regulations	Applicable environmentally related statutes and regulations in each of Alberta, Saskatchewan, Manitoba, Ontario, Quebec and New Brunswick
	Industry Agreements	Canadian Energy Pipeline Association (CEPA) <i>Mutual Emergency Assistance Agreement, 2014</i>
Marine Emergency Preparedness and Spill Response	Transport Canada Canada Coast Guard	<ul style="list-style-type: none"> • <i>Canada Shipping Act, 2001</i> • <i>Response Organizations and Oil Handling Facilities Regulations</i> SOR/95-405 • <i>Environmental Response Arrangement Regulations</i> SOR/2008 – 275 • <i>Vessel Pollution and Dangerous Chemicals Regulations</i> (SOR/2012-69) • Response Organizations Standards (TP 12401) • Oil Handling Facilities Standards (TP 12402) • Final Standards – Response Organizations Response Plans, February 28, 2014 • Canadian Coast Guard Guidance, including documents pertaining to standards, operations and vessels of opportunity • <i>Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants</i> (TP 9834) • <i>Places of Refuge Contingency Plan</i> (TP 14707E) • <i>Marine Liability Act</i> • International Oil Pollution Compensation (IOPC) Funds • Civil Liability Convention
	Fisheries and Oceans Canada	<i>Fisheries Act</i>
	International Agreement	<i>International Convention for Prevention of Pollution from Ships</i> (MARPOL 73/78) <i>International Convention for Safety of Life at Sea</i> (SOLAS 1974)

6.2 TRANSCANADA'S EMERGENCY MANAGEMENT PROGRAM

TransCanada's EMP governs all aspects of emergency planning, preparedness and response, and in particular, supports all practicable activities to ensure safety and security of first responders and the public as well as the protection of property and environment, regardless of the cause of the company's emergency or assignment of fault, during an emergency.

The basic components of TransCanada's EMP, all of which will be incorporated in each of the project-specific ERPs, include:

- identifying potential emergencies arising from human activity or natural hazards based on a formalized risk-determination process, such as:
 - hazard/risk assessments
 - tabletop and field reviews
 - emergency event analysis
- assigning responsibilities, such as:
 - emergency procedure coordination
 - emergency notifications
 - perimeter/visitor control
 - media contact
 - contractors management
- activation and notification procedures
- tactics to respond to spills
- strategic locations of emergency response equipment, such as:
 - boats
 - equipment trailers
 - boom, skimmers and temporary storage
 - vapour monitors
- consultation and coordination, where appropriate, with local industries, municipalities and other government agencies to develop ERPs
- identifying requirements for outside assistance/emergency response, such as:
 - local emergency services (such as first responders and health officials)
 - emergency response contractors
 - industrial and other co-operatives
 - emergency response technology support, including area mapping and communications
- communicating with personnel, the public and government agencies during the emergency regarding:
 - emergency status

- involved government agencies
- emergency procedures, including evacuation communications
- requirements for follow-up investigations, communication and reporting
- process for establishing emergency operations centres (EOCs) and incident command posts
- communicating plans in an appropriate manner
- requirements for providing assistance to persons dislocated by the emergency
- training requirements to ensure personnel are trained and outside resource personnel are aware of their emergency preparedness roles and responsibilities
- exercise requirements to test ERPs and evaluate effectiveness of personnel training in ERP implementations
- system to evaluate emergency preparedness and response, including:
 - plan review/updates
 - training and exercises
 - auditing

TransCanada's EMP is predicated on a multi-stage process that involves:

- activation, notification and response procedures
- extensive and adaptable emergency response regime
- continuous improvement

This multi-stage process enables TransCanada to undertake effective and consistent responses to a variety of emergencies throughout all its operations.

6.2.1 Activation and Notification Procedures

TransCanada will activate an emergency response when an incident occurs that meets the definition of an emergency. TransCanada defines an emergency as:

An unforeseen or imminent event that requires:

- prompt coordination of resources
- heightened authority for personnel

TransCanada's emergency response priority is to protect the health, safety and welfare of people first, and then to limit impacts to the environment and property.

TransCanada's operations and emergency response philosophy focusses on minimizing any impact from an emergency incident by stopping the flow of a pipeline and thereby minimizing the potential impact from an incident. In parallel, processes are started to assess the emergency situation and begin an immediate and full response. This response philosophy contributes to ensuring that the necessary equipment and resources are

deployed as early as possible to an incident site to limit the potential effects of an emergency incident.

For the internal notification process used to notify all required parties of an incident, see Figure 6-1, which shows how the incident is escalated once notification occurs.

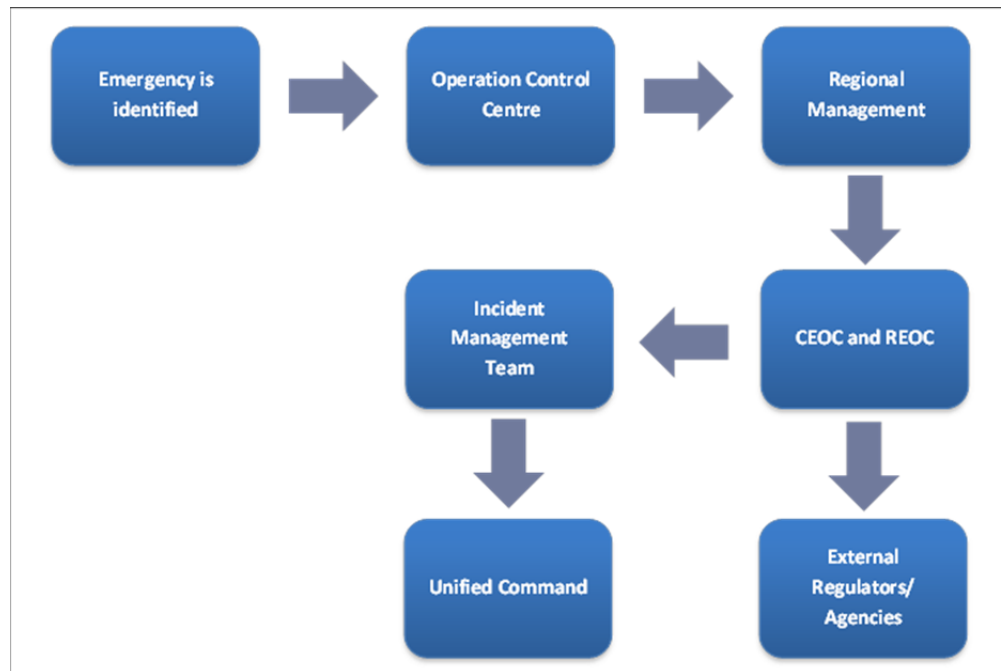


Figure 6-1: Emergency Activation Process (CA Rev. 0)

Notification of a potential emergency situation involving TransCanada or any of its subsidiaries can occur through a number of means, including:

- hydraulic indications (through SCADA or leak detection) that cannot be determined to be false positive signal
- multiple hydraulic indications in a 10-minute window as observed by the OCC
- reported by the public, personnel, industry partners and emergency response agencies through a dedicated trilingual emergency line

The OCC will initiate TransCanada's EMP, including the internal notification process by contacting the Corporate Emergency Operations Centre (CEOC) manager and the manager on call for the region. Various TransCanada functional groups are responsible for notifying external regulatory authorities.

TransCanada uses both a CEOC and a Regional Emergency Operations Centre (REOC) to support an incident response. Support services include:

- safety

- logistics
- communications
- security
- environment
- operations

These support services will be immediately notified and mobilized within one hour of notification. Once the emergency is verified, federal and provincial regulatory agencies will be notified, along with affected community members.

In the event that an emergency incident occurs on a tanker transiting to or from either of Energy East's marine terminals, the ship master would contact the appropriate certified response organization, such as ALERT, to initiate a spill-response and recovery operation. Response activities would be at the direction and expense of the responsible party (vessel owner).

6.2.2 Response Timelines

For all incidents and emergencies associated with the pipeline facility, Energy East has adopted the response time guideline developed by the Canadian Energy Pipeline Association. These timelines, described in Table 6-2 below, are included in the *TransCanada Emergency Management Corporate Program Manual* which Energy East will adopt for the Project.

Energy East has taken the view that these timelines represent the maximum allowable time for each phase of a response. In verifying that Energy East will be able to respond to an incident according to these timelines, Energy East will establish emergency response plans (including the location of personnel and equipment) that will be verified on a regular basis by desktop studies and field exercises.

Table 6-2: CEPA Response Time Guidelines (CA Rev. 0)

Phase	Response Time Target ¹	Actions	Description
Phase 1	Initiated immediately upon recognition of a pipeline emergency	Pipeline shutdown	The remote shutdown of the pipeline or dispatch of local responders for pipeline isolation through a control center should be undertaken immediately upon recognition of an emergency.
Phase 2	2 Hours	Emergency response activities	An Emergency Response Management System will be structured immediately once an emergency has been recognized. An Incident Command System will be established in no more than two hours. Emergency response activities may include establishing an Emergency Response Structure, an Emergency Operation Centre and other initial response activities <i>en route</i> to the site.

Table 6-2: CEPA Response Time Guidelines (CA Rev. 0) (cont'd)

Phase	Response Time Target ¹	Actions	Description
Phase 3	3 Hours	Staff onsite	Company First Responder on scene within three hours.
Phase 4	6 Hours	Initial emergency response equipment onsite	Initial response equipment should be on-site no more than six hours after recognition of an emergency. This can be achieved with in-house, mutual aid, spill cooperatives or contracted response equipment.
Note: 1. The full version of the Canadian Pipeline Association (CEPA) response guidelines can be found at the following link http://www.cepa.com/about-pipelines/maintaining-safe-pipelines/in-an-emergency/emergency-response .			

Beyond these guidelines, all highly sensitive receptors (HSRs) will be further evaluated and where required, a higher level of planning will occur through the creation of site specific ERPs, also known as geographic response plans (GRPs) and tactical control points. These plans may lead to response times faster than the standard identified in the response time guidelines described above.

In some circumstances, the above timelines may be delayed as a result of extenuating circumstances that may influence Energy East's response time. These could include variables such as the safety of employees and the public, weather conditions, and road closures due to natural disasters.¹

6.2.3 Initial Incident Response

TransCanada has adopted the Incident Command System (ICS) as the basic response structure for its emergency response regime. ICS is a widely used and internationally recognized onsite emergency management framework to aid in responding to all types of emergency incidents pursuant to a command and control structure. It is readily adaptable to very small emergency incidents as well as more significant or complex emergencies.

The initial incident response will be carried out by local TransCanada personnel and local emergency service agencies, as required. The local TransCanada personnel are employees and contractors who are present at or near the scene of an incident and who will be properly trained in emergency response and safety. The public and non-essential personnel will be cleared from the incident scene immediately.

The initial responder's primary tasks will be to:

- ensure the safety of all people in the area of the incident

¹ For further reference and information regarding this, see Energy East's response to NEB 5.30 (NEB Filing ID: A4V8G6).

- assess and communicate the situation, including:
 - incident size
 - severity
 - likely impacts
 - resource needs
- take action (where safe and appropriate) to mitigate impacts on safety, the environment and property

Initial responders will perform these tasks until the appropriate level of management in the ICS organization arrives on scene. In the event of a small emergency, such as a small-volume oil spill completely confined to Energy East property, the initial responders might coordinate the entire response effort.

The initial responders will typically be incorporated in the overall Incident Management Team (IMT) organization established to manage the response to the emergency. The Incident Commander is responsible for managing the response, along with the appropriate command and general personnel, who carry out various functional areas of the response and report to the Incident Commander. The Incident Commander will have the lead role in the following responsibilities:

- managing the response and establishing incident objectives
- assigning the response structure and establishing a Unified Command where appropriate
- ensuring ongoing emergency-specific planning is conducted
- approving and authorizing implementation of the incident action plan

On larger incidents, additional personnel and equipment, including internal TransCanada resources such as the Corporate Emergency Response Team (CERT), and third-party resources, will be activated to assist in emergency response activities. TransCanada maintains a network of third-party contractors who can provide emergency response equipment, resources and qualified personnel to assist TransCanada resources.

In addition, TransCanada is a member of response cooperatives and has entered into mutual aid agreements with other industry proponents able to supplement TransCanada and its third-party contractor resources if required (see Section 6.3.5). These third-party response contractors and response cooperatives are integrated in TransCanada's ICS for the extent of their involvement in the response incident and will be directed by the IMT and the Unified Command (see Section 6.3.4).

Remediation and restoration of affected areas will continue until they have reached a state required by applicable regulations or guidelines and agreed on with government agencies.

6.2.4 Emergency Operations Centres

TransCanada EOCs are activated to support the local response. An EOC is responsible for the emergency strategic overview, or “big picture,” and supports field activities directed by the Incident Commander.

Common functions of all EOCs are to:

- collect, gather and analyze data
- assist in making recommendations to protect life, environment and property
- maintain continuity of response activities
- disseminate information to all concerned agencies and individuals

In the event of a marine-based oil release, ALERT maintains response centres in its geographical response areas, which include both spill-response equipment and personnel.

6.2.5 Unified Command

The Unified Command is a structure that typically brings together one representative of each of the three levels of government (federal, provincial and local) where they have jurisdiction, and affected First Nations or Aboriginal communities. The Unified Command links the organizations responding to an incident and provides a forum for the responsible party and responding agencies to cooperate through common objectives, communication and decision making.

The representatives in the Unified Command for a specific incident are determined considering the specifics of the incident and existing response plans and decisions reached during the initial meeting of the Unified Command. The representatives in the Unified Command could change as an incident progresses to account for changes in the situation.

If instituted, the Unified Command will be responsible for overall management of an incident. It will direct incident activities, and approve and release resources. For agencies involved (in no order of importance or seniority) in a typical Unified Command organization, see Figure 6-2.

Representatives in the Unified Command must:

- agree on common incident objectives and priorities
- have the capability to sustain a 24-hour-7-day-per-week commitment to the incident
- have the authority to commit agency or company resources to the incident
- have the authority to spend agency or company funds
- agree on an incident response organization

- agree on the appropriate Command and General Staff assignments
- commit to speak through a single representative
- agree on logistical support procedures
- sign the Incident Action Plan

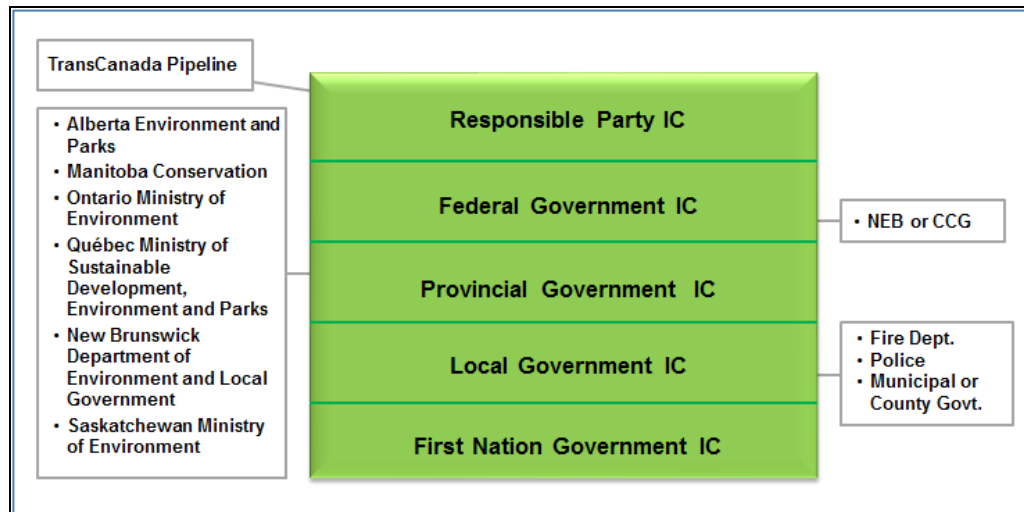


Figure 6-2: Unified Command Organization (CA Rev. 0)

Agencies that could potentially be involved in a Unified Command include:

- the federal government:
 - National Energy Board
 - Environment Canada
 - Fisheries and Oceans Canada
 - Transport Canada
 - Canadian Coast Guard
 - Royal Canadian Mounted Police
- provincial government:
 - environment
 - energy
 - law enforcement
- local government:
 - emergency services
 - county emergency agencies
 - city emergency managers
- Aboriginal communities

6.2.6 Training

Energy East will use TransCanada's existing learning management system and other resources to ensure personnel are trained.

Types of internal TransCanada training could include:

- ICS
- Hazardous Waste Operations and Emergency Response (HAZWOPER) and first responder training
- emergency response plan and fire response plan training
- response boat operations
- Transportation of Dangerous Goods and Workplace Hazardous Management Information System

TransCanada will invite local emergency services, government agencies, Aboriginal communities and third-party contractors to various of its emergency response training and exercises.

Training and exercises will be conducted annually in various operating and weather/climatic conditions throughout Project facilities. The objective of training and exercises is to:

- understand and mitigate the safety hazards and risks associated with emergency response
- ensure the ability to execute ERPs
- practise the knowledge and skills received in training
- identify areas of future training priority
- identify areas to improve current emergency procedures or equipment
- engage with local, provincial, federal agencies, Aboriginal communities in an effort to better clarify each other's roles and responsibilities
- share lessons learned

Examples of the types of exercises that TransCanada employs include:

- Notification / alerting exercises, which are initiated using the notification process outlined in TransCanada's EMP. Notification drills might be announced beforehand, or conducted unannounced. Objectives of the notification/alerting drills are to ensure that the notification and activation procedures work properly.
- Deployment exercises where tactical response actions are practiced.

- Tabletop exercises that simulate the management response to a hypothetical incident. Scenarios involve both land and marine incidents. During tabletop exercises, no personnel or equipment are deployed. Exercise participants are presented with an incident scenario and script, with key challenges or events. They are required to plan and manage the response to the incident.
- Full-scale field exercises that involve establishing an IMT, Incident Command Post and EOCs (including external agencies) and deploying resources, including equipment to conduct a tactical response.

Energy East will conduct a series of exercises to test response plans and capabilities for all types of incidents, including worst case scenarios². The types of exercises used to test response capabilities are described below:

- Quarterly notification exercises will be conducted to test communication between Energy East Project personnel and the qualified individual(s) and/or designated alternate(s).
- Annual equipment deployment exercises will be conducted to test Energy East's ability to deploy spill response equipment identified in the emergency response plan for each planning zone; planning zones will be identified during the detailed development of the ERP.
- Annual response team tabletop exercises will be conducted to test the response team's organization, communication, and decision-making in managing a spill response; teams will be identified during the detailed development of the ERP.
- Third-party contractor assessment exercises will be conducted once every two years to test third party contractor's preparedness, availability, and capacity to respond to worst case discharge scenario.

In addition to the above-mentioned methods, Energy East will continue to test its ability to respond by incorporating a continuous improvement cycle which includes lessons learned from events that occur in industry and input from all participants during planned exercises.

Each exercise will be documented and archived. Documentation will specify:

- the type of exercise
- date and time of the exercise
- a description of the exercise
- the objectives met in the exercise
- the components of the response plan exercised
- internal and external exercise participants
- lessons learned and required action item(s) for continuous improvement

² For further reference and information regarding this program, see Energy East's response to NEB 5.30 (NEB Filing ID: A4V8G6).

In addition, ALERT will conduct their own independent exercises and training activities as part of their ongoing operations, as well as to maintain their certification as response organizations.

6.2.7 Continuous Improvement

TransCanada is committed to the continual improvement of its EMP, as well as the project-specific ERPs, through participation in industry associations, lessons learned from exercises and previous incidents, and annual reviews by emergency preparedness and response professionals and TransCanada personnel.

For example, lessons learned from an incident on another pipeline system included:³

- Responding quickly: Timeliness of a tactical response to an oil spill in water is imperative. The incident reinforced the need to respond with the appropriate resources and as quickly and safely as possible.
- Pre-qualifying a large contractor network: Contractors will be used to supplement any response TransCanada would make to an oil spill. By ensuring that trained/skilled contractors are pre-qualified and contracted with TransCanada along the Project footprint, response times will be minimized and available resources (appropriate equipment and personnel) will be maximized.
- Equipment resources required for sunken and submerged oil must be available: TransCanada continues to work with its external contractors to ensure that the appropriate resources required to effectively respond to sunken and submerged oil are in place, and in ensuring personnel are appropriately trained on their use.

TransCanada's EMP annually identifies a set of goals, objectives, and targets in order to provide clear direction and continuous program monitoring improvement. These goals, objectives, and targets are based on findings of an ongoing management review process and are focused on utilizing measureable indicators to assess the overall efficiency and efficacy of the program.

Below are the EMP goals, including objectives that are developed and approved by management to allow for implementation of strategies:

- maintain and improve effective response systems
- continuous improvement of response effectiveness
- continuous improvement of emergency preparedness
- enable effective emergency preparedness through recruitment, training, and planning of effective response resources
- monitor and manage personnel training programs

³ National Transportation Safety Board, *Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release*, 2010.

- effectively execute drill and exercise programs
- improve external first responder collaboration
- ensure effective management of program hazards and risks to promote regulatory compliance and conformance
- maintain emergency management related policies and procedures
- effective and timely identification of hazards and risks that could lead to non-compliances and non-conformance incidents
- effective and timely management on non-conformances
- compliance with TransCanada's hazard identification and risk assessment processes
- perform management review and audit activities to ensure program effectiveness
- perform required reviews/audits/benchmarking
- demonstrate relationships with internal TransCanada personnel, industry associations, outside emergency management related organizations and/or government agencies

Within each of the objectives set forth for the EMP goals, a series of metrics and targets are identified and approved through the management review process to allow for measurement of progress towards each of the objectives. Included in these are annual metrics focused on:

- the number of TransCanada employees completing emergency response and incident management training
- the number of emergency exercises and drills completed, including the completion of exercise objectives, post-exercise reviews, and completion of identified post exercise action items
- adherence to TransCanada's incident response time guidelines
- ensuring regulators and emergency services agencies are included in TransCanada's emergency exercises and drills and utilizing opportunities for supplemental dialogue and outreach activities with emergency responders
- capturing feedback from regulators and emergency services agencies after incidents and exercises and addressing any items identified as opportunities for program improvement
- ensuring the required review and update of TransCanada's ERPs and program guidance documents
- ensuring the completion of internal quality management activities and audits and ongoing review of regulatory compliance

6.2.8 Emergency Responder Awareness

TransCanada's top priority in responding to emergencies is protection of people, including all responders (e.g., fire, police, medical). Therefore, a comprehensive and extensive stakeholder outreach effort is conducted under TransCanada's PA program.

The key components consist of baseline awareness information and further detailed educational sessions via personal contact and other means. At a minimum, awareness information materials are delivered annually to all local-level emergency service agencies.

Information provided in the baseline package includes:

- location of the pipeline and facilities
- product awareness and hazards
- how to recognize the signs of a leak
- how to contact TransCanada
- how to respond in the event of an incident

Extended outreach educational efforts can include:

- follow-up by phone call
- face-to-face meetings
- external association/organization meetings
- participation in TransCanada and emergency service agency response exercises and training

Energy East will make the full unredacted ERP and any supplemental response plans related to the requesting jurisdiction available on request to emergency services agencies that may be involved in an emergency response on the pipeline.

Supplemental response plans could include⁴:

- geographic response plans
- site-specific emergency response plans
- facility response plans
- fire protection plans
- tactical control plans

Redacted versions of the ERP will be made available online for the public in accordance with NEB Order MO-006-2016 dated April 2016.

⁴ For further reference and information, see Energy East's response to NEB 5.31 (NEB Filing ID: A4V8G6).

6.3 ENERGY EAST EMERGENCY RESPONSE PROGRAMS

6.3.1 Overview

TransCanada will be responsible and accountable for emergencies associated with the Project, which includes:

- pipeline and associated facilities, such as mainline valves
- tank terminals
- pump stations
- marine terminal

Vessel-sourced emergency situations, including oil spills, will be the sole responsibility of the shipper or vessel-owner.

TransCanada will implement and execute the Energy East ERPs. In addition to incorporating TransCanada's EMP components, each of the Energy East ERPs will ensure:

- Response equipment is stored in predetermined locations throughout the Project footprint, including at the Canaport Energy East marine terminal, to enable safe and quick response capabilities. Storage sites and equipment will be selected based on risk assessment results, community feedback and other considerations. Equipment needs will be supplemented or supported by third-party responders, as required.
- On-call personnel are trained in TransCanada's emergency response procedures before starting operations, and annually once the Project has been commissioned. The primary responsibility of on-call personnel will be to respond to any emergency.
- Supplementary personnel and equipment are identified and retained. Supplementary personnel will consist of contractors, cooperatives, personnel from other companies pursuant to mutual aid agreements and certified response organizations. Contracts with third-party response providers will be secured before Project commissioning.
- Consultation with external emergency response personnel occurs to ensure appropriate communication protocols, operational and product awareness and understanding of emergency response procedures, and roles and responsibilities.

Project-specific ERPs will be reviewed annually. Lessons learned from exercises, industry, actual emergencies and audits will be incorporated in the ERP revisions.

6.3.2 Spill-Response Resources

Energy East will complete an assessment to pre-determine the locations along the pipeline route for positioning of the required spill response equipment, resources and

personnel to respond to a worst case incident within the response time guidelines previously identified.

This assessment will include the following elements:

- establishing response radii based on the response time guideline and assuming 60 km/hr transit time around the locations with the greatest potential for worst case incident locations
- verifying proposed locations for positioning the required spill response equipment, resources and personnel relative to the response radii around the worst case incident locations
- adjusting locations for equipment, resources and personnel that initially fall out of the range of the response radii

The proposed locations for the required spill response equipment, resources and personnel will be further validated through internal and external emergency response exercises led by Energy East testing all aspects of our ERP including specific worst case scenarios.⁵

As well, Energy East will follow TransCanada's existing operating procedures which, in addition to all exercises required by applicable regulations, also require that third party resource assessment exercises be conducted. These exercises assess emergency response contractor's preparedness, availability, and capacity to respond to worst case discharge scenarios according to the timeframes outlined in the Response Time Guidelines. Evaluation of the response includes availability of both personnel and equipment responding to an emergency. For personnel, this includes safety officers, supervisors, foremen, operators, and technicians, and for equipment includes boats, booms, vacuum trucks, pumps, skimmers, waste storage, heavy equipment and additional equipment as determined necessary by the ERP.

Internal Spill-Response Resources

Energy East will purchase oil spill-response equipment and strategically locate it along the pipeline system as determined by risk assessment and community consultation, and in compliance with TransCanada's EMP. Equipment can be accessed and transported by multiple means, such as ground, water and air, as appropriate, on a 24/7 basis.

TransCanada personnel, trained and qualified in emergency response, will live and work along the length of the pipeline system and be available for an emergency on a 24/7 basis. Additionally, TransCanada will have full-time personnel dedicated to the emergency preparedness and response program.

⁵ For further reference and information regarding this program, see Energy East's response to NEB 5.30 (NEB Filing ID: A4V8G6).

Typical spill-response equipment includes containment, recovery and storage capacity, such as but not limited to:

- containment and deflection booms
- boats
- inverted weir equipment
- dams
- sorbents
- pumps
- oil skimmers
- storage containers

The Canaport Energy East marine terminal will have dedicated onsite equipment and personnel to meet the requirements of an oil-handling facility as defined under the *Canada Shipping Act, 2001*.

External Spill-Response Resources

TransCanada will contract with on-call external third-party response agencies and cooperatives, and form mutual aid agreements for Project facilities. This will ensure adequate supplemental resources are available in the event of an emergency. Standing agreements will be secured for resources to provide response equipment, labour, air and human health monitoring, environmental assessment and emergency management assistance before the Project goes into service.

The Canaport Energy East marine terminal will have an agreement in place with ALERT, the certified response organization for the Bay of Fundy.

For vessels transiting to or from the Canaport Energy East marine terminal, shippers and vessel owners remain solely responsible and accountable for emergency response situations associated with their respective vessels, as per the *Canada Shipping Act, 2001* and *Marine Liability Act*.

TransCanada supports the Government of Canada's initiative to develop geographically based response plans that are to be developed in conjunction with certified response organizations (including ALERT) and other stakeholders for the Bay of Fundy, which was announced 13 May 2014. TransCanada commits to ensuring that the Canaport Energy East marine terminal will meet the regulatory requirements that might be established through this and other regulatory initiatives.

Mutual Aid Agreements

TransCanada continuously strives to improve its emergency response capabilities. In that regard, effective 1 January 2014, TransCanada entered into a Mutual Emergency Assistance Agreement (MEAA) with all CEPA-member companies operating in Canada.

During an emergency situation, the CEPA member companies can call on each other to share personnel and equipment to increase each company's existing emergency response capabilities.

6.4 RESPONSE STRATEGIES

Response strategies and tactics will be outlined in the Energy East ERPs. During an actual emergency response, conditions at the time of the emergency, including type of oil and spill locations, will be considered before decisions on specific response strategies are made.

For the response strategies that represent the types of activities that will occur in response to a spill in a given environment, see Figure 6-3.

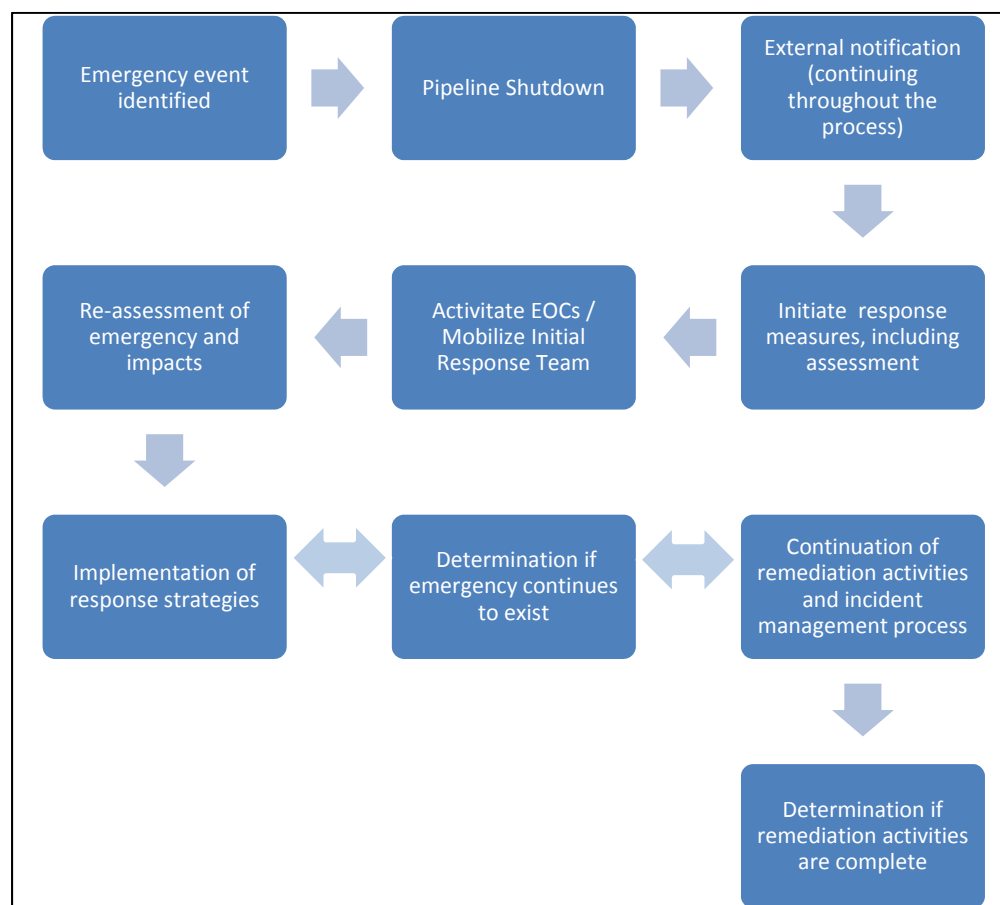


Figure 6-3: Emergency Response Process (CA Rev. 0)

The highest priority for TransCanada during a spill response is safety of the public and responding personnel. The first major strategic step that TransCanada takes in

response to a spill is source control, which includes pipeline system shutdown and hazard assessment.

Once the health and safety of responders has been accounted for, containment to prevent migration of oil is conducted and recovery of spilled product can start concurrently with containment activities. The affected area is then remediated and reclaimed to meet regulatory standards. Assessments throughout the response will ensure continued protection of responders and the public.

For an analysis and description of the characteristics, environmental fate, transport processes and environmental effects of crude oil that will be transported by the Project, see Volume 19, Section 4 (land origin) and Section 6 (marine origin) of the consolidated ESA. Three general categories of crude oil that will be transported by the Project are analyzed:

- conventional light crude oil (Bakken)
- synthetic crude oil (Husky Synthetic Blend)
- diluted bitumen (Western Canadian Select)

Theoretical site-specific analyses are also detailed in consolidated ESA Volume 19, Sections 5 and 6. These theoretical site-specific analyses cover 12 potential release sites that represent the types of environmental settings traversed by the Project. Information from these analyses will help inform ERP development.

6.5 CONTAINMENT, RECOVERY AND RECLAMATION STRATEGIES

TransCanada uses a wide range of containment, recovery and reclamation techniques in response to incidents, which will be outlined in the ERPs. The techniques deployed will vary depending on the type of incident, type of crude oil involved, weather conditions, location of sensitive receptors and other site- and time-specific factors. Decisions about which techniques to use are made onsite by the Incident Commander or Unified Command, with oversight by federal and provincial regulatory agencies.

Response strategies allow for containment and recovery of oil, which minimizes the potential for responders to be harmed or environmental damage to occur. Rapid containment of spilled oil will:

- reduce the spread of oil and its impacts
- reduce potential impacts to human health and the surrounding environment
- reduce potential impacts to property and other economic impacts
- maximize the effectiveness of oil spill countermeasures

As noted previously, emergency response equipment and supplies will be pre-positioned at strategic locations along the pipeline and at Project facilities. TransCanada and third-party contractors will receive regular training on use and

deployment of emergency response equipment and supplies to ensure that appropriate equipment and supplies are deployed based on terrain, weather and type of crude oil.

6.5.1 Releases to Soil

Containment, isolation and removal strategies for releases to soil could include:

- containment / isolation of the released oil to minimize its horizontal and vertical migration:
 - securing the release site to ensure no wildlife or unauthorized persons can gain access
 - using dams, dykes, trenches, collection pits and impervious barriers
- removal of released oil from the environment using:
 - suction equipment, including vacuum trucks in areas of pooled oil
 - excavators and backhoes to remove saturated or contaminated soil
 - manual cleanup, including the application of sorbents (oil-absorbing materials) and other absorbent materials
- use of alternative response techniques such as in-situ burning⁶

6.5.2 Release to Waterways

Containment, isolation and removal strategies for releases to waterways could include:

- Containing/isolating the released oil to minimize its migration:
 - securing the release site (if possible, depending on the waterway that is affected) to minimize access by wildlife or unauthorized persons
 - using dams and dykes
 - deploying containment booms and diversion booms, including sorbent booms
 - installing underflow dams or overflow dams
 - ice-slotting where waterways are ice-covered
- removing released oil from the environment by:
 - applying sorbents and other absorbent materials
 - deploying oil skimmers
 - deploying suction equipment, including vacuum trucks
 - dredging
 - ice-slotting

⁶ This response has a short window of opportunity for effectiveness and must be approved by federal and provincial regulators before use.

- deploying filters and various netting techniques
- use of alternative response techniques such as chemical dispersants and in-situ burning (see Footnote 6)

6.5.3 Releases Affecting Groundwater

Containment and removal strategies and methods for releases that enter groundwater could include:

- excavating contaminated soil, constructing an intercept trench down gradient of the contamination, and removing intercepted oil by vacuum truck
- other remediation methods such as:
 - air sparging
 - vacuum extraction
 - conventional pump and treat
 - bioslurping
 - enhanced biodegradation/bioremediation
 - chemical addition/oxidation
 - natural attenuation

In the event that groundwater resources are affected, Energy East will consult technical experts and government agencies to determine the most appropriate method of remediation to suit the site and surrounding environment.

6.5.4 Releases to the Marine Environment

Containment, isolation and removal methods for releases that affect the marine environment could include:

- Containing/isolating oil on water to prevent its migration using:
 - containment booms at the spill site
 - protection booms, including shore-seal booms, and deflective booms to protect sensitive areas
 - on-water sweep systems to corral free-floating oil
 - hazing teams to deter wildlife from the spill site
- recovering oil from the water using:
 - on-water sweep systems to recover free-floating oil
 - on-water recovery skimmers
 - suction equipment, including vacuum tracks and pumps
- using alternative response techniques such as chemical dispersants and in-situ burning (these responses have a short window of opportunity for effectiveness and must be approved by federal and provincial regulators before use)

- surveillance and tracking using overflights and spill-tracking buoys to track oil movement and to direct on-the-water operations
- recovering oil from shorelines using:
 - Shoreline Cleanup and Assessment Technique (SCAT) to identify areas requiring action and to determine the most appropriate type of action to remove spilled product, such as:
 - water flushing, manual removal, chemical cleaning, natural attenuation
 - near-shore/shoreline operations

6.5.5 Urban Releases

Containment and removal methods for releases to urban areas could include:

- containing the released oil to minimize its migration by restricting access to storm water or sewer drains using dams, blocks and sorbents
- removing released oil from the environment using:
 - suction equipment, including vacuum trucks and pumps on pooled oil
 - manual cleanup, including excavation and applying sorbents
 - heated pressure washing or complete removal and replacement for oil-contaminated areas such as paved roads, culverts or concrete curbs or rock
 - cleaning agents (surfactants), with agency approval, to lift the oil off hard surfaces such as concrete or rock

6.5.6 Incidents Impacting Wildlife

TransCanada will use hazing and other avoidance techniques to minimize wildlife interaction with spilled product. If wildlife is affected, TransCanada will conduct wildlife recovery, rehabilitation and relocation in consultation with applicable regulatory agencies.

6.6 HYPOTHETICAL SPILL-RESPONSE SCENARIOS

One approach used to develop an emergency response plan is to analyze hypothetical spill-response scenarios. Hypothetical spill-response scenarios differ from the theoretical site-specific spill analyses referred to earlier in the section, as they focus on spill-response tactics.

Given the large scope of the terrain traversed by the Project, six representative hypothetical spill-response scenarios have been developed. These six scenarios represent the majority of terrain and marine environments traversed by the Project. For the hypothetical spill-response scenarios, see the following appendices:

- terrestrial spill response with groundwater effects – Appendix 7-9

- marine spill response at the Canaport Energy East marine terminal – Appendix 7-11 (developed by ALERT)
- marine spill response in the Bay of Fundy – Appendix 7-12 (developed by ALERT)

All scenarios include a brief description of potential pathways for spill transportation.

For additional information, see ESA Volume 19: Accidents and Malfunctions, which contains a detailed analysis of potential spill trajectories and description of the environmental fate and effects of crude oil in the environment.