



**EQUITABLE  
ORIGIN**

# **EO100™ Technical Supplement**

## **EO100.1: Onshore Natural Gas and Light Oil Production**

**October 2022**

**Final – Version 2.0**

**Supersedes:**

**EO100.1: Onshore Conventional Oil and Gas Technical Addendum (2015) and  
EO100.2: Shale Oil and Gas Technical Addendum (2015)**



## EO100™ Standard Technical Supplement

### Effective Date

The Technical Supplement for Onshore Natural Gas and Light Oil Production is effective January 1, 2022. Conformance with the requirements of the Technical Supplement for certification purposes is mandatory after January 1, 2023.

### Applicability

Operators seeking certification for onshore natural gas and light oil production, gathering and boosting and gas processing segments of the market are assessed against the EO100™ Technical Supplement for Onshore Natural Gas and Light Oil Production and the overarching EO100™ Standard for Responsible Energy Development.

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## FOREWARD

The mission of Equitable Origin (EO) is to partner with business, communities, and government to support transparent, sustainable, and equitable development of energy through an independent, stakeholder-negotiated, market-driven certification system that distinguishes and rewards operators for outstanding social, environmental and safety performance.

In 2015, two technical addenda were published: EO100™ Shale Oil and Gas Technical Addendum and EO100™ Onshore Oil and Gas Technical Addendum. Following a standard review cycle of 5 years, we committed in 2021 to reviewing the two Technical Addenda. In this review, the 2 Technical Addenda have been combined and rebranded as the:

### EO100™ Technical Supplement: Onshore Natural Gas and Light Oil Production

The rationale for the rebranding and combining of the Technical Addenda was to clarify the applicability of the Technical Supplement to natural gas and light oil operations including conventional, tight and shale operations.

Since publication of the Technical Addenda, there have been four certifications for natural gas producers' sites in Canada and two certifications in the United States. Through broad stakeholder participation and engagement, there have been learnings over the past 2 years and a number of areas identified for improvement that were incorporated as revised or additional Performance Targets in the Technical Supplement. The objectives of the review have been to ensure that the Performance Targets:

- remain current with recommended best practices that evolve with time and are globally applicable;
- are clear and methods to demonstrate conformance are as quantitative and transparent as possible;
- encourage continuous improvement to strive for higher level performance over time by showing progression from level 1 to 2 to 3;
- are consistent with other global sustainability reporting frameworks such as SASB, GRI, TCFD and CDP; and
- show encouragement for going above and beyond local regulations.

The Technical Supplements to the EO100™ Standard for Responsible Energy Development serve to add specific Performance Targets under the following five Principles of the Standard for oil and gas producers seeking EO100™ certification:

- Principle 1: Corporate Governance, Transparency & Business Ethics
- Principle 2: Human Rights, Social Impacts & Community Development
- Principle 3: Indigenous Peoples' Rights
- Principle 4: Fair Labor & Working Conditions
- Principle 5: Climate Change, Biodiversity & Environment

The Performance Targets in the document reflect the expectations of multiple stakeholders regarding management and mitigation of social and environmental impacts associated with development of oil and gas resources.



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## GLOSSARY

**A/F Ratio Controller** – Air to Fuel Ratio Controller used for precise engine control to avoid methane slip emissions and work together with precise catalytic control of emissions.

**Associated Gas** – Gas produced at a well that is primarily producing oil.

**Abandonment** – The process of permanently sealing and taking a well out of service.

**Bioaccumulating Properties** - referring to chemicals that because of their persistence and ability to bioaccumulate, once exposure levels are sufficient to cause adverse effects in humans, domestic animals, or wildlife, their impacts are not easily reversed.

**Biodegradability** – referring to the use of chemicals that naturally biodegrade and are not harmful to the soil or water.

**BOE** – Barrel of oil equivalent. Using conversion factors based upon energy content and density of different production streams. Natural gas, natural gas liquids, condensate and oil can be added and converted to an equivalent oil volume.

**BTEX** – The combination of the following aromatic compounds: Benzene, Toluene, Ethylbenzene and Xylenes.

**Certifiable Unit** – The scope of the assessment area including all facilities located within the predetermined geographical area. Facilities include well pads, compressor stations, gas processing plants, batteries, water treatment/storage facilities, and both active and inactive operations. Sometimes used interchangeably with Site.

**Certified Unit** - Subsequent to the Certifiable Unit achieving EO100™ certification it is called the Certified Unit. Sometimes used interchangeably with Site.

**EOR** – Enhanced Oil Recovery. Using methods of injection into oil wells to increase and stimulate production of oil.

**EPZs** - Emergency Planning Zones. Zones in which notification and evacuation may

**ERPs** - Emergency Response Plans. Safety plans to be invoked in the case of an emergency.

**ESG** – Environmental, Social and Governance

**Exceedances** – referring in this document to instances of ambient air quality objectives or standards being exceeded.



**Extremely High Baseline Water Stress** – Categorized as extremely high (>80%) by the WRI Water Risk Atlas. Baseline Water Stress is calculated as the ratio of total water withdrawals to available renewable surface and groundwater supplies.

**Facility** – A facility is any well, well pad, compressor station, gas processing plant, battery, storage facility, water storage or treatment facility. Several facilities are included in a Certifiable or Certified Unit.

**Flaring** – The combustion of gas from a flare stack.

**Flowback** – Initial phase of well production where sand, gas, oil, and water start to flow.

**FPIC** – Free, Prior and Informed Consent

**GHG** - Greenhouse Gas emissions including but not exclusive to: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O

**Greenhouse Gas Intensity** – Amount of greenhouse gases per volume produced.

**H<sub>2</sub>S** – Hydrogen Sulphide

**High Baseline Water Stress** – Categorized as high (40-80%) by the WRI Water Risk Atlas. Baseline Water Stress is calculated as the ratio of total water withdrawals to available renewable surface and groundwater supplies.

**Induced Seismicity** – Seismic events taking place because of well drilling or hydraulic fracturing.

**LDAR** – Leak Detection and Repair

**Light Oil** – oil having a density of less than 876 kg/m<sup>3</sup> being produced by conventional, enhanced oil recovery or hydraulic fracturing methods.

**mcf** – Thousand cubic feet

**mmcf** – Million cubic feet

**NO<sub>x</sub>** – Nitrogen Oxides

**NSCR** – Non-selective Catalytic Reduction

**Paris Agreement** – Referring to the UN Paris Climate Agreement.

**Reclamation** – The process of bringing a project area back to how it originally looked before development took place on the land.

**Remediation** - The process of cleaning up any contaminated sites.

**SCR** – Selective Catalytic Reduction

**SDS** – Safety Data Sheet

**SO<sub>x</sub>** – Sulphur Oxides

**Suspension** – The process of temporarily taking a well out of service. After suspension, a well may be abandoned or brought back into service at a future date.

**TIER 4 Engine Controls** – Refers to US EPA TIER 4 on road engine regulations. Depending upon model year and engine power ratings, the emission limits for heavy duty on road vehicles to be met are at minimum NMHC < 0.14 g/bhp-hr, NO<sub>x</sub> < 0.2g/bhp-hr and PM<sub>2.5</sub> < 0.01 g/bhp-hr after 2007 model year.

**Toxicity** – referring to the use of chemicals that pose risk to humans and animals when in contact with.

**TRIR** – Total Recordable Incident Rate

**VOCs** – Volatile Organic Compounds

**VRU** – Vapor Recovery Unit

**ZRF** – Zero Routine Flaring

## 1.0 SCOPE

This Technical Supplement applies to both conventional and unconventional natural gas and light oil operations. Prior to 2006, conventional oil and gas operations were the primary operations in North America. With the hydraulic fracturing advances in the early 2000's, now most new exploration and production is from unconventional sources and horizontally drilled wells. Unconventional oil and gas extraction utilizes technology commonly known as hydraulic fracturing as part of the well development process. Hydraulic fracturing operations pose unique risks and impacts to communities and the environment such as increased stress on water supplies, contamination of water supplies, adverse impacts from induced seismicity, adverse impacts due to disposal into injection wells and air pollutant concerns as well as greenhouse gases.

Other methods of extracting unconventional oil and gas resources are out of the current scope of the EO100™ Standard, including open pit mining, strip mining, underground mining, or in-situ extraction of hydrocarbons from oil sands or oil shales.

Operators are expected to implement the EO100™ Standard in full and reference this Technical Supplement to ensure that, for the following environmental, social and governance (ESG) Performance Targets, Certifiable Units meet the intent of the Performance Targets' applicability to oil and gas operations.

## 2.0 SUMMARY OF EO100™ PRINCIPLES AND OBJECTIVES

Table 1 summarizes the 5 Principles covered in the Standard and the Objectives under each Principle. This Technical Supplement does not add Performance Targets under every Objective covered in the Standard but only those that have specific requirements for oil and gas operations. Those Objectives with additional Performance Targets covered in this Technical Supplement are highlighted in darker orange in Table 1.

**Table 1: Summary of EO100™ Principles and Objectives**

Principle 1: Corporate Governance, Transparency & Ethics	Principle 2: Human Rights, Social Impacts & Community Development	Principle 3: Indigenous Peoples' Rights	Principle 4: Fair Labor & Working Conditions	Principle 5: Climate Change, Biodiversity & Environment
1.1 Legal Compliance	2.1 Human Rights	3.1 Free, Prior & Informed Consent (FPIC)	4.1 Labor & Working Conditions	5.1 Environmental Management & Mitigation
1.2 Financial Disclosure	2.2 Fair, Inclusive Engagement & Good Faith Consultation	3.2 Engagement & Participation	4.2 Child Labor	5.2 Emergency Preparedness & Response Planning
1.3 Bribery, Corruption, Money Laundering & Financing of Terrorism	2.3 Human Rights & Security Personnel	3.3 Cultural Impacts	4.3 Forced Labor	5.3 Energy Efficiency
1.4 Management Systems	2.4 Land Rights	3.4 Use of Traditional Natural Resources	4.4 Freedom of Association & Collective Bargaining	5.4 Waste Production & Management
1.5 Contractors	2.5 Resettlement	3.5 Culture-Based Intelligence & Traditional Knowledge	4.5 Equal Opportunities & Treatment	5.5 Remediation of Environmental Liabilities
1.6 Transparency & Disclosure	2.6 Uncontrolled Settlements	3.6 Voluntary Isolation	4.6 Working Hours & Leave	5.6 Closure & Restoration
	2.7 Community Health & Safety		4.7 Remuneration	5.7 Greenhouse Gas Emissions
	2.8 Sustainable Community Investment		4.8 Workplace Grievances	5.8 Ozone Depletion
	2.9 Cultural Heritage		4.9 Occupational Health & Safety	5.9 Biodiversity & Ecology
	2.10 Grievance Mechanism		4.10 Workplace Emergency Preparedness & Response Planning	5.10 Air
				5.11 Water
				5.12 Land
				5.13 Land Restoration
				5.14 Visual & Ambient Impacts
				5.15 Chemical Management

### 3.0 PRINCIPLE 1: CORPORATE GOVERNANCE, TRANSPARENCY & BUSINESS ETHICS

#### 3.1 Objective 1.4: Management Systems

The goal of this Objective is to ensure that the Operator implements effective social and environmental management systems including risk identification, assessment, impact management and mitigation, and monitoring and evaluation of impacts at each stage of the project life cycle. Table 2 contains an additional Performance Target for oil and gas operations that covers setbacks.

**Table 2: Objective 1.4 Performance Targets**

Performance Target Level		
1	2	3
101.1.4.1: Where operations encroach into urban and suburban environments, Operator engages and consults affected communities regarding appropriate setbacks (i.e., the distance between residential, commercial, or other potentially sensitive land use areas and well sites) in cases where regulation does not align with stakeholder expectations or does not exist.	-	-

#### 3.2 Objective 1.6: Transparency and Disclosure

The goals of Objective 1.6 are to ensure that the Operator provides stakeholders with free and reasonable access to information about the Operator’s social and environmental policies, activities, and performance. This section was enhanced in the most recent review to include performance targets related to a company’s corporate GHG policies and ensuring that those align with the UN Paris Climate Agreement. Table 3 lists the additional Performance Targets under this Objective.

**Table 3: Objective 1.6 Performance Targets**

Performance Target Level		
1	2	3
-	101.1.6.4: Operator provides affected communities with up-to-date information regarding ongoing uncertainties and risks of oil and gas development, including quantitative documentation of uncertainties when appropriate and practicable (e.g., quantified probabilities of risks to water or other resources, and characterization of resulting consequences).	-
101.1.6.1: Operator discloses the amount of administrative and non-administrative fines issued and the number of sanctions ("Notices of Violation") for violation of environmental laws and regulations.	-	-
101.1.6.2: Operator shall disclose its climate lobbying position and report on how its goals and direct lobbying activities are in the line with the Paris Agreement.	101.1.6.5: The Operator discloses all trade association memberships and has a policy commitment to ensure that their lobbying activities are in line with the Paris agreement.	101.1.6.7: Operator publishes a review of lobbying activities and positions of the trade associations in which they are a member to ensure they lobby in accordance with the Paris Agreement. If the review of the trade association's lobbying



Performance Target Level		
1	2	3
		activities shows misalignment with the goals of the Paris Agreement, the operator reports on the actions it has taken in response, including the leaving the association.
101.1.6.3: Operator sets corporate GHG intensity reduction targets (short, medium, and long term) in line with requirements under the Task Force on Climate-Related Financial Disclosures (TCFD) with plans to align with requirements to meet the Paris Agreement which includes a strategy towards net-zero emissions by 2050 or sooner.	101.1.6.6: Operator shows progress towards meeting the targets set under PT1 and that they are on a trajectory to meet or exceed their corporate ambition.	101.1.6.8: Operator has achieved net zero in its corporate operations.

## 4.0 PRINCIPLE 2: HUMAN RIGHTS, SOCIAL IMPACTS & COMMUNITY DEVELOPMENT

### 4.1 Objective 2.2: Fair, Inclusive Engagement & Good Faith Consultation

The goal of this Objective is to ensure that the Operator identifies and engages honestly, frequently and collaboratively with all project-affected stakeholders through a process of fair, representative, and non-discriminatory consultation. Operator allows for meaningful input into project-related decisions, practices, and performance by those stakeholders before and during the full project cycle.

**Table 4: Objective 2.2 Performance Targets**

Performance Target Level		
1	2	3
101.2.2.1: Operator conducts meaningful community engagement and consultation around project risks and impacts that allows for broad participation of local communities.	-	-

### 4.2 Objective 2.7: Community Health & Safety

The goal of this objective is to ensure that the Operator promotes community health, including monitoring indicators of community health and by communicating risks and managing incidents quickly and efficiently to avoid or minimize the risk of community exposure to health and safety hazards and the risk of impacts on ecosystem services. Table 5 summarizes the additional Performance Targets applicable to oil and gas operations.

**Table 5: Objective 2.7 Performance Targets**

Performance Target Level		
1	2	3
101.2.7.1: Where operations encroach into urban and suburban environments, Operator engages and consults affected communities regarding appropriate setbacks (i.e., the distance between residential, commercial, or other potentially sensitive land use areas and well sites) or additional control measures and safeguards that could be implemented in cases where regulation does not align with stakeholder expectations or does not exist, where appropriate and practicable.	101.2.7.3: Operator uses risk-based approach to determine and consistently apply setbacks from occupied buildings such as houses, schools, churches, and commercial establishments and from potentially sensitive land use areas; and related concerns of local community stakeholders during the siting process. Within the Certifiable Unit, different areas such as wastewater pits, wastewater treatment plans, wells, may require specific setback limits.	-
101.2.7.2: Operator gathers and uses information about community road use to avoid negatively affecting the health of local community members such as ensuring safe driving practices, minimizing use of roads during peak hours and taking special precautions near schools (see also 1.4 Management Systems: Secondary & Cumulative Impacts).	101.2.7.4: Operator adjusts activity schedules to prevent or reduce traffic congestion and maintains a record of associated traffic accidents.	-
-	101.2.7.5: Operator evaluates road damage caused by its operations and compensates for or remediates any negative impacts.	-

### 4.3 Objective 2.8: Sustainable Community Investment

The goal of this Objective is to ensure that the Operator supports the development of communities where operations take place through community-led initiatives that promote sustainable improvements in the quality of life of affected communities. Table 6 summarizes the additional Performance Target 2 applicable to oil and gas Operators.

**Table 6: Objective 2.8 Performance Targets**

Performance Target Level		
1	2	3
-	101.2.8.1: Operator sets targets for and records local job creation. Operator communicates anticipated job creation numbers and reports actual job creation figures over the course of the project.	-

### 4.4 Objective 2.10: Grievance Mechanism

The goal of this Objective is to ensure that the Operator establishes an accessible, transparent, culturally appropriate, trustworthy, and inclusive project-level grievance mechanism for individuals and communities who may be adversely impacted by development activities.

**Table 7: Objective 2.10 Performance Targets**

Performance Target Level		
1	2	3
101.2.10.1: Operator identifies community impact concerns and responds to them. Concerns are discussed and appropriate responses are prepared, budgeted, implemented, and monitored. Operator maintains statistics on local community concerns and reports them to senior management and back to the local community.	-	-

## 5.0 PRINCIPLE 3: INDIGENOUS PEOPLES' RIGHTS

### 5.1 Objective 3.1: Free, Prior & Informed Consent (FPIC)

The goal of this Objective is to ensure that the Operator obtains FPIC of the affected communities of Indigenous Peoples when the project activities may affect the rights of Indigenous Peoples as established in the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169 on Indigenous and Tribal Peoples, and in the constitution of the country of operation.

**Table 8: Objective 3.1 Performance Targets**

Performance Target Level		
1	2	3
101.3.1.1: Operator obtains Free, Prior and Informed Consent (FPIC) for the disposal or long-term storage of hazardous materials on the lands or territories traditionally occupied or otherwise used or acquired by Indigenous Peoples.	-	-
101.3.1.2: Operator obtains FPIC for transport, transfer, or injection of wastewater, flowback and produced water, or other by-products within Indigenous lands, territories, or resources, or in areas from which chemicals in wastewater could migrate to Indigenous lands, territories, or resources.	-	-
101.3.1.3: Operator obtains FPIC for extraction of water for operational activities where the water is drawn from sources within Indigenous lands, territories, and resources or from water bodies on which the reliability of those sources depend.	-	-

## 6.0 PRINCIPLE 4: FAIR LABOR & WORKING CONDITIONS

### 6.1 Objective 4.9: Occupational Health and Safety

The goals of Objective 4.9 are to ensure that the Operator respects the right to health by providing safe and healthy working conditions for directly and indirectly employed workers. Table 9 summarizes the additional Performance Targets applicable to oil and gas operations.

**Table 9: Objective 4.9 Performance Targets**

Performance Target Level		
1	2	3
101.4.9.1: Operator conducts due diligence when hiring contractors regarding health & safety issues; ensures contractor conformance with operator's health & safety policies and evaluates health & safety performance of contractors. Contractors must meet any applicable training and safety levels required of employees.	101.4.9.6: Operator regularly monitors worker health, especially where employees are exposed to hazardous chemicals, naturally occurring radioactive materials from flowback or produced water, and/or hydrocarbons. Worker health monitoring includes but is not limited to: · Silicosis, respiratory illnesses and dermal diseases associated with hydrocarbon exposures · Upper respiratory, neurological, gastrointestinal, and dermatological symptoms associated with hydrocarbon exposures and exposures to chemicals used in hydraulic fracturing.	-
101.4.9.2: Operator minimizes risk of traffic accidents by ensuring all employees and contractors receive comprehensive worker training on driving safety, including driving heavy vehicles in residential or commercial areas.	-	-
101.4.9.3: Operator ensures chemical labeling, training, Personal Protective Equipment (PPE), secondary containment and monitoring	-	-



Performance Target Level		
1	2	3
procedures are in place to safely manage the handling, storage, and disposal of chemicals.		
101.4.9.4: Operator conducts hazard risk assessments, including explosion risks, and develops risk management plans to mitigate incidents.	101.4.9.7: Any airborne or waterborne health impacts identified should trigger additional impact evaluations for nearby populations in potentially affected communities.	-
101.4.9.5: Operator provides a discussion of management systems used to integrate a culture of safety in all operations within the Certifiable Unit including training provided to employees and contractors and frequency of safety inspections.	101.4.9.8: Operator discloses (1) Total recordable incident rate (TRIR) including number of fatalities occurring within the Certifiable Unit for the past 1 year, 2 years, and 3 years preceding the assessment. Incident rate includes any recordable incident that occurs including incidents involving contractors or short service employees. Statistics and learnings are shared within the corporation to other business units.	101.4.9.9: Operator provides a discussion of learnings from incidents or near misses over the course of the 3 years preceding the assessment. The discussion is shared among trade associations, peer operations or publicly disclosed and best practices show evolution with time.

## 6.2 Objective 4.10: Emergency Preparedness & Response Planning

The goal of this Objective is to ensure that the Operator has the capacity to respond to operational emergencies and incidents in a manner which prioritizes worker health and safety.

**Table 10: Objective 4.10 Performance Targets**

Performance Target Level		
1	2	3
101.4.10.1: Operator provides proper training for onsite workers in case any exposure to hazardous materials and pays for the proper emergency equipment. Operator ensures emergency protective equipment is accessible and available for immediate use.	-	-

## 7.0 PRINCIPLE 5: CLIMATE CHANGE, BIODIVERSITY, & ENVIRONMENT

### 7.1 Objective 5.2: Emergency Preparedness and Response Planning

The goals Objective 5.2 are to ensure that the Operator prepares for, communicates, and demonstrates its capacity to respond to, environmental incidents, releases, and emergencies. There is a particular focus on ensuring that the company promotes a culture of safety by learning from incidents and improving practices as a result of any incident.

**Table 11: Objective 5.2 Performance Targets**

Performance Target Level		
1	2	3
101.5.2.1: Operator has developed/adopted and implemented engineering specifications, construction practices, operational procedures, contingency plans, appropriate equipment, and permanent control points to minimize the risk of spills and evaluates the contingency plans at least annually. Operator has procedures in place for responding to spills and releases, including local experts and specialists that are technically qualified to respond to emergencies in a timely manner.	-	-
101.5.2.2: Operator shall disclose the volume and number of hydrocarbon spills over a threshold of 1 barrel (IPIECA spill guidance) and all chemical spills to soil and water annually to the environment outside of primary and secondary containment.	-	-
101.5.2.3: Operator demonstrates that root causes and contributing factors to spills have been thoroughly investigated.	101.5.2.5: Corrective measures have been adopted and learnings from incidents have been incorporated into operational protocols for preventing future spills.	101.5.2.6: Spill investigation reports as well as corrective action plans are publicly available.
101.5.2.4: Operator ensures that public access to a facility where flaring occurs is restricted. Operator develops Emergency Response Plans (ERPs) and predetermines Emergency Planning Zones (EPZs) wherein any residents, businesses or schools	-	-

Performance Target Level		
1	2	3
located within the EPZs are alerted during emergency flaring situations and during periods where non-routine flaring is planned to exceed 8-hours in duration.		

## **7.2 Objective 5.5: Waste Production and Management**

The goals of Objective 5.5 are to ensure adequate treatment of wells and facilities at end of life as well as ensuring that sell-off of aging inventory is not a common practice by ensuring that the purchaser has adequate funds to abandon, remediate and reclaim sites.

**Table 12: Objective 5.5 Performance Targets**

Performance Target Level		
1	2	3
101.5.5.1: Within Certifiable Unit, operator discloses a list of active fields or facilities with decommissioning plans, fields and facilities that have been decommissioned, and those fields and facilities in the process of being decommissioned.	-	-
101.5.5.2: Operator discloses total amount of financial provisions made by the organization for decommissioning and closure, as well as post-decommissioning and closure monitoring and aftercare for their fields and facilities.	101.5.5.5: Operator conducts a risk-based analysis of liabilities to prioritize closure and remediation. Factors that should be considered are age, presence of H <sub>2</sub> S, and proximity: livestock, known wildlife habitats, communities, residences, ground, and surface water.	-
101.5.5.3: Operator ensures proper end of life treatment of wells to reduce the risk of public liabilities. Operator commits to and discloses planned timelines relative to the age of the well for suspending (shut-in, suspended or temporarily abandoned), abandoning and reclaiming wells.	101.5.5.6: Operator commits to managing 10% per year of their long-term inactive property inventory (wells that have been inactive for more than six years) over the following 10 years by: a. abandoning, remediating and reclaiming the property; or b. bringing the property back into productive use; or c. after properly plugging and	101.5.5.7: Operator commits to managing 20% per year of their long-term inactive property inventory (wells that have been inactive for more than six years) over the following 10 years by: a. abandoning, remediating, and reclaiming the property; or b. bringing the property back into productive use; or c. after properly plugging and abandoning the well in



Performance Target Level		
1	2	3
	abandoning the well in accordance with regulatory requirements or industry best practices, whichever is more stringent, leaving the land in a form requested by the landowner, provided it complies with all regulatory requirements.	accordance with regulatory requirements or industry best practices, whichever is more stringent, leaving the land in a form requested by the landowner, provided it complies with all regulatory requirements.
101.5.5.4: Before divesting assets, Operator conducts a due diligence process in which they confirm that the buyer has adequate financial means to close, abandon and reclaim facilities and wells when they reach end of life.	-	-

### 7.3 Objective 5.7: Greenhouse Gas Emissions

The goals of objective 5.7 are to incentivize better practice for reduction in methane and overall greenhouse gas emissions in the oil and gas sector. Table 13 contains several Performance Targets aimed at reducing venting and flaring emissions as well as quantifying methane intensity and GHG intensity and showing improvement over time.

**Table 13: Objective 5.7 Performance Targets**

Performance Target Level		
1	2	3
-	101.5.7.7: Operator estimates and quantifies scope 3 emissions, using GHG Protocol or another industry accepted protocol, due to upstream value chain at the Certifiable Unit including: (a) emissions associated with upstream processing of purchased fuels (such as diesel or propane) and (b) for midstream operators that process natural gas produced from a third-party, the midstream operator accounts for scope 3 emissions associated with the third-party production volumes processed on site.	101.5.7.12: Operator estimates and quantifies scope 3 emissions, using GHG Protocol or another industry accepted protocol, downstream of their supply chain including petrochemical production, refining into end use fuels such as hydrogen, CNG, LNG (including pathways to end use) and combustion of natural gas. Note: estimates of downstream emissions using emission factors is permissible.
101.5.7.1: Operator reports methane intensity at the Certifiable Unit following the NGSi intensity calculation methodology for each segment in which the Certifiable Unit has operations: production, gathering and boosting, and processing.	101.5.7.8: Operator joins OGMP 2.0 and demonstrates annual reductions in methane intensity in each segment in which the Certifiable Unit has operations: production, gathering and boosting and processing.	101.5.7.13: Operator quantifies and reports methane emissions at level 4 or 5 under OGMP 2.0.
101.5.7.2: Operator employs best management practices to control methane emissions at all	101.5.7.9: Operator employs good design/operating practices to new facilities	101.5.7.14: Operator employs best design practices to new

Performance Target Level		
1	2	3
facilities and well pads included within the Certifiable Unit and documents efforts in a methane management plan. These best management practices include: training employees and implementing a leak detection and repair program at all facilities and well pads; training operators to look for leaks and report promptly any indication of leaks; repair leaks at the earliest practicable timeframe according to leak management plan and implementing best management practices to avoid methane emissions such as training operators on proper well unloading and blowdown practices, ensuring proper tank handling, ensuring proper flare operation and proper compressor maintenance. Operator installs low-bleed or no-bleed pneumatic devices at all facilities and well pads within the Certifiable Unit.	or modifications to existing facilities including: (a) replacing wet seal with dry seal on compressors and employing enhanced maintenance schedules, (b) non-venting unloadings, (c) green completions with infrastructure takeaway in place, (d) enhanced flare functionality systems to ensure highest efficiency, (e) management plan to minimize emissions of commodities transferred to and from site (water and produced gas) and (f) all new facilities and well pads built with no-bleed pneumatic devices.	facilities or modifications to existing facilities including: (a) use of no-bleed pneumatic controllers, (b) vapour recovery systems installed on compressors and tanks to capture leaks, (c) installing vapour capture on well casings, (d) including advanced detection technologies such as continuous monitoring.
101.5.7.3: Operator has policies and procedures in place to eliminate both routine associated gas venting and non-routine venting of gas. During shut-downs, completions, well testing or during production, operator either captures gas, or re-routes to flare or incinerator instead of venting.	-	-

Performance Target Level		
1	2	3
101.5.7.4: Operator employs semi-annual LDAR at minimum at all facilities and well pads within the Certifiable Unit.	101.5.7.10: Operator employs quarterly LDAR surveys, at minimum, at all facilities and well pads within the Certifiable Unit.	101.5.7.15: Operator employs quarterly LDAR surveys and annual top-down surveys at all facilities and well pads within the Certifiable Unit.
101.5.7.5: Operator ensures flares/combustion devices are operating properly by use of monitoring devices to ensure proper ignition (i.e. Unlit flares are unacceptable).	101.5.7.11: Operator progressively reduces routine flaring intensity on a production or throughput basis at its ongoing operations and provides evidence of year over year reduction in flaring intensity.	101.5.7.16: Certifiable Unit achieves zero routine flaring (ZRF).
101.5.7.6: Operator reports GHG emission intensity of the Certifiable Unit for each of the segments in which they operate within: 1) Production and 2) gathering/boosting and processing according to the EO Carbon Intensity Quantification Methodology which includes both Scope 1 and Scope 2 emissions.	101.5.7.12: Operator shows annual improvement in GHG emission intensity of the Certifiable Unit in each of the segments in which they operate within: 1) Production and 2) gathering/boosting and processing.	101.5.7.17: Operator achieves near-zero GHG emissions intensity of the Certifiable Unit in each of the segments in which they operate within: 1) Production and 2) gathering/boosting and processing.

#### **7.4 Objective 5.10: Air**

The goals of Objective 5.10 are to ensure that the Operator's activities improve or do not negatively affect the air quality in affected airsheds and that best available technology is used to control air pollutant emissions from combustion and fugitive sources.



**Table 14: Objective 5.10 Performance Targets**

Performance Target Level		
1	2	3
101.5.10.1: Operator uses best management practices to control dust. Dust suppression techniques such as enclosures and covers, spraying, irrigation, stabilization, and revegetation of cleared land. Project roads should be sealed as far as practicable to minimize dust from vehicles.	-	-
101.5.10.2: Operator reports releases of air pollutant emissions: NO <sub>x</sub> , SO <sub>x</sub> , H <sub>2</sub> S, VOCs, and PM <sub>2.5</sub> from processing plants, compressor stations, well pad operations, and drilling and completions and ensures compliance with any applicable regulatory requirements regarding air pollutant emissions.	101.5.10.4: Operator employs best management practices to control air pollutant emissions at operations. Where diesel engines use the lowest sulfur content fuel available in the area and employ TIER 3 or 4 emission controls for both NO <sub>x</sub> and PM <sub>2.5</sub> . Sulfur oxides are controlled by using the best available sulfur recovery technologies, natural gas engines and boilers/heaters employ emission controls for NO <sub>x</sub> .	101.5.10.6: Operator employs best practices to control air pollutant emissions at operations. Hydraulic fracturing operations use natural gas engines or combination electric hydraulic fracturing units with natural gas generators instead of diesel engines. Natural gas engines and boilers employ emission controls for NO <sub>x</sub> (SCR, NSCR) and methane slip (A/F ratio controllers, vapour recovery systems).
101.5.10.3: Operator considers effects of the operations on ambient air quality by doing any of the following: a. belonging to a monitoring network, b. random sampling of	101.5.10.5: Operator regularly monitors ambient air quality in the site vicinity through either site level continuous air quality monitoring or through	101.5.10.7: Operator summarizes and discloses incidents of ambient air quality exceeding local ambient air quality objectives or standards set in place by

Performance Target Level		
1	2	3
ambient air quality within the site, c. passive monitoring of ambient air quality within the site, d. performing an impact assessment to determine minimal or negligible effects expected on the ambient air quality, or e. show evidence of ambient air quality not materially affected at nearby monitoring stations over a year's time frame. Operator discloses which methods were used (from a, b, c, d, e above).	participation in the local airshed monitoring network.	regulatory bodies and contributes to understanding of the root cause of the exceedances. Evaluates operations at the time of the exceedances to determine if site contributed an excessive emission level (higher than under normal operating conditions such as during emergency shutdowns).

## 7.5 Objective 5.11: Water

The goals of Objective 5.11 are to ensure that the Operator's activities improve or do not negatively affect the quality and quantity of groundwater or surface water in affected terrestrial and marine areas. Discharges to water meet or exceed international standards and have no negative impacts on human health, ecosystem health and the use of water to meet social, cultural, economic, and environmental needs. There are numerous Performance Targets under this Objective specifically applicable to the oil and gas sector in response to stakeholder concerns over significant adverse effects on water quality and supply possible due to hydraulic fracturing operations.

**Table 15: Objective 5.11 Performance Targets**

Performance Target Level		
1	2	3
101.5.11.1: Operator does not use surface water for enhanced oil recovery operations, unless approved by the relevant government permitting authority.	-	-
101.5.11.2: Operator respects water rights and water use rights of local and Indigenous communities, both formal and informal, that are affected by the site's water use. In countries where water rights are commoditized, fair compensation is made to appropriate parties for acquisition of the necessary water.	-	-
101.5.11.3: Operator assesses and documents freshwater use by measuring water use from all sources: aquifer, river, basin, catchment. Operator assesses and reports methods to reduce overall water use.	101.5.11.18: Operator develops local source water protection plans that include addressing regional water risks, engaging with key stakeholders, and supporting projects that improve watersheds and aquifers.	-
101.5.11.4: Operator manages impacts related to storm water and extreme flow events.	101.5.11.19: Operator monitors surface water withdrawals tied to seasonal flows to ensure flow rates are not significantly impacted considering cumulative impacts and are in line with local regulations and with sustainability of local community access and use where regulations do not exist.	-
101.5.11.5: In areas with high baseline water stress, operator assesses drilling and completion plans	101.5.11.20: In areas with high baseline water stress, operator manages risks associated with well-bore	-

Performance Target Level		
1	2	3
including projected water needs for re-fracturing against potential long-term water constraints.	integrity challenges that may occur for old wells and takes appropriate actions.	
101.5.11.6: In areas of high baseline water stress, operator does not use water for hydraulic fracturing from a source that is also used as a source for a community water supply.	101.5.11.21: Operator works with local communities to conduct joint monitoring of water resource impacts.	-
101.5.11.7: Operator ensures the integrity of the casing to reduce the risk of leakage of fracturing fluids, saline formation water or hydrocarbons into a shallow aquifer due to imperfect sealing of the cement column around the casing. Operator ensures that wells are properly sealed before perforation and stimulation.	101.5.11.22: Operator undergoes an independent review of groundwater contamination using qualified independent groundwater geologists when contamination is suspected.	-
101.5.11.8: Operator employs annular pressure monitoring and an annular pressure management program to ensure well-bore integrity over time. Pre-frac modeling should be performed when the interval to be stimulated is near protected water.	101.5.11.10: Operator conducts baseline and post-completion sampling of individual drinking/agricultural water wells and surface water within a minimum radius of 2,500 feet, or regulator limit, whichever is greater, prior to drilling and following completion of wells. Testing includes levels of hydrocarbons, arsenic, mercury and total dissolved solids in aquifers and surface streams.	-
101.5.11.9: Upon final abandonment, operator ensures the integrity of plug and abandonment measures and the isolation of freshwater aquifers	-	-

Performance Target Level		
1	2	3
101.5.11.11: Operator mitigates risk of spills at the surface through secure storage of hazardous chemicals on site, preferably fully contained in stable, weather-proof storage facilities. Volumes are minimized by expedited treatment, recycling, or disposal.	-	-
101.5.11.12: Operator verifies the location of aquifers prior to stimulation via hydraulic fracturing. Where appropriate, computer simulations that include all available geologic information, the presence of faults, stress regimes and the presence of existing wells, either active or abandoned, are performed to understand the propagation and vertical growth of the induced fractures, taking into account the impact of the presence of wells and faults.	-	-
101.5.11.13: Operator uses and discloses minimum-depth limitations on hydraulic fracturing, based upon local hydrogeologic conditions. Minimum-depth limitations meet or exceed local regulations.	-	-
101.5.11.14: Operator employs best management practices for storage of fluids and flowback water in tanks including methods to control vapour releases to ambient air.	-	-

Performance Target Level		
1	2	3
101.5.11.15: Operator discloses total volume of freshwater use, and recycled water use annually for the site for well drilling, production, and completion.	101.5.11.23: Operator sets freshwater use intensity targets (per BOE production) and reports at the site level annually on progress to meeting those targets.	-
101.5.11.16: Operator has a policy to use non-potable or brackish water whenever technically and economically feasible.	101.5.11.24: Over 80% of water usage for hydraulic fracturing operations is recycled water.	101.5.11.26: Over 90% of water usage for hydraulic fracturing operations is recycled.
101.5.11.17: Operator discloses (1) total fresh water withdrawn (2) total fresh water consumed and the percentage of each in regions of High or Extremely High Baseline Water Stress.	-	-
-	101.5.11.25: Operator stores fluids to be injected and flowback water in closed tanks. Operator does not use pits or impoundments for any liquid other than freshwater except in the case of emergency containment of fluids.	-



## 7.6 Objective 5.12: Land

The goals of Objective 5.12 are to ensure that the Operator minimizes deforestation or the clearance of land in line with the Mitigation Hierarchy as well as hold the Operator accountable to potential seismic events caused by hydraulic fracturing operations.



**Table 16: Objective 5.12 Performance Targets**

Performance Target Level		
1	2	3
101.5.12.1: Operator develops policies to invoke response plans and halt fracturing operations if seismic events beyond appropriate thresholds are triggered. Applicable to both drilling and completions and injecting wastewater.	101.5.12.5: Operator evaluates available 2D or 3D seismic data to identify potential faults before drilling and completions. If relevant data do not exist, operator obtains and interprets new data prior to drilling and completion activities.	101.5.12.8: If seismic events do occur, operator takes action to compensate for any impacts such as property damage evaluated through an independent, mutually agreed upon, third-party.
101.5.12.2: For injection wells, operator minimizes the risk of coming into contact with freshwater aquifers by proper well design and regular testing of injection well integrity.	101.5.12.6: Operator evaluates available 2D or 3D seismic data to locate potential faults before injecting wastewater. If relevant data do not exist, operator obtains and interprets new data prior to wastewater injection.	-
101.5.12.3: Operator minimizes operation's physical footprint by maximizing the number of wells on one pad.	101.5.12.7: Where practical, operator co-locates infrastructure (e.g. roads and pipelines in the same right of way) to minimize surface disturbance.	101.5.12.9: Operator evaluates landscape-level and potential cumulative impacts if a high number of wells is required for full field development and develops and implements mitigation measures in consultation with local communities.
101.5.12.4: Operator evaluates and reports potential risks and impacts to wildlife migratory corridors and habitat for species	-	-

Performance Target Level		
1	2	3
native to the site area when locating infrastructure.		

## 7.7 Objective 5.15: Chemical Management

The goals of Objective 5.15 are to ensure that the Operator publicly reports on chemicals used and evaluates and uses chemicals that are safer, less toxic and have higher biodegradability and less bioaccumulating properties than traditionally used chemicals used in hydraulic fracturing operations.

**Table 17: Objective 5.15 Performance Targets**

Performance Target Level		
1	2	3
101.5.15.1: Operator develops screening tools to analyze the risks associated with each chemical used and requires increasing levels of management approval for higher toxicity/dangerous chemicals.	-	-
101.5.15.2: Operator publicly reports progress in reducing volumes of toxic chemicals used, as well as substitution of less-toxic chemicals used in its operations. Operator includes all chemicals such as corrosion inhibitors, acids, solvents and lubricants in the progress report and reduction plans.	101.5.15.5: Operator evaluates safer and eco-friendly alternatives to corrosion inhibitors and acids commonly used in all processes and demonstrates use of safer and eco-friendly alternatives by public disclosure.	-
101.5.15.3: Where trade secret protection is asserted, such assertions are made public and substantiated by a public body, where possible and in accordance with national, state, or other applicable law. Operator discloses whether chemical disclosure includes exemptions for confidential business information. Operator discloses the % of chemicals that public disclosure of is reported.	-	-
101.5.15.4: Operator does not use diesel oil, kerosene, BTEX (benzene, toluene, ethylbenzene, xylene), jet A aviation fuel, or #2 fuel oil in drilling/fracturing fluids.	101.5.15.6: Operator publicly discloses the composition of all chemicals/compounds used in the drilling, completion, and production	101.5.15.7: Operator uses hydraulic fracturing products that are low toxicity, have high biodegradability and

Performance Target Level		
1	2	3
Operator does not use or is actively moving away from using petroleum distillates.	operations including the specific chemical species, SDS numbers, concentrations, and volumes of chemicals to be used.	have low bio-accumulating properties.

## 8.0 NORMATIVE AND SUPPORTING REFERENCES

**GRI 2021.** Global Reporting Initiative. GRI 11: Oil and Gas Sector 2021.

<https://www.globalreporting.org/how-to-use-the-gri-standards/resource-center/>

**IPIECA 2020.** Sustainability Reporting Guidance for the Oil and Gas Industry. March 2020. Module 4: Environment. IPIECA, API, IOGP.

**NGSI 2019.** NGSI Methane Emissions Intensity Protocol. Final Draft. Natural Gas Sustainability Initiative. M.J. Bradley and Associates. December 2019.

**OGMP 2020.** Mineral Methane Initiative: Oil and Gas Methane Partnership (OGMP) 2.0 Framework. United Nations Environment Programme (UNEP).

**SASB 2018.** Oil & Gas – Exploration & Production. Sustainability Accounting Standard. Industry Standard version 2018-10. Sustainability Accounting Standards Board (SASB).

**The Voluntary Principles Association 2000.** Voluntary Principles on Security and Human Rights. Voluntary Principles Initiative.

**TCFD 2021.** Task Force on Climate-Related Financial Disclosures. Guidance on Metrics, Targets, and Transition Plans. October 2021.

**UN 2015.** Paris Agreement. United Nations 2015.

[https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf)

**WRI 2021.** The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard. Revised Edition. World Resources Institute (WRI) and World Business Council for Sustainable Development.

**WRI 2019.** Hofste, R., S. Kuzma, S. Walker, E.H. Sutanudjaja, et. al. 2019. “Aqueduct 3.0: Updated Decision Relevant Global Water Risk Indicators.” Technical Note. Washington, DC: World Resources Institute. Available online at: <https://www.wri.org/publication/aqueduct-30>.

## 9.0 VERSION TRACKING

Version No.	Publication Date	Substantive Revisions	Revision by	Approved by
1.0	December 2021	First Version - Original	H. Jones	S. Mills
2.0	October 2022	Moved PT 101.5.11.10 from a PT1 to a PT2 following investigation into best practices	H. Jones	EO Technical Committee