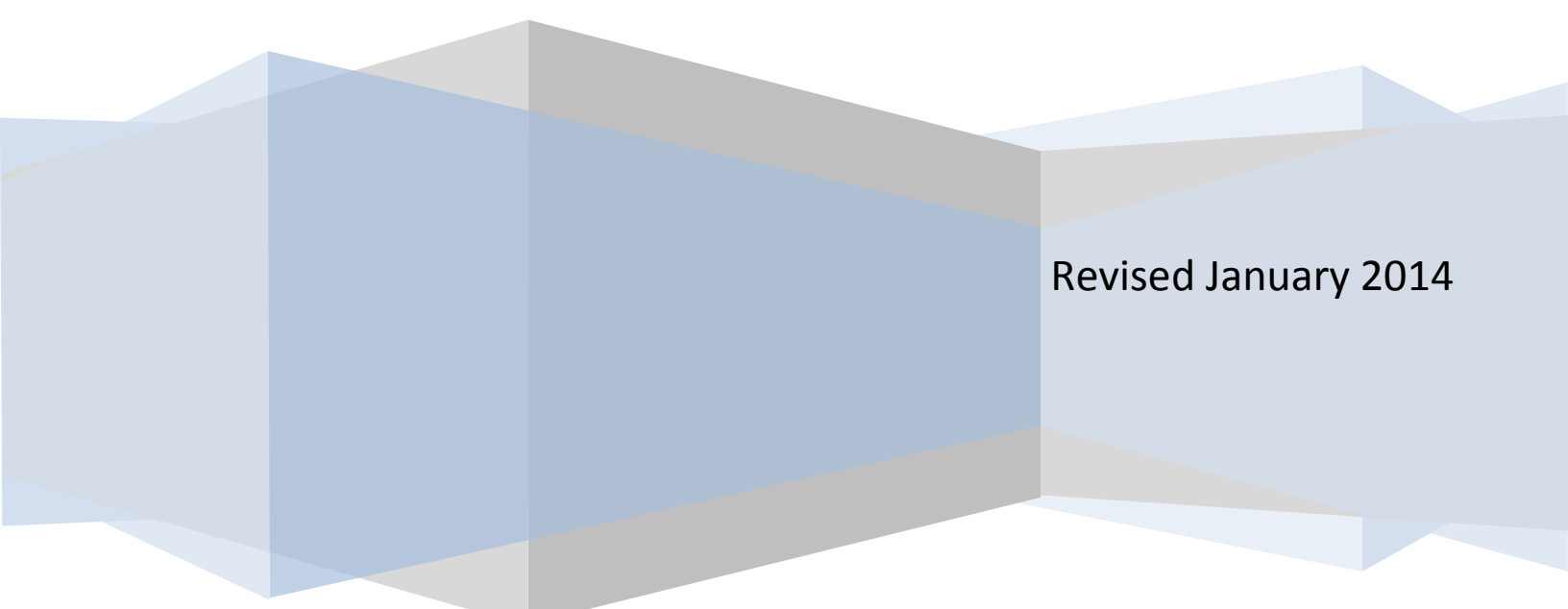


Province of British Columbia

Carbon Capture and Storage Regulatory Policy

Discussion and Comment Paper

Ministry of Natural Gas Development



Revised January 2014

Carbon Capture and Storage Regulatory Policy Discussion and Comment Paper

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1. INTRODUCTION

CONTEXT

Carbon capture and storage (CCS) is a greenhouse gas (GHG) emissions mitigation method that involves the capture, transportation and storage of industrial sourced carbon dioxide (CO₂) in the pore space of rock formations deep underground. It is an internationally recognized emissions mitigation strategy that can contribute significantly to reducing GHG emissions globally and in British Columbia.

The Government of British Columbia has passed a number of significant pieces of climate action legislation that drive the adoption of emissions mitigation measures such as CCS. Brought into force in 2008, the *Greenhouse Gas Reduction Target Act* (GGRTA) sets targets for British Columbia's emissions to be lowered by 33% by 2020 and 80% by 2050 from 2007 levels. These targets drive development of supporting legislation, regulation and policy to reduce GHG emissions.

In British Columbia the greatest potential for emissions mitigation using CCS is in the natural gas sector. This is due to the presence of large CO₂ point sources (i.e., natural gas processing plants) near suitable geological storage sites. Optimal underground storage sites for CCS are located in the area of the Western Canada Sedimentary Basin of northeast British Columbia and include deep saline formations and depleted oil and gas reservoirs.

As a method for reducing GHG emissions, CCS has been encouraged by the Province through

policy since the 2007 Energy Plan. CCS development is also one of the strategies identified for GHG mitigation by the joint government-industry Natural Gas Climate Action Working Group.

The 2012 British Columbia Natural Gas Strategy further outlined the following government actions to promote the use of CCS:

- Complete development of a regulatory framework.
- Amend legislation, if required.
- Work with the British Columbia Oil and Gas Commission to develop regulations.
- Evaluate potential projects.

Underground storage and disposal is not new to the Province of British Columbia. It has been used for decades in the oil and gas industry for temporary storage of marketable natural gas and for disposal of acid gas.¹ These types of underground storage differ from CCS primarily in their purpose and scale as CCS is explicitly developed for the purpose of GHG mitigation and the scale of a CCS project is significantly larger than is currently experienced with other storage and disposal project types.

British Columbia currently has a comprehensive regulatory regime that regulates all oil and gas industry activities. The regulation for CCS is found in the [Petroleum and Natural Gas Act \(P&NG Act\)](#) and the [Oil and Gas Activities Act \(OGAA\)](#). Additional elements are being proposed to be added to this regulatory regime in light of the larger size of CCS projects.

¹ A by-product of natural gas processing that consists primarily of hydrogen sulphide (H₂S) and CO₂.

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PURPOSE

The Ministry of Natural Gas Development (Ministry) is in the process of developing a regulatory policy framework for CCS. The proposed framework developed for CCS would apply to the use of underground storage reservoirs for any substance.²

The purpose of developing a CCS regulatory policy framework (RPF) is to: identify and address any regulatory gaps; ensure that CCS is done safely to protect the public and the environment, and provide transparency in CCS development.

A CCS RPF aims to address regulatory policy barriers to CCS projects and provide certainty to industry in order to enable CCS projects to proceed and to ultimately reduce GHG emissions.

PRINCIPLES

CCS RPF development is guided by the following design principles:

- Builds on the existing oil and gas regulatory framework currently in place
- Based on sound science and best practices
- Consistent, transparent and fair
- Outcomes and risk-based
- Long-term risk sharing between government and industry

² For the remainder of this document, the discussion will focus on CCS; however, the legislative and regulatory requirements will apply broadly to any gas storage or disposal use of a storage reservoir or associated project.

SCOPE

For the purposes of this policy framework, carbon capture and storage refers to the direct capture, transportation and storage of industrial sourced CO₂ deep underground in geological formations. The focus of the proposed framework is on the post-capture phase of CCS project development. In this regard, the proposed CCS RPF would also be applicable to CCS projects that use CO₂ sourced from industries other than the oil and gas sector including electrical power generation.

The CCS RPF does not include policy actions relating to land-based carbon storage of atmospheric CO₂ achieved through forestry and agricultural practices. The framework discussed in this paper considers key regulatory issues but does not look at commercial or market factors involved in the crediting, offsetting or verification of emission reductions.

DISCUSSION PAPER AND COMMENTS

Through this discussion paper, the Ministry is seeking feedback from stakeholders and the general public on a proposed CCS RPF to inform the development of the framework.

The discussion paper is organized into sections that reflect the various stages of a CCS project. Each section provides a summary overview of the current legislation and regulatory processes that govern a particular phase of underground storage/disposal. The section then provides an overview of key changes under consideration as to how the Ministry might address any regulatory gaps and areas needing strengthening for CCS projects. Each section

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concludes with a question to prompt your comments on the topic of that section.

Please use the response form to record your comments.

Comments received in response to this discussion paper will be used to help inform CCS regulatory policy development in British Columbia.

2. STORAGE AND DISPOSAL RIGHTS

SUMMARY OF CURRENT PROCESSES

Definition of Underground Storage Reservoir

The *Petroleum and Natural Gas Act (P&NG Act)* defines a storage reservoir as “a naturally occurring underground reservoir that is capable of being used for the introduction, disposal, storage or recovery of petroleum, natural gas, water produced in relation to the production of petroleum or natural gas, waste or any other prescribed substance.” Storage reservoirs can include oil and gas bearing formations, but also any other suitable geological formation.

Primary Uses

Under the *P&NG Act*, oil and gas operators who have tenure rights for producing natural gas or oil from a specific geological zone also have rights of disposal of substances associated with the production back into that zone. Substances produced through the production of petroleum and natural gas, including CO₂, and any other substances prescribed through regulation can be stored or disposed of into an underground reservoir. In the future, CO₂ from sources other than the production of petroleum and natural gas could be stored or disposed of into a

storage reservoir by defining the substance to be a prescribed substance under the Act.

Once prescribed, all legislation and regulations that apply to storage reservoirs as identified in the *P&NG Act* would also apply to all CCS projects that capture and store emissions.

Obtaining storage rights

Industry proponents wanting use of an underground storage reservoir must first acquire the rights to access that space – i.e. tenure for a specific geological zone under a specified land area (referred to as a parcel area). The current process for obtaining rights for underground storage was originally created for the purpose of enabling temporary underground storage of marketable natural gas.

Requests for storage reservoir tenure are made by industry through an application to the Ministry. Tenures for storage reservoirs are regulated under Part 14 of the *P&NG Act* and can be issued in the form of a licence to explore for a storage reservoir or a lease for the use of a storage reservoir. A licence to explore may be granted following a technical review of a proponent’s application and a referral process.

Section 130 of the *P&NG Act* describes the lease application process for a storage reservoir, and outlines:

1. who may apply -

The holder of a petroleum or natural gas permit, drilling licence or lease or a person who has a licence to explore for a storage reservoir may apply to the minister for a lease of a storage reservoir that is owned by the government;

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2. how they can apply -

An applicant for a lease must make the application to the minister in a form suitable to the minister; and,

3. government's response -

The minister may lease a storage reservoir that is owned by the government to a person who applies and the minister may grant a lease that is different than the one applied for or may refuse to grant a lease.

Pre-tenure review and referral process

All storage reservoir tenure requests are subject to a pre-tenure review, which involves a referral process where the Ministry seeks input on concerns and comments from local governments, First Nations, the Oil and Gas Commission (the regulator of surface and subsurface activities) and other provincial government agencies that may have specific knowledge about the parcel area.

The purpose of this referral process is to identify issues that the Ministry will take into consideration when determining whether the parcel should be made available for disposition. Considerations identified as part of the pre-tenure review may be included as caveats (i.e., conditions) in any tenure documents subsequently issued to a company.

The referral process may result in some parcels not being put forward, being reconfigured, or being "deferred" for disposition until a later date if more time is required to address an issue. The latter is done through further consultations with the respective provincial government agencies, First Nations, or local

governments. At this time, as storage reservoir exploration and development are not routine oil and gas activities, the regular referral timelines would not be applied, in order to allow the appropriate analysis to be undertaken.

If the referral process results in a successful parcel configuration with appropriate caveats, then the Ministry has the discretion to issue either a Licence to explore for a storage reservoir, or a Lease of a storage reservoir. Storage reservoir rights issued will normally be restricted to the geological zone of storage plus the required cap rock or trapping layers. Oil and gas activities, including the exploration, development and use of a storage reservoir, must be approved under the *Oil and Gas Activities Act (OGAA)* by the Oil and Gas Commission (OGC). Before applying for the approval of an activity, an applicant is required to undertake consultations with stakeholders in accordance with requirements set under OGAA.

The Landowner Notification (LON) Program was implemented in March 2008 to provide private landowners notification of an upcoming auction of provincial petroleum and natural gas rights below their property as well as information on surface lease agreements. This program applies to storage reservoir referral processes as well.

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Administration of storage reservoir rights

[The Petroleum and Natural Gas Storage Reservoir Regulation \(B.C. Reg. 350/971\)](#) gives effect to the authorities granted under Part 14 of the *P & NG Act* and provides for the administration of underground storage projects in British Columbia approved under section 131 of the *P & NG Act*. It establishes fees for processing applications for new licences and issuing new storage reservoir leases, and rentals for storage reservoir leases.

The specification of standards for the design, construction, operation and abandonment of hydrocarbon storage projects in British Columbia are regulated by the Oil and Gas Commission through the regulatory authorities in *OGAA*.

OVERVIEW OF CHANGES UNDER CONSIDERATION

Obtaining storage rights

At this present time the Ministry intends to continue to use an application process for all storage reservoir tenure requests including those requested for CCS projects. Storage reservoir licence and lease applications would continue to be adjudicated on a project by project basis at the minister's discretion.

However, in order to adequately prepare for a time when there may be competition for storage reservoirs, the Ministry is proposing to create the legal means so that, in the future the Lieutenant Governor in Council may prescribe that the competitive bid disposition process used for oil and gas tenures (section 71 or 72) apply to the disposition of storage reservoirs.

Categories of Storage Reservoir Leases

The Ministry is proposing the creation of three categories of storage reservoir lease based on a project's development stage. By using a staged lease process, government would be able to more effectively manage the use of and risks associated with a storage reservoir at different phases of project development.

The proposed lease categories are: developmental, operational, and post-closure. Each lease category would have a different purpose, term-length and right of extension. Depending upon the lease category, the lease would convey a right to develop, use (i.e., inject and recover substances) or monitor a storage reservoir in accordance with the *P & NG Act* and *OGAA*. The Minister would have discretion over whether a project moves from one category of storage reservoir lease to the next. A lease in any category could be issued with specific terms and conditions.

The Ministry is proposing that a developmental storage reservoir lease be issued for up to seven years with an option at the end of the initial term to convert to an operational lease of up to 30 years. Conversion to an operational lease would be conditional upon the applicant being able to demonstrate the appropriate use of the storage reservoir for the proposed project within the location of the lease. If not converted, the developmental storage reservoir lease could be extended at the discretion of the Minister by increments of one year to a maximum of three years to provide the applicant with additional time to meet the conversion test.

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It is proposed that upon application by the lessee, the initial term of the operational lease (up to 30 years) could be renewed for one or more additional terms of 10 years on the condition that, at the time of each renewal and to the satisfaction of the Minister, the lessee was continuing to competently and safely operate, or maintain capable of operation, a storage reservoir within the location of the lease.

A storage reservoir lease would also be subject to a periodic review every five years to determine if the project was on target to utilize the leased storage reservoir area. Following each review, if capacity utilization was not demonstrated to be on target, the Minister would reserve the option to remove unused areas from the storage reservoir lease.

New requirement to apply for a storage reservoir lease for the purpose of disposal

The Ministry is proposing to require petroleum and natural gas tenure holders to apply for a storage reservoir lease in order to be able to apply to conduct disposal operations on their tenures in the future. This requirement would ensure effective management of the zones where substances are being disposed. Crown petroleum and natural gas interests are also best served by maintaining a separation of disposal rights from production rights.

Applying for a CCS storage reservoir lease

The Ministry is proposing to clarify and strengthen the lease application process for underground storage reservoirs to be used for CCS and to include the establishment of a rigorous site characterization and selection

process. A comprehensive site selection and review process is critical to manage risk and to ensure the long-term containment needed for effective GHG emissions management. Regulatory changes would require an applicant for a CCS storage reservoir lease to prove the suitability of the proposed storage formation and to demonstrate project viability at the time of applying for a storage reservoir lease.

The Ministry intends to incorporate international best practices for CCS site selection into the storage reservoir lease application process. In order for a site to demonstrate it is viable for permanent CO₂ storage a broad range of assessments would need to be conducted and reviewed. There are currently several generalized methodologies that have been developed by experts in the CCS field that outline technical requirements for appropriate site selection. The Canadian Standards Association as part of a new standard for CCS has developed site screening and selection criteria. The Ministry may adopt this standard.

Both site selection and project planning are foundational to making sure CO₂ storage is safe and secure. The CCS RPF proposes that a preliminary project review process be incorporated into the CCS storage reservoir lease application process. CCS project proponents would be required to submit project plans as part of the CCS storage reservoir lease application.

A CCS proponent's project plan would also be required to include a community and First Nations engagement plan and outline any consultations conducted to date. The Ministry

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led pre-tenure referral process would provide additional opportunity for other government agencies, First Nations, community and public stakeholders to engage in the review process and be consulted on the proposed project.

The proposed CCS storage reservoir lease application process would provide the necessary information to decision makers as to: stakeholder concerns and viewpoints; whether the storage capacity is likely to be adequate; whether the site is suitable based on the site characterization; whether the project proposal is viable and whether the proponent would be able to meet the regulatory requirements of the OGC.

Table 1 provides details of the proposed process and the information required for a lease application.

Table 1: Applying for a CCS storage reservoir lease	
a.	The holder of a petroleum or natural gas permit, drilling licence or lease or a storage exploration licence may apply to the Minister for a storage reservoir lease for a CCS project. ³
b.	The applicant must prove the suitability of the proposed storage formation at the time of applying for a storage reservoir lease.
c.	The storage reservoir lease area applied for may include a buffer zone beyond the extent of the storage reservoir to ensure its integrity.
d.	An application will include the following: <ol style="list-style-type: none"> 1. The location and areal extent of the storage site; 2. A site characterization of the proposed storage site including: <ol style="list-style-type: none"> (a) Geology of the sedimentary succession from the storage unit to ground surface;

- (b) Fault and fracture characteristics;
 - (c) Rock properties;
 - (d) Hydrogeology and geothermics;
 - (e) In-situ conditions of pressure, temperature and stress;
 - (f) Fluid compositions and PVT (pressure, volume, temperature) behavior;
 - (g) Reservoir history;
 - (h) Well history, and
 - (i) Land features
3. The total quantity of CO₂ to be stored, the composition of CO₂ streams, the injection rates and pressures, and the location of proposed injection facilities;
 4. The site model including an assessment of the anticipated security of the storage site;
 5. A description of measures to prevent significant leakage, unintended migration or other irregularities in the storage site;
 6. A proposed monitoring plan;
 7. A corrective measures/contingency plan in the event of any significant leakage or unintended migration of CO₂;
 8. A proposed closure plan;
 9. A proposed post-closure plan;
 10. A proposed health and safety emergency response plan;
 11. Proof of the financial security of the applicant;
 12. Determination and resolution of any resource ownership conflicts that may exist;
 13. A community and First Nations' engagement plan including consultations conducted to date, and
 14. Any other information required by the Minister.

³ *Petroleum and Natural Gas Act*, Section 130.

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Evaluating a CCS storage reservoir lease and project application

The Ministry is proposing to establish a coordinated and concurrent review process of a storage reservoir lease application and CCS project by the Ministry and the OGC to ensure appropriate site selection and manage project risk.

The Ministry is proposing that a CCS review board (referred to in later sections as the Storage Reservoir Stewardship Board) be established within the OGC, to oversee the lease/project application process in conjunction with the Ministry. The proposed board could also include representatives from other government agencies such as the Ministry of Environment.

In evaluating an application for a CCS storage reservoir lease, the CCS review board would:

- Verify that the site is suitable as a storage reservoir for the proposed project in terms of storage capacity, injectivity, risk of leaks and unintended migration, and risk to health and the environment.
- Refer to third party experts, who are professionally certified and/or recognized in their field of practice, to review site characterization data, validate site risk assessments, monitoring and verification programs and mitigation plans.
- Evaluate impacts to the exploitation and recovery of other subsurface resources and consider solutions that compare and determine the values, timing of development, recovery and use of both the other resources and the storage reservoirs.

- Ensure that established mineral, petroleum and natural gas resources and rights would not be compromised by storage leases.

Resource Management considerations

In order to ensure responsible reservoir management and development of other geologic and underground resources the Ministry is proposing that:

- The Minister not issue petroleum and natural gas rights in the geological zones of a CCS storage reservoir or in any designated cap rocks.
- Geological zones that are shallower than the storage reservoirs designated cap rock could continue to be made available for disposition of petroleum, natural gas, geothermal and other mineral rights.
- The area of the storage reservoir lease (including geographical extent and geological depth) would be at the discretion of the Minister and would be based on the project's demonstrated need for storage capacity.
- A standard indemnity clause, as per a Petroleum and Natural Gas lease, would apply to storage reservoir leases.
- The storage reservoir lease agreement may not be transferred without the consent of the Minister.

COMMENTS

Q.1. Do you have any comments regarding CCS site selection and storage reservoir leases?

Please use response form

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3. GENERAL OPERATIONS AND PERMITTING

SUMMARY OF CURRENT LEGISLATION

Under the [OGAA](#), the Oil and Gas Commission (OGC) is the regulator of all oil and gas activities which includes CCS projects. The OGC has the regulatory authority for the exploration and use of storage reservoirs, facilities, wells and pipelines except where a pipeline and related facility is interprovincial in nature, where the authority lies with the National Energy Board.

Underground storage or disposal requires the regulatory approval of the OGC. Regulations for the injection and underground storage of gases currently exist to facilitate the disposal of acid gas from the natural gas processing industry and to facilitate market-based storage and withdrawal of sales natural gas. Major legal requirements for permitting under *OGAA* that currently apply to CCS are found in the following regulations:

- [Drilling and Production Regulation](#);
- [Pipeline and Liquefied Natural Gas Facility Regulation](#);
- [Geophysical Exploration Regulation](#);
- [Environmental Protection and Management Regulation](#);
- [Oil and Gas Road Regulation](#);
- [Consultation and Notification Regulation](#);
- [Fee, Levy and Security Regulation](#);
- [Administrative Penalty Regulation, and](#)
- [Oil and Gas Activities Act General Regulation](#).

The OGC provides direction to industry on its requirements through Guidance Documents such as the [Facility Application and Operations Manual](#) and the [OGC Well Completion, Maintenance and Abandonment Guidelines](#).

Operational safety

British Columbia has an established regulatory process for permitting acid gas disposal and the operation of injection sites. Operational safety is ensured through a broad range of regulatory measures including well design requirements, installation of safety valves and monitoring systems and emergency procedures. Acid gas disposal wells and related infrastructure must meet rigorous safety design, far above a normal production or service well. The injection well must be designed and operated to prevent accidental release of the acid gas. Well casing design criteria, established to protect shallow groundwater sources, must be adhered to. Monitoring of wellhead gas composition, injection pressure, temperature and rate is required. Operators are also required to have a detailed emergency response plan. An Emergency Planning Zone must also be established around the injection well in the case of an accidental release of acid gas. The area surrounding the injection site must contain H₂S detection and alarm systems and remote shutdown stations.

Operators must obtain an approval to operate as a Special Project under section 75 of the *OGAA*. An [Acid Gas Disposal Well Application Guideline](#) is available online to assist proponents. OGC assessments of applications are site specific and include evaluation of the confining system, injection zone and existing

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well bores. Emphasis of the OGC evaluation is on long-term containment, safety and resource conservation. A proposal to dispose into a deep water-saturated formation must be shown to have no adverse effects on hydrocarbon potential or usable water. Operating approvals that are issued contain numerous specific operational and reporting requirements. This includes wellbore integrity management criteria, safety criteria and monitoring and reporting requirements.

Consultation and Notification

The OGC has the responsibility and authority to ensure that the Crown's legal obligations, to consult First Nations and accommodate if appropriate, are fulfilled with respect to decision making on oil and gas activities including CCS where activities have the potential to adversely impact First Nation rights. As with other oil and gas activities, where there is potential to adversely impact First Nation rights, CCS operational permit applications will be referred to First Nations for their input and advice on the manner that potential adverse impacts could be avoided or mitigated.

Landowners and other stakeholders also have an opportunity for input on the development of natural gas and petroleum activities. Companies are required to conduct an engagement process with potentially affected persons before they submit an application for a permit to conduct an oil and gas activity which includes disposal and injection activities. Requirements under the Consultation and Notification Regulation ensure the concerns of landowners, and other affected persons are addressed and taken into

consideration by industry operators who are seeking operational permits.

In order to locate an oil and gas activity on private land, an oil and gas operator must either have a surface lease agreement with the landowner or an order from the Surface Rights Board authorizing the entry, occupation or use of the land (section 142 of the *P&NG Act*). A landowner is entitled to compensation for the entry, occupation or use of land.

OVERVIEW OF CHANGES UNDER CONSIDERATION

Operations and Approvals

The core obligations of operators under *OGAA* would apply to CCS operations as per current legislation, which includes CCS as an oil and gas activity.

The Ministry is proposing that CCS operators would follow the regulatory process for acid gas disposal projects and therefore be required to obtain OGC approvals for:

- Special Project status;
- Drilling and operating injection well(s);
- Drilling monitoring well(s), and
- Developing facilities and pipelines.

Operators would also submit an application to operate a CO₂ injection plan which would include among other items as deemed necessary by the OGC:

1. A description of the mechanisms of geologic confinement that would prevent channelling of CO₂;
2. A public health, safety and emergency response plan;

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3. A worker safety plan;
4. A corrosion monitoring and prevention plan, and
5. A facility and storage reservoir leak detection and monitoring program.

Adoption of Standards

The Canadian Standards Association has developed Canada's first CCS Standard (CSA Z741) which lays out broad operational requirements for CCS. CSA Z741 establishes a standardized approach to CCS projects consistent with industry best practices and regulatory requirements. The new standard is a bi-national standard for both Canada and the United States. The new standard will also be used as a basis for an international standard which is currently under development through the International Organization for Standardization (ISO).

The OGC participated in the development of CSA Z741 and has now adopted the standard, pursuant to sec. 80 of the Drilling and Production Regulation under OGAA. The CCS RPF confirms the adoption of CSA Z741 by the OGC.

COMMENTS

Q.3. Do you have any comments on CCS operations and permitting or the proposed changes?

Please use response form

4. MONITORING

SUMMARY OF CURRENT LEGISLATION

Monitoring of operational activities is currently required in British Columbia to ensure safe performance of natural gas and its constituent parts (i.e., H₂S and CO₂) during exploration, production, processing, transportation and re-injection. The regulatory authority to permit, inspect and enforce monitoring requirements is held by the OGC.

Current requirements for monitoring are found under various regulations depending on the activity. For example, monitoring of operations such as acid gas disposal facilities are found under Part 7 – “Safety, Security and Pollution Prevention” of the OGAA Drilling and Production Regulation. Pipeline monitoring, on the other hand, constitutes part of a pipeline integrity management program as outlined in CSA Z662; the standard required under the Pipeline and Liquefied Natural Gas Facility Regulation of OGAA.

Monitoring is a vital component of safety procedures for acid gas re-injection projects. Surface monitoring of acid gas injection facilities and disposal wells is currently required. The acute toxicity of H₂S warrants increased safety measures. Operators are required to have a detailed emergency response plan and an Emergency Planning Zone established around the injection well in the event of a leak.

In British Columbia, monitoring requirements are established for operational purposes during the operation of a well, pipeline or facility. For an acid gas disposal/storage well or facility,

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monitoring is required for the injection component where the well-head gas composition, pressure, temperature and rate must be reported to the OGC.

OVERVIEW OF CHANGES UNDER CONSIDERATION

The Ministry is proposing that CCS project proponents develop a monitoring plan that is results-based and informed by site-specific risk assessments. A reservoir monitoring program would need to provide the means to take into account potential natural migration pathways from the injection zone to other formations, shallow groundwater and/or the surface. Monitoring would also be needed to detect leakage and/or migration through man-made conduits, such as hydraulic fractures and abandoned wells. Movement of the CO₂ plume within the reservoir would require monitoring using monitoring wells.

Monitoring would also be required after injection has ceased in the closure and the post-closure periods. Long-term monitoring requirements would likely need to continue to some degree past the post-closure phase but the actual requirements could not be determined until projects have been in existence for a while and data is available to demonstrate any potential risks (see proposals under 6. Closure and Post Closure Assurance).

COMMENTS

Q.4. Do you have any comments on the proposed considerations for CCS Monitoring?

Please use response form

5. CLOSURE AND POST CLOSURE ASSURANCE

SUMMARY OF CURRENT LEGISLATION

Companies are responsible for the remediation and reclamation of sites once operations end. Under *OGAA*, the OGC is responsible for site profiles and issuing Certificates of Restoration. Injection well sites and facilities must be restored according to regulatory standards described under a Certificate of Restoration.

OVERVIEW OF CHANGES UNDER CONSIDERATION

Once the CCS project is complete, the Ministry is proposing the creation of a post-closure assurance phase during which the operator would continue to maintain all project liability, monitoring, maintenance and remediation responsibilities. During the assurance phase the operator would continue to gather data in order to be able to demonstrate that prescribed performance measures can be met for the stored CO₂.

The Ministry is considering the establishment of a Storage Reservoir Stewardship Board that would, as part of its role, review closure applications, conduct risk assessments and make decisions on the completion of the assurance period. It is proposed that a minimum of 15 years must pass post-injection before an operator could submit an application to the Board to review and to determine if performance measures were met or if circumstances indicate the assurance period

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should be continued. Continued monitoring may be required by the Board at that time⁴.

COMMENTS

Q.5. Do you have any comments on the Closure or Post Closure Assurance periods for CCS projects and the proposed process under consideration?

Please use response form

6. LONG TERM LIABILITY AND RESERVOIR STEWARDSHIP

SUMMARY OF CURRENT LEGISLATION

In regards to liability, British Columbia's environmental legislation reflects two general principles. The first principle is that of "polluter pays" and the second principal is that of "joint and several". Joint and several liability means that any working interest participants (WIPs) - operators and other partners of a company - can be held responsible for their share of liability within their business arrangement. If a site operator becomes defunct and cannot be found or is financially unable to pay for the costs of site remediation, then the WIPs may be held responsible for the clean-up. British Columbia's liability framework is designed to ensure that the public is not held responsible for pollution created by the private sector and, that those who have benefited from an activity

⁴ Or be set by regulation by that time.

bear the responsibility for costs associated with its cleanup.

Long -term liability for the accidental release of contamination arising from oil and gas activity is addressed by the Contaminated Sites Regulation (CSR) under the *Environmental Management Act* (EMA). Under the EMA companies are effectively liable in perpetuity for activities. The principal of continuing liability is also captured in the *OGAA*. By the current legislation CCS operators would be liable in perpetuity for any remediation and damages arising in the future from CO₂ leakage from their projects.

OVERVIEW OF CHANGES UNDER CONSIDERATION

Internationally, long-term liability has been identified as a key barrier to CCS projects. CCS developers are not willing to move forward with projects on the basis that they will be forever held responsible for the CO₂ in a reservoir. Other jurisdictions, such as Alberta, have recognized this barrier to development and have passed legislation which enables government to take on the long-term liability of the stored CO₂.

The current long-term liability approach does not adequately account for the long time periods associated with CCS projects nor does it adequately address how liability risk will be financed. Indemnification for loss is only possible up to the value of a firm's assets. Under the current system, if a company defaults, the Crown will be responsible for a number of remediation liabilities. Currently, the Orphan Sites Restoration Fund raises

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revenue for ongoing liabilities associated with orphaned oil and gas sites through a tax paid by producers on production. Unlike production, injection activities are not taxed and CCS operators would therefore not be contributing to the fund. Under *OGAA* monies from the fund could potentially be used for remediation of orphaned injection and monitoring wells but not for liabilities associated with storage reservoirs.⁵

The Ministry is considering the transfer of long-term liability for storage reservoirs back to the Crown following the completion of the Post Closure Assurance period. During operations, operators would be required to contribute to a reservoir stewardship fund which would be used to protect the public from costs associated with long-term liabilities and to provide for government’s ongoing stewardship obligations. If prescribed conditions are met, following the Post-Closure Assurance period, the government would assume long-term liabilities and stewardship responsibilities associated with the storage reservoir (subject to operator responsibility arising from negligence or regulatory non-compliance).

In the proposed model, in order to ensure high standards of equipment and operation, liability for injection wells and any necessary corrective measures, remediation and damages resulting from leakage related to these wells would be retained by the operator in perpetuity. In the event an operator defaults or cannot be found, costs associated with any orphaned injection well would be managed through the stewardship fund.

⁵ Oil and Gas Activities Act Part 4 – Orphan Sites

COMMENTS

Q.6. Do you have any comments on the proposed CCS long-term liability framework?

Please use response form

Q.7. Do you have any additional comments that you would like to note at this time?

Please use response form

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7. PROVIDING COMMENTS ON THE PROPOSED CCS REGULATORY POLICY FRAMEWORK

The Ministry is requesting your feedback and comments on the proposed CCS RPF. Please use the Response Form for this purpose. The Ministry will review all comments and submissions received and will summarize the comments without attribution into a document and report out via the Ministry website.

Comments may be submitted by:

Fax to: 250-953-3770 or by

Email to: CCS.PolicyComments@gov.bc.ca

Please provide comment by:

February 28 2014.

Your opinions and personal contact information is collected under the authority of section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purpose of informing CCS regulatory policy development. If you have any questions about the collection of this information, please contact:

Director, Regulatory Policy Development
Policy and Royalty Branch
Upstream Development Division
Ministry of Natural Gas Development
PO Box 9323 Stn Prov Govt
Victoria, BC V8W 9N3
250-387-1585

Thank you for taking the time to provide your comments.

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RESPONSE FORM

*The Ministry of Natural Gas Development is seeking your feedback.
Please use this form to provide your comments and respond to questions in the
CCS Regulatory Policy Discussion and Comment Paper.*

**Q1. DO YOU HAVE ANY COMMENTS REGARDING CCS SITE SELECTION AND STORAGE
RESERVOIR LEASES?**

**Q2. DO YOU HAVE ANY COMMENTS ON CCS OPERATIONS AND PERMITTING OR THE
PROPOSED CHANGES?**

**Q3. DO YOU HAVE ANY COMMENTS ON THE PROPOSED CONSIDERATIONS FOR CCS
MONITORING?**

**Q4. DO YOU HAVE ANY COMMENTS ON THE CLOSURE OR POST CLOSURE ASSURANCE
PERIODS FOR CCS PROJECTS AND THE PROPOSED PROCESS UNDER CONSIDERATION?**

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Q5. DO YOU HAVE ANY COMMENTS ON THE PROPOSED CCS LONG-TERM LIABILITY FRAMEWORK?

Q6. DO YOU HAVE ANY ADDITIONAL COMMENTS THAT YOU WOULD LIKE TO NOTE AT THIS TIME?

Thank you for taking the time to provide your comments.

Comments may be submitted by fax to 250-953-3770 or

By email to: CCS.PolicyComments@gov.bc.ca

Please Provide Comment by **February 28, 2014.**

Your opinions and personal contact information are collected under the authority of section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purpose of informing CCS policy development. If you have any questions about the collection of this information, please contact:

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