Australian Legislation on Carbon Capture and Storage: A Canadian Perspective

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Introduction

Canadian jurisdictions are actively considering the need to adopt a legal and regulatory framework for carbon capture and storage (CCS). Over the last number of years the government of Australia has taken a leadership role in this area internationally. As part of this leadership role, the state and Commonwealth governments collaborated in the development and publication of a set of Regulatory Guiding Principles for CCS operations. To implement those Guidelines, the Commonwealth has long promised new legislation to deal with CCS in the offshore where the Commonwealth has clear jurisdiction. The Commonwealth government released its so called "exposure draft" of the proposed legislation on May 16, 2008. The draft legislation was accompanied by two other documents, a Regulation Impact Statement and a Readers' Guide.

The draft legislation takes the form of a comprehensive set of amendments to the Commonwealth's *Offshore Petroleum Act* and is designed to provide an enabling framework for objective-based regulation for CCS in offshore (Commonwealth) waters. Our focus in this paper is the Australian proposals but we also make some reference to other initiatives including the draft Directive tabled by the EU in January 2008 and the Interstate Oil and Gas Compact Commission's draft model legislation tabled in September 2007.

In earlier work on the legal and regulatory framework for CCS we have suggested that any such framework needs to deal with property issues, regulatory issues and liability issues.[1] The property issues include ownership of the pore space, the need for a disposition scheme to allow third parties to acquire storage rights, and surface rights questions. Pore ownership is a non-issue in the Australian offshore since there is no private ownership of petroleum or natural gas and all relevant rights are vested in the

[1] Nigel Bankes, Jenette Poschwatta and E. Mitchell Shier, "The Legal Framework for Carbon Capture and Storage in Alberta" (2008), 45 *Alta. L. Rev.* 585.

Commonwealth government. Surface rights are also irrelevant in the offshore situation. The draft legislation concentrates on the disposition scheme.

The regulatory issues include the choice of regulator (an oil and gas authority or an environmental authority), the type of regulatory approval and monitoring and verification scheme that needs to be put in place, and other miscellaneous issues such as the need to provide for third party access to CCS injection sites and facilities. The proposed legislation covers these issues although it also acknowledges the relevance and importance of other general environmental legislation.

Liability issues include Kyoto liability for emissions (in the event that storage fails), liability for harms caused to others, and liability for any necessary remedial work. There are both short-term and long-term liability concerns to consider. Short-term liability covers the period of active exploration and injection operations while long-term liability covers the extended period for which we expect carbon dioxide (CO_2) to be contained. The proposed legislation deals with both aspects but does not address liability for emissions.

The paper is divided into two Parts. Part One provides a description and analysis of the Australian proposals. Part Two offers a critique of the legislation from a Canadian perspective. Here the paper tries to identify what Canadian regulators and companies can learn from the Australian approach and where we might be more reluctant to follow.

Part I: The Australian Draft Legislation

The proposed legislation will accomplish two main objectives. First, it will provide a disposition or tenure scheme for parties to acquire the right to store GHGs in the offshore. Second, it will provide the regulatory framework for reviewing and approving CCS operations. In delivering on both of these objectives the legislation will also provide a framework for deciding upon the competing claims of petroleum operations and CCS operations. The Commonwealth legislation focuses on the development of a disposition scheme modeled on existing offshore petroleum legislation.

For a Canadian reader the closest analogy and reference point is likely the federal tenure scheme under the *Canada Petroleum Resources Act* with its three forms of tenure (exploration licence, significant discovery licence and production licence) and its two categories of discoveries (significant discoveries and commercial discoveries).

A. Tenure

The tenure scheme proposed for CCS activities is modelled on a similar scheme for petroleum tenure. The draft legislation creates three principal forms of tenure: (1) a GHG assessment permit (2) a GHG holding lease, and (3) a GHG injection licence. In addition other authorizations permit some exploratory operations on a non-exclusive basis.

The tenure scheme is underpinned by a series of prohibitions. The legislation prohibits the unauthorised exploration or injection and storage of substances in an offshore area.

The GHG Assessment Permit

The GHG assessment permit deals with the exploration phase of GHG storage development. The process begins with the Minister inviting applications for selected areas. Permits may be granted on the basis of either a work-bid or cash-bid for designated block(s). Initially permits will likely be offered on the basis of the work-bid approach.

An applicant for work-bid permit must describe the proposed work and expenditures, the technical qualifications and advice available to the applicant and its financial resources. In the case of a single applicant, the Minister has the discretion to offer the block on specified terms and conditions including security requirements. Where there are competing applications, the Minister may make the offer to the applicant that, in the Minister's opinion, is "most deserving" of the permit based on published criteria. The scheme for cash-bids tracks the above with the permit being offered to the highest bidder. Once granted, a permit is valid for six years subject to extension where the permittee

applies for a declaration of an identified GHG storage formation, a GHG holding lease or a GHG injection licence.

The GHG assessment permit grants the permittee the right within the permit area: (a) to explore for a potential GHG storage formation; (b) to explore for a potential GHG injection site; (c) to inject GHGs into a part of a geological formation for appraisal purposes; and (d) to store GHGs on an appraisal basis; (e) to inject, air, water or petroleum on an appraisal basis; (f) to store the same substances on an appraisal basis; and (g) with the written consent of the Minister recover petroleum in the permit area for appraisal purposes but such petroleum once recovered does not become the property of the permittee. Conditions attached to permits may specify the work requirements and may require the permittee to lodge security. In addition the permittee will need prior approval for any "key GHG operations".

The next phase of the process is to obtain a declaration of an "identified GHG storage formation" (discussed below). After a declaration has been obtained, the permittee has two options – to seek a GHG holding lease or a GHG injection licence. Each will be discussed in turn.

The GHG Holding Lease

The GHG holding lease is designed to protect the investor who makes the initial investment to identify a storage site but cannot secure a CO_2 source. Once a holding lease is granted, it remains in force for 5 years and can be renewed once. A special holding lease (indefinite duration) is also available to either a permittee or a lessee that is refused a GHG injection licence on the basis that operations that could be carried on under the injection licence will have a significant adverse impact on petroleum exploration or recovery operations. The special holding lease is an example of how the draft legislation seeks to balance GHG storage interests and petroleum interests.

The draft legislation confers the same rights on a holder of a GHG holding lease as are conferred on the holder of a GHG assessment permit including all exploration

rights. This gives the holder the ability to continue to explore for additional storage formations which can be declared as new identified GHG storage formation. A GHG holding lease is also subject to similar conditions as those for an assessment permit.

The GHG Injection Licence

The final stage in the tenure scheme is the GHG injection licence. An injection licence authorizes the licensee to carry out operations for the injection and permanent storage of a GHG substance in an "identified GHG storage formation" located in the licence area.

An application can be made by a holder of a GHG assessment permit or holding lease or by a holder of a petroleum production licence. An injection licence granted to the holder of a petroleum production licence is only for the injection of CO_2 that is obtained through the production of natural gas. The application must set out those matters that the licensee wants specified as conditions, e.g. the type and origin of the GHG substance which must be consistent with the "fundamental suitability determinants" of the indentified GHG storage formation. Fundamental suitability determinants are used in the determination of the spatial extent (the expected migration path or pathways of the GHG substance injected) of an eligible GHG storage formation. They include the particular GHG substance, the amount of GHG substance injected, point or points of injection, period of injection, and the effective sealing feature, attribute or mechanism that enable permanent storage. They become "locked-in" when finalized as part of a declared identified GHG storage formation. In addition, the application must be accompanied by a draft site plan for each identified GHG storage formation, the details of the proposed work and expenditure by storage formation and the technical qualifications and advice available to the applicant and its financial resources.

The GHG injection licence confers both exploration rights and storage rights. The licensee has the same exploration rights as those conferred on the assessment permittee and the holding lessee. The additional and crucial rights conferred by the licence are the

right (a) to inject a GHG substance into an identified GHG storage formation, and (b) to permanently store a GHG substance in an identified GHG storage formation.

GHG injection licences are subject to several conditions including conditions with respect to the kind and origin of GHG substance injected, the injection period, the total amount of GHG injected and the rate of injection. None of the matters specified in the injection licence can be inconsistent with the fundamental suitability determinants of the identified GHG storage formation. A GHG injection licence has an indefinite duration but is subject to termination if there are no operations to inject a GHG substance for a continuous period of five years excluding any non-production period beyond the licensee's control or when the licence is suspended under the Minister's power to protect petroleum discovered in an area,

B. Storage Formations

Running parallel with the three forms of tenure are three classifications of storage formations each associated with increased knowledge of the geological formation: (1) potential, (2) eligible or (3) identified. While a tenure holder may inject GHGs into potential and eligible formations for appraisal purposes, approval for injection for permanent storage requires that there be a declaration of an identified GHG storage site. It is the third of these classifications then that is of the greatest legal significance.

A declaration of an identified GHG storage formation is a core document that specifies the activities that can be carried out under a GHG injection licence (the activities are controlled through licence conditions that match the matters in the declaration) and the areal extent of such operations. The declaration will specify the fundamental suitability determinants and the spatial extent of the indentified GHG storage formation. Because of its role in determining allowable injection activities and the integrity of the storage system, the declaration retains its significance over the life of the CCS project. The Minister may only revoke a declaration of an identified GHG storage location, subject to consultation with the title-holder, if the Minister is satisfied the formation is no longer an eligible GHG storage formation.

C. Reconciling Petroleum and Storage Interests

The need to reconcile the potentially competing petroleum and storage interests is a significant feature of the Australian draft legislation. Essentially all of Australia's offshore potential CCS areas are subject to existing petroleum titles and a policy decision was made to give a high level of protection to holders of petroleum titles in place at the commencement of the legislation. Interests are divided into pre- and post-commencement interests. A pre-commencement petroleum title is an exploration permit, retention lease or production licence that is in force at the time when the amendments commence and the term includes any successor interest. A post-commencement petroleum title is a petroleum interest granted after the amendments commence and which is not a successor interest.

The reconciliation rules apply where there is a "significant risk of a significant adverse impact" on one of the interests by the operations of the other interest. "Significant risk" is the equivalent of a "large adverse impact on other operations" and that the risk may be taken to be a significant risk "even if the probability is low".

The overall approach is to protect pre-commencement petroleum interests and existing production licences by requiring that the holder of the petroleum tenement agree to the GHG operation in the event of significant risk. But when the competing claims do not involve pre-commencement petroleum interests or existing production licences, the draft legislation uses a public interest test to determine which claim trumps. The principal mechanisms that the legislation uses to resolve completing claims are:

(1) prior approval of key GHG operations

A GHG assessment permit or GHG holding lease does not itself authorize any particular operations so that approval is required before permittees and lessees carry out any "key GHG operations". In the case of an existing or future pre-commencement title or an existing post-commencement licence the petroleum title-holder must agree to the GHG

operation. In other cases the Minister's decision will turn on an assessment of the public interest.

(2) consideration of petroleum interests when granting a GHG injection licence

The scheme protects pre-commencement and existing production interests by insisting that they agree to the grant of an injection licence where there is an assessment of significant risk. Post-commencement petroleum interests may be sacrificed if the Minister's assessment of the public interest puts CCS ahead of the petroleum interest.

(3) consideration of GHG interests when granting a petroleum licence

If there is an existing assessment permit, holding lease, or declaration of an identified GHG storage formation, the Minister may grant a production licence if it is in the public interest. The scheme protects existing GHG injection licensees since their agreement is essential before a production licence can be granted.

(4) a scheme for the prior approval of key petroleum operations

A *petroleum* interest can become a "declared interest" as part of setting the conditions for the interest. Once this occurs, the holder of the declared interest must obtain approval before undertaking any "key petroleum operations" on a basis similar to that outlined above for key GHG operations.

(5) directions to protect petroleum interests.

The draft legislation gives the Minister the power to give a direction to a GHG licensee in order to protect geological formations containing petroleum, or petroleum discovered in areas of overlap with a pre-commencement title provided the discovery is commercially viable (or is likely to become commercially viable).

D. The Regulatory Elements of the Legislation

The Regulation Impact Statement suggests that Australia had little need to develop specific legislation for some regulatory aspects of the CCS industry such as general environmental approvals and occupational health and safety issues. The Regulation Impact Statement did however identify a need for new legislation to regulate two things: (1) the selection and approval of storage sites, and (2) site closure. The proposed legislation therefore contains provisions that address each of these issues. Both are clearly of central importance and it is therefore perhaps a little surprising that, while addressed, the relevant provisions are relatively short. Some further content as well as the reasons for this can be gleaned from the discussion of these issues in the Regulation Impact Statement but it bears emphasising that the proposals are far less detailed and far less prescriptive than those proposed by either the IOGCC or the EU.

Other regulatory issues dealt with in the legislation include third party access.

Site Plan

One risk associated with CCS is the potential for unanticipated migration of injected substances and leakage through pathways such as geological faults or improperly abandoned wells and each CCS storage site is unique. The IPCC and others have emphasised that these risks can be reduced if there is careful site selection and regulatory oversight. Consequently, the most critical element of the regulatory scheme is the approval of site plans for an injection operation. Such a site plan would have to demonstrate, to the satisfaction of the regulator, that the project will result in 'safe and secure' storage.

An applicant for a GHG injection licence must present a draft site plan. The legislation itself has little to say about the content of the site plan other than that it must set out predictions for the behaviour of the GHG substance stored in the identified GHG storage formation. The Readers' Guide suggests that the matters to be addressed by the site plan will be prescribed by regulations modeled on existing petroleum regulations and will require the applicant to address such matters as: (1) the geological attributes or features of the storage formation; (2) current and proposed injection and storage

operations; (3) the operations and techniques to be used by the licensee to monitor and verify the behaviour of the GHG over the life of the project; (4) operations management systems, including processes for identification, assessment and management of risks; and (5) predictions as to the short, medium and long-term behaviour and fate of the GHG in the identified storage formation and associated geological formation(s).

Site Closure

At some point injection and storage operations will cease and the injection licensee will need to close the site. The legislation suggests that there are six steps.

First, the injection licensee applies for a site closing certificate including a proposal for a monitoring and verification program to be conducted by the Commonwealth. An application must be accompanied by a written report that sets out the applicant's modelling of the GHG plume and an assessment of the behaviour of the plume including the expected migration pathway, the short- and long-term consequences of the migration, and the applicant's suggested approach for long-term monitoring of the plume to be undertaken by the Commonwealth once the closing certificate has been issued.

Second, the Minister may issue extensive site closing directions to the licensee. A licensee might be required to carry out remedial work (e.g. plugging abandoned wells) on the storage formation (including remedial work outside the injection licence area) in order to prevent escape of GHG substances.

Third, the Minister responds to the application by indicating that s\he is prepared to issue a site closing certificate. Other options include refusing to issue the certificate or deferring that decision. Fourth, the licensee posts security to cover the costs of monitoring and verification program and fifth, the Minister the issues the site closing certificate. A site closing certificate remains in force indefinitely and is automatically transferred with the licence. Nothing in the legislation suggests that a closing certificate eliminates future liability of the licensee. The costs that the Commonwealth incurs in

carrying out the monitoring program under the site-closing certificate are a debt due to the Commonwealth recoverable in a court of competent jurisdiction. The sixth and final step is surrender of the licence provided that the licensee has fulfilled all of its obligations including removal of property and plugging of wells**.**

Liability Related Issues

Liability can be broken down into short-term and long-term liability. In the Australian system short-term liability covers the period of active exploration and injection and the period post-injection until site closure. Long-term liability refers to liability post-closure. In earlier work we have stressed the importance of unbundling the liability issues so as to, at a minimum, separate out liability for emissions from a (failed) CSS project, liability for harm suffered by others and liability for remedial operations as well as the questions of short-term and long-term liability. There is no indication that the draft was intended to deal with liability for emissions from a (failed) CCS project. It is far more likely that this issue will be dealt with in any cap and trade legislation that the government eventually puts in place as the EU proposes in its scheme.

Short-term Liability

There is no indication that the legislation will create a special liability regime for those who suffer harm as a result of a CCS project. Liability therefore will continue to be governed by tort laws of general application.

The injection licensee will also be responsible for all of the activities associated with site closure and abandonment. This of course raises the question of whether there will be money on hand for these closure operations since by this time it can be expected that there will be no offsetting revenue stream. In the absence of offsetting revenue the traditional response of the regulator has been to demand security from the licensee\operator to cover at least anticipated abandonment\closure costs. The draft legislation is structured to allow the Minister to require an applicant to lodge security before being issued a grant of an assessment permit, holding lease or injection licence.

The liability of an operator to take remedial action is generally based on statute rather than general tort law. Examples here include the "directions" that the Minister can issue to the licensee as part of site closure. In addition, the Minister can also issue a variety of "directions" where there is a "serious situation".

Long-term Liability

The Regulation Impact Statement considered four options for long-term liability: no new regulation; new regulation under which Government explicitly assumes long-term liability; new regulation where industry is required to assume long-term liability, and; new regulation to share long-term liability between government and industry. The "no new regulation" scenario represents the status quo for petroleum which assigns liability based on general tort law. The Regulation Impact Statement reasoned that under this scenario, title-holders would not be immunized from their common law liability and that over time the risk "would, in a sense, pass to the community because project participants may cease to exist or because of some other time related factor such as availability of witnesses." The Regulation Impact Statement recommends this approach for CCS projects and as a result the draft legislation is completely silent on long-term liability. But this is a case where silence speaks volumes since silence will serve to leave liability with the licensee\operator.

Part II

The second Part of the paper offers some comments on the Australian legislation from a Canadian perspective. The comments fall into three main groups: the tenure scheme; the regulatory scheme; and liability related issues.

A. Tenure Scheme

As we have observed elsewhere, Alberta has yet to develop a tenure scheme for "disposal rights" in Crown subsurface. To the extent that the Crown authorizes subsurface disposal operations in Crown subsurface lands (such as for acid gas disposal

(AGD)) it does so using a form of letter of consent or a licence issued under the authority of s. 56 of the *Mines and Minerals Act*, rather than a formal tenure.

We think that there is a strong case for each province and the federal government (for federal lands) to develop disposition legislation for publicly owned storage rights. A more formal and competitive disposition scheme would provide security for investment and provide a level playing field for different actors to engage in CCS activities. It would also signal that storage and disposal into pore space represents an important use of a publicly owned and limited resource. This conclusion raises the question of what form such a disposition scheme should take.

The Australian approach (and the EU proposal is similar) is that each jurisdiction should use and adapt its existing petroleum legislation (whatever it may be) to fit the challenges posed by CCS. Adapting existing regulation draws on a well established framework for accessing and managing property rights, it reduces the need for entirely new schemes, it increases understanding and acceptance of the regulatory framework and it allows for integrated management of CCS with other uses (in particular petroleum).

A version of the Australian approach but adapted to Alberta's tenure regime as described in the *Petroleum and Natural Gas Tenure Regulations* might include the following: (1) industry nominations of blocks of land for bidding for CCS operations; (2) a new (single) form of tenure, a GHG storage licence with a short initial exploration term followed by an intermediate term provided the licensee meets minimum work requirement; (3) disposition of interests by way of cash bidding or work bidding but with a single bidding variable; (4) a minimum work requirement of at least one exploratory well during the initial term of the licence; and (5) by the end of the intermediate term a requirement that the licensee identify an area within the licence area that is suitable for GHG storage purposes and file an application for approval of a site plan or plans with the ERCB. Parts of the GHG licence not subject to an ERCB approved site plan would revert to the Crown.

B. The regulatory scheme

As we have seen, Australia's proposed regulatory scheme contains three main elements: (1) approval required for key GHG operations; (2) filing and approval of site plans; and (3) the site closure mechanism. The best analogies for each of these regulatory elements within Alberta's current oil and gas regulatory system would seem to be: (1) the well licensing provisions of the *Oil and Gas Conservation Act* (*OGCA*); (2) s. 39 OGCA approvals for schemes including injection schemes; and (3) approvals for non-routine abandonments. But none of these analogies is entirely appropriate and each would have shortcomings if simply re-jigged to accommodate CCS.

Areas of the Alberta regulatory approach requiring adjustment would include the following: (1) the regulatory framework should require a geological formation approach that relies on the use of a site plan; (2) well licensing provisions should include a list of factors the applicant and the regulator must address as part of an application to address broader issues of public policy such as the priority to be accorded to different resources uses; (3) unlike the details for approval for a gas storage, enhanced oil recovery (EOR) or AGD scheme, the legislation should, at a minimum, express both the objective of a site plan (assurance of safe and secure storage) and the issues and types of information that a site plan needs to address including monitoring and verification; (4) unlike current practice, no licensee should be allowed to abandon a CCS well without approval by the regulator to ensure the overall integrity of the CCS project.

It will also be necessary for Alberta to deal with the resource use conflict and priority issue as between CCS and oil and gas interests. Here Alberta should be able to draw upon experience with the gas-over-bitumen debates and as well as the regulatory rules developed by the ERCB and examined by the courts in that context.

C. Liability Issues

As we have observed elsewhere, most liability issues in Alberta's oil and gas sector are dealt with by tort laws of general application. Special rules exist for

abandonment obligations and for remedial obligations. There is no transfer of liability to the state under any of these rules and to the extent that an operator becomes defunct the costs of abandonment operations are borne by the industry financed orphan well fund (but not more general tort liabilities).

What are the implications of this and the Australian proposals for a liability scheme for CCS operations in Alberta? First, it will be hard to make the case that special rules are required for liability for harm suffered by others in the case of CCS operations if the general tort rules apply to conventional oil and gas operations. But it may be necessary to create a separate orphan fund for CCS operations. Second, it will likely be necessary to be more prescriptive about requirements for posting security given that a pure CCS scheme (as opposed to an EOR scheme) will have no offsetting production revenue. Finally, existing provisions dealing with remedial liability will likely serve as an adequate basis for CCS operations although the triggers for requiring remedial action may require some adjustment. The Australian concept of a "serious situation" is more precautionary than existing provisions in the *OGCA*.

Conclusion

The proposed Australian legislation accomplishes several things. First, it will provide a disposition or tenure scheme for parties to acquire the right to store GHGs in the offshore. Second, it provides a regulatory framework for reviewing and approving CCS operations on a case by case basis with individual site plans and closure plans. Third, the legislation provides a framework for deciding upon the competing claims of petroleum operations and storage operations. And finally, the legislation proposes to leave both short term and long term liability with the operator\licensee largely on the basis of laws of general application. While the draft is too intricate and detailed for Canadian purposes, many of the broad ideas captured by the legislation merit serious consideration as provincial legislatures seek to develop appropriate disposition, regulatory and liability regimes to accommodate CCS operations.