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The Draft Alberta Quantification Protocol for CO₂ Capture and Permanent Geologic Sequestration, Version 2

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Nearly ten years ago I posted an [ABlawg comment on a draft of the first version of this Offset Quantification Protocol](#). The Quantification Protocol (QP) was developed at that time so as to be ready for when Shell's Quest Project came on stream. A QP is designed to establish the circumstances under which a project, in this case a carbon capture and storage (CCS) project, might generate offset credits under Alberta's CO₂ emissions legislation and regulations, which could then be used to meet the compliance obligations of a regulated emitter. At that time, the relevant regulation was the *Specified Gas Emitter Regulation*, [Alta Reg 139/2007](#) (SGER); the current regulation is the *Technology Innovation and Emissions Reduction Regulation*, [Alta Reg 133/2019](#) (TIER Regulation). My earlier post identified a number of issues that remain pertinent today, including the transparency of the process, issues of liability in the event of a reversal, and a question as to the apportionment of regulatory responsibilities between the mechanisms of the QP and the responsibility of the energy regulator (then the Energy Resources Conservation Board, now the Alberta Energy Regulator (AER)) for scheme approvals for injection activities. This latter point continues to present some difficulties in the current draft of Version 2.0, particularly with respect to monitoring for containment assurance, which is explicitly dealt with in s 5.1.6 and Appendix C of the Draft QP (but also relevant to the sections of the QP dealing with reversals). I explore these issues in more detail below.

In September of this year, John Storey-Bishoff, the Executive Director Climate Regulation and Carbon Markets, Environment and Protected Areas, [gave notice](#) that the Department was "flagging" version one (Version 1.0) of the QP. "Flagging" (and see the more detailed discussion in the earlier 2014 [post](#)) indicates that the Department has concerns as to the integrity of a QP or that it is considering making revisions to a QP and that, "as a result, new projects can only be initiated using version 1 of the protocol with permission from the Director, Emission Offsets (see Part 1, section 4(6) of [the Standard for Greenhouse Gas Emission Offset Project Developers v 3.2](#), April 28, 2023)." The memorandum suggested two main reasons for anticipated revisions: first, "to enable carbon capture and storage (CCS) projects to generate carbon offsets in the context of changes to the tenure mechanism and storage reservoir eligibility requirements established by Alberta Energy and Minerals" and second "to provide certainty to offset project developers on the treatment of unintentional releases during all phases of a CCS project."

The Department has now (November 1, 2024) released a public comment draft of a proposed revised QP (Version 2.0). As with my previous post on Version 1.0, this post does not engage with

the detailed consideration of project sources and sinks, but it does seek to identify some of the policy choices that inform the current draft of the QP, especially where those policy choices have possible legal implications. The draft is open for comment until December 2, 2024.

Here are some of the changes that I have identified (unlike some other QPs within the Alberta offset system, such as Version 2.0 of the [Quantification Protocol for Enhanced Oil Recovery](#), (EOR QP, Version 2.0) this QP does not have its own list of changes.)

- Whereas Version 1.0 (at s 1.2) only allowed for geological sequestration in deep saline aquifers (and this was reflected in the title of the QP), Version 2.0 will include sequestration projects in depleted reservoirs (s 3.0); the title of the QP has been amended accordingly.
- In addition to capture at large industrial facilities, the flexibility mechanisms (FM) of Version 2.0 will allow for crediting by “removal” activities i.e. direct air capture (DAC) and the capture and sequestration of biogenic CO₂ (i.e. biomass energy with CCS or BECCS).
- Whereas Version 1.0 only contemplated sequestration activities occurring under the terms of a sequestration lease granted under the terms of the *Carbon Sequestration Tenure Regulation*, [Alta Reg 68/2011](#) (CSTR) under Part 9 of the *Mines and Minerals Act*, [RSA 2000, c M-17](#) (MMA), Version 2.0 will allow for sequestration activities under a variety of Crown sequestration tenures.
- Version 2.0 attempts to provide a more complete framework for defining and accounting for project reversals. Version 1.0 largely punted these issues. Version 2.0 also introduces the idea of credit discounting to address the risk of possible reversals.
- The QP clarifies that it applies to so-called hub projects as well as vertically integrated projects (such as Shell’s Quest Project.). While the QP does not use the term “hub project” it recognizes that the emission offset project developer may or may not be conducting the “CO₂ capture, compression, transport and net geological sequestration” and indeed, that “it is likely that different entities may conduct each of the project activities.” (at s 1.1)

Other key policy choices continue. For example, Version 2.0 continues to state that “This protocol does not apply to CCS activities using CO₂ enhanced oil recovery (EOR), or acid gas injection schemes associated with sour natural gas processing operations.” (at s 1.1) Furthermore, Version 2 continues to offer an initial crediting period of 20 years with the possibility of ongoing 5-year extensions (at s 1.2).

The following sections of the post examine: (1) the provisions on scope and flexibility, (2) offset credit discounting, (3) the treatment of reversals, (4) reporting on containment assurance, (5) the treatment of removal projects, and (6) the Limits to a QP when it comes to changing TIER Rules.

1. The Protocol Scope and Flexibility Mechanisms

As with other QPs, Version 2.0 of this QP describes a generic project that falls within the scope of the QP and then identifies what are typically (albeit misleadingly in the context of global climate change instruments) described as “flexibility mechanisms” (FM). The QP’s description of the

generic project is, as suggested above, very accommodating of the hub approach to CCS projects and offers separate descriptions of the capture entity, the transport entity, and the sequestration entity. It also recognizes that “it is likely that different entities may conduct each of the project activities” (at s 1.1) and that these activities “may or may not be conducted by the emission offset project developer.” (ibid)

Version 1.0 of the QP described three FMs, Version 2.0 describes four FMs: (1) a project with direct air capture component (DAC), (2) a project with different project boundaries than the standard, (3) a project for which the project developer seeks to limit liability for reversals, and (4) a project that is based on a form of carbon sequestration tenure that does not contemplate the transfer of liabilities to the Crown post issuance of a closure certificate. The third and fourth FMs are qualitatively different from the first two FMs, and while DAC projects are specifically identified as an FM, BECCs projects are not.

In the DAC scenario (FM1), the DAC facility serves as the emissions source. The QP informs that the quantification of emissions upstream of the injection meters “must meet the same rigor as for large emitters, as outlined in the TIER Quantification Methodology.” (at s 1.4) For the most recent version of that Methodology, v 2.3, see [here](#). The EOR Protocol, Version 2.0 has a similar provision (at 9).

For a project for which the project boundaries differ from the process flow diagram (Figure 3 in the QP) (FM2), Director approval must be obtained prior to project initiation on the registry. “Proponents are referred to the most recent version of Standard for Greenhouse Gas Emission Offset Project Developers for information regarding deviations from protocols.” For the most recent version of the Standard see v 3.2, [here](#). This is a fairly conventional type of flexibility mechanism.

The third flexibility mechanism (FM3) refers to a scenario in which a project developer wishes to limit the reversal true-up liability for the crediting and post crediting pre-closure stages of the project. In such a case a project developer may limit that liability “to a maximum total of three-year injected volume based on the average annual injection over the course of the crediting period(s)” (at s 1.5) by applying an increased discount factor to that which will apply to the standard project (see discussion below of the discount factors). It is best to think of the limitation on liability as a limitation that attaches to the offset credits generated by a registered project since the obligation to true-up is an obligation of the regulated entity that uses an offset credit for compliance purposes; it is not an obligation of the project developer (TIER Regulation, at s 22(5)).

The fourth flexibility mechanism (FM4), building on FM3, is the most complex and requires considerable unpacking. The following paragraphs describe the mechanism using the actual language of the QP and then offer an explanation of the assumptions underlying the mechanism. Here is what the QP has to say about FM4.

Flexibility Mechanism 4: Tenure Mechanism without liability transfer. In some cases, CCS project developers may be granted sequestration rights from Energy and Minerals through a tenure mechanism that does not permit the transfer of liability under the *Mines and Minerals Act* through the issuance of a closure certificate. While this does not preclude a

project from generating emission offsets under this protocol, the project developer must receive written approval from the Director and adhere to the following conditions:

- Apply flexibility mechanism 3 to their projects and apply the increased discount factor beginning in year 4.
- No further true-up liability obligations associated with climate liability will be required when the project developer can demonstrate the following:
 - Evidence is provided to the Director that all project wells associated with the emission offset project have been abandoned in accordance with applicable well abandonment regulations, directives, and rules; and
 - 20 years have passed since the date the last project well was abandoned; and
 - A post-crediting, pre-closure reversal as defined in section 1.5 has not occurred since the last well was abandonment.

For projects utilizing this flexibility mechanism, in lieu of closure certificate issuance, the conditions for post-closure liability transfer will be used to differentiate between project life cycle stages as they relate to a reversal under section 1.5.

The first question is what sorts of tenure are we talking about? Carbon sequestration tenure in Alberta seems to be a moving target: see this ABlawg post from September of last year: “[Alberta Rolls Out Yet Another Form of Sequestration Agreement](#)”. It appears that Alberta now has three forms of carbon sequestration tenure. The first form of CCS tenure (I will refer to this as the “standard CCS tenure”) is the tenure system established by *Carbon Sequestration Tenure Regulation*, [Alta Reg 68/2011](#) under Part 9 of the *MMA*. This two-step tenure system is comprised of evaluation permits and carbon sequestration leases. For present purposes it is important to emphasise that under the standard scheme certain liabilities of a carbon sequestration lessee may be assumed by the Crown following issuance of a closure certificate for the project covered by the tenure. This assumption of liability does not, however, include the liability for any reversals of sequestered greenhouse gases for which offset credits have been obtained. But s 120 of the *MMA* does provide for a set of conditions that must be met by a lessee before the Minister can issue a closure certificate including that the Minister (now effectively the AER because of the transfer of responsibility effected by Ministerial Order 060/2023, discussed [here](#)), is satisfied that “the captured carbon dioxide is behaving in a stable and predictable manner, with no significant risk of future leakage” (*MMA*, at s 120(3)(f)). The prescribed “closure period” must also have elapsed. The Department has yet to prescribe (by regulation) what that period will be.

The second form of CCS tenure is represented by the standard form carbon sequestration evaluation agreement and carbon sequestration agreement (CSA) (the latter of which has recently been published by the GoA and described and critiqued [here](#)). I will refer to this as the CCS hub tenure. The authority for this scheme is s 9 and Part 9 of the *MMA* meaning that, as above, the scheme contemplates a transfer of certain prescribed liabilities from the holder of the CSA to the Crown. And as above, there is no transfer of liability for any reversals of sequestered gases for which offset credits have been obtained, but the above noted conditions for the issuance of a closure certificate and thence the assumption of liability are presumably applicable.

The third form of tenure is the small-scale and remote carbon sequestration tenure. This complex form of tenure is comprised of a combination of a concurrent pore space lease and a pore space unit agreement which I have analyzed [here](#) and [here](#). The Crown grants this form of tenure under s 15.1(3) rather than under Part 9 of the *MMA* and accordingly the provisions dealing with closure certificates and the Crown's assumption of liability do not apply.

In sum, it seems that it is this third form of tenure that FM4 seeks to accommodate.

Now that we know what tenure arrangements will serve to trigger FM4, it is necessary to clarify the other conditions associated with FM4. The first condition is that the project developer must obtain the written approval of the Director. Second, the project must apply the enhanced discount factor applied to FM3 projects. What is not clear is whether an FM4 project would also be entitled to the proposed cap on true-up liability that applies to FM3 projects. In any event, the conditions for an FM4 project do propose that “No further true-up liability obligations associated with climate liability will be required” of such a project (or, more precisely, that regulated entities who have used credits generated by an FM4 project will have no further climate liability) provided that the project developer can demonstrate that all project wells have been properly abandoned, that 20 years have elapsed since the last abandonment, and that there has been no reversal during the “post-crediting, pre-closure” period.

This prompts three comments. First, it is unusual if not completely unprecedented for a flexibility mechanism in an Alberta Offset Protocol to be based on a particular type of tenure supporting an offset project. Flexibility mechanisms more usually allow for the selection of different baselines in prescribed circumstances, different MMV (monitoring, measurement and verification) methods, the uses of grouping and averaging techniques, different technologies, and different physical infrastructure configurations.

Second, the QP seems to offer an FM4 project (or more specifically regulated entities who have used credits generated by an FM4 project) the benefit of a limitation on the power of the Director to reach-back and require the true up of a regulated entity's account provided that the conditions with respect to abandonment have been met. As we shall see below, the provisions on reversals (specifically at s 1.5.3) seems to extend this “no look back” provision to all projects utilizing this QP.

And finally, it is notable that the QP proposes a 20 year wait-and-see period even though the Department has yet to prescribe the minimum closure period for projects operating on the basis of the two other forms of tenure.

2. Offset Credit Discounting

We have already come across several references to the discounting of credits in the Draft QP and thus it is important to draw these threads together. Credit discounting refers to the idea that instead of registering credits for 100% of all CO₂ permanently sequestered, there is a holdback of a certain percentage of credits, which credits are retired to the atmosphere to address the possibility of a reversal. The QP refers two different credit discount factors.

The first is an across-the-board (ATB) discount factor of 0.005 that is applied to all volumes of injected CO₂ during the “during the quantification of each greenhouse gas statement during the offset crediting period.” (at s 1.5.3) This ATB discount factor is applied whatever form of sequestration tenure governs the project and to all FMs. This is the same discount factor applied under the EOR QP, Version 2.0 (at 10).

The second form of credit discount factor is the FM3 & FM4 discount factor. A project developer who makes the FM3 election is subject to the ATB discount factor for the first three years of crediting but in year 4 is subject to a discount factor of 0.01 “and will be discounted until the issuance of a closure certificate.” (at s 1.4) I assume that what is meant by this is that the discount is applied to all further volumes injected until injection ceases (which will precede issuance of the closure certificate by some years). FM4 projects are subject to the same rule.

I comment further on these credit discounting rules in the conclusion.

3. The Treatment of Reversals

Version 1.0 of the QP dealt with reversals as part of a discussion of “liability” in the closing section of the QP. Draft Version 2.0 deals with the topic of reversals as part of the initial discussion of the “project description” in s 1.5 – immediately following the discussion of flexibility mechanisms. I begin by reviewing how the Draft QP defines a reversal and then turn to the accounting treatment of a reversal.

What is a Reversal?

Version 2.0 offers a more detailed and precise definition of a reversal than that found in Version 1.0. In this Draft Version 2.0, “reversal” is defined as:

... an accidental or intentional release or removal of CO₂ from the targeted geologic storage zone(s) during or after the offset crediting period. An accidental reversal meets the following criteria:

- The AER determines a loss of containment has occurred under the emission offset project’s D065 scheme approval,
- The loss of containment cannot be remediated, and
- An expert investigation determines the CO₂ that is subject of the loss of containment will foreseeably leak into the atmosphere within 100 years of the occurrence of the loss of containment.

Emissions associated with a reversal that can be remedied must be accounted for, as per sections 1.5.1, 1.5.2 and 1.5.3, whichever applies. (at s 1.5)

This definition prompts a number of observations.

First, while the definition addresses both accidental and intentional releases and removals, the principal concern of the definition is with accidental releases.

Second, “targeted geological storage zone” is a defined term and means “The targeted geological formation(s) that contribute to providing secure long-term sequestration of CO₂ as outlined in the D065 Scheme Approval. It may include one or more seals and one or more zones that have the potential to accept sequestered CO₂.” (at s 1.6) The reference to a “scheme approval” is a reference to the scheme approval that any sequestration project requires from the AER under the terms of s 39.1 of the *Oil and Gas Conservation Act*, [RSA 2000, c O-6](#). And the reference to D065, is a reference to the AER’s Directive 65, [Resources Applications for Oil and Gas Reservoirs](#). It seems to follow from this that, in assessing whether there has been a loss of containment, the governing instrument will be the terms of the scheme approval rather than the terms of the Crown sequestration tenure under which the project is proceeding. These may or may not be the same. For example, in the case of the Quest project, [Shell’s scheme approval](#) is for “the disposal and sequestration of carbon dioxide (CO₂) into the Basal Cambrian Sand Formation (BCS)” as described in Shell’s application, whereas Shell’s leases are described as being for the pore space below the top of the Elk Point Group.

Third, the loss of containment is determined in the first instance by the AER, presumably on the basis of an incident report or the annual report that the scheme approval holder will be required to file with the AER for any event indicating loss of containment. See Quest Scheme Approval, at s 6. See also in this context section 5.1.6 of the draft Version 2.0 of the QP, entitled “Monitoring and Reservoir Management Plan for Containment Assurance” as well as Appendix P of AER Directive 065, Resources Applications. Appendix P details MMV for CO₂ sequestration projects.

Fourth, the loss of containment from the targeted geological storage zone will not itself constitute a reversal for the purposes of the QP. It will only be treated as a reversal if the loss of containment identified by the AER “cannot be remediated” and “An expert investigation determines the CO₂ that is subject of the loss of containment will foreseeably leak into the atmosphere within 100 years of the occurrence of the loss of containment.” (at s 1.5) It is not clear to me how one might remediate a loss of containment. I understand that one might be able to take steps to prevent additional losses of containment by taking remedial measures, but I can’t imagine how remedial measures could possibly restore (and to put it colloquially) CO₂ that has escaped the container back into the container. It is also puzzling to me that while “emissions associated with a reversal that can be remedied must be accounted for” the QP is silent on emissions associated with a reversal that cannot be remedied. Should not these volumes also be accounted for? The same statements are repeated in Appendix C: Carbon Capture and Sequestration Containment Assurance Report Template.

Fifth, the QP does not provide any details as to the nature of the “expert investigation” or the methodology that would inform such an investigation. One thing is for sure, it will be a time-consuming process.

And finally, care needs to be taken to ensure that the different parts of the QP fit together. Here I point to s 5.1.6 dealing with monitoring of containment assurance. While much of the language of this section is consistent with the provisions on reversals and the treatment of reversals, this is not always the case. For example, s 5.1.6 seems to suggest that it is necessary to “fully account” for

any loss of containment, whereas as we have just seen, loss of containment is simply one of a number of conditions precedent to assessing whether there is a reversal that must be accounted for.

But in any event, once we know that we have a loss of containment that has been determined to constitute a reversal we need to know how to account for that reversal. This is the subject of s 1.5 but the discussion there also draws upon the discussion of discount factors above.

How to Account for a Reversal?

If all of the above conditions are met, the loss of containment from the targeted geological storage zone will be treated as a reversal which triggers a duty to account, but as the QP informs, “The timing of a reversal will affect how the reversal is accounted for.” (at 1.5) There are three relevant time periods for accounting and true-up purposes: (1) a reversal that occurs during an accounting period while injection is ongoing; (2) a reversal that occurs after injection has ceased (i.e. when no ongoing crediting is occurring); and (3) a reversal that occurs after the issuance of a closure certificate.

A reversal while injection is ongoing

If a reversal occurs while injection is ongoing the initial result must be that the project developer cannot earn credits on the injected tonnes that are found to have been the subject of a reversal (understanding, as noted above, that this might be a time-consuming and contested process). Emissions from a reversal must be quantified in accordance with Table P20. If the reversal tonnage exceeds the volume injected and contained during the reporting period there will be a negative greenhouse gas statement for that period and a net reversal.

Table P20 uses somewhat different language from s 1.5 insofar as it refers to “a leak from the Subsurface to the Atmosphere” (while capitalized in the table, neither capitalized term is defined) rather than loss of containment and the additional conditions referenced in s 1.5.

P20 - Emissions from a Reversal	<i>Emissions Subsurface to Atmosphere = Mass CO₂e leaked</i>					
	Mass of CO ₂ e leaked from the Subsurface to Atmosphere/ Mass CO ₂ e leaked	t of CO ₂ e	Estimated	If a leak event occurs, the mass of CO ₂ e leaked from the subsurface to the atmosphere shall be estimated with a maximum overall uncertainty over the reporting period of ±7.5%. In case overall uncertainty of the applied quantification approach exceeds ±7.5%, an adjustment shall be applied. Refer to Appendix B for further guidance.	N/A	Estimation would be required for reporting to The Alberta Energy Regulatory authority. Direct measurement is likely not possible, but the use of engineering estimates and accounting for the uncertainty would be a reasonable approach in the event leakage occurs.

If there is a negative GHG statement for a reporting period, the project developer (PD) must remove emissions offset credits from a previous reporting period. This will be a complete answer if the offsets have not been assigned to a regulated emitter that has used these offset credits for compliance purposes. But if the credits have been used for compliance purposes then it is the responsibility of that regulated emitter (and not the responsibility of the PD) to “follow the true-

up process set out in the Standard for Completing Greenhouse Gas Compliance and Forecasting Reports.” (at s 1.5.2) This follows from the language of s 22(5) of the TIER Regulation (and the same was true under SGER as pointed out in the earlier post).

A reversal that occurs after injection has ceased (i.e. no ongoing crediting is occurring)

If a reversal occurs after injection has ceased (i.e. no ongoing crediting is occurring) but before a closure certificate has been issued (which is specifically relevant for projects operating on the basis of the first two types of sequestration tenure discussed above), it must follow that some offset credits recorded by the PD can no longer be supported. It must also follow, much as in the first time frame, that if a regulated emitter has used these offset credits for compliance purposes, it is the responsibility of that regulated emitter (and not the responsibility of the PD) to “follow the true-up process set out in the Standard for Completing Greenhouse Gas Compliance and Forecasting Reports.” (at s 1.5.2)

The next question is which offset credits the Director will target for cancellation? The answer that the QP gives is last-in first-out (LIFO) – meaning that the most recently registered offset credits will be targeted for cancellation (at s 1.5).

But if a regulated entity has used offset credits for compliance purposes from an FM3 project, such an entity may be insulated from cancellation action by virtue of the liability cap (framed in the QP as a cap on the liability of the PD, a party that doesn’t actually have any true-up liability!) for three times the average annual emissions over the life of the project (a number that we will not know with any precision until the project ceases to inject).

It seems that same protection may be afforded to those who deal with an FM4 project – which raises the question of why any regulated emitter would choose to deal with a PD that did not elect to use FM3.

A reversal that occurs after the issuance of a closure certificate

If there is a reversal that occurs in this period, the QP provides that “the Director will not cancel emission offsets related to the post-closure reversal, and no action is required from the project developer or large emitter who used the emission offsets for TIER compliance.” (at s 1.5.3) The QP appears to offer two reasons for this position. The first is that once a closure certificate has been issued, the risk of reversals is considered to be low. There is some support for this claim in the *MMA*, at least for the two forms of sequestration tenure that contemplate the issuance of a closure certificate (CC). As noted above, s 120(3)(f) of the *MMA* stipulates that the Minister may only issue a CC, if the Minister, *inter alia* concludes that “the captured carbon dioxide is behaving in a stable and predictable manner, with no significant risk of future leakage.” In other words, the risks of loss of containment and reversal should be low. And this makes sense. The highest risk point for a project is the injection of the last tonne of CO₂; thereafter the risk profile declines as the pressure at point of injection dissipates through the target geological structure.

The second rationale is premised on the offset credit discounting discussed above. The assumption or premise therefore is that these retirements, either on a project basis or a pooled basis, will be sufficient to protect the integrity of the offset system.

The same rationale applies to projects using FM4 based on the understanding that much as with FM3 projects, an enhanced discount factor will have been applied to such a project since year 4. But in this case since there will be no CC issued the QP settles on what is effectively a proxy for that decision in order “to differentiate between project life cycle stages as they relate to a reversal”:

- Evidence is provided to the Director that all project wells associated with the emission offset project have been abandoned in accordance with applicable well abandonment regulations, directives, and rules; and
- 20 years have passed since the date the last project well was abandoned; and
- A post-crediting, pre-closure reversal as defined in section 1.5 has not occurred since the last well was abandonment. (at s 1.4)

It must follow that if a reversal has occurred during this period (the last bullet) that such a project will never move out of the “post-crediting, pre-closure period” and that, as such, those regulated entities who have used emissions credits to meet their TIER obligations will face a continuing obligation to true-up. And of course they cannot know this in advance.

4. Reporting on Containment Assurance

The project developer needs to file annual reports during the injection period in order to register offset credits. On the other hand, in order to be assured of permanence the Director will need continuing reporting post-injection, at least until closure. The QP seeks to address this by stipulating that:

To ensure the department continues to have assurance of containment, offset project developers must submit an annual containment assurance report to the Director. A containment assurance template is provided in Appendix C and must be used by the project developer. (at s 1.5.3)

Appendix C notes that this reporting must continue “each year in the post crediting period prior to the issuance of a closure certificate”. Presumably, in the case of an FM4 project the reporting must continue until the proxy conditions for a closure certificate laid out in s 1.4 for FM4 projects are met. The Appendix should make this clear.

The idea of reporting on assurance containment is obviously sound, both for AER scheme approval purposes but also for the purposes of assessing whether loss of containment also amounts to a reversal and the concomitant duty to true-up. But Appendix C also reveals that the responsibility for the completion of such a report may pose some challenges given the different roles of the project developer and the party responsible for sequestration activities. Here is what Appendix C has to say about this conundrum:

The emission offset project developer may be a different entity than the sequestration tenure holder, as administered by Energy and Minerals. The containment assurance report should be authored and submitted by the sequestration tenure holder. If there are more than one tenure holders associated with an emission offset project, each tenure holder must submit a containment assurance report. (QP, at Appendix C)

One wonders why this paragraph of the Appendix fastens on the tenure holder as the person who should be responsible for filing the containment assurance report rather than the holder of the AER scheme approval for the project. While in many cases the same party will hold both the tenure and the scheme approval, containment assurance seems more of a regulatory issue suited to the scheme approval rather than the conditions of tenure. I mention in passing that this emphasis on the tenure holder directly contradicts the first sentence of Appendix C which states that the report “is required to be submitted by the emission offset project developer to the Director” annually. Hopefully this inconsistency can be reconciled before the QP is finalized. I also note that the Appendix uses the capitalized term “Permitted Geologic Boundaries” which raises the question of whether this is a reference to the Targeted Geologic Storage Zone(s), the pore space held under the sequestration, the terms of the AER’s scheme approval or something else. As another aside I note that one of the closing sentences to s 5.1.6 references “conditions outlined in the operating license.” Is the reference to a “license” intended to be a reference to the scheme approval or something else?

5. The Treatment of Removals

In a world committed to net-zero, a removal and sequestration activity should have greater social utility, and therefore value, than a capture and sequestration activity. However, this is a value that such projects and project developers will have to monetize themselves by marketing their offsets to those prepared to pay a premium for a removal activity. Removal offset credits will not have any additional compliance value in Alberta’s system. The QP makes this clear when it states, “CO₂ removal credit types on the Alberta Emission Offset Registry will carry no additional compliance benefit and are subject to all requirements and restrictions of an emission offset under the regulation.” (at s 1.6)

6. The Limits to a QP when it comes to Changing TIER Rules

I think that the QP raises an important question as to what can be done by way of a QP and what may require an amendment to the TIER Regulation. I recognize that s 61 of the *Emissions Management and Climate Resilience Act*, [SA 2003, c E-7.8](#) and s 2 of the TIER Regulation allow the incorporation by reference of various standards etc., but this referential incorporation does not extend to QPs adopted on the basis of these standards. Accordingly, one must view with a degree of scepticism provisions in this Draft QP which seem intended to vary the provisions of the TIER Regulation. I refer specifically to the QP provisions that allow FM3 and FM4 projects to limit their true-up liability (or more accurately to limit the true-up liability of those who use FM3 and FM4 project credits for compliance purposes) as well as the statement in s 1.5.3 to the effect that:

If a post-closure reversal occurs, the Director will not cancel emission offsets related to the post-closure reversal, and no action is required from the project developer or large emitter who used the emission offsets for TIER compliance.

It is true that the Director's power to cancel an emission offset under s 22 of the TIER Regulation is a discretionary power, but I don't think that a QP can fetter the exercise of the Director's discretion in this blanket manner.

Conclusions

There can be no doubt that Version 1.0 of this QP required revision if for no other reason than to clarify what constitutes a reversal that requires an accounting – or, to put it another way, requires redress (true-up) from those who have used credits earned under the QP to meet their compliance obligations. The Draft QP Version 2.0 does address this issue although I caution that care must be taken to ensure that all parts of the QP speak with the same voice so as not to re-introduce uncertainty (see my remarks above about s 5.1.6 and Appendix C).

A key criterion for any review of a QP must be the integrity of the QP which criterion requires that the emissions avoided through the QP versus the baseline are real. It must also mean that, if there are reversals, somebody has the legal duty to ensure that those reversals are true-up by other offset activities. If that is not the case somebody has received credits for compliance purposes when the sequestration activities are inadequate.

How does Draft QP Version 2.0 fare when measured against this criterion? This is a big question, and I will only attempt to answer two elements of that inquiry in this post, those being the credit discounting provisions of the QP and the no-look back following issuance of a closure certificate (or its proxy in the case of FM4 projects).

Credit discounting is a recognized way of dealing with the risk of non-permanence and so in that sense we should welcome the introduction the ATB discounting provisions. I am not qualified to say if those provisions are adequate (eg should the QP adopt a more aggressive discount factor), but I do question why all projects are subject to the same base discounting. Some projects will present more risk than others. A project injecting into a depleted reservoir is far more likely to encounter issues associated with offsetting wells than a project (like Quest) injecting into a deep saline aquifer just above the basement. The province claims to recognize the idea of relative risk in setting the post closure sequestration fee (PCSF) on a project-by-project basis (see CSTR, at s 20) and if that is the case why not use the same risk-based approach to setting the base discount for different projects? Similarly, proposed amendments to the AER's Directive 065 will require risk assessments for CCS projects which might also inform the adoption of different discount factors for different projects.

The second form of discounting adopted by the QP however seems to me to be more problematic since it is evidently a form of risk insurance for FM3 and FM4 projects (and those who use the credits from such projects – although as I note above there is some ambiguity here as to whether FM4 projects take the benefit of the liability cap or are only subject to the higher discount factor) rather than assurance of the environmental integrity of the QP. After all, there is no provision in the QP or the TIER Regulation that transfers true-up liability to the province or any other fund such as the PCSF once a project's liability cap is reached.

Finally, the QP adopts the position that once a closure certificate has been issued (or its proxy in the case of an FM4 project) there will be no recourse (no look-back) against anybody who has used project related credits, even if there is a subsequent reversal. The rationalization for this is: (1) low risk of reversal, and (2) credit discounting. Both factors go a long way to providing assurance of the integrity of the QP if the discounting is sufficiently aggressive (not something that I can comment on), but if there is a post closure release that exceeds the pooled amounts in the discount account, the atmosphere will be the loser and the government will not step in to balance the account. All of this assumes that a QP authorizes a no look-back rule as articulated in s 1.5.3, and as I have already indicated I have my doubts about that given that this looks like an unlawful fettering of the Director's discretionary powers under s 22 of the TIER Regulation.

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