

SEARCHING FOR MEANING IN ENERGY RESOURCE 'CONSERVATION'¹

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Introduction

Energy issues are receiving particularly close attention these days due to heightened interest in cutting greenhouse gas emissions from energy production and consumption, as well as concerns relating to energy prices and national security. Given the prominence of energy on government agendas, it is no surprise that Alberta's Premier Ed Stelmach has committed the province to develop a "comprehensive energy strategy".² In developing this policy, the province should rigorously assess the utility of and logic underlying all existing energy-related policies, rather than take those existing policies for granted. This reassessment is especially warranted by an additional recent event – the province's commencement of a legislative process to split its chief energy regulatory body, the provincial Energy and Utilities Board (EUB), back into two separate boards. One Board will deal with upstream fossil fuel production and the other with management of the province's electricity system.³ This process warrants a reassessment of existing provincial energy policies to make sure that the two new energy Boards start their regulatory work with the proper underlying policy foundation and that the Boards are properly structured to effectuate those policies.

This article assesses one of the most prominent of Alberta's existing energy policies, which is the legislative objective in the *Energy Resources Conservation Act (ERCA)*, to "effect the conservation of, and prevent the waste of" Alberta's "energy resources".⁴ The *ERCA*'s purpose section lists several other purposes (discussed below).

However, the Act's "conservation" mandate was

the *only* legislative objective in the statutory predecessor to the *ERCA*.⁵ And although there are now other objectives, the *ERCA*'s reference to "conservation" in its title suggests that the "conservation" purpose trumps all others. Thus, energy resource "conservation" is said to "go to the very root" of the EUB's "purpose and existence"⁶ and is referred to as the Board's "primary objective" or "overriding mandate".⁷ In fact, just as it appears in the *ERCA*'s title, this mandate was reflected in the name of the Energy Resources Conservation Board (ERCB), which is one of the two Boards that were combined into the EUB and that will be created again if and when the EUB is split.⁸ (For simplicity, references in this paper to the "EUB" are intended to include the ERCB, unless otherwise noted.)

While the importance of the "conservation" mandate is clear, its actual meaning is not. This article explores the meaning and utility of the Act's energy resource "conservation" purpose in the context of non-renewable energy resources, particularly oil and gas.⁹ The article starts by addressing several plain or common meanings of the term "conservation" and discusses the *ERCA*'s lack of documentation of the term's meaning. The article then discusses the meaning of "conservation" from the standpoints of that term's use in several fossil fuel "conservation" statutes that operate in conjunction with the *ERCA*, and from the long history of oil and gas "conservation" programs and scholarship related to those programs. Finally, the article considers what, if any, legislative/policy reforms to the energy resource "conservation" mandate are warranted.



RÉSUMÉ

En développant une “stratégie énergétique globale”, la province de l’Alberta devrait évaluer soigneusement le sens et la valeur de ses politiques énergétiques actuelles. Cet article examine le mandat provincial de longue date de « conservation » des ressources énergétiques et conclut que ce mandat est ambigu et insuffisant parce qu’il n’encourage pas la prise en compte de la totalité des coûts et l’analyse du cycle de vie lors des développements énergétiques.

“Conservation” in the ERCA – An Undefined Purpose Without a Program

At first blush, the *ERCA*’s energy resources “conservation” mandate sounds sensible, but what does energy “conservation” really mean? Absent a definition of “conservation” in the *ERCA*, the term’s plain or ordinary meanings may be useful bases for interpreting the legislative term.¹⁰ These meanings appear to subsume “waste prevention” and thus suggest that the *ERCA*’s references to energy “conservation” and “waste prevention” are equivalent.¹¹ (Hence, references to “conservation” in the remainder of this article implicitly include “waste prevention” unless otherwise noted.) While this facet of “conservation” is relatively clear, the following discussion shows that there are several other facets of the term’s plain meaning that are much more ambiguous.

As relevant here, there are two variations in the plain meaning of “conservation”. One of these contemplates no diminution at all of a given resource.¹² This absolute concept is equivalent to “preservation” and arguably has no intuitive (or lay) application to production and use of non-renewable energy resources, because the total stock of those resources is necessarily diminished by each increment of production.

Under another possible plain meaning, “conservation” can result in some diminution of a resource provided the rate or quantity of diminution is socially acceptable.¹³ This meaning makes intuitive sense in the downstream energy context where, even if seldom specifically defined, “energy conservation” has long implied simply using less energy or using it more efficiently. However, this non-absolute meaning also has a better fit in the upstream, non-renewable energy context, because it accommodates the inevitable diminution associated with non-renewable resource production.

While it makes more sense than the absolute meaning, the non-absolute meaning of “conservation” is still problematic

in leaving open *how* the socially acceptable levels of diminution are to be determined. Are rates or volumes of diminution resulting from unfettered markets benchmarks of socially acceptable diminutions, even when there is no price for the non-energy resource inputs and the market prices for the energy inputs do not reflect the ‘external’ social costs of producing those inputs? If “conservation”-based limits on extraction rates are warranted given those non-market costs, how should “conservation” regulators weigh those costs against the benefits of marginal energy production in setting appropriate limits on extraction rates?

Putting these questions another way, how much of a resource should be saved now so that it is available for future generations?¹⁴ Are future generations better served by having access to non-renewable resource stocks than to the capital or other products of the wealth gained from prior generations’ production of that resource stock or, conversely, from avoiding the negative effects of such production in earlier generations? Does production in earlier generations promote additional exploration and technology development that actually increases available reserves for at least some number of subsequent generations? Are market-based interest rates appropriate bases for ‘discounting’ exercises to compare the values of future versus present production?

In short, the plain meanings of “conservation” raise several fundamental questions about the term’s application in the non-renewable upstream energy resource context. Unfortunately, the *ERCA* provides only incomplete answers to these questions because, as previously noted, it lacks a definition of “conservation”. However, at least some facets of the term’s meaning may be gleaned by negative inference from the Act’s other purposes. One of these other purposes, to “ensure environment conservation”, suggests that the Legislature did not consider “conservation” of energy resources and of the environment to be identical concepts. Likewise, another purpose, to ensure “safe and efficient” practices in upstream energy exploration, processing, development and transportation activities,



suggests that these goals are distinct from the Act's energy "conservation" goal (ss. 2(d) & (e)).

While the Act provides some clues as to what concepts may *not* be included under the "conservation" umbrella, these clues shed little light on what actually belongs under that umbrella. Besides failing to affirmatively define energy resource "conservation", the *ERCA* also lacks a clear mechanism for *implementing* that mandate. Other than the Act's threshold list of purposes, the only provision that actually refers to "conservation" is a section giving the EUB general authority to make recommendations to the provincial Cabinet on matters relating to energy development, including "energy conservation" (s. 21(b)). If anything, this section suggests the Legislature left it to the EUB to figure out what "conservation" really meant rather than provide its own view as to the term's meaning.

Another relevant *ERCA* provision requires the EUB to consider the "public interest" whenever the Board is required by another statute to conduct a "hearing, inquiry, or investigation" with respect to an energy-resource "project" (s. 3). These "public interest" determinations presumably should reflect consideration of the Act's several purposes, including the "conservation" objective.¹⁵ Conversely, this provision suggests that the EUB's efforts to "conserve" energy resources must fit within a broader "public interest" objective,¹⁶ although it is uncertain how and whether "conservation" actually serves that broader "public interest", as discussed further below.

In sum, the *ERCA*'s "conservation" objective sounds lofty and is spoken of reverentially in Alberta. But the Act's text appears to be largely symbolic and lacks a definition of the objective and provisions to implement it, and thus provides virtually no clues as to its meaning. This kind of omission would generally warrant giving the Legislature a failing grade for poor bill drafting. However, this criticism is somewhat harsh in the case of the *ERCA*'s "conservation" mandate, at least in the fossil fuel context, because there are additional, external clues as to the term's meaning in that context.¹⁷ The following parts of this article discuss those clues.

The Fossil Fuel "Conservation" Acts

Three fossil fuel "conservation statutes" – the *Oil and Gas Conservation Act (OGCA)*, the *Oilsands Conservation Act (OCA)*, and the *Coal Conservation Act (CCA)* – have "conservation" and "waste prevention" purposes that echo those in the *ERCA*.¹⁸ Indeed, these objectives have been considered the "pervasive and unifying theme" of the *ERCA* and the two conservation statutes listed above that cover

oil and gas.¹⁹ However, like the *ERCA*, none of these three fossil fuel conservation statutes specifically defines "conservation" but, unlike the *ERCA*, these three do define "waste" and then generally prohibit activities that "commit waste".²⁰ These statutes' "waste" definitions might therefore be considered evidence of legislative intent regarding the meaning of "conservation". Yet, as with the *ERCA*, the three statutes' plain references to both "conservation" and "waste" prevention might suggest the Legislature considered the two mandates distinct, if not closely related. In addition, the following analysis of the three statutes' "waste" definitions suggests that they too are ambiguous.

Starting with the *CCA*, that Act's definition of "waste" refers to "careless or improvident" mining practices that cause coal to be "lost" or that result in "reduced" coal "recover[ies]", and to "needless deterioration" of coal quality (s. 1(1)(r)). This definition is generally consistent with the non-absolute plain meanings of "conservation" and "waste" discussed above; yet, as with those lay meanings, the *CCA* definition's standards of conduct are inherently ambiguous. Are they defined by individual firms' own policies, by the best practices among all coal producers or some other industry benchmark, or by broader measures of social acceptability that account for costs and benefits which are external to the producers' own bottom lines?

The "waste" definitions in both the *OGCA* and *OSCA* are more complex than the *CCA*'s definition in that they have two parts. One part is a bare-bones reference to the "ordinary meaning" of "waste". (The lay person's "ordinary meaning" was discussed above and, thus, need not be repeated here.) However, there is some question as to whether the Legislature meant "ordinary" from a lay person's standpoint or from the historical usage of the term in the specific context of oil and gas regulation.²¹

The second part of the "waste" definitions in the *OGCA* and *OSCA* consists of a cross-reference to "wasteful operations" which term, in turn, is defined in both statutes by a list of several categories of wasteful activities. The listed categories differ somewhat between the two Acts but, read together, all of the categories (with one exception discussed below) essentially mimic the non-absolute approach of the (lay person's) "ordinary meaning" of waste. Thus, these categories cover operations that result in reduced recoveries or surface losses of oil and gas or bitumen that are considered "excessive", "improper", "inefficient", not "economic", or not justified by "sound engineering and economic principles".²² It is debatable whether the standards "excessive" or "improper" provide any more guidance than the lay person's "ordinary meaning" of waste, as discussed in above. The remaining three standards appear more specific, but even these





provide ambiguous guidance for drawing lines between non-wasteful and wasteful losses. Are the concepts of “economic” and “efficient” practices viewed from firm-based, industry-wide, or broader social perspectives? If the latter, to what extent should they involve considerations of the externalities and life cycle costs of upstream oil and gas production? What is the ultimate or underlying social objective of, or reason for, restricting losses to only those that are justified by “sound” engineering and economic principles?

Given the questions arising from the Acts’ “waste” definitions, it is not surprising that the EUB itself has observed that the “specific details” of the factors listed in the *OGCA*’s definition of “waste”, including the “economic tests”, are “left to the discretion” of the Board.²³ Put another way, the Legislature has purported to make a significant policy decision by generally prohibiting “waste”, but has effectively passed that policy function off to the Board by defining “waste” in such broad, ambiguous terms as to leave effective interpretation to the Board’s *ad hoc* or generic decisions.

As noted above, the *OGCA* and *OSCA* list an additional category of “wasteful operations” that does not generally track the non-absolute “ordinary” meaning. This category covers operations that produce petroleum fuels and related products “in excess of proper storage facilities or of transportation and marketing facilities *or of market demand*” for them.²⁴ While this category lacks the ambiguities associated with the non-absolute standards of conduct, its reference to “market demand” is similarly ambiguous or open ended. The *OGCA* defines “market demand” as the amount of oil or gas that is “reasonably needed for current consumption, use, storage and working stocks within and outside Alberta.”²⁵ It is arguably hard enough to forecast demand for oil and gas by calculating historic demand and then predicting future trends in commercial and non-commercial activities that use oil and gas. But adding a determination of a “reasonable” need for oil and gas impliedly requires additional, complex determinations of current and potential future efficiencies of these uses and of availabilities of alternative fuels and non-energy sources for oil and gas products. To make matters worse, “market demand” is itself a function of government policy and regulation, particularly with respect to social costs that are external to market prices. Because “market demand” does not occur within some ‘natural state’, any government decision-making under these statutes based on predictions of “market demand” is a circular exercise. However, this is somewhat of an overstatement from the EUB’s perspective, because the Board might simply take other government decisions affecting “market demand” as givens for purposes of the Board’s own determinations of “market demand”

and, accordingly, of whether any oil and gas operations are “wasteful” under the Act.

In sum, the three fossil fuel “conservation” acts purport to flesh out the *ERCA*’s “conservation/waste prevention” mandate through the statutes’ “waste” definitions, but those definitions are themselves ambiguous. Thus, it is no surprise that the EUB has reported to have “engaged in many debates over the years to try to define the most appropriate criteria for determining the difference between waste and acceptable production practice.”²⁶

Of course, the Acts’ “waste” definitions are not the only legislative clues as to the meaning of oil and gas “conservation” in Alberta. In addition to defining and generally prohibiting “waste”, the three fossil fuel “conservation” statutes contain extensive regulatory regimes (all implemented by the EUB) for their respective fossil fuel sectors. Thus, one might say that the statutes’ conservation mandates are defined, if not directly then indirectly, by the nature and scope of those regulatory regimes. Even under this interpretation, it is still difficult to glean an abstract meaning of “conservation” because the Acts contain little additional policy direction, beyond their “conservation” purposes and several other purposes (like those in the *ERCA*), as to how the EUB should exercise its regulatory discretion.

Given this legislative policy vacuum, one might conclude that “conservation” is more of a label for the EUB’s broad regulatory discretion than a coherent, self-standing resource management principle.²⁷ This interpretation has considerable appeal from a practical standpoint, but it arguably offends legal principles for legislative interpretation because it would essentially render the “conservation” provision in the Act’s purpose section meaningless and provide no good guidance for energy resource developers. Absent meaningful legislative clues, the historical usage of “conservation” in the oil and gas industry likely provides the most compelling evidence of this meaning although, as discussed below, that evidence itself is unclear as to what “conservation” means.

The Historical Meanings of Oil and Gas “Conservation”

The term “conservation” has long been a mantra for managing conventional upstream oil and gas production in Alberta and in other Canadian and U.S. jurisdictions.²⁸ There is an extensive record of this “conservation” history, including generic “conservation” policies and case-specific “conservation”-based decisions of regulators relating to numerous different aspects of oil and gas production. And





there is a considerable body of “conservation” scholarship providing theoretical, empirical, and historical analyses. The aim of this part is not to provide a comprehensive review of this historical record but simply to glean the salient facets of the oil and gas “conservation” history, relying primarily on secondary sources, in order to determine what if any clues this history provides for understanding the meaning of non-renewable energy “conservation”.

Oil and Gas “Conservation” Problems and Programs

The history of oil and gas “conservation” goes back to the pioneer programs for regulating oil and gas production in the U.S.²⁹ In both the U.S. and Canadian contexts, oil and gas “conservation programs” were developed in response to courts’ application of the common law ‘rule of capture’ to petroleum reservoirs. Under this rule, a person who has rights to produce sub-surface minerals under one tract of land is not liable to any holders of mineral rights under neighbouring tracts for loss of oil and gas drained from under those tracts by a well drilled on the person’s own land. The practical effect of the rule is to encourage oil and gas rights holders to drill wells as quickly as they can, through as many wells as possible, to avoid losing access to reserves that might be drained by neighbouring holders of ‘correlative’ rights to the same pool. These incentives in turn can cause over-investment in production, sloppy practices resulting in surface losses, and rapid drainage that reduces reservoir pressures and thus the total volumes recovered from each reservoir being produced.³⁰

To remedy the problems that have been of concern to “conservation” programs, the classic or most common tools used in those programs have been requirements to minimize the flaring of natural gas and other kinds of surface losses of oil and gas during production, and to require ‘enhanced recovery’ techniques and specified production rates and well spacings to maintain reservoir pressures.³¹ (In the latter sense, it might be more fitting to say that the resource being “conserved” is reservoir pressure rather than the oil or gas being produced.³²)

As with the plain or ordinary meaning of “conservation”, these historic “conservation” programs have generally been considered to be equivalent to, or to at least include, the concept of “waste” prevention.³³ Thus, “waste” prevention can be considered an underlying “conservation” objective from a historical standpoint. However, this linkage of “conservation” and “waste” prevention is questionable when viewed from a legislative standpoint, because the *ERCA* and oil and gas “conservation” statutes all refer to those terms as related but *distinct* concepts (as noted above).

Several underlying objectives have been mentioned in connection with the conventional oil and gas conservation

programs discussed above: maximizing recovery in any given reservoir; ensuring equitable access among correlative owners of production rights to a given reservoir; and, preventing over-investment in production which is often referred to as “economic waste” or inefficiency – *i.e.*, excess production expense per unit of output. (Price stabilization or maintenance was an additional historical objective, at least, in some jurisdictions, although there is some question whether this was a ‘true’ “conservation” objective.³⁴) However, not all of the three objectives are consistently mentioned among “conservation” scholars; nor does there seem to be a consensus on their relative importance.³⁵ As two U.S. “conservation” scholars commented several decades ago, the wide range of state regulatory programs that were subsumed under the “conservation” rubric “diffuses the term into an almost meaningless coverage incapable of definition.”³⁶ Compounding this confusion, Alberta’s two oil and gas “conservation” statutes collectively expressly aim to promote “efficiency” and protect correlative rights, *in addition to* ensuring oil and gas “conservation”.³⁷ Thus, as with the texts’ distinction between “conservation” and “waste” prevention, these distinct legislative references suggest that the Legislature intended “conservation” to mean something *other* than promoting “efficiency” and protecting correlative rights.³⁸

In the oil sands context, the “conservation” principle has been especially prominent as a justification for the EUB’s issuance of orders shutting in wells for producing reserves of natural gas that are “associated” with underlying bitumen deposits, when production of that gas might jeopardize recovery of the underlying bitumen. The EUB’s logic is that the raw energy content of the bitumen being protected – measured on an ‘oil equivalence’ basis – greatly exceeds that of the “associated” gas.³⁹

What the “Conservation” Objectives Don’t Cover

As noted above, there are questions as to whether all of the historical oil and gas “conservation” objectives fit within the legislative concept of “conservation”. There are additional questions as to why these historical objectives have been pursued. Before attempting to answer these questions, it is worth clarifying several limitations in the scope of the objectives or, in other words, what the objectives do *not* purport to cover.

First, “conservation” is not described as having been intended to maximize *net* energy output *per se* – *i.e.*, energy output minus energy inputs needed to generate that output. Nor is it meant as a goal to minimize the full, life-cycle costs of energy production.⁴⁰ This said, there are ongoing attempts to account for and reduce the life cycle costs of “conservation” activities. For example, a





provincial cabinet regulation offers limited royalty credits for oil and gas producers who use CO₂ in place of water for enhanced recovery operations.⁴¹ And oil sands operations are being assessed from life cycle standpoints using assessment methodologies that are being increasingly refined.⁴² More work is arguably needed to not only perfect life cycle assessment methods but also to fully incorporate their results in regulatory and policy decisions.⁴³

Second, upstream oil and gas “conservation” has not been viewed as contingent upon, or as a function of, the implementation of downstream energy conservation policies. This non-linkage was observed forty years ago by Lovejoy and Homan who noted that, in the “petroleum industry and among state [petroleum] regulatory agencies, the end-uses to which petroleum is to be put are almost completely excluded from discussions of conservation.” In fact, the authors concluded with some regret that there was “something approaching a dogmatic taboo against mentioning the subject” of downstream end-uses in the context of upstream “conservation”.⁴⁴ This said, all three fossil fuel “conservation” statutes include provisions for the EUB’s regulation (through an “industrial development permit” program) of the downstream use of fossil fuels by large-scale industrial and manufacturing operations. However, the upstream and downstream energy “conservation” provisions are functionally linked in these statutes only in the sense of being contained in the same statutory texts.⁴⁵

Third, “conservation” does not seem to guide considerations of equitable or otherwise appropriate allocations of *all* conventional oil and gas reserves between present and future generations.⁴⁶ Finally, the three historical “conservation” objectives are related to, but distinct from, considerations as to whether a jurisdiction-wide production/reserve ratio – *i.e.*, the amount produced today versus the amount left in place for future production – will maximize the jurisdictional owners’ *rents* in light of current and future resource prices, interest rates, and technology and other factors bearing on production costs and reserve discoveries. How these factors bear on socially optimal production rates is a central question for natural resource economists.⁴⁷ And while economists have occasionally referred to this production rate question under the broad rubric of “conservation”,⁴⁸ this topic does not seem to have been relevant to government decision-making under oil and gas “conservation” programs.⁴⁹

In Search of a Unifying Theory

Besides identifying these limitations in the “conservation” concept, it is worth considering whether there is a single or unified principal or definition of “conservation” that can be gleaned from the historical record. There have been

attempts to articulate an unambiguous “conservation” concept but their success is questionable. Thus, for example, U.S. economists Lovejoy and Holman referred to the “looseness and vagueness” of the “conservation” concept that has been articulated in “industry circles”.⁵⁰ Writing in the 1970s, Canadian economist Anthony Scott opined that “conservation” involved “using the results of research into the most profitable methods of production so that no oil which might return a good profit is lost.”⁵¹ However, Scott’s definition is utterly ambiguous as to the relative roles of governments and markets in determining appropriate production practices and outputs.

Putting aside scholars’ attempts to synthesize a unifying theory of oil and gas “conservation”, what theory has the EUB applied in carrying out its broad regulatory discretion under the fossil fuel “conservation” statutes? The answer is unclear, in part, because the Board does not appear to have ever articulated an abstract theory and logic of “conservation”.⁵² Former EUB member George Govier has provided an often-referenced explanation which lumps the concepts of “efficiency” and “economically avoidable” waste with notions of protecting the interests of future generations and waste elimination in general.⁵³ This explanation has appropriately been described as an ambitious attempt to “blend ... traditional conservation philosophy, insights from practical engineering experience, and economic theory”.⁵⁴ However, it hardly provides a uniform underlying abstract theory from which regulatory approaches in varying petroleum and non-petroleum energy resource contexts can be logically derived. In his landmark history of the EUB, Breen noted that petroleum “conservation” regulations “did not emerge full-blown from a solidly constructed theoretical foundation.”⁵⁵ Nor does it appear that the EUB has ever developed such a foundation after the fact and thus has not embedded this foundation in its decisions.

Preliminary research suggests that, besides not articulating a foundational “conservation” theory, the Board has shifted over time in its views as to the principle’s implications. An illustrative example of this shift is the EUB’s policy for conserving ‘solution gas’ which is gas that exists in solution with crude oil in a reservoir but separates from the oil during production. For a period up to the late 1990s, the Board believed that ‘solution gas’ should be “conserved” – *i.e.*, recovered and put to use, rather than flared or vented to the atmosphere – only when this approach was cost effective from the industry’s own cost-benefit standpoint.⁵⁶ By contrast, the EUB currently decides whether solution gas should be “conserved” based on a cost-effectiveness standard that is not driven by the industry’s own financial bottom line.⁵⁷ The fundamental nature of this shift from the industry to the public’s perspective of cost effectiveness supports Breen’s conclusion, noted above, that the Board’s



“conservation” programs have not been premised on a strong underlying theoretical foundation.⁵⁸

The “Conservation” Objectives and the “Public Interest”

The absence of a single theory underlying the three historical “conservation” objectives makes it difficult to assess how those objectives are intended to serve the broader “public interest”, but does not preclude that inquiry altogether. We offer several conclusions based on the above analysis.

First, two of the three historical “conservation” objectives – protecting correlative rights and promoting efficient production – if not also the third objective of maximizing production, are likely aimed primarily at promoting the profitability or health of the oil and gas sector as a whole. The means for achieving this profitability objective, in turn, is essentially to protect the sector against the harms any one of its members might inflict on itself and on the other members through their naturally competitive responses to the ‘rule of capture’. While questions have been raised about how the public as a whole benefits from those protective measures,⁵⁹ the case can at least be made that any benefits to the oil and gas industry inure *indirectly* to the public as well, based on the logic that the overall economy thrives when the oil and gas sector is healthy. To the extent it has really been applied, the upstream production efficiency objective may also have direct benefits for the general public, but even the nature of the actual public benefit has been questioned.⁶⁰

The historical “conservation” objective of maximizing production also seems to have a more direct connection to the “public interest” which is based on a notion that it is simply wrong, from some fundamental or moral standpoint, to ‘strand,’ ‘sterilize,’ or otherwise render unusable a natural resource that has no apparent social utility *in situ*. Thus, Lovejoy and Holman note that “conservation” is “more a movement and an ethic for avoiding waste in some physical sense than a mere extension of the economic theory of optimum allocation of resources between uses and through time.”⁶¹ The authors themselves characterize it as a “puritan directive not to ‘waste’ our God-given resources”.⁶²

The moral notion is intuitively appealing but only at first blush. This appeal diminishes when, as explained above, the “conservation” imperative is exercised without consideration of the full life cycle costs of maximizing production (or of maximizing output on an oil equivalence basis). In simple terms, it may not be wrong to forego producing the last drop of oil or gas from a given pool, or even a larger or significant percentage of that remainder, if the social costs of that marginal production – *e.g.*, costs

arising from production and consumption of other natural resources needed to maximize production of a given oil or gas pool – are greater than the social benefits.

Of course, just because full life cycle costs seem to be excluded from historic oil and gas “conservation” objectives doesn’t mean the EUB has to ignore them in applying the *ERCA*’s environmental conservation and efficiency objectives and in making its “public interest” decisions.⁶³ However, if energy resource “conservation” is nevertheless viewed as the EUB’s chief or primary mandate (as noted in the introduction above), historic conservation objectives may trump all other “public interest” considerations in practice. The EUB’s reliance on the “conservation” principle as a basis for resolving the ‘gas over bitumen’ dispute suggests that this is the case, at least, in those contexts where “conservation” issues arise in the first instance.⁶⁴ The narrow scope of issues typically addressed in oil and gas “conservation” literature also suggests that full cost life cycle considerations have generally been excluded in other oil and gas “conservation” contexts.

In sum, there is an extensive historical record – from industry, government, and scholars – of oil and gas “conservation”, but the record is problematic for discerning a coherent meaning of the term as used in the *ERCA*. This is due, in part, to the apparent lack of an underlying “conservation” theory. And while several “conservation” objectives are commonly referenced, they are not consistently embraced under the “conservation” banner and may not fit within the legislative use of the term. Finally, the objectives are limited in scope or focus and, thus, their linkage to the broader “public interest” is hardly clear.

The Future for “Energy Resource Conservation”?

The ambiguous nature of the province’s oil and gas “conservation” mandate strongly suggests that legislative reform of the mandate is warranted. This part provides several points to help policy makers in deciding what kind of reform is needed. First, the *ERCA*’s application of its “conservation” objective (as well as its other threshold objectives) to *all* “energy resources” provides an implied legislative directive that provincial energy policies and programs should reflect a comprehensive, holistic focus.⁶⁵

This said, the “conservation” mandate should itself be seriously reconsidered in all its applications. Besides the uncertainties as to what it means in various upstream energy resource contexts, the concept’s apparent preclusion of full cost life cycle, system-wide considerations, as discussed above, severely limits





its utility as a guide for government decision-making. Thus, “conservation” should be re-defined or, more accurately in the *ERCA*'s case, newly defined, to reflect these considerations. Alternatively, perhaps the *ERCA*'s “conservation” provision should be retired altogether in the upstream energy context and replaced with a new mantra for a more holistic, system-based approach. “Integrated energy” management, as expressed in a 2006 provincial “vision” statement, and “resource sustainability” are two terms that might fill this legislative void, but they too should be supported by reasonably clear definitions and implementing provisions.

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Notes

1. This article is excerpted from a more extensive study by the authors: *Is “Conservation” Worth Conserving? The Implications of Alberta’s “Energy Resource Conservation” Mandate for Renewable Energy*, Occasional Paper No. 20 (Calgary: CIRL, 2007).
2. Premier Ed Stelmach, *Government Priorities*, <http://www.premier.alberta.ca/news/>.
3. Bill 46, *Alberta Utilities Commission Act*, Third Sess., 26th Leg., Alberta, 2007.
4. R.S.A. 2000, c. E-10, s. 2(c).
5. *Oil and Gas Resources Conservation Act*, S.A. 1938, c. 1, s. 3.
6. *Giant Grosmont Petroleum Ltd. v. Gulf Canada Resources Ltd.* (2001), 93 Alta. L.R. (3d) 242 at 259 (Alta. C.A.), Picard J.A., leave to appeal dismissed, [2001] S.C.C.A. No. 484.
7. *EnCana Corp. v. Alberta (Energy & Utilities Board)* (2005), 33 Alta. L.R. (4th) 223 at 227 (Alta. C.A.), Hunt J.A.
8. See *Alberta Energy and Utilities Board Act*, R.S.A. 2000, c. A-17. The ERCB was created in 1971. Bill 61, *Energy Resources Conservation Act*, 4th Sess., 16th Leg., Alberta, 1971, cl. 3. This Board was itself a successor to two prior oil and gas “conservation” boards. See Wenig & Moore, *supra* note 1 at n. 17.
9. For a discussion of the possible meanings of “conservation” in the renewable energy context, see Wenig & Moore, *supra* note 1.
10. The term also has a *scientific* meaning, but this meaning makes no sense as a guide to upstream energy development. See *ibid.* at 8.
11. For example, the Oxford English Dictionary (OED) defines the noun “conservation” as the act of “conserving” or as the “preservation from ... waste”. OED online: <http://dictionary.oed.com>.
12. For example, the OED defines the verb “to conserve” as to keep from “decay, or loss” or to preserve from “destruction or change”, or to “preserve or maintain in being or continued existence”. *Ibid.* Similarly, one of the OED’s definitions of “waste” is a gradual loss or diminution of a resource. *Ibid.*, definitions II.8.a and 9.a. Thus, waste prevention logically means preventing gradual loss or diminution.
13. For example, one OED definition of the verb “to conserve” is to preserve “with care”. *Ibid.*, definition #1. This is a non-absolute concept in the sense that acting “with care” may reduce diminutions but not necessarily eliminate them altogether. This non-absolute sense is reflected in one OED definition of “waste” as a “useless” diminution or “squandering” of a resource. *Ibid.*, definition II.5.a.
14. One “conservation” scholar refers to “conservation” as a “policy which aims at ensuring the future existence of resources by sacrificing ordinary investment, consumption, and leisure now, for the benefit of future generations.” Anthony Scott, *Natural Resources – The Economics of Conservation* (Toronto: McClelland & Stewart Ltd., 1973) at 47; see also *ibid.* at 30 (similar “conservation” definition).
15. See, e.g., EUB, *Policy Review of Solution gas Flaring and Conservation in Alberta* (Calgary: June 1997) at 14 (“The purview of public interest includes ... conservation of non-renewable resources.”); and *Giant Grosmont*, *supra* note 6 at 261 (referencing the “public interest in energy resource conservation”). In contrast with this implied link to “conservation”, the *ERCA* specifically states (s. 3) that the EUB’s “public interest” review of proposed projects must reflect consideration of the “social and economic effects of the project and the effects of the project on the environment”.
16. *Giant Grosmont*, *ibid.* at 264 and *Encana Corp.*, *supra* note 7 at 227 (both decisions referring to the EUB’s responsibility for the “conservation of energy resources in the public interest”).
17. The criticism may be unduly harsh for the additional reason that the Legislature’s failure to define “conservation” is hardly unique among users of the term. As noted by one “conservation” scholar, “there are many books with the word ‘conservation’ in their title which seem never to define the phrase and to do nothing more than to describe the current situation of supply *vis-à-vis* demand for each of a dozen or so resources.” Scott, *supra* note 14 at 28.
18. *OGCA*, R.S.A. 2000, c. O-6, s. s. 4(a); *OSCA*, R.S.A. 2000, c. O-7, s. 3(a); and *CCA*, R.S.A. 2000, c. G-4, s. 4(d).
19. *Giant Grosmont*, *supra* note 6 at 259. See also *Alberta Energy Co. v. Goodwell Petroleum Corp. Ltd.* (2004) 22 Alta. L.R. (4th) 4, Fruman J.A. (noting that the *ERCA*, *OGCA*, and *OSA* “create a single regulatory regime that requires each statute to be read in the context of the other statutes within the overall scheme”).
20. See *OGCA*, ss. 1(1)(ccc) & 107; *OSCA*, ss. 1(1)(s) & 22; and *CCA*, ss. 1(1)(r) & 46.
21. See Owen L. Anderson, *Oil and Gas Conservation on Canada Lands*, Working Paper No. 7 (Calgary: CIRL, 1985) at 26 (interpreting the “ordinary meaning” of waste as referenced in Canadian federal oil and gas legislation as referring to the “ordinary *oil and gas law* meaning” rather than to an ordinary meaning in a more general context (emphasis in original); and *Canada Oil and Gas Operations Act*, R.S.C. 1985, c. O-7, s. 18(2) (defining “waste” as its “ordinary meaning” as well as “waste as understood in the oil and gas industry”).
22. *OGCA*, s. 1(1)(ddd); and *OSCA*, s. 1(1)(t).
23. EUB, *Policy Review*, *supra* note 15 at 15.
24. *OGCA*, s. 1(1)(ddd)(vii); and *OSCA*, s. 1(1)(t)(iv) (emphasis added).
25. *OGCA*, s. 1(1)(dd). By contrast, the *OSCA* does not define “market demand”.
26. EUB, *supra* note 15 at 15.
27. Lovejoy and Homan echo this view implicitly by noting the lack of distinct “conservation”-type regulations and that, in “popular [petroleum] industry usage, ‘conservation regulation’ is the behavior enforced upon the industry by regulatory statutes and agencies”. Wallace F. Lovejoy & Paul T. Homan, *Economic Aspects of Oil Conservation Legislation* (Baltimore: Johns Hopkins Press, 1967) at 9. See also, e.g., David H. Breen, *Alberta’s Petroleum Industry and the Conservation Board* (Edmonton: University of Alberta Press, 1993) at 1 (noting



- that the “entire range of activities” conducted by “conservation boards” is “commonly described by the phrase ‘conservation’ regulation.”).
28. Further research is needed to determine how the concept has been applied in the coal sector.
 29. See, e.g., Michael J. Wozniak, “Expanding Authority of Oil and Gas Conservation Commissions” in *Proceedings of the Rocky Mountain Mineral Law Fifty-Second Annual Institute, July 20-22, 2006* (Westminster, CO: Rocky Mountain Mineral Law Foundation, 2006), ch. 15 at §15.03; and G.W. Govier, “The Administration of the Oil and Gas Conservation Act in Alberta” (1969) 7 Alta. L. Rev. 341.
 30. See, e.g., Wozniak, *ibid.* at 15-6 – 15-8.
 31. See generally Breen, *supra* note 27; see also, e.g., Ibrinke Tinuola Odumosu, *Reforming Gas Flaring Laws in Nigeria: The Transferability of the Alberta Regulatory Framework* (LL.M. Thesis, University of Calgary, Faculty of Law, 2005), ch. 4; Govier, *supra* note 29 at 341; and Anderson, *supra* note 21 at 6-7.
 32. See Scott, *supra* note 14 at 163 (referring to oil pro-rationing schemes as having the effect of “conserving” both the oil and underground gas pressure).
 33. Several sources addressing oil and gas “conservation” confirm this linkage to “waste prevention”. See references cited in Wenig & Moore, *supra* note 1 at note 82.
 34. See *ibid.* at note 84.
 35. For a range of perspectives on the primary objectives of oil and gas “conservation”, see references in *ibid.* at note 85.
 36. Lovejoy & Homan, *supra* note 27 at 6; and *ibid.* (noting that the term “is used with different meaning by different people inside and outside the petroleum industry”) and at 26 (noting that “conservation” “cannot be defined” through its use by the petroleum industry and regulators).
 37. Efficiency is listed in one of the *ERCA*’s purposes and in two of each of the other conservation acts’ lists of purposes. *ERCA*, s. 2(e); *OGCA*, ss. 4(b) and (c); *OSCA*, ss. 3(b) and (g); and *CCA*, ss. 4(c) and (f). The *OGCA* is the only statute among the four that expressly aims to protect correlative rights. *OGCA*, s. 4(d) (aiming to “afford each owner the opportunity of obtaining the owner’s share of the production of oil or gas from any pool”).
 38. Thus, Govier’s characterization of all of these objectives as the “three main conservation objectives” (Govier, *supra* note 29 at 342), is inconsistent with the Legislature’s separate references to “conservation” and the other objectives in the Acts’ purpose sections. The Board itself has referred to these two functions in separate breaths. See ERCB, *Conservation in Alberta – 1971* at 4 (listing “Conservation” and “Protection of Correlative Rights” as distinct functions within an overall role of “Management of Energy Resource Development”).
 39. See Michael Wenig, “Valuing Energy Resources” (Fall 2002) 80 Resources 1. For a critique of ‘oil equivalence’ as a criterion for comparing energy values in other contexts, see M.A. Adelman & G. Campbell Watkins, “Costs of Aggregate Hydrocarbon Additions” (June 2004) 25 The Energy J. 37-51; and Dr. John Lohrenz, “In Situ Gas To Oil Equivalence 6 MCF/Barrel? Aw C’mon?” (December 1998) 6 Dialogue (U.S. Ass’n for Energy Econ.) 8-11. Notably, the Alberta Court of Appeal has upheld the EUB’s resolution of the ‘gas over bitumen’ conflict under the Board’s broad “conservation” mandate, notwithstanding the Legislature’s removal of provisions that would have specifically authorized the Board’s action. *Giant Grosmont*, *supra* note 6 at 263. This decision was not unanimous, however. One dissenting Justice concluded that the EUB’s decision to “protect one [energy] resource to the detriment of another” was a “major policy decision” that could not “wholly be justified by the legislative objective of [conservation and] waste prevention.” *ibid.* at 277, Conrad J.A.
 40. See generally, e.g., Wenig, *ibid.*; see also, e.g., *BP Canada Energy Co. v. Alberta (EUB)*, (2004) 27 Alta. L.R. (4th) 234 at 249, Wittmann J.A. (in denying the associated gas producers’ request to stay the EUB’s decision to shut in the associated gas wells, concluding that the “balance of convenience is clearly in favour of the public interest” in shutting in the gas wells, because the energy content of the bitumen is 600 times that of the shut-in gas production).
 41. *CO₂ Projects Royalty Credit Regulation*, A.R. 120/2003.
 42. See Joule Bergerson & David Keith, *Life Cycle Assessment of Oil Sands Technologies* (Calgary: ISEEE, 2006).
 43. Michael M. Wenig & Dr. William A. Ross, “Making Progress Toward a Truly *Integrated* Energy Policy” (March/April 2007) 31 LawNow 43-44.
 44. *Supra* note 27 at 11.
 45. See *OGCA*, s. 43; *OSCA*, s. 12; and *CCA*, ss. 28-31. For information on this permit program, see EUB Directive 025: *Industrial Development Permit Applications to the ERCB* (September 1981); see also Steven A. Kennett, ed., *Canada Energy Law Service – Alberta (CELS)* (Thomson-Carswell, 2005), Part 25; and D.J. Jenkins, “Industrial Development Permits” (1979) 17 Alta. L. Rev. 467-496.
 46. See Lovejoy & Holman, *supra* note 27 at 10-16; but see Scott, *supra* note 14 at 26 (noting that conservation objectives in the 1920s included retaining resource stocks for future use).
 47. See Wenig & Moore, *supra* note 1 at note 96.
 48. See references in Odumosu, *supra* note 31 at 30 and n. 122.
 49. For example, in deciding to shut-in associated gas wells in order to “conserve” a bitumen deposit, the EUB expressly eschewed the gas producers’ request that the two resources be compared according to their net present values, while at the same time the Board avoided second-guessing the bitumen producers’ desired production schedule, which was a critical factor in those net present value calculations. See Wenig, *supra* note 59 at 3.
 50. *Supra* note 27 at 26.
 51. Scott, *supra* note 14 at 26.
 52. This conclusion is based on a search of EUB policy statements published outside of the context of specific quasi-judicial adjudications.
 53. See Breen, *supra* note 27 at 3 (reference omitted); and Ken Banister, *A New View of Conservation: The Sustainable Development of Energy Resources in Alberta* (May 2003) at 9 [unpublished].
 54. Breen, *ibid.* at 3.
 55. *ibid.* at 4.
 56. According to the Board, it generally intervened in this industry-focused cost calculation only when necessary: to ensure consistency among different firms that might draw different conclusions from the same costs; to account for “conservation” techniques that would be cost-effective under scenarios of intra-firm cooperation that competitive firms might not undertake on their own; or, due to overriding “public interest” concerns. EUB, *Policy Review*, *supra* note 15 at 15-16.
 57. More specifically, the Board currently requires the “conservation” of solution gas even if the ‘net present value’ of a method for recovering and reusing the gas is below \$0, and thus not cost effective to a producer, provided that the net present value is minus \$50,000 or more. EUB Directive 060: *Upstream Petroleum Industry Flaring, Incinerating, and Venting* (revised 16 November 2006), part 2.8.
 58. For a discussion of the EUB’s rule change, see Wenig & Moore, *supra* note 1 at note 107.
 59. See, e.g., Maurice J. Sychuk, “Conservation: Is it Justified in the Public Interest” (1969) 7 Alta. L. Rev. 355 at 358 (noting that “one of the strongest criticisms of the conservation program is that conservation does not promote public welfare but is a private price maintenance scheme.”).
 60. See Odumosu, *supra* note 31 at 33 (noting the public interest factors that are not addressed by efficiency considerations).
 61. *Supra* note 27 at 25.
 62. *ibid.* at 25, n. 16.
 63. Unlike the *ERCA*, each of the three fossil fuel conservation acts refers to promotion of the “public interest” in its list of threshold purposes. See *OGCA*, s. 4(c); *OSCA*, s. 3(b); *CCA*, s. 4(c); and *ERCA*, s. 3. A literal reading of these purpose provisions suggests that the “public interest” is not a ‘bottom-line’ kind of consideration that encompasses all others.
 64. Wenig, *supra* note 39.
 65. For a discussion of the justifications for a comprehensive focus, see Wenig & Moore, *supra* note 1 at 32-33.



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