

Title:	Directive for Water Licensing of Hydraulic Fracturing Projects – Area of Use Approach
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Scope and Applicability

This directive does not replace or override requirements specified in other guidelines, directives, regulations, policies or legislation in effect at the time of application for a licence under the *Water Act*.

This directive applies to hydraulic fracturing projects, typically with a longer development horizon, which are planned to occur over a specified geographic area and that have ongoing water needs over the life of the project. These projects are generally distinguished by:

- an operating area that is identifiable and constrained by mineral tenure rights held by an applicant;
- multiple hydrocarbon wells to be developed within those specific and defined geographic areas;
- hydrocarbon wells that are completed using multi-stage hydraulic fracturing techniques; and
- well pad and hydrocarbon well development that is staged to occur over many years.

For this type of oil and gas project, there are unique characteristics warranting development of a tailored approach to water licensing. These include:

- most of the water being required prior to the operating phase of each hydrocarbon well (i.e. used initially only for the fracturing of a formation, with no ongoing water need in the hydrocarbon production phase of the well);
- the exact surface location of each hydrocarbon well over the life of the project not being known at the outset of the project; and
- the surface areal extent of where an operator is authorized to explore and develop for oil and gas being known and defined by the mineral tenure rights.

A distinguishing characteristic is the longer-term need for water over the life of a project, where use at a single location is short-term, and the ongoing water use is characterized by spatial movement in progression to the next hydrocarbon well development location.

Intent

This directive provides direction to the Alberta Energy Regulator to ensure a consistent approach in evaluating the various factors regarding water licensing of hydraulic fracturing projects with multi-year operations occurring over an area of use constrained by mineral tenure rights. The directive also provides direction to applicants when preparing licence applications under the *Water Act*.

Background

Mineral tenure rights held by oil and gas companies can span a wide range of land areas, from multiple sections of land and up to many townships in size. As a consequence, multi-stage hydraulic fracturing projects are generally planned in a sequence of development and can extend over larger geographic areas.

The conventional approach for licence applications, typically for smaller areas or projects where the details of the surface locations of water use are provided at the application stage, is difficult to apply to longer-life multi-stage hydraulic fracturing developments. Traditionally, applications to divert water for oil and gas wells have been handled on a “well-by-well” basis by issuing temporary diversion licences for each well completion, or for each well pad development. However, this approach generally would not explicitly consider potential cumulative effects within long-life projects; and also does not provide sufficient regulatory certainty or incentive for applicants to consider longer-term investments in infrastructure that could reduce the overall impact of activities.

To better enable the policy outcomes around water use and conservation by the energy sector, longer term, multi-year licences are the preferred water allocation approach for multi-stage hydraulic fracturing projects. These types of projects require greater flexibility regarding use of water, where the project areas are known at the time of application but exact locations where water will be applied become known as development plans are finalized and operational phases commence. There is a need to:

- balance avoidance of speculation in the water resource with flexibility regarding how the precise locations of water use are identified;
- clarify the areal considerations and requirements for licences, including the information the proponent is required to provide for these types of applications;
- demonstrate that the projected and likely impacts of a project within an area have been adequately assessed, considered, and can be mitigated.

Purpose of Licensing using an Area of Use Approach

The purpose of developing this directive for hydraulic fracturing projects is to allow operational flexibility by a licensee within specific and defined geographic areas of oil and gas development, while remaining within provisions of the *Water Act*.

Compared to the traditional licensing approach (obtaining temporary licences for each well), this directive is intended to enable better management of water resources; planning for longer-term infrastructure and supply options; and address water supply risk for operators.

This directive provides a set of consistent considerations and requirements for implementing this tailored approach to issuing a licence. This directive does not preclude other types of *Water Act*

authorizations such as temporary diversion licences, preliminary certificates and approvals, which continue to be used when appropriate to the circumstance of an application.

Alternatives Assessment

It is expected that proponents will seek the use of alternative water sources before considering the use of non-saline water for their projects. Alternative water sources include, but are not limited to, recycled flowback, recycled municipal or industrial wastewater, saline groundwater, groundwater containing hydrocarbon compounds (excluding methane) and/or non-water technologies. As part of the application submitted under this directive, proponents must include an alternatives assessment that demonstrates no other economically and environmentally feasible water sources are available over the proposed term of the licence. The *2006 Water Conservation and Allocation Guideline for Oilfield Injection* provides guidance on conducting alternatives assessments.

Demonstrated Need for Water

To address potential speculation in the water resource, the licence application must demonstrate the need for the allocation of water being requested by providing, at a minimum, the following information:

- Project area, including the mineral lease boundaries to be developed and any boundaries of major river basins as defined in the *Water Act*.
- Development plan for the project (concept/scoping level) that identifies the well density needed to develop the resource (e.g. #wells/section).
- Schedule of development (concept/scoping level) that identifies the potential annual water need from year zero to the anticipated end of the project.
- Total volume of water needed per well (e.g. m³/well). The information must be sufficient (provide data, models, assumptions) for justification of the allocation request.
- Number of years expected to complete the project.

Ongoing demonstration of the need for water is required through the life span of the project, within a reporting period specified by the Director. As a condition of the licence, licensees must be required to report supporting information, including, but not limited to, the following:

- The volumes of water diverted from the source; the volumes of water used; and the water use per energy well, compared to estimates submitted with the application and any previous reports;
- For the upcoming reporting period, an estimate of the monthly volume of water that is expected to meet the needs of the project operations;
- Changes to the:
 - mineral lease boundaries within the project area; and
 - well density plan;that may result in a change from the original schedule of development, which would affect the timelines required to complete the project.

Licences must include a condition that allows for Director-initiated amendments to reduce the allocation of water and/or reduction in the term of the licence.

Prior to considering a reduction of volume and/or reduction of the term by the Director, a 30-day written notice (or other time period specified by the Director) will be sent to the licensee requesting additional information that justifies the ongoing and future water needs under the current allocation. If there has been a consequential deviation from an operator's development plan and water need cannot be demonstrated, the Director must have the discretion to amend the annual allocation (volume, rates of diversion, timing) and/or the licence term may be reduced.

The Director also has ability to apply both statutory (preliminary certificates) and administrative (licence conditions) instruments to provide necessary regulatory oversight and controls to manage water needs that may change over time or are subject to variable conditions (for example, "ramping-up"/phasing; economic factors; conditional buildout).

One Point of Diversion per Licence

Water licences issued under this approach should be limited to one Point of Diversion per licence from either a surface or a groundwater source. The recommended procedure limits applications to one point of diversion with one priority-of-use date per licence, as a means to limit opportunities for speculation in the resource.

With respect to groundwater sources, for the purpose of this directive one Point of Diversion is a well or multiple wells contained within the equivalent area of one quarter section and completed within the same aquifer.

Appurtenance

Appurtenance¹ conditions in water licences are mandatory. The licence condition must specify appurtenance to land or undertaking; it cannot be both. A licence is typically appurtenant to the Point of Diversion, which determines where a diversion is taking place within a basin. The Point of Diversion is the precise physical location where water is withdrawn from a specified source. A licence may also be appurtenant to a Point or Points of Use, which is description or specification of where water that has been diverted may be used or applied.

For licensing of multi-stage large scale hydraulic fracturing projects, the licence must be appurtenant to the Point of Diversion only. These types of licence are not made appurtenant to a Point of Use. The use and application of water is regulated separately with licence conditions, specifying a point of use or points of use as a bounded area.

The Point of Diversion must be known at the time of application and can only be amended in accordance with provisions in the *Water Act* under section 54(1)(b)(vi). The appurtenance statement in the licence regarding the Point of Diversion should refer to land and not the undertaking, as:

- reference to land is more appropriate given the nature of these projects, which are limited and described by access to mineral rights based on surface locations; and
- consistent interpretation based on AEP's *Guidelines Regarding Appurtenance* would be expressed as appurtenant to lands for industrial projects involving mineral extraction.

¹ Appurtenance means belonging to; accessory or incident to; adjunct to; appended or annexed to. Refer to AEP's *Guidelines Regarding Appurtenance* for additional explanation.

Point of Use

This water licensing approach for multi-stage hydraulic fracturing projects allows for a generally described and spatially limited Point of Use Area to be identified at the time of application. The Point of Use becomes specified when water is applied during the term of the licence. Various aspects regarding the Point of Use must be incorporated into licences using this approach as described below.

Point of Use Area Boundary

The applicant must identify the sub-surface mineral lease area(s) that the application is based on and held at the time the application is submitted and where water will be used for drilling and completion (i.e. hydraulic fracturing) purposes. The Sub-surface Mineral Lease Area is a principal component of a specific Point of Use Area, identified within the licence. Multiple sub-surface mineral lease areas to be included under one licence shall generally be contiguous with or in close proximity to one another.

The Point of Use Area is the extension of the Sub-surface Mineral Lease Area to the surface, with a small and justifiable buffer that allows for related ancillary surface activities related to the hydraulic fracturing project, that require water. Examples of these activities are road access and maintenance, dust suppression, construction, related infrastructure, etc. The Point of Use Area should generally align with the licensee's mineral leases to be held under the project water licence and it must encompass all of the Sub-surface Mineral Lease Area of the licensee. This is best identified in the licence and application using a detailed map, diagram or similar visual identification, which can be referenced as a Plan in the licence. The licence must specify the purpose(s) and uses for which water may be applied within the Point of Use Area, and within the Sub-surface Mineral Lease Area as appropriate.

The Point of Use Area can only be amended in accordance with provisions in the *Water Act* under Section 54.

Watershed boundaries should be identified on maps or diagrams; any major river basin boundaries (reference Section 10, *Water (Ministerial) Regulation*) must be identified in applications. Transfer of water across the boundary of a major river basin is restricted by Section 47 of the *Water Act*, requiring a special Act of the Legislature to authorize the issuing of such a licence. To avoid triggering special provisions required for inter-basin transfer of water, the boundary of the Point of Use Area must be indicated on plans and clearly identified as constrained to within the same major river basin as the Point of Diversion.

Size of Point of Use Area

The Point of Use Area should be no larger than the equivalent area of 16 townships. The Sub-surface Mineral Lease Area will be equal to or smaller than the Point of Use Area and will comprise one or more contiguous areal block(s) generally corresponding with mineral leases within the Point of Use Area held by the operator at the time of application for a water licence.

The Director may consider a larger Point of Use Area than the specified maximum in this directive, if there is clearly demonstrated net environmental benefit compared to assessed alternatives (for

example; a reduced or less significant spatial footprint; fewer independent water sources needed; ability to use a source with less potential for adverse impact).

Specified Upon Use

Within a reporting period specified by the Director, the licensee is required as a condition of the licence to report the specific surface locations where the water allocation under the licence was used for the hydraulic fracturing project within the Point of Use Area. These surface locations must align with the Point of Use Area in the licence.

Altering Point of Use Area

The Point of Use Area can only be amended as provided for in the *Water Act*. A new licence must be obtained for new Point of Use areas. The Point of Use Area boundary cannot be expanded. A reduction in the Point of Use Area can be authorized through a licence amendment.

Altering Sub-surface Mineral Lease Area

Any proposed changes to the Sub-surface Mineral Lease Area must be submitted to the Director for consideration. Director discretion in accordance with section 54(5) of the *Water Act* will determine if the changes are significant enough to require an amendment, or if a simple update to the plan is sufficient.

Addition

In circumstances where new mineral leases are acquired within the existing Point of Use Area, the licensee must submit an application under the *Water Act* to amend the Sub-surface Mineral Lease Area in the licence. In such cases small additional areal block(s) can be proposed as new sub-surface mineral lease area(s) within the original Point of Use Area. The proposed sub-surface mineral lease area(s) shall be contiguous with or in close proximity to the original sub-surface mineral lease area(s), and shall apply to the same target formation(s).

An application to amend cannot request an increase in the volume of the diversion of water specified in the licence. If a change in the Sub-surface *Mineral Lease Area* results in a need for additional water, a new licence is required.

Disposition

The removal of a sub-surface mineral lease area, usually due to the sale, transfer or expiry of a mineral lease, may require an update to the plan on the licence. The Director may consider a reduction in allocation volume or a change in diversion rate or timing to reflect the disposition of the lands, if it materially affects the schedule of development for the project. Depending on the extent of the removal of sub-surface mineral lease area(s), a reduction in the Point of Use Area may also be required by the Director.

Other operators who have acquired new mineral leases under such circumstances (i.e. through the disposition of others) must apply for a separate water licence for those newly acquired leases.

Term Length

Unless otherwise established in a water guideline or subject to an amendment of the *Water (Ministerial) Regulation*, the term of a licence under this approach is 10 years or less. Licensees can submit applications to renew licences for subsequent terms of up to 10 years. The Director must also specify when a licence is not subject to further renewal. Other terms or conditions may be revised in accordance with Section 59 of the *Water Act*.

Water Release

A general expectation of hydraulic fracturing activity is an effectively fully consumptive process, where water, makeup waters and flow back are generally mixed throughout the process and injected or eventually disposed of, and not returned to the environment. Circumstances of well drilling and completions are not always fully predictable and there may be potential for water, capable of discharge back to environment, to be generated.

Based on authorization procedures already in general use, this directive requires that potential water return be addressed through the use of standard licence conditions. Licensees must be required to ensure that prior to any discharge or release of fresh or non-saline water to the environment:

- all applicable protocols and recommended practices to prevent the spread of aquatic invasive species are implemented (including the possibility that no release can be made, regardless of satisfying all other water release criteria);
- water must meet acceptable surface water quality and groundwater quality guidelines;
- the return is made to a watershed where the original diversion took place;
- licensees employ erosion prevention and other environmentally precautionary measures; and
- consent of immediate and downstream landowner(s), as appropriate, is obtained.

Policy and Regulatory Alignment

Licences issued under this approach may be subject to the requirements of new or updated policies or regulatory tools that are developed in the future. Furthermore, this directive may be updated in the future to ensure alignment with new or updated policies or regulatory tools that are developed.

Original signed by: _____

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