Directive 011

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Estimated Liability

Contents

1 Introduction

1.1 Purpose of This Directive

The Alberta Energy Regulator (AER) reviews, updates, and publishes estimated liability as required. This directive

- explains the purpose of estimating liability,
- outlines how estimated liability is used by the AER,
- details the requirements for estimating liability,
- provides clarity on how liability is estimated when costs are determined by the AER, and
- describes the orphan fund levy and licences included in the levy.

1.2 AER Requirements

Requirements are mandatory. The term “must” indicates a requirement, and terms such as “should,” “recommends,” and “expects” indicate a recommended practice. For ease of reference, requirements are numbered. Information on compliance and enforcement can be found on the AER website.

Because oilfield waste management facilities are included in the scope of this directive, but are approved rather than licensed, the terms “licence” and “licensee” are to be read as also including oilfield waste management approvals and oilfield waste management approval holders. The term “facility” includes oilfield waste management facilities.

1.3 What’s New in This Edition

This edition contains updated requirements for estimated liability, including how liability is estimated, how it is used, and how the information will be made available to licensees and the public. It also incorporates other requirements related to estimated liability previously contained in other directives (e.g., when a site-specific liability assessment is required, the Conditional Adjustment of Reclamation Liability Program, and the orphan fund levy). This consolidation of requirements is part of the ongoing implementation of the *Liability Management Framework*.

2 What is Liability

The AER uses the term “liability” in its regulatory instruments to refer to both the legal responsibility to safely close and clean up energy development sites as well as the estimated cost to do so. The legal responsibility to safely close and clean up energy development sites is inherent in those sites from the moment land disturbance for resource extraction begins. The actual cost to complete this work, however, will not be known until this work is completed. Accordingly, liability assigned by the regulator before this work is completed is based on the estimated cost to suspend, abandon, remediate, and reclaim a site, as well as provide care and custody from shutdown of operations through to site reclamation. Where possible in this directive, we have tried to make this distinction clear by referring to “estimated liability” to describe the estimated costs of closure work.

3 What is Estimated Liability

Estimated liability is the estimated cost to safely close an energy development at the end of its life cycle. This includes the costs of completing each closure stage: abandonment (including decommissioning), remediation (if applicable), and reclamation. A licensee’s magnitude of estimated liability includes the total estimated liability of all of its infrastructure.

Estimated liability is assigned when a licence is issued. It is important to consider liability before and throughout the energy development life cycle. A licensee’s liability changes through the energy development life cycle and can increase as more disturbances occur, more infrastructure is added, when contamination occurs, or liability is transferred to the licensee. Liability can decrease during the closure stages and once a reclamation certificate or equivalent is issued. Estimated liability is updated daily with new information received, generally impacting estimates the following day. The various types of liability are depicted in figure 1.

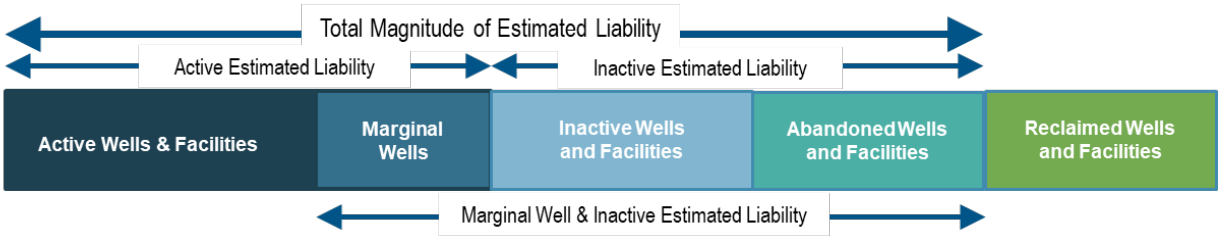


Figure 1. Types of liability

Inactive liability is the estimated liability associated with inactive wells and facilities as well as abandoned/decommissioned wells and facilities.

- An inactive well is defined in *Directive 013: Suspension Requirements for Wells*, and an inactive facility is defined in *Directive 088: Licensee Life-Cycle Management*. The inactive wells and facilities have estimated liability associated with the cost of abandonment, remediation (if applicable), and reclamation.
- An abandoned well or facility is when the licence/approval status is "abandoned." They still have estimated liability associated with the cost of remediation (if applicable) and reclamation.

Active liability is the estimated liability for the wells and facility that are not included in inactive liability. Active wells and facilities have estimated liability associated with the cost of abandonment, remediation (if applicable), and reclamation.

Marginal liability is the estimated liability for marginal wells as defined in *Directive 088* and is a subset of active liability. This estimated liability includes the cost of abandonment, remediation (if applicable), and reclamation.

4 Methods for Determining Estimated Liability

The AER uses two methods for determining estimated liability:

- Regional costs are an average cost or reasonable representation of costs for a specific group of licences (see section 5).
- Costs determined by a site-specific liability assessment (SSLA), which is prepared by the licensee (see section 6).

Appendix 1 lists the estimation methods used for different licence types.

5 Regional Costs

Regional costs use a single value to represent a group of similar licences; some licences will inevitably cost less than the estimate, while others will cost more. The regional values published in this directive are the values that will be used by the AER for estimating liability.

In instances where licensees can abandon or reclaim for less than the estimates being used, it is important that licensees submit closure spend costs to the AER as required in *Directive 088* when that work is completed so that they can be used to update estimates in the future. Licensee- or licence-specific costs will not be used to reduce the regional costs for estimated liabilities upon request. For site-specific estimated liability, refer to section 6.

The regional estimated liability of a well or facility is the sum of its abandonment and reclamation liability. Although the estimated liability is broken into these two components, it represents all stages of closure (suspension, abandonment, remediation, and reclamation). A reclamation-certified or reclamation-exempt well or facility will have no estimated liability assigned.

Well abandonment costs in section 5.1.1 are based on closure spend data reported by industry and the Orphan Well Association and were updated June 26, 2024. Regional cost estimates are outlined in sections 5.1 and 5.2 of this directive and will only be changed with updates to this directive or through the adjustments to estimated liability outlined in sections 5.1.1.1, 5.1.1.2, and 7.2. All other costs are based on older methods of determining costs such as consultants and voluntary cost surveys conducted by the AER.

Separate maps are used for determining regional abandonment costs (appendix 2) and regional reclamation costs (appendix 3).

5.1 Regional Well Estimated Liability

5.1.1 Well Abandonment Cost Parameters

The base well abandonment estimated liability considers the well geographic location, depth, and downhole completion scenario. The costs are outlined in table 1.

- Geographic location is based on the regional abandonment cost map in appendix 2.
- Depth considers a well's total depth, vertical depth, and plug back depth. If the well has a plug back depth, that will be used; if not, the vertical depth will be used; if there is no vertical depth, then the total depth is used.
- Downhole completion scenario considers various pieces of information such as fluid type and status type (e.g., a crude oil pumping well is assessed in the tubing and rods scenario, while a gas flowing well is assessed in the tubing-only scenario). In the case of a suspended well, the last reported operational status issued will be used.

A well that is abandoned, with licence status of "abandoned," will not have an abandonment component included in its estimated liability calculation.

Table 1. Regional well abandonment cost

Area 1. Medicine Hat

Depth (m)	Empty not perforated	Empty perforated	Tubing only	Tubing & rods
All	$11 252	$15 801	$24 588	$37 073

Area 2. Calgary/Edmonton

Depth (m)	Empty not perforated	Empty perforated	Tubing only	Tubing & rods
0–1199	$13 300	$15 956	$30 665	$43 314
1200–1999	$13 300	$32 925	$45 966	$59 798
2000–2499	$13 300	$50 492	$70 707	$84 610
2500+	$13 300	$66 164	$108 817	$130 881

Area 3. Drayton Valley/Grand Prairie

Depth (m)	Empty not perforated	Empty perforated	Tubing only	Tubing & rods
0–1199	$13 500	$23 692	$44 235	$50 294
1200–1999	$13 500	$57 997	$82 457	$84 113
2000–2499	$13 500	$69 125	$94 560	$109 050
2500–2999	$13 500	$78 995	$124 206	$129 626
3000+	$13 500	$139 342	$157 690	$267 915

Area 4. Lloydminster

Depth (m)	Empty not perforated	Empty perforated	Tubing only	Tubing & rods
All	$12 800	$36 134	$41 932	$42 104

Area 5. Athabasca/Peace River

Depth (m)	Empty not perforated	Empty perforated	Tubing only	Tubing & rods
0–1199	$13 500	$34 542	$57 380	$88 727
1200–1999	$13 500	$45 399	$81 964	$89 551
2000–2499	$13 500	$61 282	$95 885	$99 982
2500+	$13 500	$94 667	$155 633	$172 333

Area 6. High Level

Depth (m)	Empty not perforated	Empty perforated	Tubing only	Tubing & rods
0–1199	$17 400	$43 494	$50 931	$239 197
1200+	$17 400	$126 133	$134 839	$263 471

After determining the base well abandonment cost, the AER will apply the following estimated liability costs in addition to the value in table 1, when applicable:

- Additional events: The number of events requiring abandonment simply counts each additional unabandoned event associated with the well by 25%.
- Groundwater protection: Compares the surface casing depth to the deepest aquifer requiring protection, with consideration for cement. To ensure the groundwater is protected, a groundwater protection cost of $46 288 is applied.
- Vent flow: If there is an open surface casing vent flow record (see *Directive 020: Well Abandonment*), a surface casing vent flow repair cost of $157 437 is applied.

- Gas migration: If there is an open gas migration record (see *Directive 020*), a gas migration cost of $148 373 is applied.

5.1.1.1 Adjustments to Well Scenario

Licensees may be able to adjust the well scenario by correcting assumptions made when estimating abandonment costs, which may reduce estimated liability. For example, removal of tubing and means of artificial lift as closure work begins may move the licence to a lower liability scenario in table 1.

1) To change the scenario used for estimating well abandonment costs, a licensee must submit an Adjustment to Well Scenario form and follow instructions associated with it and provide the required declaration document to the AER for consideration.

The form, the declaration document, and the process for submission are on the AER's website (Regulating Development > Rules and Directives > AER Forms > Directive Forms).

5.1.1.2 Adjustments to Groundwater Protection

Groundwater is considered to have protection through a combination of surface casing and cement. Licensees have the option to submit information on historic wells for the AER to assess if a reduction in estimated liability is applicable.

2) In order for the AER to reduce estimated liability related to groundwater protection, the licensee must submit the missing or incorrect casing and cement information.

Once the AER receives and reviews the information, if appropriate, the AER will adjust the groundwater protection estimated liability.

5.1.2 Well Reclamation Costs

The cost per well in each of the seven regional reclamation cost areas is as follows:

- Grasslands Area East $16 500
- Grasslands Area West $25 250
- Parklands Area $27 250
- Foothills Area $29 250
- Alpine Area $42 125
- Western Boreal Area $34 000
- Boreal Area $23 875

A licensee may establish a multiwell pad for those sites on which it has more than one well on a single surface lease. Wells can be added or removed from the multiwell pad once established. Both the well licences and the surface lease must be held by the same licensee.

The reclamation estimated liability for wells located on a multiwell pad is 100 per cent of the reclamation cost specified for a well in the Regional Reclamation Cost Map area in which the pad is located for the first well plus 10 per cent of that value for each additional well on the same pad.

3) To reduce the reclamation estimated liability, a licensee must submit a multiwell pad notification electronically through the AER's Digital Data Submission (DDS) system through the Multi Licence Pad (MLP) subsystem.

5.2 Regional Facility Estimated Liability

Facility licences identified as using regional costs for estimated liability (appendix 1) use a well equivalency approach to calculate estimated liability for abandonment and reclamation. Table 2 provides the well equivalent for each facility type based on the facility category, fluid type, and licensed design capacity. Well equivalency does not indicate how many wells are connected to the facility.

There is no option to change the estimated liability for a facility when using regional costs. Changes to the estimated liability for a facility can only occur if an SSLA is required (section 6).

Table 2. Facility well equivalent

Category/fluid type	*Directive 056* category	Licensed design capacity	Well equivalent
Oil/bitumen or injection/disposal facility	030, 031, 080, 321, 331, 421, 431, 090, 091	0–50 m^3/day	5
		>50 m^3, ≤500 m^3/day	10
		>500 m^3, ≤3000 m^3/day	20
		>3000 m^3/day	40
Oil/bitumen satellite	070, 071, 350, 351, 450, 451	Any throughput level	2
Gas facility	020, 311, 411	0–900 10^3 m3 gas inlet/day	10
		>900 10^3 m3/day, ≤2500 10^3 m3/day	20
		>2500 10^3 m3/day	40
Compressor	040, 340, 440	Any throughput level	5

5.2.1 Facility Abandonment Costs

The estimated liability for a facility abandonment is the abandonment cost for each well equivalent multiplied by the well equivalent in table 2. The abandonment cost for each well equivalent is $17 000.

5.2.2 Facility Reclamation Costs

The estimated reclamation liability for a facility that uses regional cost estimates considers its geographic location based on the regional reclamation cost map (appendix 3) and its well equivalent. The regional reclamation cost for a facility is calculated by multiplying the well equivalent of the facility (table 2) by the well regional reclamation cost in section 5.1.2 for the region that the facility is in.

For example, a gas processing facility with a licensed design capacity of 3000 10^3 m^3/day (40 well equivalent) in the Parklands area ($27 250) has an estimated liability of $1 090 000, which is equal to (40 well equivalent × $17 000) + (40 well equivalent × $27 250).

5.3 Pipeline Estimates

While a pipeline licence does have liability associated with it, the AER does not currently assign an estimated liability unless it requires an SSLA as per section 6. The AER is assessing whether, in the future, regional estimated liability for pipelines will be assigned similar to wells and facilities.

6 Site-Specific Liability Assessment

6.1 General Requirements

When an SSLA is required (see appendix 1), the requirements in this section apply. *Directive 001: Requirements for Site-Specific Liability Assessments* provides additional requirements for completing and submitting an SSLA.

4) When directed by the AER, the licensee must conduct and submit an SSLA in accordance with *Directive 001*.

5) The licensee must conduct and submit an SSLA that meets the requirements of *Directive 001* for the infrastructure in appendix 1 where an SSLA is identified as the method for determining the estimated liability.

6) For new facilities with SSLA-based liabilities, an initial SSLA meeting the requirements of *Directive 001* must be submitted and accepted by the AER before submitting a new facility licence or waste management approval application.

A licence or approval that requires an SSLA per appendix 1 always requires an SSLA and may not use regional liability values.

7) A licensee must continue to provide an SSLA for a licence even if the licence is later amended to a type that regional liability could apply to, until closure is achieved (reclamation certificate).

8) If a licence has regional liability and is amended to a licence that requires an SSLA, then an SSLA must be submitted and accepted by the AER before submitting an amendment application.

9) The following must be completed when a licensee becomes aware or ought to have become aware that the cost to achieve a reclamation certificate is greater than four times the regional abandonment liability or the regional reclamation liability:

    a) Notify the AER by email at ssla@aer.ca immediately.

    b) Conduct and submit an SSLA that meets the requirements of *Directive 001* within 30 days.

10) The licensee must evaluate liability and submit an SSLA if one or more of the following circumstances applies:

    a) Remedial measures are anticipated to continue for ten years or more.

    b) A formal risk-management plan is required or already in place.

    c) Non-aqueous phase liquid (NAPL) has been identified or is likely.

    d) Any off-lease contamination occurs.

    e) A volume of soil has been affected, resulting in concentrations exceeding *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* and that would result in remedial costs being greater than four times regional liability (e.g., 800 m^3 of in situ impacted soil on a well licence).

    f) Any pipeline release occurs that requires a remedial action plan under section 2.2(2) of the *Remediation Regulation*.

The AER may require an SSLA from a licensee or approval holder at any time based on factors it considers appropriate. These include well age, construction (e.g., low top of cement), integrity, and depth; evidence or high probability of groundwater contamination; access considerations (e.g., wildlife areas, winter access); and reclamation issues (e.g., cut and fill sites), and any other factors considered appropriate by the AER.

11) Once an SSLA is required, licensees must submit an updated SSLA meeting the requirements of *Directive 001* every five years from the assessment date of the last SSLA.

12) When a licensee becomes aware or ought to have become aware that there is a cumulative increase of either $2 million or 20% of the current estimated liability values in the SSLA, the licensee must conduct and submit an SSLA that meets the requirements of *Directive 001* within 30 days.

The AER may require more frequent updates of the SSLA in situations such as the following:

- at the time of a licence transfer or change in ownership
- upon audit of a licence or approval
- if site conditions warrant an update
- if an AER requirement specifies an earlier submission deadline
- if the AER determines that circumstances warrant an update

A licensee may provide the AER with an updated SSLA to reflect a change in estimated liability at any time. Some factors to consider in the evaluation of cost changes include changes in site conditions, unit rates used in estimating costs, and regulatory requirements.

6.2 Transfer Applications

When a licence transfer occurs, there can be a large shift in liability between the transferor and transferee, which requires that SSLAs be as up to date as possible.

13) If a transfer application will include a licence that requires an SSLA, the transfer application must include the SSLA. The SSLA submitted by the licensee must be accepted by the AER and be within

    a) one year from the assessment date of the last SSLA for large facilities and oilfield landfills and

    b) three years from the assessment date of the last SSLA for all other licenses or approvals that require an SSLA and be accompanied by an evaluation of cost changes that have occurred since the SSLA was completed.

14) An SSLA that requires updating as a result of a cumulative increase of either $2 million or 20% of the current estimated liability values in the SSLA must be submitted by the licensee and accepted by the AER to be eligible for a transfer.

6.3 Changing to Regional Estimates

When an SSLA is required for licences normally assigned regional estimated liability per appendix 1, it is possible to remove the SSLA requirement.

15) If the licensee wants to return to regional estimated liability, the licensee must submit a request to the AER with an SSLA that demonstrates that the liability is now aligned with the regional values in section 5.

The AER will review the submission and determine whether the SSLA requirement can be removed.

6.4 Audits

The AER may conduct an audit at any time for compliance with *Directive 001*. An SSLA may be randomly selected or judgmentally selected by the AER.

16) When subject to an audit, the licensee must submit all SSLA-related information within the time set by the AER.

17) If deficiencies are noted, the licensee must revise the SSLA by the date specified by the AER.

7 Changes to Estimated Liability

At time of application, a new licence will have its estimated liability beginning on the date the licence was issued, based on what was approved to be constructed by the AER. If the licensee does not proceed with the construction or operations, refer to *Directive 056: Energy Development Applications and Schedules* for cancellation procedures to adjust estimated liability.

A licence amendment will not necessarily result in a reduction in estimated liability. Estimated liability is determined based on both current and historic use.

Liability associated with a licence may increase as the infrastructure is constructed and during operations and usually decreases during closure activities and upon receipt of a reclamation certificate. However, estimated liability will only be reduced upon notification of abandonment or through the Conditional Adjustment of Reclamation Liability Program and once a reclamation certificate is issued.

7.1 Abandonment Notifications

18) Licensees must report a facility abandonment within 30 days of completing the operation through the designated information submission system.

Well abandonment reporting requirements are in *Directive 020*, and pipeline abandonment reporting requirements are in the *Pipeline Rules*.

7.2 Conditional Adjustment of Reclamation Liability Program

The AER's Conditional Adjustment of Reclamation Liability (CARL) Program allows licensees to request a temporary conditional adjustment of estimated reclamation liability before a reclamation certificate is issued under the *Environmental Protection and Enhancement Act* (*EPEA*).

Licensees with wells and facilities licensed under *Directive 056*, excluding those with an *EPEA* approval or sites with a site-specific liability assessment, may request a temporary conditional adjustment of estimated reclamation liability on a per-licence basis.

19) The licensee must meet the following conditions:

    a) All required abandonment, remediation, and reclamation work for wells and facilities according to *Directive 020* and *EPEA* and associated regulations (*Release Reporting Regulation*, *Remediation Regulation*, and *Conservation and Reclamation Regulation*) is completed.

    b) Re-establishing vegetative cover is the only remaining closure activity to obtain a reclamation certificate.

If these conditions are met and a request has been submitted through OneStop, the associated estimated reclamation liability for the licence will be adjusted to the following amount for a period of five years or until a reclamation certificate is obtained, whichever occurs first:

- $5000 for cultivated land
- $9000 for all other land types

The AER may audit information provided in the licensee's CARL requests.

20) The licensee must provide information to the AER as requested to verify that they have met the conditions to receive the temporary conditional adjustment of estimated reclamation liability.

If the licensee fails to provide satisfactory information, the AER will reinstate the estimated reclamation liability to its full amount and may take other regulatory actions as appropriate.

21) If a licensee's estimated reclamation liability is adjusted, the licensee must obtain a reclamation certificate under *EPEA* for the licence at issue within five years from the date of the adjustment.

22) If it is not possible to meet the five-year timeframe and the licensee requires an extension, a request for a single extension of two years must be submitted prior to the end of the five-year timeframe, and a detailed site assessment must be provided.

If the licensee fails to obtain a reclamation certificate under *EPEA* for the requested licence within the required timeframe (five years or as extended by the AER), the AER will reinstate the estimated reclamation liability to its full amount, and the licence will be ineligible for any future CARL adjustment.

8 Use of Estimated Liability

As the estimated liabilities referred to in this directive are the estimated costs to safely close an energy development, the AER uses the estimated liability to understand the risk of liability exposure to Albertans and make regulatory decisions.

Estimated liability is used by the AER to assess licensees and make certain decisions, like the following:

- To complete a holistic licensee assessment including determining the magnitude of liability for each licensee (e.g., transfer application decisions; *Directive 088*)
- To calculate closure quotas as part of the inventory reduction program (*Directive 088*)
- To calculate security deposits (*Directive 068: Security Deposits*)
- To calculate an orphan fund levy or large facility levy (see section 9)
- To publicly report overall industry and licensee-specific performance in annual liability management performance report

8.1 Administration

8.1.1 Licensee

The AER attributes one hundred per cent of the estimated liability of a well, facility, pipeline, or waste management approval for which the licensee is named to the licensee.

8.1.2 Working Interest Participants

A working interest participant (WIP) is responsible for its proportionate share of the cost to suspend, abandon, remediate, and reclaim an energy development (see section 30 of the *Oil and Gas Conservation Act*).

8.1.3 Maintaining Information

Licence information, including licence/approval status, are used to estimate liability. Requirements around reporting of well abandonments are in *Directive 020*. Requirements around reporting of pipeline abandonments are in the *Pipeline Rules*.

23) Licensees must maintain accurate well, facility, and pipeline licence and approval status records with the AER.

9 Orphan Fund

The orphan fund is fully funded by licensees and approval holders through a levy administered annually by the AER to prevent the costs of providing reasonable care and measures and to suspend, abandon, remediate, and reclaim a well, facility, or pipeline from being borne by the public of Alberta if a licensee, approval holder, or working interest participant (WIP) becomes insolvent or defunct. Wells, facilities and pipelines have their estimated liability included in the annual orphan fund levy unless otherwise indicated in appendix 1.

A well, facility, or pipeline is eligible to be declared an orphan when the licensee becomes insolvent, defunct, or cannot meet its obligations to close its sites safely and responsibly. Well, facility, and pipeline licence types that are eligible to be closed through the orphan fund are outlined in appendix 1. If the well, facility, or pipeline meets these criteria, the AER may designate it as an orphan as outlined in section 70(2) of the *Oil and Gas Conservation Act*.

A licensee or approval holder is responsible for its proportionate share of any orphan fund levy or orphan fund levy for large facilities. The levy is calculated as the sum of the licensee's estimated liability of its licences to the total industry estimated liability of all eligible licences as of the date the levy is calculated, in accordance with the formulas in sections 16.530 and 16.531 of the *Oil and Gas Conservation Rules*.

The orphan fund levy for large facilities is only issued when needed to fund or reimburse the costs to close a large facility when there is a defaulting licensee. WIPs are responsible for their proportionate share of the orphan fund levy for large facilities in which they hold working interest, payable to the licensee of the large facility.

Situations may exist where the licence type is identified in appendix 1, but the specific licensee is not directly related to the upstream oil and gas sector and does not contribute to the orphan fund levy. These licences, held by these specific licensees, are not eligible for closure through the orphan fund and are not assessed for levy purposes

The orphan fund is managed by the Alberta Oil and Gas Abandonment and Reclamation Association, known as the Orphan Well Association (OWA), a nonprofit society.

10 Availability of Information

Licensees are to use the OneStop liability assessment report to understand their own liabilities.

The AER will make available through liability management reporting the magnitude of estimated liability for industry and licensees. This includes the following:

- Industry total estimated liability, including a sum of multiple site-specific liability assessments or components of the total estimated liability based on active, inactive, and marginal liability.
- Industry total estimated liability based on different levels of financial distress or components of the total estimated liability based on active, inactive, and marginal liability.
- Licensee-specific total estimated liability including site-specific liability or components of total estimated liability based on active, inactive, and marginal liability.

Additional reporting on the magnitude of estimated liability will continue to be developed as the AER implements the liability management framework.

The AER will hold as confidential the information submitted to or acquired by the AER from the licensee for the purpose of determining site-specific liability assessments.

The AER will maintain estimated liability resulting from a site-specific liability assessment as confidential except in the following circumstances:

- The AER may provide to a transferee the estimated liability of the licensees that are part of a transfer application.
- The AER may provide to the Orphan Well Association the estimated liability when a licence or approval that becomes part of an insolvency proceeding and is being transitioned to the Orphan Well Association for closure. The AER may share the information previously submitted to or acquired by it with the OWA for the purposes of understanding the closure work required and for preparing the OWA's own site-specific cost estimates.

Following a transfer of licences or approvals, related liability assessment information the AER holds may be made available to the new licensee (e.g., history of liability assessment).

Inquiries regarding the requirements of this directive or any aspect of liability management should be directed by email to LiabilityManagement@aer.ca.

Appendix 1 Estimated Liability Method and Orphan Fund Applicability by Licence Type

If there are any conflicts between this appendix and table 2, this appendix prevails.

If there are circumstances not identified in the tables below, they will be assessed by the AER on a case-by-case basis to determine orphan fund applicability.

Wells

Licence type	Licence description	Estimated liability type (regional/SSLA)	Eligible for orphaning? (yes/no)	Invoiced in what levy?
Production wells (oil, gas, and bitumen)	Wells that are or were used to produce oil, gas, or bitumen.	regional	yes	orphan fund levy
Injection wells	Wells that are or were used for injection and relate to the production of hydrocarbons.	regional	yes	orphan fund levy
Gas storage wells	Wells that are or were used for the purpose of storing gas.	regional	yes	orphan fund levy
Observation wells	Wells used for observation related to the production of hydrocarbons.	regional	yes	orphan fund levy
Liquefied petroleum gas (LPG) wells	Wells that are or were used for the production of liquified petroleum gas.	regional	yes	orphan fund levy
Oilfield source water wells	Wells that are or were used for sourcing water for oil and gas purposes.	regional	yes	orphan fund levy
Water wells not related to upstream oil and gas activities	Water wells not related to upstream oil and gas activities, including municipal water wells, domestic and farm water wells, and water wells less than 150 meters in depth licensed in error.	regional	no	N/A
Class 1a and 1b disposal wells (related to oil and gas)	Class 1a and 1b waste disposal wells associated with the upstream oil and gas sector.	regional	yes	orphan fund levy
Class 1a and 1b disposal wells (unrelated to oil and gas)	Class 1a and 1b waste disposal wells not associated with the upstream oil and gas sector.	regional	no	N/A
Disposal wells (class II, III, & IV)	Class II, III, and IV as defined in *Directive 051: Injection and Disposal Wells*.	regional	yes	orphan fund levy
Farm gas wells drilled by industry (pre-1996)	Oil and gas wells drilled by industry and transferred as a farm gas well prior to 1996. The gas is not being sold.	regional	yes	N/A

Licence type	Licence description	Estimated liability type (regional/SSLA)	Eligible for orphaning? (yes/no)	Invoiced in what levy?
Farm gas wells drilled by industry (post-1996)	Oil and gas wells drilled by industry and transferred as a farm gas well after 1996. Regardless of use, any such farm use oil and gas wells are subject to all regulatory requirements. The gas is not being sold.	regional	yes	orphan fund levy
Farm and domestic gas wells *not* drilled by industry	Farm and domestic gas wells *not* drilled by industry as an oil or gas well. The gas is not being sold.	regional	no	N/A
Test holes (exploration wells)	Test holes licensed under section 2.030 of the *OGCR* (exploration wells). Test wells that are drilled for cores and logs only and are not completed.	regional	no	N/A
Oil sands evaluation wells	Oil sands evaluation wells, licensed under *Directive 056*, category OV. Oilsands exploration wells that are drilled for cores and logs only and not completed.	regional	no	N/A

Facilities

Licence type	Licence description	Estimated liability type (regional/SSLA)	Eligible for orphaning? (yes/no)	Invoiced in what levy?
Satellites	Single or multiwell, oil and bitumen. *Directive 056* category types: 070, 071, 350, 351, 450, 451	regional	yes	orphan fund levy
Compressor stations	Excludes compressors that are part of an oil or gas transmission pipeline. *Directive 056* category types: 040, 340, 440	regional	yes	orphan fund levy
Injection/ disposal facilities	*Directive 056* category types: 090, 091 (excluding geothermal facilities)	regional	yes	orphan fund levy
Custom treating facilities	*Directive 056* category type: 080	regional	yes	orphan fund levy
Single-well facility or battery – single well (gas, oil, or bitumen)	*Directive 056* category types: 001, 310, 320, 330, 410, 420, 430 (excluding brine-hosted mineral facilities)	N/A	yes	orphan fund levy
Battery – multiwell (gas, oil, or bitumen)	*Directive 056* category types: 020, 030, 031, 311, 321, 331, 411, 421, 431 Bitumen multiwell batteries (331 & 431) with a licensed design capacity less than 5000 m^3/day only. Excludes brine-hosted mineral facilities.	regional	yes	orphan fund levy

Licence type	Licence description	Estimated liability type (regional/SSLA)	Eligible for orphaning? (yes/no)	Invoiced in what levy?
Bitumen battery – multiwell (5000 m^3/day or greater)	*Directive 056* category type: 331 or 431 (current or historic), with a licensed design capacity of 5000 m^3/day or greater.	SSLA	yes	orphan fund levy for Large Facility
Gas processing & fractionating plants	*Directive 056* category types: 010, 011, 300, 301, 400, 401 (current or historic)	SSLA	yes	orphan fund levy
Sulphur recovery gas plants	*Directive 056* category type: 600 (current or historic)	SSLA	yes	orphan fund levy for large facilities
Straddle plants	*Directive 056* category types: 200, 302 (current or historic)	SSLA	yes	orphan fund levy for large facilities
Oilfield waste management facility approvals (excluding landfills)	Oilfield waste management facilities with a waste management approval.	SSLA	yes	orphan fund levy
Oilfield waste management facility approvals – landfills	Oilfield waste landfills related to upstream oil and gas, held by waste management approval holders.	SSLA	yes	N/A (full security held)
Surface waste management facilities	These facilities are not licensed by the AER. These are approved by Alberta Environment and Protected Areas (AEPA) and associated with *Directive 051* class 1a disposal wells.	N/A	no	N/A

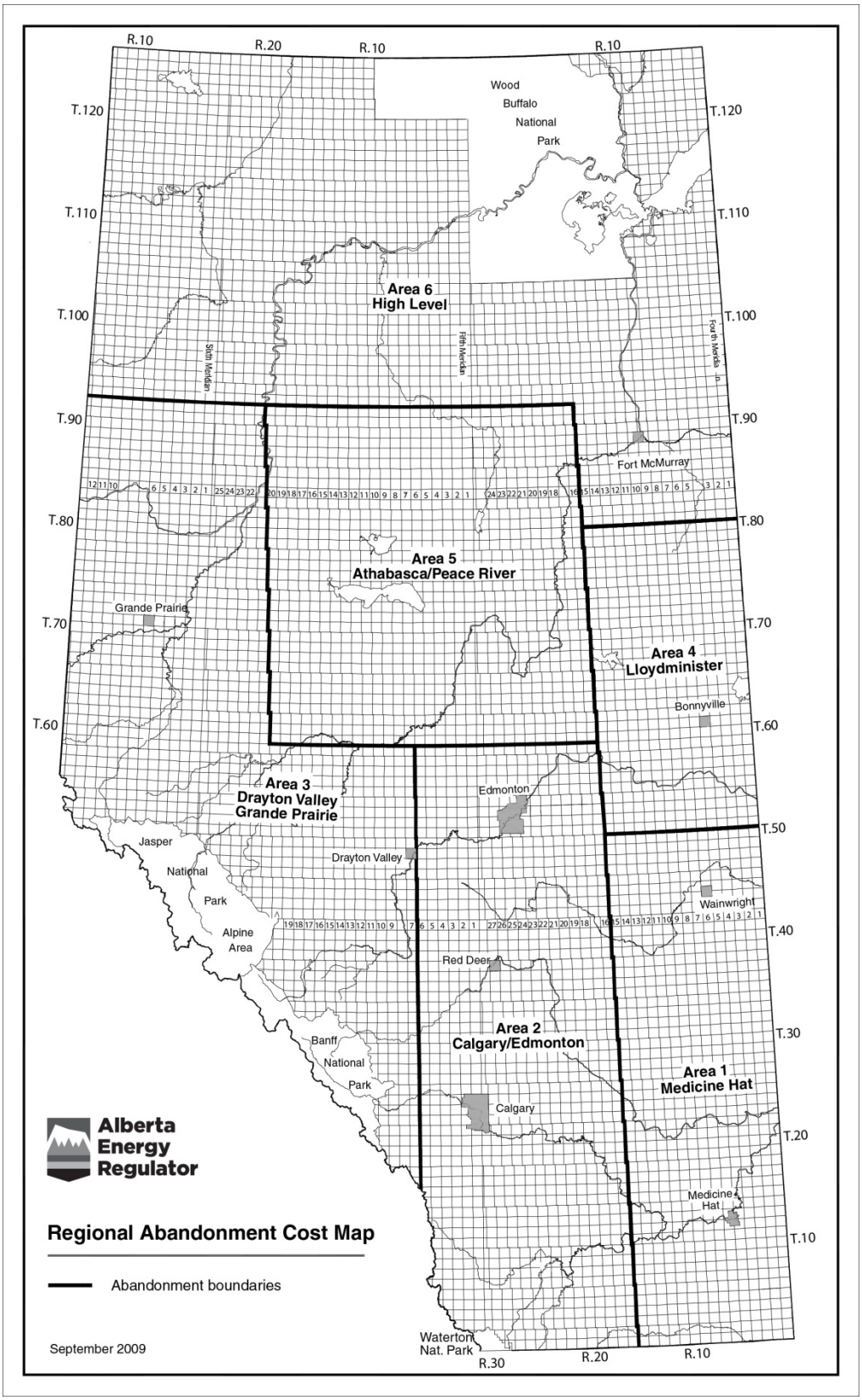
Pipelines

Licence type	Licence description	Estimated liability type (regional/SSLA)	Eligible for orphaning? (yes/no)	Invoiced in what levy?
Pipelines (excluding transmission pipelines)	Pipelines within Alberta boundaries for activities regulated under the *OGCA/OGCR* and *Pipeline Act* and *Rules*.	N/A (unless SSLA required)	yes	orphan fund levy
Transmission pipelines	Pipelines that cross provincial boundaries are not regulated by the AER.	N/A	no	N/A

Other

Licence type	Licence description	Estimated liability type (regional/SSLA)	Eligible for orphaning? (yes/no)	Invoiced in what levy?
Helium infrastructure	Helium production wells, facilities and associated approvals licensed under the *OGCA*.	regional	yes	orphan fund levy
Brine infrastructure licensed under the *OGCA*	Brine wells, facilities, pipelines, and associated approvals licensed under the *OGCA*.	regional/SSLA	yes	orphan fund levy
Brine-hosted mineral infrastructure	Brine-hosted mineral production wells, facilities, pipelines, and any associated approvals licensed under the *Mineral Resource Development Act* (*MRDA*). These include brine-hosted licences that were previously licensed under the *OGCA*.	see *Directive 090*	no	N/A
Carbon sequestration infrastructure	Carbon Sequestration wells, facilities, pipelines, and associated approvals subject to the *Mines and Minerals Act*. Licensed under an agreement pursuant to section 9(a)(iii) of the *Mines and Minerals Act.*	N/A	no	N/A
Geothermal infrastructure (excluding coproduction of hydrocarbons)	Geothermal wells, facilities, pipelines, and associated approvals for sole purpose of geothermal production, licensed under *Geothermal Resource Development Act* (*GRDA*).	see *Directive 089*	no	N/A
Geothermal infrastructure, with coproduction of hydrocarbons	Geothermal wells, facilities, pipelines, and associated approvals, with coproduction of hydrocarbons and licensed under the *OGCA*.	regional/SSLA	yes	orphan fund levy
Sites designated as contaminated under section 125 of *EPEA*	Wells, facilities, and pipeline sites designated as contaminated under section 125 of *EPEA* are not supported by orphan funds, pursuant to section 68 in Part 11 of the *OGCA.*	SSLA	no	N/A
Refineries	Refineries as defined in the *Pipeline Act*. These are not regulated by the AER.	N/A	no	N/A
Oil sands mine site or processing plant	Oil sands mine site or processing plant as defined in the *Oil Sands Conservation Act*.	N/A	no	N/A
Coal mine site or processing plant	Coal mine site or processing plant as defined in the *Coal Conservation Act*.	N/A	no	N/A
Rock-hosted mineral mine site or processing plant	Rock-hosted mineral mine site or processing plant licensed under the *Mineral Resource Development Act* (*MRDA*).	N/A	no	N/A
Dams in relation to upstream oil and gas use	Dams licensed by the AER in relation to upstream oil and gas use under the *Water Act*.	N/A	no	N/A

Appendix 2 Regional Abandonment Cost Map



Appendix 3 Regional Reclamation Cost Map