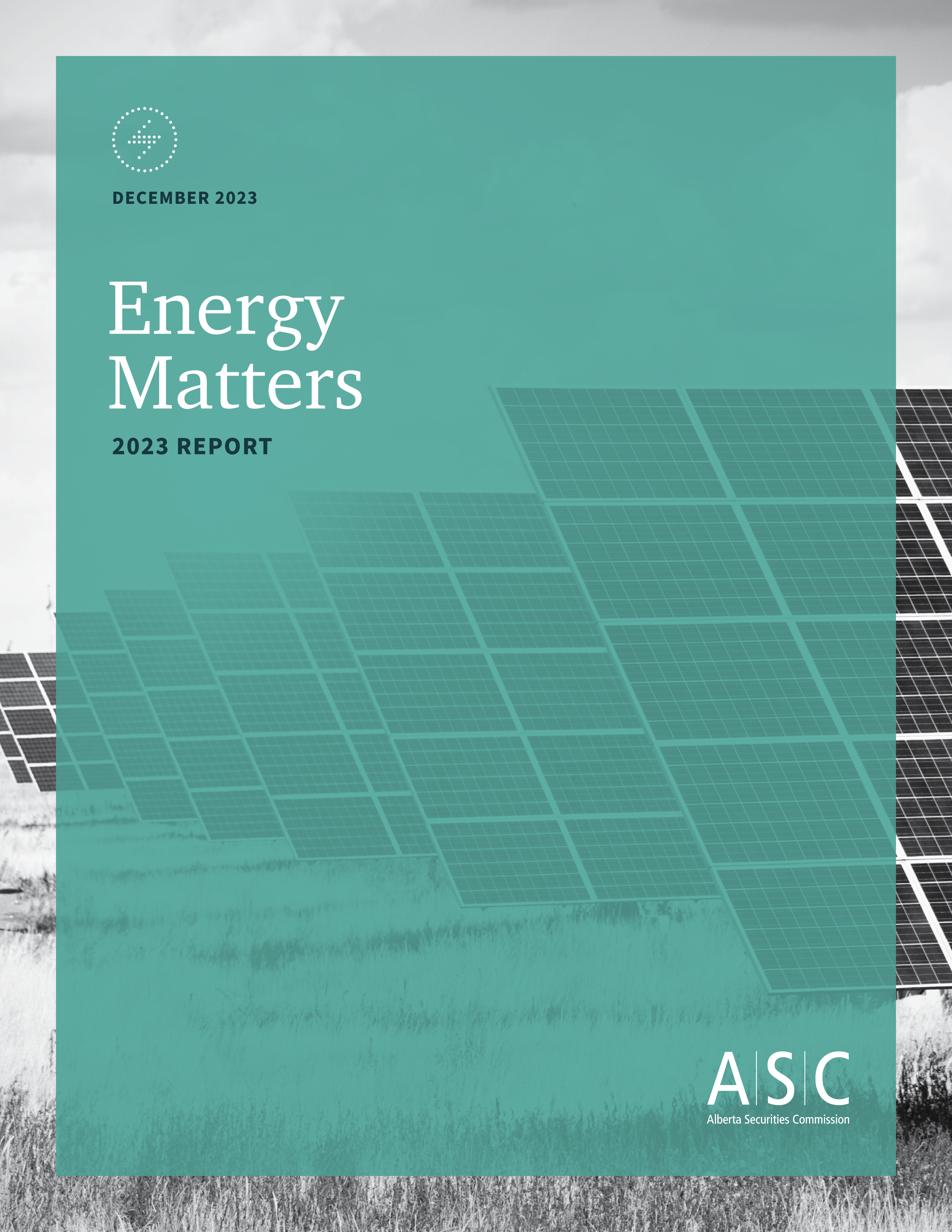

DECEMBER 2023

Energy Matters

2023 REPORT

ASC
Alberta Securities Commission

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Balanced, accurate and high-quality reporting is critical for investors to make informed investment decisions.

We are pleased to share the Alberta Securities Commission's 2023 Energy Matters Report.

This year's report, in addition to providing foundational guidance in relation to the disclosure contemplated by National Instrument 51-101 *Standards of Disclosure For Oil and Gas Activities*, also provides insights from our Energy Group's review of disclosure relating to renewable electricity projects. We hope it will be of benefit to issuers engaging or planning to engage in this evolving industry.

We collect data to help inform our policy-making efforts, for example, in relation to consideration of climate-related and broader sustainability disclosure. In this report, we share some of the data collected by the Energy Group relating to issuers engaged in the energy industry and information gleaned from its analysis. This includes data on environmental sustainability reporting, the number, type and size of issuers in energy-related sub-industries, and information about their financing activity. Given the growing interest in mineral and metals exploration and development, for example, to support low carbon energy production and storage, this year the team has expanded its efforts to also be able to report this data for issuers reporting under National Instrument 43-101 *Standards of Disclosure for Mineral Projects*.

On February 1, 2024, our team will be hosting a webinar to share the information provided in this report and to address questions. We hope you will join us!

As always, if we can be of assistance or if you have questions, please don't hesitate to contact us.

Yours truly,
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1. Introduction

1.1 GENERAL

The Alberta Securities Commission (**ASC**) administers Alberta's securities laws and is a member of the Canadian Securities Administrators (**CSA**), the umbrella organization of Canada's provincial and territorial securities regulators. The ASC is the lead regulator for oil and gas and certain other energy-related disclosure. Alberta securities laws are comprised of the *Securities Act* (Alberta) (**Act**) and the rules, regulations and decisions made under the Act, which are intended to protect investors and foster a fair and efficient capital market. ASC staff endeavour to ensure investors have access to balanced, accurate, relevant and reliable information so they can make informed investment decisions.

Situated within the Corporate Finance division of the ASC, the Energy Group is staffed with technical experts that oversee the review of energy-related technical disclosure from energy-related reporting issuers (**RIs**) for which the ASC is the principal regulator (**AB RIs**). Staff of the Energy Group acts as subject matter experts in the maintenance of National Instrument 51-101 *Standards of Disclosure For Oil and Gas Activities* and energy-related guidance and communication with stakeholders on energy-related matters. They also provide their expertise to other CSA jurisdictions.

While oil and gas remains a core focus of the Energy Group, their responsibilities have expanded in recent years to encompass Alberta's ever-evolving energy industry and capital market, including consideration of the disclosure issues in the broader energy sector. The Energy Group also works closely with the Corporate Finance departments of Sustainability & ESG Disclosure and Legal in addressing the increasing focus of issuers and investors on environmental matters, including the reduction of greenhouse gas (**GHG**) emissions.

The Energy Group's specific responsibilities include:

- Review of oil and gas disclosure, including reserves and resources other than reserves and other oil and gas information, from issuers that report under National Instrument 51-101 *Standards of Disclosure For Oil and Gas Activities* (**NI 51-101**);
- Maintenance of NI 51-101 and its related guidance and providing recommendations concerning NI 51-101 amendments;
- Review of other energy-related technical disclosure from energy-related RIs for which the ASC is the principal regulator;
- Review of energy-related environmental liabilities disclosure;
- Monitor energy-related trends, technologies and developments; and
- Engagement with Alberta capital market participants through ASC advisory committees, publications, webinars, presentations, inquiries and other outreach.

The Energy Group is primarily concerned with energy-related AB RIs involved in:

- Oil and gas activities as defined in NI 51-101;
- Oil and gas midstream (including pipelines) and oil and gas services;
- Petrochemicals;
- Renewable electricity via wind, solar, hydro, biomass and geothermal;
- Renewable hydrocarbons, also referred to as “green hydrocarbons” and “biofuels;”
- Exploration and development of helium;
- Production and transport of hydrogen;
- Carbon capture and storage (**CCS**) and carbon capture, utilization and storage (**CCUS**), and their related technologies;
- Lithium, primarily its recovery from brines (battery usage);
- Electrical generation and transmission;
- Energy storage more generally;
- Energy-related environmental liabilities;
- Energy-related services; and
- Nuclear energy.

The Energy Group also works collaboratively with the Sustainability & ESG Disclosure department to track GHG emissions disclosure and sustainable financings (also referred to as “transition” and “green” financings). In this regard, the Energy Group’s focus is on AB RIs in the energy sector and those required to report under National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (**NI 43-101**).

This 2023 Energy Matters Report (**Report**) provides information concerning:

- Oil and gas disclosure from RIs engaged in oil and gas activities;
- Disclosure from other energy-related RIs for which the ASC is the principal regulator;
- Results of tracking disclosure concerning GHG emissions and other sustainability matters in respect of energy-related RIs and RIs that report under NI 43-101 for which the ASC is the principal regulator;
- Energy and the Alberta capital market; and
- Energy Group activities.

Please note that a glossary of selected terms related to oil and gas activities is located in section 8 of the Report. Please refer to section 7 for our contact information. We hope you find the Report informative and look forward to hearing from you.

1.2 OVERVIEW

Safe, secure, reliable, cost-effective and environmentally responsible energy is essential to meeting the world’s growing energy needs. Canada’s energy industry has an important role to play as the country is the world’s fifth largest producer of natural gas and the fourth largest producer of oil. The industry continues to demonstrate significant technical expertise, innovation and leadership as it responds to significant challenges associated with energy diversification, energy security and increasing scrutiny and accountability with sustainability concerns.

This last year, the Energy Group reviewed general and required annual oil and gas disclosure to assess compliance with securities law disclosure requirements, including NI 51-101 and its related forms. NI 51-101 sets out the general disclosure standards and specific annual disclosure requirements for RIs engaged in oil and gas activities. Under section 2.1 of NI 51-101, RIs engaged in oil and gas activities are required to file the following with the securities regulatory authority (**SRA**) on an annual basis:

- Form 51-101F1 *Statement of Reserves Data and Other Oil and Gas Information* (**Form 51-101F1**);
- Form 51-101F2 *Report on [Reserves Data][,] [Contingent Resources Data] [and] [Prospective Resources Data] by Independent Qualified Reserves Evaluator or Auditor* (**Form 51-101F2**); and
- Form 51-101F3 *Report of Management and Directors on Oil and Gas Disclosure* (**Form 51-101F3**).

In addition, specific circumstances may necessitate the filing of:

- Form 51-101F4 *Notice of Filing of 51-101F1 Information*; or
- Form 51-101F5 *Notice of Ceasing to Engage in Oil and Gas Activities*.

NI 51-101 requires disclosure to be prepared in accordance with the Canadian Oil and Gas Evaluation Handbook (**COGE Handbook**), referred to as NI 51-101's "technical standard." The COGE Handbook is maintained and distributed by the Society of Petroleum Evaluation Engineers (**SPEE**) (Calgary Chapter www.speecanada.org). It is amended from time to time and RIs engaged in oil and gas activities must ensure that their disclosure complies with amendments upon their publication.

Disclosure reviewed by staff subsequent to the 2022 Energy Matters Report (**2022 Report**) was generally compliant with securities law disclosure requirements, including NI 51-101 and its related forms, as well as the COGE Handbook. The Report contains observations and analyses concerning key areas that were identified for improvement. We noted deficiencies in the following areas:

- **Royalty interests**
  - Absence of required disclosure concerning royalty interests in the statement of the reserves data and other information specified in Form 51-101F1.
- **Costs incurred**
  - Absent or incorrect disclosure regarding property acquisition costs, exploration costs and development costs per item 6.6 of Form 51-101F1.
- **Independence pertaining to qualified reserves evaluators and qualified reserves auditors**
  - Specified disclosure not prepared or audited by an **independent** qualified reserves evaluator or qualified reserves auditor, as required.
- **Reserves reconciliations**
  - Errors and deficiencies in reserves reconciliations required by Form 51-101F1.

Also included in the Report is data, analysis and discussion concerning oil and gas reserves estimates that are required to be disclosed under section 2.1 of NI 51-101. In addition to NI 51-101 matters, the Report contains information concerning the preparation of disclosure involving renewable electrical generation via wind, solar, hydro and biomass, in addition to their associated facilities and technologies.

Finally, the Report contains data and commentary concerning certain sustainability disclosure, particularly GHG emissions, and Alberta's capital market as it pertains to energy-related matters, such as RI statistics and capital raising activities, including sustainable financings.

1.3 ENERGY GROUP YEAR IN REVIEW

The Energy Group completed 124 screening reviews of the required annual oil and gas filings to the end of September 2023 for RIs engaged in oil and gas activities. This included filings for 101 AB RIs and 23 for RIs where another Canadian jurisdiction was the principal regulator.

Staff also completed 243 environmental sustainability monitoring reviews concerning disclosure of GHG emissions and certain other sustainability matters – one review for each energy-related RI and each RI that reports under NI 43-101, for which the ASC was the principal regulator. These reviews focused on the disclosure of basic information, such as the presence of specific disclosure, the timing and frequency of the disclosure, its preparation and the disclosure method. These reviews are discussed in detail in section 4 of the Report.

To the end of September 2023, staff reviewed 11 prospectuses from energy-related RIs, including seven for AB RIs and four for which the British Columbia Securities Commission (**BCSC**) was the principal regulator. Six of the 11 prospectuses were for RIs engaged in oil and gas activities.

Staff conducted approximately 612 press release screening reviews and four full press release reviews, three of which were for AB RIs.

In addition, staff completed 36 other disclosure reviews to the end of September 2023. Further information on review types is contained in section 2 of the Report.

Figure 1: Number of completed reviews

REVIEW TYPE	JURISDICTION	2023 YTD*	2022	2021	2020	2019	2018
Prospectus – oil & gas	AB	5	13	21	3	5	12
	Other	1	6	3	0	1	2
Prospectus – other energy	AB	2	6	8	–	–	–
	Other	3	5	4	–	–	–
Annual oil & gas filing screening	AB	101	108	113	129	132	138
	Other	23	25	29	41	45	57
Press release screening	All	612	1,652	1,766	–	–	–
Press release	AB	3	6	38	21	26	15
	Other	1	5	3	2	5	0
Other	AB	18	11	29	12	20	37
	Other	18	4	9	0	3	1
Environmental sustainability monitoring	AB	243	164	190	–	–	–
	Other	0	52	0	–	–	–

"–" None completed

* Information is included to the end of September for the current year, referred to as "YTD," and subsequently updated to the full year in future reports, with the exception of environmental sustainability monitoring reviews, which are conducted between October 1 and September 30.

As part of its ongoing commitment to engagement with capital market participants, the ASC published the 2022 Report in December 2022. It was also emailed to approximately 923 subscribers. In January 2023, staff hosted the 2023 Energy Matters Information Session webinar. The event had 162 attendees. In March 2023, staff hosted the Beginners Guide to National Instrument 51-101 *Standards of Disclosure For Oil and Gas Activities* webinar. The event had 258 attendees. See www.asc.ca/news-and-publications/events for more information on past and future ASC events.

Between October 2022 and the end of September 2023, the Energy Group responded to 30 inquiries. These included nine from firms that evaluate oil and gas reserves and resources other than reserves, nine from law firms, six from RIs, two from other Canadian regulators, and four from other sources.

2. Oil and gas disclosure commentary

2.1 INTRODUCTION

This section discusses key areas for improvement of oil and gas disclosure for RIs engaged in oil and gas activities, as identified by staff. It also includes data, analysis and discussion concerning oil and gas reserves estimates that are required to be disclosed under section 2.1 of NI 51-101. The content is based primarily on reviews of 2023 disclosure attributed to oil and gas activities that were mostly conducted in 2022 (accounting for variability in financial year-end dates).

The Energy Group applies a rigorous review process to assess compliance with oil and gas securities law disclosure requirements. While this process primarily focuses on AB RIs, staff also routinely review disclosure from RIs for which other Canadian jurisdictions are the principal regulator. This is done in an effort to assist these jurisdictions, while also ensuring the ASC's broader awareness on oil and gas-related disclosure as the CSA's lead regulator on such matters.

2.1.1 Types of reviews

The Energy Group conducts or participates in many types of reviews. The type of review conducted by staff determines specifically what will be reviewed during the review itself. Reviews may incorporate disclosure required by section 2.1 of NI 51-101 (including the statement of the reserves data and other information specified in Form 51-101F1 and related reports), management discussion and analyses (MD&A), press releases, prospectuses, investor presentations, and websites, along with material used to prepare disclosure, such as evaluations of oil and gas reserves and resources other than reserves, other technical reports and documentation.

Examples of reviews we conduct or otherwise participate in are noted below, along with associated details:

- **Screening**
  - **Oil and gas**
    - Encompasses the required annual oil and gas filings, which comprise the statement of the reserves data and other information specified in Form 51-101F1 and reports in accordance with Form 51-101F2 and Form 51-101F3.
    - Findings may result in the initiation of a compliance, technical or continuous disclosure review (see below).
  - **Press release**
    - Involves the press release being screened and other disclosure, as needed.
    - Findings may result in the initiation of a press release review (see below).
- **Environmental sustainability monitoring**
  - Includes disclosure concerning GHG emissions and other sustainability matters.
  - Also involves tracking of certain baseline information such as:
    - Whether or not certain sustainability disclosure has been made.
    - The timing and frequency of such disclosure.
    - How the disclosure was prepared.

    - The method of disclosure.
    - Whether or not specific information has been disclosed.
  - Findings may result in the initiation of a continuous disclosure review (see below).

- **Cease trade order revocation**
  - Incorporates energy-related and other disclosure contained in required and voluntary filings, as needed.

- **Compliance**
  - Initiated as a result of the identification of a specific issue during another review with a limited scope or via files referred from within the ASC or from another CSA jurisdiction.
  - Includes energy-related and other disclosure, as needed.
  - Depending on findings, these may result in the initiation of a technical or continuous disclosure review.

- **Continuous disclosure**
  - Encompasses all energy-related and other disclosure contained in required and voluntary filings, as needed.
  - Findings may result in the initiation of a technical or compliance review.

- **Notice of intent to be qualified to file a short form prospectus**
  - Incorporates energy-related and other disclosure, as needed.

- **Press release**
  - More in-depth than a press release screening review.
  - Includes other disclosure, as needed.
  - Typically results in a letter sent to the RI.
  - Findings may result in the initiation of a compliance, technical or continuous disclosure review.

- **Prospectus (short-form, long-form and shelf)**
  - Involves the prospectus, evaluations of oil and gas reserves and resources other than reserves, other technical reports and various technical documentation for long-form prospectuses (e.g. initial public offerings), and as needed for short-form and shelf prospectuses.
  - Incorporates other disclosure, as needed.
  - Findings may result in the initiation of a compliance review.

- **Technical**
  - Focuses on evaluations of oil and gas reserves and resources other than reserves, other technical reports and various technical documentation.
  - Incorporates other disclosure, as needed.
  - These may result in the initiation of a continuous disclosure review.

Outcomes of reviews will vary depending on the specific circumstances. Possible outcomes include:

- No action necessary
- Prospective advisory comment(s) intended to improve future disclosure

- Identification of deficiencies, including errors and omissions that may be misleading, with results that include one or more of the following:
  - requirement to correct and refile
  - issuer placed in default
  - management cease trade order
  - cease trade order
  - referral to the ASC Enforcement division

2.1.2 Disclosure expectations

RIs are required to ensure that their disclosure is not misleading and does not omit a required fact or a fact necessary to make a statement not misleading,[1] focuses on material information, such as information that would be likely to influence a decision by a reasonable investor to buy, hold or sell a security of a RI,[2] and otherwise complies with securities law disclosure requirements.

RIs that are uncertain whether their disclosure is compliant with securities law, including NI 51-101 and its technical standard, the COGE Handbook, should seek the advice of an appropriate professional adviser.

General guidance and examples of misrepresentations and misleading statements are provided in section 2(a)(i)(A) of CSA Staff Notice 51-327 *Revised Guidance on Oil and Gas Disclosure*.

Key areas of disclosure identified by staff for improvement are discussed below. This includes section 2.5 Reserves Reconciliations. Historically, staff have addressed this subject due to the multitude of issues that have arisen over the years. While the number of occurrences of any particular issue tends to fluctuate, we maintain this section to help reduce the chance of their recurrence. Therefore, **this section functions as a helpful reference** for those who prepare disclosure concerning reserves reconciliations, particularly qualified reserves evaluators and qualified reserves auditors.

2.2 ROYALTY INTERESTS

Concern: RIs not meeting NI 51-101 annual filing requirements due to the absence of required disclosure concerning royalty interests in their statement of the reserves data and other information specified in Form 51-101F1.

Some RIs are not aware that the statement of the reserves data and other information specified in Form 51-101F1 must include disclosure concerning royalty interests, including gross overriding royalties, lessor royalties, net profit interests, production payments and other non-operating interests.

Most of the affected RIs are small and many have annual filing issues that extend across multiple financial year ends. Prospectus filings have also been affected for some RIs.

[1] No person or company shall make a statement that the person or company knows or reasonably ought to know:
(a) in any material respect and at the time and in the light of the circumstances in which it is made,
(i) is misleading or untrue, or
(ii) does not state a fact that is required to be stated or that is necessary to make the statement not misleading,
(b) would reasonably be expected to have a significant effect on the market price or value of a security, a derivative or an underlying interest of a derivative. (Section 92(4.1) Act.)

[2] Section 1.4(2) of NI 51-101

Some RIs incorrectly conclude that they do not need to file the statement specified in Form 51-101F1 because their only interest in reserves is attributed to one or more royalty interests. Being the only reserves they would have, they would be considered material and are therefore required to be disclosed. Other RIs are unaware that the term "oil and gas activities" includes the ownership of royalty interests and the ownership of such interests would subject them to NI 51-101 requirements.

Section 1.1 of NI 51-101 provides that the term "oil and gas activities" includes the following:

> a) searching for a *product type* in its natural location;
> b) acquiring *property* rights or a *property* for the purpose of exploring for or removing *product types* from their natural locations;
> c) any activity necessary to remove *product types* from their natural locations, including construction, drilling, mining and production, and the acquisition, construction, installation and maintenance of *field* gathering and storage systems including treating, *field* processing and *field* storage;
> d) producing or manufacturing of *synthetic crude oil* or *synthetic gas*;
>
> but does not include any of the following:
>
> e) any activity that occurs after the *first point of sale*;
> f) any activity relating to the extraction of a substance other than a *product type* and their *by-products*; […]

The term "property" is referenced in b) and is defined[3] to include:

- Fee ownership or a lease, concession, agreement, permit, licence or other interest representing the right to extract oil or gas;
- **Royalty interests** [emphasis added], production payments and other non-operating interests in properties operated by others; and
- An agreement with a foreign government or authority under which an RI participates in the operation of properties or otherwise serves as "producer" of the underlying reserves.

A "property" is where an RI has the right to conduct oil and gas activities, including the extraction of product types and their by-products from their natural locations before the first point of sale, or where they have a royalty or other non-operating interest where others have the right to conduct activities.

Section 2.1 of NI 51-101 discusses annual filing requirements. Section 2.1.1 requires an RI to annually file a statement of the reserves data and other information specified in Form 51-101F1. Item 2.1.1 of Form 51-101F1 specifies that disclosure is required by country and in the aggregate, reserves, gross and net, estimated using forecast prices and costs, for each product type, in specified reserves categories. Item 2.1.2 requires disclosure of the net present values attributable to these categories. Instruction 1 of item 2.1 specifies that such disclosure **is to include all of the reserves in which an RI has a direct or indirect ownership, working or royalty interest**.

As outlined in section 2.7 of Companion Policy 51-101CP *Standards of Disclosure for Oil and Gas Activities* (**51-101CP**), if an RI cannot obtain the information required to include a royalty interest in its disclosure of net reserves, it should, proximate to its disclosure of net reserves, disclose this and also disclose its corresponding royalty interest share of oil and gas production for the year.

[3] Section 1.1 of NI 51-101

2.3 COSTS INCURRED

Concern: Incorrect or absent disclosure regarding item 6.6 of Form 51-101F1, which requires disclosure of property acquisition costs, exploration costs and development costs.

Issues identified by staff generally involve either incorrect disclosure or disclosure being absent from where it is expected to occur. Incorrect disclosure includes situations where disclosure under item 6.6 does not align with the RI's discussion of its activities elsewhere. In some situations where disclosure is absent, the RI has discussed acquisition, exploration or development activities elsewhere, suggesting that there were costs incurred that should be disclosed under item 6.6.

In respect of property acquisition costs, some RIs incorrectly disclose the summation of property acquisition costs minus disposition costs or vice versa. Acquisition costs are not to be adjusted for dispositions. The presence of a negative number indicates that this may have been done. Additionally, some RIs mistakenly believe that they are not required to disclose property acquisition costs in situations where the RI's shares are used to fund an acquisition.

Item 6.6 of Form 51-101F1 requires disclosure of property acquisition costs (separately for proved properties and unproved properties), exploration costs and development costs incurred by an RI during its most recent financial year. Each of these is to be disclosed by country. The instruction to item 6.6 provides that if the incurred costs are presented in the RI's financial statements and related notes for the most recent financial year, the RI can satisfy this item by directing the reader to this information.

Property acquisition costs[4] are costs incurred to acquire a property. These can be direct costs arising from purchases or leases or indirect costs arising from the acquisition of an entity that owns an interest in a particular property. It includes the costs of lease bonuses and options to purchase or lease a property, the portion of costs applicable to hydrocarbons when land with such rights is purchased, and other fees, such as broker fees, recording and registration fees and legal fees. All costs are to be disclosed, including those paid via issuance of securities. They are to be disclosed separately for proved properties and unproved properties. A proved property[5] is a property or part thereof to which reserves have been attributed, while an unproved property is a property or part thereof to which reserves have not been attributed.

Exploration costs[6] are incurred in the identification of areas that may justify examination, as well as the examination of areas that have associated prospects that may contain quantities of oil and gas. These costs may be incurred before or after acquisition of the property. They include costs related to studies, access, geological and geophysical expenses, carrying costs, rental and property taxes, dry hole and bottom hole contributions, and the costs of drilling and equipping exploratory and stratigraphic wells.

Development costs[7] are costs incurred to obtain access to quantities of oil and gas and costs associated with their extraction, treatment, gathering and storing. They include costs related to site preparation, drilling and equipping wells, acquiring, constructing and installing production, measuring, storage, processing and disposal facilities and improved recovery.

4 CSA Staff Notice 51-324 *Revised Glossary to NI 51-101 Standards of Disclosure for Oil and Gas Activities* (**CSA SN 51-324**)

5 CSA SN 51-324

6 CSA SN 51-324

7 CSA SN 51-324

2.4 INDEPENDENCE PERTAINING TO QUALIFIED RESERVES EVALUATORS AND QUALIFIED RESERVES AUDITORS

Concern: RIs not meeting NI 51-101 annual filing requirements due to filing a Form 51-101F2 that has not been executed by a qualified reserves evaluator or auditor who is independent of the RI.

Staff have encountered several situations in recent years in which qualified reserves evaluators (**QREs**) and qualified reserves auditors (**QRAs**) appointed with the intention of satisfying the annual filing requirements under section 2.1 of NI 51-101 have not met the requirement to be independent. If they are not independent, the annual filing requirements will not be met and this may have significant consequences for the RI and the appointed non-independent QREs and QRAs.

An RI engaged in oil and gas activities must file the following with the SRA no later than the date on which it is required by securities legislation to file audited financial statements for its most recent financial year:[8]

- A statement of the reserves data and other information specified in Form 51-101F1 (section 2.1.1);
- A report in accordance with Form 51-101F2 that is executed by one or more QREs or QRAs who are independent of the RI, who evaluate or audit specified content in the statement (section 2.1.2); and
- A report in accordance with Form 51-101F3 that is executed by officers and directors of the RI, that approves the:
  - Content and filing of the statement;
  - Filing of the report prepared in accordance with Form 51-101F2; and
  - Content and filing of the report prepared in accordance with Form 51-101F3 (section 2.1.3).

NI 51-101 assigns the responsibility for appointing independent QREs and QRAs to the directors of RIs engaged in oil and gas activities. These directors are responsible for ensuring the independence of those they appoint to perform the duties of independent QREs and QRAs and they are also responsible for ensuring the RI's annual filing requirements are met.

NI 51-101[9] defines "independent" in respect of the relationship between an RI and a person or company, to mean a relationship between the RI and that person or company in which there is no circumstance that could, in the opinion of a reasonable person aware of all relevant facts, interfere with that person's or company's exercise of judgment regarding the preparation of information used by the RI.

Part 3 of NI 51-101 addresses the responsibilities of RIs and their directors, specifically those responsibilities pertaining to QREs and QRAs and their independence. A summary of Part 3 includes:

- Section 3.2 requires an RI to appoint one or more independent QREs or QRAs and direct them to report to the RI's board of directors (or those individuals who have similar authority and duties) on the reserves data, contingent resources data and prospective resources data disclosed in the RI's statement of the reserves data and other information specified in Form 51-101F1.

[8] Section 2.1 of NI 51-101

[9] Section 1.1 of NI 51-101

- Under section 3.4, the board of directors must:
  - Review each appointment under section 3.2; and
  - Meet with the RI's management and each appointed QRE or QRA before filing the statement of the reserves data and other information specified in Form 51-101F1 and the report prepared in accordance with Form 51-101F2 to:
    - Determine whether any restrictions affect the ability of the QRE or QRA to report without reservation on the RI's reserves data, contingent resources data or prospective resources data;
    - Review the reserves data, contingent resources data or prospective resources data and the report prepared in accordance with Form 51-101F2; and
    - Review and approve the:
      - Content and filing of the statement of the reserves data and other information specified in Form 51-101F1;
      - Filing of the report prepared in accordance with Form 51-101F2; and
      - Content and filing of the report prepared in accordance with Form 51-101F3.

When directors approve the filing of a report prepared for the purposes of section 2.1.2 of NI 51-101, they are acknowledging their responsibilities regarding the independence of the QREs and QRAs who have executed the report and the disclosure of the reserves data and other oil and gas information prepared or audited by them. Acceptance of these responsibilities is acknowledged with the filing of an executed report prepared for the purposes of Form 51-101F3. QREs and QRAs are also responsible for ensuring that they are not appointed to perform the duties of independent QREs and QRAs if they do not meet the requirements for independence. They acknowledge their responsibilities in this regard when they execute the report prepared for the purposes of section 2.1.2.

Staff would generally[10] consider the requirement for independence to not be met if a QRE or QRA is:

- An employee, insider or director of the RI or a related party, or a partner of a person or company who is;
- Holds or expects to hold securities of the RI or a related party, or an RI that has an interest in the property that is the subject of the technical report (evaluation or audit of oil and gas reserves and resources other than reserves) or an adjacent property;
- Has or expects to have ownership, royalty, or other interest in the property that is the subject of the technical report or an adjacent property; or
- Receives the majority of income in the three years preceding the date of the technical report from the RI or a related party.

In assessing independence, staff would also consider whether a QRE or QRA expects to receive income, either directly or indirectly, from an RI or a related party, subsequent to preparing or auditing a technical report on behalf of the RI.

If independence is not clear, staff may ask the RI to provide information concerning the independence of a QRE or QRA who it has appointed under section 3.2 of NI 51-101. There may be situations where a reasonable person would consider an appointed QRE or QRA to be independent of an RI, even though they hold an interest in securities of the RI. However, it is the RI's responsibility to make this determination and explain and support

[10] Section 1.1(3) of 51-101CP

this determination as necessary. Important factors to consider may include the number and type of security or securities, the interest(s) held and when and how the security or securities were acquired.

The COGE Handbook is also relevant concerning independence. It defines independent as:

> The state of being or acting free of the influence of other parties. Independent Reserves Evaluators and Auditors must not be influenced by any source that could prejudice their work.

Section 5.5.5 of the COGE Handbook states that QREs, QRAs, **or any firm of oil and gas consultants where individuals are shareholders, proprietors, partners, or employees, should be independent from any company whose assets are being evaluated**. Staff would generally consider the firms contemplated to include any company or partnership that retains individuals who perform the duties of QREs and QRAs as defined in NI 51-101.

Section 5.5.6.2 of the COGE Handbook discusses standards of independence for QREs and QRAs. It states that a QRE or QRA would be considered independent if they do not have, nor expect to receive, any direct or indirect interest in either the properties being evaluated or the securities of the company or its affiliates. It provides examples of circumstances that would normally impair the independence of a QRE or QRA or an associated consulting firm of which a QRE or QRA is a shareholder, proprietor, partner, or employee for a time period of at least six months before, during and after their engagement. These examples involve the QRE or QRA engaging with an RI in such things as investments, joint business ventures, borrowings and loans, indebtedness guarantees, purchases and sales of assets, certain relationships, contingent fees and major relationships.

2.5 RESERVES RECONCILIATIONS

Concern: Incorrect disclosure regarding item 4.1 of Form 51-101F1, which requires disclosure of an annual reserves reconciliation.

Over time, staff have identified the following errors and deficiencies:

- Opening balances that do not match closing balances from the previous financial year, as they should;
- Negative volumes where they should not occur;
- Erroneous and potentially misleading uses of reserve change categories, particularly “technical revisions”;
- Use of reserve change categories that are not identified by NI 51-101;
- Erroneous reserves changes due to the use of incorrect dates for acquisitions and dispositions;
- Incorrect production volumes;
- Absence of explanations regarding disclosure in each reserve change category;
- Incorrect closing balances for a given reserve change category due to erroneous summation, including in situations where optional disclosure of barrels of oil equivalent (BOE) disclosure occurs;
- Missing or inconsistent units of measure.

Incorrect reserves reconciliation disclosure is a recurring concern, with deficiencies being identified in the disclosure of RIs of all sizes. Some deficiencies are readily identifiable, while others are only identified through detailed analyses of disclosure and scrutiny of the associated reserves evaluations. In some cases, incorrect disclosure may be misleading, such as the erroneous use of reserve change categories, particularly “technical revisions.”

This section has been historically included as a helpful reference for those involved in the preparation and disclosure of reserves reconciliations. Reconciliations are included in evaluations of oil and gas reserves that are prepared by QREs and QRAs for the purposes of disclosure under section 2.1 of NI 51-101. Both NI 51-101 and the COGE Handbook provide information concerning their preparation. It is imperative that those involved in the preparation and disclosure of reserves reconciliations understand the associated requirements to reduce future disclosure issues.

Item 4.1 of Form 51-101F1 requires disclosure of an annual reconciliation of changes in estimates of gross proved reserves (in total), gross probable reserves (in total) and gross proved plus probable reserves (in total). This disclosure is required by country, product type specified in item 4.1.2(b) and reserve change category as specified in item 4.1.2(c) and instruction (4) of item 4.1. In addition, item 4.1.2(c) requires an explanation concerning disclosure that occurs in each reserve change category.

Product types are specified in item 4.1.2(b) as:

(i) *bitumen*;
(ii) *coal bed methane*;
(iii) *conventional natural gas*;
(iv) *gas hydrates*;
(v) *heavy crude oil*;
(vi) *light crude oil* and *medium crude oil* combined;
(vii) *natural gas liquids*;
(viii) *shale gas*;
(ix) *synthetic crude oil*;
(x) *synthetic gas*;
(xi) *tight oil*;

Substances such as oil, condensate, liquids, gas, solution gas, associated gas, non-associated gas, sulphur and helium are not “product types” within the meaning of NI 51-101, as they are not specified in item 4.1.2(b).

Reserve change categories specified in item 4.1.2(c) are:

(i) extensions and improved recovery;
(ii) technical revisions;
(iii) discoveries;
(iv) acquisitions;
(v) dispositions;
(vi) economic factors;
(vii) *production*.

Instruction (4) of item 4.1 requires reserves changes attributed to infill drilling to either be included in reserve change category “extensions and improved recovery” or in a separate reserve change category labelled “infill drilling.” The COGE Handbook describes infill drilling as drilling that occurs within a known accumulation.

Categories not specified in item 4.1.2(c) or instruction (4) are not reserve change categories.

The reconciliation per item 4.1 compares reserves data at the "effective date" of the most recent financial year (the financial year for which the disclosure is being prepared), with the corresponding estimates at the last day of the preceding financial year, which is the reconciliation's "opening balance." The "closing balance" is the outcome of this comparison.

Effective date is defined in section 1.1 of NI 51-101 as:

> [T]he date as at which, or for the period ended on which, the information is provided;

Additional information concerning terminology and preparation of reserves reconciliations is contained in section 2.7(6) of 51-101CP and section 4.6.2 of the COGE Handbook. However, please note that for the purposes of complying with Alberta securities laws, in the event of a conflict between the COGE Handbook and NI 51-101, NI 51-101 takes precedence.

Staff note the following common disclosure deficiencies with respect to the reserves reconciliation required by item 4.1 of Form 51-101F1, along with corrective information and examples.

- **Reserve change categories extensions and improved recovery, infill drilling and discoveries** – The incorrect recording of negative volumes. Once a volume has been assigned to one of these categories, subsequent changes should be identified either as "technical revisions" or "economic factors" and accounted for in the respective reserve change categories, **except as noted in section 4.6.2.4 of the COGE Handbook**.

- **Reserve change category technical revisions** – The recording of negative volumes that exceed 100 per cent of the opening balance, which is incorrect. Also, the attribution of reserves changes as technical revisions that should be attributed to a different reserve change category appropriate under the circumstances.

  Technical revisions are expected to show changes in existing reserves estimates in respect of carried-forward properties over the period of the reconciliation and are the result of new technical information, not the result of capital expenditure.[11]

  It is technically impossible to remove a volume that is in excess of the opening balance through a technical revision. Therefore, a negative technical revision that exceeds 100 per cent of the opening balance is incorrect.

  It is not appropriate to account for changes in reserves estimates that result from capital expenditures as technical revisions.[12] Doing so may result in misleading disclosure. An RI's acknowledgement in its disclosure that technical revisions have been done in this incorrect manner does not absolve them of their responsibility to ensure that their disclosure not be misleading. The ASC will continue its efforts to identify misattributed technical revisions.

[11] Section 2.7(6)(c) of 51-101CP

[12] Section 2.7(6)(c) of 51-101CP

- **Reserve change category acquisitions** – The use of incorrect dates to account for reserves additions through acquisitions. The correct date to reconcile changes in reserves acquired during the most recent financial year is the **effective date** of the most recent financial year.

  Estimates of the reserves at the effective date – not the acquisition date – are to be used, plus any production since the acquisition date. This production must also be included in reserve change category "production." If there have been changes in the reserves estimates between the acquisition date and the effective date (other than due to production), the RI should explain this in a footnote to the reconciliation table.[13]

  a) **Acquisition date** – The term "acquisition date" is not defined nor clarified in NI 51-101 and its related forms, 51-101CP or Staff Notices. Staff consider it to mean the date at which the RI has attained a direct or indirect ownership, working or royalty interest in reserves. Ownership is discussed in section 1.4.4.2 of the COGE Handbook.

  b) **Activities after the acquisition date** – Reserves estimates attributed to activities that have occurred on an acquired property subsequent to the acquisition date of the property, yet prior to the effective date of the most recent financial year, are to be accounted for in the appropriate reserve change category.

     These activities typically involve the drilling or recompletion of wells and related pursuits. The results of such activities are to be reflected in reserve change categories "extensions and improved recovery," "discoveries" or "infill drilling." They should not be included in the reserve change category "acquisitions" since they occurred subsequent to the acquisition date. RIs should explain why disclosure has been made in the applicable categories. Staff suggest that these explanations occur in conjunction with the explanations required by item 4.1.2(c) of Form 51-101F1, which is discussed below under "Explanations."

  In summary, the estimates to be used in the reserve change category "acquisitions" are the sum of:

  - The estimates of the reserves data by product type attributed to the acquisition at the effective date of the most recent financial year (the financial year for which the disclosure is being prepared); and

  - The production by product type that has occurred from the acquisition, accrued from the date ownership was attained, to the effective date of the most recent financial year.

  Although reserves estimates may be determined at any point during a particular financial year, reserves are only reconciled for the purposes of item 4.1 as at the last day of the most recent financial year.

  Reconciliation steps regarding acquisitions are:

  1. **Evaluate** all of the RI's reserves at the effective date of the RI's most recent financial year. Include all properties, wells, etc., owned at the beginning of the most recent financial year and those acquired **during** the most recent financial year.

  2. **Determine** the RI's share of the gross production volume, by product type, derived from the acquisition. Include production that has occurred from the acquisition date to the effective date of the most recent financial year.

[13] Section 2.7(6)(c) of 51-101CP

3. **Add** the results from step 2 to the acquired properties, wells, etc., identified and evaluated in step 1. This exercise is mechanical and is not impacted by estimates from any evaluation of the acquisition (commissioned by the RI or other party) that may have occurred at or around the date that ownership was attained.

4. **Enter** the results from step 3 into the reconciliation table adjacent to the reserve change category "acquisitions," per the appropriate product type and reserves category.

5. **Assign** to the appropriate reserve change category, reserves estimates originating from activities occurring on the acquired property, wells, etc., (typically involves the drilling or recompletion of a well and related pursuits) subsequent to the acquisition date and prior to the effective date of the most recent financial year. It is incorrect to account for these reserves estimates under reserve change category "acquisitions."

- **Reserve change category dispositions** – The use of incorrect dates to account for reserves reductions through dispositions. As discussed in section 4.6.2 of the COGE Handbook, reserves that are disposed of are recorded at the "disposition date," which is the date at which ownership by the RI has ceased. Production that has occurred subsequent to the last day of the preceding financial year to the disposition date is accounted for under reserve change category "production."

- **Reserve change category production** – Volumes not matching those disclosed under item 6.9.1(a) of Form 51-101F1 for the same country and product type. These volumes should match, unless production from entities that do not have reserves assigned is included. If they do not match, an explanation must be provided. Staff suggest that these explanations occur in conjunction with the previously noted explanations required by item 4.1.2(c) of Form 51-101F1, which is discussed below under "Explanations."

- **Opening balance** – Volumes for the current year not matching the closing balance from the previous financial year for the same country, product type and reserves category. These should match.

- **Closing balance** – Volumes not matching those disclosed for the same country, product type and reserves category under item 2.1.1 of Form 51-101F1. These should match.

- **Units of measure** – Missing or inconsistent units of measure for disclosure in the reconciliation. Although no particular unit of measure is specified in Form 51-101F1, switching between units of measure is confusing and may be misleading to investors. Consistency of units is addressed in general instruction (8), which advises against switching between Imperial units and Système International (SI) units without a compelling reason. If switching does occur, the reason for why this was done should be disclosed.

- **Reserve change category usage** – The inappropriate use of categories that are not specified in item 4.1.2(c) or instruction (4) of item 4.1. An RI must use the reserve change categories specified in item 4.1.2(c) or instruction (4) of item 4.1. Although section 4.6.2.2 of the COGE Handbook provides recommended "change categories" (equivalent to "reserve change categories"), not all change categories have equivalent reserve change categories. RIs must use the reserve change categories specified in NI 51-101.

- **Volume summation** – Volumes that do not correctly sum. The closing balance for each product type for each reserves category must equal the sum of the volumes disclosed in each associated reserve change category. Additionally, the gross proved plus probable reserves (in total) for each product type must equal the sum of the gross proved reserves (in total) and the gross probable reserves (in total).

Incorrect summation, both vertically and horizontally in the reserves reconciliation may result from mathematical error or incorrect preparation of the reconciliation. The latter will often happen with respect to technical revisions and the re-categorization of reserves. RIs that optionally disclose BOEs as part of their reconciliation must ensure that the conversion is done appropriately and that the constituent values sum correctly.

- **Explanations** – The absence of explanations that are required to accompany disclosure in individual reserve change categories. We expect RIs to provide detailed explanations of changes in individual reserve change categories. Item 4.1.2(c) of Form 51-101F1 requires separate identification and explanation of disclosure in each reserve change category.

  Without an explanation, a change may occur that cannot be easily understood. For example, a large technical revision, an acquisition, or a re-categorization of reserves from probable reserves to proved reserves may have occurred. In the absence of an explanation for the latter, for example, the re-categorization could go unnoticed if the proved plus probable reserves (in total) is unchanged.

EXAMPLE OF DISCLOSURE THAT *MET* OUR EXPECTATIONS

	TOTAL OIL		
	Total proved (Mbbl)	Total probable (Mbbl)	Total proved + probable (Mbbl)
FACTORS			
Opening balance	0	125	**125**
Discoveries	0	0	**0**
Extensions	75	(75)	**0**
Infill drilling	0	0	**0**
Improved recovery	0	0	**0**
Technical revisions	0	0	**0**
Acquisitions	0	0	**0**
Dispositions	0	0	**0**
Economic factors	0	0	**0**
Production	(10)	0	**(10)**
Closing balance	**65**	**50**	**115**

Explanation: The Company assigned probable heavy oil reserves of 125 Mstb to a location on its ABC Property in 2021. In the first quarter of 2022, the location was drilled, tested and put on production and 75 Mstb of proved heavy oil reserves were subsequently assigned. The probable reserves assignment remains unchanged. The production in the reconciliation is attributed to this new well.

Staff's comments on this disclosure:

- *This reserves reconciliation correctly portrays how a re-categorization of reserves from probable to proved is to be prepared and disclosed.*
- *It would be inappropriate for the RI to reconcile the proved reserves as a positive technical revision and the probable reserves as a negative technical revision.*
- *Instead, the proved reserves should be entered as an addition in the reserve change category that the reserves for the probable location were initially attributed, which in this example is reserve change category "Extensions."*
- *The probable reserves component will be entered as a negative change in the original reserve change category that the reserves for the probable location were initially attributed, which in this example is reserve change category "Extensions."*
- *All subsequent changes to the reserves associated with this drilled location will be attributed to reserves change category "Technical Revisions."*
- *The reserves reconciliation correctly adds up both vertically and horizontally.*
- *An explanation accompanies the reserves reconciliation that explains the disclosure in the individual reserve change categories.*
- *The correct reserve change categories are used.*
- *The units of measure are consistent.*

Instruction (5) of item 4.1 of Form 51-101F1 notes that a reconciliation is not required for RIs that have become engaged in oil and gas activities after the last day of their preceding financial year. Remember, the opening balance of the reserves reconciliation is equivalent to the associated estimates at the last day of the preceding financial year (the closing balance). In this situation, the opening balance would be zero, as the RI did not have reserves on the last day of the preceding financial year.

As discussed in instruction (5), if an RI had reserves at the effective date of the preceding financial year, but an evaluation of these reserves is unavailable, reserves estimates will not be available for the opening balance and a reconciliation cannot practicably be undertaken. In such a situation, a zero opening balance is not appropriate. Instead, the RI must disclose the reason for the absence of the reconciliation.

Additional information concerning preparation of the reserves reconciliation is provided in 51-101CP. For example, section 2.7(6)(a) discusses a scenario in which an RI has reserves at the effective date of its most recent financial year, but had no reserves at the start of that year (at which time the RI was presumably engaged in oil and gas activities). If the added reserves are material to the RI, a reconciliation must be disclosed. The opening balance will be zero, reflecting the lack of reserves at the start of the financial year. Section 5.10(4) of 51-101CP discusses reserves reconciliations with respect to initial public offerings.

2.6 INSIGHTS INTO OIL AND GAS RESERVES ESTIMATES

Analysis of an RI's reserves estimates and their variability over time, can provide insight into its activities and the quality of its reserves estimates. Instrumental in this analysis is the annual reserves reconciliation required by item 4.1 of Form 51-101F1.

For example, an RI's pursuit of new reservoirs or efforts to expand or increase recoveries from existing reservoirs can be assessed through the RI's disclosure in the reserve change categories "discoveries" and "extensions and improved recovery," respectively. The quality of reserves estimates on the other hand, can be judged using disclosure in the "technical revisions" reserve change category. This can help determine whether reserves estimates have been meeting the associated certainty levels and have therefore been assigned in accordance with the COGE Handbook, as required. This process of "reserves validation" is described in section 4.6.1 of the COGE Handbook.

With appropriate sampling and analysis, insight into activities and reserves quality can also be determined for groups of issuers that report under NI 51-101. Figure 2 presents a series of aggregated reserves reconciliations for AB RIs. These demonstrate changes in grouped and summed estimates of gross proved plus probable reserves (in total), disclosed by reserve change category for the constituent RIs. The information reflects oil and gas activities disclosed in 2023, but mostly conducted in 2022 (accounting for variability in financial year-end dates). An RI's contribution to its group reconciliation is based solely on the reserves volumes it has disclosed in each reserve change category. While generalized, a review of the changes that have occurred to volumes between the opening and closing balances for each group of RIs can help assess the quality of reserves data disclosed by AB RIs.

The following steps were taken to generate the reconciliations in Figure 2:

1. Quarterly average gross daily production volumes were obtained for each AB RI engaged in oil and gas activities at the end of 2022. Item 6.9 of Form 51-101F1 requires these volumes to be disclosed by country and product type for the most recent financial year. The volumes were summed for each RI and an annual average gross daily production volume for each RI was determined.

2. The RIs were ranked by their annual average gross daily production volume.

3. The AB RIs were then categorized into production groups based on annual average gross daily production volumes as follows:
    a. "Seniors" are those RIs with >100,000 BOE per day of production (based on a conversion ratio of six thousand cubic feet of gas for one barrel of oil);
    b. "Intermediates" are those RIs with 10,000 to 100,000 BOE per day of production; and
    c. "Juniors" are those RIs with <10,000 BOE per day of production.

4. The AB RIs ranked highest by production were selected from each group, with 10 senior, 20 intermediate and 46 junior RIs selected (50 are normally selected, but only 46 met the criteria for this analysis). For 2021, only nine RIs met the selection criteria for the seniors.

5. Within each group of selected RIs, volumes disclosed by each RI in each applicable reserve change category specified in item 4.1.2(c) of Form 51-101F1 for gross proved plus probable reserves (in total) were summed. No weighting or adjustment was applied.

6. The per cent change between the opening balance of 2022 (the closing balance of 2021) and the closing balance of 2022 was calculated. Figure 2 illustrates these results by production group. Positive and negative changes fall to the right and left of the opening balance (denoted as "0" per cent), respectively.

Figure 2: 2022 reconciliations of summed gross proved plus probable reserves (in total) for AB RIs, by production group

Figure 2a: Seniors

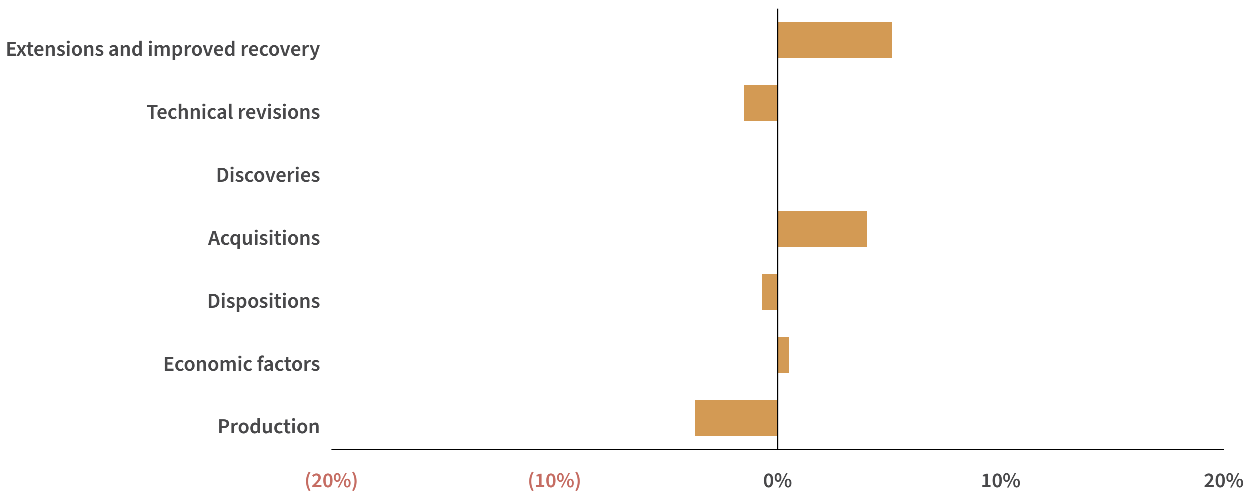


Figure 2b: Intermediates

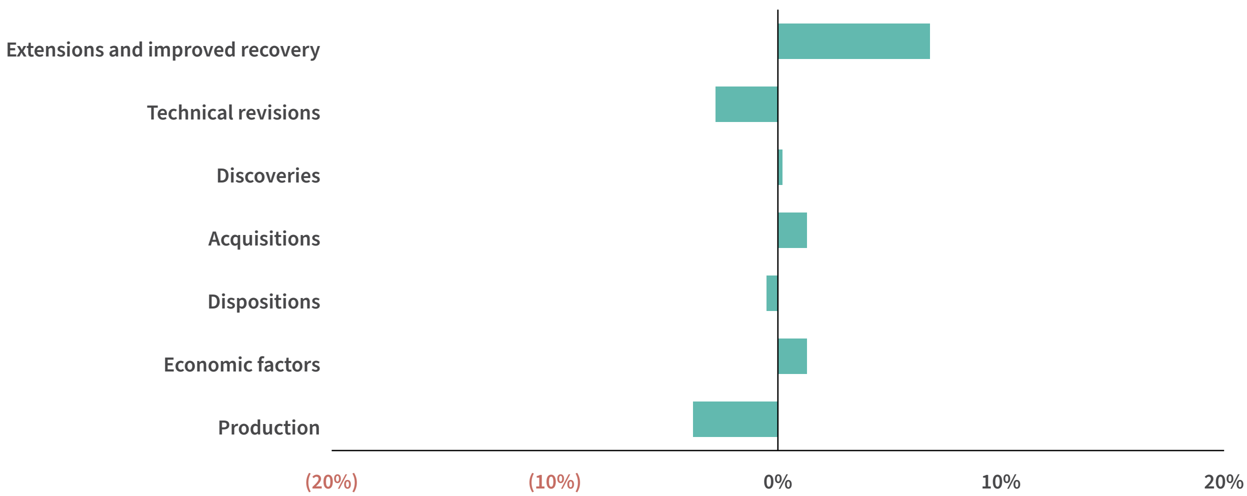
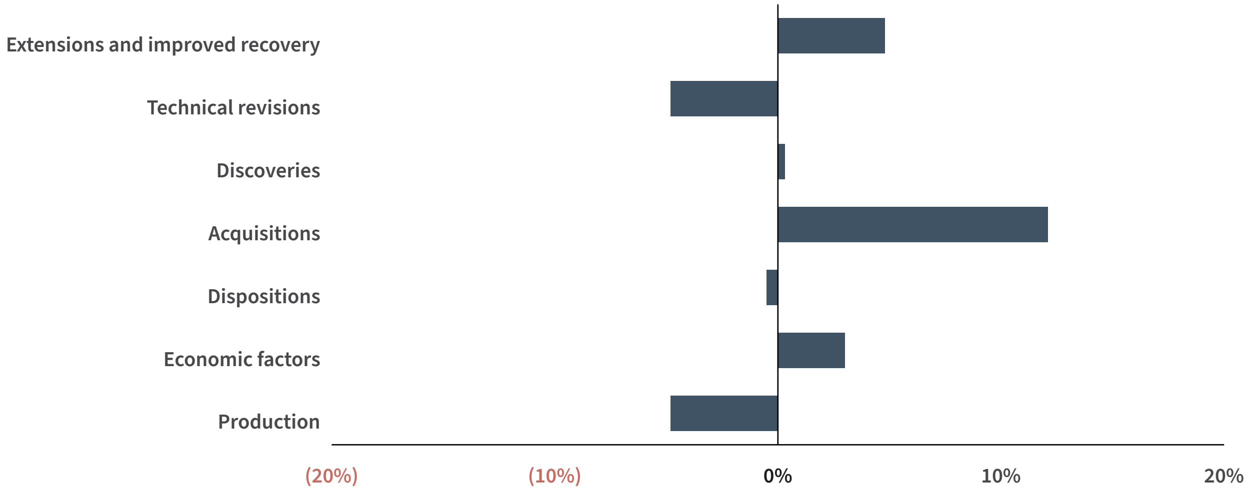


Figure 2c: Juniors



As illustrated in Figure 2, changes in extensions and improved recovery, which result from capital expenditures for step-out drilling in previously discovered reservoirs, and those associated with the installation of improved recovery schemes, are five per cent for the seniors, seven per cent for the intermediates and five per cent for the juniors. All seniors recorded extensions and improved recovery, with three of them accounting for 69 per cent of the group change. All but three of the intermediates recorded extensions and improved recovery, with three accounting for 48 per cent of the total for the group. Twenty-five of the juniors recorded extensions and improved recovery, with eight accounting for less than one per cent and four accounting for 53 per cent of the group total.

Regarding technical revisions, positive and negative revisions are generally attributed to better or poorer reservoir performance respectively, than initially forecast. For a given entity, proved reserves should be adjusted positively over time, while proved plus probable reserves should remain relatively constant. Technical revisions in Figure 2 concern proved plus probable reserves (in total), which are negative two per cent for the seniors, negative three per cent for the intermediates and negative five per cent for the juniors. Seven of the seniors recorded negative technical revisions, with two accounting for 77 per cent of the group total. Eleven intermediates recorded negative technical revisions, in addition to 24 juniors, with two accounting for 44 per cent of the group total.

Discoveries were recorded by none of the seniors, four of the intermediates and two of the juniors, including one junior that accounts for 81 per cent of the group change.

Changes in acquisitions are four per cent for the seniors, one per cent for the intermediates and 12 per cent for the juniors. Eight seniors, seven intermediates and eleven juniors recorded acquisitions, with two of the juniors accounting for 90 per cent of the group total.

Changes in dispositions are negative one per cent for each group. Eight seniors, eight intermediates and seven juniors recorded dispositions.

All three groups show adjustments for economic factors, with one per cent for the seniors and intermediates and three per cent for the juniors.

Figures 3 through 5 illustrate changes in the summed reserve change categories extensions and improved recovery, discoveries and technical revisions, respectively, for gross proved plus probable reserves (in total), for each group of AB RIs in Figure 2, for 2014 to 2022. While generalized, the purpose is to illustrate the multi-year changes in each reserve change category by production group. This can assist in the identification of disclosure trends and issues concerning proved plus probable reserves.

Figure 3: Summed extensions and improved recovery for gross proved plus probable reserves (in total) for AB RIs, by production group

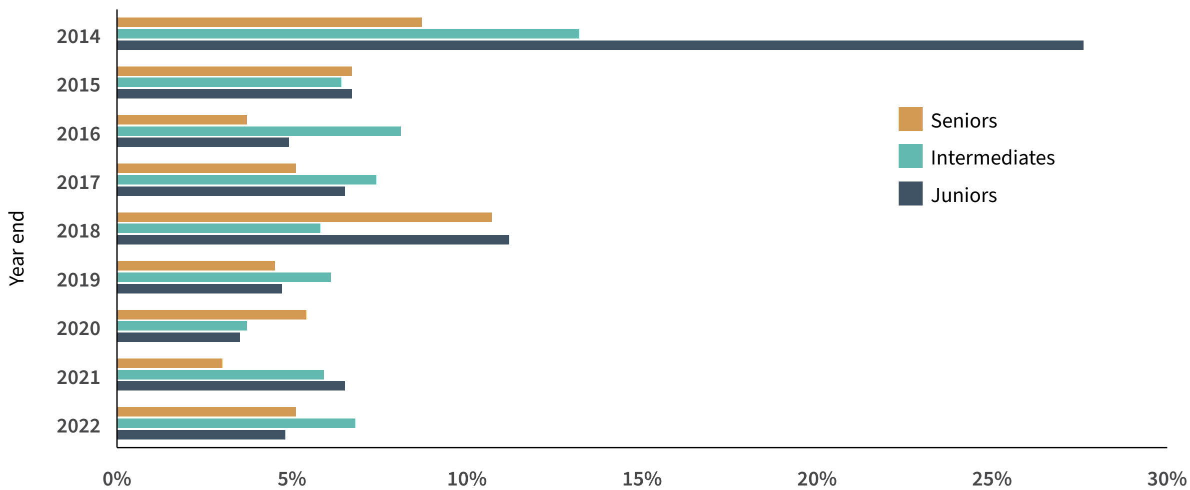


Figure 4 illustrates the average percentage change in summed discoveries for each group of RIs. The percentage change for the juniors increased sharply in 2020 and then decreased sharply, returning to historical levels in 2021 and 2022. The percentage change for the intermediates increased in 2022 over 2021, while no percentage change was recorded for the seniors for the fourth consecutive year.

Figure 4: Summed discoveries for gross proved plus probable reserves (in total) for AB RIs, by production group

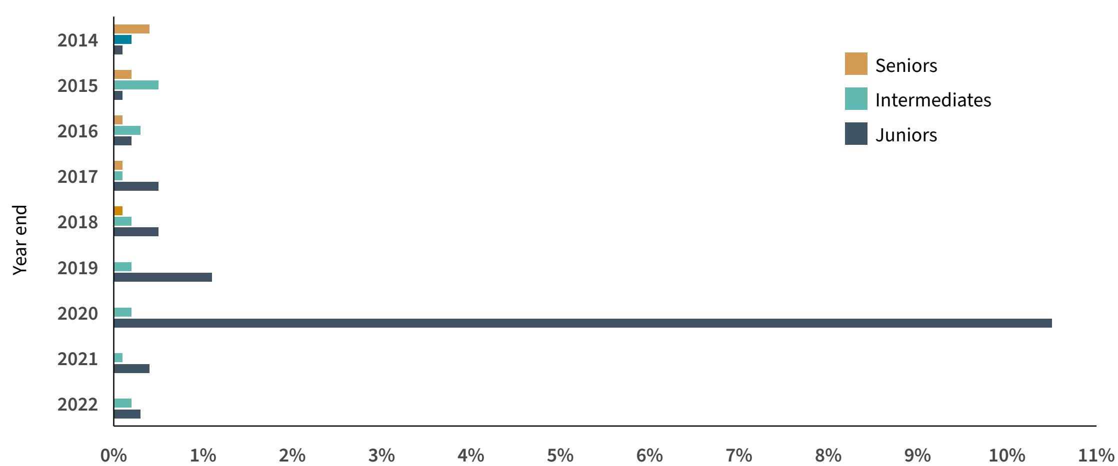
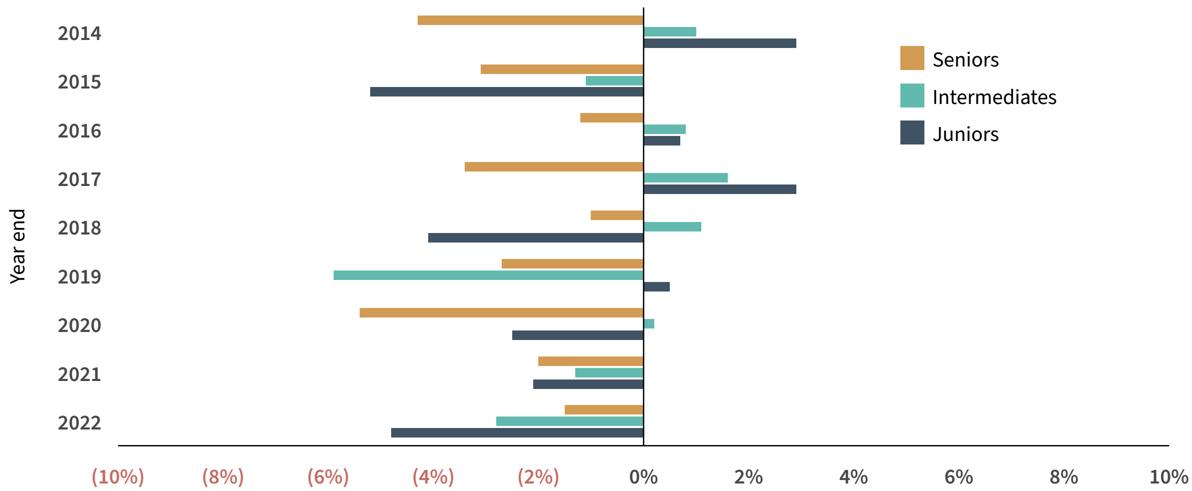


Figure 5 illustrates the multi-year average percentage change in summed technical revisions for each production group. Although the reserves quality varies for individual RIs within each group, the changes in gross proved plus probable reserves (in total) remained relatively constant until recently for the juniors and intermediates, appearing to approximate the associated certainty levels described in the COGE Handbook. The juniors have recorded negative technical revisions for three consecutive years, while the intermediates have for the last two.

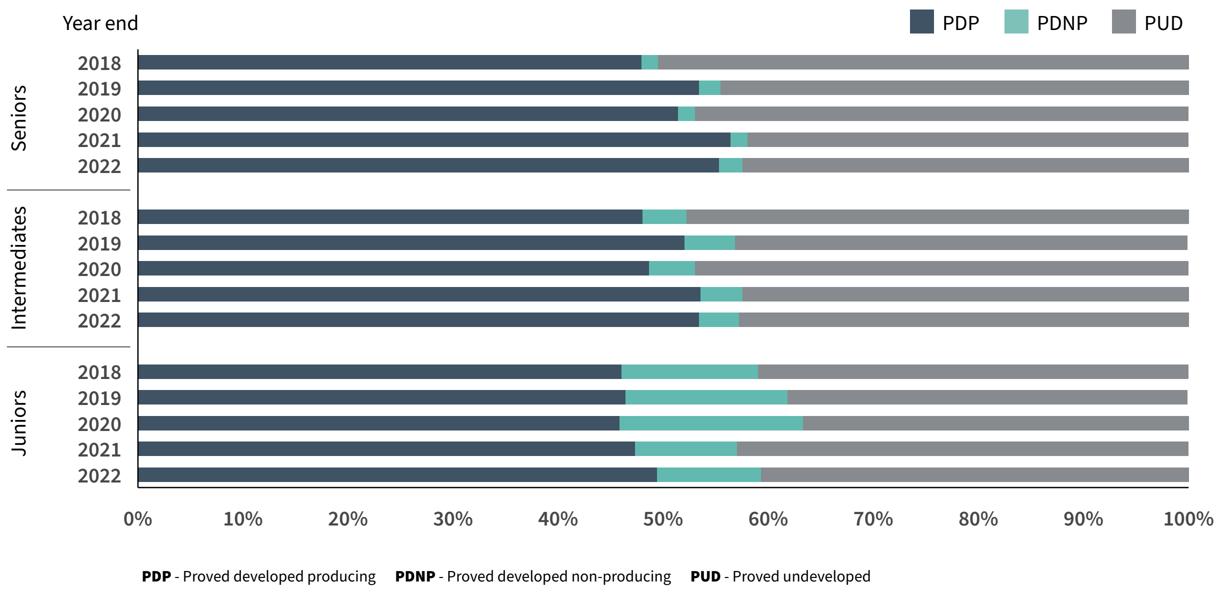
Figure 5: Summed technical revisions for gross proved plus probable reserves (in total) for AB RIs, by production group



The changes for the seniors have been negative for all years, with the percentage change in 2022 decreasing for the second consecutive year. This suggests that the certainty levels for proved plus probable reserves for the seniors continue to not be met. The ASC will continue to pay particular attention to negative technical revisions in its reviews of disclosure and will continue to address these concerns with RIs.

Figure 6 shows the average percentage allocation of gross proved reserves (in total) to proved developed producing reserves, proved developed non-producing reserves and proved undeveloped reserves for AB RIs, by production group, for 2018 to 2022. It was constructed using disclosure per item 2.1 of each constituent RI's Form 51-101F1, which requires disclosure by specified reserves category. It includes data for 88 RIs that had gross proved reserves (in total) attributed. Each RI's contribution is based solely on the volume it has disclosed in each specified reserves category, with no weighting or adjustment applied.

Figure 6: Average percentage allocation of gross proved reserves (in total) for AB RIs, by production group

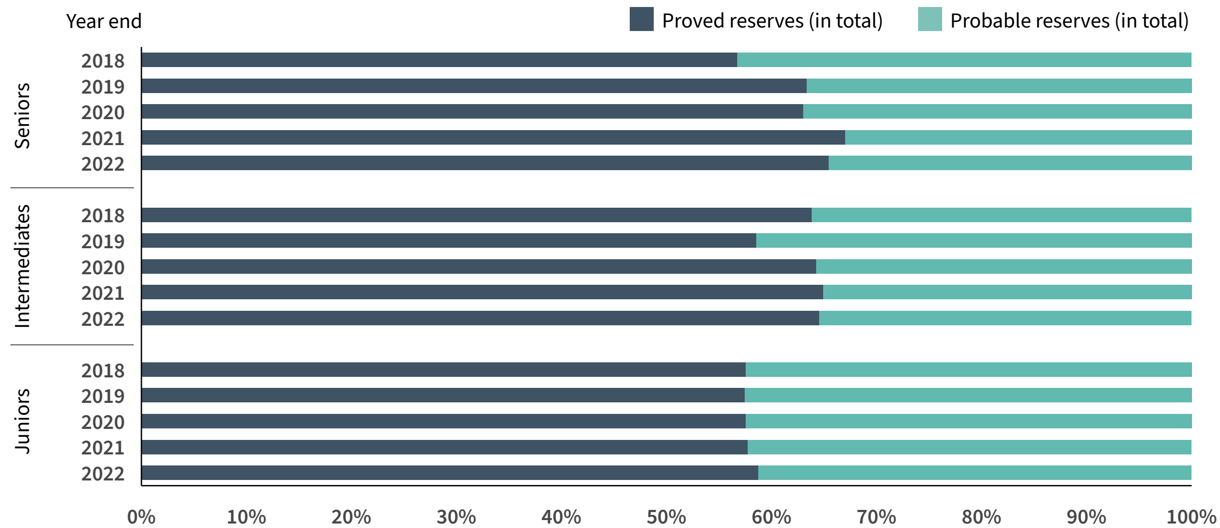


As illustrated, the average percentage of proved developed producing reserves is highest for the seniors and lowest for the juniors, for each year. The juniors tend to have the lowest average percentage of proved undeveloped reserves, but the highest percentage of proved developed non-producing reserves, followed by the intermediates.

Proved developed non-producing reserves are reserves that have either not previously been on production or have previously been on production, but are shut in and the date of production resumption is unknown. Junior RIs generally have a larger percentage of non-producing reserves because they tend to be more sensitive to low commodity prices than larger issuers and have inferior relative access to the capital and services needed to place wells on production. However, other than in circumstances discussed in section 1.4.7.2.1.8 of the COGE Handbook, reserves should not typically be classified as developed non-producing for an extended period of time, so elevated percentages of proved developed non-producing reserves could be indicative of incorrectly classified reserves. The ASC will continue to monitor proved developed non-producing reserves in its reviews of disclosure and will address these concerns with RIs.

Figure 7 shows the average percentage allocation of gross proved plus probable reserves (in total) to proved reserves (in total) and probable reserves (in total) for AB RIs, by production group, for 2018 to 2022. It was constructed using disclosure per item 2.1 of each constituent RI's Form 51-101F1, which requires disclosure by specified reserves category. It includes data for 88 RIs that had gross proved plus probable reserves (in total) attributed. Each RI's contribution is based solely on the volume it has disclosed in each specified reserves category, with no weighting or adjustment applied.

Figure 7: Average percentage allocation of gross proved reserves (in total) and gross probable reserves (in total) for AB RIs, by production group

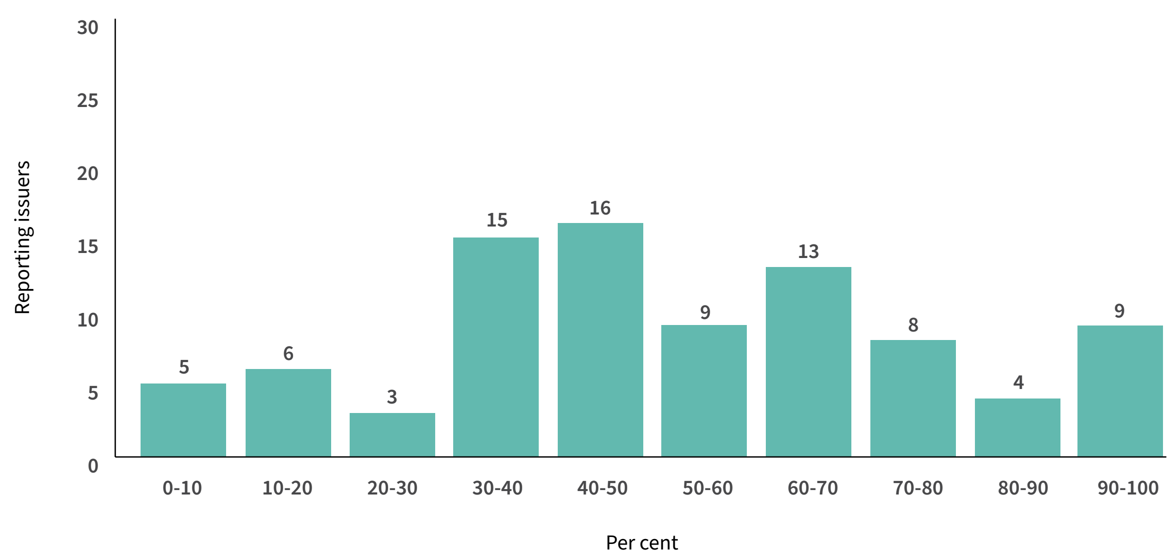


As illustrated, the average proved reserves (in total) for the juniors is consistently at just under 60 per cent. The seniors and intermediates typically have just over 60 per cent, with the percentage increasing slightly over the time period for the seniors.

Figures 8 through 11 show ratios of specified categories of reserves for AB RIs for 2022. The information was obtained from disclosure per item 2.1 of each constituent RI's Form 51-101F1. Each figure includes data for 88 RIs that reported gross proved plus probable reserves (in total) attributed. Each RI's contribution is based solely on the volume it has disclosed in each specified reserves category, with no weighting or adjustment applied.

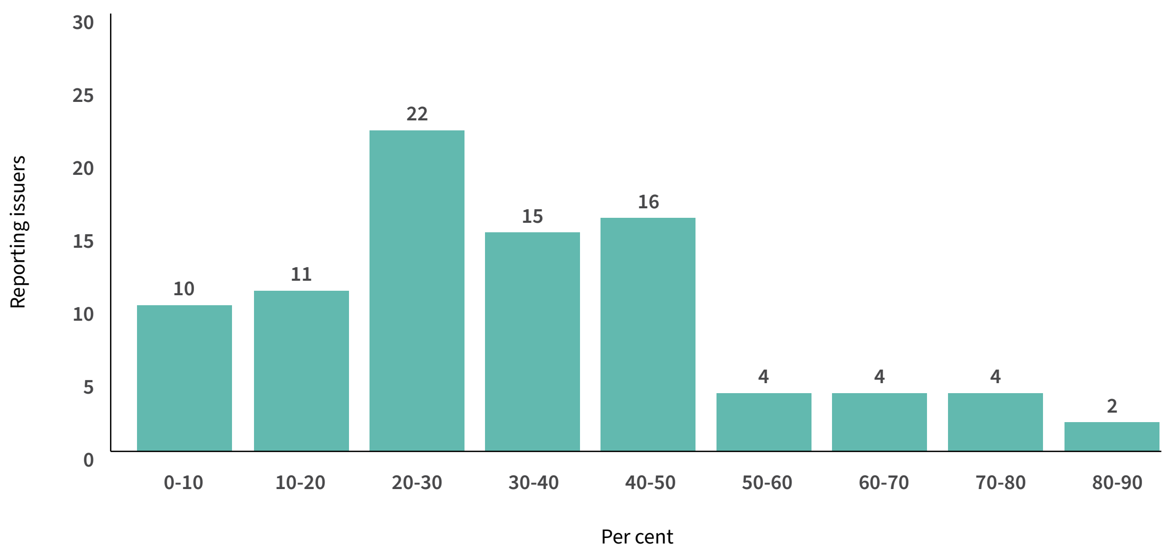
As illustrated in Figure 8, most of the RIs have between 30 and 70 per cent of their gross proved reserves (in total) attributed to gross proved developed producing reserves.

Figure 8: Percentage of gross proved developed producing reserves to gross proved reserves (in total) for AB RIs



As per Figure 9, most of the RIs have less than 50 per cent of their gross proved plus probable reserves (in total) attributed to proved developed producing reserves.

Figure 9: Percentage of gross proved developed producing reserves to gross proved plus probable reserves (in total) for AB RIs



Higher percentages of gross proved producing reserves relative to gross proved reserves (in total) and gross proved plus probable reserves (in total) are indicative of higher relative percentages of reserves that have both a high degree of certainty of recovery and do not require significant additional capital investment for this recovery (production) to occur.

As illustrated in Figure 10, all but nine RIs have 70 per cent or less of their gross proved reserves (in total) attributed to gross proved undeveloped reserves.

Figure 10: Percentage of gross proved undeveloped reserves to gross proved reserves (in total) for AB RIs

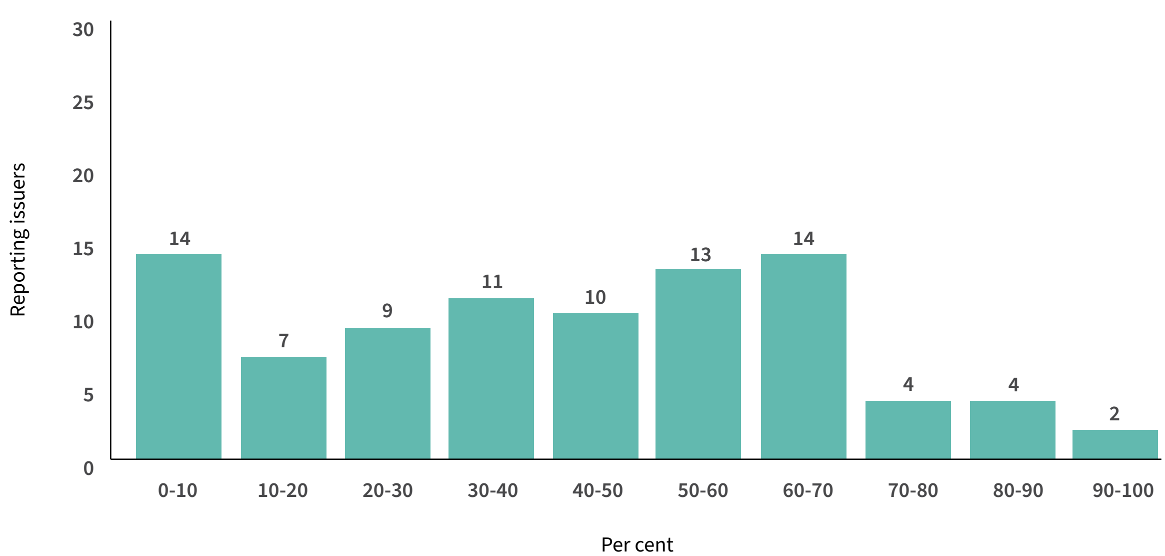
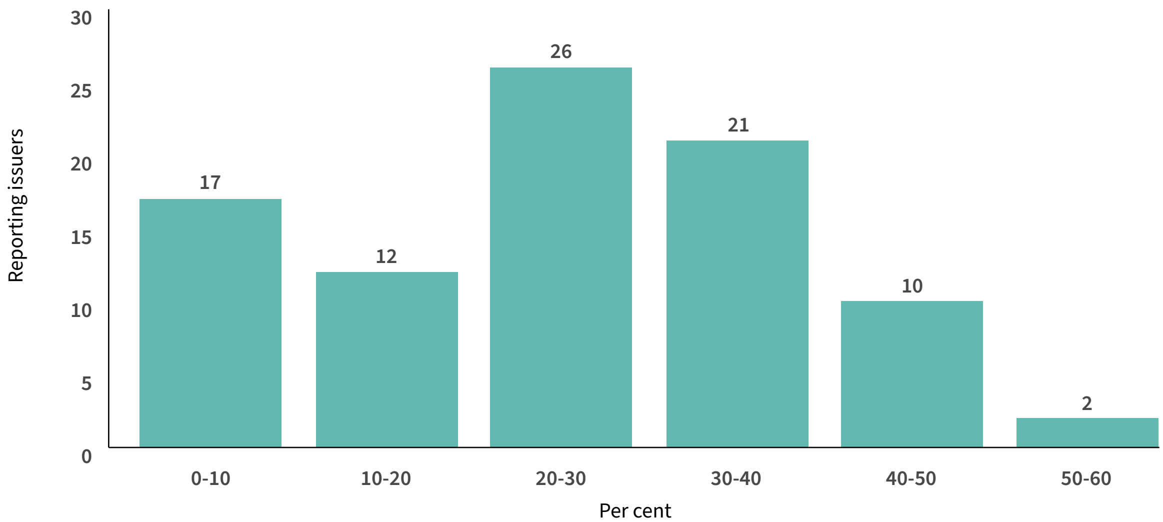


Figure 11 shows that no RI has more than 60 per cent of its gross proved plus probable reserves (in total) attributed to gross proved undeveloped reserves, with most between 20 and 40 per cent.

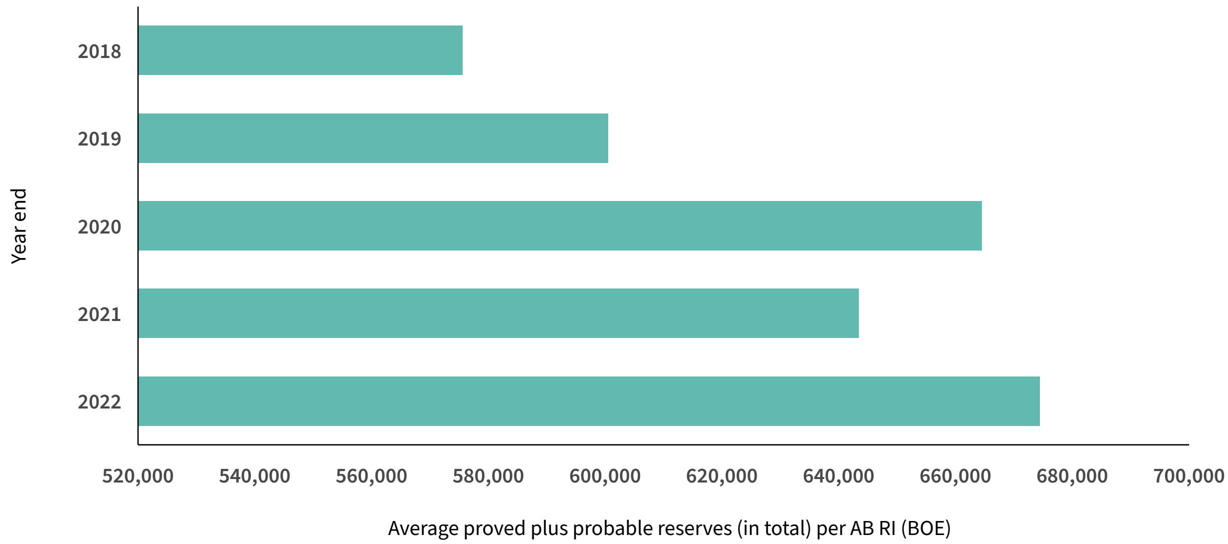
Figure 11: Percentage of gross proved undeveloped reserves to gross proved plus probable reserves (in total) for AB RIs



Higher percentages of gross proved undeveloped reserves relative to gross proved reserves (in total) and gross proved plus probable reserves (in total) is indicative of higher relative percentages of reserves that require capital investment for production to occur.

Figure 12 illustrates the average allocation of gross proved plus probable reserves (in total) for AB RIs, for 2018 to 2022. It was constructed using disclosure per item 2.1 of each constituent RI's Form 51-101F1, which requires disclosure per this reserves category. It includes data for 88 RIs that had gross proved plus probable reserves (in total) attributed in 2022, down from 104 in 2018. Each RI's contribution is based solely on the volume it has disclosed in this reserves category, with no weighting or adjustment applied.

Figure 12: Average allocation of gross proved plus probable reserves (in total) for AB RIs



As shown, the average gross proved plus probable reserves (in total) per RI has increased from 576,000 to 674,000 MMBOE over the period, a 17 per cent increase. This has occurred in spite of a decrease in AB RIs engaged in oil and gas activities over the period, as discussed in section 5 of the Report.

3. Emerging energy-related disclosure commentary

This section discusses the preparation of disclosure concerning renewable electricity. The Alberta capital market continues to experience increasing activity in emerging energy-related matters, including activity related to renewable electricity and other low-carbon alternatives and their technologies. There are new RIs involved in these areas and existing RIs, including those involved in legacy energy areas like oil and gas, are increasingly active in renewable electricity. As this subject matter is nascent, dedicated disclosure standards like NI 51-101 or NI 43-101 do not currently exist. The information here is meant to assist RIs and issuers that are not yet RIs, as well as their professional advisers, that intend to file a prospectus or other disclosure documents that incorporate prospectus requirements.

Similar to its approach concerning RIs engaged in oil and gas activities, the ASC has developed a rigorous review process for emerging energy-related subjects, which involves the assessment of disclosure for compliance with securities law regulatory requirements. While this process primarily focuses on RIs for which the ASC is the principal regulator, staff also review select disclosure from RIs for which other Canadian jurisdictions are the principal regulator.

The 2021 Report addressed disclosure preparation regarding the exploration, development, removal and sale of helium; the exploration and development of natural, subsurface accumulations of hydrogen as well as its production from feedstock; the recovery of lithium from oilfield brines for use in batteries; and carbon capture, utilization and storage. The 2022 Report provided staff's updated views on helium-related disclosure, in addition to addressing disclosure preparation concerning the manufacture and sale of renewable hydrocarbons, also referred to as "green hydrocarbons" and "biofuels," and the development of geothermal energy.

The 2023 Energy Matters Report discusses the preparation of disclosure concerning renewable electrical generation via wind, solar, hydro and biomass, in addition to associated facilities and technologies. General principles relating to balanced, complete and accurate disclosure, focused on materiality, will apply. In considering what information with respect to a particular project may be material to an investor, RIs will want to consider disclosing the following:

Location of the project

- Including:
  - country
  - province, territory or state
  - most specific administrative division such as city, town, county, etc.
- Whether it is onshore or offshore.

Size criteria

- For proposed projects, nameplate or installed capacity.
- For existing projects, actual electrical generation for a particular time period.
- Number of facilities, wind turbines, solar arrays, etc.
- Whether it is stand-alone or associated with a larger project or existing facility.

Economic interest

- The RI's economic interest (gross and net) and the type of interest, including:
  - working interest and whether it is operating or non-operating
  - royalty interest, including gross overriding and lessor, or other non-operating interest
  - other, including contractual agreements and arrangements pertaining to the interest, whether with commercial or non-commercial entities, such as governments

Economics and capital

- Economic status of the project:
  - economic
  - sub-economic
  - undetermined
- If the economic status is known, the project value or economic impact, along with the:
  - basis for the value or economic impact determination
  - methodology used
  - input data, including costs, commodity price assumptions, fiscal criteria, economic burdens, sales contract criteria and credits, grants, subsidies and other financial incentives, including carbon offsets, specific programs and other considerations
  - source of the input data and value determination
  - effective date of the determination
- Estimated total undiscounted development cost of the project.
- Sources of the capital needed to implement the project, such as internally-generated cash flow, debt or equity financing, credit agreements, farm-outs or other arrangements.

Status, timeline and approvals

- Project status (e.g., whether it is conceptual, undergoing front-end engineering design, whether a final investment decision has been made, whether it is under construction, being commissioned, operational, suspended or shut-in).
- The general timeline, including when a final investment decision is expected, the estimated date of project commissioning and when it is expected to be fully operational.
- The status of all internal and external approvals needed for implementation, including corporate, governmental, regulatory, legal, contractual and environmental.

Market access

- Whether or not market access for the output is secured (contracts and agreements in place), including if the necessary infrastructure is available or will be constructed or otherwise made available.
- If market access is not secured, when it is expected and how it will be achieved.

Technology

- The technology to be used, its current status, including whether it is experimental or if it has been used previously. If it has been used previously, explain whether it was used in a pilot or commercial application, the results, and if the proposed use is different than its previous use, how it differs.

Risks and uncertainties

- All specific, significant risks and uncertainties relevant to the project (e.g., governmental, regulatory, legal, labour, materials, technological, contractual, economic, fiscal, market, weather, climate and with respect to feedstock for biomass projects, its source, availability, quality and acquisition logistics).

In addition, to avoid confusing or misleading disclosure, it will generally be necessary for the RI to ensure that:

- Technical terminology is defined and explained.
- Units of measurement are included and explained.

In assessing whether disclosure is material to an RI, staff will generally assume that disclosure featured prominently in investor presentations, promotional materials or press releases is material.

RIs are reminded that there should be a reasonable basis for any forward-looking information and that material risks and assumptions should be disclosed.

Please contact staff with disclosure questions relating to renewable electrical generation via wind, solar, hydro and biomass, in addition to their associated facilities and technologies.

4. Environmental sustainability disclosure

There is growing interest in sustainability disclosure among some capital market stakeholders. RIs have responded with increased environmental sustainability disclosure, in particular addressing such things as GHG emissions, emissions reduction and climate risks. When preparing such disclosure, whether it is included in required filings or in voluntarily prepared documents or provided on websites or in investor presentations, RIs are reminded of the broader Canadian securities disclosure framework and its various requirements, guidance and prohibitions.

Since 2021, the Energy Group has conducted reviews of sustainability disclosure from energy-related RIs. These reviews are referred to as “environmental sustainability monitoring reviews” and they address the assessment of basic information attributed to RIs, such as:

- Whether or not certain sustainability disclosure has been provided concerning:
  - GHG emissions
  - other air emissions
  - energy usage
  - water usage
  - abandonment and reclamation activities
- Timing and frequency of such disclosure.
- How the disclosure was prepared (reporting frameworks and standards).
- Method of disclosure (stand-alone sustainability report and/or website).
- Whether or not other specific information has been disclosed.

These reviews do not assess whether or not any specific social or governance information has been disclosed. They are conducted to better understand the current status of certain environmentally related sustainability disclosure from these RIs.

The 2021 Report included information concerning this type of sustainability disclosure attributed to RIs engaged in oil and gas activities for which the ASC was the principal regulator. The 2022 Report expanded to include updated information for these RIs, along with information for RIs involved in oil and gas midstream (including pipelines) and oil and gas services, for which the ASC was the principal regulator. The 2023 Energy Matters Report has been further expanded to include information for RIs involved in utilities and RIs that report under NI 43-101.

The timing of sustainability disclosure is often irregular and does not typically conform to an RI’s financial year. The information in this section reflects disclosure made by current RIs from October 1, 2022 to the end of September 2023. This corresponds to the 12 months following the period covered in the 2022 Report.

As shown in Figure 13a, 62 per cent of current AB RIs engaged in oil and gas activities provided environmental sustainability disclosure in the past year. This is up from 48 per cent in the previous 12-month period, as shown in Figure 13b. Fifty-two per cent provided this disclosure through a stand-alone report, while 10 per cent provided this information only on their website, up from 42 and 12 per cent, respectively.

Figure 13: Environmental sustainability disclosure occurrences and methodology by AB RIs

Figure 13a: RIs engaged in oil and gas activities

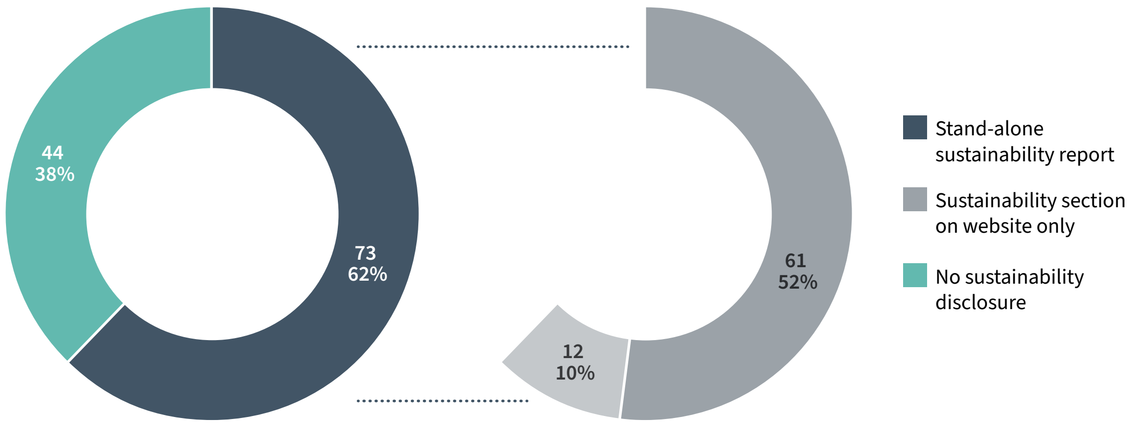
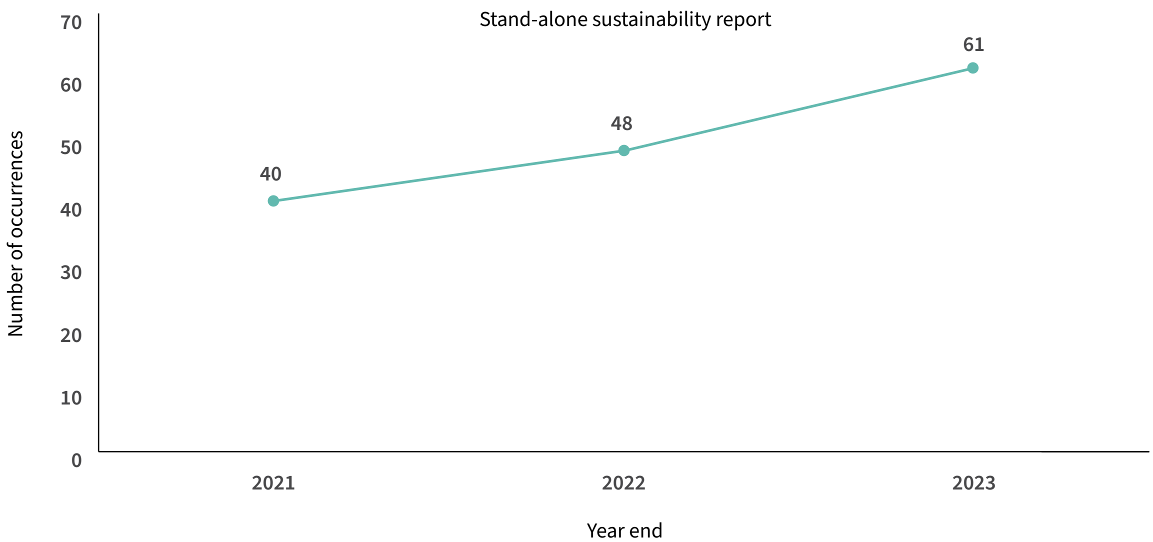


Figure 13b: Changes over time



As illustrated in Figure 13c, all current RIs involved in oil and gas midstream provided sustainability disclosure in the past year, all in a stand-alone report.

Figure 13c: RIs involved in oil and gas midstream

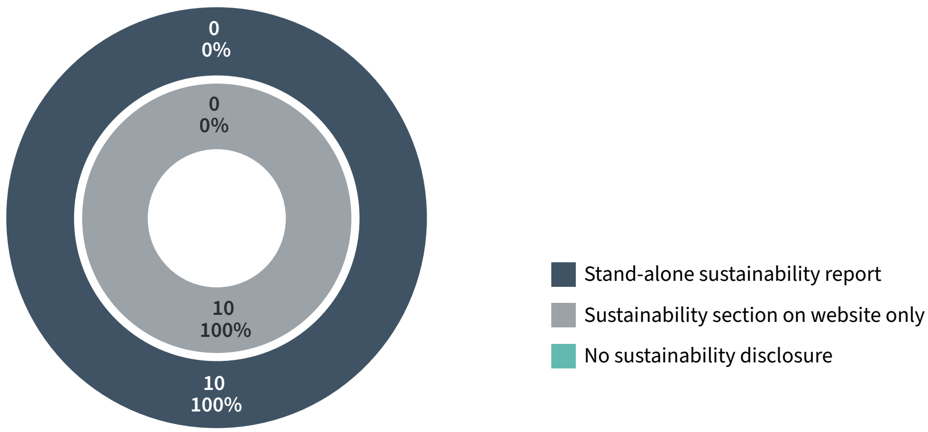
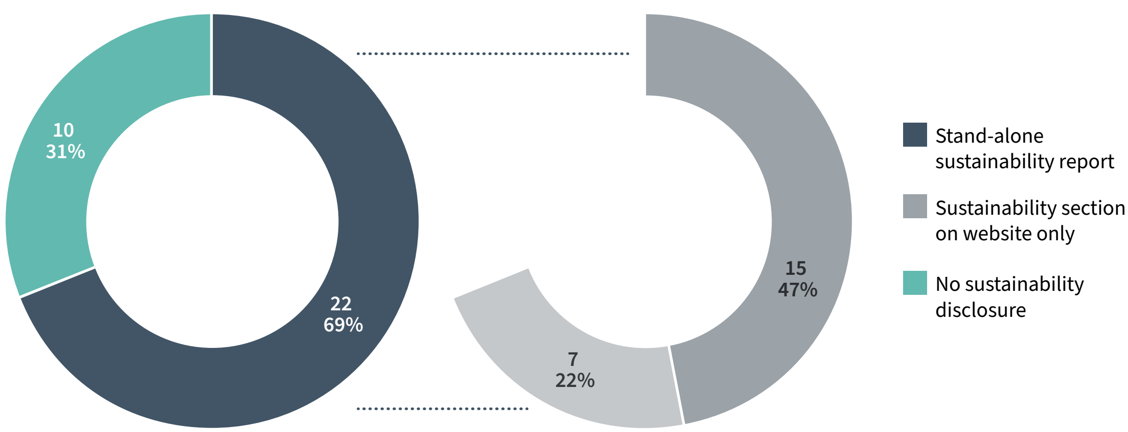


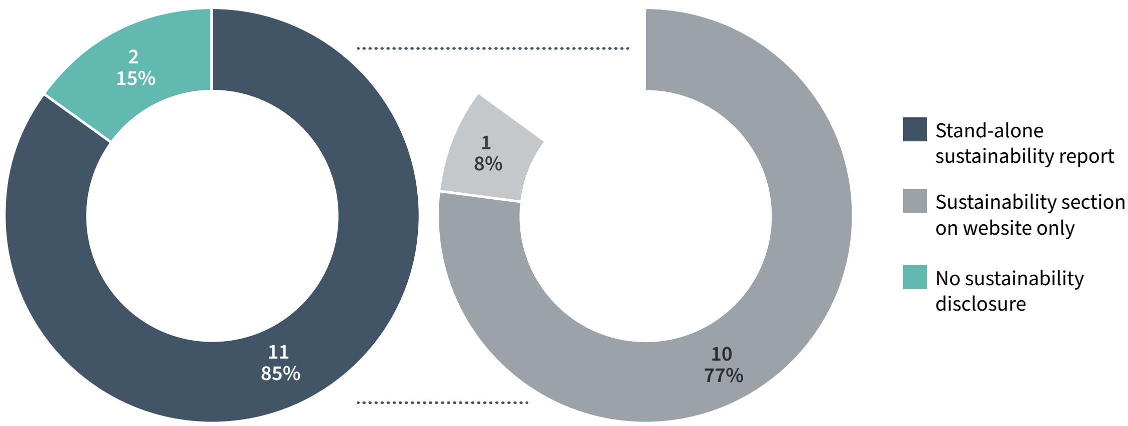
Figure 13d reflects that 69 per cent of current RIs involved in oil and gas services provided sustainability disclosure in the last year, with 47 per cent providing this information in a stand-alone report.

Figure 13d: RIs involved in oil and gas services



Per Figure 13e, 85 per cent of current RIs involved in utilities provided sustainability disclosure in the last year, with 77 per cent providing this information in a stand-alone report.

Figure 13e: RIs involved in utilities



Per Figure 13f, 31 per cent of current RIs that report under NI 43-101 provided sustainability disclosure in the last year, with only one RI providing this information in a stand-alone report.

Figure 13f: RIs that report under NI 43-101

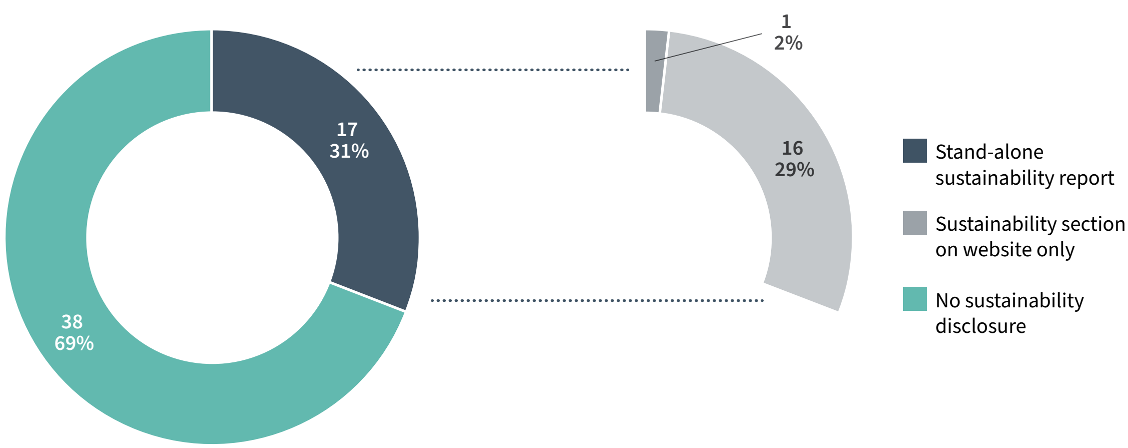
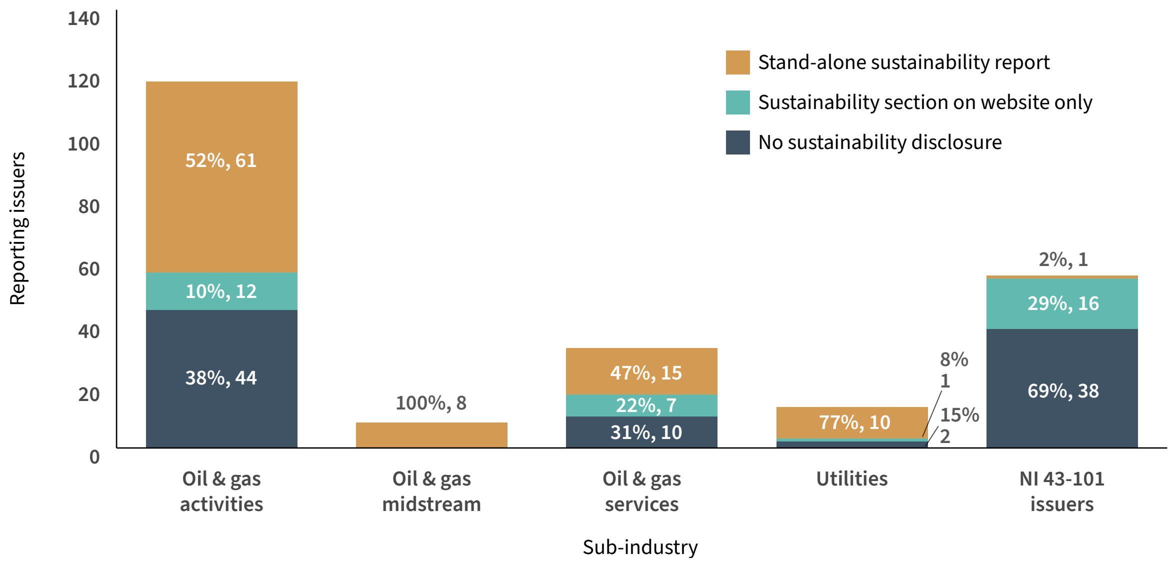


Figure 13g is a summary of sustainability disclosure occurrences and methodology by AB RIS from the preceding figures.

Figure 13g: RI Summary



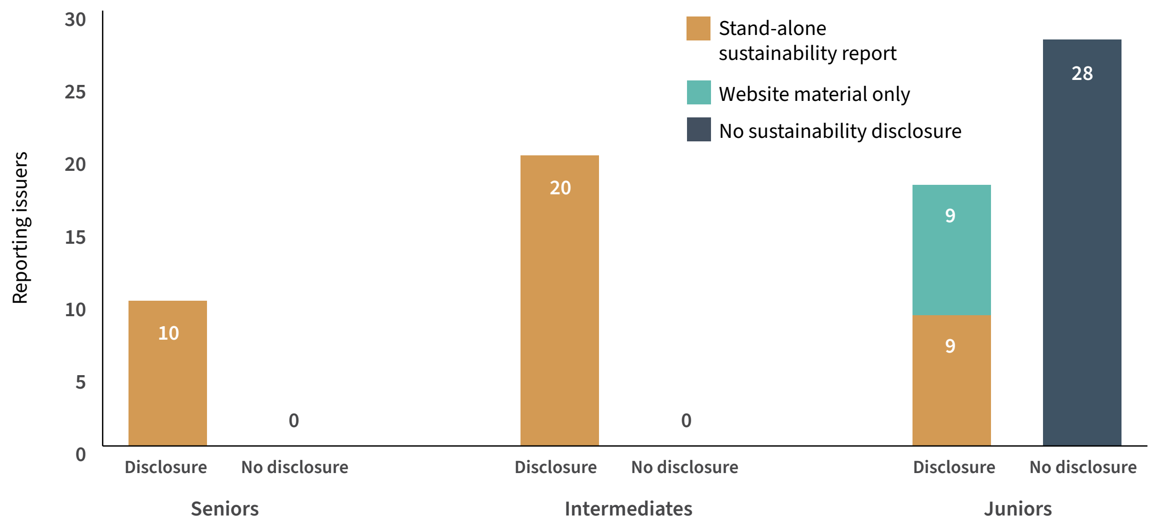
We have observed differences in the quality of disclosure made on websites compared to that made in stand-alone sustainability reports. Sustainability disclosure on websites is typically less informative than that disclosed in stand-alone reports. Furthermore, sustainability information found on the websites of RIs that do not publish stand-alone reports is typically not quantified, so changes over time are difficult to ascertain. Website disclosure also tends to be more aspirational, with a focus typically on corporate philosophy concerning such matters.

Figure 14 illustrates the information presented in Figure 13a by production group. The RIs engaged in oil and gas activities were grouped using production disclosed per item 6.9 of Form 51-101F1, as follows:

- "Seniors" are those RIs with >100,000 BOE per day of production (based on a conversion ratio of six thousand cubic feet of gas for one barrel of oil);
- "Intermediates" are those RIs with 10,000 to 100,000 BOE per day of production; and
- "Juniors" are those RIs with <10,000 BOE per day of production.

The RIs ranked highest by production were selected from each group, incorporating 10 senior, 20 intermediate and 46 junior RIs.

Figure 14: Environmental sustainability disclosure occurrences and methodology by AB RIs engaged in oil and gas activities, by production group



As shown in Figure 14, all of the seniors and intermediates published a stand-alone report containing sustainability information. For the juniors, 18 of the 46 (39 per cent) disclosed sustainability information, with nine having published a stand-alone report and the other nine providing this information only on their website. This is similar to our findings in the 2022 Report in which we noted that nine of the seniors, 19 of the intermediates and seven of the juniors published a stand-alone report.

Figure 15 indicates the reporting frameworks and standards that RIs stated that they used to prepare their sustainability disclosure. Figure 15 does not reflect an assessment of whether the RI used the framework or standard appropriately or in its entirety.

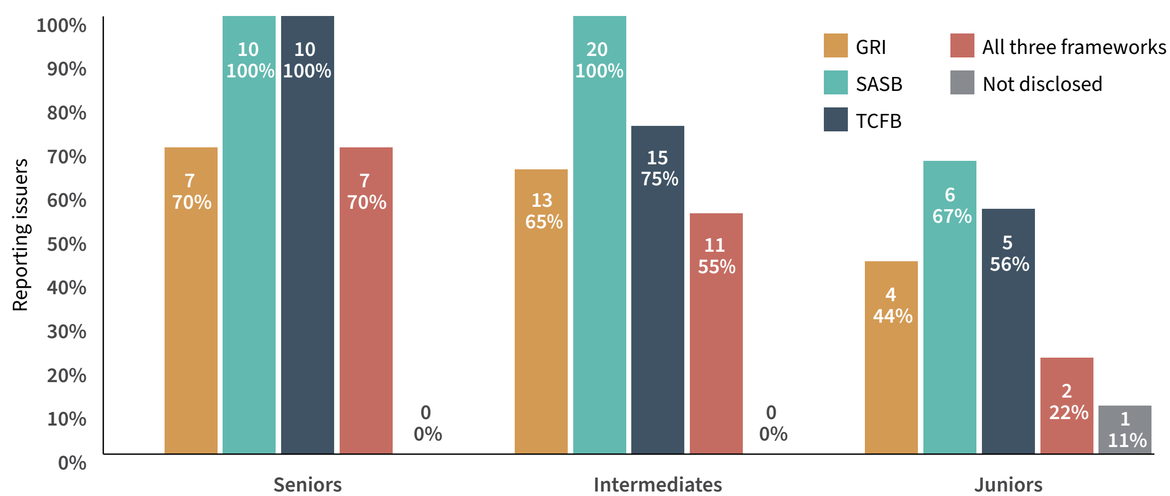
The frameworks and standards reported as used for preparing stand-alone sustainability reports are:

- Task Force on Climate-related Financial Disclosure's (**TCFD**) Recommendations of the Task Force on Climate-related Financial Disclosures
- Global Reporting Initiative's (**GRI**) GRI Standards
- Sustainability Accounting Standards Board's (**SASB**) SASB Standards

Many RIs reported using more than one framework or standard. None of the RIs that only provided sustainability information on their website disclosed a reporting framework or standard. Therefore, information in Figure 15 is associated solely with RIs that published a stand-alone report.

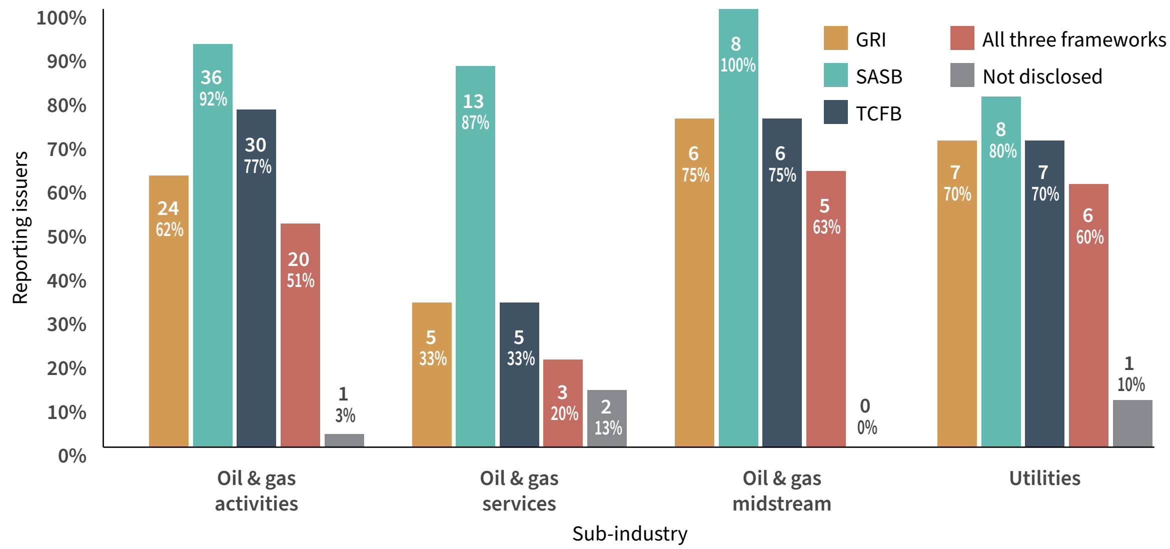
Figure 15: Reporting frameworks and standards used by AB RIS to prepare sustainability disclosure

Figure 15a: RIs engaged in oil and gas activities, by production group



Seven of the seniors, 11 of the intermediates and two of the juniors used all three frameworks and standards to prepare their disclosure.

Figure 15b: RIs engaged in oil and gas activities and those involved in oil and gas midstream, oil and gas services, and utilities



For RIs involved in oil and gas midstream and oil and gas services, five (63 per cent) and three (20 per cent), respectively, used all three frameworks and standards to prepare their disclosure. Six (60 per cent) of the RIs involved in utilities used all three. Only one RI that reports under NI 43-101 (not shown) used a reporting framework or standard to prepare their disclosure and they used all three.

Figure 16 illustrates emissions disclosure occurrences by the RIs. “Scope 1,” “Scope 2” and “Scope 3” refer to carbon dioxide equivalent emissions, which include carbon dioxide, methane and nitrous oxide. The terms are defined within each framework and standard, but broadly mean:

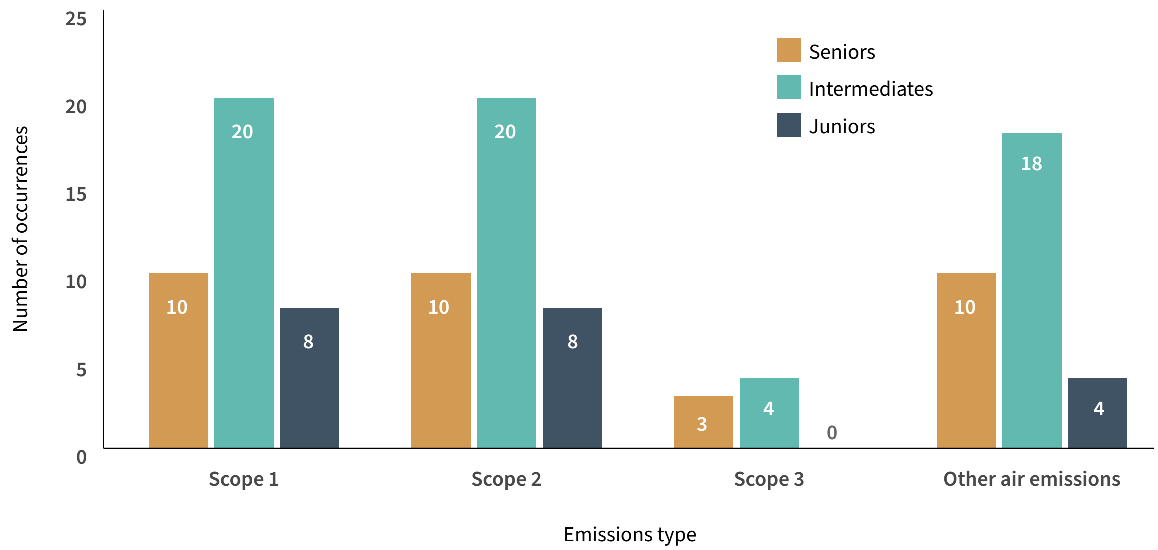
- **Scope 1**: all direct emissions owned or otherwise controlled by the RI.
- **Scope 2**: all indirect emissions attributed to energy acquired by the RI (electricity, heat or steam).
- **Scope 3**: all other indirect emissions attributed to the value chain of the RI.

Please note that there is wide variation in adherence to the various methodologies for preparing Scope 3 emissions disclosure. Some RIs note that they only include material quantities of emissions and some indicate that they exclude certain data due to concerns with its completeness or reliability.

“Other air emissions” in Figure 16e includes nitrogen oxides, sulphur dioxide, volatile organic compounds and particulate matter.

Figure 16: Emissions disclosure occurrences by AB RIS

Figure 16a: Emissions disclosure occurrences by AB RIS engaged in oil and gas activities, by production group



All of the seniors and intermediates and eight (17 per cent) of the juniors disclosed Scope 1 and Scope 2 emissions. Three of the seniors (30 per cent), four of the intermediates (20 per cent) and none of the juniors disclosed Scope 3 emissions.

Figure 16b: Changes over time, Scope 1

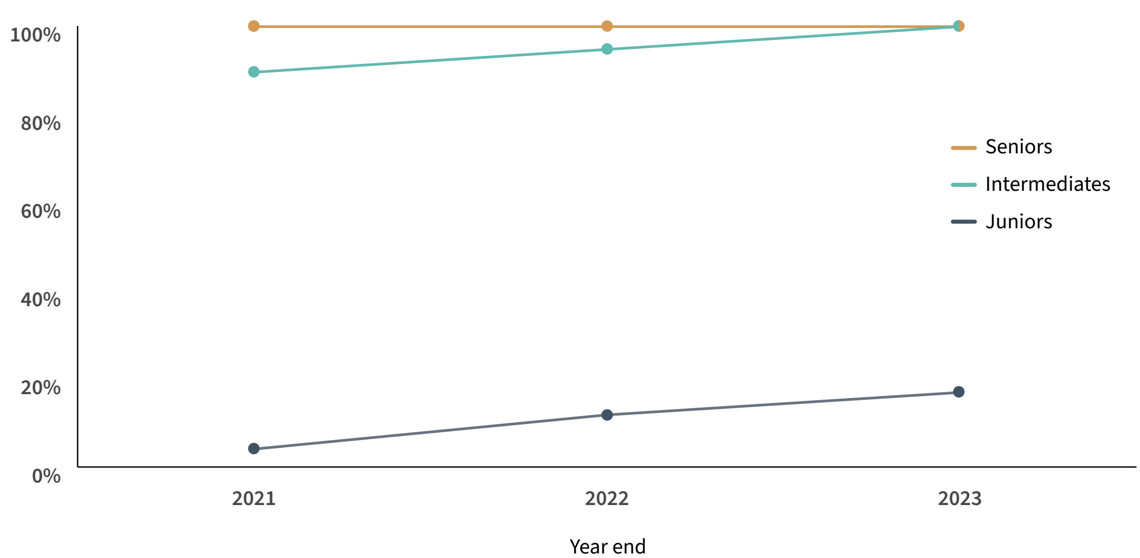


Figure 16c: Changes over time, Scope 2

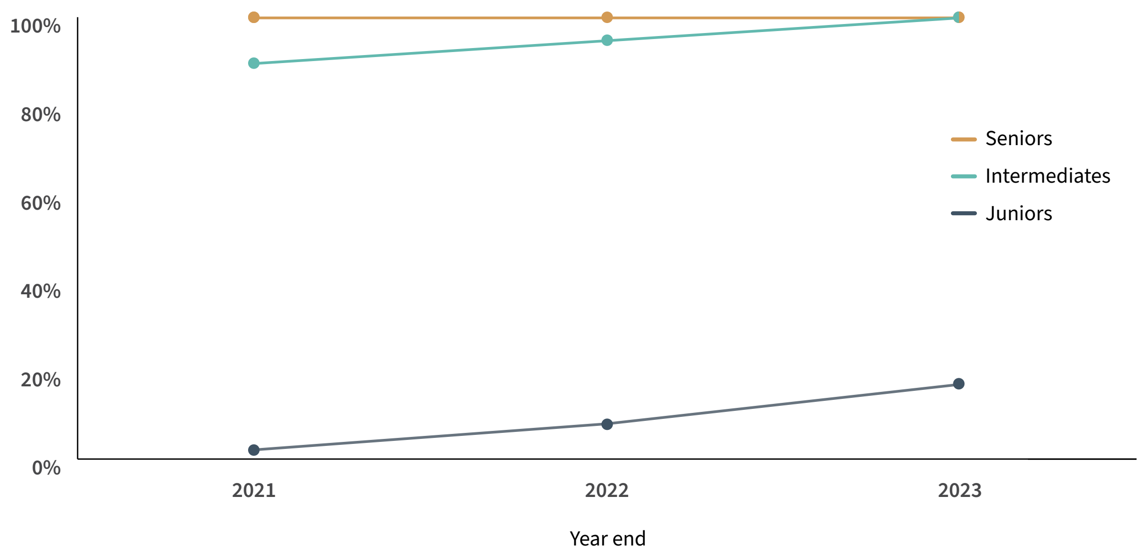


Figure 16d: Changes over time, Scope 3

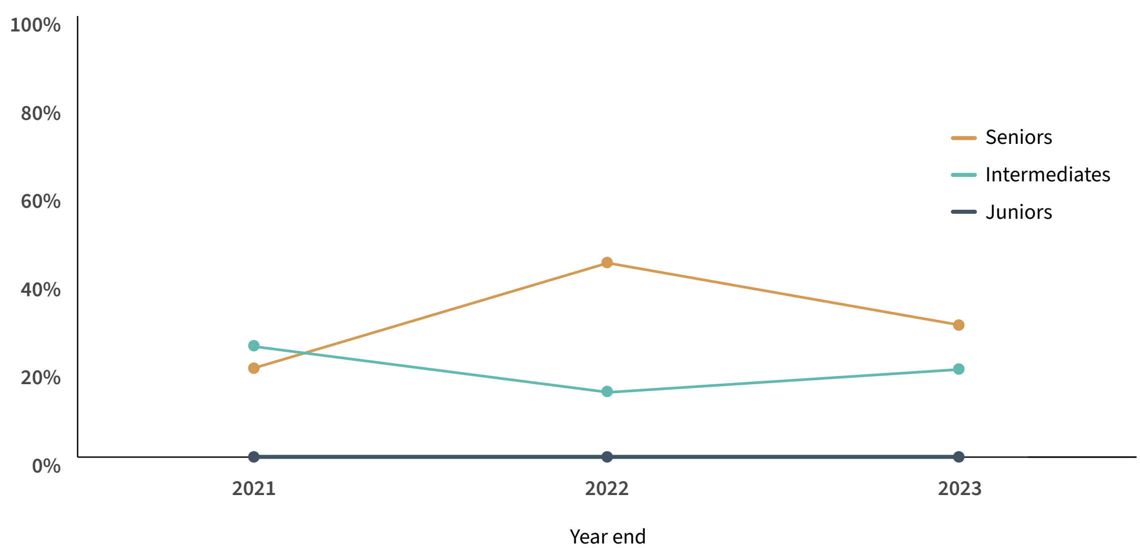
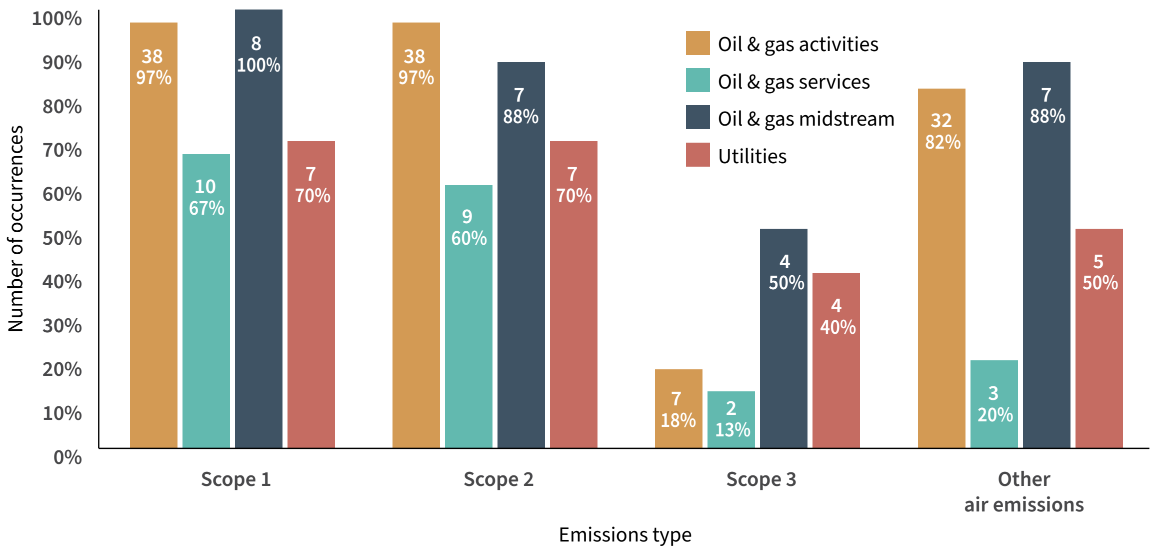


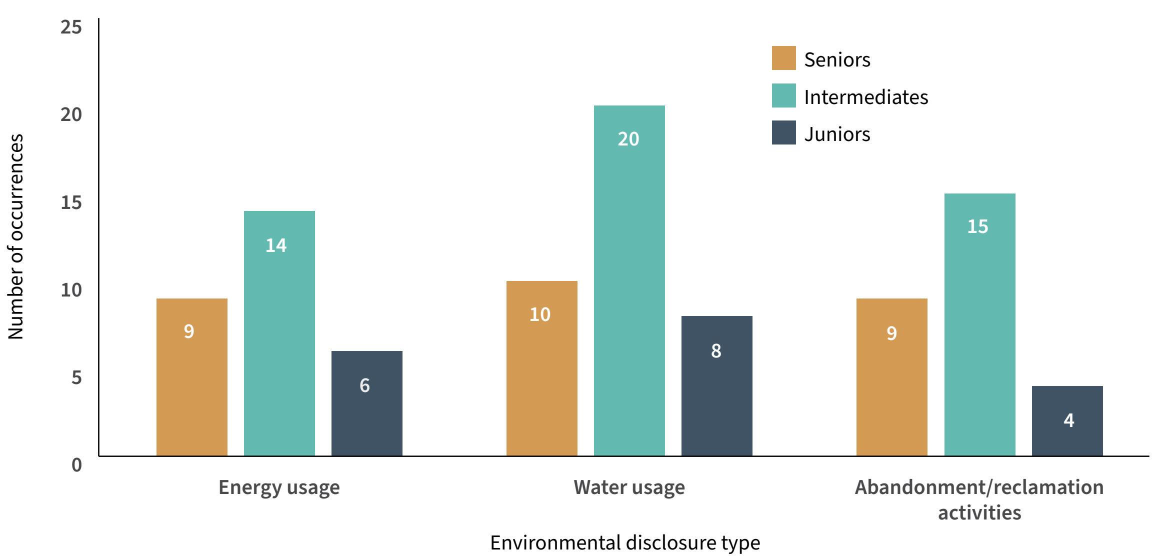
Figure 16e: Emissions disclosure occurrences by AB RIS engaged in oil and gas activities and those involved in oil and gas midstream, oil and gas services, and utilities



As shown in Figure 16e, eight (100 per cent) of the RIs involved in oil and gas midstream and 10 (67 per cent) involved in oil and gas services disclosed Scope 1 emissions. Seven (88 per cent) involved in oil and gas midstream and nine (60 per cent) involved in oil and gas services disclosed Scope 2. Four (50 per cent) involved in oil and gas midstream and two (13 per cent) involved in oil and gas services disclosed Scope 3 emissions. Seven RIs (70 per cent) involved in utilities disclosed Scope 1 and Scope 2, while four (40 per cent) disclosed Scope 3. The one RI that reports under NI 43-101 (not shown) that reported emissions only disclosed Scope 1 emissions.

Figure 17 illustrates other environmental disclosure occurrences by RIs engaged in oil and gas activities, by production group. Of the three categories, abandonment and reclamation disclosure may be of most interest to readers of the Report, due to related disclosure requirements in NI 51-101. Nine (90 per cent) of the seniors, 15 (75 per cent) of the intermediates and four (nine per cent) of the juniors provided this information.

Figure 17: Other environmental disclosure occurrences by AB RIS engaged in oil and gas activities, by production group

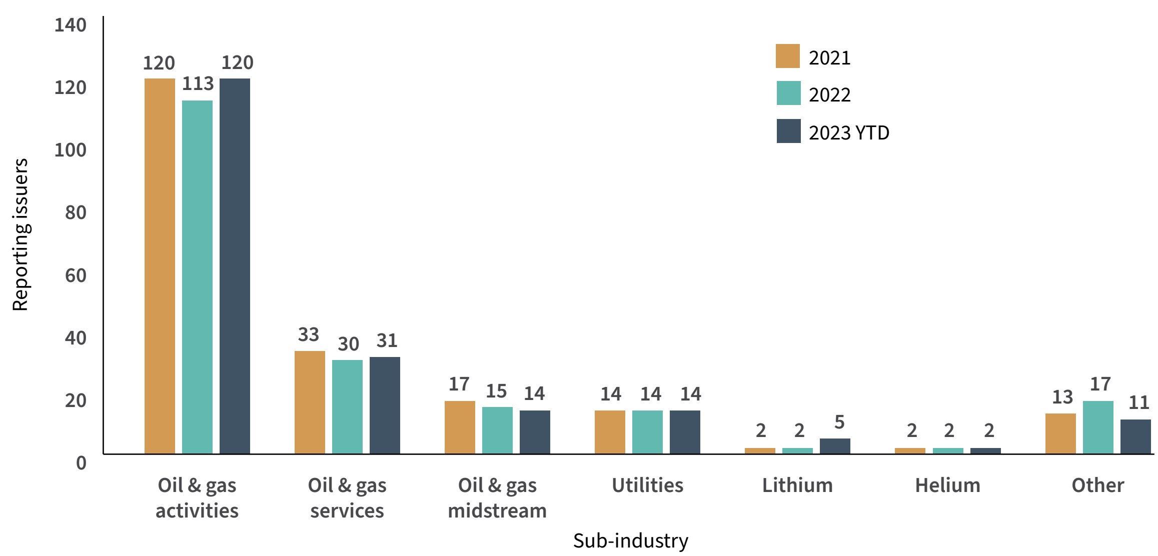


5. Energy and the Alberta capital market

This section explores the relationship between energy and the Alberta capital market, and makes some comparisons to other jurisdictions, both within and outside Canada. It incorporates a number of the energy industry's various sub-industries, both established and emerging, and provides details concerning some of their important characteristics. These include the number of RIs attributed to each, their market capitalization, capital raising activities and changes over time. Additional information concerning clean energy-related project funding provided by the Government of Canada to RIs engaged in oil and gas activities is included, along with information concerning disclosure of contingent resources data and prospective resources data by RIs engaged in oil and gas activities.

Figure 18 presents a snapshot of the number of energy-related AB RIs, by their respective sub-industry, for 2021 to the end of September 2023. Note that throughout this section, information for any given year is as of December 31, except for the current year, which is as of September 30 and discussed as "year-to-date" (**YTD**).

Figure 18: Number of energy-related AB RIs, by sub-industry

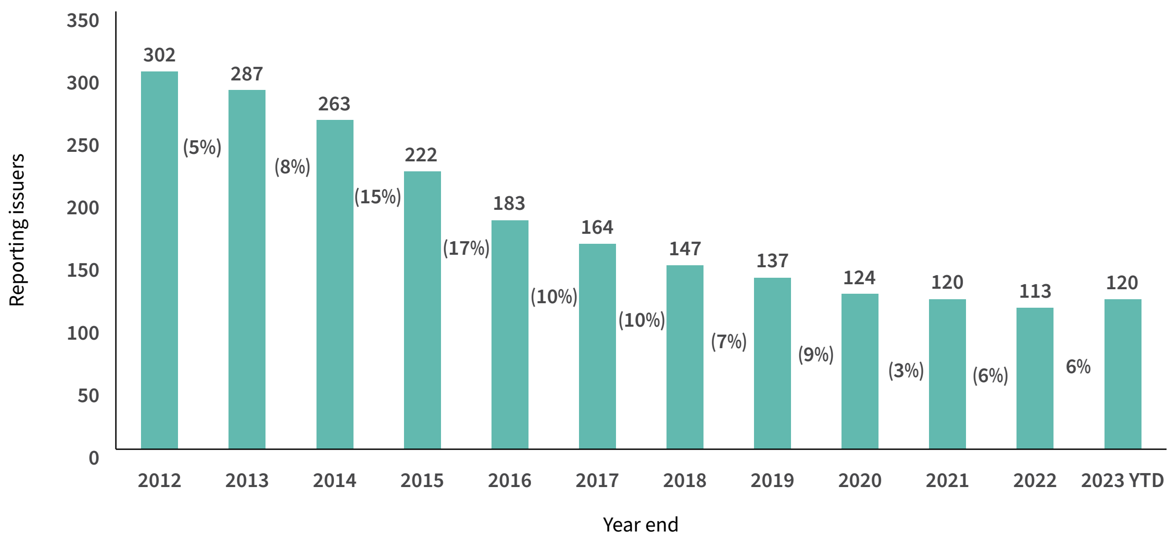


Regarding the individual sub-industries in Figure 18, "Oil & gas activities" represents RIs engaged in oil and gas activities per NI 51-101; "Oil & gas midstream" includes RIs involved with oil and gas pipelines; "Utilities" includes RIs that are involved in electrical generation via traditional and renewable means, transmission or distribution; "Lithium" includes RIs that report under NI 43-101 and are involved in the production and sale of lithium, including three involved with its recovery from brines in 2023 YTD; while "Other" includes RIs involved in other energy-related sub-industries, including energy services (four RIs), clean technology (five RIs), and renewable hydrocarbons (two RIs) in 2023 YTD.

Many RIs categorized within "Oil & gas activities" and "Oil & gas midstream" are increasingly pursuing projects beyond their traditional oil and gas focus. For example, many RIs in the former are pursuing non-traditional projects that involve CCS and CCUS, as well as their related technologies, renewable hydrocarbons, co-generation, wind energy, and various clean technologies, while some RIs in "Oil & gas midstream" are pursuing projects related to renewable hydrocarbons, and are developing renewable electrical generation projects that are typically the domain of RIs in "Utilities."

Figure 19 shows the number of AB RIs engaged in oil and gas activities for 2012 to the end of September 2023. The figure illustrates a steady decrease to 2022. However, if 2023 data remains consistent with data to the end of September 2023, this trend will have ceased, if not reversed modestly. There were 113 RIs engaged in oil and gas activities at the end of 2022, down from 302 at the end of 2012, representing a decrease of 63 per cent. At the end of September 2023, there were 120, representing a 60 per cent decrease since 2012, but a six per cent increase over 2022.

Figure 19: Number of AB RIs engaged in oil and gas activities



As shown in Figure 20, the reduction in RIs engaged in oil and gas activities is principally attributed to a reduction in the number of junior RIs, which dropped from 210 in 2012 to 73 at the end of September 2023, a 65 per cent decrease. Intermediate RIs have also notably declined, from 41 to 34 during that period, a 17 per cent drop. To construct this figure, RIs were grouped into "production groups" as follows, using production disclosed per item 6.9 of Form 51-101F1:

- "Seniors" are those RIs with >100,000 BOE per day of production (based on a conversion ratio of six thousand cubic feet of gas for one barrel of oil);
- "Intermediates" are those RIs with 10,000 to 100,000 BOE per day of production; and
- "Juniors" are those RIs with <10,000 BOE per day of production.

Figure 20: Number of AB RIs engaged in oil and gas activities, by production group

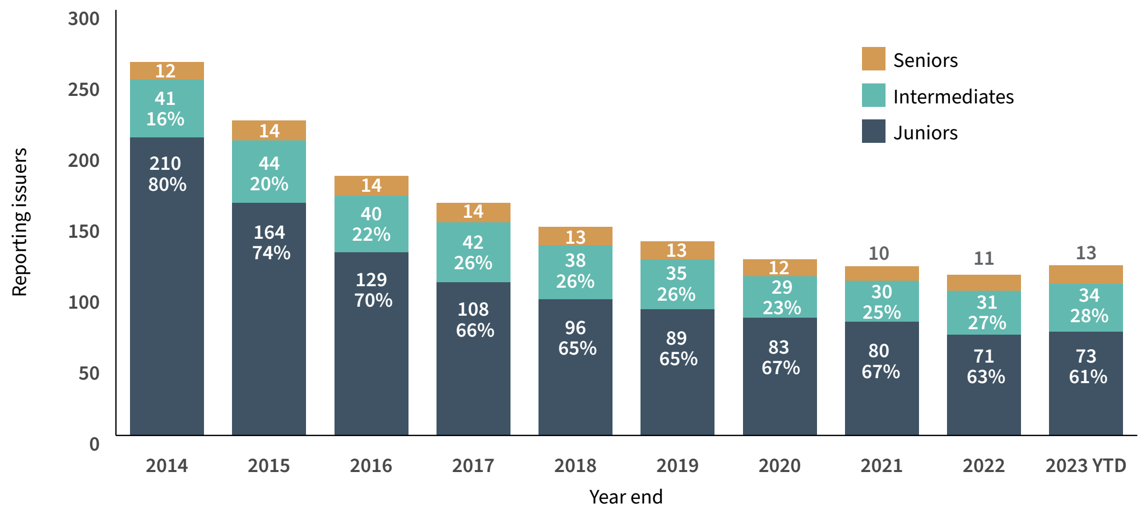


Figure 21 provides the reasons for the changes that occurred in the number of RIs from the beginning of 2023 to the end of September 2023 for each production group. There have been nine new RIs (seven net) to date in 2023, including five that were not RIs previously, two that previously reported under NI 43-101, one that continues to report under NI 43-101 and one for which the BCSC was previously the principal regulator.

Figure 21: Net change in AB RIs engaged in oil and gas activities, by production group

	NUMBER OF REPORTING ISSUERS[1]				REASON(S) FOR CHANGE
	Seniors	Intermediates	Juniors	**TOTAL**	
	–	–	(1)	**(1)**	receivership/bankruptcy
	–	–	0	**0**	change in industry/acquired by a company in another industry
		–	–	**0**	privatized/acquired by a company not principally regulated by the ASC/ceased to be RI principally regulated by the ASC
	–			**0**	acquired by an RI principally regulated by the ASC
	–	–	(1)	**(1)**	CTO
	–	2	7	**9**	new RI[2]
TOTAL	**0**	**2**	**5**	**7**	

[1] Does not capture changes due to movement between production groups.

[2] New RI includes CTO revocations.

"–" = no occurrences

Figure 22 shows the number of RIs engaged in oil and gas activities from Canadian jurisdictions for which the ASC was not the principal regulator, from 2017 to the end of September 2023. The number of RIs has decreased 56 per cent over the period.

Figure 22: Number of non-AB RIs engaged in oil and gas activities

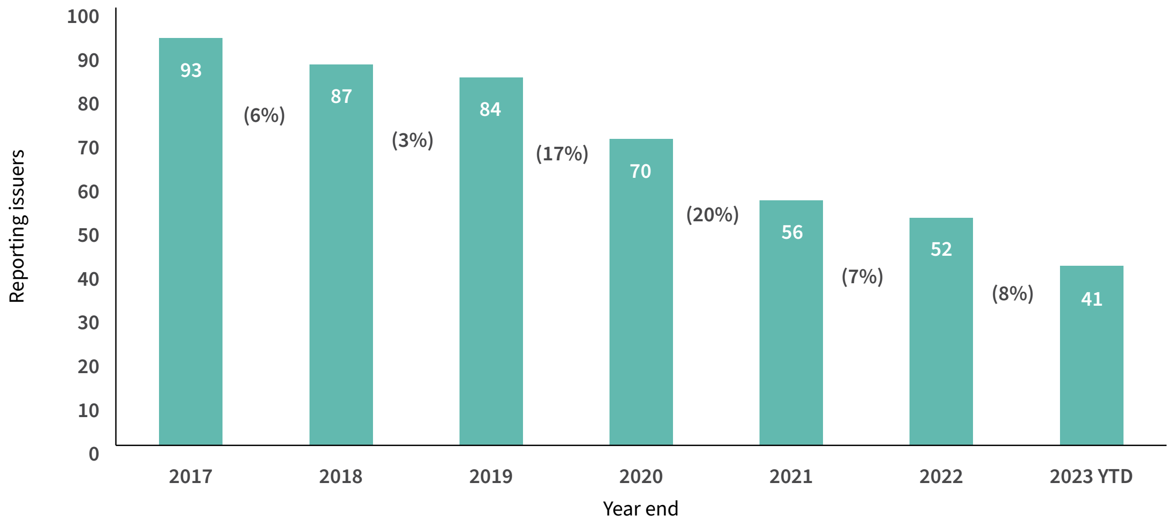


Figure 23 shows the RIs from Figure 22 grouped by production, using the methodology employed to construct Figure 20. As illustrated, the majority of RIs are junior RIs.

Figure 23: Number of non-AB RIs engaged in oil and gas activities, by production group

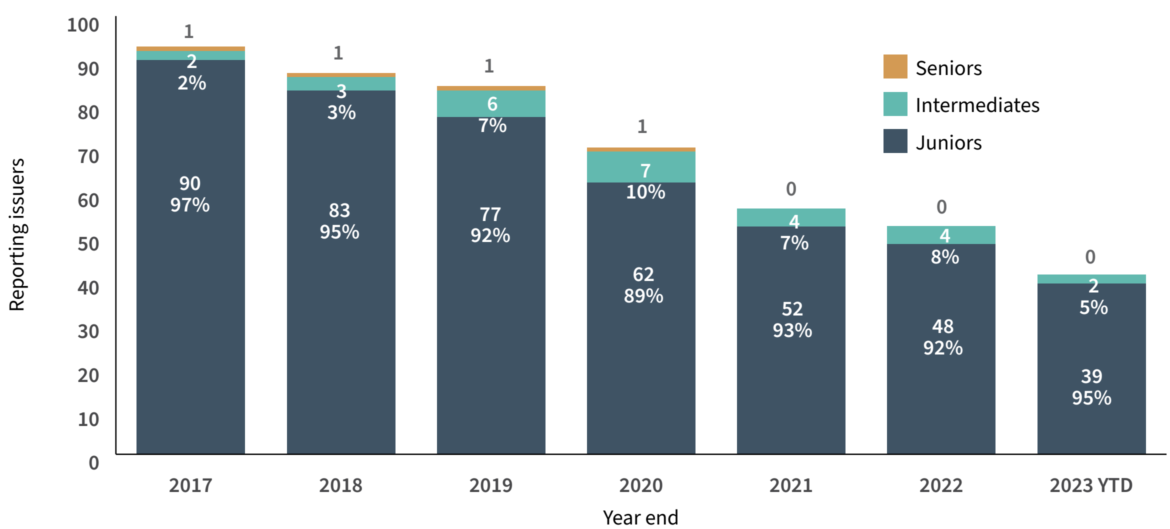


Figure 24 indicates the principal regulator of all RIs engaged in oil and gas activities. The BCSC is the principal regulator of the majority of RIs that are not principally regulated by the ASC.

Figure 24: RIs engaged in oil and gas activities, by principal regulator

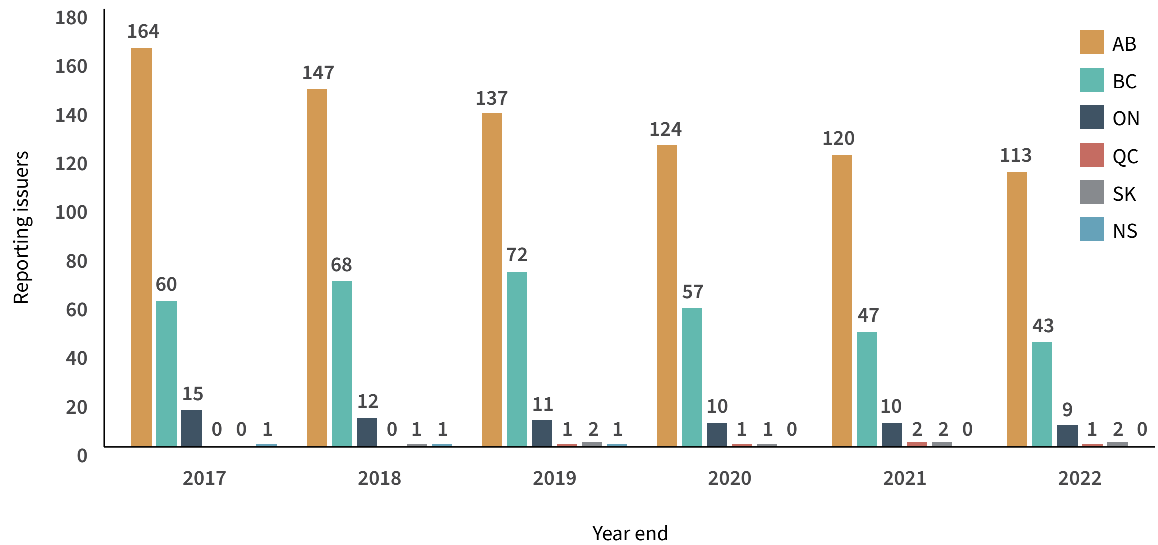


Figure 25 illustrates the market capitalizations of the energy-related sub-industries presented in Figure 18 for 2021 to the end of September 2023. These are based on closing prices attributed to the most active marketplace for the shares of each constituent RI in each sub-industry. For most of the RIs, this is the Toronto Stock Exchange (TSX) or the TSX Venture Exchange (TSX-V). Pricing data for this figure and all others in the Report is in Canadian dollars, unless otherwise noted.

Figure 25: Market capitalization of energy-related AB RIs, by sub-industry

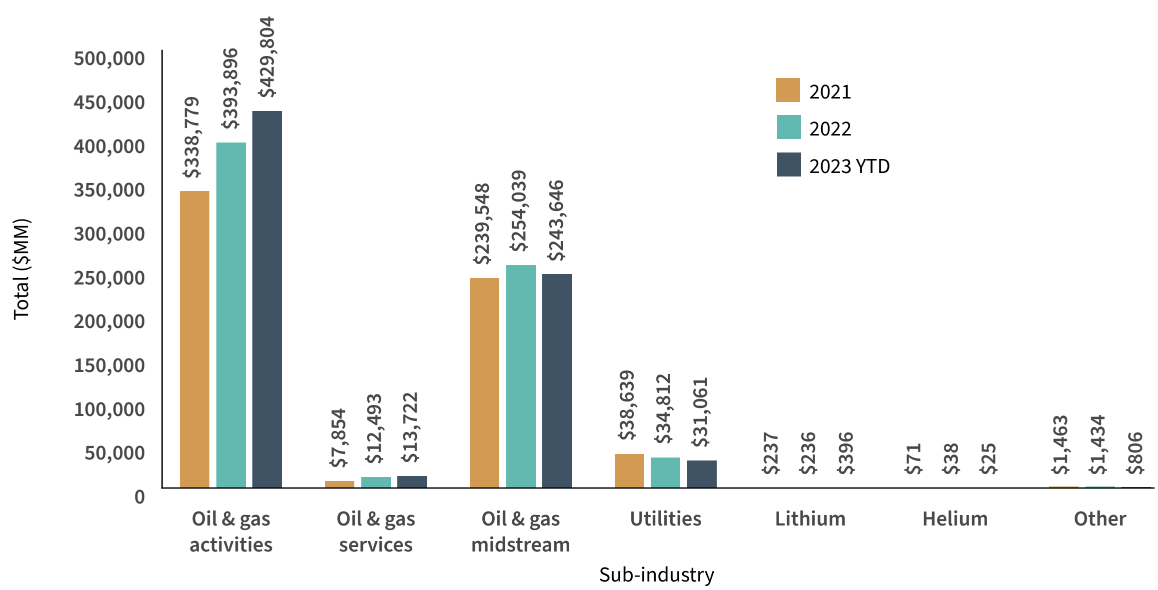


Figure 26 illustrates the average market capitalization of RIs within each of the energy-related sub-industries presented in Figure 25.

Figure 26: Average market capitalization of energy-related AB RIs, by sub-industry

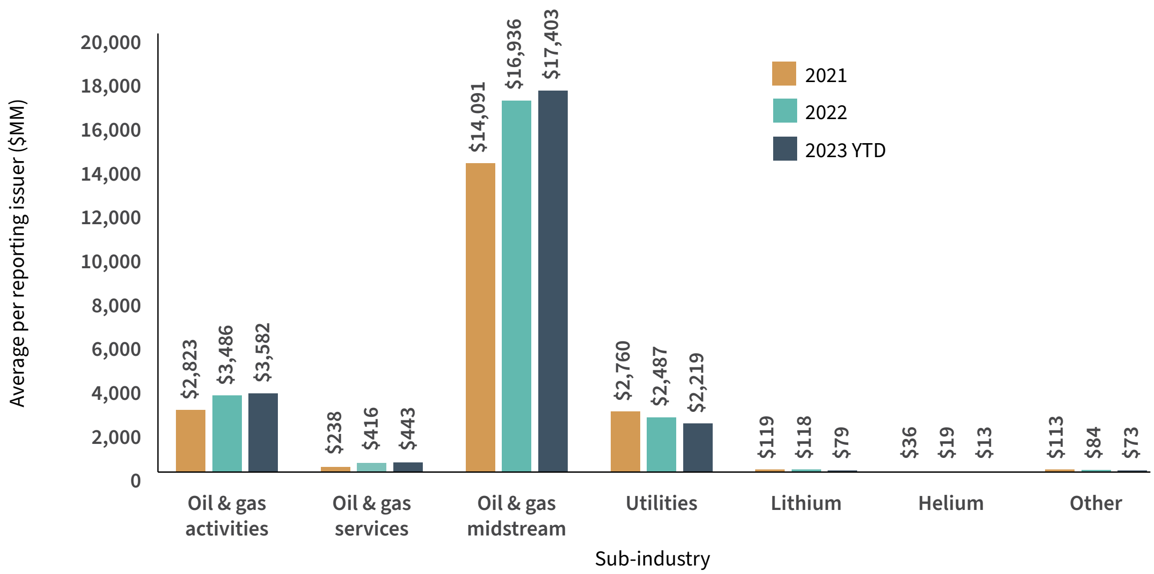


Figure 27 illustrates the average market capitalization of the RIs engaged in oil and gas activities presented in Figure 26, by production group.

Figure 27: Average market capitalization of AB RIs engaged in oil and gas activities, by production group

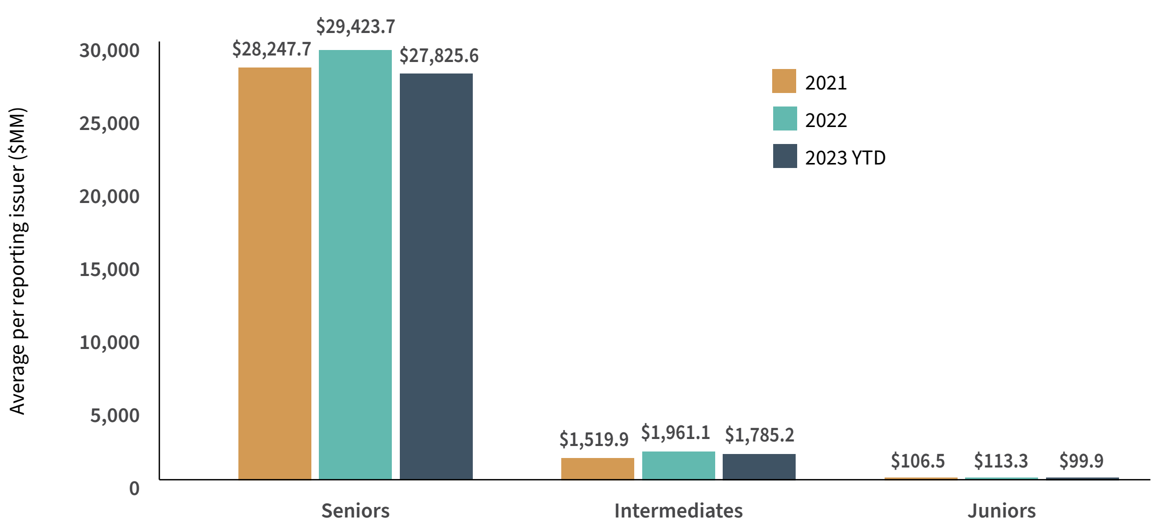


Figure 28 shows the amount of capital raised through prospectus offerings by RIs engaged in oil and gas activities for which the ASC was the principal regulator, for 2016 to the end of September 2023, along with the number of these offerings. The offerings include various types of equity and debt securities, such as common shares, units, debentures, convertible debentures, rights, subscription receipts, bonds and notes. Figure 28 accounts for prospectuses filed in Alberta, while the amount includes capital raised in Alberta and Canadian jurisdictions outside Alberta, as applicable. The 2023 YTD activity consists of seven offerings by seven different RIs.

Figure 28: Capital raised through prospectus offerings and the number of such offerings, by AB RIs engaged in oil and gas activities

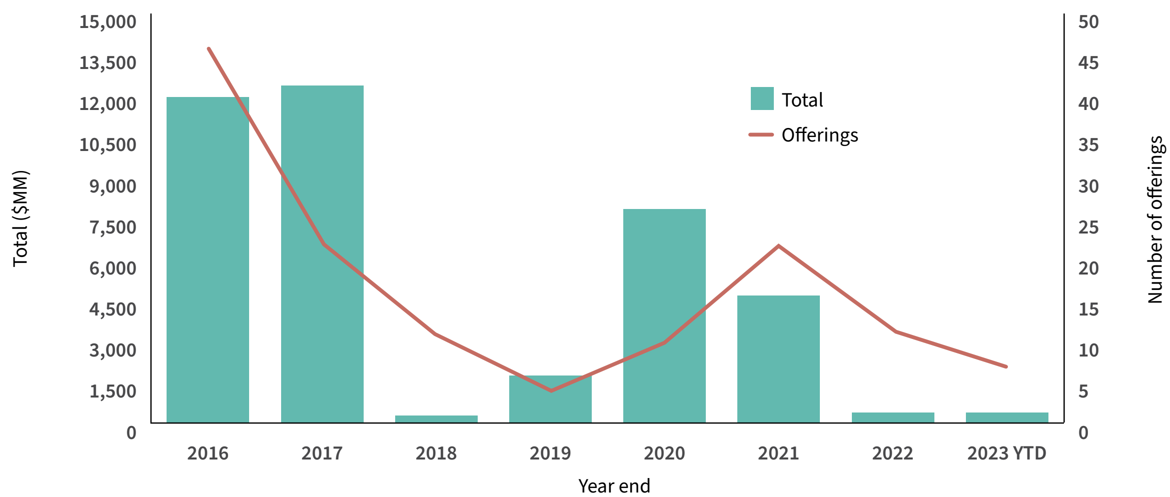


Figure 29 attributes the amounts raised in Figure 28 to production group. One of the seven 2023 YTD offerings is attributed to a senior RI, one is attributed to an intermediate RI and five are attributed to junior RIs.

Figure 29: Capital raised through prospectus offerings and the number of such offerings, by AB RIs engaged in oil and gas activities, by production group

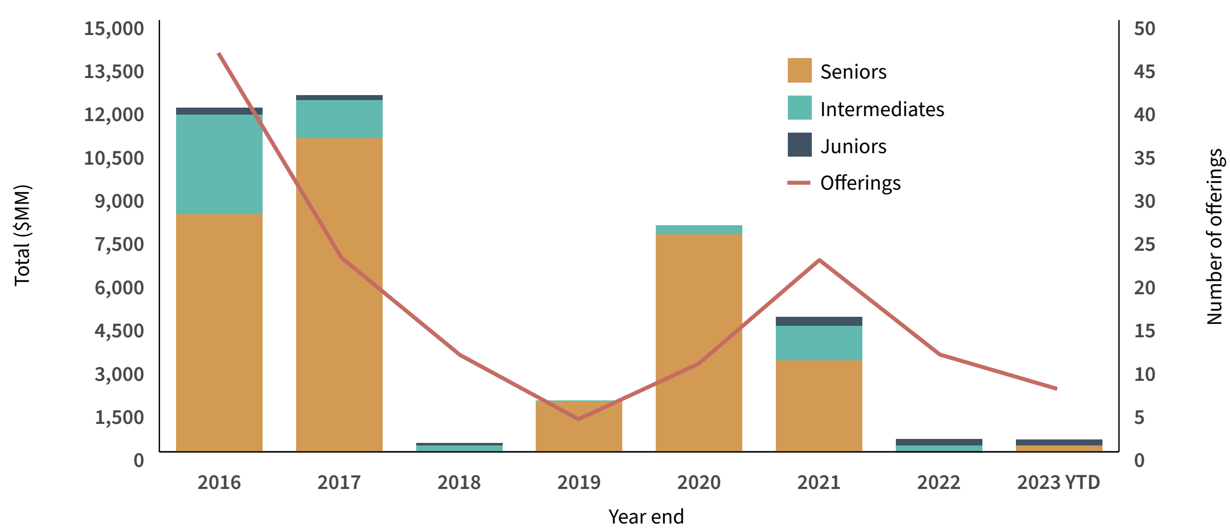


Figure 30 attributes the amounts raised in Figure 29 to securities category, be it equity, debt or both. All seven offerings to the end of September 2023 were for equity.

Figure 30: Capital raised through prospectus offerings and the number of such offerings, by AB RIs engaged in oil and gas activities, by securities category

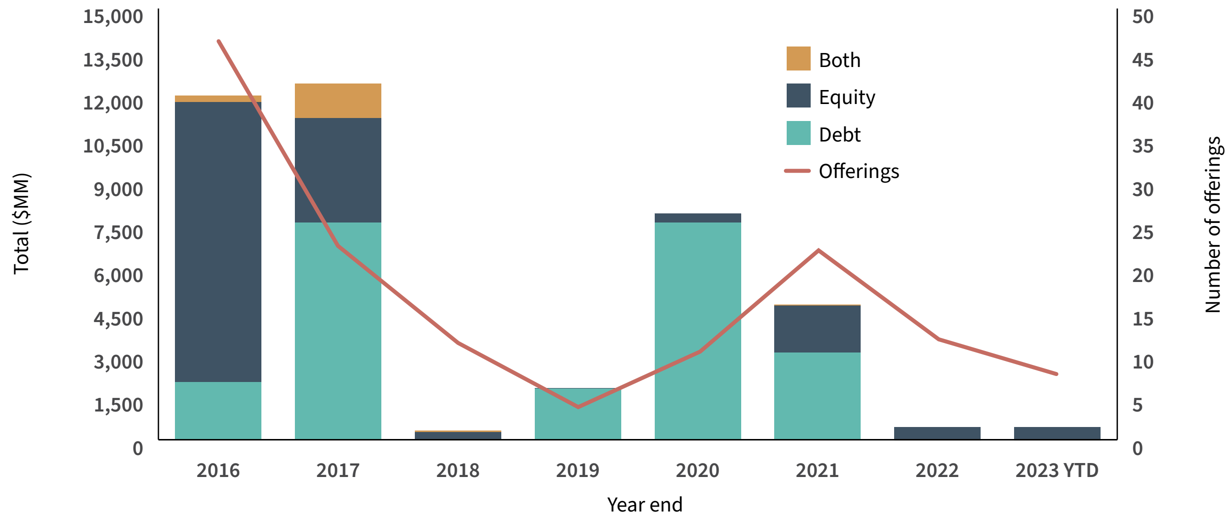
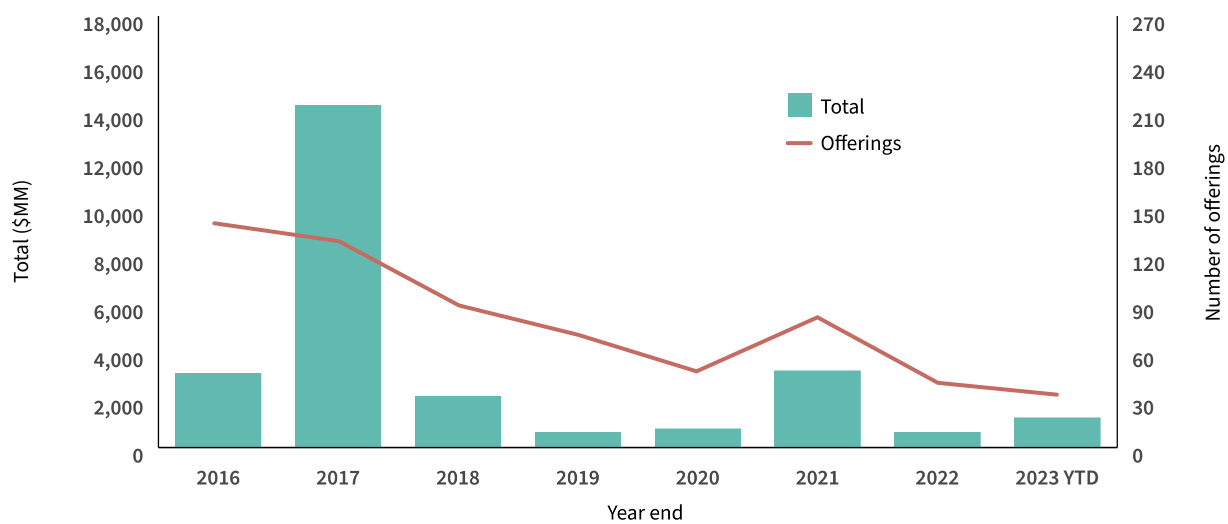


Figure 31 shows the amount of capital raised under exemption from the prospectus requirement (capital not raised via prospectus) by RIs engaged in oil and gas activities for which the ASC was the principal regulator, for 2016 to the end of September 2023, and the number of these offerings. The offerings include various types of equity and debt securities. The amount includes capital raised in Alberta and Canadian jurisdictions outside Alberta, as applicable and as reported. The 2023 YTD activity consists of 31 offerings by 19 different RIs.

Figure 31: Capital raised in the exempt market and the number of such offerings, by AB RIs engaged in oil and gas activities



There are a number of prospectus exemptions available, most of which are set out in National Instrument 45-106 *Prospectus Exemptions*. Both RIs and non-RIs rely on prospectus exemptions to raise capital. Most prospectus exemptions used for capital raising purposes are required to be reported to applicable securities regulators using Form 45-106F1 *Report of Exempt Distribution*. Reports filed with the ASC are required to report on the distributions made in Alberta, but may not report sales to investors in other jurisdictions.

Figure 32 attributes the amounts raised from Figure 31 to production group. The 2023 YTD activity includes 27 offerings attributed to junior RIs and four offerings attributed to intermediate RIs. Most of the capital raised is attributed to the intermediate RIs.

Figure 32: Capital raised in the exempt market and the number of such offerings, by AB RIs engaged in oil and gas activities, by production group

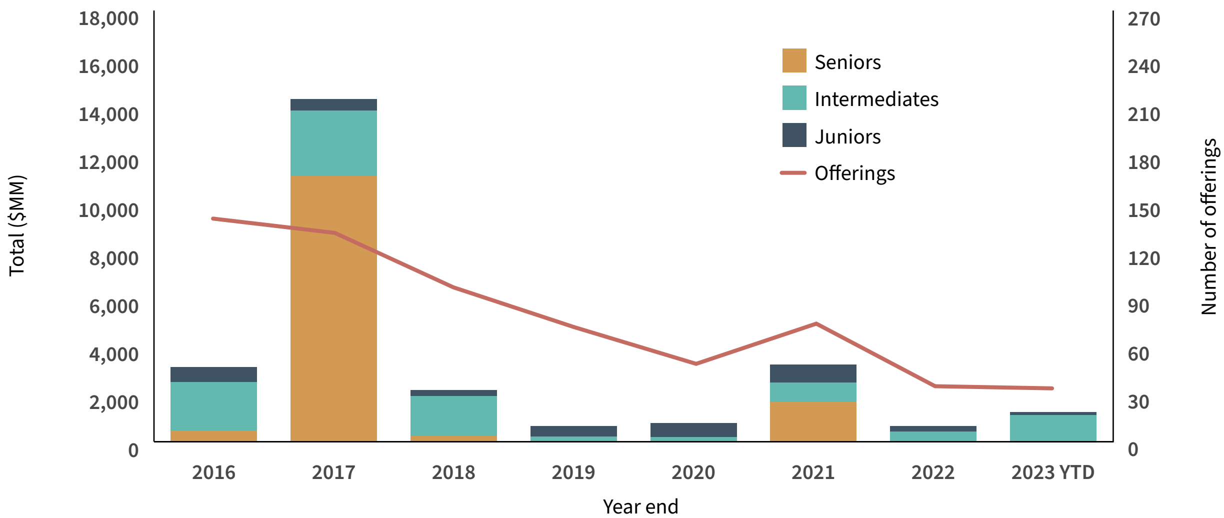


Figure 33 includes information presented in Figure 28 and Figure 31, for comparison. At the end of September 2023, the amount raised and the number of offerings YTD is higher in the exempt market, as was the case in 2022.

Figure 33: Capital raised through prospectus offerings and in the exempt market, and the number of such offerings from each, by AB RIs engaged in oil and gas activities

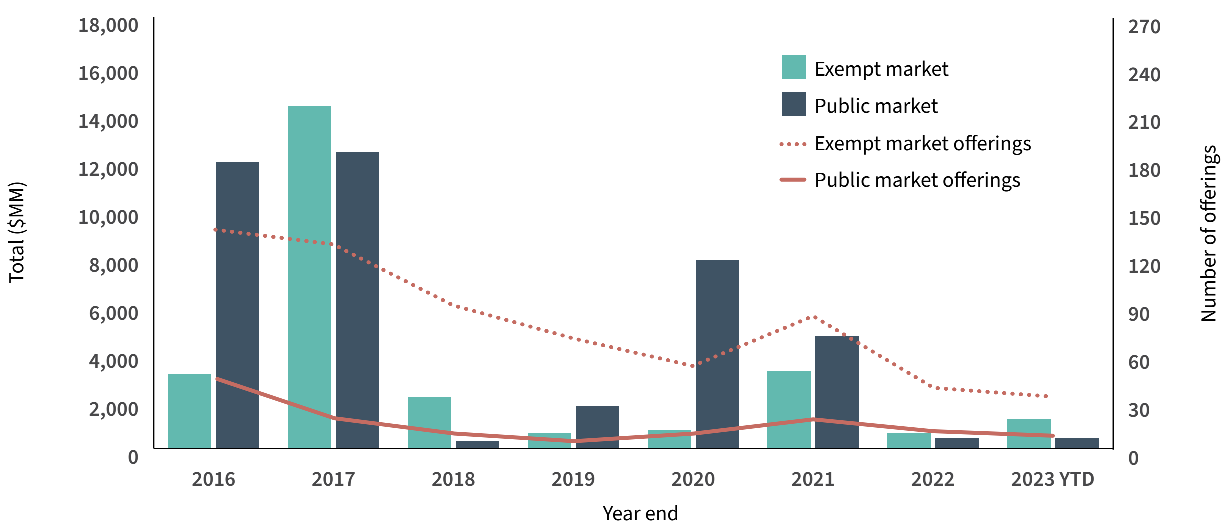


Figure 34 illustrates the amount of capital raised in Alberta by Alberta-based oil and gas issuers that are not RIs, for 2016 to the end of September 2023, and the number of these offerings. It represents capital raised under exemption from the prospectus requirement (capital not raised via prospectus), is based on information reported to the ASC and is incomplete, as some offerings are not required to be reported (e.g., issuers relying on the private issuer prospectus exemption). The amount raised includes capital raised in Alberta and Canadian jurisdictions outside Alberta, as applicable and as reported. The 2023 YTD activity consists of 20 offerings by 11 different issuers.

Figure 34: Capital raised in the exempt market and the number of such offerings, by oil and gas issuers based in Alberta that are not RIs

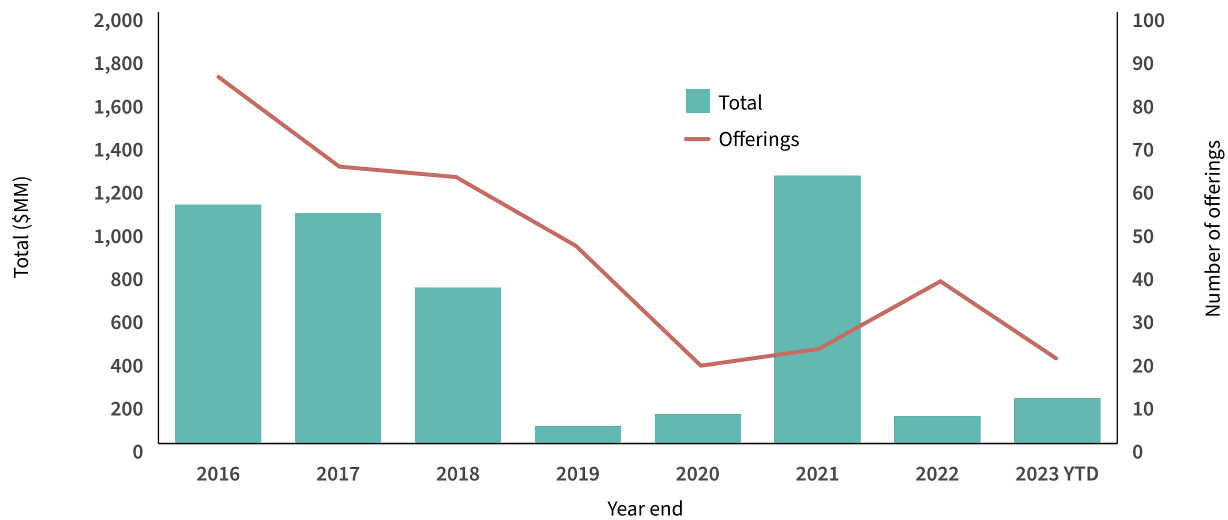


Figure 35 shows the amount of capital raised through prospectus offerings by RIs involved in oil and gas midstream and oil and gas services for which the ASC was the principal regulator, for 2016 to the end of September 2023, and the number of these offerings. The offerings include various types of equity and debt securities, such as common shares, units, debentures, convertible debentures, rights, subscription receipts, bonds and notes. As long as the prospectus was filed in Alberta, the offering is included in Figure 35. The amount raised includes capital raised in Alberta and Canadian jurisdictions outside Alberta, as applicable. The 2023 YTD activity consists of eight offerings by three different RIs involved in oil and gas midstream and four offerings by one RI involved in oil and gas services. In the absence of a prospectus exemption, capital would be raised through securities issuance via prospectus.

Figure 35: Capital raised through prospectus offerings and the number of such offerings, by AB RIs involved in oil and gas midstream and oil and gas services

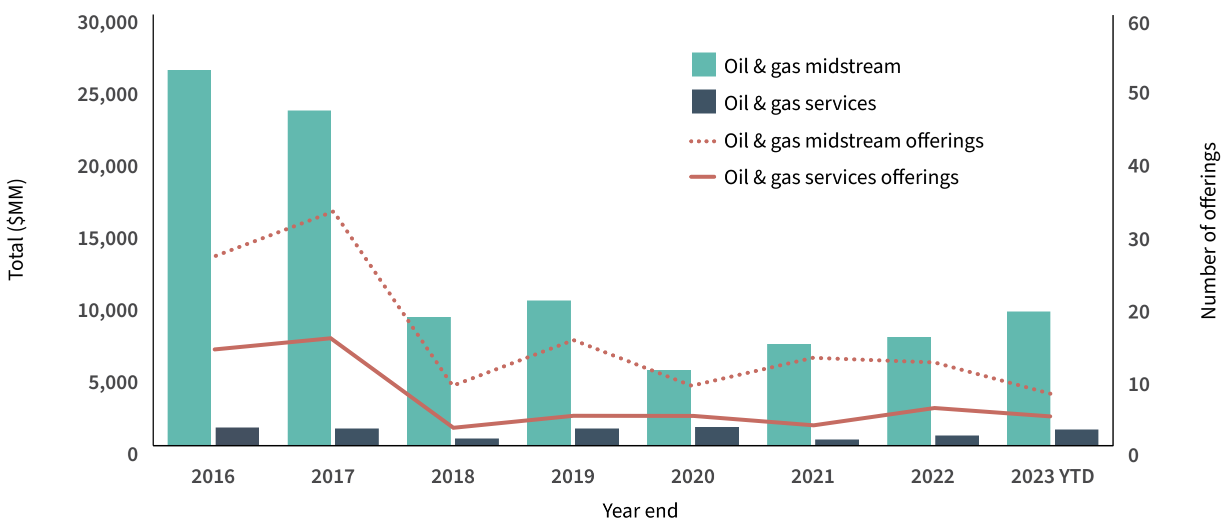


Figure 36 attributes the amounts raised in Figure 35 to securities category, be it equity, debt or both.

Figure 36: Capital raised through prospectus offerings by AB RIs involved in oil and gas midstream and oil and gas services, by securities category

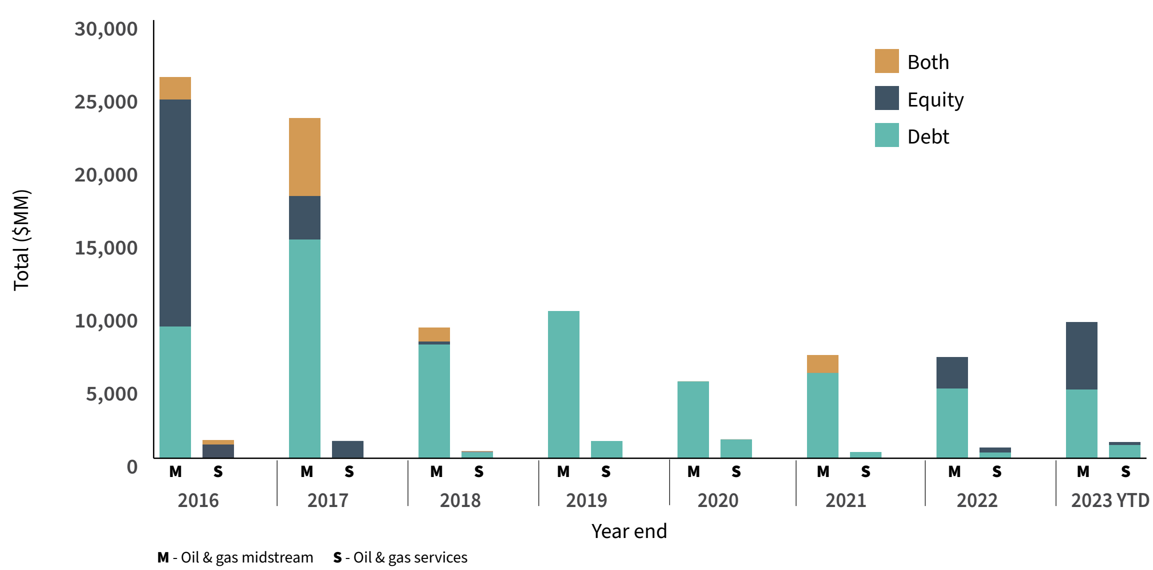


Figure 37 includes information presented in Figure 28 and Figure 35, for comparison.

Figure 37: Capital raised through prospectus offerings and the number of such offerings, by AB RIs engaged in oil and gas activities and those involved in oil and gas midstream and oil and gas services

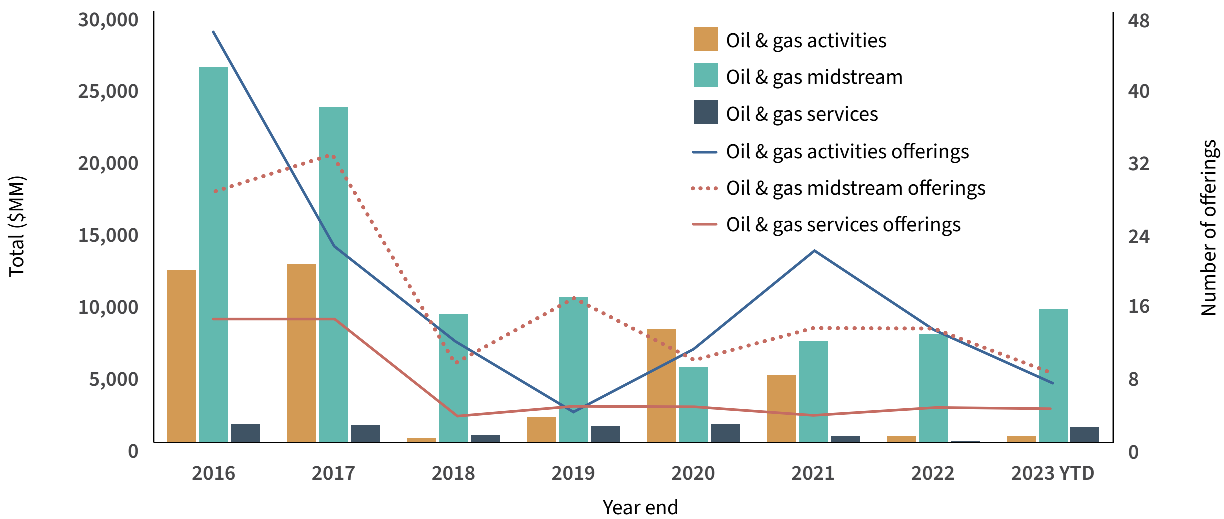


Figure 38 includes information presented in Figure 30 and Figure 36, for comparison.

Figure 38: Capital raised through prospectus offerings by AB RIs engaged in oil and gas activities and those involved in oil and gas midstream and oil and gas services, by securities category

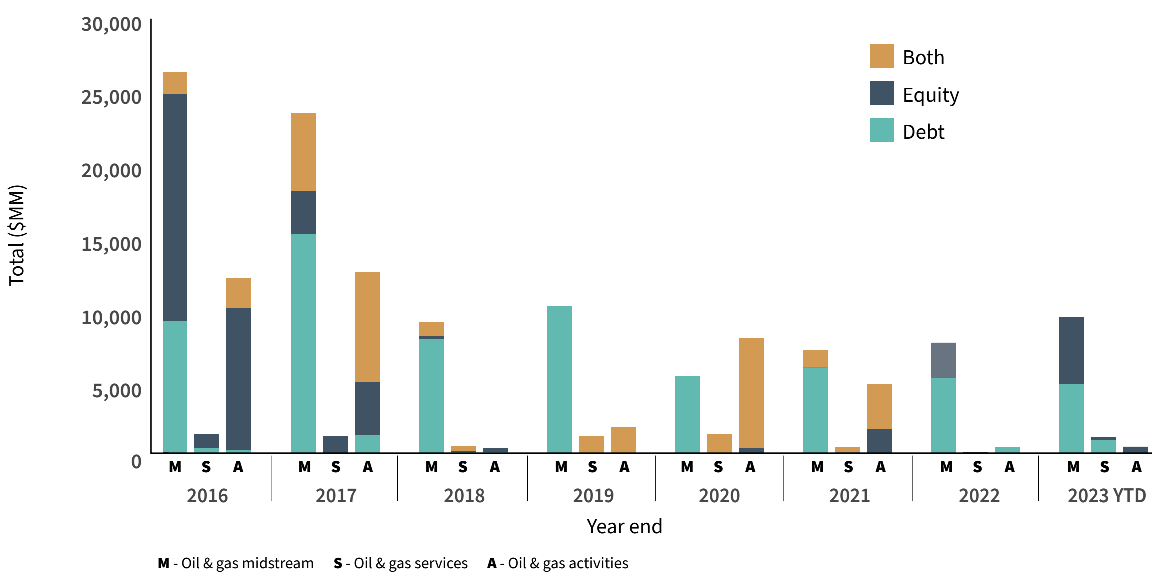


Figure 39 shows the amount of capital raised through prospectus offerings by RIs involved in utilities, lithium, helium and other energy-related sub-industries for which the ASC was the principal regulator, for 2016 to the end of September 2023, and the number of these offerings. The offerings include various types of equity and debt securities, such as common shares, units, debentures, convertible debentures, rights, subscription receipts, bonds and notes. As long as the prospectus was filed in Alberta, the offering is included in Figure 39. The amount raised includes capital raised in Alberta and Canadian jurisdictions outside Alberta, as applicable. The 2023 YTD activity consists of one offering by one RI involved in utilities and four offerings by three different RIs involved in lithium.

Figure 39: Capital raised through prospectus offerings and the number of such offerings, by AB RIs involved in utilities, lithium, helium and other energy-related sub-industries

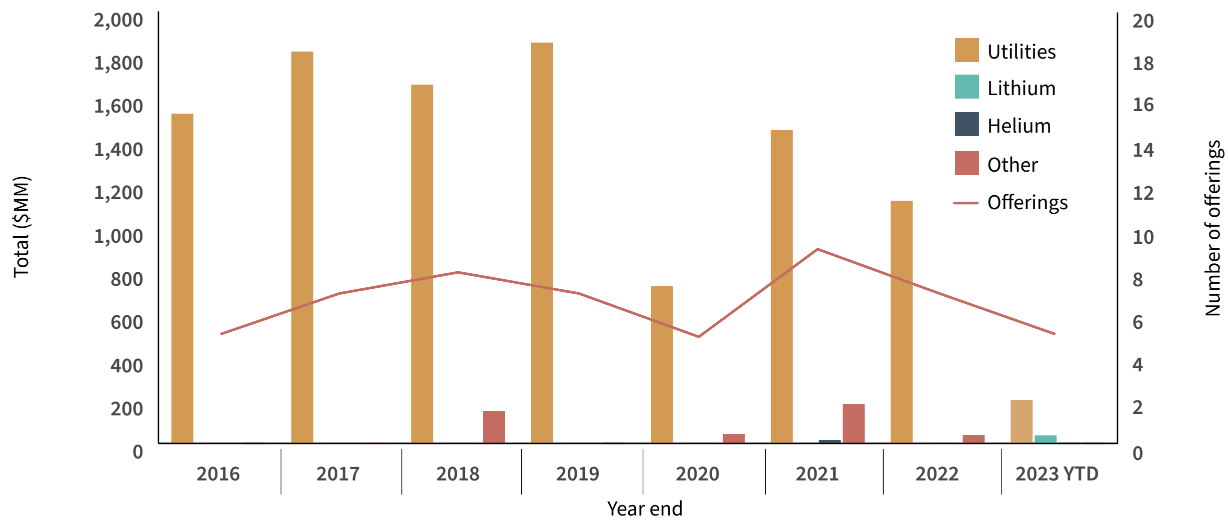


Figure 40 attributes the amounts raised in Figure 39 to securities category, be it equity, debt or both.

Figure 40: Capital raised through prospectus offerings by AB RIs involved in utilities, lithium, helium and other energy-related sub-industries, by securities category

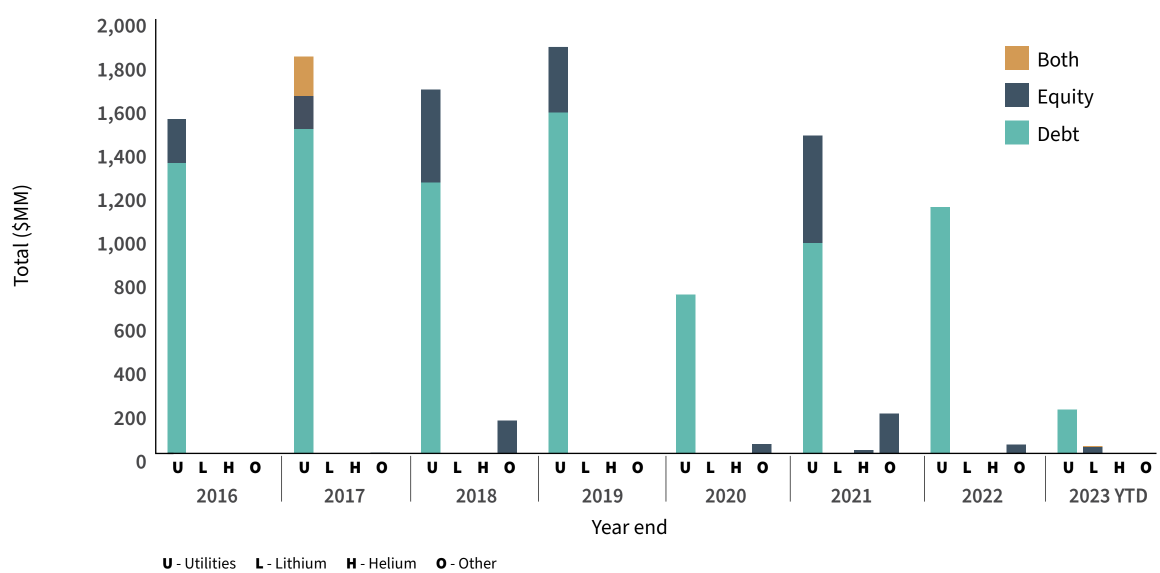


Figure 41 lists sustainable financings by RIs engaged in oil and gas activities and RIs involved in oil and gas midstream for which the ASC was the principal regulator, for 2022 to the end of September 2023. These are also referred to as “transition” and “green” financings. The figure accounts for all of these types financings identified by staff for energy-related RIs and comprise sustainability-linked notes and a green bond financing.

Sustainability-linked bonds and notes are securities for which the proceeds can be used for various purposes and are linked to improved performance related to certain sustainability criteria or key performance indicators, such as the RI’s GHG emissions, water management, health and safety or diversity of its directors. These bonds and notes typically specify varied borrowing costs associated with attaining or failing to attain the specified targets (decreased or increased coupon rate, respectively).

Green bonds are similar to sustainability-linked bonds and notes, but their proceeds must be used for a specific environmental improvement project(s), such as the RI’s reduced GHG emissions, water management, etc.

Figure 41: Sustainable financings by energy-related AB RIs

RI TYPE	AMOUNT ($MM)	SECURITIES TYPE	DATE CLOSED	DATE DUE	COUPON
Oil & gas midstream	$400	Sustainability linked notes	Q2 2023	Q2 2023	5.36%
Oil & gas midstream	$400	Green bond	Q4 2022	Q4 2029	7.75%
Oil & gas midstream	$900	Sustainability linked notes	Q4 2022	Q4 2032	6.10%
Oil & gas activities	$100	Sustainability linked notes	Q3 2022	Q4 2027	7.25%
Oil & gas activities	$200	Sustainability linked notes	Q1 2022	Q4 2027	7.25%

Figure 42 lists sustainable credit facilities initiated by RIs engaged in oil and gas activities and RIs involved in oil and gas midstream for which the ASC was the principal regulator, for 2022 to the end of September 2023. These account for all of the sustainable credit facilities identified by staff for energy-related RIs.

Sustainable credit facilities are intended to incentivize RIs to improve performance related to certain sustainability criteria or key performance indicators, such as the RI’s GHG emissions, water management, health and safety or diversity of its directors. These loans typically specify varied borrowing costs associated with attaining or failing to attain the specified targets (decreased or increased coupon rate, respectively). Note that many of the RIs that have sustainable credit facilities often have other credit facilities in place that do not have sustainability criteria attributed to them.

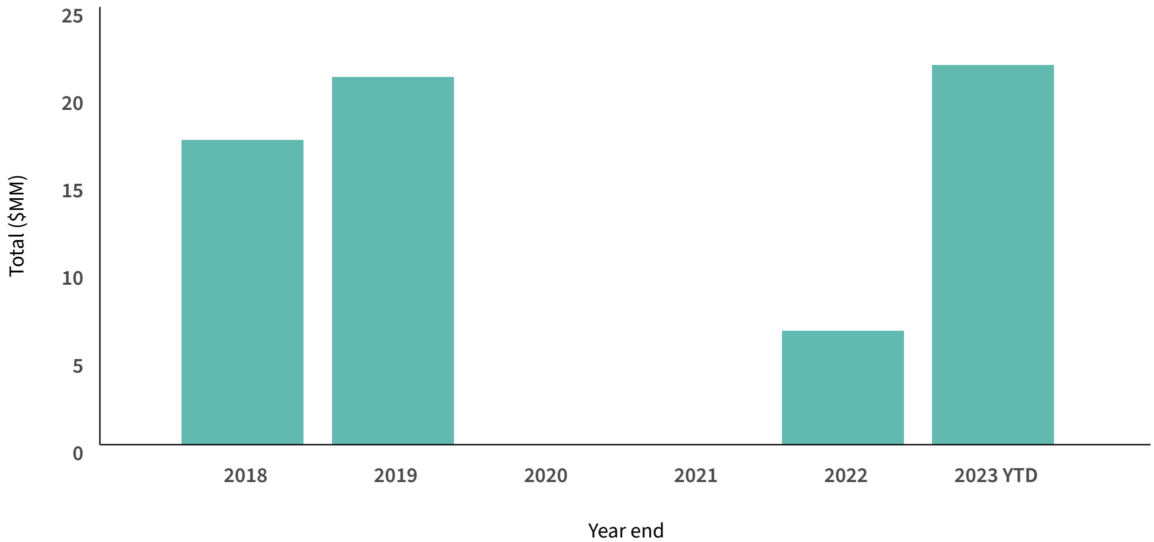
Figure 42: Sustainable credit facilities for energy-related AB RIs

RI TYPE	CURRENT CREDIT FACILITY AMOUNT	DATE FACILITY INITIATED
Oil & gas midstream	$1 billion	Q3 2022
Oil & gas midstream	$3 billion	Q3 2022
Oil & gas activities	$450 million	Q2 2022
Oil & gas activities	$2 billion	Q1 2022
Oil & gas activities	$700 million	Q4 2021
Oil & gas activities	$700 million	Q3 2021
Oil & gas activities	USD $1.265B	Q2 2021
Oil & gas midstream	$750 million	Q2 2021
Oil & gas midstream	$1 billion	Q1 2021

Figure 43 shows clean energy-related project funding provided by the Government of Canada to RIs engaged in oil and gas activities[14] for which the ASC was the principal regulator. For 2018 to the end of September 2023, there have been 13 funding events to ten different RIs, totalling $67 million. In 2023 YTD, there have been five funding events to five different RIs, totalling $22 million. Over the period, there were no funding events for RIs involved in oil and gas midstream and oil and gas services for which the ASC was the principal regulator.

[14] www.natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/current-investments/21146

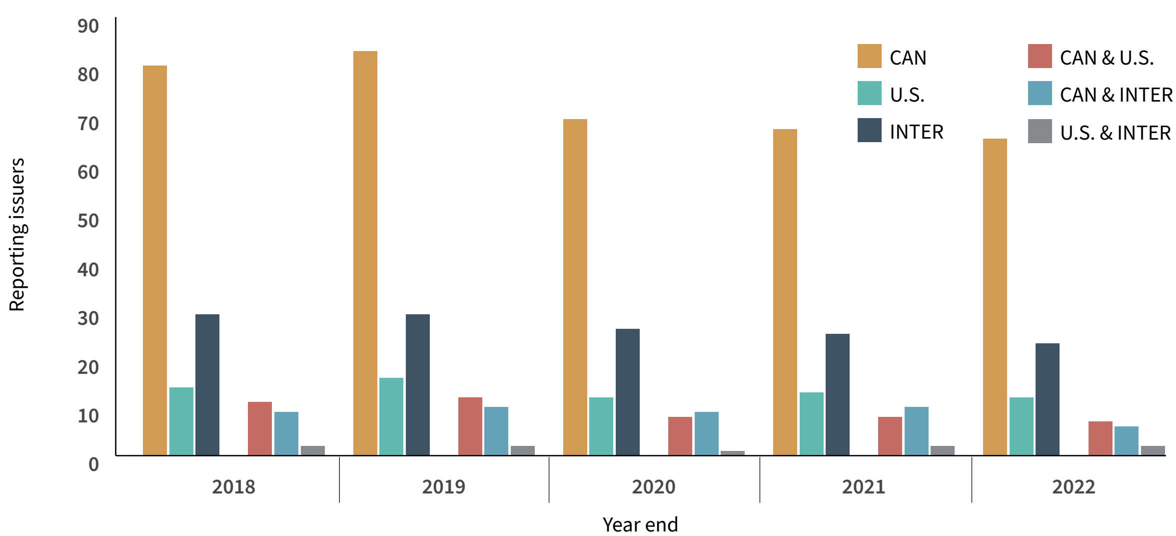
Figure 43: Government of Canada clean energy-related funding provided to AB RIs engaged in oil and gas activities



The Government of Canada and various provincial governments have become important sources of capital for RIs with projects that utilize emerging, unproven technologies that may not otherwise meet funding criteria. Staff intend to continue to monitor this type of funding and provide additional information in future reports.

Figure 44 indicates the locations where RIs engaged in oil and gas activities for which the ASC was the principal regulator, for 2018 to the end of September 2023, have one or more of reserves data, contingent resources data or prospective resources data attributed. This information was obtained from the statement of the reserves data and other information specified in Form 51-101F1 for each RI.

Figure 44: Locations where AB RIs engaged in oil and gas activities have reserves data, contingent resources data or prospective resources data attributed



It is understood by staff that investors and RIs have been prioritizing financial performance and return of capital in recent years. In response, RIs have been less inclined to optionally disclose contingent resources data and prospective resources data, which is typically done to project growth opportunities and suggest the future need for capital.

Figure 45 illustrates the number of occurrences of disclosure of contingent resources data, prospective resources data or both, in the statement of the reserves data and other information specified in Form 51-101F1, for 2014 to 2022. Disclosure occurrences of contingent resources data increased in 2022 over 2021, while occurrences for prospective resources data remained the same.

Figure 45: Disclosure occurrences of contingent resources data, prospective resources data or both, by AB RIs engaged in oil and gas activities

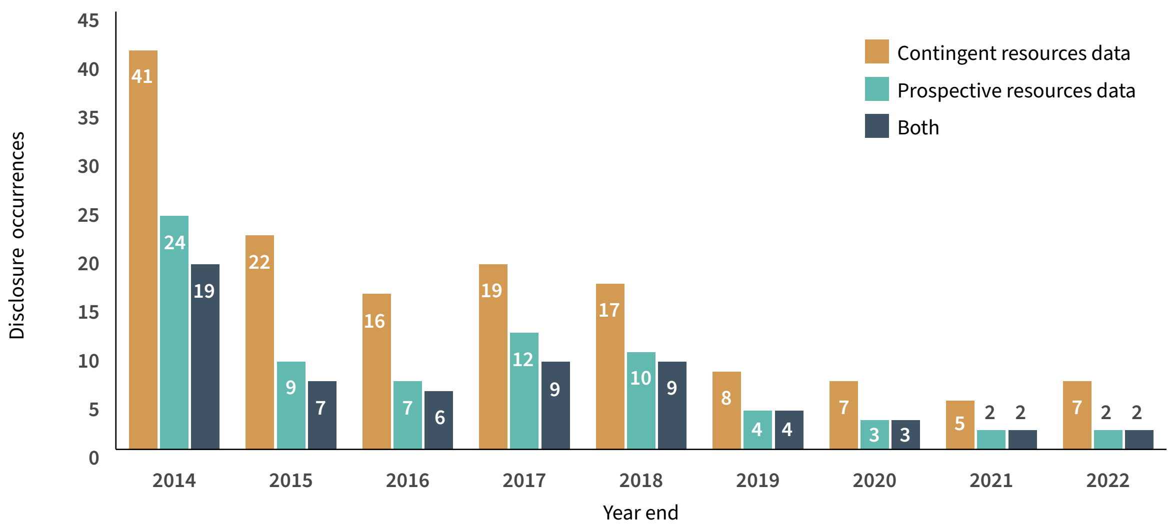


Figure 46 illustrates the information shown in Figure 45 by production group.

Figure 46: Disclosure occurrences of contingent resources data, prospective resources data or both, by AB RIs engaged in oil and gas activities, by production group

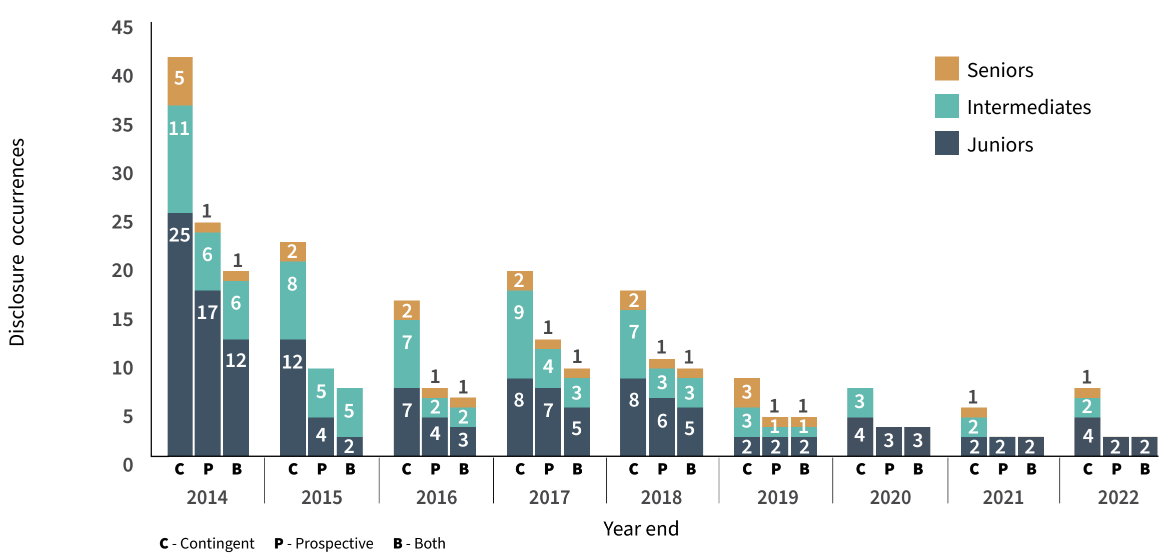
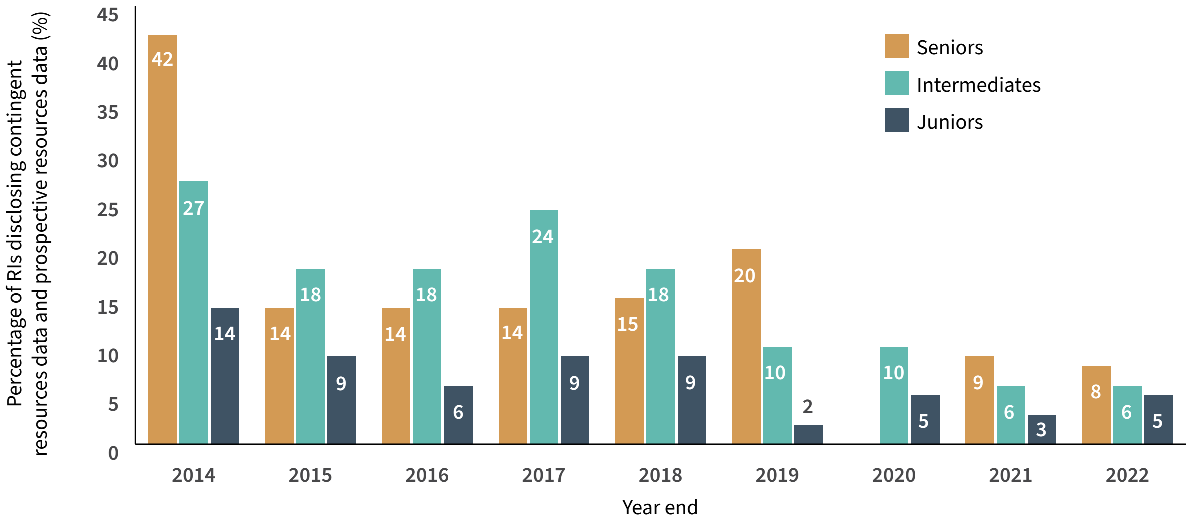


Figure 47 shows the percentage of RIs engaged in oil and gas activities, for which the ASC was the principal regulator, that disclosed contingent resources data, prospective resources data or both, in the statement of the reserves data and other information specified in Form 51-101F1, for 2014 to 2022.

Figure 47: Percentage of AB RIs engaged in oil and gas activities, that disclosed contingent resources data, prospective resources data or both, by production group



6. Energy Advisory Committee

The Energy Advisory Committee (**EAC**) is an important source of information and advice for the ASC on energy-related matters. The EAC is comprised of volunteer members (**Members**) with energy-related backgrounds that are appointed to three-year terms. Meetings are normally held three times per year and are attended by Members, observers and select ASC staff.

The EAC's mandate is to:

- Review and provide feedback on issues and current developments regarding the:
  - Evaluation of oil and gas reserves and resources other than reserves.
  - Disclosure concerning oil and gas activities.
  - Evaluation and disclosure regarding other energy-related matters.
- Comment on related current and proposed Alberta securities laws and regulatory policies.
- Provide informal advice to staff.

The ASC thanks the Members for their contributions.

Current Members:

Robyn Bourgeois, B.Sc., LL.B.
Birchcliff Energy Ltd.

Steven J. Golko, P.Eng.
Sproule

Nicole Labrecque, P.Eng.
Cenovus Energy Inc.

Dr. John Lacey, P.Eng.
Enjay Holdings Alberta Ltd.

Ian McDonald, P.Eng.
CNOOC International

Lesley Mitchell, P.Eng.
Deloitte

Rob Morgan, P.Eng.
Strathcona Resources Ltd.

Larry Petropoulos, P.Eng.
BMO Capital Markets

Michael Verney, P.Eng.
McDaniel & Associates Consultants Ltd.

John Zahary, P.Eng.
Altex Energy Ltd.

7. Contact information

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8. Glossary of terms

The following terms and their respective definitions concern oil and gas activities, as defined in NI 51-101 *Standards of Disclosure For Oil and Gas Activities*. They are sourced from section 1.1 of NI 51-101 and CSA Staff Notice 51-324 *Revised Glossary to NI 51-101 Standards of Disclosure for Oil and Gas Activities*.

"**anticipated results**" means information that may, in the opinion of a reasonable person, indicate the potential value or quantities of resources in respect of the reporting issuer's resources or a portion of its resources and includes:

(a) estimates of volume;

(b) estimates of value;

(c) areal extent;

(d) pay thickness;

(e) flow rates; or

(f) hydrocarbon content.

"**audit**" in relation to reserves data, the process whereby an independent qualified reserves auditor carries out procedures designed to allow the independent qualified reserves auditor to provide reasonable assurance, in the form of an opinion that the reporting issuer's reserves data (or specific parts thereof) have, in all material respects, been determined and presented in accordance with the COGE Handbook and are, therefore, free of material misstatement.

Because of

(a) the nature of the subject matter (estimates of future results with many uncertainties);

(b) the fact that the independent qualified reserves auditor assesses the qualifications and experience of the reporting issuer's staff, assesses the reporting issuer's systems, procedures and controls and relies on the competence of the reporting issuer's staff and the appropriateness of the reporting issuer's systems, procedures and controls; and

(c) the fact that tests and samples (involving examination of underlying documentation supporting the determination of the reserves and future net revenue) as opposed to complete evaluations, are involved; the level of assurance is designed to be high, though not absolute.

The level of assurance cannot be described with numeric precision. It will usually be less than, but reasonably close to, that of an independent evaluation and considerably higher than that of a review.

"**COGE Handbook**" means the "Canadian Oil and Gas Evaluation Handbook" maintained by the Society of Petroleum Evaluation Engineers (Calgary Chapter), as amended from time to time.

"**commercial**" means when a project is commercial this implies that the essential social, environmental, and economic conditions are met, including political, legal, regulatory, and contractual conditions.

Considerations with regard to determining commerciality include:

- economic viability of the related development project;
- a reasonable expectation that there will be a market for the expected sales quantities of production required to justify development;
- evidence that the necessary production and transportation facilities are available or can be made available;
- evidence that legal, contractual, environmental, governmental, and other social and economic concerns will allow for the actual implementation of the recovery project being evaluated;
- a reasonable expectation that all required internal and external approvals will be forthcoming. Evidence of this may include items such as signed contracts, budget approvals, and approvals for expenditures, etc.
- evidence to support a reasonable timetable for development. A reasonable time frame for the initiation of development depends on the specific circumstances and varies according to the scope of the project. Although five years is recommended as a maximum time frame for classification of a project as commercial, a longer time frame could

be applied, where, for example, development of economic projects are deferred at the option of the producer for, among other things, market-related reasons or to meet contractual or strategic objectives.

"**contingent resources data**" means:

(a) an estimate of the volume of contingent resources; and

(b) the risked net present value of future net revenue of contingent resources.

"**effective date**" in respect of information, means the date as at which, or for the period ended on which, the information is provided.

"**evaluation**" means, in relation to reserves data or resources other than reserves, the process whereby an economic analysis is made of a property to arrive at an estimate of a range of net present values of the estimated future net revenue resulting from the production of the reserves or resources other than reserves associated with the property.

"**forecast prices and costs**" means future prices and costs that are:

(a) generally accepted as being a reasonable outlook of the future;

(b) if, and only to the extent that, there are fixed or presently determinable future prices or costs to which the RI is legally bound by a contractual or other obligation to supply a physical product, including those for an extension period of a contract that is likely to be extended, those prices or costs rather than the prices and costs referred to in subparagraph (a).

"**future net revenue**" means a forecast of revenue, estimated using forecast prices and costs or constant prices and costs, arising from the anticipated development and production of resources, net of the associated royalties, operating costs, development costs, and abandonment and reclamation costs.

"**gas**" includes natural gas, conventional natural gas, coal bed methane, gas hydrates, shale gas, and synthetic gas.

"**gross**"

(a) In relation to a RI's interest in production or reserves, its "company gross reserves," which are the RI's working interest (operating or non-operating) share before deduction of royalties and without including any royalty interests of the RI.

(b) In relation to wells, the total number of wells in which a RI has an interest.

(c) In relation to properties, the total area of properties in which a RI has an interest.

"**net**"

(a) In relation to a RI's interest in production or reserves, the RI's working interest (operating or non-operating) share after deduction of royalty obligations, plus the RI's royalty interests in production or reserves.

(b) In relation to a RI's interest in wells, the number of wells obtained by aggregating the RI's working interest in each of its gross wells.

(c) In relation to a RI's interest in a property, the total area in which the RI has an interest multiplied by the working interest owned by the RI.

"**oil**" includes crude oil, bitumen, tight oil and synthetic crude oil.

"**oil and gas activities**" include the following:

(a) searching for a product type in its natural location;

(b) acquiring property rights or a property for the purpose of exploring for or removing product types from their natural locations;

(c) any activity necessary to remove product types from their natural locations, including construction, drilling, mining and production, and the acquisition, construction, installation and maintenance of field gathering and storage systems including treating, field processing and field storage;

(d) producing or manufacturing of synthetic crude oil or synthetic gas;

but does not include any of the following:

(e) any activity that occurs after the first point of sale;

(f) any activity relating to the extraction of a substance other than a product type and their by-products;

(g) extracting hydrocarbons as a consequence of the extraction of geothermal steam.

“**preparation date**” in respect of written disclosure, means the most recent date to which information relating to the period ending on the effective date was considered in the preparation of the disclosure.

“**property**” includes:

(a) fee ownership or a lease, concession, agreement, permit, licence or other interest representing the right to extract oil or gas subject to such terms as may be imposed by the conveyance of that interest;

(b) royalty interests, production payments payable in oil or gas, and other non-operating interests in properties operated by others; and

(c) an agreement with a foreign government or authority under which a RI participates in the operation of properties or otherwise serves as "producer" of the underlying reserves (in contrast to being an independent purchaser, broker, dealer or importer).

A property does not include supply agreements, or contracts that represent a right to purchase, rather than extract, oil or gas.

“**prospective resources data**” means:

(a) an estimate of the volume of prospective resources, and

(b) the risked net present value of future net revenue of prospective resources.

“**qualified reserves auditor**” means an individual who:

(a) in respect of particular reserves data, resources or related information, possesses professional qualifications and experience appropriate for the estimation, evaluation, review and audit of the reserves data, resources and related information; and

(b) is a member in good standing of a professional organization.

“**qualified reserves evaluator**” means an individual who:

(a) in respect of particular reserves data, resources or related information, possesses professional qualifications and experience appropriate for the estimation, evaluation and review of the reserves data, resources and related information; and

(b) is a member in good standing of a professional organization.

“**qualified reserves evaluator or auditor**” means a qualified reserves auditor or a qualified reserves evaluator.

“**reserves**” means proved, probable or possible reserves.

“**reserves data**” means an estimate of proved reserves and probable reserves and related future net revenue, estimated using forecast prices and cost.

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