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Upstream Oil and Gas Site-Specific Risk Assessment (SSRA) in Alberta

Common Issues from a Regulatory Perspective (AER)

Using the checklist to strengthen completeness, traceability, and technical review.
Evidence from review of recent submissions.

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Alberta Energy Regulator

Information Security Classification: Public

Overview

Where SSRAs fit — and where submissions fall short

Where SSRAs fit → **Consultation + review** → **SSRA checklist** → **What the checklist does not do**

Common issues: what we found → **Common issues: in detail** → **Quality controls** → **Closing + questions**

The "Common issues" sections draw on what submission reviews have found.

WHERE SSRAS FIT

Tier 2 application when Tier 1 does not fit

TIER 1

Generic assumptions and guideline values for defined land uses and conditions.

SITE-SPECIFIC NEED

The proponent demonstrates generic assumptions are not appropriate for the site.

TIER 2/SSRA

An SSRA is only one Tier 2 option. Site-specific conditions/evidence support the risk assessment and associated conclusions.

A defensible SSRA connects site conditions/evidence, the Conceptual Site Model (CSM), and associated conclusions.

Source: AER SSRA guidance — the Tier 1 / Tier 2 framework.

CONSULTATION + REVIEW

Consult early — as the SSRA is being developed

Bulletin 2025-33 introduced the voluntary submission checklist



BULLETIN 2025-33

Issued October 29, 2025, announcing the voluntary SSRA Submission Checklist.
It outlines minimum information and expectations for SSRA submissions. Intended to support more consistent and efficient submissions along with regulatory review by the AER.

EARLY CONSULTATION

Proponents planning or conducting an SSRA may consult the regulator at appropriate stages of the project. A OneStop submission is required.

Source: AER Bulletin 2025-33, issued October 29, 2025, Supplemental Guidance on Site-Specific Risk Assessments in Alberta, GoA, 2022.

SSRA CHECKLIST

A voluntary aid that summarizes key expectations

What the SSRA Submission Checklist is — and what it is for

PURPOSE

Helps a proponent compile and submit an SSRA, also supports consistent, efficient review.

STATUS

Voluntary. It supports and supplements legislation, standards, guidance, or professional judgment.

FUNCTION

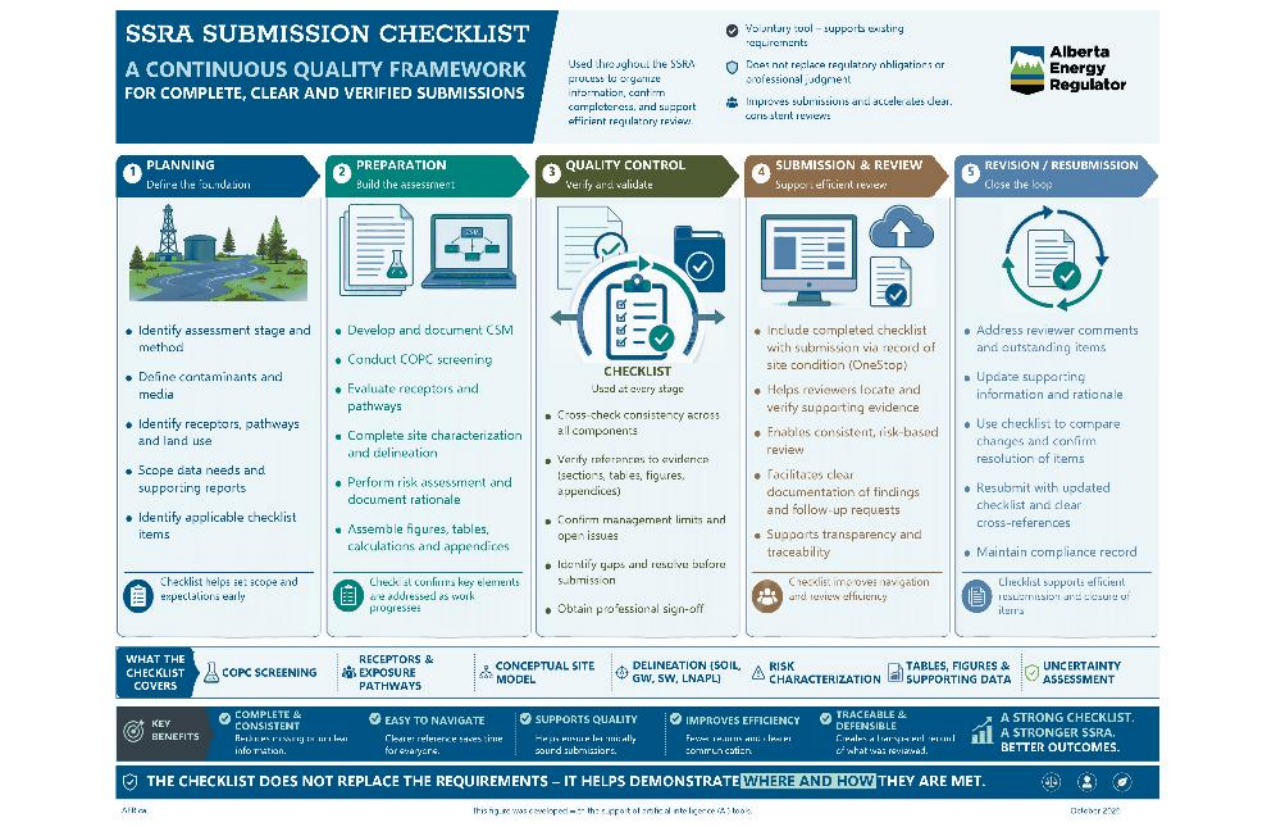
Points reviewers to the report sections, figures, tables, appendices, and supporting information.

A completed checklist organizes the evidence. It does not replace the evidence or demonstrate technical adequacy.

Source: AER SSRA Submission Checklist form and Bulletin 2025-33.

SSRA CHECKLIST

Quality control is continuous across all five stages



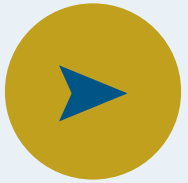
SSRA CHECKLIST

One structure helps both sides

Completeness, navigation, and traceability improved for everyone

PROPONENTS + CONSULTANTS

- Earlier identification of gaps
- Stronger internal quality control
- Clearer evidence and associated references
- Faster response to review comments



REGULATORY REVIEW

- Rapid screening for completion
- A consistent review structure
- Traceable issues and follow-ups
- Focus on higher-priority issues

WITHOUT A CHECKLIST: WHAT REGULATORY REVIEW LOOKS LIKE

- Submissions arrive in different structures, so screening starts from scratch
- Evidence can be hard to locate and trace, potentially leading to repeated information requests
- Review effort shifts from technical risk to chasing missing material leading to extended timelines

Shared result: a more complete, transparent, and independently verifiable SSRA

Source: SSRA submissions to the AER.

SSRA CHECKLIST

Checklist completion **does not equal** technical acceptability

What the checklist does not do

GUARANTEE ACCEPTANCE

Technical evidence must still support the conclusions.

REPLACE REQUIREMENTS

Applicable legislation, standards, and guidance continue to govern.

REPLACE JUDGMENT

Qualified professional evaluation remains essential.

CORRECT TECHNICAL GAPS

Missing data, incomplete delineation, or unsupported exclusions remain unresolved.

Source: AER Bulletin 2025-33 — the checklist is a voluntary tool.

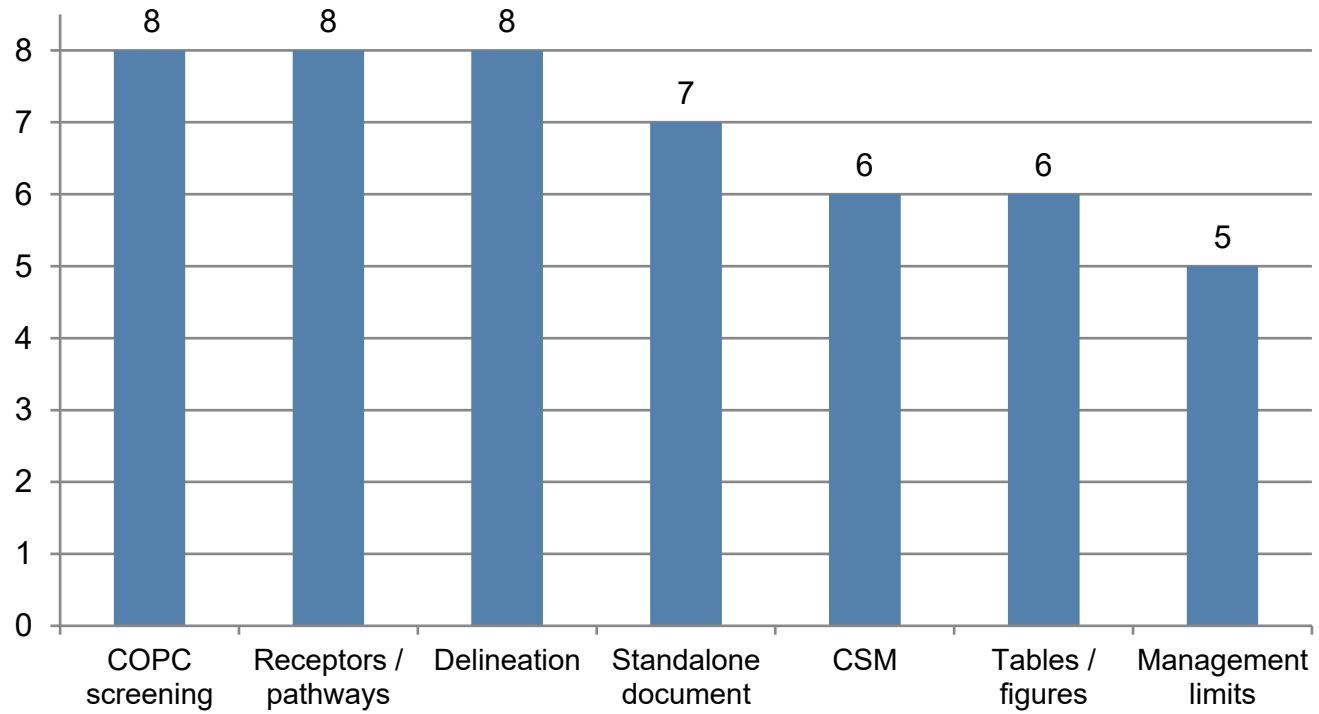


What the review found

COMMON ISSUES

COMMON ISSUES

Three issues in every review



8 of 8

reviews identified the same three common issues — COPC screening, receptors/pathways, and delineation.

WHAT IT MEANS

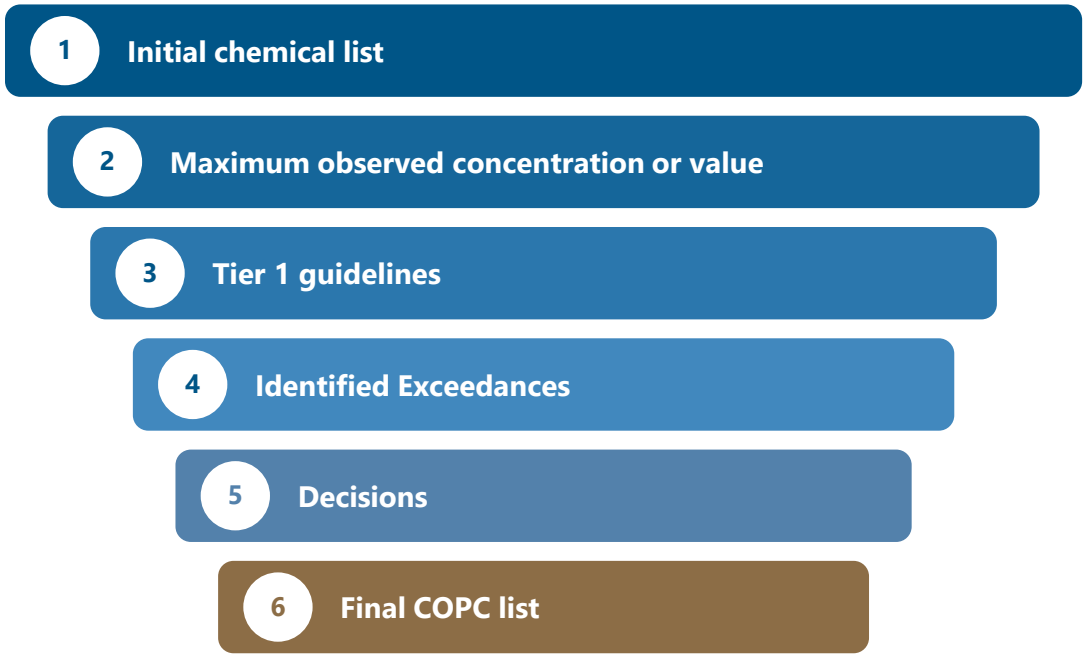
Frequency shows how often substantive comments arose — not severity.

Source: eight detailed SSRA submission reviews since the checklist was published — substantive comments per issue.

COMMON ISSUES

What is expected in COPC screening

Make the trail easy to follow



Screening narrows the list — show every step of the narrowing

COMMON ISSUES

Initial chemical list or guideline values not shown; Tier 2 or pathway-specific values used for initial screening; contaminants excluded without evidence; inconsistent screening depths.

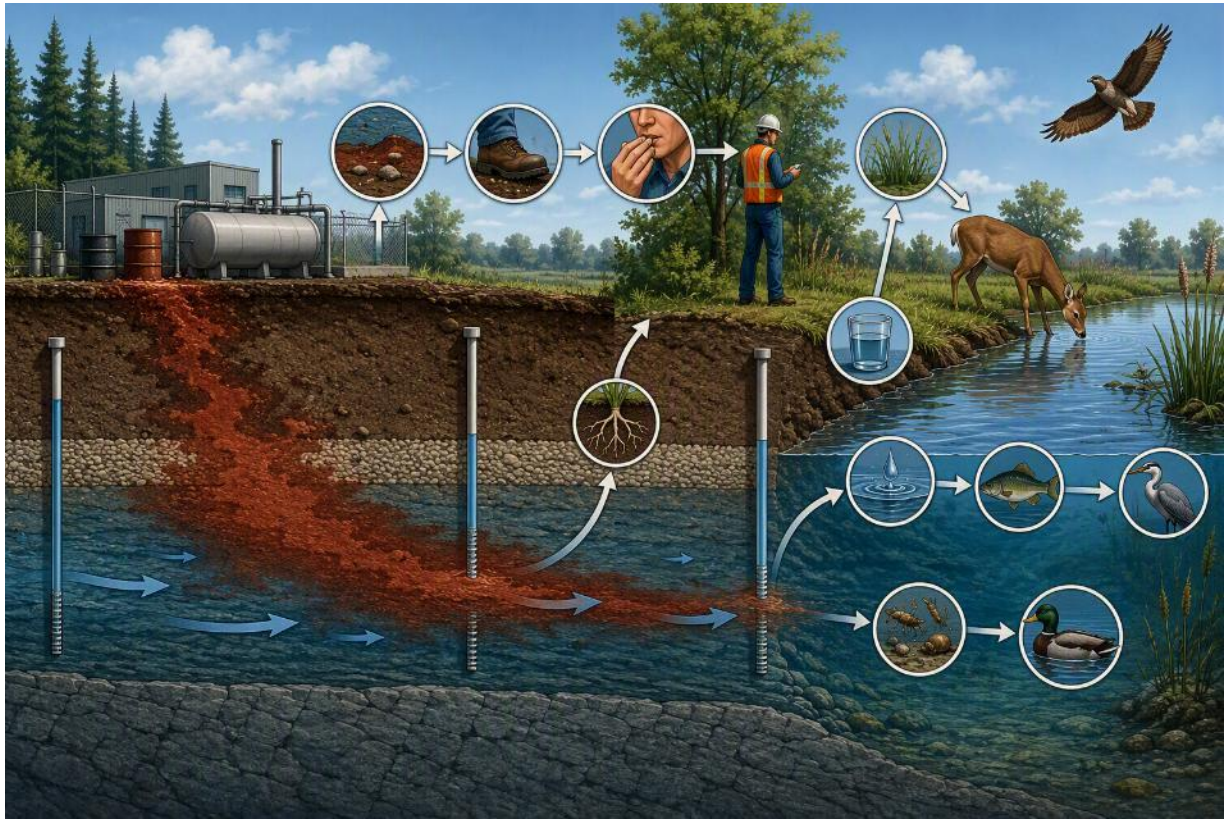
ACCEPTABLE APPROACH

A reviewer can reproduce how the submission moved from the initial chemical list to the final COPC list carried forward.

Source: Health Canada, 2024. Federal Contaminated Site Risk Assessment in Canada: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), Version 4.0.

COMMON ISSUES

Pathway and receptor identification need site evidence



Example CSM was generated by AI for illustrative purposes only; not an actual site or technical model.

COMMON ISSUE

Tier 1 protection objectives treated as pathways, or omission of receptors and pathways.

ACCEPTABLE APPROACH

Connect sources, transport media, exposure routes, receptors, and land use. See Table 1, SSRA Guide (GoA, 2022)

CSM CHECK

Reconcile the CSM with screening, delineation, and risk calculations to achieve one coherent model.

COMMON ISSUES

Delineation – Extent of impacts and where they stop



Figure generated by AI for illustrative purposes only; not an actual site or technical model.

WHAT A REVIEWER LOOKS FOR

1. Outermost exceedance found
2. Compliance in each direction
3. Vertical confirmation
4. Chemical, medium, and depth
5. Gaps in delineation clearly identified

Delineation must be verifiable from detailed figures, not from text and data tables alone.

IF THERE ARE GAPS

Identify and address them clearly.

- Small — dealt with using conservative and appropriate assumptions, or
- Larger — requiring further work to resolve.

COMMON ISSUES

Figures and tables are evidence — Clearly label them

Unlabeled or confusing figures are a recurring common issue in their own right

WHAT WAS MISSING

Legends, scales, chemical and depth labels along with sampling locations were often absent.

Watch for: unlabelled cross-sections

WHY IT MATTERS

Delineation and compliance cannot be confirmed from a figure a reviewer cannot understand.

Watch for: figures that assert, not show

WHAT IS EXPECTED

Readable scale, legends, chemicals, depths, locations, and results shown against applicable guidelines.

Watch for: readable and understandable figures

A figure a reviewer cannot read is evidence a reviewer cannot use.

COMMON ISSUES

The SSRA must stand on its own

Five questions the submission should answer without a second report

WHAT THE REVIEWER ASKS

1 Can the COPC list be reproduced?

2 Can every pathway decision be verified?

3 Can delineation be confirmed from figures?

4 Are site-specific values and assumptions provided?

5 Can conclusions be understood without another report?

WHAT BELONGS IN THE SSRA SUBMISSION

Evidence central to screening, pathway decisions, delineation, and conclusions — included or clearly summarized, not referenced elsewhere.

WHY IT IS NECESSARY

Core evidence held in scattered or unavailable reports cannot be reviewed. A reviewer should not have to rebuild the assessment to review it.

COMMON ISSUES

When site-specific remedial objectives (SSROs) apply

An SSRO sets allowable concentrations — it does not relax a management limit

WHEN SSROs APPLY

Where the SSRA sets remediation requirements, using the same protection endpoints as Tier 1.

Show the back-calculation

WHEN THEY DO NOT

Not for initial delineation unless derived by pathway exclusion, and never in place of a management limit.

Not every SSRA needs SSROs

WHERE TO FIND MORE

SSRA Guide (GoA, 2022) section 7; Alberta Tier 1 and Tier 2 Guidelines; AER SSRA FAQ.

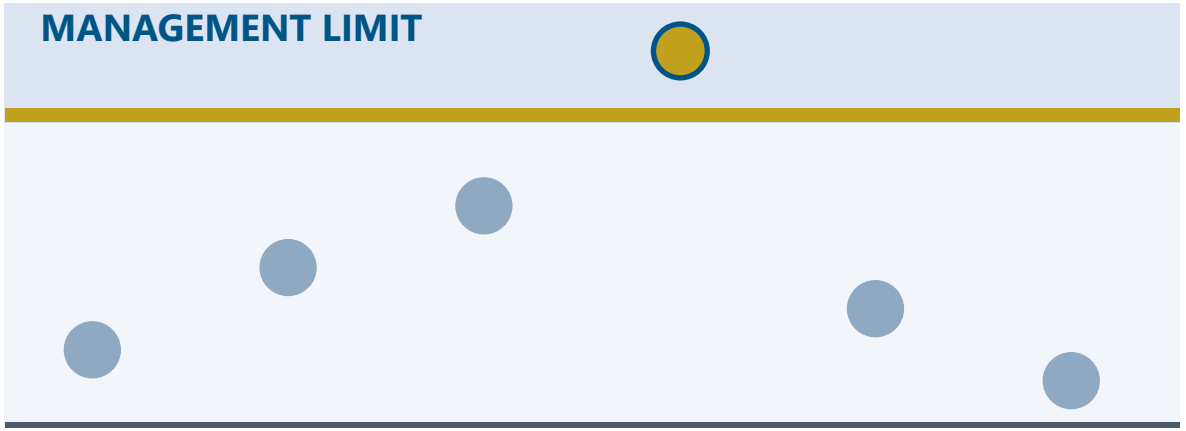
Also: RMP and Exposure Control guides

Closure requires no ongoing risk management or land use restriction.

COMMON ISSUES

Management limits are not adjustable

Management limits apply as published — they are not adjusted site by site



Example concentration distribution — one maximum value above the limit

KEY POINT

Management limits cannot be modified or eliminated.

REVIEW CHECK

Identify exceedances early and address the implications before developing closure conclusions.

QUALITY CONTROLS

Seven checks that make a submission ready

Review before the SSRA leaves your desk — all present within the SSRA checklist

- ✓ Complete chemical screening
- ✓ Confirm land use and receptors
- ✓ Verify pathways and exclusions
- ✓ Reconcile the CSM
- ✓ Confirm lateral and vertical delineation
- ✓ Check management limits
- ✓ Complete document and figure QC
- → Submission-ready SSRA

A submission-ready SSRA is complete, consistent, understandable, and traceable — also reviewable without a second report.

Source: AER SSRA Submission Checklist form.

CLOSING

A strong checklist supports a strong, defensible SSRA

Key takeaways to carry into your next submission

If necessary, consult the appropriate regulator early in the process.

Reproducibility is the standard — reach the final COPC list from the report alone.

Show delineation in detailed figures. Text and data tables alone do not confirm it.

State your gaps. An undisclosed limitation undermines everything above it.

A management limit is not adjustable — it cannot be modified or eliminated.

The checklist organizes and locates the evidence.

CLOSING

Key Take Aways

Use the checklist to organize the evidence.

Use the SSRA to demonstrate the technical case.

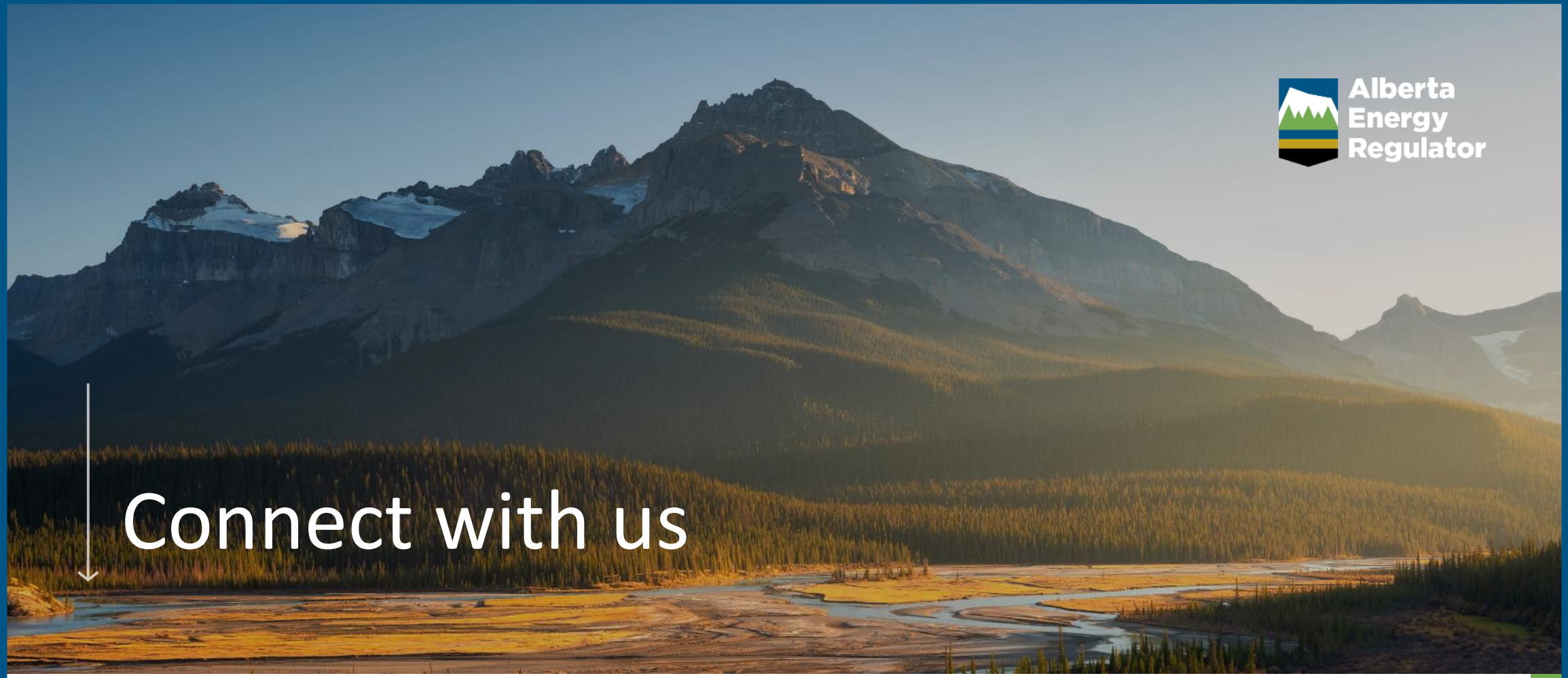
The submission must stand on its own — a reviewer shouldn't have to rebuild the assessment to review it.

Completion of the checklist is not technical acceptability.



Questions?

Contact:
CSUSubmissions@aer.ca · SSRA Submission Checklist · Bulletin 2025-33



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