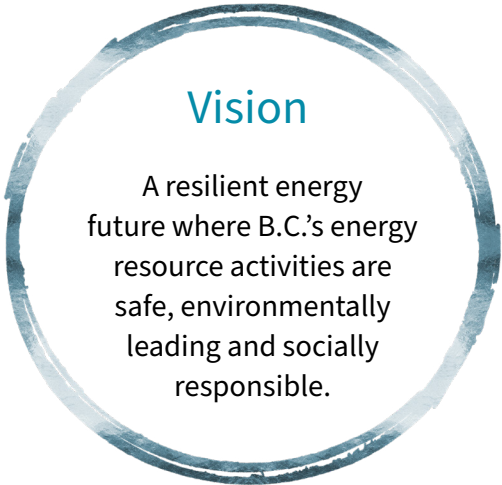


# Pipelines and Facilities Integrity Management Program (IMP) Audit Summary

Annual Report 2024



# Vision, Mission and Values



## Mission

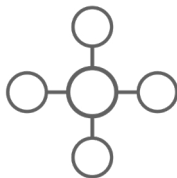
We regulate the life cycle of energy resource activities in B.C., from site planning to restoration, ensuring activities are undertaken in a manner that:



Protects public safety and the environment



Supports reconciliation with Indigenous peoples and the transition to low-carbon energy



Conserves energy resources



Fosters a sound economy and social well-being

## Values

**Respect** is our commitment to listen, accept and value diverse perspectives.

**Integrity** is our commitment to the principles of fairness, trust and accountability.

**Transparency** is our commitment to be open and provide clear information on decisions, operations and actions.

**Innovation** is our commitment to learn, adapt, act and grow.

**Responsiveness** is our commitment to listening and timely and meaningful action.

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Information, assessments and discussions  
presented in this report are by the engineering  
professionals of the BCER IMP Audit Team.

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# Role of the BC Energy Regulator

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The [British Columbia Energy Regulator](#) (BCER) oversees the full life cycle of energy resource activities in B.C., from site planning to final restoration. Our role includes the regulation of natural gas, oil, hydrogen, ammonia, methanol and renewable energy sources such as geothermal, solar and wind power.

Our authority is established by way of the [Energy Resource Activities Act](#) (ERAA) and additional legislation related to heritage conservation, roads, land and water use, forestry, and other natural resources. We work to ensure industry compliance with provincial legislation to protect public safety and the environment, support reconciliation with Indigenous peoples, conserve energy resources and foster a sound economy and social well-being.

Our employees work out of seven locations to ensure our presence near energy resource activities: Fort Nelson, Fort St. John, Dawson Creek, Terrace, Prince George, Kelowna and Victoria.



We acknowledge  
and respect the many  
First Nations, each with  
unique cultures, languages,  
legal traditions and  
relationships to the land  
and water, on whose  
territories the BCER's  
work spans.



BC Energy Regulator Office Locations Throughout B.C.



With over 25 years' dedicated service, we're committed to ensuring safe and responsible energy resource management for British Columbia.

# Executive Summary

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To ensure public safety, environmental protection and operational reliability, permit holders regulated by the [BC Energy Regulator](#) (BCER) are required to establish Integrity Management Programs (IMPs) to manage their pipeline and facility assets through their entire life cycle by anticipating and identifying hazards and assessing and managing the risk.

The BCER audits pipeline and facility permit holders on a five-year cycle to assess if permit holders' IMPs comply with regulatory requirements outlined in the [Pipeline Regulation](#), [Drilling and Production Regulation](#), [Oil and Gas Processing Facility Regulation](#) and [Liquefied Natural Gas Facility Regulation](#). The [Compliance Assurance Protocol for Integrity Management Programs for Pipelines](#) and the [Compliance Assurance Protocol for Integrity Management Programs for Facilities](#) provide guidance to permit holders including the BCER's expectations on meeting these regulatory requirements.

In 2024, the BCER audited 21 permit holders' IMPs, consisting of 11 pipeline and 10 facility audits. All audits were conducted remotely, requiring auditees to submit

audit workbooks along with relevant records and documents before a virtual audit meeting. The audit process concludes with the issuance of final audit reports which include audit findings and analysis.

## Key audit findings for pipeline IMPs pertained to:

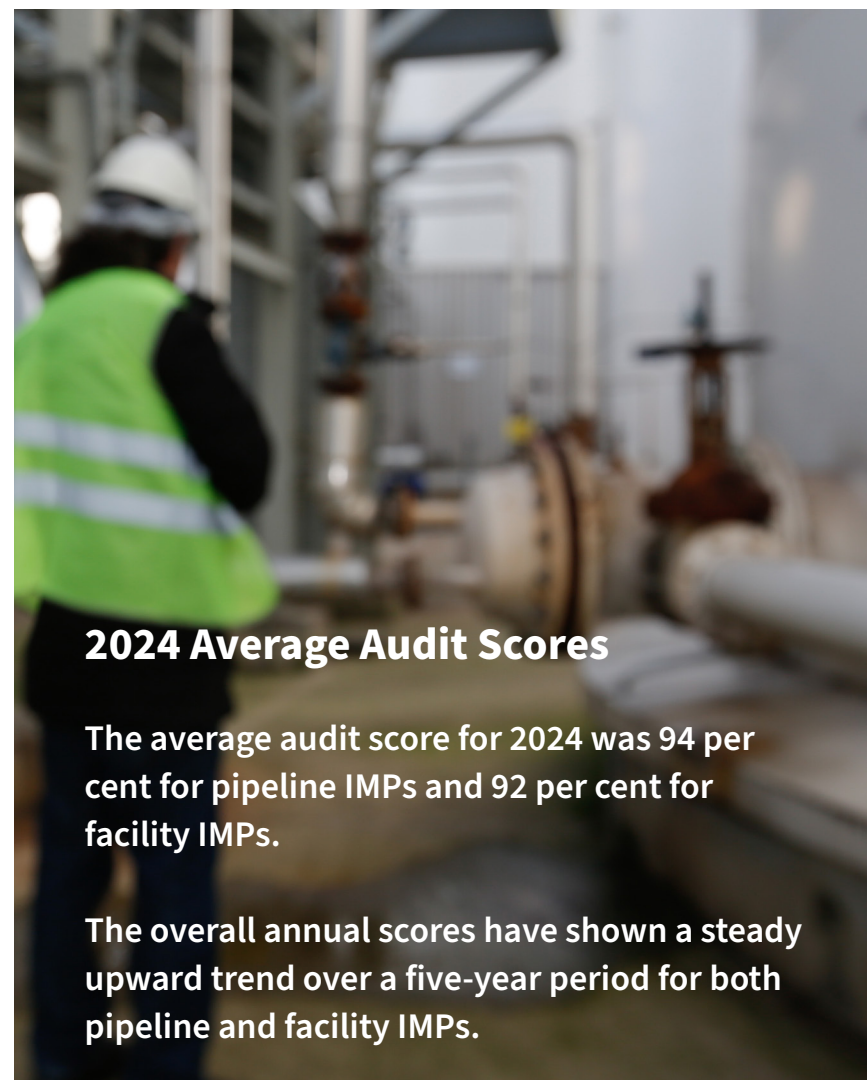
- **Risk assessment:** Update pipeline inventory, identify all potential hazards, assess the risks for all pipelines and continuously reassess the risks.
- **Inspection, maintenance and monitoring (IMM):** Establish processes to plan, manage and track IMM activities, particularly those performed by third-party contractors. Deactivate and abandon inactive pipelines within the timelines required by the Pipeline Regulation and regularly update relevant standard operating procedures.
- **Management of change (MOC):** Establish a process for handling overdue MOCs.
- **Management review:** Implement a formal management review process at defined intervals.

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### Key audit findings for facility IMPs pertained to:

- **Risk assessment:** Develop and implement risk assessments at facility and equipment levels for all facets of facilities and revalidate process hazard analyses (PHAs) for gas plants with the objective of identifying and addressing risk on a continual basis.
- **Inspection, maintenance and monitoring (IMM):** Plan and manage IMM activities for all equipment including flare stacks, align regular scheduled maintenance with IMP activities and formalize standard operating procedures for startup and shutdown processes.
- **General:** Include all pressure and non-pressure equipment, such as piping, pressure vessels and pressure safety valves, tanks, rotating equipment, flare systems, instrumentation and controls in IMP.
- **Management of change (MOC):** Manage overdue MOCs through a structured process.
- **Management review:** Establish a systematic process for performing management review at defined intervals.

The audit findings are managed to resolution through the BCER's Corrective Action Plan (CAP) oversight process, described on page 16.



### 2024 Average Audit Scores

The average audit score for 2024 was 94 per cent for pipeline IMPs and 92 per cent for facility IMPs.

The overall annual scores have shown a steady upward trend over a five-year period for both pipeline and facility IMPs.

# Introduction

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Integrity Management Programs (IMPs) for pipelines have been a regulatory requirement in British Columbia since 1999 when they were first introduced in [CSA Z662](#), the national standard for pipeline systems. Facility IMPs have been a regulatory requirement in B.C. since 2018.

IMPs provide a structured approach for assuring safe and reliable operation of pipeline and facility infrastructure. Implementing IMPs enables permit holders to anticipate hazards and analyze and manage risks to safety and the environment through the entire life cycle of pipelines and facilities including planning, design, procurement, construction, operation, maintenance and decommissioning.

The BCER has audited IMPs for pipelines since 2011 and for facilities since 2018. Damage prevention programs were integrated into the pipeline IMP audits in 2021 and safety culture insights were drawn from IMP audits starting in 2020. The audits evaluate compliance with regulatory requirements outlined in the [Pipeline Regulation](#), [Drilling and Production Regulation](#), [Oil and Gas Processing Facility](#)

[Regulation](#) and [Liquefied Natural Gas Facility Regulation](#).

The permit holders' IMPs are typically audited every five years, with selection criteria, scope and expectation details available in the [Compliance Assurance Protocol for Integrity Management Programs for Pipelines](#) and the [Compliance Assurance Protocol for Integrity Management Programs for Facilities](#).

Each year, the selection and planning of IMP audits are determined based on the interval since the last audit, the BCER's inherent risk assessment of permit holders' pipeline and facility infrastructure and other relevant criteria.

This report incorporates a summary and analysis of the pipeline and facility IMP audit results for 2024. The BCER performed 11 pipeline and 10 facility IMP audits in 2024. The scale of a pipeline and facility IMP audit was reduced for a permit holder with limited permitted assets. The results of these limited scope audits are not included in this report.

For permit holders with prior audit history, the audit scope was modified by focusing

on specific IMP components to conduct an in-depth review of priority areas. The IMP components for focused audits were determined by factors such as previous audit results, compliance history, scope of operations, industry compliance trends and risks associated with a permit holder's assets.

In 2024, the BCER performed all audits remotely. The remote auditing process includes completion of an audit workbook along with the submission of relevant documents and records submissions by the auditees. The BCER then reviews the submission, followed by an online audit meeting to obtain clarification on the program and submission documents and to present preliminary findings.

The individual audit reports, which outline the findings, are issued to conclude the audit process. The audited permit holders are required to develop and implement Corrective Action Plans (CAPs) to address any identified gaps and non-compliances. As part of the CAP oversight management process, the BCER reviews and approves CAPs and monitors implementation of corrective actions.



# Audit Results and Analysis

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Typically, IMP audits undertaken by the BCER include 18 IMP components:

## PLAN:

1. General
2. Policy and leadership commitment
3. Goals and objectives
4. Planning
5. Risk assessment

## DO:

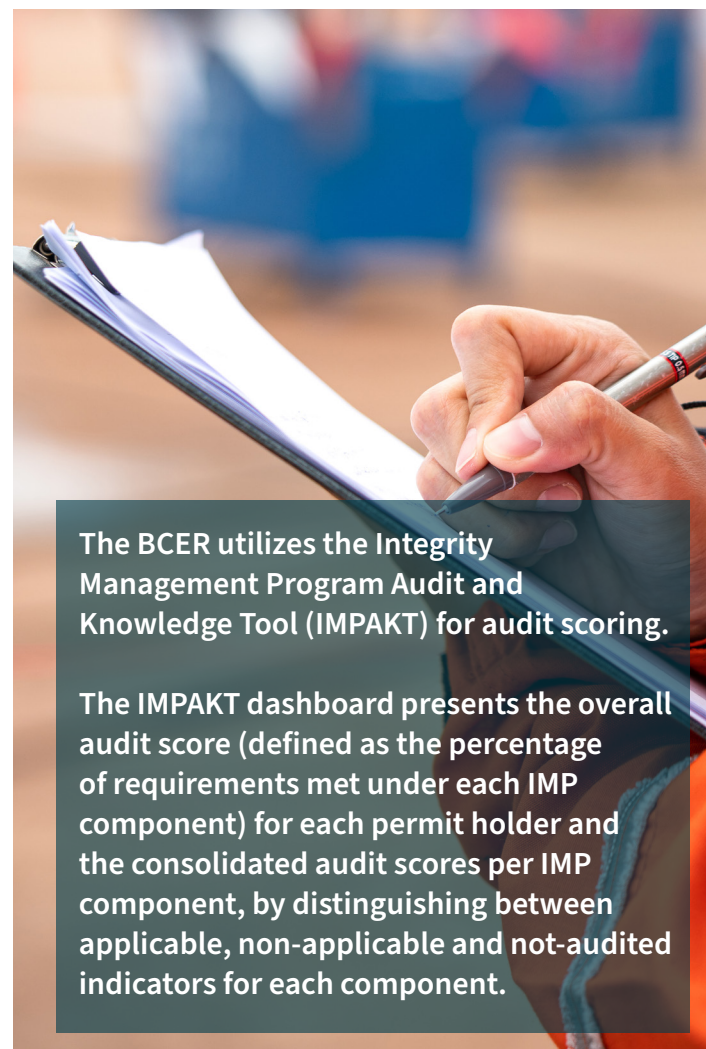
6. Organizational roles and responsibilities
7. Communication
8. Competency and training
9. Management of change (MOC)
10. Information management - document and record control
11. Operational control
12. Inspection, maintenance and monitoring (IMM)
13. Evaluation of IMM results
14. Modification and repair

## CHECK:

15. Incident reporting, investigation and learning
16. Audit
17. Performance measurement and Key Performance Indicators (KPI) analysis

## ACT:

18. Management review (MR)



The BCER utilizes the Integrity Management Program Audit and Knowledge Tool (IMPAKT) for audit scoring.

The IMPAKT dashboard presents the overall audit score (defined as the percentage of requirements met under each IMP component) for each permit holder and the consolidated audit scores per IMP component, by distinguishing between applicable, non-applicable and not-audited indicators for each component.

# Permit Holder Audit Performance

## Audit Score

The BCER uses the Integrity Management Program Audit and Knowledge Tool (IMPAKT) for scoring audits.

The average audit score is calculated as the percentage of requirements met under each IMP component. The average audit scores vary based on the number and type of permit holders audited. The performance of permit holders in 2024 for pipelines and facilities audits were relatively similar. The pipeline IMP audits had an average score of 94 per cent, while the facility IMP audits averaged 92 per cent.

For pipeline IMPs, the audit score ranged from 77 to 100 per cent for 11 audited permit holders (Figure 1).

For facility IMPs, the audit score ranged from 61 to 100 per cent for 10 audited permit holders (Figure 2).

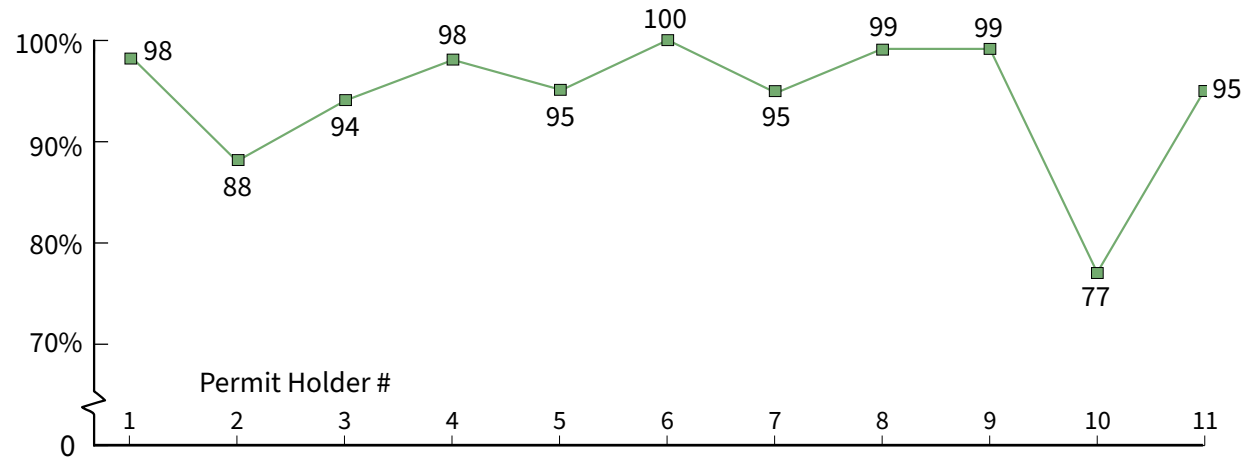


Figure 1: Pipeline IMP Permit Holder Audit Score

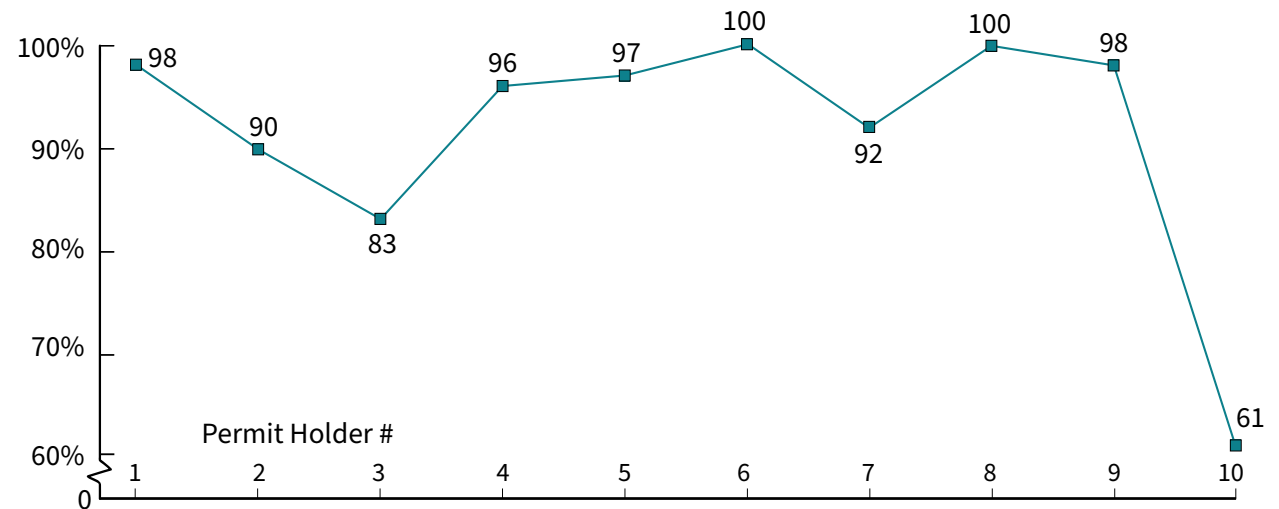


Figure 2: Facility IMP Permit Holder Audit Score

## Performance Metrics

IMP audit performance is categorized using a conservative set of criteria:

<div></div>	Strong Performance	95-100 per cent
<div></div>	Moderate Performance	86-94 per cent
<div></div>	Weak Performance	<86 per cent

Figures 3 and 4 present the audit results using the above-mentioned performance criteria for pipeline and facility IMP audits. For pipelines, 73 per cent of the audits achieved a strong performance, while 60 per cent of facility audits rated high. Only 9 per cent of performance was rated weak for pipelines, whereas facility performance was evenly distributed at 20 per cent moderate performance and 20 per cent weak performance. Overall, pipeline IMP audits showed higher percentages of strong performance compared to the facility audits, although both audits reflected a mix of performance levels.

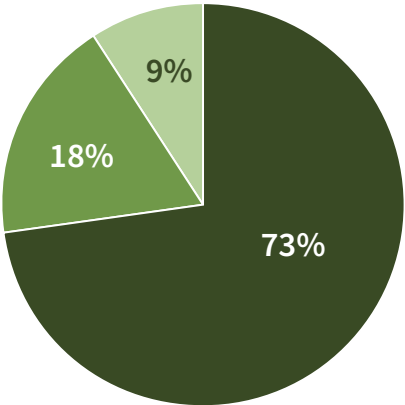


Figure 3: Pipeline IMP Audit Performance

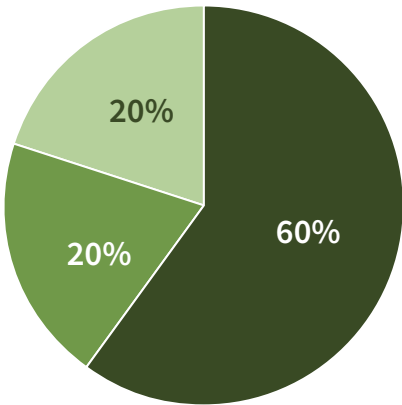


Figure 4: Facility IMP Audit Performance

# Component-Based Performance

In 2024, five pipeline IMP audits were comprehensive audits covering all IMP components (full audit). The other six audits focused on specific components, selected based on past audit results, industry compliance trends and the scope of permit holders’ operations. For facility IMP audits, seven of the ten audits included an in-depth review of all (18) IMP components, while the remaining three audits targeted select IMP components.

Focused audits were specifically conducted for permit holders with a track record of strong audit scores in prior IMP audits. This approach allowed for more thorough evaluations of smaller sets of IMP components where broad-based compliance had already been demonstrated.

## Pipeline IMP - Full Audits

The component analysis for pipeline audits showed that while permit holders demonstrated strong performance in 53 per cent of components, 24 per cent of components had weak and moderate performance. Although the majority of components performed strongly, performance could be improved particularly in management review (MR), audit and risk assessment (Figure 5).

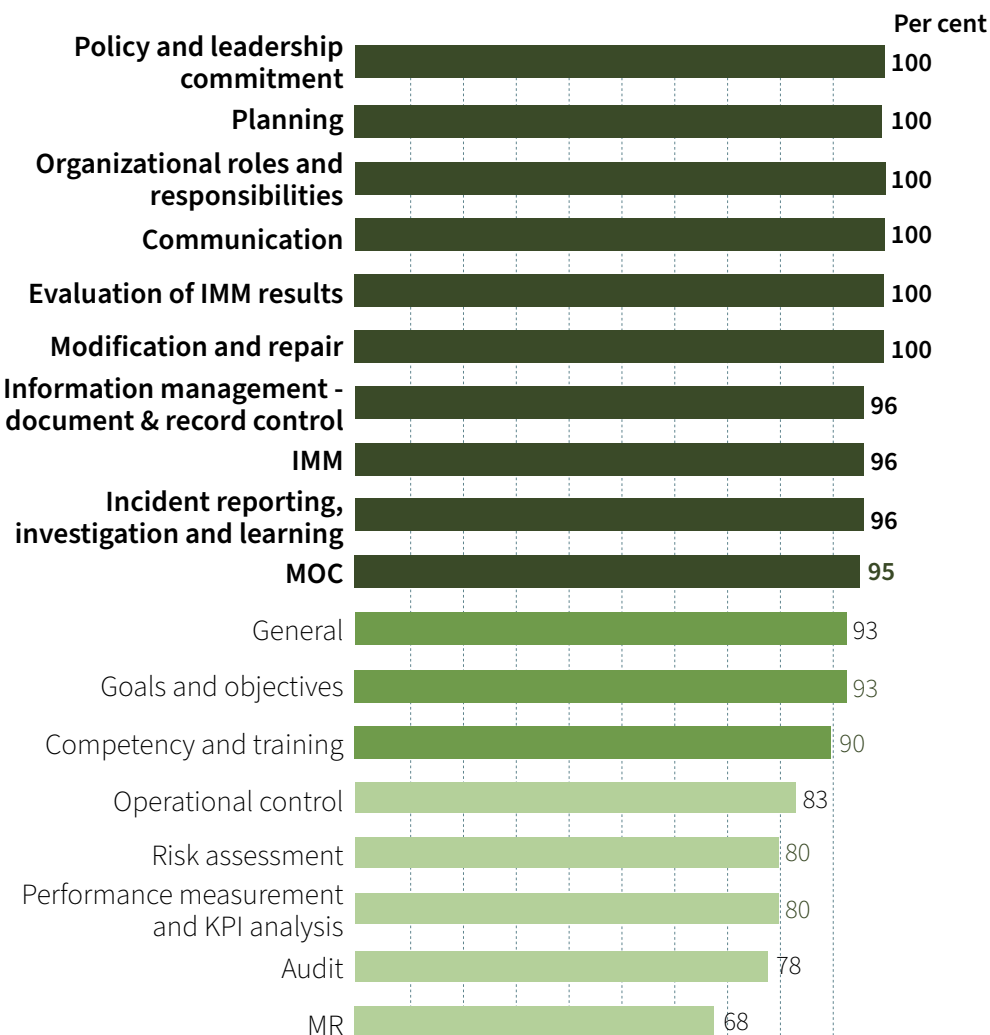


Figure 5: Pipeline IMP Average Audit Score by Component



## Pipeline IMP - Focused Audits

The focused IMP pipeline audits examined the following IMP components:

- Management of change (MOC)
- Evaluation of IMM results
- Incident reporting, investigation and learning
- Performance measurement and Key Performance Indicator (KPI) analysis
- Inspection, maintenance and monitoring (IMM)
- Risk assessment
- Operational control
- General
- Audit
- Management review (MR)

Focused audits showed high levels of performance, with the majority (70 per cent) meeting strong performance criteria. Management review was the only component classified as weak, with the rest falling into moderate or strong performance categories (Figure 6).

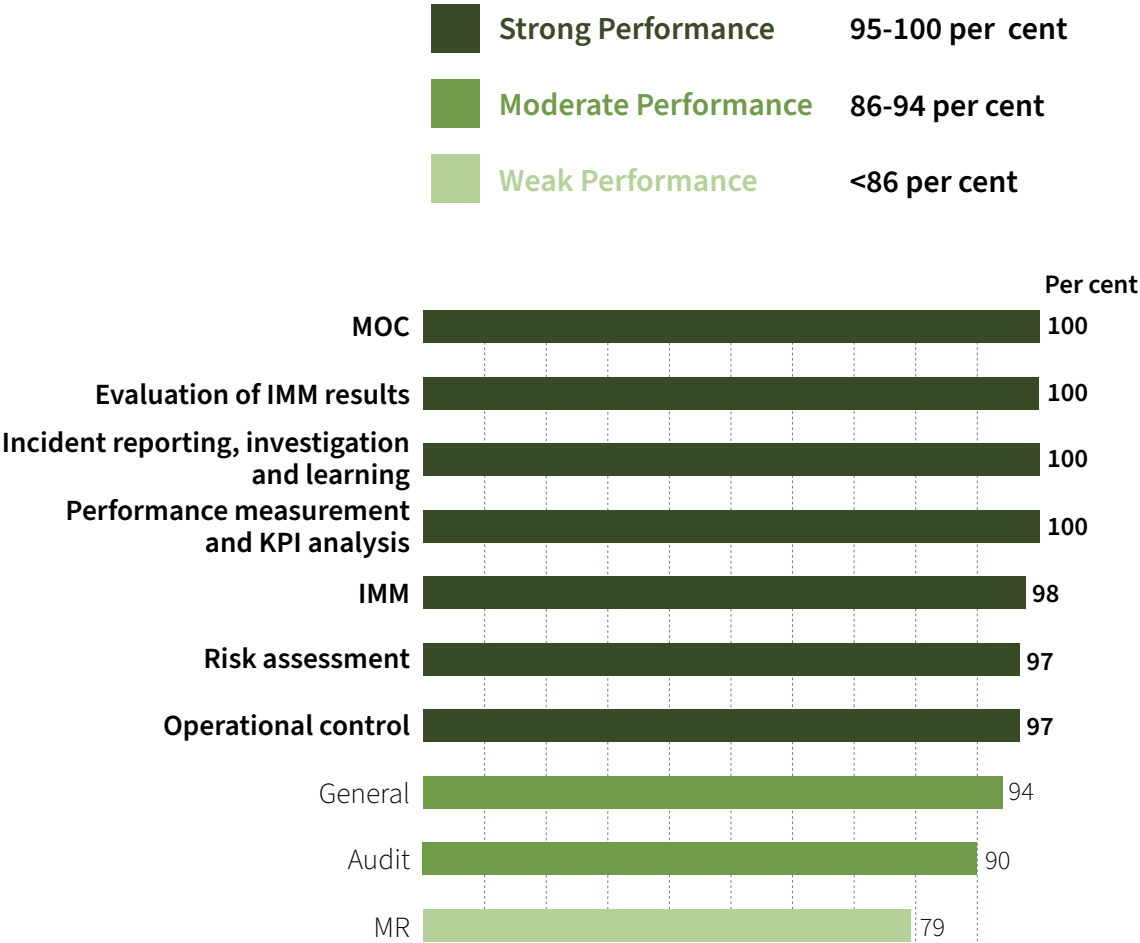


Figure 6: Pipeline IMP Average Audit Score by Component for Focused Audits

## Facility IMP - Full Audits

The component analysis for facility audits showed while permit holders demonstrated strong performance in 44 per cent of components, 22 per cent of components had weak performance.

Risk assessment and performance measurement and KPI analysis were the underperforming components at 76 and 77 per cent respectively, followed by management review (MR) at 79 per cent and general at 81 per cent (Figure 7).

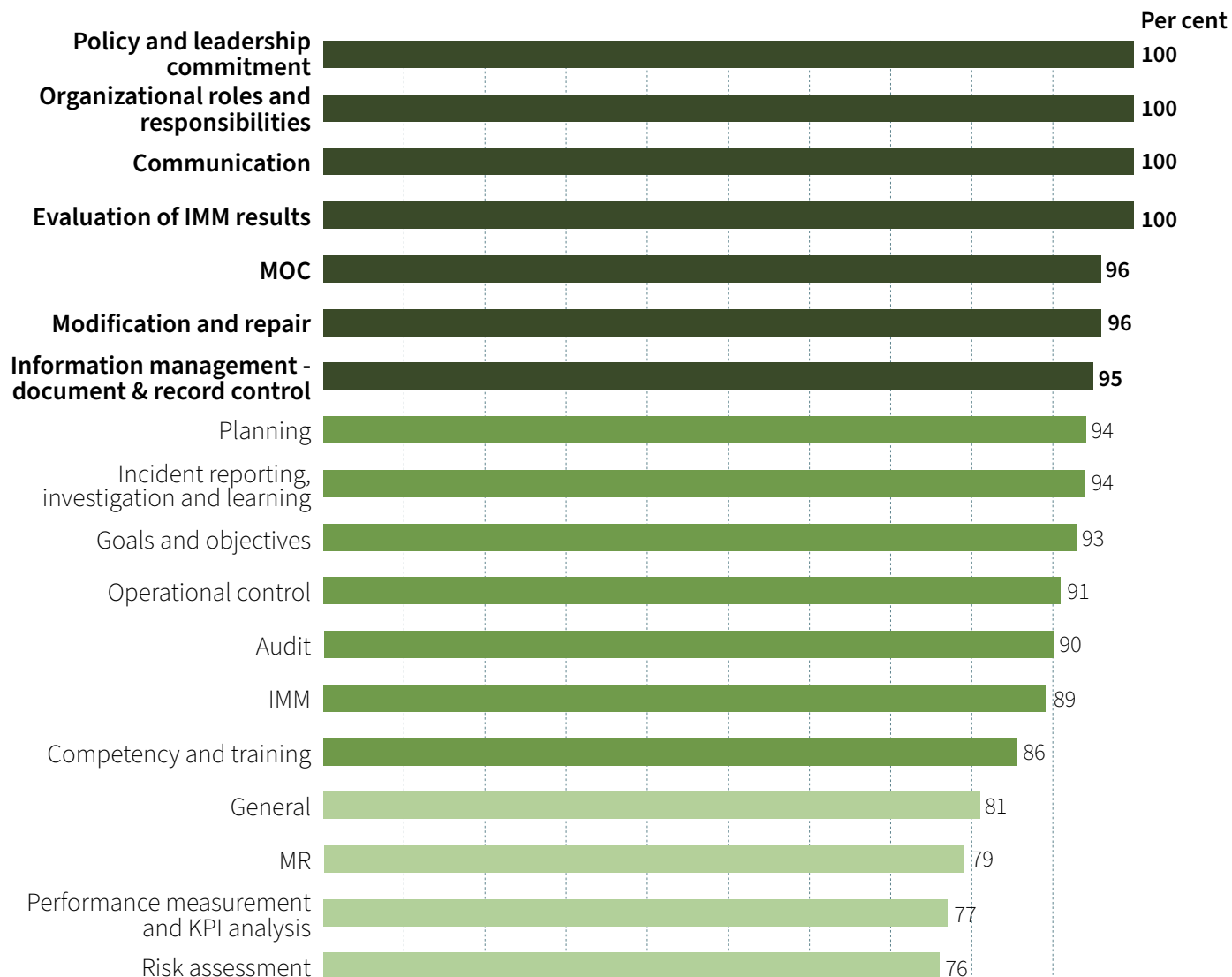


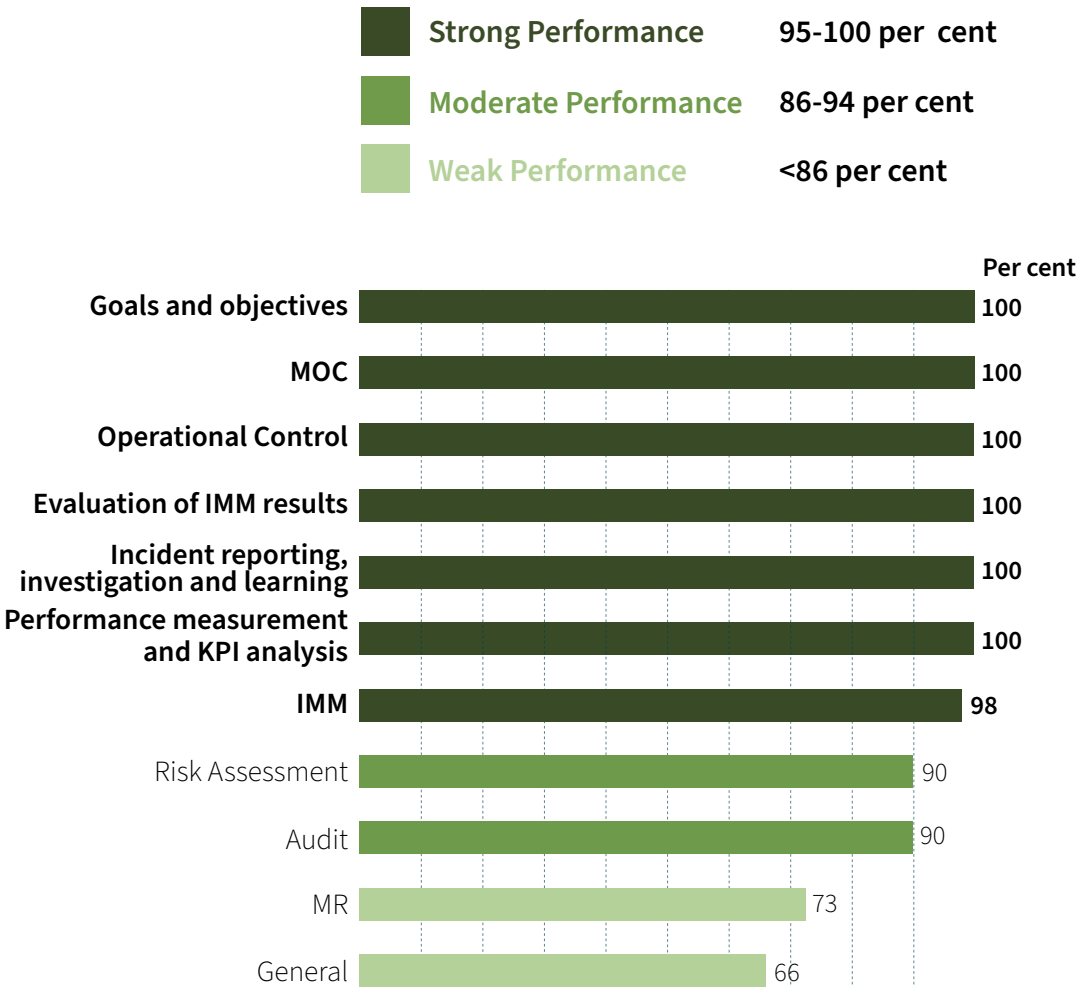
Figure 7: Facility IMP Average Audit Score by Component

## Facility IMP - Focused Audits

The focused IMP facility audits examined the following IMP components:

- Goals and objectives
- Management of Change (MOC)
- Operational control
- Evaluation of IMM results
- Incident reporting, investigation and learning
- Performance measurement and Key Performance Indicator (KPI) analysis
- Inspection, Maintenance and Monitoring (IMM)
- Risk assessment
- Audit
- Management review (MR)
- General

Within the focused audits (Figure 8), component scores were predominantly on the higher end (over 60 per cent). General and management review had the weakest performance with the lowest scores of 66 and 73 per cent, respectively.



**Figure 8: Facility IMP Average Audit Score by Component for Focused Audits**

# Audit Findings Oversight & Resolution

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## Corrective Action Plans

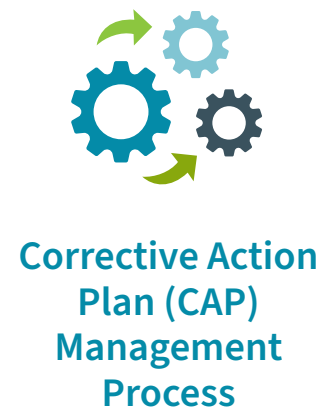
Areas in need of improvement (non-compliance) identified during an audit are addressed through audit findings. The oversight and resolution of audit findings are managed through a structured Corrective Action Plan (CAP) management process.

The BCER requires audited permit holders to submit a CAP for each audit finding within 30 days of the final audit report, outlining corrective actions, responsibilities and timelines for implementing those actions.

Audit findings and associated CAPs are prioritized using Priority Matrix (Table 1 on page 17) as high, medium and low. The matrix is based on the significance, relevance and relation of the IMP components to the overall integrity of the pipelines and facilities.

Oversight of CAPs follow these timelines and evidence of completion:

- **High priority CAPs:**  
Bimonthly progress updates, completion evidence by agreed timeline.
- **Medium priority CAPs:**  
Evidence of action completion by agreed timeline, with regular updates for longer timelines.
- **Low priority CAPs:**  
Completion notification by agreed timeline.



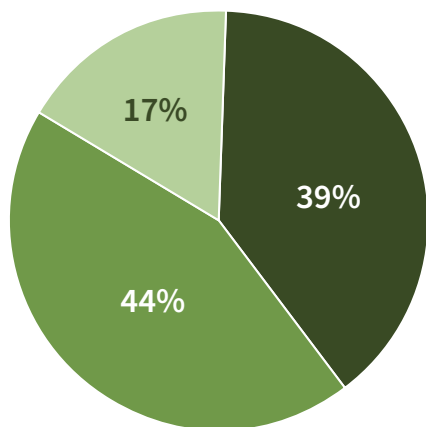
Through the CAP management process, permit holders must develop and implement plans to address any gaps in meeting the requirements of the IMP.



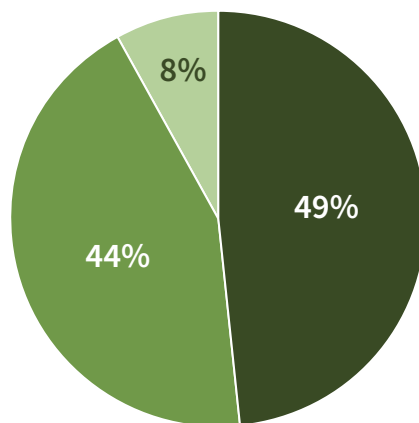
## CAP Prioritization Matrix

IMP COMPONENTS / TYPES OF FINDINGS	SCOPE	PROCESS	EXECUTION	RECORDS/ DATA	DOCUMENTATION	ADMINISTRATIVE
	1	2	3	4	5	6
General	HIGH	MED	MED	LOW	LOW	LOW
Policy and leadership commitment	MED	MED	MED	LOW	LOW	LOW
Goals and objectives	MED	MED	MED	LOW	LOW	LOW
Planning	LOW	LOW	LOW	LOW	LOW	LOW
Risk assessment	HIGH	HIGH	HIGH	HIGH	MED	LOW
Organizational roles and responsibilities	MED	MED	MED	LOW	LOW	LOW
Communication	MED	MED	MED	LOW	LOW	LOW
Competency and training	HIGH	HIGH	HIGH	MED	MED	LOW
MOC	HIGH	HIGH	HIGH	MED	MED	LOW
Information mgmt - document and record control	LOW	LOW	LOW	LOW	LOW	LOW
Operational control	MED	MED	MED	MED	MED	LOW
IMM	HIGH	HIGH	HIGH	HIGH	MED	LOW
Evaluation of IMM activities	HIGH	HIGH	HIGH	HIGH	MED	LOW
Modification and repair	MED	MED	MED	MED	MED	LOW
Incident reporting, investigation and learning	HIGH	HIGH	HIGH	HIGH	MED	LOW
Audit	MED	MED	MED	LOW	LOW	LOW
Performance measurement and KPI analysis	HIGH	HIGH	HIGH	MED	MED	LOW
MR	MED	MED	MED	LOW	LOW	LOW

Table 1: CAP Prioritization Matrix



**Figure 9 : Pipeline IMP Corrective Action Plans Prioritization**



**Figure 10: Facility IMP Corrective Action Plans Prioritization**



The prioritization of the 36 audit findings/CAPs associated with 11 pipeline IMP audits completed in 2024 is presented in Figure 9.

The prioritization of 39 audit findings/CAPs associated with 10 facility IMP audits completed in 2024 is presented in Figure 10.

All CAPs and proposed actions are carefully reviewed and approved by the BCER. Oversight of CAPs is maintained until the permit holder completely addresses all findings.

# Key Areas Warranting Improvement for the Audited Permit Holders' IMPs

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## Pipeline IMPs:

Insights gathered from the IMP component analysis and CAP/finding prioritization identified the key areas requiring further improvement:

### IMM:

- Develop and implement an IMM plan, including retention of records particularly for activities performed by third-party contractors, such as cathodic protection surveys and aerial inspections.
- Deactivate and abandon inactive pipelines as required by Pipeline Regulation and address permitting discrepancies.
- Revise standard operating procedures for conducting IMM activities for pipelines.

### Risk assessment:

- Updating pipeline inventory.
- Establish both unmitigated and mitigated risk assessments for all pipelines.
- Continuously reassess and revalidate risk to ensure new or previously unconsidered hazards are assessed before they can potentially impact safety or the environment.

### Management review:

- Implement a formal management review process at defined intervals for evaluating IMP performance and making data-driven decisions.

### MOC

- Develop a process for managing overdue MOCs effectively.



Pipeline and facility IMM management, along with risk assessment and MOC, were high priority gaps in the audits.

# Key Areas Warranting Improvement for the Audited Permit Holders' IMPs

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## Facility IMPs:

The main areas requiring further improvement identified through IMP component analysis and the CAP/finding prioritization process:

### Risk assessment:

- Create and implement a comprehensive facility risk assessment process that includes risk evaluation at the facility level, addresses all potential equipment damage mechanisms, incorporates process safety, identifies hazards and continuously manages all associated risks.
- Perform gas plant risk assessments and revalidation as mandated by the Oil and Gas Processing Facility Regulation at defined intervals.

### IMM:

- Plan, monitor and oversee IMM activities for all equipment, including tanks, compressors, pumps, piping and pressure equipment.
- Establish a process to plan and track regularly scheduled maintenance activities, intended to prevent a failure or incident during normal equipment operation.
- Develop and implement a flare stack inspection process.
- Review and update standard operating procedures particularly for facility startup and shutdown.

### General:

- Ensure all pressure and non-pressure equipment are included within the scope of IMP, covering, but not limited to, piping, pressure vessels, pressure safety valves, flare systems, tanks, rotating equipment and instrumentation and controls.

### MOC:

- Implement a process for managing overdue MOCs effectively.

### Management review:

- Establish a formal management review process for evaluating performance and making data-driven decisions to ensure IMP goals and objectives are being met.



Developing and implementing a comprehensive risk assessment process was the most recurring high priority finding in 2024, followed by IMM process for maintenance and integrity activities.

The BCER has a strong CAP management process in place, overseeing permit holders' corrective actions for all audit findings through regular follow up and communication.



# IMP Audit Score Trends

Variations in annual audit scores from year to year depend upon the number and type of permit holders selected for audit. The comparison of average IMP audit scores over five years (2020-2024) indicates a consistent upward trend with minor variations for pipeline IMPs while facility IMP scores show more fluctuation, but result in an overall increase of 11 per cent from 2020 to 2024 (Figure 11).

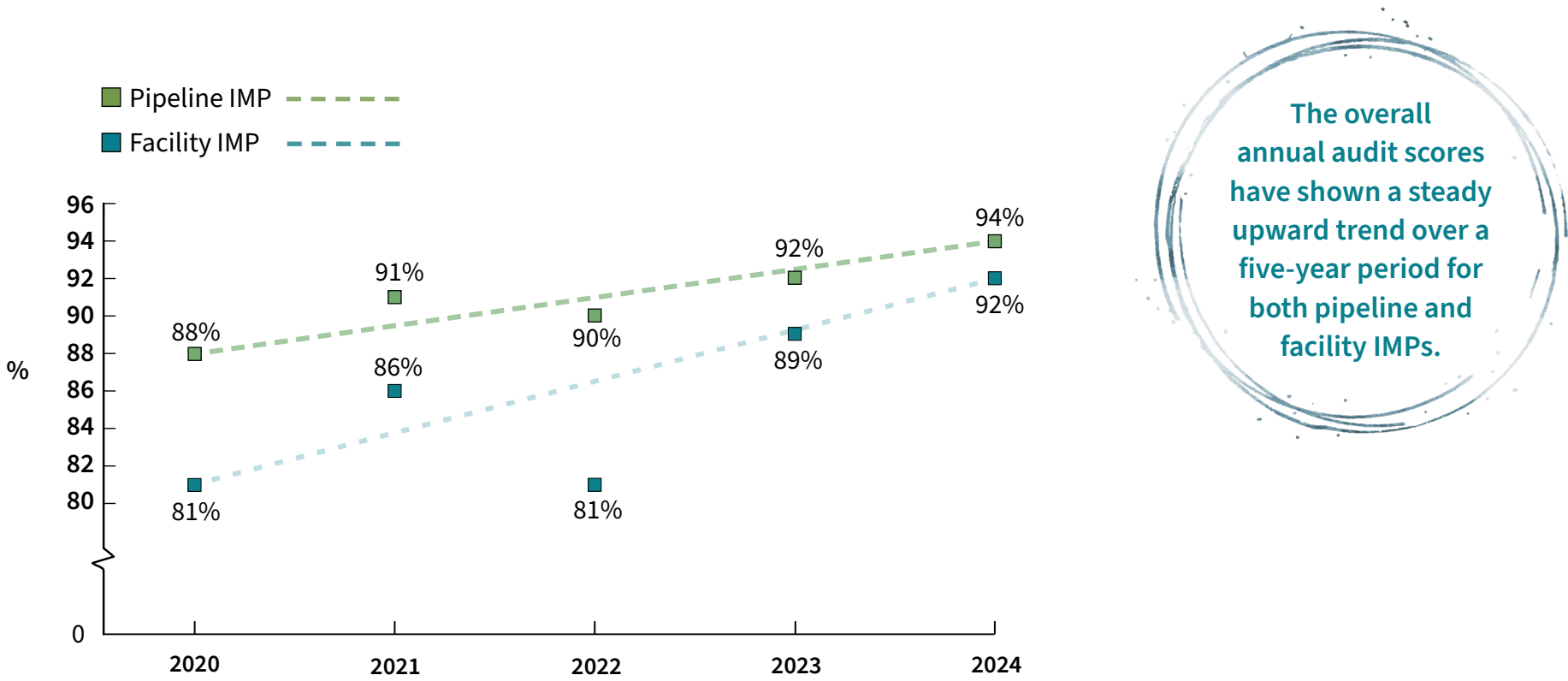


Figure 11: Five-Year IMP Annual Audit Score Trend (2020 - 2024)

# Safety Culture Insight

Since [CSA Z662](#) emphasizes safety culture enhances anticipation and management of system hazards and risk, thereby preventing pipeline system failures, the BCER uses IMP audits to gather insight on permit holders' safety culture. The BCER interprets safety culture through 12 indicators widely applied during IMP audits.

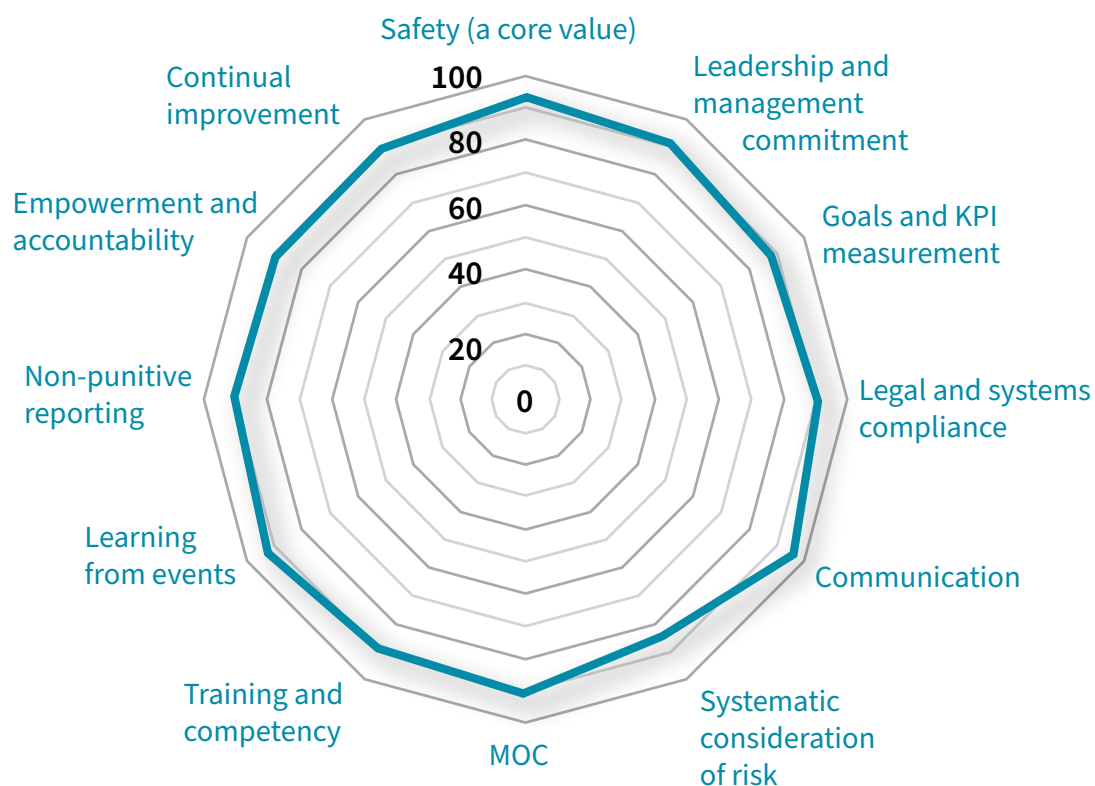


Figure 12: Safety Culture Performance

## Safety Culture Attributes

1. Safety (a core value)
2. Leadership and management commitment
3. Goals and KPI measurement
4. Legal and systems compliance
5. Communication
6. Systemic consideration of risk
7. MOC
8. Training and competency
9. Learning from events
10. Non-punitive reporting
11. Empowerment and accountability
12. Continual improvement

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During an IMP audit, safety culture observations are assessed using a 10-point scale collectively for each permit holder, based on the safety culture attributes. Scores of 8-10 indicate strong safety culture (most positive observations), scores of 5-7 reflect moderate safety culture (moderately positive observations) and scores of 1-4 signify weak safety culture (least positive observations).

The safety culture insights from IMP audits are displayed in the radar/spider plot (Figure 12).

Overall, permit holders' commitment observed during 2024 audits to establishing IMP and safety processes characterized positive safety culture. Permit holders' leadership was observed to be dedicated to safety, consistently enforcing safety and

integrity policies, allocating resources effectively and embedding safety as a core value. Additionally, we observed adherence to established processes and regulatory requirements, coupled with comprehensive reporting and analysis of near misses and hazards, exhibited positive safety culture. Furthermore, permit holders' emphasis on employee empowerment through training and competency assessments, along with maintaining clear communication channels, provided meaningful insight into their attitude towards safety management.

Based on safety culture assessments, permit holders are encouraged to continue reinforcing leadership commitment, align goals and objectives with KPIs, enhance risk assessments, improve MOC, communicate processes to all stakeholders and avoid complacency to maintain and strengthen a positive safety culture.



**In 2024 the permit holders demonstrated commitment to fostering a positive safety culture.**

# Summary

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Permit holders' Integrity Management Programs (IMPs) play a crucial role in ensuring public safety, environmental protection and operational reliability through the entire life cycle of pipelines and facilities. IMPs anticipate potential hazards and assess and manage risks to prevent adverse impacts on public safety and the environment.

In British Columbia, pipeline IMPs have been a regulatory requirement since 1999 when they were introduced in [CSA Z662](#), the national standard for pipeline systems. Facility IMPs became a regulatory requirement in 2018. The BCER began auditing IMPs for pipelines in 2011 and facilities in 2018.

## The BCER completed 11 pipeline IMP audits in 2024. Key findings focused on:

- **Risk assessment:** Update pipeline inventory, establish both unmitigated and mitigated risk assessment for all pipelines and continually evaluate the risk assessment for all pipelines.
- **IMM:** Formalize processes to plan, manage and track IMM activities, particularly those performed by third-party contractors, and ensure inactive pipelines are deactivated and abandoned within the Pipeline Regulation's required timelines while regularly updating standard operating procedures.
- **MOC:** Establish a process for effectively handling overdue MOCs.
- **Management review:** Implement a formal management review process at defined intervals.

## The BCER completed 10 facility IMP audits in 2024. Key findings focused on:

- **Risk assessment:** Develop and implement a comprehensive facility risk assessment process for facilities (including gas plants) and equipment to identify and address risks on a continuous basis.
- **IMM:** Plan, track and manage IMM activities for all equipment especially flare stacks, align maintenance processes with IMP and update standard operating procedures for startup and shut-down processes.
- **General:** Ensure all pressure and non-pressure equipment, such as pressure vessels, piping, pressure safety valves, tanks, rotating equipment, flare systems and instrumentation is included in the scope of the IMP.
- **MOC:** Establish a process for effectively handling overdue MOCs.
- **Management review:** Implement a formal management review process at defined intervals.

Through a structured CAP oversight process, the BCER ensures permit holders address audit findings by outlining appropriate actions and implementing them in the specified and mutually agreed upon time frame.

The average annual audit score for 2024 was 94 per cent for pipeline IMPs and 92 per cent for facility IMPs, which indicates steady upward performance over time. The 2024 audit results highlight permit holders' commitment to establishing and maintaining IMPs, fostering a positive safety culture.

The BCER continues to enhance its oversight of permit holders' IMP regulatory obligations by engaging with industry, annually disclosing audit findings and deficiencies and requiring permit holders to address them to ensure regulatory compliance and improved operations.

**The 2024 audit  
results demonstrate  
permit holders'  
commitment to safety  
and establishing  
IMPs.**





Discover how we regulate energy in B.C.

**BCER**

This report was published in June 2025 and is updated annually.