



# Seismicity Monitoring Services for Carbon Storage

Mitigating induced seismicity risk  
in injection operations

Similar to other industries where induced seismicity is a well-documented consequence of injecting fluids deep underground, the growing practice of carbon capture and storage (CCS) is expected to generate associated seismicity.

Operators must be prepared to address this risk throughout the lifecycle of their project to ensure safe and stable operations and protect their investment.

## Carbon storage challenges being faced

Navigating the complex landscape of carbon storage requires addressing four key challenges:

### Meeting regulatory criteria

As the regulatory landscape matures, operators need to be ready to meet current seismicity monitoring requirements and adopt robust risk management strategies for the future.

### Ensuring carbon containment

Seismicity in or above the storage formation has the potential to create pathways for CO<sub>2</sub> to migrate to shallower formations, groundwater level or even the surface. It is critical to demonstrate the absence of seismicity levels of concern to carbon containment.

### Protecting social license to operate

Events felt at the surface raise public concerns about damaging earthquakes, carbon leakage and environmental impacts, putting both individual operations and the industry as a whole at risk.

### Managing investment risk

Already costly endeavors, the financial viability of long-term CO<sub>2</sub> projects can be jeopardized by operational shutdowns forced by triggered events.

## Taking a proactive approach

Risk assessment and continuous monitoring are crucial to managing induced seismicity in carbon storage operations. By implementing flexible and scalable monitoring solutions at the onset of a project, operators can develop a proactive risk management strategy with the ability to predict issues and take preventative measures.

Our seismicity monitoring solutions give operators the ability to:

### Assess hazards and risk

Our Seismic Hazard and Risk Consulting service provides guidance for seismicity monitoring and management by leveraging proven engineering seismology techniques (ground motion prediction, shake maps, probabilistic seismic hazard assessments). Gain an understanding of the likelihood and potential consequences of induced seismicity for your specific project.

### Monitor induced (micro)seismicity

Through the deployment of a real-time seismic network around your carbon storage operations, our Seismicity Monitoring service helps you detect, understand and respond to natural and induced seismicity, including micro-seismicity. Use this service to manage surface impact and monitor caprock integrity through an improved understanding of seismogenic features and the likelihood of future events.

### Protect critical infrastructure

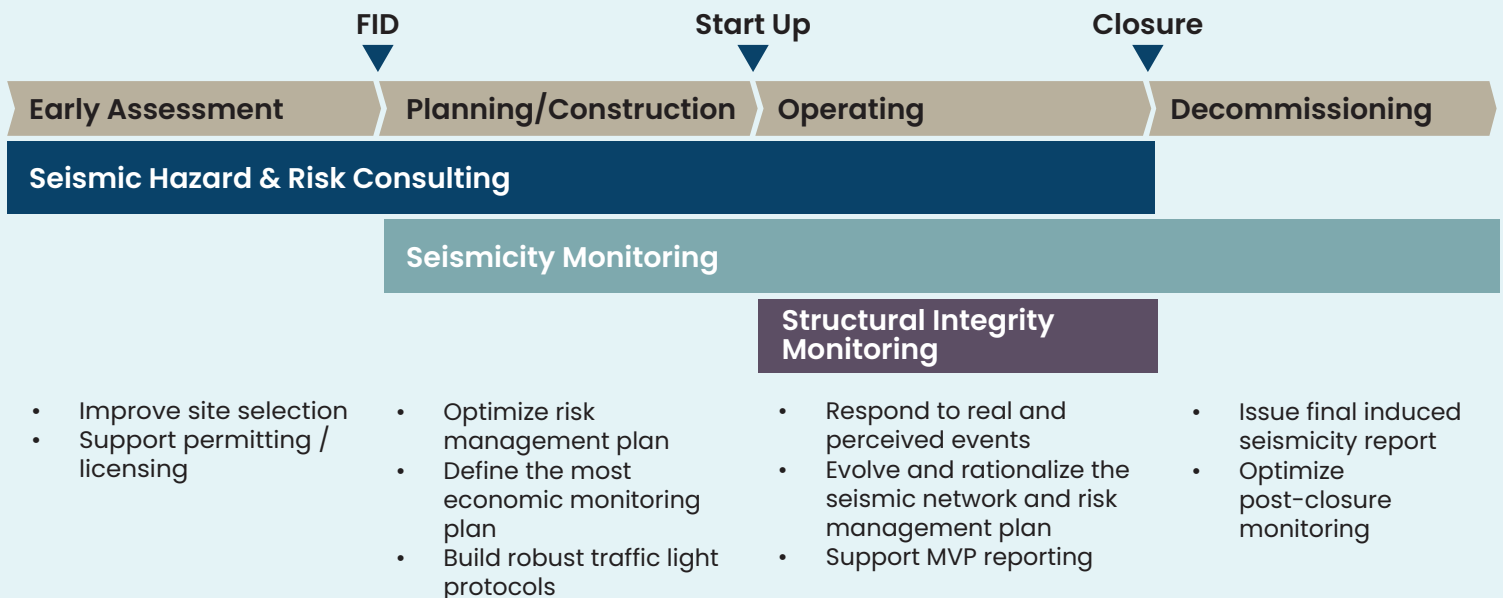
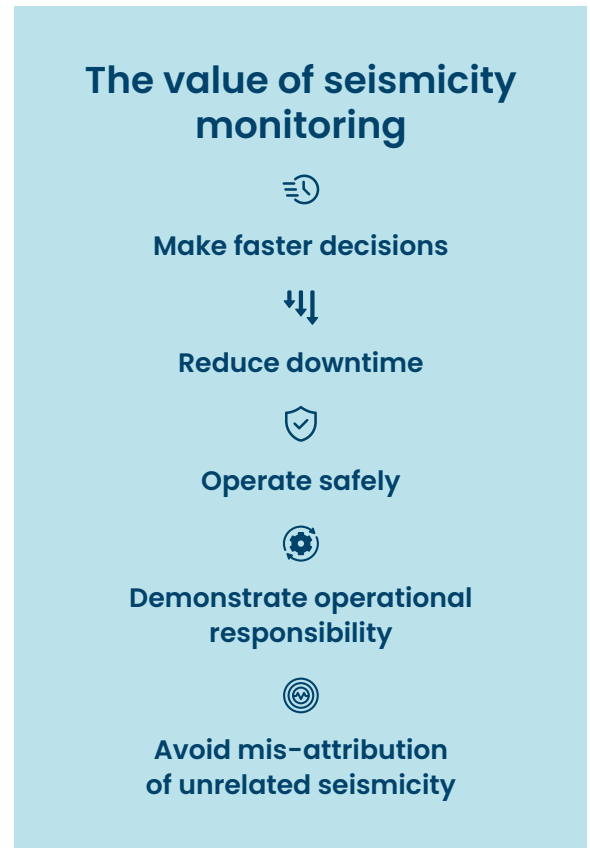
Our Structural Integrity Monitoring service detects the impact of earthquakes and ground motions on instrumented facilities. Compliant with accepted structural engineering practices, this service offers earthquake early warning, alerts for large events and integration with control and alarm systems.

## Turnkey seismic monitoring service

Our carbon storage offering is delivered as a turnkey service, allowing you to leverage our extensive expertise in seismic network management and data processing so you can focus on your core business. Our service includes:

- **World-class instrumentation:** Precision, class-A seismic instrumentation designed and built by Nanometrics and engineered for autonomous operation and maximum reliability. With a small environmental footprint, our stations are easily installed and decommissioned.
- **Continuous station monitoring and maintenance:** Through both intelligent remote station monitoring and local, in-field maintenance and troubleshooting, we ensure high data availability and system reliability.
- **Intelligent seismic data center:** Our data center operates 24/7, using cloud-based infrastructure to provide real-time data acquisition, storage and archiving.
- **Industry-leading data processing:** Leveraging AI, we produce high-resolution, regulatory-compliant data catalogues in near real-time.
- **Intuitive cloud applications:** Inspect and download critical data products through secure mobile and desktop applications, access real-time engineering parameters and set-up automated text and email notifications.

We offer custom seismic network planning and flexible design, including on and offshore solutions, to meet the unique business requirements of our carbon storage customers.



## Build an end-to-end induced seismicity risk management plan

Leverage Nanometrics' Seismic Monitoring Services to mitigate induced seismicity risk throughout the lifecycle of carbon storage projects.



## See how we can help you proactively address induced seismicity

Contact us to schedule a meeting at [info@nanometrics.ca](mailto:info@nanometrics.ca) or request a demo at [nanometrics.ca/demo](https://nanometrics.ca/demo)

Nanometrics Seismic Monitoring Services is a market leader in passive seismic monitoring, leveraging 30+ years of experience to help organizations manage the risks associated with natural and induced seismicity. We provide turnkey, scalable and future-proof solutions that deliver the critical data and insights our customers need to make informed decisions, optimize operations and meet regulatory requirements. As one of the world's largest seismic network operators, we are transforming how seismicity monitoring is done, from how seismic data is processed to how it's presented and delivered. Every day we empower our customers in oil & gas, mining, carbon capture and storage, geothermal, and critical infrastructure to safely and effectively run their businesses.