

Small Modular Reactors (SMRs)

A Clean Opportunity for Saskatchewan Mining

Saskatchewan's mining sector is energy-intensive, relying heavily on fossil fuels for both heat and power. As the province moves toward a low-carbon future, new technologies are being explored to support cleaner operations and long-term sustainability.


In a new study led by March Consulting Associates Inc. and supported by IMII and its members, researchers investigated the potential of Small Modular Reactors (SMRs) to meet the unique energy needs of mining operations across the province.

What the study explored:

- Energy use patterns and heat requirements in potash and uranium mining
- Leading SMR technologies that could be deployed in Saskatchewan
- Integration strategies for using SMR-generated heat and electricity on-site
- Three practical scenarios, including on-grid, off-grid, and long-distance heat transport models
- Trade-offs between different heat transfer media like molten salt, steam, and glycol

Key takeaways:

- Micro-reactors are a promising fit for northern, off-grid mines.
- Advanced reactors with higher temperature outputs align well with potash operations.
- Heat integration presents engineering challenges, but many required components are already commercially available.
- While SMRs offer significant emissions reduction potential, some mining processes may still require fossil fuel sourced boosting heat for peak temperature requirements.

 A public version of the report, including findings and deployment considerations, is now available: [SMR Applications for the Saskatchewan Mining and Minerals Industry | IMII](#)

Proponent: March Consulting Associates Inc.
Project Duration: January to July 2024

Project Cost:	\$186,136
IMII Members:	\$85,175
March Consulting:	\$70,963
SaskPower:	\$30,000