Logo

# PROJECT FILE

## PROJECT TitLE

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| **Project Name:** |  |

## PROJECT DESCRIPTION

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| **2 a)** | **Summary:** |
|  | A brief, non-confidential description of the project, including its main objective and how the project is innovative. |
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| **2 b)** | **Background:** |
|  | The reasons why the project is being launched, the problems to be solved, the opportunity to be seized, and the needs to be met. |
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| **2 c)** | **Objectives:** |
|  | The specific, measurable, achievable, relevant, and time-bound objectives of the project. |
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| **2 d)** | **Competitive advantages:** |
|  | The unique and innovative features that set this project apart. Highlight concrete benefits in terms of performance, cost, and sustainability. |
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## PROJECT CHALLENGES

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| **3 a)** | **Describe the technical problems to be solved:** |
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| **3 b)** | **What are your solutions?** |
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| **3 c)** | **What knowledge and skills are required to solve the identified problems?** |
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| **3 d)** | **In your opinion, what are the main steps involved in completing the project?** |
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| **3 e)** | **Have you completed a literature review on these issues? If so, what are your conclusions?** |
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## MAIN ACTIVITIES

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| **Check off one or more answers** | | | | |
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|  | **Diversification of energy supply** | | | |
|  | | | | |
|  | Renewable energy | |
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|  | Nuclear energy and new technologies | |
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|  | Energy storage technologies for renewable energies | |
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|  | **Energy demand conversion** | | | |
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|  | Integration of renewable energies in mine electrification | |
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|  | Using hydrogen for mining electrification | |
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|  | Converting biomass into electrical energy | |
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|  | Converting waste heat into electricity | |
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|  | **Energy efficiency** | | | |
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|  | Technologies and practices for optimizing energy consumption |
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|  | Intelligent management of energy resources |
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|  | Integration of renewable energies into mining power grids |
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|  | Energy storage |
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|  | Smart Grids |
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|  | **Carbon capture** | | | |
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|  | Carbon capture technologies | |
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|  | Storage and recovery of captured C02 | |
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|  | Reduction of C02 emissions | |
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|  | Environmental impact and economic benefits | |

## PROJECT TIMETABLE

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| **5 a)** | **Specify project start date:** | |  |
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| **5 b)** | **What is the expected duration?** |  | |
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| **5 c)** | **Provide a timeline showing the main stages and milestones:** | | |
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## PARTNERS

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| Identify the mining companies, governments, research institutions, local communities and indigenous organizations, as well as environmental NGOs involved in this project. |
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## EXPECTED RESULTS AND BENEFITS

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| **7 a)** | Identify and clearly describe the project's measurable objectives. |
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| **7 b)** | Explain the expected positive impacts on the mining industry, highlighting the long-term benefits. |
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| **7 c)** | Also mention potential gains in terms of sustainability, efficiency, and innovation. |
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## BUDGET

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| Estimate project costs and identify potential funding sources to be considered. |
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## REQUIRED RESOURCES

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| Determine the human, material, and technical resources required, as well as their availability and planned use. |
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## PERFORMANCE INDICATORS

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| Define methods for evaluating project success and associated key performance indicators (KPIs). |
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## COMMUNICATION PLAN

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| Establish stakeholder communication strategy, including frequency, and communication methods. |
| -Full Scale & even Demonstration CCS programs generally don’t exist in Canada or even globally.  (one only currently exists at Boundary Dam coal fired power station in Saskatchewan now – it is significantly different on the bmill capture side from potash, uranium, gold or other mine/mills to warrant & justify new work in these industries) Doing more demonstrations & studies will significantly reduce risk of CCS across Canada. Sask. Experience in CCS since 1998 does significantly reduce the risk exposure for this project and provide a solid basis to believe it will be successful)  -These systems at scale are very expensive so funding support +/or access to capital is a key risk  (Amortizing the research & demonstration costs of 8-10 interested parties or site will significantly reduce this financial risk exposure. A shared successful demo can improve the outcomes and efficiencies for all saving the taxpayers of Canada, Saskatchewan & others significantly and it will ensure a speedy & more timely introduction to CCS to a major portion of mining industry emitters to the benefit of Canada & the world. This project will act as an accelerator, reduce ventilation & better enable Canada to meet our decarbonization & emissions reduction goals. This project will reduce our global carbon footprint more quickly and the methodology can provide directly transferrable knowledge that will be a significant multiplier of development $$$. Keeping the work & deliverables in the public domain rather than as a top-secret competitive advantage will yield huge benefits to Canadians, tax payers & the world’s climate. As public domain IP this CCS IP can be easily adaped to other mines., to other provinces & to other industries & to other countries.  -Facing a lack of SME’s, Designs & designers capable of inventing, creating, constructing & commisioning a viable & efficient CCS workforce are very rare.  (We have already developed the basic expertise, experts, knowledge, awareness and mentors, coaches, teachers from experience on the Boundary Dam work. We also propose to assign significant amounts of work on this project to GIEMS (Globa Institute of Energy, Mines in Society) a newly formed collaboration between Saskatchewan Polytechnic (SP), USASK. And UREGINA as an added means to build these learnings, teaching and labs into the students and faculty of these large educational institutes to help build-up the size and quality of our workers, trades people, engineers & technologist and scientists, teachers, researchers in this field at this time of global need thus reducing this risk exposure significantly. The timing is also outstanding as we develop similar initiatives in nuclear power, SMR’s & modularization (modular design & fabrication of large process systems & reduce or eliminate stick build to free up more construction resources & thereby force better quality & performance into them.) \*\*\* Public investment in this technology also ensures a timely development of good operations & maintenance, repair, replacement practitioners, strategies & tactics.  -Not enough systems are actually operating to prove their viability.  (By not creating a large enough population of CCS systems and by leaning towards a bias of on-off solutions we’re condemning Canada to support prospectively multiple not properly optimized or filed tested, durable, cost effective CCS solution making them more expensive, more prone to break-downs and inflated OPEX & repair/replacement costs as well as a likely reduced operating life at reduced performance efficiencies and lower ROI, letting more CO2 pollution out & thereby supporting larger carbon footprints than necessary. Providing prove-up of CCS at scale where we already have the knowledge, skills and awareness then transferring this to other jurisdictions across Canada will be to the strong benefit of all Canadians and allow us to tackle climate change that much faster & better.  -Identifying & developing suitable underground works to support long-tern CCS deposition are rare & not always known or understood well. (Sask.’s already proven up this unique geology and the concept vis a vis the work of PTRC since 1998. The Boundry Dam demo pulled this concept to reality at demo scale in power now we need to move it fully into the full-scale mining CCS domain with this project.) Our Deadwood horizon U/G is the perfect, most cost-effective industrial solution to date so removing the worry & risk of this part of CCS will allow us to focus on the mill adaptations for the least investment to expedite this CCS to market in a proven state.)  -Carbon Capture in an operating mill doesn’t currently exist.  (This project is easily expected to be able to solve this concern in the most cost-effective, efficient & quickest manner amongst alternatives. It is also our best opportunity to model & simulate, analyze the system through Digital Twinning to afford Digital Transformation (DT))  -Transporting waste CO2 long distances cross country is not well understood, proven or accepted.  (-This project will allow us to annalyze whether to take the CO2 u/g at the site(s) or to transport it. The work scope will also enable us to evaluate & determine what distances are cost effective & commercially viable. It is also our opportunity to study & determine how many sites can be joined or piggy-backed commercially & how quickly this can impact the U/G reservoir.  -Some observations of Brine Li impact may also be possible & this is very timely now in the CM (Critical Minerals), for EV/electrification in aid of climate change remediation has grown in profile on this same file. -The study will provide great opportunities to study, learn & determine how & where we can optimize the pipe systems and the wellhead/vertical pipestand/and U/G dispersions designs, systems and mechanics through Modularization. This work is exoected to be very powerful as it will create a new module fab shop base load capacity for others to use/and in support of SMR & can solve as yet unsolved pipe module life-cycle materials, flow efficiency, controls & automation, design optimization issues. These results will reduce the costs, improve OPEX/CAPEX and are directly transferrable to all other sites. )  -Eliminating & reducing all these risks are very high value to society. |

## RISKS AND RISK MANAGEMENT

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| Identify key project risks and establish a risk management plan with mitigation and management strategies. |
| -A completed CCS Scopings Study  -Completed CCS PFS  -Completed Feasibility Study  -Detail Design of a Demo Scale CCS sytem for a Sask. Potash Mine complex  -An operating CCS Demo |

## DELIVERABLES

Please provide semi-annual reports clearly detailing the results achieved, highlighting key findings and their impact. Also include an in-depth analysis of the data, recommendations based on the results, and a summary of the methodologies used.