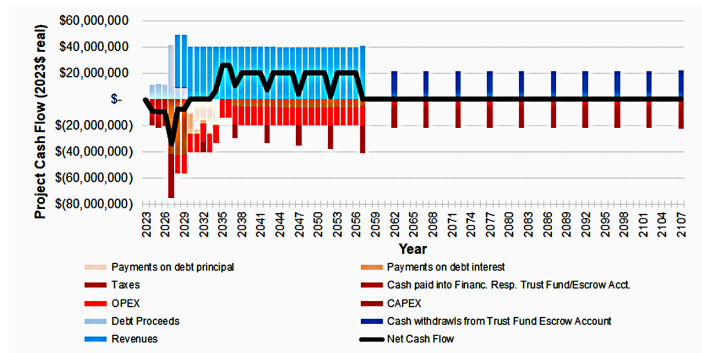


NRAP/SMART Technoeconomic and Liability Evaluation for Storage (TALES) Model

The **NRAP/SMART TALES Model** is an engineering economic model of a CO₂ saline storage project. TALES is written in Python and is derived from the FECM/NETL CO₂ Saline Storage Cost Model (CO₂_S_COM) which is an Excel-based technoeconomic model.

TALES accounts for the revenues and costs of implementing and operating a CO₂ saline storage project, including financing costs and the costs of complying with the requirements of the UIC Class VI permit regulations including financial responsibility.

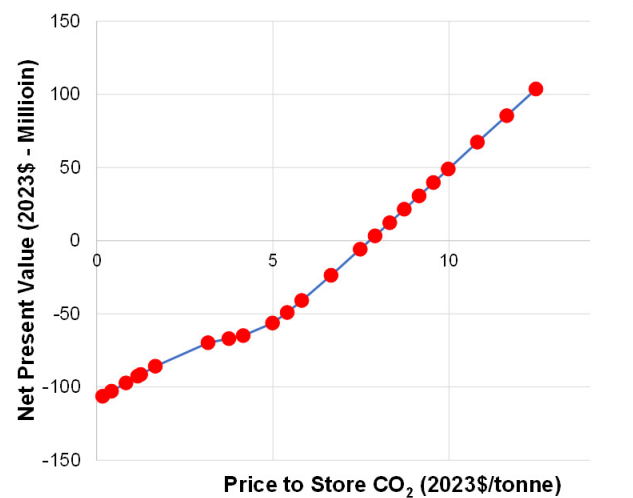


Above: Example cash flows for a hypothetical CO₂ storage project

Additionally, TALES includes the capability to determine the cost of responding to adverse events, either fluid leakage out of the storage formation or induced seismic incidents. TALES first calculates the costs and financial performance of a storage project assuming there are no adverse events (baseline). TALES then calculates the cost and financial performance of implementing one or more remedial response actions to address an adverse event. Liability is the cost of implementing the remedial response action and any change in overall financial metrics for the project relative to the baseline, such as the break-even cost of storing CO₂.



For leakage adverse events, TALES will utilize leakage projections from NRAP Open-IAM. For induced seismic adverse events, TALES will utilize output on seismic activity from the NRAP ORION model. TALES will eventually work with the RAMP tool being developed for evaluating different monitoring programs.



Above: Example of determining the cost of implementing brine production and disposal to remediate leakage at a hypothetical CO₂ storage project injecting 4 MMt CO₂/yr for 50 years

TALES was developed jointly through the **National Risk Assessment Partnership (NRAP)** and the **Science-informed Machine Learning to Accelerate Real-Time (SMART) Decisions in Subsurface Applications Initiative**.

TALES is a new tool and is currently under development. An alpha version of TALES is projected for release by the end of April 2024.

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