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Fossil Energy Subsurface Activities

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Fossil Energy Subsurface Activities

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National Lab efforts providing paths to improved recovery

FE R&D targets increasing recovery from unconventional oil and gas formations

From Carey et al, LANL

(Cartoon for illustration)
Control sustainability of hydraulic fracture permeability in ductile shales

Reduce fracture deformation and proppant embedment via mineral precipitation.
A Three Pronged Approach to Real-Time Control in the Subsurface

**Common FE Vision for Exploiting Machine Learning to Transform Subsurface Operations**

**Real-Time Visualization**

**“CT” for the Subsurface**

*Vision*: Transform reservoir management via dramatic improvements in subsurface visualization, exploiting ML to achieve speed and enhanced detail.

**Real-Time Forecasting**

**“Advanced Control Room”**

*Vision*: Transform “human-in-the-loop” decisions on reservoir management by rapid visualization of forecasted behavior for different operational decisions.

**Rapid Data to Knowledge**

**Autonomous Monitoring**

*Vision*: Enable the extraction of more information at lower cost from subsurface environments via smart sensor systems, edge–cloud analysis platforms, etc.

**Big Data Management**

*Vision*: Generate protocols and tools to allow access, transfer, curation, quality control, and maintenance of public and private datasets.

**Rapid Prediction**

**Virtual Learning**

*Vision*: Enable a virtual learning environment for exploring and testing strategies to optimize reservoir development, management, & monitoring prior to field activities.
Questions?

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