

Figure: The process schematic for the integrated energy system evaluated in this report. From Figure S-1, page 8.

### SUMMARY

This is the fourth publication produced as part of the California Council on Science and Technology's (CCST) **California's Energy Future - Policy (CEF-P)** project, a study designed to help inform the policy-related decisions California state and local governments must make in order to achieve California's ambitious goals of significantly reducing total greenhouse gas emissions over the next four decades.

CO<sub>2</sub> capture and storage ("**CCS**") with CO<sub>2</sub>-enhanced oil recovery ("**CO<sub>2</sub>-EOR**") has been identified as potentially important for advancing California's energy future and climate goals. This report evaluates emission accounting under California's existing climate policies for energy systems that integrate carbon capture utilization, and also addresses regulatory

### BACKGROUND

Carbon capture and CCS storage is a technology that can capture a portion of the carbon dioxide (CO<sub>2</sub>) emissions produced from the use of fossil fuels in electricity generation and industrial processes. CCS has been identified as an important step in reducing overall emissions, although the implementation of CCS technologies is an added expense and it can be challenging to induce CO<sub>2</sub> producers to implement them.

Stored CO<sub>2</sub> can be used to enhance oil recovery, making the stored gas a potential resource rather than just a storage problem. Expanding carbon capture, utilization, and storage (**CCUS**) is argued to represent an important step in advancing both near and long-term climate policy objectives. CCUS provides incentives for industry to invest in and deploy CCS technologies, providing both real-world cost and performance data, experience to drive down future technology risk and financial costs, and deployment of infrastructures such as CO<sub>2</sub> pipeline

networks. The regulatory frameworks governing this type of synergy, however, are still evolving.

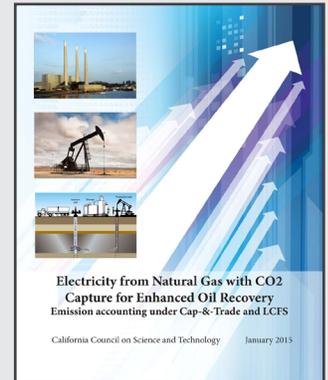
In order to clarify the likely regulatory treatment of CCUS under these emerging frameworks, this report quantifies the emissions profile of a hypothetical CCUS deployment in California: a natural gas power plant using CO<sub>2</sub> capture to supply CO<sub>2</sub> enhanced oil recovery. This deployment is evaluated as a representative configuration for CCUS in order to provide a concrete technical basis for analysis.

#### The report is organized into four sections:

background; a description of the model; results of the analysis; and a policy discussion. The example used here is intended to support ongoing policy discussions regarding the appropriate regulatory treatment of CCUS systems, the implications of CCUS and emerging climate policy frameworks and of increasing adoption of these frameworks.



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This report is part of the **Policies for California's Energy Future** project.

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