



# Utilization Options for CO<sub>2</sub>: Beyond EOR

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CO<sub>2</sub> Utilization Task Force

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## Purpose

The purpose of the CCUS Task Force is to identify/study the most economically promising CO<sub>2</sub> utilization options that have the potential to yield a meaningful, net reduction of CO<sub>2</sub> emissions, or facilitate the development and/or deployment of other CCS technologies.



# CO<sub>2</sub> Utilization Task Force



## Milestones: Phase I

- **Developed initial list of CO<sub>2</sub> utilization options for initial evaluation.**
- **Conducted literature review and draft report for review and comment by task force.**
- **Final Phase I Report to CSLF Technical Group/Policy Group.**

## **Due Date/Lead**

June 2012  
CCUS task force

July 2012  
CCUS task force

October 2012  
CCUS task force

# CO<sub>2</sub> Uses



## Hydrocarbon Recovery

- CO<sub>2</sub>-EGR
- CO<sub>2</sub>-ECBM
- CO<sub>2</sub>-EGHR
- Oil shale recovery
- CO<sub>2</sub>-fracturing

## Non-consumptive

- Fuels & chemicals
- Desalination
- Slurry transport
- Beneficiation
- Working/HT fluid
- Extractant
- Inerting Agent
- Fire Suppression
- Food/Products
- Refrigerant

## Consumptive

- Soil amendment/fertilizer
- Synthetic cementitious materials, building materials
- Chemicals
- Polycarbonates / polymers

# Tentative List of Promising CO<sub>2</sub> Utilization Pathways

## *Resource Recovery*

Application	Utilization (MMT/y CO <sub>2</sub> )	Benefit
CO <sub>2</sub> -EGR	3,200 to 7,800 MMT/y <sup>1</sup>	
Shale gas recovery Technical: Marcellus shale	340 to 3,320 MMT/y CO <sub>2</sub> *	
CO <sub>2</sub> fracturing	0.4 T CO <sub>2</sub> /well for vertical well completions	

## *Non-Consumptive*

Fuels and Chemicals	Utilization (MMT/y CO <sub>2</sub> )	Benefit (\$/MMT CO <sub>2</sub> )
Urea	109	\$183/MMT CO <sub>2</sub>
Algal Fuels	22*	-\$255 to - \$1,115/MMT CO <sub>2</sub>
Green house	?	?

## *Consumptive*

Application	Utilization (MMT/y CO <sub>2</sub> )	Benefit (\$/ton CO <sub>2</sub> )*
Aggregate, SCM	12 to 1,500	\$14 to \$100
CO <sub>2</sub> Assisted Geothermal		

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## Deliverables

### Phase II Report: TBD

- Phase II report will provide a more thorough discussion of the most attractive CO<sub>2</sub> utilization options, based on economic promise and CO<sub>2</sub> reduction potential.
- An assessment of current and potential economic viability,
- CO<sub>2</sub> reduction potential at various price points,
- The potential for co-production, and
- A discussion of RD&D needs.