INTEGRATED CARBON CAPTURE AND STORAGE FOR KANSAS (ICKAN): Ethanol CO₂ Capture and Transportation Cost Analysis

Dane McFarlane and Martin Dubois

Scenario 1: Fifteen Nebraska and Kansas ethanol plants to Kansas oilfields

**Table 1: Scenario 1 Costs and Required CO₂ Price**

<table>
<thead>
<tr>
<th>Plant Capture</th>
<th>Pipeline Transport</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CapEx</td>
<td>$384</td>
<td>$842</td>
</tr>
<tr>
<td>Annual OpEx</td>
<td>$37</td>
<td>$16</td>
</tr>
</tbody>
</table>

**Economic Analysis Assumptions**

- 10% ROI
- 2 year construction period
- 20 year operational life
- Not inflation adjusted
- Capture 90% of CO₂ from each ethanol Plant

**Read More:**

This work was featured in a recent white paper released by the State CO₂-EOR Deployment Work Group and the Great Plains Institute. While this paper was published before the passage of recent 45Q tax credit legislation, the primary economics and modeling remain the same.

Find the paper on GPI’s website: [betterenergy.org](http://www.betterenergy.org): [betterenergy.org](http://www.betterenergy.org)

**References**


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**Network Infrastructure - Map Key**

- Pipelines by Volumetric Flow in million metric tonnes
  - Less than 1 million
  - 1 million - 10 million
  - 10 million and greater
- Electric & Ethanol CO₂ Sources by Volume
  - Ethanol
  - Electricity

**Electricity**

**References**


**Scenario 2: Large scale Midwestern pipeline network to Permian Basin**

**Table 2: Scenario 2 Costs and Required CO₂ Price**

<table>
<thead>
<tr>
<th>Plant Capture</th>
<th>Pipeline Transport</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CapEx</td>
<td>$809</td>
<td>$1,857</td>
</tr>
<tr>
<td>Annual OpEx</td>
<td>$85</td>
<td>$47</td>
</tr>
</tbody>
</table>

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