Million Ton Carbon Capture Fund
Monetizing Carbon Capture and Storage in the USA
Petra Nova Power Plant, Houston, Texas (2016)
## 18 Projects by 2020

<table>
<thead>
<tr>
<th>Operation Date</th>
<th>Project Name</th>
<th>State</th>
<th>Facility Details</th>
<th>CO₂ Capture (mtpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>Val Verde Natural Gas Plants</td>
<td>Texas</td>
<td>Natural Gas Processing</td>
<td>1.3</td>
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<tr>
<td>1982</td>
<td>Enid Fertilizer CO₂-EOR Project</td>
<td>Oklahoma</td>
<td>Fertilizer Production</td>
<td>0.7</td>
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<tr>
<td>1986</td>
<td>Shute Creek Gas Processing Facility</td>
<td>Wyoming</td>
<td>Natural Gas Processing</td>
<td>7.0</td>
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<tr>
<td>2010</td>
<td>Century Plant</td>
<td>Texas</td>
<td>Natural Gas Processing</td>
<td>8.4</td>
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<td>2013</td>
<td>Air Products Steam Methane Reformer</td>
<td>Texas</td>
<td>Hydrogen Production</td>
<td>1.0</td>
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<tr>
<td>2013</td>
<td>Coffeyville Gasification Plant</td>
<td>Kansas</td>
<td>Fertilizer Production</td>
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<tr>
<td>2013</td>
<td>Lost Cabin Gas Plant</td>
<td>Wyoming</td>
<td>Natural Gas Processing</td>
<td>0.9</td>
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<tr>
<td>2015</td>
<td>ADM Illinois Industrial Project</td>
<td>Illinois</td>
<td>Chemical production</td>
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<td>2016</td>
<td>Kemper County Energy Facility</td>
<td>Mississippi</td>
<td>Power Generation</td>
<td>3</td>
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<tr>
<td>2016</td>
<td>Petra Nova Carbon Capture Project</td>
<td>Texas</td>
<td>Power Generation</td>
<td>1.4</td>
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<tr>
<td>2017</td>
<td>Sargas Texas Point Comfort Project</td>
<td>Texas</td>
<td>Power Generation</td>
<td>0.8</td>
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<tr>
<td>2018</td>
<td>Quintana South Heart Project</td>
<td>North Dakota</td>
<td>Power Generation</td>
<td>2.1</td>
</tr>
<tr>
<td>2018</td>
<td>Medicine Bow Coal-to-Liquids Facility</td>
<td>Wyoming</td>
<td>Coal-to-liquids (CTL)</td>
<td>2.5</td>
</tr>
<tr>
<td>2019</td>
<td>Indiana Gasification</td>
<td>Indiana</td>
<td>Synthetic Natural Gas</td>
<td>5.5</td>
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<tr>
<td>2019</td>
<td>Mississippi Gasification</td>
<td>Mississippi</td>
<td>Chemical production</td>
<td>4</td>
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<tr>
<td>2019</td>
<td>Texas Clean Energy Project</td>
<td>Texas</td>
<td>Power Generation</td>
<td>2.7</td>
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<tr>
<td>2018-2020</td>
<td>Riley Ridge Gas Plant</td>
<td>Wyoming</td>
<td>Natural Gas Processing</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Environmental Benefits

• Prevents emissions from entering atmosphere, which mitigates climate change

• Unique attributes of Carbon Capture and Storage:
  – Huge volume: millions of tons CO2 removed from atmosphere
  – Easily scalable: technology is viable (although expensive)
  – Fossil fuel compatible: complements existing infrastructure
Quick Background

• Technology created in 1970s

• Rapid increase in projects since 2009 due to three factors
  – Growth in US oil production using CO2 ($40 / ton)
  – Creation of 45Q tax credit ($10 / ton)
  – Expansion of DOE subsidies program (25% - 30% project cost)
Typical Project Economics

- Based on Subsidies, CO2 Market, Tax Credits

**Example:** Plant installs equipment, captures & stores 1 million tons annually

<table>
<thead>
<tr>
<th>Capital Expenditure:</th>
<th>Annual Cash Flow:</th>
</tr>
</thead>
<tbody>
<tr>
<td>$200 million</td>
<td>CO2 markets: $40/ton = $40 million</td>
</tr>
<tr>
<td>- $50 million</td>
<td>45Q tax credit: $10/ton = $10 million</td>
</tr>
<tr>
<td>$150 million</td>
<td>$50 million</td>
</tr>
</tbody>
</table>
Problem: Tax Credit

- Total pool of tax credits in program: 75 million tons, $750,000,000
- Tax credits that could be claimed: 50 million tons, $500,000,000
- Tax credits actually claimed: 27 million tons, $270,000,000 (as of June 2014)
Investment Opportunity

• Create investment fund that will buy & sell (transfer) tax credits

• Provide project financing to project developers that can’t use, or do not need, the tax credits

• Create stable revenue source for project financing, that is not dependent on project owners’ tax liability

• 15 potential clients by 2020, receiving tax credits

• Current market size / value is $480 million (credits for 48 million tons remaining), possible expansion of the program in the future
Fund Summary

• Invest $10 million in US carbon capture and storage projects, in exchange for tax credits

• Buy carbon capture tax credits for cash at a discount from CO2 project owners, pass-through to investor

• Facilitate the capture and storage of 1 million tons of CO2

• Provide returns of 8-10% in the form of tax credits (via credit discount)
Contemplated Structure

**Carbon Capture Investment Fund, LP**
- 99.99% owner of Carbon Capture Project Facility Owner, LP
- 99.99% owner of Carbon Capture Investment Fund

**Carbon Capture Project Facility Owner, LP**
- 100% Property Owner of Carbon Capture Project Facility
- Performs all work related to building CCS Project
- Qualifies for Federal 45Q Tax Credits

**Industrial Facility Owner**
- 100% Property Owner of Industrial Facility

**Industrial Facility**

**Fund Manager**
- 00.01% GP of Carbon Capture Investment Fund, LP

**Tax Credit Investor**
- 99.99% owner of Carbon Capture Investment Fund

**Lender**
- $1,136,45Q Tax Credits
- $500,000 Fees

**Carbon Capture Project Facility**

**Equity**
- $10,000,000

**Fees**
- $500,000

**45Q Tax Credits**
- $11,361,364 ($0.88 / credit)

**Industrial Facility Owner**
- 00.01% GP of Carbon Capture Project Facility Owner, LP

**Equity**
- $10,000,000

**Fees**
- $500,000

**45Q Tax Credits**
- $1,136,45Q ($0.88 / credit)
Investment Thesis

- Supply of credits will exist from industrial facility owners, who will sell credits at a discount (assumption of $0.88 / $1.00 credit)

- Demand for credits will exist from banks to buy credits, which have environmental attributes but also risk and uncertainty

- Government will be on board - IRS will need to approve investment structure (unknown)
Value Added

• Provide project financing to project developers that can’t use, or do not need, the tax credits

• Create stable revenue source for project financing, that is not dependent on project owners’ tax liability

• Support existing projects by lowering overall cost of capital

• Incentivize new projects and economically marginal projects
Next Steps

1. Talk to facility owners (potential clients) to gauge interest

2. Talk to banks (potential clients) to gauge interest

3. Talk to lawyer, design optimal fund structure

4. Talk to IRS, look for approval
   - Office of Passthroughs and Special Industries
Thank you!

And Thanks to Advisors!

David L. Yermack
Albert Fingerhut Professor of Finance
and Business Transformation
Leonard N. Stern School of Business

Bob Taylor
Executive Director, Morgan Stanley
Global Sustainable Finance
Appendix: 45Q Tax Credit Compliance Rules

- Section 45Q(d)(2): “the Secretary of Treasury… in consultation with the Administrator of the EPA, the Secretary of Energy (DOE), and the Secretary of the Interior (DOI), shall establish regulations for determining adequate security measures for the geological storage of CO2 such that the CO2 does not escape into the atmosphere.”

- IRS Guidance 2009-83: “the proposed UIC program rules have not been finalized… taxpayer claiming the § 45Q credit must follow… the IPCC Guidelines… a site characterization… an assessment of the risks… Monitor potential leakage pathways… taxpayer… must submit an annual report to the Service.”

- EPA Class 2 and Class 6 well injections regs, GHG reporting regs
Appendix: Tax Credit Allocation Rules

Allocation of § 45Q Credit Among Qualified Facility Owners

• (a) If the qualified facility is owned by a partnership that has not made a valid election under § 761(a), the partnership will be considered the taxpayer for purposes of this notice. In such cases, the § 45Q credit must be allocated in accordance with § 1.704-1(b)(4)(ii).

• (b) If the qualified facility is owned by a partnership that has made a valid § 761(a) election, then each partner in the partnership will be considered the taxpayer for purposes of this notice. In such case, the taxpayer may claim the § 45Q credit in accordance with its portion of the total amount of qualified CO2 that is commensurate with its undivided ownership of the qualified facility.