

The 1 Million Ton Carbon Capture Fund

Summary: The Carbon Capture Fund will invest \$10 million in as many as 10 carbon capture and storage projects in the US petrochemical sector, which will collectively remove 1 million tons of CO₂ from the atmosphere to combat climate change. The Fund will use a pass-through tax credit equity investment structure to provide investor returns in the form of 45Q tax credits, a federal income tax offset.

Fund investment goals:	Financial returns, environmental benefits
Asset class, capital structure:	45Q tax credits, US petrochemical industry, equity
Target geography:	United States: TX, WY, ND, CA, MS, IL, IN
Financing mechanism:	Tax credit equity pass-through structure
Target investor pool:	Institutional investors
Size of addressable market:	\$750 million (current cap of 75 million tons of CO ₂)
Size of investment fund:	\$10 million
Time horizon and returns:	1 year, 8% IRR after all Fund incentives
Fees and incentives:	2/20 incentive structure
Environmental issue:	Climate change
Environmental metrics:	1 million tons of CO ₂ removed from atmosphere

Background: Carbon capture and storage has been cited by the IPCC as a key means of mitigating climate change. The crux of the idea is to capture anthropogenic CO₂ and store it underground. However, carbon capture and storage projects are expensive and have no clear revenue stream. Only a few government-funded demonstration projects have been built, and private sector financing is scarce.

Over the past decade, two potential revenue sources for carbon capture and storage projects have emerged. The first is from selling CO₂ to the oil industry, where oil producers sometimes use CO₂ to help produce oil. In this process, CO₂ is injected into an oil well, where it displaces oil and remains trapped underground. The second is in the form of a tax credit. In 2009, Senator Jay Rockefeller (D-WV) sponsored a bill to create a federal tax credit of \$10 per ton of industrial CO₂ that is captured and stored underground during enhanced oil recovery. There is evidence that these two revenue sources have begun to incentivize carbon capture. Since 2010, five large-scale industrial carbon capture projects have been built. We believe that ten more projects in consideration could be built by 2020 [Table 2, p. 2].

Market failure: In several tax credit markets, investment groups broker credits between project developers and investors; this provides a stable source of project financing and incentivizes new projects. However, it appears that there is no market for 45Q tax credits; project developers must currently use tax credits themselves inefficiently and ad hoc. We think this is due to opaque government verification requirements for CO₂ storage, the infancy of the 45Q program, a perception of high risk, and a small number of completed projects. In addition, the available pool of 45Q credits is relatively small.

Investment Thesis: We propose to create an investment vehicle that will monetize 45Q credits and allow us to invest in carbon capture and storage projects in the petrochemical industry. We believe that project developers will find value in trading credits for cash at a discount to par value, and that institutional investors will have appetite for the credits. We believe that access to a streamlined financing mechanism will catalyze projects that are currently in consideration, and incentivize new projects.

Environmental impact: With a \$10 million investment, the Carbon Capture Fund will invest in projects that collectively remove 1 million tons of CO₂ from the atmosphere, the equivalent of removing 190,000 cars from the road for one year. This reduction of CO₂ emissions will reduce greenhouse gas emissions at their source, directly combating climate change. If successful, the fund could provide the basis for an expanded 45Q program that would finance the removal of millions more tons of CO₂ from the atmosphere.

Innovation:	First fund dedicated to carbon capture and storage
Assumptions:	Brokerage demand from project developers and investors
Risk factors:	Regulatory risk, compliance risk, potential IRS scrutiny
Investment criteria:	Petrochemical underwriting criteria and 45Q compliance criteria
Due diligence process:	Site visits, documentation, milestones, verification

Size of current opportunity: The 45Q tax credit program currently has a cap of 75 million tons of CO₂, or \$750 million. We estimate that \$600 million of credits will probably be claimed ad hoc by existing projects by 2016, leaving an estimated investment opportunity of \$150 million for the Fund. The Fund's investment will be directed to 10 potentially qualifying projects listed in Table 2.

Size of future opportunity: The US government administers several multi-billion dollar tax credit programs [Table 1] that facilitate investment in target markets. We believe the 45Q program is a coherent and scalable approach to addressing climate change that is likely to be expanded in the future, creating a new asset class and new investment opportunities for the Fund.

Value of Federal Tax Credits, 2014-2018 (Billions)	
Low-income housing tax credit (LIHTC)	40.5
Renewable energy production credit (PTC)	13.8
New markets tax credit (NMTC)	5.2
Historic tax credit (HTC)	4.9
Renewable energy investment credit (ITC)	2.9

[Table 1] Source: Novogradac & Company, (2014)

How it will work: The Fund will use a pass-through equity investment structure modeled after the tax credit industry to monetize 45Q credits at \$0.88 - \$0.90 per tax credit dollar and invest equity in carbon capture and storage projects. A timeline is below:

- (a) June 2015 – June 2016: investors contribute \$10 million cash into the Fund
- (b) June 2015 – June 2016: Fund provides \$10 million equity to projects utilizing 45Q tax credits
- (c) June 2015 – June 2016: projects pass through \$11.36 million of 45Q tax credits to Fund
- (d) June 2015 – June 2016: Fund passes through \$11.36 million of 45Q tax credits to investors
- (e) June 2016: investors reimburse Fund for salaries and expenses (2/20 incentives)

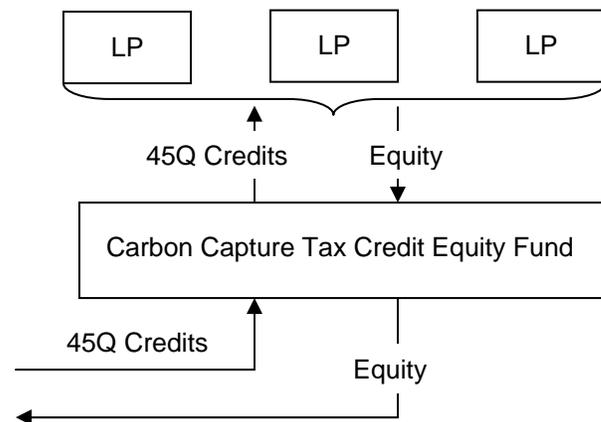
Projects and potential investments (in bold):

Project	State	CO ₂ *	Date	Details
Val Verde	TX	1.3	1972	Nat Gas
Enid Fertilizer	OK	0.7	1982	Fertilizer
Shute Creek	WY	7.0	1986	Nat Gas
Century Plant	TX	8.4	2010	Nat Gas
Air Products	TX	1.0	2013	Hydrogen
Coffeyville	KS	1.0	2013	Fertilizer
Lost Cabin	WY	0.9	2013	Nat Gas
Illinois Ind.	IL	1	2015	Chemical
Kemper	MS	3	2016	Power
Petra Nova	TX	1.4	2016	Power
FutureGen	IL	1.1	2017	Power
Sargas Texas	TX	0.8	2017	Power
Quintana	ND	2.1	2018	Power
Medicine Bow	WY	2.5	2018	CTL
Indiana Gas	IN	5.5	2019	SynGas
MS Gas	MS	4	2019	Chemical
HECA	CA	2.7	2019	Power
Texas CEP	TX	2.7	2019	Power
Riley Ridge	WY	2.5	2020	Nat Gas

— In service before 45Q Credit

— Currently using 45Q Credits ad hoc

Diagram of Fund:



[Table 2] Source: global CCS Institute *million tons per annum (mtpa)