

How to Monetize Carbon Credits

Colorado Carbon Fund Workshop
February 22, 2011



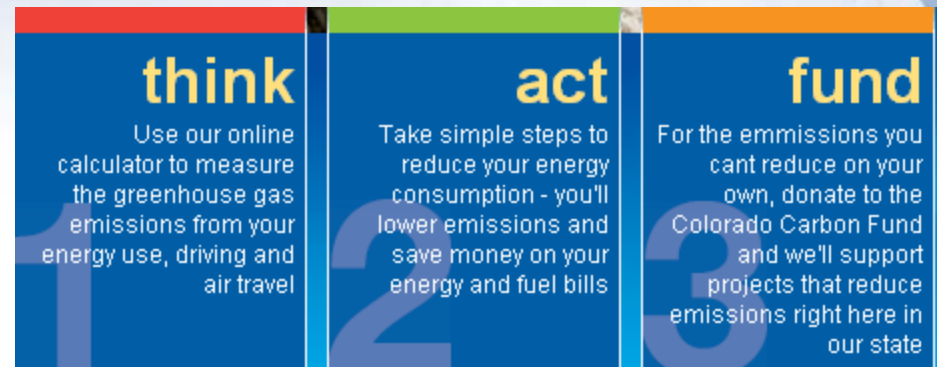
We Have The Power

Sheldon Zakreski

The
ClimateTrust[®]

Overview

- About the Colorado Carbon Fund
- The How To Guide
 - Eligibility
 - Feasibility
 - Contracting
- The CCF's Role



Colorado Carbon Fund



- **Founded by the Governor's Energy Office in 2008**
- **A tangible fund**
 - Funding from Colorado for Colorado projects
 - Transition to the new energy economy
- **Carbon finance for eligible projects**
 - In state requirement
 - Preferences: energy utilization, certifiable, economic and social co-benefits

The CCF Product

Fund two project types

Carbon Offset Projects

- Meet eligibility + market criteria
- Scale
 - >2,500 mtCO₂e/year
- Certified\Verified
- Larimer landfill gas destruction project

Climate Benefit Projects

- Charismatic
- No scale restrictions
 - 15-500 mtCO₂e/year
- Monitored
 - No 3rd party audits
- Apex and Maple Terrace Solar Projects

Common Project Activities

Offsets

- Landfill gas to energy
- Dairy biogas
- Coal mine methane
- Forestry

Climate Benefit

- Low income weatherization
- Urban forestry
- Transportation
- Solar

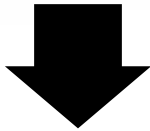


Equivalencies

- **2,500 metric tons of CO₂e per year?**
- =**
- **457,000 therms of gas/500 homes**
- **333,333 gallons of gas/380 cars**
- **Manure from 1,000 dairy cows**
- **Organic food waste from 2,400 homes**

Creating a Carbon Asset

Project Assessment



Project Design



**Project Certification
Listing**

Project Monitoring



3rd Party Verification



Register Reductions



Step 1: Market Eligibility

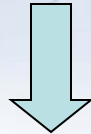
Offset Quality Initiative Criteria

Offsets Should:

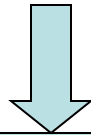
- 1. Be real**
- 2. Be additional**
- 3. Be based on a realistic baseline**
- 4. Be quantified and monitored**
- 5. Be independently verified**
- 6. Be unambiguously owned**
- 7. Address leakage**
- 8. Address permanence**
- 9. Do no net harm**

Project Design

Determine applicable standard(s)



Calculate baseline emissions and project emissions



Revenue forecast \ Financial modeling

Step 2: Market Feasibility

$$\text{Net Revenue} = (\text{Credits})(\text{Price}) - (\text{Transaction Costs})$$

Net Present Value (time, discount rate)

Market Prices

USD per metric ton of CO₂e	American Carbon Registry	Voluntary Carbon Standard	Climate Action Reserve (non-CA compliance)	Climate Action Reserve (CARB compliant)
Low Price	\$2.50	\$3.50	\$4.00	\$9.00
High Price	\$5.00	\$6.00	\$8.00	\$12.00
Types of Buyers	Voluntary and Pre-Compliance	Voluntary and Pre-Compliance	90% Pre-Compliance	Compliance

Why Certification?

“When purchasing carbon offsets, insist on transparency and third party verification to ensure your money goes to quality projects.”

- Colorado Attorney General John Suthers



The Denver Channel, “Officials Urge Caution With Carbon Offsets,” April 23, 2008,
(<http://www.thedenverchannel.com/news/15961573/detail.html>)

Step 2: Market Feasibility

$$\text{Net Revenue} = (\text{Credits})(\text{Price}) - (\text{Transaction Costs})$$

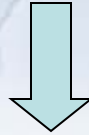
Net Present Value (time, discount rate)

Pre-Operation

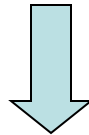
Scope	Climate Action Reserve	American Carbon Registry	Voluntary Carbon Standard
Project Design Assessment	\$4,000	\$10,000	\$10,000
Eligibility Assessment		\$1,000	\$2,000
Validation			\$12,000
Account\Listing Fees	\$1,000	\$1,000	\$1,000
Total	\$5,000	\$12,000	\$25,000

Operation\Tracking

Monitor



Verify

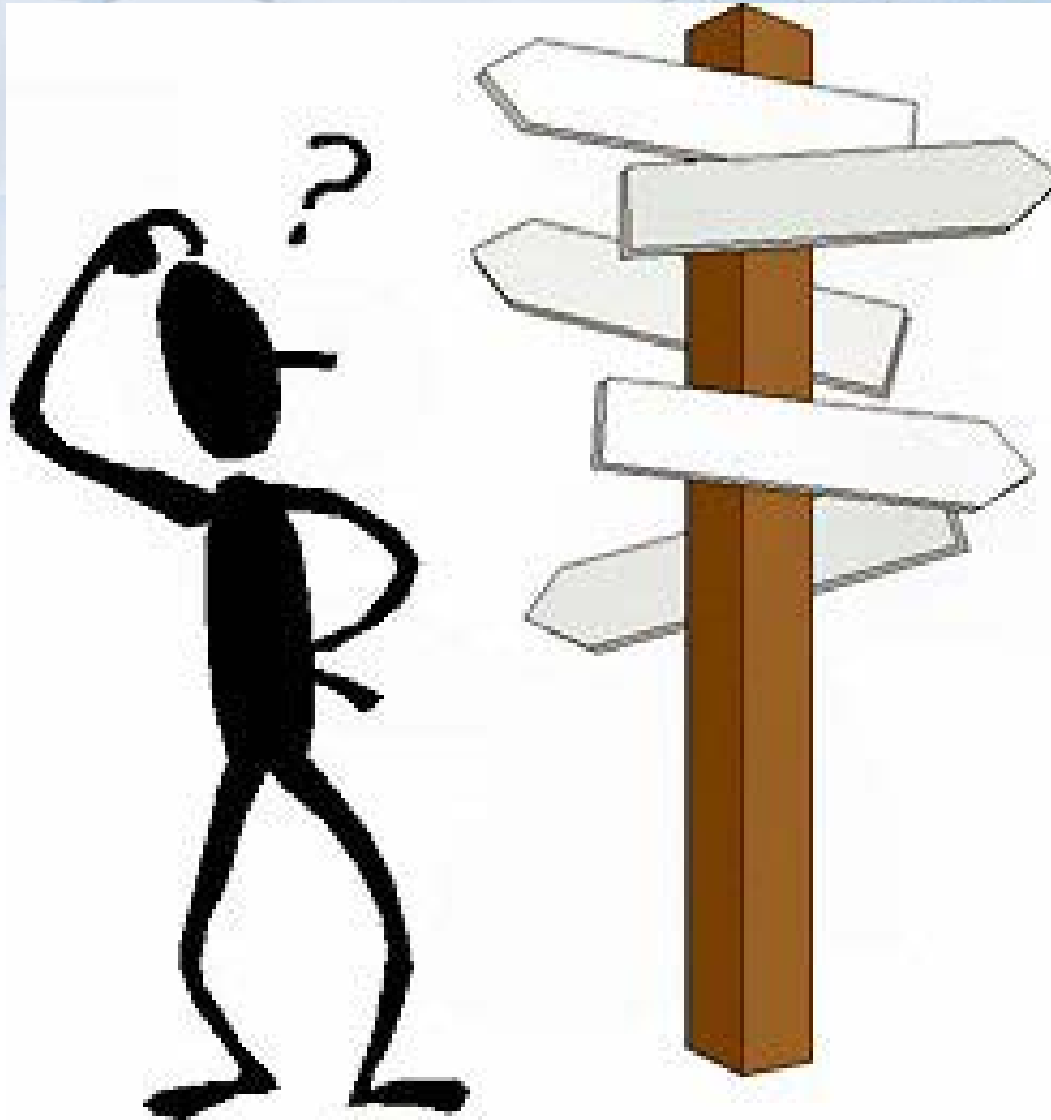


Register credits

Operating Expenses (Annual)

Scope	American Carbon Registry	Voluntary Carbon Standard	Climate Action Reserve
Monitoring	\$3,000	\$3,000	\$3,000
Annual Verification	\$3,500-\$10,000	\$10,000	\$10,000
Account\Listing Fees	\$500	\$500	\$500
Total (Fixed)	\$7,000-\$13,500	\$13,500	\$13,500
Issue Fees (\$\mt)	Free	\$0.15	\$0.20
Transfer Fees (\$\mt)	\$0.07	\$0.02	\$0.03
Total (Unit)	\$0.07	\$0.17	\$0.23

Confused?



Project Stories



Feasibility assessment 1

-5300 ton biomass heating project\ 7 schools

Project Characteristics

Standard: ACR

Scale: 2,500 mt CO₂e\year

Crediting: 10 years

Levelized Price = \$6.00

Cost-Benefit Metrics

Annual Revenues: \$17,500

Upfront Cost: \$13,000

Avg. Annual costs: \$8,475

Payback: 4th year

NPV (8%) = \$30,000



Feasibility assessment 2

-9575 household organic food waste composting project

Project Characteristics

Standard: CAR

Scale: 10,000 mt CO₂e\year

Crediting: 10 years

Levelized Price = \$8.50



Cost-Benefit Metrics

Annual Revenues: \$85,000

Upfront Cost: \$5,000

Avg. Annual costs: \$16,500

Payback: 2nd year

NPV (8%) = \$425,000

Feasibility assessment 3

-3 MW coal mine methane electricity project/1900 homes

Project Characteristics

Standard: VCS

Scale: 80,000 mt CO₂e/year

Crediting: 10 years

Levelized Price = \$5.50

Cost-Benefit Metrics

Annual Revenues: \$550,000

Upfront Cost: \$30,000

Avg. Annual costs: \$29,000

Payback: 2nd year

NPV (8%) = **\$2.5 MM**



Summary- Asset Creation and Management

- **Certification is the price of access**
- **Fixed costs upfront and throughout**
- **Scale matters**
 - **Carbon asset unit costs**
 1. **Small: biomass \$3.80\mtCO₂e**
 2. **Medium: composting \$1.65\mtCO₂e**
 3. **Large: CMM: \$0.40\mtCO₂e**

Purchase Agreements

- **Three structures**
 1. **Fixed**
 2. **Spot\Brokered**
 3. **Hybrid**



Broker fees 3-5%

Contract costs: \$2,500-\$15,000

CCF: Market Access

- **What we can do for you?**
 - **Eligibility screening**
 - **Funding options**
 - **Carbon asset development + management**
 - **Off-take**
 - **Market as CCF endorsed**

Closing Thoughts

- **A voluntary, but well-defined process**
- **Not without risk**
- **Designed to deliver credibility to the commodity**
- **CCF can serve as a guide**



Thank you!

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We Have The Power

Questions + Answers Summary for Webinar on Monetizing Carbon Credits

*Colorado Carbon Fund(CCF) and The Climate Trust
February 22, 2011*

Introduction

Thank you for joining us for our first webinar. We have heard lots of great feedback including ways to improve for the next one. If you have any additional questions and/or ideas for another webinar feel free to contact either Hillary Dobos, Program Manager for the Colorado Carbon Fund, at hillary.dobos@state.co.us or Sheldon Zakreski, Senior Program Manager for The Climate Trust at szakreski@climatetrust.org

Q: I see that verification varies by standard (ACR/CAR/VCS/etc.). How much does it vary WITHIN standard according to project type?

A: This depends on project type. Less complex projects that have a small amount of variables and metered data can cost roughly \$7000, while sequestration projects involving large difficult to access lands can cost upwards of \$20,000.

Q: How are RECs and 'carbon offsets' different?

A: RECs and offsets are two different environmental commodities. RECs are 1 megawatt-hour of electricity from a qualified facility. The list of qualified facilities depends on state legislation, but commonly includes wind, solar, and certain types of biomass. Offsets are one metric ton of carbon dioxide equivalent emission reductions that are generated from projects that meet such criteria that are not required from projects that generate RECs. These criteria include additionality, uncontested offset ownership, leakage and third party verification.

Q: CCF literature says "Projects must reduce GHG emissions at the project site rather than replacing grid electricity;" Can you expand on what that means? Are large-scale efficiency upgrades eligible?

A: Onsite emission reductions include project types such as landfills, dairies, or facilities that are destroying carbon emitting fuels such as landfill gas or organic wastes. Large scale electric end use efficiency upgrades are ineligible because the reductions are physically occurring at an untold number of power plants that are dispatching less electricity in the grid as a result of the upgrade. Large scale thermal energy end use efficiency upgrades are eligible because such activities are reducing combustion at the project site.

Q: Are small hydro power plants eligible?

A: Small hydro projects are not eligible for CCF carbon offset funding because the emissions are physically being reduced at many different fossil power plants that are producing less electricity as a result of the small hydro project. However, the CCF would consider this project under its climate benefit

project finance window should we release a RFP for this project type.

Q: What does a 10 year project life mean?

A: This is also known as the crediting period and refers to the life of the offset project and not the technical life of a project. Under a 10 year crediting period the offset design such as the baseline and project scenario for quantifying carbon offset production is fixed. After this 10 year period the project might not be eligible for further funding because it is no longer additional or if it is still eligible, the project would need to revise its baseline and project scenario calculations that would generate a different net level of offsets.

Q: With respect to biofuel projects, a project be considered on-site where the biofuel is produced, or offsite where the biofuel is consumed?

A: This would depend on the biofuel and the baseline scenario for the feedstock(s) used to produce it. For example, biogas produced from dairy manure that would otherwise be managed in a lagoon resulting in methane emissions is an onsite reduction regardless of where the biogas is combusted. However, biofuel production projects that claim emission reductions from vehicles that switch from fossil fuels to biofuels are ineligible. This is because the owner of the vehicle who makes the choice to use the biofuel in his\her vehicle over a fossil fuel alternative is the owner of the emission reductions associated with the fuel switch.

Q: Does the Governors Energy Office (GEO) have a strategy to keep any carbon credit funds for agency or GEO use?

A: The financial contributions to the CCF flow from the original donors to The Climate Trust; the third party contracted by GEO to administer the CCF. In exchange for the donation, The Climate Trust as a 501(c)3 nonprofit supplies a tax deduction receipt to the donors. The Climate Trust pools these funds to purchase and retire carbon offsets on their behalf. Therefore, these funds are not received by the GEO nor are they eligible for state agency use.