



Money for Nothing: The Illusion of Carbon Offsets

by
Todd Wynn

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About the Author

Todd Wynn received his bachelor's degree in Business Economics from California State University Long Beach and his masters in International and Developmental Economics from University of San Francisco. Mr. Wynn wishes to thank Dana Fortmiller, Elizabeth Harrison, and Vanessa Holguin for their help in research and Cascade Academic Advisor Michael Barton, Ph.D., President John A. Charles, Jr., and Policy Analyst Christina Martin for their review.

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Introduction

Climate change has become a dominant feature of state and national public policy in the United States. Although the federal government has yet to act on regulating greenhouse gases (GHGs) such as carbon dioxide, many states have taken the initiative and have developed stringent GHG reduction goals. Oregon has developed one of the most ambitious GHG policies in the world, attempting to reduce the state's greenhouse gas levels to 10% less than 1990 levels by the year 2020 and 75% less than 1990 levels by 2050.

Oregon's goals rely in great part on carbon offsets. This report explains what offsets are and discusses the role of the Climate Trust in brokering them for industries regulated by a 1997 Oregon GHG statute. The Climate Trust of Oregon is one of the earliest and most well known carbon offset purchasers, and their projects are perceived as some of the best in the nation. Taking a closer look into the Climate Trust's offset portfolio, this report shows that numerous problems undermine the quality and effectiveness of the organization's endeavors, which casts doubt upon the entire carbon offset industry. Accordingly, the environmental effect of the very legislation that makes the Climate Trust relevant will be shown to be dubious at best.

What follows is background information on carbon offsets in a regulatory regime, how and why the Climate Trust was formed, problems inherent with all offset projects, and a thorough audit of the Climate Trust offset projects.

Cap-and-Trade and Carbon Offsets

In order to reach greenhouse gas reduction goals, many states and regions have implemented or begun to design regional cap-and-trade programs to reduce greenhouse gas emissions. These programs “cap” total emissions at some arbitrary level and then issue permits, each of which allows a certain amount of emissions. The distribution of permits may require their purchase, or may be distributed without initial cost. If a facility wishes to emit more than its endowed permits allow, the facility must purchase more permits in the market. Permits would be purchased from facilities that emit less than their permits allow either because they were issued excess

emissions credits in the first place, have low-cost ways of reducing emissions, reduce their overall production, or go out of business.

“A carbon offset is generated by the reduction, avoidance, or sequestration of carbon dioxide or carbon dioxide equivalent emission from a specific project.”

In order to reduce the compliance cost of cap-and-trade programs, program designers have developed an alternative mechanism that is frequently advocated as a more cost-effective way to meet the cap on emissions than purchasing additional permits. This mechanism is carbon offsetting. A carbon offset is generated by the reduction, avoidance, or sequestration of carbon dioxide or carbon dioxide equivalent emissions from a specific project. Offsets are expected to counteract or offset greenhouse gases (GHGs) that would have been emitted into the atmosphere.¹

In Oregon, a cap-and-trade program is being designed and advocated by the Western Climate Initiative (WCI) as the preferred method for reducing GHGs. The Western Climate Initiative is a collaboration of 13 U.S. states (seven participants and six observers) and five Canadian provinces (four participants and one observer). Oregon is one of the founding states and is a full partner. While the Initiative was formed to develop regional approaches to addressing potential climate change, their strategy has focused entirely on the implementation of a cap-and-trade program. Even though each partner in the WCI sets its own emission reduction goals, the WCI established an overall regional goal of reducing greenhouse gas emissions to 15% below 2005 levels by 2020. In July 2008, the partners issued a draft design of a regional energy rationing policy, also known as a cap-and-trade program.

Through the WCI plan, businesses and industries that emit over 25,000 metric tons of CO_{2e} annually fall under the cap and will be required to obtain emission “permits.” The regulated entities are allowed to use offsets to meet up to 49% of their mandated cap instead of purchasing more permits to emit. WCI states, “The primary role of the offsets system is to reduce the compliance costs for the cap-and-trade program, while ensuring the environmental integrity of the cap.”²

¹Climate Trust website. Available at < http://www.climatetrust.org/about_offsets.php>

²Western Climate Initiative: Design Recommendations for the WCI Regional Cap-and-Trade Program. September 23, 2008. Available at < <http://www.westernclimateinitiative.org/ewebeditpro/items/O104F20432.PDF>>

Origin of the Climate Trust

In 1997, Oregon passed the nation's first law (House Bill 3283) regulating and attempting to reduce CO₂ emissions. A carbon dioxide emission standard was established by HB 3283; it applies to base-load gas plants, non-baseload (peaking) power plants using any type of fossil fuel, and non-generating facilities that emit CO₂.

For base-load gas plants and non-base load plants, the current standard is a net emissions rate of 0.675 lb. CO₂ per kilowatt-hour. For non-generating facilities, the current rate is 0.504 lb. CO₂ per horsepower-hour. This allowable emission rate for CO₂ from such facilities is 17% below the “cleanest” known plant in the country, and it is periodically adjusted to remain 17% below the state-of-the-art plant. Therefore, a regulated facility cannot ever comply with the standard, no matter how emission-efficient the facility's processes are.

When the unattainable standard is not met, the regulated facility is required to offset excess carbon dioxide emissions. HB 3283 defines an offset as an action that is implemented by the applicant, a third party, or a qualified organization to avoid, sequester or displace CO₂ emissions. There are no limitations on the geographic location or types of CO₂ offset projects.

Regulated facilities have two compliance methods for offsetting their carbon dioxide that is in excess of the allowable emission rate. One method is for the regulated facility to implement offset projects directly or through a third party, and the other method is through what is called the “monetary path.”

For the first compliance method, regulated facilities may propose offset projects that it or a third party on contract will implement. The Oregon Energy Facility Siting Council (EFSC) then determines the quantity of CO₂ emission reductions reasonably likely to occur from the proposed project. To do so, the Council considers:

“This allowable emission rate for CO₂ from such facilities is 17% below the ‘cleanest’ known plant in the country....Therefore, a regulated facility cannot ever comply with the standard....”

- 1) The certainty that the projected offsets will be achieved;
- 2) the ability of the Council to determine what reductions resulted from the projects, based on the monitoring and evaluation the new energy facility proposes; and
- 3) the extent to which the CO₂ reductions would have occurred in the absence of the offset project, known as the concept of “additionality.”

The second compliance method is the “monetary path.” Regulated facilities can pay a specified amount per short ton of CO₂ as a way to meet the standard. The Oregon Energy Facility Siting Council sets this dollar amount per short ton of CO₂ (1 short ton = 0.90718474 metric ton). When HB 3283 was signed into law in 1997, the rate was set at 57 cents per short ton of CO₂. Every two years, EFSC may adjust the offset rate based on empirical evidence of the cost of CO₂ offsets. The last rate change was in May 2007, and it was set at \$1.27 per short ton (equivalent to about \$1.40 per metric ton).

The monetary path allows the regulated facility to avoid having to go through a lengthy process to prove the projected CO₂ offsets from specific projects and has become the preferred method for regulated facilities. It also provides certainty about what it will cost to meet the standard and allows a facility to avoid developing and managing offset projects itself.

Carbon Offsets and the Climate Trust

The monetary path relies on a “qualified” organization for its implementation. HB 3283 set the criteria for an independent, non-profit organization that is to administer this method of compliance. The Climate Trust was created independently in 1997 for this purpose and is currently the only qualified organization.

In accordance with HB 3283, the Climate Trust must use at least 80 percent of the offset funds for contracts to implement offsets directly. The Trust may use the remaining 20 percent for monitoring, evaluation, administration, and enforcement of contracts. The Climate Trust is also required to obtain the offsets in a timely manner and regularly to report its activities to the Energy Facility Siting Council (EFSC).

Since its founding in 1997, the Climate Trust has spent \$8.8 million in

carbon offset funding into 15 carbon dioxide offset projects that is proclaimed to offset close to 2.6 million metric tons of carbon dioxide.

All regulated facilities in Oregon built since 1997 have made payments to the Climate Trust. However, once they send the check, they have no further involvement in the offset process, and any liability associated with compliance with HB 3283 is removed. Therefore, they have little incentive to follow-up and find out how the money was spent.

As this analysis will show, there are reasons to be concerned about project implementation.

Problems Inherent with Carbon Offset Projects

There are a number of problems with the concept of offsetting carbon dioxide emissions. The key issues that need to be addressed with every project are: (1) lack of additionality; (2) verification and monitoring; (3) lack of permanence; and (4) leakage.

The Climate Trust believes that these problems can be overcome with well-established standards. According to the Trust, in order to be certain that an offset project results in a true net benefit to the environment, it must meet two essential tests:

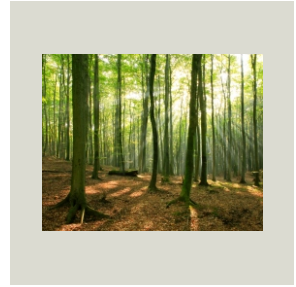
1. Additionality Test: It must be demonstrated that an offset project would not otherwise occur without the funding provided by the offset purchaser. In other words, the project is additional to “business as usual.”

“All regulated facilities in Oregon built since 1997 have made payments to the Climate Trust. However, once they send the check, they have no further involvement with the offset process....”

2. Sufficient Monitoring and Verification: Results must be rigorously quantified. A third party with no financial interest in the project must verify the method and the calculations used to quantify the results.

Additionality

The main problem with carbon offset projects involves the first test. Complying with the “additionality” standard requires verification that the investment would not have taken place in the absence of funds provided by the offset-seeking company. But it is impossible to prove a negative, so regulators can never actually know what might have happened in a free market.



Discussion of a hypothetical example illustrates the problem. If a carbon offset project, such as an industrial energy efficiency upgrade, has been perceived to be cost efficient and a sensible business decision, it is not considered additional. For example, a factory decides that an energy efficiency upgrade would save money by lowering the cost of doing business and decides to implement the project with private sector financing. For a carbon offset project, this would not be considered additional because the factory would have done this upgrade without funding provided by the offset purchaser.

In order for a project like this to be considered additional, it would have to occur only with the financial help of an offset purchase. This sets up a serious problem. Because of the existence of carbon offset funds, businesses are motivated to seek financing and help from offset purchasers in order to pay for upgrades. Even if a business could receive commercial financing, why would it pursue this route if organizations such as the Climate Trust are giving out “free” money? Businesses will work hard to prove that there is no way they could have afforded to upgrade without carbon offset funds. By receiving a carbon offset handout, the business essentially lowers the cost of becoming more competitive in the market. Any business surely would jump at a chance for this outcome, and outside auditors will never be able to state with confidence what might have happened under normal market conditions.

There is also a resource efficiency problem that exists with the concept of additionality. If a project truly cannot be completed without an offset purchaser's financial help, then the project in fact may be resource inefficient. In other words, the Climate Trust may be “buying” the high-hanging fruit and financing a bad investment. Thus, even if the Climate Trust could “prove” that the offset project is additional; this only means that no business making a rational

decision would finance such a project.

Given that most advocates of GHG reduction are aggressive (if not fanatical) supporters of improved energy efficiency, the carbon offset path creates a moral hazard problem. In order to promote offsets, energy efficiency advocates must support projects that are relatively wasteful. They can support either carbon offsets or resource efficiency, but they cannot seek both simultaneously through the same transaction.

Monitoring and Verification

Another problem involves the second test. The Climate Trust is required to quantify carbon dioxide offsets accurately so that the projects can be verified to offset the exact amount of carbon dioxide promised. This is difficult to do, since many carbon offset projects are long-term (up to 100 years), and there is frequently no way actually to measure the carbon dioxide offset. Most verification and quantification rely on a handful of assumptions and estimates, not empirical observations. This undermines the significance and quality of all offset projects.

Accountability of Funds

Beyond the Climate Trust's two essential tests, accountability of funds is a very important issue in any carbon offset project. Carbon offset money is intended to be used for implementing a carbon offset project directly. Unfortunately, the funds are often not directly used for implementing the project, thus negating the environmental benefits that are supposed to have occurred. The funds are frequently siphoned into other non-related activities and expenditures that have nothing to do with the carbon offset project.

The accountability of funds problem also involves the established EFSC cost effective rate at which carbon offset projects can be implemented, currently set at \$1.27 per short ton or \$1.40 per metric ton (1 metric ton = 1.102 short tons). If this cost effective rate is ignored or not followed with scrutiny, the regulated facilities are losing out on the true amount of carbon dioxide offsets that would have occurred if the rate was followed. Essentially, they are cheated out of what is promised to occur with the funds they have been forced to pay. This action could be considered fraud.

Permanence

Permanence can be a major issue with many offset projects, particularly with forest conservation and reforestation. The possible lack of permanence makes long-term carbon offset projects hard to verify and measure. Carbon dioxide sequestered in a forest may be released if the forest were to burn down. Also, if the contract dissolves or becomes unenforceable after a period of time, the project may not reach its goals or reduce carbon dioxide at all. Long-term contracts are extremely hard to enforce, and it is even harder to prove that the carbon dioxide offsets estimated to occur actually happen.

Leakage

Leakage occurs when an offset project causes an increase in greenhouse gas emissions at another location than the offset project site. For example, if a project protects against deforestation in a particular area, it is possible that demand for forest products could push logging operations to move to another location and negate any greenhouse gas reductions. Efficiency rebound effects also could be considered leakage. For example, if an energy efficiency project in the short run reduces energy consumption, yet the decrease in energy cost has a rebound effect causing energy consumption to rise in the long run, then the projected offsets are negated.

Although there are numerous complications with ensuring a quality and robust project, the Climate Trust is still considered the leader in high quality greenhouse gas offset projects, and the organization is perceived as an example of experience and reliability in carbon offsetting. Mike Burnett, executive director of the Climate Trust, states, “The Climate Trust provides a model for how to do offsets right. If the rest of the voluntary offset market applied the quality standards developed by the Climate Trust, consumers would get what they pay for, regulators would have greater confidence in offsets, and, most important, the atmosphere would see a significant increase in environmental benefits.”

Since the Climate Trust of Oregon is such a well-respected carbon offset provider, and their projects are perceived as some of the best in the nation, a closer look at the Climate Trust's projects should reveal much about the industry.

Audit of Climate Trust Offset Projects

Sequestration Projects

Sequestration projects are any projects that denote the permanent storage of carbon dioxide or other IR active compounds, so they will not be released to the atmosphere where they would contribute to the greenhouse gas effect.

The Climate Trust has been involved in three sequestration projects, and they are some of the first offset projects that the Trust has undertaken since its founding. The Deschutes Riparian Reforestation, the Ecuadorian Rainforest Restoration, and the Preservation of a Native Northwest Forest are the three projects that are sequestration type offset projects in the Trust's offset portfolio.

Amongst these three Climate Trust projects, there is a wide range of expected carbon dioxide offsets that is far from consistent or coherent. For the Deschutes Riparian Reforestation, 1500-1800 acres are supposed to offset 233,333 metric tons of carbon dioxide in 50 years, or the equivalent of 466,666 metric tons of carbon dioxide in 100 years. This equates to approximately 259 - 311 metric tons per acre per 100 years. For the Ecuadorian Rainforest Restoration, 680 acres of forest is expected to sequester 58,890 metric tons of carbon dioxide per 100 years. This equates to about 87 metric tons per acre per 100 years. Lastly, for the Preservation of a Native Northwest Forest, approximately 1654 acres is expected to sequester 350,000 metric tons of carbon dioxide per 100 years. This equates to about 212 metric tons per acre per 100 years.

Although different forests can have different sequestration potential, the Climate Trust provides no discussion of why these figures vary so widely. A forest in Washington State is estimated to sequester approximately 212 metric tons per acre, yet a forest of similar stature in Oregon is estimated to sequester approximately 285 metric tons. This discredits the legitimacy of sequestration projects.

“Although different forests can have different sequestration potential, the Climate Trust provides no discussion of why these figures vary so widely.”

In addition to the difficulties in accurately assessing carbon dioxide sequestration, permanence is a very serious issue with all of the sequestration projects undertaken by the Climate Trust. The contract signed by the offset participator states that in order to receive the offset funds from the Climate Trust, the forested land must be managed and verifiably sequestering carbon dioxide for the entire life of the project; in this case, either 50 to 100 years. Contracts are difficult to enforce after 50 to 100 years, and contracts in foreign countries may be easily dissolved by foreign governments. In 50 to 100 years, forested land could be devastated by insects, forest fires, storms or other natural disasters that ultimately could negate any carbon dioxide offsets. Currently at the Climate Trust, there is no accountability established if these things happen, and there certainly will be no accountability if they happen in 30 years or more.

Deschutes Riparian Reforestation

Offsets Expected:	233,333 metric tons carbon dioxide
Project Type:	Sequestration
Project Lifetime:	50 years
Contract Signing Date:	2002
Location:	Oregon
Project Partners:	Deschutes River Conservancy

Background on Project:

The Climate Trust contracted to buy offsets from a Deschutes River Conservancy (DRC) program that helps landowners in the Deschutes River Basin reforest denuded riparian areas with native trees.

The Climate Trust funding pays DRC to recruit and provide incentives to landowners to participate in the offset program. Landowners enter into legally binding agreements to preserve the trees for at least 50 years.

By 2008, 1500 to 1800 acres of riparian habitat were expected be restored and actively sequestering carbon.

The agreement is contracted to last 52 years from the planting date.

Problems:

According to the Climate Trust, 1500-1800 acres were supposed to

be actively sequestering carbon dioxide by 2008. As of September of 2008, only 367 acres had been “reforested,” and there were no more planned for 2008.³ This is only 20-24% of their goal (depending on the exact figure of the Climate Trust's goal, as only a range is given). The Climate Trust states that the project will sequester 233,333 metric tons carbon dioxide equivalent to taking 46,480 cars off the road for a year over the 50-year lifetime of this project. Due to actual 20-24% of realized offsets, they may only sequester 47,574 to 56,000 metric tons of carbon dioxide, which is the equivalent to taking only 9,576 cars to 11,115 cars off the road for a year. In accordance with HB 3283, the regulated facilities are not held accountable for offset project failure once the facility has paid through the “monetary path.” Apparently, the Climate Trust is not held accountable for failed projects either, since their goal of reforestation is not being met.

What is more, the offsets that supposedly did occur are far from additional. Out of the mere 367 acres reforested, approximately 250 acres are owned by Ochoco Lumber Company. For these 250 acres, Ochoco had met reforestation mandates required by the Forest Practices Act, and the land was already restocked with trees at a certain height.⁴ The 1972 Forest Practices Act was amended in 1995 and established a standard to ensure timely replacement and maintenance of tree cover following forest operations. The 250 acres currently owned by Ochoco were harvested earlier by a now-bankrupt company called Pacific Crown. When the land came into the hands of Ochoco, the trees that were left had suffered a bad case of budworm. Ochoco harvested the affected trees for chip wood and to prevent forest fires and then planted more than a million seedlings in the region to comply with the Forest Practices Act.

Ochoco stated that they had completely complied with mandatory reforestation requirements and were not planning on logging the area because of laws preventing future harvesting due to the classification of the land as a riparian area. **The Climate Trust paid a lumber company, which was not planning on harvesting trees in the area, to plant more trees on an already mandated stocked land.**

³Email conversation with Scott McCaulou, Director of the Deschutes River Conservancy. Sept. 3, 2008.

⁴Phone Conversation with Ochoco Lumber Company. October 2008.

The Climate Trust has three established “tests” that define additionality.⁵ Test 1, the Regulatory Surplus Test, directly pertains to the sale of offsets by the Ochoco Lumber Company. The test ensures that the project that is occurring is not mandated by any existing law, policy, statute or other regulatory framework. If it is, then it is assumed that the project is being developed to comply with the law or regulation and thus cannot be considered additional. Trees were already stocked according to an Oregon forest regulation mandating a minimum stocking requirement after harvesting. The offsets purchased from Ochoco’s 250 acres cannot be considered additional.

Of course, an obvious and serious issue arises when a lumber company receives money to plant trees that potentially could be used as an asset after 52 years of growth. It is hard to lay blame on Ochoco, which simply made a sound business decision in signing up for the Climate Trust funds. Current legislation makes the riparian area virtually off limits to logging; thus the land is close to worthless for forestry products. However, Ochoco can make money by selling offset rights to the Climate Trust in exchange for planting more trees that may be able to be logged in the future if regulations are amended or changed.

To date, the Climate Trust has refused to provide documents or figures on the amount that was paid to Ochoco through the Deschutes River Conservancy. It would be fair to assume that since the dollar amount paid to Ochoco has not been made available, the Climate Trust must have paid the lumber company a dollar amount per metric ton of carbon dioxide well above the established EFSC cost effective rate.

Preservation of a Northwest Native Forest

Offsets Expected:	350,000 metric tons carbon dioxide
Project Type:	Sequestration
Project Lifetime:	100 years
Contract Signing Date:	2002
Location:	Washington
Project Partners:	Lummi Indian Tribe

⁵Climate Trust website, Additionality Guidance: http://climatetrust.org/solicitations_Open_Additionality.php

Background on Project:

The Climate Trust contracted to purchase offsets from a Lummi Indian Tribe project to acquire forestland and manage it to permanent old growth. As stated on the Climate Trust website, the Lummi Indian Tribe with funding from the Climate Trust has bought more than 1,654 acres of historical tribal forestland near Mt. Vernon, Washington, to protect it from logging and to capture 350,000 metric tons of carbon dioxide over the next century.

A 100-year conservation easement is expected to ensure that old growth forests develop and are preserved.

Problems:

The Climate Trust stated that its grant had been given to the Lummi tribe to buy forestland that was threatened by commercial logging. At the time of the Climate Trust's involvement, the land was not in any danger of being logged. The land was owned by Crown Pacific. As early as 1998 if not earlier, Crown Pacific was working with the Lummi tribe so they could regain control of the land. Thus, at the time of the contract signing, the culturally significant area that was desired by the Lummi tribe had already been set aside to be sold to the tribe in the future.

Also, Crown Pacific did not practice clear cutting of forests. The company practiced tree selection forestry in which forests are thinned out so that only a few trees from an area are harvested at any one time. Crown Pacific openly revealed both of these facts on their website earlier than 1998. This land was not in any danger of being logged even four years before the Climate Trust began its involvement with the Lummi tribe.

"The Climate Trust stated that its grant had been given ... to buy forestland...threatened by commercial logging. At the time of the...Trust's involvement, the land was not in any danger of being logged."

The premise behind additionality is that a carbon offset project would not have been undertaken without an offset purchaser's funds. The Climate Trust website states, "With The Climate Trust's funding, the Lummi Indian Tribe was able to acquire the Arlecho Creek site that would have remained under logging company ownership, and been subsequently logged." But this claim is far from the truth.

The Climate Trust gave the Lummi Tribe a grant of \$106,000 and according to Zach Dewees, forest manager of the Lummi natural resources division, **“The \$106,000 went to fund tribal objectives, specifically, the 2008 Lummi Canoe Journey and the Northwest Indian College Billie Frank Endowment.”** The grant obviously did not go to the purchase of the land, thus negating additionality for this project. The Climate Trust either was not aware that these funds were not going to the purchase of the land or they ignored it and decided to keep up the image of the Climate Trust and its portfolio. Either scenario reflects that there is a serious lack of accountability of funds and additionality.

Even assuming the funds had gone to help the Lummi tribe purchase the land and the land was legitimately in danger of being logged in the near future, the Climate Trust claimed an inaccurate figure of carbon sequestration. The Climate Trust claimed that 350,000 metric tons of carbon dioxide would be sequestered from the land, yet Zachary Dewees admitted that the actual sequestration from these acres would be only 263,159 metric tons. This is almost 100,000 metric tons less than projected, or about 75% of their original goal. This certainly brings up questions about the Climate Trust's ability to accurately quantify carbon dioxide offsets through sequestration projects.

Ecuadorian Rainforest Restoration

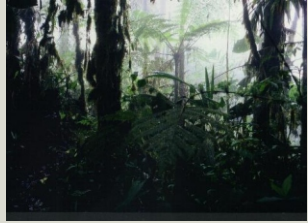
Offsets Expected:	58,890 metric tons carbon dioxide
Project Type:	Sequestration
Project Lifetime:	99 years
Contract Signing Date:	2002
Location:	Ecuador
Project Partners:	Jatun Sacha Foundation and Conservation International

Background on Project:

The Climate Trust contracted to purchase offsets from Conservation International and Jatun Sacha Foundation to reforest more than 680 acres in northwest Ecuador. Over seven years, 25 native hardwood species are expected to be replanted on the site. This project will restore and protect the land and allow it to grow back to old growth forest. Over the life of the project, this square mile of forest is projected to capture at least 65,000 metric tons of carbon dioxide.

Problems:

This project is the perfect example of why international offsets can be a problem. For four months, emails were sent to numerous contacts at the Jatun Sacha Foundation in Ecuador asking questions that were posed in both Spanish and English. The questions were simple and asked about the success or failure of the project to date. The questions regarded how many acres had been reforested to date, how the Climate Trust funds helped complete the project, who manages the reforested land to ensure that it remains untouched and forested, how much money the Climate Trust contributed to the project, and if the reforestation would have gone forward without help from the Climate Trust.



After being constantly redirected to another Jatun Sacha employee who supposedly would be able to answer the questions, a formal response was finally received. The email read, “The information you solicit unfortunately is restricted....In case this information is authorized for release, I would like to know what this information would be used for.”⁶ Attempts to contact Conservation International, the group that partnered with the Climate Trust and the Jatun Sacha Foundation, led to a similar dead end. After phone calls, messages left on voicemail systems, and emails, there were no calls back or answers to the few questions regarding this project.

The lack of transparency in offset projects is particularly unsettling. The secrecy and avoidance of simple project-related questions undermines the credibility of this offset project and makes one question if the project were ever accomplished at all.

Energy Efficiency Projects

Energy efficiency and its close kin, transportation efficiency, are frequently touted as the silver bullet to decreasing greenhouse gas emissions. The main premise behind this is the belief that efficiency reduces energy consumption and that these reductions in

⁶Email from Carlos Aulestia, director of the Jatun Sacha Foundation, Nov. 30, 2008.

consumption are expected to lead to a reduction in the combustion of fossil fuels, which is the primary human cause of greenhouse gas emissions.

Will efficiency upgrades help reduce greenhouse gases by reducing energy consumption⁷? Probably not.

Energy consumption, whether it is electricity used at a business or gasoline usage for a vehicle, is directly related to energy prices. As energy prices rise, consumption declines. Increases in energy efficiency essentially lower energy prices. As a result, a consumer can use more energy but at the same cost as before. When efficiency is improved, there is room for new energy demand over the long run. Businesses that undertake efficiency upgrades will be able to produce goods at a cheaper rate, allowing a lowering of prices which increases demand and, in turn, lets the business ramp up production. This is known as the rebound effect.

Consumers with lower electricity or gasoline bills due to efficiency upgrades also will enjoy a higher relative income, which likely will be spent on energy intensive goods, further fueling energy demand. This is why efficiency has increased significantly in recent decades while consumption is higher than ever. In order to curb energy consumption, one would have to lower efficiency or make energy more expensive by some other means, such as a tax.

Aggregate energy consumption in Oregon has increased 133% from 1960 to 2005. This happened despite major gains in energy efficiency over the past 40 years. From 1963 to 2005, the energy intensity of the Oregon economy (the amount of energy consumed per unit of GDP) declined by 91%, a fantastic achievement⁸. Yet, total

⁷Alcott, B., and Madlener, R. 2006. Energy Rebound and Economic Growth: A Review of the Main Issues and Research Needs. Centre for Energy Policy and Economics.

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⁸Wynn, T. 2008. Why Energy Efficiency Doesn't Always Reduce Greenhouse Gases. Cascade Policy Institute Commentary. Available at <http://www.cascadepolicy.org/pdf/env/2008_34.pdf>

energy consumption more than doubled. The more efficient our society, the more energy we desire.

This is not to say that efficiency is a bad thing to pursue. Efficiency in general should be looked at in a positive light. It is always better to have a more productive device that uses fewer inputs. However, agencies and politicians need to realize that efficiency is not the silver bullet to reduce greenhouse gases and that carbon offset projects related to energy efficiency most likely will not reduce greenhouse gases significantly or at all in the long run.

There is some misguided logic involved in carbon offset purchases involving efficiency. If these projects are truly efficient and save money in lower energy costs, the Climate Trust should not need to help finance upgrades. If the efficiency upgrade made sense and was cost effective, then businesses most likely would find financing and complete the upgrade. This brings up two serious issues. One is that businesses are motivated to take advantage of extra handouts from the Climate Trust in order to implement an upgrade that would have saved them money anyway. The other is that the Climate Trust funds could be financing a cost-ineffective upgrade that may not reduce energy usage at all.

What follows is an audit of four of the earlier and close-to-completed efficiency-type projects that the Climate Trust has undertaken.

Internet Based Carpool Matching

Offsets Expected:	70,000 metric tons carbon dioxide
Results:	3,075 metric tons of carbon dioxide were reduced through CarpoolMatchNW.org; 24,882 metric tons carbon dioxide were delivered as replacements tons. The replacement tons are not included in the Climate Trust's portfolio.
Project Type:	Transportation Efficiency
Project Lifetime:	10 years but contract ended after 5 years
Contract Signing Date:	2001
Location:	Oregon
Project Partners:	City of Portland

Background on Project:

The Climate Trust contracted with the City of Portland to purchase offsets from an Oregon-based project that established and operated an interactive website to help commuters conveniently and easily arrange carpools. The free service, CarpoolMatchNW.org was designed to save 70,000 metric tons of carbon dioxide over 10 years.

The website was developed by Portland's Office of Transportation in partnership with nearly 20 other transit agencies, associations, and businesses. During the project's life, the Portland Transportation Options Division expanded the project to include other Oregon areas, including the Rogue Valley in Southern Oregon.

Registered users of the site enter their point of origin, destination, and schedule and see a map showing the general location and email addresses of potential riders in their neighborhood. Drivers send e-mail messages to potential riders with whom they would like to carpool or vanpool. Responders then provide enough information to form a carpool or vanpool. Registered users control the amount of personal information to be exchanged.

Problems:

This project was one of the earliest projects undertaken by the Climate Trust. It was created in 2001 with \$120,000 in offset funds from the Climate Trust. Portland's Office of Transportation (POT) took the lead in implementing the program, and other entities including Tri-Met, C-Tran in Vancouver, and the city of Salem also signed on. The program was based on the belief that if people could log on to an internet site to find compatible carpoolers, significant numbers of people would leave their cars behind and begin ride-sharing, thereby avoiding the generation of CO₂ caused by single occupancy trips.

The Climate Trust and the other participating agencies should have seen some large warning signs from the beginning. First, carpooling has been steadily dropping over the past 20 years. To the extent that there is barely any carpooling at all, it is clearly dominated by so-called “fam-

“The program was based on the belief that if people could log on to an internet site to find compatible carpoolers, significant numbers of people would leave their cars behind and begin ridesharing....”

pools,” that is, family members sharing rides, such as parents driving a few kids to school while on the way to work. As Louise Tippens, the first manager of CarpoolMatchNW.org noted at the time, “The interesting thing about Portland-area car pools is that most are comprised of family members.”

After one year of promotion, the results were disappointing. Portland had promised the Climate Trust that carpooling would generate 2,000 metric tons of carbon offsets; the estimated actual number was only 95 metric tons, or roughly 5% of the goal. So few people signed up the first year that *The Portland Tribune* ran a feature story estimating that each new carpool formed had cost electricity ratepayers about \$29,000.

For the next three years, the targets jumped to 4,500, 7,500 and 8,000 metric tons respectively, but the cumulative offsets for the four-year period only totaled 14% of the goal.

The Climate Trust now admits that the project failed. The Trust's website acknowledges that the goal for the project was 70,000 metric tons of CO₂ offsets over 10 years, but it only achieved 3,075 after five years and those were estimated, not measured. Therefore, the Trust terminated its contract with the City of Portland in 2006.

A clause in the contract allowed Portland to fulfill its CO₂ offsets obligation by substituting offsets from other activities. After negotiations, the city provided replacement offsets from two transportation projects: the Eastside Hub project (20,614 metric tons) and the TravelSmart Interstate project (4,268 metric tons). Both projects utilized “individualized marketing strategies to reduce

trips and promote alternative methods of transportation”, strategies that were unlikely to succeed for the same reasons the internet-based carpooling failed.

“After one year of promotion, the results were disappointing. Portland had promised the Climate Trust that carpooling would generate 2,000 metric tons of carbon offsets; the estimated actual number only 95 metric tons, or roughly 5% of the goal.”

However, ultimately it didn't matter. According to Jed Jorgenson, Marketing and Communications Manager at the Climate Trust in 2007, “While both are excellent projects, The

Climate Trust did not attempt to quantify their results. These replacement offsets are not included in the Climate Trust's offset portfolio."The carpool matching program shows that there is little accountability to ensure that those who are forced to pay for carbon offsets get anything in return. The City of Portland had a contractual obligation with the Climate Trust, but the initial offset strategy failed and then the Trust allowed Portland to escape with non-verified replacement offsets.



Also, when the contract was signed with the Portland Office of Transportation in 2001, the offset rate was \$0.85 per short ton of carbon dioxide. This rate was established by the Energy Facility Siting Council in order to reflect the cost of offsetting carbon dioxide that was in excess of the HB 3283 standard. For example, if a regulated facility was 100,000 short tons over the standard, this facility would pay \$85,000 and expect that the excess tons would be completely offset by Climate Trust offset projects. If the Climate Trust did not adhere to this offset rate, then the regulated facility did not get what it paid for, and the purpose behind HB 3283 is not being achieved. For the carpool matching project, the Climate Trust spent \$120,000 of regulated facility money, which at a rate of \$0.85 per short ton should have represented 102,000 short tons of offsets. Instead the Climate Trust only delivered a mere 27,957 metric tons of unverifiable offsets. This is a discrepancy of approximately 64,576 metric tons of carbon dioxide offsets. At a rate of \$0.85 per short ton (\$0.94 per metric ton), regulated facilities were essentially cheated out of approximately \$60,701.44.

Portland Building Energy Efficiency

Offsets Expected:	392,035 metric tons carbon dioxide
Project Type:	Energy Efficiency
Project Lifetime:	5 years
Contract Signing Date:	2002
Location:	Oregon
Project Partners:	Portland Office of Sustainable Development

Background on Project:

The Climate Trust expected to create offsets by promoting the installation of energy efficiency measures in multifamily housing in Oregon and Washington and in commercial buildings in Oregon.

The Climate Trust paid the Portland Office of Sustainable Development to help multifamily property owners reduce energy use by installing and implementing energy saving measures, thus reducing the related carbon dioxide emitted from electricity generation and creating carbon dioxide offsets. In return, the property owners transferred ownership of the offsets to the Climate Trust.

There were two main projects within this energy efficiency plan. One is the multi-family assistance program (MAP), and the other is the commercial green building program (CGBP).

Problems:

Additionality for this project is hard, if not impossible, to prove. Would these commercial buildings and residential units have invested in energy efficient measures on their own? Apparently, the Climate Trust expects that some of the energy efficient measures they undertook are additional and some are not.

In its monitoring and verification reports, the Office of Sustainable Development has used a few arbitrary figures to calculate the percentage of offsets that it considers not to be additional. These figures are surprisingly different in definition and magnitude between the Commercial Green Building Program and the Multi-Family Assistance Program.

For the CGBP, it is assumed that energy savings per site due to the Climate Trust investment is the energy savings minus 10%. The Office of Sustainable Development states, "This 10% reduction accounts for the anticipated market penetration of energy savings measures that would occur in the absence of the Climate Trust." This is an attempt to arbitrarily quantify what percentage of the Climate Trust's investment is additional.

For MAP, it is assumed that energy savings per site due to the Climate Trust investment is the energy savings minus 5% in order to reflect the "building decay and uncertainties." Although not explicitly

stated, building decay could be defined as depreciation of old building measures that is replaced with newer, more energy efficient measures. This would occur without any Climate Trust funds and is therefore not additional. Uncertainty is neither defined nor explained in the reports.

The CGBP does not include any sort of decay or depreciation rate, and MAP does not include any form of expected self-adoption that would have occurred without the Climate Trust funds. The lack of consistent rates across programs makes one question whether the figures for actual energy savings have been inflated.

The arbitrary assumptions do not end there. For the final 2006 Monitoring and Verification report, a figure for “background” was used in the final calculations of energy savings/carbon offsets. According to the report, background is described as a deduction for a specific amount that would have occurred without the Climate Trust’s involvement. The final report uses a value of 5% (again not consistent with the previous discount rates). Using the 5% “background” figure, the report states, “...[T]he draft verification process identified a shortcoming in the results after adjustment for background savings. This deficit required Portland to submit some additional savings in order to ‘true up’ to the contract amount. Portland made up the deficit by specifying two additional multifamily projects in Nov. 23, 2007.”

This means that the arbitrary figure chosen to represent “background” is extremely influential in determining whether the Climate Trust has met its offset goals. By simply including this “background” figure that attempts to calculate lack of additionality, the quality of the offset project is diminished.

There is also a problem of lack of accountability of funds. When this project began, the EFSC monetary offset rate was at \$0.85 per short ton. However, the Climate Trust began paying the Office of Sustainable Development \$3.81 per metric ton of carbon dioxide offset times the number of metric tons of CO₂ offsets for each site. Even using

“...[T]he arbitrary figure chosen to represent ‘background’ is extremely influential in determining whether the Climate Trust has met its offset goals.”

the current May 2007 established EFSC rate of \$1.27 per short ton of CO₂ (or the equivalent of about \$1.40 per metric ton), the Climate Trust was paying 272% more per metric ton of carbon dioxide offset than it should have been. At this rate, the Climate Trust truly “owed” the regulated facility that was forced to pay for much more carbon dioxide offsets than were actually delivered.

“Mysteriously, in 2006, with no discussion or explanation in the reports, the Climate Trust changed its payment rate and started paying \$1.50 per metric ton, which is much closer to the 2007 EFSC rate.”

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The Climate Trust paid \$985,653.29 at a rate of \$3.81 per metric ton and an additional \$200,000 at a rate of \$1.50 per metric ton. If the Climate Trust had paid the 2007 established offset rate of \$1.40 per metric ton, 846,895 metric tons of carbon dioxide could have been offset. Instead only 392,035 metric tons were estimated to have been offset. This means that regulated facilities were cheated out of 454,860 metric tons of offsets. At a value of \$1.40 per metric ton, these facilities were cheated out of \$636,804.29.

Traffic Signal Optimization

Offsets Expected:	171,786 metric tons of carbon dioxide
Project Type:	Transportation Efficiency
Project Lifetime:	10 years
Contract Signing Date:	2002
Location:	Oregon
Project Partners:	Portland Office of Sustainable Development

Background on Project:

The Climate Trust contracted to buy offsets from a City of Portland project that improves the timing of traffic signals. The Portland Office of Sustainable Development is working with the Portland Office of Transportation, Washington County, and the Oregon Department of

Transportation to improve signal timing on seventeen major metropolitan area arterials. It is expected that by reducing idling and acceleration, emissions of carbon dioxide from gasoline and diesel fuel will decrease.

The project is expected to offset 171,786 metric tons of carbon dioxide, which is the equivalent to taking 34,220 cars off the road for a year. The project began in 2002 with a 10-year time period.

Problems:

The Office of Sustainable Development in Portland received a grant of \$533,000 from the Climate Trust to reduce CO₂ emissions through traffic signal optimization in Portland and another \$80,239 to Multnomah County for 4 traffic signal optimizations. Before the contract signing date, the City of Portland had a local action plan on global warming (Resolution no. 35995) which established a goal of reducing local greenhouse gases by 10 percent below 1990 levels by 2010. Two years before the contract signing with the Climate trust, traffic signal optimizations were being completed. Plans for more traffic signal optimizations were part of the city's long-term goals. The 2000 local action plan states: "...Continue the City's signal optimization plans until all major streets and roads are optimized. The City plans to optimize signals on two major arterials per year through 1997.... City will continue to optimize a single arterial each year from 1998 through 2010."⁹

There is no additionality for this offset project, since the City of Portland was already going to implement traffic signal optimizations with its own funds and established this two years before any discussion of offset funds from the Climate Trust.

Even assuming that the City of Portland had no intention to optimize signals in order to reduce greenhouse gases, additionality for a traffic signal optimization project is near impossible. Signal optimization is not only for reducing greenhouse gases, but it is a tool used by many transportation departments to reduce traffic and congestion. Many of the roads in these areas would need to be revamped or expanded due to traffic growth and congested conditions, and the most cost effective way to do this would be to optimize signals.

⁹Sten, E. 2000. City of Portland: Carbon Dioxide Reduction Strategy Success and Setbacks. Portland Energy Office. Available at <<http://www.portlandonline.com/shared/cfm/image.cfm?id=112113>>

Traffic signal optimization is performed in many cities in order to postpone the need for costly long-term road constructions, and it is well known that it improves traffic flow with already existing resources. The city most likely would have optimized these signals in the near future even without the Climate Trust's funds. The Climate Trust grant was simply “extra” money that the City of Portland and Multnomah County jumped at the chance to get their hands on.

Setting aside the issue of the lack of additionality, the Climate Trust figures on fuel savings are over-inflated. The Climate Trust hired a company called DKS associates to monitor and verify the fuel savings and the subsequent carbon dioxide offsets. DKS associates used a program called Synchro in order to estimate the fuel savings that may be achieved through the optimizations. Synchro is a traffic analysis program designed and sold by a company called Trafficware. It uses certain assumptions on fuel efficiency, fuel types, and types of vehicles to estimate the fuel savings of a certain traffic measure.

When asked about the assumptions, a Trafficware employee, John Albeck, stated that the estimations were most likely not accurate because of changing fuel efficiencies and other factors. Mr. Albeck stated, “As noted, the values [assumptions of fuel savings] are based on empirical data which admittedly is quite old.”¹⁰ Even if the carbon dioxide offsets in this project could be proved to be additional, the actual offsets are estimated using assumptions of dubious quality.

Once again there is a lack of accountability of funds due to the Climate Trust's neglect of the EFSC monetary offset rate. At the beginning of the project, the Climate Trust was paying a rate of \$2.74 per metric ton of CO₂ offsets, which is above the \$1.40 per metric ton offset rate set in May 2007 and well above the rate of \$0.93 per metric ton established at the contract signing date. By not using the 2007 EFSC established rate, the Climate Trust cheated regulated facilities out of half of what they expected to pay for. Although the contract agreement clearly established a rate of \$2.74 per metric ton of offsets, the Climate Trust grant totaled \$533,000 for 171,786 metric tons of CO₂, which is a rate of \$3.10. In other words, the Climate Trust should have paid \$470,693.64 for 171,786 metric tons of offsets but instead overpaid by \$62,306.36.

¹⁰Email from John Albeck with Trafficware. Jan. 6, 2009.

Blue Heron Paper Manufacturer Efficiency Upgrade

Offsets Expected:	191,232 metric tons of carbon dioxide
Project Type:	Energy Efficiency
Project Lifetime:	10 years
Contract Signing Date:	2004
Location:	Oregon
Project Partners:	Blue Heron Paper Company, Energy Trust of Oregon, Oregon Department of Energy

Background on Project:

The Climate Trust contracted to buy offsets from an industrial energy efficiency project being implemented by the Blue Heron Paper Company. The efficiency upgrade is expected to reduce Blue Heron's energy use by 25% and increase its capacity to use recycled paper as a raw material. In addition, the Energy Trust of Oregon and the Oregon Department of Energy provided financial incentives, energy tax credits, and loans to supplement Blue Heron's portion of the investment. This is considered one of the largest energy efficiency projects ever undertaken in Oregon.

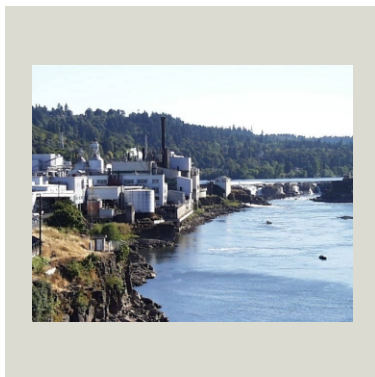
Blue Heron uses two types of feedstock to make their paper: wood waste chips from timber operations and recycled paper. Paper manufacturing using the recycled paper feedstock is considered much less energy intensive. This carbon offset project is expected to increase the facility's capacity to use the recycled paper feedstock through the removal of production bottlenecks, retrofit of equipment, and other measures. Overall capacity of the facility is expected to remain the same, resulting in a decrease of energy intensity and fossil fuel consumption.

Problems:

The Blue Heron efficiency upgrade project is the perfect example of misguided incentives. According to Bruce Martin¹¹ with the energy and environmental department at Blue Heron, the Energy Trust of Oregon volunteered to perform an energy audit on the processes at the paper manufacturing plant. Blue Heron welcomed the idea of

¹¹ Telephone interview with Bruce Martin at the energy and environmental department at Blue Heron. Nov. 4, 2008.

receiving free advice on how to become more energy efficient. When the audit was performed, an opportunity for a large amount of energy savings was noticed if the majority of the equipment at the plant was upgraded. The Energy Trust noticed that an upgrade of this magnitude was well beyond the allowed scope of the Energy Trust. However, the Trust had a meeting and decided to temporarily waive the limits of funding that can be provided to industrial efficiency upgrades and awarded Blue Heron the money that was needed to move the project forward.



The upgrade of Blue Heron was expected to cost approximately \$11.8 million dollars, and after being fully implemented, the annual savings in energy were expected to top \$5.3 million annually, making the payback period a little over two years. Although the upgrade seems to show a completely feasible return that could have been facilitated by private sector financing, there would be no incentive for Blue Heron to seek private financing if a number of free handouts were offered to them from the start.

Incentives from the Energy Trust, the Climate Trust, The Oregon Department of Energy and the business energy tax credit create a serious problem. Why would Blue Heron even attempt to gain outside private sector financing if they knew a large amount of subsidies were available? The Energy Trust provided approximately \$5.4 million in incentives. Also, along with a \$4.5 million dollar construction loan from the Oregon Department of Energy, Blue Heron received \$2.8 million in tax credits through the Oregon Business Energy Tax Credit¹².

When asked the question, “Did the company attempt to gain financing outside of using Energy Trust funds and Climate Trust funds?”, Bruce Martin stated, “Not that I am aware of.” Mr. Martin went on to say that the Energy Trust offered Blue Heron help from the beginning, since they had performed the energy audit. Also, in a

¹²Energy Trust of Oregon Case Study: Blue Heron Paper Company. 2006. Available at <http://energytrust.org/library/case_studies/BlueHeron_CS.pdf>

phone conversation with Ron Ingram¹³, the chief financial officer at Blue Heron, he stated, “We didn't pursue outside private financing.”

When asked a hypothetical question about whether Blue Heron would have undertaken the project if the incentives were not available, Bruce Martin stated, “I'm assuming we probably would have gone for the upgrade in the future if we had noticed the opportunity and in order to save our business because costs were increasing.”

“This offset project was obviously not additional from the beginning. Outside financing may have been able to provide enough funding to facilitate the efficiency upgrade at Blue Heron.”

This offset project was obviously not additional from the beginning. Outside financing may have been able to provide enough funding to facilitate the efficiency upgrade at Blue Heron.

According to the Climate Trust website, the Trust had given a grant of \$500,000 to Blue Heron in order to meet the capital costs of completing the upgrade. The Climate Trust claims that the project could not have been undertaken without their help. Clearly there is no evidence to support this assertion.

In fact, the Climate Trust grant had not even been given to Blue Heron, and the “offset deal” that the Climate Trust worked out had been entirely through the Energy Trust. In a telephone conversation with Ron Ingram, CFO at Blue Heron, he explained the involvement between Blue Heron and the Climate Trust, “What is our relationship with the Climate Trust? I can just quickly tell you we did not have a direct relationship with the Climate Trust. The entire deal was through the Energy Trust...and the Climate Trust was able to get some ongoing emission type credits from our project. **We had no direct relationship with the Climate Trust.**”

In response to a follow up question regarding what the \$500,000 Climate Trust grant did for Blue Heron, Mr. Ingram said, “What happened was the award we got from the Energy Trust was based on their assumptions and rules and we passed muster...then, before they got to finalization, they kind of used the Climate Trust as a way to

¹³Telephone interview with Ron Ingram, chief financial officer at Blue Heron. Nov. 5, 2008.

spread their risk if you will. They assigned a piece of the energy and savings to the Climate Trust and got reimbursed. We did not get anything extra from the Climate Trust. We did not even know the Climate Trust was going to be involved in it. But we didn't really care because we knew the Energy Trust was going along with the deal already. We eventually signed an agreement at the end that acknowledged that they [Climate Trust] were a part and how they claimed the offsets from the project.”

“Blue Heron may have been able to implement the efficiency upgrade in absence of the incentives and tax credits. Unfortunately, this cannot be proven because incentives were a critical part of the upgrade from the start.”

Elaine Prause¹⁴, the senior industrial sector manager at the Energy Trust, said she knew little about the project and the workings of the deal and neither does anyone else with the Energy Trust, since the person who handled the project had already left the publicly funded nonprofit. She also went on to say that the information was confidential and not publicly available.

The Climate Trust grant did not go directly to the Blue Heron Paper Company, nor was the grant necessary in facilitating the upgrade. Blue Heron may have been able to implement the efficiency upgrade in absence of the incentives and tax credits. Unfortunately, this cannot be proven because incentives were a critical part of the upgrade from the start.

Once again, the Climate Trust does not adhere to the monetary offset rate established by the EFSC. The grant of \$500,000 has gone supposedly to offset 191,232 metric tons of CO₂. This is a rate of \$2.61 per metric ton, which is well above the current established rate of \$1.40 per metric ton. If the Climate Trust had adhered to the 2007 rate, the \$500,000 should have offset approximately 357,143 metric tons instead of the mere 191,232 metric tons that have been estimated. Regulated facilities paid a certain sum using the “monetary path,” which is equal to the short tons of carbon dioxide in excess of the HB 3283 standard multiplied by the current established offset rate of \$1.27 per short ton. The regulated facilities were cheated out of 165,911 metric tons of offsets worth approximately \$232,275.

¹⁴Telephone interview with Elaine Prause, senior industrial sector manager at the Energy Trust. Nov. 5, 2008.

Renewable Energy Projects

Renewable energy generation is frequently stated as a solution to problems allegedly associated with global warming and fossil fuel use. Although renewable energy may be able to play a role in energy generation, it will never be able to completely meet energy demands.

For the purposes of offsetting carbon dioxide, carbon offset purchasers frequently look towards helping finance renewable energy that does not use fossil fuels, such as wind turbines or solar panels. It is widely known that energy produced by wind and solar energy is considerably more expensive than fossil fuel generated energy. This is due to a number of factors but mainly to construction costs, the unreliable and inconsistent nature of the wind and sun, and the efficiency of the generator itself.

The variability and inconsistent nature of wind and solar present substantial challenges to balancing the electricity grid system. In order to maintain grid stability, energy supply and demand must remain in balance. Because of this need for grid stability, there must be a power source that is turned off when the wind is blowing or the sun is shining and turned on when these power sources are not available. This typically means operating a natural gas or coal fired power plant below optimal efficiency to back up the variable power source. There are difficulties and costs associated with shutting off thermal power plants so these plants will operate in spinning standby mode, emitting more CO₂ per kilowatt hour (kWh) than if the use of the plant was optimized, and thus offsetting many of the acclaimed benefits of wind or solar power. Furthermore, the use of more wind energy increases the need for fossil fuel generating plants to operate on spinning standby mode.

In some areas, the variability of wind and solar power is met with hydropower facilities. In this case, when renewable energy enters the grid, the hydroelectric dams are shut off to prevent an overload in the system. This combination of wind or solar with hydropower can eliminate the problems associated with fossil fuel plants being on spinning standby. However, the question then arises as to whether the renewable power actually displaces fossil fuel generation, since when the renewable power enters the grid, hydroelectricity is decreased, not fossil fuels.

Because of integration problems and maintaining the integrity of grid

stability, renewable generation is and will continue to be a small part of the nation's energy generation.

The fact is, fossil fuels are cheaper, easier to manage on the grid, and can provide reliable and consistent base-load power. This makes it illogical actually to shut down existing fossil fuel plants because more renewable sources enter the grid.

“Renewable energy advocates like to profess that new renewable power added to the grid offsets the need to build a new coal or natural gas power plant. This is incorrect.”

Renewable energy advocates like to profess that new renewable power added to the grid offsets the need to build a new coal or natural gas power plant. This is incorrect. The unreliable nature of wind and solar power means that they cannot be base-load power generators. Base-load power generation is needed to provide reliable and consistent power, and this has been traditionally achieved by the use of fossil fuels. Renewable power only provides some power generation when the wind is blowing or the sun is shining. Therefore, it always will need a back up source. The use of more renewable energy will never significantly decrease the use of fossil fuels.

This sets up an unfortunate situation for the Climate Trust and for other offset providers which claim that funding directed toward renewable power generation is a one-for-one tradeoff with fossil fuel generation.

Innovative Wind Financing

Offsets Expected:	23,893 metric tons carbon dioxide
Project Type:	Renewable Energy
Project Lifetime:	10 years but completed in 2
Contract Signing Date:	2002
Location:	Oregon and Washington
Project Partners:	Bonneville Environmental Foundation

Background on Project:

The Bonneville Environmental Foundation (BEF) and the Climate Trust shared the costs of a joint purchase of the “pollution-avoiding” benefits from a wind farm. The organizations purchased the environmental benefits of wind power, called Green Tags, by paying the extra cost of wind power. This transaction is considered “innovative” because the CO₂ reductions were separated from the other environmental benefits and transferred to the Climate Trust. The Climate Trust then retired the CO₂ reductions rather than using them in any future trading system of credits.



According to the Climate Trust, this project is assumed to offset CO₂ because the electricity generated by the wind facility is expected to displace electricity that otherwise would have been generated by burning fossil fuel at other power plants. The Green Tags were purchased from the Bonneville Power Administration (BPA) and came from three new wind projects across Oregon and Washington. The revenue that was generated by BPA from their sale of the Green Tags is supposed to be reinvested in the next round of renewable energy projects to serve Northwest electricity users.

The project was supposed to be a 10-year purchase beginning in January 2002; however, BEF delivered all of the metric tons of CO₂ offsets eight years ahead of schedule.

Problems:

BEF designed a “system” that separates renewable electricity into two parts: the electrical energy produced by a renewable generator and the renewable “attributes” of that generation. The renewable or “green” attributes are sold separately as Green Tags (or now known as renewable certificates), or BEF Carbon Offsets. One Green Tag represents 1,000 kilowatt hours of electricity from renewable resources. The offsets produced are calculated based upon the assumption that if 1000 kWh of renewable energy is used, it has substituted 1000 kWh of non-renewable energy, thereby reducing the amount of carbon emissions.

According to BEF, “The Green Tags reflect the avoided pollution that results from substituting new wind, solar and other renewable electricity sources for coal or gas.” BEF then “reinvests” the revenues created by selling the Green Tags to develop the next generation of renewable energy which, when completed, create more Green Tags that can be sold again. Citizens, businesses, the Climate Trust and any other consumer who wants to offset carbon emissions can go to the BEF website and buy Green Tags. Green Tag purchasers own the environmental “rights” to their offset and can sell them at a later date or give them to the BEF to retire, never to be resold again.

Regarding the innovative wind financing project by the Climate Trust, the National Wind Coordinating Committee explains, “To capture the CO₂ reduction specific benefits of the BEF green tags, BEF is proposing to buy back the CO₂ attributes from the purchasers of the green tags with the OCT [Oregon Climate Trust] funds. The CO₂ benefits would then be retired by OCT, per its mandate. BEF would own the remaining green attributes, which would retire as many of the attributes as possible.”

In other words, BEF and the Climate Trust decided that it was possible to separate the environmental attributes of the Green Tags into CO₂ benefits and the other environmental benefits that wind or solar power is expected to provide. The Climate Trust bought just the CO₂ environmental attributes of the previously sold Green Tags in a joint purchase plan with BEF. Climate Trust did not directly provide funding for the renewable energy facilities but bought the carbon dioxide mitigation benefits that already have been generated by preexisting wind farms. The Climate Trust retired the CO₂ benefits so they could not be resold, but BEF held onto the other environmental attributes and relabeled the Green Tags as “light green tags” which could be resold.

“Citizens, businesses, the Climate Trust and any other consumer who wants to offset carbon emissions can go to the BEF website and buy Green Tags.”

This is not necessarily additional because the Green Tags that were purchased by the Climate Trust and BEF funds already had been invested into renewable energy projects and owned by the Bonneville Power Administration. Since the supply of Green Tags

purchased by BEF and the Climate Trust was created by the construction of wind turbines that had been built already, the Climate Trust funds were not needed to finance the renewable energy that produced the CO₂ benefits that they purchased. In effect, the Climate Trust spent money on already occurred CO₂ “benefits.”

Although the profits made from the sale of the Green Tags are supposedly reinvested into construction of more wind energy, the initial Climate Trust purchase did nothing but buy back environmental attributes from renewable energy that already existed. This project is neither innovative nor additional.

Even if one assumes that the entire amount of the Climate Trust's purchase of preexisting green tags did go into financing the next round of wind energy, there are problems with asserting that construction of renewable energy is a one-for-one tradeoff with fossil fuel use. The premise behind Green Tags is entirely based on an assumption that electricity generated by the wind or solar facility completely displaces electricity that otherwise would have been generated by burning fossil fuel. This is a drastic over-simplification of reality.

Because of its variability, wind power cannot be depended on as a reliable and consistent energy source. Thus, by necessity, wind power must be combined with another power source. If the backup power source uses fossil fuels, it is possible that wind farms could displace some fossil fuel generation. However, the full impact that such displacement has on carbon emissions is still being debated. Typically, a fossil fuel plant is put on spinning stand-by to allow wind power to enter the grid. In this case, carbon emissions are still produced, and the net effect on emissions may or may not be less. Fossil fuel plants begin to produce more carbon emissions per kilowatt as their output is ramped down. In other words, they are most efficient when running flat out. Thus, the expected carbon dioxide offsets of increasing wind generation may be severely inflated due to its variability.

“Because of its variability, wind power cannot be depended on as a reliable and consistent energy source. Thus, by necessity, wind power must be combined with another power source.”

Often, and particularly in Oregon because of the state's large use of hydropower, the backup power is another low carbon intensive energy source. The question then arises, does the wind power that enters the grid actually push coal-generated electricity off the grid? The National Electricity Market Management Company confirmed that "greenhouse-friendly power sources such as gas and hydro are likely to be the first shut down when wind energy enters the grid. The last to be displaced is brown coal, the worst for the environment but also the cheapest."¹⁵

"The National Electricity Market Management Company confirmed that 'greenhouse-friendly power sources such as gas and hydro are likely to be the first shut down when wind energy enters the grid.'"

Even assuming a one-for-one trade-off, the Climate Trust figure of offsetting 23,893 metric tons of carbon dioxide is vastly overinflated. Recent estimates and the new rate established by the British Wind Energy Association on the offset capacity of wind farms are at 430 grams of CO₂ per kilowatt hour¹⁶, assuming that adding wind generation completely displaces fossil fuel generation on the grid. This means that the 36,500 MWh of BEF Green Tags purchased by the Climate Trust and BEF only represents 15,695 metric tons of CO₂, or only 65% of the proclaimed project offsets.

There is also no consideration of carbon dioxide emissions that are produced from constructing a wind farm. This concept, known as a life cycle analysis, is not used in the carbon dioxide reduction calculations and could nearly negate any greenhouse gas reduction benefits that are claimed to exist. The material requirements for wind turbines are up to 40-50 times greater than for gas powered plants per unit of output and can have only half the useful life.

There are two major components of wind turbine construction: concrete and steel, both of which are major contributors to greenhouse gas emissions. Turbines require a significant amount of

¹⁵"Wind Power Will Only Blow Hot and Cold as States Seek Grid Boost" Industrial Wind Action Group. Available at <www.windaction.org/news/4307>

¹⁶"Promoters Overstated the Environmental Benefit of Wind Farms." 2008. Available at <<http://www.telegraph.co.uk/earth/energy/windpower/3867232/Promoters-overstated-the-environmental-benefit-of-wind-farms.html>>

concrete to be placed at their base. The production of cement¹⁷, which is the main component of concrete, is one of the most energy intensive of all industrial manufacturing processes and accounts for 5-10% of the world's carbon dioxide emissions. The production of steel for the turbines is also highly energy intensive, and each ton of steel produced adds approximately two tons of carbon dioxide to the atmosphere.

The variability of wind power, the need for backup power sources, and the consideration of a life cycle make the estimated carbon dioxide reductions questionable.

The money spent on this project was well over the EFSC established cost effective rate. The joint purchase totaled \$200,000¹⁸ and is proclaimed to offset approximately 23,893 metric tons of CO₂. Unfortunately, the Climate Trust has neglected to offer information on the exact dollar amount that they contributed to the joint purchase. At the full amount, the \$200,000 went to purchasing approximately 23,893 metric tons of carbon dioxide, which is a rate of \$8.37 per metric ton of carbon dioxide. \$8.37 per metric ton is nowhere near the current EFSC established rate of \$1.40 per metric ton.

To be fair, the Climate Trust did not contribute the full \$200,000 to the joint purchase because only the CO₂ attributes were purchased. In order to be within the EFSC established rate, the Climate Trust would have been able to contribute only \$33,540 to the total of \$200,000. If any more than \$33,540 was paid, then the Climate Trust overpaid for carbon dioxide offsets and, in a sense, cheated regulated facilities out of the true amount of offsets promised.

Conclusion

Even staunch supporters of the carbon offset industry readily admit that the concept of offsetting carbon dioxide is not without flaws. Yet, supporters also assert that through proper quality controls and

¹⁷“Cement and Concrete Environmental Considerations”. 1993. Environmental Building News. Available at <<http://enpub.fulton.asu.edu/cement/pdf/cementconc.pdf>>

¹⁸The Journal. Monthly Publication of the Bonneville Power Administration. October 2001. Available at <<http://www.bpa.gov/corporate/pubs/journal/01j/j11001x.pdf>>

standards the industry can develop robust offsets that achieve significant environmental benefits.

In their 2007 annual report, the Climate Trust states that they are “the first institutional GHG offset buyer in the United States” and that “[t]he Climate Trust has long promoted quality standards both by participating in and by helping shape the GHG offset market. We firmly believe that our commitment to quality is the key to our success. We also believe that quality is the key to ensuring a robust and viable offset marketplace that provides verifiable and enduring reductions in GHG emissions.”



But from a closer look into the Climate Trust's offset portfolio, there are numerous problems that undermine the quality and true effectiveness of the organization's endeavors. Lack of additionality and accountability of funds, inaccurate assumptions, difficulty of verifying and monitoring results, lack of permanence, and leakage issues are most of the problems that plague the Climate Trust's projects.

Unfortunately, the problems with the Climate Trust's projects and the failure of HB 3283 are not obvious to politicians, citizens, or regulated facilities. The passing of HB 3283 inadvertently set up a system in which failures easily would go unnoticed. According to the law, regulated facilities that choose the “monetary path” are not held liable if there is any “nonperformance, negligence or misconduct on the part of the qualified organization [Climate Trust].” Once the funds are paid through the monetary path, the regulated facilities have no rights or liability in the carbon offsets. Regulated facilities simply pay their dues, pass the cost onto the ratepayers, and go about business as usual.

Although the Energy Facility Siting Council is the established regulatory body that is charged with monitoring and overseeing the Climate Trust's projects and performance, this “monitoring and overseeing” is almost entirely done through reviewing the release of the Climate Trust's annual report. These reports reflect none of the difficulties and failures that have occurred with the projects audited in this report. In fact, the reports completely misrepresent the success of all of the projects.

This lack of regulatory oversight is further enhanced by a serious lack of transparency in the Climate Trust's operations. HB 3283 mandated regulated facilities to pay for offsetting carbon dioxide, and the Climate Trust was specifically founded for the purpose of implementing these carbon offsets. Because the Climate Trust's existence is a function of state law regulating facilities, they should be subject to the same standards as public agencies for the release of public records. The Climate Trust initially cooperated with inquires but officially stopped all communication on November 20, 2008.

Responding to an inquiry into a few specific offset projects, Mike Burnett, executive director of the Climate Trust, stated, "This is the latest of several such queries over the past several years, which have been used in preparation of articles and public talks deeply critical of carbon offsets....We do not feel that using our limited and valuable staff resources to continually answer Cascade Policy Institute questions would further our important mission."

After the official refusal to answer key questions about additionality, assumptions, and contact information about specific projects, an Energy Facility Siting Council board member was contacted for facilitating the answers. Jacob Polvi, a member of both the Climate Trust board and the EFSC, ensured that Mike Burnett would answer the questions that were provided. Burnett has yet to follow up or address any questions to date. A final version of this audit was then sent to the Climate Trust and EFSC for review. Only the Climate Trust responded and stated, "...we respectfully decline to comment on it at this time."

HB 3283 was originally passed with the intention of reducing manmade greenhouse gases that are assumed to cause global warming. However, the actual implementation of the law has not led to this at all. HB 3283 essentially established a system of extortion that distributes money from regulated facilities into projects that have little or no environmental benefit, all at the expense of Oregon ratepayers and/or corporate investors.

¹⁹ Email from Mike Burnett, Executive Director of the Climate Trust. Received Nov. 20, 2008.

²⁰ Email from Jacob Polvi, board member of Energy Facility Siting Council and the Climate Trust. Received Dec. 9, 2008.

²¹ Email from Amy Phillips, Marketing and Communications Manager of the Climate Trust. Received Jan. 26, 2009.

There is a surprising and unfortunate parallel between the failure of the Climate Trust's offsets and the implementation of a cap-and-trade program. Cap-and-trade programs typically involve a mechanism that allows regulated entities to purchase carbon offsets rather than decrease emissions or purchase emission permits. The Western Climate Initiative cap-and-trade program has established that regulated entities can use carbon offsets to meet up to 49% of their cap. This means that a large number of the facilities that fall under the WCI cap will be purchasing offsets. Because of the problems and lack of transparency with carbon offset projects, the WCI cap-and-trade program would create more costs that will be ultimately passed through to Oregonians with little or no environmental benefit, just like the establishment of the carbon cap and offset payment scheme through HB 3283.

A cap-and-trade program will be a complex tax on energy that will have a direct and negative effect on businesses and individuals. Although it is being advocated as a cost-effective solution to reducing carbon emissions, it is unclear whether the policy would reduce carbon emissions at all because of regulated entities' ability to meet the cap by using offsets. This audit has clearly shown that offsets have very little if any underlying environmental benefit in the form of reduced carbon emissions. If a cap-and-trade program were to be implemented in Oregon, citizens should expect much higher energy costs and a thriving offset industry that does nothing but redistribute money into projects that do little for the environment.



4850 SW Scholls Ferry Road
Suite 103
Portland, Oregon 97225

(503) 242-0900
www.CascadePolicy.org