

CARBON CAPPING

A Citizen's Guide



By Peter Barnes

Foreword by Bill McKibben

Tomales Bay Institute • 2007

Foreword | **Bill McKibben**

If bad climate policies are adopted, years could be lost before emission reductions occur.

Solving the climate crisis is up to us

If you're reading this guide, you don't need to be told we face a planetary crisis. You've heard the warnings. You know there's no time to lose. You also know that, while a single citizen can't stop global warming, an *army* of citizens can. Acting together, we can make our government respond with solutions that are commensurate with the crisis.

Fortunately, millions of Americans are now demanding that all levels of government – local, state and federal – take immediate and effective action to cut greenhouse gas emissions. What's more, many thousands are participating in discussions about specific ways to get the job done. They're exploring climate policy options and pushing politicians to act. This groundswell has made it a near-certainty that the next President and Congress – the ones who take office in 2009 – will finally address the climate crisis at the national level.

But there's a big problem. Despite countless conferences and think tank reports, there's no broad consensus on what policies will actually work. Hundreds of proposals are floating about, and many of them aren't good or sufficient. It's quite possible that *bad* climate policies will be adopted, and that more years will then be lost before real emission reductions occur.

We can't let that happen. That's why you need to read and circulate this guide. In a very real sense, this guide ushers in the next stage of the climate debate. In the first stage, we discussed the *problem*. In this stage, we must choose *solutions*. This guide demystifies the leading solution – carbon capping – so that citizens can understand and shape it.

So read this guide and get involved. Join the citizen's army that *must* solve the climate crisis. We can't wait any longer, and we can't do it wrong.

– Bill McKibben is the author, most recently, of *Deep Economy*.

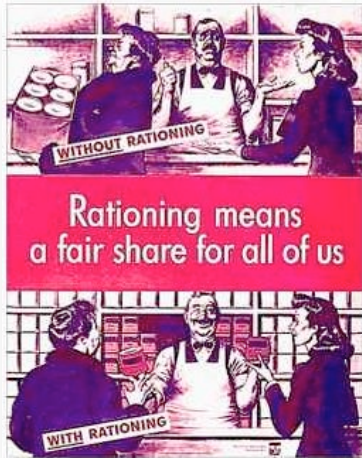
About this guide

This guide has two parts and an appendix. **Part I** discusses fundamental questions raised by carbon capping. **Part II** examines several ways to resolve those questions. The **appendix** includes a **glossary**, a guide to **Internet resources**, and a list of **groups to contact**.

Introduction

To meet the climate crisis, America must design and install an economy-wide system for reducing our use of the atmosphere as a waste dump.

Our present system for using the atmosphere – first come, first served, no limits and no prices – is clearly dysfunctional. One alternative is rationing – limit total use and give everyone equal usage rights. Rationing worked during two World Wars, but we're loath to use it again – we prefer market mechanisms to government allotments.



That preference is fine, but it doesn't change the fact that we need an emissions reducing system. A carbon cap is likely to be part of that system, and there are several ways to design it.

The details will soon be laid before you. But before we get there, it's worth noting three basic principles of system design:

- 1) **The simpler a system is, the more likely it is to work.**
- 2) **The fairer a system is, the more likely it is to last.**
- 3) **In the future, polluters should pay for the right to pollute.**

That third principle is particularly important because, when all is said and done, climate politics is about *who will pay whom* when a carbon capping system is installed.

Many large and powerful companies are happy with the current arrangement in which polluters pay nothing. But pollution has real costs, and if we want to fix the climate crisis, someone must pay them. If polluters don't, the rest of us will.

Under all forms of carbon capping, the price of burning carbon will rise. With one kind of cap, the extra money we pay will go to polluting companies that receive free carbon permits. With another, it will go to the government. With a third, it will come back to citizens, reducing the burden of higher energy prices. The amount of money involved is enormous – trillions of dollars over the years. Congress will decide who gets it. So Congress needs to hear from *you*.

**In the future,
polluters should
pay for the right
to pollute.**

Part 1 | Fundamental Questions

What's the problem?

If we don't understand the problem, it's unlikely we'll be able to fix it. So let's begin by asking, with regard to the climate crisis, what is the problem we need to fix?

Often in public policy, the problem we need to fix isn't immediately obvious. Sometimes we see symptoms without seeing the underlying problem. Other times we see part of the problem but not the whole.

On the surface, global warming appears to be an environmental problem. But deeper down, climate change is a result of two economic and political failures.

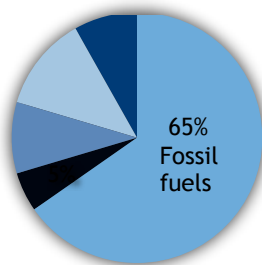
The first of these is a *market failure*. Humans are dumping ever-rising quantities of carbon dioxide into the atmosphere because there are no limits or prices for doing so. There are, however, huge costs – costs that are shifted to future generations. When people don't pay the full cost of what they're doing, but instead transfer costs to others, economists call this a "market failure." Nicholas Stern, former chief economist at the World Bank, has said that climate change is "the biggest market failure the world has ever seen."

The second cause of global warming is *misplaced government priorities*. Because polluting corporations are powerful and future generations don't vote, our government not only allows carbon emissions to grow, but subsidizes them in numerous ways. Thus, in 2006, 65 percent of federal energy subsidies went to fossil fuels.

It's important to recognize that these failures are *economy-wide*. They're not problems of the electricity sector, or the automobile sector, or the building sector. They're problems of *every* sector, and must be treated at that level.

Federal energy subsidies (2006)

\$74 billion not counting military



Source: www.earthtrack.net



"Climate change is the biggest market failure the world has ever seen."

Nicholas Stern, lead author of the *Stern Report on the Economics of Climate Change*.

What makes good climate policy?

Policies are attempts by government to solve problems. They can be evaluated on three grounds:

- 1) How effectively do they solve the problem?
- 2) Whose interests do they serve?
- 3) What principles do they advance?

Many policies tackle only part of a problem. They may achieve small gains, but they don't address the core problem, which continues to worsen.

Some policies are giveaways to private interests. Typically, they're cloaked in public interest language, but their effect is to enrich a few corporations at our expense. Lobbyists work hard to get policies like these.

A few policies genuinely solve big problems, serve the interests of ordinary people, and advance important principles such as fairness and transparency. These are the policies citizens should actively support. Social Security, for example, solves the problem of old age poverty in a way that benefits all. That same standard should apply to climate policy.

Some policies are giveaways to private interests. Lobbyists work hard to get such policies.



Source: www.stepitup2007.org

What are the goals?

Climate policy goals can be expressed numerically and in terms of system design. The most important numeric goal is to reduce carbon emissions to a level at which the earth's climate will stabilize.

The most widely accepted scientific study – made by the Intergovernmental Panel on Climate Change – says we must reduce carbon emissions 80 percent by 2050. That works out, on average, to 2 percent of current emissions per year.

In terms of system design, our goal is to build a simple, fair and durable system for reducing our collective use of the atmosphere. If the system is complex, unfair, and full of loopholes, it's probably not good or durable.

Scientists say we must cut carbon dioxide emissions 80% by 2050.

Who should own the sky?

The atmosphere is different from private property – all living beings share it, which makes it a commons. But that doesn't stop corporations from trying to privatize it.

The possibilities are: polluting corporations, government, and us.

How could they do that? By persuading Congress to grant them free pollution rights in the future. Then, as the price of emitting carbon rises, they'd keep the extra money we pay. In effect, they'd become landlords of our common sky.

Who *should* own the sky? The possibilities are (1) polluting corporations, (2) government, and (3) all of us as co-owners. How we answer this question will determine the kind of carbon capping system we have.

What price for carbon?

We face a dilemma with regard to carbon prices.

From a climate perspective, we want carbon prices to be as high as possible: the higher the carbon price, the less dirty coal we'll burn and the more we'll invest in clean alternatives like wind and solar power. But high carbon prices have a cost: they take money from our wallets and move it somewhere else. The higher the carbon price, the lower our disposable incomes. Thus the dilemma: high carbon prices are good for the planet but bad for our pocketbooks.

High carbon prices are good for the planet but bad for our pocketbooks.

At present, the price of emitting carbon is zero – that's the market failure at the root of climate change. The 'right' price of carbon is the price at which climate stability is maintained. Capping carbon will move us toward that price. The question is whether it will move us quickly enough.

Many carbon cap proposals include 'leaks' intended to slow the rise of carbon prices. Unfortunately, these leaks (such as offsets and safety valves) also slow the rate at which we transition to a low-carbon economy.

The key to successful climate policy is to raise carbon prices steadily without hurting household incomes or businesses. That can be accomplished with leak-proof descending caps and two complementary tools: dividends to protect household incomes, and import fees to protect businesses. When those tools are added to carbon caps, carbon prices can safely rise to where they need to be.

Part 2 | Devil in the Details

Theory of carbon capping

In theory, a descending economy-wide carbon cap is the best way, if not the only way, to guarantee a pre-determined decrease in carbon emissions by a pre-determined date. That's because it's an absolute limit on emissions rather than just an incentive or regulation.

A carbon cap functions through the issuance of permits. Each year the number of permits is reduced. To cut emissions 80 percent in 40 years, we'd reduce the number of permits by an average of 2 percent a year.

Because a cap requires permits, it introduces the opportunity to trade those permits. Businesses like this feature because it gives them flexibility in reducing emissions. But it's important to remember that the key to the system is not the trading but the cap.

Like a carbon tax, a decreasing carbon cap drives up the price of fossil fuels. As fewer carbon permits become available, their price in the market rises, spurring investment in clean alternatives.

History

The idea of capping and trading pollution permits was developed by economists in the 1960s. It got its first major test with the Clean Air Act of 1990, which applied it to sulfur dioxide emissions from coal-burning power plants (which cause acid rain). The program successfully cut emissions and is widely considered a success.

In 2005 the European Union applied the sulfur model to carbon. The resulting scheme is widely considered a failure. It has led to huge windfalls for companies that received free permits, higher prices for everyone else, and no reduction in carbon emissions. The EU is now trying to fix its system.

In 2006, nine northeastern U.S. states formed a Regional Greenhouse Gas Initiative, which adopted a carbon cap for electric utilities. By contrast with the EU, most of the U.S. states decided to auction carbon permits rather than give them away to historic polluters.

Among the lessons learned from these experiences are:

- Unlike other pollutants, carbon is ubiquitous in our economy. It *can* be capped, but not in the same way as minor pollutants.
- Capping carbon has large price impacts and can generate correspondingly large private windfalls or public revenue.

The key to carbon capping is the cap, not the trading.

Capping carbon will generate large private windfalls or equally large public revenues.

Lessons from Europe

To meet its Kyoto Protocol commitments, the European Union set up a carbon capping system in which permits are given free to historical polluters. So far, the results have been dismal. Electricity prices have climbed, coal-burning utilities have reaped windfall profits, and emissions have risen rather than fallen.

There are numerous reasons the EU system hasn't worked. First, because permits are issued to large emitters only, less than half the carbon in the economy is covered. Second, big companies used their political clout to get more permits than they needed (always a danger when companies are given things free). Third, electricity generators who got free permits have raised energy prices and kept the extra income as profit. Fourth, there's no protection for consumers or manufacturers. And fifth, because carbon offsets from outside Europe can be used as substitutes for emission permits within Europe, companies don't actually have to lower their own emissions by the amounts prescribed by the caps.



Everyone from Britain's Conservative Party to Germany's Deutsche Bank now says that the system should be radically over-hauled. The most important fix is to end the giveaway to large polluters. Says British Conservative Party spokesman Peter Ainsworth, "The system will not be sorted out until the market is made to work properly by forcing firms to bid for their permits instead of being allowed to lobby government for them free of charge."

Ironically, despite the failure of the European trading system, some U.S. Senators are promoting a similar cap-and-giveaway system here. (See *Current federal legislation*, page 16.)

Key lessons:

- Cap all carbon entering the economy
- Auction, don't give away, permits
- Protect consumers and manufacturers
- Don't count offsets against permits

Three varieties

It's commonly believed that there's only one kind of carbon capping – the kind applied to sulfur in 1990. That isn't the case. Carbon capping comes in three varieties: **cap-and-giveaway**, **cap-and-auction**, and **cap-and-dividend**.

In **cap-and-giveaway**, permits are given free to historic polluters.

This is called 'grandfathering.' The more a company polluted in the past, the more permits it gets in the future – not just once, but year after year. As the descending cap raises fuel prices, everyone pays more, and this extra money flows to the companies that get free permits. An [MIT study](#) estimates that grandfathering carbon permits to U.S. utilities would give them hundreds of billions of dollars in extra profits every year for decades.

Follow The Money	
Type of cap	Who we pay
Cap-and-giveaway →	Large polluters
Cap-and-auction →	Government
Cap-and-dividend →	Ourselves

In **cap-and-auction**, permits are sold to polluters, not given away free. Revenue is collected by government rather than private companies. What government does with the money is then up to public officials.

In **cap-and-dividend**, permits are also sold, not given away free. However, the income doesn't go to government – it goes to all of us equally. The purpose of revenue recycling is to fix the Achilles heel of carbon capping – its regressive economic impact on American households.

A seat in Exxon Stadium

It's sometimes said that selling carbon permits will lead to higher prices than giving them away free. After all, why would energy companies raise their prices if they get permits at no cost?

The answer is, *because businesses set prices by what the market will bear, not by their cost of production*. When the supply of carbon permits goes down, companies will charge more for carbon, regardless of what they pay for permits.

If you doubt this, imagine that carbon permits are World Series tickets. If the government gives all tickets to Exxon for free, with no strings attached, will Exxon let people into the stadium for free, or sell tickets for what the market will bear?

Giveaway of the Century?

If, through carbon capping, the U.S. Congress gives sizable chunks of the atmosphere to historic polluters, it will be one of the largest giveaways of a public resource ever. It won't, however, be the first.

Congress has a long history of giving public resources to private corporations. In the 19th century, it gave vast swaths of public land to private railroads. In the 20th century, it gave public airwaves to private broadcasters. Wisely, it refused to do the same for cell phone companies; instead, it made them bid for airwave rights at auctions. But there's strong pressure now to give the atmosphere to historic polluters for free.

Why do that? Past giveaways were justified on the grounds that the receiving corporations provided some public benefit in exchange for the value received. Railroad companies, after all, built railroads. But what will Duke Energy, American Electric Power and Exelon do for their handouts? Literally, nothing. As the [National Commission on Energy Policy](#), a group consisting partly of energy corporations, has candidly stated, "*Giving away emission allowances is like giving away money with no strings attached.*" The only reason to do it is to buy those companies' political support for carbon capping.

The question this raises, of course, is why a handful of polluting corporations should be granted hundreds of billions of dollars – money that all of us will pay to them through higher prices – just for backing a policy that every American ought to support. If anyone has a right to the economic value of the atmosphere, it's not a few polluters, but all of us. That's the fundamental reason for auctioning rather than grandfathering carbon permits.

From Stanford to Duke



Leland Stanford
Central Pacific Railroad CEO
*19th century
 handout recipient*



James Rogers
Duke Energy CEO
*21st century
 handout recipient?*

Upstream, downstream

Carbon dioxide doesn't trickle from a few smokestacks, it gushes from virtually everywhere. That makes it hard to cap where it enters the atmosphere. Fortunately, there's a much easier place to cap carbon: where it enters the economy.

Think of carbon as flowing through the economy the way water flows through a garden sprinkler. To reduce the flow of water, you wouldn't plug holes in the sprinklers; you'd turn a valve at the spigot. In like manner, to reduce the flow of carbon, we can crank down a valve where carbon enters the economy.

With an upstream cap, all carbon would be covered and no smokestacks would be monitored.

The valve would work like this. All first sellers of carbon-based fuels would be required to buy permits. Each year the number of permits would be lowered. This would physically reduce the amount of carbon flowing into the economy, and eventually into the atmosphere. Economists call this an *upstream cap*.

An upstream cap would be easy to administer because only a few hundred companies bring fossil fuels into the U.S. During the course of a year these companies would have to own permits equal to the carbon content of their fuels. Once a year they'd 'true up' and pay a penalty if they don't own enough permits. All carbon would be covered by the cap, and no smokestacks would need to be monitored.

Safety valves and their alternatives

In the context of carbon capping, a 'safety valve' is mechanism for increasing the number of carbon permits when the price of permits hits a pre-set level. The rationale is, this will limit the rise in carbon prices.

The trouble with a safety valve is that it defeats the purpose of a carbon cap. The issuance of additional permits means, by definition, that the cap will be exceeded. And the constraint on carbon prices will delay investment in clean alternatives.

There are better ways than this to deal with the negative effects of higher carbon prices. One is to return permit auction revenue to individuals – this protects consumers. Another is to impose border fees on imports from countries with low carbon prices – this protects manufacturers and workers.

There are better ways to mitigate higher prices than by issuing extra permits.

Protecting incomes with dividends

A cap-and-dividend system, also known as a sky trust, is a way to reduce carbon emissions while protecting household incomes.

The system works by capping carbon, auctioning permits and recycling the revenue to all residents equally. In this way, it makes everyone pay to emit carbon, but arranges things so that we pay ourselves. As carbon prices rise, so does the money we get back.

The centerpiece of the system is a trust. (The trust can be run by government or a not-for-profit corporation.) Each year the trust sells a declining number of permits. It then returns the proceeds to residents by wiring dividends to their bank accounts. No money flows to into the government treasury.

You gain if you conserve and lose if you guzzle.

How you're affected depends on what you do. The more energy you use, the more you pay. Since everyone gets the same amount back, you gain if you conserve and lose if you guzzle. The 'winners' are thus everyone who conserves fossil fuel – plus our children who inherit a stable climate.

The premise of a cap-and-dividend system is that the atmosphere belongs to everyone equally. Its central formula – from each according to their use of the atmosphere, to each in equal share – is fair to poor, middle class and rich alike. The poor benefit most, however, because they pollute the least.

From a political perspective, a carbon cap with monthly dividends would be the most popular federal program since Social Security. It would

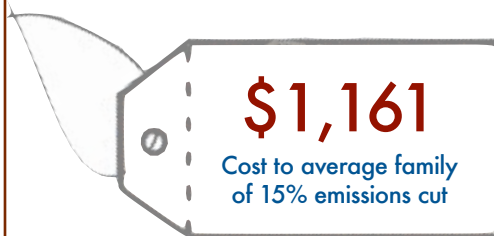
lock in popular support for emission reductions no matter how high fuel prices rise.

On top of that, it would take politicians off the hook for rising prices. If voters complain, politicians can say, "The market sets prices, and you determine by your own energy use whether you gain or lose. If you conserve, you come out ahead."

What a 15% cut in CO₂ emissions would cost U.S. families

Quintile	Cost increase	As % of income
Poorest	\$677	3.3%
Second	\$883	2.9%
Middle	\$1,161	2.8%
Fourth	\$1,500	2.7%
Richest	\$2,171	1.7%

Source: Congressional Budget Office



Cap and Dividend in 3 Steps



1 Carbon cap is lowered
2% a year for 40 years



2 Carbon permits are
auctioned



3 You get an equal share
of permit income

It's simple, fair and market-based.

Offsets aren't permits

In a simple capping system, companies can trade permits among each other. The permits are issued by government, and each year the supply of them declines.

In recent years, entrepreneurs have come up with a new product: carbon *offsets*. Sometimes offsets and permits are confused, but they're not the same.

Offsets aren't issued by governments, they're not permits to pollute, and there's no limit to how many there can be. Offsets are privately sold certificates that claim to remove carbon from the atmosphere. These claims aren't verified by any government agency or third-party certifier.

In theory, purchasing offsets lets you pollute with a clear conscience. Yes, you may have dumped some carbon into the atmosphere, but your purchase of offsets has presumably reduced emissions somewhere else, so your net contribution to the atmosphere is arguably zero.

There are several problems with such offsets, however. First, they imply that we can go about our lives as usual; all we need do is 'offset' the CO₂ we emit. This isn't true.

Second, in many cases, offsets don't actually subtract CO₂ from the atmosphere. Instead, they pay extra money to private parties for doing things they should or would have done anyway. Offsets bought by movie stars attending the Oscars, for example, went to Waste Management Inc. for cleaning up a landfill that the government had already ordered it to fix.

The danger with offsets isn't just that they may waste people's money. It's that the government will allow them to be substituted for real permits. If that's done, the integrity of any carbon cap would be undermined.

Some projects financed with offsets are legitimate. If private buyers want to fund them, that's fine. But whatever emissions are avoided by such projects should be *in addition to*, not *in lieu of*, real reductions achieved through a declining carbon cap.

Offsets should be in addition to, not in lieu of, reductions from a permit cap.

Carbon capping in a nutshell

If done right, a descending economy-wide carbon cap is the single best tool to fight climate change. If done wrong, a cap won't reduce emissions sufficiently and will transfer hundreds of billions of dollars from families to corporate polluters.

Doing a cap right means:

- Covering all carbon in the economy
- Selling permits rather than giving them away free
- Recycling permit revenue to individuals
- Allowing no offsets or safety valves

Doing a cap wrong means:

- Exempting sectors or industries
- Giving polluters free permits
- Putting the burden of higher energy costs on families
- Allowing offsets and safety valves

Carbon Capping EZ Guide		
	RIGHT WAY	WRONG WAY
Where to cap	✓ Upstream	Downstream
How to issue permits	✓ Auction	Give away
Dividends	✓ Yes	No
Offsets	✓ No	Yes
Safety valve	✓ No	Yes
Import fees	✓ Yes	No

Current federal legislation

This section is accurate as of November 2007. Because legislation changes frequently, the interested reader is advised to check for updates.

Several bills pending in Congress include a carbon cap. However, the main ones replicate errors of the European system: they give free permits to polluters, cap carbon downstream rather than as it enters the economy, allow offsets, and offer little protection to consumers. They also include safety valves. Only one aims to cut emissions 80 percent by 2050, and that one merely authorizes, but doesn't require, a descending cap.

None of the bills is supported by the Bush Administration, so their chances of passing before 2009 are slim. That said, they reflect the current state of thinking within Congress, and they'll shape future debate.

Additionally, three current presidential candidates, [Barack Obama](#), [Hillary Clinton](#) and [John Edwards](#), have proposed climate policies that include a carbon cap and 100% auction of pollution permits. Within these policies, however, there remain differences in how auction revenue would be spent.

Climate bills In Congress			
	Lieberman-Warner	Bingaman-Specter	Sanders-Boxer
2020 Goal	15% below 2005 level	2006 level	1990 level
2050 Goal	70% below 2005 level	Contingent on other countries' efforts	80% below 1990 level
Initial permit allocation	55% given free to historic polluters	76% given free to historic polluters	Authorizes EPA to cap and allocate permits
Offsets	Yes	Yes	Not covered
Safety valve	Administered by a Fed-like board	Starts at \$12 a ton	Trigger price linked to a technology index
Other features	Auctions fund technology partnerships, adaptation and low-income consumers	Auctions fund technology partnerships	Higher auto and electricity efficiency standards

An American climate solution

It's time to sum up what we've learned.

First, we need to create a fair and durable system for limiting our use of the atmosphere. The best system would start by capping all carbon as it enters the economy. The cap would then be gradually lowered so that, by 2050, emissions are at least 80 percent below our current level.

To make sure the cap is airtight, there'd be no safety valves or substituting of offsets for permits. (Offsets would be *additional*.)

To prevent stalling or backsliding, the rate at which the cap descends would be set at the outset by Congress, or delegated to an independent trust.

To avoid windfalls to polluters, all permits would be auctioned.

To assure fairness to families, sustain popular support and prevent a loss of purchasing power, dividends would rise along with energy prices.

To protect U.S. manufacturers and workers, import fees would be added to products from countries with low carbon prices.

A leak-proof descending carbon cap would have many positive ripple effects. Higher carbon prices would spur private investment in conservation, efficiency and non-carbon technologies. Utilities would know what kinds of plants to build – and coal wouldn't be on the list. Auto makers would know what kinds of cars to build – and they wouldn't be gas guzzlers.

Second, we must change government priorities. This requires cutting subsidies to fossil fuels and investing in clean energy instead. It also requires higher efficiency standards. The most important measures are:

- Huge investments in mass transit and smart electricity grids.
- Steadily rising efficiency standards for motor vehicles, airplanes, buildings and appliances.
- Steadily rising renewable energy requirements for electric utilities.

Other helpful policies include:

- Transition assistance to workers, communities and businesses badly hurt by rising fuel prices.
- Green collar job training.

Of course, carbon-based industries will resist many of these policies. They'll push for loopholes and giveaways that add emissions and pick our pockets. That's where citizen involvement is critical. Citizens must pressure politicians to hang tough. While it's always tempting to grant concessions to powerful companies, we can't afford to do so this time. The stakes are too high and the margin for error too small.

A leak-proof
descending cap
would have
many positive
ripple effects.

Appendix | Glossary

Allocation: The way in which carbon permits are distributed.

Allowance: A right to emit a specified amount of carbon. The same thing as a permit.

Border fee: A tariff based on the carbon content of products imported from countries that have lower carbon prices than the U.S.

Cap-and-auction: A capping system in which a declining number of permits are sold to fossil fuel companies.

Cap-and-dividend: A capping system in which revenue from permit sales is returned to individuals.

Cap-and-giveaway: A capping system in which permits are given free to polluting companies.

Carbon trading: Buying and selling permits and offsets in open markets.

Dividend: A periodic return of revenue from carbon permit sales.

Downstream carbon users: End users of fossil fuels. Capping downstream users is much harder than capping upstream sellers.

Grandfathering: Giving carbon permits free to historic polluters.

Market failure: When the true cost of something is larger than the price people pay.

Offsets: Privately sold certificates that claim to remove CO₂ from the atmosphere or avoid potential emissions.

Permit: A government-issued right to emit a quantity of CO₂, usually one ton.

Safety valve: A requirement that government issue more permits when the price of permits reaches a pre-set level.

Sky trust: A system for capping CO₂ emissions, auctioning permits and recycling the revenue to individuals; the entity that manages such a system.

Upstream sellers: Companies that bring burnable carbon into the economy.

Windfall profit: A sudden and unearned profit. If energy companies are given free carbon permits, they'll collect windfall profits at the expense of energy users.

Internet Resources

Carbon caps

U.S. EPA: www.epa.gov/airmarkets/captrade/index.html

Resources for the Future: www.weathervane.rff.org/policy_design/cap_and_trade.cfm

Resources for the Future paper "Carbon Emission Trading Costs and Allowance Allocations": Evaluating the Options: www.rff.org/Documents/RFFResources145c02emmis.pdf

Lessons from Europe

Financial Times, "Big profits predicted for EU generators": www.ft.com/cms/s/ed6f3c9c056411dcb151000b5df10621,dwp_uuid=3c093daaedc111db8584000b5df10621.html

Guardian (UK), "EU carbon trading is not cutting emissions": <http://business.guardian.co.uk/story/0,,2048733,00.html>

Climatepolicy.com research paper "Auctioning of EU ETS phase II allowances": how and why?: www.electricitypolicy.org.uk/pubs/tsec/hepburn.pdf

Jörg Haas and Peter Barnes, "Why the European emissions trading system should be transformed into a sky trust": www.boell.de/downloads/oeko/EU_Sky_trust_final.pdf

Giveaway of the century?

National Commission on Energy Policy, "Allocating Allowances in a Greenhouse Gas Trading System": www.energycommission.org/site/page.php?report=32

MIT Joint Program on the Science and Policy of Global Change, "Assessment of U.S. Cap-and-Trade Proposals": http://web.mit.edu/globalchange/www/MITJPSPGC_Rpt146.pdf

Cap-and-dividend (sky trust)

Alaska Permanent Fund: www.apfc.org

Jonathan Alter, "A Clear Blue Sky Idea": www.msnbc.msn.com/id/19228483/site/newsweek/page/0/

Robert Reich, "Carbon Auction's Your Winner": <http://marketplace.publicradio.org/shows/2007/06/20/AM200706202.html>

Corporation for Enterprise Development, "Sky trust proposal": <http://www.cfed.org/focus.m?parentid=34&siteid=47&id=93>

Peter Barnes and Rafe Pomerance, "Sky Trust: How to Fight Global Warming": http://www.ourfuture.org/projects/next_agenda/ch10.cfm

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Cap-and-dividend (con't.)

Peter Barnes and Marc Breslow, "Pie in the Sky? The Battle for Atmospheric Scarcity Rent": http://peri.enomaly.net/fileadmin/pdf/working_papers/working_papers_150/WP13.pdf

Congressional Budget Office, "TradeOffs in Allocating Allowances for CO2 Emissions": www.cbo.gov/ftpdocs/80xx/doc8027/0425Cap_Trade.pdf

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Tim Hargrave, "U.S. Carbon Emissions Trading: Description of an Upstream Approach": www.ccap.org/pdf/upstpub.pdf

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Joe Romm, "Romm's rules of carbon offsets": <http://gristmill.grist.org/story/2007/6/29/1170/23713>

Groups to Connect With

Faith groups

Interfaith Power and Light: www.interfaithpowerandlight.org

Coalition on the Environment and Jewish Life: www.coejl.org

Links to Faith and Environment Groups: www.sierraclub.org/partnerships/faith/websites.asp

Youth and college groups

Focus the Nation: www.focusthenation.org

Campus Climate Challenge: www.climatechallenge.org

It's Getting Hot in Here: www.itsgettinghotinhere.org

Community organizations

Ella Baker Center for Human Rights: www.ellabakercenter.org

Labor organizations

Apollo Alliance: www.apolloalliance.org

Blue-Green Alliance: www.bluegreenalliance.org

National environmental organizations

Sierra Club: www.sierraclub.org

Natural Resources Defense Council: www.nrdc.org

Greenpeace: www.greenpeace.org

Union of Concerned Scientists: www.ucsusa.org

National grassroots groups

MoveOn.org: www.moveon.org

Alliance for Climate Protection: www.climateprotect.org

Step It Up: www.stepitup2007.org

U.S. Public Interest Group: www.uspirg.org

1SKY: www.1SkyCapmpaign.org

State and regional grassroots groups

Clean Air Cool Planet: www.cleanaircoolplanet.org

Global networks

EcoEquity: www.ecoequity.org

Global Commons Institute: www.gci.org.uk

FEASTA: www.feasta.org

About the author

Peter Barnes co-founded and led a solar energy company in the 1970s, and co-founded and served as president of Working Assets Long Distance in the 1980s and '90s. He is the author of *Who Owns the Sky?* (2001), *Capitalism 3.0* (2006), and a forthcoming book on climate solutions.

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The Tomales Bay Institute is a network of thinkers and doers who promote public understanding of common wealth. Our work is rooted in the belief that many forms of wealth – ecosystems, knowledge, public institutions – belong to all of us, and should be managed for the common good.

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