



What will Missouri's Energy Future look like?

By Melissa K. Hope, Sierra Club's Associate Regional Representative in MO.



Moving Beyond Coal

Over the last few years Missouri Sierra Club's coordination with the National Coal Campaign has been instrumental in moving Missouri beyond

coal and toward a transition to a clean energy future. In April 2008 Associated Electric Cooperative, Inc. abandoned plans for a newly permitted coal plant in Norborne, Missouri.

And thanks to Sierra Club's 2007 agreement with Kansas City Power and Light (KCPL), they are now the most progressive utility in the state with the deployment of wind investments and by reducing energy demand with the development of energy efficiency programs. KCPL has also championed climate change initiatives in the Kansas City region.

Passage of Proposition C, the Clean Energy Initiative moves us another step forward but there is still a lot of work to be done. Fifteen percent renewable energy by 2021 is an important first step but it doesn't go far enough to achieve the 80% cut in greenhouse gas emissions scientists say is needed by 2050.

So what's next - nuclear or efficiency and renewables?

2009 presents some challenges and opportunities for Missouri's clean energy future. Most importantly, AmerenUE's plans to build a new nuclear plant in Fulton could undermine clean energy in Missouri for decades.

To advance their nuclear plans, Ameren is expected to ask the Missouri legislature to repeal the current No Construction Work In Progress (No-CWIP) law, passed by initiative petition in 1976 that prevents utilities from charging rate-payers for power plants before they are operational.

If Ameren gets CWIP, it will enable them to saddle rate-payers with the substantial financial risk associated with building a new nuclear power plant. Repeal of No-CWIP would allow Ameren to get rate increases to cover costs during the planning and construction of the nuclear plant. Rate-payers

Sierra Club Nuclear policy

(See full policy here: <http://sierraclub.org/policy/conservation/nuc-power.aspx>)

The Sierra Club opposes the licensing, construction and operation of new nuclear reactors utilizing the fission process, pending:

1. Development of adequate national and global policies to curb energy over-use and unnecessary economic growth. (this applies to MO, does it not)
2. Resolution of the significant safety problems inherent in reactor operation, disposal of spent fuels, and possible diversion of nuclear materials capable of use in weapons manufacture.
3. Establishment of adequate regulatory machinery to guarantee adherence to the foregoing conditions. The above resolution does not apply to research reactors.

could be on the hook for billions even if the plant is never built or operational (see "This CWIP Isn't Funny: Ameren seeks to shift risk of new nuke to ratepayers", Missouri Sierran, Oct - Dec 2008, <http://missouri.sierraclub.org/SierranOnline>.)

Sierra Club is opposed to nuclear power (see adjoining box on nuclear policy). However we believe the more important issue today is that Missouri should be investing in clean energy solutions and energy efficiency (demand reduction) before saddling the state with a very expensive \$9 - \$12 billion nuclear plant. Amory Lovins of the Rocky Mountain Institute tells us that nuclear buys less solution per dollar than any other alternative to fossil fuels. If Ameren and state policy makers are focused on a huge new energy source, they will not be focused on efficiency which can reduce demand substantially and perhaps eliminate the need for more supply, and it will cost rate payers much less.

What about efficiency?

Ameren wouldn't need to spend anywhere near \$9-12 billion on efficiency to get the same bang for their (our) buck. Energy efficiency is the lowest cost energy source and the least utilized in Missouri.

According to the American Council for an Energy-Efficient Economy (ACEEE), "energy efficiency and demand response are the lowest-cost resources available to meet this growing demand and the quickest to deploy for near-term impacts." (see *Estimates of Levelized Cost of New Energy Sources in Energizing Virginia: Efficiency First*, <http://www.aceee.org/pubs/>)

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2009 Legislative Agenda

By Byron Combs, MO Chapter Legislative Chair

Chapter joins MCEA coalition

The Missouri Chapter of the Sierra Club is joining a coalition of environmental groups for lobbying in 2009. The Missouri Conservation and Environmental Alliance (MCEA) was formed two years ago to create a coalition of environmental groups for lobbying Missouri legislators on issues such as clean air and water, renewable energy and green building.

The Chapter has been partnered with MCEA since its inception, but now we will be joining in their lobbying effort as well. The coalition has two strong environmental lobbyists, Kyna Iman, who has been lobbying for the coalition for the last two years and Jim Farrell, who is new to the group.

Other members of MCEA are Audubon Missouri, Conservation Federation of Missouri, Missouri Coalition for the Environment, Missouri Parks Association and Missouri Votes Conservation. By combining our lobbying efforts, we will convey a united front for environmental groups to the legislators in Jefferson City.

Environmental summit

The 7th Annual Statewide Environmental Summit was held on December 6 at the University of Missouri, Columbia campus. The summit brings together environmental leaders from across the state to discuss the key environmental and conservation issues facing Missouri and how they could be dealt with during the legislative session. This year over 130 environmentalists representing about 50 organizations, educational institutions, and other groups participated.

The summit began with a review of key environmental issues, after which attendees broke up into working groups to discuss the individual issues. This year the summit focused on electricity and energy efficiency, climate change, green building, factory farms (CAFOs), sand and gravel mining, transportation, and solid waste. Each working group reported suggested legislative priorities for their issue.

Legislative preview

The 2008 legislative session was very successful for environmental and conservation issues. Several good pieces of legislation were passed, including some good energy legislation,

and no environmentally unfriendly legislation passed. Although no mandatory renewable energy standard legislation was passed, by the hard work of a lot of volunteers, enough signatures were obtained to place the issue on the ballot in November. Proposition C won by an overwhelming two-thirds majority.

2009 Missouri Legislature

We will have to wait and see exactly what the 2009 legislative session might bring, but energy issues will undoubtedly play a major role. Sierra Club joins a strong coalition of environmental and consumer groups to oppose repeal of the law banning Construction Work in Progress (No-CWIP) that will enable AmerenUE to transfer the financial risk of building a new nuclear power plant to ratepayers. And we will be strongly supporting clean energy solutions - investments in clean energy and efficiency (see related article in this issue: "Legislative Agenda: Making More from Less".)

Several energy-related bills have already been introduced. One would repeal the Missouri Renewable Fuel Standards Act which requires all automotive fuel sold in the state to contain 10% ethanol. Others include tax deductions for the purchases of hybrid vehicles and tax deductions for residential purchases of fuel cells or solar cells for generating electricity.

Other areas of concern that have come up in previous legislative sessions and we need to watch for are factory farms (CAFOs) and environmental self-audit for businesses. Attempts are continually being made to ease restrictions on CAFO construction requirements and CAFO health and environmental regulations.

Also, an environmental self-audit bill has been introduced the last several years that would allow businesses to self-report any illegal emissions into the air or water and not be penalized or fined, and all records would be withheld from the public. We will be watching for this or any other anti-environmental legislation throughout this session. ■

You can help ...

Support Missouri Sierra Club's Legislative & Advocacy Program:

- online at missouri.sierraclub.org/donate
- or send your check to the Chapter office (see newsletter return address)

(Contributions and gifts to the Missouri Sierra Club are not tax deductible; they support our effective citizen-based advocacy and lobbying efforts.)

Sign up (or update your information) for Missouri Sierra Club's Legislative Alert list at <http://whistler.sierraclub.org/lists/sub?listname=OZARK-LEGISLATIVE-ALERTS> and be prepared to contact your legislators, the governor and other officials about environmental issues important to Missouri's future.

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(What will Missouri's Energy Future... Cont.) E085.htm) The 2008 Energy Efficiency Scorecard from ACEEE ranks Missouri as 45th (http://www.aceee.org/pubs/e086_es.pdf), indicating a huge economic opportunity for our state. And conservative Department of Energy (DOE) studies show that 80% of projected growth in electric demand could be offset by efficiency improvements alone.

Along with opposition to the repeal of No-CWIP, which is our first line of defense to stop the nuclear plant, Sierra Club will be working on several fronts to secure energy efficiency policies and incentives for utilities, businesses and individuals, and advancements toward a climate change mitigation policy. These efforts will focus on the Governor, the legislature, the Public Service Commission and energizing grassroots support for a truly clean energy policy agenda.

Since Missouri has no climate change action plan for reducing our global warming impact we are calling on Governor Nixon to take two immediate steps to establish climate change initiatives in Missouri:

- **Sign the Midwest Governors Association Energy Security and Climate Stewardship Platform and Greenhouse Gas Accord** that provides a regional strategy to achieve energy security and reduce greenhouse gas emissions that cause global warming. (<http://www.midwesterngovernors.org/govenergynov.htm>). Missouri is the only Midwest state not participating in a meaningful way.
- **Establish a Governor's Action Team on Energy and Climate Change** and task it with creating a comprehensive Missouri Energy and Climate Change Action Plan to achieve or surpass the statewide targets for greenhouse gas reduction.

We will also be encouraging our Missouri congressional delegation to support the clean energy agenda expected to be advanced by the new President and new Congress. A green economy is a strong economy and clean energy and environmental protection are central to driving economic recovery.

Sierra Club's energy policy agenda for Missouri is guided by the following objectives:

Long-term policy recommendations that will propel Missouri into the clean energy future with efficiency investments, renewable energy investments, climate change and green house gas (ghg) initiatives and electric utility regulation that will promote demand reduction, clean energy development and reductions in ghg emissions. Transitioning to a clean energy economy can create jobs, help save money on our energy bills and fight global warming.

Legislative Agenda: Making More from Less

By Henry Robertson

With the passage of Proposition C renewable energy is now law in Missouri. Next up is energy efficiency. The legislature took a few steps in this direction in 2008, like enacting Energy Star appliance efficiency standards. It's time to think bigger.

We'd like to see statewide codes for energy efficiency in buildings. We'd like to see support for combined heat and power (CHP), which uses otherwise wasted heat from electricity generation and industrial processes to heat and cool buildings or generate more electricity.

A lot of individuals, including most readers of this newsletter, are reducing their carbon footprints. But individual efforts only go so far. Most people don't know enough or care enough, or they look at the up-front cost of insulation or an Energy Star refrigerator and either won't consider the long-term savings or can't afford to.

Expanding energy efficiency is an enterprise that requires money and expertise. Many other states have turned for help to those companies we all know and love, our electric and gas utilities.

This sticks in the craw. Not even the oil companies are more fossil-fuel dependent than the utilities. I wish we could get all our electricity from rooftop solar and batteries, but we're not there yet.

The electric companies in particular make more money only by selling us more juice, not less. They have a strong disincentive to help us save energy. The hope is that we can begin to transform the kind of companies the utilities are if we can change their incentives. We can't slow

climate change if we can't make the utilities change.

Suppose we let the utilities stay profitable while selling us less energy. Our bills go down while their revenues stay the same or even improve. Everybody wins.

They advance the money to us in the form of free energy audits or rebates on appliances or insulation. We repay their investments through our bills plus something extra, like a percentage of the money we save. It's only fair that they get a part of the savings if they made them possible. We and they both come out ahead.

The carrot of incentives could be accompanied by the stick of mandates. We could require that they spend a certain percentage of their revenues on energy efficiency programs. Or we could require them to reduce their energy

sales over time—say by 0.5% in year 1 increasing to 2% per year by year 10.

Many studies look at energy efficiency potential—how much energy a state or other area can save with these kinds of programs. The technological potential for saving energy (what can be done with existing technology regardless of cost) is huge, close to 50%. The economic

potential (what is both technologically and economically feasible) is almost as great. But achievable potential is far less. Achievable potential takes into account the barriers to doing efficiency. Prominent among them is customer resistance—sheer inertia and reluctance to change. A residential market efficiency report by the Midwest Energy Efficiency Alliance in 2005 found that the achievable potential for Missouri in the electric sector was only 12%.

There are early indications that this could be changing; that the steady rise in demand for electricity went into reverse even before the economic crisis hit. One possible reason is saturation of the market for electronic goods of all kinds. The Energy Information Administration just lowered its forecast for demand growth from 1.4% a year to 1.1%. Time will tell.

So the utilities claim, not without justice, that it's not in their power to change human behavior. Even with the best will and incentives in the world, they can't guarantee the results we'd like to see. It's up to all of us.

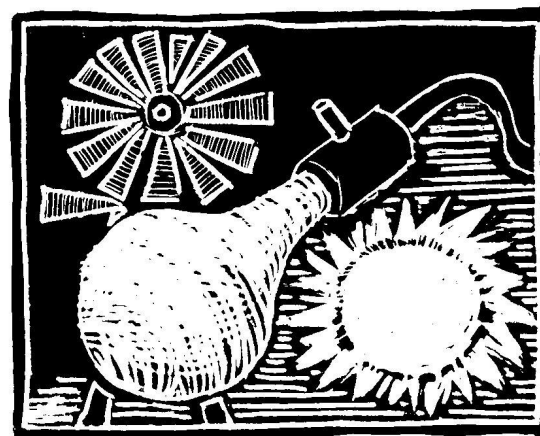


Illustration by Sharon Williams

Climate Change Won't Wait for the Economy

by Henry Robertson

Senator Claire McCaskill urged president-elect Barack Obama to hold off on moving a climate change bill through Congress.

"I think a delay may be necessary," she told ABC News on December 9. "Yes, we've got to do something. Yes, we have to move forward. But we can't kill the business climate at the same time. I'm from a state where most of the people who turn on the lights in the state get it from utility companies that depend on coal. And the cost of switching all that to clean coal technology or to alternative sources is going to be borne by them."

It was inevitable that politicians and those with an interest in the status quo would cry that the economy can't afford the burden of more expensive fossil fuels. This is a big deal. The imminence of higher-priced coal has made new coal-fired power plants so risky that many have been cancelled.

Meanwhile, Obama promised a sort of green New Deal as an economic stimulus. Both carbon regulation and a public works project, if done right, would cost money up front but pay off down the road.

Forward to the past or the future?

Rebuilding decrepit roads and bridges may be necessary, but that's just deferred maintenance. Bailing out Detroit? The Big 3 CEOs still don't get it. They blame their problems on circumstances beyond their control—the credit crunch. Everything was just fine before that!

Senator McCaskill mentioned clean coal. That means carbon capture and storage (CCS)—pumping the stuff underground. CCS doesn't exist yet, and if it does come to pass, it will be at a forbidding cost in both money and energy.

Much of the electricity from a power plant equipped for CCS must go to run CCS itself—as much as 30–40% by a recent estimate.

Weatherizing old buildings to make them

more energy-efficient is labor-intensive—plenty of jobs there, and megatons of CO₂ saved. Investment in renewable energy technologies and energy efficiency technologies promise to launch a new, more sustainable economy, not just prop up the infrastructure of a resource-intensive way of life that has gone bad through waste and bloat.

Personally, I believe that efficiency and renewable energy won't save us unless we first vastly reduce our demand for resources and terminate the delusion of perpetual economic growth. But there are sectors of the economy that should grow, and efficiency and renewables are foremost among them.

If carbon regulation is expensive, let's consider what's already been committed to bailing out the old economy, and what we stand to lose.

If not now, when?

I ask Sen. McCaskill: If not now, when?

The risk of climate change has been known for well over a century, and the reality has overtaken us faster than the caution of scientists predicted. Just between 2006 and 2007 world CO₂ emissions grew by 3%. US emissions grew by 2% and China's by 7.5% just in that one year. Far from getting the problem under control, mankind is accelerating its run toward disaster.

Climate scientists have calculated that to avoid runaway, uncontrollable global warming we

must stabilize the concentration of CO₂ in the atmosphere at 450 parts per million by volume or, at the very most, 550 ppmv.

The goal of 450 is fading in the rear view mirror, and now NASA's James Hansen says we must hold to 350 ppmv. We're already at 387. That means we need negative CO₂ emissions.

We have to suck it out of the

atmosphere and into the forests, soils and oceans. Yet there are signs that the oceans and forests are slowing in their ability to absorb carbon, and the oceans are acidifying, killing corals and other life. Warming threatens to make soils emitters, not absorbers, of CO₂.

And don't forget methane, a greenhouse gas more than 20 times as potent as CO₂ at trapping heat. As Arctic permafrost thaws, it releases huge

quantities of methane.

There is also the first evidence that the Arctic Ocean off the Siberian coast is beginning to give up methane caused by the melting of methane hydrates, which are crystals of the gas trapped in ice.

Obama's climate change policy echoes the scientific advice that we should reduce our greenhouse gas emissions 80% below 1990 levels by 2050. Now we're being told to focus on nearer-term goals of achieving a large portion of those reductions by 2020. Kansas City issued a climate action plan last July setting a municipal goal of reducing emission 30% by 2020—ambitious, but it really needs to be higher.

Cap and trade

Sen. McCaskill was urging Obama to go slow on cap and trade legislation. Cap and trade is probably not the best way to reduce emissions—there's much to be said for a carbon tax or mandatory regulations like CAFE standards for cars—but it is definitely the frontrunner in Congress.

It means putting a cap on CO₂ emissions and lowering that ceiling over time. Emission allowances are issued in an amount that adds up to the cap. Firms in the industries that are covered by the cap—certainly the big polluters like utilities, automakers, cement, etc—get their quotas of emission allowances (or rights to pollute) and trade them on a market. It's better to sell them than to have to buy them, so firms have an incentive to reduce emissions and sell allowances they no longer need.

The allowances should be auctioned off at the outset, not given away. The government will thus collect a fund that can be invested in low-carbon and no-carbon technologies and can also provide relief to those who suffer from the transition, as some inevitably will.

The whole point of carbon regulation is to make fossil fuels more expensive so that we will finally force ourselves to phase them out. You have to spend money to save money. The excess price on carbon must be used to fund the transition to alternatives.

Now the climate crisis coincides with an economic crisis. Economists and elected officials say the government has to spend us out of this recession because confidence has collapsed to the point where lending has dried up.

Whether the stimulus plans will work and how we're going to deal with a societal debt load that was already astronomical before the crisis began are questions I can't answer. But as long as we're going to be spending all this money, let it go to building the new economy, not bailing out the old. ■



Missouri Wilderness Campaign Update

by Eileen McManus

Between 1976 and 1984 Congress passed four separate bills designating seven wilderness areas in the Mark Twain National Forest in Missouri: Hercules Glades, Bell Mountain, Rockpile Mountain, Devil's Backbone, Piney Creek, Paddy Creek and the Irish Wilderness.

Wilderness conservation efforts on behalf of these areas were coordinated through the Missouri Wilderness Coalition, or MWC, which included all the major conservation organizations in the state. At that time MWC also identified seven additional areas which were designated for administrative protections as "Sensitive Areas": Lower Rock Creek, Big Spring, North Fork, Smith Creek, Spring Creek, Swan Creek, and Van East Mountain.

In 2005 the Forest Service produced another management plan for the Mark Twain. But instead of strengthening protections for these seven sensitive areas, the plan actually weakened them.

The MWC has been reactivated with a renewed and reinvigorated commitment to work together to complete the wilderness agenda for Missouri by proposing that these seven areas, totaling less than 50,000 acres of federal public land become part of the National Wilderness Preservation System.

MWC's first major goal is to have legislation introduced by April 23, Earth Day of 2009, based on these four points:

1. These areas have been successfully managed as wilderness for more than 25 years.
2. Congress must pass wilderness legislation to protect these nationally recognized wilderness areas that provide important bird habitats, clean streams, and healthy forests.
3. These areas will bring economic and tourism benefits, and would cost no jobs.
4. Wilderness allows hunting, fishing, horseback riding and other non-motorized recreation opportunities for all.



Eileen McManus

Permanent protection of these sensitive areas can be assured only through wilderness designation which requires an act of Congress. Contact your Representative of Congress and Missouri Senators to support this proposal and consider adding the name of your organization or business to the growing list of endorsements.

Also, as a limited opportunity, see for yourself the beauty of two proposed areas on a spring outing to Lower Rock Creek and Van East Mountain the weekend of April 17-19. Contact Eileen McManus, 816-523-7823 or eileen4250@sbcglobal.net

Growing a Wilderness Activist

by Eileen McManus

(editor's note: I asked Eileen to describe her background in the Sierra Club and how she became inspired to work on Wilderness in MO. This is her response.)

I joined the Sierra Club after a visit to Yosemite in 1989. I was 32 years old and had not done much hiking and had never backpacked. After several easy hikes through the valley and to waterfalls, I was hooked. I went to the park bookstore and joined the Sierra Club. Back home in Kansas City, I went to my local Sierra Club group meetings and became involved in the campaign for curbside recycling.

For fun, I went on outings including my first backpack to Hemmed-In Hollow in Arkansas. I borrowed an outer frame Boy Scout pack that was a poor fit. I had to prop it up with my hands most of the hike. Even though the hike was steep and long, I still absolutely loved the experience.

My first Sierra Club national outing was to the Olympic National Park in Washington. I had never seen a temperate rain forest before.

The giant ferns, draping moss and huge trees in the Quinalt Valley were magical and we had the luck of seeing a spotted owl. This is where I began to understand the difference among National Parks, National Forests and Wilderness, as far as federal protection goes.

Our leader talked about several issues, especially clearcutting in the National Forests surrounding park. Driving in the area you could see the many dramatic clearcuts right up to the Olympic National Park boundary.

This is when I became interested in the protection of public lands. Over the years, I have been to several federally designated Wilderness areas in Missouri where the dogwoods, redbuds, oaks, limestone, granite, streams, springs and wildflowers reward and inspire me.

Although most of my volunteer time is spent at the local level keeping our group organized and active, I am involved in a new campaign to get seven more areas in Missouri protected as wilderness. With that in mind, I attended a Sierra Club Wilderness Advisory Training in Phoenix with about twenty other participants from around the country.

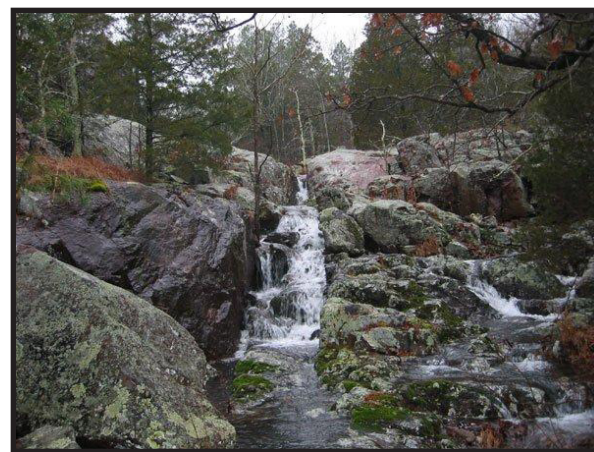
I came away realizing that much of the hard work other groups had done in their states had already been done in Missouri by the Missouri Wilderness Coalition (MWC) along with participation from local Sierrans.

MWC laid the foundation thirty years ago when seven areas were identified and designated as "sensitive areas" with a relatively high level of protection. When the recent revision of the Mark Twain Forest Plan lessened these protections, the MWC reactivated to see that these seven areas become federally designated as wilderness.

Since outings to our public lands is what inspires me the most, I am glad to be a part of the campaign to protect more public lands in Missouri as wilderness.

I hope you too will get inspired and join with the Missouri Wilderness Coalition in making this happen. I would

also like to recommend the many local and national Sierra Club outings that are led by dedicated volunteers throughout this beautiful country that we are so lucky to live in.



Sierra Club Supports Energy Efficiency Bill

by Henry Robertson

Electric utilities can help their customers use less energy, but they won't unless it pays for them to do so. We don't want utilities building new fossil fuel or nuclear power plants, but we're happy to make it profitable for them to do the right thing.

Kansas City Power and Light (KCPL) got legislative sponsorship for a bill, SB 376 and its House counterpart HB 882, that would make energy efficiency (EE) more financially attractive to them than building new plants.

The bill wasn't to our liking, but the Missouri Sierra Club, with expert help from the Natural Resources Defense Council, negotiated a revision with KCPL that would advance the cause of efficiency in Missouri. At this writing the revised bill has not been posted on the Missouri legislature's web site, but here are features we worked out that make it a better deal for customers, not just the utility:

We asked for a cost-effectiveness test for efficiency programs, so that customers can be sure they're getting their money's worth. They added it.

We asked for independent evaluation of company EE programs and how they're working. They added it.

We asked for an EE goal — something to shoot for instead of doing it haphazardly. We compromised on this; the bill says the utilities and the Public Service Commission will work toward a goal of "all cost-effective" EE.

We asked for a definition of EE, making it clear that it must result in reduced energy usage, to prevent utilities from just trying to switch customers from gas heat to electric. They added it.

The bill includes language from the federal stimulus package that makes more money available to states that enact policies to encourage EE.

The Public Service Commission would work out many of the details if the bill passes. The PSC could allow ratepayers to share in the cost-reducing benefits of EE so that even customers who don't personally get a new Energy Star refrigerator or other improvement would still see some relief on their bills. ■

Carbon Markets—Buying and Selling the Right to Pollute

By Robert Freehling, Energy and Climate Committee, Sierra Club California

Carbon pollution markets, where governments give companies the right to pollute and allow them to buy and sell such rights (a "cap and trade" system), are being widely adopted as one of the largest—and most controversial—tools for limiting global climate change.

In the basic "cap-and-trade" system, the government annually grants to each business a certain number of pollution allowances, each worth one metric ton of carbon dioxide. The allowances are handed out free of charge. The number of allowances is capped for the entire trading system, and decreases each year.

If a business pollutes less than its allotment, it can sell extra credits to other companies. If a business pollutes more than its number of allowances, then it must buy extra allowances from other companies that reduced their pollution. Companies that don't comply face steep fines.

Businesses are supposed to respond to market

pressure by finding cost-effective ways to lower emissions. A business that requires expensive retrofits or replacement of factories will find it cheaper to buy allowances, paying another business that can reduce its emissions at less cost. A pollution market is supposed to be more efficient than government mandates that might not be sensitive to costs and benefits.

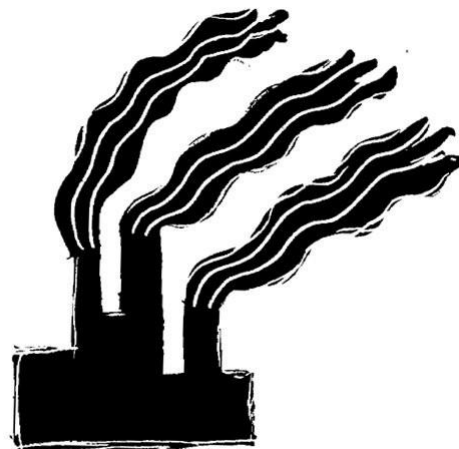
Theoretical analysis of supply and demand curves predicts that carbon markets will lead to a least-cost reduction in carbon pollution. Since market participants don't always make ethical or even rational choices, though, it's an open question whether they will obey mathematical equations.

Cap-and-trade systems do have potential problems. They give little incentive to reduce carbon faster than the declining caps, since that leads to a surplus of allowances and falling carbon

prices. Participants may also face unpredictable prices, which will depend on decisions by government regulators, economic cycles, and even the weather.

Prices can also be influenced by speculation; under the European Climate Exchange, a secondary market has developed in derivatives, such as carbon futures and carbon options.

Buying a carbon option would give someone a right to buy or sell a pollution allowance at a future date at a preset price. In theory that is supposed to be a way to control price risk, but in practice it can lead to higher risk.





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The basic “cap and trade” approach is subject to several major criticisms:

- It allows many businesses to buy their way out of reducing emissions;
- It provides an incentive to limit total pollution to the cap, but not to do better than that;
- It provides no revenue for government programs that reduce carbon emissions;
- It violates the ethical principle that the “polluter pays”.

Another complication in a carbon market is the “offset”, where businesses can pay for carbon reductions outside the trading system. Many critics consider offsets to be “leaks” that remove the market pressure of the gradually tightening caps and that thus can undermine the market system.

In response to such problems, policymakers are moving toward an auction system, where polluters have to bid for all allowances.

To make sure that revenues are generated beyond the cost of holding the auction, government may set a minimum bid price. President Obama has recently stated that he favors an auction to create an effective program for reducing carbon emissions, and to limit gaming of the system.

Others, however, believe it may be more efficient to impose a carbon fee or tax, as was recently recommended by Rex Tillerson, the CEO of ExxonMobil, a company that for years denied that climate change exists. A tax eliminates the price uncertainty of a pollution market, and lowers transaction costs. While cap-and-trade is usually limited to large industrial polluters, a tax can be distributed across the whole economy. A given amount of revenue is generated at a lower cost per ton of carbon, which reduces the burden on businesses.

There has been speculation about how high a carbon cost (whether through cap-and-trade, auction, or a tax) would motivate businesses or consumers to change their habits. There may, however, be significantly less expensive ways to transform our energy system. A \$25 per ton tax on the nation’s six billion tons of carbon dioxide would generate \$150 billion of revenue per year. That could pay for efficiency programs, subsidies for renewable energy, conversion to cleaner transportation, and redesigning our infrastructure. It is unlikely that the equivalent tax of 28 cents

per gallon of gas could achieve a similar transformation through a penalty effect.

Real carbon markets

The European Union created the first major carbon market, the European Climate Exchange, in 2005. At first, the EU issued too many allowances. Most companies could easily meet the cap, and the price of carbon plummeted. This resulted in little incentive to cut emissions. In



spite of challenges, the market has grown dramatically. In 2005, 94 million tons of carbon permits traded hands; in 2008 the trading volume was 20 times larger, equivalent to about half of all the carbon emissions in the EU.

Prices have ranged from 10 to 30 euros per metric ton (about \$15 to \$45 per English ton), with 2007 sales of \$64 billion and the value more than doubling every year.

Despite years of stonewalling by the U.S. government and the oil industry, discussion and action on climate protection are rapidly moving ahead in this country.

The Regional Greenhouse Gas Initiative (RGGI) is a group of 10 states that created a “northeastern climate confederacy” with Kyoto-style regulations. Nearly all carbon allowances under the system are auctioned, and offsets are minimized; currently only power plants are covered.

The three auctions held since the market began in September 2008 have raised a hefty \$260 million—to be spent by states for efficiency, renewables, and other climate-protection programs. The caps are designed to reduce regional emissions 10% by 2018.

The next region to bolt from under the Bush regime of climate inaction was the West. In 2007 five states (California, Oregon, New Mexico,

Arizona, and Washington) formed the Western Climate Initiative (WCI). Two more states and four Canadian provinces have since joined, and a few Mexican states sit in as observers. While still in the planning stage, WCI will cover nearly all sectors including transportation, residential, commercial, and industrial carbon pollution. It aims for a 15% reduction in carbon emissions by 2020.

California has developed its own climate agenda through AB 32 (Nuñez and Pavley), the Global Warming Solutions Act of 2006. California has focused strongly on programs, planning, and regulations to achieve greenhouse-gas reductions. A pollution market will account for 21% of the reductions.

The trading scheme will probably involve auctions, after a phase-in when initial allowances may be handed out for free. This is a contentious issue, with environmentalists wanting to minimize, or ideally to eliminate, free allowances.

It is too early to judge the effectiveness of carbon pollution markets. The market systems that have achieved significant reductions in other pollutants, such as sulfur dioxide and nitrogen oxides, have been mixed with regulatory structure, and have operated largely through retrofitting existing facilities.

In contrast, controlling carbon emissions will require replacement of entire power plants, factories, transportation systems, and other infrastructure. Clearly, the economic incentive required to rebuild infrastructure will need to be much higher than for adding equipment to existing facilities.

It is almost certain that pollution markets will not be able to achieve all the necessary reductions in greenhouse gases. Much of our infrastructure—such as roads, planned urban environments*, transit systems, passenger rail, airports, electric utilities, and vast portions of the nation’s real estate—is immune to market incentives because it is owned or heavily regulated by government.

Government plays a key role in research and development of new technologies and controls about 40% of the U.S. economy through the power of taxation. Governments also set laws and regulations, and can design climate policies, programs, and plans.

These are things that few people expect or want the “free market” to do. Government and markets both have critical roles to play in protecting the world’s climate; the challenge will be to integrate them into effective and timely solutions to the major crisis of our age. ■

Bushwhacked... again!

By Tom Kruzen

Those who follow the lead issue were overjoyed earlier this year when the EPA revisited the National Ambient Air Quality (NAAQS) rule for lead for the first time in 30 years. The EPA had to respond to a lawsuit brought forward by Leslie and Jack Warden of Herculaneum and the Missouri Coalition for the Environment. The Clean Air Act says that such rules need to be revisited every five years. The lead industry and its toadies in government succeeded in delaying that for 30 years!

The original NAAQS was set at 1.5 ug/m³ based on old blood lead level standards of 40ug/dl. At one of two public hearings on the rule change in St. Louis in June, about 75 people including Fernando Serrano, director of the School of Public Health at St. Louis University, Kat Logan-Smith of MCE, Steve Mahfood, former director of MDNR and myself testified for updating the rule. The overwhelming sentiment was that science had finally caught up and showed that blood lead levels can be damaging to humans at levels below 2 ug/dl. Researchers such as Dr. Herbert Needleman and Dr. Bruce Lanphear had shown that lead was deadlier than previously thought

The decision came on October 16, 2008. We had succeeded in raising the standard by lowering the allowable limit of ambient airborne lead to 0.15 ug/m³. For a brief moment we celebrated. Then we read the fine print. The Bush administration's EPA administrator, Stephen Johnson, caved under pressure from battery producers and recyclers (like Doe Run) and immediately weakened the rule. Industry now had 8 years to comply with the new rule.

Delay!

EPA documents indicate that until the afternoon of October 15, a court-mandated deadline for issuing the revised standard, the EPA proposed to require a monitor for any facility that emitted a half ton or more a year.

By early evening on the 15th emails suggest that the White House objected and then the EPA set the level for one ton or over per year. (It only takes lead in the amount of six grains of salt to poison a child!)

Dilute!

EPA documents showed that 346 sites have emissions of a half ton a year or more. By raising the threshold to a ton or more, the number of monitored sites fell by 211 or a 61% reduction.

Under the final rule with the 1-ton cutoff, the requirement will be 135 site-specific monitors and 101 urban monitors in areas of 500,000 or more people, she said. There are 133 monitors now.

True to the lead industry's history in the US, science is always delayed, diluted and if that doesn't work, then delusion is the preferred method of obfuscation. This fit in perfectly with Bush administration modus operandi. So many rules have been stacked this way that Obama will suffer severe writer's cramp from signing as much of this tomfoolery out of the rules and law.

It should not go unnoted that the single largest financial supporter of bush has been Harold Simmons, a fellow Texan, who just happens to own NL Industries (formerly National Lead). National Lead sold lead to Glidden, which used "the little Dutch Boy" and other child images to sell white lead paint. Simmons also arranged for his general counsel, Gayle Norton, to become Secretary of the Interior under Bush.

Delusions from men who put profit before human health!

People should write Obama at: www.change.org to augment the LEAD NAAQS rule to where it will truly protect the public. Remind him that he promised to restore SCIENCE to the White House. Write many and write often! ■

Clean Energy Initiative Wins

It's old news by now, but it feels so good to say it. On November 4 Proposition C, the renewable energy initiative, passed with a whopping 66% of the vote. The state legislature wouldn't act so the voters did. Missouri's investor-owned utilities must make 2% of their electricity sales come from renewable energy sources by 2011 and 15% by 2021.

Let's give ourselves another hand. Thanks to everybody who worked on the campaign, and thanks to all the Sierra Club members who voted for Prop C.

It's not over, though. Prop C gives the Public Service Commission and Department of Natural Resources one year to make regulations to implement the renewable energy policy. We plan to be involved and vigilant to head off utility attempts to water it down. There will be opportunities for public comment. ■

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Contact Melissa Hope, Chapter Development Director, Melissa.Hope@sierraclub.org, (816) 806-6965.

*Contributions to the **Missouri Sierra Club** are **not tax-deductible**; they support our effective citizen-based advocacy and lobbying efforts in Missouri. [This type of gift is preferred as it provides maximum flexibility for our work in Missouri.](#)

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- Please send me information on how to plan a bequest from my will or living trust.
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Confined Animal Feeding Taints Water and Air

In November, 90,000 gallons of hog manure contaminated a neighbor's land and a stream near Quincy, Illinois when an underground sewer line at a 6,000 hog-raising facility became dislodged -- a vivid reminder that the technology of Confined Animal Feeding Operations (CAFOs) does not guarantee safety, and that too many of the costs of large-scale confined animal feeding are not borne by CAFOs but are imposed on the community and the environment.

"It sounded like a gushing, Rocky Mountain stream," said the neighbor. "Then I started to smell this stench." (STEVE EIGHINGER, Herald-Whig Staff Writer, 11/13/2008) When people build dwellings in rural areas, they assume that fresh air will be one of the big benefits they are obtaining. But if a CAFO is constructed upwind across the road, neighbors may find that their enjoyment and the value of their home is damaged. The threat to their lungs is not imaginary.

In November, Dr. Amy Peterson, a veterinarian and now a researcher from the Bloomberg School of Public Health at Johns Hopkins University, told a northeast Missouri audience about the damages that air pollution from CAFOs can cause. At <http://aphg.jhsph.edu/?event=browse.subject&subjectID=11> you can find these dangers summarized in this statement:

"Air emissions from confined animal feeding operations may include a toxic mixture of contaminants, such as hydrogen sulfide, particulate matter from decaying fecal waste, odors, microbes and toxins. These pollutants can pose a serious health risk to vulnerable populations. Volatile organic compounds (VOCs) in pesticides contribute to the formation of ground-level ozone, which can harm human health and plant life."

Furthermore, animals in close confinement are dosed with antibiotics to avoid epidemic disease, and this can reduce the effectiveness of antibiotics for control of disease among humans. For all of these reasons, confined animal feeding operations need close regulatory scrutiny to limit the heavy risks they impose upon society. So what our regulatory agencies doing?

Here's an overview: At the federal level, this December 2008 the EPA finalized a rule that allows farm operators (including CAFOs) to avoid having to get a permit if they claim the facility will not put harmful discharges into nearby

waterways. The CAFO operators are required to develop waste management plans, but no federal agency has power to routinely check on those plans.

Foxes are allowed to guard the henhouse.

This rule will be difficult to dislodge; it is based on a federal appellate court decision which held that manure from the CAFOs is beyond the authority of the Clean Water Act unless there is proof that the manure has actually reached and contaminated navigable waters of the United States -- essentially that means continuously flowing streams or wetlands in close proximity to those streams.

Until some conservative judges and justices are replaced or the Clean Water Act is amended, the likelihood of overturning that decision is uncertain, and it may be difficult for the EPA to protect us from pollution by CAFOs. Meanwhile, the CAFOs are receiving at least \$35 million per year through the U.S. Environmental Quality Incentives Program to help them manage this pollution, but they do not have to disclose what they are doing with the money or its effects on protecting our environment.

In Missouri, our statutes merely require that CAFOs be at least 3,000 feet away from occupied dwellings -- scant protection for neighbors who are subjected to offensive and harmful odors from CAFOs. Our state courts have provided some protection for our parks, but while a Cole County judge ruled in August that CAFOS must be at least fifteen miles away from our parks and historic sites, this December she has revised that down to a narrower two-mile buffer.

Meanwhile, there is much criticism that our Department of Natural Resources is attempting to classify Missouri streams in a way that would in effect legalize the status quo for many streams that are impacted by polluting runoff (it is beyond the scope of this article to discuss that further.)

With weak supervision of CAFOs at the national and state level, it has been left to our Missouri county commissions to enact health ordinances that set stricter protection for rural residents from encroaching CAFOs. During the last two sessions of the Missouri Legislature, the CAFOs have sought a statute to invalidate those county ordinances. But thanks to strong leadership from the Missouri Rural Crisis Center and supportive contacts from concerned constituents, those efforts failed and several Missouri counties continue to have effective health ordinances. Our Missouri Sierra Club and several other organizations are united in supporting effective regulation of CAFOs. The CAFO situation continues to evolve in ways that brings new challenges.

At <http://www.kansascity.com/746/story/946430.html>, Karen Dillon of the Kansas

City Star reports that livestock corporations are moving toward use of smaller farms: "Instead of building mega farms, they work with several smaller farms, each of which has fewer animals than would trigger the state pollution rules." These smaller farms can collectively have a large impact on Missouri's air and water, and they should not escape regulatory attention.

Our consumption patterns can also influence animal raising. If we eat less meat or choose meat from local non CAFO sources, we are casting a vote against the dominant meat industry. Of course vegetarianism is another choice. To find out what you can do regarding legislation see the "What You Can Do" section on page 2 to sign up for legislative alerts which will include CAFO issues.

New Leader at MO DNR

Missouri's Department of Natural Resources (DNR) has a new director, Mark N. Templeton, who was appointed by Governor Nixon. Mr. Templeton is a Missouri native, with a diverse work history. He has worked as office director of the Human Rights Documentation Center in Bangkok, Thailand and as a research associate in New Delhi, India. Prior to his return to Missouri he was associate dean at Yale Law School.

There are several topics we would like to see on his agenda. For instance, we would like to see Proposition C, which requires utilities to use a percentage of renewable energy among their sources, carried out by DNR. Also on the energy front, 2008 legislation required that DNR carry out various energy efficiency programs, such as offering energy audits. That and more will be needed for Missouri to do its share to meet the U.S. Department of Energy's goal for improved residential and commercial energy conservation codes.

Confined animal feeding operations, CAFOs, are under DNR's directive; we hope DNR administers its permitting process to forcefully respond to the health and environmental pollution issues CAFOs pose. Several areas of the state still do not meet federal Clean Air standards. DNR will continue to face tightened regulations in these areas and will need to be both tough and willing to work with local interests to find workable solutions.

Our State Parks are Missouri treasures. But they face a backlog of maintenance and problems due to encroachments from our growing population. We hope DNR will be a fierce advocate for our state parks.

These are just a few of the issues ahead for DNR and its new director.

MISSOURI CHAPTER SIERRA CLUB OUTINGS

In order to participate on one of the Sierra Club's outings, you will need to sign a liability waiver. If you would like to read a copy of the waiver prior to the outing, please see www.sierraclub.org/chapter/forms/ or call (415) 9797-5630. Outings cost one dollar and are open to the public. Please call the leader in advance for details, approval, or if you plan to cancel. No guns, pets, or radios are permitted on trips.

Eastern Missouri Group

<http://missouri.sierraclub.org/emg/outings.aspx>

Eastern Missouri Group outings cost one dollar and are open to the public. Leaders are unpaid volunteers who need your cooperation to make the trip safe, pleasant and rewarding. Please call the leader well in advance for details, approval, or if you plan to cancel. Outings start officially at the trailhead or river access. Travel responsibility rests on each participant.

Car-pooling is encouraged but leaders cannot be responsible for its organization. The Sierra Club does not provide insurance for transportation. Participants sign a liability release form and reimburse drivers for expenses. Be adequately equipped and prepared. No guns, pets, or radios are permitted on trips.

Please leave the area cleaner than you find it. For general information about outings call Wayne Miller, (314) 628-9084.

For outing listings, please check the Eastern Missouri Group website at: <http://missouri.sierraclub.org/emg>.

Thomas Hart Benton Group

<http://missouri.sierraclub.org/thb/outings>

May 9 (Saturday) Loose Park Champion Tree Compass Course, Kansas City, MO — Bring your compass and we will learn to set bearings to find unique trees in one of the most beautiful parks in the city. \$5 donation requested. Eileen McManus 816 523 7823 eileen4250@sbcglobal.net

May 9 (Saturday) Urban Bike Riding Workshop, Kansas City, MO — Bicycle travel can be very safe provided that you know a few rules of the road. This workshop will teach you how to travel by bike for commuting or other types of errands. We will begin with a discussion of bike safety and will then go for an easy ride. Please bring your bike and a helmet. \$5 donation requested. David Anderson 816 678 4359 kobecobra76@gmail.com

May 15-17 (Friday-Sunday) Family camping, Flint Hills, Elmdale, KS — We'll stay at the YMCA's scenic Camp Wood in Elmdale, KS, where your choice of

accommodations range from your own tent to a well-appointed cabin. On Saturday we'll hike and explore at the beautiful Tallgrass Prairie National Preserve. Campfires and horseback riding, too! \$10 donation (per family) requested. Renee Andriani 913 341 4753 randri@kc.rr.com

June 6-7 (Saturday-Sunday) Canoeing, MO/AR Ozarks — Experience two easy days of classic Ozark scenery and waters from your canoe (or kayak.) Saturday night we will camp on a sandbar, make a campfire and soak it all in. \$10 donation requested Terry DeFraties 913-385-7374 theerustbucket@aol.com

June 13 (Saturday) Day Hike James A. Reed Wildlife Area, Lee's Summit, MO — Make time for a nice hike through flat grass trails and some wooded small hill trails at J. A. Reed Wildlife Area. We will hike about 5 miles and finish up with a brown bag picnic lunch (bring your own and some snacks to share). \$5 donation requested. Tom Kutscher 913 383 9351

June 20 (Saturday) Bike Ride, Little Blue Trace, Independence, MO — We'll ride about 10 miles on this level crushed rock trail alongside the Little Blue River. \$5 donation requested. Kathy Patton 816 461 6091 kspatton@comcast.net

June 27 (Saturday) Class, Introduction to GPS, George Owens Park, Independence, MO — This class is for people who are considering buying or who have recently purchased a GPS receiver. We'll discuss how GPS works, how to use waypoints, routes and tracks. How to relate what your GPS is telling to you to a topographic map and how to have some fun geocaching. Dave Patton 816 461 6091 davedahiker@yahoo.com

June 28 (Sunday) Day Hike, Jerry Smith Park, Kansas City, MO — We'll check out the late spring flowers on this afternoon day hike. \$5 donation requested Doris Sherrick, 816 779 6708 djsher@fairpoint.net

July 11 (Saturday) Bike Ride, Powell Gardens, Kingsville, MO — Join us for this 25 fun-filled mile ride of rolling hills and rural settings. All levels of riders are encouraged to join us, we won't leave anyone behind. We will reward ourselves to a delicious lunch buffet at Café Thyme, followed by a hike through the gardens. For the return trip a trailer for bikes and car rides will be available. \$5 donation requested. Melody Gross, 816 228 6563 wildwoodp@hotmail.com

Osage Group

<http://missouri.sierraclub.org/osage>

For updated outings visit website at: <http://missouri.sierraclub.org/osage/contact.htm> or call Greg Leonard (573) 443-8263.

Trail of Tears Group

<http://missouri.sierraclub.org/trailoftears>

For updated outings visit website at: <http://missouri.sierraclub.org/trailoftears/> or call Adam Gohn (573) 270-0053

White River Group

<http://missouri.sierraclub.org/osage>

Contact Jennifer Ailor, outings chair, at 417-581-4018, or check the White River Group's Web site at www.missouri.sierraclub.org/wr for details.

May 16 – Bike on the 30-mile Frisco Trail from Springfield to Bolivar with possible overnight in a Bolivar B&B or motel if camping on the trail is not an option. Stop along the way at La Petite Gemme Prairie in Polk County. Unscheduled destinations – Day hike to Drury Mincy Conservation Area, flower identification at Woods Prairie, work outing at Tumbling Creek Cave, Prairie State Park, Greer Spring, Noblett Lake, work outing on trail at Lake Springfield and other Missouri wilderness areas.

May 9-10 - Ride the Frisco Trail outing. Ride your bike on the trail for an hour, a half-day or the entire weekend!

June 6 - Revisiting Swan Creek, the proposal wilderness area closest to Springfield. Come prepared to hike and wade in the creek.



The Potential Impact of Climate Change on Missouri Biodiversity

By Alan Journet – part 2

In the prior issue of Missouri Sierran Alan reported from a recent meeting of the Missouri Society for Conservation Biology's conference presentations regarding climate change in Missouri. In that article researchers contemplated how increased temperatures may cause changes in the range of suitable habitat for birds in the state. Part 2 describes impacts on insects, reptiles, and amphibians.

As a perfect follow-up to potential bird consequences, John Landosky then reviewed the possible impacts of climate change on insects, noting that in addition to the temperature effects, it was necessary to consider the direct consequences of increased CO2 concentration.

In terms of the CO2 influence, Landosky pointed out that increasing the gas may reduce the Nitrogen composition and leaf water content of some plants, two factors important to the feeding insect. Reduction in these variables renders plant food less nutritious, thus may have a negative impact on the growth and development of the insect – but may also induce increased feeding which compensates for the poor quality food.

Additionally, elevated CO2 may induce changes in the defensive chemistry and structure of the plant – either to the benefit or cost of the feeding insect – though generally the latter. By causing insects to spend more time feeding, elevated CO2 may also cause them to be more exposed to their natural enemies for longer periods of time, and thus more susceptible to predation and parasitism.

The affect of temperature on insects may primarily occur through the impact on insect growth and behavior since the activity and growth rate of insects are generally enhanced by increased temperatures. In particular it is quite possible that current efforts to contain spreading insect outbreaks such as the Gypsy moth could be negated as higher temperatures promote their growth and spread.

The next contribution was offered by Bethany Williams who discussed the potential impact of climate change on Missouri's herpetofauna. Williams started by indicating similar potential

consequences for herps as may be the case for birds – identifying range shifts, changes in phenology, morphology and behavior, and shifting genetic composition.

Williams pointed out that the primary problems facing amphibians result from their ease of desiccation, their need for damp environments for reproduction, and the dependence of many on ephemeral wetlands. Reptiles, meanwhile, are generally less moisture dependent, having better mechanisms in adult and egg for resisting desiccation. However, for some reptiles, gender is determined by temperature of incubation – so increased temperature potentially may shift the sex ratios in populations. Research suggests that an increase of 4 degrees Celsius could result in the elimination of male offspring in some turtle populations.

In terms of the necessary wetland breeding grounds, Williams noted that early drying out can result in a breeding season with zero recruitment for amphibian populations. For reptiles, climatic changes could induce a shift in nest site selection and phenology. Several recent studies indicate that reduced pond depth increases UV exposure of eggs, thereby increasing amphibian susceptibility to fungal infections. Also, warmer winters can result in increased female mortality, and decreased egg production.

Tim Nigh followed with a discussion of the potential impact of climate change on Missouri's ecosystems. Placing the future in historical perspective, Nigh pointed out that Missouri has long been in a shifting tension zone broadly between forest to the east and prairie to the west.

Our dominant forest composition has responded to glacial and interglacial periods. As

“How will humans influence the ability to disperse?”

a result of this history, Missouri now incorporates a mix of relicts of the past glacial period and past xeric period.

Looking to the future, Nigh built on the climate history and predictions of Pat Guinan's presentation to note that the future will potentially present Missouri with greater biomass due to enhanced growth resulting from increased CO2 but also an increased chance of drought and fire.

The climate is likely to reduce the abundance of white oaks, while enhancing post oak distribution, potentially eliminating sugar maple but promoting the distribution of pine-oak

woodlands and savannas.

Nigh closed by offering some queries about the future: Will dispersal occur between existing sites or from existing sites onto lands with appropriate physical setting? Are there distance limitations? How will humans influence the ability to disperse? He also wondered if we should be thinking about conserving dispersal corridors between all centers of biological diversity.

The final presentation was authored by Dennis Figg who related climate change considerations to the Missouri Comprehensive Wildlife Strategy. While many of the states included climate change in their state Wildlife Action Plan, most of them merely made mention of the issue, although 13 states (including Missouri) did not mention global climate change at all.

Assessments on the impact of global climate change should not be made on state boundaries, but by an ecological framework Figg presented some preliminary methodology from a national project being developed by the Rocky Mountain Research Station, USFS, which suggests that climate change may well be significant in the Ozarks.

Figg also reminded folks that the Missouri Strategy is built around primary habitat types consistent with The Terrestrial Natural Communities by Paul Nelson. This is important, as the effects of global climate change may have more to do with internal changes to these systems than “shifting” as some people suggest. The internal changes to natural (and domesticated) communities will cause changes in vegetation that will affect animal populations by “reorganizing” them into new and unfamiliar groups.

Although the Missouri Strategy did not address global climate change, it is designed so as to be able to respond to climate change information as it

becomes available.

The strategy is already organized by ecological units, further subdivided into primary habitat types. Integral to implementing the strategy are working groups, namely the Conservation Opportunity Stakeholder Teams that work on habitat conservation together.

As new information on any threat to habitat quality and quantity, we have a mechanism to respond with conservation action. The loss and degradation of habitat for wildlife is not just by global climate change, and we need to be careful to not lose our emphasis on

Six Degrees

by Mark Lynas

Reviewed by Dave Mitchell

Six Degrees is the best, and the most sobering book I have yet to read on global warming. Mark Lynas, the author, is a British journalist, as well as an environmental activist, who reviewed thousands of studies on the issue, using hundreds of them as sources for his book.

Mr. Lynas structures his book with each chapter devoted to the effects of an increase of one degree Celsius. Mr. Lynas bases his book on the United Nations IPCC temperature ranges for various scenarios, from 1.4 degrees- to 5.8 degrees Celsius (2.6-10.4 degrees Fahrenheit).

There are several facts and conclusions arrived at in Six Degrees, which are sobering, at minimum, and truly terrifying at the maximum. In order to avoid runaway global warming, the generation of feedback loops that cannot be stopped, Mr. Lynas concludes total CO2 emissions must be capped at 400 ppm by 2050. The current CO2 load in the atmosphere is about 380-390 ppm (parts per million). In order to achieve the level of 400 ppm by 2050, global emissions must decline by the year 2015, and then decline steadily until an 80% reduction has been achieved.

The above achievement will stabilize the CO2 load in the atmosphere at approximately the current level, and will give the Earth, as well as humanity, a 3 in 4 chance of keeping global warming under 2 degrees Celsius. If this cannot be done, runaway global warming will result, with eventual increase to 6 degrees Celsius, at which point there will be mass extinctions of species.

At three degrees Celsius, the entire Amazon rain forest will be destroyed, mostly by fire, and the desert will rise in its wake. Approximately 80% of the Arctic sea ice will have been lost, and Greenland, glaciers, and ice caps will be disgorging phenomenal amounts of water. The ecosystems we humans have always known will be in the process of being destroyed. The runaway global warming process will be well on its way.

Mr. Lynas notes that all of humanity's efforts to this point to reduce carbon output have been for naught, including the Kyoto treaty. He notes that the collective disgorging of CO2 emission since 1996 has risen 4x faster (per his quote of the 2006 Global Carbon Project) than previously. Further, he quotes the International Energy Agency, projecting the world's energy demands

will increase 50% by 2030, with 80% of this energy coming from fossil fuels, rather than clean energy sources. These are grim statistics in the extreme.

Clearly, humanity is on a suicidal path, as well as a homicidal one, the killing of the biosphere as we know it. All through the use of fossil fuels since the beginning of the industrial age late in the 18th century. A crisis point is being reached, and Mr. Lynas is trying to let us know there must be a significant change in our course.

Six Degrees cannot be read, without feeling the greatest sense of alarm, as well as the recognition of the necessity of changing the way we conduct our lives, the way we develop and use energy.

What is beneficial about Six Degrees is the delineation of specific goals which can be done to eventually slow down, and reverse the collective CO2 output. Mr. Lynas cites the work of Robert Socolow and Steve Pacala, from Princeton University, in discussing "wedges".

Wedges are the saving of a billion tons of carbon, by the year 2055. There must be the development of at least 11-12 wedges by that time, in order to achieve the 400 ppm goal. One wedge could be gained by increasing vehicle fuel efficiency to 60 miles per gallon.

Another wedge could be gained by increasing solar power by 700 fold, and another by building two million one megawatt wind turbines, a 50 fold increase. You get the idea. The halting of the destruction of the world's rain forests would give another wedge. Obviously, each wedge is massive in scope, requiring efforts on a scale never before achieved.

Mr. Lynas devotes some discussion in his last chapter on the issue of human denial, and how the dynamics of this process of denial must be broken, if there is to be change enough, soon enough.

Despite all assertions to the contrary, we really are living in the Dark Ages, in terms of our ability as a species to live without the very real threat of destroying the one planet we live on. The cumulative forces of industrialization, population growth, ignorance of the issues, as well as outright denial of the problem of global warming, are leading to the eventual destruction of the biosphere.

Collectively, there must be a decision to act in a positive direction, and this means much more than buying a Toyota Prius, or riding a bike to work. Mountains must be moved, and this can only be done when mankind is seized by a fervor, a fervor fed by the recognition of the danger at hand, and the consequent actions taken.

It is incumbent upon each one of us, especially

those of us in the U.S., as participant destroyers of the biosphere, to add our voice, our actions, to the needed transformation that must occur. ■

Sierra Club Supports Energy Efficiency Bill

by Henry Robertson

Electric utilities can help their customers use less energy, but they won't unless it pays for them to do so. We don't want utilities building new fossil fuel or nuclear power plants, but we're happy to make it profitable for them to do the right thing.

Kansas City Power and Light (KCPL) got legislative sponsorship for a bill, SB 376 and its House counterpart HB 882, that would make energy efficiency (EE) more financially attractive to them than building new plants. The bill wasn't to our liking, but the Missouri Sierra Club, with expert help from the Natural Resources Defense Council, negotiated a revision with KCPL that would advance the cause of efficiency in Missouri.

At this writing the revised bill has not been posted on the Missouri legislature's web site, but here are features we worked out that make it a better deal for customers, not just the utility:

We asked for a cost-effectiveness test for efficiency programs, so that customers can be sure they're getting their money's worth. They added it.

We asked for independent evaluation of company EE programs and how they're working. They added it.

We asked for an EE goal — something to shoot for instead of doing it haphazardly. We compromised on this; the bill says the utilities and the Public Service Commission will work toward a goal of "all cost-effective" EE.

We asked for a definition of EE, making it clear that it must result in reduced energy usage, to prevent utilities from just trying to switch customers from gas heat to electric. They added it.

The bill includes language from the federal stimulus package that makes more money available to states that enact policies to encourage EE.

The Public Service Commission would work out many of the details if the bill passes. The PSC could allow ratepayers to share in the cost-reducing benefits of EE so that even customers who don't personally get a new Energy Star refrigerator or other improvement would still see some relief on their bills. ■