Understanding 'Carbon Cap and Trade'

Wouldn't it be great if all things in life could be explained in simple terms? We spend a lot of time and effort trying to write about complex issues in quick understandable terms, but with limited space and a lot of competition for your time, it can seem a daunting task. Nevertheless, I must discuss another complex—yet crucial—issue.

Current discussions in Congress involve the reduction of carbon emissions in our country. Target reductions in greenhouse gases call for a 20 percent emissions decrease from 2005 levels by 2020 and an 83 percent decrease by 2050.

Initially, the debate focused on climate change and a concern for the environment, but more recently the discussion for a "Cap & Trade" program has been presented as an opportunity to raise funds for programs unrelated to energy.

Before I get too far into this subject, I need to say that as a utility, we believe conservation of energy as well as renewables will play an important part in our energy future. We also believe that maintaining affordability of electricity is the principle by which all climate change and energy legislation must be judged.

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So what is carbon cap and trade, sometimes referred to as an emissions trading program? And if the government charges for it, is it a tax?

Simply defined, a cap places a limit on the amount of carbon dioxide produced in the U.S. Under the current bill, entitled "American Clean Energy and Security Act of 2009," those who generate or use energy that releases carbon, CO2, will be required to purchase or trade for carbon credits, based on their CO2 emissions as well as some assigned quota.

One popular approach is to have the Environmental Protection Agency (EPA) auction the carbon credits to the highest bidder, which would open the market to financial speculation. The other approach would allow Congress to auction the emission allowances and use the revenue predominantly to fund other government programs, with a small portion reserved for energy research. Regardless of how the revenue will be spent, the costs will be borne by the American public and reflected on their electricity bills.

The challenge with meeting the CO2 reduction goal is how it affects the one source of fuel we

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have in abundance in this country—coal. Using that natural resource becomes much more expensive, which drives up the end product—electricity.

The other dilemma is that the technology for clean coal, carbon capture and coal gasification is still in development and will take time to deploy once it becomes available for commercial use.

We need a disciplined, measured approach to any changes that involve our national energy goals. Forcing the American people into compliance with unrealistic goals by taxing electric bills is not the way to redefine our energy policy.

Right now, more research and development are needed to raise our reliance on renewable energy sources. Do you wonder why coal, natural gas and nuclear are the mainstay of electric generation? Low cost and reliability. Now is not the time to abandon the most reliable electric generation system in the world, and we most certainly should not use electric bills as a back door revenue generator for federal spending.

Tom Stackhouse, CAEC President and CEO

Putting a Price on Carbon

All climate change policy proposals seek to reduce emissions of carbon dioxide. While the greenhouse gas can be removed from the air (plants and trees are nature's best example), slashing man-made emissions tops the list of climate change remedies. A carbon tax or cap-and-trade tax are the current options for doing so.

CARBON TAX

Q: What is it?
A: A levy on energy sources emitting carbon dioxide meant to cut consumption of fossil fuels like coal, natural gas, and oil. The tax would most likely be based on the actual carbon content, in tons, found in each fuel type. The effectiveness of such a system depends on the actual price established per ton of carbon.

PROS

- ⊕ Economic certainty: costs are easily tallied up-front
- ⊕ Resulting revenue could be used for research on new energy technologies, create incentives for non-emitting sources such as nuclear power and renewables, or returned to taxpayers via rebates and other assistance

CONS

- ⊖ No specific goal for carbon dioxide reductions set
- ⊖ Sources of emissions could essentially pay to maintain "business as usual"
- ⊖ If the tax is set too high, prices could skyrocket across the board; electricity bills, as well as the price of goods and services dependant on fossil fuels, would increase

Source: National Rural Electric Cooperative Association

CAP & TRADE TAX

Q: What is it?
A: In its most basic form, a cap-and-trade tax uses market forces to curb emissions of greenhouse gases like carbon dioxide. Each source (like a power plant) has a limit, or set number of allowances, placed on the amount of gases it can release—the cap. Those who make investments to curb emissions under the cap can sell any extra allowances to those who can't make reductions as easily—the trade. The cap-and-trade tax being considered by Congress would sell allowances through an auction, essentially making all sources pay for any amount of carbon dioxide emitted.

PROS

- ⊕ If implemented well, provides an opportunity to find the most efficient ways to reduce emissions
- ⊕ Guaranteed environmental benefits

CONS

- ⊖ Financial speculators could ultimately determine the price of carbon, directly impacting electricity bills
- ⊖ Success of reducing emissions relies on technology that is currently limited, largely untested, and expensive
- ⊖ If used to generate additional federal revenue, essentially turns electric co-ops into government tax collectors

CAEC offices will be closed Friday, July 3 in observance of Independence Day.

The Bridge from Production to Your Home

As you go through your daily routines of eating, showering, etc., you probably don't think about how you're able to complete such tasks with the help of electricity. It's hard to imagine that power generated more than 150 miles away gives you the ability to complete countless activities each day with virtually no delay. This is made possible, in part, through a transmission system (or grid) which serves as a bridge between power generation and the distribution system—which in turn delivers power to your home.

As we learned recently with our detailed look at the distribution system (see the April issue of *Alabama Living*, pages 6 & 7), it takes many parts working together to make the transmission system possible. It is this grid, owned and maintained by CAEC's Generation and Transmission provider, PowerSouth, as well as transmission lines owned by Southern Company that makes delivery of electricity possible to our members.

And it all starts at the generation plant:

Generation:

The generation of electricity begins at the power plant—where fuel sources such as coal, natural gas or hydro are used to transform water to steam by a heating process. For example, in most coal fired power plants, chunks of coal are crushed into fine powder and are fed into a combustion unit where it is burned. Heat from the burning coal is used to generate steam which is piped throughout the plant.

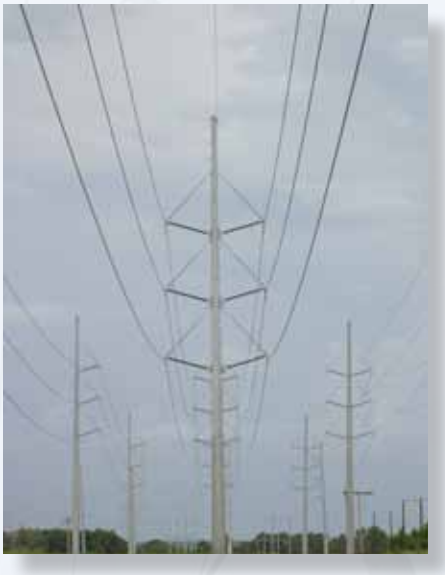
Turbines/Generator:

Since steam is water in a highly pressurized state, it is sent to a turbine where the pressure causes the blades on the turbine to spin at a high rate of speed. A shaft is connected between the turbine and a generator. Inside the generator is a magnetic field which produces voltage—or electricity at approximately 15,000 volts (V). For the power needs of CAEC's members and the consumers of PowerSouth's other distribution cooperatives, it takes about 10-12 years and between $200 million and $1.8 billion to build just one generation plant.

Transmission Substation:

The high voltage power produced by the generator enters a transmission substation at the power plant. Inside the substation large transformers convert the generator's voltage up to extremely high voltages (115,000-500,000 V range) in order for it to travel more efficiently over the transmission lines to transmission substations and transmission step-down substations.

Transmission Lines and Poles:



Once stepped up to the appropriate voltage, the power is then placed on the transmission system which consists of lines and poles owned, wholly or jointly, by PowerSouth. PowerSouth maintains more than 2,200 miles of transmission line and more than 300 substations across Alabama and the Florida panhandle.

The planning for and siting of new transmission equipment can be a long and tedious process. It often involves a number of complex and critical environmental, reliability, economic, social and technical issues that must be examined before decisions can be made and the required permits (i.e. environmental impacts, rights of way) are issued. The investigation and research of each of these key areas, and the action of planning and forecasting the need and placement of transmission equipment can be a 10-20 year process and take an additional two to five years to actually implement.

Switching Station:

Once the power reaches its delivery point, it goes through a step-down (or reduction of voltage) process at switching stations. Here the 115,000-500,000 V is stepped-down to approximately 115,000-46,000 V before being sent to the first component of the distribution system—the substation – and eventually to your home.

Such a large system can take years or decades to plan and can cost millions of dollars. For example, one-mile of a 115,000 V line on the transmission grid can cost approximately $400,000—from planning and development to implementation.

When you think of the time and effort it takes, as well as the investment, to build and maintain the thousands of miles of line to deliver power to our homes, the value of electricity becomes much more apparent.

Advocating for *You* on the Hill

As Congress debated the 648-page Waxman "cap and trade" bill, 3,000 cooperative leaders from across the country converged on Washington, May 4-6 in the annual grass roots event that allows them to meet with their elected officials. This year's dialogue centered on the issue of whether Congress "plans to tax electric bills as a means of raising money for other government programs." Among the 100 people in the Alabama delegation were CAEC's Board Chairman Chase Riddle, and fellow Trustees Jimmie Harrison, Jr., C. Milton Johnson, David Kelley and Terry Mitchell, as well as CAEC staff members.

At issue was how our nation will address carbon capture while attempting to meet new energy and climate change objectives. Cooperative representatives offered help to work with their federal delegations to develop a simple, affordable, flexible and effective piece of legislation.

Other issues addressed during the Congressional visits included affordability with renewable energy sources and a request to continue funding the Rural Utilities Services (RUS) so that cooperatives can meet their infrastructure needs through low-interest loans.

For more information on how you can help address today's growing energy concerns and join the political action grass roots movement, Co-op Owners for Political Action, visit our Web site www.caec.coop and click on the Political Action section (located under the About Us tab). You can also join the national discussion and let your voice be heard by visiting www.ourenergy.coop .

Restoring Power *After* the Storm

June is the beginning of hurricane season and we should all be aware of the need to safeguard our families during severe storms as well as knowing what to do afterward.

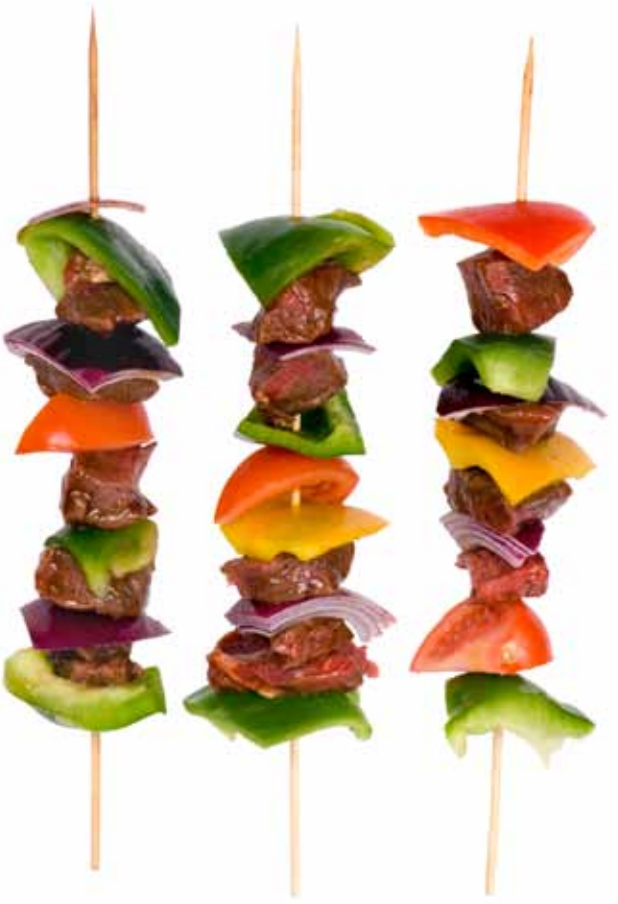
Emergency plans need to be made well in advance (See the April issue of *Alabama Living*, "Electrical Safety… Before, During and After the Storm" – Page 8). But even with the benefit of a good plan, the consequences from a powerful hurricane or tropical storm can result in outages. Usually downed trees and branches are the primary causes of outages. When outages occur, what steps does your co-op take to restore power to you as promptly and safely as possible?

Generally, power is restored in this order: transmission circuits, substations, distribution lines and service lines. Outage restoration management must begin at the source of the electric failure and work outward. Transmission lines and distribution substations are top restoration priorities because these two facilities must be in working order to deliver power to the customer. The co-op assesses damage to its equipment and facilities and determines corrective actions.

Once the evaluation is completed, the crews are mobilized to work their way through the damaged areas, rebuilding electrical systems one pole at a time. Crews must first remove debris before they can reconnect meters. They clean up scrap wire, broken poles, insulators and transformers; reset leaning poles and restring lines; untangle fallen trees and power lines, and deal with saturated ground, which makes accessibility an issue at times.

Restoring power in a major outage is a huge undertaking that involves much more than simply throwing a switch or removing a tree from a line. The main objective is to restore power to the greatest number of members in the shortest time possible without compromising the safety of the crews, the members or the community.

Sheesh, Kabobs Are Easier Than Ever!



When you buy an electric grill or smoker from CAEC, there's no telling what you can cook up! Get the delicious taste of grilled food without any of the hassle or harm of singed eyebrows. CAEC's quality electric grills and smokers can make your summer cooking easier than ever before!

Call 1-800-545-5735 for more information, or visit www.caec.coop

Central Alabama Electric Cooperative

A Touchstone Energy® Cooperative

Recipe for *Efficiency* from CAEC

Quick Do-It-Yourself Home Energy Audit

Did you know there are several key areas in your home that you can check for efficiency by conducting a Do- It- Yourself Home Energy Audit? This quick and easy audit is suitable for most dwelling types and can help you gauge your home's efficiency.

Utensils (tools):

Screwdriver
Digital Thermometer
Detergent/Cleaner
Hose pipe

Ingredients (supplies):

Air Filter (if needed)

Electric Water Heater Setting

1. Turn off the circuit (at the breaker box) to your electric hot water heater.

2. Check the temperature setting on the tank. The top element should be set at 120 degrees and the bottom element at 130 degrees for peak efficiency.

3. If the temperature setting needs to be adjusted, turn the thermostat to the desired temperature with a screwdriver. After you have made any adjustments, restore power to your water heater.

Check Water Temperature

1. To also ensure efficiency, use a digital thermometer to check the temperature of the hot water. Turn a faucet on hot and after maximum heating has taken place, take a reading.

2. If the temperature is not within 10-20 degrees of the water heating setting, this could mean your hot water heater is not functioning properly (or efficiently) and should be checked by a trained professional.

Checking and Changing Air Filters

You should check your heating and air filters monthly and replace with new filters as needed. Dust and debris can reduce the efficiency of your heating and air unit.

1. Locate your air filter(s). Inspect for debris, dust, hair, etc.

2. If a filter needs to be replaced, do so with the appropriate filter for your heating and air unit model.

Check Outside Air Unit

If you have an outside air unit, debris can affect its efficiency.

1. Turn off power to the outside unit.

2. Remove the fan motor cover.

3. Spray the inside with water from a hose. Use a detergent-like substance if the area is especially dirty.

4. Return fan cover back to unit and restore power.

By checking these four simple areas, you can help make your home more efficient. For more energy tips, visit us at www.caec.coop.