

## Carbon Offsets

### Potentially an Important Low Cost / High Certainty Feature of Greenhouse Gas Reduction Programs

(Presented by Dan Carson, Appalachian Power Company, August 27, 2008)

#### **Background**

In any emissions cap and trade program there will be sources of the targeted emissions component that are covered by the program and sources that for one reason or another are not.

Greenhouse gas (GHG) emissions are different with respect to their impacts than, say, constituents such as SO<sub>2</sub> or NO<sub>x</sub> for which reductions are required because of impacts within specific geographically defined areas. Climate change is a global phenomenon such that GHG reductions made anywhere on earth will be functionally equivalent to those made locally. A ton of GHG emissions in China would be functionally the inverse equivalent to a one ton reduction achieved in downtown Richmond (as net contributions to climate change causation are considered).

With cap and trade and offsets allowed, a “covered” source needing to make reductions in emissions of GHGs will have the opportunity to find the most economical method of doing so, with greatly enhanced flexibility for developing an effective, efficient and low cost compliance strategy. Acting rationally, covered sources will initiate reductions from non-covered sources and achieve successful offsets in lieu of making equal reductions in covered source emissions that would cost significantly more. Offsets from non-covered activities might also be achieved utilizing well-developed, conventional technologies (e.g. tree planting) that yield verifiable and certain reductions earlier than could be achieved with yet-to-be-proven new technology.

Finally, offsets may afford the opportunity to achieve reductions of more active GHGs that offset larger quantities of a less active material. AEP, Appalachian Power’s parent company, is participating in a methane capture program yielding offsets of almost 19 tons of CO<sub>2</sub> for each ton of methane captured.

#### **Offsets...Definition and Criteria**

A GHG *Offset* is defined as a reduction, removal, or avoidance of a non-covered GHG emission (i.e., one that is outside of applicability of the cap) which can *offset* emissions within or by a covered sector.

Offsets must generally meet three criteria to be considered valid:

1. They must be **Real**, in that there must be an actual net lowering of emissions of a GHG. For instance, use of an alternative fuel, the combined production and use of which would result in greater GHG emissions than the production and use of the original fuel, would not likely be considered a viable offset. The controversy over ethanol provides an example of such a test.

2. They must be **Additional**. Somewhat controversial, this criterion usually requires that an activity resulting in a lowering of GHG emissions must be initiated solely for the purpose of the reduction. Taking advantage of an activity prompted by another purpose, such as switching from natural gas to a biofuel because the biofuel is cheaper would probably not, for example, qualify under this condition.
3. They must be **Verifiable**. Sufficient monitoring and record keeping must substantiate and document the reduction.

Examples of carbon offset activities that are generally considered valid include forestry (biological sequestration), agriculture (methane capture from animal waste control), mining (methane capture from coal mining), landfill activity (methane capture from organic waste decomposition), and sewage treatment (anaerobic decomposition of solids handling).

### **AEP's Offset Activities**

AEP began several years ago to address the issue of climate change and has continued to expand its portfolio of measures related to GHG emissions. It joined as a founding member in 2003 the Chicago Climate Exchange, the nation's first voluntary program established for the exchange of greenhouse gas emissions, and committed to reduce by 2010 its GHGs by 6% of its average base load emissions of the 1998-2001 period. AEP thereby expects to reduce GHG emissions by a total of 46 million metric tons by 2010, and had achieved through 2007 43 million metric tons of that goal.

This level of accomplishment was achieved by improving the efficiency of existing plants; retiring older, inefficient units; substantially reducing the leakage rate of sulfur hexafluoride (SF<sub>6</sub>) – a potent GHG – from transformers; increasing renewable energy resources; and reforesting lands in the United States and abroad. Examples of AEP's external activities are:

- Planting 63 million trees through 2006 as part of an extensive tree planting program to restore former strip mines, return depleted agricultural lands to forest, and preserve wildlife habitat. AEP continues to plant trees at the rate of 350,000 per year.
- Developing a large portfolio of wind generation.
- Participating in international projects to protect and restore threatened tropical and subtropical rainforests, including the Noel Kempff Mercado Climate Action Project in Bolivia and the Guaraquecaba Climate Action Project in Brazil.

For the future, AEP has planned improvements to its existing power plants that will further reduce GHG emissions by more than 400,000 tons per year by 2010. Last year, it outlined its post-2010 commitment to offset CO<sub>2</sub> emissions by an additional 5 million tons annually through offsets, as follows:

- Purchasing an additional 1,000 MW of new wind power by 2011.

- Committing to the achievement of 1,000 MW of demand reduction by 2012 through new demand-side management and energy efficiency programs.
- Investing in domestic offsets. AEP signed an agreement in 2007 with the Environmental Credit Corp. to purchase 4.6 million carbon credits (one carbon credit is equal to reducing one metric ton of CO<sub>2</sub>) between 2010 and 2017. The credits would be created by capturing and destroying methane on 200 U.S. livestock farms, at least half of which will be within AEP's 11-state service territory. The first two manure "lagoons" to capture methane were completed on a farm in upstate New York in December. These credits will offset 0.6 million metric ton of CO<sub>2</sub> between 2011 and 2017.
- Increasing investments in domestic offsets, including forestry, between 2011 and 2020. (Investments in new forestry projects have been hampered by the conversion of lands to grow crops, often for biofuels.)
- Offsetting 0.2 million tons of CO<sub>2</sub> emissions from the Company's mobile fleet. Of 542 light-duty vehicles planned for purchase in the coming year, 31 percent will be hybrid or flex fuel.

#### **Suggestions for Making Offsets Work for a Virginia GHG Reduction Strategy**

The following strategy components could prove very helpful to the viability of offset programs and utilities' and other entities' abilities to utilize them:

- Virginia law and regulation should recognize properly documented offsets as constituting an acceptable and equivalent GHG emission reduction activity pursuant to an overall reduction target.
- The state should recognize/give credit for offset activities conducted in locations external to Virginia.
- Virginia should seriously consider the generation of offset credits for energy efficiency and conservation activities.
- Virginia should recognize expanded nuclear powered generation as an effective offset of GHG emissions.
- GHG offsets purchased for the purpose of reducing Virginia utility GHG "footprints" must be accorded contemporaneous cost recovery treatment. Doubts about a utility's ability to recover offset costs on a timely basis will discourage offsets as an important GHG mitigation tool.