



February 9, 2008

**Comments on Allowance Allocation in the Economic and Technology
Advancement Advisory Committee's (ETAAC's)
Final Draft Recommendations –
for Consideration February 11, 2008**

Andy Van Horn, Ph.D.

The comments below respond to ETAAC's discussion of the Allowance Allocation Method in chapter 9 of its final draft recommendations.¹ These comments describe an approach for allocating greenhouse gas (GHG) emissions allowances to generating units in the electric sector. This approach recognizes the current differences in technology performance and provides a simple means for making the transition between an initial output-based allocation and the increased auctioning of allowances over time.

While an output-based approach offers efficiency advantages, the technological differences between coal and natural gas-fired power plants and their differing locations within the West and the U.S. pose severe equity issues that could continue to be debated for years.

Many parties have suggested allowance allocation methods. However, it is essential to devise an allocation method that will be workable, not only in California, but also throughout the West and across the U.S. The chosen method must be straightforward, easy to calculate, verify and administer, and in order to be adopted, it must be efficient and equitable across a variety of existing generating technologies.²

A Potential Allowance Allocation Method Based on the Lowest Emitting Installed Technologies (LEIT)

On page 9-4 of its draft recommendations ETAAC states:

"All ETAAC members agreed that if a free allocation method is to be used, output-based free allocation methods are preferable to grandfathering. Any free allocation method should be designed in such a way that the setting of baseline emissions levels does not discourage early reductions..."

¹ VHC's prior comments on ETAAC's discussion draft, submitted on November 27, 2007, address the other eight market design issues discussed in chapter 9 of the February 2008 Final Draft.

² The allowance allocation method suggested here could be employed effectively regardless of the point of regulation selected for the electric sector.



Some amount of auctioning is necessary for establishing a clear and early price signal.”

The suggested output-based allocation method outlined here would not only enable an increasing portion of allowances to be auctioned in each year, but it would also allocate allowances in a manner that recognizes existing differences in emission rates for different combinations of fuel and generating technologies. It is based on adopting a small number of categories to classify each GHG-emitting electric generating unit by its fuel type and combustion method, analogous to the categories used by the U.S. Environmental Protection Agency's New Source Performance Standards (NSPS) for fossil-fired boilers. A lowest-emitting-installed-technologies (LEIT) emission rate in tonnes/MWh would be determined from the lowest emission rate generators comprising 10 percent of the total generation in each generator category. The category would consist of all generating units located in the Western Electricity Coordinating Council or nationwide to ensure a larger sample size and a compatible transition to a national LEIT rate. This LEIT rate would be based on EPA monitoring data and would be applied to calculate the first year GHG allowances allocated to each generator, based on each generator's known MWh generation in the base year, like 2006, or from its highest MWh in one or more years, e.g., 2004-2006.

Thus, the most efficient 10 percent of the generation measured on a GHG emissions per MWh basis would receive an initial year's GHG allowance allocation nearly sufficient to cover their base year GHG, while the other generators in each category with emission rates above the lowest-emitting-installed-technology (LEIT) emissions rate would need to purchase their shortfall in an allowance auction or a bilateral transaction. Since the first-year cap in the electric sector will be higher than the LEIT allocated allowances, the first year's auction would consist of the unallocated allowances.

In each successive year the percentage of allowances so allocated could be reduced, such that by a designated year, such as 2020, all GHG allowances could be auctioned. The debate over allocation would focus on the definition of a few categories, such as applied in the NSPS, the cumulative percentage of MWh to include in calculating the LEIT emissions rate, e.g., 10 percent, the years, e.g., 2004-2006, to include for baseline calculations and the ultimate percentage of allowances to be auctioned. EPA and FERC data are publicly available to enable the allocations to be determined and modeled in upcoming analyses, either on a WECC-wide or a nationwide basis.

LEIT Allocation Method Steps

The LEIT allocation method would involve the following example steps:

1. Classify each GHG-emitting generating unit into a generic category by fuel type and combustion method; e.g., a natural gas-fired steam unit, a natural gas-fired combined cycle unit, a bituminous or sub-bituminous coal-fired steam unit, somewhat analogous to the NSPS categories.



2. Calculate an historical GHG emission rate in tonnes/MWh or lb/MWh for each unit for years 2004, 2005 and 2006, based on EPA monitoring data already in public databases.
3. Rank all generators in each category located in the Western Electric Coordinating Council (or the nation) from lowest GHG emission rate to highest in each year.
4. Calculate the average emissions rate per MWh for the lowest emitting installed units that cumulatively generated 10 percent of the total MWh in that category in each year. Average the rates for the three years 2004-2006 to determine a Lowest Emitting Installed Technology (LEIT) emission rate for each category.
5. Multiply the LEIT emission rate for each category by each unit's MWh generation in a specified base year, which might need to adjusted to normalized hydro conditions, to calculate that unit's tonnes of free allocated allowances for the first year of the program.
6. Reduce the number of allowances allocated for free each year by taking the allocation for the first year of the program and reducing it proportionately until the designated year when 100 percent of the allowances would be auctioned. Hence, the number of allowances allocated for each year for each generating unit would be known at the beginning of the program.
7. The remaining unallocated allowances making up the sector's total capped allowances in each year would be made available for purchase by auction or reserved for special purposes. By the designated year 100 percent (or a lesser percentage, if that is the policy choice) of the allowances would be auctioned.

Attributes of the LEIT Greenhouse Gas Allowance Allocation Method

The above LEIT allocation approach can be evaluated across several important attributes. These attributes include:

- **Efficiency** – This output-based approach encourages low emitting generators in each generator class, while requiring generating units with emission rates higher than the LEIT rate to purchase a higher percentage of their allowances. Thus, high heat rate generating units will need to buy more allowances, depending on how they compare to the lowest emitting installed plants in their category.

As the percentage of auctioned allowances increases each year, even the lowest emitting plants will need to buy an increasing number of allowances. However, the free allocation of a declining number of allowances to each generator will reduce the costs of compliance to all generator categories, while benefiting those with the lowest emission rates the most.

- **Equity** – Owners of the lowest emitting technologies will have to purchase fewer allowances than will owners of higher emitting technologies. Yet, coal-fired generating units will receive free allocations commensurate with the lowest emitting coal plants in a category, giving them time to improve operations and adapt to a market where the number of free allowances diminishes over time.



- **Ease of allocation and administration** – Even before a sector cap is determined, it will be straightforward to calculate the number of free allocated allowances. Once a sector cap is determined for each year, the remaining unallocated allowances would be auctioned.

Publicly available data for the electric sector will enable the effects of the LEIT allocation approach to be examined in upcoming studies, using appropriate models of electricity market investment and operating decisions and emissions.

In chapter 9 of its final draft recommendations, ETAAC discusses the potential effects of each market design element on Early Action, Innovation and Clear Price Signals. The LEIT method proposed here comports with each of ETAAC's criteria as follows:

- **Early Action** – As pointed out by ETAAC on page 9-3, “output-based allocations do not discourage early actions.” Early actions to improve the operations of individual power plants to move them closer to the lowest emitting plants in their categories will reduce the number of allowances that need to be purchased. Because the LEIT category rates will be set by the most efficient plants in very recent years, those that took early action will benefit more than those that did not.
- **Innovation** – On page 9-3, ETAAC points out that:

“Allowance auctions provide the strongest financial incentives for innovation within capped sectors. With auctioning, permits are allocated efficiently and all parties have an incentive to innovate so as to reduce the number of permits they must purchase. Auctions are also an easy way to permit the entry of innovative new firms into the market. The revenue from auctions can be used to encourage innovation. However, it was mentioned by some ETAAC members that firms have limited available capital. Money expended for purchasing permits may reduce their ability to invest in new technology.”

The suggested LEIT allocation method would lessen the upfront compliance costs, and it would also provide incentives for innovation, including auctions.

- **Clear Price Signals** – Since auctions would be conducted during each year of the program, a public price signal would be available to complement price signals from bilateral transactions and published industry indices. In addition, because owners of almost all affected generators will need to acquire some allowances in each year under the LEIT allocation approach, participation in the GHG allowance market will be broad-based from the program's inception.

Respectfully submitted,

Andrew J. Van Horn
Van Horn Consulting
12 Lind Court
Orinda, CA 94563
Telephone: 925.254.3358
Email: andy.vanhorn@vhcenergy.com