



## **AB32 and California's Forestry Sector<sup>1</sup>**

### **INTRODUCTION**

California is developing policies to bring statewide emissions back to 1990 levels by 2020 as specified in AB32. The Scoping Plan has proposed a broad cap-and-trade program to help achieve this objective. As indicated in Appendix C of the Plan, the economic sectors that would be subject to an emission cap include electricity, transportation fuels, natural gas, and large industrial sectors (pg 13). Among other sectors, forestry could be allowed to earn offset credits, which would presumably be sold to firms subject to the broad cap-and-trade program (pg. 131).

For several reasons, however, the state may seek greater contributions from the forestry sector toward meeting its emission goal than would be possible with a traditional offset program. If an offset is sold to an industrial firm subject to a cap, the sequestration of carbon in forests merely substitutes for the abatement of emissions by the purchasing firm. The effect of offsets is therefore a reduction in compliance costs for the industries subject to the cap-and-trade program, but no net contribution to emission reductions. In addition, offsets raise a fairness issue across economic sectors. In selling offsets, the forestry sector would profit from additional sequestration projects at a time when other industries are bearing increased costs from emission abatement or from the purchase of emission allowances. Furthermore, in allowing forestry to participate on a voluntary basis, there would be no guarantee that the cost-effective actions available to this sector would be implemented; the overall cost of meeting the AB32 emission limit would therefore be increased. Finally, establishing future regulations for the forestry sector would be more difficult as the state would be taking away a source of revenues from offsets.

### **VALUING SEQUESTRATION BY CHARGING A FEE FOR CONVERSION OF FORESTLAND**

One simple measure to boost the contribution of forestry toward an emission reduction goal would be a fee for clearcutting. Forest landowners would be required to pay the fee when forests are converted to another land use. The amount of the fee could be based on the loss of stored carbon because of clearcutting and the price of allowances in the cap-and-trade program. The fee

---

<sup>1</sup> Written by William Whitesell and Stacey Davis, Center for Clean Air Policy.

would tend to discourage unnecessary clearcutting. Also, the revenues from such fees could be used to purchase conservation easements, improve forest management, or fund other activities that would contribute to achieving the state's emission goal. The Center for Clean Air Policy and the Pacific Forest Trust have both suggested fees for clearcutting.

## **ACHIEVING INCREASED SEQUESTRATION FROM FORESTED LANDS**

Privately-owned forestlands that remain forested should also contribute to California's emission goals. Designing a mechanism for this purpose is complicated because CO<sub>2</sub> is removed from the air as forests grow. For this reason, California's forestlands are a net sink of carbon, rather than a source. The Scoping Plan estimated that forests are currently removing on net about 5 million metric tons (MMt) of CO<sub>2</sub> per year. While the Scoping Plan stated that 5 MMt is a goal for future sequestration from forestry, that would merely be a business-as-usual (BAU) result. For the sector to make a genuine contribution to the state's emission goal, the net sequestration of carbon in forests should be increased beyond BAU results through the implementation of improved forest management practices.

Incentives for greater-than-BAU sequestration could be provided through two alternatives described below. The first is a modified offset program proposed by the Pacific Forest Trust (PFT). The second is a separate cap-and-trade program for forestry proposed by the Center for Clean Air Policy (CCAP).

### **PFT Proposal: Enhanced Forestry Sequestration through a Modified Offset Program**

The proposal by Pacific Forest Trust is a no-lose approach (Wayburn *et al.*, 2008). Landowners could opt into the program if they were willing to sequester more carbon in their forestlands than would occur under BAU assumptions.

For landowners who opt in, a forecast would be constructed for the net sequestration of carbon that would occur on their land over the next 100 years under existing Forest Practice Rules. The landowner would then commit to a change in management practices that would sequester more carbon. The landowner would earn credits equal to the cumulative increase in sequestration expected from the change in practices. Full credit would be earned for a 100-year commitment. The percentage earned would be less for a shorter-term commitment. The minimum commitment period would be 50 years, which would earn half the credits of the 100-year commitment.

The credits could then be sold as offsets to firms in energy and other industries that were subject to the cap-and-trade program. This proposal differs from a traditional offset program in which credits are earned by specific projects. Instead, the proposal would require net sequestration to be improved over the entire forest holdings of the landowners who opt into the program. The program would require long-term monitoring to ensure that the half-century and longer commitments were maintained. Penalties would have to be assessed on landowners, or the heirs of landowners, who failed to abide by these

commitments many years after the offsets had been granted. The proposal would suffer from other disadvantages associated with a traditional offset program, including uncertain levels of participation, emission reductions in forestry substituting for those in other industries rather than being additional, fairness relative to industries in the cap-and-trade program, and the creation of an entitlement to revenues from offsets that might be difficult to alter in favor of restrictive regulations later.

### **CCAP Proposal:**

#### **Enhanced Sequestration through a Separate Cap-and-Trade Program for Forestry**

The proposal by the Center for Clean Air Policy involves establishing a separate cap-and-trade program for private forestlands in California. Because of the special challenges in measuring carbon fluxes in forestry, the program would be kept separate from the cap-and-trade system applicable to energy and other industries, at least during the first several years. After some experience, the forestry sector could potentially be included in the multi-sector cap-and-trade system.

Under a conventional cap-and-trade system, regulated entities have to surrender allowances for their emissions. As noted above, however, forests are a sink for carbon except in harvest years. *Thus, a nontraditional approach is needed to create a demand for emission allowances among forest landowners.* The procedure would be as follows: Each landowner in the program would have a stretch goal for the net sequestration of carbon on their forestlands. Most landowners would be unable to meet this goal. To the extent that they fell short, they would have to buy emission allowances. If they altered their management practices to sequester more carbon, they would need fewer allowances. If they managed to exceed the stretch goal for sequestration on their lands, they would earn allowances that they could sell to other forest landowners.<sup>2</sup>

The stretch goals for net sequestration could be constructed in the following manner. The annual sequestration of carbon that would occur under improved management would be estimated for each of the main types of forestland (conifer, mixed hardwood, oak woodland, etc.) under the assumption of no harvesting. That estimate of sequestration would be reduced by an assumption that a fraction of the land would be harvested each year. The fraction assumed to be harvested would be based on a long rotation consistent with an optimum storage of carbon. The resulting estimates of net sequestration for each type of forest (under the assumption of long rotations and other improvements in management) would be used to construct stretch sequestration goals for each parcel of land. The goal for each parcel would be based on the type of trees in that parcel. Each landowner would probably have some parcels that exceeded the goal and others that fell short. The landowner would have to submit allowances to the extent that the net sequestration over all his/her lands fell short of the sum of the stretch goals for all his/her land parcels.

---

<sup>2</sup> The stretch goal is a critical part of creating a viable sequestration allowance market. If the sequestration goals are too easy, there would be no demand for allowances and no market price.

A three-year compliance period could be used for this program. At the end of the compliance period, the implementing agency would need to assess the actual net sequestration for each landowner. In a period in which a landowner harvested a material number of trees, he/she would probably need to submit emission allowances for falling short of the stretch goal. In years when no harvesting occurred, the landowner might receive some allowances for free because of exceeding his/her stretch goal.

The final component of this program would be determining the total amount of forestry emission allowances to be issued. The number of allowances would be determined in a way that, even if landowners surrendered all the issued allowances at the end of a compliance period, the net sequestration of carbon over all private forest lands would be greater than expected under the BAU forecast.

### **An Illustrative Example**

Assume that, under the assumptions of improved management and longer rotations, the net sequestration of carbon across all privately owned forests in California was estimated to be 10 MMt of CO<sub>2</sub>-equivalent over a three-year compliance period. That 10 MMt would be partitioned into stretch goals for individual forest landowners. Suppose also that a BAU forecast of net sequestration in private forestlands amounted to only 6 MMt over the period. The difference is 4 MMt. The total forestry emission allowances that should be issued would be smaller than 4 million, assuming that each allowance is good for one ton of CO<sub>2</sub>-equivalent emissions. The amount of allowances issued would determine the incremental reductions achieved by the forestry cap-and-trade program.

Suppose that 2 million allowances were issued in auctions and used by the land owners. The net sequestration from forestry in that period would then amount to the sum of the stretch goals, 10 MMt, less the 2 MMt of allowances. Thus, the state would achieve 8 MMt of net sequestration from forestry. That would be 2 MMt better than the projected BAU result, a significant contribution to California's emission reduction goals.

Note that any allowances given to landowners who exceed their stretch goals would not affect net sequestration for the state. For instance, in the above example, suppose that 1 million allowances were distributed for free to landowners who exceeded their stretch goals during the compliance period. That would mean an extra 1 MMt of CO<sub>2</sub>-equivalent sequestration beyond the stretch goal for the state. If those allowances were sold, other landowners would be able to harvest more land and emit another 1 MMt. These two effects thus cancel out. The total net sequestration for the state during the compliance period would still be the sum of the stretch goals, 10 MMt, less the allowances sold in auction, 2 MMt.

### **Further Details of the Proposal**

The cap-and-trade program for the forestry sector should start with the largest landowners and move down to smaller managed landowners. Once a land parcel entered the

program, it would stay in the program. The net sequestration requirement would remain with the land upon sale and upon any subdivision of the parcel.

If a parcel was included in the forestry cap-and-trade system, it would no longer be subject to the fee for clearcutting, as allowances would have to be purchased and surrendered to account for the carbon lost in removing trees.

Forestlands would need to be inventoried every three years to ensure compliance. Monitoring requirements could be simplified for smaller landowners.

The state would need to identify an agency responsible for distributing allowances, which might not be the same as the agency responsible for enforcing compliance. In the example above, it was assumed that the only allowances distributed for free would be to landowners who exceeded their stretch goals. Auctions were assumed to be used for the scheduled issuance of 2 million allowances. As an alternative, some of the allowances scheduled to be issued could also be distributed to landowners for free. This would imply reduced costs for landowners and lower revenues for the state. However, considerable administrative burdens could be involved in devising equitable methods for distributing free allowances.

The revenues collected from clearcutting fees and from allowance auctions could be used for covering the administrative costs of the program, for providing education and training on forest management, for the purchase of conservation easements, and/or for achieving other objectives of the state.

After two or three compliance periods, the cap-and-trade program should be reviewed. The accuracy of carbon measurement, the effects on net sequestration, the performance of the allowance market, and the compliance experience would be evaluated. In addition, an assessment would be made on whether forestry cap-and-trade should be continued as a separate program or instead folded into the cap-and-trade system applicable to energy and other industrial sectors.

### **Advantages of a Separate Cap-and-Trade Program for Forestry**

A separate cap-and-trade program for forestry, at least for a while, would allow time to test the special program design elements related to goal-setting, monitoring, and measurement. It would also allow a separate market price to emerge for forestry allowances. After observing the operation of the program, adjustments might be needed before the forestry program could be integrated into the broader cap-and-trade program. Otherwise, the cost of emission abatement in other sectors might be out of line with the cost of improved management practices to increase net sequestration in forestry.

Establishing a cap-and-trade program in forestry would secure additional contributions towards the State's AB32 limit from landowners that would match the sacrifices to be borne by the producers and consumers of energy and related products in meeting California's emission goal.

Finally, tradable forestry emission allowances offer the key advantage of any cap-and-trade system. They provide a market-based incentive for the cheapest possible projects to be implemented to achieve sequestration goals. Forest landowners who could implement improved management at the lowest cost would be able to avoid purchasing allowances. They might even earn extra allowances from the state. Landowners who found it more expensive would not have to bear the cost of implementing management improvements. They could instead buy allowances in auctions or from other landowners. Thus, enhanced carbon sequestration in forestry would be achieved at the lowest possible cost.

#### **WORKS CITED**

California Air Resources Board, "Climate Change Draft Scoping Plan," June 2008.

Wayburn, L., A. Tuttle, and P. Swedeen, "A Programmatic Approach to the Forest Sector in AB 32," Pacific Forest Trust, May 2008.