

California Environmental Protection Agency
 **Air Resources Board**



**Staff Report:
Proposed Adoption of California Climate Action
Registry Forestry Greenhouse Gas Protocols
for Voluntary Purposes**

**Planning and Technical Support Division
Emissions Inventory Branch**

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**State of California
AIR RESOURCES BOARD**

STAFF REPORT

**PROPOSED ADOPTION OF CALIFORNIA CLIMATE ACTION REGISTRY
FORESTRY GREENHOUSE GAS PROTOCOLS FOR VOLUNTARY
PURPOSES**

To be considered by the Air Resources Board on October 25-26, 2007, at:

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Executive Summary

The Air Resources Board (ARB or Board) staff proposes that the Board adopt the three current California Climate Action Registry (CCAR) forestry protocols to provide tools for voluntary carbon accounting in the forest sector. Forests can absorb (sequester) and store carbon long-term, and they have the potential to provide significant greenhouse gas (GHG) reductions when managed for carbon benefits. Adoption of the protocols would represent the Board's endorsement of a technically sound approach for carbon accounting in voluntary forest projects. Board adoption of quantification methodologies, as set forth in the Global Warming Solutions Act of 2006, AB 32, (the Act) is a non-regulatory action.

CCAR's current set of three forestry protocols – the sector, project, and certification protocols - provides a solid basis for quality carbon accounting. They provide a methodology for complete, consistent, transparent, accurate, and conservative accounting of carbon emissions and reductions. This includes standardized eligibility rules, calculation methods, monitoring instructions, and procedures for reporting and verifying project information. The CCAR protocols represent the results of a four-year, public, multi-stakeholder process that included the work of leading experts in both forestry and protocol development. The protocols were circulated for review to more than 50 external experts, representing the forest industry, government agencies, and academia. They were supported by the California Board of Forestry in 2004 and adopted by the CCAR Board in 2005.

The forest protocols would be the first voluntary protocols to be adopted by ARB pursuant to the Act. Board consideration of these protocols is included in ARB's broad list of early actions, consistent with the Act's directives to adopt methodologies for quantification of voluntary GHG emission reductions. The Board's adoption of the protocols would send a positive signal to entities considering voluntary projects using these protocols. Adoption of the protocols by the Board is expected to encourage early reductions, but would not immediately address the use of voluntary reductions to satisfy future ARB GHG emission limits. Before voluntary reductions can be used as an alternative compliance mechanism, ARB must adopt regulations for verification and enforcement (Health and Safety Code (H&SC) section 38571).

As part of an overall effort to bring additional quantification methodologies to the Board for consideration, staff also proposes creation of a stakeholder working group for the forestry sector to be staffed by ARB, Resources Agency, and the Department of Forestry and Fire Protection (CAL FIRE) in coordination with CCAR. This public process is intended to bring together all interested parties with a goal of completing additional voluntary protocols for ARB adoption. Priorities for further work include forest management and public lands issues which were raised in the process of bringing these protocols to the Board.

I. Introduction

This report presents the Air Resources Board (ARB or Board) staff recommendation for Board adoption of the three California Climate Action Registry (CCAR) forestry protocols to provide tools for voluntary carbon accounting in the forest sector. Forests can absorb (sequester) and store carbon long-term, and they have the potential to provide significant greenhouse gas (GHG) reductions when managed for carbon benefits. The CCAR forest protocols are rigorous methodologies that were developed over an extended, broad-based, public process and have undergone an extensive review by a number of forest experts. They are an excellent first step which sets a high standard for future forest project calculation methods or protocols. The CCAR forest protocols would be the first voluntary protocols to be adopted by ARB pursuant to the Global Warming Solutions Act of 2006, AB 32 (the Act).

Adoption of voluntary methodologies, as set forth in the Act is a non-regulatory action. The adoption of the protocols represents the Board's endorsement of a technically sound approach for carbon accounting in voluntary forest projects. ARB staff also proposes a public process for Board consideration of additional quantification methodologies. Issues related to forest management and public lands will be further addressed in a public process staffed by ARB, Resources Agency, and California Department of Forestry and Fire Protection (CAL FIRE), in coordination with CCAR.

This report discusses how voluntary GHG reductions are addressed in the Act, the general role of forestry, how the CCAR Protocols were developed, a description of the CCAR protocols, and anticipated future actions related to forestry protocols. The report concludes with recommendations for moving forward by adopting the CCAR forest protocols and initiating a process to further promote sound forest projects and encourage broad stakeholder participation.

II. Voluntary Actions and Implementation of AB 32

ARB is working to promote and encourage voluntary actions as part of California's effort to meet the 2020 emission target established by the Act. There is substantial stakeholder interest, and voluntary actions can be a significant source of emission reductions. The Act gives a high priority to voluntary reductions, and sets forth a number of specific directives to ARB:

- Identify opportunities for verifiable and enforceable voluntary emission reduction actions
- Ensure that entities that have previously made voluntarily emission reductions receive appropriate credit
- Adopt methodologies for the quantification of voluntary GHG emission reductions (a non-regulatory Board action)

- Adopt regulations to verify and enforce any voluntary GHG reductions that would be used to comply with GHG emission limits
- Incorporate the standards and protocols developed by CCAR where appropriate and to the maximum extent feasible
- Ensure that the greenhouse gas emission reductions that are achieved are real, permanent, quantifiable, verifiable, and enforceable (H&SC §38562(d)1)

Before voluntary reductions can be used as an alternative compliance mechanism to satisfy requirements of the Act, ARB must adopt regulations “to verify and enforce any voluntary greenhouse gas emission reductions used to comply with greenhouse gas emission limits” (H&SC section 38571). Therefore, Board adoption of the current CCAR forestry protocols or any other voluntary protocol, is only a first step in the process of addressing the role of voluntary reductions in ARB’s climate change program.

Voluntary reductions, such as those in the forest sector, come into play in several aspects of implementation of the Act. ARB staff has included Board consideration of the CCAR forest protocols on the comprehensive list of proposed early actions. As part of the development of the Scoping Plan, a forestry sector workgroup will be formed to look broadly at how this sector can contribute reductions toward the 2020 target. Lastly, ARB staff is proposing a process to develop additional accounting methodologies for forestry and other project types.

Early Actions

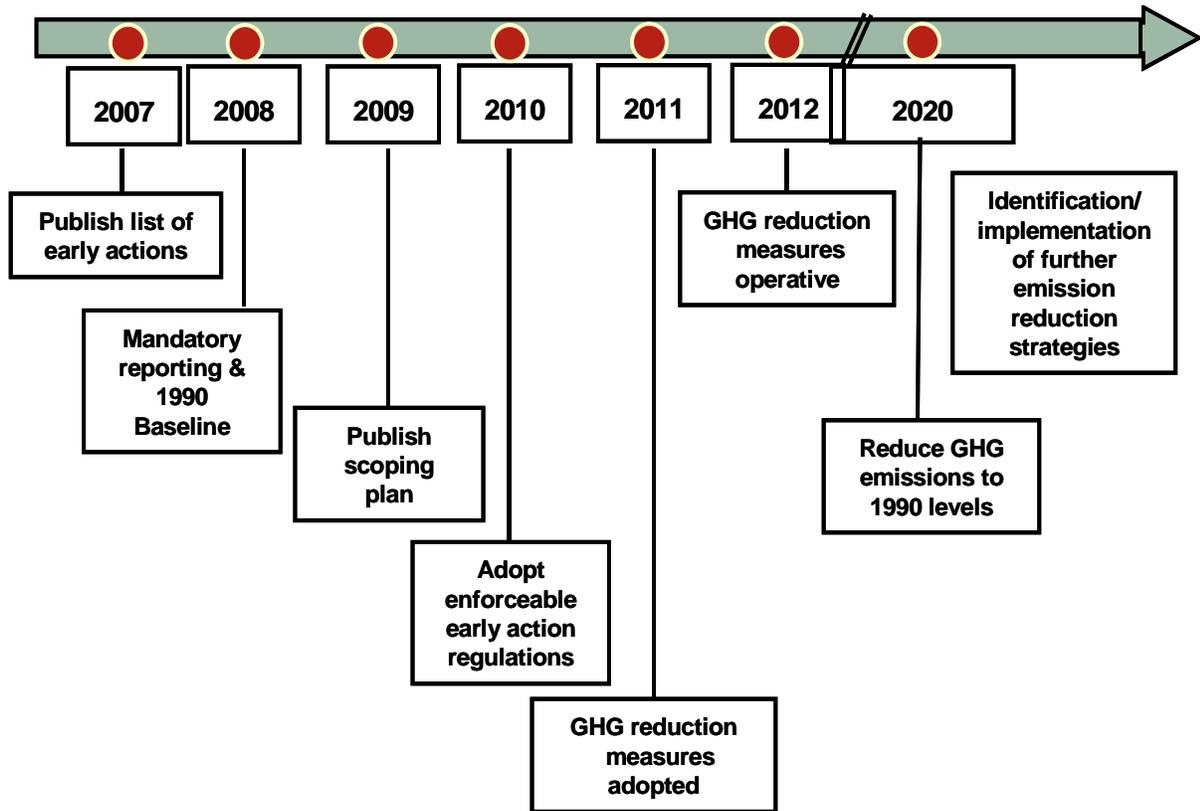
The Act required ARB to identify a list of “discrete early action” GHG emission reduction measures by June 30, 2007. Discrete early actions are measures to be developed into regulatory proposals adopted by the Board and made enforceable by January 1, 2010. In addition to the discrete early actions, ARB staff has developed a broader list of “early actions” which includes actions to promote voluntary reductions. This broad list includes a mix of regulatory and non-regulatory GHG strategies which could be implemented during the 2007-2012 timeframe. One of these early actions is the proposed Board adoption of the CCAR forest protocols for voluntary purposes.

Scoping Plan

In parallel to the early action process, ARB is also developing a comprehensive Scoping Plan (Plan) which must be adopted by January 1, 2009. The Plan will outline a multi-faceted approach to meeting the 2020 emissions reduction target defined in the Act. In developing the Plan, ARB staff will evaluate opportunities for sector-specific reductions, integrate early actions and additional GHG reduction measures, identify additional regulatory and non-regulatory measures, and define the role of any potential market mechanisms such as a cap-and-trade

program. To gather needed information, ARB staff will form a number of sector workgroups. This includes an ARB/Resources Agency Forest Sector Workgroup. Development of the Plan will occur in a public process starting in late 2007, and will progress over the next year. A timeline for implementation of the Act is shown in Figure 1.

Figure 1. Timeline of ARB activities related to implementation of the Act. These activities include developing mandatory reporting regulations, defining the 1990 baseline emissions which becomes the 2020 emissions target, determining discrete early actions (regulatory) and voluntary early actions (non-regulatory) to reduce emissions, and designing the Scoping Plan.



Process for Adoption of Additional Methodologies

In effort to promote voluntary GHG reductions, ARB staff will issue a solicitation for quantification methods for voluntary GHG reduction project types. As part of this effort, ARB staff will, in coordination with other State agencies, develop criteria for project selection taking into account the factors such as magnitude of potential reductions, breadth of applicability, state-of-the-science, ease of implementation, and permanence and additionality considerations. Information gathered through this solicitation will also aid ARB staff in evaluating the role of voluntary reductions in meeting the 2020 emissions reduction target and help

determine the potential contribution from voluntary measures in the Scoping Plan process.

As part of the overall effort to bring additional quantification methodologies to the Board for consideration, staff also proposes creation of a stakeholder working group for the forestry sector to be staffed by ARB, Resources Agency, CAL FIRE, and the Board of Forestry, in coordination with CCAR. This public process will be to bring all interested parties to the table with a goal of completing additional voluntary protocols for ARB adoption. Priorities for further work include forest management and public lands which were raised in the process of bringing these protocols to the Board. This working group will operate with the broad forest sector workgroup that will be participating in the development of the Scoping Plan.

III. Role of Forestry in California Climate Change Mitigation

Opportunity for Carbon Benefits from California Forests

Forests actively remove carbon dioxide from the air and can sequester carbon in trees, shrubs, and soil for long periods of time. To understand the potential role of the forest sector in climate change mitigation, it is important to understand the nature of forest ownership in California. California has 33.7 million acres of forested land (FRAP 2003), roughly half of which is timberland¹. Most of the non-timberland is managed by U.S. Forest Service (USFS). Of the timberland, roughly half is public land and half private land. The public portion, 9.2 million acres, includes some managed by the State of California but most is under USFS jurisdiction. Of the remaining 7.4 million acres of private timberland, 3.2 million acres belong to small, non-industrial private forest owners (ranches, non-profit organizations, farmers, Native Americans). Industrial forests, generally greater than 50,000 acres each, make up the remaining 4.2 million acres of timberland.

The State has among the most productive forests in the country. However, California forests are growing at roughly 30 percent below capacity (FRAP 2003). With appropriate incentives, programs and management, it is estimated that an additional 8 MMT CO₂eq could be sequestered annually by 2020 (Climate Action Team--CAT, 2007). This potential will be further explored in the development of the Scoping Plan over the coming year.

As we consider the carbon sequestration benefits of forests, it is important to also consider other positive aspects of the forestry sector. Forests provide multiple ecological benefits (for example, habitat, maintenance, and nutrient cycling), as well as a suite of other human benefits or services on which we depend (for

¹ Timberland (timber productive forest land) is forest land capable of growing 20 cubic feet or more per acre per year (mean increment at culmination in fully stocked, natural stands) of industrial wood (FRAP 1998).

example, water storage, soil stability, air and water purification, wood products, and recreation).

Criteria embedded within protocols should maintain carbon benefits of forests without losing ecosystem and other benefits. Internationally, forest reduction principles have evolved to include conservation principles. In 2001, the UNFCCC Conference of Parties adopted a general environmental protection principle in response to concerns that “managing lands for carbon sequestration could lead to short-sighted, unsustainable forest uses, including destruction of natural forests” (Rosenbaum et al. 2004). These issues will need to be addressed as new accounting methodologies are considered. Managing forests for multiple benefits fits into the larger framework of managing for climate change mitigation and adaptation in which forests, and forest protocols, can play an important role.

Sequestration Strategies

A range of state-wide forest strategies to increase carbon sequestration and to reduce deforestation has been identified by California’s Climate Action Team (CAT), a multi-agency climate task force. Key strategies include reforestation, conservation forest management, conservation, urban forestry, and fuels management combined with biomass substitution.

1. Reforestation – Reforestation projects plant trees on land that has been out of forest for at least 10 years.
2. Conservation forest management – Conservation forest management projects manage forests to enhance carbon sequestration while still harvesting timber.
3. Conservation (avoided development) – Conservation projects protect land from development and/or conversion out of forest.
4. Urban Forestry – Urban forestry projects will provide the dual benefit of carbon sequestration through tree planting and shade to reduce energy use. An urban forestry protocol is well-along in development and is expected to be completed by mid-2008 (Greg McPherson, USFS Center for Urban Forestry at UC Davis, CAL FIRE, CCAR, others).
5. Fuels management & biomass – The fuels management and biomass protocol accounts for the benefits of removing hazardous fuels from forests and thus reducing wildfire emissions. The removed wood can be substituted for fossil fuels to create “carbon neutral” feedstock. Winrock International is developing this protocol as a part of the WESTCARB sequestration project.

The three CCAR protocols that are detailed in this report are accounting frameworks to support the first three of these five forest GHG reduction strategies. The protocols for the final two strategies are currently under development. Additional accounting methodologies for forest management and

public lands will be developed for Board consideration through the joint staff efforts of ARB and Resources Agency.

IV. Context and Process for CCAR Protocol Development

Genesis and Development

With the enactment of Senate Bill 812 (SB 812), Sher 2002, State law mandated that CCAR develop forest protocols. Section 42823 of the Health and Safety Code was amended to define CCAR's role in creating a GHG accounting framework for the forest sector that also broadly benefits the environment (California's native forests, biodiversity, water quality and species habitat). CCAR was required to adopt procedures and criteria for monitoring, estimating, calculating, reporting, and certifying carbon sequestration from conservation, reforestation, and conservation-based forest management. The CCAR forestry protocols are to require that reductions exceed existing requirements (i.e. regulatory additionality), commit to Best Management Practices, maintain and promote native forest types² as part of registered forest activities, and support natural forest management. State law also requires that registered forest projects secure reductions with a permanent conservation easement (section 2.4.d.2). These requirements sunset on December 31, 2007. The text of SB 812 is contained in Appendix I.

The forest protocols were developed through a four-year, multi-stakeholder public process. In spring 2003, CCAR assembled a working group that represented approximately eight organizations including government agencies, the forest industry, and environmental and research organizations to develop and draft the protocols. The protocols were reviewed by the Registry's Technical Advisory Committee and shared with over 50 external experts, representing the forest industry, government agencies and academia. The protocols were supported by the Board of Forestry in August 2004 and adopted by the CCAR Board in June of 2005. In October 2007, the Department of Forestry and Fire Protection's work during the protocol development was recognized with the Green California Leadership Award, an annual award to acknowledge outstanding government accomplishments in the field of environmental sustainability.

In actions leading up to the proposed adoption of the CCAR forestry protocols, ARB staff has reached out to stakeholders and other public agencies to explain the proposed action and gain an understanding of the views the forestry sector on the CCAR protocols. Over the last several months, ARB staff has had numerous meetings with representatives of the timber industry, forest

² Best Management Practices are forest management practices, developed pursuant to federal water quality legislation, such as the Clean Water Act, to minimize or prevent nonpoint source water pollution, soil erosion, etc.

conservation groups, and public agencies. ARB staff conducted a public workshop on September 6, 2007, and held one joint stakeholder meeting with staff of the Resources Agency on issues related to the adoption of the CCAR protocols.

International Context

To fit into an international GHG accounting framework, forest accounting must meet internationally recognized and rigorous voluntary standards, which include that they be permanent, real, additional, independently verified, and not double-counted (International Voluntary Carbon Standard, IETA, WBCSD, WEF, TCG, 2007). One of the most important steps in achieving carbon reductions is accurate carbon stock accounting. Forest protocols are designed to provide accurate and standardized GHG accounting methodologies to measure biological GHG emissions and/or reductions from the forest sector. Biological emissions are measured as carbon stock loss and reductions are measured as stock growth. To ensure a standard currency across climate change programs, quantification uncertainty in the forest sector should not exceed that of other sectors. This can be a challenge since natural biological systems like forests are usually highly variable. High quality forest protocols require rigorous measuring schema to reduce quantification uncertainty.

The CCAR protocols were developed pursuant to SB 812 to meet a need for standardization in forest protocols and to make project approval more efficient. International forest project reporting was initially limited to Clean Development Mechanism (CDM) projects, which were assessed on a project-by-project basis. This process proved prohibitively slow and expensive. Between January 2004 and August 2007, only one international forest project has finished the process of registration, although nine more are in the pipeline (UNEP Risoe CDM 2007). There was also a need to make protocols more user-friendly. The existing ISO 14064 project protocol and World Resources Institute (WRI) project protocols were too general to be useful as concrete methodologies, but they served to guide the efforts of CCAR protocol developers. CCAR protocols were the first standardized international protocols designed specifically for the forest entity, which met international protocol quality criteria sufficient to develop robust forest carbon accounting and reductions. Drafters of the CCAR forest protocols then helped WRI develop a new international standardized forest project protocol.

A number of countries are actively including forests in their climate strategies and in new laws aimed at reducing GHGs. Some of these laws contain elements of the CCAR forest reporting protocols: long-term conservation easement (Australia and New Zealand), requiring reductions be measurable, verifiable, and additional (Canada). The northeastern U.S. Regional Greenhouse Gas Initiative (RGGI) States are in the process of implementing the Model Rule, which has a reforestation/afforestation component to it. The European Union offers financial support for enhancing forest carbon sequestration, and for avoided wildfire

projects, but these activities do not generate carbon credits (Rosenbaum et al. 2004).

V. CCAR Protocol Description

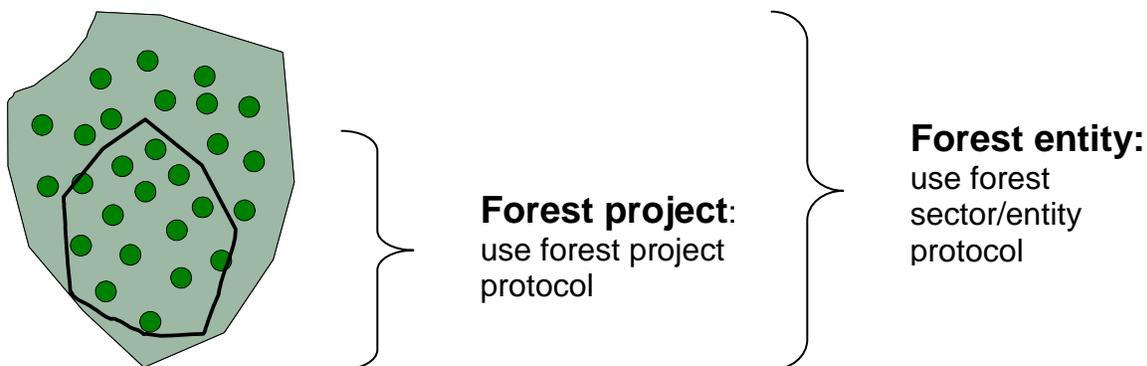
CCAR has developed a cohesive set of three forest protocols for accurate carbon accounting from the forest sector. These protocols – the sector³, project and certification protocols - provide a solid basis for quality carbon accounting. They provide a standardized methodology for complete, consistent, transparent, accurate, and conservative accounting of carbon emissions and reductions. This includes standardized eligibility rules, calculation methods, monitoring instructions and procedures for reporting project information. These protocols can be found in their entirety in Appendix II. A brief overview of the CCAR protocols is presented in this section.

Common Elements of the Sector and Project Protocols

Defining Boundaries

The first step in implementing the protocols is to identify geographic and organizational boundaries for the forest entity. Geographic boundaries may or may not be entirely within California, but at this time only California carbon stocks and emissions can be certified. Organizational boundaries refer to an entity's share of ownership or control of the emission sources and carbon stocks. If a carbon reduction project is planned, the boundaries must be determined for the project area, which may be a subset or all of the forest entity. Figure 2 shows a diagram depicting boundaries.

Figure 2. Below is a diagram of a forest entity in plan view, with forest entity and forest project boundaries outlined. In this case, the forest project is a subset of the forest entity.



³ CCAR's official title for this protocol is the "sector" protocol, however the protocol does not provide accounting methodologies for the entire forest sector, but rather the forest entity. So, for clarity purposes, we use the term sector (entity) protocol.

Quantifying carbon stocks

The next step is to quantify carbon stocks through a complete inventory of carbon pools. The CCAR forest protocols identify two types of carbon pools: those which the entity is required to report and those which are optional to report. Only required pools can be certified. Required pools are live and dead trees above a minimum size. Optional pools include shrubs, the herbaceous understory, litter and duff, soil, and wood products. The protocols provide guidance and standards for sampling methodologies and minimum confidence standards to ensure that the uncertainty in measurement from the forest sector is no greater than that of other sectors.

Allometric (scaling) relationships are equations used to estimate tree biomass from tree diameter and/or height. The default allometric relationships in the protocols are derived from generalized equations based on national average relationships. Site-specific equations, which better reflect local growth trends, are encouraged in the protocols, either from peer-reviewed literature or from documented on-site equation development. Default values are provided for the unusual event that entities cannot find equations for their needs.

Wood-product accounting principles are detailed in the protocols using robust methodologies from USFS.

The basic steps to carbon stock quantification include the following:

- Establish inventory and sampling methodology
- Measure plots using standard forest measurement techniques
- Use scaling equations to determine biomass. Scaling equations use tree diameter and/or height measurements to estimate the weight of the entire tree. Default equations are provided, but site-specific equations are encouraged
- Scale up plot measurements to an area estimate and sum all the biomass pools
- Convert biomass to carbon
- Determine confidence in estimate of mean. For all carbon pools reported to the Registry, the standard error must be within 20 percent of the estimate of the mean for the estimate to be accepted
- Use models to project growth over time. Annual reports of estimated carbon stocks are required, but can be based on either direct sampling or estimated stock change based on projected growth and disturbance
- Direct sampling of carbon stocks must be made at least every 10 years

Elements of Sector Protocol

The forest sector (entity) protocol is used to report entity-wide biological emissions/stocks. An entity owning at least 100 acres of trees is eligible. The

sector/entity protocol does not contain provisions for emissions *reduction* accounting. Reduction projects must use the project protocol. Entity-wide accounting is required, however, if projects are implemented. The primary purpose is to account for the possibility of activity-shifting leakage, i.e. the reduction of carbon stocks outside the project boundary to make up for the increase of carbon stocks within a project boundary. Baseline reporting at entity-level is optional but strongly encouraged.

Elements of Project Protocol

The CCAR forest project protocol is used for planned activities to achieve carbon stock enhancement on privately owned forest lands. The three carbon reduction project types – reforestation, conservation forest management, and conservation (avoided conversion) – provide an accounting framework for maximizing carbon sequestration and minimizing carbon loss without compromising other ecological and human benefits. Requirements for these project types are detailed below.

The CCAR protocols contain methodologies that help ensure permanence and additionality in carbon reductions. Permanence is required to offset emissions of GHGs to the atmosphere, which create a long-term warming effect lasting in the atmosphere from 5 to 50,000 years. Additionality is required because business-as-usual practices have no net GHG benefit. It is the additional increment and storage of carbon *beyond business as usual* that provides the benefit to the atmosphere and the value to the reported reduction.

- **Permanence**: To be eligible for registration, SB 812 requires a forest project to be secured with a permanent conservation easement to a qualified third party, a conservation not-for-profit organization or a state or local government entity. This helps to establish long-term carbon security and environmental co-benefits.
- **Additionality**: Projects must be additional to long-term baseline, which is required and defined differently for each project type. Project activities must be additional to business-as-usual practices as well as additional to any applicable laws and regulations in order to provide atmospheric benefits.

An important component of carbon accounting in the project protocol is defining an appropriate baseline. A baseline describes the reductions associated with a project activity relative to what would have happened in the absence of that activity. Defining the correct baseline for a project is critical for quantifying reductions. The protocols are specific with respect to baseline determination and baselines are characterized differently for each of the three types of projects.

- **Reforestation** projects are those on land that has had less than 10 percent tree cover for at least 10 years. The expected practices on the land are based on those of the previous ten years, so if the land has been totally

unmanaged, the expectation is that this management will continue. The standing carbon stock at the beginning of the project is measured as the baseline. This could be zero or greater than zero.

- Conservation-based Management – assumption is that forest land will be harvested to the maximum extent permitted by the most specific and standardized option of the California Forest Practice Rules, Option C.
- Conservation – assumption is that land will lose forest at a rate either:
1) determined by concrete knowledge of a site-specific threat such as a planned development, or 2) based on county-specific land conversion trends.

Elements of Certification Protocol

The final protocol, the Forest Certification Protocol, provides guidance for certifiers of forest entity and project accounting. Independent third party verification ensures completeness, consistency, and accuracy of data. An additional requirement of forest certification over other sector certification is that forest certification teams must include a California Registered Professional Forester (RPF). The protocols include the option for forest entities to choose their own approach to carbon stock estimations – allometric equations and growth projection models are examples. Requiring a certifying team to have an RPF ensures that the forest entity has chosen and made appropriate use of equations, assumptions, and models, whether they are default or site-specific.

Certification components include the following:

- Conduct direct sampling (at beginning and end of 6 year intervals)
- Review annual monitoring reports
- Assess methodologies, estimations, models and calculations
- Ensure reported data is free of material misstatements
- Ensure plot calculations are within 15 percent of certifiers

Forest Project Protocols in Practice

Ten forest entities are registered with CCAR, including the California Department Forestry and Fire Protection and the USFS. Every one of these entities must report their non-biological emissions annually to the Registry using the CCAR General Reporting Protocol. Three of these entities report their biological emissions using the forest entity protocol. Three forest projects in California have already been approved and registered with CCAR, and two of these are in the process of certification or waiting for certification – the Van Eck Forest (2000 acres) and the Garcia River Forest (15,500 acres). These forest projects have demonstrated the application of the project protocol conservation forest management project type.

These projects documented the project design, sampling schema, calculation and projection of the baseline, measurement of carbon pools, monumenting of permanent plots, and reporting project results according to the CCAR entity and project protocols. The final certification stage is pending. The carbon reductions achieved by the Garcia River project are 42,000 tons CO₂eq annually, and the reductions achieved by the Van Eck project are 5,000 tons CO₂eq annually. These entities that have implemented projects using the CCAR forestry protocols attest to their utility. Details can be found in presentations posted to the ARB forestry website:
http://www.arb.ca.gov/cc/ccei/forestry/forestry_protocols/forestry_protocols.htm

VI. Environmental Impacts

There should be no environmental impacts as a result of this action by the Board. This is a non-regulatory action that does not impose any requirements on the public. The adoption of a quantification methodology should not result in any person taking action, which they would not have otherwise taken, if the Board had not adopted these methodologies.

VII. Future Actions

ARB staff would like to encourage broad participation in the development of forest emission reduction projects. Over the past several years, affected agencies, groups, and industries have identified potential technical limitations or specific barriers to implementation of the CCAR forest protocols. This section summarizes these elements. ARB staff recognizes the need for further work on potential options to make project implementation more attractive, within the framework of the Act and international standards. As discussed in section II, ARB staff proposes a public process to further address these issues with the goal developing additional methodologies for Board consideration.

Public Lands

Public lands constitute the largest acreage of forest land in California. These national and state forests are publicly owned and managed by federal or State agencies. The transfer of a conservation easement may not be allowed on public lands, which raises the issue of how to secure permanence of reductions on public lands. There are ownership issues over carbon credits from projects on public land, and whether they belong to the public or to the land managers. These issues require the development of new approaches for public lands. ARB staff will work with Resources Agency, CAL FIRE, federal land management agencies, CCAR and other stakeholders on developing new approaches for public lands.

Permanent Conservation Easements

To be eligible for CCAR registration, the protocols (pursuant to SB 812) require a forest project to be secured with a permanent conservation easement to a qualified third party – a conservation not-for-profit organization or a state or local government entity (California Civil Code, 2007). This helps to ensure long-term carbon security, as well as ecological and human co-benefits. Permanent easements may create a barrier for some forest land holders to implement projects. An alternative that has been accepted internationally under UNFCCC for CDM forest projects is the use of a binding contractual obligation in place of an easement. This may address concerns over potential reduced property values and tax consequences associated with a permanent easement. The Act requires that GHG reductions be permanent. Staff will work with CCAR and stakeholders to explore additional potential methods of ensuring permanence.

Forest Management

Conservation easements are one, but not the only issue that has been raised regarding forest management. ARB staff have committed to a public process to address these issues of working forests more broadly.

Urban Forestry

ARB staff supports the development of an Urban Forestry protocol. There is significant potential in California's urban landscape, and wildland-urban interface, for projects to sequester carbon and create energy-savings through shade benefits. Efforts are well underway on this protocol and a voluntary protocol is expected next year (G. McPherson, USFS, with CAL FIRE, CCAR, and others).

GHG Reporting Requirements

Currently the CCAR protocols state that starting in the fourth reporting year entities should report all six Kyoto GHGs. Methane and nitrous oxide are the other Kyoto GHGs that the forest sector emits in any significant quantity. However, the protocols currently contain no methodologies for estimating biological emissions of gases other than CO₂. ARB staff will work with state and federal agencies, CCAR, and stakeholders to address potential solutions to this issue, such as optional reporting of these gases whenever possible until methodologies have been developed.

Cost to Implement

Currently, the methodologies for carbon stock assessment require intensive sampling schema to meet the confidence levels required. Because natural biological systems are highly variable, there is currently no better methodology to

measure carbon if a high degree of certainty is required. The protocols use well-documented standard forest measurement techniques. Feedback from forest sector certifiers supports the rigorous requirements in the forest protocols. The level of documentation and transparency allows certifiers to more easily assess the accuracy of entity reports, reducing the time they need to spend on certification. However, ARB staff is willing to explore lower cost, alternative approaches.

Risk of Carbon Reversal

Forests carbon stores are never permanent, and may be lost to fire, insects, disease, or other unplanned events. Carbon reversal can also be caused through human action such as changes management plans or in ownership. There are numerous options for dealing with such carbon reversals, incorporating different strategies. One strategy, recommended by WRI, puts the burden of risk on the forest entity, requiring a within-entity plan, for example a set-aside forest to replace the lost forest. Another strategy relies on private sector third-party insurance agents that provide insurance policies to either the forest entity or the credit purchaser. The risk of carbon reversal, and the options for dealing with it, is not unique to the forest sector. This issue needs further consideration in the implementation process of the Act.

Biomass Management/Fire Avoidance

ARB staff recognizes that there are projects and plans underway to reduce catastrophic wildfire in California, and that these measures have the potential to reduce GHG emissions. ARB staff encourages the exploration of approaches to provide GHG accounting methodologies for wildfire emissions avoidance, but recognizes there are significant technical issues around characterizing wildfire avoidance. ARB staff also recognizes that biomass removed from forests could provide a climate benefit if used for feedstock in biomass energy generation facilities, and supports the development of a protocol to provide accounting for these practices.

VIII. Recommendations

The current CCAR forest protocols represent the work of leading experts in the field of forestry and protocol development, and the input of stakeholders and the public over a four-year public process. They have been supported by the Board of Forestry and approved by the CCAR Board. The three protocols together – the sector, project, and certification protocols – are a cohesive and comprehensive set of methodologies for forest carbon accounting, and furthermore contain all the elements necessary to generate high quality carbon credits. As such, they are ready for use in voluntary measures to reduce carbon emissions in California.

Staff recommends the non-regulatory adoption of these protocols by the Board, as called for by the Act, to provide tools for voluntary carbon accounting in the forest sector. Staff further recommends ARB continue to promote quality forest projects which reduce GHGs by working with the public and private sectors to encourage development of additional accounting methodologies to broaden forest sector participation. Adoption of the CCAR protocols is the first step which will help provide the tools to encourage voluntary forest projects in the short-term. Subsequent steps will allow continued work on the development of forest accounting approaches and protocols for the longer term. By adopting these protocols ARB sends a signal about its recognition of the importance of early reductions from this sector. There is demand for the protocols in their current form, and there is also demand for continued development of additional forest carbon accounting methods and protocols.

The current CCAR protocols set a high standard for future voluntary reduction efforts, and ARB staff will continue to promote quality forest projects that can play a significant role in achieving California's GHG targets.

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