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# Understanding and Analysis: The California Air Resources Board Forest Offset Protocol

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# Preface

This document was produced as a joint venture between the U.S. Department of Agriculture's U.S. Forest Service (USFS) and Appalachian State University. It is a product of the initial phase of a broader study evaluating the voluntary and regulatory compliance protocols that are used to account for the contributions of forests in U.S.-based greenhouse gas (GHG) mitigation programs. Although the broader study is particularly concerned with these protocols' use of the Forest Service's Forest Inventory and Analysis (FIA) data to describe forest conditions, ownership, and management scenarios, this document is oriented toward providing regulators, policymakers, industry stakeholders, and other interested parties with an objective comparison of the options, uncertainties, and opportunities available to offset GHG emissions through forest management. This report is focused on the approach adopted by the California Air Resources Board (ARB) for incorporating forest-based carbon offsets as a compliance option in California's cap-and-trade program. This report offers insights into accounting approaches, protocol methods, and program designs that may prove useful in numerous jurisdictions as efforts to develop state implementation plans for compliance with the Environmental Protection Agency's proposed Clean Power Plan drive increased interest in GHG mitigation strategies.

As a starting point, this document introduces basic concepts related to the use of carbon offsets in a cap-and-trade system, provides a brief overview of California's cap-and-trade program, and offers some early data on ARB-eligible offset project activity. The California protocol and methods used for quantifying the offset of GHG emissions through forest-based project activity are reviewed in the next chapter and followed by a section focused on the implementation and adherence to GHG accounting principles. The next chapters then embark on an in-depth examination of specific aspects of the ARB document "Compliance Offset Protocol U.S. Forest Projects" and the use of forest-based offsets in the California cap-and-trade program in general. This includes the treatment of boundaries, baselines, and leakage;

defining additionality and permanence; management of risk and uncertainty; and accounting for carbon storage in wood products. We include broader programmatic topics such as barriers to participation, spatial and temporal approaches to diversification and risk management, and the implications of distinguishing between programmatic- and project-oriented achievement of objectives.

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# Executive Summary

The Forest Offset Protocol for the California cap-and-trade program was created in 2006 and was used initially by three projects. These projects served as demonstrations of how such a project might work. Now, with the latest revision to the protocol approved in June 2015 and coming into force in November 2016, there are over 90 projects. Although this does not constitute a great deal of data, the revisions over those 10 years have worked to improve the functionality of the protocol and to make the protocol more inclusive. The protocol has evolved to include harvested wood products, solid waste disposal systems, and increased quantification and verification.

While there are still controversies to resolve and loopholes to fill, the protocol has made great steps in adjusting to new information and recognizing the needs of the different stakeholders. It is through the experiences and refinements of the California protocol that other programs will learn and adapt these ideas to their own needs. Although the protocol is not perfect and is in need of additional revision, California clears the path for others to follow.

In this document we look at the protocol under different lenses to better understand how it functions, where challenges still exist, and where new opportunities lie in wait for the next revision. The team assembled here represents expertise in policy, accounting, forestry, mathematics, and statistics. We look at the interests of each stakeholder from landowner to legislator. Discussions were held over 2 years of study and experimentation, following participation rates and revisions in the protocol.

We begin this document with a brief review of the cap-and-trade program and the role that the Forest Offset Protocol plays in that program. We then outline the basics of the protocol and how a project might travel through the protocol from inception to retirement. Following this, we outline the basic tenets of accounting. These introductions and backgrounds provide the groundwork for our ensuing discussion and suggestions. The discussion includes thoughts about the broader implications of the program and how it might interact with other current and future programs, both voluntary and compliance.