

Comparison of Selected Proposals to Design a Greenhouse Gas Offset Program¹

Background Paper for the EPRI Greenhouse Gas Emissions Offset Policy Dialogue Workshop #3

November 2008

I. Background

This paper has been prepared for a workshop that will be held by the Electric Power Research Institute (EPRI) on November 20, 2008 in Washington D.C. It is the third in a series of workshops held by EPRI in 2008 on Greenhouse Gas (GHG) emissions offsets.

The purpose of this background paper is to describe and compare and contrast current offset policy proposals in the U.S. with respect to how each one addresses:

- Eligible offset project categories;
- Additionality, project baselines, and measurement of emission reductions;
- Limits on the use of offsets for compliance; and,
- Other issues that may be important for overall performance of an offset system.

The paper considers the following offset policy proposals:

1. Offset provisions in the legislation developed by *Senators Lieberman (I-CT) and Warner (R-VA) (S. 3036)* that was considered on the Senate floor in June 2008;
2. Offset provisions contained in the draft *Dingell-Boucher legislation* developed by Representatives John Dingell (D-MI), Chairman of the House Energy and Commerce Committee, and Rick Boucher (D-VA), Chairman of the Subcommittee on Energy and Air Quality in October 2008;
3. Offset rules for the Northeast states' *Regional Greenhouse Gas Initiative (RGGI)*;
4. The United Nations' *Clean Development Mechanism (CDM)*;
5. Recommendations on offset policy design for the *Western Climate Initiative (WCI)* issued in September 2008;
6. Recommendations on offset policy design provided by the *Nicholas Institute for Environmental Policy Solutions* at Duke University; and
7. Offset policy design recommendations provided by the *Offset Quality Initiative (OQI)*.

A summary table providing a side-by-side comparison of these offset policy proposals is provided in the Appendix to this paper.

¹ Prepared by Natsource Advisory and Research Services and the Electric Power Research Institute.

II. Important Design Issues That Affect Offset System Performance

This paper considers how existing offset systems and those being developed address key issues that are common to most or all offset programs and proposals. We focus on the issues described below because they have significant impact on offset system performance.

The range of *eligible offset activities* is important because wider eligibility can result in more low-cost emissions abatement opportunities being accessed. In addition, “positive lists” of eligible offset project types provide regulatory clarity to offset project developers and can help jump start development of an offset market.

Provisions addressing *additionality, baselines and measurement of emission reductions* help ensure the environmental integrity of an offset program, and reduce the risk that the use of offsets will undermine the integrity of the emissions cap in a cap-and-trade system.

Quantitative limits on offset use sometimes are included in offset programs to ensure that a certain portion of emission reductions are achieved by entities regulated under a cap-and-trade program.

Finally, *qualitative limits* on offset use may be included to limit offsets to those within desired geographic areas (e.g., to promote regional or domestic emissions abatement) or technology types. However, as shown in economic modeling, quantitative and qualitative offset limits can significantly increase the economic cost of cap-and-trade programs.

A. Eligible Activities

In some cases, offset provisions incorporated into GHG mitigation programs and proposals identify categories of project activities that are eligible to create offsets, and specific rules for determining eligibility of projects within those categories. Eligible activities vary between proposals.

B. Additionality, baselines, and measurement of emission reductions

A GHG emission reduction project designed to create offsets is considered to be “additional” if the reductions created by the project would not have occurred *but for* the implementation of the project and the incentives created by the offset program. A number of different “additionality tests” have been developed and used in existing programs (i.e., tests designed to demonstrate an offset project is additional). Others have been proposed for use in offset programs under development.

A project “baseline” consists of its estimated GHG emissions under a business-as-usual (BAU) scenario that assumes the absence of the project activity. In general, the volume of offsets awarded to a project is calculated as being equal to the difference between baseline emissions and emissions after implementation of the project. Baseline measurement may be addressed in baseline methodologies for different project types, as is the case for projects implemented under the Clean Development Mechanism (CDM). Alternatively, it may be addressed in conjunction with project eligibility requirements, as is the case for the RGGI offset rules.

Standardized approaches to additionality and baselines

The term “standardized approach” often arises in discussions on additionality and baselines. As described by the OQI, standardized approaches “credit reductions on the basis of uniformly applicable criteria.” These include performance standards (e.g., emission rates, energy use rates, market penetration rates) and technology benchmarks (specific technologies in certain sectors and locations that are automatically deemed additional). It is important to highlight that a standardized approach can mean several things because standards can be applied in different contexts, and with differing project-specific data requirements.

For example, performance standards and technology benchmarks may be used to determine additionality. RGGI requires that for energy efficiency offset projects, new commercial buildings must exceed specific energy performance requirements by 20%. Similarly, projects in EPA’s Climate Leaders program demonstrate additionality by achieving “a level of performance [an emissions rate, a technology standard or a practice standard] with respect to emission reductions and/or removals that is significantly better than business as usual.”²

In contrast to standardized approaches, the CDM determines additionality using a case-by-case approach for each project (i.e., a “project-specific” approach). It requires that each project apply: 1) an investment test (i.e., a financial additionality test); *or* 2) a barrier test; *and* 3) a common practice test. The Lieberman-Warner bill’s requirement for each offset project to apply a financial additionality test also can be described as project-specific.

A standardized approach also can be used to set an emissions baseline.³ For example, baselines under the Climate Leaders program are calculated either from a historic project baseline for a retrofit (e.g., equal to the average annual emissions of a boiler prior to the retrofit) or based on data sets from similar recently undertaken or planned practices, activities, or facilities in the same geographic region depending on the specific project type. Potential GHG emission reductions from the offset project may be estimated by comparing emissions from the baseline with emissions from the proposed project.

A standardized approach for baseline setting can incorporate default assumptions (e.g., BAU emissions factors) established by the regulator, thereby streamlining the baseline calculation process and reducing the amount of project-specific data required to calculate the baseline. In contrast, RGGI’s offset system requires the calculation of project-specific baselines, and provides methodologies for doing so. This approach is similar to the one used by the CDM. It may be the case, however, that even under a standardized baseline approach, some project categories will require a significant amount of project-specific data and assessment.

² U.S. EPA, “Climate Leaders Greenhouse Gas Inventory Protocol Optional Module Guidance: Using Offsets to Help Climate Leaders Achieve Their GHG Reduction Goals,” discussion draft, August 2008, <http://www.epa.gov/stateply/documents/resources/OffsetProgramOverview.pdf>

³ In the Climate Leaders program, the benchmark(s) used for the baseline generally appears to be distinct from those used to determine additionality. To provide a simplified example, a project may need to achieve a performance standard equal to the top 20th percentile of performance to be considered additional and therefore eligible, but its baseline may be based on a lower performance standard or may simply be the project’s actual emissions prior to the project.

Many market participants believe project-specific approaches such as those used by the CDM are too burdensome and inefficient, allow for subjective decision-making, create risks that discourage investment and project development and increase transaction costs. On the other hand, others may be concerned that standardized approaches may not provide the same level of assurance that non-additional projects will be rejected.

C. Quantitative Limitations on Offsets Use

Offset program rules may impose quantitative limits on the use of offsets for compliance by entities regulated under a cap-and-trade program. Typically, these so called “supplementarity” limits have been expressed in terms of a percentage of the total annual allocation of allowances – or equivalently – a percentage of each year’s emissions compliance obligation.

D. Qualitative Limitations on Offset Use

Offset programs also may impose qualitative limits on the activities that can create offsets. For example, qualitative limits may exclude offsets created in certain geographic regions from being used for compliance. An example of such a limit is a prohibition on the use of international offsets in the context of U.S. climate change legislation. Other qualitative limits have been discussed to deal with concerns regarding the “permanence” of certain types of offset activities and difficulties in measuring the volume of offsets potentially created by other types of projects. For example, the European Union’s CO₂ Emissions Trading Scheme (EU-ETS) prohibits the use of offsets created by forest carbon sequestration projects, nuclear power and “large” hydropower production.

E. Other Key Provisions

This paper uses “other issues” as a catch-all category to capture other types of offset provisions we believe are important to the effective functioning of an offset system. Examples of “other” types of provisions include the project review and approval process, measures to address impermanence and the risk of project reversals for sequestration projects and provisions related to appropriate offset crediting periods.

III. Description of How Various Offset Proposals and Offset Systems Address Key Issues

This section describes key design elements incorporated into existing GHG emissions offset systems and in proposed systems under development. There are many proposals we could have emphasized. However, given the need for brevity, we have chosen to focus on existing GHG emissions offset programs, others under development in the U.S. and a limited number of stakeholder proposals. We also note that throughout the paper, commentary is provided on certain provisions, particularly to compare and contrast approaches taken by different offset policy proposals. Commentary is provided in italics and parentheses.

A. Existing and proposed government offset programs

1. The United Nations' Clean Development Mechanism (CDM)

The CDM is the largest existing GHG emissions offset system in the world. It has been operating since 2001. It has achieved significant results, but also has been criticized by many observers and participants for several reasons that are described below.

Eligible activities. The CDM has no restrictions with respect to consideration of baseline and monitoring methodologies for any project type. Methodologies can be proposed by project developers for consideration by the CDM Executive Board and its Methodologies (“Meth”) Panel. Once a methodology has been approved, an offset project using that methodology may be considered for *registration*, subject to other requirements. To date, over 100 methodologies have been approved. The absence of restrictions on potentially eligible project types provides significant flexibility to allow for the consideration of a wide range of project types. However, delays in approving CDM methodologies and changes to methodologies subsequent to approval impose significant risks and uncertainties on project developers.

Additionality, baselines, and measurement of emission reductions

Additionality. The CDM has established an “additionality tool” which provides guidance to project developers on how to demonstrate additionality. The CDM considers additionality on a case-by-case, project-specific basis. This approach is intended to ensure that offset projects demonstrate convincingly that associated emission reductions would not have taken place in the absence of the project. However, many project developers view the CDM’s approach to additionality as being too burdensome, subjective and unpredictable. Others have criticized it for failing to ensure that non-additional projects are not approved.

Generally speaking, offset projects must demonstrate their additionality using:

- 1a. An investment test (often referred to as a financial additionality test); *or*
- 1b. A barrier test; *and*
2. A common practice test.

If a project is deemed to meet the requirements of two tests – either 1a or 1b, and test 2 – it is considered to be additional under the CDM. These three tests are described below. A more detailed summary of the CDM’s additionality tests and an illustration of how the CDM’s additionality tool is used to determine the additionality of proposed CDM projects is provided in the Appendix to the background paper for the second EPRI Greenhouse Gas Emissions Offset Policy Dialogue.⁴

Investment Test: The investment test requires project developers to demonstrate that if revenue associated with offset credits that would be created by a proposed project were not available, the project would not be economically feasible, or its rate of return would not be attractive. This approach assumes CERs created by a project are a decisive reason for undertaking it and that the project would not be viable or attractive absent the revenue created by the sale of offsets.⁵

Barrier Test: A barrier test considers whether there are significant barriers to implementing an offset project – such as local resistance to new technologies – in the absence of revenue from GHG reductions. If such barriers exist, and if they do not prevent the implementation of at least one realistic alternative to the proposed project (e.g., continuation of the current BAU situation, or implementation of a project utilizing a different technology), then the proposed project is assumed to be additional. This approach assumes GHG reductions are decisive for the project to be able to overcome existing barriers.

Common Practice Test: This test typically compares the emissions performance of a proposed project to that associated with “common practice” technologies or activities in the relevant sector and region. If the project does not achieve greater emission reductions than other technologies/activities, it is assumed that they were not a decisive reason for undertaking the project. Consequently the project is not considered to be additional. The CDM’s application of this test differs somewhat. It identifies other technologies/activities operating in the region that are similar to the project activity, and considers whether those activities faced barriers or enjoyed benefits that were not applicable to the project to make an additionality determination.

Baselines. Methodologies for calculating project emissions baselines are established in baseline and monitoring methodologies, which must be approved by the CDM “Meth” Panel and the CDM Executive Board. The approach is project-specific and detailed. In some cases, methodologies have been revised subsequent to their initial approval. Subsequently, project developers using the original methodologies have been required to conform to the updated methodology.

Quantitative limits on offset use. The CDM does not set firm quantitative limits on the use of CERs for compliance with national GHG emissions caps under the Kyoto Protocol, but does call for the use of CERs to be “supplemental to domestic policies and measures.” In the European

⁴ Overview of Different Approaches for Demonstrating Additionality of Greenhouse Gas Emissions Offset Projects, Background Paper for the EPRI Greenhouse Gas Emissions Offset Policy Dialogue Workshop 2 September 2008, Natsource Advisory and Research Services and the Electric Power Research Institute..

⁵ See Table 1 in Trexler, Broekhoff and Kosloff, “A Statistically-Driven Approach to Offset-Based GHG Additionality Determinations: What Can We Learn?” in *Sustainable Development Law & Policy*, Winter 2006. Other definitions of additionality tests in this paper are derived from this table.

Union (EU), this formulation has been interpreted to mean that no more than 50% of each country's effort to meet its Kyoto emissions target be achieved through the use of so-called "flexible mechanisms" – i.e., through purchases of CERs from the CDM, ERUs from Joint Implementation (JI) or Assigned Amount Units (AAUs). This limit is not seen to be legally binding for countries. However, it is used to calculate the legally binding limit on the volume of CERs and ERUs that may be used by installations for compliance under the EU Emissions Trading Scheme (EU ETS).⁶

Qualitative limits on offset use. Countries with binding emissions caps under the Kyoto Protocol "are to refrain from using certified emission reductions generated from nuclear facilities to meet their commitments."⁷ The EU ETS sets additional qualitative limits on the use of CERs for compliance. Hydroelectric projects of over 20 MW in capacity must meet relevant international criteria and guidelines, including those established by the World Commission on Dams.⁸ In addition, CERs and ERUs from land use, land use change, and forestry (LULUCF) activities (e.g., forest carbon sequestration projects, avoided deforestation projects and other terrestrial carbon abatement projects) may not be used for compliance.

Other issues

Project review and approval process. The following steps must be taken for an offset project to be approved by the CDM and CERs to be issued for the project.⁹

- ***Project Activity Design.*** Project participants must submit information on their proposed CDM project using the Project Design Document (CDM-PDD), including information describing the project activity, how baseline and monitoring methodology is being applied, the duration of the project activity and crediting period, environmental impacts, and stakeholders' comments.
- ***Validation of the CDM project.*** Projects utilizing baseline and monitoring methodologies that have been approved by the CDM Executive Board can proceed to validation – i.e., the independent evaluation of a project by a "designated operational entity" (an approved auditing firm known as a DOE) against the requirements of the CDM, based on the PDD.
- ***Registration of the CDM project.*** Registration is the formal acceptance by the Executive Board of a validated project as a CDM project. Registration is the prerequisite for the verification, certification and issuance of CERs related to that project activity.
- ***Verification / Certification/ of the CDM project.*** Verification is the periodic independent review and *ex-post* determination by the DOE of the monitored reductions in GHG emissions that have occurred as a result of a registered CDM project during the

⁶ The limit on CER and ERU use is established for EU ETS sectors in each EU Member State based on the country's overall CER/ERU use limit (approximately 50% of its Kyoto compliance effort), and the volume of CERs/ERUs that the Member State government will need to purchase.

⁷ United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its Seventh Session, Held at Marrakesh from 29 October to 10 November 2001, FCCC/CP/2001/13/Add.2, 21 January 2002.

⁸ See "Dams and Development: A New Framework for Decision-Making," World Commission on Dams, November 2000.

⁹ <http://cdm.unfccc.int/Projects/pac/index.html>

verification period. Certification is the written assurance and confirmation by the DOE that a project activity achieved the emission reductions documented in the verification report.

- *Issuance of CERs.* The DOE requests issuance of CERs on behalf of a project developer. If three members of the CDM Executive Board or a Party involved in the project do not request a review of the request for issuance, the Executive Board instructs the CDM Registry administrator to issue the specified CERs for the specified time period.¹⁰

Crediting period. Project developers may opt to use a seven-year renewable crediting period, or a ten-year, non-renewable crediting period.

2. Regional Greenhouse Gas Initiative (RGGI)

The RGGI program officially becomes operational on January 1, 2009 at which time binding limits on CO₂ emissions by electric power plants in the Northeast region of the U.S. will take effect. We have included a discussion of the RGGI offset program here because 10 states in the Northeast U.S. participate in this CO₂ emissions cap and trade program and RGGI uses an approach to determine additionality that many believe is preferable to the case-by-case, project-specific approach utilized by the CDM.

Eligible activities. The following five categories of offset activities are eligible to generate offsets in the RGGI program:¹¹

- 1) Landfill methane capture and destruction (LFG);
- 2) Reduction in emissions of sulfur hexafluoride (SF₆);
- 3) Sequestration of carbon through afforestation;
- 4) End-use efficiency projects resulting in the reduction of CO₂ emissions from natural gas, propane and heating oil; and,
- 5) Methane reduction from farming operations.

Additionality, baselines, and measurement of emission reductions

In RGGI, potentially eligible offset projects also must be “surplus to existing requirements” and “surplus to other mandates or support” and must be commence before a certain date. These issues are described briefly below.

Surplus to existing requirements. For all RGGI offset project types, offsets will not be issued for activities that are required to be implemented under local, state or federal law, regulation, or administrative or judicial order. If the activity becomes mandatory after an offset project has been approved, the project will receive offsets until the end of its current crediting period but will not be extended to the next period.

¹⁰ Ministry of the Environment, Japan, and Institute for Global Environmental Strategies, “CDM and JI in charts,” version 6, August 2008, <http://enviroscope.iges.or.jp/modules/envirolib/upload/835/attach/charts.pdf>

¹¹ Other activities may be considered for eligibility in the future.

Surplus to other mandates or support. Developers of offset projects that include an electricity generation component must transfer legal rights to the appropriate regulatory agency for any “attribute credits.” Such credits include renewable energy credits (RECs) that may be created by the proposed project, and which may be used for compliance with renewable portfolio standards or similar requirements.

Also, projects that receive funding from any system benefit fund or other incentives provided through RGGI’s consumer benefit or strategic energy purpose allocation are not eligible to receive offset credits.

Timing. Eligible offset projects must commence on or after December 20, 2005.

In RGGI, project additionality is addressed through eligibility requirements (which include performance standards) as defined in the RGGI Model Rule, and baselines (which are project-specific) are addressed in detailed emission reduction measurement methodologies, as summarized below.

Landfill methane projects

- A landfill methane capture and destruction project is eligible if the landfill is not subject to New Source Performance Standards (NSPS) for municipal solid waste landfills.
- The baseline is the amount of potential fugitive landfill emissions, as represented by the methane captured and metered for thermal destruction in the project. Reductions are equal to the amount of fugitive landfill emissions that would have occurred if the methane captured by the project were not destroyed. Detailed methodologies are provided. (*This approach, in which captured methane (measured by meters) is equal to creditable emission reductions, simplifies the determination of additionality and measurement.*)

SF₆ reduction projects

- A performance standard for the appropriate SF₆ emissions rate is established for projects that reduce SF₆ emissions from electricity generation and transmission equipment through capture and storage, recycling or destruction. Projects consist of incremental actions beyond those taken in the baseline year (the year before the consistency application is filed).¹² To be eligible, projects must have an emissions rate in the baseline year that is lower than the performance standard (with some specified exceptions). Emission reductions are then measured relative to those in the baseline year (detailed methodologies are provided). This approach may be meant to avoid rewarding projects that have a high emissions baseline.

¹² The consistency application includes project description, emissions baseline determination, explanation of quantification, monitoring and verification approach, and a monitoring and verification report. See discussion under “other issues” below.

Afforestation projects

- Project land must have been non-forested for at least 10 years preceding project initiation.
- Projects must be managed “in accordance with widely accepted environmentally sustainable forestry practices and designed to promote the restoration of native forests by using mainly native species and avoiding the introduction of invasive nonnative species.” In addition, if there will be commercial timber harvest activities on the land, certification must be obtained prior to harvest activities from pre-approved certification organizations.
- Project land must have a permanent, enforceable conservation easement that requires the land to be maintained in a forested state in perpetuity.
- Baseline emissions must be measured prior to commencement of the project (detailed methodologies are provided). Measurement procedures must be consistent with March 2006 protocols published by the Department of Energy under the 1605(b) program.¹³ *(RGGI does not require estimation of GHG fluxes or carbon stock on comparable land, as does the Lieberman-Warner bill, which also requires for all emission reduction projects that emissions be measured at comparable facilities. The Dingell-Boucher draft does not appear to address this topic.)*
- The amount of carbon sequestered is measured as the net increase in carbon relative to the baseline, minus 10% to account for potential losses of sequestered carbon. The 10% discount is not required if the project sponsor retains insurance that guarantees to replace any lost sequestered carbon for which offsets were awarded. *(This standardized use of discounting contrasts with the Lieberman-Warner bill’s requirements for calculating uncertainties and discounting for uncertainties (for all eligible project types) based on an exaggerated proportional discount that increases relative to uncertainty, and the Dingell-Boucher draft’s requirements for standardized methods for conservative discounting for uncertainty in biological sequestration projects.)*

Energy efficiency

Projects that reduce or avoid CO₂ emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency (i.e., improvements in energy efficiency of fuel use and/or energy efficient delivery of energy services) in a new or existing commercial or residential building must meet various performance criteria to be eligible, including those that follow.

- To be eligible, new buildings must be built to replace an existing building on the project offset site or must be designed to be zero net energy buildings.
- Commercial and residential heating, ventilating, and air conditioning (HVAC) systems must meet specified sizing and installation requirements.
- Eligible new commercial buildings or whole-building retrofits for commercial buildings must exceed the energy performance requirements of ANSI/ASHRAE/IESNA Standard

¹³ U.S. Department of Energy, Technical Guidelines Voluntary Reporting of Greenhouse Gases (1605(b)) Program; Chapter 1, Emissions Inventories; Part 1 Appendix: Forestry; Section 3: Measurement Protocols for Forest Carbon Sequestration, March 2006.

90.12004: Energy Standard for Buildings Except Low Rise Residential Buildings by 20% or 30%, depending on the type of building.

- Eligible new residential buildings or whole-building retrofits for residential buildings must exceed the energy performance requirements of the 2004 International Energy Conservation Code by 30%.
- Energy conservation projects involving commercial boilers and residential boilers, furnaces and water heaters, and that commenced before January 1, 2009, must meet or surpass specified performance standards.
- Energy conservation projects commenced after January 1, 2009 must demonstrate that the energy conservation measures to be implemented have a market penetration rate of less than 5%. (*This appears to be the only example of market penetration being used as a benchmark for eligibility in the proposals considered in this paper.*)
- Methodologies and standards are specified for calculating baselines for energy conservation projects, baseline energy usage in existing and new commercial buildings and existing and new residential buildings, and annual energy savings.
- The impact of each eligible conservation measure must be isolated through direct metering or energy simulation modeling.
- Offset projects that implement similar measures in multiple residential buildings can employ representative sampling of buildings to determine aggregate baseline energy usage and energy savings, based on sound statistical methods such that there is 95% confidence that the reported value is within 10% of the true mean.

Agricultural manure management

- For projects that capture and destroy methane (CH₄) from animal manure and organic food waste using anaerobic digesters, eligible projects are defined as consisting of “the destruction of that portion of methane generated by an anaerobic digester that would have been generated in the absence of the offset project through the uncontrolled anaerobic storage of manure or organic food waste.”
- Projects must employ “only manure-based anaerobic digester systems using livestock manure as the majority of digester feedstock.” Organic food waste used by an anaerobic digester must be limited to that which would have been stored in anaerobic conditions in the absence of the offset project.
- The emissions baseline is the methane emissions that would have been produced under uncontrolled, site-specific anaerobic storage conditions and released directly to the atmosphere in the absence of the offset project (detailed assumptions and methodologies are provided).
- Emissions reductions may not exceed the potential emissions of the anaerobic digester.
- If the project is a regional-type digester, CO₂ emissions from manure and organic food waste transportation must be subtracted from project emission reductions.
- To monitor emissions, projects must use a system that provides metering of biogas volumetric flow rate and determination of methane concentration.

Quantitative limits on offsets use. Initially, offsets can be used to meet up to 3.3% of a covered source's total reported CO₂ emissions in a three-year long compliance period. However, the use of offsets is allowed to increase to 5% if the rolling average price of CO₂ emission allowances (calculated based on the most recent twelve-month period) reaches \$7/tCO₂, and increases to 10% if the rolling average price for a twelve-month period reaches \$10/tCO₂. In addition, if the \$10/tCO₂ rolling average price threshold is reached, RGGI allows European Union Allowances (EUAs) from the EU ETS and CERs and ERUs under the CDM and Joint Implementation mechanisms incorporated in the Kyoto Protocol to be used for RGGI compliance.

Qualitative limits on offsets use. Eligible RGGI "offset allowances" can be generated from CO₂e emission reduction projects initiated after December 20, 2005 anywhere in the U.S., provided that a formal Memorandum of Understanding (MOU) has been signed with the proper state authority in the state which the offset project is located. At this time, it is not clear what terms and requirements need to be contained in such MOU's nor the process for how such MOU's are to be negotiated between RGGI and interested states that are not part of RGGI.

Other issues

Crediting period. The initial crediting period for offset projects is ten years. Offsets may be issued for a second 10-year period if the project sponsor has submitted a "consistency application" for the project that received approval. For afforestation projects, the crediting period is 20 years and also is renewable.

Process for offset issuance

- ***Consistency application.*** This includes project description, emissions baseline determination, explanation of quantification, monitoring and verification approach, and a monitoring and verification report. An independent accredited verifier must sign a verification report and certification statement that addresses whether the project meets eligibility requirements, baseline measurement requirements, and monitoring and verification plan requirements.
- ***Consistency determination.*** This is a determination by the regulatory agency that the offset project is consistent with all relevant standards and requirements in the RGGI Model Rule. It must be performed within 120 days following receipt of the application).
- ***Approval of a monitoring and verification report.*** Such reports must be submitted annually for all project types except afforestation, for which total carbon stock within the project boundary must be calculated at least every 5 years. For projects undertaken after January 1, 2009, the monitoring and verification report must be submitted within 6 months after the last year in which emission reductions took place.
- ***Offset issuance.*** Following approval of a monitoring and verification report, the regulatory authority issues offsets for the project for the applicable period.

Audit. The implementation of projects, including monitoring and verification, may be audited by the regulatory authority or its agent.

3. S. 3036 – “America’s Climate Security Act of 2007” (aka “Lieberman-Warner”)

The Lieberman-Warner bill was selected for evaluation here because it was considered on the Senate floor in June 2008, and because it contains detailed offset program design provisions which may be incorporated into subsequent Federal legislative proposals.

Eligible Activities. EPA will consider making the following project activities eligible to create offsets:

- 1) Agricultural and rangeland sequestration and management, including:
 - Tillage practices;
 - Winter cover/continuous cropping to increase biomass for soil;
 - Cropland to grassland conversion;
 - Reduction of nitrogen fertilizer or increase in efficiency;
 - Reductions from frequency/duration of flooding rice paddies; and
 - Reductions from organic soils.
- 2) Land-use and forestry, including:
 - Afforestation or reforestation of acreage not forested as of Oct. 18, 2007; and
 - Increasing forest stand volume.
- 3) Manure management and disposal, including:
 - Waste aeration; and
 - Methane capture and combustion.
- 4) Terrestrial practices identified by EPA Administrator, including:
 - Capture and reduction of fugitive emissions from uncovered sources;
 - Methane capture and combustion from nonagricultural facilities; and
 - Other approved actions.
- 5) EPA may issue a list of technologies and associated performance benchmarks that can be considered additional in specific applications (valid for maximum of 5 years).

Other project types. The bill also would allow for consideration of other types of offset activities that are not linked to agricultural, forestry, or other land use-related projects and that are proposed by petition.

Additionality, baselines, and measurement of emission reductions

S. 3036 delegates the development of methodologies for additionality determinations and baselines to the EPA, but imposes several requirements. Methodologies must specify rules and methods for:

- Determining project eligibility and additionality (including a test to assess whether the project would have taken place in the absence of revenues from the sale of offsets – i.e., a financial additionality test). (*Note that RGGI does not contain a financial additionality test, and the Dingell-Boucher draft legislation also does not call for the inclusion of such a test in offset regulations.*)

- Determining project baselines that ensure additionality. The project developer is required to establish the project baseline. EPA may issue a list of technologies and associated performance benchmarks the achievement of which will be considered to be additional in specific project applications. Such a list would be valid for 5 years. *(This suggests that the Lieberman-Warner bill, like RGGI, could incorporate performance standards in eligibility and additionality tests, although the bill does not require the use of performance benchmarks. The bill does not explicitly call for standardized baselines, although it also does not preclude them.)*
- Monitoring, verification and reporting;
- Determining leakage;
- Determining whether an offset project receives support from an allowance allocation under the bill or any other government incentive, subsidy or mandate, and whether offsets are not double-counted under any other program.
- Quantifying uncertainty in measurements of changes in emissions and sequestration;
- Determining whether a project receives support from an allowance allocation, subsidy, incentive or mandate;
- For sequestration projects,
 - Measuring and accounting for reversals and managing the risk of reversals. *(Note that managing the risk of reversals could entail mandatory contributions of a portion of offsets from sequestration projects to a reserve pool, as recommended by the Nicholas Institute. Other proposals, such as RGGI and the Dingell-Boucher draft, do not incorporate measures to manage the risk of reversals. The latter requires all reversals be compensated.)*
 - Determining whether the amount of sequestration occurring on project land changed significantly during the 10 years prior to project initiation (to ensure that cropland converted to grassland or rangeland has been in non-forest use for at least 10 years prior to the project);¹⁴
 - Estimating GHG fluxes or carbon stock for the project for 4 years prior to the enactment of offset regulations (to ensure that land is not converted, cleared or managed differently in anticipation of an offset regime);
 - Estimating GHG fluxes or carbon stock on comparable land based on similarity in current management practices, similarity of state, regional or local programs, and similarity of geographical and biophysical characteristics. *(This requirement suggests that sequestration projects must develop a dynamic emissions baseline based on emissions on comparable land under BAU. In contrast, RGGI does not appear to require the development of a dynamic baseline involving analysis of emissions on comparable land.)*
 - Discounting for uncertainty in monitoring and quantifying changes in carbon stocks in agricultural and forestry projects, and in determining additionality and leakage

¹⁴ RGGI also requires that afforestation project land must have been non-forested for at least 10 years preceding the initiation of the project.

(based on an “exaggerated proportional discount that increases relative to uncertainty”). (*The Dingell-Boucher draft has a somewhat similar provision calling for the use of a “conservative [discounting] coefficient that accounts for uncertainty.”*)

- For emission reduction projects,
 - Estimating GHG fluxes on comparable land or facilities. (*Other programs and proposals do not appear to require such estimates.*)
 - A threshold of uncertainty above which an offset project will not be eligible to receive offsets. (*This provision is similar to a recommendation of the Nicholas Institute with respect to sequestration projects.*)

Timing. Eligible projects that commence operations after the promulgation of offset regulations will be eligible to generate offsets. Banked offsets that are registered or meet the standards of The Climate Registry (TCR), the California Action Registry (CCAR), the GHG Registry, the Chicago Climate Exchange (CCX), the GHG Clean Projects Registry, or any other Federal, State or private reporting programs or registries may be allowed to transfer into the program’s offset registry if the Administrator determines that they meet all relevant requirements under the bill.

Quantitative limits on offset use. The Lieberman-Warner bill sets a *program-wide limit* on domestic offset use at 15% of each annual emissions cap, rather than each covered entity’s compliance obligation. It is not clear whether or how the program-wide limit would potentially flow down to covered entities; possible approaches include a first-come-first-served approach, pro-rating the limit to entities or some other approach. The bill also sets an additional program-wide limit on international offsets at 15% of each annual emissions cap, 5% of which can be project-based credits and 10% of which can be international forestry credits. If these limits are not fully satisfied, international allowances from a comparable program can be used to meet the shortfall.

Qualitative limits on offset use. As noted above, offset categories eligible for consideration include those specified in the bill. Other categories that are proposed by petition also may be considered. With respect to international project-based offsets, EPA must determine whether such offsets meet requirements comparable to the U.S. program, and assure that offset credits do not come from projects that compete directly with a U.S. facility. (*Other proposals and programs do not appear to include a similar provision.*)

With regard to international forestry credits, EPA, in conjunction with the Secretary of State, must establish a list of countries from which such credits may be generated. Selection criteria include the availability of historical data on changes in national carbon stocks, relevant technical capacity and institutional capacity to participate in international forestry activities, a credible national baseline, the achievement of reductions below the baseline, the implementation of an emission reduction program for the forestry sector, and demonstration of the reductions using remote sensing technology, taking into account international standards. (*These provisions are similar to those in the Dingell-Boucher draft legislation. One exception is that the latter would impose a discount of at least 10% on offsets from countries deemed not to have a credible*

baseline after 10 years, and would discontinue allowing offsets to be generated from countries deemed not to have a credible baseline after 15 years.)

Other issues

Crediting period. An emission baseline approved for an offset project shall be valid for a period of 5 years before being subject to revision. However, the length of the offset crediting period is left to the discretion of the EPA Administrator. *(This compares with a potentially renewable 10-year allocation period for emission-reducing offset projects under RGGI, the Nicholas Institute's recommendation of a 7- to 10-year crediting period, and the Dingell-Boucher draft's 5- to 10-year potentially renewable crediting period.)*

Methodology testing and approval. Methodologies will only be approved if they have been tested by three (3) independent expert teams on at least three (3) different offset projects, and if their estimates of emission reductions or sequestrations do not differ by more than 10 percent. *(This provision is similar to a recommendation by the Nicholas Institute. RGGI and the Dingell-Boucher draft do not appear to contain a similar provision.)*

Project review and approval process

- A project developer may submit a petition for approval of an offset project any time after the issuance of offset program regulations. The petition must include: 1) a copy of the monitoring and quantification plan; and 2) a GHG “initiation certification” (a certification that seeks to exclude activities that undermine the integrity of the offset program, such as the conversion or clearing of land, or marked change in management regime, in anticipation of offset project initiation).
- Within 180 days, EPA must determine if the monitoring and quantification plan satisfies all requirements, determine whether the GHG initiation certification indicates a significant deviation, and notify the project developer of the determinations.
- The monitoring and quantification plan must be prepared prior to offset project initiation; the EPA Administrator and the Secretary of the Department of Agriculture will specify requirements for the plan, including those relating to:
 - Determination of accounting periods,
 - Content and timing of public reports,
 - Delineation of project boundaries,
 - Selection and description of monitoring and quantification tools to monitor and quantify changes in greenhouse gas carbon fluxes and carbon stocks associated with a project,
 - Selection and description of standardized methods for determining additionality and uncertainty, estimating the baseline, and discounting for leakage.

4. House Energy & Commerce Committee Draft Climate Change Legislation dated October 7, 2008 (aka “Dingell-Boucher Draft”)

This proposal was introduced after Congress went out of session in October 2008. We believe this draft legislation will receive significant attention in 2009 given that it was introduced by the Chairman of the committee¹⁵ and the Chairman of the subcommittee¹⁶ with jurisdiction over climate change policy in the U.S. House of Representatives.

Eligible activities. The list of eligible project types will include:

- Methane collection and combustion projects at active underground coal mines;
- Methane collection and combustion projects at landfills;
- Methane collection and combustion projects involving manure management; and
- Afforestation or reforestation of acreage not forested as of January 1, 2008.

The following additional project types will also be considered for eligibility:

- Practices that increase agricultural soil carbon sequestration
- Conversion of cropland to rangeland or grassland;
- Reduction of nitrogen fertilizer use or increase in nitrogen use efficiency;
- Forest management resulting in an additional increase in forest stand volume;
- Reduced deforestation;
- Methane reduction from reclamation of abandoned surface mines;
- Recycling and waste minimization;
- Controlled wastewater treatment; and
- Categories proposed to the EPA Administrator by petition.

Additionality, baselines, and measurement of emission reductions

Emissions reductions, avoided emissions or sequestration are not considered additional if they are common practice in a relevant geographic area, or if they are required or undertaken to comply with any Federal, State or local law or regulation.

The Dingell-Boucher draft calls for a standardized methodology to be used for determining additionality “relative to a performance threshold or baseline for the eligible project category.” *(In addition to calling for a standardized approach for determining additionality, it also appears to call for the use of standardized baselines. RGGI uses standardized methodologies for*

¹⁵ John Dingell (D-MI) is the Chairman of the Committee on Energy and Commerce, United States House of Representatives.

¹⁶ Rick Boucher (D-VA) is the Chairman of the Subcommittee on Energy and Air Quality, United States House of Representatives.

determining eligibility and additionality (all eligible projects are considered additional), but provides detailed baseline methodologies that generally require the preparation of a fair amount of project-specific data (although they also provide other standardized data inputs). The Lieberman-Warner is silent on the topic of standardized baselines.)

Other issues

Discounting for uncertainty in sequestration projects. The protocol(s) addressing measurement of emission reductions, avoidance or sequestration must incorporate standardized methods for determining and discounting for uncertainty in biological sequestration projects. The methods must take into account the robustness and rigor of methodologies for determining measurement, additionality, leakage, and permanence, and must use a “conservative coefficient that accounts for uncertainty.” (This is somewhat similar to the Lieberman-Warner bill’s “exaggerated proportional discount that increases relative to uncertainty.”)

Project review and approval process. Project design plans must be submitted to the EPA Administrator prior to initiation of an offset project, and must include a monitoring and quantification plan, and a certification that the project will not have adverse impacts on the environment. The Administrator must determine within 60 days whether it meets all requirements, notify the project representative, and, if the plan has been approved, register the project. A process will be established to provide for appeal and review of rejected project plans. Within 90 days of receiving a verification report regarding the project’s performance from an accredited verifier, the Administrator must approve or reject the project, notify the project representative of this ruling, and if appropriate, “register the offset credits,” (i.e., assign them unique serial numbers in the registry), and issue the offset credits.

Crediting period. The crediting period for offset projects is to be no less than 5 and no more than 10 years for project types other than afforestation or reforestation, which will have a crediting period of 20 years. Offset projects can petition to renew the crediting period subject to the most recent standards, protocols, and project eligibility requirements. A petition may not be submitted more than 18 months before the end of the pending crediting period.

Updating of methodologies. Methodologies, protocols and standards must be reviewed and updated as needed at least every 5 years.

Sequestration reversals. Regulations will be developed to account for and address reversals in sequestration projects. They will include sanctions for failure to report reversals, provisions assigning liability and responsibility for mitigating and fully compensating reversals, and any other provisions necessary to address reversals. (While the Dingell-Boucher draft calls for compensation for reversals, it does not explicitly call for measures to manage the risk of reversals, as does the Lieberman-Warner bill. Such measures might include requiring a set-aside of sequestered tonnes to create an insurance pool that could be drawn upon in case of reversals, as recommended by the Nicholas Institute.)

Quantitative limits on offset use. The Dingell-Boucher draft proposal would allow a covered entity to meet up to 5% of its annual compliance obligation (i.e., its covered GHG emissions) with a combination of both domestic offsets and international offsets from 2012 to 2017, and up to 15% from 2018 to 2020. From 2021-2024, a covered entity would be able to meet up to 15% of its compliance obligation with domestic offset credits and an additional 15% with international offset credits. From 2025 and beyond, domestic offset limits are increased to 20% while international credits and allowances remain at 15%. There is no limit on the use of hydrofluorocarbon (HFC) destruction allowances and international allowances from approved programs. *(Unlike the Lieberman-Warner bill, which proposes an offset limit based on a fixed percentage of compliance, the Dingell-Boucher draft expands the volume of offsets allowed to be used for compliance over time as emission reduction requirements become more stringent.)*

Qualitative limits on offset use. The list of eligible activities and activities to be considered are described above under “Eligible activities.” With respect to the inclusion of international offset credits and allowances, EPA in consultation with the Secretary of State must determine whether a foreign climate change program implements comparably stringent requirements to those established in the U.S. proposal. Allowances from qualifying international climate change programs (i.e., that impose absolute emission caps and are at least as stringent as the U.S. program) may be used for compliance, provided they are not “in the nature of an offset credit or allowance awarded” for reductions or sequestrations that are not subject to coverage under the absolute emissions cap. With respect to international offset credits (as distinct from international allowances), regulations will be developed regarding listing and approval of qualifying international offset credits. Such regulations must be as stringent as those applying to U.S. domestic offsets. Credits from international offset projects that destroy hydrofluorocarbons would not be eligible.

Timing

- Offset projects that commenced operations after January 1, 2002 but before the date of enactment of the bill, and that meet the standards of existing Federal, State, or regional GHG registries, may be eligible to receive “early action” emission allowances.
- Projects meeting these standards and that started: 1) before 2006, or 2) after 2008 but before promulgation of offset regulations, would be eligible to generate offset credits for emission reductions that occur after the promulgation of offset regulations. Regulations are required to be promulgated within 2 years of enactment of the bill.

Offsets from international forest carbon activities. Provisions relating to offsets from international forest carbon activities in the Dingell-Boucher draft are very similar to those included in the Lieberman-Warner bill. In addition, the Dingell-Boucher draft states that, within 10 years of enactment of the bill, a discount of at least 10% may be applied to international offsets to be generated from projects located in specific countries if: 1) the country accounts for more than 0.5% of global greenhouse gas emissions; and 2) it is determined that the country has not established a credible national deforestation baseline or has not reduced total emissions from deforestation and forest degradation. After 15 years, if a similar determination is made, the country will be disqualified from generating offset credits from international forest carbon activities under the U.S. program.

5. Western Climate Initiative

On September 23, 2008, the Western Climate Initiative (WCI) issued its “Design Recommendations for the WCI Regional Cap and Trade Program.”¹⁷ According to the WCI, the proposed cap and trade program will be considered by WCI participants (“participants” here refers to the individual states and provinces who are WCI members) and steps will be taken to implement it in time to start the program in 2012.

Phase 1 of the program will run from 2012 to 2014, and will cover GHG emissions from electricity generation (including emissions from electricity imported into WCI jurisdictions), combustion at industrial and commercial facilities, and industrial process emission sources, including oil and gas process emissions.

In Phase 2, program coverage is proposed to expand to include transportation fuels and residential, commercial and industrial fuels. As discussed below, the design recommendations also include provisions on the design of the WCI offset program. However, some of the key details of the proposed offset program, such as the standards and processes for approving offset projects, have not yet been fully developed.

Eligible activities. WCI has identified the following types of offset activities as priorities to investigate and develop further as WCI offsets, but at this point the WCI does not guarantee that they will be included in the final offsets program.

- Agriculture (soil sequestration and manure management);
- Forestry (afforestation/reforestation, forest management, forest preservation/conservation, forest products); and
- Waste management (landfill gas and wastewater management).

Protocols for eligible activities will be developed by the WCI participants starting in 2009. WCI participants will use protocols that are “standardized to the extent possible and make use of (or adapt if needed), existing protocols as appropriate.” They also will establish a process to review and approve other offset project types and protocols proposed by project developers.

Additionality, baselines, and measurement of emission reductions. WCI will address these design elements in its offset protocols which will be developed prior to the start of the trading program in 2012.

Quantitative limits on offset use. The states participating in the WCI have agreed to limit the use of all eligible offsets and allowances from other jurisdictions (e.g., EU allowances) to no more than 49% of the total emission reductions to be achieved between 2012-20 so as to ensure that a majority (at least 51%) of reductions are achieved at WCI covered entities and facilities. The limit is based on aggregate reductions over the 2012-2020 period, rather than based on annual reductions to provide additional flexibility to covered entities. The participating WCI states may opt to set lower percentage limits.

¹⁷ “Design Recommendations for the WCI Regional Cap-and-Trade Program,” Western Climate Initiative, September 23, 2008

Qualitative limits on offset use. All offsets and allowances from other jurisdictions must meet rigorous criteria to be established by WCI participants. These include additionality requirements, the requirement that offset projects must be enforceable by the WCI jurisdiction that issues the credit, and the requirement that offsets must be verifiable by the WCI jurisdiction that accepts the credit for compliance. In addition, criteria must ensure that offsets and allowances from other jurisdictions are not double-counted.

Offset projects located throughout the U.S., Canada and Mexico may be approved and certified if they are subject to “comparably rigorous oversight, validation, verification, and enforcement and those located within the WCI jurisdictions.”

Offset credits from CDM projects may be accepted. WCI participants may opt to establish “added criteria to ensure similar rigor to WCI approved/certified offset projects or other requirements, such as international offset standards, as appropriate to enable use of these offset credits in the cap-and-trade program.”

WCI participants may not approve offset credits from projects in developed countries that reduce, remove or avoid emissions from sources that within WCI jurisdictions are covered by the cap-and-trade program.

B. Stakeholder proposals

1. Nicholas Institute for Environmental Policy Solutions^{18, 19}

After working with a number of U.S. Senate offices to develop a domestic forest and agricultural offsets provision, the Nicholas Institute set the goal of developing a complete offset policy framework “that has enough rigor and transparency to meet environmental goals without creating a process so onerous that it discourages participation.”²⁰ A working group of experts in GHG offsets and policy worked with the Institute to develop the proposed policy framework.

Eligible activities. The Nicholas Institute recommends that in addition to the offset activity categories included in the Lieberman-Warner bill, the following categories of activities should be considered for inclusion in an offsets program:

- Carbon capture and geological storage for emissions not covered under the cap;
- Unregulated and uncapped fuel cycle efficiency activities;
- Composting of municipal solid waste to avoid methane production; and

¹⁸ The Nicholas Institute is “a nonpartisan institute founded in 2005 to engage with decision makers in government, the private sector, and the nonprofit community to develop innovative proposals that address critical environmental challenges.” More information is available at <http://www.nicholas.duke.edu/institute/about.html>.

¹⁹ “Designing Offset Policy for the U.S.,” Nicholas Institute for Environmental Policy Solutions, Duke University, Lydia Olander, T. Profeta, C. Galik, B. Murray and M. Dawson, May 2008, NI R 08-01.

²⁰ “Designing Offset Policy for the U.S.,” Nicholas Institute for Environmental Policy Solutions, op. cit.

- Emission reductions from entities in sectors which include covered facilities, but where the entity does not qualify as a facility to be covered under the trading program (e.g., facilities that do not meet the minimum emissions threshold to be covered).

Additionality, baselines, and measurement of emission reductions

Additionality tests. The Nicholas Institute recommends that eligibility and additionality requirements be based on such criteria as the following:

- *Performance benchmark.* The project activity must perform at a rate (e.g., methane emissions per ton of hog waste stored) that is lower than a benchmark defined by the EPA Administrator.
- *Regulatory.* The project activity is not required by existing government regulations or commonly accepted industry (sector) standards as determined by the Administrator.
- *Technology-Specific.* Technologies are predetermined by the Administrator to be additional or eligible.
- *Common practice.* The project activity must utilize technologies or practices that are not in common use (e.g., 85th percentile above mean or better) within a particular jurisdiction or industry as defined by the Administrator.
- *Initiation date.* The project activity must be initiated by a certain date to be determined by the Administrator.
- *Financial.* Revenue from the sale of offset allowances can be shown to contribute to the financial viability of the project and the project is not the least-cost alternative, as defined by the Administrator. This test cannot be used exclusively, but must be used to corroborate one of the others.”

(While these recommendations are not prescriptive, they are generally more specific than those in the Lieberman-Warner bill, which gives the Administrator authority to “issue a list of technologies and associated performance benchmarks the achievement of which will be considered to be additional in specific project applications.” On the other hand, the Lieberman-Warner bill does prescribe that the eligibility and additionality test must include a financial additionality test. In contrast, the Nicholas Institute only suggests that a financial additionality test be considered.)

Baselines. The Nicholas Institute report states that “where a new technology reduces or avoids emissions, the “baseline can simply be the emissions at the facility when using the standard existing technology or a performance standard X% below the industry-wide average emission rate for this activity.” *(This language appears to support at least some use of standardized baselines.)* For sequestration projects, “historical reference periods projected forward in time or the initial standing carbon stock are the simplest methods and are commonly used,” but may be less accurate if management practices change. The report notes another alternative would be to assume a dynamic emissions baseline reflecting evolving technologies and forest growth over time.

Quantitative limits on offset use. The Nicholas Institute recommends that quantitative limits on offset use be imposed at the national level and not the entity level. *(This approach was adopted in S. 3036, the version of the Lieberman-Warner bill that was considered on the Senate floor. The original version of the Lieberman-Warner bill (S.2191) imposed offset limits at the entity level).*

Other issues

Crediting period. The Nicholas Institute recommends that projects should be guaranteed a crediting period of 7 or 10 years at their approved baseline. In contrast, the Lieberman-Warner bill leaves the matter of crediting periods to the Administrator.

Methodology testing and approval. Each methodology should be tested by three independent expert teams on at least three different projects, and estimates of reductions or sequestration for a given project must be within 10% of each other. *(This approach was adopted in the Lieberman-Warner bill.)*

Quantification of uncertainty. Sequestration project methodologies incorporate “tables (or certified tools) that provide a threshold of uncertainty for quantification of emissions reduction or increases in sequestration and for baseline estimation above which no emissions reductions or sequestration will be compensated.” *(This is similar to a provision in the Lieberman-Warner bill.)*

Mitigation of reversal risk. All sequestration projects should have a set-aside of offset allowances withdrawn from their account to guarantee that all offset project reversals (i.e., the loss of sequestered tonnes after they have been credited due to such causes as flooding or fire) are fully compensated. The set-aside would be proportional to risk, and would be calculated in the monitoring and quantification plan for sequestration projects based on certified methods. *(The Lieberman-Warner bill calls for the development of regulations to manage the risk of project reversal, and requires annual certification to determine and compensate for any project reversal, but does not prescribe any approach for mitigating project reversal risk. While the Dingell-Boucher draft calls for compensation of reversals, it does not explicitly call for measures to manage the risk of reversals. RGGI also does not require such measures.)*

2. Offset Quality Initiative (OQI)

The Offset Quality Initiative (OQI) is an initiative of six non-governmental organizations (NGOs), including The Climate Trust, Pew Center on Global Climate Change, California Climate Action Registry, Environmental Resources Trust, Greenhouse Gas Management Institute and The Climate Group. In July 2008, OQI published a “white paper” to provide guidance to U.S. policymakers on the design of offset policies.²¹

Eligible activities. OQI does not recommend inclusion of specific offset categories, although it believes that “biological sequestration, particularly avoided deforestation, is a vital category of

²¹ “Ensuring Offset Quality: Integrating High Quality Greenhouse Gas Offsets Into North American Cap-and-Trade Policy,” Offset Quality Initiative, July 2008, <http://www.pewclimate.org/docUploads/OQI-Ensuring-Offset-Quality-white-paper.pdf>.

mitigation opportunity.” However, OQI notes that *direct emission reductions* should be the preferred source of offset credits, while *indirect emission reductions* should not be included in a U.S. offset program unless problems of double-counting and ownership issues are resolved.

Additionality, baselines, and measurement of emission reductions

The OQI paper describes three approaches that can be used to determine project additionality, estimate baselines, and quantify project emission reductions:²²

- *Project-specific assessments.* These are “individual or case-by-case examinations of the unique circumstances of a proposed offset project. Individualized assessments may be made regarding a project’s additionality, baseline, quantification, and crediting period.” The CDM utilizes this approach.
- *Standardized approaches.* “These approaches credit reductions on the basis of uniformly applicable criteria.” These include performance standards (e.g., emission rates, energy use rates, market penetration rates) and technology benchmarks (specific technologies in certain sectors and locations that are automatically deemed additional). To a large extent, EPA’s voluntary Climate Leaders program utilizes standardized approaches.
- *Hybrid approaches.* These are approaches that combine “elements of both project-specific and standardized methodologies to balance the strengths and weaknesses of both.”

OQI recommends the adoption of a hybrid approach, which “strikes the best balance between transparency and standardization, while taking into account the consideration of project-specific circumstances.”²³ It notes that “[r]egulation should strive to integrate the transparency and consistency of standardized approaches, while capitalizing on the flexibility and adaptability of project-specific approaches.”

For this reason, OQI recommends the hybrid approach to developing regulations for the assessment of offset project additionality, baseline establishment, quantification, and crediting periods.” It further notes that while standardized approaches are often advocated, “all approaches will in reality be some hybrid of standardized and case-by-case assessments... [because] individualized expert judgment is often required to ensure that reasonable and accurate estimations of a project’s reductions are properly credited.”

Although OQI does not provide specific examples of a hybrid approach, one can imagine a hybrid approach might combine a performance standard with other tests, such as a timing test or another test that takes other project-level specifics into consideration.

The Lieberman-Warner bill, RGGI and the Dingell-Boucher draft can all be viewed as hybrid approaches. The Dingell-Boucher draft may represent the greatest use of standardization relative to RGGI and the Lieberman-Warner bill as it allows the potential use of standardized baselines. RGGI does not use standardized baselines, but does standardize additionality tests by equating

²² Ibid.

²³ Ibid.

eligibility to additionality. The Lieberman-Warner bill states that EPA may propose standardized additionality tests, but the bill's position on standardized baselines is not clear. It is possible that the Lieberman-Warner bill would be the most project-specific approach of the three proposals, as it would require project-specific financial additionality tests, and may require a project-specific approach for baselines with limited use of default values or standards.

With respect to crediting periods, OQI recommends “conservative, multiyear and potentially renewable” crediting periods, and notes that initial crediting periods are usually five or ten years. (*This is similar to crediting provisions in the Lieberman-Warner bill, RGGI and the Dingell-Boucher draft.*)

Quantitative limits on offset use. OQI recommends offset programs avoid quantitative limits on offset supply and use.

Qualitative limits on offset use. OQI recommends offset programs not restrict offset eligibility by geographic location. It notes that “policy should be crafted to distort the market as little as possible, and to ensure that emission-reduction goals can be met in the most efficient, credible, and cost-effective manner possible.”

Other issues. OQI recommends against the use of “temporary offsets” for sequestration project activities “due to its barriers to inter-market fungibility, additional administrative requirements, and movement towards a globally tradable and credible commodity.” Instead, OQI states that measures should be taken to ensure replacement of offset credits in the event of project reversal. Options include: “insurance and bonding mechanisms to secure funding for replacement tons in the event of underperformance or reversal; buffer accounts that provide additional reductions that can be tapped in the event of underperformance or reversal; and strict covenants and easements on the use of land and forested areas, as well as long-term leases.”

Appendix

The various offset policy proposals and provisions reviewed in this paper are briefly summarized in the following table, which allows for a side-by-side comparison.

Summary Table Comparing Design Elements of Existing and Proposed Offset Programs

	Clean Development Mechanism (CDM)	Regional Greenhouse Gas Initiative (RGGI)	Lieberman-Warner bill (S. 3036, America's Climate Security Act of 2007)	Dingell-Boucher draft climate change legislation (House Energy and Commerce Committee)	Western Climate Initiative (WCI)
Eligible Activities	<ul style="list-style-type: none"> No restrictions Methodologies for any project type may be proposed by project developers and considered for approval Over 100 approved methodologies Methodologies may be subject to later modification by regulatory authority, which creates risks for project developers. 	<ul style="list-style-type: none"> Landfill methane capture and destruction; SF₆ emission reductions; Afforestation; End-use efficiency reducing emissions from natural gas, propane and heating oil; Methane reduction from farming operations 	<ul style="list-style-type: none"> Agricultural and rangeland sequestration and management; Land-use and forestry (afforestation, reforestation, and increasing forest stand volume); Manure management and disposal; Terrestrial practices identified by EPA Administrator (includes fugitive emissions capture and combustion from uncovered sources, methane capture and combustion from non-agricultural facilities) 	<ul style="list-style-type: none"> Methane collection and combustion projects: <ol style="list-style-type: none"> At active underground coal mines; At landfills; and Involving manure management. Afforestation or reforestation Other project types listed for consideration include: <ol style="list-style-type: none"> agricultural soil carbon sequestration; conversion of cropland to rangeland or grassland; reduction of nitrogen fertilizer use or increase in nitrogen use efficiency; forest management resulting in increased forest stand volume; reduced deforestation; methane reduction from reclamation of abandoned surface mines; recycling and waste minimization; controlled wastewater treatment 	<ul style="list-style-type: none"> Agriculture (soil sequestration and manure management); Forestry (afforestation/reforestation, forest management, forest preservation/conservation, forest products), Waste management (landfill gas and wastewater management).
Additionality, Baselines and Measurement of Emission Reductions	<ul style="list-style-type: none"> Additionality is demonstrated through; <ol style="list-style-type: none"> a financial additionality test; OR a barrier test; AND a common practice test. Additionality and baselines are determined on case-by-case, project-specific basis. 	<ul style="list-style-type: none"> Additionality is addressed in eligibility requirements, which include performance standards. Baselines are project-specific, but baseline methodologies are detailed and include some standardized inputs. 	<ul style="list-style-type: none"> Additionality determination to include project-specific financial additionality test. Additional tests could include standardized approaches (e.g. performance benchmarks). No indication of position on use of standardized baselines. Sequestration projects must develop a dynamic baseline based on 	<ul style="list-style-type: none"> Calls for EPA to develop standardized methodologies (e.g. performance threshold) for determining additionality, and appears to call for consideration of standardized baselines. 	<ul style="list-style-type: none"> Protocols will be "standardized to the extent possible and make use of (or adapt if needed), existing protocols as appropriate." Protocols to be developed prior to start of program in 2012.

	Clean Development Mechanism (CDM)	Regional Greenhouse Gas Initiative (RGGI)	Lieberman-Warner bill (S. 3036, America's Climate Security Act of 2007)	Dingell-Boucher draft climate change legislation (House Energy and Commerce Committee)	Western Climate Initiative (WCI)
Additionality, Baselines and Measurement of Emission Reductions			emissions on comparable land (in contrast, RGGI does not require a dynamic baseline).		
Quantitative Limits on Offset Use	<ul style="list-style-type: none"> • Kyoto Protocol (KP) has no firm quantitative offset limits, but calls for use of CDM and JI credits for compliance to be "supplemental" to domestic action. • EU countries and other countries aim to use CDM and JI credits to meet no more than 50% of their Kyoto emission reduction obligation. 	<ul style="list-style-type: none"> • Offset limit increases as CO₂ allowance price increases. • 3.3% of a covered source's emissions. • Limit increases to 5% and 10% if rolling annual average price reaches \$7 and \$10/tonne, respectively. 	<ul style="list-style-type: none"> • Domestic offset limit equal to 15% of each annual emissions cap. • International offset limit also 15%, 5% of which may be project-based, and 10% of which may be international forestry credits. 	<ul style="list-style-type: none"> • 2012-17: Up to 5% of a covered entity's compliance obligation (i.e. emissions) may be met using combination of domestic or international offsets. • 2018-20: Up to 15% may be met using this combination. • 2021-24: Up to 15% may be met using domestic offsets, and an additional 15% using international offsets. • 2025 and beyond: Up to 20% may be met using domestic offsets, and an additional 15% using international offsets. • There is no limit on the use of HFC destruction allowances and international allowances from approved programs. 	<ul style="list-style-type: none"> • Use of eligible offsets and international allowances limited to no more than 49% of total emission reductions in 2012-20.
Qualitative Limits on Offset Use	<ul style="list-style-type: none"> • Kyoto Protocol forbids nuclear project offsets. • EU ETS requires that large hydro projects must meet sustainability criteria, and forbids use of offsets from land use, land use change and forestry activities (LULUCF). 	<ul style="list-style-type: none"> • At \$10/tonne, EU Allowances and CDM and JI credits also can be used for compliance. • Projects must be initiated after December 20, 2005 for offsets to be eligible. • Projects in all U.S. states eligible, but Memorandum of Understanding must be in place for non-RGGI states. 	<ul style="list-style-type: none"> • Projects must commence operations after offset regulations are promulgated. • International project-based offsets must meet requirements comparable to domestic offsets. • Projects at facilities that compete directly with a U.S. facility are disallowed. • Countries hosting international forestry activities must meet 	<ul style="list-style-type: none"> • Projects that commenced after 2001 but before bill enactment, may be eligible to receive early action allowances. • Projects that started before 2006, or after 2008 but before promulgation of offset regulations, are eligible to generate offset credits for reductions occurring after regulations are promulgated (e.g. 2011). • International allowances may be used from programs that are of comparable stringency 	<ul style="list-style-type: none"> • Offsets projects throughout U.S., Canada and Mexico may be eligible if subject to comparably rigorous oversight, validation, verification, and enforcement. • Offsets and allowances from other jurisdictions must meet rigorous criteria to be developed with respect to additionality, and the ability of WCI to enforce and verify

	Clean Development Mechanism (CDM)	Regional Greenhouse Gas Initiative (RGGI)	Lieberman-Warner bill (S. 3036, America's Climate Security Act of 2007)	Dingell-Boucher draft climate change legislation (House Energy and Commerce Committee)	Western Climate Initiative (WCI)
Qualitative Limits on Offset Use			various data, capacity and emission reduction requirements.	to the U.S. program. <ul style="list-style-type: none"> International offsets (e.g. CDM credits) must meet requirements of comparable stringency to U.S. requirements for domestic offsets. International offsets from HFC destruction projects will not be eligible. Countries hosting international forestry activities must meet various data, capacity and emission reduction requirements. 	reductions. <ul style="list-style-type: none"> CDM credits may be accepted, but may be subject to international offset standards to be established by WCI participants. Offset credits are disallowed from projects in developed countries involving sources that within WCI jurisdictions are covered by the cap-and-trade program.
Other	<ul style="list-style-type: none"> Project review and approval process involves multiple approvals at different stages; Precedents on decisions (e.g. rationales in additionality determination for a given project type) are not binding; Decision-making is not transparent. Option to choose 7-year, renewable crediting period or 10-year, non-renewable crediting period. 	<ul style="list-style-type: none"> Reversal risk in afforestation projects is addressed through standardized 10% discount on offset credits or valid insurance that guarantees replacement of lost tonnes. Crediting period is for 10 years (20 for afforestation) and may be renewed. 	<ul style="list-style-type: none"> EPA will develop methodologies to manage the risk of sequestration reversals. This could involve a reserve pool, as recommended by the Nicholas Institute. Monitoring and quantification uncertainty in sequestration projects will be addressed through an "exaggerated proportional discount that increases relative to uncertainty." Crediting period to be determined by EPA Administrator. Methodologies must be tested by 3 independent expert teams, and will be rejected if estimates differ by more than 10% (similar to Nicholas Institute recommendation). 	<ul style="list-style-type: none"> Methodologies for sequestration projects must apply conservative discount factor that accounts for uncertainty in measurement, additionality, leakage and permanence. Crediting period is between 5 and 10 years, except for forestry projects (20 years), and may be renewed subject to most recent protocols and standards. 	N/A

