



## Overview of RGGI CO<sub>2</sub> Budget Trading Program

The CO<sub>2</sub> Budget Trading Program is based on the Model Rule, which was developed to provide guidance and consistency to states that signed the RGGI Memorandum of Understanding (MOU) as they implement the program detailed in the MOU<sup>1</sup>. The MOU states that “Each of the Signatory States commits to propose the Program substantially as reflected in the Model Rule”.<sup>2</sup> The Model Rule provides states flexibility in adopting provisions regarding applicability and source exemptions, allowance allocations and allowance set-asides, and permitting. With the exception of these portions of the Model Rule where states are provided with discretion, the applicable regulatory agencies in the region intend to propose rules that are materially consistent with the Model Rule. This consistency is required to provide for participation in a regional allowance trading program.

The initial template for the Model Rule was based on EPA’s Part 96 rule<sup>3</sup>, which was used as the starting point for provisions addressing the basic administrative functioning of the cap-and-trade program (e.g., process for establishing authorized account representatives, compliance certification, allowance tracking system, and allowance transfers).

The Model Rule was developed by the RGGI Staff Working Group, comprised of staff members from the environmental and energy regulatory agencies in each signatory state. This effort was supported by an extensive regional stakeholder process that engaged the regulated community, environmental non-profits, and other organizations with technical expertise in the design of cap-and-trade programs.

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<sup>1</sup> The MOU was signed by the Governors of the participating states and outlines the program in detail, including the framework for a Model Rule. The states made substantial revisions to the draft model rule in response to public comments. As a result, an amendment to the MOU was agreed to and signed by the heads of the energy regulatory and environmental agencies in each participating state. The MOU and amendments are available at <http://www.rggi.org/agreement.htm>.

<sup>2</sup> The RGGI Model Rule does not supplant any state regulatory or legislative efforts, but instead facilitates them by including the types of provisions necessary to implement RGGI. The RGGI Model Rule does so in a way that preserves state sovereignty and provides certainty and consistency to the regulated community and to the public. The Model Rule is available at <http://www.rggi.org/modelrule.htm>.

<sup>3</sup> 40 CFR Part 96 – NO<sub>x</sub> Budget Trading Program and CAIR, NO<sub>x</sub>, and SO<sub>2</sub> Trading Programs for State Implementation Plans. See [http://www.access.gpo.gov/nara/cfr/waisidx\\_06/40cfr96\\_06.html](http://www.access.gpo.gov/nara/cfr/waisidx_06/40cfr96_06.html).

The major components of the CO<sub>2</sub> Budget Trading Program, as outlined in the Memorandum of Understanding and the Model Rule, are discussed below.

### Applicability

The applicability criteria established by the Model Rule require fossil fuel-fired electric generating units serving a generator of 25 MW or larger to comply with the CO<sub>2</sub> Budget Trading Program. Once a unit triggers applicability under the CO<sub>2</sub> Budget Trading Program (a CO<sub>2</sub> budget unit), that unit will remain subject to the program, regardless of changes to the unit. Regionally, units of this size are responsible for approximately 95% of CO<sub>2</sub> emissions from the electric generation sector.

The definition of “fossil fuel-fired” varies depending on when a unit commences operation. A unit that commences operation on or after January 1, 2005 is considered fossil fuel-fired provided that fossil fuel comprises more than 5% of its total annual heat input. A unit that commenced operation prior to January 1, 2005 is considered to be fossil fuel-fired if fossil fuel comprises more than 50% of its total annual heat input.

CO<sub>2</sub> emissions attributable to the combustion of eligible biomass at a CO<sub>2</sub> budget unit can be deducted from that unit’s CO<sub>2</sub> compliance obligation. Eligible biomass includes sustainably harvested woody and herbaceous fuel sources that are available on a renewable or recurring basis (excluding old-growth timber), including dedicated energy crops and trees, agricultural food and feed crop residues, aquatic plants, unadulterated wood and wood residues, animal wastes, other clean organic wastes not mixed with other solid wastes, biogas, and other neat liquid biofuels derived from such fuel sources. Determinations as to what constitutes sustainably harvested biomass shall be made by the applicable regulatory agencies in each participating state.

### Size and Structure of Cap

The RGGI MOU calls for signatory states to stabilize power sector CO<sub>2</sub> emissions over the first six years of program implementation (2009-2014) at a level roughly equal to current emissions<sup>4</sup>, before initiating an emissions decline of 2.5% per year for the four years 2015 through 2018. This approach will result in a 2018 annual emissions budget that is 10% smaller than the initial 2009 annual emissions budget. The first three-year compliance period would begin January 1, 2009.

This phased approach with initially modest emissions reductions is intended to provide market signals and regulatory certainty so that electricity generators begin planning for, and investing in, lower-carbon alternatives throughout the

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<sup>4</sup> The initial regional cap is 188 million short tons of CO<sub>2</sub> per year, which is approximately 4% above annual average regional emissions during the period 2000-2004.

region, but without creating dramatic wholesale electricity price impacts and attendant retail electricity rate impacts. The RGGI MOU apportions CO<sub>2</sub> allowances among signatory states through a process that was based on historical emissions and negotiation among the signatory states. Together, the emissions budgets of each signatory state comprise the regional emissions budget, or RGGI “cap.”

<u>Year</u>	<u>Regional Annual CO<sub>2</sub> Emissions Budget (short tons)</u>
2009-2014	188,076,976
2015	183,375,052
2016	178,673,127
2017	173,971,203
2018	169,269,278

### Permitting

It is anticipated that the proposals in participating states may require each CO<sub>2</sub> budget source to have an approved CO<sub>2</sub> budget emission monitoring plan (EMP). These permitting provisions would be developed by the applicable regulatory agency in each participating state in accordance with its permitting regulations. The anticipated potential scope of such state-specific provisions is outlined below.

The purpose of the CO<sub>2</sub> budget EMP is to define CO<sub>2</sub> emissions and net energy output monitoring procedures for a particular CO<sub>2</sub> budget source. Applicable regulatory agencies could propose to allow CO<sub>2</sub> budget sources that are subject to the Acid Rain Program to submit as part of their CO<sub>2</sub> budget EMP a statement that they already have an emissions monitoring plan in place that meets the requirements of the CO<sub>2</sub> Budget Program. CO<sub>2</sub> budget sources that are not subject to the Acid Rain Program could be required to include in their EMP a detailed emissions monitoring plan that meets requirements specified by the CO<sub>2</sub> Budget Trading Program. These monitoring plans would be consistent with monitoring provisions at 40 CFR Part 75 (see “Emissions Monitoring” below). CO<sub>2</sub> budget sources could also be required to include in their CO<sub>2</sub> budget EMP a detailed electricity/useful steam output monitoring plan unless they already have an approved output monitoring plan under the NO<sub>x</sub> Budget Program or CAIR, in which case they would need to include a statement to that effect.<sup>5</sup> After reviewing the CO<sub>2</sub> budget EMP, the applicable regulatory agencies would issue a proposed final approval, a denial, or a final approval with conditions. The applicable regulatory agencies would incorporate the CO<sub>2</sub> budget emission monitoring plan into an operating permit in accordance with their permitting regulations.

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<sup>5</sup> EPA does not currently require annual net energy output monitoring under 40 CFR Part 72 or Part 75.

## Allowance Allocation

### *Auction of Allowances*

States participating in RGGI have signed a Memorandum of Understanding (MOU) that establishes a regional emissions budget (the cap), and divides the emissions budget among participating states. Each state will allocate allowances up to the amount of its emissions budget, with each allowance allowing a regulated source to emit one ton of CO<sub>2</sub>.

RGGI takes an innovative approach to how states allocate allowances to regulated sources. Historically, cap-and-trade programs have allocated allowances directly to regulated emissions sources. Under RGGI, instead of giving allowances directly to electric generators for free, states would sell a significant portion or all allowances through a regional auction or otherwise. RGGI takes this approach because in a competitive wholesale market electric generators pass through the market value of free allowances to the price they bid into the market.<sup>6</sup> The RGGI program proposes to use this allowance value to provide incentives for end-use energy efficiency and other measures, thus lowering the impact of the program on electricity consumers.

In the RGGI MOU participating states have agreed to allocate a 25% minimum of allowances to support consumer benefit programs.<sup>7</sup> Individual participating states may choose how to allocate the remaining 75% of their allowances, but the clear trend among the RGGI states is to auction nearly all of their allowances and dedicate the proceeds to support consumer benefits. NY, MA, VT, RI, CT, and ME have all publicly stated their commitment to auction 100%, or nearly 100%, of their allowances to support consumer benefit programs (CT, ME, RI, and VT have statutory requirements to this effect).<sup>8</sup> Allocating allowances to support consumer benefits leads to lowering of electricity demand, reducing the overall compliance costs of the RGGI program and its impact on electricity ratepayers.

It is expected that the regulations promulgated by many states will include provisions outlining the process for auctioning allowances that will align with the design of a regional allowance auction platform established jointly by the RGGI signatory states. States participating in RGGI are currently discussing the design

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<sup>6</sup> This is because allowances can be traded to other parties, and therefore have a market value. Generators expend an asset – emission allowances – when generating electricity. As such, the use of freely allocated allowances has an “opportunity cost” since revenue from the potential sale of the allowance is foregone. In a competitive wholesale market, generators therefore pass on the cost of allowances as a cost of generating electricity, whether allowances were received for free or were purchased. RGGI is being implemented in a region with deregulated wholesale electricity markets, which warrants a design approach that includes the auctioning of allowances.

<sup>7</sup> The MOU defines “consumer benefit or strategic energy purposes” as the following: the use of allowances to promote energy efficiency, to directly mitigate electricity ratepayer impacts, to promote renewable or non-carbon-emitting energy technologies, and to stimulate or reward investment in the development of innovative carbon emissions abatement technologies.

<sup>8</sup> Maine has a modest set-aside to address a portion of the emissions from cogeneration facilities.

of a regional auction platform and the components of regulatory provisions necessary for implementing a regional auction.

#### *Early Reduction Allowances*

The Model Rule includes Early Reduction Allowance (ERA) provisions. ERAs are intended to provide an incentive for facilities to take actions to reduce CO<sub>2</sub> emissions sooner than otherwise would be required by granting allowances for qualifying emissions reductions made before the CO<sub>2</sub> Budget Trading Program start date. ERAs are awarded directly to the CO<sub>2</sub> budget source, are not included in the auction, and are in addition to the cap. To be eligible to receive ERAs, a CO<sub>2</sub> budget source must submit an ERA application no later than May 1, 2009 demonstrating the following:

- An absolute reduction in the mass of CO<sub>2</sub> emitted during the early reduction period (the three years 2006, 2007, and 2008), relative to the baseline period (the three years 2003, 2004, 2005 – the three years immediately preceding the early reduction period)
- A reduction in the average CO<sub>2</sub> emissions rate resulting from electric energy output and useful thermal energy output for all the CO<sub>2</sub> Budget Units at the CO<sub>2</sub> budget source during the early reduction period relative to the baseline period
- Facility shutdowns are not eligible for ERAs

#### *Allowance Retirement for Voluntary Renewable Energy Purchases*

In order to promote and increase support for renewable energy and to encourage citizens to voluntarily purchase electricity that has a demonstrated greenhouse gas benefit, the Model Rule contains optional provisions that provide for the retirement CO<sub>2</sub> allowances from a participating state's CO<sub>2</sub> emissions budget for voluntary ratepayer purchases of qualified renewable energy.

Imposing a cap on CO<sub>2</sub> creates incentives for generating electricity in ways that do not emit carbon dioxide (e.g., renewable energy). However, in a capped environment, the development of new renewable electric generation facilities does not necessarily reduce the emissions of carbon dioxide associated with electric generation. This is because the production of electricity by non-carbon emitting sources does not lower the cap and the number of allowances available. Therefore, electric generators can continue to emit carbon dioxide as long as CO<sub>2</sub> allowances are available. Under this scenario, additional electric generation by renewable sources could make it easier for carbon dioxide-emitting electric generators to meet the cap (by avoiding CO<sub>2</sub> emissions and reducing the demand for CO<sub>2</sub> allowances), which could affect generator dispatch order. However, generators could still emit CO<sub>2</sub> up to the level of the cap or bank allowances for future use. Consequently, increased renewable energy generation would help achieve the emissions cap at lower cost, but would not necessarily result in lower overall CO<sub>2</sub> emissions. This dynamic precludes marketers from stating unequivocally that voluntary renewable energy purchases

can be used to offset a purchaser's CO<sub>2</sub> emissions, a quality that is often highlighted to consumers when marketing such products.

To remedy this situation, allowances could be retired in an amount equivalent to the avoided CO<sub>2</sub> emissions resulting from voluntary purchases of qualified renewable energy. Renewable energy purchases would qualify for this retirement if they represent a voluntary purchase of eligible renewable energy on behalf of retail customers in a respective participating state, provided that such purchases represent renewable energy generation in the RGGI region and may not be used for compliance with renewable portfolio standards in the RGGI region, or a renewable portfolio standard in any other state. Depending on the annual marginal or average CO<sub>2</sub> emission rate for electric generation, as determined by the applicable independent system operator (ISO), the applicable regulatory agency in a participating state would retire allowances representing some small portion of the state's emissions budget.

### Temporal Flexibility Mechanisms

#### *Overview*

The Model Rule includes a number of temporal flexibility mechanisms (i.e., banking, extended compliance period, and early reduction allowances). Allowance borrowing is not included in the model rule.

#### *Banking*

The Model Rule provides for the banking of allowances with no restrictions. Banking provides facilities with the ability to carry over unused allowances from a current compliance period into future compliance periods. Therefore, banking should provide allowance price stability while providing an incentive to hedge future year emissions uncertainty.

#### *Extended Compliance Period*

The Model Rule provides for a three-year compliance period. This compliance period can be extended to four years in the event of a stage-two trigger event (see "Price Triggers" below). Multi-year compliance periods were employed to provide regulated facilities more flexibility to adjust to variations in electricity demand (driven by meteorology and load growth), fuel price spikes, clean unit outages, etc. A longer compliance period may also lead to resource (administrative) savings for the regulated facilities and the states implementing the program. This design component was included in lieu of allowance borrowing, as it allows for de facto borrowing within a three-year compliance period.

## Price Triggers

The MOU and Model Rule include allowance price triggers, which provide additional compliance flexibility and price dampening in the event of higher allowance prices in two distinct stages.

A stage-one trigger event occurs if the twelve-month rolling average CO<sub>2</sub> allowance price is equal to or greater than the stage one trigger price. The stage-one trigger price is set at \$7 in 2005 dollars, and will be adjusted up or down each year according to the consumer price index. In the event that a stage-one trigger event occurs, CO<sub>2</sub> budget units will be able to expand their use of CO<sub>2</sub> offset allowances from 3.3% of their compliance obligation to 5% of their compliance obligation (see “Offsets” below).

A stage-two trigger event occurs if the twelve-month rolling average CO<sub>2</sub> allowance price is equal to or greater than the stage-two trigger price. The stage-two trigger price is set at \$10 in 2005 dollars, and will be adjusted up or down each year according to the consumer price index plus two percent.

If a stage-two trigger event occurs:

- CO<sub>2</sub> budget units will be able to use CO<sub>2</sub> offset allowances to satisfy 10% of their compliance obligation;
- The compliance period will be extended to four years; and,
- CO<sub>2</sub> offset allowances may be awarded for the permanent retirement of greenhouse gas allowances or credits that have been issued pursuant to any mandatory carbon constraining program outside the United States that places a specific tonnage limit on greenhouse gas emissions, or greenhouse gas emissions reduction credits certified pursuant to the United Nations Framework Convention on Climate Change (UNFCCC) or protocols adopted through the UNFCCC process.

The price trigger provisions include a 14-month market settling period, which commences at the start of each new compliance period. The twelve-month rolling averages used to calculate the stage one and stage two trigger events cannot include the 14-month market settling period. Therefore, the earliest that either trigger event can occur is 26 months after the commencement of a compliance period.

Calculations of trigger prices, and determinations as to whether or not a stage-one or stage two trigger event has occurred, will be performed by the applicable regulatory agency, in consultation with the applicable regulatory agencies in other signatory states.

## Emissions Monitoring

The emissions monitoring and reporting section of the Model Rule requires the owners and operators and/or the CO<sub>2</sub> Authorized Account Representative of each CO<sub>2</sub> budget unit to install and certify monitoring systems and to collect, record, quality-assure and report data necessary to quantify CO<sub>2</sub> mass emissions from that unit. The emissions monitoring and reporting provisions contained in the Model Rule are primarily based upon the US EPA monitoring provisions at 40 CFR Part 75, and contain many specific references to these provisions.

Those sources that would be subject to the CO<sub>2</sub> Budget Trading Program that are also subject to the Acid Rain Program are already required by EPA Acid Rain rules to monitor, record, and report CO<sub>2</sub> mass emissions annually. Those sources subject to CO<sub>2</sub> Budget Trading Program that are not Acid Rain sources are subject to the Clean Air Interstate Rule, which requires sources to report mass emissions of oxides of nitrogen on an annual basis. Since the physical equipment necessary to monitor emissions of oxides of nitrogen on an annual basis is also capable of monitoring for CO<sub>2</sub> mass emissions, the Data Acquisition and Handling Systems would need modification to quantify CO<sub>2</sub> mass emissions (additional programming with the additional formulas relative to CO<sub>2</sub>). The applicable agencies in participating states are currently in communication with the Clean Air Markets Division of the United States Environmental Protection Agency to determine if US EPA will accept and perform quality assurance data checks on CO<sub>2</sub> mass emission monitoring data from non-Acid Rain Program subject sources.

The monitoring provisions of the Model Rule include deadlines and procedures for the initial certification of, and, under certain circumstances, the recertification of Continuous Emission Monitoring Systems. Acid Rain Program subject sources that have already certified CO<sub>2</sub> monitoring systems will not require initial certification but may require recertification if, for example, changes to the monitoring system trigger such recertification.

The monitoring section establishes procedures to apply conservative missing data routines in the event that a monitoring system fails to meet quality assurance and quality control requirements.

The monitoring section contains specific provisions regarding:

- Requirements to provide heat input data;
- Requirements to provide electricity and useful steam output data;
- Procedures for filing petitions for alternative monitoring plans; and,

- Procedures for quantifying the portion of CO<sub>2</sub> emissions associated with the combustion of eligible biomass.<sup>9</sup>

### Offsets (Project-Based Emissions Reductions Outside the Capped Sector)

The emissions offset provisions of the Model Rule provide compliance flexibility by awarding CO<sub>2</sub> offset allowances to projects outside the capped sector that reduce and/or sequester emissions of greenhouse gases. CO<sub>2</sub> offset allowances may be used to satisfy a limited fraction of a source's compliance obligation. Initially, the use of CO<sub>2</sub> offset allowances is constrained to 3.3% of a unit's total compliance obligation during a control period, though this may be expanded to 5% and 10% if a stage one or stage two trigger event occurs, respectively.

In order to ensure that the CO<sub>2</sub> offset allowances awarded represent CO<sub>2</sub>-equivalent emissions reductions or carbon sequestration that are real, additional, verifiable, enforceable, and permanent, highly prescriptive standards were developed for specific project categories. At this time, only the following five project categories are eligible for CO<sub>2</sub> offset allowances:

- Landfill methane capture and destruction;
- Reduction in emissions of sulfur hexafluoride (SF<sub>6</sub>);
- Sequestration of carbon due to afforestation;
- Reduction or avoidance of CO<sub>2</sub> emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency in the building sector; and,
- Avoided methane emissions from agricultural manure management operations.

The initial list of project categories was selected with consideration of expected offset supply within the borders of RGGI MOU signatory states; the relative ease of developing standards; and, the likelihood of mandatory greenhouse gas regulations for that sector. The participating states intend to develop methodologies for evaluating new categories of offset projects.

Eligible offset projects may be located in any participating state, or any other state or U.S. jurisdiction in which a cooperating regulatory agency has entered into a MOU with the participating states to provide oversight support related to CO<sub>2</sub> emissions offset projects in that state or U.S. jurisdiction.<sup>10</sup> Offset

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<sup>9</sup> At this time, procedures have not yet been developed for deducting CO<sub>2</sub> emissions associated with the combustion of liquid biomass fuel. The net GHG emissions benefits of combusting liquid biofuels can vary significantly due to the wide range of liquid biofuels production processes and feedstocks. The participating states are jointly researching the appropriate manner of addressing liquid biofuels.

<sup>10</sup> Cooperating regulatory agencies would provide administrative oversight assistance to the Signatory States to help ensure the credibility of offset allowances from the state or other jurisdiction.

project applications will be submitted to the appropriate regulatory agency in the state where the project occurs. Applications for projects not located in any RGGI signatory state will be submitted to any one RGGI signatory state.

Eligible offset projects must go through a two-step application process and must be verified after both steps by an accredited independent verifier. The first step is a consistency determination, whereby the applicable regulatory agency would determine whether a project meets the eligibility criteria. The second step is the submittal of an annual monitoring and verification report, which requires the applicant to demonstrate the precise amount of greenhouse gas emissions reduced or sequestered before offset allowances are awarded.

A key component of the offset provisions in the Model Rule are those that address project “additionality”. Broadly, additionality attempts to address whether incremental greenhouse gas emissions reductions will be achieved from an offset project that would not otherwise have occurred in the absence of the RGGI offsets component. Additionality is the key criteria for ensuring that offsets projects result in “real” emissions reductions in the context of a cap-and-trade program. Since offsets allow an additional ton of CO<sub>2</sub> to be emitted from sources subject to RGGI for each ton of emission reduction achieved through an offset, offset projects must provide reasonable assurance that they are achieving emissions reductions that would not otherwise have occurred in the absence of the offset provisions of RGGI. This presumes that offsets must involve actions that are unlikely to occur under a business-as-usual scenario (standard market practice).

Evaluating additionality is difficult, since it requires a counterfactual assessment based on assumptions about what would likely have occurred in the absence of the offset project. It may also involve an evaluation of individual project developer intent to determine if a project presents an attractive investment alternative absent offset allowance revenue.

Despite the problematic nature of determining additionality, the environmental integrity of emissions offsets, and by extension the environmental integrity of the cap-and-trade system, presumes that best practical efforts are made to account for additionality. Offsets mechanisms without additionality criteria would simply involve quantification of emissions reductions achieved through typical market activities.

There are two levels of additionality, “regulatory additionality” and “financial additionality”:

- Regulatory additionality is the simplest version of additionality – only project-based reductions not required by law or regulation would be eligible. However, for many offset types this standard would allow a significant number of voluntary actions that are otherwise highly

economically attractive or representative of standard market practice to receive offset allowances. Many of these actions would be considered business-as-usual by a wide range of stakeholders.

- Financial additionality attempts to determine whether a project is likely to be economically attractive absent the revenue stream provided by an emissions offset. This route is being utilized by the Clean Development Mechanism (CDM) and has typically been evaluated on a case-by-case basis, a process that has received significant criticism. CDM financial additionality evaluation typically involves the following:
  - Identification of alternatives to the project
  - Barriers analysis (market barriers, technology barriers, or financial barriers)
  - Common practice analysis
  - Investment analysis (project-specific analysis, such as IRR or NPV) with and without the projected revenue stream provided by the CDM offset credits. Determination is made as to whether the project, without offset credit revenue, is less financially attractive than other market options.

The Model Rule employs a benchmark and performance standard approach to evaluating the additionality of a prospective offset project, referred to as a “standardized approach”. Benchmarks and performance standards are proxies that may be used to infer financial additionality, as outlined below:

- Benchmark is a qualitative eligibility criterion for a category of projects that reasonably ensures that a project is unlikely to occur under standard market practice. For example, prohibition of receipt of both offset allowances and other attribute credits, such as renewable energy credits (RECs), or the ability to receive both only under certain limited conditions.
- Performance standard is a quantitative eligibility criterion that establishes a metric for determining if categories of projects are unlikely to occur under standard market practice. The criterion is usually established in relation to the performance level achieved through standard market practice for the category of activities eligible for a certain type of offset. Projects that meet or surpass the standard qualify as additional. Examples of performance standards include:
  - Emission rate
  - Energy efficiency criteria
  - Market penetration rate

These benchmarks and performance standards are used independently or in tandem, depending on the market situation for specific categories of eligible offset project types.