*** NOTICE ***

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EPA is providing the draft of this document, the drafts of the CPP Model Rules, and the drafts of other associated technical support materials for informational purposes only. EPA withdrew the Model Rules and accompanying documents from OMB review before the review was completed. The Administrator has not signed the Model Rules. With respect to the Model Rules, EPA has not completed several of the steps necessary to conclude a rulemaking action under CAA section 307. The agency has not completed the responses to comments and has not completed the docketing process for supporting materials at this time as would be required under CAA section 307(d)(6) for a final rule. The docket will remain open, with the potential for finalizing the Model Rules at a later date. These materials are not being published in the *Federal Register* or the *Code of Federal Regulations* and are not subject to judicial review. *See* CAA section 307(b)(1).

While this is a deliberative document that EPA is not required to release, for the reasons discussed in the Cover Memorandum accompanying the Draft Model Trading Rule Preamble and Regulatory Text, the agency is providing the public with its work to date on these topics. This is in keeping with the agency's general ability to share deliberative material with the public at its discretion in appropriate circumstances.

Draft Technical Support Document

Leakage Requirement for State Plans Using Mass-based Emission Budget Trading Programs

U.S. Environmental Protection Agency

Date

This technical support document is a non-binding guidance document. It is intended to provide assistance to State/Local/Tribal Agencies seeking EPA approval of state plans to meet the requirements of the Clean Power Plan (CPP) at 40 CFR part 60 subpart UUUU and section 111(d) of the Clean Air Act (CAA). It does not substitute for or expand upon the substance of the requirements contained in applicable regulations and statutes. This document only provides examples of how states can meet the leakage requirement as it is specified in the CPP.

Additionally, the U.S. Supreme Court has stayed the CPP and the EPA is not implementing or enforcing the requirements of the rule at this time.[1] However, this stay does not otherwise constrain the Agency or states, and the EPA has not been enjoined from continuing to work on the CPP. Therefore, the EPA is providing technical assistance to states voluntarily seeking more information about the CPP and state plans, including information about the leakage requirement.

This document does not specify a single model trading rule leakage approach, demonstration method or quantitative leakage assessment. Instead, it provides examples for states to inform decision-making on how to address leakage. States can use leakage approaches, state plan demonstration methods and assessments beyond those discussed in this document. States can also modify the example approaches in this document. States can discuss any ideas and questions regarding the leakage requirement and this document with the EPA at any time, including during the state plan submittal process.

None of the approaches or methods we provide in this document are presumptively approvable methods in their entirety for meeting the leakage requirement or any other CPP requirement. The EPA will need to review and approve each state plan submission in a notice and comment rulemaking to determine whether the state's leakage approach and/or demonstration meets the applicable requirements. The CPP did finalize the state budgets that include the new source complement as presumptively approvable. We have provided sample regulatory text implementing those budgets that can be used in conjunction with the model trading rule (see Appendix A).[2]

[1] See West Virginia, et al. v. EPA, et al., No. 15A773 (February 9, 2016).

[2] This regulatory text is not presumptively approvable because it has not been offered for comment. However, if states adopt these budgets using the language specified here, they can save time in plan development and plan review because the need for technical analysis of the approach should be minimal.

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List of Acronyms

BSER	Best System of Emission Reduction
CAA	Clean Air Act
CO_2	carbon dioxide
CPP	Clean Power Plan
EE	energy efficiency
EGU	electricity generating unit
EM&V	evaluation, measurement and verification
EPA	U.S. Environmental Protection Agency
ERC	emission rate credit
IGCC	integrated gasification combined cycle
IRP	integrated resource plan
MRR	monitoring, recordkeeping, and reporting
NSC	new source complement
RE	renewable energy
RES	renewable energy standard
RTO	regional transmission organization
SIP	state implementation plan
TSD	Technical Support Document

1 Introduction

This document includes a detailed discussion of methodologies for meeting the Clean Power Plan (CPP) requirement to address leakage. In this introduction, we cover three key topics:

- Section 1.1 reiterates the basis of the leakage requirement and provides additional discussion of the nature of the requirement as it is outlined in the CPP.
- Section 1.2 provides context for the discussion of the leakage requirement by describing how the mass-based budgets were established to account for potential new demand growth, the role and potential benefits of using regional approaches in mass-based state plans because of the interconnected nature of the power grid, and how those interstate relationships can be considered in addressing the leakage requirement.
- Section 1.3 provides an overview of the key points discussed in this Technical Support Document (TSD) regarding meeting the requirement to address leakage within a state. In particular, it discusses the options specified in the CPP to meet the requirement and how a state can select the option that best matches its circumstances.

1.1 Background on the Leakage Requirement

The CPP specifies CO_2 emission performance rates for two subcategories of existing fossil fuel-fired EGUs— fossil fuel-fired electric utility steam generating units and stationary combustion turbines—as well as state-specific rate- and mass-based CO_2 goals for each state's affected EGUs as an alternative to subcategory-specific performance rates for the purpose of each state meeting its state plan requirements. These options allow for two alternatives for state plan design. Rate-based plans rely on the application of CO_2 emission performance rates as emission standards for individual affected EGUs. They can also include a rate-based trading program that uses emission rate credits (ERCs). Affected EGUs use ERCs to adjust their emission rate, and the CPP allows for the trading of ERCs among ERC generators and affected EGUs. ERCs must be issued by a state with a rate-based plan based on verified measurements of generation and energy savings from resources that meet the eligibility requirements under the CPP.[3] Among other requirements, the CPP specifies that certain affected EGUs and zero-emitting resources—e.g., renewable energy (RE), energy efficiency (EE) and nuclear—can be issued ERCs and that new fossil EGUs cannot.[4]

The mass-based goals can constitute the basis of a mass-based emission budget trading program, which establishes an emission budget of allowances equal to the state's mass goal for CO_2 emissions. Affected EGUs must hold and retire allowances equal to their emissions and they can trade allowances with other allowance holders.

[3] 80 FR 64894.
[4] 80 FR 64899-64903.

The Need for a Leakage Requirement

The EPA calculated each state's mass goal as the equivalent of the subcategorized rates and alternative rate-based goals. This calculation is based on the assumption that generation shifts from higher-emitting affected EGUs to lower-emitting affected EGUs and zero-emitting resources and not to new fossil EGUs. The same shift is assumed in the calculation of the subcategorized rates and alternative rate-based goals because it results in a level of CO_2 emission reductions achievable through the application of the BSER. These shifts are expected to occur under implementation of rate-based plans because lower-emitting affected EGUs and zero-emitting resources can be issued ERCs that encourage their increased use, whereas new fossil EGUs cannot be issued ERCs. Therefore, different incentives exist for dispatching lower-emitting affected EGUs and zero-emitting resources relative to dispatching new fossil EGUs.

A mass-based emission budget trading program that is only applicable to affected EGUs and does not address leakage provides an incentive structure that differs from that of rate-based programs. Affected EGUs face a CO_2 compliance cost for every unit of generation that they produce because their emissions are constrained by the emission budget, regardless of whether they are lower-emitting EGUs. New fossil EGUs are not constrained under that mass goal-based budget and do not face that compliance cost.

First, this means that existing affected EGUs can receive the same compliance benefit when generation is shifted to new fossil EGUs as they would if generation shifted to zero-emitting resources, in contrast to the compliance benefit conferred by ERCs generated exclusively by generation shifting to lower- or zero-emitting resources under rate-based plans. Whether generation shifts to new fossil EGUs or zero-emitting resources—including EE and RE—under a mass-based budget, this shift frees up an equal number of allowances that can be used by affected EGUs to emit CO_2 equal to those allowances. The existing affected EGU can then sell those available allowances to other affected EGUs that are subject to the mass-based plan. As a result, the program can provide an incentive for sources to shift generation to generators other than existing affected EGUs that must hold allowances to generate, including new fossil EGUs.

Second, under a rate-based state plan, lower-emitting affected EGUs are encouraged to increase their generation to produce ERCs, whereas higher-emitting EGUs and new fossil EGUs are not. This incentive, which favors lower-emitting affected generation relative to new fossil EGUs, does not exist under mass-based plans because lower-emitting affected EGUs cannot defer costs to generate by earning ERCs. Additionally, lower-emitting affected EGUs must hold allowances to cover their emissions, whereas new fossil EGUs do not need to do so under mass-based emission budget trading programs. New fossil EGUs do not face any compliance cost under either type of plan. This combination of factors provides an incentive for new fossil fuel EGUs to generate relative to lower-emitting affected EGUs under a mass-based emission trading program.

Additionally, under mass-based emission trading programs, a shift of generation to new fossil EGUs instead of affected EGUs or zero-emitting resources results in additional CO_2 emissions. Indeed, this shift in generation is unlikely to reduce emissions from affected EGUs because overall emissions performance is driven by the level of the mass limit. Therefore, incentives for leakage under mass-based emission

budget trading programs result in affected EGUs achieving emission reductions in a way that is contrary to the calculation of an equivalent mass goal and results in increased overall emissions. Such an increase in emissions would be contrary to the purpose of section 111(d) and the CPP. For these reasons, the CPP requires a state adopting a mass-based emission budget trading program to address leakage.[5]

Key Limitations for the Leakage Requirement

Although leakage is a concern for the reasons described in the CPP and reiterated above, the CPP did not specify a tonnage of total CO_2 emissions from affected EGUs and new fossil EGUs that the subcategory-specific CO_2 emission performance rates or state mass goals are intended to deliver.[6] A state, in meeting the leakage requirement or, for that matter, in developing an overall state plan does not need to ensure a particular total CO_2 emission outcome or a specific amount of generation from any particular type or group of generating resources.

This is in part because there are other dynamics, such as increased electricity generation to satisfy new demand or interstate generation shifting, that can increase the total emissions from affected and new fossil EGUs. This is particularly likely to occur in an environment in which different states are implementing a variety of state plan approaches. These dynamics lie outside of the definition of leakage found in the CPP and the state is not required to address these dynamics under the leakage requirement.

Under CAA section 111(d), the focus is on state-specific plans and, thus, the leakage concern we address here is the one that can occur within a single state. However, we also recognize that the energy system in this country operates regionally, with demand and supply readily crossing state lines. Numerous states have expressed interest in operating with a regional trading program for CO_2 reduction. And states could certainly consider coordinating regionally on leakage and provide a regional leakage demonstration, whether or not they participate in a regional trading plan. Even a state that does not intend to operate within a regional program is likely to make its plans for meeting demand available to its neighbors through a regional transmission organization (RTO) or other regional planning organization. EPA encourages that, especially when the state predicts no new in-state generation because it expects additional generation to satisfy demand to come from a neighboring state. Finally, states motivated by a desire to ensure overall reductions in CO2 will want to pay attention to the interaction between supply and demand across state borders lest reductions in generation in its own state are simply made up for by the construction of new generation in another state. We discuss these issues in more detail below.

[5] The EPA calculated the mass-based goals to ensure that they are an equivalent application of BSER to the subcategory-specific emission rates.
[6] 80 FR 64822.

1.2 Leakage in Context: Emission Trading, Grid Integration and Regional Approaches

In this section, we provide context for the material presented in this document, by discussing aspects of the CPP and the multi-state context of CPP compliance that states considering adopting a trading program may want to consider while planning for the leakage requirement.

The CPP was designed, in part, to reflect the unique dynamics of the electricity grid, which operates through a network of connections between and among a large and diverse set of electricity generators that, in concert, meet the electricity demand across interstate regional grids. Although the CPP regulates, by means of state plans, a specific set of generators, it was designed to provide states with options that would enable them to reduce CO_2 emissions through a variety of technology and policy approaches that have already been deployed on the grid and that can be fully integrated with regional power planning and delivery.

To facilitate the development of state plans by those states that choose to adopt mass-based allowance trading programs, the CPP established, in addition to each state's rate-based goal, a mass-based budget that represented the equivalent of the rate-based goal. To further facilitate the efforts of those states that sought to create regional multi-state strategies, the CPP, in addition to expressly authorizing the submissions of multi-state plans, laid out for states a "trading ready" option under which affected EGUs could engage in interstate trading, even in the absence of a multi-state plan.

The CPP offered states the option of using emission trading as a mechanism that allows states and sources to meet the emission reduction requirements of the CPP. This mechanism is both cost-effective and conducive to fostering the integration of CO_2 emissions reduction strategies with the operation of the interconnected grid. Among the various trading approaches available, both the EPA and the states—and EGU and grid operators—have had the most experience and success with mass-based allowance trading. Instrumental to the success of these programs is the particular ease with which allowance trading can be used to enable the integration of emissions reductions with the current operation of the interconnected electricity grid. Other emission trading programs such as the Title IV Acid Rain Trading Program, the NO_x SIP Call, the Clean Air Interstate Rule, and the Cross-State Air Pollution Rule, have provided economic benefits by allowing the flexibility for emission reductions to occur at the affected EGUs with the lowest cost of compliance.

Multi-state regional grid operations enable net electricity-exporting states and net-electricity-importing states to harmonize their mutual interests and ensure system reliability. Multi-state emission trading programs have also proven to be effective tools for EGUs and states using integrated regional emissions control strategies across the interconnected grid. Aligning multi-state regional grid operations and multi-state emission trading programs can help achieve multiple critical objectives in a more coordinated manner. Strategies to meet the leakage requirement can also be coordinated across states, and this coordination provides multiple benefits.

To meet the requirements of the CPP, which covers only existing affected fossil EGUs, mass-based programs would be designed to facilitate shifting generation between and among existing affected fossil

EGUs and to zero-emitting resources both within each state and across the interconnections. The CPP requires each state to address the potential, under mass-based emission trading programs, to incentivize generation shifts from existing affected EGUs to new fossil fuel-fired EGUs operating *within* each state, resulting in increased overall emissions.

The CPP offers states a path to address this "leakage" of generation and emissions from existing EGUs to new generators within the same state by offering a presumptively approvable new source complement (NSC), which can be combined with a state's mass-based goal to create an emission budget covering both new and existing EGUs. Under this approach, states would use state law to incorporate new fossil EGUs into their mass-based programs for existing affected EGUs.

States using the NSC, particularly as part of a regional trading approach, would further enhance the integration of their emissions reductions strategies with existing grid operations. This is true because, under a program using the NSC, both existing and new fossil EGUs would be required to hold allowances in order to generate and because the cost of holding allowances would be included in system operator dispatch decisions for both existing and new fossil EGUs. As such, the incorporation of emission trading programs into grid operations would allow for a more efficient integration of emission reduction strategies across the interconnected grid.

To facilitate states' adoption of this option, the CPP offers a state plan approach to leakage by establishing for each state a presumptively approvable emission budget combining its new and existing fossil EGUs. In addition, we calculated the mass-based state goals and NSCs in the CPP assuming that *both* affected EGUs *and* new fossil EGUs would be used to address electricity demand growth. As a result, the state budgets for both affected and new EGUs include additional allowances that build in "headroom" for growth. This can provide assurance to existing EGUs planning to meet increased demand, both inside and outside the state, while still meeting the CPP emission reduction requirements under a mass-based state plan.

As explained above, however, a number of states and stakeholders, via comments submitted in response to the proposed model trading rules and federal plan and through stakeholder engagement, have expressed interest in considering the other options for addressing leakage included in the CPP. This document presents additional information and illustrative examples for states weighing and, perhaps, ultimately adopting those options. In doing so, this document is intended to allow states to reap the benefits of mass-based trading programs while addressing the leakage requirement, even if those programs do not include the NSC.

We expect that states will want to engage in regional coordination or communication when developing their leakage approach and demonstration, ideally aligned with regional discussions of other aspects of state plan development like addressing reliability. States using any of the approaches included here can benefit from using regional planning efforts to coordinate their leakage approaches. Whether a state adopts an allocation-based leakage remedy or any one of several clean energy policies that address the generation-shifting incentive that characterizes leakage, these approaches are highly likely to be applied with greater workability, flexibility and effectiveness in states operating under multi-state regional

plans. For example, because leakage does not include generation increases at new fossil EGUs resulting from either in-state demand growth or export demand growth, states operating under a regional plan should be able to demonstrate the distinction between such growth and leakage with greater ease.

Even states operating under single-state plans could realize similar advantages if they coordinate their leakage strategies with other states. In fact, states can also develop a regional demonstration showing that the leakage risk has been addressed, even if they do not use the same leakage approach. States coordinating their leakage demonstrations will likely enhance the analytical credibility of their respective plans' approaches to addressing the incentives and risks for leakage from units within each state's jurisdiction because such coordination accounts for the impacts of relevant out-of-state actions on in-state leakage (e.g., how one state's relative incentives for in-state leakage are affected by another state's in-state leakage remedy).Through multi-state plans or regional coordination, states can also proactively address other interstate dynamics that can result in increased emissions, and concerns regarding interstate planning for future generation. To some extent, this type of planning and engagement occurs already through existing regional planning efforts involving a variety of venues and a range of public and private sector organizations involved in the power sector.

Within the context established above, the rest of this document discusses leakage in more detail and clarifies that however a state decides to proceed with its plan, it has multiple straightforward options for satisfying the leakage requirement.

1.3 Introduction to the Leakage TSD

As stated above, the CPP offers states a variety of options for meeting their obligation to adopt emission standards that meet either the performance rates for affected electricity generating units (EGUs) or alternative mass- or rate-based goals representing the application of the Best System of Emission Reduction (BSER). These options include mass-based emission budget trading programs to meet mass-based goals. Under the CPP, states that adopt this approach must include in their state plans elements or provisions that address what the CPP identifies as leakage. This TSD discusses the issue of leakage and how states can address it in their plans.

The CPP includes a presumptively approvable NSC that, together with the mass goal, provides a single emission budget for existing and new fossil EGUs.[7] Because emission budgets and allowance trading have been used in a number of successful federal and state pollution control programs, states and stakeholders have expressed interest in this approach. In addition, they have suggested methods for addressing leakage other than by using the NSC.

As the CPP allows states to choose from options other than the NSC to address leakage, the immediate purpose of this TSD is to provide states with additional information about how state plans might incorporate any of these approaches. As such, this TSD reflects one of the critical objectives of the CPP: providing states with meaningful choices and flexibility regarding the types of state plans they adopt. By

[7] As described in the CPP, the emission standards for affected EGUs are required to be included as part of the federally enforceable plan, whereas requirements for new fossil EGUs would be regulated and enforceable only as a matter of state law. 80 FR 64888.

providing additional information, this TSD illustrates that states can incorporate a mass-based trading program in their state plans and choose a relatively straightforward leakage approach, even without adopting the NSC.

The CPP defines leakage as a larger incentive under mass-based trading programs (compared to rate-based programs) for generation to shift from affected existing fossil fuel-fired EGUs (hereafter referred to as "affected EGUs") to new in-state fossil fuel-fired EGUs (hereafter referred to as "new fossil EGUs").[8] This differential incentive for generation-shifting is inconsistent with how we applied both the BSER and the assumptions used to calculate the mass goals. This potential for leakage could undermine the equivalence of the mass-based goals and the subcategory-specific emission rates that the EPA established in the calculation of the goals. Therefore, leakage must be addressed by states choosing a mass-based trading program in their state plans. At the same time, this differential incentive is inconsistent with the emissions reductions achievable through application of the BSER and can result in increased overall CO_2 emissions. Section 1.1 provides a detailed background discussion about the need for the leakage requirement.

We have received a significant number of questions and ideas on how states adopting mass-based emission budget trading plans might meet the leakage requirement. Stakeholders provided this input as comments on both the proposed federal plan and model trading rule and through our engagement with a variety of stakeholders during the CPP regulatory development process.[9] This TSD is responsive to this feedback, provides additional clarity regarding the leakage requirement and highlights the optionality offered in the CPP to help states deciding on an approach to address leakage.

The steps required to meet the leakage requirement are as follows:

1. As part of the state plan submittal, the state provides a leakage approach and includes any needed analysis.
2. The EPA reviews the approach and any associated analysis as part of state plan review.
3. If the approach is approved, the state implements the approach as part of state plan implementation.
4. The state takes any steps that are needed to ensure that the approach remains in effect or that leakage is otherwise addressed.

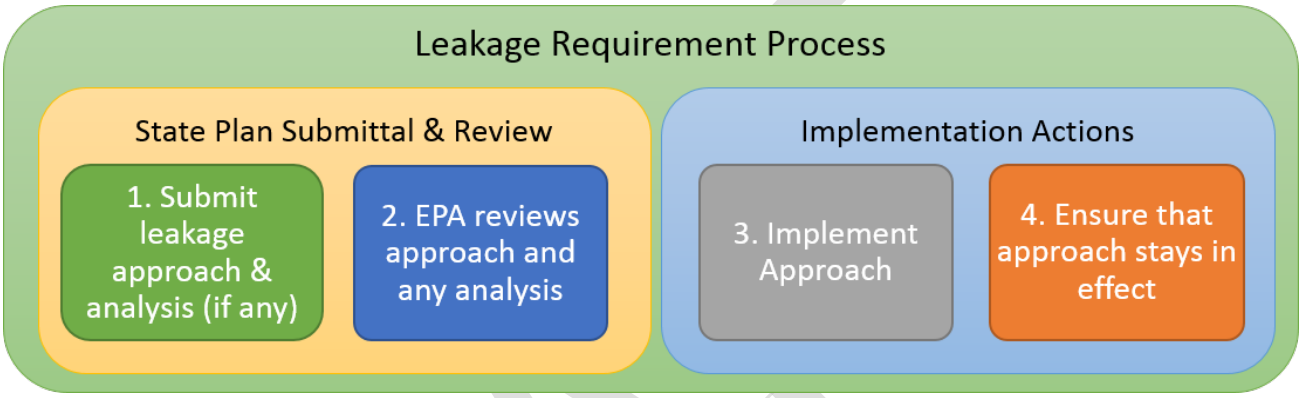
[8] 80 FR 64822. The CPP defines affected existing sources (referred to here as existing fossil fuel-fired EGUs or affected EGUs) and it states that affected EGUs must have commenced construction as of January 8, 2014 (80 FR 64715). The CPP specifies that the type of units that need to be addressed as potential sources of leakage are new fossil EGUs regulated under Clean Air Act section 111(b) (80 FR 64822, 64888). The Carbon Pollution Standards for New, Modified and Reconstructed Power Plants defined these units as any boiler, integrated gasification combined cycle (IGCC) unit, or combustion turbine (in either a simple cycle or combined cycle configuration) that commenced construction after January 8, 2014 and that meets the applicability criteria, including EGUs modified or reconstructed after that date (80 FR 64532).

[9] See, e.g., Comments from State of Iowa (coordinated departments) Docket ID Number EPA-HQ-OAR-2015-0199-0281, and Comments from Missouri Department of Natural Resources Docket ID Number EPA-HQ-OAR-2015-0199-0457.

This document provides additional information to help states understand each of these steps. We discuss the nature of the leakage concern addressed by the CPP; possible approaches that can fit a state's circumstances; example strategies for specifying and supporting a leakage approach in a state plan, including strategies for credible analysis; and example strategies to ensure that a leakage approach is in place throughout the compliance period.

Chart 1 provides a brief summary of the four-step process. A similar chart is provided for each example approach described in Section 2 that summarizes the necessary steps for each approach.

Chart 1.



1.3.1 Matching State Circumstances and Leakage Approaches

States can match their particular needs and state plan strategies with any one of a number of straightforward leakage approaches. Specifically, a state can consider which approach works best with existing circumstances and policies that may neutralize, preclude or otherwise address leakage. A leakage approach can also fit with new policy directions, such as new renewable energy (RE) and energy efficiency (EE) programs, nuclear development and, under the NSC, new fossil EGUs in emission trading. Here, we provide examples of common state circumstances and provide leakage approaches that align with those circumstances.[10]

In the CPP, the EPA provided three options for states' leakage demonstrations, which are referred to as Options 1, 2 and 3. Option 1 is the option to incorporate new fossil EGUs as a matter of state law using presumptively approvable budgets that include what is known as the NSC. Option 2 provides incentives that counter leakage through allowance allocation-based approaches. Option 3 allows a state to develop its own, custom-tailored approach. This document retains the nomenclature used to describe these three options. It provides additional detail about Options 1 and 2 and three examples of custom-tailored approaches under Option 3 that could fit a variety of state circumstances. These are referred to as Option 3 Example 1, Option 3 Example 2 and so on.

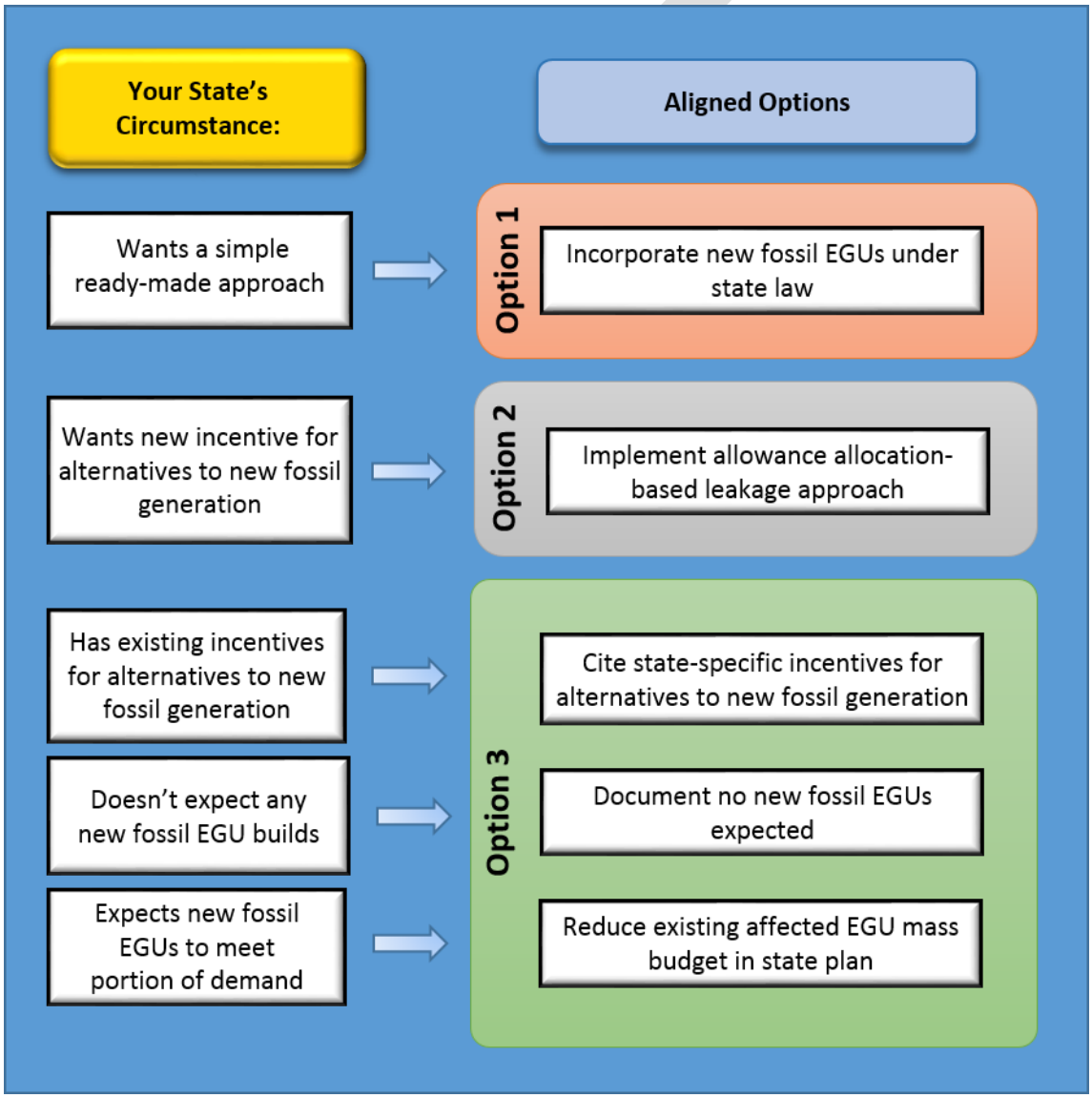
[10] Of course, states may select these particular approaches for other reasons, and states can also choose to develop other approaches. We are happy to discuss leakage approaches with states. All approaches will ultimately be subject to state plan review.

The example approaches that we provide are summarized in Chart 2 and briefly discussed below. Section 2 provides a more detailed discussion of each option.

As Chart 2 shows, these example approaches fit within the framework of the specific options provided in the CPP:

- Option 1: Incorporating new fossil EGUs as a matter of state law.
- Option 2: Allowance allocation-based approaches.
- Option 3: Custom approaches that meet a variety of state needs and circumstances.

Chart 2. State Options for Addressing Leakage



For states seeking a simple ready-made leakage approach:

Many states are seeking a predefined approach that ensures that leakage has been addressed in the state plan while also seeking certainty regarding plan approvability. The simplest, most straightforward approach, which we provide in the CPP, is including applicable new fossil EGUs in the state's mass-based emission budget trading program as a matter of state law (Option 1). If states adopt this option, then both affected EGUs and new fossil EGUs will face similar incentives to generate, and the state has ensured that leakage is addressed, assuming that the state adopts an appropriate budget and regulations to implement the trading program.

This option is made even easier because, in the CPP, we calculated and provided presumptively approvable budgets for a trading program that includes new fossil EGUs (i.e., by adding the NSC to the mass goal for a larger total budget). The mass-based state goals and the NSC were specifically calculated using relatively generous assumptions so that states that face a wide range of circumstances—including anticipated growth in demand—can feasibly use this ready-made approach. In fact, the calculations used to establish the mass-based state goals and NSCs assumed that *both* affected EGUs *and* new fossil EGUs would be used to satisfy electricity demand growth. As a result, the combined allowable emissions for both affected and new EGUs include additional allowances that build in substantial "headroom" for growth. The combined state budget is available to both existing affected and new fossil EGUs. This was responsive to comments received on the proposed CPP from states concerned about their ability to comply with the rule and incorporate new fossil EGUs in an emission-based trading program while addressing increased demand.

Additionally, we note in Section 1.2 the context in which the CPP provides a variety of pathways to emission trading, particularly mass-based trading, by way of facilitating multi-state approaches to meeting emission reduction goals. Multi-state emission trading approaches not only allow states to offer their EGUs the most cost-effective options for meeting their emission reduction obligations but they also facilitate the integration of emission compliance strategies with the overall regional operation of electricity markets, dispatch and reliability. Adoption of the NSC or similar approaches to cover new fossil EGUs can be especially valuable if states operating within the same regional system adopt them together. If states adopt them individually, they can nevertheless take into account and, if appropriate, address, the effect of the state's NSC on the multi-state markets and operating systems within which their EGUs function.

States can be assured that the adoption of budgets including the NSC that we have provided would be approvable, presuming that all other applicable state plan requirements are met, and a state does not need to provide technical analysis to support this leakage approach. Additionally, this document includes sample regulatory text that can be used to convert the final mass-based model trading rule into a trading program that incorporates new fossil EGUs with these budgets (see Appendix A). If a state adopts the larger budgets with the NSC along with the model trading rule and the regulatory text in

Appendix A, technical analysis of its plan can be further simplified. The state can be assured that this will save time in plan review.[11] We discuss Option 1 further in Section 2.1.[12]

Option 1: Incorporate New Fossil EGU under State Law

- State A uses state law to incorporate new fossil EGUs into the emission budget trading program that is reflected in its state plan submittal.
    - No analysis is needed in the state plan submittal if State A uses the model trading rule text with the rule text in Appendix A using emission budgets that include the NSC.
- The EPA reviews and approves the plan.
    - Minimal technical review is needed if the state uses the model trading rule and Appendix A rule text.
- State A implements the emission budget program that includes new fossil EGUs.

For states that want to provide a new incentive for alternatives to new fossil generation (e.g., affected EGUs or zero-emitting resources):

We have heard from states that may prefer to focus their policies on providing generation incentives to existing affected EGUs, and from states that seek additional opportunities to provide incentives to zero-emitting resources, such as EE and RE. Either or both of these preferences can be advanced by using allowance allocation-based incentives and these very same incentives can be used to address leakage (Option 2). Providing generation incentives to affected EGUs and zero-emitting resources provides a counter-incentive to shifting generation away from these resources to new fossil EGUs and, thus, addresses leakage.

Because the CPP already requires states to specify allowance allocation provisions in mass-based state plans, and the EPA has provided significant flexibility in how states structure those allocations, allocations are a ready-made tool for addressing leakage. States choosing Option 2 to address leakage can meet multiple state plan requirements via this strategy. Additionally, choosing this option means that no additional implementation action is required to address leakage because the incentive is embedded within the allowance allocations.

[11] The state does not need to provide technical analysis because (1) the budget is presumptively approvable and the EPA has already completed technical analysis in calculating the NSC to be added to state budgets (80 FR 64888); and (2) the example applicability and monitoring, recordkeeping, and reporting (MRR) requirements in Appendix A match those of the (b) and (d) rules for new fossil EGUs and affected EGUs, respectively.

[12] The state should keep in mind that the EPA will need to review and approve each state plan submission in a notice and comment rulemaking to determine whether the state's leakage approach and/or demonstration meets applicable requirements. The regulatory text provided is not considered presumptively approvable because it has not been provided for comment.

The proposed federal plan, which was issued at the same time as the proposed model trading rule, included one example of how leakage can be addressed: providing incentives through allowance allocation to both affected EGUs and zero-emitting resources. If we are ever required to develop and implement a federal plan because a state fails to submit an approvable plan and uses a mass-based approach, we will need to implement an approach within our authority, such as an allowance allocation-based leakage approach.[13] Thus, we co-proposed this allocation-based leakage approach in the proposed model trading rule as well.

In response to the proposed rules, commenters and other stakeholders provided a wide variety of potential strategies for addressing leakage through allowance allocations, and many urged us not to finalize any particular allocation-based leakage approach. Although the EPA is not finalizing an allocation-based leakage approach in the mass-based model trading rule, a state can submit its own allocation-based leakage approach for EPA review. We discuss Option 2 further in Section 2.2, and confirm that the allowance allocation-based leakage approaches offered by stakeholders can serve as a resource for states interested in this type of approach.

Option 2: Incorporate an Allowance Allocation-based Leakage Approach

- State B seeks to provide a new generation incentive for existing fossil EGU or generation/savings from zero-emitting resources, as alternatives to new fossil EGUs.
- State B specifies the following in its state plan submittal:
  - Includes in its allowance allocation provisions an allocation-based incentive to the targeted new fossil EGU alternative(s).
  - Demonstrates that the incentive is sufficient by providing a credible leakage assessment showing that these programs are projected to sufficiently address leakage. Example assessments are provided in Section 3.
- The EPA reviews the documentation and approves the plan.
- State B implements the allocation-based incentive as part of its allocation provisions.

For states that already have existing incentives for new fossil EGU alternatives (such as affected EGUs or zero-emitting resources):

Existing programs that provide incentives for affected EGUs or zero-emitting resources (e.g., EE and RE) may guard against leakage during implementation. If the state can show that its existing policies and programs provide sufficient incentive to counter leakage, this approach can be successful.[14] In this example, we have also included a back-up strategy that will ensure that leakage is addressed even if the state has run into problems implementing the programs as specified in the state plan. The back-up

[13] A federal plan can only be developed and implemented for a state if a state either failed to submit a required state plan or the EPA disapproved the state plan. See 40 CFR 60.27.

[14] If states need to supplement the programs they have on the books, they could, for example, combine an allowance allocation-based leakage approach with existing incentive programs.

strategy includes a look-back and emissions make-up mechanism that is triggered if the state is unable to resolve those problems or unable to provide a replacement approach. We provide further discussion and an example of an incentive-based approach with the specified back-up approach in Section 2.3, which focuses on Option 3 Custom Approaches.

Option 3 Example 1: Cite State-specific Incentives for Alternatives to New Fossil Generation

- State C has existing RES and EE programs that will provide sufficient zero-emitting resources to counteract leakage incentives to operate new fossil EGUs during the implementation period.
- State C provides the following in its state plan submittal:
    - Specifies that the state will address leakage by providing incentives through the state's RES and EE programs, citing the documents that define the structures and objectives of those programs.
    - Demonstrates this claim by providing a credible leakage assessment showing that these programs are projected to sufficiently address leakage. Example assessments are provided in Section 3.
    - Specifies that it will report to the EPA after each compliance period, documenting that the RES and EE programs are still being implemented as specified in the state plan. The state also commits to monitor the implementation of these programs in the interim and if the programs are not being implemented as specified, to act as expeditiously as possible to rectify the problem or submit a replacement leakage approach through a plan revision.
    - Specifies in the state plan that if the RES and EE programs are not being implemented fully and effectively as specified in the state plan and the state does not fix or replace the approach, the state will be subject to a leakage look-back/make-up after each compliance period that estimates the amount of emissions attributable to leakage that have occurred, and adjusts a future budget downward by the estimated amount of leakage-related emissions. See Section 1.3.2 for a discussion on the reporting and look-back/make-up example strategy.
- The EPA reviews the documentation and approves the plan.
- State C reports to the EPA on the status of the RES and EE programs after every compliance period.
- If the RES and EE programs are not being implemented fully and effectively as specified in the state plan, the state implements the look-back/make-up as outlined in the state plan.

For states that are not building new fossil EGUs:

In many states, no new fossil EGUs exist or are expected to be built. Thus, by definition, leakage will not occur within the state.[15] Section 2.3.2 provides suggestions for how states can document such an approach in their state plans and a strategy using reporting with a look-back and emissions make-up mechanism that will ensure that leakage is addressed if an entity within the state does decide to build a new fossil EGU.

Option 3 Example 2: Document that No New Fossil EGUs are Expected

- State D determines that it does not expect any applicable new fossil EGUs to be built within its borders.
- State D provides the following as supporting documentation of this leakage approach as part of its state plan submittal:
  - An inventory of its fossil fuel fleet with no new fossil units, as defined under the CPP.
  - Documentation that no construction or operating permits for new fossil EGUs have been issued.
  - Existing data demonstrating that no new fossil EGUs are expected to be built in the state, including information from utility integrated resource plans (IRPs) or databases that track potential new builds.
  - Specifies that it will report to the EPA after each compliance period. State D specifies the documentation it will use to show that no new fossil EGUs are operating or planned. The state also commits to expeditiously submit a replacement leakage approach through a plan revision if a new fossil EGU is expected to be built.
  - Specifies that if a new fossil EGU is planned or built and the state does not provide a replacement approach, the state will be subject to a leakage look-back/make-up after each compliance period that estimates the amount of emissions attributable to leakage that have occurred and adjusts a future budget downward by the estimated amount of leakage-related emissions. See Section 1.3.2 for a discussion on the reporting and look-back/make-up example strategy.
- The EPA reviews the documentation and approves the plan.
- State D reports to the EPA on whether there are any new fossil EGUs operating or planned after every compliance period.
- If a new fossil EGU is planned or begins to operate, State D provides a replacement approach through a plan revision or implements the look-back/make-up as outlined in the state plan.

[15] New fossil fuel-fired EGUs (also referred to here as "new fossil EGUs") are defined as those which that commenced construction after January 8, 2014, including EGUs modified or reconstructed after that date. See 80 FR 64532.

For states that are not planning to pursue alternatives to new fossil EGUs: Some states may choose not to pursue alternatives to new fossil EGUs under a mass-based trading program. An Option 3 approach consistent with this preference involves a state simply reducing its mass budget for existing affected EGUs. Improving the emissions performance of affected EGUs operating under a lower mass budget could successfully compensate for the increase in new fossil EGU emissions resulting from leakage. The feasibility of this approach is facilitated indirectly by the fact that in each state's CPP mass goal calculation, additional RE—beyond what is necessary to achieve the emission performance rates—was included to provide affected EGUs with the flexibility to increase utilization (refer to Section 3 for a more detailed discussion of this point). We discuss this option further in Section 2.3.3.

Option 3 Example 3: Reduce the Existing Affected EGU Mass Budget in the State Plan

- State E is not planning to pursue alternatives to new fossil EGUs, such as increased generation from affected EGUs and expanded zero-emitting resources.
- State E includes the following as part of its state plan submittal:
  - Specifies the lower mass budget that the state will be required to meet in each compliance period.
  - Supports this budget with credible projections of the expected leakage or recalculation of the mass budget based on the mass goal calculation with reduced assumptions for affected EGU and zero-emitting generation (see discussion in Section 2.3.3).
  - Specifies that, after each compliance period, the state will report to the EPA with an evaluation of its original budget recalculation method and whether it served to compensate for any estimated amount of leakage-related emissions. The state commits to submit a plan revision with a revised calculation method if the evaluation shows that the method was insufficient.
  - Specifies that, if the calculated budget insufficiently compensates for leakage, the state will complete a leakage look-back/make-up for the previous compliance period to estimate the amount of emissions attributable to leakage that have occurred, and additionally adjust a future budget downward by the estimated amount of leakage-related emissions. See Section 1.3.2 for a discussion on the reporting and look-back/make-up example strategy.
- The EPA reviews the documentation and approves the plan.
- State E implements the emission budget trading program with the reduced mass budgets. State E implements reporting as outlined in the state plan and a look-back/make-up as needed.

1.3.2 Key Considerations for Choosing a Leakage Approach

The following are key considerations for states selecting a leakage approach.

Will the state need to provide a quantitative analysis in its state plan to demonstrate the approach? Several of the approaches described in this document do not require the state to develop quantitative analysis supporting its approach.

- If a state uses the presumptively approvable budgets that include the NSC, it does not need to provide any sort of demonstration.
- If a state intends to demonstrate that is it not expecting new fossil EGUs to be built in the state, it can use existing data to document this claim. Because they do not need to submit a quantitative analysis under these approaches, states can spend less time and fewer resources on state plan development and the EPA's technical review is likely to be simpler.

For approaches that do require quantitative analysis, Section 3 of this document addresses how a state can quantitatively demonstrate that its leakage approach is sufficient. Section 3 also highlights key considerations for such an analysis and provides two examples of relatively simple analytical assessments for leakage.

These assessment examples are as follows:

- *New fossil emissions assessment*: The state assesses leakage based upon the emissions from new fossil EGUs.
- *Generation assessment*: The state assesses leakage based upon the generation level and savings from affected EGUs and zero-emitting resources (including savings from demand-side EE measures), assuming that sufficient generation and savings from these resources would prevent leakage to new fossil EGUs.

Will the approach require substantive EPA technical review? If a state chooses to include new fossil EGUs in its emission trading program using the EPA-calculated budgets that include the NSC, particularly with the model trading rule and sample regulatory text provided in this document, the EPA anticipates that the state leakage approach will not require more than minimal substantive technical review by the EPA. All other approaches require some technical review of the supporting documentation for the leakage approach, such as non-quantitative documentation or quantitative analysis. Below, we suggest methods and assessments that can simplify this technical review.

Can the state ensure that the state leakage approach stays in effect? It is important that the state plan ensure that leakage is addressed throughout all compliance periods. Some approaches are more likely to remain in effect during all compliance periods, including the inclusion of new fossil EGUs in the emission budget trading program (Option 1), allowance allocation-based approaches (Option 2) and the Option 3 Example 3 approach that adjusts the mass budget. This is mainly because these approaches are partially or entirely codified within the state plan. We provide two examples of Option 3 approaches that may be less likely to remain in effect because they are not codified in the state plan: Option 3 Example 1 (Cite state-specific incentives for alternatives to new fossil generation) and Option 3 Example 2 (Document that no new fossil EGUs are expected). To address this, these examples include a commitment by the

state to take expeditious action to repair any problems that arise with their approach or replace the approach using a plan revision. In case the state does not take action to repair or replace the approach, we also include an automatic back-up strategy that consists of a reporting mechanism and a look-back evaluation and emissions make-up mechanism for leakage. This back-up strategy is described below.

Regarding Option 3 Example 3 (Reduce the existing affected EGU mass budget in the state plan), we also include a back-up strategy in our example. This ensures that the method by which the state estimated a reduction in its budget to compensate for leakage-related emissions is actually doing so. In our example, if the state finds that the method has not compensated for leakage-related emissions at the end of a compliance period, the state is obligated to both revise its methodology as warranted and adjust a future budget further downward by the estimated amount of leakage-related emissions through a look-back/make-up.

For all the leakage approaches that we provide in this document, it is also useful to keep in mind the importance of ongoing evaluation by the state regarding plan performance and implementation. Established emission budget trading programs, such as RGGI and California's AB32 trading program, have implemented periodic evaluation and program adjustments to address changing circumstances. In light of those models, we reasonably expect that state emissions budget programs similarly will include periodic evaluations and look-backs at program effectiveness, and mechanisms to address any concerns with plan performance or implementation, including the effectiveness of their leakage approach. More specific steps for periodic evaluation are included in examples for state-designed approaches described later in this document in Option 3.

Reporting and Look-Back/Make-up Example Strategy

- **Reporting**: The state reports to the EPA after each compliance period that its approved leakage approach remains in effect as specified in the state plan submittal. The state should also report any problems with the approach that have been expeditiously addressed during the compliance period, as the state committed to do in their state plan submittal.
- **Look-back/Make-up:** The state specifies in its state plan a look-back and emissions make-up mechanism that will be triggered if the state ceases to implement its approved leakage approach fully and effectively and does not act to expeditiously repair or replace it. If the state continues to implement its leakage approach, it is not subject to the look-back/make-up.
    - Example: The state commits to be subject to a leakage look-back and make-up mechanism after each compliance period. At the end of each compliance period, the state estimates the amount of emissions attributable to leakage that have occurred (the look-back) and adjusts a future budget downward by the estimated amount of leakage-related emissions (the make-up).

2 State Plan Approaches to Address Potential Leakage

This section provides a more detailed discussion of approaches that states can use to address potential leakage as defined in the CPP.[16] The discussion is organized according to the three approach options outlined in the CPP:

- **Option 1:** Including new fossil EGUs in the mass-based emission budget trading program as a matter of state law. The state can use budgets provided by the EPA that include the NSC.
- **Option 2:** Using allowance allocation-based incentives to counteract leakage to new fossil EGUs.
- **Option 3:** Other custom approaches that fit different states' circumstances.

2.1 Incorporate New Fossil EGUs under State Law (Option1)

The CPP provided this first option as a clear, streamlined path for states to address leakage. Under this path, the state, using the NSC-formulated emissions levels set forth in the CPP for the state, incorporates new fossil EGUs under the same emission budget trading program as that used for affected EGUs as a matter of state law or regulation. [17,18,19]

To further simplify the adoption of this approach, the final CPP provided a ready-made approach by providing presumptively approvable state emission budgets that include additional allowances with the total allowance pool available to both affected EGUs and new fossil EGUs. These CO_2 emission budgets consist of the state's mass-based goal for affected EGUs plus additional allowances referred to as the NSC. Under this plan approach, the entire emission budget is available to all EGUs subject to the program, and both existing and new fossil EGUs have access to all allowances.[20]

Stakeholders requested that the EPA provide regulatory text implementing the presumptively approvable emission budgets, along with necessary applicability and reporting requirements. Appendix A provides sample regulatory text changes to the model trading rule that convert it to a program incorporating both affected existing and new fossil EGUs. The EPA is not providing this text as part of the

[16] 80 FR 64887-64890; 40 CFR 60.5790(b)(5).
[17] Under such a plan approach, both existing and new fossil EGUs must surrender CO_2 allowances equal to the reported CO_2 emissions.
[18] The CPP specifies that the type of units that need to be addressed as potential leakage sources are new fossil EGUs regulated under Clean Air Act section 111(b) (80 FR 64822, 64888).
[19] We acknowledge that there are other mechanisms aside from the incorporation of new fossil EGUs that a state could use to address leakage by aligning the carbon signals facing new and existing fossil fuel-fired EGUs. Any approaches that utilize other mechanisms would be considered under Option 3 and may need to be paired with a quantitative assessment to demonstrate that they sufficiently address leakage. One straightforward example is requiring new fossil EGUs to pay a per-ton fee on CO_2 emissions equal to the prevailing allowance price faced by existing fossil EGUs. We note that, for such a fee policy, it may be advisable to include a fee floor to ensure that leakage does not serve to lower the allowance price and, subsequently, the fee thereby potentially rendering the fee ineffective. The EPA encourages states interested in such approaches to consult with the Agency during the development of their state plans to discuss the adequacy and demonstration of the approach of interest.
[20] A state also has the option to calculate its own alternative NSC, but it must provide analytical support for its alternate NSC as part of its state plan submittal. Additionally, the state would then be subject to different state reporting requirements. (80 FR 64889).

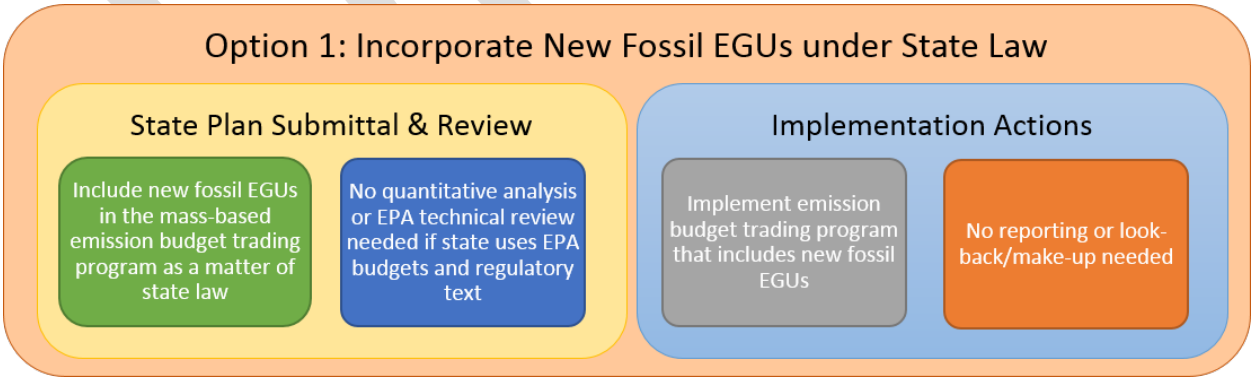
final mass-based model trading rule, which only applies to affected EGUs. Although the rule language is not considered "presumptively approvable" as a matter of federal law, if a state uses this text along with the model trading rule, the state plan review process will be simplified because minimal technical analysis is needed. Some states can further streamline this process by incorporating this regulatory text by reference, if allowed by state law.

States may find that it is particularly useful to adopt this approach together with other states operating within the same regional system. This can help to facilitate compliance and provide aligned signals to existing and new fossil EGUs across a region. Whether a state is implementing this approach individually or along with other states, it is likely that the state should, by customary practice, coordinate with any existing regional system operators or other authorities. This can enable coordinated operation across utility service territories, regional electricity markets and other regional efforts.

This approach does not include reporting with a look-back and emissions make-up mechanism because inclusion of new fossil EGUs as a matter of state law is integral to the successful implementation of the emission trading program as outlined in the state plan.

Option 1: Incorporate New Fossil EGUs under State Law

- State A uses state law to incorporate new fossil EGUs into the emission budget trading program reflected in its state plan submittal.
  - No analysis is needed in the state plan if State A uses the model trading rule text with the rule text in Appendix A using emission budgets that include the NSC.
- The EPA reviews and approves the plan.
  - Minimal technical review is needed if the state uses the model trading rule and Appendix A rule text.
- State A implements the emission budget program that includes new fossil EGUs.



2.2 Implement Allowance Allocation-based Leakage Approaches (Option 2)

The CPP specified that states can use allowance allocation-based approaches to address leakage. A state can use an allocation method for some or all of its allowances to provide a countervailing incentive to

the potential generation shifts from affected EGUs to new fossil EGUs. The allocation strategy must be submitted as part of the allocation provisions for the mass-based emission trading program required to be included in the state plan.[21]

This option reflects the EPA's recognition that states have wide discretion to determine the allocation approaches that best suit the policy, environmental and equity considerations unique to each state.[22] States also have significant discretion to design allocation-based approaches to mitigate leakage. The CPP did not specify any allocation approach that must be used. States can choose the target(s) of the allocation incentive, the methods of allocation and the portion of the emission budget used for this purpose.

Option 2: Incorporate an Allowance Allocation-based Leakage Approach

- State B seeks to provide a new generation incentive for existing fossil EGU or generation/savings from zero-emitting resources, as alternatives to new fossil EGUs.
- State B specifies the following in its state plan submittal:
  - Includes in its allowance allocation provisions an allocation-based incentive to the targeted new fossil EGU alternative(s).
  - Demonstrates that the incentive is sufficient by providing a credible leakage assessment showing that these programs are projected to sufficiently address leakage. Example assessments are provided in Section 3.
- The EPA reviews the documentation and approves the plan.
- State B implements the allocation-based incentive as part of its allocation provisions.

Some existing state-level emission trading programs use allowance allocations (or the proceeds of auctions) to provide dedicated funding for a wide variety of programs, such as demand-side EE programs, RE programs and low-income ratepayer support.[23] These approaches result in deployment of more clean energy, decreased electric demand and a reduced likelihood of new fossil EGUs being deployed to replace generation from affected EGUs. [24]

An allowance allocation approach to address leakage was included in the proposed federal plan and model trading rule (as opposed to the NSC), in part because it was within the EPA's authority, which, unlike that of states, is limited under section 111(d) and the CPP to affected EGUs, when implementing a

[21] 80 FR 64889-64890 and 40 CFR 60.5815.
[22] 80 FR 65015.
[23] See Regional Greenhouse Gas Initiative, "Investment of RGGI Proceeds Through 2013" (April 2015), available at http://rggi.org/docs/ProceedsReport/Investment-RGGI-Proceeds-Through-2013.pdf.
[24] Stakeholders have offered a variety of resources that discuss allocations generally, including the use of set-asides. For example, see, Franz Litz and Brian Murray, "Mass-Based Trading under the Clean Power Plan: Options for Allowance Allocation" (Nicholas Institute at Duke University, March, 2016), available at https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_16-04_0.pdf.

federal plan. As discussed in the final model trading rule, after considering comments, the EPA has decided not to finalize a presumptively approvable allowance allocation-based leakage approach in the mass-based model trading rule. The model trading rule preamble provides a more detailed discussion of the rationale underlying that decision and more information on the proposed federal plan.[25]

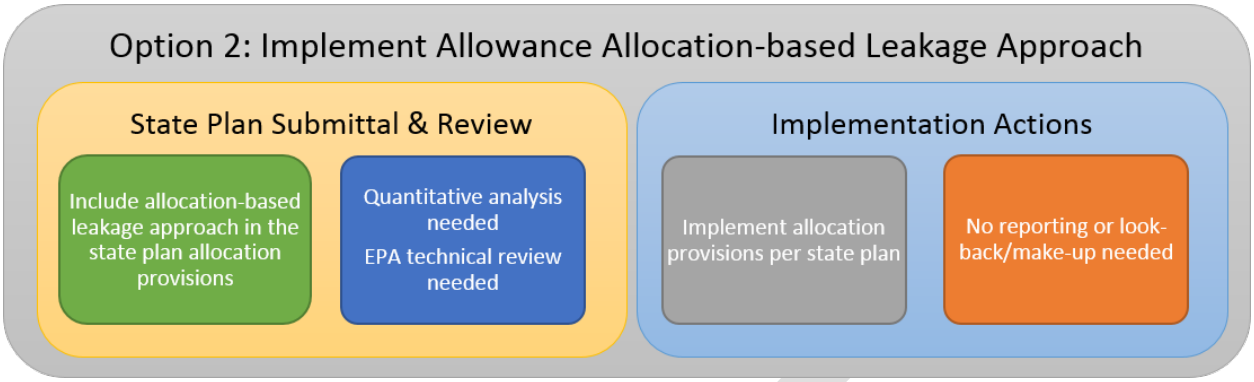
Stakeholders provided many examples of allowance allocation-based approaches for addressing leakage, beyond those in the proposed federal plan and model trading rule. For instance, many different ideas for allocation-based approaches to address leakage, such as through allocations to cleaner generation and EE, were offered in comments on the model trading rule proposal as alternatives to the proposed approach. Furthermore, a number of organizations have convened workshops with states and published papers and analyses on CPP state plan design, including allowance allocation approaches for mass-based plans, and provided multiple overviews and studies of different allocation approaches. As a result, a wealth of information and analyses of different allocation approaches are available for use by states designing allocation methods to be included in state plans that use the mass-based model trading rule. These types of information and analysis could be used to support a state plan that employs allocation approaches to demonstrate adequate leakage mitigation. For more information on allowance allocation in general, see the model trading rule preamble.[26]

Allowance allocation-based leakage approaches can also affect incentives across state borders. In particular, they potentially impact the incentive to import generation from other states. The EPA expects that states adopting this type of approach will want to coordinate with other states and regional system operators. This can be an opportunity for states to adopt similar approaches and align incentives, or simply discuss how an individual state approach may interact and affect interstate dynamics.

The approach should include specified evaluation, measurement and verification (EM&V) requirements only to the extent that they are needed to enable the effective delivery of zero-emitting resources. The EM&V does not need to meet the standards applied to rate-based ERC issuance if doing so is not necessary to implement an effective incentive. Although we are not providing further examples of allocation-based approaches that could meet the CPP leakage requirement, this document provides methods of assessing the effectiveness of an allocation-based approach to address potential leakage. This can be achieved using the quantitative assessments provided in Section 3 of this document. States need to provide credible analysis to support any allowance allocation-based leakage approach, as discussed in the CPP.

This approach does not need a reporting and look-back/make-up example strategy because the allocation-based leakage approach will be codified in the state plan allocation provisions.

[25] See section IV.G.
[26] See section IV.F.



2.3 Other Custom Approaches (Option 3)

The CPP specifies a third option for leakage approaches: A state can adopt a leakage approach tailored to its particular situation using mechanisms other than the incorporation of new fossil EGUs in the program or the use of allowance allocations.[27] The CPP states that these approaches must be supported by credible analysis showing that the approach sufficiently addresses leakage.

Since the rule was finalized, we have received requests for more information on Option 3 and ideas for different types of custom approaches. Other topics of interest include the nature of the credible analysis required and how a state can demonstrate in its plan the effectiveness of a custom approach using mechanisms other than those in Options 1 and 2. In response to these questions and comments, this section discusses considerations for Option 3 approaches and provides examples of such approaches. Section 3 presents examples of how states can demonstrate that these approaches are sufficient to meet the CPP requirements. Many of these approaches are ideas suggested by stakeholders.

Key Considerations for Custom Approaches

We included Option 3 in the CPP to offer states the flexibility to develop a leakage approach that suits their particular needs, expectations, existing state policy, and state plan components. The following considerations can help highlight appropriate state characteristics and policies to consider for choosing a suitable leakage approach:

- The nature of the current and projected generating fleet in the state.
- The projected total and peak electricity demands.
- Relevant existing and potential state policies and actions that could counter generation shifts to new fossil EGUs.
- Ways to ensure that the mechanism(s) specified by the state to address leakage will be in effect throughout the implementation period.

Consider that communication and coordination with other states regarding custom leakage approaches can facilitate their effectiveness. In a number of cases, it may be that states are compelled by customary practice to coordinate with any existing regional system operators or other authorities. States can also

[27] 80 FR 64888; 40 CFR 60.5790(b)(5)(iii).

use regional coordination as an opportunity to share ideas for custom state approaches and associated analytical demonstrations. States can adopt a single custom leakage approach together or simply engage in cooperative evaluation of the effectiveness of various approaches and the impact of individual state approaches on interstate dynamics. A variety of venues are available for such coordination, and the EPA encourages regional communication and cooperation through existing regional venues.

Ensuring Leakage is Addressed

As mentioned above, one key consideration is the uncertainty regarding whether the mechanism(s) addressing leakage will be in effect throughout the implementation period because there is a possibility that certain measures may not remain in effect for a variety of reasons. This is particularly applicable to Option 3 Examples 1 and 2, as described below. We also discuss how to address uncertainty regarding whether a method for reducing a mass budget sufficiently compensates for leakage-related emissions. This is applicable to Option 3 Example 3.

If the state is citing incentives to alternatives to new fossil EGUs (Option 3 Example 1), it is possible that the specified policies and programs could be repealed, changed, or not meet the original objectives specified in the state plan submittal. To guard against this affecting the state's capacity to address leakage, our example includes a commitment by the state to monitor the implementation of these programs and if the programs are not being implemented as specified, to act as expeditiously as possible (e.g., within the year) to rectify the problem or submit a replacement leakage approach through a plan revision.

If the state is documenting that no new fossil EGUs are expected (Option 3 Example 2), the approach would no longer be in effect if a new fossil EGU is built in the state. In that case, we specify in our example that the state commits to expeditiously specify a new leakage approach through a plan revision.

In case the state is unable or unwilling to promptly address an ineffective leakage approach, we recommend including an automatic back-up strategy as part of the state plan submittal to ensure that leakage continues to be addressed. In the following examples, we include as part of each approach a reporting mechanism to demonstrate that the leakage approach is still in effect and a look-back/make-up that would automatically obligate the state to address leakage if the initial leakage approach is no longer effective and the state has not acted to repair or replace it. Reporting combined with a look-back/make-up can ensure that an approved state plan continues to meet the leakage requirement.

Regarding Option 3 Example 3 (Reduce the existing affected EGU mass budget in the state plan), we also include a back-up strategy in our example. This ensures that the method by which the state estimated a reduction in its budget to compensate for leakage-related emissions is actually doing so. In our example, if the state finds that the method has not compensated for leakage-related emissions at the end of a compliance period, the state is obligated to both revise its methodology as warranted and adjust a future budget further downward by the estimated amount of leakage-related emissions, through a look-back/make-up.

We include the following two-step process in our examples:

Reporting and Look-Back/Make-up Example Strategy

- **Reporting**: The state reports to the EPA after each compliance period that its approved leakage approach remains in effect as specified in the state plan submittal. The state should also report any problems with the approach that have been expeditiously addressed during the compliance period, as the state committed to do in their state plan submittal.
- **Look-back/Make-up:** The state specifies in its state plan a look-back and emissions make-up mechanism that will be triggered if the state ceases to implement its approved leakage approach fully and effectively and does not act to expeditiously repair or replace it. If the state continues to implement its leakage approach, it is not subject to the look-back/make-up.
    - Example: The state commits to be subject to a leakage look-back and make-up mechanism after each compliance period. At the end of each compliance period, the state estimates the amount of emissions attributable to leakage that have occurred (the look-back) and adjusts a future budget downward by the estimated amount of leakage-related emissions (the make-up).

In the discussions of example approaches below, we note when reporting with a look-back/make-up would be applicable.

2.3.1 Example 1: Cite State-specific Incentives for Alternatives to New Fossil EGU Generation

The risk of leakage lies in the incentive under a mass-based emission trading program limited to existing affected EGUs to produce replacement generation from new fossil EGUs instead of other existing affected EGUs or new zero-emitting resources, such as EE and RE to a greater degree than would be achievable under a rate-based program. The state can implement policies and programs that counteract the leakage risk by requiring the delivery of or providing incentives for new incremental zero-emitting generation, new incremental energy savings through EE, or lower-emitting existing affected fossil fuel-fired EGUs. These types of policies and programs address leakage by ensuring that these resources are available to replace higher-emitting affected EGU generation in place of new fossil EGUs. A state could cite multiple mechanisms in its state plan to address leakage in this manner.[28]

[28] Allowance allocation-based approaches (Option 2) represent one way of providing these type of incentives. A state could use an allowance allocation-based approach exclusively under Option 2, or complement other programs, such as RE standards or demand-side EE programs, with an allowance allocation incentive as part of a portfolio of actions to address leakage under Option 3.

Example mechanisms:

- RE policies, programs and measures such as RE standards, and incentives, such as performance-based incentives and clean energy funds (including the allowance allocation-based incentives described under Option 2 above).
- EE policies, programs and measures, such as EE resource standards, demand-side EE programs, building energy codes, state appliance standards (that are more stringent than existing federal appliance standards) and incentives and finance mechanisms for EE (including allowance allocation-based incentives).
- Incentives for new nuclear plants or incremental nuclear uprates.
- Incentives for existing affected fossil fuel-fired EGU generation: The primary approach offered by stakeholders is allowance allocation-based incentives (Option 2), but states may use other mechanisms in their state plans.

States generally adopt EE and RE policies and programs to meet a variety of policy objectives including contributing to reductions in air pollutant emissions, meeting electricity service needs cost-effectively, and ensuring reliable and affordable electric service to all customers. Addressing leakage can be an additional benefit of adopting and maintaining these types of initiatives. However, the EPA realizes that states may experience challenges in the implementation of EE and RE programs that can affect the state's capacity to address leakage because the programs are not realizing the projected generation/ savings levels cited in the state plan submittal. The policies and programs identified in the state's leakage approach may be revised or repealed, the policies and programs could expire during the compliance horizon of the CPP, or the state could fail to realize projected impacts for a variety of reasons (e.g., insufficient funding or underperformance). As discussed above, the state needs to ensure that, should such circumstances arise, the state is aware of the problem and takes rapid action to make sure that leakage is still being addressed through other means as soon as possible.

We expect that there are or will be cases in which existing or future state RE and EE programs will incorporate options for participating in or complying with such programs that include interstate or regional investments where interconnected multi-state operations, generation and demand warrant such options. States operating in those circumstances would by no means be barred from demonstrating that such programs could be adapted to address CPP-specific leakage. In fact, the value of such programs is precisely that they are already designed or could be designed to reflect the actual region-level operations of the electricity system and the resulting effects on emissions. At the same time, for the purposes of states seeking to develop truly robust and credible mass-based programs covering only existing EGUs while relying on allied RE and EE programs to address or neutralize generation-shifting incentives that could undercut the emissions reduction goals of the program, taking account of and addressing generation-shifting to new fossil EGUs across state borders would serve those states well by confirming the credibility of their leakage strategies.

We know that the other policy objectives advanced by these programs and unrelated to leakage give states compelling reasons to quickly rectify problems that keep programs from realizing projected renewable generation or energy savings levels. However, to ensure that the state continues to

Option 3 Example 1: Cite State-specific Incentives for Alternatives to New Fossil Generation

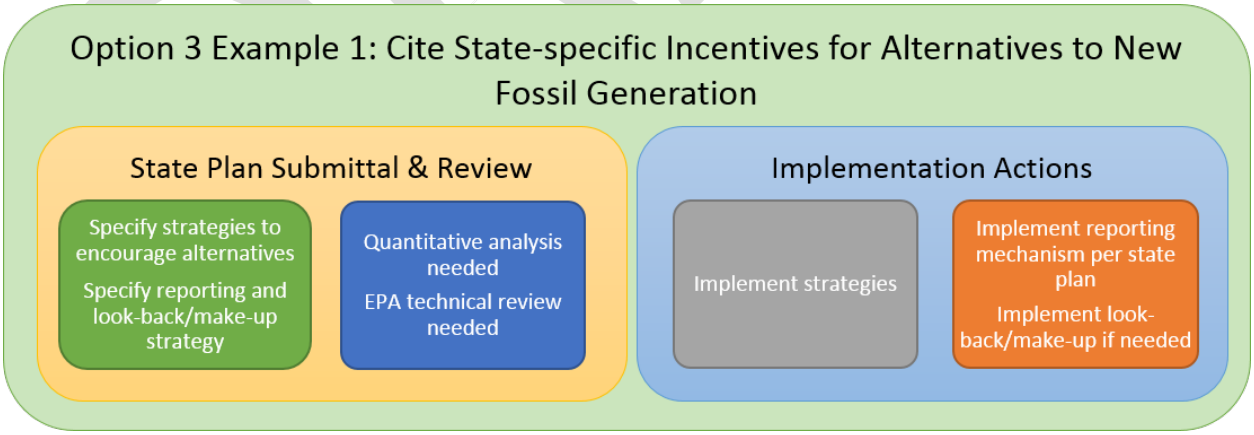
- State C has existing RES and EE programs that will provide sufficient zero-emitting resources to counteract leakage incentives to operate new fossil EGUs during the implementation period.
- State C provides the following in its state plan submittal:
  - Specifies that the state will address leakage by providing incentives through the state's RES and EE programs, citing the documents that define the structures and objectives of those programs.
  - Demonstrates this claim by providing a credible leakage assessment showing that these programs are projected to sufficiently address leakage. Example assessments are provided in Section 3.
  - Specifies that it will report to the EPA after each compliance period, documenting that the RES and EE programs are still being implemented as specified in the state plan. The state also commits to monitor the implementation of these programs in the interim and if the programs are not being implemented as specified, to act as expeditiously as possible to rectify the problem or submit a replacement leakage approach through a plan revision.
  - Specifies in the state plan that if the RES and EE programs are not being implemented fully and effectively as specified in the state plan and the state does not fix or replace the approach, the state will be subject to a leakage look-back/make-up after each compliance period that estimates the amount of emissions attributable to leakage that have occurred, and adjusts a future budget downward by the estimated amount of leakage-related emissions. See Section 1.3.2 for a discussion on the reporting and look-back/make-up example strategy.
- The EPA reviews the documentation and approves the plan.
- State C reports to the EPA on the status of the RES and EE programs after every compliance period.
- If the RES and EE programs are not being implemented fully and effectively as specified in the state plan, the state implements the look-back/make-up as outlined in the state plan.

sufficiently address leakage, we are specifying in our example that the state will commit in the state plan submittal to monitor the implementation of policies and programs cited as part of a leakage approach, and if a material change occurs that will specifically decrease their effectiveness, the state will either

resolve the problem promptly (e.g., in that same year) or identify and implement a replacement approach as expeditiously as possible and provide it to the EPA in a plan revision. Additionally, in our example, if the state does not take action expeditiously, it will be subject to the reporting and look-back/make-up example strategy discussed above. The reporting and look-back/make-up will ensure that any leakage that is estimated to have occurred during the previous compliance period will be compensated for with a downward adjustment of a future emission budget by the amount of leakage-related emissions.

Key considerations for this example are as follows:

- Under this example approach, the state would implement the mechanism(s) addressing leakage throughout the implementation period.
- Under this example approach, the state is only subject to the look-back/make-up if it reports to the EPA that it has stopped implementing the mechanism(s) encouraging alternatives to new fossil EGUs as specified in the leakage approach in the state plan submittal, and it has not taken prompt action to repair or replace the approach in the interim.
- If the look-back/make-up remedy has been triggered, it will continue to be used for each subsequent compliance period. If the state submits a plan revision with a replacement leakage approach that is approved by the EPA, it will then be subject to the replacement leakage approach.
- The key considerations for RE and EE programs are as follows:
    - The mechanism(s) should include specified EM&V requirements only to the extent that they are needed to enable the effective delivery of zero-emitting resources. The EM&V does not need to meet the standards applied to rate-based ERC issuance if doing so is not necessary to achieve delivery of zero-emitting resources.
    - For RE or EE standards, states should consider the role of alternative compliance payments (or other means to ensure compliance) in their policy and whether such means affect the extent to which the standard can counteract leakage.



2.3.2 Example 2: Document No New Fossil EGUs Expected

The CPP specifies that the type of units that need to be addressed as potential sources of leakage are new fossil EGUs regulated under Clean Air Act section 111(b) within the state in question.[29] In this example approach, the state would need to show in its state plan that such units have not been built

Option 3 Example 2: Document that No New Fossil EGUs are Expected

- State D determines that it does not expect any applicable new fossil EGUs to be built within its borders.
- State D provides the following as supporting documentation of this leakage approach as part of its state plan submittal:
    - An inventory of its fossil fuel fleet with no new fossil units, as defined under the CPP.
    - Documentation that no construction or operating permits for new fossil EGUs have been issued.
    - Existing data demonstrating that no new fossil EGUs are expected to be built in the state, including information from utility integrated resource plans (IRPs) or databases that track potential new builds.
    - Specifies that it will report to the EPA after each compliance period. State D specifies the documentation it will use to show that no new fossil EGUs are operating or planned. The state also commits to expeditiously submit a replacement leakage approach through a plan revision if a new fossil EGU is expected to be built.
    - Specifies that if a new fossil EGU is planned or built and the state does not provide a replacement approach, the state will be subject to a leakage look-back/make-up after each compliance period that estimates the amount of emissions attributable to leakage that have occurred and adjusts a future budget downward by the estimated amount of leakage-related emissions. See Section 1.3.2 for a discussion on the reporting and look-back/make-up example strategy.
- The EPA reviews the documentation and approves the plan.
- State D reports to the EPA on whether there are any new fossil EGUs operating or planned after every compliance period.
- If a new fossil EGU is planned or begins to operate, State D provides a replacement approach through a plan revision or implements the look-back/make-up as outlined in the state plan.

[29] The CPP states that affected existing fossil fuel-fired EGUs must have commenced construction on or before January 8, 2014 (80 FR 64715). The CPP specifies that the type of units that need to be addressed as potential sources of leakage are new fossil EGUs regulated under Clean Air Act section 111(b), which must have commenced construction after January 8, 2014, including EGUs modified or reconstructed after that date (80 FR 64822, 64888 and 80 FR 64532).

and are not expected to be built during the implementation period. This negates the possibility that leakage as it is defined in the CPP will occur.

This example approach provides an opportunity to create a relatively simple state plan demonstration. If a state is seeking to demonstrate that leakage cannot occur because no new fossil EGUs are expected, it could do so using existing data and documentation without developing a new quantitative assessment of potential leakage. The following are examples of the strategies and data sources a state could use to show that it does not expect to build any new fossil EGUs:

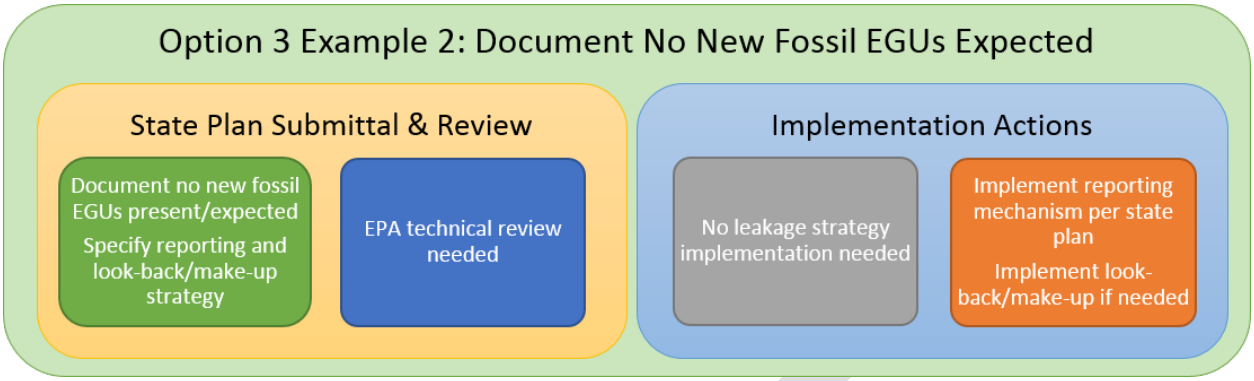
- Document that no new fossil EGUs have been built in the state, as defined by the CPP, based on an inventory of fossil generators in the state.
- Document that no new fossil EGUs are planned in the state. This can be based on documentation that no construction or operating permits have been issued for new fossil EGUs in the state.
- Document that no new fossil EGUs are expected to be built in the state. For example, information from utility integrated resource plans (IRPs), databases that track new builds, and third party new fossil EGU build projections under CPP implementation could all be used for this purpose.

Because the construction of an applicable new fossil EGU would mean that the state could no longer demonstrate that leakage is not occurring under this approach, this is an example of an approach that would benefit from reporting and look-back/make-up example strategy to ensure that the state plan continues to address leakage even if a new unit is built.

Key considerations for this example approach are as follows:

- The state would not need to prohibit or limit the construction of new fossil EGUs regulated under section 111(b).
- The state needs to establish and implement a reporting mechanism only to notify the EPA whether new fossil EGUs have been or are planned to be built.
- The state does not have to submit any quantitative analysis of leakage in its state plan or as part of reporting. However, it does need to specify a method of estimating leakage it will use in a look-back/make-up to address any leakage that occurs if the state builds a new fossil EGU.
- In our example, the state would only be subject to the look-back/make-up if it reports to the EPA that new fossil EGUs will be built or are operating.
- If the look-back/make-up has been triggered, it will continue to be used for each subsequent compliance period.
- A state can avoid the look-back/make-up if it submits a plan revision with an adequate replacement leakage approach.

Here states could also be guided as much by their own commitment to achieving genuine net emission reductions as by the express requirements of the CPP. States considering this option should not ignore the possibility that generation from affected EGUs could shift not to in-state new fossil EGUs, but to new fossil EGUs in a nearby state. We expect a state considering this type of approach will want to discuss the potential implications for regional planning with neighboring states and/or a regional planning organization.



2.3.3 Example 3: Reduce Existing Affected EGU Mass Budget in the State Plan

A state could address leakage proactively in its state plan by voluntarily taking a reduced emission budget for affected EGUs, such that projected leakage during each of the compliance periods is less than or equal to the amount by which the state voluntarily reduced its mass CO_2 budget for affected EGUs. This reduction to the emission budget for affected EGUs can be based upon an estimation of leakage-related emissions, or be based on an adjustment of the assumed amount of zero-emitting generation in the mass-based goal calculation that provided "headroom" for meeting increased demand.

This approach seeks to pair any CO_2 emissions attributable to leakage with a reduction in the allowable CO_2 emissions from affected EGUs. This approach may be attractive to states that do not expect to pursue alternatives to new fossil EGUs. It ensures that emissions due to leakage are addressed, but rather than doing so by regulating new fossil EGUs, it ensures reductions equivalent to projected leakage are made at existing fossil EGUs. The state plan would need to identify the lower mass budget for each compliance period and demonstrate through credible analysis that the lower budget addresses leakage. Emission standards for affected EGUs would operate exactly as they would under any other CPP mass-based trading program (i.e., an allowance is surrendered for every ton emitted), but fewer allowances would be available to affected EGUs. The state could still be part of a multi-state program or be a ready-for-interstate-trading state.

Option 3 Example 3: Reduce the Existing Affected EGU Mass Budget in the State Plan

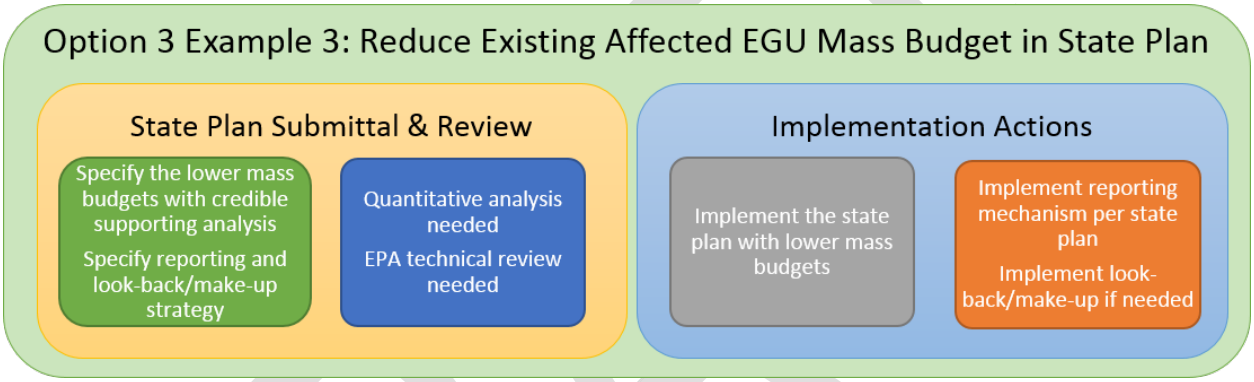
- State E is not planning to pursue alternatives to new fossil EGUs, such as increased generation from affected EGUs and expanded zero-emitting resources.
- State E includes the following as part of its state plan submittal:
    - Specifies the lower mass budget that the state will be required to meet in each compliance period.
    - Supports this budget with credible projections of the expected leakage or recalculation of the mass budget based on the mass goal calculation with reduced assumptions for affected EGU and zero-emitting generation (see discussion in Section 2.3.3).
    - Specifies that, after each compliance period, the state will report to the EPA with an evaluation of its original budget recalculation method and whether it served to compensate for any estimated amount of leakage-related emissions. The state commits to submit a plan revision with a revised calculation method if the evaluation shows that the method was insufficient.
    - Specifies that, if the calculated budget insufficiently compensates for leakage, the state will complete a leakage look-back/make-up for the previous compliance period to estimate the amount of emissions attributable to leakage that have occurred, and additionally adjust a future budget downward by the estimated amount of leakage-related emissions. See Section 1.3.2 for a discussion on the reporting and look-back/make-up example strategy.
- The EPA reviews the documentation and approves the plan.
- State E implements the emission budget trading program with the reduced mass budgets. State E implements reporting as outlined in the state plan and a look-back/make-up as needed.

There are a few different ways a state can consider quantifying this change, according to projected emissions or on a projected generation basis. This is discussed in detail in Section 3.

- *Projected Emissions*: The state projects the amount of new fossil EGU emissions that will occur because of leakage and adjusts the emission budget for existing affected EGUs in its state plan downward to compensate for those emissions. The state can use the new fossil EGU emissions assessment test discussed in Section 3 as the basis for the calculation of leakage-related emissions.
- *Projected Generation*: The state could also calculate a lower mass budget for existing affected EGUs by projecting the amount of in-state affected EGU and zero-emitting generation (including energy savings from EE) expected and comparing the result to an appropriate benchmark level under which leakage to new fossil EGUs would be prevented. One such benchmark level is found in the mass goal calculation, which includes additional RE beyond what is necessary to

achieve the emission performance rates to provide affected EGUs the flexibility to increase utilization (refer to Section 3 for a more detailed discussion). If the projected generation falls short of the benchmark, then the difference could be converted into tons using an emissions rate for new fossil EGUs and used to calculate a lower mass budget that the state could voluntarily accept.

Regarding Option 3 Example 3 (Reduce the existing affected EGU mass budget in the state plan), we also include a back-up strategy in our example. This ensures that the method by which the state estimated a reduction in its budget to compensate for leakage-related emissions is actually doing so. In our example, if the state finds that the method has not compensated for leakage-related emissions at the end of a compliance period, the state is obligated to both revise its methodology as warranted and adjust a future budget further downward by the estimated amount of leakage-related emissions, through a look-back/make-up.



3 Assessments for State Leakage Demonstrations

3.1 Introduction

A state adopting a mass-based emission budget trading program will need to demonstrate in its state plan that its leakage approach is sufficient to address leakage or its impact in a mass-based emission trading program. The CPP does not specify the method by which the state must demonstrate that leakage is sufficiently addressed, aside from specifying that it must be based on credible analysis. In this section we provide some key considerations for leakage-related analysis and examples of widely applicable quantitative assessments that states could use as the basis of a successful demonstration that any of a wide variety of state plan approaches sufficiently address leakage.

States should also consider that the approach of documenting that no new fossil EGUs are expected to be built in the state can be supported by a simple non-quantitative demonstration. This is discussed in Example 2 in the Option 3 Approach Examples (Section 2.3.2).

3.2 Analytical Considerations

Many demonstrations, including the quantitative assessments provided here, may require some type of analytical projection of the impact of the state's leakage approach. The CPP does not specify the nature of the projections required, if any. If a state chooses to include a projection in its demonstration, it can consider the following points:

- The projection does not necessarily have to use power sector modeling. For example, it could consist of a spreadsheet analysis based on readily available data as long as that is appropriate for the approach in question.
- Whatever the form, credible analytical practices include transparent data sources and clear documentation of methods.
- States can refer to existing modeling by third party stakeholders (e.g., academic institutions, multi-state organizations, regional transmission organizations, and independent system operators) instead of developing original modeling, as long as that modeling conforms to credible analytical practices.
- The analysis is intended to characterize intrastate leakage dynamics; therefore, it should successfully reflect the relevant dynamics within the state.
- States should ensure that projections accurately reflect any mechanisms that are cited in the state plan to address leakage.
- The time frame of concern includes the interim and final compliance periods through 2030.
- States may also want to consider whether any data sources used in the analysis are available to the EPA at a minimum and ideally to the public, and whether those data are independently verifiable.

3.3 Leakage Assessment Examples

In this section, we provide examples of widely applicable quantitative leakage assessments that can demonstrate that the sufficiency of a leakage approach. The examples are based on two different metrics:

- Emissions-based: the amount of new fossil EGU emissions expected.
- Generation-based: the amount of generation expected from affected EGUs and incremental zero-emitting resources that would qualify for ERCs.

Below, we discuss how emission- and generation-based assessments can be used to demonstrate in a state plan submittal that the preventative mechanisms cited are projected to sufficiently address leakage. The emission-based assessment can also serve as the basis of a look-back/make-up to estimate leakage-related emissions after they have occurred.

The example demonstrations provided here are not the only ways that a state could successfully show that leakage has been addressed. We are not excluding states from offering other demonstrations using different methods. The Agency will consult with states about potential approaches and review any demonstration to determine whether it credibly shows that potential leakage has been addressed.

3.3.1 New Fossil EGU Emissions Assessment

New Fossil EGU Emissions Assessment Example – Analyzing a Projection

- State G projects the total emissions from new fossil EGUs in the applicable period.
- State G compares that total to the NSC during that period.
- Leakage has been addressed if the following condition is met:

new fossil fuel-fired EGU emissions $\leq$ *NSC*

  - If the new fossil EGU emissions are less than or equal to the NSC, leakage **is** projected to be addressed by the prospective approach.
  - If the new fossil EGU emissions are greater than the NSC, leakage **is not** projected to be addressed under this approach.

When following an emissions-based approach for leakage assessment, it is important to note that the emissions performance of affected EGUs is fully defined by the level of the mass goals (although that level may vary temporally and geographically because of allowance banking and trading) and is, therefore, unaffected by leakage. Consequently, projections of emissions from new fossil EGUs is the only potential emissions-based metric to evaluate the existence and extent of leakage based on overall emissions performance. In one potential new source emissions assessment, the state could compare its emissions from new fossil EGUs to the NSC. The NSC is the number of tons the EPA calculated to

increase the total emission budget for a program that includes new fossil EGUs while ensuring that the budget is consistent with BSER.[30] If the state's new fossil EGU emissions are at or below the NSC, this would constitute an acceptable demonstration that leakage has been addressed.

This method can be applied to projections if used to evaluate a prospective leakage approach. It can also serve as the basis of a method to estimate leakage-related emissions under a look-back/make-up. Both of these applications are explained below.

If a state applies an NSC-based new source emissions assessment to projections, the assessment metric can be expressed as:

new fossil fuel-fired EGU emissions ≤ NSC

If this assessment is the basis of an emissions estimation method for a look-back/make-up, the following simple method can be used: The additional emissions attributable to leakage can be estimated as the difference between the state's actual new fossil EGU emissions in the period and the NSC. Thus, the estimation method can be expressed as:

new fossil fuel-fired EGU emissions – NSC = emissions associated with leakage

If the result is zero or negative, there are no estimated emissions associated with leakage. Conversely, if the results are positive, under a look-back/make-up, the state would adjust a future budget downward as specified in Section 2.3 and in the Option 3 examples therein.

New Fossil EGU Emissions Assessment Example—
Estimating Leakage-associated Emissions in a Look-back/Make-up

- After the applicable period, State H calculates the total emissions produced by new fossil EGUs.
- State H subtracts the NSC from the total new fossil EGU emissions using the following equation:

  new fossil fuel-fired EGU emissions – NSC = emissions associated with leakage

  - If the result is less than or equal to zero, there are no estimated emissions associated with leakage.
  - If the result is greater than zero, it corresponds to the amount of emissions attributable to leakage that have occurred. If State H is implementing a look-back/make-up, it would adjust a future budget downward by the estimated amount of leakage-related emissions.

[30] The NSC calculated for each state is available in Table 14 in the CPP (80 FR 64888-64889). The calculation method is described in the "New Source Complements to Mass Goals TSD" and its appendix, Docket ID No. EPA-HQ-OAR-2013-0602-37111. Both documents are available online at https://www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-technical-documents.

3.3.2 Total Generation Assessment for Affected EGUs and Zero-emitting Resources

Generation Assessment Example – Analyzing a Projection

- State I projects the total generation from affected EGUs and incremental in-state zero-emitting resources (including the energy savings from EE) in the applicable period.
- State I compares that total projected generation in the applicable period to the total adjusted 2012 fossil EGU generation baseline provided in the CPP.
- The outcome of the assessment can be determined as follows:
  - If the total generation is greater than or equal to the adjusted 2012 baseline, leakage **is** projected to be addressed by the prospective approach.
  - If the total generation is less than the adjusted 2012 baseline, leakage **is not** projected to be addressed by the prospective approach.

A state can assess leakage based on the level of generation from affected EGUs and incremental in-state zero-emitting resources (including energy savings from EE).[31] Unlike emissions, the level of generation from affected EGUs is not fully defined by the number of tons specified in the mass goal levels. Indeed, a wide range of generation levels can be associated with a given emissions outcome when multiple sources contribute to the total emissions.

To understand how generation levels can form an effective leakage assessment, it is important to recall that the BSER involves replacing existing fossil EGU generation with incremental zero-emitting resources. Because this action is a one-for-one replacement, the total amount of fossil EGU and incremental zero-emitting generation remains constant. In contrast, if existing fossil EGU generation were to be replaced by new fossil EGU generation, then the total amount of existing fossil EGU generation and incremental RE would decline. This reduction in generation indicates that leakage is occurring because existing fossil EGU generation is being replaced by an emitting source rather than a zero-emitting resource.

Consequently, a generation-based leakage assessment can be successful if it demonstrates a sufficient amount of demand is being met by affected EGUs and incremental in-state zero-emitting resources. One generation level that the EPA would find sufficient is the amount of generation assumed in the calculation of the state's mass goal, which is the adjusted 2012 fossil EGU generation baseline provided in the CPP.[32] If the sum of the state's affected EGU and zero-emitting generation in each period is equal

[31] In describing this test, we are using "generation" as shorthand for affected EGU generation, incremental non-emitting generation and electricity savings from energy efficiency and demand-side measures. We also follow the definition of "incremental" that is used in the CPP to specify eligibility for ERC issuance, see 80 FR 64896. These dates generally align with the dates used for broadly defining incremental RE resources that were considered in establishing the BSER.

[32] The adjusted 2012 fossil EGU generation baseline for each state is provided in Appendix 3 to the "Technical Support Document: Emission Performance Rate and Goal Computation (PDF)". This is available online at

to or greater than the state's adjusted historical baseline, this finding would constitute an effective demonstration that leakage has been addressed.

This assessment may be particularly useful to states that expect to deploy significant zero-emitting resources during the implementation period. For example, a state that is providing incentives to EE and RE can use this assessment to document the significant zero-emitting resources expected that would prevent leakage to new fossil EGUs.[33]

https://www.epa.gov/cleanpowerplan/clean-power-plan-final-rule-technical-documents (Docket ID No. EPA-HQ-OAR-2013-0602-36849).

[33] The rationale for this assessment approach is related to the method described under Example 3 in Section 2.3.3 in which the state can calculate a lower mass budget by adjusting the generation assumptions that underlie the mass goal methodology.

4 Appendix A: Regulatory Text for Incorporating New Fossil EGUs into the Mass-based Model Trading Rule

This appendix provides example rule text changes that can be made to the model trading rule regulatory text finalized in 40 CFR Part 62 Subpart MMM if a state elects to address leakage by including new fossil EGUs in the emission budget program using the new source complement (NSC) promulgated in the Clean Power Plan (CPP). This text includes updated applicability language to incorporate, by a matter solely of state law and not federally enforceable under federal law, those units subject to 40 CFR Part 60 Subpart TTTT; a provision that specifically enumerates that sources subject to 40 CFR Part 60 Subpart TTTT if regulated under a state's program are solely subject to state-enforceable requirements and not federally-enforceable requirements; a provision to remove any duplicative reporting required under 40 CFR Part 60 Subpart TTTT and the state's program; and updated CO_2 emission budgets including the NSC finalized in the CPP for the interim steps and final compliance periods.

The areas under the mass-based model trading rule (40 CFR Part 62 Subpart MMM) that would need to be changed as a result of a state regulating, solely as a matter of state law and not federally enforceable under federal law, units that are subject to 40 CFR Part 60 Subpart TTTT are as follows:

1. Applicability of this Subpart
    - 62.16210 Who is subject to this subpart?
2. General Requirements
    - 62.16220 What emission standards and requirements must owners or operators and designated representatives comply with?
3. Monitoring, Recordkeeping, Reporting
    - 62.16345 What monitoring requirements must the owner or operator comply with?
4. State Emission Budgets
    - Table 1 to Subpart MMM of Part 62—Annualized State CO_2 Emission Budgets for Affected EGUs (short tons)

The following changes are written as amendatory text in the format the EPA uses to revise subparts in the CFR for ease of guidance.

1. Applicability of this Subpart

This section can be amended to read as follows:

§ 62.16210 Who is subject to this subpart?

(a) Owners or operators of an affected electric generating unit (EGU) located within a State that has adopted this subpart as a State plan, or portion of a State plan, which plan or portion has been approved by the Administrator and is effective

under subpart UUUU of part 60 and part 62 of this chapter, are subject to this subpart.

(b) An affected EGU is any unit that:

(1) Is a steam generating unit, IGCC unit, or stationary combustion turbine that meets the applicability requirements in §§ 60.5845 and 60.5850 of this chapter~~.~~; or

(2) Is a steam generating unit, IGCC unit, or stationary combustion turbine that meets the applicability requirements in § 60.5509 of subpart TTTT of this chapter.

* * * * *

2. General Requirements

This section can be amended in paragraph (f) and by adding paragraph (g) to read as follows:

§ 62.16220 What emission standards and requirements must owners or operators and designated representatives comply with?

(f) Effect on other authorities. No provision of the GHG Mass-based Trading Program or exemption under § 62.16215 shall be construed as exempting or excluding the owners and operators, and the designated representative, of an affected EGU subject to the applicability requirements of § 62.16210(b)(1) from compliance with any other provision of the applicable, approved State plan, a federally enforceable permit, or any other requirement of the Clean Air Act.

(g) Requirements that Apply to New Units. Affected EGUs that meet the applicability requirements under § 62.16210(b)(2) shall only be subject to the requirements of this subpart as a matter of State law and any regulatory requirements of this subpart that apply to those units meeting the applicability requirements under § 62.16210(b)(2) shall not be submitted by the state for approval by the EPA as federally enforceable components of a state plan.

* * * * *

3. Monitoring, Recordkeeping, Reporting:

This section can be amended by revising paragraph (b) to read as follows:

§ 62.16345 What monitoring requirements must the owner or operator comply with?

* * * * *

(b) ~~[Reserved]~~ Affected EGUs that meet the applicability requirements under §62.16210(b)(2) do not need to do any additional monitoring or reporting to fulfill the requirements of this subpart if that monitoring or reporting is already required by subpart TTTT of part 60 of this chapter.

* * * * *

4. State Emission Budgets

This section can be revised by amending the following table to read as follows. The budgets provided consist of the state's mass CO_2 goal plus the state's NSC:

Table 1 to Subpart MMM of Part 62—Annualized State CO_2 Emission Budgets for Affected EGUs (short tons) [1]

State	Interim period			Final period
	Step 1 2022-2024	Step 2 2025-2027	Step 3 2028-2029	2030-2031 and thereafter
Alabama	66,515,949	62,104,698	59,336,277	57,636,174
Arizona	35,869,066	34,070,025	33,039,340	32,380,196
Arkansas	36,201,456	33,522,923	31,791,721	30,685,529
California	54,858,122	53,472,875	52,997,917	52,823,635
Colorado	36,376,858	34,132,015	32,747,885	31,822,874
Connecticut	7,611,353	7,295,920	7,132,188	7,060,993
Delaware	5,380,716	5,072,246	4,887,401	4,781,386
Florida	120,099,944	113,181,823	109,029,369	106,641,595
Georgia	54,535,858	50,792,677	48,420,669	46,944,404
Idaho	1,660,490	1,635,157	1,634,160	1,639,013
Illinois	80,731,921	74,257,813	69,992,293	67,199,174
Indiana	92,396,252	85,000,711	80,130,184	76,942,604
Iowa	30,531,021	28,029,256	26,372,964	25,281,881
Kansas	26,870,692	24,656,647	23,189,053	22,220,822
Kentucky	77,066,129	70,740,507	66,551,068	63,790,001
Lands of the Fort Mojave Tribe	654,605	644,618	644,225	646,138
Lands of the Navajo Nation	26,835,616	24,964,261	23,769,601	22,955,804
Lands of the Uintah and Ouray Reservation	2,799,029	2,603,841	2,479,235	2,394,354
Louisiana	42,233,941	39,131,613	37,130,156	35,854,321

Maine	2,267,928	2,176,390	2,129,585	2,109,968
Maryland	17,517,496	16,079,110	15,126,393	14,498,436
Massachusetts	13,453,117	12,823,637	12,476,082	12,303,372
Michigan	57,110,174	52,756,905	49,922,586	48,094,302
Minnesota	27,420,731	25,265,233	23,851,560	22,931,173
Mississippi	29,109,101	27,358,874	26,293,049	25,666,463
Missouri	67,587,294	62,083,903	58,445,482	56,052,813
Montana	13,977,772	13,003,045	12,380,787	11,956,908
Nebraska	22,335,063	20,492,045	19,269,996	18,463,444
Nevada	15,444,082	14,990,694	14,805,867	14,718,107
New Hampshire	4,490,876	4,261,849	4,130,554	4,060,591
New Jersey	18,370,159	17,541,576	17,092,023	16,876,364
New Mexico	15,041,467	14,142,829	13,594,353	13,229,925
New York	35,707,786	33,655,705	32,424,984	31,718,182
North Carolina	61,259,834	56,707,332	53,761,714	51,876,856
North Dakota	25,553,843	23,435,223	22,028,979	21,099,677
Ohio	88,902,150	82,020,069	77,522,714	74,607,975
Oklahoma	47,816,048	44,469,397	42,337,362	41,000,852
Oregon	9,314,152	9,018,260	8,888,687	8,822,053
Pennsylvania	106,598,711	98,945,311	94,036,616	90,931,637
Rhode Island	3,840,372	3,689,890	3,614,288	3,584,016
South Carolina	31,167,043	28,814,276	27,286,053	26,303,255
South Dakota	4,250,270	3,926,790	3,716,258	3,580,518
Tennessee	34,265,552	31,575,934	29,812,562	28,664,994
Texas	223,672,713	210,382,837	202,595,072	198,105,249
Utah	28,948,270	27,152,096	26,042,759	25,300,693
Virginia	31,474,885	29,614,008	28,487,101	27,830,174
Washington	12,649,388	12,074,804	11,759,581	11,563,662
West Virginia	62,804,443	57,597,448	54,141,279	51,857,307
Wisconsin	33,655,371	31,076,392	29,395,142	28,308,882
Wyoming	39,094,099	36,380,577	34,650,409	33,472,602

[1] The values in this table are annual amounts; the total CO_2 emission budget for each multi-year compliance period is the annual value multiplied by the number of years in the compliance period.