# Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans

Appendix F: Control Strategy Pathway

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## Appendix F: Control Strategy Pathway

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# SECTION F.1: BASICS OF CONTROL STRATEGY PATHWAY

## Pathway Description

A control strategy is a policy, program, or requirement used by a state, tribal or local agency in a nonattainment, attainment, or unclassifiable area to reduce ambient air pollution levels. States adopt control strategies to satisfy Clean Air Act (CAA) requirements for the purposes of, as appropriate, attaining or maintaining the National Ambient Air Quality Standards (NAAQS), demonstrating reasonable further progress (RFP) towards attainment, or meeting other statutory State Implementation Plan (SIP) requirements.

After jurisdictions adopt control strategies, they incorporate them into a SIP or Tribal Implementation Plan (TIP) for a particular air pollutant and then submit them to EPA for review. Collectively, all of the control strategies in a SIP/TIP need to reduce emissions to levels that satisfy attainment, maintenance, RFP, and other pertinent SIP provisions.

**Task Checklist: Control Strategy Pathway**

- ✓ Identify and describe the EE/RE policies and programs to include as a control measure
- ✓ Demonstrate EE/RE policies and programs are permanent
- ✓ Estimate the magnitude of potential emission reductions before undertaking more comprehensive analysis
  - ✓ Estimate the EE energy savings and/or RE generation
  - ✓ Quantify or estimate displaced EGU emissions
  - ✓ Determine emission reduction impact on air quality
  - ✓ Provide a mechanism to validate or evaluate the effectiveness of the project or initiative
- ✓ Demonstrate EE/RE policies and programs are surplus and not accounted for as part of another pathway
  - ✓ Assess if the EGUs in the nonattainment area are subject to a cap and trade program for the applicable pollutant
- ✓ Ensure EE/RE policies and programs are traditionally federally enforceable

This appendix addresses the tradeoffs, level of effort, methods, and other key criteria involved in incorporating energy efficiency and renewable energy (EE/RE) policies and programs in a SIP/TIP as a control strategy. As with any SIP/TIP pathway, EPA recommends that state, tribal and local agencies coordinate with their EPA regional office as soon as they decide to move forward.

## Tradeoffs of Pathway

State, tribal and local agencies can, of course, select more than one pathway for their jurisdiction's different EE/RE policies and programs. With respect to the control strategy pathway, including EE/RE policies and programs in a SIP/TIP under that pathway can help jurisdictions meet their air quality goals by accounting for emission reductions needed to show attainment, RFP, or maintenance. The control strategy pathway may be an especially appealing option to state, tribal and local agencies that are having difficulty reaching attainment and are seeking new and viable emission reductions opportunities.

State, tribal and local agencies should consider several tradeoffs and issues when deciding whether to include EE/RE policies and programs in the control measure pathway consistent with the jurisdiction's circumstances and objectives. Reviewing the tradeoffs will enable a

state, tribal and local agency to evaluate the merits of following the control measure approach in the context of the other three pathways.

Key tradeoffs and considerations when deciding whether to pursue the control strategy pathway include:

- **Transparency:** Of the four pathways, this option offers the most transparent and direct approach to estimating the air quality impacts of EE/RE policies. State, tribal and local agencies will gain a better understanding of how much generation from which fossil fuel-fired EGUs will be displaced as a result of future EE/RE policies/programs. State, tribal and local agencies will have a tons-per-day amount of emissions for each fossil fuel-fired EGU they expect to reduce based on a specified EE/RE policy and program. State, tribal and local agencies will have emission reductions from a control strategy to help them attain.
- **Documentation:** This option needs more documentation than the future baseline and WOE approaches because under the CAA a jurisdiction would have to show that the EE/RE policy/program was permanent, enforceable, quantifiable, and surplus. As better information about the success of EE/RE policies and programs becomes available, EPA believes it will be feasible for air agencies to make the necessary demonstration to address the requirements in their SIPs/TIPS.
- **Federal Enforceability:** To gain SIP/TIP approval, the EE/RE policies and programs that are included as a control strategy need to be enforceable against a responsible party. State, tribal and local agencies should consider their role and responsibility, as well as the associated resources needed to enforce EE/RE policies included in a control strategy.
- **Coordination:** Early coordination will help ensure that responsible agencies and entities understand their roles and have sufficient time dedicated to incorporating EE/RE policies and programs as a SIP/TIP control strategy. Developing strategies and determining their efficacy for meeting and maintaining compliance with NAAQS necessitates a high level of coordination among multiple government agencies.
- **Level of Analytical Rigor:** Overall, quantification under this pathway can be more resource intensive because the state, tribal or local agency would have to perform an EGU analysis that shows where emissions are likely to go down in relation to the nonattainment area of interest. The specific level of effort necessary for quantifying the emission reduction impacts depends on the analytical approach selected. Appendix I describes four different approaches of analysis that vary in sophistication.
- **Coordination Across Relevant State Agencies:** Another factor affecting level of effort is the degree to which agencies responsible for SIP implementation coordinate with entities responsible for overseeing and evaluating EE/RE policies and programs (e.g., typically the state's public utility commission (PUC) or state energy office). The purpose of these discussions is to:

    - Help air quality planners fully understand the jurisdiction's EE/RE policies/programs, including their extent, duration, and anticipated impact.

- Ensure that all parties understand the implications of including EE/RE in the SIP, including the obligation to sustain the program consistent with agreements in the SIP and federal enforceability of SIP provisions.
- Help the respective agencies better understand the other's roles and responsibilities.
    - In many cases, formal agreements can be established between state air agencies and PUCs to outline each entity's obligations for implementing the state's EE/RE activities, quantifying their impacts, and including them in the SIP.

### Circumstances the Pathway is Best Suited For

The control strategy pathway is best suited for "on the way" EE/RE policies that state, tribal and local agencies want to include in their SIP/TIP control strategy that have not been accounted for elsewhere in the SIP and that are not emerging/voluntary programs. (This could include policies that were adopted after preparation of the SIP emissions baseline that were, thus, not considered "on the books" when the baseline was prepared.) If incorporated in the control strategy, such policies would be federally enforceable.

## SECTION F.2: FOUR CRITERIA OF THE CONTROL STRATEGY PATHWAY

To become part of the SIP/TIP as a control strategy, the EE/RE policy or program needs to be:

- Quantifiable
- Surplus
- Permanent
- Enforceable

## SECTION F.3: QUANTIFICATION CRITERION

### Steps to Quantify Emissions Impacts

Emissions and emission reductions attributed to the measure are quantifiable if someone can reliably measure or determine their magnitude in a manner that can be replicated. The recommended procedure for determining the amount of SIP/TIP credit generated by an EE/RE policy or program follows four basic steps:

- Step 1: Estimate the energy savings that an EE measure will produce, or, for a RE project, the amount of energy generation that will occur.
- Step 2: Convert the energy impact in STEP 1 into an estimated emissions reduction.
- Step 3: Determine the impact from the estimated emission reduction on air quality in the nonattainment area.
- Step 4: Provide a mechanism to validate or evaluate the effectiveness of the project or initiative.

Appendix I provides guidance on the first three of the four steps and describes two quantification approaches that EPA suggests for estimating the emission reductions of EE/RE control strategies:

- Dispatch or Capacity Expansion Model Approach
- Historical Hourly Emission Rate Approach

### Provide a Mechanism to Validate and Evaluate the Effectiveness of the Policy

The purpose of step four is to determine the type of monitoring, record keeping, and reporting that is needed to evaluate whether the expected energy impacts, emission reductions and/or air quality improvements were achieved in practice. If an air agency wants to incorporate EE policies as a control measure, the agency should conduct evaluation, measurement, and verification (EM&V) of the EE impacts over time, as savings accrue. In jurisdictions with significant levels of EE investment in place, a robust EM&V framework likely already exists and is overseen by the PUC. Communications with these officials can reveal the frequency, rigor, and scope of the EM&V effort needed, as well as the timing for impacts reporting.

Air officials can then use these data to document and validate the effectiveness of the EE policy for SIP purposes. Public utility commissions can also point to any irregularities with the data, as well as any issues with EE reporting that may affect the policy validation process. In jurisdictions where the entity overseeing and evaluating the EE policy is not immediately apparent, an inquiry with the EE service provider (often a utility or non-profit organization) or a local organization can help. While it is not necessary for air officials to become experts in EE EM&V, it may be useful to understand the sources of EE data, along with reporting schedules, overall level of rigor, the roles played by leading organizations, and other basic information relevant to the successful linkage of air and energy policy. For more information on EE EM&V, see the National Action Plan for Energy Efficiency Guide on this topic.[1]

For RE policies and programs, jurisdictions should have a system in place to track whether energy providers are meeting required percentage targets for procurement of RE. Typically, the PUCs or state energy offices monitor utility compliance or performance on a year-to-year basis.

## SECTION F.4: SURPLUS CRITERION

Jurisdictions cannot "double count" emissions reductions. Emission reductions associated with EE/RE policies and programs may not be relied upon in any of the other three pathways included in a jurisdiction's SIP/TIP. To demonstrate that this criterion has been met, jurisdictions should provide:

- A statement that the appropriate agency has reviewed the control strategy and confirms that it is not accounted for as part of other pathways in the SIP; and

[1] EPA and U.S. Department of Energy (2006).

- A statement describing the potential areas of overlap, if any, and steps to ensure that emission reductions are surplus and that there is no double-counting.

Emission reductions associated with the EE/RE policies and programs may be relied upon to satisfy the SIP Reasonably Available Control Technology and RFP requirements, as well as CAA requirements for emissions standards.

## SECTION F.5: ENFORCEABLE CRITERION

The jurisdiction's EE/RE policies and programs need to be mandatory, created either by specific state legislation, commission order, or regulation. Under the CAA, states are required to have enforcement authority for the policy or program. If a state submits a SIP that incorporates EE/RE programs, the programs also become federally enforceable. Making state adopted EE/RE programs federally enforceable puts them on par with more traditional air pollution control programs for which states have sought SIP credit in the past. Once these policies and programs become federally enforceable EPA has the authority under the CAA to apply CAA-mandated penalties against the party responsible for noncompliance. Depending on the policy, the responsible party would not be the agency administering the policy – typically a PUC. Instead, the party may be the load serving entity responsible for delivering power to customers and upon whom the duty to use EE/RE has been placed, for example, through a permit or the rate setting process. For example, under a Renewable Portfolio Standard policy, a state could require certain entities to purchase an amount of RE. If the state relies upon such requirements within the SIP, then such measure could be enforceable against the entities required to purchase the renewable electricity, even if those entities are not responsible for the operation of the electricity generating units at which the emission reductions are expected to occur.

Additionally, if the reductions are enforceable against another party responsible for the EE or RE activity, then they are considered enforceable if:

- The activity or measure is independently verifiable;
- Violations are defined;
- Those liable for violations can be identified;
- The activity or measure is practicably enforceable in accordance with EPA guidance on practicable enforceability;[2] and
- The state maintains the ability to apply penalties and secure appropriate corrective actions where applicable.

From the standpoint of federal SIP enforceability, an agreement among state agencies is not necessary for EPA to approve an EE/RE policy into a SIP as a control measure. However, it is recommended to ensure adequate coordination and communication at the state level so that expectations and responsibilities are clear. The EPA recommends a memorandum of understanding between the state department of environmental protection (DEP) and the PUC

[2] EPA (1989) and EPA (1992).

or other state entity to ensure adequate program coordination. From EPA's standpoint, it does not matter what part of state government implements the program – it could be the DEP or the PUC – so long as the state agency in question has authority from the legislature to administer the program. The governor (or its designee) would need to sign the SIP to give the proper state agency authority in this situation where one state agency – typically a PUC – is administering the EE/RE policy or program and the state DEP is responsible for developing the SIP.

## SECTION F.6: PERMANENT CRITERION

The impacts of the EE/RE policy and/or program control strategy need to continue through the future attainment year unless it is replaced by another control measure or the state demonstrates in a SIP revision that the emission reductions from the EE/RE policy or program are no longer needed to meet applicable statutory and regulatory requirements. The state, tribal or local agency should demonstrate that the EE/RE policy was adopted in a state regulation or enacted in statute.

To demonstrate permanence in the case of EE, the jurisdiction should ensure that the projected emissions impacts of the EE policy and program are achieved by the attainment year. If the EE policy or program is not fully implemented by the attainment year, then new programs should be adopted to deliver the same results. One way to increase the likelihood that EE programs will result in emissions reductions is to secure a commitment for continued support and funding for the EE programs in the future.

## SECTION F.7: SIP CREDIT IN A MULTI-STATE SCENARIO

Electricity continuously flows through the electric grid, as electricity providers produce power to meet demand both within and across state boundaries. This dynamic raises the question of how to apportion emission reduction SIP credit between states that buy and sell electricity from each other. Historically, about half of the states (e.g., California, Virginia) import electricity to meet electricity demand within the state, while about half of the states (e.g., New Mexico, New Hampshire) export electricity to meet demand elsewhere.[3] For a state to obtain "credit" for emission reductions associated with these electricity transfers, a state would need to account for these transfers as part of the analysis it conducts for estimating future EGU emissions. For example, imports and exports of electricity across state lines are accounted for in dispatch and capacity expansion models, such as IPM energy modeling that EPA provides to support regulatory analysis.[4] Estimates of future year EGU emissions made by states using other techniques should also account for imports and exports of electricity across state lines.

For a state to obtain credit under the control strategy pathway for emission reductions that are associated with these electricity transfers, the state should ensure that its estimate of reduced

[3] For more information on state-level export/import data, go to: http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html.

[4] Note that EPA's IPM modeling only includes "on the books" EE/RE policies and programs that have been adopted in regulation, statute or commission order.

future year EGU emissions includes the impact of these policies and programs as outlined within the control strategy. Typically, Regional Planning Organizations model the air quality impact of state control strategies across multiple states in a "control strategy" modeling run. After the baseline modeling is constructed, states put forth the suite of strategies they intend to adopt as part of the SIP to be modeled in the "control strategy" modeling run. Those control strategies need to meet the provisions outlined per the four SIP control strategy criteria discussed above. Ultimately, when EPA reviews the SIP it needs to determine whether or not the suite of control strategies assumed in the multi-state SIP modeling were actually adopted by the states in question, including EE/RE policies and programs.

## REFERENCES

EPA (1989). *Guidance on Limiting Potential to Emit in New Source Permitting*. June 13, 1989. Available online at <http://www.epa.gov/reg3artd/permitting/t5_epa_guidance.htm>

EPA (1992). *Use of Long Term Rolling Averages to Limit Potential to Emit*. February 24, 1992. Available online at <http://www.epa.gov/region7/air/title5/t5memos/rollave.pdf>

EPA and U.S. Department of Energy (2006). *National Action Plan for Energy Efficiency*. July 2006. Available online at <http://www.epa.gov/cleanenergy/documents/suca/napee_report.pdf>

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