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

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

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## ACRONYMS

AAGR: Annual Average Growth Rate
AEO: Annual Energy Outlook
ARRA: American Recovery and Reinvestment Act
CAA: Clean Air Act
CFEC: Capacity Factor Emission Calculator
CHP: Combined Heat and Power
CO: Carbon Monoxide
$CO_2$: Carbon Dioxide
DEP: Department of Environmental Protection
EE: Energy Efficiency
EERS: Energy Efficiency Resource Standard
eGRID: Emissions & Generation Resource Integrated Database
EGU: Electric Generating Unit
EIA: Energy Information Administration
EIP: Economic Incentive Program
EM&V: Evaluation, Measurement and Verification
EMM: Electricity Market Module
GWhs: Gigawatt Hours
HEDO: High Electric Demand Days
Hg: Mercury
IPM: Integrated Planning Model
ISO: Independent System Operator
KWh: Kilowatt-Hour
MW: Megawatt
MWh: Megawatt-Hour
NAAQS: National Ambient Air Quality Standard
NEEDS: National Electric Energy Data System
NEMS: National Energy Modeling System
NERC: North American Electric Reliability Corporation
Pb: Lead
PM: Particulate Matter
PUC: Public Utility Commission
RE: Renewable Energy
RFP: Reasonable Further Progress
RGGI: Regional Greenhouse Gas Initiative
RPS: Renewable Portfolio Standard
RTO: Regional Transmission Organization
SEO: State Energy Office
SIP: State Implementation Plan
$SO_2$: Sulfur Dioxide
TIP: Tribal Implementation Plan
WOE: Weight of Evidence
ACEEE: American Council for an Energy-Efficient Economy

LCSE: Levelized Costs of Saved Energy

# EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency's (EPA's) Office of Air and Radiation encourages state, tribal and local agencies to consider incorporating energy efficiency (EE) and renewable energy (RE) policies and programs in their State and Tribal Implementation Plans (SIPs/TIPs). State and local governments have increased their adoption of EE/RE policies and programs since EPA last issued guidance on the topic in 2004. This increase in activity has the potential to provide appreciable emission benefits for air quality that state, tribal and local air planners could capture in SIPs/TIPs. As EPA continues to review and, as appropriate, revise National Ambient Air Quality Standards (NAAQS) to protect public health, emission reductions from EE/RE policies and programs may become increasingly important for jurisdictions designated as nonattainment. The goal of this document is to facilitate the use of EE/RE emissions reduction strategies in air quality plans. This is made possible by the abundance of information available on the energy impacts of EE/RE policies and programs and by the availability of the SIP/TIP pathway decision-making framework provided here in this roadmap.

## Purpose of the Roadmap

The EPA is issuing this roadmap to reduce the barriers for state, tribal and local agencies to incorporate EE/RE policies and programs in SIPs/TIPs by clarifying existing EPA guidance and providing new and detailed information. The roadmap provides a section on "getting started" that includes charts and tables for decision-makers to consider in weighing which pathway or pathways to pursue for incorporating EE/RE policies and programs in SIPs/TIPs. The charts and tables also describe the advantages and disadvantages of each pathway. Attached to the roadmap are detailed appendices that include new information. A range of topics is covered from basic information on understanding the electric system and EE/RE policies and programs to details on four different approaches for quantifying EE/RE benefits. The appendices also provide basic information on each pathway, including SIP/TIP documentation.

## The Four Pathways

The roadmap describes the four SIP/TIP pathways that are available to state, tribal and local agencies as they consider which approach to adopt for incorporating policies and programs in SIPs/TIPs. The four pathways described in the roadmap are:

1. Baseline emissions projection pathway;
2. Control strategy pathway;
3. Emerging/voluntary measures pathway; and
4. Weight of evidence (WOE) determination pathway.

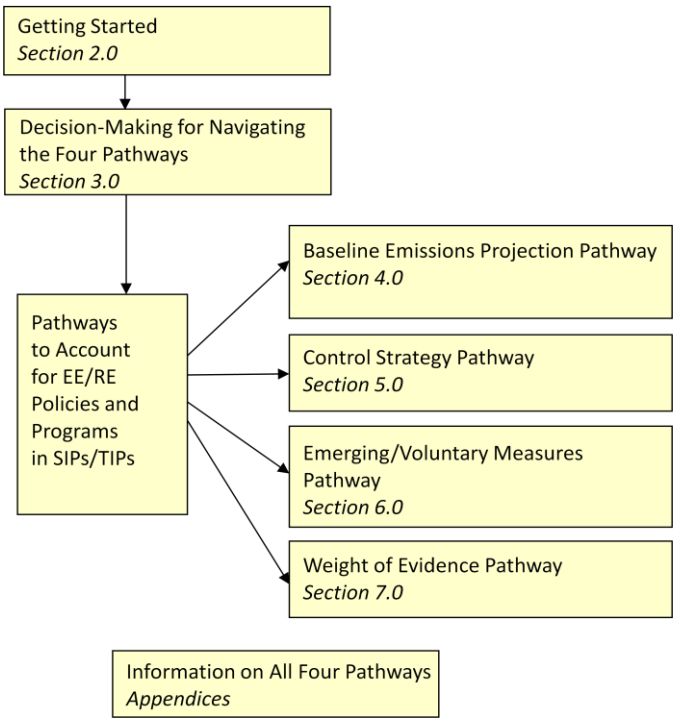
State, tribal and local agencies can, of course, select more than one pathway for their jurisdiction's different EE/RE policies and programs. Each option is appropriate for a specific set of circumstances and has its own documentation and analytical provisions. For example, the baseline emissions projection pathway is an option for agencies that have already adopted EE/RE policies and programs that they wish to incorporate in their

emissions forecast. Alternatively, if the jurisdiction is contemplating adopting new EE/RE policies before it submits its SIP/TIP to EPA, then the control strategy pathway is an option. In cases where jurisdictions have adopted emerging and/or voluntary measures (i.e., those that are difficult to enforce and/or quantify), the emerging/voluntary measures pathway may be the preferred route. The WOE pathway is a supplemental analysis to an attainment demonstration in cases where a jurisdiction is not predicted to attain an air quality standard based on air quality modeling; it is a recommended option for accounting for EE/RE policies and programs where a state, tribal or local agency wants to claim emissions benefit that will potentially affect air quality in the attainment year, but where modeling the impacts of the policy or program is either too resource intensive or not feasible for other reasons and/or the jurisdiction is not interested in SIP/TIP credit.

# SECTION 1.0: PURPOSE AND ROADMAP ORGANIZATION

This document provides a roadmap to assist state, tribal and local agencies with accounting for and incorporating energy efficiency and renewable energy (EE/RE) policies and programs in State Implementation Plans (SIPs) and Tribal Implementation Plans[1] (TIPs). The roadmap accomplishes this task by clarifying guidance[2] the U.S. Environmental Protection Agency (EPA) issued in 2004 on incorporating EE/RE policies and programs into SIPs, as well as related guidance[3] EPA issued in that year and in 2005.

**Figure 1: Organization of the Roadmap**




States are required, under the Clean Air Act (CAA), to submit SIPs when an area is designated as nonattainment for a National Ambient Air Quality Standard (NAAQS). The EPA is then required to either approve or disapprove the SIP/TIP, based on whether the plan meets the requirements of the CAA. EE/RE policies and programs are increasingly being explored by state, tribal and local agencies for use in meeting air quality goals and SIP/TIP requirements (i.e., emission reductions needed to demonstrate attainment and/or satisfy other CAA requirements).[4]

To help state, tribal and local air quality planners start, the main body of this roadmap provides several resources, is designed to be user friendly and is intentionally brief. The detailed appendices describe the electric system mechanics, emission quantification

[1] The Clean Air Act provides authority for tribes to implement CAA programs and instructed EPA to adopt regulations so that eligible Tribes may manage their own EPA-approved air pollution control programs under the CAA. The 1998 Tribal Authority Rule (TAR) implements the provisions of section 301(d) of the CAA to authorize eligible Tribes to develop their own tribal programs. Under the TAR, a Tribe may be approved by EPA to be eligible to be treated in the same manner as a state for one or more CAA programs. Such a program may include, but is not limited to, a TIP. Tribal governments are not required to submit a TIP, nor are they subject to deadlines mandated under the CAA. However, EPA must meet its obligations with respect to tribal lands under the CAA.

[2] EPA (2004a).

[3] EPA (2004b) and EPA (2005).

[4] The other requirements include: Reasonable Further Progress and Reasonably Available Control Technology/Reasonably Available Control Measures.

approaches and detailed provisions for incorporating EE/RE policies and programs in the four SIP pathways. References to outside sources are also provided.[5] Figure 1 provides the overall organization of the roadmap. Figure 4 describes each appendix and its applicability to each of the four pathways.

## Energy Efficiency/Renewable Energy Policies and Programs as Cost-Effective Strategies

EE/RE policies and programs (as described in Section 2.0) offer the potential to achieve emission reductions at a cost that can be lower than traditional control measures. The EPA is gaining experience with these potentially cost-effective strategies in rulemakings affecting the utility and other sectors.[6] The EPA is working to define how and when EE/RE policies can lower the overall cost of achieving compliance with the requirements of emissions standards.

EE/RE policies and programs may be a cost-effective strategy that state, tribal and local agencies can use as part of multi-pollutant emissions reduction approaches to help attain and maintain compliance with NAAQS, as well as achieve other regulatory or non-regulatory objectives such as improving visibility, reducing regional haze, reducing air toxics, and limiting greenhouse gases.

## Four Reasons to Take Advantage of Energy Efficiency/Renewable Energy Policies and Programs in Air Plans

EE/RE policies and programs represent a real opportunity for improving air quality. The EPA encourages state, tribal and local air quality planners to quantify and take advantage of the emission benefits of EE/RE policies and programs. Over the past 10 years, states have made substantial investments in EE/RE initiatives and are seeing significant increases in EE savings and renewable generation as a result. These commitments have the potential to provide appreciable emission benefits for air quality that state, tribal and local air planners could capture in SIPs/TIPs.

Four reasons for state, tribal and local agencies to consider EE/RE policies and programs in SIPs and TIPs are:

1) From 2006 to 2011, states have increased their budget investments in electric EE programs significantly, committing over $5 billion of ratepayer resources in 2011 to electric EE programs. (See Figure 2 for growth in state EE expenditures from

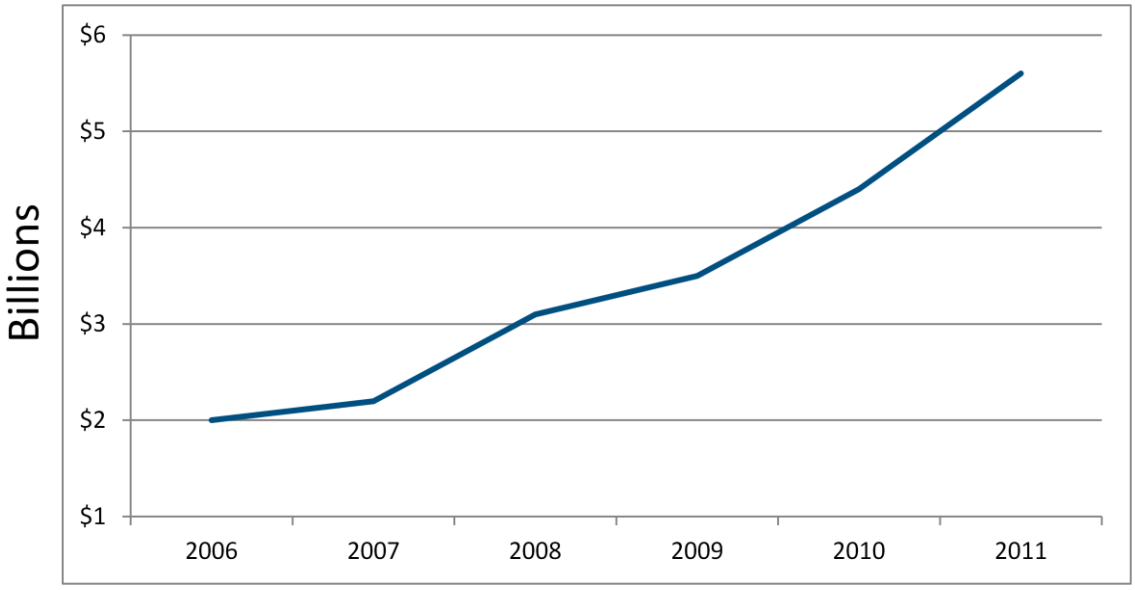
[5] For links to sources external to EPA, note that EPA cannot attest to the accuracy of non-EPA information provided by these third-party sites or any other linked site. The EPA provides these links as a reference. In doing so, EPA does not endorse any non-government websites, companies or applications.

[6] For example, a recent EPA modeling scenario for EPA's Mercury and Air Toxics Standard rule predicts that moderate levels of energy-demand reduction – equivalent to the continuation of current policies – could lower total compliance costs, reduce ratepayer bills over the long term, and in some cases, delay or avoid the need for equipment upgrades or new construction of generating facilities and emissions controls. This energy-demand reduction is also likely to reduce emissions of air pollutants on high electricity demand days when air quality can be especially harmful (Federal Register 2011a).

2006-2011.)[7] Additionally, nearly all states (48) have EE programs reporting efficiency program budgets.[8]

2) As of 2011, twenty-nine states (and Washington, DC) had adopted renewable portfolio standards (RPS) which require retail electricity providers to supply a minimum percentage or amount of retail demand with renewable resources, more than double the number of states in 2000 (see Figure 3).[9]
3) As EPA periodically reviews NAAQS to strengthen public health protection, the need for state, tribal and local agencies to find greater emission reductions may well continue. EE/RE policies and programs can provide a resource to help meet that need.
4) Information about the energy impacts of EE/RE policies and programs and their resulting emission benefits is now more widely available. State, tribal and local agencies do not have to start analyses from scratch, but can access existing, quality data. (Refer to Appendix D for a list of resources.)

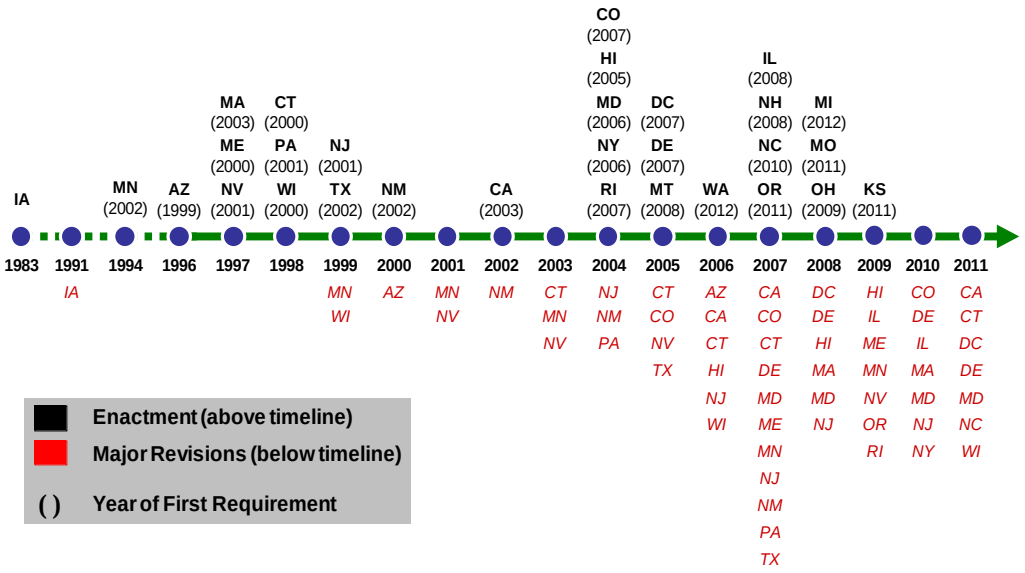
**Figure 2: Electric Energy Efficiency Program Budgets**




Source: http://www.cee1.org/ee-pe/2011AIR.php3

[7] For more information, go to: http://www.cee1.org/ee-pe/2011AIR.php3.
[8] ACEEE (2012), Appendix A.
[9] For more information, go to: http://www.cleanenergystates.org/assets/Uploads/2011-RPS-Summit-Combined-Presentations-File.pdf

**Figure 3: Growth in State Policies for Renewable Portfolio Standards**




Source: http://www.cleanenergystates.org/assets/Uploads/2011-RPS-Summit-Combined-Presentations-File.pdf

## Four Pathways Available

The EPA recognizes that state, tribal and local agencies interested in incorporating these policies and programs in SIPs/TIPs may need more detailed information on how to achieve this goal. To that end, this manual provides a roadmap for understanding the parameters and other aspects of the four pathways available for incorporating EE/RE policies and programs in SIPs/TIPs. State, tribal and local agencies can, of course, select more than one pathway for their jurisdiction's different EE/RE policies and programs. The pathways are:

1. **Baseline emissions projection pathway:** This is an option for agencies that have already adopted EE/RE policies and programs and they wish to incorporate the impact of those policies and programs in their SIP/TIP forecast of emissions for the electric generating units (EGUs).
2. **Control strategy pathway:** If a jurisdiction is contemplating adopting new EE/RE policies before it submits its SIP/TIP to EPA, then the control strategy pathway is an option. EE/RE policies incorporated in a SIP/TIP as a control strategy must be quantifiable, surplus, enforceable and permanent.
3. **Emerging/voluntary measures pathway:** In cases where jurisdictions have adopted emerging and/or voluntary EE/RE measures (i.e., those that are difficult to enforce and/or quantify), the emerging/voluntary measures pathway is the preferred route.
4. **Weight of evidence (WOE) determination pathway:** The WOE pathway is a supplemental analysis to an attainment demonstration in cases where a jurisdiction is not predicted to attain an air quality standard based on air quality

modeling; it is a recommended option for accounting for EE/RE policies and programs where a state, tribal or local agency wants to claim emissions benefit that will potentially affect air quality in the attainment year, but where modeling the impacts of the policy or program is either too resource intensive or not feasible for other reasons and/or the jurisdiction is not interested in SIP/TIP credit.

Each pathway is appropriate for a specific set of circumstances and has its own documentation and analytical provisions.

## Challenges of Incorporating Energy Efficiency/Renewable Energy Policies and Programs in State and Tribal Implementation Plans

In addition to the advantages, the EPA also recognizes the challenges associated with incorporating EE/RE policies and programs in SIPs, including:

- Establishing partnerships between air and energy regulators in jurisdictions
- Quantifying the emissions and air quality benefits of EE/RE policies and programs

One challenge is establishing strong, productive partnerships among energy and environmental agencies within state, tribal or local governments. In many jurisdictions, environmental agencies have not traditionally partnered with public utility commissions (PUCs) and state energy offices (SEOs). Collaborating with PUCs and SEOs can help all parties understand the details of relevant EE/RE policies and how the associated emission benefits can help an area attain one or more NAAQS. Greater collaboration may help with the transfer of energy information that is needed for SIP/TIP documentation from energy to air agencies. Partnerships among state air and energy offices can facilitate successful monitoring of compliance with adopted EE/RE policies and evaluation of their impacts; this will ensure that projected energy and emission benefits are achieved.

The EPA also recognizes that quantifying the emission impacts of EE/RE policies and programs in a manner acceptable for SIPs/TIPs can be challenging, especially in cases where air agencies need to determine whether and to what extent the EE/RE initiative is affecting a particular nonattainment area. Appendix I of the roadmap describes emission quantification approaches state, tribal and local agencies can apply to understand the magnitude and location of EE/RE policy and program emission impacts. Depending upon the emission quantification approach used, emission reductions can be attributed to specific EGUs within (or upwind of) a nonattainment area.

One of the key issues is to identify where and when the emission reductions need to occur to reduce harmful air quality levels for a particular NAAQS in a particular area. For criteria pollutants like sulfur dioxide ($SO_2$) and primary particulate matter (PM), reductions in electricity demand from a fossil fuel-fired EGU can produce air quality improvements in the area around the EGU in a shorter time frame. For other criteria

pollutants, like ozone or secondary PM, the air quality improvements from EE/RE policies and programs would occur at a larger regional scale and over a longer period since these pollutants form in the atmosphere over a greater period of time and at a greater distance from the pollution source.

Air agencies should evaluate the effectiveness of an EE/RE policy or program on achieving benefits to air quality within a nonattainment area. This can depend upon the form of the NAAQS – that is, short-term versus long-term concern – and on local impacts versus long distance concerns. To address these challenges, in Appendix I, EPA describes four emission quantification approaches for EE/RE policies and programs. These approaches encompass a range of techniques that can be used to support the four SIP pathways. In addition, the appendix addresses pertinent analytical questions, as well as a description of the advantages and disadvantages of each approach.

## This Roadmap Clarifies Existing Guidance and is Not a Regulation

This roadmap is being issued to clarify existing guidance and does not create new guidance. In addition, the CAA and implementing regulations at the Code of Federal Register, Title 40, Part 51: Requirements for Preparation, Adoption, and Submittal of Implementation Plans (40 CFR Part 51) contain legally binding requirements. This roadmap does not substitute for those provisions or regulations, nor is it a regulation itself. Thus, it does not impose binding, enforceable requirements on any party, and may not be applicable in all situations.

The EPA and state, tribal and local agency decision makers retain the discretion to adopt approaches for approval of SIPs/TIPs that differ from this guidance where appropriate and consistent with applicable law. Any final decisions made by EPA on a submitted revision for a particular SIP will be made based on the statute and regulations within the context of EPA notice and comment rulemaking. Therefore, interested parties may raise questions and objections about the substance of this roadmap and appropriateness of its application to a particular situation. The EPA will, and state, tribal and local agencies should similarly, consider whether the recommendations in the roadmap are appropriate in a particular situation.

This roadmap is a living document and may be revised periodically without public notice. However, the EPA welcomes public comments on this document at any time and will consider those comments in any future revision of this document. Finally, this document does not prejudice any future final EPA decision regarding approval of any SIP, which will only be completed through notice and comment rulemaking.

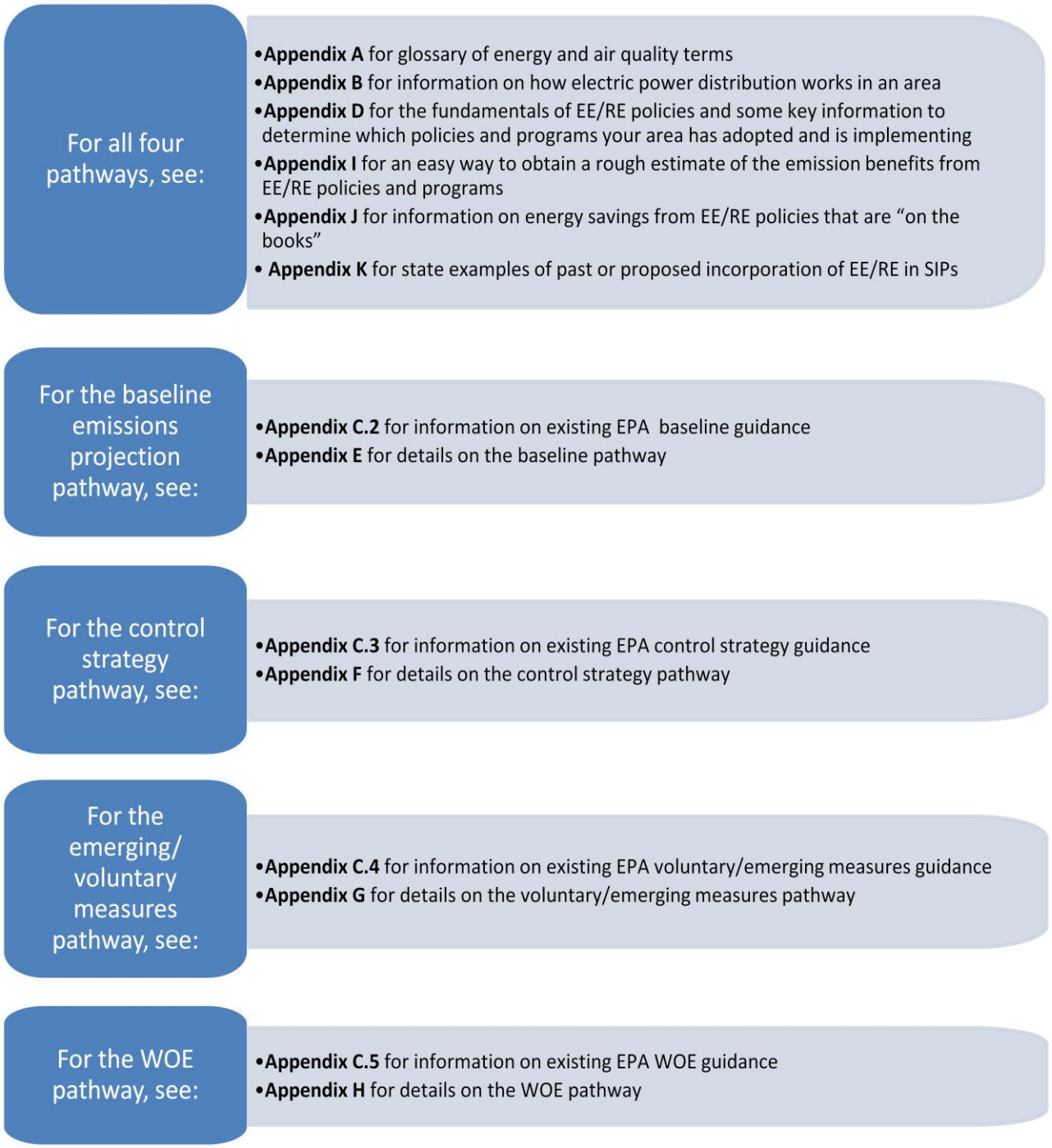
## Scope of Roadmap

The roadmap described in this document pertains only to the impact of EE/RE policies and programs on air emissions from the electric utility sector, which is a major stationary source of emissions contributing to ozone, $SO_2$ and $PM_{2.5}$ air quality levels.

Other source sectors, especially mobile sources,[10] can also contribute to ambient levels of these pollutants. In addressing nonattainment air quality problems, state, tribal and local agencies will need to consider emission reductions from more than the utility sector.

[10] EPA (1997).

**Figure 4: How the Appendices Support the Four Pathways**



## SECTION 2.0: ACTIVITIES FOR GETTING STARTED

The purpose of this section is to help state, tribal and local agencies understand what activities EPA recommends agencies consider when deciding whether to incorporate EE/RE policies and programs in a SIP/TIP. The EE/RE SIP Pathway Flowchart (Figure 5) recommends initially that agencies become familiar with:

- Basic functioning of the electric system
- Roles and responsibilities of key state energy-related organizations
- State, tribal and local EE/RE policies and programs in the jurisdiction
- Estimating potential emission reductions
- Understanding existing EPA EE/RE SIP guidance
- Common "getting started" questions and answers

More information on each one of these topics can be found in the appendices.

### Functioning of the Electric System

Many air agencies are already familiar with the electric system, and the roles and responsibilities of energy agencies in their state. For those who want more information on the topic, it is provided here. It is important to understand the workings of the electric system and to address key issues that arise in energy and air quality planning, most notably quantifying the emission impacts and accounting for the EE/RE policies and programs in SIPs/TIPs (see Appendix I). The operation of regional power systems is complex and dynamic, so predicting how these systems will react to new resources – including EE and RE – is likewise a complex undertaking.

The decision of which EGU to dispatch and in what order is based in principle on economics, with the lowest cost resources dispatched first and the highest cost resources last. The last resources to be called upon are referred to as the marginal units, which are typically the most expensive units to run. In some cases in certain parts of the country, these plants can also be among the highest emitting and least efficient EGUs of the power plant fleet.

EE/RE can affect dispatch in different ways, though both cause marginal units to run less frequently and can result in fewer air emissions. In the case of EE, energy savings occur at the point of consumption, resulting in a reduction in demand on the electric system and a corresponding reduction in emissions from the power plant fleet. In the case of RE, energy savings occur at the point of generation, resulting in a reduction of generation by fossil fuel-fired EGUs and a corresponding reduction in emissions from the power plant fuel. (Refer to Appendix B for more information on the electric system.)

### Roles and Responsibilities of Key State Electric Energy Organizations

Reaching out to your energy counterparts and explaining the emissions and air quality benefits of EE/RE policies and programs within your jurisdiction is one way to start

identifying partnership opportunities, common objectives and policy goals. In most cases, the SEOs and PUCs will have information on the state's adopted or planned EE/RE policies and programs. The regional planning organizations and sustainability coordinators, within the city or county operations, will most likely have information on adopted or planned local EE/RE policies and programs. Tribal jurisdictions may also have a designated representative that is knowledgeable on EE/RE policy and program issues.

Building partnerships with energy agencies and organizations within your jurisdiction, prior to and during the SIP planning stages, can help facilitate information exchange on areas such as: energy impacts of EE/RE policies and programs for required SIP/TIP emission quantification and documentation. To get started, EPA recommends reviewing the roles and responsibilities of the following energy-related organizations: SEOs, PUCs and Regional Transmission Organizations/Independent System Operators. To assist, Figure 6 lays out what they do, the types of policies and programs they oversee and the types of information they can provide. The EPA encourages state, tribal and local agencies to collaborate with these energy experts to obtain information on their jurisdiction's EE/RE policies and programs. (Appendix B provides more information on the different types of agencies and how they interact.)

## State, Tribal and Local Energy Efficiency/Renewable Energy Policies and Programs in Jurisdictions

The following questions can help lead state, tribal and local agencies in the appropriate direction:

- Which EE/RE policies and programs has the jurisdiction adopted?
- What are the details of those policies and programs in terms of implementation dates, stringency, financial commitments, historic investments in EE/RE and important enforcement features?
- Is there any information on the energy impacts (projected and/or historical) of those EE/RE policies in terms of energy saved, quantities of RE procured and air emission impacts?
- Which organization or agency monitors and evaluates the energy impacts of those EE/RE policies?

Certain terms are important to understand as state, tribal and local agencies review this roadmap:

- **EE/RE policies** are regulations, statutes, or state public utility commission orders that require parties to acquire EE and/or RE or to commit to funding levels for programs aimed at acquiring EE/RE. Policies can include Renewable Portfolio Standards (RPS) and Energy Efficiency Resource Standards (EERS).
- **EE programs** are designed to increase adoption of energy efficient technologies and practices in particular end-use sectors through education and outreach,

financial incentives, financing mechanisms, and/or technical or deployment assistance. Such programs are frequently implemented in support of mandatory state-level policy goals (e.g., an EERS).

- **RE programs** are designed to increase the production and use of RE sources through resource procurement and development, education and outreach, financial incentives, and/or technical assistance. Such programs may be implemented in support of mandatory state-level policy goals (e.g., an RPS), or may be for other purposes (e.g., voluntary purchases of RE).

## Estimating Potential Emission Reductions

After a jurisdiction determines what state, tribal and local EE/RE policies and programs are in place and gathers information on their energy impacts, EPA recommends air quality professionals conduct an initial calculation of potential emission benefits. Estimating the potential emission reductions allows a jurisdiction to determine whether further investigation is warranted.

Appendix I describes four different emissions quantification approaches for EE/RE policies and programs. Three of these quantification approaches could help with performing back-of-the-envelope calculations of potential emission reductions of EE/RE policies and programs. Having a sense of the emissions impact of a policy or program will help a jurisdiction decide whether and how to move forward with incorporating an EE/RE policy or program in a SIP/TIP.

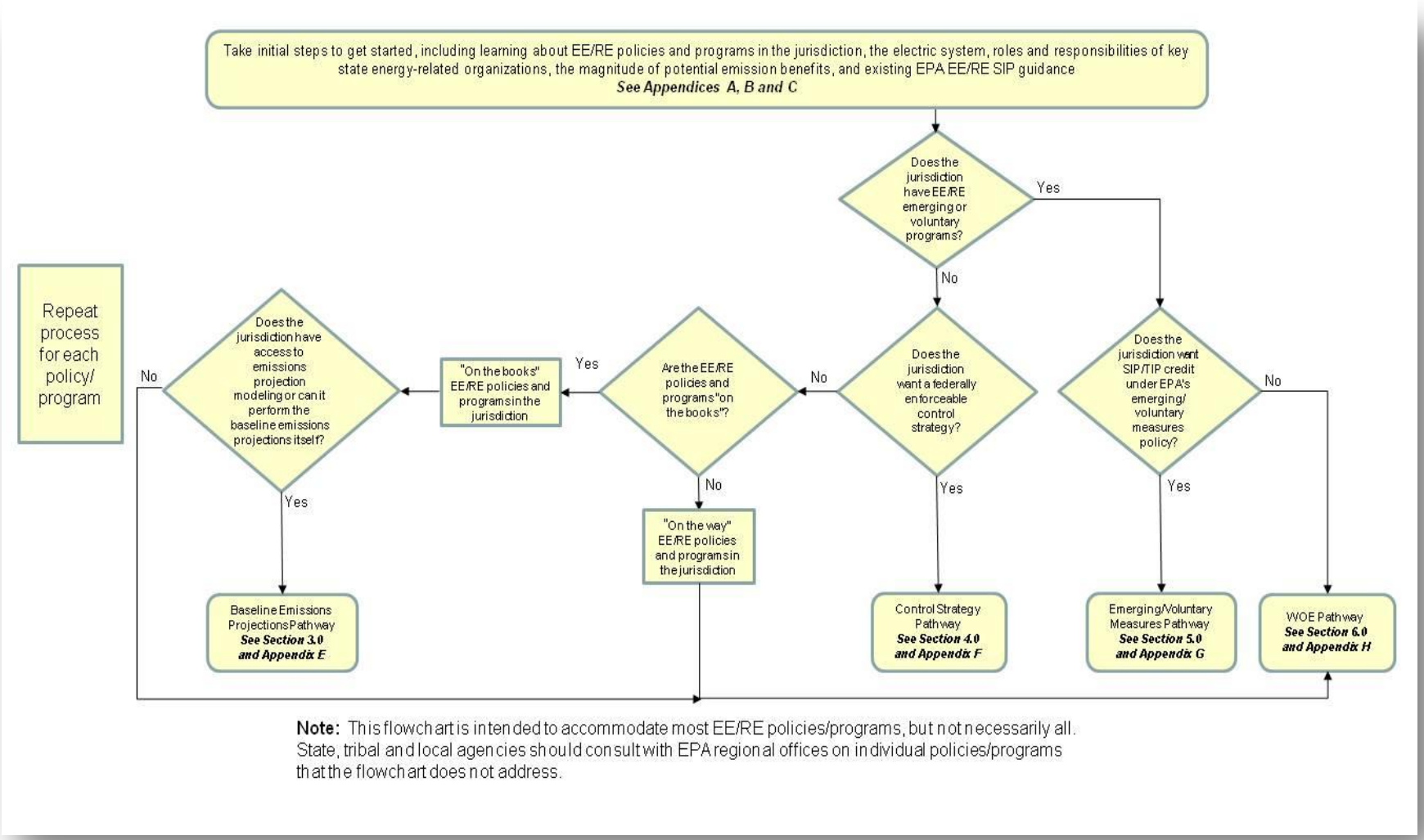
## Understanding Existing EPA Energy Efficiency/Renewable Energy SIP Guidance

The EPA has issued five guidance documents related to incorporating EE/RE programs in SIPs. Appendix C provides highlights of the parts of those documents relevant to EE/RE and SIPs. State, tribal and local agencies should gain a basic understanding of EPA's existing guidance (and this roadmap's clarifications) before deciding on which pathway or pathways to pursue for its policies and programs.

## Common "Getting Started" Questions and Answers

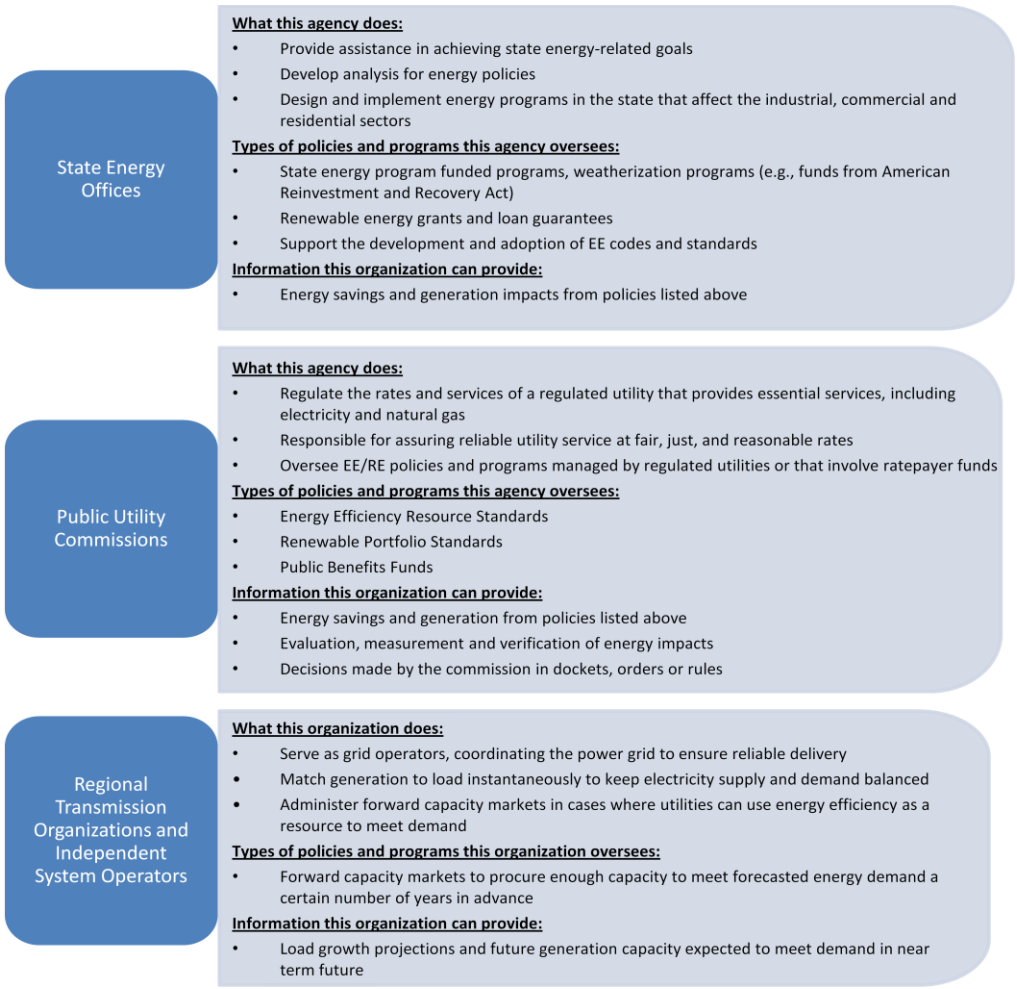
The EPA has also identified important EE/RE policy and program frequently asked questions state, tribal and local agencies could ask when determining whether to incorporate the emission impacts of EE/RE policies and programs in a SIP/TIP. Table 1 includes several "getting started" questions and answers to help state, tribal and local agencies address some basic issues.

## Figure 5: Energy Efficiency/Renewable Energy Pathway Flowchart for State and Tribal Implementation Plans




**Note:** This flowchart is intended to accommodate most EE/RE policies/programs, but not necessarily all. State, tribal and local agencies should consult with EPA regional offices on individual policies/programs that the flowchart does not address.

## Figure 6: Energy Organizations' Roles and Responsibilities



### Table 1: Common "Getting Started" Questions and Answers

| Question | Answer |
|---|---|
| With all the other regulatory activities I'm responsible for, why should I take time to consider EE/RE measures? | In many cases, state, tribal and local governments have already adopted EE/RE policies and programs for reasons other than air quality improvement. It may be a matter of simply accounting for the emission impacts of these existing initiatives. The EE/RE policies and programs may be able to provide emission reductions, which could include criteria pollutants, toxic air pollutants, and greenhouse gases. Air quality planners will benefit from understanding the full benefits of these strategies |
| I represent a city government in a nonattainment area that wants to take credit for locally-initiated EE measures. The plan for the nonattainment area is a SIP, managed by the state government, not a local plan. What should I first do? | One of the first actions EPA recommends is to talk with your state environment department to understand its position. The SIP is a *State* Implementation Plan, so an important first step is to engage the state agency primarily responsible for that plan. Analyses will need to be performed of the expected emission benefits of the measures and any impact on air quality in the nonattainment area. Agreements between local and state government agencies can clearly delineate responsibility for making up any discrepancies that might arise if emission reductions do not occur as expected. |
| Some states may be apprehensive about depending on EE/RE policies or programs for emission reductions in the SIP because, if the reductions fail to materialize, then the state will have to make up the reductions elsewhere. Is this an issue? | Some states have expressed this apprehension. If this is a concern, states can evaluate which SIP pathway can accommodate a jurisdiction's unique needs. The WOE pathway is also available to reach attainment goals even if reductions fail to materialize. In addition, for the baseline pathway and voluntary measures, if the state finds the EE/RE policy or program is not needed to attain the NAAQS, then action would not be needed to make up the shortfall. |
| Are daily emission reductions from electric sector EE/RE SIP initiatives typically small? | The jurisdictions that have requested SIP credit in a nonattainment area have typically claimed less than 1 ton/day of nitrogen oxides ($NO_x$) credit for an ozone SIP. However, EPA is aware of some state proposals that would seek multiple tons/day of $NO_x$ credit. The magnitude of emission reductions depends on the aggressiveness of the EE/RE policy or program and its effects on EGU emissions. The EPA encourages state and local governments initially to review more aggressive EE/RE policies and programs so that jurisdictions can capture the largest benefits first. |

| Question | Answer |
|---|---|
| How much effort does it take to complete the technical documentation to account for emission impacts of EE/RE policies and programs in SIPs/TIPs? | It varies depending upon a number of factors, including which EE/RE policies and/or programs state, tribal or local agencies have adopted; the energy data availability; whether the air agency has an established relationship with energy regulators; and the chosen SIP pathway. For example, relatively less effort is needed to fold existing EE/RE policies into a baseline emission projection analysis. For the emerging/voluntary measures and WOE pathways, documentation is based on a jurisdiction's desired level of rigor and energy information availability. By contrast, for the control strategy approach, a higher level of documentation and communication with energy regulators is needed and the particular EE/RE provisions need to be enforceable. |
| We have been designated as a nonattainment area for ozone and are subject to an emissions budget program for $NO_x$. Can we get SIP credit for EE/RE policies or programs? | Yes, SIP credit is available under these circumstances.[11] One acceptable way is by achieving additional emission reductions from EE/RE policies or programs in the presence of this type of program through the retirement of allowances commensurate to the emissions expected to be reduced by the EE/RE policy or program. Another way is to clearly demonstrate that emissions will decrease in the nonattainment area and/or time of interest despite the presence of the emissions cap.[12] |
| Where do you go to find the major steps to proceed from having a state or local EE/RE policy or program to realizing SIP credit for such a measure in a SIP revision? | The EPA has designed this roadmap to cover the major principles common for each SIP pathway, Figure 5 of this roadmap is provided as a starting point. Depending upon which SIP pathway is pursued, further information on the major steps for each pathway can be found in the roadmap appendices that illustrate the major steps a state, tribal or local agency would take to quantify emission reductions, documentation and other applicable requirements. |
| How do I know which state, tribal or local EE/RE policies or programs may already be accounted for in a future emissions inventory, which is incorporated in a SIP baseline emissions projection? | Appendix E of this roadmap outlines the steps state, tribal and local governments can take to understand what EE/RE policies and programs are already reflected in the SIP emission baseline projections. First, a state, tribal or local agency needs to know the information source of energy forecast and evaluate which EE/RE policies are affecting the demand and supply assumptions in the energy forecast. |

[11] EPA (2004a), pp. 9-10.
[12] The Agency plans to provide an example of such a demonstration and to further clarify this answer.

| Question | Answer |
|---|---|
| What specific tools are available to enable me to estimate the kilowatt-hours (kwh) impacts from various, common EE and RE programs (e.g., green building codes, renewable energy credit purchases, water conservation and water pumping improvements, retrofits of public buildings)? | The energy regulators within your state or energy-related local government offices are normally the people who manage these common EE/RE programs. The EPA encourages you to reach out to your colleagues to understand the tools and methods that are employed to estimate the energy impacts of specific programs. You can also refer to the following website for general information on this topic. http://www.epa.gov/statelocalclimate/state/activities/measuring-savings.html. |
| How can I specifically estimate the magnitude of kwh reduced (and emissions reductions) from each EGU that supplies the geographic area where the EE/RE policies and programs are being implemented? | Examples supplied in Appendix K of this roadmap discuss this methodology. An energy model such as a dispatch modeling has the capability of performing this type of analysis. Performing a regional analysis is the best approach for this situation because the electricity suppliers generally cross state boundaries to meet the demand or reduce demand when EE/RE programs are brought onto the electric grid in a particular area. |

# SECTION 3.0: DECISION-MAKING FOR NAVIGATING THE FOUR PATHWAYS

After completing the initial tasks identified at the top of the EE/RE Pathway Flowchart (Figure 5), the next activity EPA recommends is exploring which of the four pathways described above represents the most appropriate mechanism for incorporating a jurisdiction's EE/RE policies and programs in their SIP/TIP. The purpose of this section is to help state, tribal and local agencies with this task by navigating through the decision-making flowchart.

To use the flowchart, jurisdictions need to understand certain definitions contained in the EPA's 2004 guidance[13] and for federal enforceability:

- **An emerging program** does not have the same high level of certainty as traditional measures for quantification purposes. (Traditional measures are generally thought of as control measures applied to stationary industrial sources that can take the form of emissions limitations.)
- **A voluntary program** is not enforceable against an individual source or implementing party.
- **Federal enforceability** refers to the fact that in the SIP planning process when EPA approves a SIP control strategy submitted to it for review, the SIP becomes federally enforceable, which provides EPA with authority to ensure the SIP is implemented. Once EE/RE policies and programs become federally enforceable, EPA has the authority under the CAA to apply CAA-authorized penalties against the noncompliant party.

## Decision-Making Flowchart

The EPA has identified certain key EE/RE policy/program characteristics agencies should address when determining which pathway they can pursue to account for the emission impacts of EE/RE policies and programs in a SIP or TIP. State, tribal and local agencies can apply these characteristics to their unique situations and needs. As additional aids, for each pathway Figure 7 provides characteristics of policies and programs that would suit each approach and Table 2 contains examples of EE/RE policies and programs for the four pathways.

Five key questions will aid jurisdictions in determining what SIP pathway(s) to pursue for each EE/RE policy or program, or group of EE/RE policies or programs:

1) Does the jurisdiction have emerging or voluntary programs?
2) If the answer is "yes," then does the jurisdiction want SIP/TIP credit under EPA's emerging/voluntary measures policy?

[13] EPA (2004a, 2004b).

- The term “SIP/TIP credit” means emission reductions achieved by using technologies or strategies, used by a state or tribe for the purpose of meeting emission reduction requirements in its reasonable further progress (RFP[14]), attainment or maintenance strategy.

3) If the answer is “no,” then does the jurisdiction want a federally enforceable control strategy?
4) Are the EE/RE policies and programs “on the books” (i.e., already adopted by a legislative or regulatory body)?
    - If the policies and programs are not “on the books,” then the logical assumption is whether the jurisdiction has EE/RE policies and programs that are “on the way” to being adopted prior to SIP submittal to EPA.
5) Does the jurisdiction have access to emissions projection modeling or can it perform baseline emissions projections itself?

State, tribal and local agencies can do a combination of any, or all, of the four pathways. They should proceed through the steps in the flowchart in Figure 5 for each separate policy and program in their jurisdiction so that they evaluate each policy and program separately.

Whether a jurisdiction has emerging and voluntary measures serves as the entry point question into the decision-making flowchart. The next two sections describe the possible scenarios that can result from whether the answer to this question for a specific policy or program is “yes” or “no.”

## Pathways for Jurisdictions That Have Emerging and/or Voluntary Measures

If a jurisdiction has EE/RE policies and programs that meet the emerging and/or voluntary measures definition and wants SIP/TIP credit for the emission reductions, then it should consider the *emerging/voluntary measures pathway*. If it does not choose that pathway, but nevertheless wants to reflect the emissions reduction benefit of its EE/RE policies and programs in its SIP/TIP, then the *WOE pathway* would be the appropriate option.

## Pathways for Jurisdictions That Do Not Have Emerging and/or Voluntary Measures

If a jurisdiction does not have EE/RE emerging and/or voluntary programs, then it can consider at least two or three of the other pathways. The first important question is whether or not the jurisdiction wants the EE/RE policy or program to be a federally

[14] Under the Clean Air Act, the term "reasonable further progress" means such annual incremental reductions in emissions of the relevant air pollutant as are required by the CAA or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable NAAQS by the applicable date. In previous guidance, when referring to SIP requirements EPA also referred to rate of progress or ROP, which was intended to cover a portion of emissions needed to satisfy reasonable further progress. In this guidance, EPA has dropped the ROP term and is now referring to the reasonable further progress requirement only as RFP.

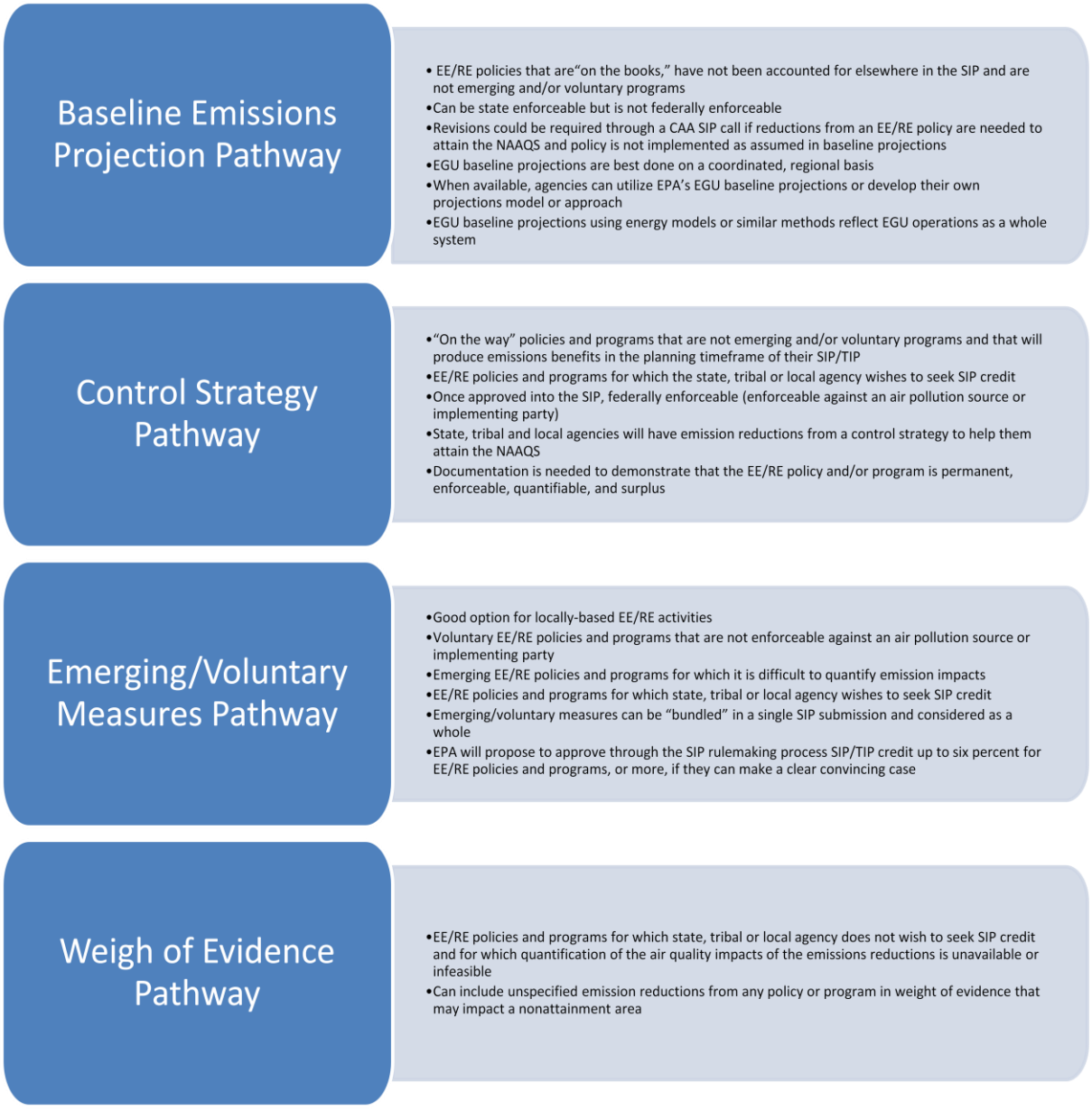
enforceable control strategy. If the answer is "yes," then the *control strategy pathway* would be the recommended option. If the answer is "no," then the next decision point hinges on whether the jurisdiction has access to emissions projection modeling or can perform the baseline emissions projections itself. If the answer is "yes," EPA recommends that "on the books" policies and programs be accounted for in the *baseline emissions projection pathway*. If the answer is "no", then EPA recommends the *WOE pathway*.

## Additional Resources

Table 3 contains summary information on SIP credit for each pathway, including appropriate percentage of SIP "credit," suggested quantification methods and relevant EPA guidance. It also includes suggested emission quantification approaches state, tribal and local agencies can use as guidelines when accounting for emission impacts of EE/RE policies and programs within a certain SIP/TIP pathway. These approaches are suggestions only, so a jurisdiction can choose to use an alternative approach, not listed here, that has comparable rigor and emission results. Before getting too deeply into any EE/RE emissions analysis, contact the air program in an EPA regional office[15] to discuss options for emission quantification approaches that are appropriate for the EE/RE policies and programs at hand.

[15] For more information, go to: http://www.epa.gov/aboutepa/where.html.

## Figure 7: Characteristics of Policies and Programs Suitable for Each Pathway



## Table 2: Examples of Energy Efficiency/Renewable Energy Policies and Programs for the Four State and Tribal Air Planning Pathways[16]

| Policies | Programs |
|---|---|
| ***Baseline Emissions Projection Pathway*** | |
| Existing policies such as:<br>• Renewable portfolio standards<br>• Energy efficiency resource standards<br>• Public benefit funds | • Not applicable |
| ***Control Strategy Pathway*** | |
| New policies (or proposed increases in stringency for existing policies) with respect to:<br>• Renewable portfolio standards<br>• Energy efficiency resource standards<br>• Public benefit funds | • Not applicable |
| ***Emerging/Voluntary Measures Pathway*** | |
| New or existing policies such as:<br>• Mandatory commercial whole-building energy use disclosure at time of sale or lease<br>• On-bill financing for EE retrofits | New or existing programs such as:<br>• Development and implementation of municipal energy conservation plan<br>• Municipal building retrofit programs<br>• Statewide EE awareness program<br>• Customer feedback on energy usage |
| ***Weight of Evidence Pathway*** | |
| New or existing policies such as:<br>• Renewable portfolio standards<br>• Energy efficiency resource standards<br>• Public benefit funds<br>• Mandatory commercial whole-building energy use disclosure at time of sale or lease | New or existing programs such as:<br>• Development and implementation of municipal energy conservation plan<br>• Municipal building retrofit programs<br>• Statewide EE awareness program<br>• Customer feedback on energy usage |

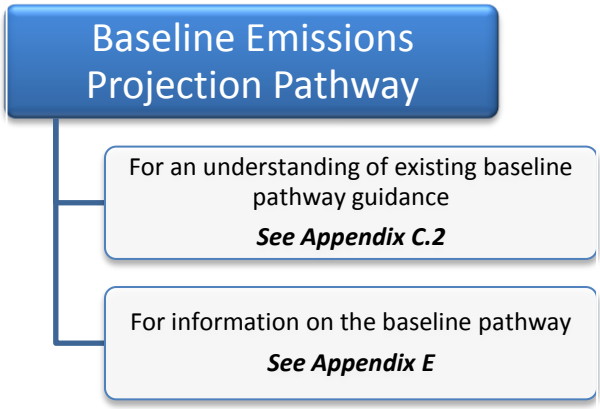
[16] Example policies are provided here for all four pathways. Generally, because of their larger scope, EE/RE policies have the potential to provide greater emission reductions than programs. By contrast, EE/RE programs are frequently implemented in support of mandatory state-level policy goals and individually have the potential to achieve smaller emission impacts. Example programs are provided for only two of the four pathways – the emerging/voluntary measures and WOE pathways. Example programs are not provided for the baseline emissions projection and control strategy pathways because they are not anticipated to provide enough potential emission reductions to warrant the time and resources necessary to satisfy the SIP documentation needs of each of those pathways. However, jurisdictions can decide if this is true in their unique circumstances. Reviewing the resources needed can help provide the context for EE/RE policies and programs as jurisdictions consider which SIP/TIP pathway is appropriate for each of its EE/RE policies and programs.

### Table 3: Information on State and Tribal Implementation Plan Credit and Quantification Approaches

| Percentage of SIP "Credit" Allowed | Suggested Quantification Methods | Relevant EPA Guidance |
|---|---|---|
| ***Baseline Emissions Projection Pathway*** | | |
| • No SIP credit limit<br>• Allows for jurisdictions to account for established EE/RE policies in the SIP | • Energy model approach<br>• Historical hourly emission rate approach<br>• Alternative emissions projection tools or analysis | • More information on IPM is available at http://www.epa.gov/airmarkt/epa-ipm/<br>• "EIIP, Emissions Projections Volume X", EPA, http://www.epa.gov/ttnchie1/eiip/techreport/volume10/x01.pdf, 1999 |
| ***Control Strategy Pathway*** | | |
| • No SIP credit limit<br>• Need to present case for credit | • Energy model approach<br>• Historical hourly emission rate approach<br>• Capacity factor approach | • "Guidance on SIP Credits from Emission Reductions from Electric-Sector Energy Efficiency and Renewable Energy Measures," EPA, http://www.epa.gov/ttncaaa1/t1/memoranda/ereseerem_gd.pdf, August 2004 |
| ***Emerging/Voluntary Measures Pathway*** | | |
| • Presumptive limit is 6 percent of the total amount of emission reductions required for SIP purposes<br>• Limit applies to the total number of emission reductions that can be claimed from any combination of emerging and/or voluntary measures<br>• Can be greater than six percent where a clear and convincing justification is made | • Capacity factor approach | • "Incorporating Emerging and Voluntary Measures in a State Implementation Plan (SIP)," EPA, http://www.epa.gov/ttncaaa1/t1/memoranda/evm_ievm_g.pdf, September 2004<br>• "Guidance on Incorporating Bundled Measures in a State Implementation Plan," EPA, http://www.epa.gov/ttn/caaa/t1/memoranda/10885guideibminsip.pdf, August 2005 |
| ***Weight of Evidence Pathway*** | | |
| • No SIP credit limit<br>• Only an option if the predicted air quality value in the attainment demonstration (using modeling) is within a prescribed margin of attaining the NAAQS | • Energy model approach<br>• Historical hourly emission rate approach<br>• Capacity factor approach<br>• eGRID sub region non-base load emission rates | • "Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze," EPA, http://www.epa.gov/ttn/scram/guidance/guide/final-03-pm-rh-guidance.pdf, April 2007 |

## SECTION 4.0: BASELINE EMISSIONS PROJECTION PATHWAY

When developing a SIP/TIP, jurisdictions must have an inventory of current emissions and a baseline projection of future emissions. The baseline emissions projection shows the level of emissions in the future target year that will result if no additional control strategies, policies or programs are implemented. The baseline emissions projection includes effects of existing federal, state, tribal or local policies or programs that will come into effect by the future attainment year, but does not include any additional ("on the way") strategies not yet in statute or codified by a regulatory body. These strategies can include cases where a local community wants to capture local EE/RE SIP measures that are not part of federal or state regulations or statutes. The EPA will consider the concept of a state entering into a binding commitment with a community in order to capture such reductions within the baseline emissions projection pathway.




Jurisdictions can take steps to understand the impacts of their existing EE/RE policies and programs, and to represent these impacts in baseline emission projections. State, tribal and local agencies interested in accounting for "on the books" EE/RE policies in the baseline emissions projections pathway can conduct their own analysis or use EPA's emissions projections of the EGU sector.

**Task Checklist: Baseline Emissions Projection Pathway**

- ✓ Identify and describe EE/RE programs and policies to include in the baseline emissions projection
- ✓ Ensure EE/RE programs and policies will be in place for the duration of the planning period
- ✓ Perform an analysis of the energy impacts expected from the policies and programs
- ✓ Ensure EE/RE emission reductions in the baseline emission projections are not accounted for as part of another pathway to avoid double counting

Appendix E provides details on incorporating "on the books" EE/RE policies in the SIP/TIP baseline pathway and on implementing this pathway. Agencies interested in EPA's energy modeling capability (using the IPM model) to account for EE/RE policies in their baseline emission projections can start by reviewing Appendix E.2. State, tribal and local

agencies considering developing their own method can also review Appendix J which describes the methodology EPA used to develop energy savings estimates for state EE/RE policies, provides an overview of the information EPA is making available and outlines potential uses for the information.

## Qualifying Criteria

Certain qualifying criteria have to be met in order to include a policy in the future baseline attainment year. First, EE/RE policies in the baseline need to be mandatory policies adopted by a governing body in a jurisdiction. For example, EERS that have been adopted in law can be included in the baseline emissions forecast. However, if a state, tribal or local agency is currently discussing whether to adopt such a policy, or has proposed but not yet adopted one, then it is not appropriate to include. Voluntary EE/RE policies – where there is no regulatory obligation – are likewise ineligible.

Second, EPA wants to ensure that the emission reductions from EE/RE policies are not counted twice. Prior to adjusting the baseline emission projections, state, tribal and local agencies must clearly understand which EE/RE policies and programs are already assumed in the baseline. Likewise, any EE/RE policies accounted for in the baseline cannot be incorporated in any other SIP pathway.

**Baseline Emissions Projection Pathway: Qualifying Criteria**

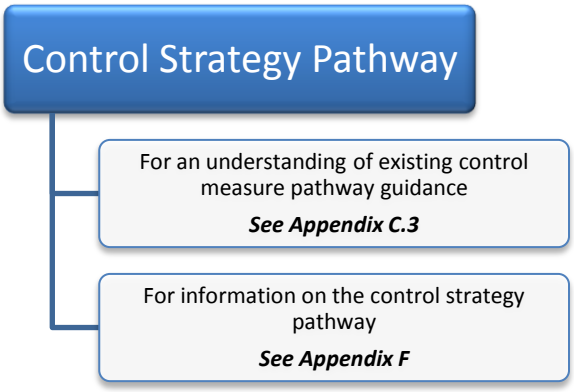
- State, tribal and local agencies can include a *specific EE/RE policy* in the future SIP/TIP attainment year emissions baseline if:
  - It has already been adopted by a governing body in a jurisdiction AND
  - The effects of the policy have not already been accounted for in the SIP/TIP (no double counting).

## Mandatory Policies That Are Not Federally Enforceable

EE/RE policies incorporated into the baseline emission projections are not federally enforceable and the EPA may not bring an enforcement action if a state fails to implement such an initiative. However, if the state, tribal or local air agency is relying on the EE/RE policy in the baseline to help the area attain a NAAQS and the EE/RE policy is not implemented as assumed and air quality does not improve so as to meet the NAAQS as anticipated in the SIP/TIP, then the jurisdiction may be required to implement backup policies to make up for the emissions shortfall. The air agency might also agree voluntarily to revise their SIP. Alternatively, EPA may initiate a SIP call under section 110 of the CAA in which EPA can require that the state revise the SIP to make up the emissions relied upon to meet the applicable NAAQS. In addition, state public utility commissions typically have mechanisms to require compliance with state EE/RE policy requirements, including financial incentives for exceeding state policy requirements and penalties for non-compliance. These enforcement mechanisms can provide more certainty that EE/RE policy requirements will be achieved.

## SECTION 5.0: CONTROL STRATEGY PATHWAY

SIPs and TIPs include strategies containing control measures to provide emission reductions to enable nonattainment areas to attain and meet SIP requirements. The control strategy pathway would provide state, tribal and local agencies the opportunity to include EE/RE policies as part of a control strategy. It is best suited for a state, tribal or local agency that is contemplating adopting EE/RE policies before submitting its SIP to EPA ("on the way" policies) and whose emission benefits will be realized coincident with the planning timeframe of its SIP. The control strategy pathway offers the most visible and direct benefit in the SIP context, is federally enforceable and represents the pathway taken when an agency adopts a traditional control measure into a SIP/TIP (e.g., a control measure for a stationary source).




**Task Checklist: Control Strategy Pathway**

- ✓ Identify and describe the EE/RE programs and policies to include as control measures
- ✓ Demonstrate EE/RE programs and policies are permanent
- ✓ Estimate the magnitude of potential emission reductions before undertaking more comprehensive analysis
- ✓ Demonstrate EE/RE programs and policies are surplus and not accounted for as part of another pathway
- ✓ Ensure EE/RE programs and policies are federally enforceable

This pathway involves significant documentation and quantification efforts. State, tribal and local agencies that undertake the control strategy option have to provide a demonstration that the emission reductions resulting from their mandatory EE/RE policies are permanent, enforceable, quantifiable and surplus. This roadmap clarifies how those requirements can be satisfied. As better information about the success of these policies and programs becomes available, EPA believes that it will be feasible for air agencies to make the necessary demonstration to address the requirements in their SIPs/TIPS.

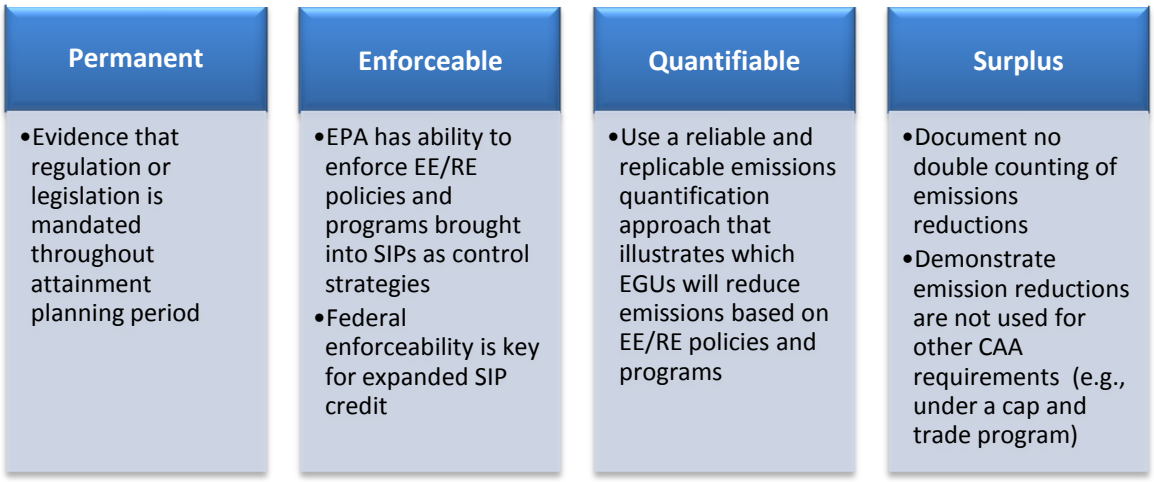
### Control Strategy Pathway Must Meet Four Criteria

Because the control strategy pathway is federally enforceable, coordination issues could be significant. The state, tribal or local air quality office will most likely need to reach out to the state public utility commission and others to explain the implications of making the state, tribal or local agency's mandatory EE/RE policies federally enforceable.

Additional details about this pathway are included in Appendix F. Appendix F contains information on four criteria that have to be met and how a state, tribal or local agency can satisfy them (see Figure 8). The strategy must be permanent throughout the term for which the credit is granted unless it is replaced by another measure or the state demonstrates in a SIP revision that the emission reductions from the measure are no longer needed to meet applicable requirements. The strategy must be federally enforceable and its emission reductions must be quantifiable and include procedures to evaluate and verify over time the level of emission reductions actually achieved. The emission reductions must be surplus and not double counted.

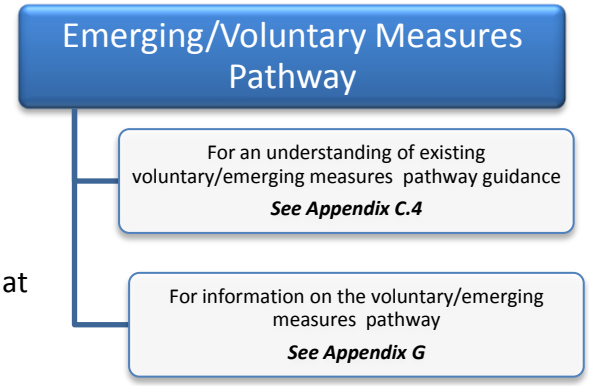
With respect to quantifying the benefits of mandatory EE/RE policies, the approaches outlined in Appendix I reflect that some state, tribal and local agencies (or groups of state, tribal and local agencies) will possess the resources and capability to perform sophisticated modeling analyses of the energy and air benefits of mandatory EE/RE policies, while others will not. Appendix I contains four quantification approaches that range in sophistication and describes how to handle uncertainty, including which approaches would be appropriate for the control strategy pathway.

**Figure 8: Four Criteria the Control Strategy Pathway Must Meet**



## SECTION 6.0: EMERGING/VOLUNTARY MEASURES PATHWAY

In the 2004 guidance,[17] EPA recognized that many jurisdictions of the country had implemented most available, traditional emission control strategies and wanted to try new types of pollutant reduction strategies to attain NAAQS, including emerging and voluntary EE/RE programs. The EPA supports and encourages the testing of emerging and voluntary pollutant reduction strategies. An emerging measure is a measure or strategy that does not have the same high level of certainty as traditional measures for quantification purposes. A voluntary measure is a measure or strategy that is not enforceable against an individual emissions source or a party responsible for implementing the EE/RE activity. A measure can be both emerging and voluntary. These measures can be state initiatives, but are generally locally-based initiatives, that are designed to encourage or require citizens, businesses or local government to reduce emissions.




**Task Checklist: Emerging/Voluntary Measures Pathway**

- ✓ Identify and describe the emerging/voluntary EE/RE policies and programs to be included in pathway
- ✓ Calculate emissions reductions, including description of quantification technique
- ✓ The state, tribal, or local agency needs to make an enforceable commitment to:
  - ✓ Implement those parts of the measure for which the agency is responsible
  - ✓ Monitor, evaluate, and report at least every three years on progress toward emission reductions
  - ✓ Remedy any SIP/TIP credit shortfall if the program does not achieve projected emission reductions
- ✓ Certify EE/RE policies and programs are permanent
- ✓ Certify EE/RE policies and programs are surplus and not accounted for as part of another pathway

In addition, the individual emerging and/or voluntary measure can be "bundled" in a single SIP submission. The emission reductions for each measure in the bundle would be quantified and the total reductions would be summed together in the SIP submission. After SIP approval, each individual measure would be implemented according to its schedule in the SIP. It is the performance of the entire bundle (the sum of the emission reductions from all the measures in the bundle) that is considered for SIP evaluation purposes, not the effectiveness of any individual measure.[18]

This pathway is similar to the control strategy pathway in that an EE/RE program can receive emission reduction SIP credit. For emerging/voluntary stationary measures, the presumptive SIP credit limit is 6 percent of the total amount of emission reductions required for RFP, attainment or

[17] EPA (2004b).
[18] These measures can be bundled with non-EE/RE measures.

maintenance demonstration purposes.[19] These measures must satisfy the four criteria for SIP measures:

- Permanent
- Enforceable
- Quantifiable
- Surplus

The 2004 guidance provides flexibility for emerging measures on the quantifiable criterion and for voluntary measures it provides flexibility on the enforceable criterion.

The pathway is well suited for jurisdictions that have emerging and/or voluntary EE/RE policies and programs that are not easy to enforce and/or quantify but for which the jurisdiction would like SIP credit. The pathway establishes conditions that limit the credit that emerging/voluntary measures can receive. (See Table 3 for details on how much SIP credit is allowed under this pathway compared to other pathways.) The emerging/voluntary measures pathway provides a mechanism that allows state, tribal or local agencies to receive provisional emission reduction credit in their SIP for new emission control and pollutant reduction strategies that have the potential to generate additional emission reductions or air quality benefits. Provisional emission reductions or pollutant reduction strategies can become permanent when post-implementation evaluations validate the amount of emission reductions achieved.

[19] EPA (2004b).

## SECTION 7.0: WEIGHT OF EVIDENCE PATHWAY

When state, tribal and local agencies prepare SIP/TIP demonstrations of attainment, sometimes air quality modeling results can be inconclusive and predict that jurisdictions may not attain a NAAQS based solely on air quality modeling. In those cases, EPA guidance allows state, tribal or local agencies to submit WOE demonstrations to show that, despite inconclusive modeling results, the nonattainment area will still attain based on other evidence. The WOE pathway can reflect mandatory and voluntary EE/RE policies and programs that demonstrate, through objective analysis, which emission reductions will occur within the same planning timeframe as that used for attainment.

**Weight of Evidence Pathway**

For an understanding of existing WOE pathway guidance
***See Appendix C.5***

For information on the WOE measures pathway
***See Appendix H***

The WOE pathway is applicable where a state, tribal or local agency has prepared an attainment demonstration that includes modeling that results in projected future air quality that is close to the NAAQS, but does not meet the level of the NAAQS. In this case, an agency may choose to submit a WOE analysis, which may include, among other things, alternative modeling results, emissions controls that were not modeled, and ambient data trends and analyses. As part of the WOE showing, the agency may wish to take advantage of EE/RE policies or programs adopted in its jurisdiction for purposes other than the SIP/TIP. They may want to reflect the emission benefits of the policies or programs in the determination because they believe that the positive benefits will potentially affect air quality in the attainment year, but modeling the impact of the policy or program is either too resource intensive or not feasible for other reasons or the jurisdiction is not interested in SIP/TIP credit.

**Task Checklist: Weight-of-Evidence Pathway**

- ✓ Identify and describe the EE/RE policies and programs that it wishes to include in the WOE demonstration
- ✓ Ensure EE/RE policies and programs will be in place for the duration of the planning period
- ✓ Perform an objective analysis of the benefits expected from the policies and programs
- ✓ Ensure that any EE/RE emission reductions included in the WOE demonstration are not double counted as part of another pathway

Agencies need to perform objective analyses of the benefits expected from the EE/RE programs and policies reflected in the WOE demonstration that are intended to help improve air quality in the nonattainment area in question. The more robust the analysis supporting the WOE demonstration, then the stronger the argument that the area will attain despite inconclusive air quality modeling results. The WOE demonstration can be strengthened in several ways, including obtaining commitments from SEO or PUCs that the EE/RE policy or program requirements are approved or will be in place for the duration of the attainment plan. Process issues

associated with this pathway can be more or less significant, depending on the extent of the supporting analysis.

WOE demonstrations are generally a set of analyses of air quality, emissions, meteorological data, and modeling data that state, tribal and local agencies can use to show that attainment of a NAAQS is likely, despite initial modeled results that may not show attainment or may be close to the level of the NAAQS. The greater the difference between the modeled design value and the level of the standard, the more compelling the additional evidence produced by analyses must be in order to conclude (based on the WOE results) that attainment is likely despite the inconclusive modeled attainment test. WOE demonstrations are described in guidance EPA has issued on their use in SIP attainment demonstrations.[20] The EPA guidance includes guidelines for assessing when corroborating analyses and/or WOE determinations may be appropriate.

Emission reductions from mandatory EE/RE policies and voluntary programs proposed for use in the WOE demonstration cannot be used elsewhere in the SIP. In other words, no double counting is permitted. In addition, the measures must be in place for the duration of the SIP planning period. Appendix H describes the WOE approach in more depth and provides information on WOE analyses and Appendix K provides two examples of states that incorporated EE/RE policies and programs in their SIP WOE demonstrations.

[20] EPA (2007).

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