

## Allowance-Trading Programs

- Allowance-Trading Programs, also known as Cap and Trade, “use emission allowances as the currency to comply with emission reduction requirements. These programs display the following key features:
  - An emissions ‘cap’: A limit on the total amount of pollution that can be emitted (released) from all regulated sources (e.g., power plants); the cap is set lower than historical emissions in order to reduce emissions.
  - Allowances: An authorization to emit a fixed amount of a pollutant.
  - Measurement: Accurate tracking of all emissions.
  - Flexibility: Sources can choose how to reduce emissions, including whether to buy additional allowances from other sources that reduce emissions.
  - Allowance trading: Sources can buy or sell allowances on the open market. Because the total number of allowances is limited by the cap, emission reductions are assured.
  - Compliance: At the end of each compliance period, each source must own at least as many allowances as its emissions.
- Source: <http://www.epa.gov/airmarkt/trading/basics.html>

## Best System of Emission Reduction (BSER)

- In terms of reducing CO<sub>2</sub> emissions at affected EGUs, the EPA considered “numerous measures that are already being implemented and can be implemented more broadly to improve emission rates and to reduce CO<sub>2</sub> emissions from fossil fuel-fired EGUs. [It] is based on a range of measures that fall into four main categories, or ‘building blocks,’ which comprise improved operations at EGUs, dispatching lower-emitting EGUs and zero-emitting energy sources, and end-use energy efficiency.”
- The EPA proposed a combination of all four building blocks as the BSER
- Source: I. General Information. A. Executive Summary. b. Policy Context and Industry Conditions. <https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating>

## Building Blocks

- The ways and measures that the EPA is suggesting to utilities to reduce emissions. There are four building blocks “which comprise improved operations at EGUs, dispatching lower-emitting EGUs and zero-emitting energy sources, and end-use energy efficiency.”
- I. General Information. A. Executive Summary. b. Policy Context and Industry Conditions. <https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating>

### California's Global Warming Solutions Act (AB 32)

- “AB 32 requires California to lower greenhouse gas emissions to 1990 levels by 2020... The plan lays out the strategy and a comprehensive set of actions including:
  - Expanding and strengthening energy efficiency programs and building and appliance standards.
  - Achieving a statewide renewable energy mix of 33% by 2020.
  - Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.
  - Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
  - Adopting and implementing direct measures to reduce emissions and protect public health, including California’s clean car standards goods movement measures and the Low Carbon Fuel Standard
- Source: <http://www.edf.org/climate/AB32>

### Carbon Dioxide (CO2)

- Carbon Dioxide is a “naturally occurring gas, and also a by-product of burning fossil fuels” and a leading cause of global warming.
- Source: <http://www.epa.gov/climatechange/glossary.html#C>

### Clean Air Act Section 111(d)

- Section 111 (d) of the Clean Air Act provides the framework to reduce emissions from existing stationary pollution sources, like power plants.
- Using Section 111 (d), the EPA has developed the Clean Power Plan which allows the EPA to establish guidelines and recommend best practices. “The states then design programs that fit in those guidelines and get the needed reductions.”
- The Clean Power Plan intends to “maintain an affordable, reliable energy system, while cutting pollution and protecting our health and environment now and for future generations.”
- Source: <http://www2.epa.gov/carbon-pollution-standards/what-epa-doing>

### Climate Justice

- Achieving Climate Justice would entail “the fair treatment of all people and the freedom from discrimination with the creation of policies and projects that address climate change and the systems that create climate change and perpetuate discrimination.”
- Source: <http://www.actforclimatejustice.org/about/what-is-climate-justice/>

### Co-pollutants

- Co-pollutants include “sulfur dioxide, nitrogen oxides, particulates, and hazardous air pollutants, like mercury” and are emitted in large quantities by power plants. (Source: p. 7 [http://papers.ssrn.com/sol3/Delivery.cfm/SSRN\\_ID2451156\\_code797450.pdf?abstractid=2451156&mirid=1](http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2451156_code797450.pdf?abstractid=2451156&mirid=1))
- Co-pollutants are a major concern within Environmental Justice communities as “[e]pidemiological evidence suggests that chronic stress [as a result of factors like poverty], which alters immune function and other physiologic parameters, may alter individual susceptibility” to the health implications of concentrated levels of pollution. (Source: <http://www.weact.org/Projects/CleanAirQuality/CommunityStressors/tabid/610/Default.aspx>)
- The health implications of co-pollutants include, but are not limited to, asthma, emphysema, bronchitis, decreased lung function, irregular heartbeat, and nonfatal heart attacks. (Source: <http://www.epa.gov/airquality/particlepollution/health.html>)

### Components of State Plan

- “The EPA is proposing to evaluate and approve state plans based on four general criteria:
  1. enforceable measures that reduce electricity generating units’ CO2 emissions;
  2. projected achievement of emission performance equivalent to the goals established by the EPA, on a timeline equivalent to that in the emission guidelines;
  3. quantifiable and verifiable emission reductions; and
  4. a process for biennial reporting on plan implementation, progress toward achieving CO2 goals, and implementation of corrective actions, if necessary.”
- Source: <http://www.nrdc.org/air/pollution-standards/files/pollution-standards-epa-plan-summary.pdf>

### Demand Side Energy Efficiency

- Demand Side Energy Efficiency involves “measures that reduce the overall quantity of generation demanded by end-users.” (Source: VI. Building Blocks for Setting State Goals and the Best System if Emission Reduction. C. Detailed Discussion of Building Blocks and Other Options Considered. 4. Building Block 4 – Demand-Side Energy Efficiency.  
<https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating>)
- An end-user is a “firm or individual that purchases [electricity] products for its own consumption and not for resale” (Source:  
<http://www.eia.gov/tools/glossary/index.cfm?id=E>)

### Demand Reduction Strategies

- Energy Efficiency Resource Standards (EERS) “establishes specific, long-term targets for energy savings that utilities or non-utility program administrators must meet through customer energy efficiency programs... an EERS requires that [utilities] achieve a percentage reduction in energy sales from energy efficiency measures.” (Source: <http://www.aceee.org/topics/eers>)
- Example: In the state of California, Pacific Gas & Electric Company offers multiple energy efficiency programs that promotes reducing the demand of end-users through services like allowing customers to view their electricity consumption in real time and assisting customers establish “a comprehensive plan for making energy-efficient upgrades.” (Source: <http://www.pge.com/en/myhome/saveenergymoney/energysavingprograms/index.page>)

### Executive Order 12898

- In 1994 President Clinton established Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. “The order required that ‘each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, and low-income populations. . . .’”
- Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1913562/>

### Environmental Justice

- “Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

- Source: <http://www.epa.gov/environmentaljustice/>

### Fossil Fuel-Fired Electric Generating Units (EGUs)

- An EGU is “a solid fuel-fired steam generating unit that serves a generator that produces electricity for sale to the electric grid.” (Source: p.6 <http://www.epa.gov/nsr/ghgdocs/electricgeneration.pdf>)
- A fossil fuel-fired EGU is an EGU that uses coal, natural gas or petroleum (oil) to produce electricity.

### National Ambient Air Quality Standards (NAAQS)

- “The Clean Air Act... requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards.
  - Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.
  - Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.”
- Source: <http://www.epa.gov/air/criteria.html>

### President's Climate Action Plan

- A “series of executive actions to reduce carbon pollution, prepare the U.S. for the impacts of climate change, and lead international efforts to address global climate change.”
- Source: <http://www.whitehouse.gov/share/climate-action-plan>

### Portfolio Approach

- The Portfolio Approach is option of compliance with the Clean Power Rule for states which that includes “emission limits for affected EGUs along with other enforceable measures, such as RE and demand-side EE measures, that reduce CO<sub>2</sub> emissions from affected EGUs.”
- Source: VIII. State Plans. B. Approach. 1. State Plan Approaches. b. Portfolio Approach <https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating>

### Process for State Plan Submittal and Approval

- “Each state would be required to submit a plan by June 30, 2016, that contains certain required components. If a state needs additional time to submit a complete plan, then the state must submit an initial plan by June 30, 2016 that documents the reasons the state needs more time and includes commitments to concrete steps that will ensure that the state will submit a complete plan by June 30, 2017 or 2018, as appropriate.
- To be approvable, the initial plan must include specific components, including a description of the plan approach, initial quantification of the level of emission performance that will be achieved in the plan, a commitment to maintain existing measures that limit CO<sub>2</sub> emissions, an explanation of the path to completion, and a summary of the state's response to any significant public comment on the approvability of the initial plan...
- If the initial plan includes those components and if the EPA does not notify the state that the initial plan does not contain the required components, the extension of time to submit a complete plan will be deemed granted and a state would have until June 30, 2017, to submit a complete plan if the geographic scope of the plan is limited to that state. If the state develops a plan that includes a multi-state approach, it would have until June 30, 2018 to submit a complete plan. Further, the EPA is proposing that states participating in a multi-state plan may submit a single joint plan on behalf of all of the participating states.
- Following submission of final plans, the EPA will review plan submittals for approvability. Given the diverse approaches states may take to meet the emission performance goals in the emission guidelines, the EPA is proposing to extend the period for EPA review and approval or disapproval of plans from the four-month period provided in the EPA framework regulations to a twelve-month period.”
- Source: I. General Information. A. Executive Summary. 2. Summary of the Proposal's Major Provisions. c. State Plans. iii. Process for State Plane Submittal and Review. <https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating>

### Regional Greenhouse Gas Initiative (RGGI)

- “The Regional Greenhouse Gas Initiative (RGGI) is the first market-based regulatory program in the United States to reduce greenhouse gas emissions. RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce CO<sub>2</sub> emissions from the power sector.”
- Source: <http://www.rggi.org/>

### Renewable Energy

- Renewable Energy is comprised of resources that are “naturally replenishing but flow-limited. They are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time. Renewable energy resources include biomass, hydro, geothermal, solar, wind, ocean thermal, wave action, and tidal action.”
- Source: <http://205.254.135.7/tools/glossary/index.cfm?id=R>

### Renewable Portfolio Standards

- “A Renewable Portfolio Standard (RPS) provides states with a mechanism to increase renewable energy generation using a cost-effective, market-based approach that is administratively efficient. An RPS requires electric utilities and other retail electric providers to supply a specified minimum amount of customer load with electricity from eligible renewable energy sources. The goal of an RPS is to stimulate market and technology development so that, ultimately, renewable energy will be economically competitive with conventional forms of electric power.”
- Source: <http://www.epa.gov/agstar/tools/funding/renewable.html>

### State-Specific Emission Goals

- Under the Clean Power Plan, states are required to meet EPA-specified goals of CO<sub>2</sub> reductions.
- “To set state-specific goals, EPA analyzed the practical and affordable strategies that states and utilities are already using to lower carbon pollution from the power sector. These include improving energy efficiency, improving power plant operations, and encouraging reliance on low-carbon energy.”
- “Each state has the flexibility to choose how to meet the goal using a combination of measures that reflect its particular circumstances and policy objectives.”

- Source: <http://www2.epa.gov/carbon-pollution-standards/fact-sheet-clean-power-plan-framework>

### State Implementation Plan

- “The Clean Air Act (CAA) requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as State Implementation Plans or SIPs, are developed by state and local air quality management agencies and submitted to EPA for approval.
- The SIPs serve two main purposes:
  - Demonstrate that the state has the basic air quality management program components in place to implement a new or revised NAAQS.
  - Identify the emissions control requirements the state will rely upon to attain and/or maintain the primary and secondary NAAQS.”
- Source: <http://www.epa.gov/oar/urbanair/sipstatus/overview.html>