CP3T Quickstart Guide

The Clean Power Plan Planning Tool (CP3T) is a free Excel-based spreadsheet tool for performing "first-pass" planning for compliance with EPA's Clean Power Plan for reducing CO_2 emissions. It is based on the unit-specific data assembled by EPA to create its Clean Power Plan building blocks. You can use CP3T to create different scenarios with different compliance targets and pathways.

Step 1 — Select a state or group of states, and load the presets detailed below.

Step 2a — **Scenario setting—Select a compliance pathway:** Choose rate-based and mass-based approaches to compliance. CP3T calculates compliance with all of the different pathways and targets the Clean Power Plan offers. It always displays compliance information for at least one rate-based and one mass-based approach.

Understanding rate-based compliance

- Units comply by purchasing emission rate credits (ERCs) to offet CO_2 emission rates.

- CP3T calculates the number of ERCs required for each compliance period (see below).

- CP3T compares those with the number of ERCs produced in each of the three interim compliance periods and during the final compliance period.

- Scenarios that do not have enough ERCs to meet the total statewide requirement for ERCs in a given period do not achieve compliance.

Understanding mass-based compliance

- Units comply by obtaining an allowance for each ton of CO_2 they expect to emit in a year. States have a cap on the number of allowances they can distribute to units.

- CP3T calculates the total emissions from affected units and assumes each ton of these emissions is accompanied by an allowance.

- CP3T then compares this against the cap on allowances in each of the three interim compliance periods and during the final compliance period.

- Scenarios with emissions exceeding allowances in a given period do not achieve compliance.

Emission Rate Credits

Standard ERCs: Produced by new renewables, new energy efficiency, and new nuclear units

High-performing ERCs: Produced by affected fossil units with very low emissions rates

Gas shift ERCs: Produced by NGCC units. Only used by coal and other steam-powered units

CEIP ERCs: Produced by low-income energy efficiency, wind, and solar prior to 2022

Purchased ERCs: Assumed to be purchased from units in other states

Banked ERCs: Produced, but not used, in previous years

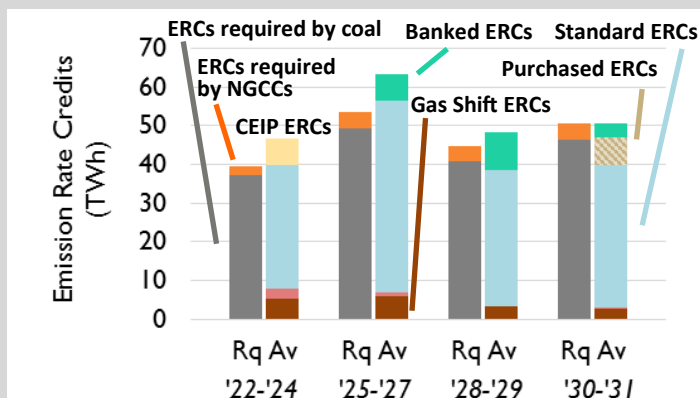ERCs have a default price in CP3T, or you can pick your own.

Allowances

Coal, oil and gas steam, or NGCC units must hold an allowance for each ton of CO_2 emitted.

For some scenarios, the statewide cap can be increased as a result of:

a) out-of-state allowances purchases, or

b) banked allowances from previous, over-compliant years.

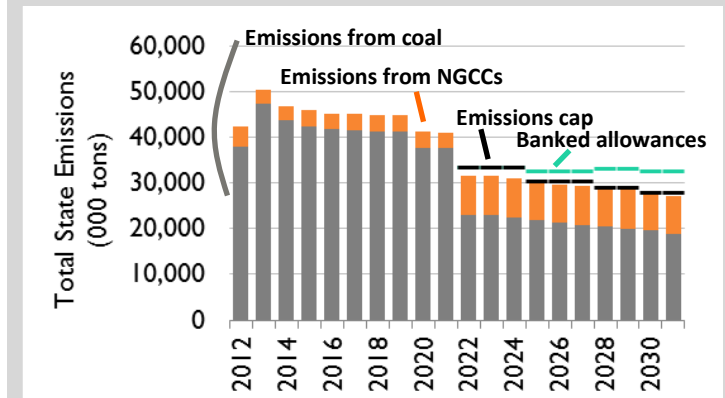Allowances have a default price in CP3T, or you can pick your own.

Figure 1. Required (left) versus available (right) ERCs for each period

Figure 2. Emissions cap versus Clean Power Plan-affected emissions

Renewables

Change variables such as future incremental renewable capacities, capacity factors, and costs.

Model resources including on-shore wind, off-shore wind, utility-scale solar, distributed solar, biomass, combined heat and power (CHP), geothermal, bundled renewable energy credits (RECs), and unbundled RECs.

Choose preset options including the level of renewables assumed by EPA's Clean Power Plan ("CPP Default") or a state's renewable portfolio standard ("State RPS").
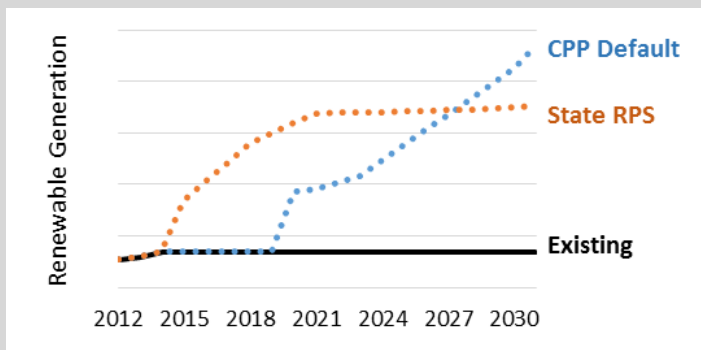

Figure 3. Choose between different renewable presets

Energy Efficiency

Adjust sales growth rates, baseline levels of energy efficiency, future energy efficiency levels and achievement rates, and measure expiration schedules.

Modify first-year costs, allocation of costs and savings by sector, financing perspectives, and allocation of costs between program administrators (e.g., utilities) and participants.

Choose preset options including future energy efficiency savings of 1 percent per year or a state's energy efficiency resource standard ("State EERS").
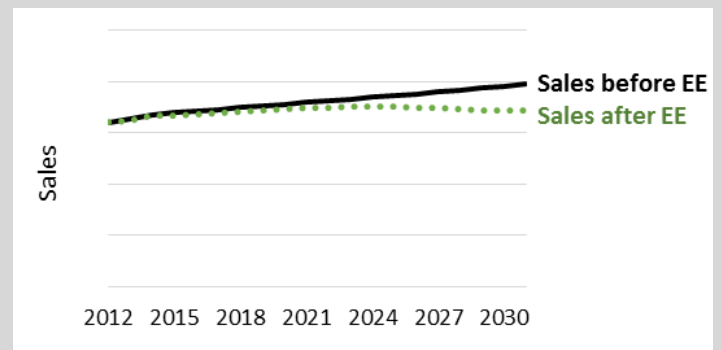

Figure 4. Set detailed inputs for energy efficiency (EE)

Existing and New Fossil and Nuclear Units

Modify fuel costs and other variables at existing fossil and nuclear units.

Add new fossil units, like new natural gas combined-cycle units.

Model costs of future environmental retrofits using data from Synapse's Coal Asset Valuation Tool (CAVT) (other cost data sets available at CP3T.com).

Enable fuel-switching at individual units, or set unit retirement dates.

Choose preset options including increasing capacity factors at NGCC units to 75 percent or improving emission rates at coal plants to Clean Power Plan levels.

Displacement

Adjust which, and to what level, existing resources are displaced by new "must-take" generation (i.e., new renewables and energy efficiency).

Imports and Exports

Examine historical data to determine whether your state is a net electricity importer or exporter.

Choose preset options including maintaining these historical levels of imports and exports, or allowing CP3T to recalculate imports and exports to fill any gaps in generation.

Step 3 **Calibration**: If a scenario fails to meet compliance or generation requirements, increase energy efficiency or renewables, add ERC or allowance purchases, or change capacity factors and emission rates at existing units.

Step 4 **Compare differences across scenarios**—and determine strengths and weaknesses—in generation, capacity, emissions, emission rates, and costs.

Create new scenarios or plan further analysis.

Other Resources

- Synapse Clean Power Plan Toolkit for in-depth modeling beyond the "out-of-the-box" CP3T version: synapse-energy.com/synapse-clean-power-plan-toolkit.
- Synapse blog posts on key Clean Power Plan issues: synapse-energy.com/tags/clean-power-plan.
- CP3T and the CP3T User Manual are available at: CP3T.com.