



FEDERAL AGENCY POLLUTANT LOAD ANALYSIS

How to Use CAST to Answer Questions about Your Federal Facilities

Abstract

This simple “How-To” document will walk you through seven commonly-asked questions that can be used to determine what information is in the Phase 6 Chesapeake Watershed Model for your federal agency and help you build an effective and efficient implementation plan.

Olivia H. Devereux

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INTRODUCTION

The Chesapeake Bay Program tracks progress toward the 2010 Chesapeake Bay TMDL for nitrogen, phosphorus and sediment for federal and nonfederal areas in the watershed. Federal agencies contribute to state-wide plans and report progress toward achieving those plans for each of the seven major jurisdictions within the Bay. Major jurisdictions include New York, Pennsylvania, West Virginia, Maryland, Delaware, Virginia, and the District of Columbia. Planning includes the Phase III Watershed Implementation Plan (WIP) for 2025 and the two-year milestones in 2021 and 2023. Federal agencies report their best management practice (BMP) implementation progress to the major jurisdictions annually.

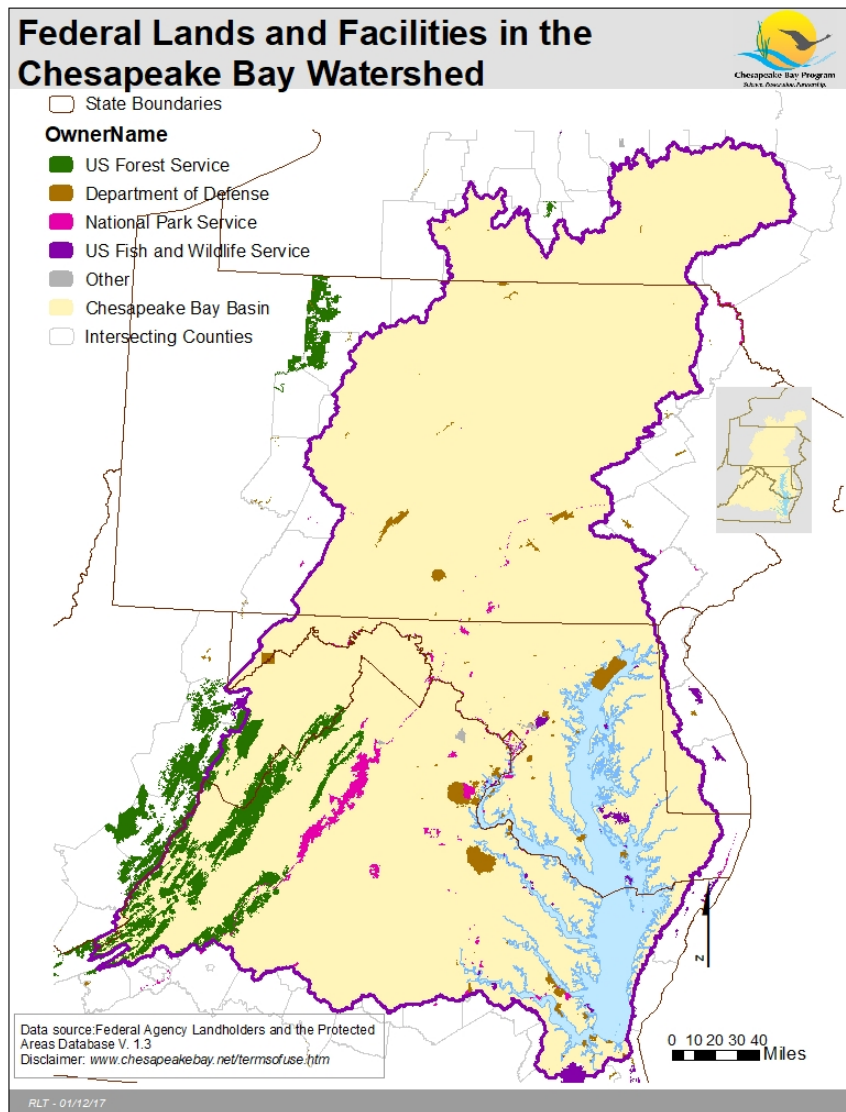
The planned implementation of BMPs are entered directly into CAST at CAST.ChesapeakeBay.net. CAST includes BMPs previously reported in each year beginning with 1985. The scenarios with BMPs previously reported serve as a foundation for planning future BMPs. Reporting of existing BMPs is through data entered into spreadsheet templates, which can be downloaded from the federal facility page in CAST.

This guide is intended to answer frequently asked questions by federal agencies. Additional support for CAST users is available through the website under "How To and the "Contact Us" menus.

software was unable to distinguish the land use for low vegetation and barren land cover. These land uses were assigned loading amounts and the percentage of land use inputted into the Editor Tool is used to determine total loading amounts in the Watershed Model.

We currently are not forecasting any land use changes for federal agencies due to their relatively small size relative and the fact that development on federal lands is not necessarily associated with county-level population and employment projections. A map of the federal lands in the Chesapeake Bay Watershed is below.

You will see construction and agricultural land uses in reports on CAST. There are no federal agency areas assigned to these categories. Where those areas existed for federal areas, they were subtracted out and assigned as "non-federal". For tracking and planning purposes, there are no construction, agricultural, septic, or wastewater loads. This was a policy decision made by the Federal Facility Workgroup and the Water Quality Goal Implementation Team of the Chesapeake Bay Program.



Q3. Which BMPs are we currently receiving pollutant reductions for in the Chesapeake Bay Model/CAST?

Using [CAST](#), you can download a report with all the BMPs for the agency and geographic area in which you are interested. 🌿

- If you would like a BMP report for your agency and geographic area, log in to [CAST](#).
 1. Using the ribbon at the top of the screen, select Results > Reports.
 2. Choose the “Report Type “BMP Submitted vs. Credited”. Note that the “BMP Summary” does not provide agency-level detail so stick with the more detailed report. 📷
 3. Name your report.
 4. Select Geographic Scale and Geographic Area in which your facility is located.
 5. Select the scenario. There are reports for every year from 1985 to 2017. 🌿
 6. Click the “Submit Report” button.
 7. You will get an email with a link to the report. You may also see the report by clicking on the second tab on that page named Download Report and clicking the download icon. Open the excel file.

Part 2. Knowing Your Commitments

Q4. How much sediment or phosphorus load is our federal agency expected to reduce in the planning period?

Reductions by 2025 should be provided to federal partners by each state environmental agency. There are planning targets for each state's portion of a major river basin 🌿 available on the CAST homepage under [Develop A Plan](#). The planning goals for federal agencies and local governments are developed by the state and posted when they are available from the state.

Details with definitions of BMP names and load sources are available under [Source data](#) on the home page.




🌿 If you choose 2017 Progress, you will see all BMPs implemented in your selected geographic area and agency as of the year 2017. The next year's progress is generally available around March of the following year. The Phase 2 WIP shows you the BMPs that were in the Phase 2 Watershed Implementation Plans for 2025. Since federal agencies were not explicitly modeled in the Phase 2 WIP, BMPs will not be broken out by agency in that scenario.

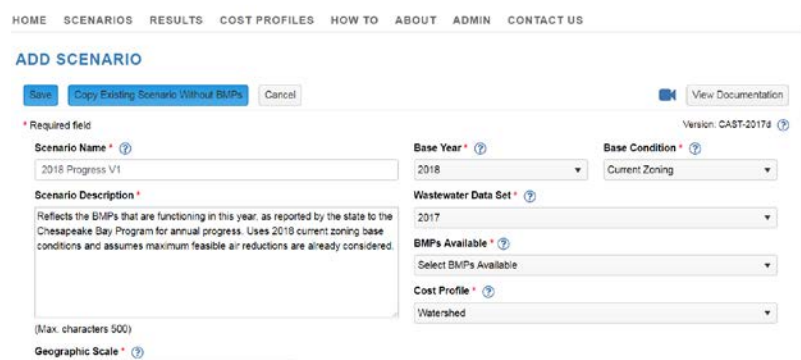
🌿 Draft planning targets establish the pounds of nutrients and sediments that must be achieved for each state major river basin, such as the Pennsylvania portion of the Susquehanna River, or the Maryland portion of the Potomac River.


Q5. How do I determine the reduction in pollutant loads for my agency?


Using [CAST](#), you can compare pollutant loads and land uses among multiple scenarios. You can create a scenario with your planned BMPs and compare with a current progress scenario to determine the amount of reduction between the two. To do this, you create two scenarios for your geographic area, the first scenario will be your baseline and the second will be for a future year. You can then download both scenarios in a single report to easily compare them.



➤ Login to [CAST](#), select Add New Scenario


1. This scenario is your first point of comparison and is a baseline condition.
2. Name your first scenario and add a description that will be useful to you. This scenario will represent your current pollutant loads and land uses. 






3. For BMPs Available, select “Planning BMPs” 
4. For Geographic Scale, select what makes sense for your area. If you’re not sure, we recommend starting with “county”. We can apply the results to a more local result like a facility later on (see Q6).
5. Once Geographic Scale is selected, choose your Geographic Area. Multiple areas may be selected.
6. Select the Base Year. This is the year you want to use as your first point of comparison. You probably want to select the current year.


 **Planning BMPs** include some BMPs that are not eligible for Chesapeake Bay TMDL reductions because they are either still under review or have not been approved by the Bay Program partnership. They may be used in the WIP.


7. Select the Base Condition.  There are two base conditions available. A description of each pops up when you hover over it. If you aren't sure, we recommend "Current Zoning".
8. Select a Wastewater Dataset. Typically, you will use the same year you used for your Base Year in Step 6.
9. Select Cost Profile. Costs are estimated for each state as well as a watershed average. You also have the option to create your own cost-profile with more locally-appropriate data if you have it. That will not be covered in this document.
10. Copy BMPs from an existing scenario.  This option is under "Copy/Upload BMPs". "Existing Scenario" is on the first tab. Select "single" and select the Base Year that you are used in Step 6. This allows you to see what your pollutant loads are with all the BMPs that you have already implemented and reported to the Chesapeake Bay Program.
11. "Share this Scenario" and "Notes" are not required. You can skip these sections.
12. Click Save.

➤ Now, create your second scenario for comparison by clicking Add New Scenario button. 


1. Click on the button at the top that says Copy Existing Scenario Without BMPs.
2. Select the scenario that you just created from the list. Rename your second scenario something like Agency Plan 2025 and add a description that will be useful to you. This scenario will show how your pollutant loads and land uses are projected to look like in 2025 with the BMPs that you add.
3. Change Base Year to 2025.
4. Change Wastewater dataset to WIP2. WIP2 represents the projected pollutant caploads from wastewater plants under the Phase 2 Watershed Implementation Plans . The Phase 3 WIPs are under development and not available yet.
5. Copy BMPs from an existing scenario exactly as you did for your first scenario. If you selected the 2017 Progress, then do so again.
6. Click Save.
7. On the Scenarios page, click the "Edit" button. 
8. On the tabs across the top, select "Developed BMPs" and click the blue "Add BMP" button.
9. Complete the information in the box using the drop down lists. Add as many BMPs as you would like in your plan. Additional


 **Base Conditions** define the land use for the selected year.









 **My Scenarios**

Add New Scenario Clear Filters

Scenario Name	Scenario Status
2016 Progress V9	Editing 

 **Watershed Implementation Plans (WIPs)** include detailed, specific steps each jurisdiction will take to meet the pollution reduction goals of the TMDL by 2025.

Edit	Run	Delete
		
		

information is available under "How To" on the CAST website. Information about BMP selection for optimizing load reductions is described in Q7.

- Click run on both scenarios once they are done validating.
- When both have a scenario status of Run Finished, go to the Results>Compare Scenarios item in the top ribbon menu.
- Select the same Geographic Scale that you did in your two scenarios.
- Select the Agency of interest.
- Select the two scenarios you just created. You can add in others if you like, but it is not necessary.
- Select Compare Scenarios
- There are four tabs with results. You can explore the comparison of the acres, loads, loading rates, and even see the percent change in loads. Tables can be downloaded from these pages.
- If you prefer to see the data all in one place on an excel spreadsheet, go to Results>Reports and download a Loads or Loads By Unit report. When you select the scenarios, just add both and they will be side-by-side in the downloaded report.

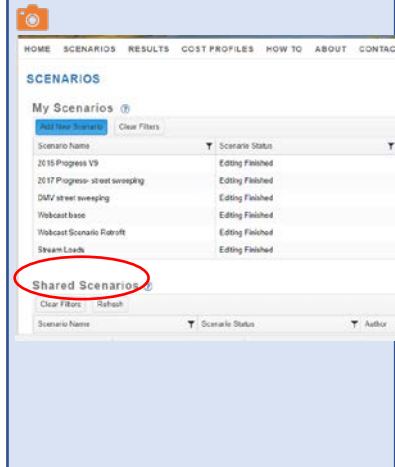
Q6. How can I use CAST to get accurate pollutant loading rates for my federal facility? 🌿




Using [CAST](#), you can view and download the pollutant loading rates as pounds per acre. You can then multiply those loading rates by the land uses and acres that are just in your facility to get the most accurate numbers for your implementation plan.


1. Log in to [CAST](#) and add a new scenario.
2. Copy the information from an existing scenario. We recommend using the most recent shared scenario that is labeled "Progress". This will probably be 2017 Progress. 📷
3. Select the geographic scale. County is probably fine for this purpose because you will only be using the lbs./acre, not the total pounds.
4. Copy BMPs from the most recent Progress (2017 Progress or whatever you used in Step 2)
5. Save. At this point, you have two identical scenarios. The one you've just created in Steps 2-4, and one that is already stored in CAST's "Shared Scenarios", called 2017 Progress.
6. Edit your scenario to add a few BMPs for the planning period. These are the BMPs that are part of your implementation plan. Tips for adding BMPs are in Q7.

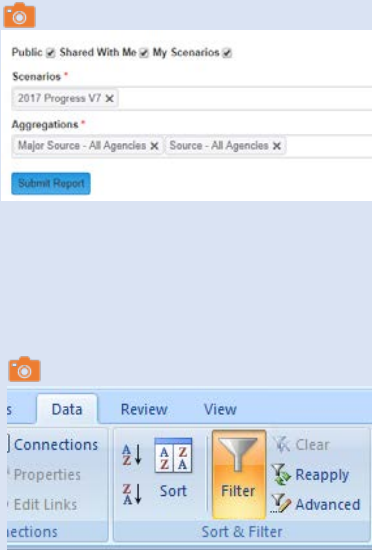


"Facility" refers to an agency's individual building, office or grounds. "Agency" describes the federal agency types established by the Federal Facilities workgroup. These agencies are explicitly modeled in CAST.



7. Run the Scenario to get the results.
8. On the results menu item in the ribbon at the top, select Results>Reports.
9. Select the report type as “Loads Per Unit”
10. Select the same geographic scale that you used for creating the scenario in Step 3.
11. From the dropdown list on the reports page, select the scenario “2017 Progress”, which is a Public Scenario. Also select the scenario you created, which is under "My Scenarios".
12. For aggregation , select Major Source - Agency. Also select Source - Agency. “Major Source” lumps all the MS4 land together and “Source” separates out the types of MS4 land. Agricultural and construction land uses will be included in the report but can be ignored. The policy decision was that there would be no agricultural or construction land use attributed to federal agencies.
13. Submit Report.  You will get an email with a report link. You can also go to the top of the screen and see another tab named Download Reports. You can download the report from Download Reports or from the email, whichever you prefer.
14. Once you download the report and open the Excel file, take a look at the tabs. If you do not want the level of detail for the MS4 area, then use the Major Source - Agency tab. If you like the level of detail, use the Source - Agency tab.
15. Filter the spreadsheet. The excel button for filter looks like a funnel  and is under the Data tab of the menu. You will first need to select the rows and columns that have data.
16. Click on the down arrow button for sector and select “Developed” only.
17. Click on the down button for Agency and select only the load sources with your agency type in the name
18. You can now see the loading rate for your agency's load sources. You can see the change between the latest annual scenario and the one you created.
19. Multiply the acres that you know are in your facility by the loading rate. If you don't know the acres in your facility, see Q1 in this How-To guide. A sample spreadsheet is available on CAST under How To>[User Documentation](#). Then click on “Getting Started” in the table of contents.

 **Aggregation** determines how the data in your report will be grouped and displayed. The word "All" can be considered equivalent to sum in this context.



The screenshot shows a software interface with a 'Submit Report' button. Below it, the 'Data' tab of the Excel ribbon is visible, with the 'Filter' button highlighted. The 'Filter' button is represented by a funnel icon. Other buttons in the ribbon include 'Sort', 'Advanced', 'Reapply', and 'Clear'.

Q7. How can I use CAST to experiment with BMPs and see if they help me reach my pollutant reduction goals?

There are a number of ways to target reductions by location, load source and most effective, least expensive BMP. There is a webinar available on CAST under How To, [Webinars](#) that walks through these three methods. 📺 The webinar covers the following topics.

- To evaluate the best locations to target, add the same BMP to two different geographies and compare the results to determine the location with the greatest reduction.
- To determine the load source that carries the highest load, calculate the pounds per acre for each load source in your scenario, then sort to see the one that is highest.
- To select the most effective, least expensive BMP, use the spreadsheet that lists the cost per pound reduced for each BMP. This spreadsheet is on the [Develop a Plan](#) page on CAST's home page.

