Draft climate change allocations for the Chesapeake Bay TMDL
COG staff document, Sept. 17, 2020

COG staff has developed the following information regarding the Chesapeake Bay Program's efforts to include the effects of climate change within the Chesapeake Bay TMDL. It addresses questions raised by members of COG's Water Resources Technical Committee at its Sept. 11 meeting.

The data shown here is based on the current consensus for how the Bay Program will adjust its Planning Targets as reached by the program's Water Quality Goal Implementation Team on Sept. 10. It is subject to change based on a final decision expected to be reached by the Principals' Staff Committee in early 2021.

Several notes regarding how to interpret the data:

The following table and charts show planning targets, which are annual loading amounts estimated by the Bay Program's modeling suite that serve as state-by-state allocations of the total load allowed by the TMDL, in the form of base loads and adjusted loads to account for climate change. Because climate change has a negative impact on achieving Bay water quality goals, incorporating its effects into the TMDL lowers the planning targets and thus increases the amount of reductions the District and Bay partner states must accomplish to achieve TMDL goals. COG has calculated this increase in effort in comparison to the amount of reductions still needed after implementation progress through 2019.

Caution should be observed in interpreting this "% increase in level of effort." Because this is determined in comparison to the amount of reduction still required to meet the base TMDL after 2019 Progress, the percentages are affected by the amount of progress that has been made. Thus, both Maryland and Virginia are in the 20 – 30 percent range while Pennsylvania has about a 5-percent increase in its total nitrogen (TN) level of effort. Primarily, this is because PA still has 37 million pounds of TN reduction to reach its base TMDL planning target, which dwarfs its additional allocation for climate change.

Nitrogen Planning Targets (in millions of pounds/year)

Jurisdiction	Base TMDL planning target	Adjusted planning target (preliminary)	Reduction required to meet base planning target (from 2019 Progress)	Additional reduction to address climate change (preliminary)	% increase in level of effort
District of Columbia	2.420	2.413	n.a. *	0.007	n.a. *
Delaware	4.550	4.511	2.154	0.039	1.8%
Maryland	45.840	44.698	6.179	1.142	18.5%
New York	11.530	11.131	2.337	0.399	17.1%
Pennsylvania	73.490	71.679	36.917	1.811	5.0%
Virginia	52.950	51.361	5.498	1.589**	28.9%**
West Virginia	8.230	8.230	n.a. ***	0.0	n.a. ***
TOTAL	199.010	194.024	52.465	4.986	9.5%

Notes:
Overall: the added proportional climate change reductions have been adjusted to cap New York's allocation at 0.399 million pounds
* The District is already 364,000 pounds below its base planning target in its 2019 Progress scenario
** Virginia's Phase III WIP already plans for additional N reductions of 1.72 million pounds for climate change
** West Virginia is already 160,000 pounds below its base planning target in its 2019 Progress scenario

Phosphorus Planning Targets (in millions of pounds/year)

Jurisdiction	Base TMDL planning target	Adjusted planning target (preliminary)	Reduction required to meet Planning Target (from 2019 Progress)	Additional reduction to address climate change (preliminary)	% increase in level of effort
District of Columbia	0.130	0.129	n.a. *	0.001	n.a.
Delaware	0.108	0.105	0.008	0.003	37.5%
Maryland	3.680	3.669	0.214	0.011	5.1%
New York	0.587	0.543	0.044	0.044	100%
Pennsylvania	2.905	2.810	1.004	0.095	9.5%
Virginia	5.583	5.246	0.538	0.337	62.6%
West Virginia	0.433	0.424	0.018	0.009	50%
TOTAL	13.426	11.665	1.761	0.599	34%

Notes:

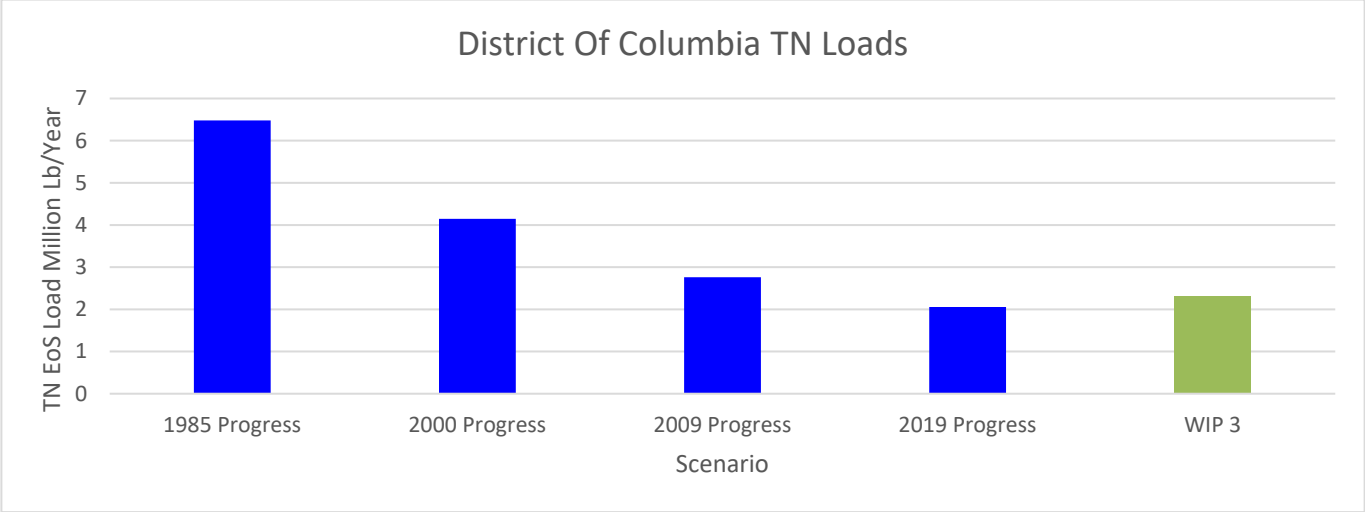
* The District is already 65,000 pounds below its base planning target in 2019 Progress scenario

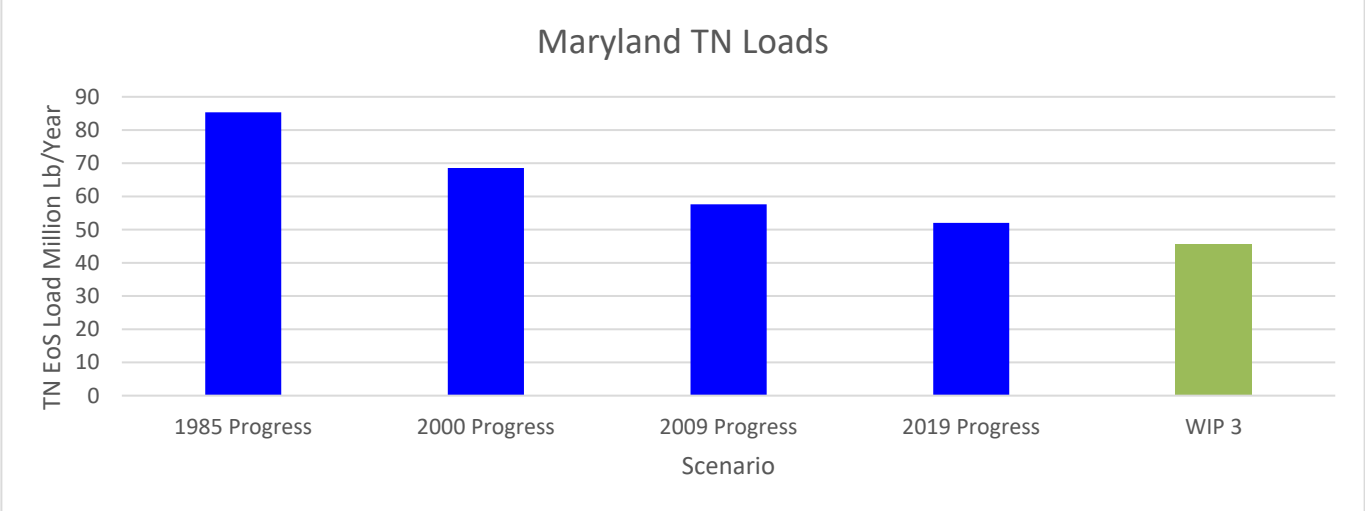
** Virginia's Phase III WIP already plans for additional P reductions of 0.19 million pounds for climate change

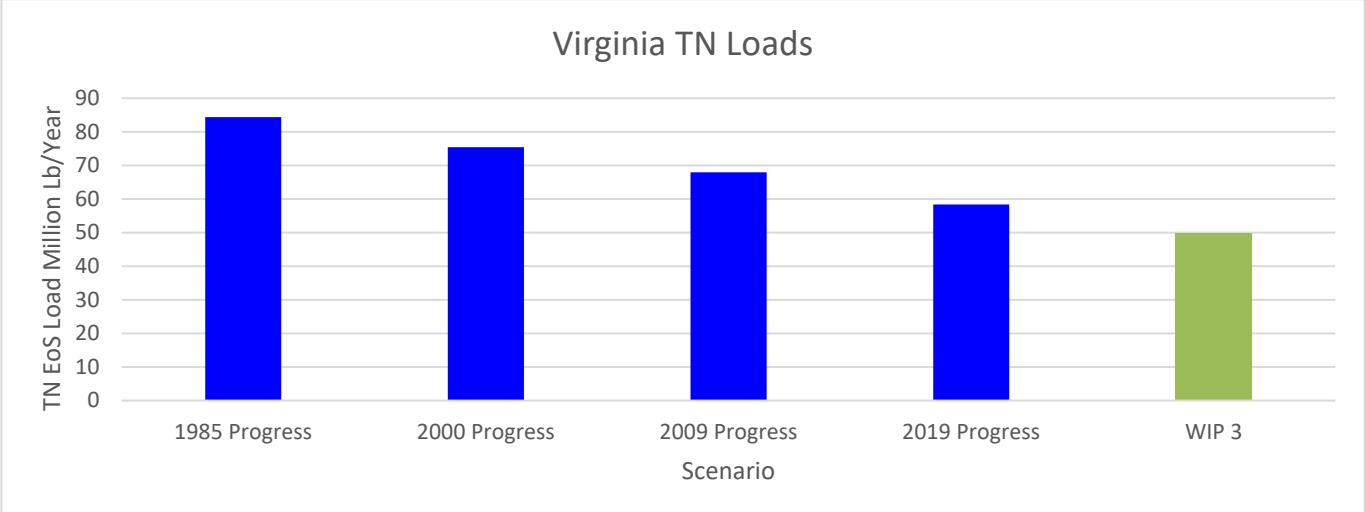
One final caution: the percent increase in the level of effort for nitrogen may be a more meaningful gauge of the increased effort required by climate change because nitrogen reductions have been more difficult to achieve than phosphorus reductions and most jurisdictions are closer to achieving their TP targets than their TN targets.

Additional graphic analysis is provided on the following two pages.

The following set of charts shows a time series of estimated loads in comparison to the load estimated to occur when jurisdictions' WIP 3s are fully implemented.

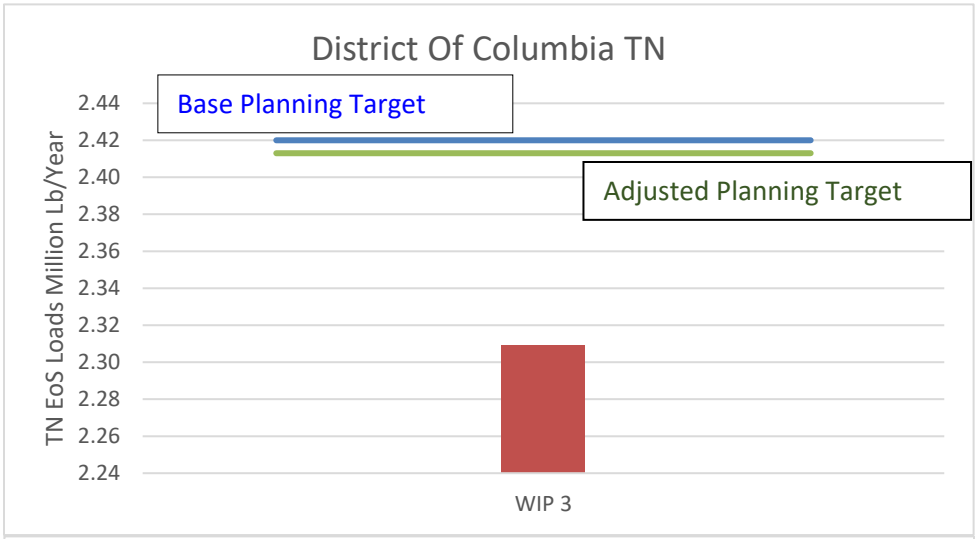




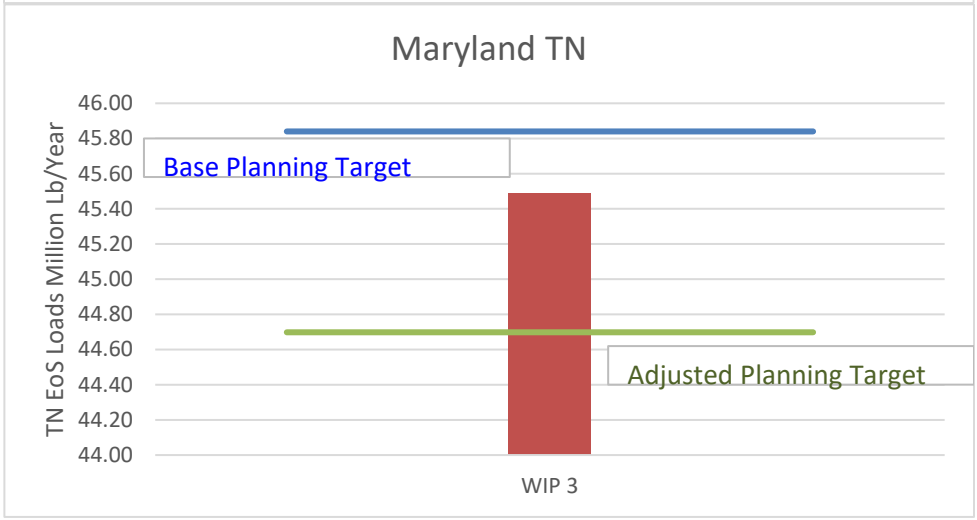


Note: WIP 3 loads were estimated using CAST - 2019

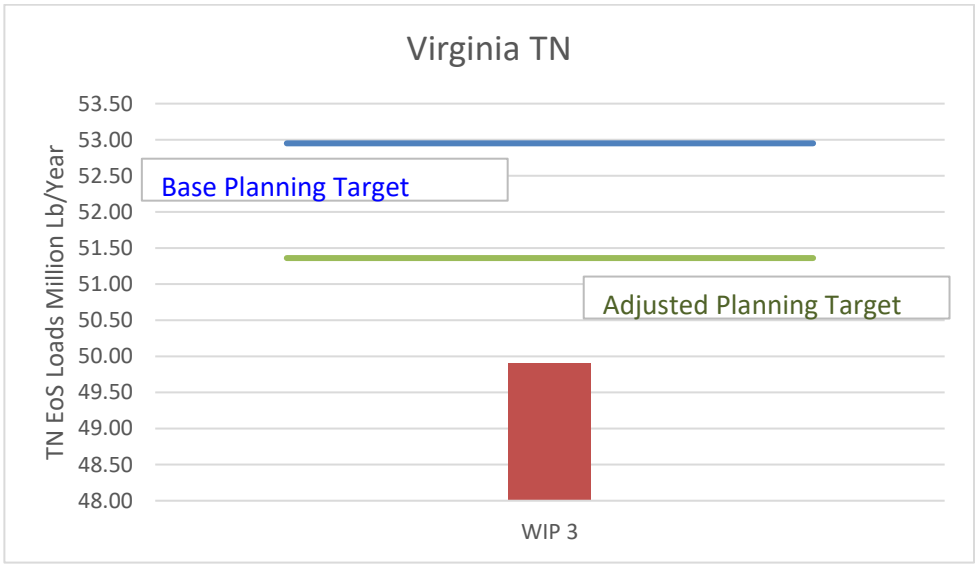
The following set of charts shows how the base and adjusted (for climate change) planning targets compare to the jurisdictions' TN WIP 3 loads. (Note the difference in scale to the previous set of graphs.)



The adjusted planning target is higher than the District's projected WIP 3 load; additional reductions are not required.



The adjusted planning target is less than Maryland's projected WIP 3 load, requiring additional reductions.



The adjusted planning target is higher than Virginia's projected WIP 3 load; additional reductions are not required

Note: WIP 3 loads were estimated using CAST -2019