MJ Bradley Compliance Tool, Utilizing Business-as-usual Changes to Achieve Rate-based Compliance and Mass-based Compliance including the New Source Complement

DEQ Stakeholder Meeting, 12/15/15

1). Rate-Based compliance, through Planned Retirements, PJM Gas Build Queue, and Planned RE & EE:

Compliance scenario includes:

- Utility announced EE and already-planned RE (500 MW solar by 2020; Dominion and Apex wind builds)
- All 6,498 MW of NGCC in the PJM queue/Dominion IRP (4,919 MW online between 2013-2022 and 1,570 MW online in 2023)
- Dominion IRP coal retirements, in addition to already announced post-2012 coal retirements, and
- Decrease in coal generation of 44.5% below 2012 levels.

Compliance achieved at a rate of 932 lbs/MWh, with total emissions of 43,417,959 tons in 2030 (112,355,647 tons above the mass budget). Compliance cost can be assessed utilizing STEER model.

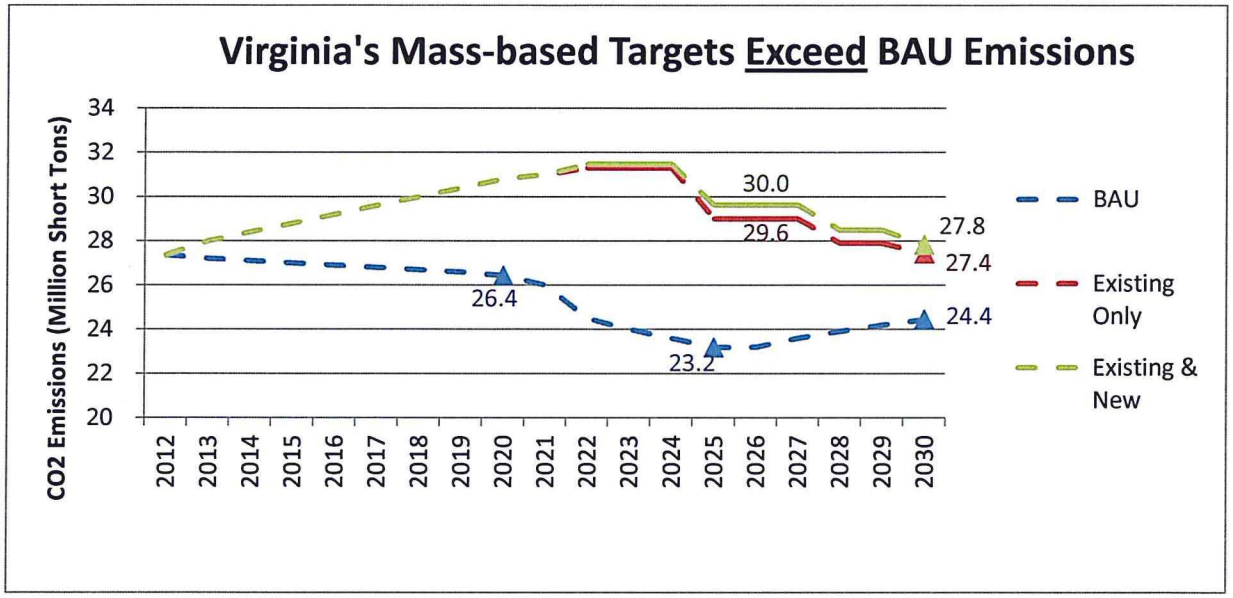
2). Mass-based compliance, through Planned Retirements, Planned Utility NGCC, and Planned RE & EE:

Compliance scenario includes:

- Utility announced EE and already-planned RE (500 MW solar by 2020; Dominion and Apex wind builds)
- Dominion IRP coal retirements (721,033 tons) , in addition to already announced post-2012 coal retirements, and
- NGCC fleet at average 60% capacity factor, including the forthcoming Greensville plant.

Compliance achieved with the mass-based standard including new source complement, at 27,830,173 tons. Compliance cost can be assessed utilizing STEER model.

Note: If EE penetration is increased to EPA's assumed level and already-planned RE is doubled by 2030, mass-based compliance can be achieved while also: preserving historic coal capacity factors at remaining generators; substantially increasing NGCC capacity factors; and completing Doswell's NGCC expansion.



Source: EPA, "Base Case State Emissions File", IPM Base Case Run, available at: http://www2.epa.gov/airmarkets/analysis-clean-power-plan

	CO2 Emissions Targets Compared to BAU (Short Tons)			
	2012	2020	2025	2030
BAU	27,365,439	26,433,868	23,182,323	24,446,232
Existing Only	27,365,439		29,580,072	27,433,111
Existing&New	27,365,439		30,030,110	27,830,174

Due to how generous they are, Virginia's mass-based emissions are very achievable: EPA developed Virginia's mass targets to be "equivalent" to the emissions that are allowed to occur under the state's rate-based target.

To achieve such "equivalence" between rate and mass targets, **EPA allowed for both demand growth and significant growth in carbon emissions from existing sources when calculating the mass budget.**

Specifically, EPA accounted for the emissions that would be permissible from existing sources if under a full, 100% build-out of "building block 3." This equates to an additional 166,255,493 MWh of renewable energy in 2030 above what EPA assumed would come online under a source-specific rate system for the entire country. EPA assigned 3,202,516 MWh of this "excess" BB3 to Virginia's mass-based standard.[1]

To calculate the additional emissions associated with this buildout, EPA doubled that amount of RE-generated MWh and attributed those doubled MWh to Virginia's fossil-based baseline generation as allowable emissions under a very generous and high mass-based standard.[2]

[1] See Appendix 5 of the "CO2 Emission Performance Rate and Goal Computation Technical Support Document for CPP Final Rule". Technical Support Document (TSD) for the CAA Section 111(d) Emission Guidelines for Existing Power Plants. Docket ID No. EPA-HQ-OAR-2013-0602.
[2] The equation be found on Pg. 24 of the CO2 Emission Performance Rate and Goal Computation Technical Support Document for CPP Final Rule. Mass Adjustment = State Emission Rate Goal × BB3 Generation Not Captured in Source Category-Specific Performance Rates × 2.