

Issue Paper New Kent County's Location in the Chesapeake Bay Watershed as an Obstacle to Data Center Development August 2026

Executive Summary

New Kent County lies entirely within the Chesapeake Bay watershed. The Bay is subject to a federally mandated Total Maximum Daily Load (TMDL) and Virginia's Watershed Implementation Plans (WIPs) that require sustained reductions in nitrogen, phosphorus, and sediment to restore water quality and living resources. Localities share responsibility for achieving these goals through land-use decisions, stormwater management, and control of new pollution sources.

Data centers introduce multiple pathways of impact that conflict with Bay restoration requirements: large-scale water withdrawals that can reduce freshwater inflows, increased impervious cover and construction-related sediment risk, stormwater runoff from vast rooftops and paved areas, emissions from backup generators and associated power generation that contribute to atmospheric nitrogen deposition, and potential wastewater or cooling-system discharges. These effects occur against a backdrop of already constrained groundwater resources (the Potomac aquifer) and ongoing drought stress.

Approving data center applications in New Kent would add new, difficult-to-offset pollutant loads and resource demands in a watershed under strict accountability. The county's position in the Chesapeake Bay watershed therefore constitutes a clear, science-based, and regulatory obstacle to data center development. Land-use approvals should treat consistency with Bay restoration goals as a threshold criterion.

New Kent's Position in the Chesapeake Bay Watershed

The Chesapeake Bay watershed covers 64,000 square miles across six states and the District of Columbia. New Kent County drains entirely to the Bay via the Pamunkey, Chickahominy, and related tributaries that ultimately reach the York and James River systems.

Virginia, as a Bay partner, is bound by the 2010 Chesapeake Bay TMDL and successive Watershed Implementation Plans. Phase III of Virginia's WIP assigns load reduction responsibilities to localities for urban and suburban sources, agriculture, and other sectors. Progress is tracked through two-year milestones, and failure to achieve targets can trigger additional federal or state consequences. Local comprehensive plans, zoning decisions, and development approvals are expected to support, not undermine, these commitments.

Regulatory Framework Governing Bay Protection

Key mechanisms include:

- The Chesapeake Bay TMDL, which sets maximum allowable loads of nitrogen, phosphorus, and sediment.
- Virginia's WIP and associated regulations that translate those loads into local and sector-specific actions.
- Stormwater management requirements under the Virginia Stormwater Management Program and MS4 permits (where applicable).
- Nutrient management, land-disturbance, and water-withdrawal permitting that consider cumulative effects on Bay water quality and freshwater inflow.
- Atmospheric deposition rules, because a substantial portion of the Bay's nitrogen load arrives via air pollution from power generation, vehicles, and industrial sources, including diesel generators.

New large industrial facilities are evaluated for their contribution to these loads. Local governments retain authority—and responsibility—to deny or condition uses that would make TMDL and WIP compliance more difficult or costly.

Data Center Impacts on Bay Water Quality and Restoration Goals

Data centers generate several categories of impact relevant to the Bay:

Water Quantity and Freshwater Inflow Cooling systems can consume large volumes of water. Withdrawals from groundwater or surface sources reduce baseflow to streams that feed the Bay, altering salinity regimes and habitat for anadromous fish and other species. New Kent's reliance on the stressed Potomac aquifer amplifies this concern; any additional industrial demand competes with existing uses and the county's mandated transition to surface-water sources.

Sediment and Stormwater Construction of large building footprints, parking, substations, and transmission infrastructure increases impervious surface and land disturbance. Even with best management practices, sediment delivery during and after construction threatens local waterways and downstream Bay segments. Ongoing operations generate runoff from rooftops and paved areas that can carry nutrients, metals, and thermal loads.

Nutrient and Pollutant Loads

- Atmospheric nitrogen: Backup diesel generators and the electricity demanded by data centers contribute nitrogen oxides that deposit into the watershed—a major, recognized pathway of Bay pollution.
- Wastewater and cooling discharges: Facilities that use evaporative cooling or discharge treated process water can introduce nutrients, residual chemicals, or elevated temperature.
- Cumulative growth: Data centers accelerate related infrastructure (transmission lines, substations, support facilities) whose construction and operation add further loads.

These impacts are difficult to fully offset within an already load-constrained watershed. Offsets or trading programs, where available, increase costs and complexity and do not eliminate the physical addition of new sources.

Incompatibility with Existing Constraints and Local Reality

New Kent is simultaneously managing:

- State-mandated reductions in groundwater withdrawals from the Potomac aquifer by approximately 2038.
- Investment in costly surface-water alternatives (Pamunkey River project).
- Drought conditions that periodically stress both groundwater and surface supplies.
- Rural character and limited existing industrial infrastructure.

Adding data-center-scale water, energy, and land demands would compound these pressures and make progress toward Bay nutrient and sediment targets harder and more expensive for existing residents and businesses. Neighboring localities in the same watershed segments face parallel challenges; approving intensive new uses in New Kent would shift burdens rather than solve them.

Legal and Policy Implications

Virginia localities may consider environmental impacts, including consistency with state water-quality and Bay-restoration programs, when acting on rezonings, conditional-use permits, and comprehensive-plan amendments. A decision that authorizes a use reasonably expected to increase pollutant loads or reduce freshwater inflows in a TMDL watershed is vulnerable to challenge on consistency, arbitrary-and-capricious, or public-interest grounds.

The combination of DEQ groundwater findings, Bay TMDL accountability, and New Kent's location supplies objective evidence that data-center development is incompatible with the county's resource constraints and restoration obligations. Private parties or environmental organizations could also raise claims related to water-quality degradation or failure to protect shared resources.

Recommendations

1. Adopt an explicit policy that data-center or similar high-intensity industrial applications must demonstrate no net increase in nitrogen, phosphorus, or sediment loads to the Chesapeake Bay watershed and no significant reduction in freshwater inflow attributable to water withdrawals.
2. Require independent, peer-reviewed assessments of water use, stormwater, generator emissions, and cumulative watershed effects as a precondition for any application completeness determination.
3. Condition any future consideration of such uses on verified connection to surface-water supplies with demonstrated capacity that does not impair Bay inflows, plus enforceable offsets for residual impacts.
4. Coordinate with DEQ, the Chesapeake Bay Program, and neighboring localities (Charles City, James City, Henrico) on cumulative loading analyses.

5. Incorporate Bay-watershed consistency language into the county's forthcoming data-center ordinance and comprehensive-plan updates so that the watershed location functions as a standing screening criterion.

Conclusion

New Kent County's position inside the Chesapeake Bay watershed is not incidental; it places the county under binding federal and state water-quality restoration requirements that already constrain growth. Data centers introduce water-quantity, sediment, nutrient, and atmospheric-deposition impacts that conflict with those requirements and with the county's parallel obligation to reduce reliance on the stressed Potomac aquifer.

The watershed location therefore constitutes a substantive obstacle to data-center development. Treating consistency with Bay restoration goals as a threshold barrier protects water quality, limits long-term liability and cost shifts onto existing residents, and aligns local land-use authority with statewide environmental mandates. Denial of applications that cannot meet this standard is both scientifically justified and legally defensible.