



A GIS Based Analysis of Virginia's
Alternative Fuel Infrastructure

Completed in collaboration with



Brandon Walraven
Virginia Clean Cities
June 2014

Virginia Alt Fuel Maps



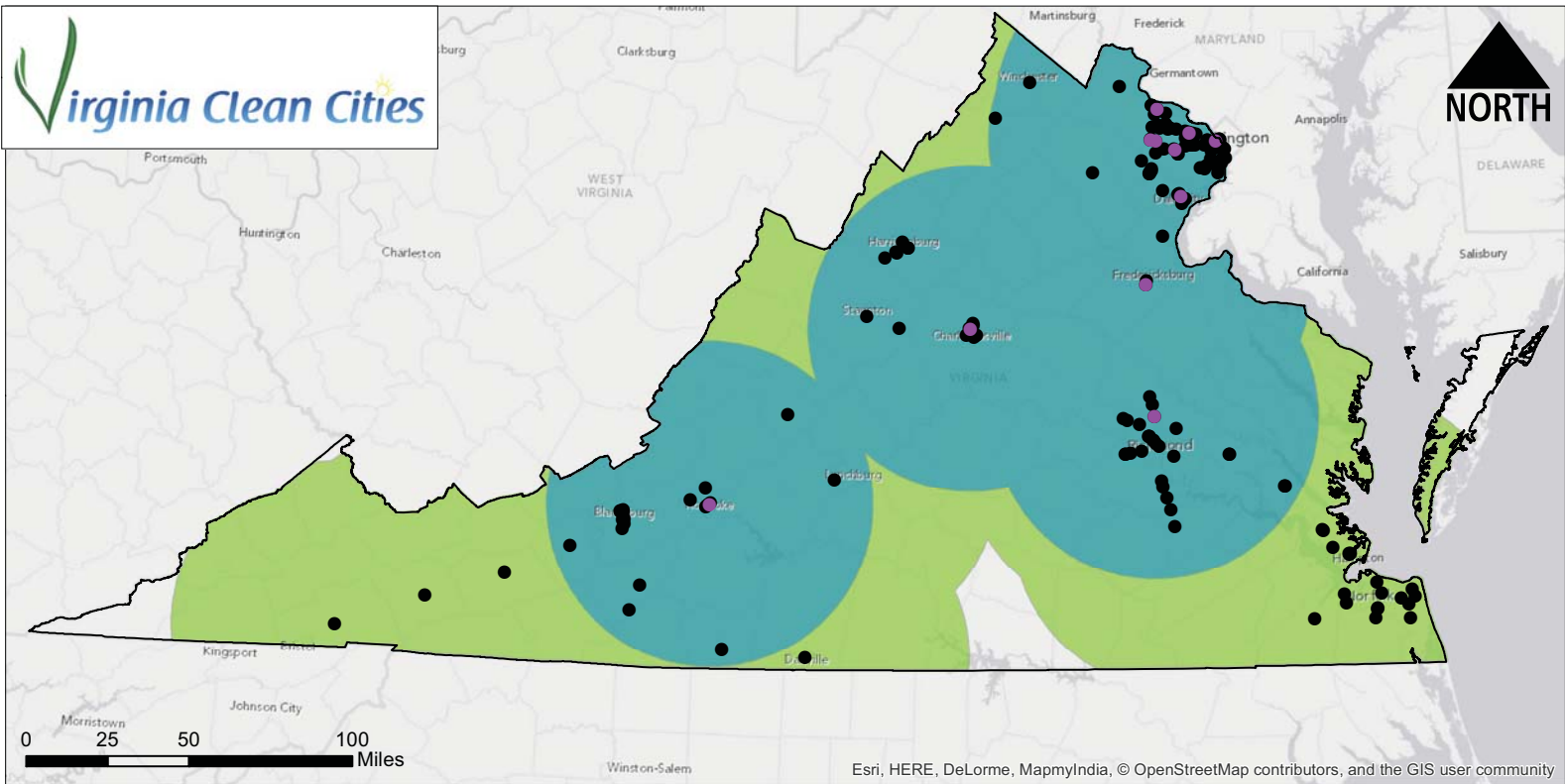
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Virginia Clean Cities utilized U.S. Department of Energy Alternative Fuel Vehicle Station Locator data in partnership with the Clean Cities Workforce Development Program and the effort of Brandon Walraven to advance a series of alternative fuel infrastructure, production, and 2014 deployment maps. These maps are intended for the purposes of development planning and analysis, and all information presented here is available for use and reference.



U. S. Department of Energy

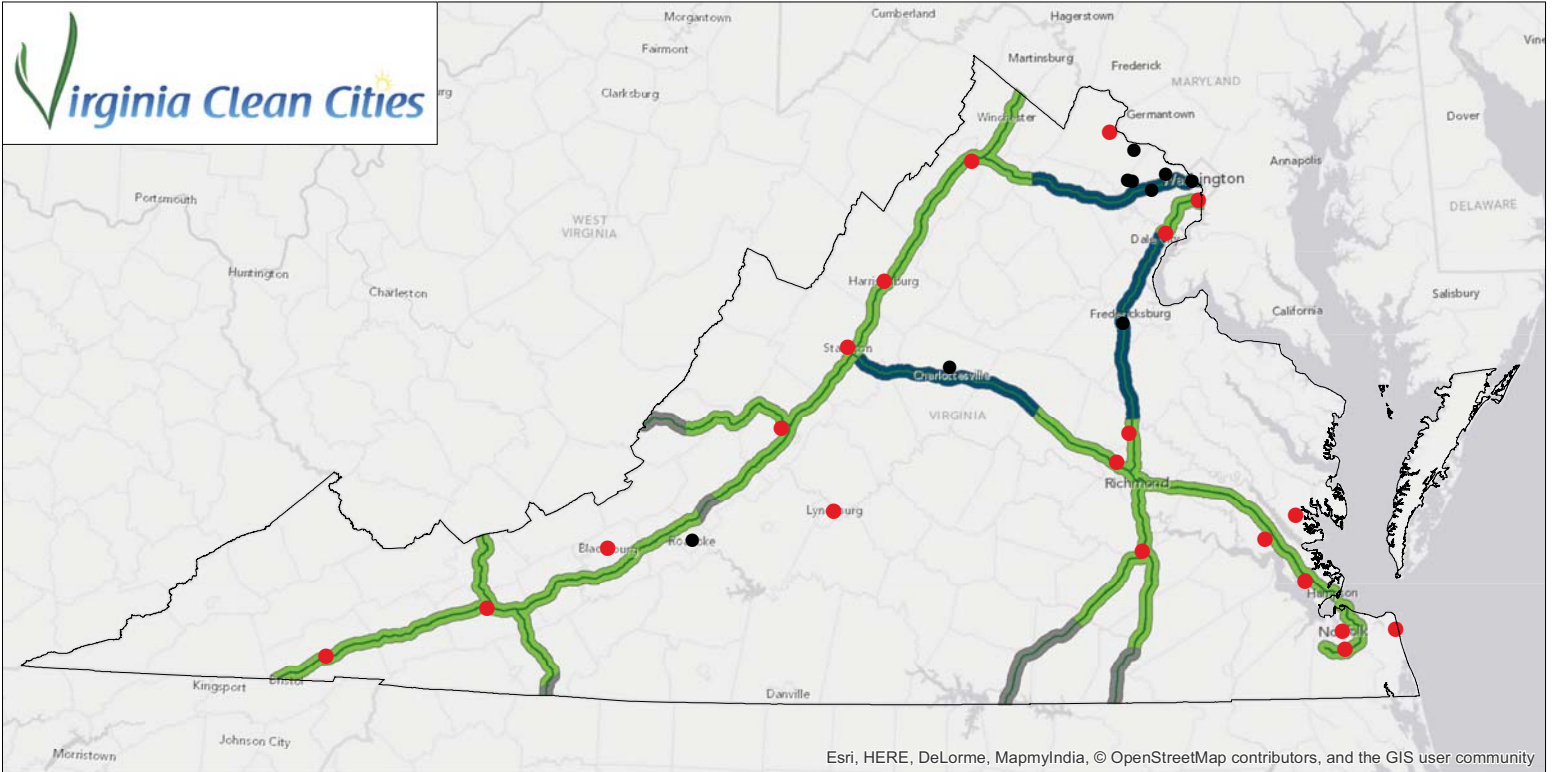


Electric Vehicle Charger Infrastructure in Virginia: June 2014

Legend

- Virginia
- L3 Chargers
- L1 & L2 Chargers
- L3 Electric Range
- L1 & L2 Electric Range

The purpose of this map is to show the extent and limitations of Virginia's current electric vehicle charging infrastructure. Virginia's electric vehicle charging infrastructure is currently most concentrated in the high population centers of Hampton Roads, Richmond, and Northern Virginia. Through Virginia Clean Cities' initiatives, DC fast chargers (Level 3) have been added in Roanoke and Charlottesville as well. Despite its relatively high level of EV adoption, the Hampton Roads region has no Level 3 chargers. To give an estimate of electric vehicle access in Virginia, 50 mile buffers were placed around all charging infrastructure. Fifty miles was chosen as a conservative estimate to account for direction changes, road type, topography, and driving style. The LEAF is Virginia's most popular electric vehicle, however other vehicles may have different ranges.

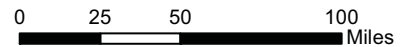


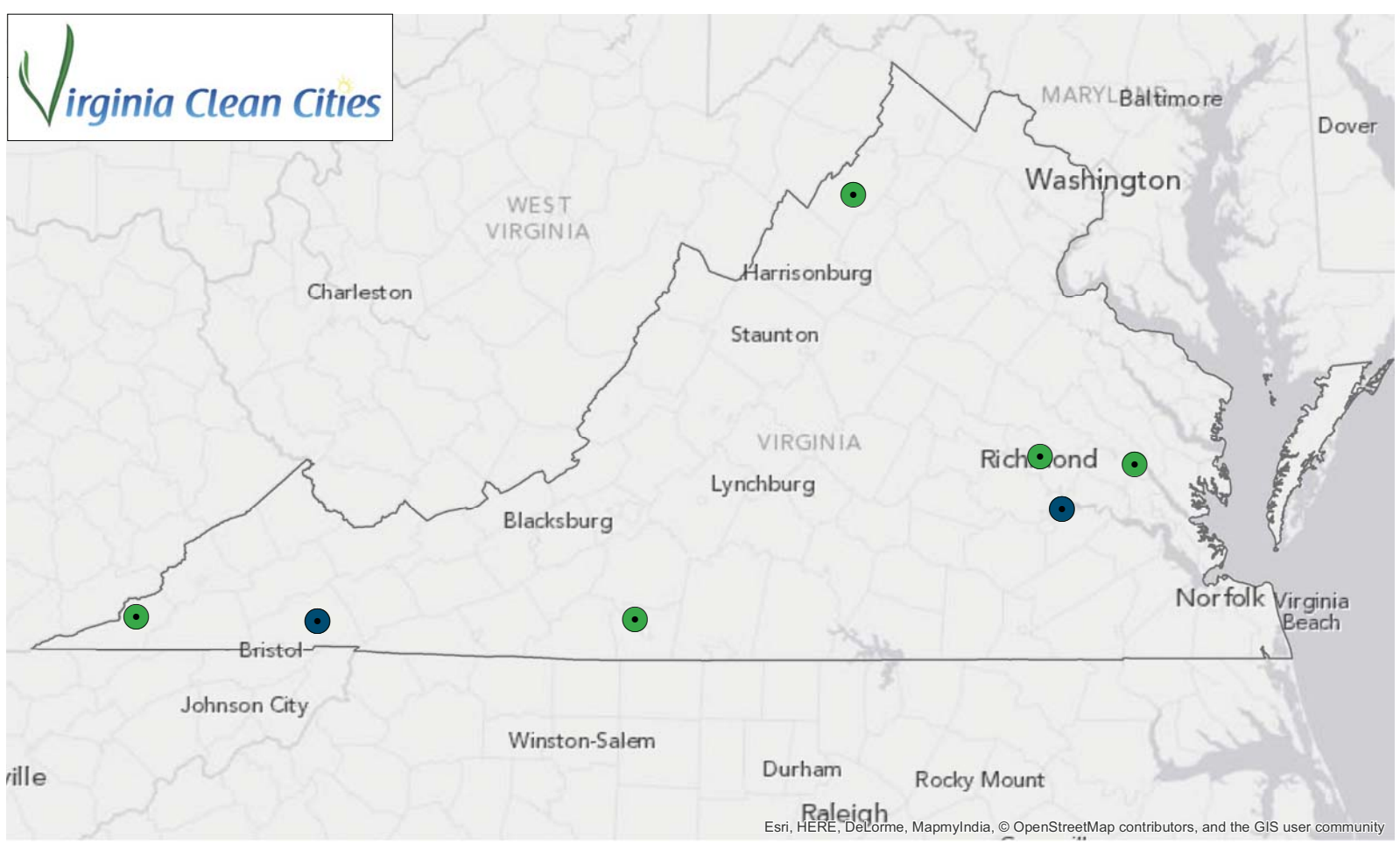
Existing and Proposed Level 3 Highway Charging Range: June 2014

Legend

- Virginia
- Proposed L3 Chargers
- Existing L3 Chargers
- Existing L3 Charger Range
- Proposed L3 Hwy Range

The purpose of this map is to show the interstate access of electric vehicles based on current level 3 chargers located within 3 miles of Virginia's interstates. With current highway accessible DC fast chargers, EV drivers have access to approximately 180 miles (18%) of Virginia's interstate system. If all Virginia Clean Cities target L3 chargers are realized the highway accessibility will increase by 690 miles to approximately 870 miles (87%) of accessible interstate. For this map 30 mile buffers were placed around both existing and proposed chargers to account for direction changes, road type, topography, and driver behavior. These distances assume a round trip on the interstate.



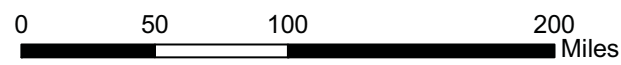


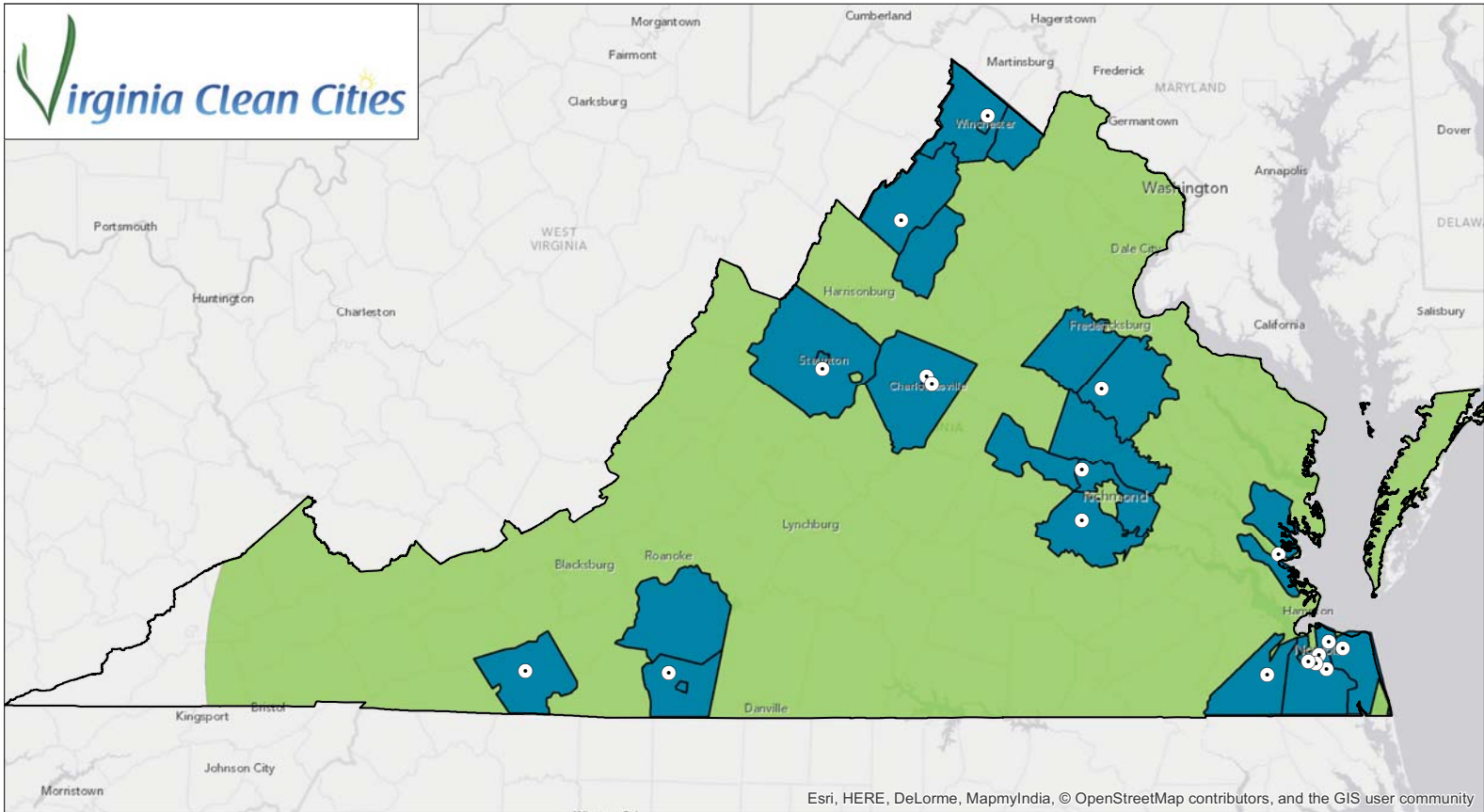
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Legend

- Ethanol Producers
- Biodiesel Producers
- Virginia

Locations of Biofuel Producing Plants in Virginia: June 2014

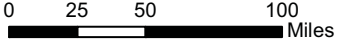




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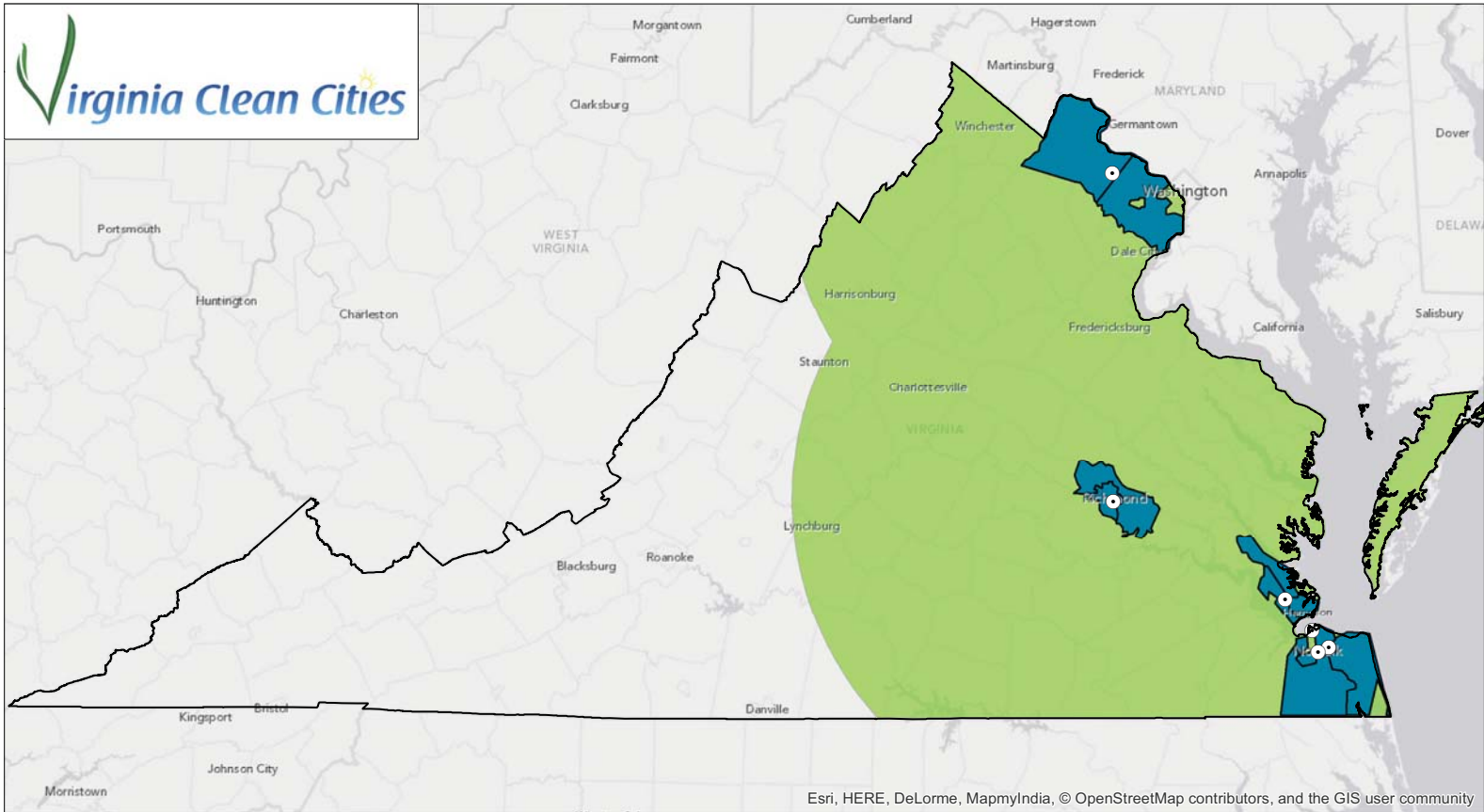
Public Biodiesel Fueling Infrastructure in Virginia: June 2014

- Legend**
- Virginia
 - Public BD Stations
 - Accessible Counties
 - BD Driving Range



This map shows the current public biodiesel fueling infrastructure in Virginia and should be used for the purpose of planning future development. All counties within 5 miles are highlighted to show potential users of these stations. A driving range of 100 miles is used to account for driving behavior, road type, direction changes, and topography for a round trip. This range only accounts for biodiesel usage as all vehicles using biodiesel can also refuel with conventional diesel.

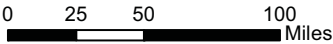




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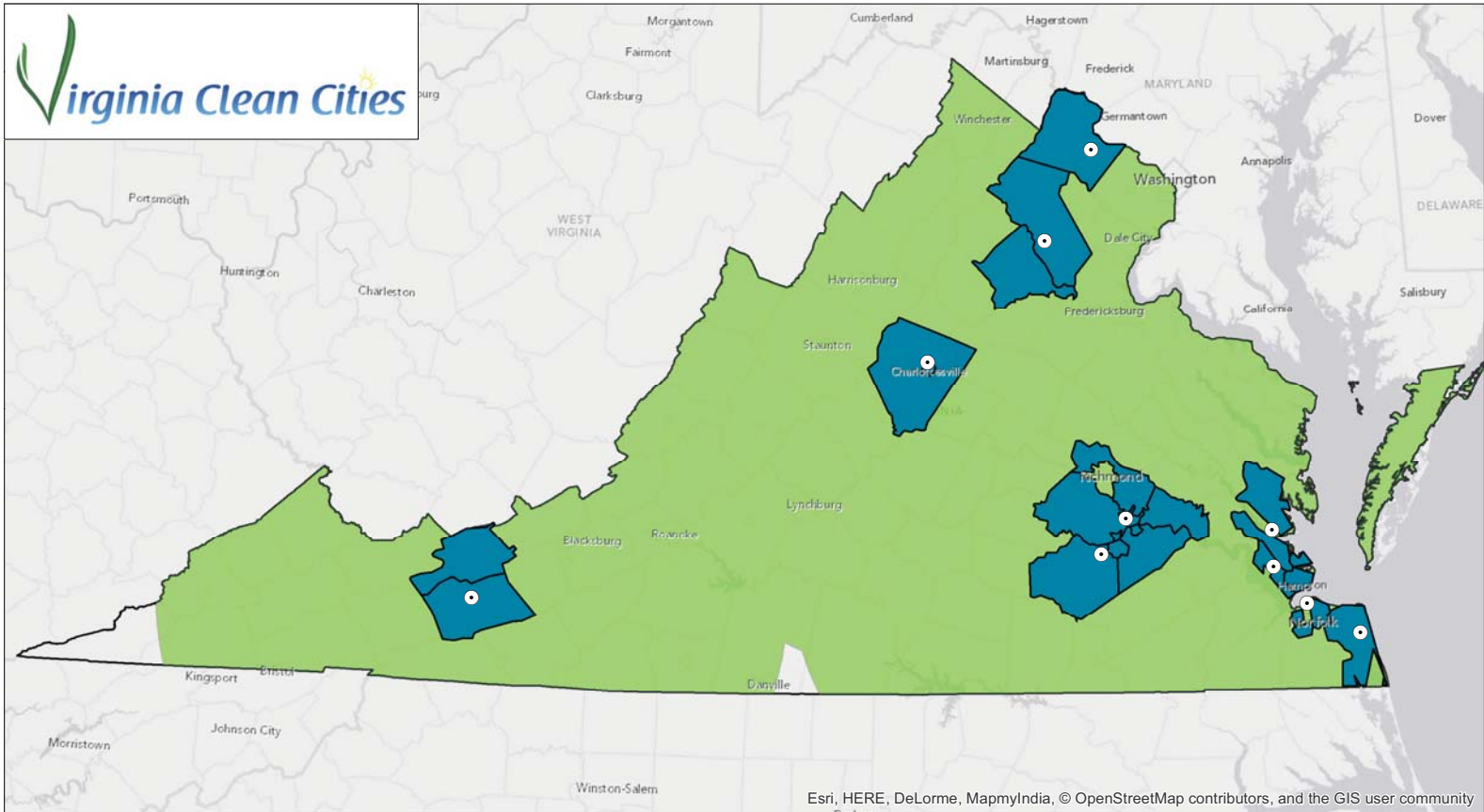
Public CNG Fueling Infrastructure in Virginia: June 2014

- Legend**
- Virginia
 - Public CNG Stations
 - Accessible Counties
 - CNG Driving Range



This map shows the current public CNG fueling infrastructure in Virginia and should be used for the purpose of planning future development. All counties within 5 miles are highlighted to show potential users of these stations. A driving range of 100 miles is used to account for driving behavior, road type, direction changes, and topography for a round trip. This range only accounts for CNG usage as bifuel vehicles can also refuel with conventional gasoline or diesel.



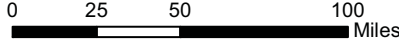


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Public E85 Fueling Infrastructure in Virginia: June 2014

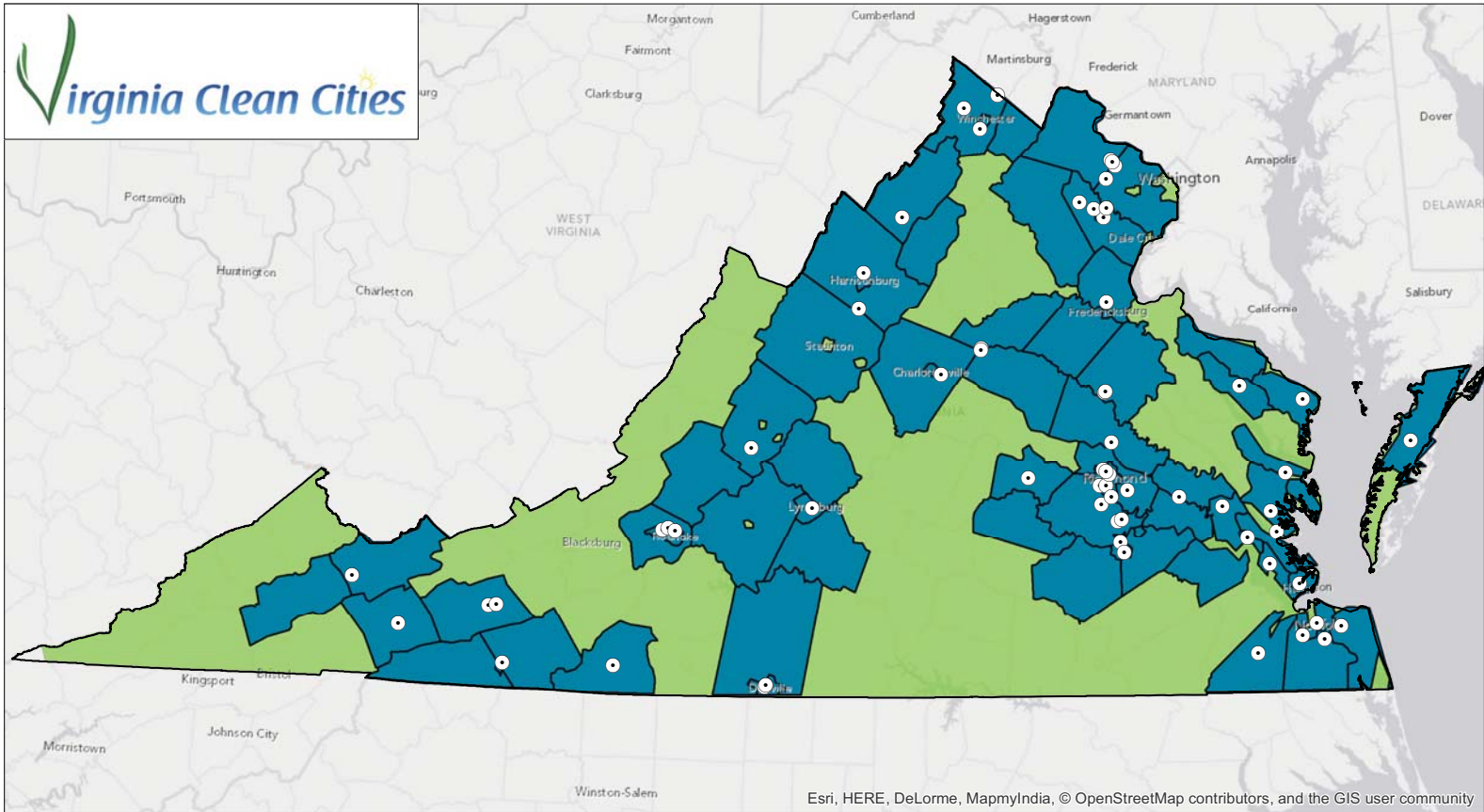
Legend

- Public E85 Stations
- Accessible Counties
- E85 Driving Range
- Virginia



This map shows the current public E85 fueling infrastructure in Virginia and should be used for the purpose of planning future development. All counties within 5 miles are highlighted to show potential users of these stations. A driving range of 100 miles is used to account for driving behavior, road type, direction changes, and topography for a round trip. This range only accounts for E85 usage as flex fuel vehicles can also refuel with conventional gasoline or diesel.





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Public LPG Fueling Infrastructure in Virginia: June 2014

- Legend**
- Virginia
 - Public LPG Stations
 - Accessible Counties
 - LPG Driving Range



This map shows the current public LPG fueling infrastructure in Virginia and should be used for the purpose of planning future development. All counties within 5 miles are highlighted to show potential users of these stations. A driving range of 100 miles is used to account for driving behavior, road type, direction changes, and topography for a round trip. This range only accounts for LPG usage as bifuel vehicles can also refuel with conventional gasoline or diesel.

