

Carson Substation, Dinwiddie County, Virginia

A first look at the power, land, zoning and site risks around a 500/230 kV Dominion hub. Everything here comes from public records.

VOLTAGE

500/230 kV

MAJOR LINES

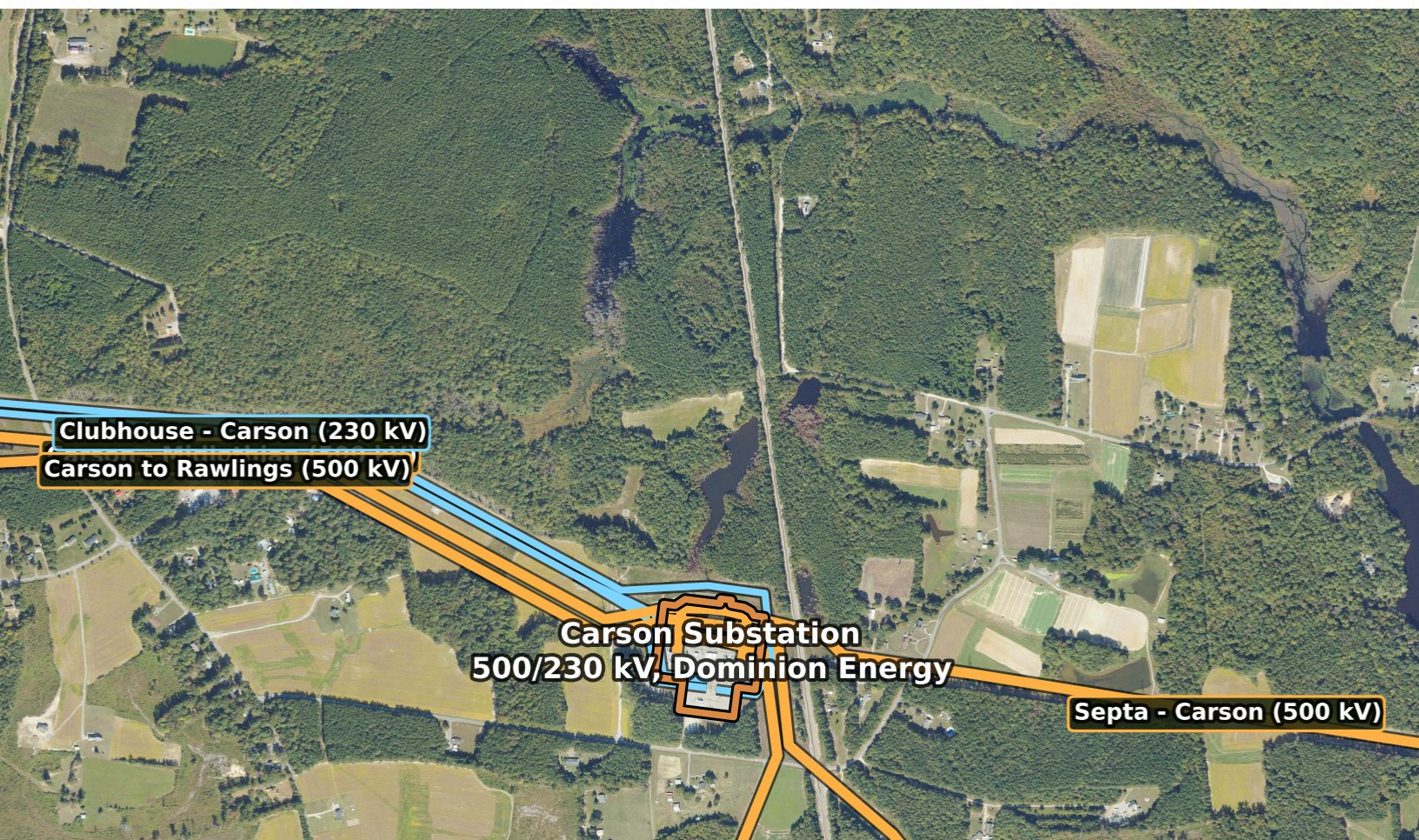
6

PARCELS 100+ AC

32

SPARE LOAD CAPACITY

Unknown



Please read: This report is information from public sources. It is not engineering, legal, environmental or real estate advice, and it is not a utility capacity statement. Only Dominion Energy and PJM can confirm what power is available. Check every item before you rely on it.

EXECUTIVE SUMMARY

The short version

Please note: This is an early desk screen from public data. It is not an engineering or interconnection study and does not guarantee a connection or capacity. Confirm with the utility and PJM before committing money.

Carson is a large 500/230 kV Dominion hub (37.0853, -77.4060) where six major lines meet. Here's what stood out, good and bad:

GRID

PJM and Dominion have work planned here: a transformer replacement (N9378) and a proposed rebuild of the 37-mile Carson to Midlothian 500 kV line (in-service 06/2032 per proposal). Older PJM studies flagged overloads on that same line and on a Carson transformer.

ZONING

Dinwiddie allows data centers only in its Emerging Technologies district, with a conditional use permit. One big data center rezoning (Haven Oak, 986.9 acres) is being reviewed right now.

LAND

32 parcels of 100+ acres sit within about 3 miles. All but one are zoned agricultural (A-2). The odd one out is rural residential.

UNKNOWN

How much spare load capacity Carson has. Dominion doesn't publish that.

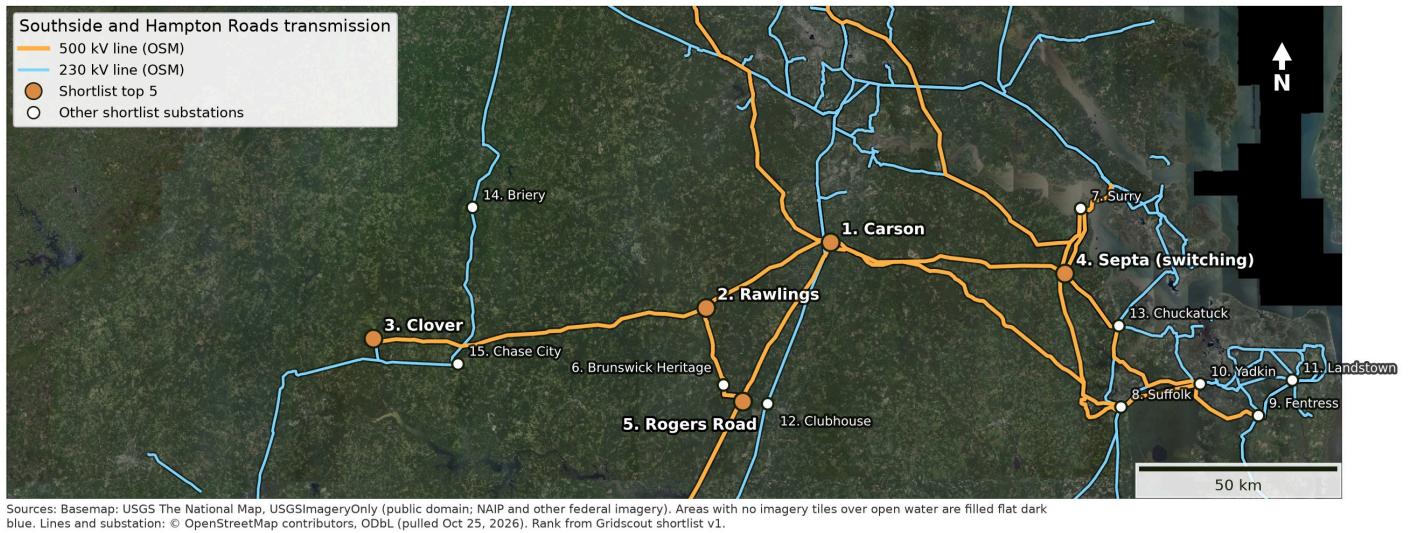
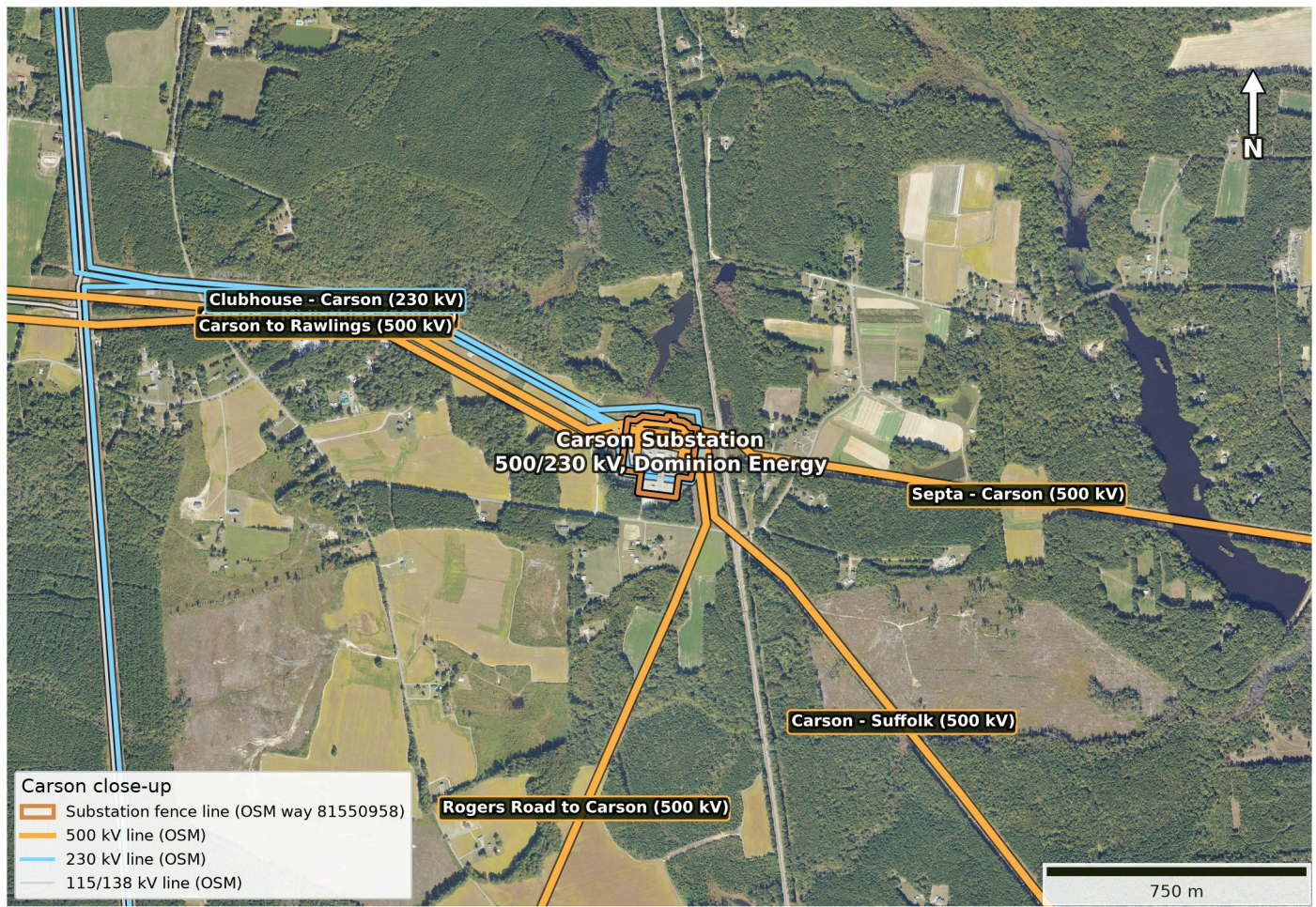


Figure 1 500 kV and 230 kV lines across Southside and Hampton Roads, with the 15 shortlist substations. Carson sits where several 500 kV routes meet.

SECTION 1

Grid and planned upgrades



Sources: Imagery: USDA Farm Service Agency NAIP via USGS The National Map (public domain). Lines and substation: © OpenStreetMap contributors, ODbL (pulled Oct 25, 2026). Lines are mapped by volunteers and may be offset a few meters from towers.

Figure 2 Carson on recent aerial imagery. The orange outline is the fence line mapped in OpenStreetMap. Line names come from OpenStreetMap tags.

Connections. 500 kV lines to Midlothian, Suffolk, Rawlings, Rogers Road and Septa; 230 kV line to Clubhouse. (OpenStreetMap [way 81550958](https://www.openstreetmap.org/way/81550958))

N9378: replace Transformer #2 at Carson. Four 500-230 kV, 480 MVA single-phase transformers plus protection gear. Identified in PJM Transition Cycle #1 studies (Facilities Study, June 2025). [PJM N9378 Facilities Study](#)

Proposed: Line 563 rebuild, Carson to Midlothian (2025 RTEP Window 1, proposal 238). About 37.4 miles, rebuilt as 500/230 kV double-circuit towers, proposed rating 4,357 MVA summer, in-service 06/2032. A proposal, not an approved project. [PJM proposal 238](#)

Proposed: Carson 500 kV equipment upgrade to 5000 A (proposal 243). [PJM proposal 243](#)

History. Carson to Rogers Road 500 kV (Line 585) was rebuilt around 2017 to 2018 to fix a PJM-found overload. [Virginia SCC order](#)

SECTION 2

What the withdrawn queue projects tell us

PJM's queue lists 29 projects naming Carson; 21 withdrew (10,756 MW). Those are power plants asking to put power onto the grid. A data center would be taking power off it, so these give a hint of grid stress without telling you how much load room there is.

AE2-313 (314 MW solar tapping Carson-Rawlings 500 kV, withdrawn 1/22/2025). Its System Impact Study (Feb 2020, 2022 base case) estimated \$21.95M for its own connection and listed \$221.6M of system upgrades. It flagged overloads on:

- Carson to Midlothian 500 kV: up to about 134% in a breaker-failure case
- Carson 500/230 kV transformer: about 137% to 144%
- A Carson 230 kV line (to PJM bus 6CHRL249; name not decoded): about 155% to 160%

Source: [PJM AE2-313 System Impact Study](#). Keep in mind it used an old base case, and later upgrades (like N9378 and the 563 rebuild) go after these same parts of the grid.

Withdrawn studies worth reading next: [AE2-031](#), [AE1-068](#), [AG1-014](#).

Takeaway. The lines leaving Carson toward Richmond have been tight, and fixes are planned for the early 2030s. A large new load here likely waits on those fixes. Dominion's large-load queue is also very large system-wide (about 70 GW per SCC filing). [SCC filing copy](#)

SECTION 3

Zoning and local rules

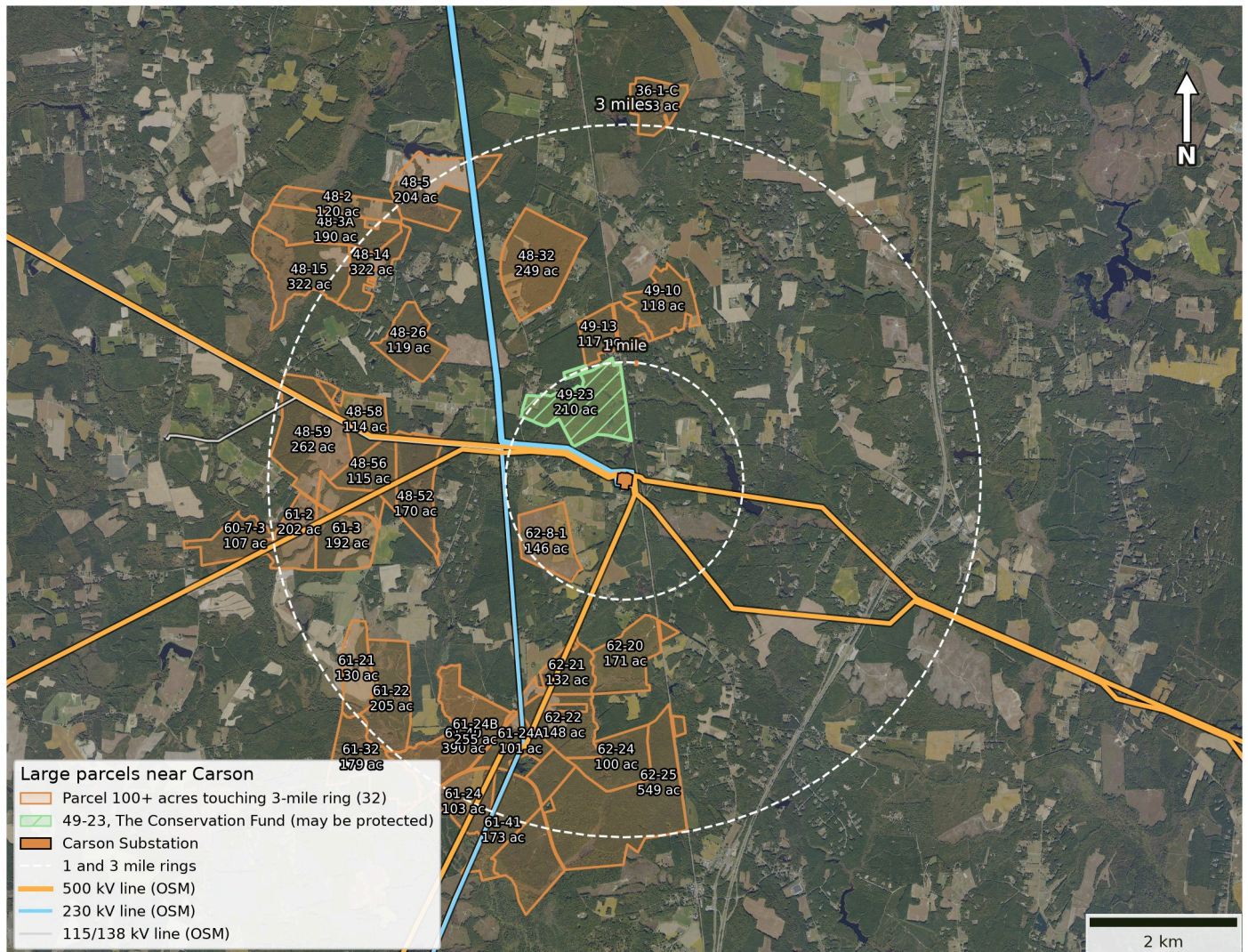
Emerging Technologies (ET) district. Data centers ("Data Warehouse Center") need rezoning to ET plus a conditional use permit. The district is meant for land that sits close to high-capacity power. [Dinwiddie ET ordinance](#)

High energy use facilities. Applicants must submit a sound study (homes and schools within 500 feet), effects on water, farms, parks, historic sites and forest, and the planned substation and voltage. [Sec. 22-245.5](#)

Live test case: Haven Oak Technology Park. Tract affiliate seeks to rezone 986.9 acres near White Oak Rd and Claiborne Rd to ET. Revised conditions: closed-loop cooling, 52 dBA sound limit, bigger buffers. As of Sept 15, 2026 the application wasn't yet accepted; Planning Commission possible Nov or Dec, Board possibly Jan or Feb 2027. The county also previewed a proposed M-3 zoning class on Oct 6. [County project page](#) · [Sept 15 minutes](#)

SECTION 4

Large parcels within about 3 miles



Sources: Imagery: USDA Farm Service Agency NAIP via USGS The National Map (public domain). Parcels: Dinwiddie County property map service, pulled Oct 25, 2026 (not a survey). Lines and substation: © OpenStreetMap contributors, ODbL (pulled Oct 25, 2026).

Figure 3 The 32 parcels of 100+ acres that touch the 3-mile ring, labeled by map PIN and acres. Green hatch marks 49-23, held by The Conservation Fund.

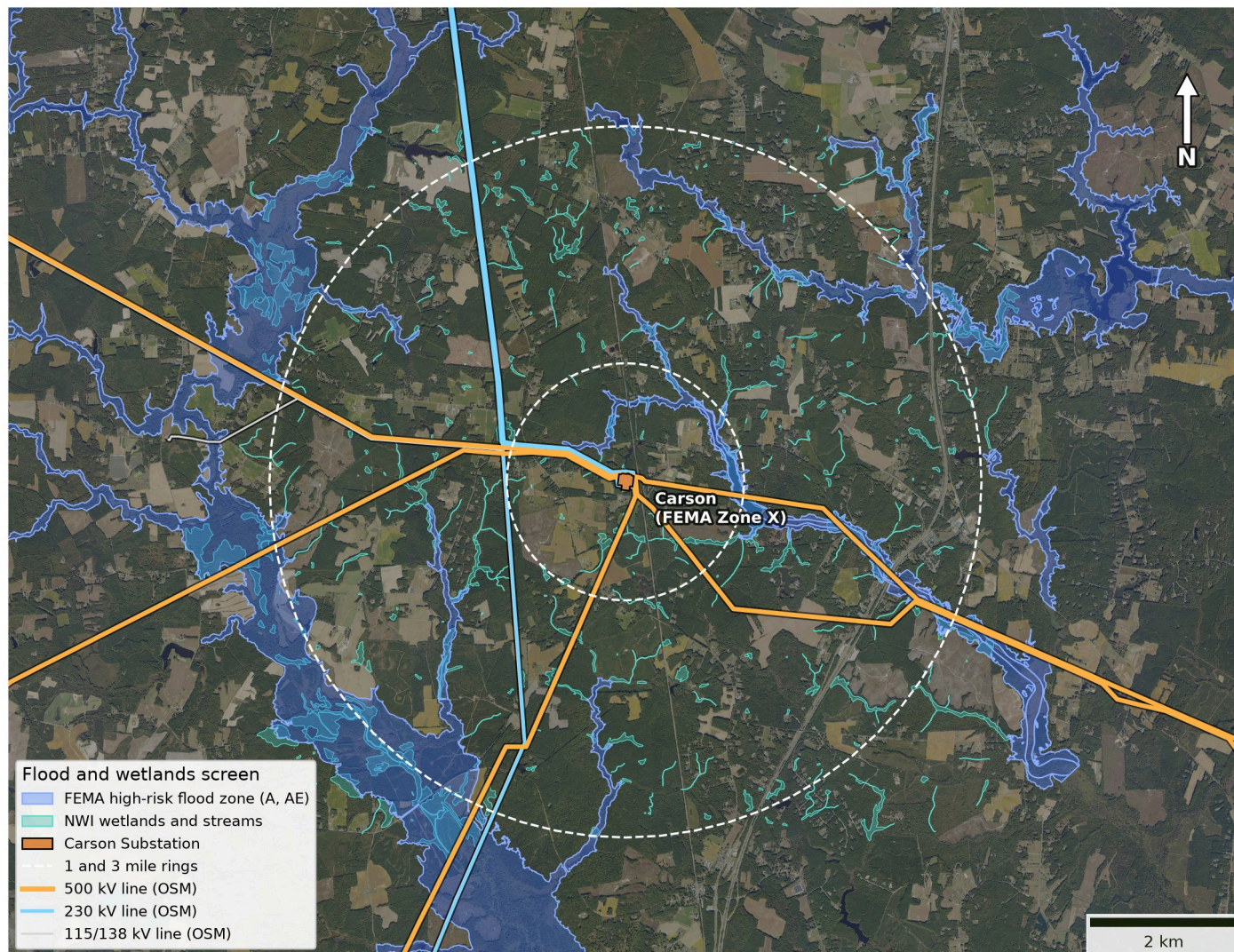
Parcels of 100+ acres whose shape touches a 3-mile circle around Carson. Distance is measured to the rough center of each parcel. I left individual owners' names out, and the county record has them if you need them.

MAP PIN	ACRES	MILES	ZONING	ASSESSED TOTAL	OWNER TYPE
62-8-1	146	0.7	A-2	\$279,500	Private owner(s)
49-23	210	0.9	A-2	\$420,000	The Conservation Fund
49-13	117	1.2	R-R	\$168,900	Private owner(s)
49-10	118	1.4	A-2	\$233,100	Private owner(s)
62-20	171	1.5	A-2	\$357,300	Private owner(s)
62-21	132	1.6	A-2	\$358,300	Private owner(s)
48-52	170	1.7	A-2	\$314,000	North Country Pines Llc C/O
48-32	249	2.0	A-2	\$789,600	Private owner(s)
62-22	148	2.1	A-2	\$359,200	Private owner(s)
48-56	115	2.1	A-2	\$166,100	Private owner(s)
48-26	119	2.2	A-2	\$174,700	North Country Pines Llc C/O
61-3	192	2.3	A-2	\$310,000	Private owner(s)
62-24	100	2.3	A-2	\$138,000	North Country Pines Llc C/O
48-58	114	2.4	A-2	\$327,900	Private owner(s)
61-24A	101	2.5	A-2	\$276,400	Private owner(s)
48-14	322	2.7	A-2	\$363,500	Private owner(s)
61-24B	255	2.7	A-2	\$357,300	Sustainable Growth Llc
61-40	390	2.8	A-2	\$892,400	Private owner(s)
48-59	262	2.8	A-2	\$594,000	North Country Pines Llc C/O
61-21	130	2.8	A-2	\$247,000	Private owner(s)
62-25	549	2.8	A-2	\$759,600	Clements Land Holdings Lllp
61-22	205	2.9	A-2	\$262,000	Sustainable Growth Llc
61-2	202	2.9	A-2	\$420,000	Btg Pactual Oef Property 2 Lp
61-41	173	2.9	A-2	\$329,100	Private owner(s)
61-24	103	3.0	A-2	\$179,000	Private owner(s)
48-5	204	3.0	A-2	\$430,300	Private owner(s)
61-32	179	3.1	A-2	\$255,300	Sustainable Growth Llc
36-1-C	103	3.1	A-2	\$846,700	Private owner(s)
60-7-3	107	3.2	A-2	\$155,800	Private owner(s)
48-15	322	3.3	A-2	\$363,500	Private owner(s)
48-3A	190	3.5	A-2	\$226,000	North Country Pines Llc C/O
48-2	120	3.6	A-2	\$174,500	Private owner(s)

Source: Dinwiddie County property map service ([public ArcGIS](#)), pulled Oct 25, 2026. This isn't a survey. Parcel 49-23 (Conservation Fund, 210 acres, 0.9 mi) may be protected land. Any of these parcels would need ET rezoning before a data center could go on it.

SECTION 5

Flood and wetlands



Sources: Imagery: USDA Farm Service Agency NAIP via USGS The National Map (public domain). Flood: FEMA National Flood Hazard Layer. Wetlands: USFWS National Wetlands Inventory. Both public domain, pulled Oct 25, 2026. Screening only, not a delineation. Lines and substation: © OpenStreetMap contributors, ODbL (pulled Oct 25, 2026).

Figure 4 FEMA high-risk flood zones (blue) and National Wetlands Inventory features (teal). The flood zones follow the stream corridors. The substation sits in Zone X.

FEMA flood zone. The substation point is in Zone X (minimal risk). Within 3 miles, FEMA maps 54 flood-zone areas; 20 are high-risk (A or AE), likely along streams. [FEMA NFHL](#)

Wetlands. Within 1 mile, the National Wetlands Inventory shows 135 features, mostly forested/shrub wetlands and streams. Plan for a wetland delineation on any site. [USFWS NWI](#)



Sources: Imagery: USDA Farm Service Agency NAIP via USGS The National Map (public domain). Terrain: USGS 3D Elevation Program (public domain), height exaggerated 6x. Lines and substation: © OpenStreetMap contributors, ODbL (pulled Oct 25, 2026). Area shown is about 4.4 miles across. Perspective view, so no scale bar applies; north is toward the upper right.

Figure 5 A 3D view from the southwest, with terrain height exaggerated 6 times. The land around Carson is gently rolling, about 25 to 53 meters above sea level across the area shown.

SECTION 6

Fiber (proxies only)

Carriers don't make their fiber routes public, so here are the next best clues. Mid-Atlantic Broadband (MBC) runs open-access middle-mile fiber in Dinwiddie, with new segments from Route 1 in Dinwiddie to Prince George and from Blackstone to I-85 at McKenney. The Haven Oak filing also says fiber is available near its site. The county map doesn't show any communication towers within 3 miles. Ask the carriers for a route map before you decide anything. [MBC](#) · [Haven Oak narrative](#)

SECTION 7

What we don't know yet

Spare load capacity at Carson

Dominion large-load queue position near Carson

Water and sewer reach

Exact fiber routes

Owner willingness to sell

MAP SOURCES AND LICENSES

- Aerial imagery: USDA Farm Service Agency National Agriculture Imagery Program (NAIP), served by USGS The National Map. US government work, public domain.
 - Regional basemap: USGS The National Map USGSImageryOnly. Public domain. Open-water areas without tiles are filled flat dark blue.
 - Terrain (Figure 5): USGS 3D Elevation Program. Public domain.
 - Transmission lines and the substation outline: © OpenStreetMap contributors, Open Database License (ODbL). Volunteer-mapped, so positions may be off by a few meters.
 - Parcels: Dinwiddie County property map service, public ArcGIS layer. Not a survey.
 - Flood zones: FEMA National Flood Hazard Layer. Wetlands: USFWS National Wetlands Inventory. Both public domain.
-

This is an early desk screen from public data. It is not an engineering or interconnection study and does not guarantee a connection or capacity. Confirm with the utility and PJM before committing money.

Prepared by Gridscout. Information only, not engineering, legal or real estate advice.