



Hub City Energy Park

Aberdeen, South Dakota

Application for an Energy Conversion Facility Permit

Docket EL26-XXX

Appendix K – Traffic Study

October 2026



Traffic Study

Hub City Energy Park

Aberdeen, SD

NorthWestern Energy

September 30, 2026

Contents

1	Introduction	1
2	Existing Conditions	1
2.1	Road Network	1
2.2	Traffic Volumes	3
2.3	Adjacent Land Uses	4
2.4	Functional Classifications & Surface Types	5
2.4.1	135 th Street	5
2.4.2	387 th Avenue	5
2.4.3	388 th & 389 th Avenues	5
2.4.4	134 th Street & 136 th Street	6
2.4.5	U.S. Highway 281 & U.S. Highway 12	6
2.5	Study Area Bridges	7
3	Construction Impacts	8
3.1	Construction Traffic Routes	9
3.2	Planned State Roadway Construction	10
3.3	Roadway Capacity	10
3.4	Heavy Haul Equipment Shipments	11
3.5	Site Access	12
4	Recommendations	13
4.1	Signage	13
4.2	Heavy Haul Routes	14
4.3	Additional Recommendations	14

Tables

Table 1: Average Daily Traffic Volumes & Truck Percentage Estimates	3
Table 2: Study Area Bridges and Culverts	7
Table 3: Heavy Haul Load Summary	11

Figures

Figure 1: Project Location Map	2
Figure 2: Study Area Roadway Daily Volumes	4
Figure 3: Vicinity Bridges and Culverts	8
Figure 4: One-Hour Commute Radius from Proposed Site	9
Figure 5: Roadway Capacity	10
Figure 6: Hub City Energy Park Layout	12
Figure 7: Construction Signage Considerations	13

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1 Introduction

NorthWestern Energy is proposing to site a new power plant and substation across the street from its current Aberdeen Generating Station in Aberdeen Township, which is located in Brown County, South Dakota. The Project Site is comprised of Lots 1, 2, and 3. This Traffic Study pertains to Lot 1 at 440 135th Street SW (Parcel Identification Number 32640) and Lot 3 at 90 135th Street SW (Parcel Identification Number 32642). The Project Site is in the southwest ¼ of the southwest ¼ of Section 25, T123N, R64W and is located approximately three miles south of the City of Aberdeen's city center on the northeast corner of Brown County Road 14W (135th Street) and Brown County Road 10 (S. 5th Street/387th Avenue). An active BNSF railroad is located approximately 12-feet west of the site.

This Traffic Study documents existing traffic and transportation infrastructure conditions, forecasts potential impacts on the transportation facilities due to the project and provides recommendations to be used to minimize impacts within the Study Area. The Study Area is bounded by U.S. Highway 281 on the west, 391st Avenue on the east, U.S. Highway 12 on the north and 139th Street on the south (see **Figure 2**). These Study Area boundaries are pertinent to this Traffic Study since any potential impact would be proximate to the Project Site, however, the Study Area defined in other reports may be different.

2 Existing Conditions

2.1 Road Network

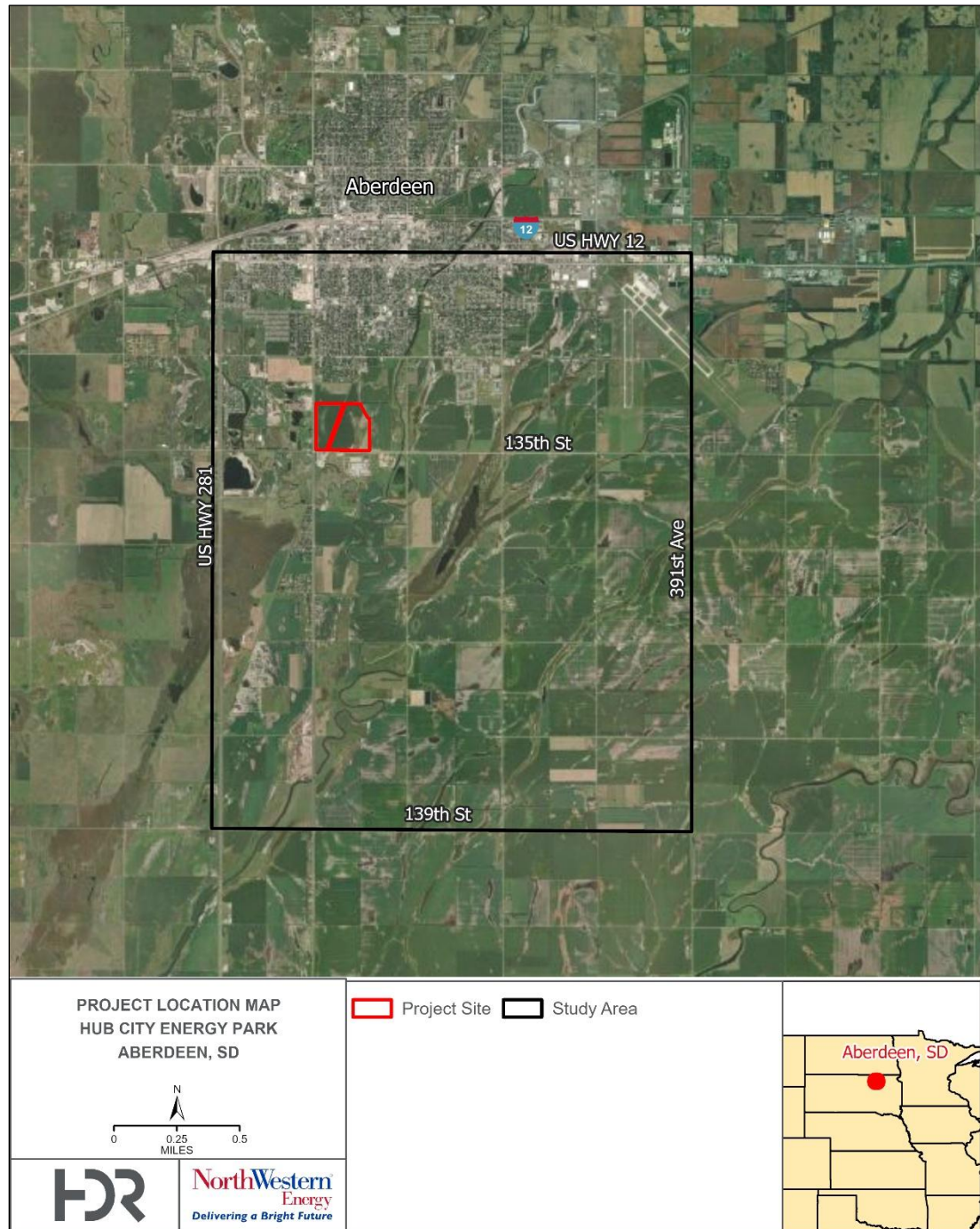
As shown in the Project Location Map (**Figure 1**), the Project Site is located in a rural area at the intersection of Brown County Road 14W (135th Street) and Brown County Road 10 (S. 5th Street/387th Avenue), which is one mile east of U.S. Highway 281. U.S. Highway 281 travels north and south throughout the state connecting to Interstate 90, approximately 120 miles south of the project site, and Interstate 94, approximately 110 miles north of the project site in North Dakota. Interstate 29 is the closest north-south interstate, which is located approximately 75 miles east of the Project Site along U.S. Highway 12. The Study Area road network forms a one-square mile grid of local, county, and state roads with dense grid blocks in the City of Aberdeen to the north of the site.

Major east-west roads in South Dakota's roadway network are numbered streets that increase south and major north-south roads are numbered avenues that increase east. Brown County is approximately 1,715 square miles in the northeast side of the state. It is bound by the state line (100th Street) on the north, 148th Street on the south, 412th Avenue on the east, and 373rd Avenue on the west. Aberdeen Township comprises approximately 38 square miles of Brown County.

Located in the east-central portion of the county, Aberdeen Township is bounded by 130th Street on the north, 136th Street on the south, 382nd Avenue on the west, and a

portion of 391st Avenue (County Road 14 N) on the east. The approximately 17 square mile City of Aberdeen cuts into the township and shares 391st Avenue as its eastern border.

Figure 1: Project Location Map



2.2 Traffic Volumes

Table 1 identifies the Study Area roadways surrounding the Project Site that could be used in facilitating construction traffic, workforce, and deliveries and provides the most recently reported estimated Average Daily Traffic (ADT) volumes and truck percentages for each roadway. Traffic, especially truck traffic, in the Study Area is highest during the harvest seasons. Since the U.S. Highway segments listed in the table are long, averages were used. The highest and lowest ADTs for the segment are recorded in the table to demonstrate the ranges.

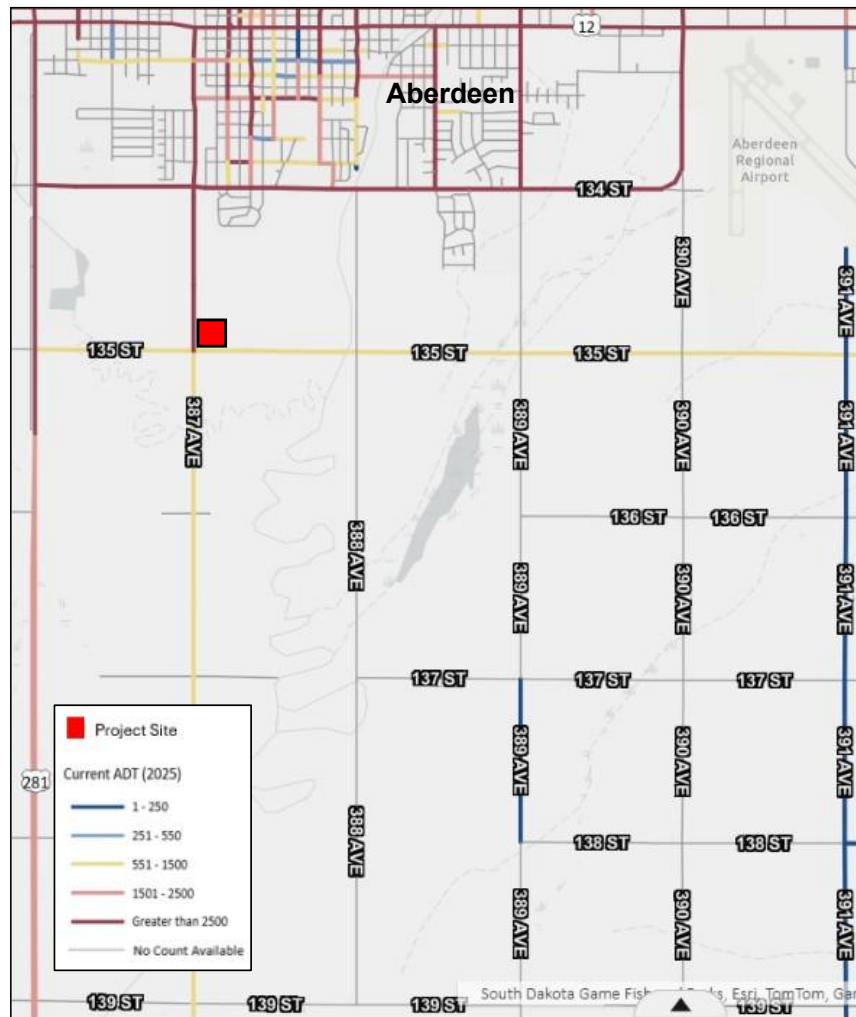
Table 1: Average Daily Traffic Volumes & Truck Percentage Estimates

Route	Direction from Site	Daily Traffic (Yr.)	% Trucks Annually
135 th St. BTWN 387 th Ave. & 388 th Ave.	East	2,200 (2025)	30 – 40%
387 th Ave. (5 th St.) BTWN 135 th St. & 134 th St.	North	3,000 (2025)	15 – 20%
387 th Ave. BTWN 135 th St. & 139 th St.	South	1,600 (2025)	15 – 20%
134 th St. BTWN 5 th St. & 388 th Ave.	North	6,169 (2025)	20%
U.S. Hwy 281 BTWN 135 th St. & 100 th St.	North	3,929 Avg. (2025)	17% Avg.
		4,631 High; 1,652 Low	
U.S. Hwy 281 BTWN 135 th St. & I-90 E/W	South	2,436 Avg. (2025)	22% Avg.
		4,885 High; 1,083 Low	
U.S. Hwy 12 BTWN Hwy 281 & I-29 N/S	East	9,335 Avg. (2025)	16% Avg.
		22,957 High; 2,514 Low	

Source: Brown County, Highway Director, <https://www.brown.sd.us/departments/highway/>; City of Aberdeen, Public Works Director, <https://www.aberdeen.sd.us/68/Public-Works>, and SDDOT GIS Open Data Hub; Traffic Data <https://experience.arcgis.com/experience/cb089bc673df486a8708f2d22b1e740b>

Figure 2 shows the ADT for the roadways within the Study Area. Current ADT is relatively low, especially on local roadways which could be used in facilitating construction traffic and/or a permanent workforce to/from the project site. **Section 2.4** details the functional classifications and roadway surface types of these roadways and **Section 3.3** describes the existing roadway capacities.

Figure 2: Study Area Roadway Daily Volumes



Source: SDDOT GIS Open Data Hub; Traffic Data
<https://experience.arcgis.com/experience/cb089bc673df486a8708f2d22b1e740b>

2.3 Adjacent Land Uses

NorthWestern Energy's existing Aberdeen Generating Station (AGS) and Siebrecht Substation are located south of 135th Street across from the Project Site. A quarter mile east of the AGS and Siebrecht substation, also on the south side of the street, is DemKota Ranch beef plant. The Aberdeen Water Reclamation Facility is adjacent to the plant and extends to 388th Avenue. Aberdeen Community Gardens and the Aberdeen Arboretum are the sole land uses on 388th Avenue between 135th Street and 134th Street and there are no land uses on 388th Avenue south between 135th Street and 136th Street.

Three single-family homes with outbuildings and farm equipment storage are located on the first half of County Road 10 (5th Street) between 135th Street and 134th Street. The Hub City Livestock Auction building and vehicle storage are further north on 5th Street, as is the Aberdeen Rural Fire Station. There are several single-family homes and a manufactured housing community on County Road 10 (387th Avenue) between 136th Street and 135th Street.

The greatest traffic generator of the land uses within the Study Area is the DemKota Ranch beef plant with daily truck shipments. The total truck traffic on that segment of the street is estimated at approximately 780 vehicles per day, which is estimated as 30 to 40 percent of the total traffic. Truck traffic increases within the harvest seasons.

Once the project is completed, NorthWestern Energy will generate minimal traffic with a maximum of 10 employees and two deliveries at the site per day. Anticipated construction impacts are identified in **Section 0**.

2.4 Functional Classifications & Surface Types

Since the interstates are located a significant distance from the site, this study focuses on the local roads and highways around the site. Construction traffic will generally occur on these surface streets, which have capacity to handle the excess traffic, as discussed in detail in **Section 3.3**.

2.4.1 135th Street

135th Street is an urban major collector with a surface width of 24 feet. It is paved (concrete) in front of the site; however, it is unpaved (gravel and crushed rock) from just east of the DemKota access drive until east of 390th Avenue. 135th Street west of 397th Avenue is paved (concrete/bituminous) until Highway 281. 135th Street east of Highway 281 is unpaved.

2.4.2 387th Avenue

As a rural major collector with a surface area of 28-feet, 387th Avenue is paved throughout the Study Area. It remains paved north of 135th Street until 128th Street and south until 143rd Street.

2.4.3 388th & 389th Avenues

388th Avenue is designated as a rural local road from 135th Street south and is predominantly unpaved until the southern state line. It is paved and is designated as an urban local street from approximately a half mile north of 135th Street. Although it ends at 134th Street, it picks up again as S. Dakota Street north of Moccasin Creek. It resumes its designation as 388th Avenue north of the city at 24th Avenue NE. As a rural road, its surface width is 25-feet with 1-foot shoulders. Its cross section increases to 36-feet wide and 45-feet wide as an urban local street until it reverts to a rural road.

389th Avenue is also designated as a rural local road south of 135th Street and becomes an urban local street approximately a half mile north of 135th Street. As a rural road, it has a surface width of 18-feet to 25-feet. As an urban street, its width increases to 45-feet throughout the City of Aberdeen. Its name changes to Roosevelt Street through the city from 134th Street north to 24th Avenue NE, at which point it also reverts to an unpaved rural road.

2.4.4 134th Street & 136th Street

134th Street is the primary southern boundary of the City of Aberdeen. As such, it is designated as an urban minor arterial between U.S. Highway 281 and 389th Avenue. It continues as an urban major collector for a mile until it ends at the Aberdeen Regional Airport. 134th Street picks up east of the airport as a rural local road. It is also designated as a rural road west of U.S. Highway 281 when it feeds into U.S. Highway 12 before continuing west. Like the north-south streets in the Study Area, 134th Street is paved in the urban areas between 385th Avenue east to the airport and unpaved in rural areas east and west of the Study Area.

136th Street is designated as a rural local road throughout the state and is fragmented in the Study Area due to the Moccasin Creek. It is unpaved, predominantly with gravel and/or crushed rock, but its surface type is also designated as a primitive trail a half mile west of 390th Avenue to 391st Avenue and again from 392nd to 394th Avenues.

136th Street provides access through a residential neighborhood for approximately a quarter mile west of 387th Avenue until it dead ends prior to an undeveloped wetland area. It picks up a mile west at U.S. Highway 281 and continues its fragmentation every two to ten miles. It also maintains this fragmented characteristic east of 398th Avenue to a lesser extent.

2.4.5 U.S. Highway 281 & U.S. Highway 12

U.S. Highway 281 is a four-lane, state-owned expressway that connects rural areas to interstates. As such, it is paved throughout the state. Its surface width is on average 48-feet with 2-foot shoulders. In cities, such as Aberdeen, it is designated as an urban principal arterial but maintains its total 48-foot width. In rural areas it is typically divided.

U.S. Highway 12 is a five-lane, urban principal arterial within city jurisdictions and is designated as an expressway in rural areas. It is paved throughout the state, and it is typically divided in rural areas. Its surface width changes more than U.S. Highway 281 from 24-feet in rural areas, such as east of 393rd Avenue, to 60-feet in urban areas such as between U.S. Highway 281 east to 393rd Avenue.

2.5 Study Area Bridges

The bridges identified in **Table 2** are located on the roadways within the Study Area. The bridges and culverts listed are inspected on a bi-annual basis. **Table 2** provides the roadway name, structure number, mile marker if applicable, Average Daily Traffic (ADT), and the structure condition as recorded by South Dakota DOT.

The county and township roadways also have drainage crossings that are small in nature and do not meet the minimum requirements for bi-annual evaluation. These small structures are not listed in the table and were not reviewed as part of this traffic study.

Heavy haul routes will be studied and confirmed by the original equipment suppliers prior to delivering combustion turbines, generators, and GSUs. The Heavy Haul study will include the inspection of the bridges listed in **Table 2** as well as the small structures not listed.

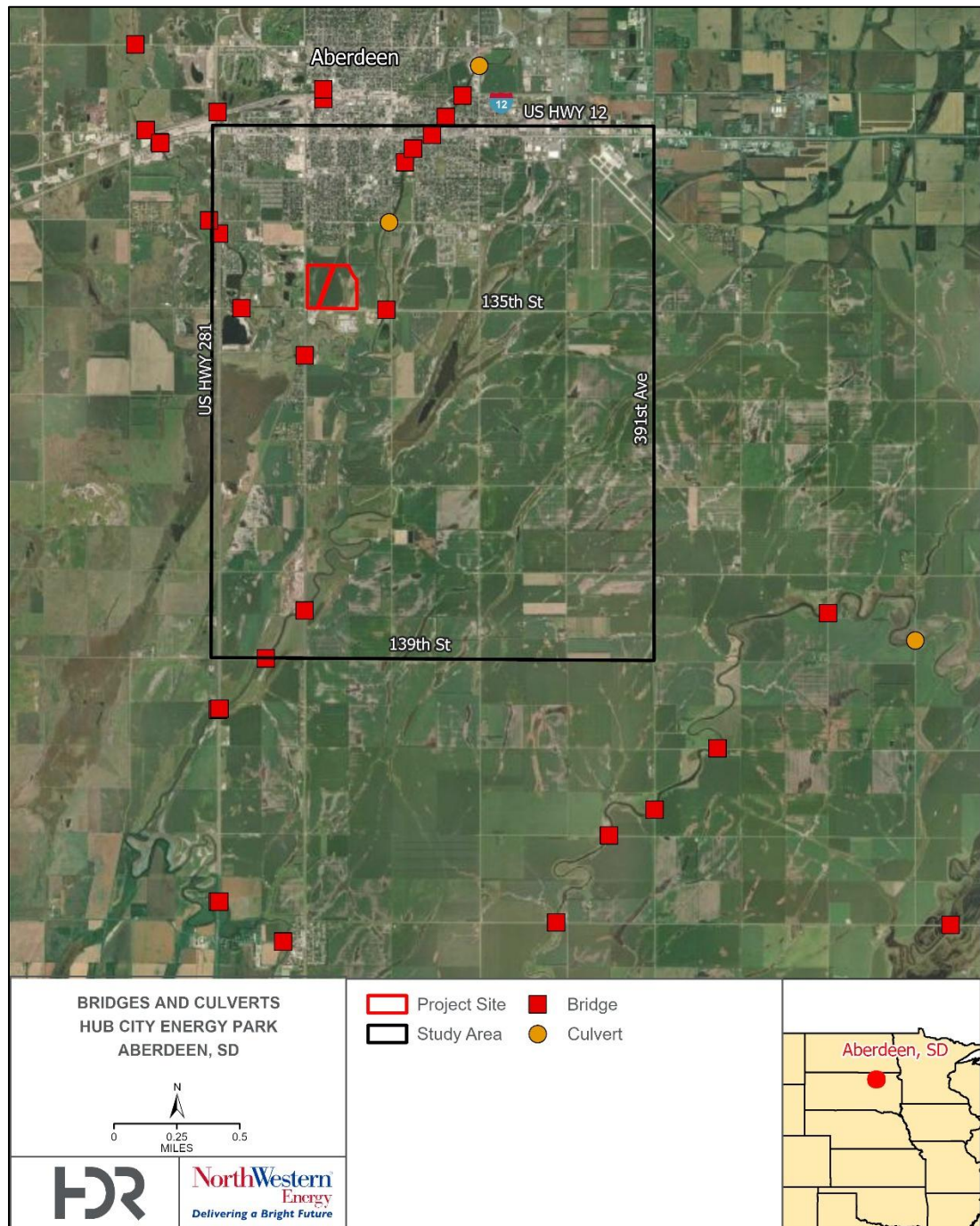
Table 2: Study Area Bridges and Culverts

Roadway	Structure Number	MRM	ADT	Structure Condition
Hwy 281	07100342	193.08	4,631	Fair
135 th St. near 388 th Ave	07102350	N/A	950	Poor
135 th St. near U.S. Hwy 281	07118350	N/A	950	Fair
387 th Ave.	07110356	N/A	745	Good
134 th St. near 388 th Ave. (Culvert)	07119340	N/A	6,480	Fair

Source: SDDOT GIS Open Data Hub; Local Roads Map Viewer;
<https://experience.arcgis.com/experience/c0d19be93784872bd6dc8a06382010b>

Figure 3 identifies the bridges and culverts within and surrounding the Study Area which will be inspected when developing the heavy haul routes.

Figure 3: Vicinity Bridges and Culverts



Source: SDDOT GIS Open Data Hub; Local Roads Map Viewer;
<https://experience.arcgis.com/experience/c0d19beb93784872bd6dc8a06382010b>

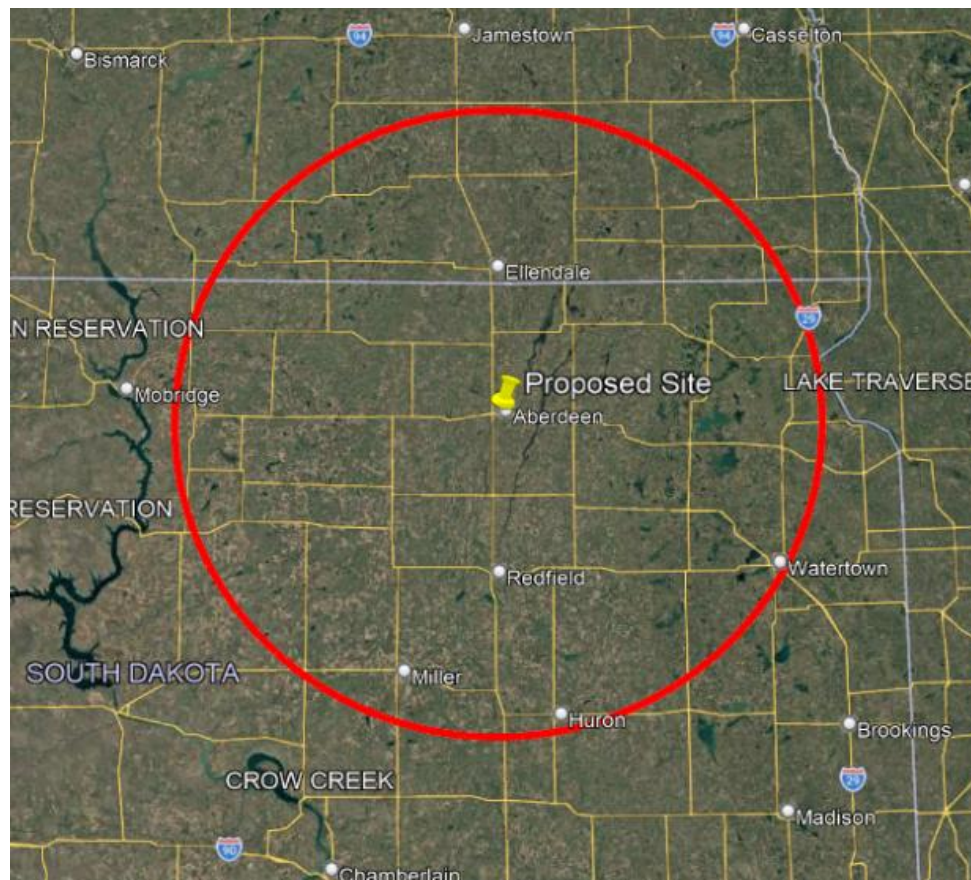
3 Construction Impacts

Construction and early site activities could begin as early as the second quarter of 2027. Peak construction is anticipated from the second quarter of 2028 to the second quarter of 2029 and is anticipated to be completed in the second quarter of 2030. Approximately 200 deliveries are anticipated during the construction lifecycle.

3.1 Construction Traffic Routes

Construction crews and deliveries traveling to the site will cause some short-term traffic increases to the routes within the Study Area. Construction crews are anticipated to either make one hour or less daily commutes to the site or will stay in a short stay or rental properties in the vicinity if their commute is greater than one hour. Figure 4 shows an 80-mile radius around the proposed site, which based on normal traffic speeds in South Dakota are located within a one-hour commute. These areas include the City of Aberdeen, Highmore, Faulkton, Huron, and Watertown. Therefore, it is anticipated that most of the construction traffic will primarily use U.S. Highway 281 and U.S. Highway 12 from the interstates. Both facilities, and the adjacent county and local roads, can serve this additional traffic with little to no impact to the current level of service provided by those facilities (**Section 3.3**).

Figure 4: One-Hour Commute Radius from Proposed Site



3.2 Planned State Roadway Construction

It should be noted that the 2026 South Dakota Statewide Transportation Improvement Program (STIP) has construction planned on the U.S. Highways in the Study Area during NorthWestern Energy's construction schedule. Signal replacement is scheduled on U.S. Highway 12 between U.S. Highway 281 and 390th Avenue in Fiscal Year (FY 2027). Milling, resurfacing, and pipe work is planned for U.S. Highway 12 west of the Study Area in FY 2028 and for U.S. Highway 281 south of the Study Area in FY 2029. U.S. Highway 12 resurfacing is also planned for segments west of the Study Area in FY 2029.^{1,2}

3.3 Roadway Capacity

With an increase of approximately 200 vehicles to the roadways during construction and a ten-vehicle workforce once the plant opens, significant impacts are not anticipated. Turn lanes are also not anticipated to be impacted due to the limited vehicle increase. A detour will likely not be warranted for this project.

The SDDOT Road Design Manual³ provides general guidance for roadway capacity based on rural or urban settings, number of lanes, and level of service guidelines. The number of lanes and the estimated ADT shown in Figure 5, can be used to assess operational acceptability at the daily-volume level.

Referencing **Table 1**, the Study Area's roadways 135th Street and 387th Avenue between 135th and 139th Streets are two-lane rural roadways and in 2025 had ADTs of 2,200 and 1,600, respectively; far less than the 8,000 vpd capacity. Likewise, 387th Avenue between 135th and 134th Streets, a two-lane urban roadway, had an ADT less than the 2,500 vpd capacity threshold.

The highest ADT was used to determine capacity allowances on the U.S. Highways. U.S. Highway 281 is a four-lane urban and rural highway. Its highest ADT between 135th and 100th Streets (state line) was 4,631 vpd. Between 135th Street and I-90 its highest ADT was 4,885. Therefore, it also has sufficient

Figure 5: Roadway Capacity

Total Number of Lanes	Total Design Year ADT ¹	
	Rural Level	Urban
2	< 8,000	< 2,500
3	²	2,500 to 16,000
4	8,000 to 20,000 ³	³
5	²	16,000 to 30,000
6	> 20,000 ⁴	> 30,000 ⁴

¹ Construction/Reconstruction projects are designed based on a typical 20-year ADT projection beyond the anticipated year of project construction.
² Continuous left turn lanes may be considered based on left turn volumes and/or when intersections and/or approaches are closely spaced together.
³ Undivided sections may be used if left turn movements are low and there is no crash history, otherwise consider installing a median or 5 lane section.
⁴ Medians should be used.

Source: SSDOT Road Design Manual, Table 15-9, <https://dotfiles.sd.gov/rd/rdmch15.pdf>

¹ SDDOT GIS Open Data Hub; 2026 Statewide Transportation Improvement Program (STIP); accessed May 22, 2026; <https://experience.arcgis.com/experience/ca04ce64c6204c4cbe88f9f9cb59341f>

² The SDDOT Fiscal Year runs from July 1 to June 30 of each calendar year.

³ SDDOT Road Design Manual, Chapter 15, Traffic, pg. 15-8; accessed May 28, 2026; <https://dotfiles.sd.gov/rd/rdmch15.pdf>

capacity. U.S. Highway 12 also has remaining capacity, albeit less than the other roadways. As a five-lane urban and rural highway, its highest ADT was 22,957, which slightly exceeds the 20,000 ADT capacity for a rural roadway, but is significantly less than the 30,000 ADT threshold for an urban roadway.

City of Aberdeen's two-lane, urban highway 134th Street between 5th Street and 388th Avenue was the only roadway in the Study Area that exceeded the capacity threshold with a 6,169 ADT when the threshold is 2,500. It should be noted, however, that other states have recently increased these thresholds, such as Florida's DOT guidance. These metrics should be run by SDDOT to determine suitability in this context. If the SDDOT Design Manual threshold should be followed, **construction crews should be directed to avoid that east-west roadway and use U.S. Highway 12 or 135th Street instead.**

3.4 Heavy Haul Equipment Shipments

A total of nine heavy haul shipments are expected to be delivered to the site; as described in Table 3. The combustion turbines and generator packages will likely travel by rail from San Diego, CA, where they will then be loaded onto trucks and delivered by truck to the site. The equipment suppliers have not yet verified their heavy haul plan, and it is therefore not yet known where the equipment would be delivered on the rail or the route of the subsequent truck travel.

The road surface types will likely dictate the routes of heavy haul trucks. As such, it is expected that they will be routed from an interstate (I-90, I-94, I-29) to a U.S. Highway (281, 12) and the final route will be onto 135th Street, likely from the west, since 135th Street is unpaved between 388th Street and the site.

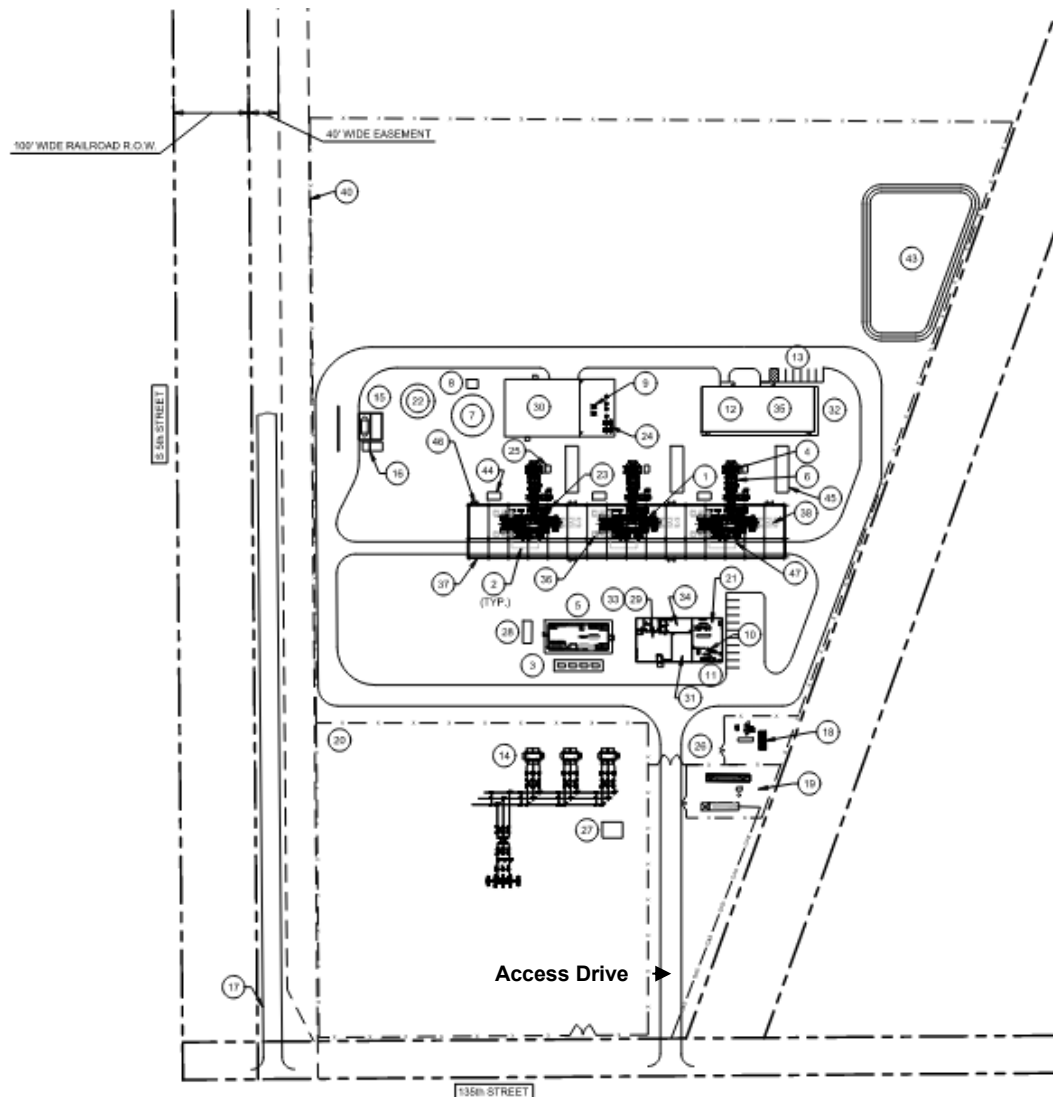
Table 3: Heavy Haul Load Summary

Equipment	Total Loads	Transport Weight of Each Load
Combustion Turbine Package	193,000 lbs.	3
Generator Package	170,700 lbs.	3
GSUs	100,000 lbs.	3

3.5 Site Access

As shown in Figure 6, the construction and permanent access drive will be on 135th Street, slightly to the right of the existing Aberdeen Generating Station (AGS) and Siebrecht Substation across the street. The drive shown on the west side of the site plan is an access easement to the farm north of the site and will not be utilized for the construction of the project.

Figure 6: Hub City Energy Park Layout



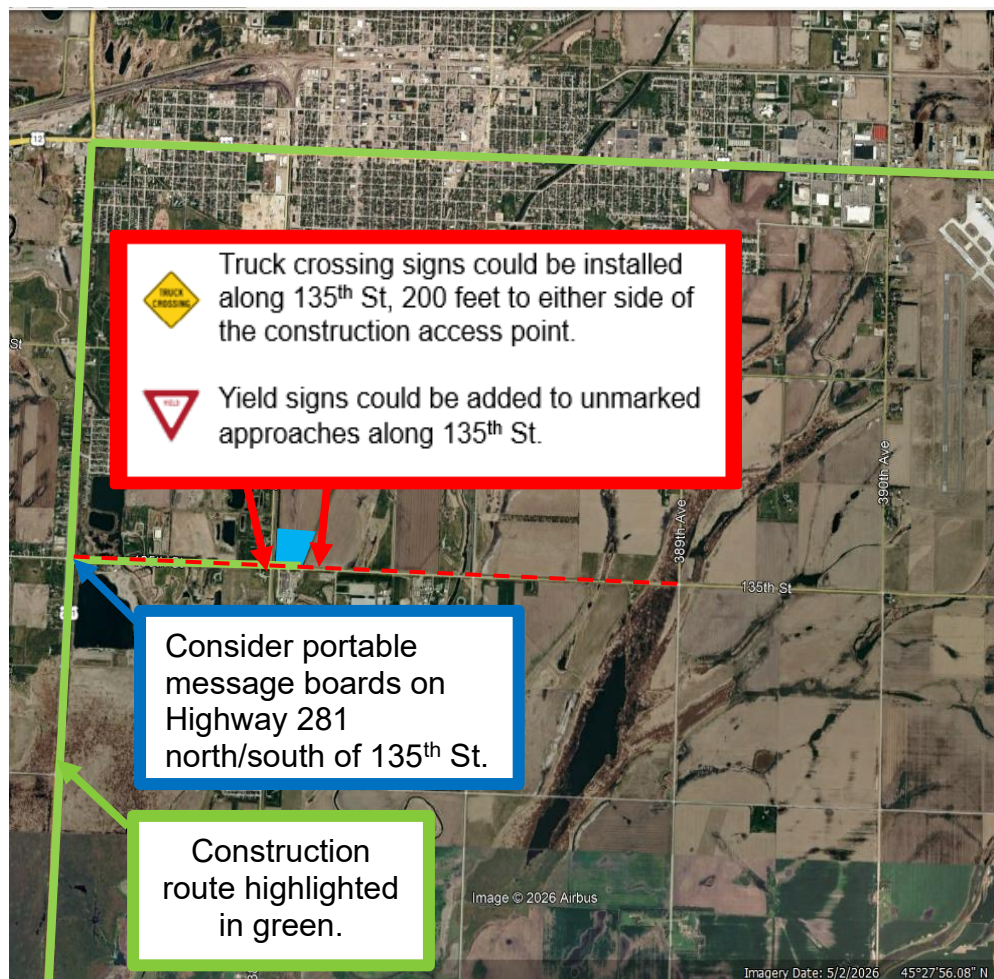
4 Recommendations

This section summarizes the recommendations based on the findings from this Traffic Study, which did not identify any major concerns. These include recommendations for signage, heavy haul routes, and additional recommendations previously discussed. Implementation means and methods will be determined by the equipment suppliers and the construction contractor.

4.1 Signage

Implementation of signage for routing traffic to the site safely is the primary mitigation effort needed. It will keep the route defined for those not making daily visits to the site. **Figure 7** provides a representative signage plan for the construction and delivery vehicles. All signs placed within state, county, or township rights-of-way shall **meet the requirements of the Manual of Uniform Traffic Control Devices (MUTCD)** and shall have the proper breakaway support structures. The signage plan should be **approved by the SDDOT Aberdeen Region Engineer prior to implementation.**

Figure 7: Construction Signage Considerations



4.2 Heavy Haul Routes

- Develop a dust control maintenance plan for any haul routes on gravel roads.
- Develop agreements with the township and county, where applicable, for roadway maintenance during construction. The agreement should include how the roadway surface will be maintained in wet and dry conditions and dust will be controlled during construction. The agreement should also clarify township and county roles in snow maintenance during the winter months.
- If any gravel roads are considered for haul routes, a geotechnical engineer should complete an assessment of the gravel depth and structural stability. This assessment will help determine route feasibility and identify additional gravel surfacing, subgrade adjustment, or in-slope flattening needs in preparation for the construction traffic.
- Over width and overweight permitting for heavy haulers will be necessary on the state and county facilities and haulers should coordinate as necessary to obtain written permits.
- Based on the information provided in this report, bridges on the county or state routes currently allow legal loads and are not posted. Smaller structures and culverts along any construction routes that are not routinely inspected/load rated should be inspected for condition and any abnormalities prior to starting construction.
- Heavy haulers should verify latest pavement and bridge conditions when determining a route.

4.3 Additional Recommendations

- Construction and workforce vehicles should avoid the following roadways:
 - 134th Street due to over-capacity concerns (unless SDDOT approves a higher capacity threshold per **Section 3.3**).
 - Roadways adjacent to residential uses, such as 387th Avenue between 135th and 136th Streets (See **Section 2.3**).
 - Unpaved roadways, such as 135th Street east of the project site and 388th and 389th Avenues (See **Section 2.4**).
- Consider SDDOT planned construction schedules for FY 2027-2029 when developing the construction route, especially for heavy haulers (See **Section 3.2**).