

Exhibit C Instructions - Underground Bipolar HVDC Electric Transmission Line

Please include an Exhibit C for each franchised line.

Part A - General Information

Item 1: Enter the name or circuit number used to identify the transmission line.

Item 2: Enter the length of the franchised line, in miles. Do not enter the number of circuit miles if the line is multi-circuited.

Item 3, Field 1: Check the phrase that applies. "Rebuilt" refers to a major rebuild in which the applicable edition of the National Electric Safety Code (NESC) changes.

Item 3, Field 2: Enter the year in which construction was complete or is anticipated to take place. If the segment has been rebuilt, enter the year in which the segment was rebuilt.

Item 4: Provide the edition of the NESC that will be used for the line to be maintained. Most line segments are maintained to the current code, but older code editions may be used as long as they are not older than the code which was in effect when the line segment was constructed or reconstructed. Dates in which Iowa adopted the various editions of the NESC are listed in the table below.

Iowa's Adoption of the National Electrical Safety Code

Edition	6th*	1973	1977	1981	199	1993	1997	2002	2007	2012	2017	2023
Adopted	10/24/65	2/27/76	6/6/79	1/12/83	9/9/92	12/14/94	12/24/97	5/22/02	6/27/07	4/9/14	5/3/17	4/23/25

* The oldest edition that can apply to overhead or underground lines is the 6th Edition.

Item 5: Enter the maximum voltage the franchised line is or will be capable of operating. "*Capable of operating*" means the standard voltage rating at which the line, wire, or cable can be operated consistent with the level of the insulators and the conductors used in construction of the line, wire, or cable based on manufacturer's specifications, industry practice, and applicable industry standards. See IUC rule 199 IAC 11.1(6)

Item 6: Enter the nominal operating voltage based on the actual operation of the line.

Item 7: Enter the circuit capacity, in MW.

Item 8: Select all purposes that apply to this line.

- i. Select this if the line is needed to serve or connect a new or existing load at a particular location. Enter the location that the line is serving or being built to serve or connect.
- ii. Select this if the line is needed to connect a generation facility to the transmission grid. Enter the type of generation that is being connected to the transmission grid by this line. Enter the owner of the generation. Enter the location of the generation. Enter the nameplate generation. Select the status of the generation.
- iii. Select this if the line was or is being constructed to mitigate transmission congestion.
- iv. Select this if the line is necessary to address a NERC violation.
- v. Select this if the line is required by your RTO. Enter the name of the RTO.

- vi. Select this if the line was or is being constructed to resolve a thermal loading issue.
- vii. Enter any other purpose of this circuit.

Part B - Conductor Specifications

- Item 1: Indicate whether the line will be direct burial or in a duct.
- Item 2: Enter the vertical and horizontal separation between the primary cable and return cable(s).
- Item 3: Enter the minimum burial depth.
- Item 4: Indicate whether the primary and return cables are identical. If so, leave Items 6 a-g blank.
- Item 5a: Enter the cable size and material.
- Item 5b: Enter the insulation thickness and material.
- Item 5c: Enter the outer shield materials.
- Item 5d: Indicate whether the cable is jacketed and, if so, enter the material.
- Item 6a: Enter the number of return cables.
- Item 6b: Enter the return cable's maximum operating voltage and typical operating voltage.
- Item 6c: Enter the return cable's catalog number.
- Item 6d: Enter the size and material of the return cable.
- Item 6e: Enter the insulation thickness and material of the return cable.
- Item 6f: Enter the return cable's outer shield materials.
- Item 6g: Indicate whether the return cable is jacketed and, if so, enter the material.
- Item 7: Enter type and a description of any other cables (communication lines, etc.) buried with the conductors. In the description, provide the size and materials of the other cables.

Part C - Structures

- Item 1: Indicate whether any aboveground enclosure or underground vault is used along the route. If no, leave items a-c blank.
- Item 1a: Enter the locations of any vaults along the line. Indicate these on Exhibit B.
- Item 1b: Enter the material the vaults will be constructed with.
- Item 1c: Enter any equipment that will be housed within the vaults. (switches, disconnects, etc.)

Part D - Converter Stations

Item 1: Enter the location of the AC to DC conversion station (1/4 section, section, township, range, county, state)

- a) Enter the AC voltage entering the station.
- b) Enter the DC voltage exiting the station.
- c) Enter the status of the station. If the station is under construction, enter the expected completion date (month, year).

Item 2: Enter the location of the DC to AC conversion station (1/4 section, section, township, range, county, state)

- a) Enter the AC voltage entering the station.
- b) Enter the DC voltage exiting the station.
- c) Enter the status of the station. If the station is under construction, enter the expected completion date (month, year).

Part E - Additional Utilities in Common Trench

Only include this part if there are other utilities buried with the line in a common trench.

Item 1: Enter the type of the utilities buried with the line.

Item 2: Enter the name of the utilities.

Item 3: Enter the voltage of the utilities if the utilities are electrical facilities.

Item 4: Enter the vertical separation between the utilities and the line.

Item 5: Enter the horizontal separation between the utilities and the line.

Item 6: Enter the locations of the shared trench.

Item 7: Enter the maximum distance between shared trenches.

Appendix 1

Attach drawings for each of the listed structures.

- 1. A typical cross-section drawing of the trench.
- 2. A typical cross-section drawing for each instance of a shared trench.
- 3. A cross-section drawing for each type of crossing with another underground facility.
- 4. A typical drawing for the line crossing a waterway.
- 5. A typical drawing of any vaults used along the route.
- 6. The cut sheets for the primary and return cables, along with any other cables being used.
- 7. The cut sheets for circuit breakers.

Appendix 2

Attach a map that shows the entire circuit from terminus to terminus on a single page. For this map, the rules for Exhibit B do not apply. The map needs to identify the termini and the parts of

the circuit being franchised and not being franchised. It needs to show county and state lines, city limits, state parks, railroad, and rivers. If all this information is shown in Exhibit B, please indicate that and do not file a separate map.

Appendix 3

Item 1: Enter the number of easements required and number of easements obtained.

Item 2: Enter the construction start date.

Item 3: Enter the construction end date.

Item 4: Enter the date the line was put into service.

Item 5: Enter in the list provided all local, state, or federal permits or approvals, other than the IUC, needed to construct the line. Give the name of the permit or approval agency and a short description of the permit or approval needed. Provide the status of the permit or approval. Examples of status are: Obtained on [DATE], Request/Filed, Waiting on other approval, etc. If waiting on other approval is used, identify the other approval.

Please update Appendix 3 questions 2 through 5 after the franchise has been granted and until the line is put into service.

Appendix 3 is only needed for new construction.

Questions?

Call (515) 725-7300 or email iuc@iuc.iowa.gov.