37

# FILE



**BEFORE**
**THE OHIO POWER SITING BOARD**

| | | |
|---|---|---|
| **In the Matter of the Application of American Transmission Systems, Inc. and the Cleveland Electric Illuminating Co. for a Certificate of Environmental Compatibility and Public Need for the Geauga County 138 kV Transmission Line Supply Project** | ) ) ) ) ) ) ) | **Case No. 07-171-EL-BTX** |

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**Applicants' Responses to**
**Staff's First Set of Interrogatories Directed to**
**Applicants and Request for Production of Documents**

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Pursuant to O.A.C. § 4906-7-07, the Staff of the Ohio Power Siting Board propounds the following interrogatories and document requests upon Applicants American Transmission Systems, Inc., and the Cleveland Electric Illuminating Company:

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| **Co. for a Certificate of Environmental** | ) | **Case No. 07-171-EL-BTX** |
| **Compatibility and Public Need for the** | ) | |
| **Geauga County 138 kV Transmission** | ) | |
| **Line Supply Project** | ) | |

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1. Provide data used to support the historic and future load growth rates described on page 02-7 of the application.

**RESPONSE:**

**See Table 1 below.**

## Table 1

**Capacity and normalized peak loads during normal system conditions at MF and SN (before Stacy):**

| | | Historical Loads | | | | | | | | Projected Loads | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ckt/ Sub** | **Cap** | **2000 Load** | **2001 Load** | **2002 Load** | **2003 Load** | **2004 Load** | **2005 Load** | **2006 Load** | **2007 Load** | **2008 Load** | **2009 Load** | **2010 Load** | **2011 Load** | **2012 Load** | **2013 Load** | **2014 Load** | **2015 Load** | **2016 Load** | **2017 Load** | **2018 Load** | **2019 Load** | **GR** |
| 19-MF | **42.4** | 20.6 | 22.6 | 22.3 | 22.5 | 20.2 | 32.4 | 34.3 | 36.2 | 36.8 | 37.4 | 38 | 38.6 | 39.2 | 39.8 | 40.4 | 41.1 | 41.7 | 42.4 | 43.1 | 43.8 | 1.6 |
| 20-MF | **42.4** | 19.1 | 22.3 | 25.6 | 28.6 | 30.0 | 21.4 | 24.2 | 31.7 | 32.9 | 34.1 | 35.4 | 36.8 | 38.2 | 39.6 | 41.1 | 42.7 | 44.3 | 46 | 47.8 | 49.6 | 3.8 |
| 21-MF | **48** | 29.5 | 29.3 | 28.3 | 21.8 | 23.0 | 25.2 | 26.6 | 37.1 | 38.5 | 40 | 41.5 | 43.1 | 44.7 | 46.4 | 48.2 | 50 | 51.9 | 53.9 | 55.9 | 58 | 3.8 |
| 22-MF | **48** | 31.0 | 31.6 | 33.2 | 38.6 | 39.6 | 40.7 | 44.5 | 33.2 | *25.1 | 26.1 | 27 | 28.1 | 29.1 | 30.3 | 31.4 | 32.6 | 33.8 | 35.1 | 36.5 | 37.8 | 3.8 |
| MF Sub | **248** | 175.2 | 176.3 | 184.8 | 184.6 | 188.6 | 204.1 | 211.3 | 221.6 | *214 | 220 | 226 | 232 | 238 | 245 | 251 | 258 | 265 | 272 | 280 | 287 | 2.7 |
| 18-SN | **42.6** | 12.3 | 12.3 | 13.5 | 13.6 | 13.3 | 16.4 | 17.9 | 16.1 | *26.0 | 26.9 | 27.8 | 28.8 | 29.8 | 30.9 | 31.9 | 33.1 | 34.2 | 35.4 | 36.6 | 37.9 | 3.5 |
| 19-SN | **42.6** | 25.9 | 25.9 | 26.2 | 24.9 | 23.6 | 24.2 | 30.3 | 27.5 | 28.5 | 29.5 | 30.5 | 31.6 | 32.7 | 33.8 | 35 | 36.2 | 37.5 | 38.8 | 40.1 | 41.6 | 3.5 |
| SN Sub | **153** | 115 | 115.5 | 116.8 | 118.1 | 119.3 | 115.7 | 119.2 | 117.7 | *115.3 | 117.6 | 119.9 | 122.3 | 124.8 | 127.3 | 129.8 | 132.4 | 135 | 137.7 | 140.5 | 143.3 | 2 |

Normalized loads are adjusted for Summer Weather Effects

* indicates load transfers

MF = Mayfield Sub
SN = Sanborn Sub
GR = Growth Rate (Growth rate is based upon actual historical load data from 2000-2007)
Cap = Capacity

Response 1
Page 2-A

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2. Provide historic MAIFI, SAIFI, CAIDI and SAIDI data by year and by circuit for MF-19, MF-20, MF-21, MF-22 and SN-18 from 1997 through 2006.

**RESPONSE:**

**Table 1 below shows the historical reliability data for the circuits that supply the Middlefield area. This table only shows customers directly supplied from the subtransmission system. It does not show how the distribution substations supplied by these circuits were affected. Table 2 below shows the distribution substations supplied by the subtransmission system and their respective customer counts. From 1997 until 2001 The Illuminating Company reported reliability data to the PUCO based on CAIDI. The Illuminating Company does not have the individual breakdowns of MAIFI, SAIFI or SAIDI for those years. Beginning in 2002 reporting requirements changed, thus The Illuminating Company can provide the necessary additional information.**

**Table 1**

| Circuit | Year | Cl. Sup. | Cu. Affect | Cu. Min. | CAIDI | SAIFI | MAIFI | LO | SAIDI |
|---|---|---|---|---|---|---|---|---|---|
| R019MF | 1997 | | 12 | 560 | 47 | | | | |
| R019MF | 1998 | | 0 | 0 | 0 | | | | |
| R019MF | 1999 | | 0 | 0 | 0 | | | | |
| R019MF | 2000 | | 4 | 577 | 144 | | | | |
| R019MF | 2001 | | 27 | 2337 | 87 | | | | |
| R019MF | 2002 | 4 | 8 | 619 | 77 | 2 | 4 | 1 | 154.75 |
| R019MF | 2003 | 4 | 12 | 686 | 57 | 3 | 5 | 2 | 171.5 |
| R019MF | 2004 | 3 | 3 | 141 | 47 | 1 | 0 | 0 | 47 |
| R019MF | 2005 | 3 | 9 | 855 | 95 | 3 | 4 | 3 | 285 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R019MF | 2006 | 3 | 4 | 120 | 30 | 1.33 | 11.67 | 0 | 40 |
| R019MF | 2007 | 4 | 8 | 440 | 55 | 2 | 10 | 1 | 110 |
| R020MF | 1997 | | 21 | 979 | 47 | | | | |
| R020MF | 1998 | | 9 | 621 | 69 | | | | |
| R020MF | 1999 | | 1 | 109 | 109 | | | | |
| R020MF | 2000 | | 19 | 1538 | 81 | | | | |
| R020MF | 2001 | | 1 | 79 | 79 | | | | |
| R020MF | 2002 | 8 | 2 | 131 | 66 | 0.25 | 0 | 0 | 16.37 |
| R020MF | 2003 | 6 | 27 | 1385 | 51 | 4.5 | 5.33 | 1 | 230.83 |
| R020MF | 2004 | 7 | 9 | 937 | 104 | 1.29 | 0 | 1 | 133.86 |
| R020MF | 2005 | 11 | 0 | 0 | | 0 | 3 | 0 | 0 |
| R020MF | 2006 | 11 | 14 | 1014 | 72 | 1.27 | 2 | 2 | 92.18 |
| R020MF | 2007 | 8 | 28 | 3265 | 117 | 3.5 | 8.5 | 1 | 408.13 |
| R021MF | 1997 | | 12 | 576 | 48 | | | | |
| R021MF | 1998 | | 0 | 0 | 0 | | | | |
| R021MF | 1999 | | 0 | 0 | 0 | | | | |
| R021MF | 2000 | | 2 | 196 | 98 | | | | |
| R021MF | 2001 | | 3 | 429 | 143 | | | | |
| R021MF | 2002 | 6 | 0 | 0 | | 0 | 0 | 0 | 0 |
| R021MF | 2003 | 8 | 21 | 884 | 42 | 2.62 | 1.25 | 2 | 110.5 |
| R021MF | 2004 | 5 | 0 | 0 | | 0 | 0 | 0 | 0 |
| R021MF | 2005 | 8 | 0 | 0 | | 0 | 3 | 0 | 0 |
| R021MF | 2006 | 8 | 7 | 1092 | 156 | 0.88 | 3 | 0 | 136.5 |
| R021MF | 2007 | 6 | 0 | 0 | | 0 | 4.33 | 0 | 0 |
| R022MF | 1997 | | 3 | 198 | 66 | | | | |
| R022MF | 1998 | | 0 | 0 | 0 | | | | |
| R022MF | 1999 | | 1 | 79 | 79 | | | | |
| R022MF | 2000 | | 0 | 0 | 0 | | | | |
| R022MF | 2001 | | 0 | 0 | 0 | | | | |
| R022MF | 2002 | 4 | 9 | 628 | 70 | 2.25 | 0 | 1 | 157 |
| R022MF | 2003 | 2 | 23 | 2660 | 116 | 11.5 | 6 | 2 | 1330 |
| R022MF | 2004 | 1 | 4 | 300 | 75 | 4 | 3 | 0 | 300 |
| R022MF | 2005 | 3 | 20 | 2412 | 121 | 6.67 | 5.67 | 4 | 804 |
| R022MF | 2006 | 2 | 5 | 108 | 22 | 2.5 | 1.5 | 0 | 54 |
| R022MF | 2007 | 3 | 8 | 344 | 43 | 2.67 | 2 | 0 | 114.67 |
| R018SN | 1997 | | 1 | 66 | 66 | | | | |
| R018SN | 1998 | | 0 | 0 | 0 | | | | |
| R018SN | 1999 | | 2 | 139 | 70 | | | | |
| R018SN | 2000 | | 2 | 282 | 141 | | | | |
| R018SN | 2001 | | 1 | 19 | 19 | | | | |
| R018SN | 2002 | | 0 | 0 | 0 | 0.00 | 0 | 0 | 0.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R018SN | 2003 | 2 | 5 | 467 | 93 | 2.5 | 5 | 1 | 233.5 |
| R018SN | 2004 | 2 | 0 | 0 | | 0 | 0 | 0 | 0 |
| R018SN | 2005 | 1 | 3 | 525 | 175 | 3 | 0 | 1 | 525 |
| R018SN | 2006 | 1 | 6 | 1336 | 223 | 6 | 4 | 0 | 1336 |
| R018SN | 2007 | 2 | 2 | 90 | 45 | 1 | 0 | 0 | 45 |

**Table 2**

| Substation | Supply Point | DSS Code | Customers |
|---|---|---|---|
| Mayfield | R-19-MF-G-X | AB | 277 |
| Mayfield | R-19-MF-G-X | LT | 1083 |
| Mayfield | R-19-MF-G-X | OX | 2181 |
| Mayfield | R-19-MF-G-X | WH | 1092 |
| Mayfield | R-20-MF-G-X | MD | 199 |
| Mayfield | R-20-MF-G-X | MDC | 2 |
| Mayfield | R-20-MF-G-X | NU | 617 |
| Mayfield | R-20-MF-G-X | QZ | 2031 |
| Mayfield | R-21-MF-G-X | BT | 1744 |
| Mayfield | R-21-MF-G-X | CD | 542 |
| Mayfield | R-21-MF-G-X | HB | 853 |
| Mayfield | R-21-MF-G-X | MD | 1073 |
| Mayfield | R-21-MF-G-X | RU | 1832 |
| Mayfield | R-21-MF-G-X | WOODSONG | 165 |
| Mayfield | R-22-MF-G-X | CD | 271 |
| Mayfield | R-22-MF-G-X | HH | 374 |
| Mayfield | R-22-MF-G-X | HN | 705 |
| Mayfield | R-22-MF-G-X | ME | 926 |
| Mayfield | R-22-MF-G-X | QK | 798 |
| Sanborn | R-18-SN-G-X | RC | 1018 |
| Sanborn | R-18-SN-G-X | RM | 1241 |
| Sanborn | R-18-SN-G-X | RW | 1744 |
| Sanborn | R-18-SN-G-X | WI | 1059 |

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3. Explain whether the MVA value for the four Stacy distribution circuits adds up to more than 110 MVA listed for the substation in Table 02-77.

**RESPONSE:**

**Each Stacy circuit is rated at 42.6 MVA. The total circuit capacity at Stacy is then 42.6 MVA times four circuits, equaling 170.4 MVA. There is more circuit capacity at that substation for the following reason: The Illuminating Company's 36 kV subtransmission system is designed to operate for the loss of one circuit, also called N-1. The Stacy substation was designed to operate with the loss of one circuit. Assuming the loss of one circuit, the remaining capacity at Stacy would be 42.6 MVA times three circuits, equaling 127.8 MVA, which is above rated capacity of the substation.**

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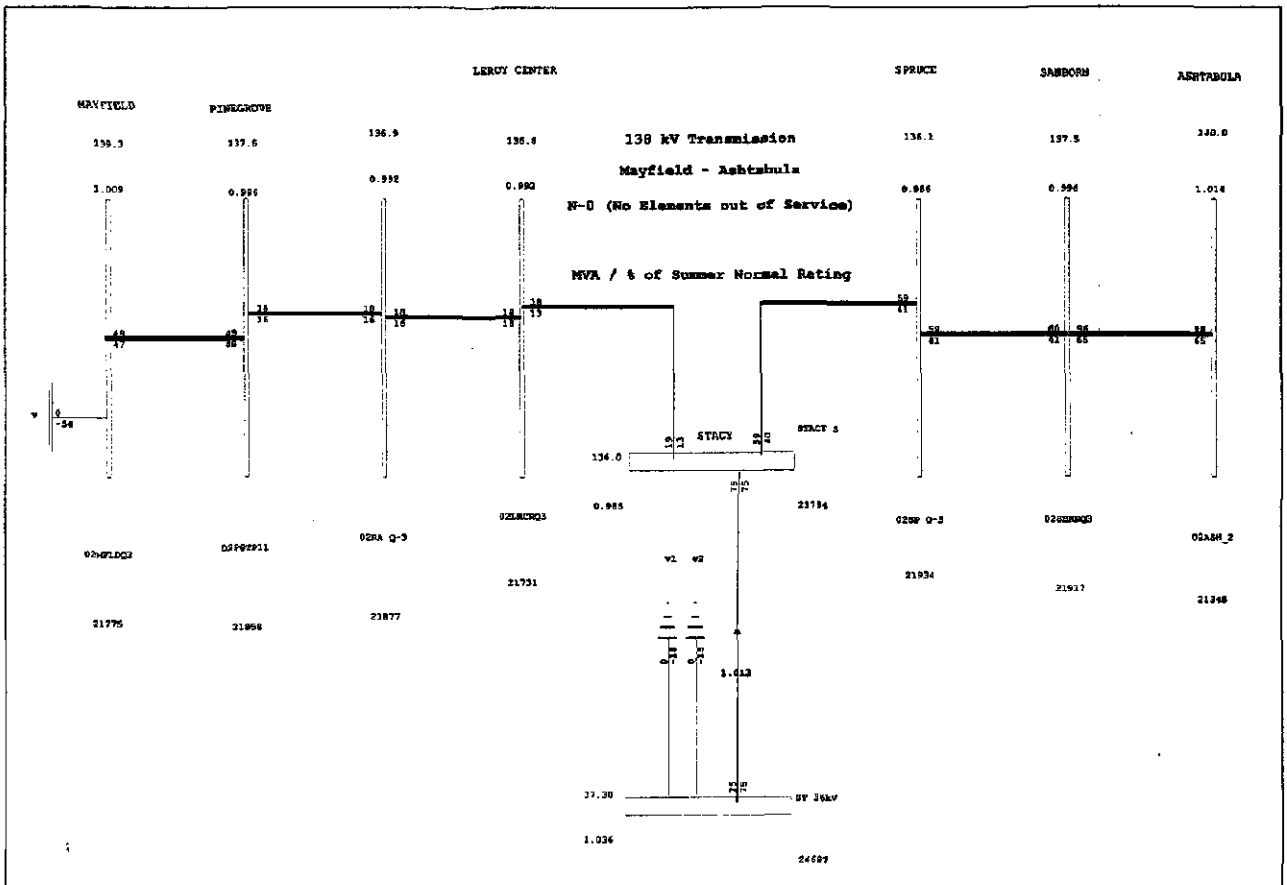
4. Provide the transmission system impact study or data for this project which shows that the transmission system will be able to supply the power requirements of the new Stacy substation along with any transmission up-grades or modifications necessary as a result of interconnecting the new Stacy substation.

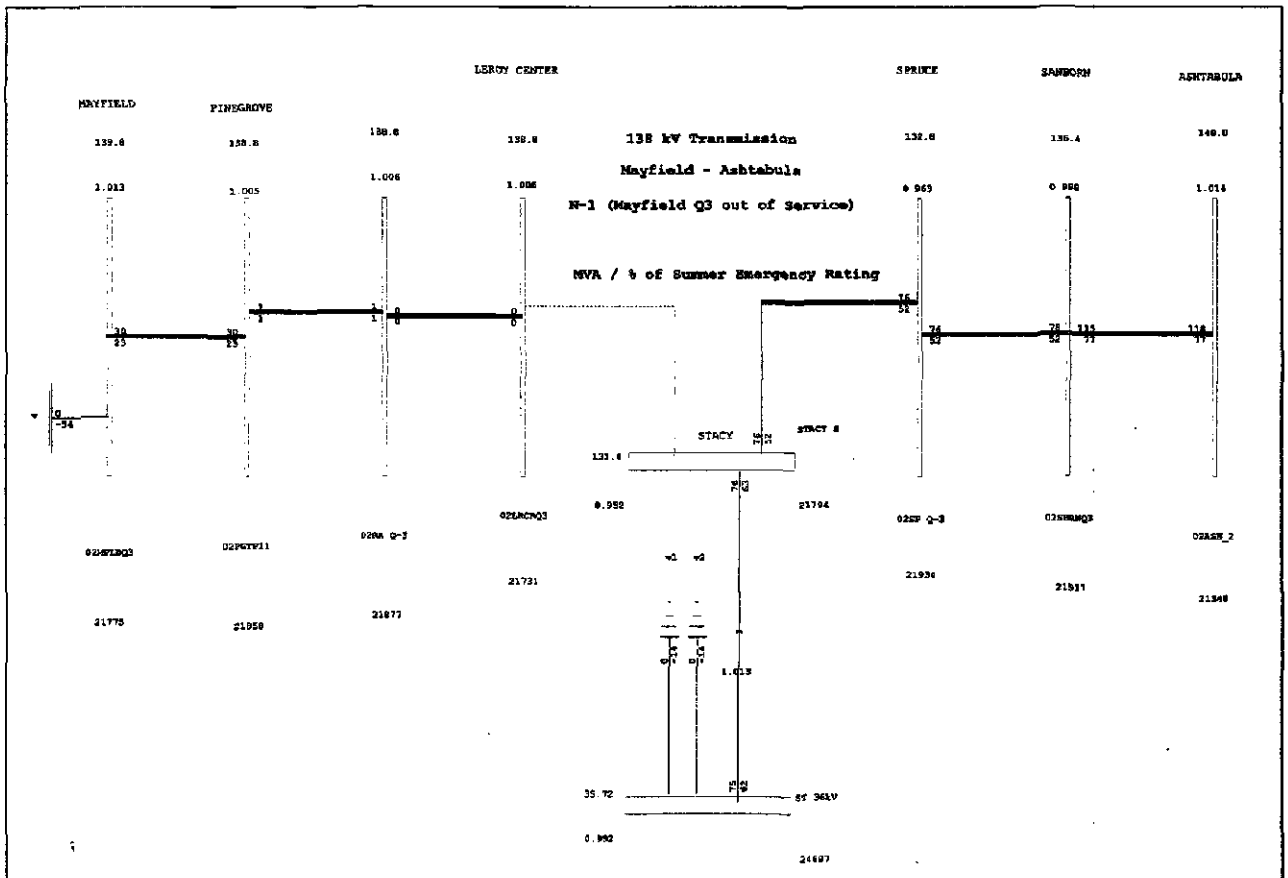
**RESPONSE:**

**On page 02-13, in the "Need" section of the application, there is an explanation of the impact of the proposed facility on the 138kV transmission system.**

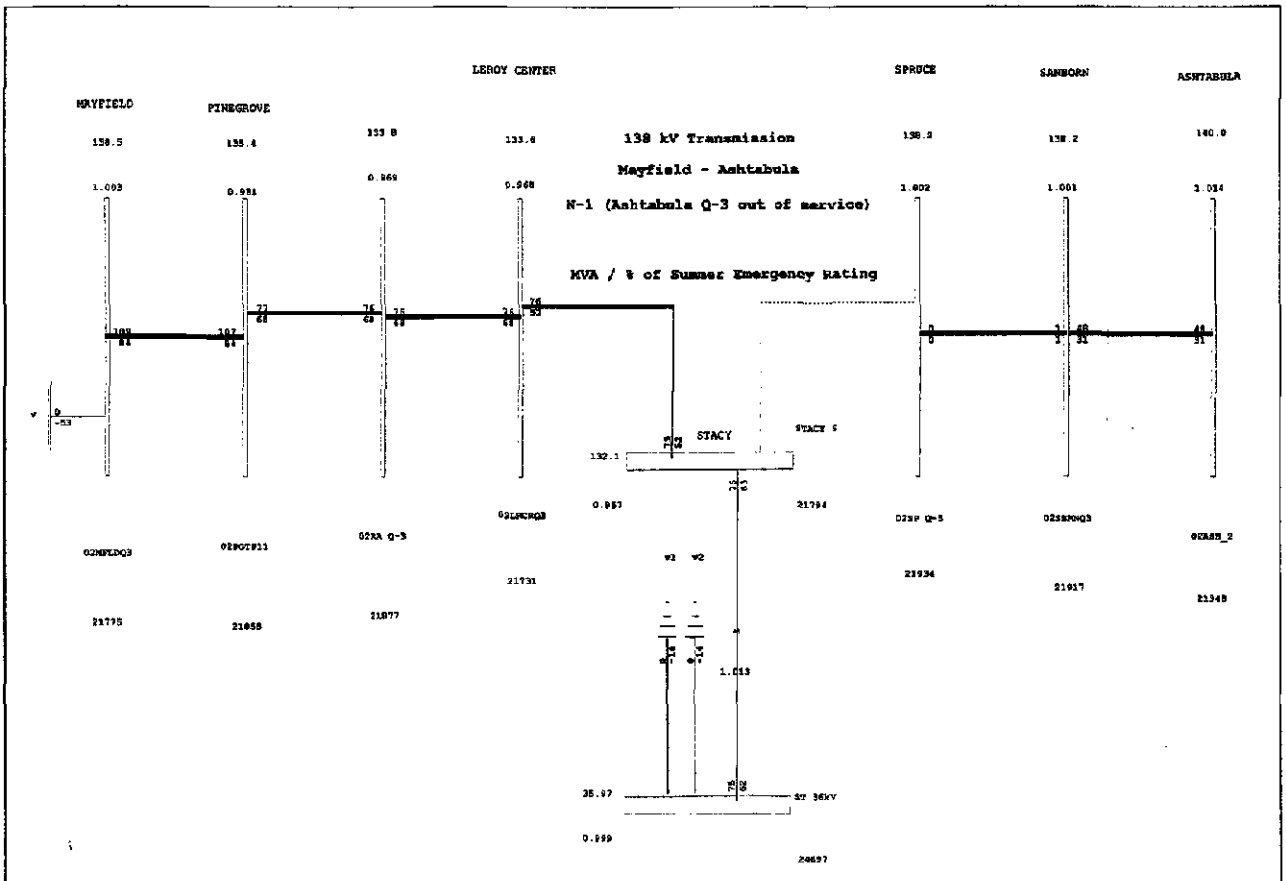
**Additionally, FE is submitting PSLF drawings (one-line diagrams) that show the power flows under normal (N-0) and single contingency (N-1) conditions. Two drawings for the (N-1) conditions show Stacy being supplied solely from the Ashtabula side, and another shows Stacy being supplied solely from the Mayfield side. The quantities shown on these three drawings are MVA (top) and percent of rated (bottom). On the (N-0) drawing, the percent (bottom) ratings are shown as a percent of the Summer Normal rating. In the case of the two (N-1) drawings, the percent ratings are shown as a percent of Summer Long Term Emergency Rating. All of the component loadings shown on these drawings are consistent with FirstEnergy's Transmission Planning Criteria. At this time, there are no immediate plans to upgrade the local transmission system as a result of interconnecting the new Stacy substation.**




Response 4
page 7-A




Response 4
page 7-B




Response 4
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5. Explain how much the losses on the transmission system will increase or decrease due to the added transmission circuit miles of the proposed project and new Stacy substation.

**RESPONSE:**

**See pages 02-1 and 02-18 of the Application for *total* electrical system loss reduction (6.5 MW during peak loading), as well as explanations of this reduction. The majority of this loss reduction will be in the 36 kV system. The change in transmission system losses (138 kV and above) will be small enough that if the "before" and "after" models are not identical in every other respect, and great attention to 36 kV configuration is not made, erroneous value of losses will result. (A simple I^2R calculation of additional losses incurred by the *new loop alone* yields a loss of 0.1 MW, which is less than 2% of the 6.5 MW total system loss reduction.)**

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6. Explain why the existing 138 kV Pinegrove substation was not an option to relieve load requirements in the project area.

**RESPONSE:**

**Pinegrove Substation is a 13kV distribution substation. It would be beyond the reasonable operating limits of the 13kV distribution system to attempt to relieve Mayfield Substation.**

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7. Explain why all the alternative transmission solutions indicated adding a new substation in the load area with an 80 MVA 138/36 kV transformer yet the proposed Stacy substation lists a 110 MVA 138/36 kV transformer.

**RESPONSE:**

**80MVA is the base transformer rating, called the OA rating. When fans are added to the transformer the rating is raised by 25% to 100MVA, called the FA rating. The planned rating will allow a small amount of overload, approximately 10% due to cyclic loading. Thus the study shows an OA rating of 80MVA and the proposal shows an FA rating of 110MVA. They are both the same transformer, just listed differently based on which rating is chosen.**

**Refer to Westinghouse *Transmission and Distribution Electrical Reference Book Fourth Edition* Chapter 5, Section 11 for an explanation of the different types of cooling for transformers and how it affects their ratings.**

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8. Provide documentation of complaints of service received by the companies over the past four years on the distribution circuits in the project area.

**RESPONSE:**

**See Table 1 below.**

**Table 1**

| Complaint | Supply Sub | Supply Circuit | Sub | Circuit | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|
| Outage | Mayfield | R-19-MF-G-X | AB | H002AB | 1 | 2 | 2 | 2 | 2 |
| Outage | Mayfield | R-19-MF-G-X | LT | L001LT | | | 1 | | |
| Outage | Mayfield | R-19-MF-G-X | LT | L002LT | | 3 | 6 | 6 | 2 |
| Outage | Mayfield | R-19-MF-G-X | OX | L001OX | 9 | 3 | 2 | 11 | 12 |
| Outage | Mayfield | R-19-MF-G-X | OX | L002OX | 1 | 2 | | 2 | 1 |
| Outage | Mayfield | R-19-MF-G-X | WH | H001WH | 1 | | | 2 | |
| Outage | Mayfield | R-19-MF-G-X | WH | H002WH | 1 | | | 2 | |
| Outage | Mayfield | R-19-MF-G-X | WH | H007WH | | 1 | | | |
| Outage | Mayfield | R-20-MF-G-X | NU | H001NU | 1 | | | 1 | |
| Outage | Mayfield | R-20-MF-G-X | NU | H002NU | 2 | | 1 | | |
| Outage | Mayfield | R-20-MF-G-X | NU | H003NU | 1 | | 1 | | 1 |
| Outage | Mayfield | R-20-MF-G-X | QZ | L001QZ | 7 | 3 | 10 | 6 | 2 |
| Outage | Mayfield | R-20-MF-G-X | QZ | L002QZ | 3 | 3 | 4 | 4 | 2 |
| Outage | Mayfield | R-21-MF-G-X | BT | H001BT | 1 | | | | |
| Outage | Mayfield | R-21-MF-G-X | BT | H002BT | 1 | 1 | 1 | | |
| Outage | Mayfield | R-21-MF-G-X | BT | H003BT | 1 | | | | |
| Outage | Mayfield | R-21-MF-G-X | CD | H001CD | 1 | 4 | 6 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Outage | Mayfield | R-21-MF-G-X | HB | H001HB | | 1 | 1 | 1 | |
| Outage | Mayfield | R-21-MF-G-X | HB | H002HB | 1 | | 2 | | 1 |
| Outage | Mayfield | R-21-MF-G-X | MD | H003MD | 1 | | | | 2 |
| Outage | Mayfield | R-21-MF-G-X | MD | H004MD | | | 2 | | |
| Outage | Mayfield | R-21-MF-G-X | RU | L006RU | | 1 | | 1 | |
| Outage | Mayfield | R-21-MF-G-X | RU | L007RU | 10 | 10 | 8 | 3 | 2 |
| Outage | Mayfield | R-21-MF-G-X | RU | L008RU | | | 2 | 1 | 1 |
| Outage | Mayfield | R-22-MF-G-X | HH | H001HH | 2 | 2 | 1 | 3 | 1 |
| Outage | Mayfield | R-22-MF-G-X | HN | H001HN | | 2 | 1 | | |
| Outage | Mayfield | R-22-MF-G-X | HN | H002HN | | 2 | 1 | | |
| Outage | Mayfield | R-22-MF-G-X | ME | L001ME | | 3 | 1 | | |
| Outage | Mayfield | R-22-MF-G-X | ME | L002ME | 2 | 2 | 1 | 4 | |
| Outage | Mayfield | R-22-MF-G-X | QK | H001QK | | | 1 | | |
| Outage | Mayfield | R-22-MF-G-X | QK | H002QK | 1 | 4 | | | |
| Outage | Mayfield | R-22-MF-G-X | QK | H003QK | | 3 | | 1 | |
| Outage | Sanborn | R-18-SN-G-X | RC | H001RC | | 1 | 2 | 4 | 2 |
| Outage | Sanborn | R-18-SN-G-X | RC | H002RC | | 1 | 1 | | |
| Outage | Sanborn | R-18-SN-G-X | RM | H001RM | 1 | 7 | 4 | | 1 |
| Outage | Sanborn | R-18-SN-G-X | RM | H002RM | 1 | 2 | 3 | | |
| Outage | Sanborn | R-18-SN-G-X | RW | H001RW | | 2 | 2 | 1 | |
| Outage | Sanborn | R-18-SN-G-X | RW | H002RW | | 2 | | 1 | |
| Outage | Sanborn | R-18-SN-G-X | WI | H001WI | 2 | 2 | | | |
| Outage | Sanborn | R-18-SN-G-X | WI | H002WI | 2 | 4 | 8 | 3 | |
| | | | | | | | | | |
| | | | | | | | | | |
| Voltage | Mayfield | R-19-MF-G-X | AB | H002AB | | 2 | 3 | | 1 |
| Voltage | Mayfield | R-19-MF-G-X | LT | L001LT | 2 | | | 1 | |
| Voltage | Mayfield | R-19-MF-G-X | LT | L002LT | 3 | 1 | 3 | 2 | 1 |
| Voltage | Mayfield | R-19-MF-G-X | OX | L001OX | 8 | 4 | 1 | 3 | |
| Voltage | Mayfield | R-19-MF-G-X | OX | L002OX | | 2 | | 1 | 1 |
| Voltage | Mayfield | R-19-MF-G-X | WH | H001WH | | 2 | 4 | 3 | |
| Voltage | Mayfield | R-20-MF-G-X | MD | H001MD | | | | | 1 |
| Voltage | Mayfield | R-20-MF-G-X | NU | H002NU | | 1 | | | |
| Voltage | Mayfield | R-20-MF-G-X | NU | H003NU | | | 1 | 1 | |
| Voltage | Mayfield | R-20-MF-G-X | QZ | L001QZ | 4 | 6 | 3 | 5 | 1 |
| Voltage | Mayfield | R-20-MF-G-X | QZ | L002QZ | 3 | 3 | 1 | 2 | |
| Voltage | Mayfield | R-21-MF-G-X | BT | H001BT | 1 | | 1 | 1 | 1 |
| Voltage | Mayfield | R-21-MF-G-X | BT | H002BT | 1 | | | | |
| Voltage | Mayfield | R-21-MF-G-X | BT | H003BT | | | 1 | | |
| Voltage | Mayfield | R-21-MF-G-X | CD | H001CD | | | 3 | 1 | |
| Voltage | Mayfield | R-21-MF-G-X | CD | H003CD | | | | 1 | |
| Voltage | Mayfield | R-21-MF-G-X | HB | H001HB | 2 | | | 5 | 2 |
| Voltage | Mayfield | R-21-MF-G-X | HB | H002HB | 1 | 1 | 2 | 6 | 3 |
| Voltage | Mayfield | R-21-MF-G-X | MD | H003MD | 1 | | | | |
| Voltage | Mayfield | R-21-MF-G-X | MD | H004MD | 1 | | | | |
| Voltage | Mayfield | R-21-MF-G-X | RU | L007RU | 7 | 3 | 1 | 2 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Voltage | Mayfield | R-21-MF-G-X | RU | L008RU | 1 | 1 | | 1 | |
| Voltage | Mayfield | R-22-MF-G-X | CD | H006CD | 2 | 1 | | | |
| Voltage | Mayfield | R-22-MF-G-X | HH | H001HH | | 1 | 1 | | |
| Voltage | Mayfield | R-22-MF-G-X | HN | H001HN | 1 | | 1 | | |
| Voltage | Mayfield | R-22-MF-G-X | HN | H002HN | 4 | 1 | 1 | | |
| Voltage | Mayfield | R-22-MF-G-X | ME | L001ME | 2 | 2 | 2 | 3 | 1 |
| Voltage | Mayfield | R-22-MF-G-X | ME | L002ME | 1 | | | 2 | |
| Voltage | Mayfield | R-22-MF-G-X | QK | H002QK | | | 1 | 1 | |
| Voltage | Mayfield | R-22-MF-G-X | QK | H003QK | 1 | 1 | 1 | | |
| Voltage | Sanborn | R-18-SN-G-X | RC | H002RC | 1 | 1 | 1 | 2 | |
| Voltage | Sanborn | R-18-SN-G-X | RM | H001RM | | 1 | 2 | 1 | |
| Voltage | Sanborn | R-18-SN-G-X | RM | H002RM | 2 | 2 | 1 | 1 | 4 |
| Voltage | Sanborn | R-18-SN-G-X | RW | H001RW | | 1 | 2 | 1 | |
| Voltage | Sanborn | R-18-SN-G-X | RW | H002RW | 2 | 1 | 2 | 1 | |
| Voltage | Sanborn | R-18-SN-G-X | RW | H003RW | | | | 1 | |
| Voltage | Sanborn | R-18-SN-G-X | WI | H001WI | | 3 | 1 | 8 | |
| Voltage | Sanborn | R-18-SN-G-X | WI | H002WI | | 5 | 1 | 4 | 2 |

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9. What is the estimated installation and annual operating cost for a diesel generating unit(s) and of a natural gas fired CT unit(s) in the load area that would provide enough power to meet the load requirements? Provide a generalized synopsis of constraints that are likely to occur when employing these technologies.

**RESPONSE:**

**OBJECTION: This Interrogatory is ambiguous and so vague as to be virtually impossible to answer. Without waiving the foregoing objection, Applicants state that the capital and operating costs of either a CT or diesel generator are dependent upon considerations such as the size of the unit, number of operating hours, location of the units in relation to the transmission system, the load to be supplied by each generation unit and constraints imposed upon the installation and operation of these units through permitting decisions by USEPA, Ohio EPA and other governmental bodies. It is unclear from this interrogatory what assumptions are requested to be made in regard to these variables.**

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10. Explain how the Applicant proposes to control fugitive dust, if/when necessary.

**RESPONSE:**

**As construction of the Geauga County 138 kV transmission line does not include significant earth grading work and does not include high concentration of construction equipment activities in one location, generation of excess fugitive dust is not expected. If fugitive dust is generated, the primary method for controlling the fugitive dust would be spraying active work areas as necessary with water from a water truck.**

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11. Provide a description of the kinds, and quantities, of construction debris that is expected to result from construction of the transmission line.

**RESPONSE:**

**Debris associated with construction of the proposed transmission line is expected to consist of conductor scrap, construction material packaging including cartons, insulator crates, conductor reels and wrapping, and used stormwater erosion control materials. Clearance poles, conductor reels and other materials with salvage value will be removed from the construction area. It is estimated that approximately 200 cubic yards of construction debris could be generated from the project. Construction debris will be disposed of in accordance with state and federal requirements in an Ohio Environmental Protection Agency approved landfill or other appropriately licensed and operated facility.**

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12. Explain what will be done with any contaminated soil that is discovered or contaminated as a result of construction activities.

**RESPONSE:**

**Any contaminated soils encountered or generated during the course of construction will be managed in accordance with applicable federal, state, and local regulations.**

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13. There is at least one actively used landing strip adjacent to each of the Preferred and Alternate routes. What steps will the Applicant take to ensure that nearby landing strips are not rendered un-usable by the construction of the transmission facility?

**RESPONSE:**

**Sections 4906-15-04(A)(1)(d), page 04-3, and 4906-15-06(B)(3)(a), page 06-6, of the Application identify potentially active private grass airstrips along the Preferred and Alternate routes. These private airstrips are also shown on Figures 04-1A and 04-1C of the Application. One airstrip, identified as "Whispering Pines," is located on the Preferred Route along the south side of Rock Creek Road, approximately 2,400 feet east of Madison Road (Figure 04-1C). One airstrip, identified as "Rick's," is located on the west side of Clay Street on the Alternate Route, approximately 4,400 feet north of Chardon-Windsor Road (Figure 04-1A). These are both grass strips and appear to be used infrequently. They do not appear to be used for commercial air carrier operations. The owners of both airstrips attended the Public Information Meetings and indicated that the airstrips are actively being used. An apparent former private airstrip, located to the east of Ledge Road, approximately one mile north of Rock Creek road, was also identified a short distance north of the Preferred Route. This airstrip does not appear to be in use and no comments have been provided to ATSI that have led to a belief that it is in use.**

**It is the Applicants' opinion that the construction of the transmission line on the proposed Preferred or Alternate route will make the adjacent private grass airstrip un-usable. In Section 4906-15-06(C)(3), page 06-16, of the Application, the Applicants indicate that mitigation for installing the transmission line within the flight path of a private grass airstrip located adjacent to the transmission line on residential property for either the Preferred or Alternate route is expected to be in the form of a compensation payment to the property owner for the loss of the use of this portion of their property. It is expected**

**that this will occur as determined in either a negotiated settlement between the Applicants and the property owner or as determined in appropriation proceedings.**

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14. In the route selection study, provide the score for the segment along the bike path corridor (between nodes D-J-P and the section from P to CC before the route leaves the bike path corridor).

**RESPONSE:**

**No scores were generated for individual segments. Raw data for segments were added and scored for routes only. Therefore there is no score for D-J-P or P to CC. Only raw data can be provided.**

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15. State whether the Applicant considered utilizing State Route 11 and State Route 322 as a possible route. If so, give a detailed response describing what factors precluded this route from selection.

**RESPONSE:**

**A route for the proposed transmission line that would be specifically located within the right-of-way of State Route 11 and State Route 322 has not been considered as a possible route for the proposed transmission line. State Route 11 is a limited access highway that is under the control of the Ohio Department of Transportation. It is the Applicants' experience that the Ohio Department of Transportation does not allow the structures for overhead electric transmission lines to be located within and paralleling the right-of-way of a limited access highway. Additionally, the Ohio Department of Transportation does not normally allow the placement of a single pole within the right-of-way of a limited access highway, although there are a few exceptions to this normal practice. Other restrictions would also be expected to be relevant but have not been studied or identified, as the Ohio Department of Transportation restriction makes their evaluation irrelevant. Therefore the Applicants believe that installation of the proposed transmission line within the right-of-way of State Route 11 is not constructible.**

**Installation of transmission lines in the general area of State Route 11 and State Route 322 was considered as part of the Ashtabula and Trumbull Counties corridor screening evaluation referred to on page 3 and Figure 2 of the Route Selection Study provided in Appendix 03-1 of the application as well as the Analysis of Transmission Alternatives provided beginning on page 02-18 of the application. The reasons for precluding the identified transmission alternatives that are in the general area of State Route 11 and State Route 322 are provided in the Analysis of Transmission Alternatives.**

**As explained in the Route Selection Study provided in Appendix 03-1 of the application, identification of the study area was based on a combination of data collected for the prescreening study work and several other sources of data. As explained in the Route Selection Study, the eastern extents of the study roughly parallel Hunt, Morgan, and Sidley Roads south to north and were based primarily on the identification of potential transmission line corridors. Corridors further to the east into Ashtabula County have a higher potential of encountering sensitive ecological resources, and as these corridors would be longer, they have a corresponding potential for greater social impacts. As the general area of State Route 11 and State Route 322 is located well east of the eastern limit of the study area, and is in the range of three times as long as the proposed Preferred Route, a route that generally follows State Route 11 and State Route 322 would be expected to have, and based on a cursory evaluation has, higher potential impacts to sensitive ecological resources, and a corresponding potential for greater social impacts.**

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16. State whether a combination of the Maple Highlands Bike Trail right-of-way and utilization of an abandoned railroad corridor through the City of Chardon considered in the route selection process. If so, provide a detailed explanation as to why this route was rejected. Include any legal constraints that may prevent acquisition of easements.

**RESPONSE:**

**A combination of the areas of the Geauga County Park District's Maple Highlands Trail and the city of Chardon Village was considered in the Route Selection Study for the Geauga County 138 kV Transmission Line Supply Project. However, a specific suitable route that traversed through both of these areas was not identified, scored or evaluated.**

**Figure 3 of the Route Selection Study provided as Appendix 03-1 of the Application provides an overview map of the area studied for the project. The western limit of this area is described in section 2.1.1 of the Route Selection Study. The general area of the City of Chardon is included in the area described in the second paragraph of page 6 of the Route Selection Study that states "[a]reas to the west of this boundary [previously described as located to the east of the City of Chardon Village] also were considered, but suitable potential routes were not identified as this area has, in general, large areas of developed residential, commercial, and recreational land use, as well as ecologically sensitive areas, which would result in routes with higher overall impacts."**

**In response to a request from Staff subsequent to the submission of these Interrogatories, Applicants have offered to perform an evaluation of the route identified in Interrogatory No. 16. See Motion For Continuance. Applicants will supplement this response with the submission proposed in Applicants' Motion For Continuance.**

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17. State whether, in the Applicant's professional engineering opinion, adherence to the National Electric Safety Code prevents the installation of a double-circuit 138 kV transmission line (with lower voltage facilities under-built on the same structures) over occupied commercial facilities.

**RESPONSE:**

**The abstract to the 2007 Edition of the National Electric Safety Code ("N.E.S.C.") provides:**

**"Abstract: This standard covers basic provisions for safeguarding of persons from hazards arising from the installation, operation, or maintenance of (1) conductors and equipment in electric supply stations, and (2) overhead and underground electric supply and communication lines. It also includes work rules for the construction, maintenance, and operation of electric supply and communication lines and equipment. The standard is applicable to the systems and equipment operated by utilities, or similar systems and equipment of an industrial establishment or complex under the control of qualified persons. This standard consists of the introduction, definitions, grounding rules, list of reference and bibliographic documents, and Parts 1, 2, 3, and 4 of the 2007 Edition of the National Electric Safety Code."**

**Section 23 of the N.E.S.C. addresses "Clearances" and Subsection 234 provides "Clearance of wires, conductors, cables, and equipment from buildings, rail cars, swimming pools, and other installations." Included in the provisions of Subsection 234 are the N.E.S.C.'s minimum horizontal clearances from the sides of buildings and the minimum vertical clearances over buildings, where buildings would include, but would not be limited to, industrial, commercial and residential types of buildings. If the N.E.S.C. minimum clearance is provided, Subsection 234 does not prohibit the installation of electric supply**

**lines above industrial, commercial and residential buildings. However, Section 1, Subsection 012, General Rules, Rule C provides: "For all particulars not specified in these rules, construction and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the construction or maintenance of the communication or supply lines and equipment."**

**On page 06-5 of the Application, in a discussion of the residences located along the Alternate Route, it is indicated that "Residences or other structures located within 30 feet of the centerline of the proposed transmission line would be removed..." This is consistent with FirstEnergy's standard practice for new transmission line projects, which is to obtain a right-of-way for the project that is free from building encroachments and which the Applicants believe is consistent with "accepted good practice" referenced in N.E.S.C. Rule C. Transmission line construction, operation and maintenance is complicated. Structures located within transmission line right-of-ways may impede the initial construction of the transmission line as well as emergency restoration activities, and could potentially make access to points along the transmission line significantly more complicated. Further, safeguarding of persons from hazards of electric supply lines is of overriding importance. If a structure is located under a transmission line, extra diligence would be required from the property owner and anyone they retain when approaching the transmission line in any way. Many of these persons may not be aware of the hazards of working near and under a transmission line. Because transmission lines are so rarely located above structures, they may not even realize that they are working under a transmission line. We think this is an unsafe situation that must be avoided. Additionally, because a solid stream of water has the potential to convey electric current, there may be objections from a community's firefighters in that such a design may put them in harm's way and hamper their efforts to put out a structure fire.**

**Although a transmission line can be installed with sufficient vertical clearance to cross above occupied industrial, commercial and residential types of buildings without constituting a violation of the N.E.S.C.'s clearance requirements, we believe these types of installations are not consistent with "accepted good practice" and should be avoided to the extent possible.**

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18. Regarding the Alternate Route along Clay Street, state whether the Applicant considered any of the following construction options: placing the entire facility underground, installing parts of the facility underground to alleviate concentrations of social impacts, routing behind residential properties to minimize impacts and frequent alignment adjustments from one side of the road to the other to reduce impacts. If so, provide a detailed explanation highlighting the rationale for rejection of these options.

**RESPONSE:**

**Installing the proposed transmission line underground was *not* considered as a construction option for the Geauga County 138 kV Transmission Line project although the features of installing the transmission line underground were identified and reviewed. The general configuration of the conceptual underground design of the transmission line and the configuration of the conductor are provided in attached Exhibits 1 and 2, and would utilize 1500 Kcmil conductor. An underground installation of the transmission line would involve open cut construction techniques to install an approximately 30-inch square concrete duct bank, associated concrete vaults with nine six-inch PVC conduits, that would contain the conductors and bond wires. This option was rejected for several reasons including: The open cut installation potentially has greater impacts to streams, wetlands and agricultural fields than aerial crossings. Because the transmission line is located underground, outages to the transmission line may be *more difficult to* identify and repair, thus customer outages may be significantly longer. The conceptual cost for installing the transmission line underground, including material, labor and overheads for the cable and conduit, but not including any land purchases, right-of-way or permitting costs, is approximately $4,000,000 per mile.**

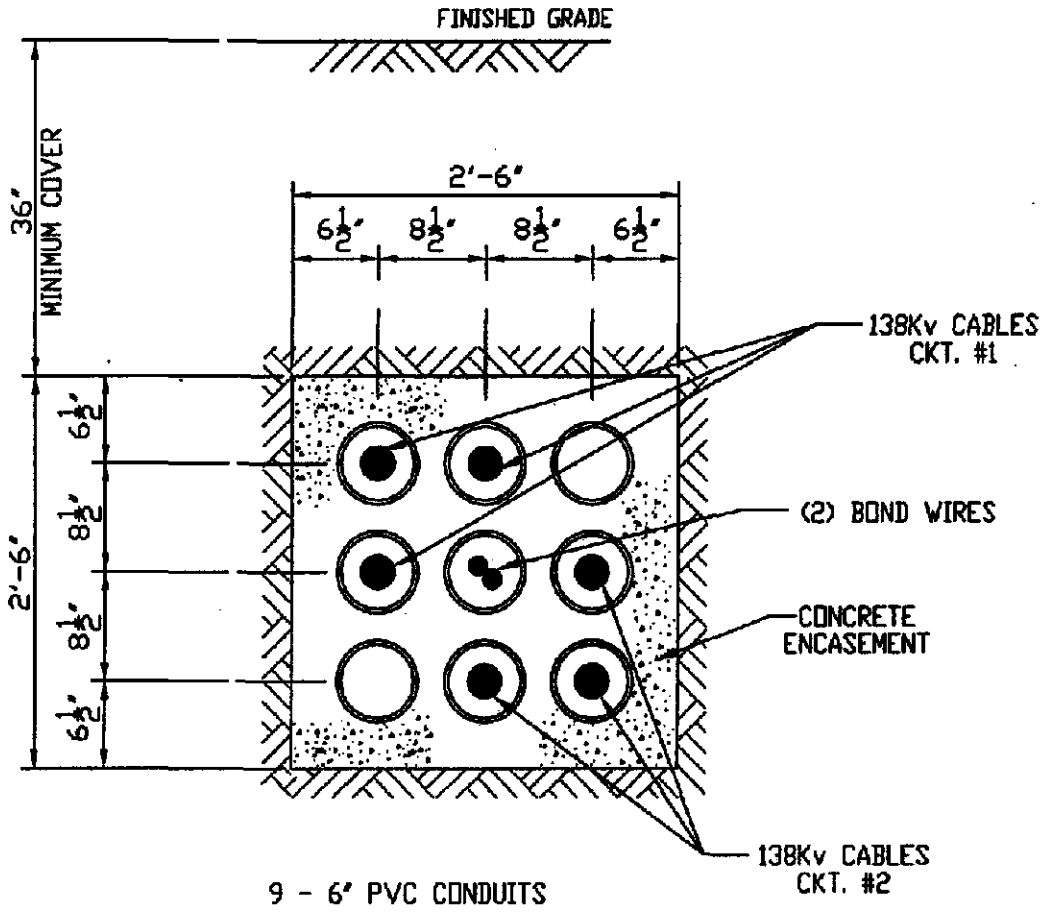
**Installing small sections of the proposed transmission line underground for the Alternate Route along Clay Street to avoid the removal of homes that would otherwise be located**

within the proposed right-of-way of the Alternate Route of the transmission line was not considered as a construction option for the Geauga County 138 kV transmission line project. The installation would be similar to the underground installation previously described, except with the addition of a pair of steel poles at each end of each underground segment to provide a transition from the underground to overhead configuration. Had this option been considered, we expect that it would have been rejected for the following reasons: As previously mentioned, this type of installation potentially has greater impacts to streams, wetlands and agricultural fields than aerial crossings. Because the transmission line is located underground, outages to the transmission line may be more difficult to identify and repair, thus customer outages may be significantly longer. As previously mentioned, the conceptual cost for installing the transmission line underground, including material, labor and overheads for the cable and conduit, but not including any land purchases, right-of-way or permitting costs, is approximately $4,000,000 per mile, and for each small section there would also be an additional cost for the steel poles. In most cases, we would expect that the purchase, relocation and/or removal of the residence is likely a more cost appropriate solution.

Routing the proposed transmission line for the Alternate Route along Clay Street behind residential properties was considered as described in the Route Selection Study provided in Appendix 03-1 of the Application. Routes behind these properties are shown in Figure 3 of Appendix 03-1 and in general on the west side of Clay Street run from Nodes C to I to AA to LL to SS to VV to MMM, and on the east side of Clay Street run from C to I to H to N to W to Y to II to KK to QQ to CCC to JJJ. Both of these routes are considered as cross country corridors, that have greater overall impacts than the proposed Preferred and Alternate Routes. Additionally, alignment of the transmission line in close proximity to the rear of residences along Clay street was conceptually reviewed but rejected. The fundamental challenge is that the residential structures are located at a wide range of distances from Clay Street. Thus placing the transmission line in the rear yard of one residence located near the road has the potential to put the transmission line more prominently in the front yard of an adjoining residence. Ultimately, moving the transmission line to a rear yard alignment for all of the residences along Clay Street largely moves the route onto the previously mentioned cross country alignments.

Frequent alignment adjustments from one side of the road to the other to reduce impacts were considered for the Alternate Route along Clay Street. As described in Appendix 06-1, Detailed Route Descriptions of the Application, the proposed Alternate Route crosses Clay Street ten times. In comparison to locating the transmission line parallel to the road right-of-way, each road crossing represents a slight increase in the visual clutter above the roadway with more overhead wires and along the roadway with a larger guyed single pole or guyed two pole structures, as well as a slight increase in land use impacts from the additionally required guying. We have no objections to utilizing more crossings of Clay Street in the proposed Alternate Route, but we believe the proposed alignment with its ten proposed crossings of Clay Street provides the best achievable balance minimizing impacts to residential properties to the extent feasible while considering overall visual and land use impacts for each crossing of Clay Street. Additionally, for the six homes located along the Alternate Route along Clay Street that are located within the proposed 60-foot wide right-

**of-way that are identified in the Application as being removed, we do not believe that additional road crossings could be reasonably installed that would remove these residences from the 60-foot wide right-of-way without replacing them with other residences.**




THIS IS AN AutoCAD DRAWING - DO NOT MANUALLY REVISE

| ENGINEERING | DATE |
|---|---|
| DR J.GOLIAS | 1/12/07 |
| CHKD | |
| APPD J.GOLIAS | 1/12/07 |
| SCALE NONE | |

# 9-6" 138Kv CONDUITS CONFIGURATION

The Illuminating Company
BRECKSVILLE, OHIO

DWG. NO. EX-1

SHEET -

REV. -

Response 18, Exhibit 1
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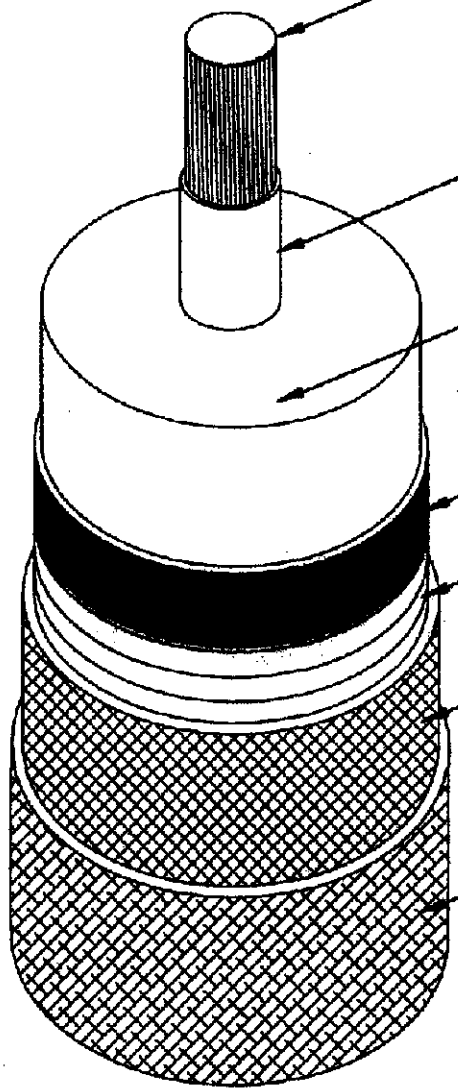

CONDUCTOR:
COMPRESSED, UNCOATED SOFT CU.

CONDUCTOR SCREEN:
1 LAYER OF EXTRUDED SEMI-CONDUCTING THERMOSET

INSULATION:
"XLP"

INSULATION SHELD
1 LAYER OF EXTRUDED SEMI-CONDUCTING THERMOSET

CUSHION & WATERBLOCKING S.C. FIRET TAPE

SHEATH:
HALF "C" LEAD ALLOY

JACKET:
BLACK POLYETHYLENE

| CABLE SIZE | OVERALL OD | WEIGHT #/FT. |
|---|---|---|
| 1000 Kcmil CONDUCTOR | 3.6" | 12# |
| 1500 Kcmil CONDUCTOR | 3.9" | 15# |

THIS IS AN AutoCAD DRAWING - DO NOT MANUALLY REVISE

| ENGINEERING | DATE |
|---|---|
| DR J. GOLIAS | 1/16/07 |
| CHKD | |
| APPD J.GOLIAS | 1/16/07 |
| SCALE NONE | |

# 1500 & 1000 Kcmil CONDUCTORS PIRELLI CABLES

The Illuminating Company
BRECKSVILLE, OHIO

DWG. NO. WIRE - 1

SHEET -

REV. -

Response 18, Exhibit 2
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19. The applicant indicates a "previously recorded archeological site" approximately 120 feet west of the Preferred Route near the southern terminus. Explain the nature of this site.

**RESPONSE:**

**This was extracted from OHPO's GIS Database. The Record information attached to the location record is provided below.**

| OAI_NUMBER | UTM_ZONE | UTM_EAST | UTM_NORTH | AFFILIATION | NADB1 | QUADRANGLE |
|---|---|---|---|---|---|---|
| GE0057 | 17 | 496200 | 4598830 | Prehistoric | 0 | East Claridon |

Respectfully submitted,

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Robert J. Schmidt (#0062261)
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41 South High Street
Columbus, Ohio 43215
Telephone: (614) 227-2028
Facsimile: (614) 227-2100

Attorneys for Applicants
American Transmission Systems, Inc.
The Cleveland Electric Illuminating Company

## CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Motion for Continuance by American Transmission Systems, Incorporated and The Cleveland Electric Illuminating Company was served upon the following persons by mailing a copy, postage prepaid, on April 15, 2008, addressed to:

Thomas Lindgren, Esq.
Thomas McNamee, Esq.
Office of the Attorney General of Ohio
Public Utilities Section
180 East Broad Street
Columbus, Ohio 43215-3793

Klaus Lambeck, Chief
Facilities, Siting & Environmental Analysis Division
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Julie Crocker
Taft, Stettinius & Hollister LLP
200 Public Square, Suite 3500
Cleveland, Ohio 44114-2302

Robert J. Schmidt

## VERIFICATION

State of Ohio :
:ss
County of Summit :

First being duly cautioned and sworn, Mr. Theodore Krauss, for Applicants, hereby states that the foregoing Responses to Interrogatories are true and accurate to the best of his knowledge, information and belief.

American Transmission Systems, Incorporated
The Cleveland Electric Illuminating Company
By: Theodore Krauss

Sworn to before me and subscribed in my presence this 15 th day of April, 2008

Notary Public

Kathleen Anne Grant
Notary Public, State of Ohio
Resident of Summit County
My Commission Expires May 8, 2009.