STATE OF IOWA
BEFORE THE IOWA UTILITIES COMMISSION

IN RE: REVIEW OF TITLE 199 IOWA ADMINISTRATIVE CODE CHAPTERS 11 AND 25	)))))))	DOCKET NO. RMU-2025-1125

COMMENTS OF THE IOWA ENVIRONMENTAL COUNCIL AND THE ENVIRONMENTAL LAW & POLICY CENTER

The Iowa Environmental Council (IEC) and the Environmental Law & Policy Center (ELPC) submit these comments in response to the Iowa Utilities Commission's (the Commission or IUC) November 17, 2025 Order Opening Rulemaking Docket, Approving Regulatory Analysis, and Setting Technical Conference and Comment Deadline. IEC and ELPC welcome the Commission's opening of this rulemaking docket and appreciates the opportunity to provide comments.

We support the Commission acting to facilitate the construction of long-range transmission projects approved by the Midcontinent Independent System Operator (MISO) that serve as the backbone to address anticipated generation and electric demand, including the MISO selected 765 kV transmission lines.

I. Introduction and Stated Purpose

In anticipation of the new projects, the Commission evaluated the potential impacts of this scale of transmission and sought to minimize impacts to agricultural producers, landowners, and communities. The Commission is proposing the following rules governing the electric transmission franchise process (Chapter 11) and the Iowa Electric Safety Code (Chapter 25), which will establish new requirements for the electric franchise process and set safety standards governing

the projects.

On any line greater that 170,000 volts, the proposal would set the following restrictions:

> **199-25.6(476,478) Additional Requirements for Higher Voltage Transmission Lines.** This rule applies to overhead electric transmission lines with a maximum operation voltage of 170,000 volts or greater, constructed or reconstructed after July 1, 2027.
> **25.6(1)** *Noise Restriction.* The audible noise from an overhead electric transmission line during a measurement period shall not exceed 55 dBA for more than 50 percent of the measured time. The measurement should be one hour in length, adjusted for ambient noise, A-weighted, fast-time averaged, and be taken at the edge of the right-of-way.
> **25.6(2)** *Electric Field Strength Restriction.* The electric field strength from an overhead electric transmission line shall not be greater than 6,000 volts per meter when measured one meter above the ground anywhere within the transmission line right-of-way.
> **25.6(3)** *Guy Restriction.* Overhead electric transmission line structures primarily reliant on guys for support shall not be constructed on agricultural land.

Although all three restrictions will impact the design and cost of the transmission line, IEC and ELPC are concerned that the electric field strength restriction is overly restrictive and unnecessarily increases transmission line costs.

II. The Electric Field Standard Must be Reasonable and Achievable

Several studies have evaluated the maximum electric field under high voltage transmission lines. For 765 kV transmission lines, the results have shown a wide range of values. Although a national standard does not exist for the maximum field strength, other states have established standards with higher electric field limits than the proposed 6000 volts per meter. Minnesota typically imposes a limit of 8000 volts per meter[1] and Oregon has a standard of 9000 volts per meter.[2] National Electric Safety Code (NESC) Rule 234G.3 limits the induced steady-state current

[1] *See, e.g.*, Docket No. ET2/TL-08-1474, Route Permit at 14, available at https://puc.eip.mn.gov/sites/default/files/2024-01/pdfs/bd76f1b0-02df-4cf5-b406-59fcf48c99f2.pdf; PUC Docket Nos. E002, E017, ET2, E015, ET10/TL-23-159, Route Permit at 16, available at https://puc.eip.mn.gov/sites/default/files/2025-05/RP%20Permit%20Only.pdf; Docket No. IP7041/TL-20-765, Route Permit, at 12, available at https://apps.commerce.state.mn.us/web/project-file/12406.
[2] Exhibit DD, Specific Standards for Transmission Lines, Boardman to Hemingway Transmission Line Project, September 2018, https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2018-09-28-B2H-ASC-Exhibit-DD.pdf

due to electrostatic effects to 5 mA.[3] The 5 mA NESC standard is a performance standard aimed at limiting the potential charge that could be developed so that a potential nuisance shock would not be harmful to children, and is deemed protective of public health. Presumably the Minnesota and Oregon standards where set with the NESC standard in mind, and considered protective of public health.

The table below shows the variability of the maximum field strength from eighteen existing high voltage transmission lines. As noted below, most of the existing 765 kV lines would not meet the 6000 volts per meter standard.

Table 1. High-voltage Line Analysis.[4]

Company/Country	Nominal Voltage (kV)	Width of right-of-way (m)	Mean Altitude (m)	Audible Noise (Rain) (dBA)	Radio Noise (Fair) @ 0.5 MHz (dBµV/m)	Max. Electric Field* (kV/m)	Electric Field Edge of Right-of-way (kV/m)
Hydro-Québec 1	735	91.5	<300	51.2	43.0	8.7	1.5
Hydro-Québec 2	735	80.0	<300	54.7	46.4	9.3	1.7
AEP 1	765	60.1	<300	59.2	55.4	12.4	4.0
AEP 1	765	60.1	600	61.2	57.4	12.4	4.0
AEP 2	765	60.1	600	57.5	52.8	10.5	4.1
AEP 3	765	91.4	800	54.5	45.8	11.2	4.4
NYPA 1	765	106.7	<300	50.5	42.8	9.2	1.6
Eskom	765	80.0	1500	53	62	10	2.4
FURNAS 1 & 2	765	175**	800	58	42	5/10/15	< 4.2
FURNAS 3	765	94.5	800	58	42	5/10/15	< 4.2
EDELCA 1 & 2	765	120.0	<300	52.2	38.4	9.5	0.7
EDELCA 3	765	90.0	<300	55.0	44.2	10.2	1.3
KEPCO 1	765	37.0	<300	50.0	44.0	3.5/7.0	3.5
POWERGRID	765	85/64	<300	54.3	43.5	10	2.0
RUSSIA 1	750	116.0	<300	50.1	39.7	5/15/20†	1.0
RUSSIA 2	750	116.0	<300	52.3	42.6	5/15/20†	
RUSSIA 3	1150	245.6	<300	51.8	29.4	5/15/20†	
TEPCO	1000	39	<300	46.8	34.9	3.5/7.0	3.5

* Smallest values are for areas frequented by people.
** The transmission lines 1 & 2 are parallel in the same right-of-way.
† 5 kV/m in populated areas. 15 kV/m in unpopulated areas reserved for agriculture; 20 kV/m in areas not accessible by agricultural machinery. No limit for unpopulated in inaccessible areas such as steep slopes, mountains, etc.

[3] *See*, e.g., Exhibit DD, Specific Standards for Transmission Lines, Boardman to Hemingway Transmission Line Project, September 2018, at 4-5, https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2018-09-28-B2H-ASC-Exhibit-DD.pdf; Journey to 765 kV Standards, Aaron Graber, May 20, 2025, page 9, https://iastate.app.box.com/s/1ta3i352ohvzue3jck1a3pq11md1erhf

[4] R. Lings, "Overview of Transmission Lines Above 700 kV," IEEE PES 2005 Conference and Exposition in Africa, Durban, South Africa, 11-15 July 2005.

Notably, a 765 kV line can be designed to meet the 6000 volts per meter standard. However, a study comparing the field strength at different lines heights established that the conductor at its lowest point would need to exceed 70 feet.[5] Increasing the line height will increase the size of the transmission line structures, and consequently the transmission line cost. A 6000 volt per meter standard will potentially add transmission line costs beyond that necessary to protect public health.

III. Conclusion

IEC and ELPC commend and agree with the efforts of the Commission to facilitate the construction of high voltage transmission lines, including the MISO selected 765 kV transmission lines. However, unless the 6000 volt per meter standard is necessary to meet the 5 mA induced current standard deemed protective of public health, IEC and ELPC recommend raising the standard to 8000 volts per meter consistent with the Minnesota standard.

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Respectfully submitted,

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[5] Transmission line fields," D. W. Deno, IEEE Transactions on Power Apparatus and Systems, vol. 95, no. 5, pp. 1600-1611, Sept. 1976, doi: 10.1109/T-PAS.1976.32259