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October 31, 2025

ELECTRONICALLY FILED

RECEIVED
OCT 31 2025
PUBLIC SERVICE COMMISSION

Linda C. Bridwell
Executive Director
Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602-0615

RE: **Case No. 2025-00027**

Dear Ms. Bridwell:

This letter constitutes the Read1st file required by 807 KAR 5:001, Section 8(5):

(a) General Description of the Filing – Kentucky Power is electronically filing herewith:

(i) The Read1st file required by 807 KAR 5:001, Section 8(5); and

(ii) Kentucky Power Company's Notice of Filing.

(b) Materials Not Included In The Electronic Filing – Kentucky Power is filing in paper format only:

(i) None.

(c) Attestation – The electronically-filed documents are a true representation of the original documents.

(d) Service – There are no parties to this proceeding who have been excused from electronic filing procedures [807 KAR 5:001, Section 8(7)(c)]. A copy of the materials identified above as being electronically filed was served by using the Public Service Commission of Kentucky's electronic filing service. Kentucky Power also mailed via USPS First Class mail a copy of the materials identified above to the following:

Larry and Debra Peterman
51 Woodland Way
Grayson, Kentucky 41143

(e) Other Matters – None.

Very truly yours,

STITES & HARBISON PLLC

Katie M. Glass

KMG

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Larry and Debra Peterman	)	
	)	
Complainants	)	
v.	)	
	)	Case No. 2025-00027
Kentucky Power Company	)	
	)	
Defendant	)	

Kentucky Power Company's Notice of Filing

Kentucky Power Company files herewith its summary report from testing conducted at the Peterman residence on August 27, 2025, and September 10, 2025, in connection with this proceeding.

Respectfully submitted,

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COUNSEL FOR KENTUCKY POWER COMPANY

Summary of Neutral-to-Earth Voltage and Testing Results

Neutral-to-Earth Voltage (Stray Voltage)
Stray voltage, or neutral-to-earth voltage, arises from current flowing through the neutral wire, which causes a voltage drop due to the wire's inherent resistance. This results in a potential difference between the neutral and the earth ground. Several factors contribute to this phenomenon, including:

- **Imperfect Power Distribution**: Variations in current flow due to phase imbalances and leakage currents from other utilities can induce voltages on the neutral wire.
- **Distance from Substation**: The farther away one is from the substation, the more pronounced the stray voltage tends to be.
- **Seasonal Variations**: During peak load periods, such as winter and summer, higher voltage drops in the neutral can lead to increased stray voltage readings.

It is important to note that some level of stray voltage is an inevitable outcome of a multi-grounded system. The National Electrical Code (NEC) prioritizes safe construction practices rather than specifying an acceptable minimum for stray voltage. The NEC outlines the requirements for equipotential pool bonding under Article 680, Section 680.26.

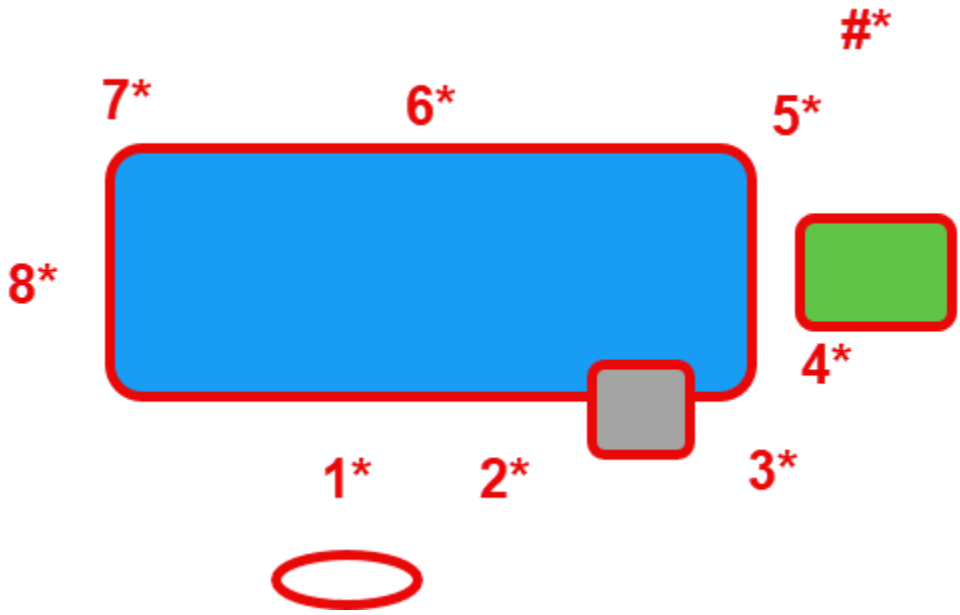
Below is a general layout of the pool and will be used in reference to various test points around the pool.

 = The slide location

 = The ladder (rail) to enter/exit the pool

 = is the meter base location

#* = various locations around the pool where a metal structure was drove into the concrete



Testing Overview (Conducted on 08/27/2025)

A series of four tests were conducted at the Peterman residence with the presence of Mr. and Mrs. Peterman, their electrician, and AEP representatives including Phil Tolliver, Travis Burton, an AEP servicer, and Michael Lewis.

- **Initial Conditions**: The coax cable had been disconnected at the house and KPC pole prior to our arrival and testing.

Test Results:

Test 1: Low impedance multimeter readings taken at various pool locations:

- Meter base bus bar to middle of the pool: **0.3V**
- Meter base bus bar to ladder: **0.0V**
- Meter base bus bar to slide: **0.5V**
- Middle of the pool to metal stake (3*): **0.6V**

Test 2: Meter disconnected; TV line still disconnected:

- Meter base bus bar to middle of the pool: **0.2V**
- Meter base bus bar to ladder: **0.0V**
- Meter base bus bar to slide: **0.5V**
- Middle of the pool to metal stake (3*): **0.6V**

Test 3: All conductors cut at service pole, meter disconnected, TV line still disconnected:

- Meter base bus bar to middle of the pool: **0.0V**

- Meter base bus bar to ladder: **0.0V**
- Meter base bus bar to slide: **0.1V**
- Middle of the pool to metal stake: (3*): **01.V**

Test 4: Hot conductors cut at service pole, meter disconnected, TV line still disconnected, grounds connected:

- Meter base bus bar to middle of the pool: **0.2V**
- Meter base bus bar to ladder: **0.0V**
- Meter base bus bar to slide: **0.5V**
- Middle of the pool to metal stake (3*): **0.6V**

Additional Notes:

- Pole ground resistance was recorded at **62 ohms**, while the ground on the pump measured **57 ohms**.

Observations and Conclusions

1. **Bonding Issues**: The voltage variations observed suggest that the pool is not properly bonded, as a well-bonded pool would show consistent voltage readings across all test points relative to a static reference.
2. **Voltage Origin**: Test 3 indicates that the voltage is likely originating from the AEP neutral conductor. The recorded voltage of **0.6V** is not a cause for concern at this time, as it can be attributed to a normal functioning electrical distribution system.
3. **Realistic Touch Voltages**: The tests were conducted from the meter base bus bar, which is not a realistic point of contact for individuals entering and exiting the pool. True touch voltages can be calculated based on differences measured between various pool points. The highest difference observed was **0.6V**.
4. **Ladder Readings**: Consistently showing **0V** may indicate a poor continuity path between the railing and the bus bar, rather than an absolute absence of voltage.

Testing Overview (Conducted on 09/12/2025 at around 10 AM, before and after the installation of ground rods at various locations).

A series of tests conducted at the Peterman residence in the presence of Phil Tolliver, Travis Burton and Michael Lewis.

Test Results:

Test 1: Meter disconnected before pole grounds where installed:

- Meter base bus bar to middle of the pool: **0.2V**
- Meter base bus bar to ladder: **0.1V**
- Meter base bus bar to slide: **0.2V**
- Middle of the pool to stake (1*): **0.3V**
- Middle of the pool to stake (2*): **0.2V**
- Middle of the pool to stake (3*): **0.1V**
- Middle of the pool to stake (4*): **0.2V**
- Middle of the pool to stake (6*): **0.4V**
- Middle of the pool to stake (7*): **0.4V**
- Middle of the pool to stake (8*): **0.1V**
- Pool (water) to slide: **0.2V**
- Pool (water) to ladder: **0.2V**
- CATV connection to pool (water): **0.6V**

Test 2: Meter disconnected after pole grounds where installed:

- Meter base bus bar to middle of the pool: **0.2V**
- Meter base bus bar to ladder: **0 V**
- Meter base bus bar to slide: **0.1V**
- Middle of the pool to stake (2*): **0.2V**
- Middle of the pool to stake (3*): **0.2V**
- Middle of the pool to stake (5*): **0.4V**
- Middle of the pool to stake (6*): **0.3V**
- Middle of the pool to stake (7*): **0.4V**
- Pool (water) to slide: **0.2V**
- Pool (water) to ladder: **0.2V**
- CATV connection to pool (water): **0.5V**

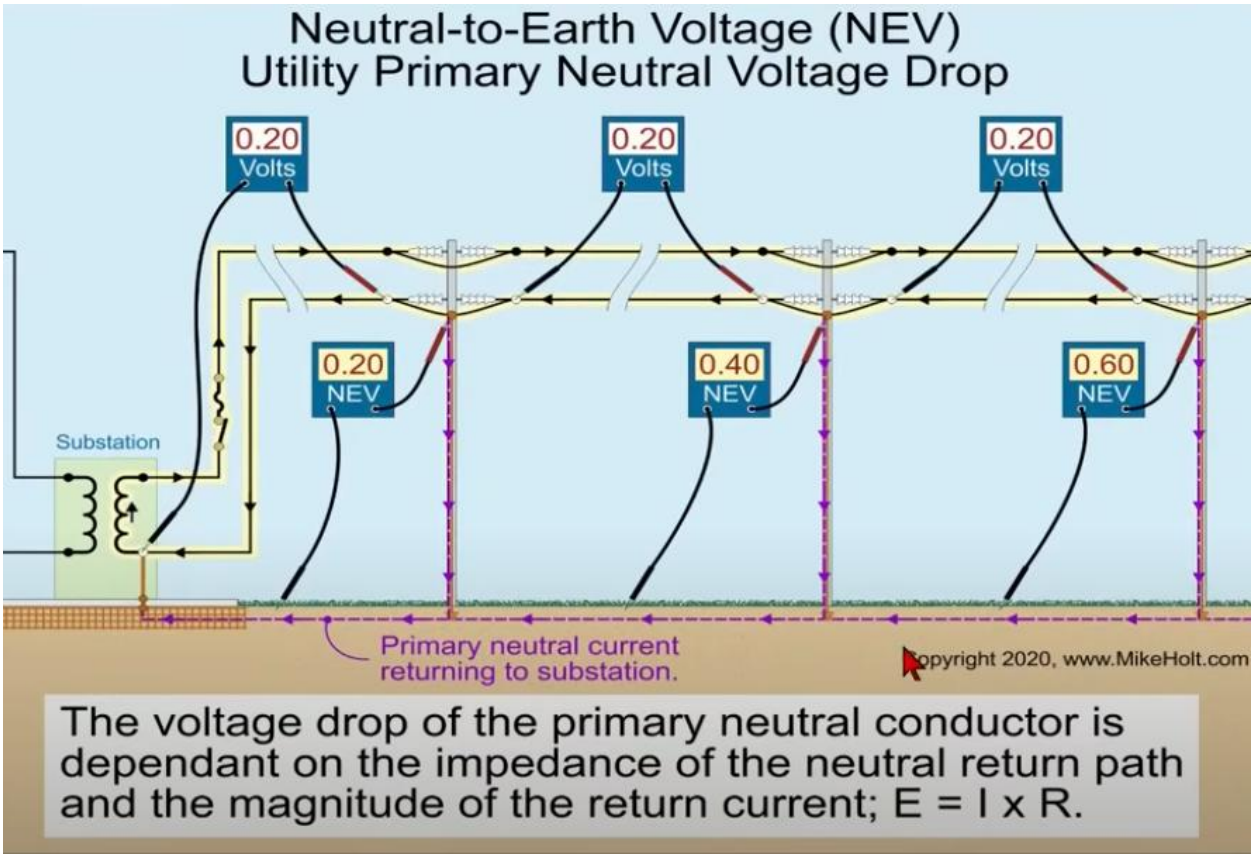
Additional Notes (after the installation of the pole grounds):

- House ground to meter base ground measured 3.4Ω.
- House ground to ladder measured 3.9MΩ

Final Recommendation

The readings taken at the Peterman residence on 9/10/2024, 08/27/2025, as well as the readings taken from 09/12/2025 indicates that the stray voltages present are minimal. On 9/12/2025 efforts to reduce the stray voltage by driving ground rods at various locations had little to no effect on the stray voltage present. Given the potential risks associated with ground faults near the pool, it is strongly recommended that the pool be properly bonded in accordance with NEC standards to ensure safety. The tests conducted by AEP indicate a lack of proper bonding, which could lead to significant injury or worse.

It should be noted that there were concerns raised by the Peterman's electrician regarding potential issues with the underground service wiring and the transformer at the residence. This theory was thoroughly tested during Test 4, conducted on 08/27/2025, and was ultimately proven to be incorrect. The initial hypothesis suggested that a fault in the underground hot conductors was causing voltage bleed to the neutral. During Test 4, the hot conductors were disconnected. If the theory had been accurate, this action would have resulted in the elimination of any present voltages. However, the voltages remained, indicating that the underground wiring is functioning properly. This outcome also eliminated the transformer from consideration as a source of stray voltage, as with the hot conductors cut open, the transformer was not part of the voltage source.


Neutral-to-Earth Voltage (NEV)
Utility Primary Neutral Voltage Drop
0.20 Volts
0.20 Volts
0.20 Volts
0.20 NEV
0.40 NEV
0.60 NEV
Substation
Primary neutral current returning to substation.
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The voltage drop of the primary neutral conductor is dependant on the impedance of the neutral return path and the magnitude of the return current; E = I x R.