BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Roeslein Alternative Energy Services, LLC for a Permanent Waiver From Certain Provisions of 20 CSR 4240-40.030 (Locust Ridge Line)	))))	**Case No. GE-2023-0355**

STAFF RECOMMENDATION

COMES NOW the Staff of the Missouri Public Service Commission ("Staff") and for its *Staff Recommendation*, states as follows:

1. On April 12, 2023, Roeslein Alternative Energy Services, LLC ("RAES"), filed an *Application for Waivers* ("Application") with the Missouri Public Service Commission ("Commission") requesting a permanent waiver of compliance from the Commission's requirement in 20 CSR 4240-40.030(3)(I)3.B.(I) that sets a design pressure limit and the Commission's requirements in 20 CSR 4240-40.030(12)(P) that sets odorization requirements.

2. On April 13, 2023, the Commission issued an order and directed Staff to file either a recommendation on RAES's Application or status report indicating when Staff intends to file its recommendation no later than May 25, 2023.

3. As further described in the attached Memorandum, Staff reviewed the Application, conducted discovery, reviewed applicable Commission rules and prior orders, and coordinated with the U.S Department of Transportation (U.S.DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) regarding federal pipeline safety requirements.

4. Commission rule 20 CSR 4240-40.030(18) allows the Commission to waive, in whole or part, compliance with any of the requirements contained

in 20 CSR 4240-40.030, upon a showing that gas safety is not compromised. Based on Staff's review and investigation, Staff recommends the Commission grant RAES's waiver request with the following conditions:

1. RAES may not serve any Missouri customers from this pipeline without prior Commission approval;
2. To the extent that placement of pipeline markers does not interfere with soil or crop cultivation, RAES shall install additional pipeline markers to provide markers at a minimum of line-of-site distance along the length of the pipeline;
3. RAES shall perform a minimum 8 hour pressure test in accordance with 20 CSR 4240-40.030(12)(M)1.B.(I) and 20 CSR 4240-40.030(10)(G) for the intrastate transmission pipeline from the Badger-Wolf Farm to a point of injection on the existing Somerset Line to establish an MOAP of 125 psig;
4. If natural gas is used as the test medium in the pressure test conducted in accordance with the requirements of 20 CSR 4240-40.030(10)(G), RAES shall develop and follow a written procedure to conduct the testing in a manner consistent with protecting public safety, including but not limited to continuous monitoring of pressure gauges during the test to detect indications of leakage, and monitoring for leakage along the pipeline right-of way during the testing. A copy of this written procedure will be provided to Commission Staff for review prior to conducting the test;
5. RAES shall conduct a leakage survey before and after the pressure test to 188 psig from the Badger-Wolf Farm a point of injection on the existing Somerset Line to establish an MAOP of 125 psig;
6. All leaks from the leakage surveys must be repaired prior to operating above 100 psig;

7. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline;

8. RAES shall utilize automatic controls to limit the temperature of all gas sources introduced into the pipeline to no higher than 73ºF;

9. RAES shall conduct leakage surveys with instrumented gas leakage detection equipment and patrols along the entire length of the pipeline at intervals not exceeding four and one-half (4½) months, but at least four (4) times per calendar year;

10. Each detected leak indication or any leak call from the general public, police, fire or other authorities or notification of damage to facilities by contractors other outside sources shall require immediate investigation and classification as required in 20 CSR 4240-40.030(14);

11. Leaks shall be repaired as required in 20 CSR 4240-40.030(14), except that any Class 2 and Class 3 leaks must be repaired within 15 days. All Class 1 leaks shall require immediate corrective action;

12. RAES shall conduct a class location study that includes identification of any new High Consequence Areas and Moderate Consequence Areas of the RAES transmission pipeline annually, notifying Commission Staff of any class location changes within 30 days of discovery;

13. Whenever RAES is made aware (through notification by Missouri One Call, or other source) that its pipeline lies within the area described in the notice of excavation, or is within two (2) feet of such area, in addition to following the requirements of RSMo Chapter 319 to locate its line, RAES will have personnel onsite monitoring for damages to its pipeline during excavation work; and

14. These waivers of compliance (for both design pressure limit and odorization) are only applicable to the approximately 13.3 mile long intrastate gas transmission pipeline described in the RAES Application.

> In the event any additional segment of PE pipeline is connected to this pipeline, RAES must seek a modification of these waivers in order to operate any additional segment of PE pipeline above 100 psig, or without odorization, and shall notify Commission Staff at least 60 days prior to the start of any new gas pipeline connection.

5. As stated in Commission rule 20 CSR 4240-40.030(18), "[i]f a waiver request would waive compliance with a federal requirement in 49 CFR part 192, additional actions shall be taken in accordance with 49 USC 60118 except when the provisions of subsection (17)(G) apply." Specifically, 49 U.S.C. § 60118(d) pertain to waivers granted by state authorities, and requires that the statue authority must give the Secretary written notice of the waiver at least 60 days before its effective date. In practice, the Commission would need to provide a 60-day effective date on any order approving RAES's Application. In the event the Commission grants the waiver, PHMSA has requested that the Commission order be provided to PHMSAOPSStateWaivers@dot.gov.

6. RAES's Application contained a request that the Commission waive the 60-day filing notice required by 20 CSR 4240-4.017(1). RAES's Application provided a verified declaration that it had not had communication with the office of the commission (as defined by 20 CSR 4240-4.015(10)) within the prior 150 days regarding any substantive issues likely to be in this case, and, therefore, Staff agrees good cause exists, pursuant to 20 CSR 4240-4.017(1)(D), to waive the 60-day notice requirement.

WHEREFORE, Staff respectfully submits this *Staff Recommendation* for the Commission's information and consideration and hereby recommends the Commission approve the *Application for Waivers*, with conditions, as set forth herein.

Respectfully submitted,

/s/ Casi Aslin
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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed, hand-delivered, transmitted by facsimile, or electronically mailed to all parties and/or counsel of record on this 25th day of May, 2023.

/s/ Casi Aslin

M E M O R A N D U M

TO: Missouri Public Service Commission Official Case File,
Case No. GE-2023-0355, Roeslein Alternative Energy Services, LLC

FROM: Robert A. Clay, CHMM, PE, Staff Engineer, Safety Engineering Department
Greg A. Williams, Associate Engineer, Safety Engineering Department

/s/ *Greg A. Williams* 05/25/2023
Safety Engineering Department/ Date

/s/ *Casi Aslin* 05/25/2023
Staff Counsel Division / Date

SUBJECT: Staff Recommendation Regarding Roeslein Alternative Energy Services, LLC Request for Approval of Waivers from 20 CSR 4240-40.030(3)(I)3.B.(I) and 20 CSR 4240-40.030(12)(P)

DATE: May 25, 2023

Executive Summary

On April 12, 2023, Roeslein Alternative Energy Services, LLC (RAES) filed an Application for Waivers (Application) requesting a waiver of compliance from the Commission's requirement in 20 CSR 4240-40.030(3)(I)3.B.(I) that sets a design pressure limit of 100 psig[1] and the Commission's gas odorization requirements of 20 CSR 4240-40.030(12)(P). RAES is requesting a waiver from the design pressure limit of 100 psig to allow a maximum allowable operating pressure (MAOP) of 125 psig for the construction of an intrastate gas transmission pipeline segment that would transport renewable natural gas (gas) from the Locust Ridge Farm in Sullivan County to a point of injection on an existing RAES pipeline in Mercer County, Missouri (the "Badger-Wolf to ANR Pipeline"). RAES is also requesting a waiver from the Commission's gas odorization requirements of 20 CSR 4240-40.030(12)(P) for the same segment of intrastate gas transmission pipeline.

The existing Badger-Wolf Line to ANR pipeline transports gas from the Badger-Wolf Farm, in Mercer County[2] and the Somerset Farm in Mercer county to an interconnect with the ANR Pipeline, also in Mercer County. The existing Badger-Wolf Line to ANR pipeline segments

[1] psig means pounds-force per square inch gauge.

[2] Staff notes that Paragraph 6 of the Application filed in Case No. GE-2023-0201 incorrectly identified the location of the Badger-Wolf Farm as Sullivan County. RAES corrected the location information in its Response to Staff Data Request 0015 in the current case.

are not required to be odorized pursuant to Commission orders granting RAES' waivers in Case Nos. GE-2023-0201 for the Badger-Wolf to Somerset Farm pipeline segment and GE-2023-0096 for the Somerset Farm to ANR pipeline segment. Additionally, the waivers granted in these cases allowed the design pressure limit to be increased from 100 psig to 125 psig so that the MAOP could be established at 125 psig accordingly.

The proposed RAES intrastate transmission pipeline segment from the Locust Ridge Farm to a point of injection on the existing Badger-Wolf to ANR pipeline will be approximately 11.9 miles long when constructed, and will be located in a Class 1 location[3]. RAES states in paragraph 16 of its Application that gas flowing on the line for which RAES seeks a waiver will not be used for service to any end users, and that residences along the pipeline route are located more than 50 feet from the pipeline.

The Commission's Safety Engineering Department Staff (Staff) performed the following review and analysis to reach its recommendations:

- Reviewed the Application and additional information provided by RAES as responses to Staff data requests;
- Reviewed applicable Commission and federal pipeline safety rules;
- Reviewed past Commission orders;
- Evaluated the pipe suitability and environmental conditions for compliance with the requirements of 49 CFR 192.121 allowing certain Polyethylene (PE) pipe to be operated at pressures up to 125 psig; and
- Coordinated with the U.S. Department of Transportation (U.S. DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) regarding federal pipeline safety requirements.

[3] 20 CSR 4240-40.030(1)(C)2. defines a Class 1 location as (i) an offshore area; or (ii) any class location unit that has 10 or fewer buildings intended for human occupancy.

Staff recommends that the Commission approve this waiver, subject to the following conditions and limitations:

1. RAES may not serve any Missouri customers from this pipeline without prior Commission approval;
2. To the extent that placement of pipeline markers does not interfere with soil or crop cultivation, RAES shall install additional pipeline markers to provide markers at a minimum of line-of-sight distance along the length of the pipeline;
3. RAES shall perform a minimum 8 hour pressure test in accordance with 20 CSR 4240-40.030(12)(M)1.B.(I) and 20 CSR 4240-40.030(10)(G) for the intrastate transmission pipeline from the Locust Ridge Farm to a point of injection on the existing Badger-Wolf to ANR Pipeline to establish an MAOP of 125 psig;
4. If natural gas is used as the test medium in the pressure test conducted in accordance with the requirements of 20 CSR 4240-40.030(10)(G), RAES shall develop and follow a written procedure to conduct the testing in a manner consistent with protecting public safety, including but not limited to continuous monitoring of pressure gauges during the test to detect indications of leakage, and monitoring for leakage along the pipeline right-of way during the testing. A copy of this written procedure will be provided to Commission Staff for review prior to conducting the test;
5. RAES shall conduct a leakage survey before and after the pressure test to 188 psig from the Locust Ridge Farm to a point of injection on the existing Badger-Wolf to ANR Pipeline to establish an MAOP of 125 psig;
6. All leaks from the leakage surveys must be repaired prior to operating above 100 psig;

7. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline;

8. RAES shall utilize automatic controls to limit the temperature of all gas sources introduced into the pipeline to no higher than 73ºF;

9. RAES shall conduct leakage surveys with instrumented gas leakage detection equipment and patrols along the entire length of the pipeline at intervals not exceeding four and one-half (4½) months, but at least four (4) times per calendar year;

10. Each detected leak indication or any leak call from the general public, police, fire or other authorities or notification of damage to facilities by contractors or other outside sources shall require immediate investigation and classification as required in 20 CSR 4240-40.030(14);

11. Leaks shall be repaired as required in 20 CSR 4240-40.030(14), except that any Class 2[4] and Class 3[5] leaks must be repaired within 15 days. All Class 1[6] leaks shall require immediate corrective action;

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[4] 20 CSR 4240-40.030(14)(C)2 defines Class 2 leaks as follows: Class 2 leak is a leak that does not constitute an immediate hazard to a building or to the general public, but is of a nature requiring action as soon as possible. Examples of Class 2 leaks are: a leak from a transmission line discernible twenty-five feet (25') or more from the line and within one hundred feet (100') of a building; any reading outside a building at the foundation or within five feet (5') of the foundation; any reading greater than fifty percent (50%) gas-in-air located five to fifteen feet (5'–15') from a building; any reading below the lower explosive limit in a tunnel, sanitary sewer, or confined area; any reading equal to or above the lower explosive limit in a vault, catch basin, or manhole other than a sanitary sewer; or any leak, other than a Class 1 leak, which in the judgment of the supervisor at the scene, is regarded as requiring Class 2 leak priority.

[5] 20 CSR 4240-40.030(14)(C)3 defines Class 3 leaks as follows: Class 3 leak is a leak that does not constitute a hazard to property or to the general public but is of a nature requiring routine action. Examples of Class 3 leaks are: any reading of fifty percent (50%) or less gas-in-air located between five and fifteen feet (5'–15') from a building; any reading located between fifteen and fifty feet (15'–50') from a building, except those defined in Class 4; a reading less than the lower explosive limit in a vault, catch basin, or manhole other than a sanitary sewer; or any leak, other than a Class 1 or Class 2 which, in the judgment of the supervisor at the scene, is regarded as requiring Class 3 priority.

[6] 20 CSR 4240-40.030(14)(C)1 defines Class 1 leaks as follows: Class 1 leak is a gas leak which, due to its location and/ or magnitude, constitutes an immediate hazard to a building and/or the general public. A Class 1 leak requires immediate corrective action. Examples of Class 1 leaks are: a gas fire, flash, or explosion; broken gas facilities such as contractor damage, main failures or blowing gas in a populated area; an indication of gas present in a building emanating from operator-owned facilities; a gas reading equal to or above the lower explosive limit in a tunnel, sanitary sewer, or confined area; gas entering a building or in imminent danger of doing so; and any leak which, in the judgment of the supervisor at the scene, is regarded as immediately hazardous to the public and/or property. When

12. RAES shall conduct a class location study that includes identification of any new High Consequence Areas (HCAs)[7] and Moderate Consequence Areas (MCAs)[8] of the RAES transmission pipeline annually, notifying Commission Staff of any class location changes within 30 days of discovery;

13. Whenever RAES is made aware (through notification by Missouri 811, or other source) that its pipeline lies within the area described in the notice of excavation, or is within two (2) feet of such area, in addition to following the requirements of RSMo Chapter 319 to locate its line, RAES will have personnel onsite monitoring for damages to its pipeline during excavation work; and

14. These waivers of compliance (for both design pressure limit and odorization) are only applicable to the approximately 11.9 mile long intrastate gas transmission pipeline described in the RAES Application. In the event any additional segment of PE pipeline is connected to this pipeline, RAES must seek a modification of these waivers in order to operate any additional segment of PE pipeline above 100 psig, or without odorization, and shall notify Commission Staff at least 60 days prior to the start of any new gas pipeline construction.

As stated in Commission rule 20 CSR 4240-40.030(18), "[i]f the waiver request would waive compliance with a federal requirement in 49 CFR part 192, additional actions shall be taken in accordance with 49 U.S.C. 60118 except when the provisions of subsection (17)(G) apply."[9]

venting at or near the leak is the immediate corrective action taken for Class 1 leaks where gas is detected entering a building, the leak may be reclassified to a Class 2 leak if the gas is no longer entering the building, nor is in imminent danger of doing so. However, the leak shall be rechecked daily and repaired within fifteen (15) days. Leaks of this nature, if not repaired within five (5) days, may need to be reported as a safety-related condition, as required in 20 CSR 4240-40.020(12) and (13). (191.23 and 191.25).

[7] High Consequence Area is defined in 49 CFR 192.903 (incorporated by reference in 20 CSR 4240-40.030(16)).

[8] Moderate Consequence Area is defined in 20 CSR 4240-40.030(1)(B).

[9] Commission rule 20 CSR 4240-40.030(17)(G) applies to an operator's gas distribution integrity management program and the requirement defines when an operator may deviate from required periodic inspections. Section 17 of 20 CSR 4240-40.030 is not applicable to the current pipeline as the applicability is limited to gas distribution pipelines.

Specifically, 49 U.S.C. § 60118(d) pertain to waivers granted by state authorities, and requires that the statue authority must give the Secretary written notice of the waiver at least 60 days before its effective date. In practice, the Commission would need to provide a 60-day effective date on any order approving RAES's Application. In the event the Commission grants the waiver, PHMSA has requested that a copy of the Commission order be provided to: PHMSAOPSStateWaivers@dot.gov.

1.0 Background Information

1.1 Design Pressure Limit

RAES requests a waiver of compliance from the provisions of 20 CSR 4240-40.030(3)(I)3.B.(I), which, in relevant part, require as follows:

> (I) Design of Plastic Pipe. (192.121)
>
> 3. Polyethylene (PE) Pipe Requirements.
>
> B. For PE pipe produced after January 22, 2019, a DF of 0.40 may be used in the design formula, provided:
>
> (I) The design pressure does not exceed 100 psig;

RAES requests the waiver to obtain Commission approval to increase the design pressure limit of its intrastate gas transmission pipeline from the Locust Ridge Farm in Sullivan County to a point of injection on the existing RAES pipeline from the Badger-Wolf to ANR pipeline in Mercer County, Missouri from the 100 psig maximum prescribed by Commission rule, to 125 psig. The design pressure increase is necessary before a Maximum Allowable Operating Pressure (MAOP) of 125 psig can be established by conducting a pressure test in accordance with 20 CSR 4240-40.030(12)(M) and 20 CSR 4240-40.030(10)(G).

In paragraph 12 of its Application, RAES stated the reason the waiver is necessary is that:

> "Regarding pressure, the combined flow from the renewable natural gas processing facilities will be greater than the capacity of the line if operated at 100 psig. Upgrading the maximum allowable operating pressure ("MOAP") to 125 psig would allow this combined gas flow to be accommodated. Without this waiver, RAES will have to install an additional pipeline parallel to the existing pipeline. This additional pipeline

> would add considerable cost to the project and further encumber the public and private right of ways along the route."

RAES stated in Paragraph 16 of its Application that gas flowing on the line for which RAES seeks a waiver will not be used for service to any end users, only to deliver gas to the interstate pipeline, and that residences along the pipeline route are located more than 50 feet from the pipeline.

1.2 Odorization of Gas (192.625)

RAES requests a waiver of compliance from the provisions of 20 CSR 4240-40.030(12)(P), which, in relevant part, require as follows:

> (P) Odorization of Gas. (192.625)
>
> 1. A combustible gas in a transmission line or distribution line must contain a natural odorant or be odorized so that at a concentration in air of one-fifth (1/5) of the lower explosive limit, the gas is readily detectable by a person with a normal sense of smell.

RAES requests the waiver to obtain Commission approval that it not be required to odorize the gas within the approximately 11.9 miles[10] of intrastate transmission pipeline from the Locust Ridge Farm in Sullivan County, Missouri to a point of injection on the existing RAES pipeline in Mercer County, Missouri (the "Badger-Wolf Line").

In paragraphs 13 and 14 of its Application, RAES stated the reason the waiver is necessary is that gas in the interstate ANR Pipeline system is not odorized, and that gas injected into the ANR pipeline would not be permitted to be odorized in accordance with the ANR Pipeline FERC Tariff Part 6.13 2.(a). RAES further stated that if it did odorize the gas being transported by pipeline from the Locust Ridge Farm to a point of injection on the Badger-Wolf Line as required by Commission rules, the odorant would be required to be removed in order to comply with the ANR Pipeline tariff limits prior to injection. RAES stated that this process would involve additional cost without a significant safety benefit, as RAES is unaware of any commercially available equipment for the removal of odorant from gas and, thus, RAES would have to design and construct equipment capable of removing odorant from gas.

[10] Paragraph 6 of the RAES Application described the total length of its pipeline as approximately 11.9 miles long.

RAES stated in paragraph 16 that gas flowing on the line for which RAES seeks a waiver will not be used for service to any end users, only to deliver gas to the interstate pipeline.

1.3 RAES Proposed Conditions

In Paragraph 20 of its Application, under Conditions-MAOP and Odorization, RAES proposed that the requested waivers be subject to certain conditions as a result of the requested maximum allowable operating pressure (MAOP) increase from 100 psig to 125 psig and non-odorization of gas transported in the proposed segment of its intrastate gas transmission pipeline from the Locust Ridge Farm connecting with its existing pipeline at Badger-Wolf Farm. The conditions proposed by RAES are consistent with those ordered by the Commission for the segment of pipeline from the Badger-Wolf Farm to a point of injection on the existing Somerset Line[11]. After receiving and reviewing the RAES responses to Staff Data Request 0015, and Staff Data Request 0017, Staff has made a clarification and a revision to a RAES proposed condition as follows:

- Staff is clarifying the description of the pipeline segment in paragraph 6 of the RAES Application which states that "…RAES is constructing a network of transmission lines from renewable natural gas processing facilities on the Locust Ridge Farm in Mercer County to a point of injection on the existing RAES pipeline in Sullivan County, Missouri (the "Badger-Wolf Line")." Staff has verified with RAES[12] that the Locust Ridge Farm is located in Sullivan County and the point of injection on the Badger-Wolf Line is located in Mercer County.

- Regarding condition "n" under the heading "MAOP and Odorization" of Paragraph 20 of the Application, Staff has revised the waiver condition from "This waiver of compliance is only applicable to the approximately 11.9 mile long intrastate gas transmission pipeline described in the RAES Application. In the event any additional segment of PE pipeline is connected to this pipeline, RAES must seek a modification of this waiver in order to operate any additional segment of PE pipeline above 100 psig.", to "These waivers of compliance

[11] As described within Commission Case No. GE-2023-0201.
[12] As described by the RAES response to Staff Data Request 0015 in GE-2023-0355.

(for both design pressure limit and odorization) are only applicable to the approximately 11.9 mile long intrastate gas transmission pipeline described in the RAES Application. In the event any additional segment of PE pipeline is connected to this pipeline, RAES must seek a modification of these waivers in order to operate any additional segment of PE pipeline above 100 psig, or without odorization." This revision was made because RAES is requesting a waiver from both the design pressure limit and odorization.

2.0 Applicable Commission and Federal Rules

2.1 Waivers of Compliance

20 CSR 4240-40.030(18) states that upon written request to the secretary of the commission[13], the commission, by authority order and under such terms and conditions as the commission deems appropriate, may waive in whole or part compliance with any of the requirements contained in this rule.[14] Waivers will be granted only on a showing that gas safety is not compromised. If the waiver request would waive compliance with a federal requirement in 49 CFR part 192, additional actions shall be taken in accordance with 49 U.S.C. 60118 except when the provisions of subsection (17)(G)[15] apply.

2.2 Plastic Pipeline Design Pressure Limit

Commission rule 20 CSR 4240-40.030(12)(M)1. requires that except as provided in paragraph (12)(M)3., no person may operate a segment of a plastic pipeline at a pressure that exceeds the lowest of the following:

- The design pressure of the weakest element in the segment, determined in accordance with sections (3) and (4).
- The pressure obtained by dividing the highest pressure to which the segment was tested after construction or uprated as follows:

[13] As defined by 20 CSR 4240-40.030(1)(B)6., commission means the Missouri Public Service Commission.

[14] Rule in this context refers to 20 CSR 4240-40.030.

[15] Commission rule 20 CSR 4240-40.030(17)(G) applies to an operator's gas distribution integrity management program and the requirement defines when an operator may deviate from required periodic inspections. Section 17 of 20 CSR 4240-40.030 is not applicable to the current pipeline as the applicability is limited to gas distribution pipelines.

(I) For plastic pipe in all locations, the test pressure is divided by a factor of 1.5.

- The highest actual operating pressure to which the segment was subjected during five years preceding applicable dates for pipelines installed before the effective dates of certain rules, and
- The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.

Commission rule 20 CSR 4240-40.030(3)(I)3.B. allows the use of a design factor (DF) of 0.40, provided that the design pressure does not exceed 100 psig and the PE pipe material designation code, nominal pipe size, and wall thickness meets the requirements of 20 CSR 4240-40.030(3)(I)3.B.(II)-(IV).

The federal pipeline safety requirements of 49 CFR 192.121(c)(2) allows the use of a design factor (DF) of 0.40 provided that the design pressure does not exceed 125 psig and the PE pipe material designation code, nominal pipe size, and wall thickness meets the requirements of 49 CFR 192.121(c)(2)(ii) through (iv).

Copies of the complete text of both the applicable rule requirements are included as Appendix 1.

RAES is requesting to use the higher 125 psig design pressure from the federal rule.

2.3 Odorization of Gas (192.625)

As defined by 20 CSR 4240-40.030(1)(B)40., a transmission line means a pipeline[16], other than a gathering line[17], that transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center (A large volume customer may receive similar volumes of gas as a distribution center, and includes

[16] As defined by 20 CSR 4240-40.030(1)(B)31., a pipeline means all parts of those physical facilities through which gas moves in transportation, including pipe, valves, and other appurtenances attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, and fabricated assemblies.

[17] As defined by 20 CSR 4240-40.030(1)(B)17., a gathering line means a pipeline that transports gas from a current production facility to a transmission line or main.

factories, power plants, and institutional users of gas.); operates at a hoop stress of twenty percent (20%) or more of SMYS[18]; or transports gas within a storage field.

Commission rules require odorization of combustible gas in a transmission line, without exceptions.[19] Federal pipeline safety rules require odorization of combustible gas in transmission pipeline only under certain conditions, including an exemption when at least 50 percent of the length of the line downstream is in a low population density (class 1 or class 2) location[20].

Natural gas is a naturally occurring mixture of hydrocarbon and non-hydrocarbon gases[21] that is odorless and colorless. Because there are no natural warning properties (e.g. odor or color), natural gas cannot be detected without the use of gas detection equipment unless odorant is added. Odorant, typically a proprietary blend of organic compounds containing one or more mercaptans[22], is added to natural gas to serve as a warning property for natural gas leaks. When gas is released from a pipeline into the air, persons with an ordinary sense of smell are able to readily detect the odorant.

Commission rule 20 CSR 4240-40.030(12)(P)1. requires, among other things, that a combustible gas in a transmission line or distribution line must contain a natural odorant or be odorized so that at a concentration in air of one-fifth (1/5) of the lower explosive limit[23], the gas is readily detectable by a person with a normal sense of smell.

[18] As defined by 20 CSR 4240-40.030(1)(B)37., SMYS means specified minimum yield strength is for steel pipe manufactured in accordance with a listed specification, the yield strength specified as a minimum in that specification; or for steel pipe manufactured in accordance with an unknown or unlisted specification, the yield strength determined in accordance with paragraph (3)(D)2.

[19] 20 CSR 4240-40.030(12)(P).

[20] 49 CFR 192.625.

[21] Methane is always the largest component of natural gas (typically 70-90%), and typically contains some amount of mixed heavier hydrocarbons including ethane, propane and butane, and non-hydrocarbon gases such as carbon dioxide and nitrogen.

[22] Mercaptans are a family of organic sulfur containing compounds that have a pungent odor, frequently compared to a “rotten egg” or “skunk” smell.

[23] The lower explosive limit for methane is 5% gas-in-air by volume. The methane gas produced by RAES would have approximately the same lower explosive limit level since it consists of at least 98% methane. Natural gas is composed mostly of methane, but it also contains small amounts of ethane, propane, butane, and non-hydrocarbon gases.

2.4 Requirements to Patrol Transmission Lines

20 CSR 4240-40.030(13)(C) requires that each operator of a transmission line shall have a patrol program to observe surface conditions on and adjacent to the transmission line right-of-way for indications of leaks, construction activity and other factors affecting safety and operation. For a transmission line in a Class 1 location[24], Commission rule 20 CSR 4240-40.030(13)(C)2. requires a minimum frequency of pipeline patrols at maximum intervals of seven and one-half (7½) months, but at least twice each calendar year at highway and railroad crossings. At all other locations, the maximum intervals between the patrols may not be longer than fifteen (15) months, but at least once each calendar year.

2.5 Requirement to Leak Survey Transmission Lines

20 CSR 4240-40.030(13)(D) requires instrument leak detection surveys of transmission lines at minimum frequencies based on class locations. For a transmission line in a Class 1 location, Commission rule 20 CSR 4240-40.030(13)(D)1.C. requires an instrument leak detection survey to be conducted at intervals not exceeding fifteen (15) months, but at least once each calendar year.

2.6 Damage Prevention

In general terms, Missouri statutes and pipeline safety standards require that:

1. Excavators must provide notification of intent to excavate to allow facility owners to mark buried utilities, and
2. Facility owners must provide temporary markings for their facilities in the areas identified by the excavators.

20 CSR 4240-40.030(12)(I) requires each operator of a buried natural gas pipeline to have and follow a written program to prevent damage to that pipeline by excavation activities.

49 CFR 192.935(d)(2), adopted by reference in 20 CSR 4240-40.030(16), requires that operators either monitor excavations near the transmission pipeline, or conduct patrols of the pipeline at bi-monthly intervals.

[24] As defined by 20 CSR 4240-40.030(1)(C)2.A., a Class 1 location is any class location unit that has 10 or fewer buildings intended for human occupancy.

3.0 Previous Commission Decisions

In Case No. GE-2023-0201, RAES requested waivers of compliance from the Commission's requirements in 20 CSR 4240-40.030(3)(I)3.B.(I) that sets a design pressure limit of 100 psig and 20 CSR 4240-40.030(12)(P) to odorize gas that is gathered and treated at the Badger-Wolf Farm to a point of injection on the existing RAES pipeline ("Somerset Line"). RAES requested the waiver from the design pressure limit in order to increase the maximum allowable operating pressure (MAOP) from 100 psig to 125 psig for the Polyethylene (PE) segments of its existing intrastate gas transmission pipeline transporting gas in Sullivan County, Missouri from the Badger-Wolf Farm to the Somerset Line located in Mercer County, Missouri. RAES stated that the entire 13.3 mile length of the natural gas intrastate transmission pipeline is located in a Class 1 location.

The Commission granted the Application for waiver, effective April 25, 2023, subject to the following conditions:

a. RAES may not serve any Missouri customers from this pipeline without prior Commission approval;

b. To the extent that placement of pipeline markers does not interfere with soil or crop cultivation, RAES shall install additional pipeline markers to provide markers at a minimum of line-of-sight distance along the length of the pipeline;

c. RAES shall perform a minimum 8 hour pressure test in accordance with 20 CSR 4240-40.030(12)(M)1.B.(I) and 20 CSR 4240-40.030(10)(G) for the intrastate transmission pipeline from the Badger-Wolf Farm to a point of injection on the existing Somerset Line to establish a Maximum Allowable Operating pressure (MOAP) of 125 psig;

d. If natural gas is used as the test medium in the pressure test conducted in accordance with the requirements of 20 CSR 4240-40.030(10)(G), RAES shall develop and follow a written procedure to conduct the testing in a manner

consistent with protecting public safety, including but not limited to continuous monitoring of pressure gauges during the test to detect indications of leakage, and monitoring for leakage along the pipeline right of way during the testing. A copy of this written procedure will be provided to Commission Staff for review prior to conducting the test;

e. RAES shall conduct a leakage survey before and after the pressure test to 188 psig from the Badger-Wolf Farm a point of injection on the existing Somerset Line to establish a MAOP of 125 psig;

f. All leaks from the leakage surveys must be repaired prior to operating above 100 psig;

g. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline;

h. RAES shall utilize automatic controls to limit the temperature of all gas sources introduced into the pipeline to no higher than 73ºF;

i. RAES shall conduct leakage surveys with instrumented gas leakage detection equipment and patrols along the entire length of the pipeline at intervals not exceeding four and one-half (4½) months, but at least four (4) times per calendar year;

j. Each detected leak indication or any leak call from the general public, police, fire or other authorities or notification of damage to facilities by contractors or other outside sources shall require immediate investigation and classification as required in 20 CSR 4240-40.030(14);

k. Leaks shall be repaired as required in 20 CSR 4240-40.030(14), except that any Class 2 and Class 3 leaks must be repaired within 15 days. All Class 1 leaks shall require immediate corrective action;

l. RAES shall conduct a class location study that includes identification of any new High Consequence Areas and Moderate Consequence Areas of the RAES

transmission pipeline annually, notifying Commission Staff of any class location changes within 30 days of discovery;

m. Whenever RAES is made aware (through notification by Missouri One Call, or other source) that its pipeline lies within the area described in the notice of excavation, or is within two (2) feet of such area, in addition to following the requirements of RSMo Chapter 319 to locate its line, RAES will have personnel onsite monitoring for damages to its pipeline during excavation work; and

n. These waivers of compliance (for both design pressure limit and odorization) are only applicable to the approximately 13.3 mile long intrastate gas transmission pipeline described in the RAES Application.

In Case No. GE-2023-0096, RAES requested a waiver of compliance from the Commission's requirement in 20 CSR 4240-40.030(3)(I)3.B.(I) that sets a design pressure limit of 100 psig. RAES requested the waiver in order to increase the maximum allowable operating pressure (MAOP) from 100 psig to 125 psig for the Polyethylene (PE) segments of its existing intrastate gas transmission pipeline transporting gas in Mercer County, Missouri from the Somerset Farm to an interconnect with the ANR Pipeline.

The Commission granted the Application for waiver, effective February 28, 2023, subject to the following conditions:

a. RAES may not serve any Missouri customers from this pipeline without prior Commission approval;

b. To the extent that placement of pipeline markers does not interfere with soil or crop cultivation, RAES shall install additional pipeline markers to provide markers at a minimum of line-of-sight distance along the length of the pipeline;

c. RAES shall perform a minimum 8 hour pressure test in accordance with 20 CSR 4240-40.030(12)(M)1.B.(I) and 20 CSR 4240-40.030(10)(G) for the

intrastate transmission pipeline from the Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new MAOP of 125 psig;

d. If natural gas is used as the test medium in the pressure test conducted in accordance with the requirements of 20 CSR 4240-40.030(10)(G), RAES shall develop and follow a written procedure to conduct the testing in a manner consistent with protecting public safety, including but not limited to continuous monitoring of pressure gauges during the test to detect indications of leakage, and monitoring for leakage along the pipeline right-of way during the testing. A copy of this written procedure will be provided to Commission Staff for review prior to conducting the test;

e. RAES shall conduct a leakage survey before and after the pressure test to 188 psig from the Somerset to the existing interconnect with the ANR Pipeline to establish a new MAOP of 125 psig;

f. All leaks from the leakage surveys must be repaired prior to operating above 100 psig;

g. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline;

h. RAES shall utilize automatic controls to limit the temperature of all gas sources introduced into the pipeline to no higher than 73ºF;

i. RAES shall conduct leakage surveys with instrumented gas leakage detection equipment and patrols along the entire length of the pipeline at intervals not exceeding four and one-half (4½) months, but at least four (4) times per calendar year;

j. Each detected leak indication or any leak call from the general public, police, fire or other authorities or notification of damage to facilities by contractors other outside sources shall require immediate investigation and classification as required in 20 CSR 4240-40.030(14);

k. Leaks shall be repaired as required in 20 CSR 4240-40.030(14), except that any Class 2 and Class 3 leaks must be repaired within 15 days. All Class 1 leaks shall require immediate corrective action;

l. RAES shall conduct a class location study that includes identification of any new High Consequence Areas (HCAs) and Moderate Consequence Areas (MCAs) of the RAES transmission pipeline annually, notifying Commission Staff of any class location changes within 30 days of discovery;

m. Whenever RAES is made aware (through notification by Missouri One Call, or other source) that its pipeline lies within the area described in the notice of excavation, or is within two (2) feet of such area, in addition to following the requirements of RSMo Chapter 319 to locate its line, RAES will have personnel onsite monitoring for damages to its pipeline during excavation work; and

n. This waiver of compliance is only applicable to the approximately 8.4 mile long intrastate gas transmission pipeline described in the RAES Application. In the event any additional segment of PE pipeline is connected to this pipeline, RAES must seek a modification of this waiver in order to operate any additional segment of PE pipeline above 100 psig.

In Case No. GE-2021-0049, RAES requested a waiver of compliance with the requirement of 20 CSR 4240-40.030(12)(P) to odorize gas that is gathered and treated at the Whitetail Farm in Putnam County, to a point of injection on the ANR Pipeline, in Putnam County (the "Whitetail Line").

The Commission granted the Application for waiver, effective March 1, 2021, subject to the following conditions:

1. RAES may not serve any Missouri customers from the gas transmission pipeline in Putnam County, Missouri, subject to this waiver without prior Commission approval;

2. RAES shall conduct leakage surveys and patrols along the entire length of the pipeline at intervals not exceeding four and one-half months and at least four times per calendar year;

3. RAES shall conduct an annual class location study of the gas transmission pipeline in Putnam County, Missouri, and notify Commission Staff of any class location changes within 30 days of discovery;

4. Whenever RAES is aware, through notice by Missouri One Call or another source, that the pipeline lies within the area described in a notice of excavation, or is within 2 feet of such area, in addition to following the requirements of Chapter 319 of the Revised Statutes of Missouri to locate its line, RAES will have personnel onsite to monitor for damage to its pipeline during excavation;

5. RAES shall notify Commission Staff no fewer than 60 days before starting construction on any new gas pipeline that would transport combustible gas from the Green Hills, South Meadows and/or Locust Ridge farms to Whitetail Farm; and

6. Waiver under this order is limited to the intrastate gas transmission pipeline described in RAES' application in this case. Commission approval is necessary to extend a waiver to any additional pipeline connected to the pipeline described and considered in this case.

In Case No. GE-2020-0238, RAES requested a waiver of compliance with the requirement of 20 CSR 4240-40.030(12)(P) to odorize gas that is gathered and treated at the Somerset Farm in Mercer County, then transported to the point of injection on the ANR Pipeline, also in Mercer County (the "Somerset Line"). RAES stated that the entire 8.77 mile length of the natural gas intrastate transmission pipeline is located in a Class 1 location.

The Commission granted the Application for waiver, effective June 26, 2020, subject to the following conditions:

a. RAES may not serve any Missouri customers from the gas transmission pipeline in Mercer County, Missouri, subject to this waiver without prior Commission approval;

b. RAES shall conduct leakage surveys and patrols along the entire length of the pipeline at intervals not exceeding four and one-half months and at least four times per calendar year;

c. RAES shall conduct an annual class location study of the gas transmission pipeline in Mercer County, Missouri, and notify Commission Staff of any class location changes within 30 days of discovery; and

d. Whenever RAES is aware, through notice by Missouri One Call or another source, that the pipeline lies within the area described in a notice of excavation, or is within 2 feet of such area, in addition to following the requirements of Chapter 319 of the Revised Statutes of Missouri to locate its line, RAES will have personnel onsite to monitor for damage to its pipeline during excavation.

The conditions Staff is recommending in this current case, GE-2023-0355, are consistent with the conditions from these previous Commission orders.

4.0 Coordination with U.S. DOT

The Commission has an annual certification from the U.S. DOT under 49 U.S.C. Section 60105 of 49 U.S. Code to implement its pipeline safety program. 49 U.S.C. 60118 addresses waivers of pipeline safety standards by state authorities. 49 U.S.C. 60118 (d) requires that:

> If a certification under section 60105 of this title or an agreement under section 60106 of this title is in effect, the State authority may waive compliance with a safety standard to which the certification or agreement applies in the same way and to the same extent the Secretary may waive compliance under subsection (c) of this section. However, the authority must give the Secretary written notice of the waiver at least 60 days before its effective date. If the Secretary makes a written objection before the effective date of the waiver, the waiver is stayed. After notifying the authority of the objection, the Secretary shall provide a prompt

> opportunity for a hearing. The Secretary shall make the final decision on granting the waiver.

In guidelines provided to state programs, PHMSA encourages state programs to coordinate review of waiver requests with PHMSA prior to finalizing state approval. Staff therefore submitted a copy of the RAES Application waiver of compliance from the design pressure limit of 100 psig for polyethylene pipe and odorization to PHMSA on April 14, 2023. Staff has discussed the proposed RAES pipeline specifications and Staff's recommended conditions for granting the waiver with PHMSA, noting the similarity between this pipeline segment (from Locust Ridge Farm to a point of injection on the existing Badger-Wolf Line) and the segment for which the Commission granted a waiver in GE-2023-0201 (Badger-Wolf Farm to the Somerset Line) and GE-2023-0096 (Somerset Farm to the interconnect with ANR pipeline). PHMSA has requested that if the Commission grants the waiver, a copy of the Commission order be provided to: PHMSAOPSStateWaivers@dot.gov.

5.0 Staff Analysis

5.1 Design Pressure Limit

RAES provided information regarding the pipe production dates, material designation codes, pipe size, wall thickness and Standard Dimension Ratio (SDR)[25] in response to Staff data requests.

The pipeline segments were produced in October 2022, therefore the applicable requirements are in 49 CFR 192.121(c)(2), for pipe produced after January 22, 2019. 49 CFR 192.121(c)(2) states that a design factor of 0.40 may be used in the design formula, provided that:

> (i) The design pressure does not exceed 125 psig;
>
> (ii) The material designation code is PE2708 or PE4710;
>
> (iii) The pipe has a nominal size (IPS or CTS) of 24 inches or less; and
>
> (iv) The wall thickness for a given outside diameter is not less than that listed in table 1 to paragraph (c)(2)(iv).

[25] Standard dimension ratio (SDR) is defined in 49 CFR 192.121(a) as the ratio of the average specified outside diameter to the minimum specified wall thickness, corresponding to a value from a common numbering system that was derived from the American National Standards Institute (ANSI) preferred number series 10.

RAES provided documentation that the material designation code of the pipeline is PE4710, with a nominal pipe size of 6 inch IPS, minimum wall thickness of 0.6023-inches and a SDR of 11. Table 1 to paragraph (c)(2)(iv) in 49 CFR 192.121 indicates that a 6-inch pipe must have a minimum wall thickness of 0.315-inches.

Staff confirmed that the RAES pipe specification meets the requirements of 49 CFR 192.121(c)(2), therefore a design factor of 0.40 may be used in the design formula, provided that the design pressure does not exceed 125 psig.

49 CFR 192.121(a) provides two (2) design formulae that may be used to establish the design pressure. Staff substituted the values provided by RAES into the design formula:

$$P = \frac{2S}{(SDR - 1)} * (DF)$$

Where P = Design pressure, gauge, psig
S = the Hydrostatic Design Basis (HDB) determined at a specific temperature
DF = Design Factor
SDR = Standard Dimension Ratio

RAES provided documentation that the pipe material to be used is designated PE4710. The HDB for the pipe is 1,600 psi at a temperature of 73ºF. Staff notes that as temperature increases, the HDB for the pipe decreases[26], therefore to use 1,600 in this equation, the pipe operating temperature would need to be 73ºF or lower.

Using a value of 1,600 for "S", 11 for SDR and a design factor of 0.40 in the equation, Staff calculated a design pressure of 128 psig.

$$P = \frac{2 * 1{,}600}{(11 - 1)} * (0.40) = 128\ psig$$

[26] The typical HDB value shown in the PPI literature for PE 4710 pipe at 140ºF is 1,000.

Since this calculated value is above the 125 psig maximum allowed by 49 CFR 191.121, the maximum design pressure for this pipe can be considered to be 125 psig. Staff notes that the HDB for PE4710 is 1,000 at a temperature of 140°F. If 1,000 is substituted in the equation above for S, the calculated design pressure would be reduced to 80 psig. Therefore in order to use a design pressure of 125 psig, both the temperature of the gas inside the pipe and the environmental conditions in which the pipe is installed will need to be equal to or less than 73ºF.

In response to a Staff data request, RAES stated that its design for this system includes a gas refrigeration unit at the Locust Ridge Farm to reduce the gas temperature to below 73°F prior to injection into the High Density Polyethylene (HDPE) pipe.

Paragraph 20 of the RAES Application includes two (2) conditions under the MAOP portion that provides the following:

> g. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline; and
> h. RAES shall utilize automatic controls to limit the temperature of all gas sources introduced into the pipeline to no higher than 73ºF.

Staff agrees with these conditions for continuously monitoring, recording, and limiting the temperature of all gas sources introduced into the pipeline to no higher than 73ºF.

Staff evaluated the temperatures that may be encountered in the environment where the pipeline is installed. In response to a Staff data request, RAES provided information that pipelines in Missouri, including the Locust Ridge Farm to Badger-Wolf Line, will be installed with at least 48-inches of cover over the top of the pipelines.

Staff requested monthly soil temperature maximums at a depth of 40 or more inches from the National Oceanic and Atmospheric Administration (NOAA) for calendar year 2022 at monitoring sites near Sullivan and Mercer counties in Missouri. The closest NOAA monitoring site was located in Grundy County, Missouri (directly south and adjacent to Mercer County, Missouri). For calendar year 2022, a maximum soil temperature of 70°F occurred during the consecutive months of August and September at a depth of 40-inches. Shallower soil depths are affected by changes

in ambient temperatures more so than deeper soils. Since the RAES pipeline is installed deeper than 40-inches, Staff does not anticipate there will be any detrimental temperature effect due to ambient temperatures.

5.2 Odorization of Gas (192.625)

In paragraphs 13 and 14 of the Application, RAES stated that ANR's FERC tariff prohibits odorized gas to be injected into ANR's interstate natural gas pipeline in such that gas injected into the pipeline "shall be commercially free from objectionable odors…",[27] and that the odorant level required by Commission rules would violate ANR's FERC tariff. Additionally, in response to Staff Data Request No. 0003 from Case No. GE-2020-0238, RAES provided a copy of a letter from TC Energy[28] which stated that odorized gas could not be accepted from RAES due to the fact that downstream distribution systems would be expecting to receive un-odorized natural gas. The letter further explains that the introduction of odorized gas into ANR's pipeline could cause the accidental over-odorization of the downstream distribution systems.

In paragraph 14 of the Application, RAES stated that it was unaware of any commercially available equipment for the removal of odorant from gas. As such, RAES would be unable to odorize the gas for the length of the pipeline and then remove the odorant from the gas prior to injection into the ANR pipeline. Additionally, RAES stated that denial of the waiver would likely make the project to collect gas from the Locust Ridge Farm and inject the gas into the natural gas grid cost prohibitive as RAES would have to design and construct equipment capable of removing odorant from gas.

In paragraph 16 of the Application, RAES proposed not to provide "service to any end users, only to deliver gas to the intrastate pipeline". Within paragraph 20 of the Application, Odorization section, part i. includes a waiver condition that "RAES shall conduct leakage surveys with instrumented gas leakage detection equipment and patrols along the entire length of the pipeline at intervals not exceeding four and one-half months, but at least four times per calendar year". Staff agrees with these conditions as increased leakage survey and patrol frequencies would

[27] ANR FERC Tariff Part 6.13 2. (a).
[28] Parent company of ANR Pipeline Company.

aid in the discovery of gas leaks on the pipeline in the absence of odorant in the gas and the additional patrols would increase the chance for detecting any excavation activities near the transmission line and observing areas where the pipeline may have been exposed due to flooding or washouts.

6.0 Staff's Conclusions

1. Based on Staff's analysis, the plastic pipe specifications provided by RAES are consistent with the requirements of 49 CFR 192.121(c)(2). Therefore, a design factor of 0.40 can be used in the design formula.
2. In order to use a design pressure of 125 psig, the temperature both inside and outside of the pipe must be maintained at or below 73 ºF.
3. Based on data received by NOAA, soil conditions are anticipated to be 70 ºF or cooler year round at the depth the pipeline is installed.
4. With the installation of temperature monitoring instrumentation and controls to the existing RAES control system, the temperature of the gas entering the pipeline can be controlled to 73 ºF or less.
5. Staff concurs with RAES's assertion that granting the waiver requested in the RAES Application will not compromise gas safety provided measures are implemented to control the temperature of gas entering the pipeline, ensure public safety during pressure testing, and increase public awareness of pipeline location.
6. ANR will not accept injection of odorized gas from RAES. RAES stated that it cannot inject then remove odorant from the gas because equipment for the removal of odorant from gas is not currently commercially available.
7. Staff concurs with RAES's assertion that granting the waiver requested in the RAES Application will not compromise gas safety provided alternative measures are implemented to detect gas leaks. These proposed measures, included in Staff's recommendation, are in addition to leak detection measures

required in Commission rules, and are intended to mitigate risks associated with not odorizing the gas.

7.0 Staff's Recommendation and Proposed Conditions of the Waivers

Staff recommends the Commission approve the Application with the following conditions, which include those conditions proposed in RAES' Application:

1. RAES may not serve any Missouri customers from this pipeline without prior Commission approval;
2. To the extent that placement of pipeline markers does not interfere with soil or crop cultivation, RAES shall install additional pipeline markers to provide markers at a minimum of line-of-sight distance along the length of the pipeline;
3. RAES shall perform a minimum 8 hour pressure test in accordance with 20 CSR 4240-40.030(12)(M)1.B.(I) and 20 CSR 4240-40.030(10)(G) for the intrastate transmission pipeline from the Locust Ridge Farm to a point of injection on the existing Badger-Wolf Line to establish an MAOP of 125 psig;
4. If natural gas is used as the test medium in the pressure test conducted in accordance with the requirements of 20 CSR 4240-40.030(10)(G), RAES shall develop and follow a written procedure to conduct the testing in a manner consistent with protecting public safety, including but not limited to continuous monitoring of pressure gauges during the test to detect indications of leakage, and monitoring for leakage along the pipeline right-of way during the testing. A copy of this written procedure will be provided to Commission Staff for review prior to conducting the test;
5. RAES shall conduct a leakage survey before and after the pressure test to 188 psig from the Locust Ridge Farm to a point of injection on the existing Badger-Wolf Line to establish an MAOP of 125 psig;
6. All leaks from the leakage surveys must be repaired prior to operating above 100 psig;
7. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline;

8. RAES shall utilize automatic controls to limit the temperature of all gas sources introduced into the pipeline to no higher than 73ºF;
9. RAES shall conduct leakage surveys with instrumented gas leakage detection equipment and patrols along the entire length of the pipeline at intervals not exceeding four and one-half (4½) months, but at least four (4) times per calendar year;
10. Each detected leak indication or any leak call from the general public, police, fire or other authorities or notification of damage to facilities by contractors or other outside sources shall require immediate investigation and classification as required in 20 CSR 4240-40.030(14);
11. Leaks shall be repaired as required in 20 CSR 4240-40.030(14), except that any Class 2 and Class 3 leaks must be repaired within 15 days. All Class 1 leaks shall require immediate corrective action;
12. RAES shall conduct a class location study that includes identification of any new High Consequence Areas and Moderate Consequence Areas of the RAES transmission pipeline annually, notifying Commission Staff of any class location changes within 30 days of discovery;
13. Whenever RAES is made aware (through notification by Missouri 811, or other source) that its pipeline lies within the area described in the notice of excavation, or is within two (2) feet of such area, in addition to following the requirements of RSMo Chapter 319 to locate its line, RAES will have personnel onsite monitoring for damages to its pipeline during excavation work; and
14. These waivers of compliance (for both design pressure limit and odorization) are only applicable to the approximately 11.9 mile long intrastate gas transmission pipeline described in the RAES Application. In the event any additional segment of PE pipeline is connected to this pipeline, RAES must seek a modification of these waivers in order to operate any additional segment of PE pipeline above 100 psig, or without odorization, and shall notify Commission Staff at least 60 days prior to the start of any new gas pipeline construction.

Staff additionally recommends that if the Commission grants this waiver, the effective date should not be sooner than 60 days from the date of the order granting the waiver, and that a copy of the order granting the waiver be provided to: PHMSAOPSStateWaivers@dot.gov.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Roeslein Alternative Energy Services, LLC for a Permanent Waiver From Certain Provisions of 20 CSR 4240-40.030 (Locust Ridge Line)	))))	**Case No. GE-2023-0355**

ROBERT A. CLAY

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW Robert A. Clay, and on his oath states that he is of sound mind and lawful age; that he contributed to the foregoing *Staff Recommendation, in Memorandum form*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Robert A. Clay

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 24th day of May, 2023.

Notary Public

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Roeslein Alternative Energy Services, LLC for a Permanent Waiver From Certain Provisions of 20 CSR 4240-40.030 (Locust Ridge Line)	))))	**Case No. GE-2023-0355**

GREG A. WILLIAMS

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW Greg A. Williams, and on his oath states that he is of sound mind and lawful age; that he contributed to the foregoing *Staff Recommendation, in Memorandum form*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Greg A. Williams

Greg A. Williams

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 25th day of May, 2023.

Dianna L. Vaught

Notary Public

DIANNA L VAUGHT
Notary Public - Notary Seal
STATE OF MISSOURI
Cole County
My Commission Expires: July 18, 2023
Commission #: 15207377

APPENDIX 1

20 CSR 4240-40.030(3)(I)3. – Design of Plastic Pipe

20 CSR 4240-40.030(3)(I)3. specifies the polyethylene (PE) pipe requirements which include the following:

A. The federal regulation at 49 CFR 192.121(c)(1) is not adopted in this rule. (This federal regulation permits higher design pressures for certain types of PE pipe.)

B. For PE pipe produced on or after January 22, 2019, a DF of 0.40 may be used in the design formula, provided—

(I) The design pressure does not exceed 100 psig;
(II) The material designation code is PE2708 or PE4710;
(III) The pipe has a nominal size (IPS or CTS) of 24 inches or less; and
(IV) The wall thickness for a given outside diameter is not less than that listed in the following table:

PE Pipe: Minimum Wall Thickness and SDR Values		
Pipe Size (inches)	Minimum wall thickness (inches)	Corresponding SDR (values)
½" CTS	0.090	7
¾" CTS	0.090	9.7
½" IPS	0.090	9.3
¾" IPS	0.095	11
1" CTS	0.099	11
1" IPS	0.119	11
1 ¼" IPS	0.151	11
1 ½" IPS	0.173	11
2"	0.216	11
3"	0.259	13.5
4"	0.265	17
6"	0.315	21
8"	0.411	21
10"	0.512	21
12"	0.607	21
16”	0.762	21
18”	0.857	21
20”	0.952	21
22”	1.048	21
24”	1.143	21

49 CFR 192.121: Design of Plastic Pipe

STAFF NOTE: The pipe design requirements of subparagraph (d) Polyamide (PA-11), subparagraph (e) Polyamide (PA-12), and subparagraph (f) Reinforced thermosetting plastic pipe were omitted from 49 CFR 192.121 below since these materials are different from the polyethylene plastic pipe that is involved in the RAES waiver request.

(a) *Design pressure*. The design pressure for *plastic pipe* is determined in accordance with either of the following formulas:

$$P = 2S\frac{t}{(D-t)}(DF)$$

$$P = \frac{2S}{(SDR-1)}(DF)$$

P = Design pressure, gauge, psig (kPa).

S = For thermoplastic pipe, the *hydrostatic design basis* (*HDB*) is determined in accordance with the *listed specification* at a *temperature* equal to 73°F (23°C), 100°F (38°C), 120°F (49°C), or 140°F (60°C). In the absence of an HDB established at the specified temperature, the HDB of a higher temperature may be used in determining a design pressure rating at the specified temperature by arithmetic interpolation using the procedure in Part D.2 of PPI TR-3/2012, (incorporated by reference, see § 192.7). For reinforced thermosetting plastic pipe, 11,000 psig (75,842 kPa).

t = Specified wall thickness, inches (mm).

D = Specified outside diameter, inches (mm).

SDR = Standard dimension ratio, the ratio of the average specified outside diameter to the minimum specified wall thickness, corresponding to a value from a common numbering system that was derived from the American National Standards Institute (ANSI) preferred number series 10.

DF = Design Factor, a maximum of 0.32 unless otherwise specified for a particular material in this section

(b) *General requirements for plastic pipe and components.*

(1) Except as provided in paragraphs (c) through (f) of this section, the design pressure for plastic pipe may not exceed a gauge pressure of 100 psig (689 kPa) for pipe used in:

(i) Distribution systems; or

(ii) Transmission lines in Class 3 and 4 locations.

(2) Plastic pipe may not be used where operating temperatures of the pipe will be:

(i) Below -20 °F (-29 °C), or below -40 °F (-40 °C) if all pipe and pipeline components whose operating temperature will be below -20 °F (-29 °C) have a temperature rating by the manufacturer consistent with that operating temperature; or

(ii) Above the temperature at which the HDB used in the design formula under this section is determined.

(3) Unless specified for a particular material in this section, the wall thickness of plastic pipe may not be less than 0.062 inches (1.57 millimeters).
(4) All plastic pipe must have a listed HDB in accordance with PPI TR-4/2012 (incorporated by reference, see § 192.7).

(c) *Polyethylene (PE) pipe requirements.*
(1) For PE pipe produced after July 14, 2004, but before January 22, 2019, a design pressure of up to 125 psig may be used, provided:
(i) The material designation code is PE2406 or PE3408.
(ii) The pipe has a nominal size (*Iron* Pipe Size (*IPS*) or Copper Tubing Size (*CTS*)) of 12 inches or less (above nominal pipe size of 12 inches, the design pressure is limited to 100 psig); and
(iii) The wall thickness is not less than 0.062 inches (1.57 millimeters).
(2) For PE pipe produced on or after January 22, 2019, a DF of 0.40 may be used in the design formula, provided:
(i) The design pressure does not exceed 125 psig;
(ii) The material designation code is PE2708 or PE4710;
(iii) The pipe has a nominal size (IPS or CTS) of 24 inches or less; and
(iv) The wall thickness for a given outside diameter is not less than that listed in table 1 to this paragraph (c)(2)(iv).

Table 1 to paragraph (c)(2)(iv)

PE Pipe: Minimum Wall Thickness and SDR Values		
Pipe Size (inches)	Minimum wall thickness (inches)	Corresponding SDR (values)
½" CTS	0.090	7
½" IPS	0.090	9.3
¾" CTS	0.090	9.7
¾" IPS	0.095	11
1" CTS	0.099	11
1" IPS	0.119	11
1 ¼" IPS	0.151	11
1 ½" IPS	0.173	11
2"	0.216	11
3"	0.259	13.5
4"	0.265	17
6"	0.315	21
8"	0.411	21
10"	0.512	21
12"	0.607	21
16"	0.762	21
18"	0.857	21
20"	0.952	21
22"	1.048	21
24"	1.143	21