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 (MAOP)	))))	**Case No. GE-2023-0096**

STAFF RECOMMENDATION

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

1. On September 12, 2022, 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.

2. On September 13, 2022, 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 October 13, 2022. Staff filed a status report on October 12, 2022, and indicated it would file its recommendation on RAES's Application no later than November 30, 2022.

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 Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new Maximum Allowable Operating Pressure (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 Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new 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. 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 Polyethylene (PE) pipeline above 100 psig.

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.

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/ Jamie S. Myers
Deputy Counsel
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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 30th day of November, 2022.

/s/ Jamie S. Myers

M E M O R A N D U M

TO: Missouri Public Service Commission Official Case File,
File No. GE-2023-0096, Roeslein Alternative Energy Services, LLC

FROM: Greg A. Williams, Associate Engineer, Safety Engineering Department
Nicholas D. O'Neal, Associate Engineer, Safety Engineering Department
Kathleen A. McNelis, P.E., Engineer Manager, Safety Engineering Department

/s/*Kathleen A. McNelis 11/30/2022* — Safety Engineering Department/ Date
/s/ *Jamie S. Myers 11/30/2022* — Staff Counsel Division / Date

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

DATE: November 30, 2022

Executive Summary

On September 12, 2022, Roeslein Alternative Energy Services, LLC (RAES) filed an Application for Waiver (Application) 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 of 100 psig[1]. RAES is requesting this 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 RAES Somerset Farm intrastate transmission pipeline is approximately 8.4 miles long and is located in a Class 1 location[2]. The gas that is transported is not required to be odorized pursuant to a Commission order granting RAES a waiver in Case No. GE-2020-0238. RAES states in paragraph 11 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.

[1] psig means pounds-force per square inch gauge.
[2] 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.

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;
- Performed a site visit to the RAES renewable gas processing facility at Somerset Farm;
- 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.

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-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 Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new 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 Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new 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 (HCAs)[3] and Moderate Consequence Areas (MCAs)[4] 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. 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.

1.0 Background Information

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 existing intrastate gas transmission pipeline from the Somerset Farm located in Mercer County, Missouri, to the existing interconnect with the ANR Pipeline, also located in Mercer County from

[3] High Consequence Area is defined in 49 CFR 192.903 (incorporated by reference in 20 CSR 4240-40.030(16)).
[4] Moderate Consequence Area is defined in 20 CSR 4240-40.030(1)(B).

the current 100 psig to 125 psig. The design pressure increase is necessary before a new 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 9 of its Application, RAES stated the reason the waiver is necessary is that:

> "RAES intends to construct a new pipeline from the Badger-Wolf farm, located south of the Somerset farm, to the Somerset farm and tie this new pipeline into the existing pipeline from the Somerset farm to the existing interconnect with the ANR Pipeline system located north of Mercer, Missouri. The combined flow from the Somerset farm and from the Badger Wolf farm, and from other future connections south and east of the Badger Wolf farm, will be greater than the capacity of the existing line if operated at 100 psig. Upgrading the MAOP 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 ROWS along the route."

RAES stated in paragraph 11 that gas flowing in 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.

In paragraph 14 of its Application, RAES proposed that the requested waiver be subject to the following conditions as a result of the requested maximum allowable operating pressure (MAOP) increase from 100 psig to 125 psig of its existing intrastate gas transmission pipeline from the Somerset Farm to the existing interconnect with the ANR Pipeline:

1. RAES may not serve any Missouri customers from this pipeline without prior Commission approval;
2. RAES will perform a pressure test of the pipeline to a pressure of 188 psig to establish the new MAOP of 125 psig;
3. RAES shall conduct leakage surveys 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;
4. RAES shall conduct a class location study of the RAES transmission pipeline annually, notifying Commission Staff of any class location changes within 30 days of discovery; and,

5. 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.

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[5], 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[6]. 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)[7] apply.

2.2 Requirements for Maximum Allowable Operating Pressure for Plastic Pipelines

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:

A. The design pressure of the weakest element in the segment, determined in accordance with sections (3) and (4).

B. The pressure obtained by dividing the highest pressure to which the segment was tested after construction or uprated as follows:

[5] As defined by 20 CSR 4240-40.030(1)(B)6., commission means the Missouri Public Service Commission.
[6] Rule in this context refers to 20 CSR 4240-40.030.
[7] Code requirement 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.

C. 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.

2.3 Requirements for the Design of Polyethylene (PE) Pipe

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.

3.0 Previous Commission Decisions

Staff found no prior case in which a pipeline operator requested a waiver from the Commission to operate a segment of plastic pipeline above 100 psig.

Staff notes that 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 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 RAES pipeline for which a waiver is requested in this current case is the same intrastate natural gas transmission pipeline from the Somerset Farm located in Mercer County, Missouri, to the existing interconnect with the ANR Pipeline with no connection to a distribution system.

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 to PHMSA on September 15, 2022. Staff and PHMSA agreed that in order to recommend in favor of granting the waiver, the Company would need to show that the pipe meets the requirements of 192.121(c).

5.0 Staff Analysis

5.1 Review of RAES Pipe Specifications for compliance with 49 CFR 192.121(c)

In response to a Staff data request, RAES provided information regarding the pipe production dates, material designation codes, pipe size, wall thickness and Standard Dimension Ratio (SDR)[8].

The pipeline segments were produced in October 2019, therefore the applicable requirements are in 49 CFR 192.121(c)(2), for pipe produced after January 22, 2019 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).

RAES responded to a Staff data request that the material designation code of the pipeline is PE4710, with a nominal pipe size of 6 inch IPS, minimum wall thickness of 0.602-inches and a SDR of 11. Referring to Appendix 1 on page 3, 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.

[8] 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.

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

In response to a Staff data request, RAES provided manufacturer's data indicating that the typical HDB for the pipe material PE4710 is 1,600 psi at a temperature of 73ºF.[9] Staff notes that as temperature increases, the HDB for the pipe decreases[10], 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.

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

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 literature[11] RAES provided also contained an HDB of 1,000 at a temperature of 140°F for PE4710 pipe material. If 1,000 is substituted in the equation above for S, the

[9] In response to Staff Data Request 0002, RAES provided a brochure from JM Eagle titled "High-Density Polyethylene Black Gas".
[10] The typical HDB value shown in the JM Eagle literature for PE 4710 pipe at 140ºF is 1,000.
[11] A brochure from JM Eagle titled "High-Density Polyethylene Black Gas".

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 to reduce the gas temperature to below 73°F prior to injection into the High Density Polyethylene (HDPE) pipe. Additionally, RAES explained that the Somerset Farm system has an existing slam-shut valve already installed that is actuated by the plant Programmable Logic Controller (PLC) based on inputs from the gas chromatograph, the H2S monitor and the moisture content monitor, to ensure gas quality for the gas introduced to the HDPE pipeline.

RAES stated in response to a Staff data request that it would be agreeable to installing instrumentation for continuous monitoring of the gas temperature prior to injection into the pipe, and automatic controls to stop the injection of gas into the pipe if the refrigeration unit fails or some other failure occurs that causes the gas temperature to increase above 73ºF.

Therefore in addition to the conditions RAES has proposed (discussed in Sections 1.0), Staff recommends that if the Commission grants the waiver, additional conditions be added as follows:

1. RAES shall install and utilize instrumentation to continuously monitor and record the temperature of all gas sources prior to introduction into the pipeline; and
2. RAES shall utilize automatic controls to limit 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 Somerset Farm to TP2, have been constructed with at least 48-inches of cover to 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 2021

at monitoring sites near Mercer County, Missouri. The closest NOAA monitoring site was located in Grundy County, Missouri (directly south and adjacent to Mercer County, Missouri). For calendar year 2021, a maximum soil temperature of 70°F occurred during the consecutive months of July, August, and September at a depth of 40-inches. Shallower soil depths are affected by changes in ambient temperatures more than are 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 Staff Observation of the Somerset Farm to TP2 Pipeline Route

On November 1, 2022, Staff met with RAES personnel to observe the existing monitoring and control equipment installed at the Somerset Farm, and the pipeline route. Staff observed that there were pipeline markers at each road and creek crossing.

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.

7.0 Staff's Recommendation and Proposed Conditions of Waiver

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-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 Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new 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 Somerset Farm to the existing interconnect with the ANR Pipeline to establish a new 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. 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.

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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 30th day of November, 2022.

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

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 (MAOP)	))))	**Case No. GE-2023-0096**

NICHOLAS D. O'NEAL

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW Nicholas D. O'Neal, 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.

Nicholas D. O'Neal

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 30th day of November, 2022.

Dianna L. Vaught
Notary Public

DIANNA L VAUGHT
Notary Public - Notary Seal
STATE OF MISSOURI
Cole County
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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 (MAOP)	))))	**Case No. GE-2023-0096**

KATHLEEN A. MCNELIS, PE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW Kathleen A. McNelis, PE, and on her oath states that she is of sound mind and lawful age; that she contributed to the foregoing *Staff Recommendation, in Memorandum form*; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Kathleen A. McNelis, PE

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 30th day of November, 2022.

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

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 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 12 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	0.119	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

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