ATTACHMENT E

AECom, Preliminary Environmental Justice Impact Assessment of the Spire STL Pipeline if Removed from Service (Nov. 10, 2021)

Spire STL Pipeline

PART 1: Preliminary Environmental Justice Impact Assessment of the Spire STL Pipeline if Removed from Service

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AECOM: Preliminary Environmental Justice Impact Assessment of Spire STL Pipeline

TABLE OF CONTENTS

1.0 Methodology 1

2.0 Summary of Part I Preliminary Results 3

3.0 PART II: Detailed Environmental Justice Assessment and Whitepaper Approach and Deliverables for STL Pipeline Removal from Service 9

3.1 Study Background and Methodology 9

3.2 Identification of EJ Populations 9

3.3 Ground Truth of EJ Populations 10

3.4 Assessment of Impacts to EJ Communities 10

3.5 Initial Spire Missouri and Spire STL Pipeline EJ Performance Assessment 11

3.6 Deliverables 12

4.0 References 13

LIST OF FIGURES

Figure 1. Preliminary Highly Burdened Environmental Justice Communities Around the Spire Pipeline in Illinois and Missouri, 1 Mile Radius Buffer 6

Figure 2. Preliminary Highly Burdened Environmental Justice Communities within the Greater St. Louis Region 7

LIST OF TABLES

Table 1. Race/Ethnicity and Income Demographics for Environmental Justice Communities within the Greater St. Louis and Sub-Region Area 8

Table 2. EJ Communities Located within the North of I-64 Sub-Region 8

LIST OF APPENDICES

Appendix A: Areas of Service Outages

AECOM: Preliminary Environmental Justice Impact Assessment of Spire STL Pipeline

Environmental justice ("EJ") refers to the fair treatment of all people, and with that, the fair distribution of environmental benefits and burdens (USEPA, 2021). The consideration of EJ in impact analyses highlights the importance of identifying and addressing disproportionate effects on minority and low-income populations. The Spire STL Pipeline ("STL Pipeline" or "Project") is providing an EJ analysis to support the Federal Energy Regulatory Commission's recently announced policy for applicants to consider the impacts of EJ from proposed federal actions. This analysis will be delivered in two parts: Part I provides a preliminary quantitative data analysis using traditional EJ analytical tools such as EJSCREEN and CalEnviroScreen; Part II will provide a more robust qualitative analysis leveraging the data from Part I, including other federal and local data, and community ground truthing to determine EJ and related socioeconomic direct and indirect impacts pertaining to removing STL Pipeline from service.

The following information provides results of Part 1 of the EJ analysis and scoring of the census block groups within Missouri related to the STL Pipeline and Spire Missouri's eastern Missouri service territory. The population analysis, stratified by race/ethnicity, income status and other relevant environmental justice factors for the Greater St. Louis region and northern St. Louis sub-region have been preliminarily identified and the findings are provided herein.

1.0 METHODOLOGY

Conducting an "EJ" analysis involves assessing the cumulative impacts of exposures combined emissions and discharges for areas across Missouri and Illinois, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released.[1] The identification of EJ communities is based on their proximity to these resources and their resulting impact on public health. With access to data at the census block group level, geographic (exposures), public health (sensitive population), and environmental hazards were gathered and reviewed. This preliminary evaluation identifies (or is intended to identify) EJ communities before determining the impact that the outages will have on EJ communities. To do so, it compiles critical communities and risk factors into a composite index score to support the first-order identification of EJ communities. The data used for this analysis was obtained from the United States Environmental Protection Agency's EJSCREEN. EJSCREEN is an EJ mapping and screening tool that provides a nationally consistent dataset and approach for combining environmental and demographic indicators.

EJSCREEN data for Missouri and Illinois were used to calculate an EJ score based on the methodology of CalEnviroScreen. CalEnviroScreen is a mapping tool that identifies California communities that are most affected by many sources of pollution and where people are often especially vulnerable to pollution's effects. The CalEnviroScreen methodology uses environmental, health, and socioeconomic information to produce EJ scores. The method comprises multiple components that quantify cumulative impacts. The method includes two components representing Pollution Burden—Exposures and Environmental Effects—and two

[1] Lee, C., 2020. A Game Change in the Making: Lessons from States Advancing Environmental Justice through Mapping and Cumulative Impact Strategies. Envtl. L. Rep., 50, p. 10203.

components representing Population Characteristics—Sensitive Populations (e.g., in terms of health status and age) and Socioeconomic Factors.

The method used 15 statewide indicators to characterize both Pollution Burden and Population Characteristics. Percentiles are used to assign scores for each of the indicators in a given geographic area. The percentile represents a relative score for the indicators. The aggregate method uses a scoring system in which the percentiles are averaged for the set indicators in each of the components. These components are then combined into a composite overall EJ score using the following formula.

		Pollution Burden		**Population Characteristics**
EJ Community	=	Average of Exposures and Environmental Effects	x	Average of Sensitive Populations and Socioeconomic Factors

The result composite score for each census block group provides a comparative metric that is then used for relative and ordinal ranking based on similar scoring of the state's other census block groups.

2.0 SUMMARY OF PART I PRELIMINARY RESULTS

The preliminary EJ assessment of all the Illinois and Missouri census block groups[2] determines a comparative scoring and ranking for each residential population. These scores and ranking provide a comprehensive, systematic, and relative characterization of each population's combined pollution exposure and its socioeconomic profile. The metrics were then used to identify and locate the census block groups determined to be among the top 5 percent (e.g., 95th percentile) of communities within each state (Missouri and Illinois) experiencing the highest pollution burden and vulnerability. The analysis also similarly identified and located the census block groups within the top 15 percent (85th percentile) and top quartile (75th percentile) groupings. All these groupings represent communities of concern warranting EJ consideration to ensure that these disadvantaged populations: (1) were not adversely and disproportionately impacted by the Project routing and construction; (2) would not be adversely and disproportionately impacted by the proposed actions on Remand, and/or (3) were engaged to ground truth the analysis.

Figure 1 shows the results of the preliminary EJ assessment. This initial analysis identified no census block groups within a mile of the pipeline in Illinois within the top quartile grouping for disadvantaged populations[3]. Further analysis focused on the EJ communities in Missouri where communities of concern were identified within the service area, and potential area of impact due to service outage.

Figure 2 shows a high concentration of EJ communities of concern within Spire Missouri's eastern Missouri service territory. Appendix A shows the currently projected potential areas where peak-day outages may occur because of the proposed actions on Remand (both with and without its Lange underground storage facility in operation) in the event of prolonged periods of cold weather.

Under the scenario with the Lange storage facility operational, in the event of prolonged periods of cold weather natural gas shortages would affect an estimated 175,000 homes and businesses in eastern Missouri. These service outages (e.g., the areas shaded in yellow in the attached Appendix A) would be located mostly within western St. Charles County (east of Wentzville and Weldon Springs) and southern St. Louis County area. Visual cross-comparison of Figure 1 and Appendix A suggests that there could be only a small number of EJ communities of concern that would be impacted by the service outages.

However, if the Lange underground storage facility is depleted, in the event of prolonged periods of cold weather the service outages would increase to affect an estimated 400,000 homes and businesses and extend across nearly all communities north of I-64 within St. Louis County and St. Louis City (e.g., the areas shaded in red in the attached Appendix A). This area has a very large

[2] Analysis was performed using data from U.S. Environmental Protection Agency's EJSCREEN application which combines environmental and demographic indicators to perform environmental justice mapping and screening. EJSCREEN provides downloadable datasets at the Census Block Group level which include the summarized environmental and demographic indicators for their screening methodology.

[3] Preliminary analysis applied the same study area that was used in the socioeconomic analysis performed in 2017 for the FERC application – 1-mile radius buffer for the 24-inch pipeline and a 0.25-mile radius buffer for the Line 880.

number of highly burdened EJ communities and residents. There would also be outages for the communities and businesses located in Eastern St. Charles County.

The initial EJ analysis has focused on identifying the highly burdened EJ communities and populations located within the sub-region largely corresponding to the projected service outage areas that would occur if the Lange underground storage facility is depleted and not operational. Most specifically, the sub-region of census block groups located north of I-64 within St. Louis County and the City of St. Louis have been analyzed to identify the highly burdened EJ communities. Further, this data was used to estimate the number of persons of color and those living below the poverty threshold in the respective communities and elsewhere within the sub-region. County-level analysis was also performed to provide additional information on the regional context.

Table 1 shows the racial/ethnicities and low-income populations located within St. Louis County, St. Louis City, and their northern sub-region above I-64. The preliminary EJ analysis evaluated over 1,050 census block groups within the Greater St. Louis region. Overall, the region has more than half a million residents that are non-white and over 376,000 residents have income that are at or below the poverty threshold. The data show that 56.8 percent of the population in the City of St. Louis are non-white people of color and the proportion of low-income residents is 45.3 percent. Approximately a third (33.5 percent) of St. Louis County residents are people of color and nearly a quarter (23.6 percent) are low-income individuals.

Tables 1 and 2 show the unbalanced proportion of people of color and persons with income levels that are at or below the poverty threshold within the North of I-64 Sub-Region. More than 80 percent of the St. Louis City residents within the sub-region are people of color and more than half (54 percent) are low-income individuals. There are also more than 275,000 people of color living in the St Louis County portion of the sub-region and these residents account for more 82.3 percent of the people of color living in the entire County.

As shown in Table 2, 409 census block groups are identified as highly burdened EJ communities of concern with estimated EJ score in the top quartile for the State of Missouri. There are an estimated 457,000 residents living in these communities of concern. Given their location within the North of I-64 Sub-Region it is likely that nearly all of these residents would face service outages during the peak day scenario if the Lange storage facility is depleted.

Nearly 280 of these communities are amongst the top 15th percentile of most environmentally burdened EJ communities within Missouri. These communities include nearly 148,000 persons with income that is at or below the poverty threshold and constitute a total of 210,000 people of color. There are approximately 59,000 residents living in the 59 communities of concern with the highest EJ scorings (95th percentile). The number and proportion of people of color in these communities is very unbalanced trending toward a near majority non-white persons (48,643 individuals and 82.8 percent). The data show that two-thirds (66.6 percent) of the residents in the communities that are in the top 5% (95th percentile) of all communities that are showing to be highly burdened EJ communities have 39,100 residents with income at or below the poverty threshold.

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There are many environmental justice communities within the Spire Missouri service territory that could experience adverse direct and indirect impacts if Spire STL were removed from service—both temporarily and permanently. A central purpose of the forthcoming analysis will be to further examine and substantiate the magnitude and nature of these anticipated adverse impact. As discussed below, forthcoming analysis will evaluate, and where possible, quantify the location, type, and magnitude of impacts that the Remand actions might be expected to have on the EJ communities and populations living and working within the affected Spire Missouri service area.

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Figure 1. Preliminary Highly Burdened Environmental Justice Communities Around the Spire Pipeline in Illinois and Missouri, 1 Mile Radius Buffer

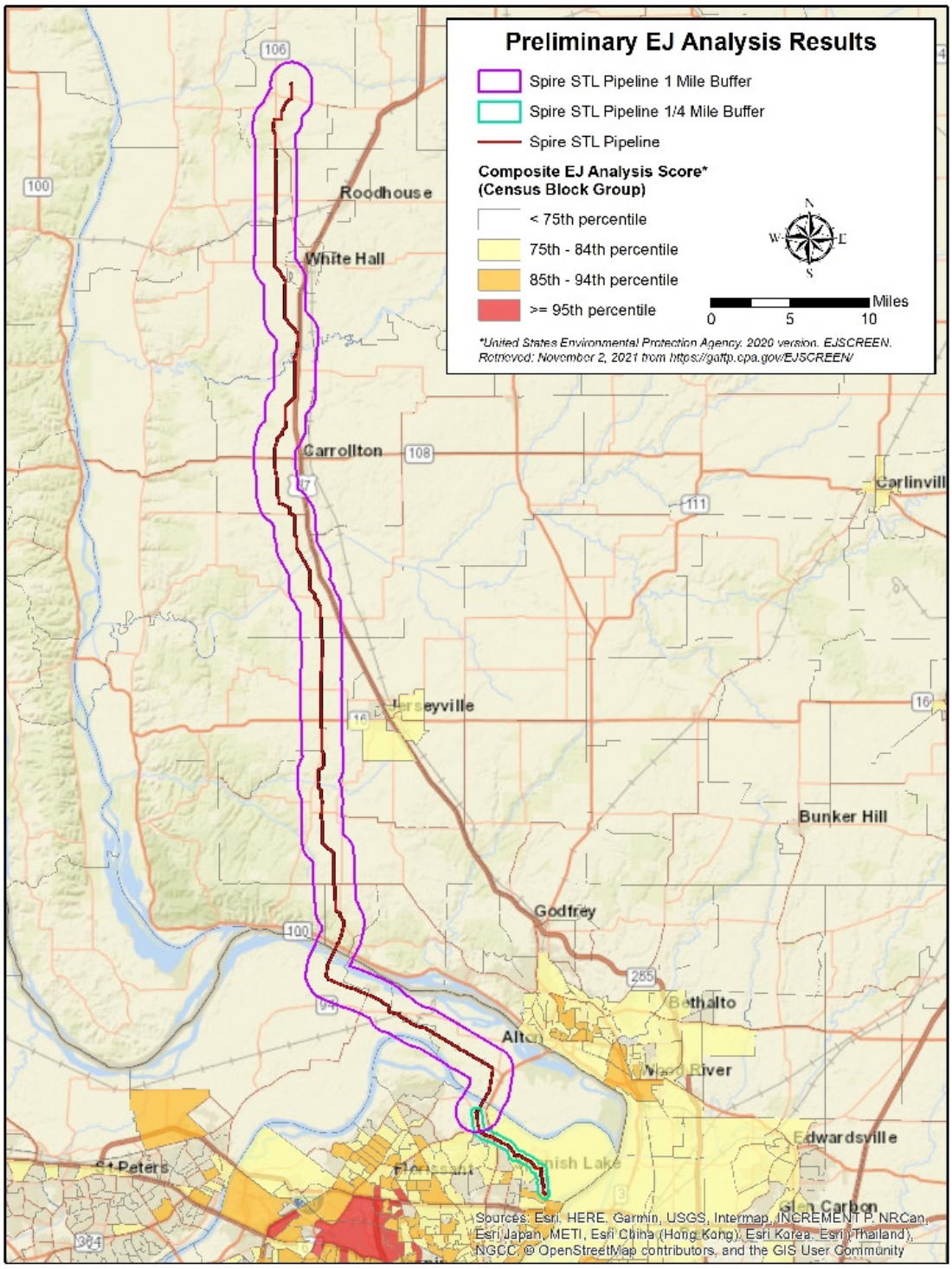

Figure 2. Preliminary Highly Burdened Environmental Justice Communities within the Greater St. Louis Region

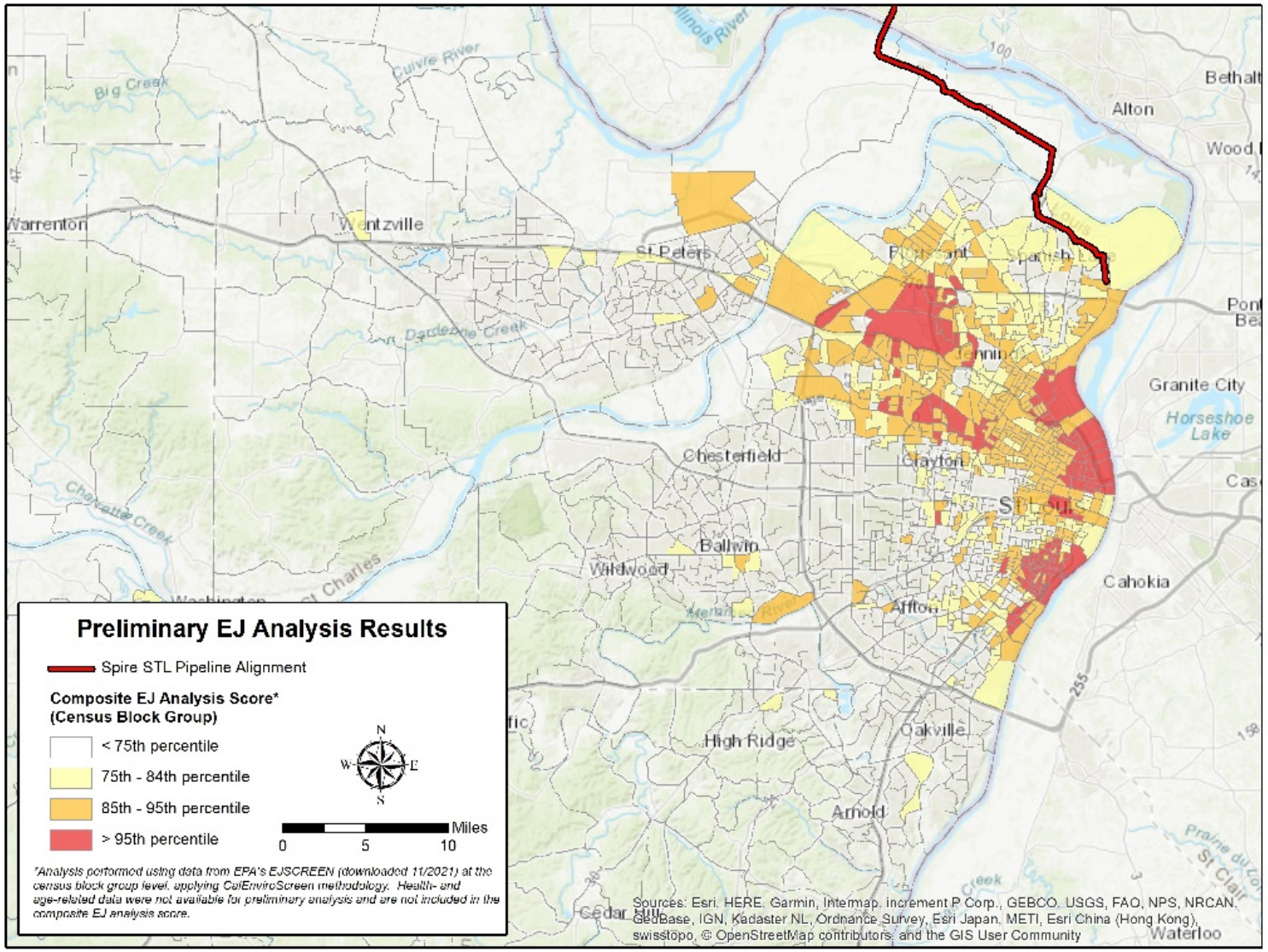

Table 1. Race/Ethnicity and Income Demographics for Environmental Justice Communities within the Greater St. Louis and Sub-Region Area

Location	Census Block Groups	Total Population	People of Color (a)		<=At or Below the Poverty Threshold /Low Income (b)	
			Population	%	Population	%
All County and City						
St. Louis City	360	311,273	176,656	56.8%	140,953	45.3%
St. Louis County	692	998,684	335,020	33.5%	235,250	23.6%
Total	**1,052**	**1,309,957**	**511,676**	**39.1%**	**376,203**	**28.7%**
North of I-64 Sub-Region						
St. Louis City	159	127,689	102,689	80.4%	68,960	54.0%
St. Louis County	379	498,978	275,808	55.3%	161,812	32.4%
Total	**538**	**626,667**	**378,497**	**60.4%**	**230,772**	**36.8%**

Source: United States Environmental Protection Agency. 2020 version. EJSCREEN. Retrieved November 2, 2021, from https://gaftp.epa.gov/EJSCREEN/

Notes:

(a) Population of "non-Hispanic white-alone" individuals (U.S. Environmental Protection Agency (EPA), 2019. EJSCREEN Technical Documentation)

(b) Low-income individuals are residents with incomes at or below 200% of the federal poverty level (U.S. EPA, 2019. EJSCREEN Technical Documentation)

Table 2. EJ Communities Located within the North of I-64 Sub-Region

Location	EJ Scoring		
	> 75%	> 85%	> 95%
EJ Communities (census block groups)	409	279	59
Population	456,948	284,444	58,757
People of Color (a)	317,321	210,183	48,643
<= Poverty Threshold/Low Income (b)	204,666	147,411	39,132

Source: EPA EJSCREEN 2021

Notes:

(a) Population of "non-Hispanic white-alone" individuals (U.S. EPA, 2019. EJSCREEN Technical Documentation)

(b) Low-income individuals are residents with incomes at or below 200% of the federal poverty level (U.S. EPA, 2019. EJSCREEN Technical Documentation)

3.0 PART II: DETAILED ENVIRONMENTAL JUSTICE ASSESSMENT AND WHITEPAPER APPROACH AND DELIVERABLES FOR STL PIPELINE REMOVAL FROM SERVICE

The following provides an outline of the detailed analysis, approach, and deliverables that will be completed for an Environmental Justice Whitepaper regarding the STL Pipeline and the service area for which STL Pipeline provides natural gas supplies. The analysis will focus on Environmental Justice (EJ) and related socioeconomic concerns pertaining to both temporary and potential permanent removal of STL Pipeline from service and alternatives to replace the energy transported on the STL Pipeline to the St. Louis region.

All analyses will be performed in accordance with published and applicable federal guidance. In the absence of existing guidance, well-established and broadly accepted methodologies and the best available data will be used for the analyses. In all cases, key sources and assumptions will be documented so the analyses are substantiated and defensible.

3.1 Study Background and Methodology

A summary of current FERC, Federal (EPA and CEQ), State and/or local EJ guidance and policies applicable to the Project will be provided. The scope and approach for the EJ analysis will be defined based on information gathered on guidance and polices for EJ community identification in the communities of concern. The key data sources, assumptions and any relevant limitations of the analysis will also be identified.

3.2 Identification of EJ Populations

A detailed identification and characterization of the direct and indirect impacts on EJ communities of concern located within both: (1) the STL Pipeline route; and (2) the Spire Missouri eastern Missouri service territory that depends on STL Pipeline natural gas deliveries. The method for EJ population identification will take into consideration EPA's response to the Notice of Inquiry ("NOI") and will use additional tools and resources as necessary to supplement EJSCREEN data with U.S. Centers for Disease Control and Prevention's Social Vulnerability Index (health data) and Federal Emergency Management Agency's National Risk Index (climate and natural hazard risk).

Census tract or census block group level analyses applying indicators of community vulnerability and other environmental exposures will be performed to identify and quantify the highly burdened EJ communities within the vicinity of the STL Pipeline route and those EJ communities in the 11 counties including St. Louis and surrounding areas that rely on the STL Pipeline deliveries for their energy needs. Maps showing the location of the identified EJ communities of concern will be provided. Table summaries showing the quantity and percentages of the people of color and low-income residents within the identified EJ communities of concern will also be provided.

Where possible additional relevant characteristics of a disadvantaged community will be included in accordance with the OMB Guidance on Justice40[4]. Additional characteristics identified by the OMB Guidance that will be evaluated will include: low income, high and/or persistent poverty; high unemployment and underemployment; racial and ethnic residential segregation – particularly where the segregation stems from discrimination by government entities; linguistic isolation; high housing cost burden and substandard housing; distressed neighborhoods; high transportation cost burden and/or low transportation access; disproportionate environmental stressor burden and high cumulative impacts; limited water and sanitation access and affordability; disproportionate impacts from climate change; high energy cost burden and low energy access; jobs lost through the energy transition; and access to healthcare.

3.3 Ground Truth of EJ Populations

A series of walkthroughs of the communities identified to ground truth[5] their designation of a highly burdened EJ community will be completed. The ground truth exercise will include conversations with community stakeholders in the respective communities. This effort is intended to identify communities that may have undergone major social and/or economic transformation during the last ten years since the 2010 census was performed which might no longer be appropriately considered highly burdened EJ communities for the purpose of this analysis.

3.4 Assessment of Impacts to EJ Communities

Scenario assumptions and projections for the potential STL Pipeline closure will be identified.

The principle expected potential service impacts will be described along with their corresponding risk of occurrence. A primary focus of this assessment will be an assessment of the projected service impacts to all populations and stratified by EJ population classification within the Spire Missouri Eastern service area.

The assessment will evaluate and, when possible, quantify projected reductions in future natural gas deliveries, duration of any forecast outages, the expected resulting effects on the user, and the impact if there is a need to remove and/or relocate new pipeline facilities to replace the STL Pipeline if it is deauthorized/decommissioned. The user impact for characterization and evaluation may include: rate cost increases, health/safety effects, access/availability of substitute energy options, property damage risks, or affected household's response/relocation expenses. The analysis will also evaluate long-term EJ impacts resulting from construction and operation of alternatives to replace the energy.

The environmental justice analysis will analysis both the potential cumulative direct and indirect project-related impacts that might occur under the proposed actions on Remand. Potential direct impacts would be related to the service outages and their immediate physical effects on the households and businesses incurring reduced or lost energy supplies. Examples of such direct

[4] Office of Management and Budget (OMD). 2021. Memorandum for the Heads of Departments and Agencies: Interim Implementation Guidance for the Justice40 Initiative. 20 July 2021. Washington, DC.
[5] The term "ground truth" entails verifying whether information indicated in regulatory databases is active, accurately described, and actually present at the reported location (Sadd et al., 2015).

impacts would include but may not be limited to: loss of amenity use (e.g. interior heating, hot water supply, cooking and/or other business/industrial/public services operations dependent on natural gas); substitute equipment and/or energy consumption costs; human health and safety resulting from the energy shortages; and business/industrial or public service interruptions.

Indirect impacts represent secondary effects that might be expected to result from project-related direct impacts and response actions. These could include but may not be limited to: socioeconomic effects from employment losses; resident relocation; emergency response costs; property damages; electrical system and/or rate impacts resulting from increased system demand; and air quality or other impacts associated with the response or substitute actions (pressurized natural gas injection).

The extent that individual impacts can be characterized and quantified will depend on supporting data availability and/or the nature of the impact itself. The following provides a preliminary framework/outline of the potential STL Pipeline closure issues and factors that may be analyzed for their effects and outcomes on EJ communities within Spire Missouri's service area:

- Current EJ household average energy dependency and usage
- Projected service reductions (quantities, location, and duration)
- Energy shortage response costs

The analysis will also evaluate broader economic consequences that might result from the potential STL Pipeline closure such as:

- Business/industry disruption and related employment/income losses
- Electrical grid effects – local/regional system capacity and costs to meet increased energy demand

3.5 Initial Spire Missouri and Spire STL Pipeline EJ Performance Assessment

The performance assessment will consider and may incorporate existing EJ performance frameworks, approaches, and/or metrics for use in an initial assessment of the Spire Inc.'s business and operations. This assessment will likely be predominately qualitative; however, relevant quantified metrics will be provided where possible. This initial assessment will provide a relatively high-level overview and characterization. More detailed evaluation may be performed for inclusion and consideration during FERC's subsequent regulatory decision-making.

The current business and operations practices and procedures relevant to EJ households dependent on Spire Missouri's energy deliveries and those located within the vicinity of the STL Pipeline facilities will be summarized. This assessment will characterize Spire Missouri's current EJ assistance programs (LIHEAP and "Dollars for Help"). Past and current company efforts to meaningfully engage with EJ communities and its performance in meeting EJ obligations will also be identified and evaluated.

3.6 Deliverables

- Key applicable EJ policies and guidance that apply to the service area.
- EJ analysis scope and approach with key data sources, assumptions, and limitations.
- Maps and tables identifying the location of and key demographics for EJ communities of concern.
- Characterization of current energy dependency and use of EJ households.
- Impact assessment of the energy shutoff focused on EJ communities of concern.
- Performance assessment of Spire Inc.'s current business and operations related to its EJ household customers.
- List of outreaches performed and gained during the outreach to ground truth the identification of EJ communities.

4.0 References

Lee, C. (2021). A Game Changer in the Making? Lessons from States Advancing Environmental Justice through Mapping and Cumulative Impact Strategies. *Environmental Law Reporter, 50*, 10203-10215. Retrieved from https://www.eli.org/sites/default/files/docs/50.10203.pdf

OMB. (2021). *Memorandum for the Heads of Departments and Agencies: Interim Implementation Guidance for the Justice40 Initiative.* Washington, D.C. Retrieved from https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf

Sadd, J. L., Hall, E. S., Pastor, M., Morello-Frosch, R. A., Lowe-Liang, D., Hayes, J., & Swanson, C. (2015). Ground-Truthing Validation to Assess the Effect of Facility Locational Error on Cumulative Impacts Screening Tools. *Geography Journal, 2015*, 1-8. doi:10.1155/2015/324683

U.S. EPA. (2019). *EJSCREEN Technical Documentation.* Retrieved from https://www.epa.gov/sites/default/files/2021-04/documents/ejscreen_technical_document.pdf

U.S. EPA. (2021). *Index of EJSCREEN 2020*. Retrieved November 2, 2021, from https://gaftp.epa.gov/EJSCREEN/2020/

USEPA. (2021). *Learn About Environmental Justice*. Retrieved from US Environmental Protection Agency: https://www.epa.gov/environmentaljustice/learn-about-environmental-justice

Appendix A: Areas of Service Outages

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