APPENDIX A -- SOCIOECONOMIC REPORT FOR THE SODIUM TEST AND FILL FACILITY

May 2024

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ACRONYMS AND ABBREVIATIONS

Acronyms	Definition
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
NAICS	North American Industrial Classification System
RV	recreational vehicle
SFP	School Foundation Program
TerraPower	TerraPower, LLC
TFF	Sodium Test and Fill Facility
USCB	U.S. Census Bureau
WDOR	Wyoming Department of Revenue
WEAD	Wyoming Economic Analysis Division's

1.0 INTRODUCTION

This socioeconomic report is prepared in support of the proposed Sodium Test and Fill Facility (TFF) in Lincoln County, Wyoming. The focus of this report is to assess the potential socioeconomic impacts of the TFF on the local municipalities and associated counties.

The TFF site is located 5 to 10 miles south of the city of Kemmerer and town of Diamondville. Industrial facilities near the TFF site include the PacifiCorp Naughton Power Plant (Naughton Plant) and the Kemmerer Operations coal mine. To predict the residential distribution of the in-migrating TFF workforce, TerraPower, LLC (TerraPower) used the residential distribution of the employees of the Naughton Plant. Most Naughton Plant employees (88 percent) live in Lincoln or Uinta Counties. The largest cities in each of these counties are Kemmerer/Diamondville (Lincoln County) and Evanston (Uinta County). Note: the northern part of Lincoln County is beyond daily commuting distance to the TFF site and not included in the Study Area. Figure 1 illustrates regional commute times from various municipalities in the Study Area to the TFF site. Only Lincoln County municipalities within a 75-minute commute are included in this analysis. The municipalities in the southern part of Lincoln and all of Uinta County form the area of impact (hereafter known as the Study Area) for this project.

Throughout this socioeconomics analysis, data are presented for the most current year available. Depending on the source of the data, the most current year may vary. ~~The United States continues to recover from the Covid-19 virus pandemic and consequent economic disruptions (e.g., large decreases and increases in employment, high inflation, etc.).~~ The most current data used in these analyses may reflect the economic disruptions and data collection complications caused by the Covid-19 pandemic. Where appropriate, 2019 data are included in the analysis to provide a pre-Covid baseline, against which, 2020 through 2023 data can be compared.

Most population and housing-related data are from the U.S. Census Bureau (USCB). As of early 2023, the USCB has only released Redistricting Data (PL 94-171) from the 2020 Decennial Census. Redistricting Data files contain high-level population, race, and housing counts, only. In this analysis, 2020 Decennial Census data are used, as available. In their absence, the most current 5-year data from the USCB's American Community Survey are used. Data from the USCB's Population Estimates Program (which is based on the 2020 Decennial Census) are the source for 2021 population estimates.

2.0 CURRENT SOCIOECONOMIC ENVIRONMENT

2.1 Population

In general, Wyoming is a state with geographically large counties and sparse population. Table 1 presents USCB Decennial Census trend data for the Study Area. Table 2 presents the Wyoming Economic Analysis Division's (WEAD) most current population forecasts for the Study Area (which are based on Decennial Census 2010 data).

Based on USCB data, from 2010 to 2020, the populations of Lincoln and Uinta Counties had average annual growth rates of 0.8 percent and -0.3 percent, respectively. Lincoln County's municipalities experienced average annual growth rates ranging from -0.6 percent in Cokeville to -4.05 percent in Opal, for the same period. Uinta County's municipalities experienced average annual growth rates ranging from

0.09 percent in Lyman to -0.5 percent in Evanston, for the same period. The Study Area experienced an average annual growth rate of -0.5 percent. For the purposes of this report, the trends experienced by each county and community are expected to continue regardless of whether or not the proposed TFF is built.

The WEAD forecasts growth rates for the state's counties and municipalities. From 2020 to 2030, Lincoln County and its municipalities are projected to experience average annual growth rates of 0.9 percent. In Uinta County and its municipalities, average annual growth rates are projected to decline by -0.3 percent. From 2030 to 2040, WEAD forecasts show average annual growth rates of 0.4 percent for Lincoln County and its municipalities and 0.04 percent for Uinta County and its municipalities. The Study Area population shows a change in average annual growth rates over the 3 decades (2010-2040) from -0.2 percent, in the first decade, to 0.1 percent, by the third decade. For the same periods, the state of Wyoming population is predicted to grow~~grew~~ at an average annual rate~~s~~ of 0.3 percent. Note: WEAD forecasts are based on the 2010 decennial census. At the time the forecasts were calculated, 2020 decennial census results were not available.

2.2 Economy

The Study Area's principal economic centers include: Kemmerer and Diamondville (Lincoln County) and Evanston (Uinta County). The city of Kemmerer and town of Diamondville are adjacent to one another and are commonly considered one economic unit. Evanston is the largest city within the Study Area.

The southern part of Lincoln County, the part within daily commuting distance of the TFF site, is dominated by open plains, grazing and rangelands, and the industrial facilities of the Kemmerer/Diamondville area. The county's economy has dependence on the energy industry: coal, oil, and natural gas mining and production (ZBPF 2012). County residents dub the Kemmerer/Diamondville area "the county's economic engine" (ZBPF 2012).

Uinta County, located south of Lincoln County, is a 90-minute drive from Salt Lake City and has economic linkages to the city. Evanston, the county's largest city, is adjacent to the I-80 corridor, which travels from Salt Lake City to eastern Wyoming and beyond.

Table 3 presents labor force and unemployment trends in the Study Area, as calculated by the Bureau of Labor Statistics (BLS). In 2021, the Study Area labor force totaled 18,346 persons, representing about 6.3 percent of the total Wyoming labor force. Between 2011 and 2021, the Study Area labor force decreased at an average annual rate of -0.2 percent, while the state's labor force decreased at an average annual rate of -0.4 percent. The Study Area labor force is roughly split between Lincoln and Uinta Counties. In 2021, 803 persons in the Study Area were unemployed, reflecting an average annual decline of -5.3 percent from 2011, when unemployment reached 1,381. The 2021 annual unemployment rate in the Study Area was 4.4 percent. The 2021 unemployment rates in Lincoln County, Uinta County, and Wyoming were 3.8 percent, 5.0 percent, and 4.5 percent, respectively.

The Bureau of Economic Analysis (BEA) reports employment data by industry (as defined by the North American Industrial Classification System [NAICS]). Table 4 presents regional and state employment, by industry, for 2019 and 2020. In 2020, local government provided 14.4 percent of jobs in the Study Area, while retail trade provided 11.5 percent. Construction and healthcare/social assistance provided approximately 10.7 and 8.2 percent of jobs, respectively.

At the state level, local government, retail trade, accommodation/food services, and healthcare/social assistance were the largest providers of jobs, at 11.6 percent, 9.6 percent, 8.2 percent, and 7.9 percent, respectively. Real estate/rental/leasing and construction were also important industries.

Notably, wage and salary employment (jobs) in Uinta County and the state of Wyoming declined, from 2019-2020. This is attributed, in part, to the socioeconomic effects of the Covid-19 pandemic. Only Lincoln County remained relatively unchanged, increasing by just nine jobs.

In its Quarterly Census of Employment and Wages, the BLS collects employment and wage data by NAICS industrial sector. Table 5 presents NAICS Sector 237 Heavy and Civil Engineering Construction data and NAICS Sector 1013 Manufacturing data, for 2021, for Lincoln and Uinta Counties, Wyoming, and the U.S. As the table shows, annual average wages, in Heavy and Civil Engineering Construction, were $59,998 in Lincoln County and $63,352 in Uinta County, compared to $72,502 in Wyoming and $83,590 in the U.S. Annual average wages, in Manufacturing, were $42,214 in Lincoln County and $48,966 in Uinta County, compared to $69,585 in Wyoming and $76,580 in the U.S.

Wyoming is a "right-to-work" state; workers are not required to join labor unions as a condition of employment. In 2021, approximately 5.7 percent of the Wyoming workforce was unionized (BLS 2022c). Nationally, the greatest concentration of unionized workers is in the governmental (public) sector (BLS 2022c).

Personal income provides a useful means for comparing worker wages in an industry to a county's total personal income. In 2021, Lincoln and Uinta Counties' total annual personal incomes were $1,248,380,000 and $911,174,000, respectively (BEA 2022).

2.3 Housing

Housing data are divided into two major categories, permanent housing (housing for permanent residents) and temporary housing (housing for transient workers/visitors).

2.3.1 Permanent Housing

In the Study Area, residential areas are found in cities, towns, and smaller communities. Housing is concentrated in the largest municipalities of each county: Kemmerer/Diamondville (Lincoln County) and Evanston (Uinta County).

Counties

Table 7 presents the number of housing units and housing unit vacancies in the counties in the Study Area, in 2020. Of the 18,628 total units in the Study Area, 18.7 percent were vacant (3,491 units). Vacancy rates for homeowners were 1.3 percent in Uinta County and 2.8 percent in Lincoln County. Vacancy rates among rental units were substantially higher, at 5.6 percent in Lincoln County and 6.6 percent in Uinta County.

Municipalities

Table 8 presents the number of housing units and housing unit vacancies for the largest municipalities in the Study Area, in 2020. Kemmerer/Diamondville had 1,890 units, of which 283 were vacant (15.0 percent). Evanston had 5,402 units, of which, 775 were vacant (14.3 percent). Vacancy rates for

homeowners ranged from 1.2 percent in Diamondville to 3.0 percent in Kemmerer. Vacancy rates among rental units ranged from 0.0 percent in Diamondville to 6.6 percent in Evanston.

Table 9 presents more detail about vacant housing units in the Study Area counties and largest municipalities in Lincoln County, in 2020.

2.3.2 Temporary Housing

Hotels and Motels

In 2022, there were 313 hotel or motel rooms in the Study Area municipalities in Lincoln County and 1,036 hotel or motel rooms in Uinta County (STR 2023a). Averaged over 9 years, monthly hotel/motel occupancy rates for the region ranged from 31.7 percent in the month of December to 67.3 percent in in the month of July (STR 2023b). For both counties, there is a gradual increase in occupancy rate, from the winter months to the summer months. During the month of July, when the hotel/motel occupancy rate is highest (67.3 percent), the corresponding vacancy rate of 32.7 percent indicates that 441 rooms would potentially be available for the project workforce.

Recreational Vehicle Parks and Campgrounds

There are recreational vehicle (RV) parks or campgrounds, with full hookups (water, sewer, and electricity) for private recreational vehicles, in the Study Area. There are, at least, 210 RV/tent sites in Lincoln County and 199 RV/tent sites in Uinta County (Gunter 2022, Wright 2022, Braband 2022, Julian 2022, BLM Undated a, Recreation.gov 2022a, BLM Undated b, Recreation.gov 2022b, and RV Life 2022). Applying the vacancy rate occurring during the month with the highest occupancy rate during the year (July, at 32.7 percent) to the number of RV/tent sites in Lincoln and Uinta County (409) indicates that 133 sites would potentially be available for the project workforce.

2.3.3 New Housing

In addition to the existing housing stock in the Study Area, Kemmerer city officials are reviewing, for approval, the construction of a significant number of new permanent and temporary housing units. At a minimum, new housing units are likely to number in the hundreds. For one new housing development, city officials have been in the process of rezoning roughly 80 to 100 acres of agricultural land to single- and multi-family residential. This change could result in the construction of more than 400 permanent and temporary housing units (City of Kemmerer 2022). Some portion of the new units may be available for the TFF workforces.

2.4 Local Taxes

In Wyoming, local governments receive tax revenues from, both, state and local taxation. Most state revenue distributed to local governments is generated by sales and use taxes, federal mineral royalties, severance taxes, fuel taxes, and lodging taxes. Most local government revenue is generated by sales and use taxes and property taxes (WLSO 2021). Property taxes are the primary source of revenue for most counties' general funds, school districts, and special districts (e.g., hospital districts, irrigation districts, community college districts), while sales and use taxes are the primary source of revenue for most municipal governments (WLSO 2021). (Most lodging taxes are used to promote tourism throughout the state and are not examined in this analysis (WTA 2021)).

Tables 10 and 11 present FY 2021 government revenues for Lincoln County and the city of Kemmerer. In Lincoln County, property taxes are the largest source of revenues, at $7,271,821, or 26.6 percent of total revenues. In Kemmerer, sales and use taxes are, by far, the largest source of revenues, at $1,689,508, or 42 percent of total revenues.

Several tax revenue categories would be affected by the construction and operation of the TFF project. Among those are sales and use taxes on construction- and operations-related purchases and personal purchases made by project-related workers; real property taxes related to the construction and operation of the facility; and real property taxes paid by in-migrating project-related workers. The following subsections describe the primary tax categories impacted by the project and their applications in the state of Wyoming; Lincoln and Uinta Counties; and the city of Kemmerer.

2.4.1 Corporate and Individual Income Taxes

There are no individual or corporate income taxes in Wyoming (W.S. 39-12-101).

2.4.2 Sales and Use Taxes

Wyoming imposes a 4 percent, statewide, sales and use tax, of which, 69 percent is directed to the state general fund and the remainder is distributed to the county of origin (WLSO 2021). The distribution between each county and its municipalities is determined using a population-based formula (WEAD 2021). Sales and use taxes are collected by vendors and remitted to the Wyoming Department of Revenue (WDOR) (WTA 2021).

Counties can levy a maximum of 2 percent in sales and use tax for general purposes and a maximum of 2 percent for specific purposes, but the local tax rate cannot exceed 3 percent (W.S. 39-15-204). Optional general purpose tax revenue, less administrative costs, is returned to the county of origin and distributed between the county and its municipalities using the same population-based formula (WEAD 2021).

Both Lincoln and Uinta County and their municipalities collect a general-purpose county tax of 1 percent, in addition to the state's 4 percent sales and use tax. There are no municipalities in the Study Area that impose their own sales or use tax. (WDOR 2022a)

Table 12 presents sales and use tax collections for the two counties and the state, fiscal years 2011 through 2021. The following trends are noted for sales and use tax revenues. Lincoln County sales and use tax revenues grew at an average annual rate of 2 percent per year, from 2011 to 2021, while Wyoming's sales/use tax revenues grew at an average annual rate of 1.4 percent, for the same period. Uinta County revenues also increased, albeit, at a slower rate (0.7 percent average annual increase).

2.4.3 Property Taxes

Property taxing jurisdictions include the state, counties, cities, schools, and special districts (WTA 2021). Each jurisdiction establishes a budget that informs its mill levy for the year. Levies are imposed, as defined by Wyoming statutes. Taxes are distributed, based on the assessed valuation of the property within the geographical boundary of each taxing jurisdiction (WTA 2021).

County tax assessors assess the value of most property, but the WDOR assesses the values of mines, rail car companies, public utilities, pipelines, and tele communications companies. County treasurers collect the taxes and distribute collections to the taxing jurisdictions (WTA 2021).

Real and personal property are assessed using fair market value, less exemptions and exclusions. Fair market value is determined by using one or more of the three following appraisal methods: sales comparison or market; cost (replacement, reproduction, or historical); and income capitalization (WDOR 2016). Current assessment ratios, based on property type, are as follows: minerals and mine products – 100 percent; industrial property, real and personal – 11.5 percent; all other property (including agricultural), real and personal – 9.5 percent (WTA 2021).

Wyoming no longer levies property taxes for state operations. Wyoming does, however, levy a property tax to fund the state's School Foundation Program (SFP), one of the state's two education equalization programs. For the SFP, the state can collect a total of 12 mills[1], based on the assessed value of all property in the state. The amount of funding each school district receives from the SFP is a function of the school finance system's funding model as well as the characteristics of the district's schools, staff, and students (WLSO 2021). In FY 2021, over $235 million in revenues were levied for this program (WDOR 2022b).

County governments can assess up to 12 mills on the taxable value of property in the county (WLSO 2021). Cities and towns are limited to 8 mills on the property located within municipal limits. For schools, the county can collect a total of 6 mills on property in the county. A school district must levy 25 mills on the property within the district (WLSO 2021). The largest single source of revenue for K-12 education is local property taxes (WSLO 2021). Special district levy maximums depend on the type of special district[2].

Table 13 presents tax levy data for Lincoln and Uinta Counties, tax years 2011 and 2019 through 2021. In Lincoln County, average mill levies increased, while total revenues decreased over the 10-year period. In Uinta County, both, average mill levies and total revenues, decreased over the 10-year period.

Table 14 presents school district revenues and sources for the 2019-2020 and 2020-2021 school years for Lincoln County School District 1, the district hosting the TFF and most of the project workforce children, as its boundaries encompass most of Kemmerer and Diamondville. Local property tax revenues represent the largest source of operating revenue funding for this school district.

TerraPower has acquired about 35 acres of land for construction of the TFF (parcel # 20161910002800). The TFF site area was formerly part of a larger parcel (# 20160210001700) owned by PacifiCorp. In 2021, the assessment ratio for the PacifiCorp parcel was 9.5 percent. The total mill levy was 65.13 mills, representing eight taxing jurisdictions.

- Lincoln County School #1: 46.40

1 Mill means $1 of taxes for every $1,000 of assessed value. A mill is applied to the assessed value of property to determine the tax due.

2 Pursuant to W.S. 39-13-104(e) and (f), special districts include hospital (6 mill max.), cemetery (3 mill max.), fire protection (3 mill max.), sanitary and improvement (1 mill max.), museum (1 mill max.), solid waste removal (3 mill max.), weed and pest (1 mill max.), water and sewer (8 mill max.), water conservancy (1 mill max.), rural health care (4 mill max.), senior citizen services (2 mill max.), flood control (12 mill max.), and rural county (1 mill max.) districts (WSLO 2021).

- Lincoln County: 12
- South Lincoln Hospital: 4.0
- South Lincoln Special Cemetery District: 0.967
- Weed and Pest: 0.905
- South Lincoln Fire: 0.555
- Kemmerer Senior Ctr: 0.30
- Lincoln Conservation: 0

At 46.6 mills, the Lincoln County School District #1 levy represents about 71 percent of the total mill levy. At 12 mills, the Lincoln County levy represents about 18 percent of the total mill levy. The remaining taxing jurisdictions' mill rates are significantly smaller.

Actual property taxes paid by PacifiCorp for this land are unavailable because the WDOR assessed PacifiCorp's property holdings across the state as one unit. Thus, for this analysis, TerraPower has applied the total mill rate (65.13) to the land's 2021 assessed value for an approximation of the taxes paid for the 35-acre property. The calculated approximation of the payment made by PacifiCorp is less than $200.

3.0 PROJECT IMPACTS RELATED TO SOCIOECONOMICS

The construction of the TFF, entrance road, and US-189 intersection would require a peak workforce of 120-150 workers and is estimated to take 29-35 months to complete. The operations phase of the TFF would employ 20-30 operations workers throughout the 20-year life of the facility (with the possibility of extensions to be determined later).

TerraPower assumes 100 percent of the construction and operations workforces would migrate into the Study Area. [At 2,378 workers (Table 4), the Study Area construction workforce is relatively small and, at 4.4 percent (Table 3), the Study Area unemployment rate is relatively low.]

3.1 Construction

3.1.1 Population

The USCB's 2010 and 2020 Census population data for the Study Area are presented in Table 1. The total Study Area population equated to 24,345 people in 2020. Table 2 presents the WEAD's projected 2030 population for the Study Area, 25,057.

At peak, the addition of 120-150 construction/operations workers to the Study Area would result in a less than 1 percent increase in the USCB's 2020 Study Area population and the WEAD's projected 2030 population. Should any of the construction workers bring families to the Study Area, the additional population (workers plus family members) would not exceed 2 percent of the Study Area population. In 2021, the average family size in Wyoming was 3.2 people (USCB 2021). If 150 workers were to bring 2.2 family members (based on 3.2 family size) per worker during the peak of construction, 480 people would become new temporary or permanent residents in the Study Area, increasing the Study Area population by 1.9 percent. The addition of 120-150 workers, at peak construction, would not significantly increase the total population in the Study Area.

Within the Study Area, changes (employment and earnings) in economic activity caused by the TFF project (direct effects) would result in additional rounds of spending, creating additional employment and earnings (indirect effects). This is called the multiplier effect. As an indirect impact, the multiplier effect of the new jobs in the area would result in additional jobs in the local industries that would support the construction and operations workforces (hotels/motels, restaurants, convenience stores, etc.) during the construction period. These indirect jobs are expected to be filled by some portion of the 803 unemployed workers already residing in the Study Area. Therefore, there would be no commensurate increase in population.

3.1.2 Employment

The magnitude of employment-related impacts on local and regional economies depends on: the size of the project's in-migrating workforce, employee-related expenditures in the Study Area, and the size of the Study Area's economy. The construction of the TFF, entrance road, and US-189 intersection would require skilled labor, such as foremen, iron workers, electricians, carpenters, and heavy equipment operators, as well as, unskilled laborers and a small number of facility operators. This workforce would be needed for road construction, site clearing, shaft drilling/lining, foundation and building construction, roadwork, and facility operations.

Within the Study Area, initial changes in economic activity caused by the TFF project would result in additional rounds of spending, creating additional economic benefits. As stated previously, in-migrating workforces directly related to the project would create employment- and earnings-related changes to the Study Area economy. Indirect Study Area employment and household earnings changes can be determined, per unit of change in employment and household earnings in a final-demand industry (direct changes). In this case, there are two final-demand industries, construction and manufacturing.

As stated previously, the TFF is expected to employ up to 120-150 workers over the construction period. During the peak of construction, 120-150 TFF workers and the indirect jobs they would create would represent a less than 1 percent increase in the Study Area's 2021 labor force of 18,346.

As presented in the Economy subsection, Lincoln and Uinta Counties' total annual personal incomes, in 2021, were $1,248,380,000 and $911,174,000, respectively (BEA 2022). TerraPower estimates total construction period wages, including TFF, entrance road, and Hwy 189 construction, would equate to about $23 million, based on U.S. average weekly wages for construction and manufacturing workers. These wages would represent 1.1 percent of the total personal incomes of Lincoln and Uinta Counties, combined, in 2021.

Further, the maximum TFF project wages estimated for a single year is about $8,000,000. At less than 1 percent of Study Area personal income in 2021, these wages and associated indirect earnings would not significantly increase the total personal income of the Study Area.

3.1.3 Housing

The USCB's 2020 housing data for the Study Area counties and municipalities are presented in Tables 7, 8, and 9. Of most importance are the data in Table 9, which provide the most detail on the vacant permanent housing units in the Study Area. According to Table 9, there were 170 vacant housing units for rent and 128 units for sale in Uinta County and the applicable Lincoln County municipalities (i.e., Kemmerer, Diamondville, and LaBarge), combined.

Also, TerraPower collected RV park and hotel/motel data for the Study Area. The data are presented in the "Temporary Housing" section of this analysis and indicate that, at the height of RV park and hotel/motel occupancy during the year (67.3 percent, in July), there would still be 441 hotel or motel rooms and 133 RV park sites available to the TFF construction and operations workforces.

Adding the vacant rental and for sale units to the available RV park sites and hotel/motel rooms equates to a total of 872 housing units. Also, some portion of the new units proposed for construction could be available for the TFF construction workforce.

As stated previously, TerraPower assumes 100 percent of the construction and operations workforces would migrate into the Study Area. Therefore, assuming one worker per housing unit, 150 construction/operations workers would occupy about 17 percent of the total number of vacant permanent and available temporary housing units in the Study Area. Also, most construction workers would be expected to be in the area for less than 2 years.

At peak, the in-migrating construction and operations workforces would occupy about 17 percent of the vacant permanent and available temporary housing units in the Study Area. While measurable, most impacts would be localized to Kemmerer and Diamondville and most construction workers would be in the area for less than 2 years.

3.1.4 Local Taxes

TFF construction-related activities, purchases, and workforce expenditures would generate several types of local taxes, the most important of which are sales and use taxes and property taxes. Most local government funding comes from sales and use taxes and property taxes.

Tables 10 and 11 present FY 2021 government revenues for Lincoln County and the city of Kemmerer. In Lincoln County, property taxes and payments in lieu of taxes are the largest sources of revenues, at $8,867,143, or 32.4 percent of total revenues. In Kemmerer, sales and use taxes are, by far, the largest source of revenues, at $1,689,508, or 42 percent of total revenues.

Sales and Use Taxes

For construction, TerraPower estimates about $71,000 in sales and use taxes to local jurisdictions and if all purchases were made within the Study Area and estimates $25,000 for the peak year.

Taxes are collected by vendors and remitted to the WDOR. To each county, the WDOR returns 31 percent of the state's 4 percent sales and use tax collections in that county plus 100 percent of that county's 1 percent sales and use tax collections (minus a WDOR service fee). The distribution of those revenues between each county and its municipalities is determined using a population-based formula.

For the peak sales and use taxes ($29,000), the portions of the taxes that would reach the Study Area counties and their municipalities would represent a minute percent of Lincoln and Uinta Counties' sales and use tax collections in FY 2021 which totaled $48,829,964 (Table 12).

TerraPower estimates a peak construction/operations workforce of 120-150. Most of these workers and their families are likely to settle in Lincoln County, in the Kemmerer/Diamondville area. Their retail expenditures (restaurants, hotels, merchant sales, and other items) would yield an increase in sales and use tax revenues. For the peak year, TerraPower estimates TFF project wages at $8,000,000. Some percentage

of these wages would be spent and taxed within the Study Area, generating sales and use tax revenues for the state and local governments.

As an indirect impact, the multiplier effect of the new jobs in the area would also result in higher personal income for current residents in the Study Area, more disposable income, and greater expenditures by individuals and families for items subject to sales or use taxes.

Property Taxes

As presented in Section 2.4.3, the most recent annual property tax payment attributable to the parcel proposed for development of the TFF was estimated to be less than $200. During construction, TerraPower would pay an estimated total of $466,000 in property taxes to local taxing jurisdictions. In the final year of construction, TerraPower would pay $225,000 in property taxes to its taxing jurisdictions. At 46.6 mills, the Lincoln County School District #1 levy represents about 71 percent of the total mill levy. At 12 mills, the Lincoln County levy represents about 18 percent of the total mill levy. The remaining taxing jurisdictions' mill rates are significantly smaller.

For the 2020-2021 school year, Lincoln County School District 1 received $10,748,651 in local revenues, most, of which, are from property taxes (Table 14). Wyoming's K-12 education system is primarily funded by state and local property taxes. By state law, Wyoming is responsible for maintaining a public education system that is complete and uniform across the state (Wyoming Constitution, Article 7 §§ 1, 9) (WLSO 2021). To that end, the state generates funding for two education equalization programs, the SFP and the School Capitalization Construction program. Through the SFP, the state guarantees that school districts are appropriately funded to meet their operational and instructional obligations each year ("guarantee"). This is accomplished through the transfer of funds between the state and its school districts. Funding is redirected from school districts that receive revenues in excess of their guarantees to school districts whose revenues are less than their guarantees. The level of funding is a function of the school finance system's funding model and the characteristics of a school district's schools, staff, and students (WLSO 2021). In the 2019-2020 school year, the Lincoln County School District 1 was dependent on the state to supplement its local revenues to meet its guarantee (DeCoria and Company 2020).

Lincoln County School District 1 would likely receive about 71 percent of the TFF tax payment, about $160,000 in the final year of construction. When compared to the school district's total local revenues in 2020-2021, the TFF payment would represent about 1.5 percent of the school district's total local revenues. Lincoln County would receive about 18 percent of the TFF tax payment, about $41,000. When compared to the county's total property tax and payment in lieu of tax revenues in 2021, the TFF payment would represent less than 1 percent of the county's total property and payment in lieu of tax revenues. The city of Kemmerer would receive none of the TFF tax payment, as the city is not one of TFF's taxing jurisdictions.

Of TerraPower's peak construction workforce, the great majority would be construction workers who would reside in the area temporarily and likely not pay property taxes. A few would be operations workers, who would likely pay property taxes. Most of these operations workers and their families are likely to settle in Lincoln County, in the Kemmerer/Diamondville area.

3.2 Operations and Maintenance

3.2.1 Population

As stated previously, the total Study Area population equated to 24,345 people in 2020 (Table 1). The Study Area's projected 2030 population is 25,057 (Table 2).

The addition of 20-30 operations workers to the Study Area would result in less than 1 percent increase in the Study Area's 2020 population and projected 2030 population. Should any of the operations workers bring families to the Study Area, the additional population would not exceed 1 percent of the Study Area populations. In 2021, the average family size in Wyoming was 3.2 people (USCB 2021). If 30 workers were to bring 2.2 family members per worker during operations, 96 people would become new permanent residents in the Study Area, increasing the population in the Study Area by less than 1 percent.

As an indirect impact, the multiplier effect of the new jobs in the area would result in additional jobs in the local industries that would support the construction and operations workforces (hotels/motels, restaurants, convenience stores, etc.) during the operations period. These indirect jobs are expected to be filled by some portion of the 803 unemployed workers already residing in the Study Area. Therefore, there would be no additional population attributable to indirect workers.

3.2.2 Employment

As stated previously, the magnitude of employment-related impacts on local and regional economies depends on: the size of the project's in-migrating workforce, employee-related expenditures in the Study Area, and the size of the Study Area's economy.

Within the Study Area, initial changes in economic activity caused by the TFF project would result in additional rounds of spending, creating additional economic benefits. As stated previously, in-migrating workforces directly related to the project would create employment- and earnings-related changes to the Study Area economy. Indirect Study Area employment and household earnings changes can be determined, per unit of change in employment and household earnings in a final-demand industry (direct changes). In this case, the final-demand industry is Manufacturing.

As stated previously, the TFF project is expected to employ approximately 20-30 operations workers over the 20-year life of the operations period. This in-migrating direct workforce would represent a small number of new jobs and small increase in household earnings and personal income in the Study Area.

3.2.3 Housing

According to Table 9, which presents more detail on vacant units in the Study Area, there were 170 vacant housing units for rent and 128 units for sale in Uinta County, Kemmerer, Diamondville, and LaBarge, combined.

As stated previously, TerraPower assumes 100 percent of the operations workforce would migrate into the Study Area. Therefore, assuming one worker per housing unit, 20-30 operations workers would occupy 7 to 10 percent of the total number of vacant housing units for rent or sale in the Study Area.

3.2.4 Local Taxes

As stated previously, most local government funding comes from sales and use taxes and property taxes. Property taxes are the largest sources of revenues for Lincoln County, at $7,271,821 in property taxes, or 26.6 percent of total revenues (Table 10), in FY 2021. In Kemmerer, sales and use taxes are, by far, the largest source of revenues, at $1,689,508, or 42 percent of total revenues (Table 11).

Sales and Use Taxes

By the end of construction and the start of operations, TerraPower estimates that TFF operations-related expenditures would result in sales taxes that would amount to a few thousand dollars per year, if all purchases were made in the Study Area.

Most of the operations workers and their families are likely to settle in Lincoln County, in the Kemmerer/Diamondville area. Their retail expenditures (housing, restaurants, grocery stores, merchant sales, and other items) would yield an increase in sales and use tax revenues. As an indirect impact, the multiplier effect of the new jobs in the area would also result in higher earnings/personal income for current residents in the Study Area, more disposable income, and greater expenditures by individuals and families for items subject to sales or use taxes.

Property Taxes

As stated previously, the TFF site's contribution to annual property tax payments was estimated at less than $200. TerraPower estimates that TFF-related property tax payments during operations would be $293,000 per year in the first few years of operations.

Throughout the 20 years of operations, the value of the TFF would be expected to change. Periodically, county or state (WDOR) tax assessors would use one or more of the three following appraisal methods to the determine the fair market value of the facility: sales comparison or market; cost (replacement, reproduction, or historical); and income capitalization. Over time, the TFF's fair market value is expected to decrease as the facility ages.

The Lincoln County School District #1 levy represents about 71 percent of the TFF's total mill levy. The Lincoln County levy represents about 18 percent of the total mill levy. The remaining taxing jurisdictions' mill rates are significantly smaller.

Wyoming's K-12 education equalization system is primarily funded by state and local property taxes. In the 2019-2020 school year, Lincoln County School District 1 received $10,748,651 in local revenues, most, of which, would have been from property taxes (Table 14), but was still dependent on the state to supplement its local revenues to meet its guarantee. Lincoln County School District 1 would likely receive about 71 percent of the TFF tax payment, about $208,000. When compared to the school district's total local revenues in 2020-2021, the TFF payment would represent about 1.9 percent of the school district's total local revenues.

Lincoln County would receive about 18 percent of the TFF tax payment, about $53,000. When compared to the county's total property tax and payment in lieu of tax revenues in 2021, the TFF payment would represent less than 1 percent of the county's total property and payment in lieu of tax revenues.

Table 1 USCB Population in the Study Area

Geography	2010 USCB Decennial Census	2020 USCB Decennial Census	2010-2020 Average Annual Percent Growth
Wyoming	563,626	576,851	0.2%
Lincoln County	18,106	19,581	0.8%
Cokeville*	535	502	-0.6%
Diamondville*	737	520	-3.5%
Kemmerer*	2,656	2,415	-1.0%
La Barge*	551	394	-3.4%
Opal*	96	64	-4.1%
Uinta County	21,118	20,450	-0.3%
Bear River	518	522	0.1%
Evanston	12,359	11,747	-0.5%
Lyman	2,115	2,135	0.1%
Mountain View	1,286	1,278	-0.1%
Study Area Total**	25,693	24,345	-0.5%

Sources: WEAD 2019 and USCB 2020a
*Lincoln County municipalities within daily commuting distance with populations over 500, except Opal.
**Lincoln County municipality populations within daily commuting distance plus total Uinta County population.

Table 2 Wyoming Economic Analysis Division's Population Forecasts for the Study Area

Geography	USCB Decennial Census 2010	Forecast (based on 2010 Decennial Census) 2020	Average Annual Percent Growth 2010-2020	Forecast (based on 2010 Decennial Census) 2030	Average Annual Percent Growth 2020-2030	Forecast (based on 2010 Decennial Census) 2040	Average Annual Percent Growth 2030-2040
WYOMING	**563,626**	**579,280**	**0.3%**	**597,260**	**0.3%**	**614,820**	**0.3%**
Lincoln County	**18,106**	**19,760**	**0.9%**	**21,550**	**0.9%**	**22,490**	**0.4%**
Cokeville*	535	572	0.7%	624	0.9%	651	0.4%
Diamondville*	737	788	0.7%	859	0.9%	897	0.4%
Kemmerer*	2,656	2,852	0.7%	3,110	0.9%	3,246	0.4%
La Barge*	551	586	0.6%	639	0.9%	667	0.4%
Opal*	96	106	1.0%	116	0.9%	121	0.4%
Uinta County	**21,118**	**20,230**	**-0.4%**	**19,710**	**-0.3%**	**19,790**	**0.04%**
Bear River	518	510	-0.2%	497	-0.3%	499	0.04%
Evanston	12,359	11,736	-0.5%	11,435	-0.3%	11,481	0.04%
Lyman	2,115	2,038	-0.4%	1,986	-0.3%	1,994	0.04%
Mountain View	1,286	1,247	-0.3%	1,215	-0.3%	1,220	0.04%
Study Area**	25,693	25,133	-0.2%	25,057	-0.03%	25,371	0.12%

Source: WEAD 2019
*Cities within daily commuting distance with populations over 500, except Opal.
**Lincoln County municipality populations within commuting distance plus total Uinta County population.

Table 3 Employment Trends

Geography	Labor Force 2011	Labor Force 2021	Labor Force - Average Annual Percent Change	Employment 2011	Employment 2021	Employment - Average Annual Percent Change	Unemployment 2011	Unemployment 2021	Unemployment - Average Annual Percent Change	Unemployment Rate 2011	Unemployment Rate 2021
Wyoming	302,932	290,404	-0.4%	284,273	277,372	-0.2%	18,659	13,032	-3.5%	6.2%	4.5%
Lincoln County	8,641	9,514	1.0%	7,921	9,154	1.5%	720	360	-6.7%	8.3%	3.8%
Uinta County	10,041	8,832	-1.3%	9,380	8,389	-1.1%	661	443	-3.9%	6.6%	5.0%
Study Area	18,682	18,346	-0.2%	17,301	17,543	0.1%	1,381	803	-5.3%	7.4%	4.4%
Study Area, as Percent of Wyoming	6.2%	6.3%		6.1%	6.3%		7.4%	6.2%			

Source: BLS 2022a

Table 4 Employment by Industry (Jobs), 2019 and 2020

Description	Lincoln County 2019	Lincoln County 2020	Uinta County 2019	Uinta County 2020	Study Area Total 2019	Study Area Total 2020	Wyoming 2019	Wyoming 2020
Employment by place of work								
Total employment (number of jobs)	11,172	11,042	11,853	11,233	23,025	22,275	408,143	386,291
								By type
Wage and salary employment	7,021	7,030	8,888	8,376	15,909	15,406	297,409	279,934
Proprietor's employment	4,151	4,012	2,965	2,857	7,116	6,869	110,734	106,357
Farm proprietor's employment	566	565	296	296	862	861	10,669	10,662
Nonfarm proprietor's employment (excludes limited partners)	3,585	3,447	2,669	2,561	6,254	6,008	100,065	95,695
								By industry
Farm employment	706	696	401	394	1,107	1,090	14,781	14,497
Nonfarm employment	10,466	10,346	11,452	10,839	21,918	21,185	393,362	371,794
Private nonfarm employment	8,466	8,361	9,139	8,608	17,605	16,969	318,575	298,573
Forestry, fishing, and related activities	126	126	84	80	210	206	3,279	(D)
Mining, quarrying, and oil and gas extraction	682	664	352	246	1,034	910	24,851	20,296
Utilities	175	166	131	126	306	292	2,583	(D)
Construction	1,283	1,371	1,138	1,007	2,421	2,378	30,913	29,261
Manufacturing	244	241	343	336	587	577	12,380	11,806

Description	Lincoln County 2019	Lincoln County 2020	Uinta County 2019	Uinta County 2020	Study Area Total 2019	Study Area Total 2020	Wyoming 2019	Wyoming 2020
Wholesale trade	150	144	205	180	355	324	9,476	8,729
Retail trade	1,117	1,138	1,419	1,423	2,536	2,561	37,636	37,143
Transportation and warehousing	274	284	526	508	800	792	15,661	14,837
Information	135	128	289	295	424	423	4,433	4,012
Finance and insurance	407	389	421	396	828	785	20,474	19,675
Real estate and rental and leasing	684	667	521	513	1,205	1,180	23,948	22,808
Professional, scientific, and technical services	524	521	503	484	1,027	1,005	18,850	18,300
Management of companies and enterprises	(D)	(D)	65	56	65	56	1,926	1,695
Administrative and support and waste management and remediation services	(D)	(D)	268	242	268	242	14,235	13,693
Educational services	110	105	92	91	202	196	4,424	4,207
Health care and social assistance	609	574	1,291	1,246	1,900	1,820	30,854	30,580
Arts, entertainment, and recreation	149	125	208	189	357	314	8,068	6,932
Accommodation and food services	679	624	793	725	1,472	1,349	36,361	31,696
Other services (except government and government enterprises)	579	564	490	465	1,069	1,029	18,223	17,129
Government and government enterprises	2,000	1,985	2,313	2,231	4,313	4,216	74,787	73,221

Description	Lincoln County 2019	Lincoln County 2020	Uinta County 2019	Uinta County 2020	Study Area Total 2019	Study Area Total 2020	Wyoming 2019	Wyoming 2020
Federal civilian	113	123	73	82	186	205	7,578	7,807
Military	104	105	104	104	208	209	6,139	6,227
State and local	1,783	1,757	2,136	2,045	3,919	3,802	61,070	59,187
State government	121	110	487	493	608	603	14,755	14,373
Local government	1,662	1,647	1,649	1,552	3,311	3,199	46,315	44,814

Source: BEA 2021
(D) Not shown to avoid disclosure of confidential information; estimates are included in higher-level totals.

Table 5 Wages by Industry Sector Heavy and Civil Engineering Construction, NAICS Sector 237.

Geography	Annual Establishments	Annual Average Employment	Annual Average Weekly Wage	Annual Wages per Employee
United States	53,917	1,037,052	$1,607	$83,590
Wyoming	450	5292	$1,394	$72,502
Lincoln County	18	161	$1,154	$59,998
Uinta County	20	422	$1,218	$63,352

Source: BLS 2022b

Table 6 Wages by Industry Sector Manufacturing, NAICS Sector 1013

Geography	Annual Establishments	Annual Average Employment	Annual Average Weekly Wage	Annual Wages per Employee
United States	366,368	12,302,657	$1,473	$76,580
Wyoming	651	9,771	$1,338	$69,585
Lincoln County	16	164	$812	$42,214
Uinta County	24	279	$942	$48,966

Source: BLS 2022b

Table 7 Selected Housing Characteristics in the Study Area, Counties, 2020

Subject	Lincoln County* Estimate	Lincoln County* Percent	Uinta County Estimate	Uinta County Percent	Study Area Total Estimate	Percent of Total
Total Housing Units	9,551	100%	9,077	100%	18,628	100.0%
Occupancy Status						
Occupied Housing Units	7,348	76.9%	7,789	85.8%	15,137	81.3%
Vacant Housing Units	2,203	23.1%	1,288	14.2%	3,491	18.7%
Homeowner Vacancy Rate	2.8%	n/a	1.3%	n/a	n/a	n/a
Rental Vacancy Rate	5.6%	n/a	6.6%	n/a	n/a	n/a
Housing Tenure (Occupied Units)						
Owner-occupied	5,906	80.4%	5,996	77.0%	11,902	78.6%
Renter-occupied	1,442	19.6%	1,793	23.0%	3,235	21.4%
Median Value (owner-occupied units)	253,400	n/a	181,600	n/a	217,229	n/a
Median Rent (renter-occupied units)	710	n/a	685	n/a	696	n/a

Source: USCB 2020b
*Note: A portion of this housing is in the northern part of this county and not within daily commuting distance of the TFF site.
n/a = Not applicable

Table 8 Selected Housing Characteristics in the Study Area, Largest Municipalities, 2020

Subject	Kemmerer Estimate	Kemmerer Percent	Diamondville Estimate	Diamondville Percent	Evanston Estimate	Evanston Percent
Total housing units	1,459	100%	431	100%	5,402	100%
Occupancy Status						
Occupied Housing Units	1,275	87.4%	332	77.0%	4,627	85.7%
Vacant Housing Units	184	12.6%	99	23.0%	775	14.3%
Homeowner Vacancy Rate	3.0%	n/a	1.2%	n/a	1.3%	n/a
Rental Vacancy Rate	4.5%	n/a	0	n/a	6.6%	n/a
Housing Tenure (Occupied Units)						
Owner-occupied	957	75.1%	250	75.3%	3,241	70.0%
Renter-occupied	318	24.9%	82	24.7%	1,386	30.0%
Median Value (owner-occupied units)	143,000	n/a	106,800	n/a	169,300	n/a
Median Rent (renter-occupied units)	622	n/a	807	n/a	652	n/a

Source: USCB 2020b
n/a = Not applicable

Table 9 Vacancy Status in the Study Area, 2020

Type	Lincoln County	Uinta County	Economic Region Total	Percent of Total	Kemmerer	Diamondville	LaBarge
Total Vacant Housing Units:	2,203	1,288	3,491	100.0%	184	99	132
For rent	86	132	218	6.2%	15	0	23
Rented, not occupied	16	62	78	2.2%	0	7	0
For sale only	169	79	248	7.1%	30	3	16
Sold, not occupied	17	15	32	0.9%	0	0	0
For seasonal, recreational, or occasional use	1,289	110	1,399	40.1%	24	8	50
For migrant workers	0	0	0	0.0%	0	0	0
Other vacant	626	890	1,516	43.4%	115	81	43

Source: USCB 2020c

Table 10 Lincoln County Revenues and Expenditures, FY 2021

	Dollars	Percent of Total
Revenues:		
Property taxes	$7,271,821	26.6%
Payments in lieu of taxes	$1,595,322	5.8%
Sales and use taxes	$6,150,208	22.5%
State gas tax	$1,139,598	4.2%
Vehicle fees	$886,772	3.2%
Severance tax	$522,757	1.9%
Other taxes	$74,849	0.3%
Nonmajor fund taxes	$76,363	0.3%
Intergovernmental	$6,635,468	24.2%
Charges for services	$2,821,782	10.3%
Licenses and permits	$3,690	0.0%
Interest and investment income	$67,040	0.2%
Miscellaneous	$131,979	0.5%
TOTAL REVENUES	$27,377,649	
Expenditures:		
General government	$8,293,827	36.0%
Public safety	$7,181,455	31.2%
Public works	$3,135,503	13.6%
Health and welfare	$4,092,071	17.8%
Debt service	$327,300	1.4%
TOTAL EXPENDITURES	**$23,030,156**	

Source: Lincoln County 2021.

Table 11 Kemmerer Revenues and Expenditures, FY 2021

	Dollars	Percent of Total
Revenues:		
Sales and use taxes	$1,689,508	42.0%
General property taxes	$133,549	3.3%
Lodging taxes	$76,098	1.9%
Severance taxes	$98,151	2.4%
Gas taxes	$91,960	2.3%
Franchise taxes	$75,295	1.9%
Motor vehicle taxes	$86,614	2.2%
Cigarette taxes	$13,583	0.3%
Charges for services	$814,104	20.2%
Licenses and permits	$44,334	1.1%
Intergovernmental	$796,760	19.8%
Fines and forfeitures	$26,235	0.7%
Miscellaneous	$79,927	2.0%
TOTAL REVENUES	**$4,026,118**	
Expenditures:		
General government	$863,882	22.7%
Public safety	$733,829	19.3%
Streets and highways	$1,012,845	26.7%
Parks and recreation	$665,479	17.5%
Sanitation	$308,216	8.1%
Municipal court	$28,956	0.8%
Building inspection/zoning	$9,432	0.2%
South Lincoln Training and Event Center	$111,913	2.9%
Debt service	$64,221	1.7%
TOTAL EXPENDITURES	**$3,798,773**	

Source: City of Kemmerer 2021.

Table 12 Total Sales and Use Tax Collections in the Study Area and State, FY 2011-2021[a]

County	FY 2011 Total Taxes	FY 2011 4% Taxes	FY 2019 Total Taxes	FY 2019 4% Taxes	FY 2020 Total Taxes	FY 2020 4% Taxes	FY 2021 Total Taxes	FY 2021 4% Taxes	Average Annual % Change, FY11 to FY21 Total Taxes	Average Annual % Change, FY11 to FY21 4% Taxes
Lincoln	$21,568,367	$17,261,556	$23,492,091	$18,766,530	$21,416,242	$17,107,382	$26,355,168	$21,040,812	2.0%	2.0%
Uinta	$20,944,926	$16,755,440	$20,207,437	$16,144,547	$21,195,181	$16,934,331	$22,474,796	$17,951,823	0.7%	0.7%
Wyoming	$853,588,045	$670,704,525	$1,018,916,734	$767,510,401	$1,016,113,236	$765,501,106	$978,476,265	$725,646,878	1.4%	0.8%

Sources: WEAD 2021 and WEAD 2011.
a. Includes Economic Impact Assessment payments (Liu 2023)

Table 13 Total Study Area County-Wide Property Tax Levies, Tax Years 2019-2021

Year	County	Municipal	Special District	Total Education[a]	State General Fund[b]	Total	Average Mill Levy
Lincoln							
2011	$10,588,451	$649,444	$4,822,020	$43,342,687	None	$59,402,602	62.476
2019	$9,111,202	$755,240	$5,360,168	$34,197,530	None	$49,424,140	63.550
2020	$8,910,569	$798,120	$4,617,154	$33,372,925	None	$47,698,768	63.209
2021	$8,726,261	$870,521	$5,013,971	$32,579,974	None	$47,190,727	64.895
Uinta							
2011	$6,961,457	$823,052	$2,012,652	$27,486,125	None	$37,283,286	66.647
2019	$4,679,240	$927,845	$1,392,443	$17,943,969	None	$24,943,497	65.431
2020	$4,179,045	$939,335	$1,257,551	$16,054,941	None	$22,430,872	65.746
2021	$3,854,575	$1,003,446	$1,149,451	$14,855,587	None	$20,863,059	64.951

Sources: WDOR 2011, 2019, 2020, and 2022b.
Includes all school district levies (including the state levy for the School Foundation Program (12 mill cap)) and bond/interest revenue.
The state of Wyoming levies property taxes for the School Foundation Program, only.

Table 14 Lincoln County School District 1 Revenue by Source

2019-2020 Operating Revenue Source	2019-2020 Lincoln School District 1 (Kemmerer)	2020-2021 Operating Revenue Source	2020-2021 Lincoln School District 1 (Kemmerer)
Local	$11,187,857	Local	$10,748,651
County	$915,987	County	$938,170
State	$951,426	State	$1,897,870
Federal	$311,959	Federal	$422,486
Other	$103,000	Other	$108,000
TOTAL	$13,470,230	TOTAL	$14,115,177
Assessed Valuation 7/1/19	403,375,699	Assessed Valuation 7/1/20	371,011,390

Sources: WDOE 2020 and WDOE 2021

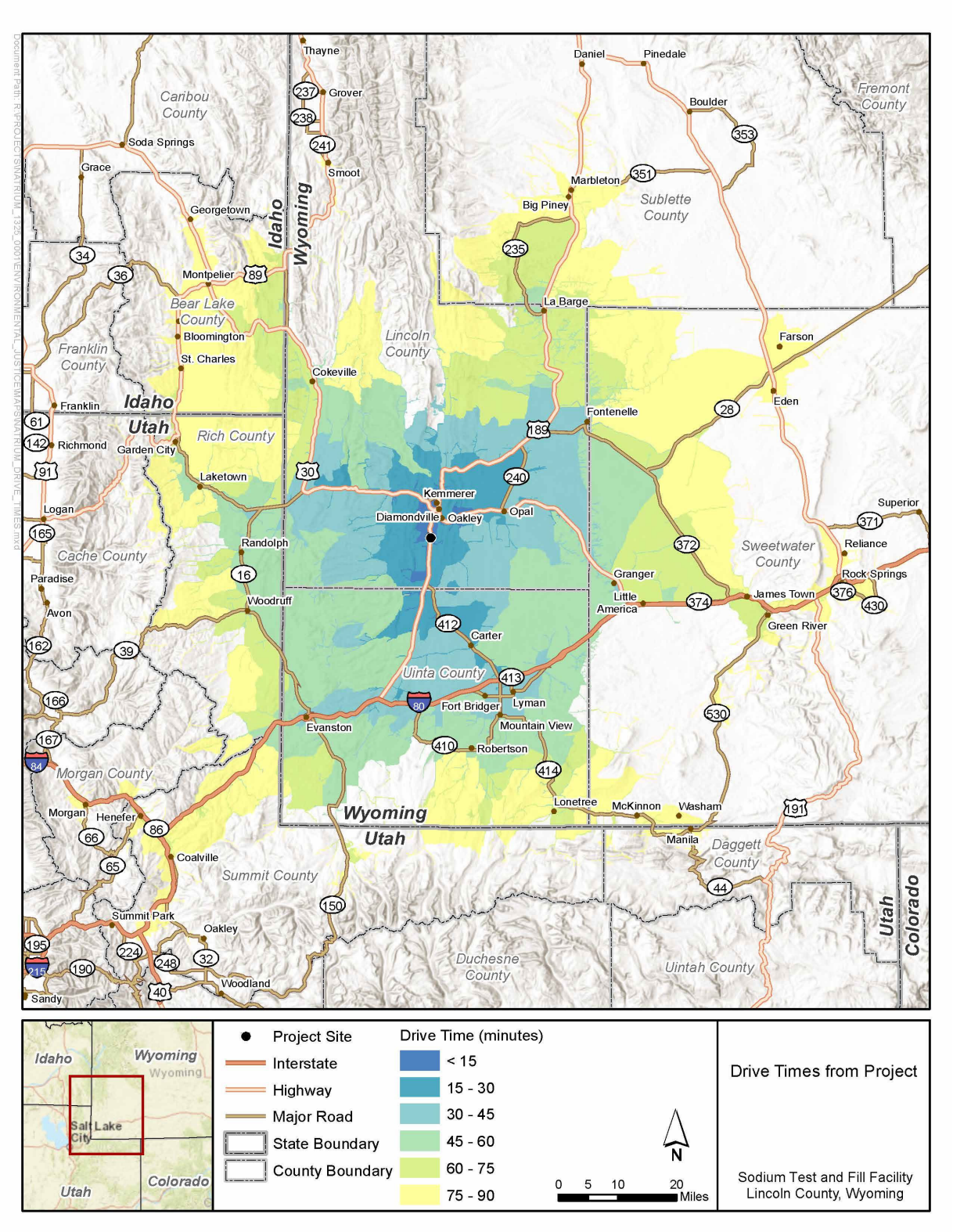

Figure 1 Drive Times for Commuting to TFF Site

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APPENDIX B -- COMMENT RESPONSE MATRIX

May 2024

Number	Commenter	Comment Summary	Response
1	City of Kemmerer	Commenter expressed general support for the project. Commenter stated that the proposed project would bring permanent and temporary jobs to the immediate and surrounding areas.	Thank you for your comment.
2	Wyoming Department of Environmental Quality (WY DEQ)	Commenter stated that they had no comments after review of the EA.	Thank you for your comment.
3a	Wyoming Department of Transportation (WY DOT)	Commenter provided general comments for consideration of the proposed access road design including licensing and permitting requirements; traffic control plans; revegetation; oversize load handling; and intersection and interchange considerations.	TerraPower has submitted a final traffic impact study and highway mitigation plans to WY DOT for review. The revised road design including consideration of all general comments provided and incorporates those into the design. The EA has been updated on pages 70-77 to provide revised figures and description of the final road design.
3b	Wyoming Department of Transportation (WY DOT)	Commenter requests the EA update the WY DOT permitting process to reflect where the applicant is in the process.	The WY DOT permitting process has been updated on EA pages 14-15. The use of "temporary" has been replaced with "initial" and the use of "permanent" has been replaced with "final" as it relates to both the access road and intersection design. The EA has been updated on pages 13-16 to show the access road improvements and auxiliary lane improvements.
3c	Wyoming Department of Transportation (WY DOT)	Commenter provides editorial edits to the EA for the discussion of the permanent roadway drainage.	EA has been updated on page 16.

Number	Commenter	Comment Summary	Response
3d	Wyoming Department of Transportation (WY DOT)	Commenter requests the EA update the discussion of the wildlife crossings in the cumulative impact section.	EA has been updated on page 20.
3e	Wyoming Department of Transportation (WY DOT)	Commenter provides editorial edits to Table 2.6-1 in the EA for permits and licenses required.	Table 2.6-1 was updated to incorporate the Access Permit and Utility License for WYDOT. The Driveway Access Permit is a separate permit that is required by Lincoln County, so this permit will remain in Table 2.6-1. EA has been updated on page 21.
3f	Wyoming Department of Transportation (WY DOT)	Commenter requests update to Table 3.3.7-1 AADT numbers.	Table 3.3.7-1 has been updated to reflect the WYDOT 2022 Vehicle Miles Book. EA has been updated on page 71.
3g	Wyoming Department of Transportation (WY DOT)	Commenter requests that detailed discussion of new access road designs be removed from the EA and a summary be provided for the final EA. Commenter states that the EA should discuss the truck haul routes and include the construction management plan and transportation demand management.	DOE provided the options that TerraPower, DOE, and WY DOT were evaluating during the draft EA for the new access road to disclose to the public what possible road designs may occur. DOE has updated the EA with the final road design on pages 70-77. The information provided by WYDOT as a suggested template is included in both the draft and final EA although it may not follow the same sequence. All comments from WYDOT on the initial Traffic Impact Study have been addressed/responded to in the final Traffic Impact Study submitted on December 20, 2023. EA has been updated on pages 70-77. The estimated number of truck shipments from either direction will not be expected to adversely affect the surrounding roads and highways. The volume of truck traffic would be absorbed by the existing highway and surface road network. Truck delivery routes have not been determined yet. The project is in the process of awarding contracts for fill, equipment, and sodium deliveries. Until these contracts are awarded, the haul routes cannot be determined with any certainty. Sources for fill and the other commodities mentioned could be from different geographic areas which would change the haul routes and ultimately

Number	Commenter	Comment Summary	Response
			the direction of approach to the TFF site via US 189. As presented in the EA, truck deliveries were assumed to arrive at TFF via US 189 with 50 percent northbound and 50 percent southbound. Truck shipments were estimated at 60 per day during the construction peak and at five per day during operations. Traffic conditions are characterized as level of service (LOS) A through F with LOS A being free-flowing traffic and LOS F being stop and go traffic (WYDOT 2021). The 2022 AADTs for highways near the TFF are presented in Table 3.3.7-1 of the EA. These AADTs are not directional. The AADTs for US 30 and US 189 segments near the TFF entrance range from 1,001 to 2,047 in rural areas with the US 189 segment at the TFF entrance having an AADT of 1,547. US 189 currently operates at LOS A (Jorgensen 2023). The Federal Highway Administration issued generalized highway capacities based on highway types, terrain, speed limits, and truck percentages from 0 to 10 percent for LOS B, C, and D (FHA 2017). The closest match to US 30 and US 189 would be a rural two-lane highway with rolling terrain and a speed limit of 65 mph. The Federal Highway Administration indicates that a rural two-lane highway with rolling terrain and a speed limit of 65 mph with 10 percent trucks would have capacity of 24,200 AADT at LOS B (reasonably free flow traffic) and 29,300 AADT at LOS C (stable flow) (FHA 2017). The addition of 60 truck shipments during peak construction would increase the AADTs very slightly. The estimated number of trucks and deliveries from either direction would not be expected to adversely affect the surrounding roads and highways. The volume of deliveries would be absorbed by the existing highway and surface road network. Page 81 of the EA *(previously pages 79 and 84)* include information regarding staggered start times, carpooling, and scheduling oversized loads and construction deliveries outside of peak hours. Due to the low peak construction staff numbers, staggered start and stop times are not being considered for TFF at this time. If at a later date staffing increases significantly over projected numbers the project will reevaluate starting times. EA has been updated on pages 70-77.

Number	Commenter	Comment Summary	Response
3h	Wyoming Department of Transportation (WY DOT)	Commenter states that WYDOT does not use crash rates.	The crash rates used in the EA were calculated using WYDOT annual crash data for total crashes and crashes involving injuries or fatalities along with the annual number of miles driven from the WYDOT Vehicle Miles Book. The data was included in the EA to estimate the potential safety risks to workers based on the number of miles driven for commuting and truck shipments. This information is used only for estimating potential impacts for the NEPA evaluation and is distinct from the crash analysis in the Traffic Impact Study which provides the crash history for the location of the intersection on Highway 189. DOE has provided a statement that WYDOT does not require this information as part of their analysis. A crash report was requested and provided by WYDOT for crash history between Mile Post 28.8 to 29.8. This area spans to the south of the BLM Blazon Gap intersection to the north of the CR-325 intersection. This crash report indicates that there were no reported crashes between 2018 - 2022. EA has been updated on pages 81-82.
4a	Coalition of Local Governments	Commenter expresses general support for the project. Commenter states that new power sources are needed as other local utilities go offline. Commenter also states that the proposed project would contribute to the local economy and provide new jobs. Commenter provides a description of their organization and their applicable authorities.	Thank you for your comment.

Number	Commenter	Comment Summary	Response
4b	Coalition of Local Governments	Commenter expresses concern that the proposed project would not utilize the existing access road due to potential safety issues with the intersection of County Road 325 and merge lanes. Commenter recommends that conversation with the Wyoming State Historic Preservation Office are completed to discuss the existing access road and protection of the eligible historic property. Commenter states that one of the proposed road designs would extend into the BLM Blazon Gap Road intersection which could pose a traffic safety concern. Commenter states that TerraPower and DOE should have continued discussion with Lincoln County and WY DOT on the final road design.	The EA has been updated with the final road design on pages 70-77. DOE has completed Section 106 consultation under the NHPA and received concurrence on no historic properties adversely affected from WY SHPO on April 4, 2024. The plant intersection location was selected in collaboration with WY DOT, including field walkdowns to confirm suitability, collection of traffic data in the field, and performance of the in-process Traffic Impact Study in accordance with the WY DOT Traffic Program Access Manual. The relationships with the existing Blazon Gap BLM Access Road and CR 325 are evaluated and addressed as part of the approval process with WY DOT. A crash analysis and site distance analysis were also conducted as part of the Traffic Impact Study. According to the WY DOT Access Manual, this intersection requires 660 feet of spacing between commercial and field accesses. This spacing is met, as shown in Figure 2.1.2-3. The EA has been updated on pages 13-15. In consultation with WYDOT, merge lanes for both intersections have been designed according to the Access Manual. TerraPower has submitted a final traffic impact study and highway mitigation plans to WY DOT for review.

Number	Commenter	Comment Summary	Response
5a	Powder River Basin Resource Council	Commenter requests to renew their comments from the scoping period. Commenter states that DOE has failed to justify how the TFF has independent utility from the Unit 1 nuclear facility. The commenter states that no other Natrium facilities are planned at this time and that additional testing at Unit 1 would be required prior to new Natrium facilities are built.	DOE received Powder River Basin Resource Council's scoping comments on June 14, 2023. DOE considered those comments while drafting the EA. DOE includes statements on the TFF's independent utility in the draft and final EA on page 3. Construction of the TFF is not predicated by other actions and does not depend on other actions taking place. See also response to comment 5d on independent utility. Even though other Natrium facilities have not been identified at this time, if Kemmerer Unit 1 did not proceed, the TFF could support other facilities through the testing of equipment, processes, and materials.

Number	Commenter	Comment Summary	Response
5b	Powder River Basin Resource Council	Commenter states that DOE has guaranteed funding up to $2 billion dollars through the cooperative agreement. The commenter states that the TFF is the first installment of the larger payment. The commenter states that the purpose and need for the proposed project should be an evaluation of the appropriations for the entire project.	DOE has entered into a cooperative agreement with several decision points to determine the progress of the project as it moves through phases. DOE or TerraPower could make decisions that could dissolve the cooperative agreement. A NEPA review is required prior to release of federal funding for all project components and phases. DOE could select the No Action Alternative for project NEPA reviews which would not allow financial assistance for that action. DOE has determined that the TFF is not a connected action and has independent utility per the CEQ NEPA Implementing Regulations (40 CFR 1501.9). The TFF is one component of the entire cooperative agreement and is not interdependent on other components. See Appendix C, Programmatic Analysis for detailed information. It is possible that other project components identified in the cooperative agreement may be modified or removed based on other factors outside of NEPA and therefore it is reasonable for DOE to evaluate each component as it becomes ripe for the decision maker. DOE is responsible for evaluating each component for the likelihood of significant impacts when making a NEPA determination on the level of NEPA review required and for assessing independent utility. Project phasing is a common practice by federal agencies provided that all phases are disclosed to the public at the start of the project which DOE has done, see Section 1.1.1. DOE evaluated the other project phases for the Natrium project in the cumulative impacts sections throughout the EA. Even though each phase may be related to the overall Natrium project does not mean that the phases are so closely related to each other that NEPA requires concurrent analysis of the TFF and Kemmerer Unit 1.

Number	Commenter	Comment Summary	Response
5c	Powder River Basin Resource Council	Commenter states that funding commitments should not have been made prior to the NEPA analysis. Commenter requests DOE analyze alternatives to the Proposed Action including allocating lesser amounts of funding, no funding, and/or the opportunity cost of funding this project vis-à-vis other projects (nuclear and non-nuclear). The commenter requests that DOE evaluates the time and resources spent on the overall project in addition to federal funding when calculating DOE's financial contribution to the project.	As stated on page 3 of the EA, DOE through the FOA process selected two applicants for award. A NEPA review is required prior to the release of federal funding. DOE included evaluation of the suggested alternatives in both the draft and final EA on pages 20-21 in Section 2.4. The No Action Alternative evaluates no financial assistance and the project not moving forward as stated in Section 2.2 of the EA. A review of the amount of resources spent on a project is not required for an EA (40 CFR § 1502.11).

5d	Powder River Basin Resource Council	Commenter requests DOE prepare an Environmental Impact Statement. Commenter states that DOE cannot segment the project into smaller actions.	DOE is not required to prepare an Environmental Impact Statement. An EIS is required for a project that is likely to have significant effects (40 CFR § 1501.3(3)). DOE selected the Proposed Action from the TFF EA and was able to reach a Finding of No Significant Impact. DOE took the requisite "hard look" at the effects the Proposed Action. Robertson, 490 U.S. at 350, 109 S.Ct. 1835. Over the course of 6 months, DOE considered the TFF's potential impacts on several areas including ecological resources, cultural resources, hydrology, socioeconomics, geological resources, environmental justice, infrastructure, traffic, and transportation, and accidents and hazards. For each of these resource areas, DOE evaluated the baseline environmental conditions in the Affected Environment section including reasonable environmental trends and analyzed the consequences of the construction and operation of the TFF. The EA also described the mitigation measures that TerraPower would take to address any possible environmental consequences. Per 40 CFR § 1501.9(e)(1), the TFF does not automatically trigger another action that would require an EIS. DOE's list of activities that typically require an EIS can be found in Appendix D of DOE's NEPA Implementing Regulations (10 CFR 1021). The proposed test and fill facility is not considered an activity that would normally require an EIS by DOE. DOE's EA determined that no significant impacts would occur as a result of the construction and operation of the TFF. The construction of the TFF does not require or automatically trigger another action to be completed. The TFF can and would proceed alone and is not an interdependent part of a larger action. The TFF can be built regardless of if Kemmerer Unit 1 is constructed and operated because it would support the testing of equipment and material that could serve other facilities. The TFF would be constructed and operated ahead of the proposed Kemmerer Unit 1 and would be an entirely separate building. The TFF can support future Natrium reactors across the country and would be only facility serving the entire fleet. The TFF would be used to advance the following Natrium technologies, and others, beyond the construction of the proposed Kemmerer Unit 1: • Fuel handling equipment including the in-vessel transfer machine, • Control road drive mechanism, • Primary sodium pump (mechanical),

Number	Commenter	Comment Summary	Response
			• Compact heat exchanger development, • Electro-mechanical pump development, • Novel waste disposal technologies (no radiological material is to be used), • Training for sodium handling and operations, and • Mobile fill system. If the TFF was not constructed and the No Action Alternative was selected, the proposed Kemmerer Unit 1 could receive sodium fill by other means including a possible mobile sodium fill system. See Appendix C, Programmatic Analysis for detailed information. DOE includes statements on the TFF's independent utility in the draft and final EA on page 3.
5e	Powder River Basin Resource Council	Commenter requests that DOE discloses the source of sodium that would be used and to analyze the potential impacts from the sourcing and transportation of the sodium in the NEPA document.	No contracts have been awarded at this time for sodium. Any truck routes evaluated would be considered too remote and speculative. Therefore, DOE did not analyze the potential impacts associated with the potential source or transportation route(s) of sodium to the proposed facility. DOE included a discussion of local traffic impacts in the EA on pages 80-82 in Section 3.3.7.2.
5f	Powder River Basin Resource Council	Commenter requests that DOE discloses any impacts from the financial assistance for the proposed project and all TerraPower activities on the federal debt.	Evaluation of the impacts of federal funding on the federal debt is considered out of scope of this EA. DOE solicited applications through a competitive, public Federal Opportunity Announcement (FOA-000271, Amendment 000003) and selected two applicants for federal funding under the Advanced Reactor Demonstration Program. DOE explains this process in the EA on page 2.
5g	Powder River Basin Resource Council	Commenter requests that DOE updates the EA including any information from government-to-government consultations with Tribes.	DOE did not receive any additional comments from Tribes on the Draft EA. DOE will continue to engage with Tribes throughout the life of the project.

References:

FHA 2017. Federal Highway Administration. “Simplified Highway Capacity Calculation Method for the Highway Performance Monitoring System.” October 2017. https://www.fhwa.dot.gov/policyinformation/pubs/pl18003/hpms_cap.pdf. Accessed October 8, 2023.

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WYDOT 2021. Wyoming Department of Transportation. “Road Design Manual. Chapter 3 General Concepts, Design Standards and Design Exceptions.” January 2021. https://dot.state.wy.us/files/live/sites/wydot/files/shared/Project%20Development/Road%20Design%20Manual_1/3-01_2021_JAN.pdf. Accessed October 13, 2023.

APPENDIX C -- TerraPower Natrium Project Programmatic Analysis

May 2024

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LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

Acronyms	Definition
FFF	Fuel Fabrication Facility
GNF	Global Nuclear Fuels
KTC	Kemmerer Training Center
KU1	Kemmerer Unit 1
NFFF	Natrium Fuel Fabrication Facility
NRC	U.S. Nuclear Regulatory Commission

1.0 BACKGROUND

This EA analyzes programmatic and site-specific actions, consistent with guidance in the December 18, 2014, Memorandum from CEQ on the Effective Use of Programmatic NEPA Reviews (CEQ 2014). CEQ notes that agencies may prepare a single NEPA document to support both programmatic and project-specific proposals. Such an approach may be appropriate when an agency plans to make a broad program decision, as well as timely decisions to implement one or more specific projects under the program, which is the case for this EA. The guidance states that when doing so, agencies "should clearly communicate the purpose and need for the programmatic and subsequent decisions, clearly state the decisions the agency proposes to make based directly on the [programmatic document] and distinguish the analysis of impacts and alternatives of the broad programmatic proposals from project- or site-specific proposals." Therefore, this EA discloses programmatic decisions that are supported by this NEPA document, including several programmatic actions that may require additional NEPA compliance once the scope and design for these actions are sufficiently developed; and separately, actions that are site-specific and fully covered by this NEPA review. These actions are addressed generally in Table 1 and are described in detail in the sections below.

Table 1 NEPA Compliance Status for Programmatic Actions and Site-specific Actions Covered in this EA

Type of Action	Specific Action	NEPA Compliance
Programmatic Actions	Training Center	Additional site-specific NEPA compliance would be completed as appropriate.
	Fuel Fabrication Facility	Additional site-specific NEPA compliance would be completed as appropriate.
	Kemmerer Unit 1	Additional site-specific NEPA compliance would be completed as appropriate.
Site-Specific Actions	Sodium Test and Fill Facility	Compliance covered in this NEPA review.

2.0 PROGRAMMATIC ACTIONS COMMON TO ALL ACTION ALTERNATIVES

Under all of the action alternatives considered, the following programmatic actions would be implemented. The information on the programmatic actions described below would likely change as the project becomes more refined for detailed analysis in a subsequent NEPA review. Some of these actions may require site-specific NEPA reviews in the future prior to implementation, as noted below.

2.1 Programmatic Actions

2.1.1 Training Center

The Kemmerer Training Center (KTC) would be the location of training for nuclear personnel of Kemmerer Unit 1 and initial training for subsequent units in the Natrium Reactor Plant fleet. The KTC would be located south of the Kemmerer Unit 1 and would include a parking lot of approximately 100 spaces. The building is proposed as a 30,000 square foot, two story structure approximately 150 ft by 100 ft. The KTC would be located next to, and utilize the same access road as, Kemmerer Unit 1. The

facility would require data fiber, water, storm and sewer access and electrical power. The KTC would house the simulator, which is a mockup of the Main Control Room, and would be where control room operators practice operating the plant and perform the simulator portion of the initial license and requalification exams. The KTC would also contain the necessary space for licensed operators, non-licensed operators, electricians, mechanics, technicians, stations sciences (Radiation Protection and Chemistry), and site engineering personnel to be trained in a lab and classroom environment. The building would also have space for instructors and training administrative staff to perform their day-to-day work. To facilitate technical training, four labs would be required. Projected staffing during normal operation is 70 staff personnel. During refueling outages, every one or two years, approximately 800 craft workers will in-process and train in the KTC. During peak training times, the KTC may be utilized on multiple shifts each day.

2.1.2 Fuel Fabrication Facility

The Global Nuclear Fuels (GNF) GNF-A Wilmington facility is situated on a 1,664-acre tract of land, located on North Carolina (NC) Highway 133 (also known as Castle Hayne Road) and is approximately six miles north of the City of Wilmington in New Hanover County, NC. GNF-A plans to design, license, and construct a standalone Category II fuel fabrication facility, the Natrium Fuel Fabrication Facility (NFFF), for the Natrium demonstration reactor within an existing controlled access area at its facility in Wilmington, North Carolina. Currently, a U.S. Nuclear Regulatory Commission (NRC)-licensed uranium fuel fabrication facility at the proposed site of the Category II HALEU facility is authorized to process uranium with an enrichment of up to 5 wt% U-235 (NRC License No. SNM-1097). GNF-A would request a license amendment from NRC to permit nuclear fuel fabrication at enrichments of up to 20.0 wt% U-235 and authorize operation of the NFFF.

2.1.3 Kemmerer Unit 1

The Kemmerer Unit 1 (KU1) site would be located on approximately 334 acres in a portion of Sections 19 and 20, Township 20 North, Range 116 West, P.M, Lincoln County, Wyoming in the vicinity of the city of Kemmerer. The site would be accessed from US HWY 189. DOE is responsible for analyzing potential impacts during pre-construction of KU1 and NRC is responsible for the NEPA review and licensing for the construction of KU1. Construction is scheduled to begin in March 2025 with an estimated peak construction workforce of 933 over a 16-month schedule for pre-construction activities. The total potentially disturbed area would be approximately 217 acres out of the 334-acre site.

The KU1 plot plan is comprised of five primary areas (pads) as follows: nuclear island, energy island, balance of plant, construction support facilities, and linear facilities. DOE's analysis would likely focus on the following preconstruction activities: layout, benchmarks, erosion control; clear & grub, drains; mass excavation & backfill; construction of reactor fabrication building, temporary construction power distribution/set up trailers; install temporary power distribution; reactor building-excavate to top of shaft; reactor aux bldg./spent fuel handling bldg.- excavation; turbine facility excavation/install ug services (circulating water pipe); turbine facility; energy island; fire water tanks; demin water tank/ condensate mu tank excavate/prep area; energy island support building-excavation & backfill; install concrete batch plant; install stormwater management ponds; establish first phases of parking lot.

2.3 Affected Environment

The affected environment would be the same for the Training Center and KU1 programmatic actions as the site-specific analysis.

The affected environment for the Fuel Fabrication Facility (FFF) would be similar to how it was described in an EA that was prepared in 2008 and a FONSI was issued in 2009 by the NRC for the Renewal of NRC's License No. SNM-1097 for GNFs Wilmington Fuel Fabrication Facility and is hereby incorporated by reference. The FFF would be in a rural agricultural land between the Northeast Cape Fear River and the main branch of the Cape Fear River which is zoned for heavy industrial use. The primary transportation corridor to GNF-A site is I-40. The pollutant concentration levels in New Hanover County are in attainment for all NAAQS criteria pollutants. Two primary aquifers lie below the area where the GNF–A site is located: the "shallow" or water table aquifer and the "deep" or principal aquifer that lies below the shallow aquifer. The GNF–A site wells produce process and potable water from the principal aquifer, which is also known as the Peedee aquifer. Wetland areas are located around the GNF–A property. GNF–A operations have affected soil and sediment quality. Corrective actions were implemented in 1995 to reduce the volume of contaminated material in the storage pad areas. Due to these actions, uranium soil concentrations have remained relatively constant since 1995. From 1995 to 1997, the average annual uranium soil concentrations in the storage pad areas ranged from 3.2 to 16.1 ppm [7.4 to 37 pCi/g] (GNF–A, 2007b). Soil sampling in this area was discontinued in 1998. According to the U.S. Forest Service, the New Hanover County area is in the Atlantic Coastal Flatlands ecoregion with the dominant vegetation communities composed mainly of southern mixed forest and oak-hickory-pine forest. Numerous animal species can be found in the region including game birds, migratory waterfowl, songbirds, mammals, reptiles, fish, and amphibians. Nine federal-listed species can potentially be found in New Hanover County. Archeological site maps at the North Carolina Office of State Archeology and documentation from GNF–A indicate that six previously recorded terrestrial archeological sites are located on the GNF–A Site and a submerged archeological site is located adjacent to the site property in the Northeast Cape Fear River. A search of the National Register of Historic Places database confirmed 19 prehistoric and historic listings in New Hanover County.

2.4 Environmental Consequences

2.4.1 Impacts of Programmatic Actions Common to Alternatives B, C, and D

Programmatic actions for the TC, FFF, and KU1 would likely affect land use, cultural and historic properties, hydrological resources, ecological resources, accidents and hazards, and infrastructure, traffic, and transportation. The degree to which these impacts would vary by the activity and the final scope of the activity. DOE would complete any necessary consultations including but not limited to Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. It can be assumed that the programmatic actions would potentially impact the flow of traffic on nearby roadways, require new or improved infrastructure, remove, or permanently alter habitat or affect migration patterns for wildlife species, introduce invasive species, cause erosion or removal of hydrological features, and change future land use. The site-specific analysis would provide details on the specific impacts of each action and the applicable resource area.

2.4.2 No Action Alternative

Under the No Action Alternative, no programmatic actions would occur and therefore there would be no impacts to resource areas.

3.0 REFERENCES

Council on Environmental Quality (CEQ). 2014. Effective Use of Programmatic NEPA Reviews. Available at: https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Effective_Use_of_Programmatic_NEPA_Reviews_Final_Dec2014_searchable.pdf. Accessed: April 16, 2024.

APPENDIX D -- ENVIRONMENTAL JUSTICE AND JUSTICE 40 MODELS

May 2024

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ACRONYMS AND ABBREVIATIONS

Acronyms	Definition
ACS	American Community Survey
AQS	Air Quality System
BIA	Bureau of Indian Affairs
CEJST	Climate & Economic Justice Screening tool
CEQ	Environmental Quality
DOI	Department of the Interior
DOT	Department of Transportation
EJ	Environmental Justice
EJI	Environmental Justice Index Tool
FRS	Facility Registry Service
FUDS	Formerly Used Defense Sites
GIS	Geographic Information System
HUD	Department of Housing and Urban Development
LAR	Land Area Representation
MDRS	Mine Data Retrieval System
MRLC	Multi-Resolution Land Characteristics
NATA	National Air Toxics Assessment
RSEI	Risk-Screening Environmental Indicators
TFF	Sodium Test and Fill Facility
TSDF	Treatment, Storage, and Disposal Facilities
WSIO	Watershed Index Online

1.0 INTRODUCTION

This socioeconomic report is prepared in support of the proposed Sodium Test and Fill Facility (TFF) in Lincoln County, Wyoming. The focus of this report is to assess the potential socioeconomic impacts of the TFF on the local municipalities and associated counties.

In conducting the NEPA Environmental Justice (EJ) analysis for this EA, the DOE followed guidance outlined in the DOE EJ Strategy 2017, DOE's Community Guide to EJ and NEPA Methods (DOE 2019), Environmental Justice Interagency Working Group Promising Practices for EJ Methodologies in NEPA Review (EPA 2016), and the Council on Environmental Quality EJ NEPA Guidance Document (CEQ 1997). The DOE also utilized the Climate & Economic Justice Screening tool (CEJST), EJScreen, DOE Energy Justice Mapping Tool, the Environmental Justice Index Tool, and the FEMA National Flood Hazard Geographic Information System (GIS) Layer Viewer to identify EJ communities and assess EJ considerations. The purpose of the appendix is to provide the reader with additional context on each model, including definitions, data sources, and outputs. This appendix will also outline the limitations of each model in how the outputs can be applied.

Model: Climate & Economic Justice Screening tool (CEJST)

The Climate and Economic Justice Screening tool (CEJST) was developed by the White House Council on Environmental Quality (CEQ) in response to Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*. The CEJST tool was created to advance the Justice 40 Initiative, which sets a goal that 40 percent of the overall benefits from Federal investments flow to disadvantaged communities. The CEJST is a geospatial mapping tool designed to be an authoritative source to help Federal Agencies identify disadvantaged communities and existing environmental burdens. The categories of burdens identified in CEJST are defined by Executive Order 14008.

CEJST utilizes the census tract boundaries from the 2010 census to define the geographic unit for reported data. Census tracts are defined as small, relatively permanent subdivisions of a county (U.S. Census Bureau, 2022). The tool uses publicly available, nationally consistent datasets to identify disadvantaged communities (Table 1). CEJST can be used to identify disadvantaged communities that may benefit from programs included in the Justice40 Initiative. CEJST has eight categories of burden: climate change; energy; health; housing; legacy pollution; transportation; water and wastewater; and workforce development.

Communities are considered disadvantaged:

- If they are in census tracts that meet the thresholds for at least one of the tool's categories of burden, or
- If they are on land within the boundaries of Federally Recognized Tribes.
- A community is identified as disadvantaged in CEJST if it is in a census tract that is (1) at or above the threshold for one or more environmental, climate, or other burdens, and (2) at or above the threshold for an associated socioeconomic burden.
- A census tract that is completely surrounded by disadvantaged communities and is at or above the 50% percentile for low income is also considered disadvantaged.

The categories of burden use thresholds, or percentiles as cutoff values, to determine values for identifying disproportionate impacts. Generally, a census tract that meets the threshold for: 1) environmental, climate, or other burdens, and 2) an associated socio-economic burden will be designated as disadvantaged. Table 1 summarizes the datasets used in CEJST (CEQ 2023). Some variables are used

directly in CEJST without additional calculations, and some others are calculated by the CEJST before use in the tool.

Table 1 Data sources and descriptions of inputs used in CEJST.

Source (date)	Dataset	Variable(s)	Category of Burden
Census 2015-2019	American Community Survey	• Census tract geographic boundaries and demographics • Low income • Lead paint • Linguistic isolation • Low median income • Poverty • Unemployment • High school education	• Socioeconomic • Health
Federal Emergency Management Agency (FEMA) 2014-2021	National Risk Index	• Expected agriculture loss rate • Expected building loss rate • Expected population loss rate	• Climate change
First Street Foundation 2022	Climate Risk Data Access	• Projected flood risk • Projected wildfire risk	• Climate change
Department of Energy (DOE) 2018	LEAD tool	• Energy cost	• Energy
Environmental Protection Agency (EPA) 2020 and 2017	Fusion of model and monitor data Treatment, Storage, and Disposal Facilities (TSDF) data CERCLIS database RMP database National Air Toxics Assessment (NATA) UST Finder Risk-Screening Environmental Indicators (RSEI) model	• PM2.5 in the air • Proximity to hazardous waste facilities • Proximity to Superfund sites • Proximity to Risk Management Plan (RMP) facilities • Diesel particulate matter exposure • Underground storage tanks and releases • Wastewater discharge	• Health • Energy

Source (date)	Dataset	Variable(s)	Category of Burden
Centers for Disease Control and Prevention (CDC) 2016-2019	PLACES data and U.S. Small Area Life Expectancy Estimates Project	• Asthma • Diabetes • Heart disease • Low life expectancy	• Health
National Community Reinvestment Coalition (NCRC) 2010	Dataset of formerly redlined areas	• Historic underinvestment •	• Socioeconomic
Department of Housing and Urban Development (HUD) 2014-2018	Comprehensive Housing Affordability Strategy dataset	• Housing cost • Lack of indoor plumbing	• Socioeconomic • Health
Multi-Resolution Land Characteristics (MRLC) consortium 2019	Percent Developed Imperviousness (CONUS	• Lack of green space •	• Health
Department of the Interior (DOI) 2017	Abandoned Mine Land Inventory System (e-AMLIS)	• Abandoned mine land	• Socioeconomic • Health
U.S. Army Corps of Engineers 2019	Formerly Used Defense Sites (FUDS)	• Formerly Used Defense Sites	• Socioeconomic • Health
Department of Transportation (DOT) 2022 and 2017	Transportation access disadvantage Traffic data	• Transportation barriers • Traffic proximity and volume	• Socioeconomic • Health
Bureau of Indian Affairs (BIA) 2018	Land Area Representation (LAR) dataset	• Tribes	• Socioeconomic • Health

Limitations of CEJST:

- Not all of the data used in CEJST is available or used for all U.S. territories such as Puerto Rico, American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands.
- To respect Tribal sovereignty and self-government and to fulfill Federal trust and treaty responsibilities to Tribal Nations, lands of Federally Recognized Tribes are designated as disadvantaged on the map. Alaska Native Villages are included as point locations that are smaller than census tract. In many instances, census tracts and Tribal lands have different boundaries.
- CEJST uses thresholds in most cases which are percentiles. Percentiles reflect the distribution of a variable from the 0^{th} percentile, lowest score on a given scale, to the 100^{th} percentile, the highest score on a given scale. Each threshold has a cutoff value. The census tract must be above the 90^{th} percentile in most cases. For high school education burden, the tool uses percents. The abandoned mine land, Formally Used Defense Sites, and historic underinvestment burdens show a yes or no.

Model: EJScreen

EJScreen is the Environmental Protection Agency's (EPA) environmental justice mapping and screening tool (EPA 2023). EJScreen was created in response to Executive Order 12898, signed in 1994, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Data

used in EJScreen comes from publicly available, nationally consistent datasets (Table 2). EJScreen can be used to help inform public involvement opportunities, permitting and compliance program implementation, and enhance geographically based initiatives. EPA does not use EJScreen to identify or label an area as an "EJ community," quantify risks to an area, measure cumulative impacts of multiple environmental factors, or as the sole basis for agency-decision-making. Therefore, EJScreen alone does not fully meet the needs to evaluate disadvantaged communities and existing environmental burdens in support of the Justice 40 Initiative and should be viewed as a supplemental tool when evaluating benefits and impacts for covered investments.

Unlike the census tracts used in similar tools, EJScreen uses census block groups to define geographic boundaries. Block groups are statistical divisions of census tract areas that usually have approximately 600-3,000 people living in them, and are used to present data and control numbering (U.S. Census 2022). The US is divided into more than 230,000 block groups. The geographic framework for EJScreen was built from 2021 census boundary data. EJScreen uses maps and reports to present three kinds of information: Environmental indicators, socioeconomic indicators and EJ/supplemental indexes. EJScreen uses 13 environmental indicators (Table 2). The socioeconomic indicators in EJScreen are used to create the following indexes:

1. Demographic Index is based on the average of two socioeconomic indicators; low-income and people of color.
2. Supplemental Demographic Index is based on the average of five socioeconomic indicators; low-income, unemployment, limited English, less than high school education, and low life expectancy (which is a health dataset).

The EJ index is a combination of two demographic indicators (average low income and people of color populations for the area of interest) and a single environmental indicator. The supplemental index uses the same methodology but combines the average of the five demographic indicators mentioned above (low income, unemployment, limited English, less than high school education, and low life expectancy) with a single environmental indicator. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. An EJScreen map can display one indicator at a time. An EJScreen standard report provides socioeconomic and environmental information for user-defined areas, and combines data into EJ and Supplemental indexes, creating a single, printable report.

The threshold map widget allows EJScreen users to look across all indexes at once, providing a cumulative outlook on vulnerable populations facing higher pollution burdens. The tool also allows users to select the number of indexes or to select specific indicators of interest. Threshold maps are available for both the EJ indexes and the supplemental indexes and are available for comparison at the national and state level. Prior to the inclusion of threshold maps, EJScreen only provided the indexes individually and did not provide a combined map of all twelve indexes on one map. The threshold maps offer users the capability to take a broader view of the indexes to help highlight areas that may warrant additional consideration, analysis, or outreach. However, EJScreen cannot provide data on every environmental impact and demographic factor that may be important to a defined area of interest, so it is important to supplement the results with additional information.

EJScreen offers a buffer feature to help identify an area on a map and includes everyone who lives within a certain distance of a point, line, or polygon. An example point might be the location of a proposed activity or development. The buffer ring, which can be up to 10 miles, creates a representative set of data showing a population-weighted average for each indicator. Every indicator in EJScreen is put into perspective by showing its associated percentile. Percentiles are a way to see how residents in the area of interest compare to everyone else in the state or Nation. For example, the national percentile tells you

what percent of the US population has a value equal to or lower than the value for the area of interest, meaning those areas feature less potential for exposure/ risk/proximity to certain facilities.

Limitations of EJScreen include the following:

- Not all possible, relevant issues (e.g., environmental concerns) are captured in the tool because some are not available in a comprehensive, nationwide dataset (such as drinking water quality or indoor air quality).
- EJScreen cannot provide data on every environmental impact and demographic factor that may be important to any location. EJScreen relies on demographic and environmental estimates that involve substantial uncertainty especially for small geographic areas.
- The demographic estimates, such as percent low-income, come from surveys, not a full census of all households.
- All indicators are calculated for each block group. The only exception is certain environmental indicators for air quality (PM, ozone, and air toxics indicators).
- The environmental indicators are only screening-level proxies for actual health impacts and have substantial uncertainty.

Table 2 Data sources and descriptions of inputs used in EJScreen.

Source(s)	Dataset	Variable(s)	Category of Burden
U.S. Census 2017-2021	American Community Survey (ACS)	• Socioeconomic & Demographic • Lead Paint	• Socioeconomic
Environmental Protection Agency (EPA) 2021-2019	Risk-screening Environmental Indicators Superfund Enterprise Management System (SEMS) database RSEI modeled results Office of Underground Storage Tanks Biennial reports	• PM2.5 • Ozone • Diesel Particulate Matter • Air Toxics Cancer Risk • Toxic Release to Air Source • Superfund proximity • Risk Management Plan facility proximity • Hazardous Waste Proximity • Underground Storage Tanks • Wastewater discharge	• Health • Energy
U.S. Department of Transportation 2020	Highway Performance Monitoring System	• Traffic Proximity Source	• Socioeconomic • Health

Model: DOE Energy Justice Mapping Tool – Disadvantaged Communities Reporter

The DOE Energy Justice Mapping Tool – Disadvantaged Communities Reporter (DOE DAC Reporter) was developed to allow users to explore and produce reports on communities that the DOE has

categorized as disadvantaged. The characterization of a disadvantaged community (DAC) was created using data at the census tract level and the results from this tool are used to advance the goals of the Justice40 Initiative. The tool is used to identify the DAC status of 73,056 census tracts. The DOE DAC Reporter uses the definition of a disadvantaged community from Section 223 of Executive Order 140008, which defines a community as either:

3. Group of individuals living in geographic proximity (such as a census tract); or
4. Geographically dispersed set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions.

The DOE DAC Reporter uses 36 burden indicators grouped into four categories: energy burden, environmental and climate hazards, socioeconomic vulnerabilities, and fossil dependence (Table 3Table 3 Data sources and descriptions of inputs used in the DOE DAC Reporter. The tool uses publicly available, nationally consistent datasets, and the current version of the tool utilizes EPA's EJScreen data to calculate some variables (Table 3). The DOE DAC Reporter has been updated to utilize CEJST data for calculations (see Table 1). Federal agencies have been directed (M-23-09) to transition to using the White House CEJST tool for defining disadvantaged communities. Therefore, the CEJST data layer was added to the DOE tool.

The DOE DAC Reporter is designed to help DOE funding recipients better understand the burdens experienced by census tracts identified in the CEJST tool by providing a DOE DAC score. The DAC score is calculated as follows: for every census tract, DOE considers the 36 burden indicators and calculates percentile values for each by census tract. Each indicator is given equal weight. The percentiles are summed across all indicators to create a score for each census tract. Up to 20 percent of the highest scoring census tracts (e.g., those tracts that rank in the 80th percentile of the cumulative sum of the 36 burden indicators) are included for each state to ensure that every state is represented. DAC eligibility is further limited based on income[1]. The final scores for each tract could range from 0 to 36, where a total score of 36 would represent the largest disadvantage. The DOE DAC score can be used to prioritize within the set of CEJST defined disadvantaged tracts and identify those tracts with the highest cumulative burdens. Cumulative burden uses an indexing method, averaging and multiplying indicators to combine normalized data into a single index score.

Table 3 Data sources and descriptions of inputs used in the DOE DAC Reporter.

Source(s)	Dataset	Variable(s)	Category of Burden
U.S. Census Bureau 2019	Not specified	• >30 min commute • No Vehicle • Uninsured • Disability • Unemployment • Low Income • Incomplete Plumbing • Single Parent • Mobile Home	• Socioeconomic • Energy

[1] A census tract is identified as a DAC if it ranks ion the 80th percentile for cumulative burdens and if at least 30% of the households are considered low income. A census tract is identified as low income if at least 30% of households are at or below 200% of the Federal Poverty Level and/or are considered low-income households by the Department of Housing and Urban Development (HUD), defined as making 80% of the area median income.

Source(s)	Dataset	Variable(s)	Category of Burden
		• Non-grid-connected heating fuel	
U.S. Environmental Protection Agency 2021	EJScreen	• Population 65 and older • Homes Built Before 1960 • Diesel • Cancer • Traffic Proximity • Water Discharge • NPL Proximity • RMP Proximity • TSDF Proximity • PM2.5 • Less HS Education • Linguistic Isolation	• Health • Climate Change
ESRI 2019	Not specified	• Parks	• Socioeconomic
Center for Neighborhood Technology 2017	Not specified	• Transportation Burden • Renters • Housing Costs • Job Access	• Socioeconomic
Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization 2021	Not specified	• Fossil energy employment • Coal employment	• Socioeconomic • Energy
U.S. Department of Agriculture 2021	Food Access Research Atlas	• Food Desert	• Socioeconomic • Health
U.S. Department of Commerce 2021	National Telecommunications and Information Administration	• Internet Access	• Socioeconomic
U.S. Department of Housing and Urban Development 2019	Not specified	• Homelessness	• Socioeconomic
U.S. Department of Energy 2018 and 2021	Not specified	• Energy Burden • Outage Events • Outage Duration	• Energy • Climate Change
U.S. Department of Homeland Security Federal Emergency Management Agency 2021	Not specified	• Climate Hazards	• Climate Change

DOE assumes for this appendix that since this tool now uses CEJST data that the two tools have the same limitations.

Model: Environmental Justice Index Tool

The Environmental Justice Index Tool (EJI) was developed by the Center for Disease Control's Agency for Toxic Substances and Disease Registry (CDC 2022). The EJI tool was created to help public health officials and communities identify and map areas that experience the greatest cumulative impacts of environmental burdens on their health, relative to other communities in the United States. The EJI is not intended to be a tool used to definitively label an EJ community or to characterize all EJ issues facing a community. The EJI uses census tract boundaries based on the 2010 census to define the geographic unit for reported data. The tool is used to determine the cumulative impacts of environmental injustice on over 71,000 census tracts. Data used in the EJI tool comes from publicly available, regularly updated, and authoritative sources (Table 4).

The EJI calculates cumulative impact scores using 36 indicators across three categories (called modules): social vulnerability, environmental burden, and health vulnerability. Indicators representing environmental burden are intended to capture features of the environment that contribute either negatively or positively to human health and well-being. Indicators representing social vulnerability are intended to capture population characteristics that may influence the ability of a community to respond to environmental hazards or influence environmental decision-making. Indicators characterizing health vulnerability are intended to capture the prevalence of certain pre-existing health conditions, which represent a measurable form of biological susceptibility that can influence morbidity and mortality associated with environmental burden.

An overall EJI score is calculated by summing the ranked scores of the three modules. All modules are weighted equally in calculating the overall EJI score. A final EJI ranking is produced using the overall EJI score. Tract-level rankings for individual indicators, modules, and overall scores are based on percentile ranks. The EJI percentile rank represents the proportion of tracts (or counties) that are equal to or lower than a tract of interest in environmental burden. For example, an EJI ranking of 0.85 signifies that 85% of tracts in the nation likely experience less severe cumulative impacts from environmental burden or social vulnerability attributable than the tract of interest, and that 15% of tracts in the nation likely experience more severe cumulative impacts from environmental burden or social vulnerability attributable.

Limitations of the EJI include:

- EJI cannot capture all social, environmental, or health issues that a community may face some issues, such as indoor air pollution or septic system failure and associated soil contamination, are not available as national datasets.
- There are limitations in the kind of data used by the EJI because the EJI relies on historical data generated by various institutions on varying time scales, meaning that the EJI is not entirely reflective of current or future conditions.
- The environmental indicators included in the EJI do not represent detailed measures of risk or exposure assessments. These indicators are intended to provide only a screening-level overview of environmental burdens facing a community.
- Proximity measures used to construct indicators within the Proximity to Potentially Hazardous & Toxic Sites domain represent proximity to points within a site rather than polygons representing the entire site area due to a lack of nationally representative polygon data. This could lead to misclassification of potential impacts from large sites.
- There is a lack of data for many key environmental indicators which led to the exclusion of Alaska, Hawaii, the Commonwealth of Puerto Rico, and all other Island Territories (the U.S. Virgin Islands, American Samoa, Commonwealth of the Northern Mariana Islands, Guam) from

the EJI 2022 calculations. The EJI 2022 includes only the Continental U.S. (48 states plus the District of Columbia).

Table 4 Data sources and descriptions of inputs used in the CDC Environmental Justice Index

Source(s)	Dataset	Variable(s)	Category of Burden
U.S. Environmental Protection Agency 2014-2021	Air Quality System (AQS; combined monitoring and modeled data) National Air Toxics Assessment Facility Registry Service (FRS) National Walkability Index Watershed Index Online (WSIO)	• Air Pollution: Ozone • Air Pollution: PM2.5 • Air Pollution: Diesel Particulate Matter • Air Pollution: Air Toxics Cancer Risk • Potentially Hazardous & Toxic Sites: National Priority List Sites • Potentially Hazardous & Toxic Sites: Toxic Release Inventory Sites • Potentially Hazardous & Toxic Sites: Treatment, Storage, and Disposal Facilities • Potentially Hazardous & Toxic Sites: Risk Management Plan Sites • Built Environment: Lack of Walkability • Water Pollution: Impaired Surface Water	• Health • Energy
U.S. Mine Safety and Health Administration 2021	Mine Data Retrieval System (MDRS)	• Potentially Hazardous & Toxic Sites: Coal Mines • Potentially Hazardous & Toxic Sites: Lead Mines	• Health • Energy
TomTom MultiNet® Enterprise Dataset 2020		• Built Environment: Lack of Recreational Parks • Transportation Infrastructure: High Volume Roads • Transportation Infrastructure: Railways • Transportation Infrastructure: Airports	• Socioeconomic • Energy
U.S. Census Bureau 2015-2019	American Community Survey (ACS) Prevention PLACES Estimates	• Built Environment: Housing Built Pre-1980 • Racial/Ethnic Minority Status: Minority Status • Socioeconomic Status: Poverty • Socioeconomic Status: No High School Diploma • Socioeconomic Status: Unemployment	• Socioeconomic • Health

Source(s)	Dataset	Variable(s)	Category of Burden
		• Socioeconomic Status: Housing Tenure • Socioeconomic Status: Housing Burdened, Lower-Income Households • Socioeconomic Status: Lack of Health Insurance • Socioeconomic Status: Lack of Internet Access • Household Characteristics: Age 65 and Older • Household Characteristics: Age 17 and Younger • Household Characteristics: Civilian with a Disability • Household Characteristics: Speaks English "Less than Well" • Housing Type: Group Quarters • Housing Type: Mobile Homes • High Estimated Prevalence of Asthma • High Estimated Prevalence of Cancer • High Estimated Prevalence of High Blood Pressure • High Estimated Prevalence of Diabetes • High Estimated Prevalence of Poor Mental Health	

2.0 Conclusion

In conclusion, there are several useful tools and models available to help characterize potential EJ communities and disadvantaged communities to aid Federal agencies when analyzing potential impacts to these communities in a NEPA review. While the outputs form these models are not directly comparable and have different intended uses they provide helpful context when evaluating potential impacts to that community from a proposed action and alternatives may be in a NEPA review.

3.0 References

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