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*Other EIS figures presented in Appendix A.

3.13 Socioeconomics

3.13.1 Regulatory Background

Socioeconomic conditions and impacts are among "the effects on the human environment" to be discussed in an EIS. They are also commonly recognized and addressed as a concern under various federal, state, and local planning and management processes.

3.13.2 Data Sources

The socioeconomic analysis relies primarily on published information compiled by federal and state government agencies, supplemented by information from academic and private sources, as well as Project-specific data and information. Key federal and state data sources include the following:

- Federal agencies: U.S. Census Bureau, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, and USDA
- State agencies: economic, demographic, labor, and revenue/taxation departments

3.13.3 Region of Influence

3.13.3.1 Region of Influence for the Project

The ROI for the socioeconomic analysis consists of the 33 counties that could potentially be directly affected by the Project components. The ROI is divided into seven regions for the purposes of analysis (Table 3.13-1; Figure 2.1-2 in Appendix A). The counties crossed by the AC collection system that are not crossed by the HVDC transmission line—Hansford, Ochiltree, and Sherman counties, Texas, and Cimarron County, Oklahoma—are not identified in Table 3.13-1, but are included as part of Region 1. Faulkner County, Arkansas, is not crossed by the Applicant Proposed Route and is therefore not identified in Table 3.13-1, but is included as part of Region 5.

Table 3.13-1:
States and Counties Crossed by the Applicant Proposed HVDC Transmission Line by Region

Region	State	County[1]	Miles
1	Oklahoma[2]	Texas, Beaver, Harper	115.5
2	Oklahoma	Woodward, Major, Garfield[3]	106.0
3	Oklahoma	Garfield[3], Kingfisher, Logan, Payne, Lincoln, Creek, Okmulgee, Muskogee[3]	161.7
4	Oklahoma	Muskogee[3], Sequoyah	43.5
	Arkansas	Crawford, Franklin, Johnson, Pope[3]	82.8
5	Arkansas[4]	Pope, Conway, Van Buren, Cleburne, White, Jackson[3]	112.8
6	Arkansas	Jackson[3], Poinsett[3], Cross	54.3
7	Arkansas	Poinsett[3], Mississippi	26.4
	Tennessee	Tipton, Shelby	16.4
		Total	719.4

1 Counties are generally listed from west to east by region.
2 Region 1 also includes the following counties that would be potentially crossed by the AC collection system routes: Hansford, Ochiltree, and Sherman counties, Texas, and Texas and Cimarron counties, Oklahoma.
3 Counties located in more than one region.
4 Region 5 also includes Faulkner County because it would be crossed by HVDC Alternative Routes 5-B and 5-D.

Where possible, the socioeconomic assessment references the seven regions, but the available socioeconomic data are typically based on geopolitical boundaries, usually counties, that do not directly correspond with the regions. As indicated in Table 3.13-1, the regions typically break mid-county, which results in several counties being located in more than one region. In addition, the proposed HVDC transmission line, as currently proposed, would be constructed in five approximately 140-mile-long segments that do not directly coincide geographically with the seven regions.

The following counties are located in more than one region: Garfield and Muskogee counties, Oklahoma, and Pope, Jackson, and Poinsett counties, Arkansas. Counties are assigned to one region for the purposes of analysis. Garfield, Muskogee, and Pope counties are assigned to the region that includes the majority of the HVDC transmission line located in that county: Regions 2, 3, and 5, respectively. The length of transmission line in Jackson and Poinsett counties is fairly evenly divided between two regions. These counties are included in the easternmost of the two regions: Regions 5 and 6, respectively.

The length of the HVDC transmission line ranges from 3.4 miles in Kingfisher County, Oklahoma, to 56 miles in Beaver County, Oklahoma (Table 3.13-2).

Table 3.13-2:
Miles Crossed by the Applicant Proposed HVDC Transmission Line by County and State

State/County[1]	Miles	State/County[1]	Miles	State/County[1]	Miles
Oklahoma		Arkansas		Tennessee	
Texas	23.8	Crawford	28.4	Shelby	5.0
Beaver	56.0	Franklin	19.8	Tipton	11.4
Harper	35.6	Johnson	27.8	Total	16.4
Woodward	32.4	Pope	27.1		
Major	52.2	Conway	21.6		
Garfield	22.2	Van Buren	13.2		
Kingfisher	3.4	Cleburne	23.5		
Logan	20.8	White	17.2		
Payne	35.7	Jackson	33.7		
Lincoln	10.0	Poinsett	31.5		
Creek	27.4	Cross	16.1		
Okmulgee	27.7	Mississippi	16.3		
Muskogee	39.5	Total	276.2		
Sequoyah	39.9				
Total	426.6				

1 Counties are generally listed from west to east by state.

Potential socioeconomic impacts would occur in the counties where the proposed facilities would be located and these counties form the ROI for the following analysis. Some impacts would also likely occur outside these counties. This is especially likely to be the case where larger communities are located in adjacent or nearby counties. These communities are likely to provide some local workers and also provide temporary housing for workers temporarily relocating to the area. Larger communities where these types of impact may occur include Metropolitan Statistical

Areas (MSAs) are part of or adjacent to the ROI. MSAs have at least one urbanized area with 50,000 or more residents, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties (OMB 2013). These areas represent larger communities that form regional markets for labor, goods and services, and information. MSAs typically include an urbanized node and economically related surrounding counties. The potentially affected MSAs are identified in Table 3.13-3.

Table 3.13-3:
MSAs that are Part of or Adjacent to the ROI

Region[1]	MSA	Principal City	Counties
3	Oklahoma City, OK	Oklahoma City, OK	Canadian, OK; Cleveland, OK; Grady, OK; Lincoln, OK[2]; Logan, OK[2]; McClain, OK; Oklahoma, OK
3	Tulsa, OK	Tulsa, OK	Creek, OK[2]; Okmulgee, OK[2]; Osage, OK; Pawnee, OK; Rogers, OK; Tulsa, OK; Wagoner, OK
4	Fort Smith, AR-OK	Fort Smith, AR	Crawford, AR[2]; Sebastian, AR; Le Flore, OK; Sequoyah, OK[2]
5	Little Rock-North Little Rock-Conway, AR	Little Rock, North Little Rock, Conway	Faulkner, AR[2]; Grant, AR; Lonoke, AR; Perry, AR; Pulaski, AR; Saline, AR
6	Jonesboro, AR	Jonesboro, AR	Craighead, AR; Poinsett, AR[2]
7	Memphis, TN-MS-AR	Memphis, TN	Crittenden, AR; Benton, MS; DeSoto, MS; Marshall, MS; Tate, MS; Tunica, MS; Fayette, TN; Shelby, TN[2]; Tipton, TN[2]

1 Identifies the region that includes counties that are part of the identified MSA.
2 County included in the ROI.

3.13.3.2 Region of Influence for Connected Actions

The ROI for wind energy generation, the future Optima Substation, and TVA upgrades is described in Section 3.1.1.

3.13.4 Affected Environment

3.13.4.1 Population

The 33 counties in the ROI had a total combined population of slightly more than 2 million people (2,055,103) in 2012, with almost half this total (934,654) concentrated in Shelby County, Tennessee. This county, located at the eastern end of the ROI includes the city of Memphis, which had an estimated 2012 population of 655,155 (USCB 2014a). As a result, slightly more than half the total population of the counties in the ROI is concentrated in Region 7. Total population in the remaining six regions in 2012 ranged from 51,652 in Region 1 (2.5 percent of the ROI total) to 348,517 in Region 3 (17.0 percent of the ROI total), closely followed by Region 5 with 334,750 (16.3 percent of the ROI total) (Table 3.13-4).

The western portion of the ROI is sparsely populated. The seven counties that compose Region 1 had an average population density of 5.4 people per square mile in 2012 (compared to a national average of 88.9). The city of Guymon, the county seat of Texas County, Oklahoma, is the largest community in Region 1, with an estimated population of just 11,930 in 2012 (USCB 2014a). Woodward and Major counties in Oklahoma (Region 2) are also relatively sparsely populated with 2012 population densities of 16.3 and 7.9 people/square mile, respectively. Average population densities in the other regions ranged from 30.8 people/square mile in Region 6 to 491.2 people/square mile in Region 7 (Table 3.13-4). MSAs adjacent to the ROI are identified by region in Table 3.13-3. There are no larger communities or MSAs within commuting distance of Region 1.

Population increased from 1990 to 2000 in all four states that are crossed by the ROI, with increases ranging from 10 percent (Oklahoma) to 23 percent (Texas), compared to a nationwide increase of 13 percent (Table 3.13-5). As detailed in Table 3.13.4, viewed by region, changes in population in the ROI from 1990 to 2000 ranged from no change in Region 2 to 24 percent in Region 5. Population in Region 1 increased by 5 percent over this period, but this was mainly due to a 22 percent increase in Texas County, Oklahoma, the most populated of the seven Region 1 counties. Five of the remaining six counties actually lost population in the 1990s.

Population also increased from 2000 to 2012 in all four states, with increases ranging from 10 percent (Oklahoma and Arkansas) to 25 percent (Texas), compared to a nationwide increase of 11 percent (Table 3.13-5). Viewed by region, changes over this period ranged from a net decrease of 6 percent in Region 6 to a 17 percent increase in Region 5 (Table 3.13-4).

Population is projected to increase nationwide and in all four states from 2012 to 2020 and from 2020 to 2030. In all cases, projected increases are expected to be smaller than those experienced over the past two decades (Table 3.13-5). Population projections for 2012 to 2020 vary substantially by region, ranging from a 6 percent decrease in Region 6 to a 20 percent increase in Region 5. Most counties are anticipated to see increases in population from 2020 to 2030 in all regions (Table 3.13-4).

Table 3.13-4:
Population by County and Region

Region	County[1]	2012 Population	2012 Population Density (people/square mile)	Population Change (Percent)		Projected Population Change[2] (Percent)	
				1990 to 2000	2000 to 2012	2012 to 2020	2020 to 2030
1	Hansford, TX	5,521	6.0	-8	3	11	11
	Ochiltree, TX	10,728	11.7	-1	19	7	13
	Sherman, TX	3,073	3.3	11	-4	7	9
	Cimarron, OK	2,451	1.3	-5	-22	-6	-7
	Texas, OK	20,620	10.1	22	3	7	5
	Beaver, OK	5,587	3.1	-3	-5	-6	-5
	Harper, OK	3,672	3.5	-12	3	-8	-7
	Region 1 Total	**51,652**	**5.4**	**5**	**3**	**4**	**5**
2	Woodward, OK	20,232	16.3	-3	9	3	5
	Major, OK	7,563	7.9	-6	0	0	-2
	Garfield, OK[1]	60,272	56.9	2	4	0	1
	Region 2 Total	**88,067**	**27.0**	**0**	**5**	**0**	**1**
3	Kingfisher, OK	14,965	16.7	5	7	3	3
	Logan, OK	41,982	56.4	17	24	10	9
	Payne, OK	77,125	112.6	11	13	9	8
	Lincoln, OK	34,106	35.8	10	6	9	9
	Creek, OK	69,934	73.6	11	4	8	8
	Okmulgee, OK	39,770	57.0	9	0	2	2
	Muskogee, OK[1]	70,635	87.2	2	2	6	3
	Region 3 Total	**348,517**	**60.7**	**9**	**7**	**7**	**6**

Table 3.13-4:
Population by County and Region

Region	County[1]	2012 Population	2012 Population Density (people/square mile)	Population Change (Percent)		Projected Population Change[2] (Percent)	
				1990 to 2000	2000 to 2012	2012 to 2020	2020 to 2030
4	Sequoyah, OK	41,945	62.3	15	8	10	10
	Crawford, AR	61,670	104.0	25	16	19	6
	Franklin, AR	18,110	29.7	19	2	2	9
	Johnson, AR	25,554	38.7	25	12	14	5
	Region 4 Total	**147,279**	**58.1**	**21**	**11**	**14**	**7**
5	Pope, AR[1]	61,853	76.1	19	14	15	-4
	Conway, AR	21,203	38.4	6	4	6	-8
	Van Buren, AR	17,223	24.3	16	6	8	7
	Cleburne, AR	25,849	46.7	24	7	10	15
	Faulkner, AR	113,730	175.5	43	32	36	4
	White, AR	77,007	74.4	23	15	17	0
	Jackson, AR[1]	17,885	28.2	-3	-3	-2	-25
	Region 5 Total	**334,750**	**67.7**	**24**	**17**	**20**	**1**
6	Poinsett, AR[1]	24,506	32.3	4	-4	-4	3
	Cross, AR	17,891	29.0	2	-8	-10	10
	Region 6 Total	**42,397**	**30.8**	**3**	**-6**	**-6**	**6**
7	Mississippi, AR	46,388	51.5	-10	-11	-12	-9
	Shelby, TN	934,654	1224.7	9	4	2	1
	Tipton, TN	61,399	134.0	36	20	12	12
	Region 7 Total	**1,042,441**	**491.2**	**9**	**4**	**2**	**1**

1 1 Counties located in more than one region are assigned to one region for the purposes of analysis. Garfield and Muskogee counties,
2 Oklahoma, and Pope County, Arkansas, are assigned to the region that includes the majority of the HVDC transmission line located in
3 that county. Garfield County is assigned to Region 2, Muskogee County to Region 3, and Pope County to Region 5. The length of
4 transmission line in Jackson and Poinsett counties, Arkansas, is fairly evenly divided between two regions. These counties are included in
5 the first region from east to west. Jackson County is assigned to Region 5 and Poinsett County to Region 6. This distribution of counties
6 by region is used throughout the following analysis.
7 2 Population projections for Texas, Oklahoma, and Tennessee counties are based on 2010 Census data. Projections for Arkansas for 2020
8 are based on 2010 Census data; 2030 Arkansas projections are based on 2000 Census data.
9 Sources: Oklahoma DOC (2012), Texas State Data Center (2012), USCB (2002, 2010, 2014a), Institute for Economic Advancement (2010,
10 2012), Center for Business and Economic Research (2013)

Table 3.13-5:
Population by State

State	2012 Population	2012 Population Density (people /square mile)	Population Change (Percent)		Projected Population Change (Percent)	
			1990 to 2000	2000 to 2012	2012 to 2020	2020 to 2030
Texas	26,060,796	99.8	23	25	5	7
Oklahoma	3,786,152	55.2	10	10	6	7
Arkansas	2,936,822	56.4	14	10	12	3
Tennessee	6,404,240	155.3	17	13	8	8
United States	313,914,040	88.9	13	11	6	7

Sources: Oklahoma DOC (2012), Texas State Data Center (2012), USCB (2002, 2010, 2014a), Institute for Economic Advancement (2010, 2012), Center for Business and Economic Research (2013)

3.13.4.2 Economic Conditions

The USDA Economic Research Service (ERS) developed a set of county typology codes designed to capture differences in economic and social characteristics at the county level (USDA ERS 2008). These codes consist of six non-overlapping categories of economic dependence (farming, mining, manufacturing, federal/state government, services, and non-specialized) and seven overlapping categories of policy-relevant themes, including non-metropolitan recreation area and retirement destination. The economic dependence categories are assigned based on the share of average annual labor and proprietors' income and/or the share of total employment associated with the identified categories. The ERS assigned all counties to one of the economic dependence categories based on data from 1998 to 2000 (Table 3.13-6).

The ERS typology identified all seven counties in Region 1 as farming-dependent. The majority of the other counties were identified as non-specialized, with six counties identified as manufacturing-dependent, two counties identified as federal/state government-dependent, two counties identified as services-dependent, and one identified as mining-dependent (Table 3.13-6). In addition, three counties, all located in Region 5, were identified as retirement destination counties, and one other was identified as a non-metropolitan county.

Total employment increased from 2001 to 2011in all four states crossed by the ROI, as well as nationwide (Table 3.13-6). Viewed by region, changes in total employment from 2001 to 2011 ranged from a 7 percent decrease in Region 6 to a 14 percent increase in Region 1. Annual unemployment rates in 2012 by region ranged from 3.3 percent and 3.7 percent in Regions 2 and 1, respectively, to 9.1 percent in Region 7 (Table 3.13-6). The national unemployment rate in 2012 was 8.1 percent (Table 3.13-7). Average per capita income by region ranged from $28,698 (equivalent to 66 percent of the U.S. per capita income) in Region 4 to $44,558 in Region 1, which is slightly higher than the U.S. average per capita income (Table 3.13-6).

Table 3.13-6:
Economic Conditions by County and Region

Region	County	Economic Type	Employment[1]		Annual Unemployment Rate 2012	Per-Capita Income	
			2011	Percent Change 2001 to 2011		2012	Percent of U.S. Per Capita-Income
1	Hansford, TX	Farming	3,712	8	3.9	56,221	129%
	Ochiltree, TX	Farming	7,687	29	3.3	52,628	120%
	Sherman, TX	Farming	1,790	0	4.6	58,431	134%
	Cimarron, OK	Farming	2,059	-4	3.6	44,090	101%
	Texas, OK	Farming	14,051	16	4.7	36,504	83%
	Beaver, OK	Farming	4,156	16	2.5	44,876	103%
	Harper, OK	Farming	2,144	1	2.9	36,897	84%
	Region 1		**35,599**	**14**	**3.7**	**44,558**	**102%**
2	Woodward, OK	Non-specialized	11,883	-16	2.8	44,285	101%
	Major, OK	Mining	5,310	13	3.2	43,005	98%
	Garfield, OK	Federal/state government	38,682	16	3.5	43,705	100%
	Region 2		**55,875**	**7**	**3.3**	**43,778**	**100%**
3	Kingfisher, OK	Non-specialized	9,922	12	3.2	43,162	99%
	Logan, OK	Non-specialized	22,398	32	4.4	40,789	93%
	Payne, OK	Federal/state government	46,646	4	4.8	36,186	83%
	Lincoln, OK	Non-specialized	14,540	3	5.1	32,633	75%
	Creek, OK	Manufacturing	30,356	5	6.0	34,619	79%
	Okmulgee, OK	Non-specialized	15,329	4	7.7	30,674	70%
	Muskogee, OK	Non-specialized	38,706	-1	6.4	33,653	77%
	Region 3		**177,897**	**6**	**5.6**	**35,236**	**81%**
4	Sequoyah, OK	Non-specialized	14,629	6	8.5	29,010	66%
	Crawford, AR	Non-specialized	27,152	14	7.4	28,880	66%
	Franklin, AR	Non-specialized	7,001	-5	6.7	31,837	73%
	Johnson, AR	Manufacturing	11,866	6	6.8	25,520	58%
	Region 4		**60,648**	**8**	**7.5**	**28,698**	**66%**
5	Pope, AR	Non-specialized	34,057	7	7.1	29,929	68%
	Conway, AR	Non-specialized	11,160	8	7.6	34,140	78%
	Van Buren, AR	Non-specialized[3]	6,162	0	8.9	31,285	72%
	Cleburne, AR	Manufacturing[2]	12,889	8	7.2	36,510	83%
	Faulkner, AR	Non-specialized[2]	55,844	22	6.6	34,472	79%
	White, AR	Services[2]	36,823	10	8.0	31,059	71%
	Jackson, AR	Non-specialized	7,900	-9	9.6	33,022	76%
	Region 5		**164,835**	**12**	**7.3**	**32,742**	**75%**
6	Poinsett, AR	Manufacturing	8,125	-13	7.8	33,832	77%
	Cross, AR	Non-specialized	8,314	0	8.2	33,687	77%
	Region 6		**16,439**	**-7**	**8.0**	**33,771**	**77%**

Table 3.13-6:
Economic Conditions by County and Region

Region	County	Economic Type	Employment[1]		Annual Unemployment Rate 2012	Per-Capita Income	
			2011	Percent Change 2001 to 2011		2012	Percent of U.S. Per Capita-Income
7	Mississippi, AR	Manufacturing	24,179	-5	10.0	33,822	77%
	Shelby, TN	Services	624,006	1	9.1	42,409	97%
	Tipton, TN	Manufacturing[2]	15,794	3	8.9	36,825	84%
	Region 7		663,979	0	9.1	41,698	95%

1 1 Total employment includes self-employed individuals. Employment data are by place of work, not place of residence and, therefore,
2 include people who work in the area but do not live there. Employment is measured as the average annual number of jobs, both full- and
3 part-time, with each job that a person holds counted at full weight.
4 2 Retirement destination county
5 3 Non-metropolitan recreation county
6 Sources: BEA (2012, 2013a), BLS (2014a), USDA ERS (2008)

Table 3.13-7:
Economic Conditions by State

State/Country	Employment				Annual Unemployment Rate 2012	Per-Capita Income	
	2001	2011	Net Change 2001 to 2011	Percent Change 2001 to 2011		2012	Percent of U.S. Per-Capita Income
Texas	12,211,172	14,611,475	2,400,303	19.7	6.8	35,437	81%
Oklahoma	2,009,727	2,167,780	158,053	7.9	5.2	40,620	93%
Arkansas	1,482,678	1,552,597	69,919	4.7	7.3	38,752	89%
Tennessee	3,433,689	3,591,298	157,609	4.6	8.0	42,638	97%
United States	165,510,200	175,834,700	10,324,500	6.2	8.1	43,735	na

7 na = not applicable
8 Sources: BEA (2012, 2013a), BLS (2014b)

9 3.13.4.3 Agriculture

10 Land in farms accounted for 78 percent of the total land area in Texas in 2007 and 80 percent of total land area in
11 Oklahoma. In Arkansas and Tennessee land in farms accounted for about 42 percent of each state's total land area
12 (Table 3.13-8). Average farm size ranged from 138 acres in Tennessee to 527 acres in Texas. Livestock, poultry, and
13 their products accounted for the majority of agricultural products sold by market value in all four states, ranging from
14 56 percent of the total in Tennessee to 80 percent in Oklahoma (Table 3.13-8).

Table 3.13-8:
Summary of Agriculture by State

County	Number of Farms	Land in Farms (acres)	Percent of Total Land Area	Average Farm Size (acres)	Market Value of Agriculture Products Sold ($ million)	Total Market Value of Agricultural Products Sold	
						Crops (%)	Livestock, Poultry, and Products (%)
Arkansas	49,346	13,872,862	42	281	7,509	39	61
Oklahoma	86,565	35,087,269	80	405	5,806	20	80
Tennessee	79,280	10,969,798	42	138	2,617	44	56
Texas	247,437	130,398,753	78	527	21,001	31	69

Source: USDA (2009)

Viewed by region, land in farms ranged from 38 percent in Region 3 to 98 percent in Region 1. Land in farms also accounted for almost all (94 percent) of the total land area in Region 2 (Table 3.13-9). Average farm size by region ranged from 198 acres in Region 5 to 1,397 acres in Region 1. Average farm size by county ranged from 116 acres in Crawford County, Arkansas, to 2,419 acres in Hansford County, Texas. All seven counties in Region 1 had average farm sizes larger than 1,000 acres (Table 3.13-9).

Table 3.13-9:
Summary of Agriculture by County and Region

Region	County	Number of Farms	Land in Farms (acres)	Percent of Total Land Area	Average Farm Size (acres)	Market Value of Agriculture Products Sold ($ million)	Total Market Value of Agricultural Products Sold	
							Crops (%)	Livestock, Poultry, and Products (%)
1	Hansford, TX	242	585,286	99	2,419	590	15	85
	Ochiltree, TX	382	579,476	99	1,517	395	(D)	(D)
	Sherman, TX	362	584,196	99	1,614	449	23	77
	Cimarron, OK	557	1,044,528	89	1,875	262	18	82
	Texas, OK	1,038	1,205,978	92	1,162	780	15	85
	Beaver, OK	952	1,128,871	97	1,186	188	19	81
	Harper, OK	580	616,947	93	1,064	123	9	91
	Region 1	4,113	5,745,282	95	1,397	2,787	17	83
2	Woodward, OK	892	783,200	98	878	79	(D)	(D)
	Major, OK	967	517,334	85	535	113	11	89
	Garfield, OK	1,082	663,431	98	613	76	38	62
	Region 2	2,941	1,963,965	94	668	268	22	78
3	Kingfisher, OK	1,002	566,212	99	565	117	22	78
	Logan, OK	1,241	403,810	85	325	49	18	82
	Payne, OK	1,567	356,765	81	228	39	13	87
	Lincoln, OK	2,300	487,858	80	212	38	10	90
	Creek, OK	1,900	377,437	62	199	20	17	83
	Okmulgee, OK	1,449	294,324	66	203	21	18	82
	Muskogee, OK	1,845	374,372	72	203	53	27	73
	Region 3	11,304	2,860,778	78	253	335	19	81

Table 3.13-9:
Summary of Agriculture by County and Region

Region	County	Number of Farms	Land in Farms (acres)	Percent of Total Land Area	Average Farm Size (acres)	Market Value of Agriculture Products Sold ($ million)	Total Market Value of Agricultural Products Sold	
							Crops (%)	Livestock, Poultry, and Products (%)
4	Sequoyah, OK	1,352	231,943	54	172	59	9	91
	Crawford, AR	1,026	119,227	31	116	59	18	82
	Franklin, AR	759	152,822	39	201	112	3	97
	Johnson, AR	607	105,820	25	174	135	3	97
	Region 4	**3,744**	**609,812**	**38**	**163**	**365**	**6**	**94**
5	Pope, AR	1,080	153,693	30	142	149	96	4
	Conway, AR	994	187,142	53	188	134	8	92
	Van Buren, AR	566	114,270	25	202	16	92	8
	Cleburne, AR	905	129,815	37	143	56	3	97
	Faulkner, AR	1,341	190,089	46	142	20	29	71
	White, AR	2,199	411,404	62	187	119	71	29
	Jackson, AR	445	302,125	74	679	107	96	4
	Region 5	**7,530**	**1,488,538**	**47**	**198**	**600**	**60**	**40**
6	Poinsett, AR	418	340,704	70	815	154	99	1
	Cross, AR	364	282,963	72	777	112	99	1
	Region 6	**782**	**623,667**	**71**	**798**	**266**	**99**	**1**
7	Mississippi, AR	369	461,328	80	1,250	196	100	0
	Shelby, TN	600	92,299	19	154	24	89	11
	Tipton, TN	610	170,182	58	279	37	93	7
	Region 7	**1,579**	**723,809**	**53**	**458**	**256**	**98**	**2**

(D) Data suppressed by the Census to prevent disclosure of an individual respondent's data.
Source: USDA (2009)

The market value of agricultural products sold in 2007 ranged from $256 million in Region 7 to $2,787 in Region 1. Viewed by county, total market value in 2007 ranged from $16 million in Van Buren County, Arkansas, to $780 million in Texas County, Oklahoma (Table 3.13-9). Total market value and the relative distribution between crops and livestock, poultry, and their products are shown graphically by county in Figure 3.13-1. Livestock, poultry, and their products accounted for the majority of agricultural products sold by market value in the counties that compose Regions 1 through 4, and some of the counties in Region 5. Crops accounted for the vast majority of the value of agricultural products sold in the counties in Regions 6 and 7, as well as Pope, White, and Jackson counties in Region 5 (Figure 3.13-1).

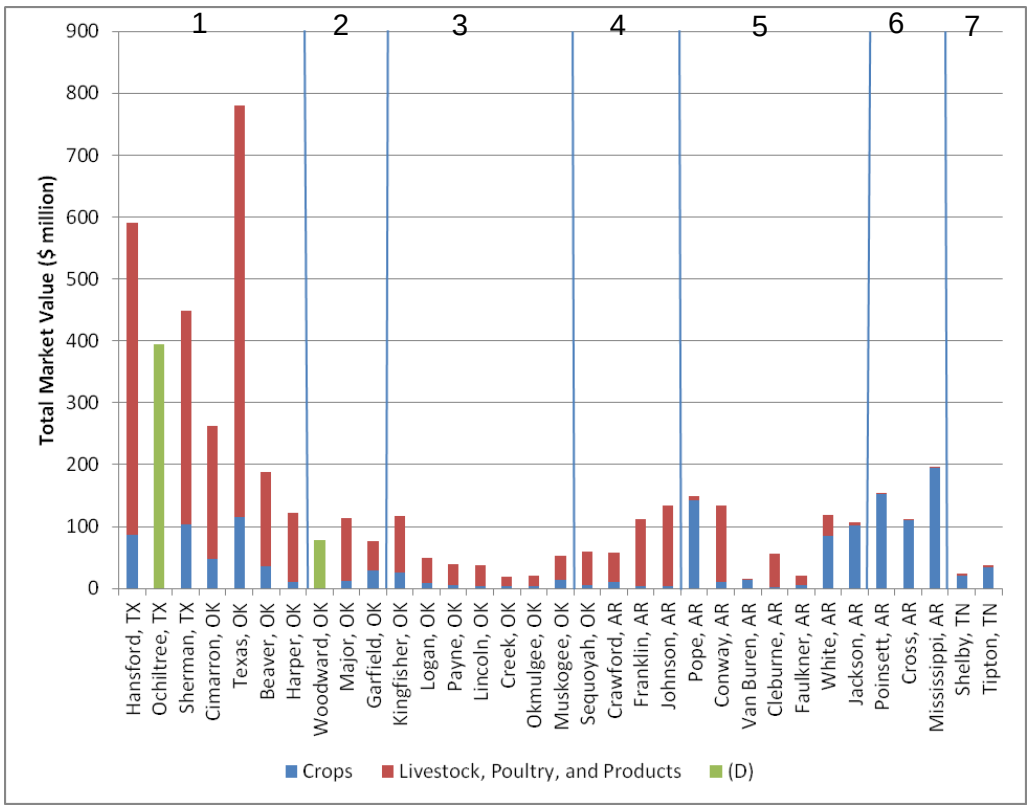

Figure 3.13-1: Total Market Value of Agricultural Products Sold, 2007

Source: USDA (2009)
(D) Data on type of product suppressed by the Census to prevent disclosure of an individual respondent's data.
The numbers (1 through 7) across the top of this figure represent the seven regions that compose the ROI.

3.13.4.4 Housing

Construction of the HVDC transmission line is expected to draw local and workers from outside the region (import workers). The majority of import workers would likely temporarily relocate to the ROI and adjacent communities, especially the larger metropolitan areas that offer quality of life amenities and are within commuting distance to portions of the Project.

Housing resources are summarized for the ROI by county and region in Table 3.13-10. Data on housing units are estimates for 2012 prepared by the USCB (2014b). The Census Bureau defines a housing unit as a house, an apartment, a mobile home or trailer, a group of rooms, or a single room occupied or intended to be occupied as separate living quarters. Viewed by region, these estimates suggest that limited rental housing is available in Region 1, with less than 100 units available in six of the seven counties that compose the region for a combined estimated total of 370 units (Table 3.13-10). Rental housing is also relatively limited in Regions 2 and 6, with 862 and 908 units available, respectively. The relatively low number of units available in Region 6 is largely due to the small size of the region, which consists of just two counties.

Data on hotel and motel rooms and recreational vehicle (RV) spaces were compiled by Clean Line (2013) from various state resources (identified in Table 3.13-10). These data are partial estimates and likely underestimate the number of hotel and motel rooms and RV spaces present. Numbers of hotel and motel rooms estimated by Clean Line range from 238 in Region 5 to 11,827 in Region 7. Other regions with relatively low estimates of hotel and motel rooms include Region 1 (1,093 rooms), Region 2 (1,604 rooms), and Region 4 (1,868 rooms).

Table 3.13-10:
Housing Resources by County and Region

County	Housing Units 2012[1]			Hotel and Motel Rooms[2]	RV Spaces[3]
	Total	Rental Vacancy Rate	Units Available for Rent		
Hansford, TX	2,338	5.9	25	29	37
Ochiltree, TX	4,048	0.0	0	252	124
Sherman, TX	1,188	5.1	13	22	N/A
Cimarron, OK	1,583	8.3	30	44	17
Texas, OK	8,221	6.0	174	697	24
Beaver, OK	2,674	11.1	75	36	7
Harper, OK	1,907	15.0	53	13	26
Region 1	**21,959**	**6.1**	**370**	**1,093**	**235**
Woodward, OK	8,827	17.0	437	775	25
Major, OK	3,673	3.0	22	35	9
Garfield, OK	26,809	4.7	403	794	60
Region 2	**39,309**	**7.2**	**862**	**1,604**	**94**
Kingfisher, OK	6,404	5.9	89	54	N/A
Logan, OK	17,037	7.9	280	315	63
Payne, OK	33,912	7.0	1,108	1,008	292
Lincoln, OK	15,168	6.9	216	183	13
Creek, OK	29,755	6.9	478	164	142
Okmulgee, OK	17,898	7.2	352	316	154
Muskogee, OK	30,937	6.9	670	832	15
Region 3	**151,111**	**7.0**	**3,193**	**2,872**	**679**
Sequoyah, OK	18,662	7.0	341	656	193
Crawford, AR	25,985	8.5	598	690	53
Franklin, AR	8,022	8.6	159	114	194
Johnson, AR	11,265	7.1	237	408	N/A
Region 4	**63,934**	**7.8**	**1,335**	**1,868**	**440**
Pope, AR	25,555	11.2	878	1,075	177
Conway, AR	9,703	16.8	436	243	142
Van Buren, AR	10,315	1.0	16	105	49
Cleburne, AR	15,765	8.6	228	501	94
Faulkner, AR	46,571	9.9	1,668	1,459	83
White, AR	32,356	7.1	708	995	68
Jackson, AR	7,624	12.2	273	171	20
Region 5	**147,889**	**9.6**	**4,207**	**4,549**	**633**

Table 3.13-10:
Housing Resources by County and Region

County	Housing Units 2012[1]			Hotel and Motel Rooms[2]	RV Spaces[3]
	Total	Rental Vacancy Rate	Units Available for Rent		
Poinsett, AR	10,957	11.9	464	96	27
Cross, AR	7,876	16.6	444	142	24
Region 6	18,833	13.8	908	238	51
Mississippi, AR	20,559	10.4	842	714	18
Shelby, TN	398,847	13.8	22,003	11,043	375
Tipton, TN	23,189	8.3	513	70	N/A
Region 7	442,595	13.4	23,358	11,827	393

N/A —Number of units not available

1 Data on housing units were compiled from USCB (2014b).
2 Data for hotel and motel rooms were compiled by Clean Line (2013) from the following sources:
Texas—Source Strategies, Inc.
Oklahoma—Oklahoma Tourism and Recreation Department
Arkansas—Arkansas Department of Parks and Tourism
Tennessee—Memphis Convention and Visitors Bureau
3 Data for RV spaces were compiled by Clean Line (2013) from the following sources:
Texas—Texas Office of Economic Development and Tourism
Oklahoma—Oklahoma Tourism and Recreation Department
Arkansas—Arkansas Department of Parks and Tourism
Tennessee—Memphis Convention and Visitors Bureau

Comprehensive data on hotel and motel rooms are available for the three Texas counties in Region 1. These data indicate that the supply of rooms is extremely limited in these counties. Number of rooms varied from just 22 and 29 rooms located in Hansford and Sherman counties, respectively, and 252 rooms located in Ochiltree County while occupancy rates varied by season in 2013, with rates generally higher in the third quarter than in the earlier part of the year (Source Strategies 2013b). Occupancy rates in the third quarter (July, August, and September) were 75.0 percent, 74.1 percent, and 49.4 percent in Hansford, Ochiltree, and Sherman counties, respectively (Source Strategies 2013a, 2013b).

Estimates of RV spaces range from 51 in Region 6 to 679 in Region 3 (Table 3.13-10). Comprehensive data are not available on these types of resources, and the estimates presented in Table 3.13-10, while representing the best available information, likely understate the number of RV spaces in many cases. However, information from various state resources suggests that RV facilities are more likely to be available in the vicinity of the more populated parts of the ROI and adjacent communities.

The data presented in Table 3.13-10 are for those counties within the ROI only. Additional housing resources within daily commuting distance are available in adjacent larger communities along parts of the ROI. This is the case for Regions 3 through 7 where communities within commuting distance generally include Oklahoma City and Tulsa in Oklahoma, Fort Smith, Little Rock, and Jonesboro in Arkansas, and Memphis in Tennessee. Located in Shelby County, Memphis is part of Region 7, but is also within daily commuting distance of parts of Region 6.

3.13.4.5 Community Services

3.13.4.5.1 Police and Fire Services

Summary data for law enforcement and fire departments are presented by county and region in Table 3.13-11. These data compiled by Clean Line (2013) provide a partial overview of resources available in each county. In general, the number of police and fire departments is directly related to the overall size and population of the county, as well as the number of communities. Multiple law enforcement agencies and providers exist in the potentially affected counties, including state patrol, county sheriffs, and local police departments. In many cases, mutual aid agreements allow agencies to support one another in emergency situations. Multiple fire departments and districts also provide fire protection and suppression services in the ROI. Many of these fire departments and districts are at least partially staffed by volunteers and tend to be housed in stations and fire houses in the larger communities.

Table 3.13-11:
Summary of Law Enforcement and Fire Departments by County and Region

Region	County	Police Departments	Fire Departments
1	Hansford, TX	3	1
	Ochiltree, TX	3	1
	Sherman, TX	3	1
	Cimarron, OK	3	2
	Texas, OK	6	4
	Beaver, OK	1	4
	Harper, OK	3	3
	Region 1	**22**	**16**
2	Woodward, OK	3	3
	Major, OK	3	4
	Garfield, OK	6	4
	Region 2	**12**	**11**
3	Kingfisher, OK	5	4
	Logan, OK	5	6
	Payne, OK	7	5
	Lincoln, OK	9	6
	Creek, OK	10	10
	Okmulgee, OK	7	10
	Muskogee, OK	9	12
	Region 3	**52**	**53**
4	Sequoyah, OK	8	17
	Crawford, AR	5	7
	Franklin, AR	3	6
	Johnson, AR	2	4
	Region 4	**18**	**34**
5	Pope, AR	5	10
	Conway, AR	2	9
	Van Buren, AR	1	6
	Cleburne, AR	3	7

Table 3.13-11:
Summary of Law Enforcement and Fire Departments by County and Region

Region	County	Police Departments	Fire Departments
	Faulkner, AR	5	14
	White, AR	8	19
	Jackson, AR	5	7
	Region 5	29	72
6	Poinsett, AR	7	9
	Cross, AR	3	5
	Region 6	10	14
7	Mississippi, AR	8	10
	Shelby, TN	9	10
	Tipton, TN	4	7
	Region 7	21	27

Source: Clean Line (2013)

3.13.4.5.2 Medical Facilities

Medical facilities in the ROI are identified in Table 3.13-12. Minor Project-related injuries would be treated at local medical facilities or emergency rooms. Workers with more serious injuries would be taken to one of the major hospitals in the general vicinity.

Table 3.13-12:
Medical Facilities by County and Region

Region	Hospital	County[1]	Beds	Services
1	Hansford County Hospital	Hansford	4	Emergency Services
	Ochiltree General Hospital	Ochiltree, TX	25	Emergency Services
	Stratford Hospital District	Sherman	42	Emergency Services
	Cimarron Memorial Hospital	Cimarron	25	Emergency Room Services
	Memorial Hospital of Texas County	Texas	47	Emergency Room Services
	Beaver County Memorial Hospital	Beaver	24	Emergency Room Services
	Harper County Community Hospital	Harper	25	Emergency Room Services
2	Woodward Regional Hospital	Woodward	73	Emergency Room Services
	Okeene Municipal Hospital[2]	Blaine	17	Emergency Room Services
	Integtis Bass Baptist Health Center	Garfield	162	Emergency Room Services, Medical Helicopter Pad
	St. Mary's Regional Medical Center	Garfield	263	Emergency Room Services
3	Kingfisher Regional Hospital	Kingfisher	25	Emergency Room Services
	Mercy Hospital Logan County	Logan	25	Emergency Room Services
	Hillcrest Hospital Cushing	Payne	99	Emergency Room Services
	Stillwater Medical Center	Payne	120	Emergency Room Services, Medical Helicopter Pad
	Prague Community Hospital	Lincoln	25	Emergency Room Services
	Stroud Regional Medical Center	Lincoln	25	Emergency Room Services
	Bristow Medical Center	Creek	30	Emergency Room Services

Table 3.13-12:
Medical Facilities by County and Region

Region	Hospital	County[1]	Beds	Services
	Drumright Regional Hospital	Creek	15	Emergency Room Services
	St John Sapulpa	Creek	25	Emergency Room Services
	Okmulgee Memorial Hospital	Okmulgee	66	Emergency Room Services
	Eastar Health System	Muskogee	320	Emergency Room Services, Medical Helicopter Pad
	Intensiva Hospital of Eastern Oklahoma	Muskogee	30	Emergency Room Services
	Solara Hospital Muskogee	Muskogee	41	Emergency Room Services
4	Sequoyah Memorial Hospital	Sequoyah	41	Emergency Room Services
	Summit Medical Center	Crawford	103	Emergency Room Services
	Mercy Hospital Turner Memorial	Franklin	25	Emergency Room Services
	Johnson Regional Medical Center	Johnson	80	Emergency Room Services
5	St Mary's Regional Medical Center	Pope	170	Emergency Room Services, Medical Helicopter Pad
	River Valley Medical Center[3]	Yell	25	Emergency Room Services
	St Vincent Morrilton	Conway	35	Emergency Room Services
	Ozark Health	Van Buren	25	Emergency Room Services
	Baptist Health Medical Center Heber Springs	Cleburne	25	Emergency Room Services
	Conway Regional Medical Center	Faulkner	149	Emergency Room Services, Medical Helicopter Pad
	White County Medical Center	White	193	Emergency Room Services, Medical Helicopter Pad
	Harris Hospital	Jackson	133	Emergency Room Services
6	Crossridge Community Hospital	Cross	15	Emergency Room Services
7	South Mississippi County Regional Medical Center	Mississippi	25	Emergency Room Services
	Baptist Memorial Hospital	Shelby	706	Emergency Room Services, Medical Helicopter Pad
	Delta Medical Center	Shelby	243	Emergency Room Services
	Methodist Healthcare Memphis Hospital	Shelby	1,537	Emergency Room Services
	Saint Francis Bartlett Medical Center	Shelby	100	Emergency Room Services
	Select Specialty Hospital Memphis	Shelby	30	Emergency Room Services
	St Francis Hospital	Shelby	519	Emergency Room Services
	Baptist Memorial Hospital Tipton	Tipton	100	Emergency Room Services

1 N/A—not applicable
2 1 No hospitals were identified in Major County, Oklahoma, or Poinsett County, Arkansas.
3 2 Okeene Municipal Hospital is located in Blaine County, Oklahoma, approximately 7 miles south of Major County.
4 3 River Valley Medical Center is located in Yell County, Arkansas, across the Arkansas River from Pope County.
5 Source: Clean Line (2013)

Medical facilities are limited in the Texas counties located in Region 1. The Ochiltree General Hospital, a Level IV trauma center, provides emergency services in Ochiltree County. Emergency medical services are provided in Sherman County by the Stratford EMS, which is part of the Stratford Hospital District. Additional hospitals are located in neighboring counties, including the Moore County Hospital, south of Sherman County, which provides 24-hour emergency services.

Most counties in Oklahoma within the ROI have at least one hospital that provides emergency services. Major County is the one exception. Emergency room services are, however, available at the Okeene Municipal Hospital in neighboring Blaine County, about 7 miles south of the county line. All but one of the counties in Arkansas has at least one hospital with emergency services. Poinsett County is the exception. Medical services are available in nearby counties. At least six hospitals serve the Memphis area in Tennessee and provide emergency services and a substantial number of beds (Table 3.13-12).

3.13.4.5.3 Education

The total number of school districts, schools, students, and teachers are summarized by county in Table 3.13-13. Student/teacher ratios are also summarized by county and region. Student/teacher ratios, calculated by dividing the total number of students by the total number of full-time equivalent teachers, are a common measure used to assess the overall quality of a school. The national average student teacher ratio for the 2011 school year (the most recent available data) was 16.0. The statewide average ratios in Texas, Oklahoma, Arkansas, and Tennessee were 15.4, 16.1, 15.1, and 14.8, respectively (NEA 2012).

All three Texas counties in Region 1 had student/teacher ratios below the state and national average (fewer students per teacher). This was also the case with Oklahoma counties in Regions 1 through 4, all of which had student/teacher ratios below the corresponding state and national averages, ranging from 6.9 in Beaver County (Region 1) to 11.8 in Logan and Payne counties (Region 3). Average student/teacher ratios in the Arkansas counties in the ROI range from 9.7 in Van Buren County to 15.0 in Faulkner County (both in Region 5), below the corresponding and state averages. Student/teacher ratios in the two Tennessee counties (Region 7) were higher than the statewide and national averages (Table 3.13-13). The numbers, presented here by county and region, are averages. Student/teacher ratios vary by school district and by school in each county, as well as by grade within each school.

Table 3.13-13:
Schools by County and Region

Region	County	Number of School Districts	Total Number of Schools	Total Number of Students	Total Number of Teachers	Student/Teacher Ratio (Average)[1]
1	Hansford, TX	3	7	1,341	136	9.9
	Ochiltree, TX	2	8	2,646	213	12.4
	Sherman, TX	3	7	1,498	130	11.5
	Cimarron, OK	3	9	864	119	7.3
	Texas, OK	9	23	4,475	460	9.7
	Beaver, OK	4	8	1,111	160	6.9
	Harper, OK	2	4	766	94	8.1
	Region 1	26	66	12,701	1,312	9.7

Table 3.13-13:
Schools by County and Region

Region	County	Number of School Districts	Total Number of Schools	Total Number of Students	Total Number of Teachers	Student/Teacher Ratio (Average)[1]
2	Woodward, OK	4	12	3,809	343	11.1
	Major, OK	4	9	1,539	186	8.3
	Garfield, OK	8	31	10,664	926	11.5
	Region 2	16	52	16,012	1,455	11.0
3	Kingfisher, OK	6	16	3,428	397	8.6
	Logan, OK	4	13	4,647	395	11.8
	Payne, OK	7	28	10,757	914	11.8
	Lincoln, OK	9	23	5,736	584	9.8
	Creek, OK	15	39	13,047	1,209	10.8
	Okmulgee, OK	9	23	6,890	621	11.1
	Muskogee, OK	10	35	13,488	1,174	11.5
	Region 3	60	177	57,993	5,294	11.0
4	Sequoyah, OK	12	26	8,616	796	10.8
	Crawford, AR	5	23	11,232	757	14.8
	Franklin, AR	4	9	3,225	238	13.6
	Johnson, AR	3	10	4,383	321	13.7
	Region 4	24	68	27,456	2,112	13.0
5	Pope, AR	5	22	9,665	756	12.8
	Conway, AR	4	10	3,121	265	11.8
	Van Buren, AR	3	8	2,231	229	9.7
	Cleburne, AR	4	9	3,355	280	12.0
	Faulkner, AR	6	36	18,157	1,211	15.0
	White, AR	9	28	12,764	946	13.5
	Jackson, AR	2	6	2,162	188	11.5
	Region 5	33	119	51,455	3,875	13.3
6	Poinsett, AR	5	15	4,227	361	11.7
	Cross, AR	2	6	3,446	250	13.8
	Region 6	7	21	7,673	611	12.6
7	Mississippi, AR	6	21	8,035	631	12.7
	Shelby, TN	4	52	45,705	2,742	16.7
	Tipton, TN	2	14	11,437	744	15.4
	Region 7	12	87	65,177	4,117	15.8

1 1 Data are average student/teacher rations per county. Rates vary within each county by school district and school.
2 Source: Clean Line (2013)

3 3.13.4.6 Tax Revenues

4 *3.13.4.6.1 Sales, Use, and Lodging Taxes*

5 The state of Texas levies a 6.25 percent sales and use tax on all retail and rental sales. In addition, counties and
6 cities have the option to levy additional combined sales and use taxes of up to 2 percent within their jurisdictions.
7 Most counties in the state of Texas levy an additional 0.5 percent sales and use tax. None of the counties in the ROI

currently levies a sales and use tax, and no sales tax receipts were received in these counties in July 2013 (Table 3.13-14).

Table 3.13-14:
Sales and Use Tax by Texas County, 2013

Region	State/County	Sales Tax (Percent)	Monthly Sales Tax Receipts (July 2013)
	Texas	6.25	N/A
1	Hansford	0.00	$0
	Ochiltree	0.00	$0
	Sherman	0.00	$0

Source: Texas Comptroller of Public Accounts (2013a)

The state of Oklahoma levies a sales, use, and lodging tax of 4.5 percent. Sales tax is levied on goods and services purchased within the state. Use tax is imposed on goods purchased tax-free outside Oklahoma for use in Oklahoma (see Oklahoma Administrative Code Title 710, Chapter 65). County and other local jurisdictions are allowed to levy additional sales, use, and lodging taxes within their jurisdictions. Additional sales, use, and lodging taxes levied by counties in Oklahoma in the ROI range from 0.25 percent in Major County (Region 2) to 2 percent in Beaver and Harper counties (Region 1) (Table 3.13-15).

Table 3.13-15:
Sales and Use Tax by Oklahoma County, 2013

Region	State/County	Sales, Use, and Lodging Tax Rates (Percent) (July 2013)	Monthly Sales Tax and Use Tax Receipts (July 2013)
	Oklahoma	4.50	N/A
1	Cimarron	2.00	40,541
	Texas	1.00	372,896
	Beaver	2.00	399,427
	Harper	2.00	136,669
2	Woodward	1.33	357,400
	Major	0.25	22,890
	Garfield	0.35	334,300
3	Kingfisher	0.75	202,916
	Logan	1.00	502,660
	Payne	0.81	1,369,669
	Lincoln	1.00	283,726
	Creek	1.00	482,373
	Okmulgee	1.25	273,060
	Muskogee	0.65	427,365
4	Sequoyah	1.42	311,253

Source: Oklahoma Tax Commission (2013a, 2013b)

The state of Arkansas levies a sales and use tax of 6.5 percent. Counties and other local jurisdictions are also able to levy additional sales and use taxes within their jurisdictions. Current county rates range from 0.5 percent in Faulkner County (Region 5) to 2.25 percent in Jackson County (Region 5) (Table 3.13-16).

Table 3.13-16:
Sales and Use Tax by Arkansas County, 2013

Region	State/County	Sales and Use Tax Rate (Percent)	Monthly Sales and Use Tax Receipts (July 2013)
	Arkansas	6.50	N/A
4	Crawford, AR	1.00	$516,053
	Franklin, AR	1.50	$208,843
	Johnson, AR	1.00	$236,443
5	Pope, AR	1.00	$830,995
	Conway, AR	1.75	$530,926
	Van Buren, AR	2.00	$316,123
	Cleburne, AR	1.63	$588,197
	Faulkner, AR	0.50	$1,808,224
	White, AR	1.50	$1,472,778
	Jackson, AR	2.25	$380,013
6	Poinsett, AR	1.25	$241,922
	Cross, AR	2.00	$372,256
7	Mississippi, AR	2.00	$1,044,722

Source: Arkansas Department of Finance and Administration (2013a, 2013b)

The state of Tennessee levies a 7.00 percent sales and use tax. Shelby and Tipton counties both levy an additional 2.25 percent sales and use tax (Table 3.13-17).

Table 3.13-17:
Sales and Use Tax by Tennessee County, 2014

Region	State/County	Sales Tax Rate	Monthly Sales Tax Receipts (January 2014)
	Tennessee	7.00	N/A
7	Shelby	2.25	$28,059,228
	Tipton	2.25	$856,828

Source: Tennessee Department of Revenue (2014a, 2014b)

3.13.4.6.2 Property and Ad Valorem Taxes

Texas has no state property tax. Property taxes are local taxes levied by local governments and used to pay for schools, streets, police, fire protection, and other services. Counties, cities, school districts, and various special districts collect and spend property taxes. The governing body of each of these local governments determines the amount of property taxes it wants to raise and sets its own tax rate. Most local governments contract with their county's tax assessor-collector to collect the tax on their behalf (Texas Comptroller of Public Accounts 2014). Utility property in Texas is assessed by each county using a unitary method that can include one or more of the cost, income, or market approach to valuation. These approaches are briefly summarized below.

Each county is served by an appraisal district responsible for determining the value of the county's taxable property. Property taxes are calculated by applying a millage rate to the assessed value of the property. One mill equals

one-thousandth of a dollar. If the assessed value of a property is $1,000 and the millage rate is 1.00, then the tax on that property is $1.00. Millage rates for the three Texas counties in Region 1 are shown in Table 3.13-18.

Table 3.13-18:
Millage Tax Rate by Texas County, 2012

Region	County	Millage Rate[1]
1	Hansford	4.131
	Ochiltree	4.200
	Sherman	4.392

1. Property tax rates are presented per $100 of assessed value in Texas. The applicable rates have been adjusted here so they are per $1,000 of assessed value.

Source: Texas Comptroller of Public Accounts (2013b)

Property or ad valorem taxes in Oklahoma are local taxes. County officials typically value property, set tax rates, and collect tax revenues. Oklahoma uses a fractional assessment system, which means the assessed value is less than 100 percent of the property's fair cash value. Once an assessed value has been determined, the various taxing entities apply their tax rate or millage rate to this assessed value to determine the total amount of ad valorem tax.

Special rules apply to the valuation of public service corporations in Oklahoma. Public service corporations, which include electric companies, are valued at the state level by the Oklahoma Tax Division. Fair cash value of public service corporation property may be determined by any combination of three possible approaches: an income approach, which converts projected future income or cash flow into an estimate of present value; the stock and debt or market approach, which estimates the price obtainable from the sale of all outstanding capital stock and funded debt; or the cost approach, which uses either the original cost or historical cost less depreciation. Assessed values are determined for public service corporation property by applying an assessment rate of 22.85 percent to the fair cash value (Oklahoma SBE 2006).

Property taxes are then calculated by applying a millage rate to the assessed value of the property. Millage rates vary within a county based on location and the corresponding jurisdictions levying a property tax. Table 3.13-19 presents a range of potential millage rates for each of the Oklahoma counties within the ROI.

Table 3.13-19:
Millage Tax Rates by Oklahoma County, 2012

Region	State/County	Low Millage[1]	High Millage[1]
1	Cimarron	61.74	67.29
	Texas	55.60	80.73
	Beaver	52.19	67.94
	Harper	57.00	86.36
2	Woodward	63.64	93.10
	Major	78.89	100.12
	Garfield	80.29	103.61
3	Kingfisher	77.99	105.94
	Logan	76.29	119.76
	Payne	73.67	102.61
	Lincoln	73.75	99.11

Table 3.13-19:
Millage Tax Rates by Oklahoma County, 2012

Region	State/County	Low Millage[1]	High Millage[1]
	Creek	73.98	120.55
	Okmulgee	80.68	97.29
	Muskogee	74.96	100.40
4	Sequoyah	68.50	84.33

1. Millage rates are presented as a range. Actual rates vary by district.
Source: OKAssessor (2012)

In Arkansas, local government entities, such as county and city governments, school districts, fire and emergency medical districts, sewer districts, and other special taxing districts, are allowed to levy *ad valorem* property taxes on real and personal property within their jurisdictions. The Arkansas Public Service Commission's Tax Division determines ad valorem assessments for transmission lines throughout the state. The Division uses a unitary appraisal method that considers the value of the company as a whole to determine assessed values (APSC 2010). An assessment rate of 20 percent is applied to the fair cash value to determine the total assessed value of the property (Arkansas Assessment Coordination Department 2012).

The average overall millage rates for Arkansas counties within the ROI are presented in Table 3.13-20. These rates consist of the combined total of the average school district, average city, and average county millage rate for each county. The combined rate for Cleburne County (41.94), for example, consists of an average school district millage of 34.86 plus the average city millage of 1.98 plus the average county millage of 5.10 (Arkansas Assessment Coordination Department 2013).

Table 3.13-20:
Millage Tax Rates by Arkansas County, 2012

Region	State/County	Millage Rate
4	Crawford, AR	49.11
	Franklin, AR	46.79
5	Johnson, AR	47.96
	Pope, AR	45.98
	Conway, AR	46.53
	Van Buren, AR	43.90
	Cleburne, AR	41.94
	Faulkner, AR	48.70
	White, AR	43.01
	Jackson, AR	46.65
6	Poinsett, AR	44.47
	Cross, AR	49.89
7	Mississippi, AR	49.70

Source: Arkansas Assessment Coordination Department (2013)

The Tennessee Comptroller of the Treasury is responsible for assessing public utility property throughout the state for property tax purposes, employing a unitary method to assess the value of the company as a whole. Utility property is assessed at 55 percent of fair market value with an appraisal ratio applied for each county to equalize values throughout the state (Tennessee SBE 2013, 2014). Average millage rates in Shelby and Tipton counties in Tennessee in 2012 were 4.06 and 2.34, respectively (Tennessee Comptroller of the Treasury 2013). These tax rates are expressed as an amount per $100 of assessed value and set by the governing body of the county (Tennessee SBE 2013). Adjusted to be per $1,000 of assessed value, the average millage rates in Shelby and Tipton counties in Tennessee in 2012 were 40.6 and 23.4, respectively.

3.13.5 Connected Actions

3.13.5.1 Wind Energy Generation

The Applicant has identified a total of 12 WDZs within a 40 mile radius of the Oklahoma Converter Station Siting Area spread over six counties, three in Oklahoma (Beaver, Cimarron, and Texas) and three in Texas (Hansford, Ochiltree, and Sherman (Table 3.13-21). These counties are the ROI for Region 1 and baseline information is presented for each of these counties in Section 3.13.4.

Table 3.13-21:
Total WDZ Acres by State and County

	Oklahoma[1]			Texas[1]			
Wind Development Zone	Beaver	Cimarron	Texas	Hansford	Ochiltree	Sherman	Total[2]
A				14	95		109
B				125			125
C				52		109	161
D			69				69
E			47				47
F			110			2	112
G		125	62				187
H			116				116
I			105				105
J	70		22				92
K	92				1		93
L				39	127		166
Total	162	125	531	230	223	111	1,382

1 WDZ areas are summarized in thousands of acres.
2 Totals may not sum due to rounding.

3.13.5.2 Optima Substation

The ROI for the future Optima Substation for socioeconomics is Texas County, Oklahoma. This county is part of the ROI for Region 1; baseline information is presented for this county in Section 3.13.4.

3.13.5.3 TVA Upgrades

A precise ROI has not been identified for the TVA upgrades. Where possible, general impacts associated with the required TVA upgrades are discussed in the impact sections that follow.

3.13.6 Socioeconomic Impacts

3.13.6.1 Methodology

The socioeconomic analysis is based primarily on secondary data compiled from federal, state, and local government agencies. Key sources of data include the U.S. Census Bureau, the U.S. Bureau of Economic Analysis, the U.S. Bureau of Labor Statistics, USDA, and various state agencies.

The potential effects of the converter stations, AC collection system, Applicant Proposed Route, and the DOE Alternatives, including the Arkansas Converter Station Alternative Siting Area and DOE alternative routes, were evaluated with respect to the key aspects of the socioeconomic environment, including demographic characteristics, economic conditions, housing, property values, community services, and tax revenues. These evaluations employ different resource-specific analysis methods that are described in their respective sections.

Key Project-related variables used in the socioeconomic analysis include projected construction employment and expenditures. Operations-related employment and expenditures are also used. Construction employment and spending estimates are disaggregated by county where appropriate, primarily based on the share of overall construction that would occur in that county. Information is primarily presented by region (Figure 2.1-2 in Appendix A) consistent with other resources and with consideration given to an ROI more consistent with socioeconomic analysis of linear facilities. These estimates represent the best available information and a reasonable approximation of the likely distribution of potential impacts, but should not be considered precise forecasts. In most cases, estimated impacts may be compared with the existing conditions data presented in the preceding part of this section.

Total regional economic impacts are estimated at the state level using direct-effect multipliers for earnings and for employment from the U.S. Bureau of Economic Analysis' RIMS II regional modeling system (BEA 2013b). The multipliers from this model are based on regional information derived from databases analyzing commercial, industrial, and household spending patterns and relationships. Multipliers are provided for different sectors of the economy. Multipliers for the construction and utilities sectors are used in this analysis. Total economic impacts consist of direct, indirect, and induced impacts.

Direct impacts represent the change in economic activity resulting from the initial round of inputs purchased by the project. In this case, direct impacts consist of the employment and related earnings directly associated with construction, operations and maintenance, and decommissioning phases of the Project. These direct impacts generate economic activity elsewhere in the local economy through the multiplier effect, as initial changes in demand "ripple" through the economy and generate indirect and induced impacts. *Indirect* impacts are generated by the expenditures by suppliers who provide goods and services to the construction project or for project operations. *Induced* impacts are generated by the spending of households benefiting from the additional wages and business income earned through related direct or indirect activities.

Economic impacts to agriculture in eastern Arkansas are assessed using information from the Arkansas Delta Agricultural Economic Impact Study prepared for this project. This agricultural economic impact study, which focuses on four counties in eastern Arkansas: Jackson (Regions 5 and 6), Cross (Region 6), Poinsett (Regions 6 and 7), and Mississippi (Region 7), is included as Appendix J to this EIS.

Clean Line will implement the EPMs listed in Appendix F to avoid or minimize potential impacts from construction of the Project. Those EPMs that would help avoid or minimize potential socioeconomic impacts include the following:

- GE-6: Clean Line will restrict vehicular travel to the ROW and other established areas within the construction, access, or maintenance easement(s).
- GE-8: Access controls (e.g., cattle guards, fences, gates) will be installed, maintained, repaired, replaced, or restored as required by regulation, road authority, or as agreed to by landowner.
- GE-11: Clean Line will conduct construction, operation, and maintenance activities to minimize the creation of dust. This may include measures such as limitations on equipment, speed, and/or travel routes utilized. Water, dust palliative, gravel, combinations of these, or similar control measures may be used. The Applicant will implement measures to minimize the transfer of mud onto public roads.
- GE-12: Clean Line will avoid remedial structures (e.g., capped areas, monitoring equipment, or treatment wells) on contaminated sites, Superfund sites, CERCLA remediation areas, and other similar areas. Workers will use appropriate protective equipment and appropriate safe working techniques when working at or near contaminated sites.
- GE-15: Waste generated during construction or maintenance, including solid waste, petroleum waste, and any potentially hazardous materials will be removed and taken to an authorized disposal facility.
- GE-20: Clean Line will conduct construction and scheduled maintenance activities on the facilities during daylight hours, except in rare circumstances that may include, for example, to address emergency or unsafe situations, to avoid adverse environmental effects, to minimize traffic disruptions, or to comply with regulatory or permit requirements.
- GE-21: Clean Line will maintain construction equipment in good working order. Equipment and vehicles that show excessive emissions of exhaust gasses and particulates due to poor engine adjustments or other inefficient operating conditions will be repaired or adjusted.
- GE-22: Clean Line will impose speed limits during construction for access roads (e.g., to reduce dust emissions, for safety reasons, and for protection of wildlife).
- GE-23: Clean Line will maximize the distance between stationary equipment and sensitive noise receptors consistent with engineering design criteria.
- GE-24: Clean Line will minimize the number and distance of travel routes for construction equipment near sensitive noise receptors.
- GE-25: Clean Line will turn off idling equipment when not in use.
- GE-27: Clean Line will minimize compaction of soils and rutting through appropriate use of construction equipment (e.g., low ground pressure equipment and temporary equipment mats).
- GE-28: Hazardous materials and chemicals will be transported, stored, and disposed of according to federal, state, or local regulations or permit requirements.
- AG-1: Clean Line will avoid or minimize adverse effects to surface and subsurface irrigation and drainage systems (e.g., tiles). The Applicant will work with landowners to minimize the placement of structures in locations that would interfere with the operation of irrigation systems.
- AG-2: Agricultural soils temporarily impacted by construction, operation, or maintenance activities will be restored to pre-activity conditions. For example, soil remediation efforts may include decompaction, recontouring, liming, tillage, fertilization, or use of other soil amendments.
- AG-4: Clean Line will work with landowners and/or tenants to identify specialty agricultural crops or lands (e.g., certified organic crops or products that require special practices, techniques, or standards) that may require protection during construction, operation, or maintenance. The Applicant will avoid and/or minimize impacts that could jeopardize standards or certifications that support specialty croplands or farms.

- AG-5: Clean Line will work with landowners and/or tenants to consider potential impacts to current aerial spraying or application (i.e., crop dusting) of herbicides, fungicides, pesticides, and fertilizers within or near the transmission ROW. The Applicant will avoid or minimize impacts to aerial spraying practices when routing and siting the transmission line and related infrastructure.
- AG-6: Clean Line will work with landowners to develop compensation for lost crop value caused by construction and/or maintenance.
- LU-1: Clean Line will work with landowners and operators to ensure that access is maintained as needed to existing operations (e.g., to oil/gas wells, private lands, agricultural areas, pastures, hunting leases).
- LU-2: Clean Line will minimize the frequency and duration of road closures.
- LU-3: Clean Line will work with landowners to avoid and minimize impacts to residential landscaping.
- LU-4: Clean Line will coordinate with landowners to site access roads and temporary work areas to avoid and/or minimize impacts to existing operations and structures.
- W-15: Clean Line will seek to procure water from municipal water systems where such water supplies are within a reasonable haul distance; any other water required will be obtained through permitted sources or through supply agreements with landowners.

Additionally, Clean Line proposes to implement the following plans that would help minimize other potential socioeconomic impacts:

- Transportation and Traffic Management Plan. This plan will describe measures designed to avoid and/or minimize adverse effects associated with the existing transportation system.
- Spill Prevention, Control and Countermeasures Plan. This plan will describe the measures designed to prevent, control, and clean up spills of hazardous materials.
- Construction Security Plan. This plan will describe measures designed to avoid and/or minimize adverse effects associated with breaches in Project security during construction including terrorism, sabotage, vandalism, and theft. The plan will include provisions describing how the Project construction team will coordinate with state and local law enforcement agencies during construction to improve Project security and facilitate security incident response, if required.
- Communications Plan. This plan will incorporate all forms of communication with the public, with elements implemented as appropriate during different phases of the Project. Elements of this plan are described in Section 3.1.2.

3.13.6.2 Impacts Associated with the Applicant Proposed Project

3.13.6.2.1 Population

3.13.6.2.1.1 Converter Stations and AC Interconnection Siting Areas

3.13.6.2.1.1.1 Construction Impacts

The Applicant proposes to locate new AC/DC converter stations in Texas County, Oklahoma, and either Shelby County or Tipton County, Tennessee. The Oklahoma converter station would be located in Region 1. The Tennessee converter station would be located in Region 7.

Employment during construction of each converter station is expected to follow a bell-shaped pattern, with an average of 138 workers over a 32-month construction period and a peak of 232 to 242 workers from months 12 to 17 (Figure 3.13-2).

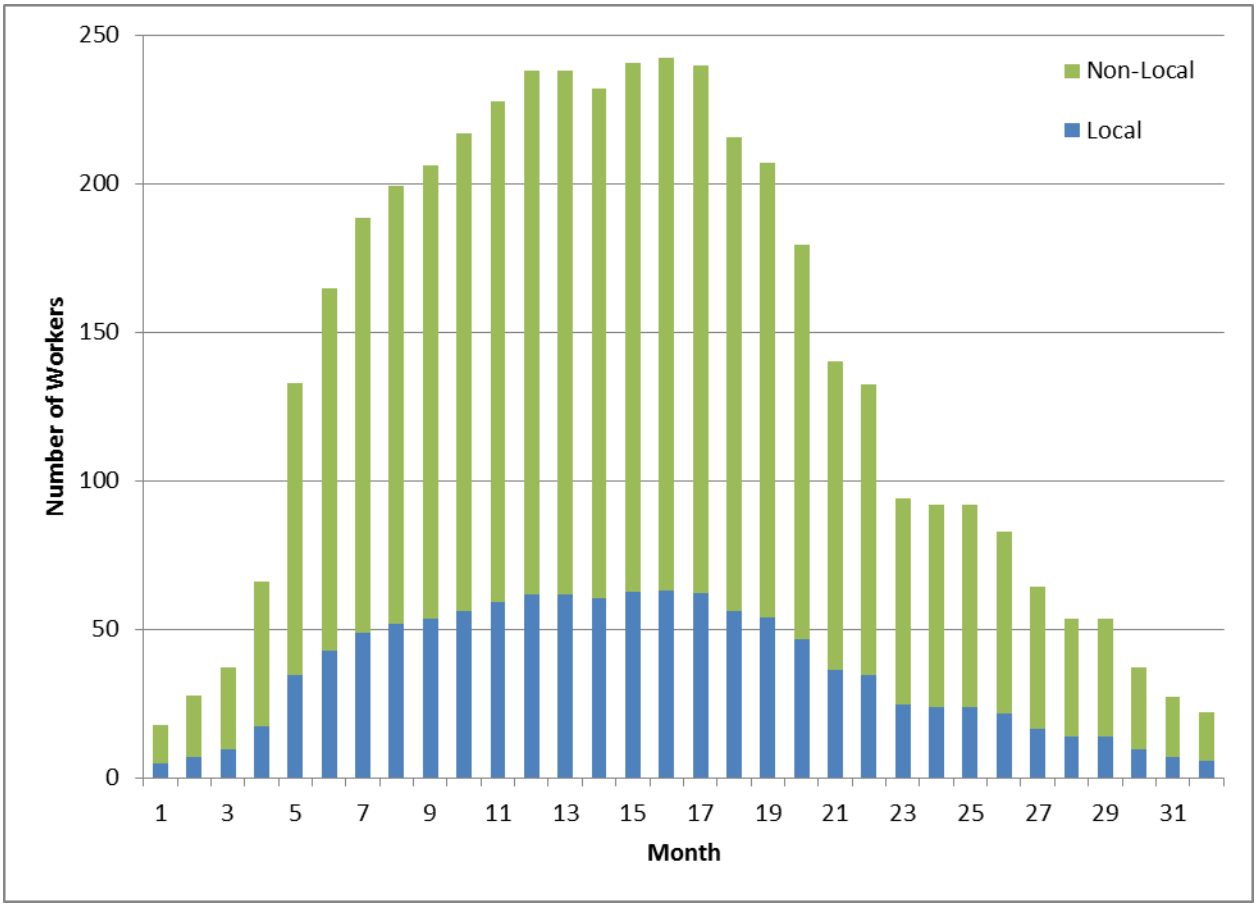

Figure 3.13-2: Estimated Construction Workforce per Converter Station by Month and Local/Non-Local Workers

Source: Clean Line (2014a)

Inclusive of pre-construction activities, an estimated total of 296 workers are expected to be hired over the construction phase of each converter station, with 26 percent of this total (approximately 77 workers) expected to be hired locally (i.e., workers who normally reside within daily commuting distance of the applicable converter station site). Daily commuting distance is assumed to be up to a 2 hour drive each way for the purposes of this analysis (Clean Line 2014a). Some workers would be employed for the full duration of construction, but many workers would be employed for shorter periods based on their trades. Local hires would include surveyors and workers employed in site development, fence installation, and traffic control. Local hires would compose a smaller share of the workforce for more specialized tasks, such as equipment footings and cable trenching, conduits, and grounding and steel structure erection and electrical equipment installation. The proportion of non-local workers onsite at any one time would vary over the construction period as the mix of labor categories and skills varies.

For the purposes of analysis, the share of non-local workers (219 workers) is assumed to be 74 percent for the full duration of convertor station construction, resulting in an average of 102 non-local workers employed over the 32-month construction period, with an estimated peak of 171 to 179 non-local workers employed during months 12 to

17. In addition, 10 percent of non-local workers temporarily relocating to the Project sites are assumed to be accompanied by family members; the average size of a family that is relocating is assumed to be two adults and one school-age child (Clean Line 2013).

Based on these assumptions, an estimated average of 123 people would be expected to temporarily relocate to the vicinity of each converter station for the full duration of the 32-month construction period, with the number of people who would relocate increasing to 215 during the peak construction period (months 12 to 17). The average increase would be equivalent to approximately 0.6 percent, 0.2 percent, and less than 0.1 percent of the existing (2012) population in Texas, Tipton, and Shelby counties, respectively. The peak increase would be equivalent to approximately 1 percent, 0.3 percent, and less than 0.1 percent of the respective existing (2012) populations in Texas, Tipton, and Shelby counties. Very few, if any, of the non-local workers employed during the construction phase of the converter stations would be expected to permanently relocate to the affected areas, so it is unlikely that construction of the converter stations would result in any long-term changes in population.

3.13.6.2.1.1.2 Operations and Maintenance Impacts

Operations and maintenance of each of the converter stations is expected to employ up to 15 workers. These estimated staffing levels would have no noticeable impact on existing population levels in the potentially affected counties.

3.13.6.2.1.1.3 Decommissioning Impacts

The labor force required to decommission each converter station would be similar to that required for construction. Impacts to population from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.1.2 AC Collection System

3.13.6.2.1.2.1 Construction Impacts

The counties crossed by the AC collection system routes and mileage of each route within each county are provided in Table 2.1-5. The AC collection system routes are all located in Region 1 (Figure 2.1-2 in Appendix A).

Assuming that workforce requirements are similar to those estimated for the HVDC transmission line, the average length of an AC collection system route, 34.4 miles, would require an average of 51 workers over a 24-month construction period, with an estimated peak of 71 workers. Adjusted to reflect the length of each alternative, the respective average and peak number of workers would range from 20 and 28 for AC Collection System Routes SE-2 and SW-1 (13.4 miles) to 83 and 116 for AC Collection System Route NW-2 (56.0 miles).

Estimated temporary increases in population are shown by alternative and county in Table 3.13-22. These estimates assume that 74 percent of the workforce would be non-local for the duration of the Project. In addition, approximately 10 percent of non-local workers are assumed to be accompanied by family members; the average size of a family that is relocating is assumed to be three, two adults and one school-age child. Population is distributed for the purposes of analysis based on the length of the line in each county.

Table 3.13-22:
Estimated Temporary Change in Population During Construction by AC Collection System Routes and County

County/Route	E-1	E-2	E-3	NE-1	NE-2	NW-1	NW-2	SE-1	SE-2	SE-3	SW-1	SW-2	W-1
Temporary Change in Population Based on Average Employment Forecast[1]													
Beaver, OK	5	20	21	0	0	0	0	0	0	4	0	0	0
Texas, OK	33	32	31	39	35	66	71	25	5	32	5	20	27
Cimarron, OK	0	0	0	0	0	2	3	0	0	0	0	0	0
Hansford, TX	0	0	0	0	0	0	0	3	13	0	13	4	0
Ochiltree, TX	0	0	0	0	0	0	0	26	0	28	0	0	0
Sherman, TX	0	0	0	0	0	0	0	0	0	0	0	25	0
Total	38	52	52	39	35	68	74	53	18	64	18	49	27
Temporary Change in Population Based on Peak Employment Forecast[1]													
Beaver, OK	7	28	30	0	0	0	0	0	0	6	0	0	0
Texas, OK	46	45	44	55	48	93	99	34	7	45	7	28	38
Cimarron, OK	0	0	0	0	0	3	4	0	0	0	0	0	0
Hansford, TX	0	0	0	0	0	0	0	4	18	0	18	6	0
Ochiltree, TX	0	0	0	0	0	0	0	36	0	40	0	0	0
Sherman, TX	0	0	0	0	0	0	0	0	0	0	0	35	0
Total	53	73	73	55	48	95	103	74	25	90	25	68	38

1 1 Totals may not sum due to rounding.

2 Viewed by AC collection system route, projected changes in population during peak construction would range from
3 about 25 (AC Collection System Routes SE-2 and SW-1) to about 103 (AC Collection System Route NW-1) (Table
4 3.13-22). The largest expected temporary increase (103) is equivalent to about 0.2 percent of the total existing (2012)
5 population in Region 1 (51,652) (Table 3.13-4). The largest expected gain for an individual county would be a
6 temporary increase of 99 in Texas County, Oklahoma, under AC Collection System Route NW-2. This estimated
7 increase of 99 people is equivalent to about 0.5 percent of Texas County's total 2012 population (20,620) (Table
8 3.13-4).

9 Four to six AC transmission lines are expected to be built. Assuming that six alternatives with an average length of
10 34.4 miles are constructed, average and peak population increases of about 271 and 379 people, respectively,
11 approximately 0.5 percent and 0.7 percent of the total 2012 population in Region 1, would result.

12 Very few, if any, of the non-local workers employed during the construction phase of the AC collection system routes
13 would be expected to permanently relocate to the affected areas, so it is unlikely that construction of the AC
14 collection system would result in any long-term changes in population.

15 *3.13.6.2.1.2.2 Operations and Maintenance Impacts*

16 Combined operation of the HVDC and AC transmission lines in Region 1 is expected to employ 15 workers based in
17 Guymon, Oklahoma (Texas County). This number is not expected to vary based on which AC collection system
18 routes are selected. This estimated staffing level would have no noticeable impact on existing population levels in
19 Texas County, which had a total estimated population of 20,620 in 2012 (Table 3.13-4).

3.13.6.2.1.2.3 Decommissioning Impacts

Decommissioning of the AC transmission lines would require a labor force approximately equal to that needed for its construction. Impacts to population from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.1.3 HVDC Applicant Proposed Route

3.13.6.2.1.3.1 Construction Impacts

Overall construction of the 720-mile-long HVDC transmission line is expected to take 30 months. Total employment by month is expected to range from 110 in month 30 to a peak of 1,288 in month 12, with an average monthly employment of 690 (Appendix F). The transmission line would be constructed in five 140-mile-long segments, each taking 24 months to complete. The estimated workforce is shown by month and task for a representative 140-mile segment in Figure 3.13-3. Total employment by month for each 140-mile segment is expected to range from 55 workers in month 24 to a peak of 290 workers in months 4, 5, and 6, with an average monthly employment of 207.

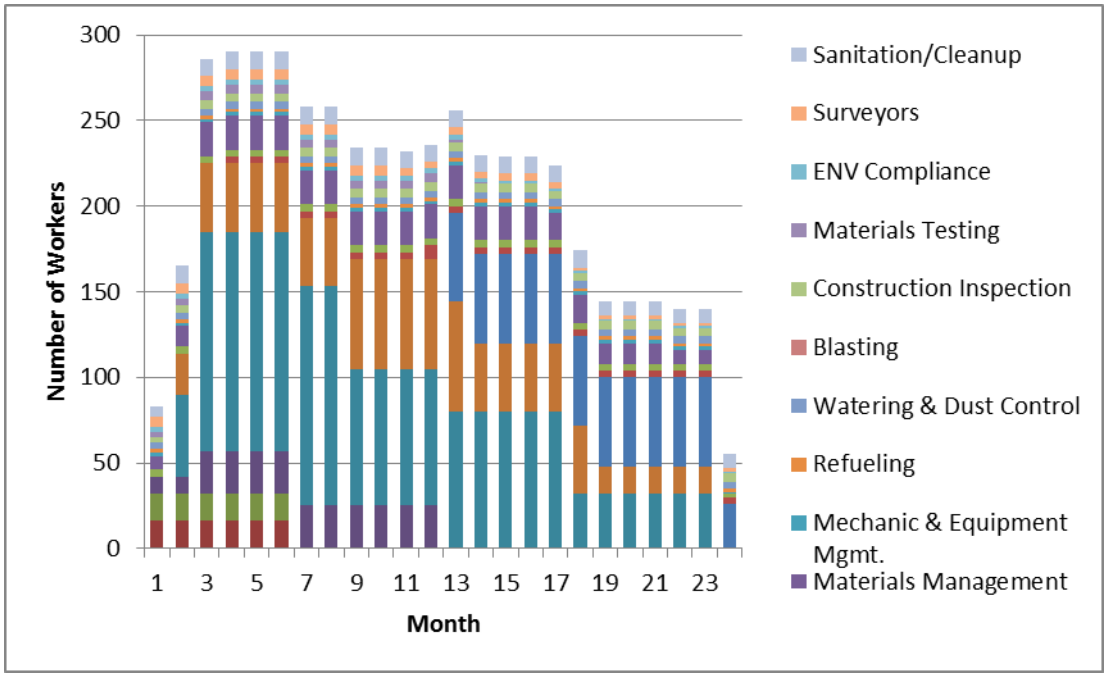

Figure 3.13-3: Estimated Construction Workforce per 140-mile Segment of HVDC Transmission Line by Month and Task

Source: Clean Line (2013)

Figure 3.13-4 identifies the expected local/non-local breakdown for an average 140-mile segment by month. Local workers are those who normally reside within commuting distance of the work sites. Non-local workers would temporarily relocate to the ROI or immediate vicinity for the duration of their employment; some workers would possibly commute home on weekends, depending on the location of their primary residence. Individual non-local workers may also relocate along the ROI and between segments depending on their assignment.

Tasks expected to mainly employ local workers include ROW clearing, access road and pad construction, foundation construction, restoration, and materials management. Tasks expected to be dominated by non-local workers are related to specialty trades and include tower lacing (assembly), tower setting (erection), wire stringing, supervision, blasting, and construction inspection. The distribution of local/non-local workers shown in Figure 3.13-4 assumes that non-local workers would account for 74 percent of the total workforce for the duration of the Project. Local employment by month for each 140-mile segment is expected to range from 14 workers per month in month 24 to 75 workers per month in months 4, 5, and 6, with an average monthly employment of 54.

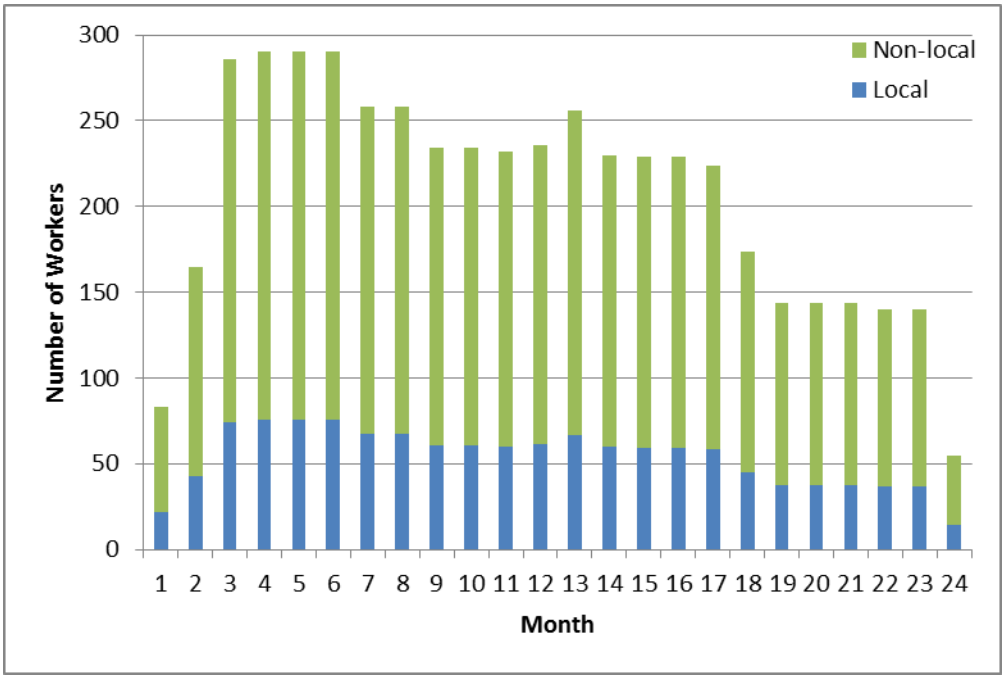

Figure 3.13-4: Estimated Construction Workforce per 140-mile Segment of HVDC Transmission Line by Month and Local/Non-Local Workers

Source: Clean Line (2013)

Non-local employment is expected to range from 41 workers per month in month 24 to 215 workers per month in months 4 to 6, with an average monthly employment of 153 (Figure 3.13-4). Very few, if any, of the non-local workers employed during the construction phase of each segment would be expected to permanently relocate to the affected areas. For the purposes of analysis, 10 percent of non-local workers temporarily relocating to the Project sites are assumed to be accompanied by family members; the average size of a family that is relocating is assumed to be three, two adults and one school-age child (Clean Line 2013).

Table 3.13-23 compares the projected average and peak numbers of people relocating by region with the corresponding 2012 population totals. Estimates of people by region are based on the estimated workforce per 140-mile segment, adjusted to account for the miles of HVDC transmission line that would be located in each region. Projected temporary peak increases in population range from less than 0.1 percent of total existing (2012) population in Region 7 to 0.4 percent in Region 1.

Table 3.13-23:
Projected Temporary Change in Population During Construction of the Applicant Proposed Route by Region

Region	2012 Population[1]	Average Employment Forecast		Peak Employment Forecast	
		Number of People Temporarily Relocating[2]	Percent of 2012 Population	Number of People Temporarily Relocating[2]	Percent of 2012 Population
1	51,652	143	0.3%	201	0.4%
2	88,067	135	0.2%	189	0.2%
3	348,517	218	0.1%	306	0.1%
4	147,279	156	0.1%	218	0.1%
5	334,750	171	0.1%	239	0.1%
6	42,397	56	0.1%	79	0.2%
7	1,042,441	39	0.0%	55	0.0%

1 Existing population data are estimates prepared by the USCB (2014a). These estimates are presented by county in Table 3.13-4.
2 The estimated numbers of people temporarily relocating are based on the projected workforce requirements shown in Figure 3.13-4. An estimated 10 percent of workers temporarily relocating are assumed to be accompanied by their families; the average size of a family that is relocating is assumed to be three, two adults and one school-age child. Workers and their families are allocated by region based on the total miles of transmission line proposed for each region.

Construction of the HVDC transmission line, converters stations, and AC collection system routes could potentially occur at the same time, with associated temporary population increases also taking place at the same time. If this were to occur, the largest overall temporary population increases would occur in Region 1, with the concurrent construction of the HVDC transmission line, Oklahoma converter station, and four to six AC transmission lines. The combined peak increase in population in Region 1 would be equivalent to 1.5 percent of the 2012 population total. In Region 7, the combined peak (HVDC transmission line plus the Tennessee converter station) would be equivalent to 0.03 percent of the 2012 population (Table 3.13-24).

Table 3.13-24:
Projected Temporary Change in Population During Construction of the Applicant Proposed Route, Converter Stations, and AC Collection System Routes by Region

Region[1]	2012 Population	Average Employment Forecast[1]		Peak Employment Forecast[1]	
		Number of People Temporarily Relocating	Percent of 2012 Population	Number of People Temporarily Relocating	Percent of 2012 Population
1	51,652	526	1.0%	779	1.5%
7	1,042,441	161	0.0%	268	0.0%

1 Average and peak employment forecasts by region include the following Project components:
Region 1: 115.5 miles of HVDC transmission line, the Oklahoma converter station, and six AC collection system routes with an average length of 34.4 miles (total length 206 miles)
Region 7: 42.8 miles HVDC transmission line and the Tennessee converter station

3.13.6.2.1.3.2 Operations and Maintenance Impacts

Operations and maintenance of the HVDC and AC transmission lines would employ 32 workers in Oklahoma, including 15 in Guymon, Oklahoma (Texas County) (Region 1), seven in Woodward, Oklahoma (Region 2), and 10 in Muskogee, Oklahoma (Region 3). An additional 10 workers would be employed in Newport, Arkansas (Jackson County) (Region 6). These workers would be responsible for operations and maintenance of all of the HVDC and AC

transmission lines, including those located in Regions 4, 5, and 7. These estimated staffing levels would have no noticeable impact on existing population levels in the potentially affected counties or regions.

Operations and maintenance of the Oklahoma converter station would employ up to 15 workers. If these workers and those required to operate and maintain the HVDC and AC transmission lines in Texas County all permanently relocated to the area from elsewhere, these combined staffing levels (30 workers) would not be expected to have a noticeable impact on existing population levels. Assuming an average family size of three people, a permanent increase in population of 90 people, about 0.4 percent of the estimated 2012 total of 20,620 would result (Table 3.13-4). The operations and maintenance employees associated with the Tennessee converter station would not be expected to reside in the same counties as the HVDC transmission line staff.

3.13.6.2.1.3.3 Decommissioning Impacts

Decommissioning of the HVDC transmission line would require a labor force approximately equal to that needed for its construction. Impacts to population from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.2 Economic Conditions

3.13.6.2.2.1 Converter Stations and AC Interconnection Siting Areas

3.13.6.2.2.1.1 Construction Impacts

Construction of the Oklahoma and Tennessee converter stations would each result in a temporary increase in employment and income in the surrounding area. Construction of each converter station is expected to cost approximately $250 million and employ an average of 138 workers over a 32-month construction period, resulting in estimated total employee earnings of $16.2 million.

Viewed in terms of annualized jobs, each converter station would provide approximately 367 years of employment, with 143 of these job-years in the first 12 months (Year 1), 188 job-years in Year 2, and 36 job-years in Year 3 (Table 3.13-25). Annualized jobs are employment estimates adjusted to be based on 12 months of employment. These estimates do not directly translate into numbers of individual workers, who may be employed for shorter periods. Construction of the Oklahoma converter station would support an estimated total (direct, indirect, and induced) of 266 jobs in Year 1, 348 jobs in Year 2, and 67 jobs in Year 3 (Table 3.13-25). Construction of the Project would also support an estimated total (direct, indirect, and induced) earnings of about $11.3 million in Year 1, $14.8 million in Year 2, and $2.8 million in Year 3 (Table 3.13-26).

Construction of the Tennessee converter station would support an estimated total (direct, indirect, and induced) of 285 jobs in Year 1, 373 jobs in Year 2, and 72 jobs in Year 3 (Table 3.13-25). Construction of the Project would also support an estimated total (direct, indirect, and induced) earnings of about $12.2 million in Year 1, $16.0 million in Year 2, and $3.1 million in Year 3 (Table 3.13-26).

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Table 3.13-25:
Estimated Total Employment Associated with Construction of the Converter Stations, AC Collection System Routes, and Applicant Proposed Route by Region and Year

Region	Year 1			Year 2			Year 3		
	Direct Employment	Indirect and Induced Employment[1]	Total Employment[2]	Direct Employment	Indirect and Induced Employment[1]	Total Employment[2]	Direct Employment	Indirect and Induced Employment[1]	Total Employment[2]
Converter Stations[3 4]									
1	143	123	266	188	160	348	36	31	67
7	143	142	285	188	185	373	36	36	72
AC Collection System[5]									
1	305	284	589	305	284	589			
Applicant Proposed Route[6]									
1	186	159	345	137	117	254			
2	175	149	324	129	110	239			
3	283	241	524	209	178	387			
4	202	172	374	149	127	276			
5	221	189	410	163	140	303			
6	73	62	136	54	46	100			
7	50	46	97	37	32	69			
Converter Stations, AC Collection System, and Applicant Proposed Route[7]									
1	634	565	1,199	630	561	1,191	36	31	67
7	194	188	382	225	217	442	36	36	72

1 1 Indirect and induced effects are estimated using the applicable state multipliers for the construction sector. Regions 4 and 7 include counties from more than one state (see Table 3.13-1). For
2 these regions, the projected construction workforce is divided by state with the appropriate state multipliers used to estimate indirect and induced effects.
3 2 Total employment consists of direct, indirect, and induced employment.
4 3 Construction of each converter station is expected to take place over a 32-month period (Figure 3.13-2).
5 4 The Oklahoma converter station would be located in Region 1; the Tennessee converter station would be located in Region 7.
6 5 The AC collection system routes assume that six routes with an average length of 34.4 miles would be built. Construction of all six average routes would take place over a 24-month construction
7 period with the workforce assumed to be divided equally between Year 1 and Year 2 for the purposes of analysis.
8 6 The Applicant Proposed Route would be constructed in five 140-mile-long segments, each taking 24 months to complete. These segments are assumed to be constructed concurrently for the
9 purposes of analysis.
10 7 Data are presented for those regions with two or more Project components only. Region 1 includes the proposed Oklahoma converter station, approximately 206 miles of AC collection system
11 routes, and 115.5 miles of HVDC transmission line. Region 7 includes the proposed Tennessee converter station and approximately 42.8 miles of HVDC transmission line.

Table 3.13-26:
Estimated Total Earnings Associated with Construction of the Converter Stations, AC Collection System Routes, and Applicant Proposed Route by Region and Year ($ million)

Region	Year 1			Year 2			Year 3		
	Direct Earnings[1]	Indirect and Induced Earnings[1 2]	Total Earnings[1 3]	Direct Earnings[1]	Indirect and Induced Earnings[1 2]	Total Earnings[1 3]	Direct Earnings[1 2]	Indirect and Induced Earnings[1 2]	Total Earnings[1 3]
Converter Stations[4 5]									
1	$6.3	$5.0	$11.3	$8.3	$6.5	$14.8	$1.6	$1.3	$2.8
7	$6.3	$5.9	$12.2	$8.3	$7.7	$16.0	$1.6	$1.5	$3.1
AC Collection System[6]									
1	$13.4	$11.2	$24.6	$13.4	$11.2	$24.6			
Applicant Proposed Route[7]									
1	$8.2	$6.4	$14.6	$6.0	$4.8	$10.8			
2	$7.7	$6.1	$13.8	$5.7	$4.5	$10.2			
3	$12.5	$9.8	$22.3	$9.2	$7.2	$16.4			
4	$8.9	$6.3	$15.2	$6.6	$4.7	$11.2			
5	$9.7	$6.6	$16.3	$7.2	$4.9	$12.1			
6	$3.2	$2.2	$5.4	$2.4	$1.6	$4.0			
7	$2.2	$1.8	$4.0	$1.6	$1.3	$3.0			
Converter Stations, AC Collection System, and Applicant Proposed Route[8]									
1	$27.9	$22.6	$50.6	$27.8	$22.5	$50.2	$1.6	$1.3	$2.8
7	$8.5	$7.7	$16.2	$9.9	$9.0	$18.9	$1.6	$1.5	$3.1

1 1 Direct earnings estimates are based on an average annual construction salary of $44,050 (BLS 2012). Earnings estimates are presented in millions of dollars ($ million).
2 2 Indirect and induced effects are estimated using the applicable state multipliers for the construction sector. Regions 4 and 7 include counties from more than one state (see Table 3.13-1).
3 Indirect and induced earnings are estimated based on the share of construction in each state.
4 3 Total earnings consist of direct, indirect, and induced earnings.
5 4 Construction of each converter station is expected to take place over a 32-month period (Figure 3.13-2).
6 5 The Oklahoma converter station would be located in Region 1; the Tennessee converter station would be located in Region 7.
7 6 The AC collection system routes assume that six routes with an average length of 34.4 miles would be built. Construction of all six average routes would take place over a 24-month construction
8 period with the workforce assumed to be divided equally between Year 1 and Year 2 for the purposes of analysis.
9 7 The Applicant Proposed Route would be constructed in five 140-mile-long segments, each taking 24 months to complete. These segments are assumed to be constructed concurrently for the
10 purposes of analysis.
11 8 Data are presented for those regions with two or more Project components only. Region 1 includes the proposed Oklahoma converter station, approximately 206 miles of AC collection system
12 routes, and 115.5 miles of HVDC transmission line. Region 7 includes the proposed Tennessee converter station and approximately 42.8 miles of HVDC transmission line.

Total regional economic impacts are estimated at the state level using direct-effect multipliers for earnings and for employment from the U.S. Bureau of Economic Analysis' RIMS II regional modeling system (BEA 2013b). The multipliers for the construction sector in Tennessee are slightly higher than those for the corresponding sector in Oklahoma and, as a result, *total* estimates for the Tennessee converter station are higher than those for the Oklahoma converter station.

3.13.6.2.2.1.2 Operations and Maintenance Impacts

Operations and maintenance of each of the converter stations is expected to support up to 15 workers, with total estimated annual earnings of approximately $1 million. Operations and maintenance activities associated with the Oklahoma converter station would support an estimated total (direct, indirect, and induced) of 54 jobs and $2.1 million in annual earnings (Table 3.13-27). Statewide multipliers for the utilities sector are lower in Tennessee than in Oklahoma. The corresponding total annual impacts for the Tennessee converter station are estimated to be 39 jobs and $1.74 million in total annual earnings (Table 3.13-28).

Table 3.13-27:
Total Annual Economic Impacts from Operations and Maintenance of the Oklahoma Converter Station

Impacts	Employment (Jobs)	Annual Earnings ($ million)[1]
Direct Impact	15	$1.02
Indirect and Induced Impacts[2]	39	$1.11
Total Impact	54	$2.13

1 Total earnings were estimated based on the 2012 estimate of $67,950 for the annual average wage across the United States for all occupations in the electric power generation, transmission, and distribution industry (BLS 2012).
2 Indirect and induced impacts are estimated using the U.S. Bureau of Economic Analysis RIMS II direct-effect multipliers for the state of Oklahoma (BEA 2013b).

Table 3.13-28:
Total Annual Economic Impacts from Operations and Maintenance of the Tennessee Converter Station

Impacts	Employment (Jobs)	Annual Earnings ($ million)[1]
Direct Impact	15	$1.02
Indirect and Induced Impacts[2]	24	$0.72
Total Impact	39	$1.74

1 Total earnings were estimated based on the 2012 estimate of $67,950 for the annual average wage across the United States for all occupations in the electric power generation, transmission, and distribution industry (BLS 2012).
2 Indirect and induced impacts are estimated using the U.S. Bureau of Economic Analysis RIMS II direct-effect multipliers for the state of Tennessee (BEA 2013b).

3.13.6.2.2.1.3 Decommissioning Impacts

Decommissioning of the each converter station would require a labor force approximately equal to that needed for its construction. Local expenditures on materials and supplies and payments to workers would likely be similar, resulting in broadly similar economic impacts to those from construction.

3.13.6.2.2.2 AC Collection System

3.13.6.2.2.2.1 Construction Impacts

Estimates of direct employment and earnings are presented by alternative in Table 3.13-29. These estimates assume similar workforce requirements to those estimated for the HVDC transmission line, with direct earnings estimates based on an average annual construction worker salary of $44,050 (BLS 2012). Total (direct, indirect, and induced) employment and earnings are estimated using the applicable multipliers for Oklahoma and Texas. The resulting annual total employment estimates range from 43 for AC Collection System Route SW-1 to 154 for AC Collection System Route NW-2; respective total earnings are estimated to be $1.7 million and $6.5 million.

Table 3.13-29:
Total Economic Impacts from Construction by AC Collection System Route

Route[1]	Direct Employment	Indirect and Induced Employment[2]	Total Employment	Direct Earnings ($ million)	Indirect and Induced Earnings ($ million)	Total Earnings ($ million)
E-1	43	37	80	$1.9	$1.5	$3.4
E-2	59	50	109	$2.6	$2.0	$4.6
E-3	59	50	109	$2.6	$2.0	$4.6
NE-1	44	38	82	$2.0	$1.5	$3.5
NE-2	39	33	72	$1.7	$1.3	$3.0
NW-1	77	65	142	$3.4	$2.7	$6.1
NW-2	83	71	154	$3.6	$2.9	$6.5
SE-1	60	64	124	$2.6	$2.4	$5.0
SE-2	20	23	43	$0.9	$0.8	$1.7
SE-3	73	75	148	$3.2	$2.9	$6.1
SW-1	20	23	43	$0.9	$0.8	$1.7
SW-2	55	60	115	$2.4	$2.3	$4.7
W-1	31	26	57	$1.4	$1.1	$2.5
Average	51	47	98	$2.2	$1.9	$4.1

1 Construction is expected to take place over a 24-month period.
2 Indirect and induced impacts are estimated using the BEA RIMS II direct effect multipliers for the states of Oklahoma and Texas (BEA 2013b).

Assuming that six routes with an average length of 34.4 miles are constructed would result in direct annual employment of 305, with total (direct, indirect, and induced) employment of about 589 jobs (Table 3.13-25). Direct employment would support $13.4 million in employee earnings, with total employment supporting $24.6 million. These direct and total employment estimates are equivalent to approximately 0.9 percent and 1.7 percent of total employment in Region 1 (35,599) in 2011, respectively (Table 3.13-6).

3.13.6.2.2.2.2 Operations and Maintenance Impacts

Operations and maintenance of the HVDC and AC transmission lines would employ 32 workers in Oklahoma, including 15 in Guymon, Oklahoma (Texas County) (Region 1). The potential economic impacts of this employment are discussed below in the Applicant Proposed Route section.

3.13.6.2.2.2.3 Decommissioning Impacts

Decommissioning of the AC transmission lines would require a labor force approximately equal to that needed for its construction. Local expenditures on materials and supplies and payments to workers would likely be similar, resulting in broadly similar economic impacts to those from construction.

3.13.6.2.2.3 HVDC Applicant Proposed Route

3.13.6.2.2.3.1 Construction Impacts

The transmission line would be constructed in five 140-mile-long segments, each taking 24 months to complete. The estimated workforce is shown by month for a representative 140-mile segment in Figures 3.13-3 and 3.13-4. Total employment by month is expected to range from 55 workers in month 24 to a peak of 290 workers in months 4, 5, and 6, with an average monthly employment of 207. Viewed in terms of annualized jobs, each 140-mile segment would provide approximately 414 years of employment, with approximately 58 percent or 238 of these job-years in the first 12 months (Year 1) and the remaining 176 job-years in Year 2.

Table 3.13-30 compares the projected number of job-years for each region with the corresponding 2011 employment totals. Projected job-years are presented by 12-month period (Year 1 and 2) based on the estimated workforce per 140-mile segment, adjusted to account for the miles of HVDC transmission line that would be located in each region. Viewed as a share of total employment in 2011, projected construction employment ranges from 0.01 percent in Region 7 (Years 1 and 2) to 0.5 percent in Region 1 (Year 1).

Table 3.13-30:
Estimated Direct Construction Employment for the Applicant Proposed Route by Region and Year

Region[1]	2011 Employment[2]	Year 1		Year 2	
		Direct Jobs	Percent of 2011 Employment	Direct Jobs	Percent of 2011 Employment
1	35,599	186	0.5%	137	0.4%
2	55,875	175	0.3%	129	0.2%
3	177,897	283	0.2%	209	0.1%
4	60,648	202	0.3%	149	0.2%
5	164,835	221	0.1%	163	0.1%
6	16,439	73	0.4%	54	0.3%
7	663,979	50	0.0%	37	0.0%

1 Estimated employment by region is based on the projected workforce requirements shown in Figure 3.13-4. Workers are allocated by region based on the total miles of transmission line proposed for each region.
2 Existing employment data are from the BEA (2013b) and presented by county in Table 3.13-6.

Total (direct, indirect, and induced) employment and earnings estimates for the construction phase of the Project are presented by region and year in Tables 3.13-25 and 3.13-26, respectively. These estimates were developed using an average annual construction worker salary of $44,050 and direct-effect multipliers for the corresponding states. Total employment divided into direct and indirect/induced components is shown graphically for Years 1 and 2 in Figures 3.13-5 and 3.13-6, respectively.

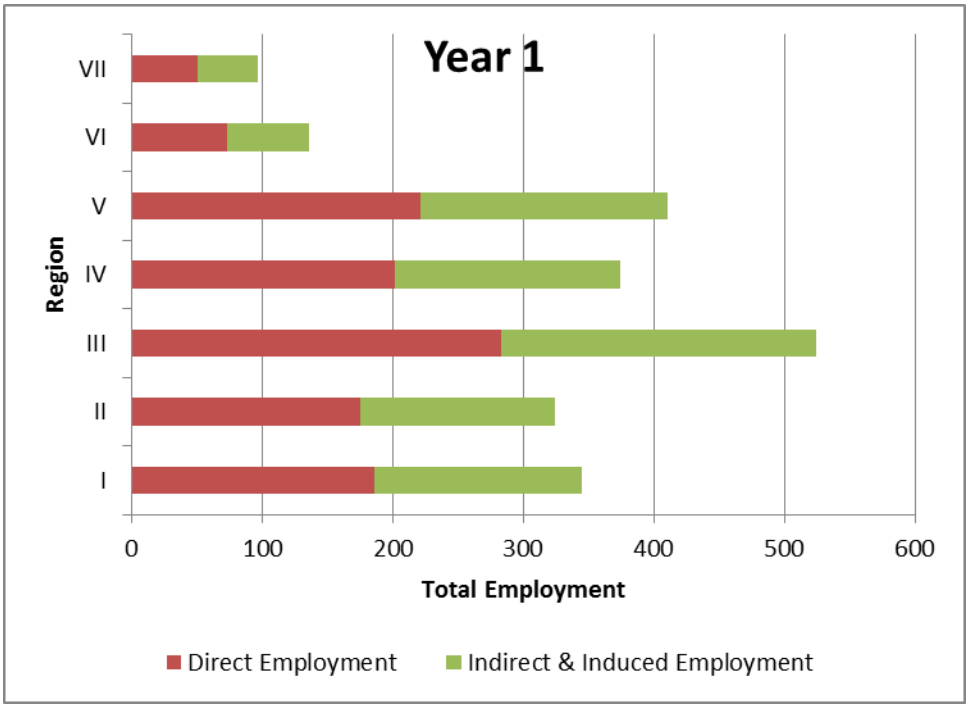

Figure 3.13-5: Total Projected HVDC Construction-Associated Employment by Region, Year 1

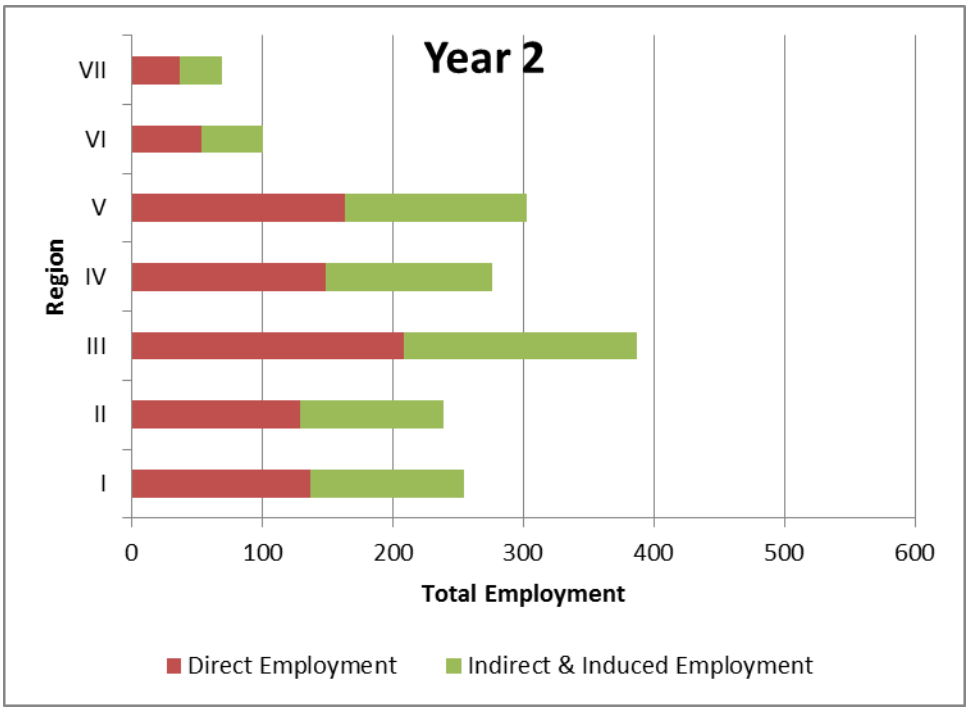

Figure 3.13-6: Total Projected HVDC Construction-Associated Employment by Region, Year 2

As noted above, an estimated 58 percent of the total construction employment (viewed in terms of job-years) would occur in Year 1 (as shown in Figures 3.13-3 and 3.13-4). Viewed by region, total employment in Year 1 would range from 97 jobs in Region 1 to 524 jobs in Region 3, reflecting the relative length of transmission line proposed for each region (Table 3.13-25). Viewed as a share of total employment in 2011, total projected construction employment in Year 1 would range from 0.01 percent of total employment in Region 7 to 1.0 percent in Region 1. Estimated direct earnings for construction activities in Year 1 would range from $2.2 million in Region 7 to $12.5 million in Region 3. Estimated total (direct, indirect, and induced) earnings in Year 1 range from about $4 million in Region 7 to $22.3 million in Region 3 (Table 3.13-26).

Table 3.13-25 also summarizes the direct and total (direct, indirect, and induced) employment that would be supported if construction of the converter stations, AC collection system routes, and Applicant Proposed Route were to occur at the same time. Data are presented by year and region. The largest combined employment totals would occur in Region 1, with the concurrent construction of about 116 miles of HVDC transmission line, the Oklahoma converter station, and an estimated 206 miles of AC collection system transmission line. The estimated miles for the AC collection system routes assume that six routes with an average length of 34.4 miles would be built. The combined estimated total employment in Region 1 would be 1,199 and 1,191 in Years 1 and 2, equivalent to about 3.3 percent of total employment in the region in 2011. Combined total employment in Region 7 would be approximately 382 jobs in Year 1 and 442 jobs in Year 2, equivalent to about 0.1 percent of total employment in the region in 2011 (Table 3.13-25).

Total combined employment in Region 1 would support an estimated $50.6 million and $50.2 million in earnings in Years 1 and 2, respectively (Table 3.13-26). In Region 7, combined converter station- and transmission line-related construction employment would support estimated total (direct, indirect, and induced) earnings of $16.2 million in Year 1 and $18.9 million in Year 2 (Table 3.13-26).

3.13.6.2.2.3.2 Operations and Maintenance Impacts

Operations and maintenance of the HVDC and AC transmission lines would employ 32 workers in Oklahoma: 15 in Guymon, Oklahoma (Texas County) (Region 1), seven in Woodward, Oklahoma (Region 2), and 10 in Muskogee, Oklahoma (Region 3). An additional 10 workers would be employed in Newport, Arkansas (Jackson County) (Region 6). Using the annual average wage for installation, maintenance, and repair occupations in the electric power generation, transmission, and distribution industry ($67,950), these jobs would support an estimated direct total of $2.07 million in salary and wages in Oklahoma and $0.65 million in Arkansas. Total (direct, indirect, and induced) estimated employment and earnings are presented by affected region in Table 3.13-31.

Table 3.13-31:
Estimated Total Employment Associated with Operations and Maintenance of the Applicant Proposed Route by Region and Year

Region[1]	Employment		Earnings	
	Direct	Total (Direct, Indirect, and Induced)[2]	Direct[3] ($ million)	Total (Direct, Indirect, and Induced)[2] ($ million)
1	15	54	$1.0	$2.1
2	7	25	$0.5	$1.0
3	10	36	$0.7	$1.4
6	10	25	$0.7	$1.1

1 Data are presented for the regions where operations and maintenance staff would be based. No operations and maintenance staff are proposed for locations in Regions 4, 5, or 7.
2 Total impacts (employment and earnings) are estimated using statewide multipliers for the utilities sector for Oklahoma (Regions 1, 2, and 3) and Arkansas (6) from the BEA (2013b).
3 Total direct earnings are estimated using an annual average wage of $67,950 (BLS 2012)

Operations and maintenance of the Oklahoma converter station is expected to support up to 15 workers, with estimated annual earnings of approximately $1 million. This employment would support approximately 54 total (direct, indirect, and induced) jobs and $2.1 million in annual earnings (Table 3.13-27). Operations and maintenance of this converter station and HVDC and AC transmission line operations and maintenance in Region 1 would support a combined annual total of 108 jobs and $4.3 million in earnings. The operation and maintenance employees associated with the Tennessee converter station would not be expected to reside in the same counties as the HVDC transmission line staff.

3.13.6.2.2.3.3 Decommissioning Impacts

Decommissioning of the HVDC transmission line would require a labor force approximately equal to that needed for its construction. Local expenditures on materials and supplies and payments to workers would likely be similar, resulting in broadly similar economic impacts to those from construction.

3.13.6.2.3 Agriculture

3.13.6.2.3.1 Converter Stations and AC Interconnection Siting Areas

3.13.6.2.3.1.1 Construction and Operations and Maintenance

Both of the converter stations would affect agricultural land use. The Oklahoma converter station is located on rangeland and would involve the conversion of 45 to 60 acres to industrial use. Construction of the Tennessee converter station would involve the conversion of approximately 45 to 60 acres of primarily agricultural land use to industrial land use. In both cases, an additional 5 to 10 acres would be temporarily disturbed during construction. Other related short- and long-term land use impacts are described in Section 3.2.6.2.1. Although the exact location of the Tennessee converter station has not yet been determined, potentially affected agricultural land uses would likely include cultivated crops and pasture/hay. These land use conversions would affect a very small share of the total agricultural land use in the Texas County, Oklahoma, Shelby, and Tipton counties, Tennessee, which included about 1.2 million, 92,299, and 170,182 acres in 2007, respectively (see Table 3.13-9). As noted above, the Tennessee converter station would either be located in Shelby or Tipton county.

3.13.6.2.3.1.2 Decommissioning Impacts

Decommissioning of the converter stations would involve restoring the affected sites to their preconstruction condition to the extent possible and a return to their preconstruction use. Some of the affected areas could be used for agriculture again at some point in the future.

3.13.6.2.3.2 AC Collection System and HVDC Applicant Proposed Route

3.13.6.2.3.2.1 Construction and Operations and Maintenance

The majority of the land in the ROI used to assess land use impacts is used for agriculture, with cultivated crops, grassland/herbaceous, and pasture/hay land covers together ranging from 38 percent of the land use ROI in Region 5 to 90 percent in Region 1 (see Tables 3.10-3 through 3.10-11). Livestock dominates the agricultural sectors in Regions 1 through 4 in terms of total market value of agricultural products sold (Table 3.13-9; Figure 3.13-1). Cultivated crops make up a large share of the land use in the land use ROI for Regions 6 and 7, accounting for 78 percent and 70 percent of their respective totals. Crops also account for the vast majority of the value of agricultural products sold in these regions (Table 3.13-9; Figure 3.13-1).

The introduction of a new transmission line can have an impact on agricultural production by reducing the acreage available for cultivation and, in some cases, disrupting existing harvest patterns, with new transmission line structures affecting the farmer's ability to maneuver equipment in the vicinity of the immediately affected area. A new transmission line also has the potential to negatively affect farm operations that employ pivot irrigation systems by potentially disrupting the "sweep area." Potential impacts to agricultural land are discussed in Section 3.2 and include the potential impacts to livestock grazing, crop production, irrigation, global navigation satellite systems (GNSS), and aerial spraying. Impacts addressed include those associated with construction, operations and maintenance, and decommissioning of the Project.

Viewed in terms of agricultural operations in the socioeconomic ROI, total estimated disturbance based on the land use ROI represents a very small share of the 14 million acres of land in farms in the 33 potentially affected counties and is unlikely to noticeably affect overall agricultural production and employment in any of the affected counties. Impacts could, however, be potentially significant to the individual operations affected.

3.13.6.2.3.2.1.1 *Livestock*

Construction and operations and maintenance of the transmission lines could affect the economic value of livestock production in the ROI by increasing ranchers' costs and decreasing available forage. Potential impacts during construction could result from road construction providing increased access and related disturbance to livestock grazing patterns, temporary reductions in available forage, and reductions in the palatability of forage due to construction-related dust.

The Project could affect net earnings from livestock production in the following ways:

- Decreased forage from land taken out of production.
- Increased management costs associated with controlling additional noxious and invasive vegetation species introduced by Project construction equipment.
- Increased management costs associated with moving livestock around Project-related structures and easements.

Total construction- and operations and maintenance-related disturbance to rangeland and pasture is discussed by Region in Section 3.2. This analysis evaluates impacts in terms of acres of forage that would be temporarily (construction) or permanently (operations) unavailable for use.

The value of the grazing land that would be affected can be approximated using data compiled by the USDA. The average land value for pasture in the affected states ranged from $1,330 per acre in Oklahoma to $3,600 per acre in Tennessee (Table 3.13-32). Average cash rents for pasture ranged from $6.5 per acre in Texas to $20 per acre in Tennessee (Table 3.13-33).

Table 3.13-32:
Average Agricultural Land Value per acre by State, 2013

State	Pasture	Cropland		
		Irrigated[1]	Non-Irrigated[1]	Overall Average[1, 2]
Texas	1,560	1,830	1,610	1,640
Oklahoma	1,330	N/A	1,500	1,520
Arkansas	2,400	3,100	1,950	2,560
Tennessee	3,600	N/A	N/A	3,550
US Total	1,200	N/A	N/A	4,000

N/A = Not available; separate irrigated and non-irrigated values are only provided for states with significant irrigated acreage
1 Values are expressed in dollars per acre.
2 This represents the average land value per acre for all cropland (irrigated and non-irrigated).
Source: USDA (2013b)

Table 3.13-33:
Average Agricultural Cash Rent per Acre by State, 2013[1]

State	Pasture	Cropland		
		Irrigated[1]	Non-Irrigated[1]	Overall Average[1, 2]
Texas	6.5	82	24	35.5
Oklahoma	12	70	32	33.5
Arkansas	18	122	50	95.5
Tennessee	20	160	89	92
US Total	12	202	125	136

1 Values are expressed in dollars per acre.
2 This represents the average land value per acre for all cropland (irrigated and non-irrigated).
Source: USDA (2013a)

3.13.6.2.3.2.1.2 *Cropland*

Construction of the transmission lines could affect net earnings from cropland in the following ways:

- Reduce acreage available for cultivation and use due to the placement of transmission structures, access roads, and other proposed Project uses.
- Increase irrigation costs due to limitations placed with respect to pivot irrigation systems.
- Increase costs due to the need to maneuver farming equipment around transmission structures.
- Increase management costs associated with controlling additional noxious and invasive vegetation species introduced by Project construction equipment.

- Reduce productivity as a result of construction-related soil compaction and erosion and damage to drainage tiles.

Potential impacts to cropland would vary based on the design and location of the transmission line structures and access roads relative to existing agricultural operations.

The value of the cropland that would be affected can be approximated using average land value and cash rent data compiled by the USDA (2013a, 2013b). The average land value for cropland in the affected states ranged from $1,520 per acre in Oklahoma to $3,550 per acre in Tennessee (Table 3.13-32). Average land values for irrigated and non-irrigated cropland are only available for those states with substantial irrigated acreage. Values are typically higher for irrigated land as illustrated in Table 3.13-32. Average cash rents for cropland ranged from $33.5 per acre in Oklahoma to $95.5 per acre in Arkansas (Table 3.13-33). Average cash rents were higher for irrigated than non-irrigated cropland, with average cash rents for irrigated cropland ranging from $70 per acre in Oklahoma to $160 per acre in Tennessee.

The Arkansas Delta Agricultural Economic Impact Study (Arkansas Delta study) commissioned by the Applicant assesses the potential economic impact of the Project on agricultural resources in Jackson, Poinsett, Cross, and Mississippi counties, Arkansas (see Appendix J). These counties are spread over two regions, Regions 6 and 7 (Table 3.13-1). Much of the cropland in these counties has a higher land value than the Arkansas average of $2,560 per acre in 2013 (Table 3.13-32), with prices ranging up to $5,000 per acre. These high values reflect local conditions (soil and topography) that allow farmers to precision level their fields and the ready availability of irrigation water from shallow aquifers.

The Arkansas Delta study estimated the following potential Project-related monetary impacts: one-time impacts expected to occur during construction and operation and annual impacts expected to occur for the life of the project.

3.13.6.2.3.2.1.2.1 One-Time Impacts

Using a "with and without Project" framework, the Arkansas Delta study estimated one-time impacts to agricultural production using data from the University of Arkansas crop budgets and a weighted average of net returns for six crops (corn, soybeans, rice, cotton, wheat, and sorghum). Net returns are estimated by subtracting production and capital costs from gross revenues (average yield per crop × price per unit). Values for the six major crops were weighted based on their share of total cropland in the four study-area counties resulting in a "without Project" average net return of $331 per acre based on a full year of costs and returns (Table 3.13-34).

Net returns estimated for the same average or "composite" acre "with Project" assume no revenues and vary depending on the time year that Project construction begins and the production costs that have been incurred up to that point. If construction begins in March, estimated cumulative production costs per disturbed composite acre would be $60, increasing as the season progresses and peaking at $407 per acre in August. Capital recovery costs are assumed to be constant at $47 per composite acre. Table 3.13-34 shows estimated with Project net returns per composite acre by month.

Table 3.13-34:
Estimated Monetary Impact per Composite Acre by Month

Month	Value per Composite Acre[1]					
	Net Return Without Project	Gross Revenues With Project	Cumulative Production Cost With Project[2]	Capital Cost With Project	Net Return With Project[3]	Estimated Monetary Impact[4]
March	$331	$0	$60	$47	-$107	-$438
April	$331	$0	$161	$47	-$208	-$539
May	$331	$0	$289	$47	-$336	-$667
June	$331	$0	$344	$47	-$391	-$722
July	$331	$0	$369	$47	-$416	-$747
August	$331	$0	$407	$47	-$454	-$785
September	$331	$0	$264	$47	-$311	-$642

1 Values for an average or composite acre were estimated using data from University of Arkansas crop budgets, with values for six major crops (corn, soybeans, rice, cotton, wheat, and sorghum) weighted based on their share of total cropland in the four study area counties. Corresponding estimates of net returns are presented by crop in Appendix 7.7 to the Arkansas Delta study (see Appendix J to this EIS).
2 Production costs consist of operating and post-harvest costs. Operating costs were estimated based on seasonal investments in crop production, which increase as the season progresses up until harvest. For summer crops, production expenditures are lowest from October through February when investments mainly consist of field work completed in fall in preparation for the next crop. Field expenses start to increase in March as farmers till, fertilize, and implement weed control measures in advance of planting, and they continue to increase until the crop is harvested in the fall.
3 The net return with Project equals gross revenues with Project minus cumulative production and capital costs.
4 Estimated monetary impacts per composite acre consist of the net return with Project minus the net return without Project.
Source: Appendix J

3.13.6.2.3.2.1.2.2 Annual Impacts

The Arkansas Delta study (Appendix J of this EIS) considered potential annual impacts to agricultural water management systems, aerial application (crop dusting), crop production logistics, and crop insurance and commodity programs.

Agricultural Water Management Systems

According to Arkansas Delta study, the proposed transmission line structures could potentially affect both center-pivot and furrow irrigation systems. Where sprinkler (center-pivot) irrigation is used, depending on its location, the presence of a new transmission line structure could prevent the pivot from being able to traverse the entire circle, with the area affected increasing the closer the structure is located to the pivot point. For fields with furrow irrigation systems, placement of a new transmission line structure could block the flow of water downstream of the structure, with the area affected increasing the closer the structure is to the upper end of the furrow.

The Arkansas Delta study estimated potential monetary impacts based on the net return for a composite acre that is a weighted average of net returns for irrigated corn, soybean, cotton, and sorghum. Impacts may be estimated by assuming that land that is no longer irrigated will be converted to dryland production, with a commensurate reduction in yield per acre and net returns. The estimated change in net return would involve a reduction from $276 per composite acre to $104 per acre, a 62 percent reduction in net returns. Annual impacts may subsequently be estimated by adjusting estimated net returns based on the number of acres expected to be converted from irrigated to dryland farming.

Aerial Applications (Aerial Spraying)

The Arkansas Delta study assumes that the presence of a transmission line would impede the ability of applicators to apply fertilizers and chemicals resulting in a reduction in yields, which the study authors assumed would be equivalent to 50 percent of the without Project yield. Reducing yields by 50 percent would reduce net returns per composite acre from $331 to -$19 per acre. Impacts may subsequently be estimated by adjusted based on the number of acres where aerial application would be affected.

Crop Production Logistics

The placement of transmission line structures could potentially affect crop production logistics by requiring a farmer to spend additional time maneuvering around the structures. The Arkansas Delta study did not quantify these potential impacts, but it should be noted that with large equipment, the additional time required to maneuver could add to crop production costs in affected areas, especially when combined with associated damage to crops.

Crop Insurance and Commodity Programs

The Arkansas Delta study discusses potential impacts to crop insurance and commodity payment programs in qualitative terms. The crop insurance program uses a 10-year crop yield history to determine losses and payments. Any potential reduction in yield, therefore, has the potential to affect crop insurance damage assessments and payments should a crop be damaged from a storm. Further, changes in yield over time could potentially affect payments a farmer might receive from the new Agricultural Risk Coverage (Individual option) program in the 2014 Farm Bill.

3.13.6.2.3.2.2 Decommissioning Impacts

Potential impacts to agriculture during decommissioning would be similar to those experienced during construction. Decommissioning could involve restoring the affected sites to their preconstruction condition to the extent possible and a return to their preconstruction use. Some of the affected areas could be used for agriculture again at some point in the future.

3.13.6.2.4 Housing

An estimated 26 percent of the construction workforce would be hired and/or contracted locally (i.e., within commuting distance) and would likely commute to and from their homes to work each day. The remaining 74 percent of the construction workforce is assumed to permanently reside further than commuting distance from the Project sites and would be expected to temporarily relocate to the ROI or immediate vicinity for the duration of their employment, possibly commuting home on weekends, depending on the location of their primary residence (Clean Line 2014a). Approximately 10 percent of workers temporarily relocating are assumed for the purposes of analysis to be accompanied by their families (see Section 3.13.9.3).

Almost half (45 percent) of the workers temporarily relocating are expected to require motel or hotel rooms, with the remaining non-local workers expected to require rental housing (apartments, houses, or mobile homes) (20 percent), or provide their own housing in the form of RVs or pop-up trailers (35 percent). Construction workers, particularly those working in less populated areas, often commute relatively long distances to job sites depending on cost and availability of housing and community amenities/services within the vicinity. The Applicant estimates that workers could commute up to 2 hours or approximately 100 miles each way.

Housing availability within the vicinity of the Project would be influenced by a number of factors outside Project demand. Other sources of temporary housing demand could include other construction projects, community-sponsored events, and hunting and other recreational activities.

3.13.6.2.4.1 Converter Stations and AC Interconnection Siting Areas

3.13.6.2.4.1.1 Construction Impacts

Construction of each of the converter stations is expected to employ an average of 138 workers over a 32-month construction period. The share of non-local workers is assumed to be 74 percent for the full duration of construction for each converter station, resulting in an average of 102 non-local workers employed over the 32-month construction period, with an estimated peak of 179 non-local workers employed during months 12 to 17 (Figure 3.13-2). The Oklahoma converter station would be located in Region 1; the Tennessee converter station would be located in Region 7.

Table 3.13-35 compares projected peak housing demand with estimated supply in the two affected regions. These data suggest that adequate temporary housing resources likely exist within each of the affected regions, a situation that is especially likely to be the case for the Tennessee converter station, which is located within commuting distance of the city of Memphis. Existing housing resources are substantially more limited in Region 1, within the counties that make up the region and also elsewhere within a commuting distance of up to 2 hours. Unlike Regions 3 through 7, there are no large communities within 2 hours commuting distance of Region 1. Economic development organizations in the Oklahoma Panhandle region have identified a potential shortage in permanent housing in and around the city of Guymon in Texas County, with these problems expected to be further exacerbated by future wind energy development (Fleming 2013).

3.13.6.2.4.1.2 Operations and Maintenance Impacts

Operations and maintenance of each of the converter stations is expected to employ up to 15 workers. These estimated staffing levels would have a minor impact on existing demand for housing in the potentially affected areas.

3.13.6.2.4.1.3 Decommissioning Impacts

Decommissioning each of the converter stations would require a labor force approximately equal to that needed for its construction. Impacts to housing from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.4.2 AC Collection System

3.13.6.2.4.2.1 Construction Impacts

Assuming six routes with an average length of 34.4 miles are constructed at the same time would result in a combined average of 226 non-local workers and an estimated combined peak of 316 non-local workers temporarily relocating to Region 1. A comparison of expected peak housing demand with existing temporary housing resources suggests that this demand would be equivalent to 52 percent of the hotel and motel rooms assumed to be available and 47 percent of all identified RV spaces (Table 3.13-35).

3.13.6.2.4.2.2 Operations and Maintenance Impacts

Combined operation of the HVDC and AC transmission lines in Region 1 is expected to employ 15 workers based in Guymon, Oklahoma (Texas County). This number is not expected to vary based on the selected AC collection system routes or affect existing trends in housing demand in Texas County.

Table 3.13-35:
Estimated Construction-Related Housing Demand by Project Component, Housing Type, and Region

Region	Projected Non-Local Employment[1]		Projected Peak Housing Demand[2]			Estimated Available Housing Units[3]			Projected Demand as a Share of Existing Resources		
	Average Employment (Jobs/Week)	Peak Employment (Jobs/Week)	Rental Housing	Hotel and Motel Rooms	RV Spaces	Rental Housing[4]	Hotel and Motel Rooms[5]	RV Spaces	Rental Housing	Hotel and Motel Rooms	RV Spaces
Converter Stations											
1	102	179	36	81	63	370	273	235	10%	29%	27%
7	102	179	36	81	63	23,358	2,957	393	0%	3%	16%
AC Collection System[6]											
1	226	316	63	142	111	370	273	235	17%	52%	47%
Applicant Proposed Route											
1	119	168	34	76	59	370	273	235	9%	28%	25%
2	112	158	32	71	55	862	401	94	4%	18%	59%
3	182	255	51	115	89	3,193	718	679	2%	16%	13%
4	130	182	36	82	64	1,335	467	440	3%	18%	14%
5	142	200	40	90	70	4,207	1,137	633	1%	8%	11%
6	47	66	13	30	23	908	60	51	1%	50%	45%
7	32	46	9	20	16	23,358	2,957	393	0%	1%	4%
Converter Stations, AC Collection System Routes, and Applicant Proposed Route											
1	447	663	133	298	232	370	273	235	36%	109%	99%
7	134	225	45	101	79	23,358	2,957	393	0%	3%	20%

1 An estimated 74 percent of the total construction workforce is assumed to be non-local for the duration of the Project.
2 Projected housing demand is assumed to be divided as follows: rental housing (apartments, houses, or mobile homes) (20 percent), hotel and motel rooms (45 percent), and RV spaces (35 percent) (Clean Line 2013).
3 Estimated available housing units are presented by county in Table 3.13-10. Data are presented for those counties within the ROI only.
4 Many of these available units include more than one bedroom and, if rented, could be occupied by more than one worker. A large number of in-migrating workers on similar projects typically rent a room in a house or live five in a rented house (BLM 2013).
5 Assumes an average occupancy rate of 75 percent for the purposes of analysis, with 25 percent of total units assumed to be potentially available.
6 Assumes six AC collection system routes with an average length of 34.4 miles.

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3.13.6.2.4.2.3 Decommissioning Impacts

Decommissioning of the AC transmission lines would require a labor force approximately equal to that needed during construction. Impacts to housing from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.4.3 HVDC Applicant Proposed Route

3.13.6.2.4.3.1 Construction Impacts

The HVDC transmission line would be constructed in five 140-mile-long segments, each taking 24 months to complete. Total employment by month is expected to range from 55 workers in month 24 to a peak of 290 workers in months 4, 5, and 6, with an average monthly employment of 207. The share of non-local workers is assumed to be 74 percent for the full duration of the Project. Non-local employment is expected to range from 41 workers per month in month 24 to 215 workers per month in months 4 to 6, with an average monthly employment of 153 (Figure 3.13-4).

Projected peak housing demand is compared with estimated supply by region in Table 3.13-35. The distribution of non-local workers is based on the miles of transmission line for each region and an average 140-mile-long segment. Demand for rental housing would range from less than 0.1 percent of the estimated available units in Region 7 to 9 percent in Region 1. Estimated peak demand for hotel and motel rooms as a share of existing available units would range from 1 percent in Region 7 to 50 percent in Region 6. Demand as a share of available hotel and motel rooms would also be relatively high in Region 1, accounting for about 28 percent of the available supply (Table 3.13-35).

Estimated peak demand for RV spaces as a share of total identified spaces would range from 4 percent in Region 7 to 59 percent in Region 2. Demand as a share of identified spaces would also be relatively high in Region 6, accounting for about 45 percent of the identified spaces (Table 3.13-35).

Table 3.13-35 also summarizes the estimated demand for housing if construction of the converter stations, AC collection system routes, and Applicant Proposed Route were to all peak at the same time. If construction of the Oklahoma converter station, six AC collection system routes, and the portion of the HVDC transmission line for Region 1 all occurred at the same time, demand for hotel and motel rooms would exceed the estimated available supply by 7 percent and demand for RV spaces would almost be equal to the total number of identified spaces (Table 3.13-35).

If the Tennessee converter station and the portion of the HVDC transmission line for Region 7 were built at the same time, demand for rental housing would be less than 1 percent of the estimated available properties, demand for hotel and motel rooms would be equivalent to 3 percent of the available supply, and demand for RV spaces would be equal to 20 percent of the total identified spaces (Table 3.13-35).

3.13.6.2.4.3.2 Operations and Maintenance Impacts

Operations and maintenance of the HVDC and AC transmission lines would employ 32 workers in Oklahoma: 15 in Guymon, Oklahoma (Texas County) (Region 1), seven in Woodward, Oklahoma (Region 2), and 10 in Muskogee, Oklahoma (Region 2). An additional 10 workers would be employed in Newport, Arkansas (Jackson County) (Region 6). These estimated staffing levels would not be expected to affect existing trends in housing demand in the potentially affected counties or regions.

Operations and maintenance of the converter station in Texas County, Oklahoma, would employ up to 15 workers. If these workers and those required to operate and maintain the HVDC and AC transmission lines in Texas County all permanently relocated to the area from elsewhere, these combined staffing levels would still not be expected to have

more than a minor impact on existing housing demand. The operations and maintenance employees associated with Tennessee converter station would not be expected to reside in the same counties as the HVDC transmission line staff.

3.13.6.2.4.3.3 Decommissioning Impacts

Decommissioning of the HVDC transmission line would require a labor force approximately equal to that needed for its construction. Impacts to housing from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.5 Property Values

The HVDC transmission line would require a new ROW. The effect that a transmission line may have on property value is a damage-related issue that would be negotiated between the Applicant and the affected landowner during the easement acquisition process. In theory, the value of each easement should be equal to the difference in value of the affected property before and after easement acquisition and construction of the facilities.

Changes in land use often raise concerns about the potential effect these changes may have on nearby property values. Research into the relationship between electric transmission facilities and local property values has tended to focus on residential properties, employing research methods that can, for the most part, be divided into surveys and opinion-based studies on one hand and quantitative studies largely based on comparisons of market data on the other.

Research conducted since the 1980s has tended to support the idea that proximity to transmission lines may affect the desirability and, therefore, the value of residential property (Bottemiller et al. 2000; Colwell 1990; Cowger et al. 1996; Delaney and Timmons 1992; Des Rosiers 2002; Hamilton and Schwann 1995). Some observers linked this general finding to increased concerns regarding potential EMF-related health effects, but a nationwide survey of real estate appraisers suggests that, for the most part, potential negative effects on property values tend to be related to the visual impact of transmission line facilities (Delaney and Timmons 1992).

The results of the studies cited above suggest that proximity to electric transmission lines can have negative effects on residential property values, with average impacts ranging from less than 1 percent to about 10 percent. The findings of these studies also suggest that this impact decreases with distance and tends to decline over time. A detailed literature review conducted by Chalmers and Voorvaart (2009) supported these conclusions, finding that in studies where depreciation was found, the typical change ranged from 3 percent to 6 percent within a few hundred feet and tended to decrease with distance and over time.

Studies of property-value impacts during periods of physical change, such as new transmission line construction or structural rebuilds, have generally revealed greater short-term impacts than long-term effects. Most studies have concluded that other factors, such as the general location, the size of property, improvements, conditions, amenities, and supply and demand factors in a specific market area are more important criteria than the presence or absence of transmission lines in determining the value of residential real estate.

Some short-term adverse impacts on residential property values (and marketability) might occur on an individual basis as a result of the Project. However, these impacts would be highly variable, individualized, and are difficult to predict. Unique Project characteristics that need to be taken into consideration when assessing the potential effects of transmission line structures on residential property values include the type and height of the structures, the

distance and view from the potentially affected property, intervening topography and vegetation, and the property market and type of landscape involved.

Few studies have addressed the impacts of transmission lines on the value of commercial and industrial properties. Those that have done so generally find the impacts are less than the impacts on residential properties. In interviews with appraisers, real-estate brokers, and owners and managers of commercial and industrial parks, Chapman (2005) found that, for the most part, the presence of a transmission line had little effect on market prices for commercial and industrial properties.

A review of studies of the impacts on agricultural land found that overhead transmission lines have the potential to reduce the sales price and the effect can vary widely, ranging from no effect to a decrease of 20 percent or more depending on the productivity of the land and the amount of disruption to farm operations (Kroll and Priestly 1992). More recently, Jackson (2010) assessed the impact of transmission lines on rural land used for agricultural or recreational purposes in Wisconsin. Using multivariate statistical analysis, Jackson found that prices for properties sold with a transmission line easement were 1.1 percent to 2.4 percent less than otherwise comparable properties sold at least 0.25 mile from a transmission line. These differences were not statistically significant (Jackson 2010).

3.13.6.2.6 Community Services

3.13.6.2.6.1 Converter Stations and AC Interconnection Siting Areas

3.13.6.2.6.1.1 Construction Impacts

Projected peak employment and the number of workers and family members expected to temporarily relocate during construction of the converter stations is discussed in Section 3.13.9.3. The peak increase for each station, estimated to be about 213 people during months 12 to 17, would be equivalent to approximately 1 percent, 0.3 percent, and less than 0.1 percent of the respective existing (2012) populations in Texas County, Oklahoma, Tipton, and Shelby counties, Tennessee. The temporary addition of these workers to local communities is not expected to affect the levels of service provided by existing law and fire protection personnel. The number of law enforcement and fire departments per county are identified in Table 3.13-11. Increased demands for local services that could occur from construction workers and family members temporarily relocating to the affected areas would be short term. It is anticipated that community commercial and retail services would experience an economic benefit from additional spending from relocating workers and their families.

The closest major medical facility to the Oklahoma converter station is the Memorial Hospital of Texas County, located 10.3 miles northwest of the site in Guymon, Oklahoma. This 47-certified-bed facility has a staff that includes 17 licensed practical nurses, 45 registered practical nurses, and two full-time physicians. This hospital provides emergency room services and would be capable of treating most construction-related injuries. At least six hospitals serve the Memphis area in Tennessee and would be capable of treating construction-related injuries were they to occur (Table 3.3-12). The temporary relocation of workers and family members to the affected areas is not expected to affect existing levels of health care and medical services. Minor increases in demands for local services that could occur from workers and family members temporarily relocating to the area would be short term.

An average and peak of 10 and 18 school-age children are expected to temporarily relocate to the affected counties during construction of each converter station. This potential increase in the number of students would not be expected to affect existing average student/teacher ratios in either affected area (Table 3.13-13).

3.13.6.2.6.1.2 Operations and Maintenance Impacts

Operations and maintenance of each of the converter stations is expected to employ up to 15 workers. If these workers and their families were to relocate from elsewhere, the resulting very small increase in population would not be expected to noticeably affect the provision of community services.

3.13.6.2.6.1.3 Decommissioning Impacts

Decommissioning of each converter stations would require a labor force approximately equal to that needed for its construction. Impacts to community services from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.6.2 AC Collection System

3.13.6.2.6.2.1 Construction Impacts

Projected peak employment and the number of workers and family members expected to temporarily relocate during construction of the AC collection system routes are discussed in Section 3.13.9.3. Assuming that six routes with an average length of 34.4 miles are constructed would result in average and peak population increases of about 271 and 379 people, respectively, approximately 0.5 percent and 0.7 percent of the total 2012 population in Region 1. The temporary addition of these workers to local communities is not expected to affect the levels of service provided by existing law and fire protection personnel. The number of law enforcement and fire departments per county are identified in Table 3.13-11. Increased demands for local services that could occur from construction workers and family members temporarily relocating to the area would be short term. It is anticipated that community commercial and retail services would experience an economic benefit from additional spending from relocating workers and their families.

Construction of the AC collection system routes could result in increased demand for emergency services. Local police assistance would likely be required to facilitate traffic flows during construction at some road crossings and permits may be required for vehicle load and width limits for some of the vehicles delivering Project materials and supplies.

Medical facilities located in Region 1 are identified in Table 3.3-12. Medical facilities are limited in the Texas counties in the region. The Ochiltree General Hospital, a Level IV trauma center, provides emergency services in Ochiltree County. Emergency medical services are provided in Sherman County by the Stratford EMS. Additional hospitals are located in neighboring counties, including the Moore County Hospital, south of Sherman County, which provides 24-hour emergency services. The Oklahoma counties in Region 1—Cimarron, Texas, Beaver, and Harper counties—each have a hospital that provides 24-hour emergency services. These facilities would be capable of treating most construction-related injuries. The temporary relocation of workers and family members to the counties in the region is not expected to affect existing levels of health care and medical services. Minor increases in demands for local services that could occur from workers and family members temporarily relocating to the area would be short term.

The estimated number of children expected to temporarily relocate to Region 1 during peak construction ranges from about 2 (AC Collection System Routes SE-2 and SW-1) to 8 (AC Collection System Route Alternative NW-1). If six routes with an average length of 34.4 miles are constructed, an estimated peak increase of 38 school-age children would result. These children would likely be located in a number of different school districts throughout Region 1 and would not be expected to affect existing average student/teacher ratios (Table 3.13-13).

3.13.6.2.6.2.2 Operations and Maintenance Impacts

Combined operation of the HVDC and AC transmission lines in Region 1 is expected to employ 15 workers based in Guymon, Oklahoma (Texas County). This number is not expected to vary based on the selected AC collection system routes. If these workers and their families were to relocate from elsewhere, the resulting very small increase in population would not be expected to noticeably affect the provision of community services.

3.13.6.2.6.2.3 Decommissioning Impacts

Decommissioning of the transmission lines would require a labor force approximately equal to that needed for their construction. Impacts to community services from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.6.3 HVDC Applicant Proposed Route

3.13.6.2.6.3.1 Construction Impacts

Projected peak employment and the number of workers and family members expected to temporarily relocate during construction of the Applicant Proposed Route are identified by Region in Table 3.13-23, with peak increases in populations ranging from less than 0.1 percent (Region 7) to 0.4 percent (Region 1) of 2012 population totals. The temporary addition of these workers to local communities is not expected to affect the levels of service provided by existing law and fire protection personnel. Law enforcement and fire departments within each region are identified by county in Table 3.13-11. Increased demands for local services that could occur from construction workers and family members temporarily relocating to the affected Regions would be short term. It is anticipated community commercial and retail services would experience an economic benefit from additional spending from relocating workers and their families.

Construction of the HVDC transmission line could result in increased demand for emergency services. Local police assistance would likely be required to facilitate traffic flows during construction at some road crossings and permits may be required for vehicle load and width limits for some of the vehicles delivering Project materials and supplies.

Medical facilities located near the transmission line are identified by location in Table 3.13-12. Construction of the Applicant Proposed Route should not have significant adverse impacts on local and regional medical facilities and services. The temporary relocation of workers and family members to the counties in the ROI is not expected to affect existing levels of health care and medical services. Minor increases in demands for local services that could occur from workers and family members temporarily relocating to the area would be short term.

The numbers of workers expected to temporarily relocate with their families during construction of the Applicant Proposed Route are identified by Region in Table 3.13-36. Table 3.13-36 also identifies the projected peak and average number of school-age children expected to temporarily relocate to each Region, and compares the peak estimates with the existing number of students in each Region. The projected peak number of school children temporarily relocating to the area would be equivalent to approximately 0.01 percent (Region 7) to 0.13 percent (Region 1) of the existing enrollment in school districts in the regions and would have no noticeable effect on existing average student/teacher ratios (Table 3.13-36).

Table 3.13-36 also summarizes the estimated temporary increase in school-age children if construction of the converter stations, AC collection system routes, and Applicant Proposed Route were to all peak at the same time. This increase would affect Regions 1 and 7 and result in increases in school-age children equivalent to 0.57 percent and 0.03 percent of existing enrollment, respectively (Table 3.13-36). These increases would not be expected to affect existing average student/teacher ratios in these regions.

Table 3.13-36:
Projected Construction-Related Demand for Education Resources by Region

Region	1	2	3	4	5	6	7
Applicant Proposed Route							
Projected Non-Local Employment[1]							
Average Employment (Jobs/Week)	119	112	182	130	142	47	32
Peak Employment (Jobs/Week)	168	158	255	182	200	66	46
Projected Number of School Age Children[2]							
Average	12	11	18	13	14	5	3
Peak	17	16	26	18	20	7	5
Estimated Education Resources							
Number of Schools	66	52	177	68	119	21	87
Number of Students	12,701	16,012	57,993	27,456	51,455	7,673	65,177
Number of Teachers	1,312	1,455	5,294	2,112	3,875	611	4,117
Student/Teacher Ratio (average)	9.7	11.0	11.0	13.0	13.3	12.6	15.8
Peak Comparison with Existing Student Numbers							
Percent of Existing Students	0.13%	0.10%	0.04%	0.07%	0.04%	0.09%	0.01%
Applicant Proposed Route, Converter Stations, and AC Collection System Routes							
Projected Number of School Age Children[2]							
Peak	73	16	26	18	20	7	23
Peak Comparison with Existing Student Numbers							
Percent of Existing Students	0.57%	0.10%	0.04%	0.07%	0.04%	0.09%	0.03%

1 An estimated 74 percent of the total construction workforce is assumed to be non-local for the duration of the Project.
2 Projected numbers of school children are based on the assumptions that 10 percent of workers would be accompanied by their families; the average family household includes 1.0 child under the age of 18 years; and all children relocating to the area would be of school age.

3.13.6.2.6.3.2 Operations and Maintenance Impacts

Operations and maintenance of the HVDC and AC transmission lines would employ 32 workers in Oklahoma, including 15 in Guymon, Oklahoma (Texas County) (Region 1), seven in Woodward, Oklahoma (Region 2), and 10 in Muskogee, Oklahoma (Region 3). An additional 10 workers would be employed in Newport, Arkansas (Jackson County) (Region 6). Even if these workers were to relocate to the affected counties from outside the respective region, the associated increase in population would not be expected to noticeably affect the provision of community services.

Operations and maintenance of the converter station in Texas County, Oklahoma, would employ up to 15 workers. If these workers and those required to operate and maintain the HVDC and AC transmission lines in Texas County were all to permanently relocate to the area from elsewhere, these combined staffing levels would still not be expected to have a noticeable impact on community services. The operations and maintenance employees associated with Tennessee converter station would not be expected to reside in the same counties as the HVDC transmission line staff.

3.13.6.2.6.3.3 Decommissioning Impacts

Decommissioning the HVDC transmission line would require a labor force approximately equal to that needed for its construction. Impacts to community services from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.2.7 Tax Revenues

3.13.6.2.7.1 Converter Stations and AC Interconnection Siting Areas

3.13.6.2.7.1.1 Construction Impacts

Construction of the converter stations would generate sales, use, and lodging tax revenue during the construction period. According to the Applicant, approximately 90 percent of the total estimated construction costs of $250 million for each station would be for materials subject to sales and use tax in Oklahoma and Tennessee, respectively. Estimated sales and use tax revenues are summarized for the two converter stations in Table 3.13-37. Estimated state and county revenues are higher for the Tennessee converter station because the sales and use tax rates are higher in Tennessee and Shelby and Tipton counties (see Tables 3.13-14 and 3.13-17). These revenues would be generated over the 32-month construction period projected for each converter station. The Oklahoma and Tennessee converter stations would be located in Regions 1 and 7, respectively. Local spending by construction workers would also generate sales and lodging tax revenues, but the amount and distribution of this type of spending is difficult to accurately forecast. These potential revenues are not estimated here.

Table 3.13-37:
Estimated Sales and Use Tax Revenues from Converter Station Construction ($ million)

Converter Station[1]	Total Estimated Cost[2]	Estimated State Revenues	Estimated County Revenues
Oklahoma	$250	$10.1	$2.3
Tennessee[1]	$250	$15.8	$5.1

1 The proposed Tennessee converter station could be constructed in either Shelby or Tipton counties, Tennessee. The state and county sales and use tax rates are the same in both counties.
2 Total estimated costs are from Clean Line (2013).

3.13.6.2.7.1.2 Operations and Maintenance Impacts

Operations of the converter stations would generate annual property or ad valorem tax revenues in the counties where they would be located. Using a simplified cost approach and an assumed value of $250 million (Clean Line 2013), annual ad valorem or property tax revenues generated by the Oklahoma converter station would range from $3.2 million to $4.6 million. These estimates are based on Oklahoma's assessment ratio (the share of assessed value subject to taxation) of 22.85 percent and the low and high millage rates identified for Texas County in 2012 (Table 3.13-19).

Annual ad valorem or property taxes associated with the Tennessee converter station would vary depending on whether the station is located in Shelby or Tipton county. Using an assumed value of $250 million (Clean Line 2013), the state's assessment ratio for utility property (55 percent), the applicable county appraisal ratios and average millage rates per $1,000 of assessed value by county (40.6 and 23.4 for Shelby and Tipton counties, respectively), results in estimated annual ad valorem tax revenues of $5.6 million and $3.4 million, respectively.

3.13.6.2.7.1.3 Decommissioning Impacts

Decommissioning the Project would involve local expenditures for supplies and services and would likely require the temporary influx of construction workers to remove the Project components. This spending would be expected to generate local sales and use tax. It is not possible to estimate approximate values, but adjusted for inflation, tax revenues would likely be generally equivalent to those estimated for construction, other conditions remaining equal. Removal of the Project would reduce the value of the affected property and result in a net reduction in ad valorem and property taxes, generally equivalent to the estimates developed for Project operations.

3.13.6.2.7.2 AC Collection System

3.13.6.2.7.2.1 Construction Impacts

The Applicant estimates that the AC transmission lines would cost $1 million to build per mile with 90 percent of this cost expected to be subject to sales and use tax in the affected states and counties (Clean Line 2014a). Estimated state sales and use tax revenues in Oklahoma range from $0.2 million for AC Collection System Routes SE-2 and SW-1 to $2.5 million for AC Collection System Route Alternative NW-2 (Table 3.13-38). Five of the alternatives are located in Texas counties. Estimated state sales and use tax for those alternatives ranges from $0.6 million (AC Collection System Routes SE-2 and SW-1) to $1.4 million (AC Collection System Routes SE-1 and SW-2). These revenues would be generated over the construction period for each alternative.

Table 3.13-38:
Estimated State Sales and Use Tax Revenues by AC Collection System Route ($ million)

County/ Alternative	Oklahoma[1]				Texas[1]			
	Beaver	Texas	Cimarron	Total	Hansford	Ochiltree	Sherman	Total
E-1	0.2	1.1		1.3				
E-2	0.7	1.1		1.8				
E-3	0.7	1.1		1.8				
NE-1		1.4		1.4				
NE-2		1.2		1.2				
NW-1		2.3	0.1	2.3				
NW-2		2.4	0.1	2.5				
SE-1		0.8		0.8	0.1	1.2		1.4
SE-2		0.2		0.2	0.6			0.6
SE-3	0.1	1.1		1.2		1.3		1.3
SW-1		0.2		0.2	0.6			0.6
SW-2		0.7		0.7	0.2		1.2	1.4
W-1		0.9		0.9				

1 Estimates in this table are for sales and use tax revenues that would be paid to the state. The affected counties in Oklahoma also levy additional sales, use, and lodging taxes (see Table 3.13-15). Estimated county sales and use revenues are not included in this table.

Counties and other local jurisdictions in Texas and Oklahoma are allowed to levy additional sales, use, and lodging taxes within their jurisdictions. Although most counties in Texas levy an additional 0.5 percent sales and use tax, none of the Texas counties in Region 1 currently levy a local sales and use tax (Table 3.13-14). As a result, the AC collection system routes that cross counties in Texas would not generate sales and use tax revenues for those counties.

Sales and use taxes levied by Oklahoma counties are identified in Table 3.13-15 and range from 1 percent to 2 percent in the Oklahoma counties in Region 1. Estimated sales and use tax revenues generated for Texas County would range from less than $0.1 million (AC Collection System Routes SE-2 and SW-1) to $0.5 million (AC Collection System Route NW-1). Four routes cross Beaver County. Sales and use tax revenues generated for that county would range from $0.1 million (AC Collection System Route SE-3) to about $0.7 million (AC Collection System Routes E-2 and E-3). Two routes cross Cimarron County (AC Collection System Routes NW-1 and NW-2) and would each generate less than $0.1 million in county sales and use tax revenues.

Local spending by construction workers would also generate sales and lodging tax revenues, but the amount of spending and distribution by county is difficult to accurately forecast, so these potential revenues are not estimated here.

3.13.6.2.7.2.2 Operations and Maintenance Impacts

Operations and maintenance of the AC collection transmission lines would generate annual property or ad valorem tax revenues in the counties where they would be located. Using a simplified cost approach and an assumed value of $1 million per mile (Clean Line 2014a), annual ad valorem or property tax revenues estimates are presented by alternative and county in Table 3.13-39.

Estimates for the affected Oklahoma counties (Beaver, Texas, and Cimarron counties) are based on the state assessment ratio (the share of assessed value subject to taxation) of 22.85 percent and the low and high millage rates identified for each county in 2012 (Table 3.13-19). Estimated low ad valorem tax revenues generated for Texas County range from less than $0.1 million (AC Collection System Routes SE-2 and SW-1) to $0.6 million (AC Collection System Route NW-1). Estimated high revenues would range from less than $0.1 million (AC Collection System Routes SE-2 and SW-1) to about $1 million (AC Collection System Route NW-2) (Table 3.13-39).

Low ad valorem tax revenues estimated for Beaver County range from less than $0.1 million (AC Collection System Routes E-1 and SE-3) to about $0.2 million (AC Collection System Routes E-2 and E-3). High estimates range from less than $0.1 million (AC Collection System Route E-1) to about $0.25 million (AC Collection System Route E-3). Two routes cross Cimarron County (AC Collection System Routes NW-1 and NW-2) and would each generate less than $0.1 million in ad valorem tax revenues under the low and high tax scenarios (Table 3.13-39).

Table 3.13-39:
Estimated Ad Valorem Tax Revenues by AC Collection System Route and County in Oklahoma ($ million)

	Low Ad Valorem Tax Estimate[1]			High Ad Valorem Tax Estimate[1]		
County/Alternative	Beaver	Texas	Cimarron	Beaver	Texas	Cimarron
E-1	0.05	0.32		0.06	0.46	
E-2	0.18	0.31		0.24	0.45	
E-3	0.19	0.30		0.25	0.44	
NE-1		0.38			0.55	
NE-2		0.33			0.48	
NW-1		0.64	0.02		0.93	0.02
NW-2		0.47	0.03		0.68	0.03
SE-1		0.24			0.35	
SE-2		0.05			0.07	
SE-3	0.04	0.31		0.05	0.45	
SW-1		0.05			0.07	
SW-2		0.19			0.28	
W-1		0.26			0.38	

1 Low and high ad valorem tax revenues are estimated based on an assumed value of $1 million per mile (Clean Line 2014a), the state assessment ratio, and county specific low and high millage rates.

Estimated ad valorem revenues for the potentially affected counties in Texas are presented in Table 3.13-40. Estimated values range from less than $0.1 million in Hansford and Ochiltree counties to $0.1 million in Ochiltree County (AC Collection System Route SE-3). Values are estimated using the average county millage rates for 2012 (see Table 3.13-18).

Table 3.13-40:
Estimated Ad Valorem Tax Revenues by AC Collection System Route and County in Texas ($ million)

County/Alternative	SE-1	SE-2	SE-3	SW-1	SW-2
Hansford, TX	0.01	0.04		0.04	0.01
Ochiltree, TX	0.08		0.09		
Sherman, TX					0.1

3.13.6.2.7.2.3 Decommissioning Impacts

The general tax implications of decommissioning the AC collection system routes would be similar to those discussed above with respect to the converter stations.

3.13.6.2.7.3 HVDC Applicant Proposed Route

3.13.6.2.7.3.1 Construction Impacts

Construction of the transmission line would generate sales and use tax during the construction period. The Applicant estimates that the transmission line would cost $2 million to build per mile with 90 percent of this cost expected to be subject to sales and use tax in the affected states and counties (Clean Line 2013). Estimated sales and tax revenues are presented by county in Table 3.13-41. These estimates are based on the miles of transmission line proposed for each county and the applicable state and county sales and use tax rates (see Tables 3.13-15, 3.13-16, and 3.13-17).

Total estimated state sales and use tax revenues range from $2.1 million in Tennessee to $34.6 million in Oklahoma; the estimated total for Arkansas would be $32.3 million. Estimated county sales and use tax revenues generated for the affected counties in Oklahoma range from $0.05 million in Kingfisher County to $2.0 million in Beaver County. In Arkansas, estimated sales and use tax revenues generated for the affected counties range from $0.5 million in several different counties to $1.4 million in Jackson County. The transmission line would generate an estimated $0.2 million in county sales and use tax revenues in Shelby County and $0.5 million in Tipton County (Table 3.13-41). These revenues would be generated over the construction period for each transmission line segment.

Table 3.13-41:
Estimated Sales and Use Tax Revenues from HVDC Transmission Line Construction ($ million)

County	Total Estimated Cost	Estimated State Revenues	Estimated County Revenues
Region 1			
Texas, OK	$47.6	$1.9	$0.4
Beaver, OK	$112.0	$4.5	$2.0
Harper, OK	$71.3	$2.9	$1.3
Region 2			
Woodward, OK	$64.8	$2.6	$0.8
Major, OK	$104.3	$4.2	$0.2
Garfield, OK	$44.3	$1.8	$0.1
Region 3			
Kingfisher, OK	$6.7	$0.3	$0.0
Logan, OK	$41.6	$1.7	$0.4
Payne, OK	$71.5	$2.9	$0.5
Lincoln, OK	$19.9	$0.8	$0.2
Creek, OK	$54.9	$2.2	$0.5
Okmulgee, OK	$55.4	$2.2	$0.6
Muskogee, OK	$79.0	$3.2	$0.5

Table 3.13-41:
Estimated Sales and Use Tax Revenues from HVDC Transmission Line Construction ($ million)

County	Total Estimated Cost	Estimated State Revenues	Estimated County Revenues
Region 4			
Sequoyah, OK	$79.9	$3.2	$1.0
Crawford, AR	$56.9	$3.3	$0.5
Franklin, AR	$39.7	$2.3	$0.5
Johnson, AR	$55.6	$3.3	$0.5
Region 5			
Pope, AR	$54.3	$3.2	$0.5
Conway, AR	$43.2	$2.5	$0.7
Van Buren, AR	$26.5	$1.5	$0.5
Cleburne, AR	$47.0	$2.7	$0.7
White, AR	$34.4	$2.0	$0.5
Jackson, AR	$67.3	$3.9	$1.4
Region 6			
Poinsett, AR	$63.0	$3.7	$0.7
Cross, AR	$32.2	$1.9	$0.6
Region 7			
Mississippi, AR	$32.7	$1.9	$0.6
Shelby, TN	$10.0	$0.6	$0.2
Tipton, TN	$22.8	$1.4	$0.5

Local spending by construction workers would also generate sales and lodging tax revenues, but the amount of spending and distribution by county is difficult to accurately forecast, so these potential revenues are not estimated here. If construction of all three Project components—converter stations, AC transmission lines, and the HVDC transmission line—were to occur at the same time, combined sales and use totals in Beaver and Texas counties, Oklahoma, and Shelby or Tipton County, Tennessee, would result, depending on the final location of the Tennessee converter station. Combined sales and use tax revenue estimates are presented in Table 3.13-42. These estimates are based on a number of assumptions (see the table footnotes) and provide an illustration of the potential combined impacts.

Table 3.13-42:
Estimated Combined Sales and Use Tax Revenues from Converter Stations, AC Collection System, and HVDC Transmission Line Construction ($ million)

	Estimated County Revenues[1]			
County	Converter Stations[2]	AC Collection System[3]	HVDC Transmission Line	Total
Texas, OK	$2.3	$1.4	$0.4	$4.1
Beaver, OK		$0.8	$2.0	$2.8
Shelby, TN	$5.1		$0.2	$5.3
Tipton, TN	$5.1		$0.5	$5.5

1 Data are combined estimates of the sales and use tax revenues that would accrue to each county and do not include sales and use tax that would be paid to the state (see the above tables).
2 The proposed Tennessee converter station could be constructed in either Shelby or Tipton counties, Tennessee. The county sales and use tax rates are the same in both counties.
3 The combined totals for Beaver and Texas counties would vary depending on the selected AC collection system routes. Estimates are based on six alternative AC transmission lines of average length, with four assumed to be partially located in Beaver County.

3.13.6.2.7.3.2 Operations and Maintenance Impacts

Operations and maintenance of the HVDC transmission line would generate annual property or ad valorem tax revenues in the counties where it would be located. Using a simplified cost approach and an assumed value of $2 million per mile (Clean Line 2013), annual ad valorem or property tax revenues estimates are presented by county in Tables 3.13-43.

Estimates for the affected Oklahoma counties are based on the state assessment ratio (the share of assessed value subject to taxation) of 22.85 percent and the low and high millage rates identified for each county in 2012. The low estimates range from about $0.1 million in Kingfisher County (Region 3) to $1.9 million in Major County (Region 2). High estimates range from $0.2 million in Kingfisher County to $2.4 million in Major County (Table 3.13-43).

Table 3.13-43:
Estimated Ad Valorem Tax Revenues for the HVDC Transmission Line by County in Oklahoma ($ million)

Region/County	Total Estimated Cost	Low Millage (2012)	High Millage (2012)	Low Estimate[1]	High Estimate[1]
Region 1					
Texas, OK	$47.6	55.60	80.73	$0.6	$0.9
Beaver, OK	$112.0	52.19	67.94	$1.3	$1.7
Harper, OK	$71.3	57.00	86.36	$0.9	$1.4
Region 2					
Woodward, OK	$64.8	63.64	93.10	$0.9	$1.4
Major, OK	$104.3	78.89	100.12	$1.9	$2.4
Garfield, OK	$44.3	80.29	103.61	$0.8	$1.0
Region 3					
Kingfisher, OK	$6.7	77.99	105.94	$0.1	$0.2
Logan, OK	$41.6	76.29	119.76	$0.7	$1.1
Payne, OK	$71.5	73.67	102.61	$1.2	$1.7
Lincoln, OK	$19.9	73.75	99.11	$0.3	$0.5
Creek, OK	$54.9	73.98	120.55	$0.9	$1.5
Okmulgee, OK	$55.4	80.68	97.29	$1.0	$1.2
Muskogee, OK	$79.0	74.96	100.40	$1.4	$1.8
Region 4					
Sequoyah, OK	$79.9	68.50	84.33	$1.2	$1.5

1 Low and high ad valorem tax revenues are estimated based on an assumed value of $2 million per mile (Clean Line 2014a), the state assessment ratio, and county-specific low and high millage rates.

Estimated annual ad valorem tax revenues are presented for the affected counties in Arkansas and Tennessee in Table 3.13-44. Estimates for Arkansas counties are based on the state assessment ratio (the share of assessed value subject to taxation) of 20 percent and the average millage rates identified for each county in 2012. Estimates range from $0.2 million in Van Buren County to about $0.6 million in Crawford, Jackson, and Poinsett counties (Table 3.13-44).

Annual ad valorem or property taxes are estimated for Shelby and Tipton counties, Tennessee, using the state's assessment ratio for utility property (55 percent), the applicable county appraisal ratios, and the average millage rates identified for each county in 2012. The transmission line would generate about $0.2 million and $0.3 million in annual ad valorem tax revenues in Shelby and Tipton counties, respectively (Table 3.13-44).

Table 3.13-44:
Estimated Ad Valorem Tax Revenues for the HVDC Transmission Line by County in Arkansas and Tennessee ($ million)

Region/County/State[1, 2]	Total Estimated Cost	Average Millage Rates (2012)	Estimated Ad Valorem Tax Revenues
Region 4			
Crawford, AR	$56.9	49.11	$0.6
Franklin, AR	$39.7	46.79	$0.4
Johnson, AR	$55.6	47.96	$0.5
Region 5			
Pope, AR	$54.3	45.98	$0.5
Conway, AR	$43.2	46.53	$0.4
Van Buren, AR	$26.5	43.90	$0.2
Cleburne, AR	$47.0	41.94	$0.4
White, AR	$34.4	43.01	$0.3
Jackson, AR	$67.3	46.65	$0.6
Region 6			
Poinsett, AR	$63.0	44.47	$0.6
Cross, AR	$32.2	49.89	$0.3
Region 7			
Mississippi, AR	$32.7	49.70	$0.3
Shelby, TN	$10.0	4.06	$0.2
Tipton, TN	$22.8	2.34	$0.3

1 1 Estimates for Arkansas counties are based on the state assessment ratio (the share of assessed value subject to taxation) of 20 percent
2 and the average millage rates identified for each county.
3 2 Estimates for Tennessee are based on the state's assessment ratio for utility property (55 percent), the applicable county appraisal ratios,
4 and the average millage rates identified for each county.

5 The proposed locations of the three Project components—converter stations, AC transmission lines, and the HVDC
6 transmission line—would result in combined ad valorem tax estimates for Beaver and Texas counties, Oklahoma,
7 and Shelby or Tipton County, Tennessee, depending on the location of the Tennessee converter station. Based on
8 the preceding analyses, combined ad valorem tax revenues would range from $4.5 million to $6.5 million in Texas
9 County and from $1.8 million to $2.3 million in Beaver County. Combined estimates for Shelby and Tipton counties in
10 Tennessee are $5.8 million and $3.7 million, respectively.

11 *3.13.6.2.7.3.3 Decommissioning Impacts*

12 The general tax implications of decommissioning the HVDC transmission line would be similar to those discussed
13 above with respect to the converter stations.

14 ## 3.13.6.3 Impacts Associated with the DOE Alternatives

15 ### *3.13.6.3.1 Arkansas Converter Station Alternative Siting Area and AC*
16 ### *Interconnection Siting Area*

17 #### 3.13.6.3.1.1 Construction Impacts

18 The Applicant has indicated that the Arkansas Converter Station Alternative Siting Area, which would be located in
19 Region 5 in either Pope County or Conway County, would cost an estimated $100 million to construct and require a
20 similar labor force to that required to build the Oklahoma and Tennessee converter stations (Figure 3.13-2).

3.13.6.3.1.1.1 Population

Based on the assumptions outlined in 3.11.5.2.1.1.1, an estimated average of 123 people would temporarily relocate to the vicinity of the Arkansas converter station over the 32-month construction period, with an estimated total of 213 people relocating during the peak construction period (months 12 to 17). Depending on the location, the average increase in population would be equivalent to approximately 0.2 percent and 0.6 percent of the existing (2012) population in Pope and Conway counties, respectively. The peak increase would be equivalent to approximately 0.3 percent and 1.0 percent of the respective existing (2012) populations in Pope and Conway counties. Very few, if any, of the non-local workers employed during the construction phase of the converter station projects would be expected to permanently relocate to the affected areas, so it is unlikely that construction of the converter stations would result in any long-term changes in population.

3.13.6.3.1.1.2 Economic Conditions

Construction of the Arkansas Converter Station Alternative Siting Area would result in a temporary increase in employment and earnings in the local area. This construction is expected to cost approximately $100 million and employ an average of 138 workers over the 32-month construction period, with total estimated employee earnings of $16.2 million. Construction of the converter station would support an estimated average of 244 total (direct, indirect, and induced) jobs and generate a total of $27.1 million in earnings over the course of the 32-month construction period (Table 3.12-45). Indirect and induced jobs and earnings are estimated at the state level using multipliers for the state of Arkansas.

Table 3.13-45:
Total Economic Impacts from Construction of the Arkansas Converter Station Alternative

Impacts	Employment (Jobs)	Annual Earnings	Earnings Over the Construction Period[1]
Direct Impact	138	$6.1	$16.2
Indirect and Induced Impacts[2]	106	$4.1	$10.9
Total Impacts	244	$10.2	$27.1

1 Construction is expected to take place over a 32-month period.
2 Indirect and induced impacts are estimated using the U.S. Bureau of Economic Analysis RIMS II direct effect multipliers for the state of Arkansas (BEA 2013b).

3.13.6.3.1.1.3 Housing

Projected peak housing demand for the Arkansas Converter Station Alternative Siting Area is compared with estimated supply in Region 5 and Pope and Conway counties in Table 3.13-46. The analyses presented for Pope and Conway counties each assume that the converter station would be located in that county. The data presented in Table 3.13-46 suggest that adequate temporary housing would be available to accommodate Project demand in Region 5. This would also likely be the case for Pope County alone. Estimated demand for hotel and motel rooms would exceed the available units in Conway County, but rooms are available in adjacent counties in Region 5, as well as the cities of Little Rock and North Little Rock to the south.

Table 3.13-46:
Projected Construction-Related Housing Demand for the Arkansas Converter Station Alternative

Housing Demand and Supply	Region 5	Pope County[1]	Conway County[1]
Projected Peak Housing Demand[2]			
Rental Housing	36	36	36
Hotel and Motel Rooms	81	81	81
RV Spaces	63	63	63

Table 3.13-46:
Projected Construction-Related Housing Demand for the Arkansas Converter Station Alternative

Housing Demand and Supply	Region 5	Pope County[1]	Conway County[1]
Estimated Available Housing Units[3]			
Rental Housing[4]	4,207	878	436
Hotel and Motel Rooms[5]	1,137	269	61
RV Spaces	633	177	142
Projected Demand as Share of Existing Resources			
Rental Housing	1%	4%	8%
Hotel and Motel Rooms	7%	30%	133%
RV Spaces	10%	35%	44%

1 The proposed Arkansas converter station would be located in either Pope or Conway counties.
2 Projected housing demand is assumed to be divided as follows: rental housing (apartments, houses, or mobile homes) (20 percent), hotel and motel rooms (45 percent), and RV spaces (35 percent).
3 Estimated available housing units are presented by county in Table 3.13-10.
4 Many of these available units include more than one bedroom and, if rented, could be occupied by more than one worker. A large number of in-migrating workers on similar projects typically rent a room in a house or live five in a rented house (BLM 2013).
5 Assumes an average occupancy rate of 75 percent for the purposes of analysis, with 25 percent of total units assumed to be potentially available.

3.13.6.3.1.1.4 Community Services

The potential temporary addition of non-local workers to Pope or Conway counties, which would be equivalent to either 0.3 percent or 1.0 percent of their respective existing (2012) populations, is not expected to affect the levels of service provided by existing law and fire protection personnel. The number of law enforcement and fire departments per county are identified in Table 3.13-11. Increased demands for local services that could occur from construction workers and family members temporarily relocating to the area would be short term.

The closest medical centers to the two Arkansas Converter Station Alternative Siting Area locations are St. Mary's Regional Medical Center (Pope County) and St. Vincent Morrilton (Conway County). Both facilities provide emergency room services and St. Mary's has a medical helicopter pad (Table 3.13-12). The temporary relocation of workers and family members to Pope or Conway counties is not expected to affect existing levels of health care and medical services. Minor increases in demands for local services that could occur from workers and family members temporarily relocating to the area would be short term.

An average and peak of 10 and 18 school-age children, respectively, are expected to temporarily relocate to the affected county during construction the converter station alternative. This minor potential increase in the number of students is not expected to affect existing average student/teacher ratios in either Pope or Conway counties (Table 3.13-13).

3.13.6.3.1.1.5 Tax Revenues

Construction of the Arkansas Converter Station Alternative Siting Area would generate sales, use, and lodging tax revenue during the construction period. According to the Applicant, approximately 90 percent of the total estimated construction costs of $100 million would be for materials subject to sales and use tax in Arkansas (Clean Line 2013). Estimated state sales and use tax revenues would be $5.9 million in either county; estimated county revenues would be higher if the converter station were located in Conway County, rather than Pope County, $1.6 million versus $0.9 million (Table 3.13-47).

Table 3.13-47:
Estimated Sales and Use Tax Revenues from Construction of the Arkansas Converter Station Alternative($ million)

County[1]	Total Estimated Cost	Estimated State Revenues	Estimated County Revenues
Pope	$100	$5.9	$0.9
Conway	$100	$5.9	$1.6

1 The proposed Arkansas Converter Station alternative could be constructed in either Pope or Conway counties.

3.13.6.3.1.2 Operations and Maintenance Impacts

3.13.6.3.1.2.1 Population

Operations and maintenance of the converter station is expected to employ up to 15 workers. These estimated staffing levels would have no noticeable impact on existing population levels in Pope or Conway counties.

3.13.6.3.1.2.2 Economic Conditions

Operations and maintenance of the Arkansas converter station would support up to 15 workers, with estimated annual earnings of approximately $1 million. Operations and maintenance activities would support an estimated total (direct, indirect, and induced) of 37 jobs and $1.7 million in annual earnings (Table 3.13-48). Indirect and induced jobs and earnings are estimated at the state level using multipliers for the state of Arkansas.

Table 3.13-48:
Total Annual Economic Impacts from Operations and Maintenance of the Arkansas Converter Station Alternative

Impacts	Employment (Jobs)	Annual Earnings ($ million)[1]
Direct Impact	15	$1.02
Indirect and Induced Impacts[2]	22	$0.63
Total Impacts	37	$1.65

1 Total earnings were estimated based on the 2012 estimate of $67,950 for the annual average wage across the United States for all occupations in the electric power generation, transmission, and distribution industry (BLS 2012).
2 Indirect and induced impacts are estimated using the U.S. Bureau of Economic Analysis RIMS II direct-effect multipliers for the state of Oklahoma (BEA 2013b).

3.13.6.3.1.2.3 Housing

The potential relocation of up to 15 workers to Pope or Conway counties would have no noticeable impact on existing demand for housing in the potentially affected counties.

3.13.6.3.1.2.4 Community Services

If up to 15 workers and their families were to relocate from elsewhere, the resulting very small increase in population would not be expected to noticeably affect the provision of community services.

3.13.6.3.1.2.5 Tax Revenues

Operations and maintenance of the Arkansas converter station would generate annual property or ad valorem tax revenues in either Pope or Conway counties, depending on where it is located. Using a simplified cost approach and an assumed value of $100 million (Clean Line 2013), annual ad valorem or property tax revenues generated by the converter station would be about $0.9 million in either county. These estimates are based on Arkansas' assessment ratio of 20 percent and the 2012 millage rates for Pope and Conway counties (Table 3.13-20).

3.13.6.3.1.3 Decommissioning Impacts

Decommissioning the converter station would require a labor force approximately equal to that needed for its construction. Impacts to population, economic conditions, housing, and community services from decommissioning are, therefore, expected to be similar to those from construction. Decommissioning of the Arkansas converter station and associated transmission line would be expected to generate local sales and use tax, which, adjusted for inflation, would likely be generally equivalent to those estimated for construction, other conditions remaining equal. Removal of the converter station would reduce the value of the affected property and result in a net reduction in ad valorem and property taxes, generally equivalent to the estimates developed for Project operations and maintenance.

3.13.6.3.2 HVDC Alternative Routes

The HVDC alternative routes and their net change in length relative to the Applicant Proposed Route are presented in Table 3.13-49. These alternatives are mainly alternatives to sections of the Applicant Proposed Route in each region, not complete alternative routes.

3.13.6.3.2.1 Construction Impacts

3.13.6.3.2.1.1 Population

Viewed by region, proposed changes in length range from a decrease of 2.7 miles in Region 4 (HVDC Alternative Route 4-B) to an increase of 10.6 miles and 14.7 miles in Region 7 (HVDC Alternative Routes 7-C and 7-A, respectively) (Table 3.13-49). HVDC Alternative Route 1-A would also result in a relative large increase, a net gain of 9.4 miles. Net changes to the projected temporary peak increases in population summarized in Table 3.13-23, range from decreases of about 5 people in Region 3 (HVDC Alternative Route 3-A) and Region 4 (HVDC Alternative Route 4-B) to increases of 16 people in Region 1 (HVDC Alternative Route 1-A) and 19 people in Region 7 (HVDC Alternative Route 7-A) (Table 3.13-49). These changes would have very small to no effect on the estimated changes in population summarized Table 3.13-23.

3.13.6.3.2.1.2 Economic Conditions

Substituting one or more of the HVDC alternative routes for the corresponding links of the Applicant Proposed Route would not substantially affect the regional economic impact estimates presented by region in Tables 3.13-25 and 3.13-26. Estimated changes in peak direct employment (local and non-local workers) by HVDC alternative route would range from -5 workers in Region 3 (HVDC Alternatives 3-A and 3-B) to 21 workers in Region 7 (HVDC Alternative Route 7-A) and 19 workers in Region 1 (HVDC Alternative Route 1-A) (Table 3.13-49).

3.13.6.3.2.1.3 Housing

The net change in the number of people who would temporarily relocate to each region, relative to the Applicant Proposed Route, is identified by HVDC alternative route in Table 3.13-49. The largest net increases would occur in Region 1 with the addition of 16 people (HVDC Alternative Route 1-A) and Region 7 where 14 and 19 more people could be added (HVDC Alternative Routes 7-C and 7-A, respectively). Substituting one of more of the HVDC alternative routes for the corresponding section of the Applicant Proposed Route would not substantially affect the findings of the housing analysis summarized in Section 3.13.5.2.4.

3.13.6.3.2.1.4 Community Services

The estimated net changes in workers and family members temporarily relocating to the affected regions identified in Table 3.13-49 are not expected to alter the conclusions presented with respect to the Applicant Proposed Route and community services in Section 3.13.5.2.6. The majority of the HVDC alternative routes would not affect the peak number of school age children temporarily relocating to the affected regions. In other cases, there would be a

potential increase of one to two school-age children relative to the Applicant Proposed Route for that region (Table 3.13-49).

Table 3.13-49:
HVDC Alternative Routes by Region

Region	Miles by Region	Net Change in Length (miles)	Percent Change in Length[2]	Estimated Change Relative to Applicant Proposed Route During Construction[1]			
				Peak Employment (Local and Non-Local Workers)	Non-Local Workers Temporarily Relocating	Total Number of People Temporarily Relocating	Number of School Age Children
Region 1	115.5						
AR 1-A		9.4	8%	19	14	16	1
AR 1-B		-2.0	-2%	-4	-3	-3	0
AR 1-C		-1.8	-2%	-4	-3	-3	0
AR 1-D		-0.1	0%	0	0	0	0
Region 2	106.0						
AR 2-A		2.7	3%	5	4	5	0
AR 2-B		-1.5	-1%	-3	-2	-3	0
Region 3	161.7						
AR 3-A		-2.4	-1%	-5	-4	-5	0
AR 3-B		-2.2	-1%	-5	-3	-4	0
AR 3-C		3.1	2%	7	5	6	0
AR 3-D		4.2	3%	9	7	8	1
AR 3-E		0.8	0%	2	1	1	0
Region 4	126.3						
AR 4-A		-2.0	-2%	-4	-3	-3	0
AR 4-B		-2.7	-2%	-5	-4	-5	0
AR 4-C		1.2	1%	2	2	2	0
AR 4-D		0.0	0%	0	0	0	0
AR 4-E		-2.0	-2%	-4	-3	-3	0
Region 5	112.8						
AR 5-A		0.4	0%	1	1	1	0
AR 5-B		3.9	3%	9	7	8	1
AR 5-C		4.7	4%	11	8	10	1
AR 5-D		1.2	1%	3	2	3	0
AR 5-E		3.2	3%	8	6	7	1
AR 5-F		3.6	3%	9	6	8	1
Region 6	54.3						
AR 6-A		-1.5	-3%	-2	-2	-2	0
AR 6-B		4.5	8%	7	5	7	1
AR 6-C		-1.7	-3%	-3	-2	-2	0
AR 6-D		0.6	1%	1	1	1	0
Region 7	42.8						
AR 7-A		14.7	34%	21	16	19	2
AR 7-B		0.2	1%	0	0	0	0
AR 7-C		10.6	25%	15	11	14	1
AR 7-D		0.1	0%	0	0	0	0

1 1 Estimated changes relative to the Applicant Proposed Route are based on the per-mile values of the affected resource category by
2 region.
3 2 Percent change is the net change in length as a percent of the total miles per region.

4 *3.13.6.3.2.1.5 Tax Revenues*

5 Changes in the projected length of the transmission line by county would result in corresponding changes in
6 construction-related sales and use tax revenues expected to accrue to the affected counties and states. Net changes
7 in estimated sales and use tax revenues, relative to the Applicant Proposed Route, are identified by county in
8 Table 3.13-50. In most cases, the miles of transmission line in each county are affected by more than one alternative.
9 The largest estimated change (positive or negative) relative to the Applicant Proposed Route is identified by county in
10 Table 3.13-50 to ensure that the largest potential variation is considered in the following assessment.

11 Viewed as a relative share of the Applicant Proposed Route, estimated changes in miles of HVDC transmission line
12 by county would range from less than 1 percent to 257 percent. In four counties the largest change relative to the
13 Applicant Proposed Route would be a 100 percent decrease because the corresponding HVDC alternative route
14 would no longer cross that county. The four counties that would no longer be crossed are Kingfisher County,
15 Oklahoma (Region 3), Van Buren and Cleburne counties, Arkansas (Region 5), and Cross County, Arkansas
16 (Region 6). Two of the alternative routes for Region 5 (HVDC Alternative Routes 5-B and 5-E) would cross Faulkner
17 County, Arkansas, which is not crossed by the Applicant Proposed Route. The largest change for Faulkner County
18 would occur under HVDC Alternative 5-E, which would involve construction of 21.8 miles of HVDC transmission line
19 across the county (Table 3.13-50).

20 Relative to the Applicant Proposed Route, the largest changes in estimated sales and use tax revenue that would
21 accrue to the respective state would occur in counties in Region 5 and range from a decrease of $2.75 million (-100
22 percent) in Cleburne County to an increase of $2.55 million (100 percent) in Faulkner County. Changes in estimated
23 sales and use tax that would be paid to each county would range from a decrease of about $0.7 million in Cleburne
24 County, Arkansas (Region 5) to an estimated increase of $0.5 million in Shelby County, Tennessee (Region 7)
25 (Table 3.13-50).

Table 3.13-50:
Estimated Tax Revenues by HVDC Alternative Route and County

County	Total Crossed by Applicant Proposed Route	Largest Net Change (miles)[1]	Percent Change in Miles	Estimated Change Relative to the Applicant Proposed Route		
				Construction Phase Sales and Use Tax Revenues ($ million)		Ad Valorem and Property Tax Revenues ($ million)[2]
				State	County	
Region 1						
Texas, OK	23.8	1.4	6%	$0.11	$0.03	$0.04
Beaver, OK	56.0	4.3	8%	$0.35	$0.15	$0.12
Harper, OK	35.6	3.8	11%	$0.31	$0.14	$0.12
Region 2						
Woodward, OK	32.4	-0.9	-3%	-$0.07	-$0.02	-$0.03
Major, OK	52.2	3.6	7%	$0.29	$0.02	$0.15
Garfield, OK	22.2	1.6	7%	$0.13	$0.01	$0.07
Region 3						
Garfield, OK	22.2	7.0	32%	$0.6	$0.0	$0.29
Kingfisher, OK	3.4	-3.4	-100%	-$0.28	-$0.05	-$0.14
Logan, OK	20.8	-7.0	-34%	-$0.57	-$0.13	-$0.31

Table 3.13-50:
Estimated Tax Revenues by HVDC Alternative Route and County

County	Total Crossed by Applicant Proposed Route	Largest Net Change (miles)[1]	Percent Change in Miles	Estimated Change Relative to the Applicant Proposed Route		
				Construction Phase Sales and Use Tax Revenues ($ million)		Ad Valorem and Property Tax Revenues ($ million)[2]
				State	County	
Payne, OK	35.7	-8.5	-24%	-$0.69	-$0.12	-$0.34
Lincoln, OK	10.0	9.1	91%	$0.74	$0.16	$0.36
Creek, OK	27.4	-0.2	-1%	-$0.02	$0.00	-$0.01
Okmulgee, OK	27.7	-0.7	-3%	-$0.06	-$0.02	-$0.03
Muskogee, OK	39.5	4.2	11%	$0.34	$0.05	$0.17
Region 4						
Sequoyah, OK	39.9	-1.1	-3%	-$0.09	-$0.03	-$0.04
Crawford, AR	28.4	-3.5	-12%	-$0.41	-$0.06	-$0.07
Franklin, AR	19.8	1.9	10%	$0.22	$0.05	$0.04
Johnson, AR	27.8	1.0	4%	$0.12	$0.02	$0.02
Pope, AR	27.1	-3.1	-11%	-$0.36	-$0.06	-$0.06
Region 5						
Pope, AR	27.1	1.1	4%	$0.13	$0.02	$0.02
Conway, AR	21.6	0.1	0%	$0.01	$0.00	$0.00
Van Buren, AR	13.2	-13.2	-100%	-$1.54	-$0.48	-$0.23
Cleburne, AR	23.5	-23.5	-100%	-$2.75	-$0.69	-$0.39
Faulkner, AR	0.0	21.8	100%	$2.55	$0.20	$0.34
White, AR	17.2	17.6	102%	$2.06	$0.48	$0.59
Jackson, AR	33.7	-0.5	-1%	-$0.06	-$0.02	$0.00
Region 6						
Jackson, AR	33.7	4.4	13%	$0.51	$0.18	$0.00
Poinsett, AR	31.5	14.4	46%	$1.68	$0.32	$0.13
Cross, AR	16.1	-16.1	-100%	-$1.88	-$0.58	$0.00
Region 7						
Mississippi, AR	16.3	12.2	75%	$1.43	$0.44	$0.00
Shelby, TN	5.0	12.9	257%	$1.63	$0.52	$0.58
Tipton, TN	11.4	4.1	36%	$0.52	$0.17	$0.11

1 1 The miles of transmission line in some counties would be affected under more than one alternative. This column presents the largest
2 change (positive or negative) relative to the Applicant Proposed Route that could occur in each county.
3 2 Estimated as valorem tax revenues for the Applicant Proposed Route in Oklahoma counties are based on average low and high millage
4 rates (Table 3.13-43). This sensitivity analysis is based on the average of this range of estimates for each county.

5 ## 3.13.6.3.2.2 Operations and Maintenance Impacts

6 ### *3.13.6.3.2.2.1 Population, Economic Conditions, Housing, and Community Services*

7 Substituting one of more of the HVDC alternative routes for the corresponding link of the Applicant Proposed Route
8 would not affect estimated operations and maintenance employment for the HVDC and AC transmission lines.
9 Potential impacts to population, economic conditions, housing, and community services from operations and
10 maintenance related to estimated operations and maintenance employment would be the same or very similar to
11 those described above for the Applicant Proposed Route.

3.13.6.3.2.2.2 Property Values

The discussion of property value impacts in Section 3.13.5.2.5 would also apply to the HVDC alternative routes.

3.13.6.3.2.2.3 Tax Revenues

Changes in the projected length of the transmission line by county would result in corresponding changes in the property and ad valorem tax revenues expected to accrue to the affected counties. Net changes in estimated property and ad valorem tax revenues, relative to the Applicant Proposed Route, are identified by county in Table 3.13-50. These changes would be less than $1 million in all cases, ranging from a decrease of about $0.4 million in Cleburne County, Arkansas (Region 5), which would not be crossed by HVDC Alternative Routes 5-B and 5-E, to a relative increase of $0.6 million in Shelby County, Tennessee (Region 7) (Table 3.13-50).

3.13.6.3.2.3 Decommissioning Impacts

3.13.6.3.2.3.1 Population, Economic Conditions, Housing, and Community Services

Decommissioning of the proposed HVDC transmission line would require a labor force approximately equal to that needed for its construction. This would be the case for the Applicant Proposed Route and all the HVDC alternative routes. Impacts to population, economic conditions, housing, and community services from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.3.2.3.2 Tax Revenues

The general tax implications of decommissioning the HVDC transmission line would be similar to those discussed with respect to the converter stations in Section 3.13.5.2.7 for the Applicant Proposed Route and all the HVDC alternative routes.

3.13.6.4 Best Management Practices

A potential impact related to housing demand exists specifically in Region 1: there is a projected shortage of hotel and motel rooms and RV spaces in this region that would be further exacerbated if the construction schedules for the Oklahoma converter station, AC collection system, and HVDC transmission line were to overlap. The analysis assumes that 25 percent of total hotel and motel units would typically be available. This availability could be further reduced by other outside activities in the ROI such as other construction projects, community-sponsored events, and hunting and other recreational activities.

The Applicant has developed a comprehensive list of EPMs that will help avoid and minimize impacts to socioeconomic resources. A complete list of EPMs for the Project is provided in Appendix F; EPMs that pertain to socioeconomic resources are identified in Section 3.13.6.1. Additionally, the Applicant will prepare and implement a workforce housing strategy that would minimize potential impacts to housing availability. This strategy would consider Project component construction schedules, workforce required, and other outside influences.

3.13.6.5 Unavoidable Adverse Impacts

No unavoidable adverse impacts to socioeconomic resources were identified.

3.13.6.6 Irreversible and Irretrievable Commitment of Resources

No irreversible or irretrievable commitments of socioeconomic resources were identified. Construction and operation of the Project would involve the use of capital and labor resources. Construction of the Project would also involve the use of temporary housing resources in the Project vicinity. These types of short-term resource use have opportunity

costs (resources used for the Project cannot be used for other concurrent projects), but they are not irreversible or irretrievable.

3.13.6.7 Relationship between Local Short-term Uses and Long-term Productivity

Potential short-term impacts to socioeconomic resources are not expected to outweigh the long-term benefits of the Project. In the long term, the Project would be expected to increase economic productivity through the delivery of renewable energy generated in the Oklahoma Panhandle region to load-serving entities in the mid-south and southeast regions of the United States.

3.13.6.8 Impacts from Connected Actions

3.13.6.8.1 Wind Energy Generation

For the purposes of analysis, the Applicant assumed that 90 percent of this capacity would be constructed over a 2-year timeframe leading up to the commercial operation date of the Project, with the remaining 10 percent expected to be built within a year following this date (Clean Line 2014b). Individual wind farms could range in capacity from 50MW to 1,000MW in a single phase; multiple-phased projects are possible. Future nameplate capacities for a single turbine are assumed to range from 1.5MW to 3.5MW (Clean Line 2014b).

The potential socioeconomic impacts of the development of approximately 4,000MW of wind generating capacity in the 12 identified WDZs (Table 3.13-21) are assessed using data derived from the DOE National Renewable Energy Laboratory's Jobs and Economic Development Impacts (JEDI) Wind model (NREL 2014). The JEDI Wind model allows the user to identify potential impacts assuming general wind industry averages.

The following analysis assesses two potential scenarios based on the range of potential capacity for individual wind farms (50MW to 1,000MW per facility). These scenarios recognize that there are labor-related economies of scale associated with larger facilities, during both construction and operation. The two scenarios are as follows: (1) 74 facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; and (2) four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW. The first scenario assumes an average facility (wind farm) consists of sixteen 3.5MW turbines. The second scenario assumes an average facility (wind farm) consists of six hundred fifty 1.5MW turbines. In both scenarios, the proposed generating capacity is assumed to be divided equally between Oklahoma and Texas, with the same total capacity and number of facilities located in the WDZs in each state. Construction is also assumed to spread evenly over the 2 years prior to the transmission line Project's commercial operation date.

3.13.6.8.1.1 Population

3.13.6.8.1.1.1 Construction Impacts

Total annual employment estimates are presented by wind development scenario and stated in Table 3.13-51. Viewed in FTEs, total direct employment under Scenario 1 would be equivalent to 2,080 FTEs. Total direct employment under Scenario 2 would be less than half this total (1,012 FTEs), reflecting the labor economies of scale involved in constructing four 975MW facilities (Scenario 2) versus seventy-four 53MW facilities (Scenario 1). FTEs are employment estimates based on 12 months (2,080 hours) employment. These numbers do not translate into individual workers who may be employed for shorter periods.

The share of the annual construction workforce expected to be hired or contracted locally was estimated using the JEDI Wind model and varies slightly by state and scenario. According to the JEDI Wind model, an estimated 56 percent (Oklahoma) and 57 percent (Texas) of workers under Scenario 1 would be hired locally; 54 percent

(Oklahoma and Texas) of the annual construction workforce would be expected to be hired locally under Scenario 2. The remaining workforce would be expected to temporarily relocate to Region 1 for the duration of their employment, possibly commuting home on weekends, depending on the location of their primary residence.

Very few, if any, of the non-local workers employed during the construction phase of the potential wind facilities would be expected to permanently relocate to the affected areas. For the purposes of analysis, 10 percent of non-local workers temporarily relocating to the area are assumed to be accompanied by family members; the average size of a family that is relocating is assumed to be three, two adults and one school-age child (Clean Line 2013). The estimated annual change in population would be equivalent to approximately 2.l percent of the total Region 1 population in 2012 under Scenario 1 and approximately 1.1 percent under Scenario 2 (Table 3.13-51).

Table 3.13-51:
Estimated Annual Change in Population During Construction by Potential Wind Development Scenario

Workers/Population[1]	Scenario 1[2]			Scenario 2[2]		
	Oklahoma	Texas	Region 1 Total	Oklahoma	Texas	Region 1 Total
Workers[3]						
Commute to Job Site Daily[4]	589	589	1,179	276	270	547
Move to the Affected Region alone[5]	414	397	812	215	204	419
Move to the Affected Region with family[5]	46	44	90	24	23	47
Total	1,050	1,031	2,080	515	497	1,012
Population						
2012 Population[6]	28,658	19,322	51,652	28,658	19,322	51,652
Number of People Temporarily Relocating[7]	552	530	1,082	287	272	558
Percent of 2012 Population	1.9%	2.7%	2.1%	1.0%	1.4%	1.1%

1 Data are annual estimates and assume that construction would be spread evenly over 2 years.
2 Scenario 1 consists of 74 wind generation facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; Scenario 2 consists of four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW.
3 The JEDI Wind model was used to estimate construction workforce requirements by scenario and state. Jobs are FTEs for a period of one year (1 FTE = 2,080 hours).
4 The share of the annual construction workforce expected to be hired locally was estimated using the JEDI Wind model and varies slightly by state and scenario.
5 An estimated 90 percent of workers temporarily relocating to the region are assumed to do so alone. The remaining 10 percent are assumed to be accompanied by their families for the purposes of analysis.
6 2012 population totals are as follows:
Oklahoma = Cimarron, Texas, and Beaver counties
Texas = Hansford, Ochiltree, and Sherman counties
Region 1 Total = The above six counties plus Harper County, Oklahoma (see Table 3.13-4).
7 Number of people temporarily relocating assumes an average family size of 3 (two adults and one school-age child).

3.13.6.8.1.1.2 Operations and Maintenance Impacts

Operations and maintenance of the potential wind facilities would employ an estimated total of 140 full-time employees in Oklahoma and 140 full-time employees in Texas under Scenario 1 and 88 full-time employees in each state under Scenario 2, reflecting the labor economies of scale associated with operating a substantially smaller number (4 versus 74) of much larger (975MW versus 53MW) facilities (Table 3.13-52). These estimates were developed using the JEDI Wind model and general wind industry averages. Assuming these employees would all permanently relocate to the area from elsewhere with an average family size of three (two adults and one school-age child), estimated total population increases in Region 1 would be 840 and 530 under Scenarios 1 and 2, respectively, which would be equivalent to 1.6 percent and 1.0 percent of the total population in Region 1 in 2012 (Table 3.13-52).

Table 3.13-52:
Estimated Annual Change in Population During Operations and Maintenance by Potential Wind Development Scenario

Workers/Population[1]	Scenario 1[2]			Scenario 2[2]		
	Oklahoma	Texas	Region 1 Total	Oklahoma	Texas	Region 1 Total
2012 Population[3]	28,658	19,322	51,652	28,658	19,322	51,652
Number of Workers[4]	140	140	280	88	88	177
Number of People Permanently Relocating[5]	420	420	840	265	265	530
Percent of 2012 Population	1.5%	2.2%	1.6%	0.9%	1.4%	1.0%

1 Data are annual estimates and assumed to continue for the operating lives of the potential facilities.
2 Scenario 1 consists of 74 wind generation facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; Scenario 2 consists of four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW.
3 2012 population totals are as follows:
Oklahoma = Cimarron, Texas, and Beaver counties
Texas = Hansford, Ochiltree, and Sherman counties
Region 1 Total = The above six counties plus Harper County, Oklahoma (see Table 3.13-4).
4 The JEDI Wind model was used to estimate annual operations and maintenance workforce requirements by scenario and state. Jobs are FTEs for a period of one year (1 FTE = 2,080 hours).
5 Number of people permanently relocating assumes that all the onsite workers would relocate from elsewhere and represent an average family size of three (two adults and one school-age child).

3.13.6.8.1.1.3 Decommissioning Impacts

Decommissioning of the potential wind generation facilities would require a labor force approximately equal to that needed for their construction. Impacts to population from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.8.1.2 Economic Conditions

3.13.6.8.1.2.1 Construction Impacts

Construction of the two potential wind development scenarios would result in a temporary increase in employment and earnings in the surrounding area. Annual estimates are presented by scenario and state in Table 3.13-53. Construction would support an estimated total (direct, indirect, and induced) of 9,910 jobs in Region 1 under Scenario 1 and 8,762 jobs under Scenario 2. Construction would also support estimated total (direct, indirect, and induced) earnings of $494 million and $435 million under Scenarios 1 and 2, respectively (Table 3.13-53). These annual impacts would occur each year for 2 years leading up to the commercial operation date of the Project.

Table 3.13-53:
Total Annual Economic Impacts During Construction by Potential Wind Development Scenario

Impacts[1]	Scenario 1[2]			Scenario 2[2]		
	Oklahoma	Texas	Region 1 Total	Oklahoma	Texas	Region 1 Total
Employment (Jobs)[3]						
Direct Impact	1,050	1,031	2,080	515	497	1,012
Indirect and Induced Impacts	3,986	3,843	7,830	3,962	3,789	7,750
Total Impacts	5,036	4,874	9,910	4,477	4,285	8,762
Annual Earnings ($ million)[4]						
Direct Impact	$48.34	$63.24	$111.58	$24.83	$31.71	$56.53
Indirect and Induced Impacts	$170.72	$211.61	$382.33	$169.60	$208.60	$378.20
Total Impacts	$219.05	$274.85	$493.90	$194.43	$240.31	$434.73

1 1 The JEDI Wind model was used to estimate direct, indirect, and induced impacts. Indirect impacts during construction are identified in the
2 model as turbine and supply chain impacts. Data are annual estimates and assume that construction would be spread evenly over 2
3 years. Indirect and induced impacts are estimated at the state level.
4 2 Scenario 1 consists of 74 wind generation facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; Scenario 2
5 consists of four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW.
6 3 Jobs are FTEs for a period of one year (1 FTE = 2,080 hours).
7 4 Annual earnings are expressed in millions of dollars in year 2014 dollars.

8 *3.13.6.8.1.2.2 Operations and Maintenance Impacts*

9 Operations and maintenance of the potential wind facilities would employ an estimated total of 140 full-time
10 employees in Oklahoma and 140 full-time employees in Texas under Scenario 1 and 88 full-time employees in each
11 state under Scenario 2 (Table 3.13-54).

12 Operations and maintenance would support an estimated total (direct, indirect, and induced) of 798 jobs under
13 Scenario 1 and 665 jobs under Scenario 2. Operations and maintenance would also support estimated total (direct,
14 indirect, and induced) earnings of $41.2 million and $32.9 million under Scenarios 1 and 2, respectively
15 (Table 3.13-54). These annual impacts would occur each year for the operating life of the potential facilities.

Table 3.13-54:
Total Annual Economic Impacts During Operations and Maintenance by Potential Wind Development Scenario

Impacts[1]	Scenario 1[2]			Scenario 2[2]		
	Oklahoma	Texas	Region 1 Total	Oklahoma	Texas	Region 1 Total
Employment (Jobs)[3]						
Direct Impact	140	140	280	88	88	177
Indirect and Induced Impacts	237	281	518	224	264	488
Total Impacts	377	421	798	312	352	665
Annual Earnings ($ million)[4]						
Direct Impact	$7.12	$9.56	$16.68	$4.17	$5.60	$9.77
Indirect and Induced Impacts	$9.87	$14.65	$24.52	$9.41	$13.72	$23.13
Total Impacts	$17.00	$24.21	$41.20	$13.58	$19.32	$32.90

1 The JEDI Wind model was used to estimate direct, indirect, and induced impacts. Indirect impacts during construction are identified in the model as local revenue and supply chain impacts. Data are annual estimates and assumed to continue for the operating lives of the potential facilities. Indirect and induced impacts are estimated at the state level.
2 Scenario 1 consists of 74 wind generation facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; Scenario 2 consists of four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW.
3 Jobs are FTEs for a period of one year (1 FTE = 2,080 hours).
4 Annual earnings are expressed in millions of dollars in year 2014 dollars.

3.13.6.8.1.2.3 Decommissioning Impacts

Decommissioning of the HVDC transmission line would require a labor force approximately equal to that needed for its construction. Local expenditures on materials and supplies and payments to workers would likely be similar, resulting in broadly similar economic impacts to those from construction.

3.13.6.8.1.3 Agriculture

Agriculture is the primary existing land use in the 12 WDZs. An estimated 3 to 5 percent of the land within the boundaries of each potential wind energy facility is expected to be affected during construction, with 1 percent or less expected to be affected during the operations and maintenance phase of each facility. Assuming full build-out, 20 to 30 percent of the area within the WDZs would involve an estimated total of 6,492 to 16,230 acres of primarily agricultural land would be affected during construction, with 2,164 to 3,246 acres affected during operations and maintenance (see Section 3.2). This potential disturbance represents a very small share of the 5.7 million acres of land in farms in Region 1 (Table 3.13-9) and is unlikely to noticeably affect overall agricultural production and employment in the affected counties.

In cases where turbines are located on agricultural land, land owners typically receive lease payments. Wind lease agreements usually include provisions to minimize construction-related losses, including minimizing soil compaction and revegetating temporary work areas. In addition, these types of agreement typically stipulate compensation for landowners for other potential losses, such as damage to or loss of crops, gates, fences, landscaping and trees, irrigation, and livestock.

3.13.6.8.1.4 Housing

3.13.6.8.1.4.1 Construction Impacts

Using the same assumptions employed in the above transmission line Project analysis, an estimated 45 percent of the workers temporarily relocating during construction are expected to require motel or hotel rooms, with the remaining non-local workers expected to require rental housing (apartments, houses, or mobile homes) (20 percent),

or provide their own housing in the form of RVs or pop-up trailers (35 percent). Projected average annual housing demand based on the number of FTE workers for the anticipated 2-year construction period is compared with estimated supply in Table 3.13-55.

This comparison indicates that temporary housing demand under Scenario 1 (74, 53MW facilities built over 2 years) would be more than double (232 percent) of the supply of rental housing in the three Texas counties. Demand under Scenario 1 would also exceed the estimated supply of available hotel and motel rooms in the counties in both states and Region 1 as a whole. Demand for RV spaces would exceed the total identified spaces in the three Oklahoma counties and Region 1 as a whole, and be almost equal to the number of identified spaces in the three Texas counties (Table 3.13-55).

Projected housing demand would be lower under Scenario 2 (four 975MW facilities) due to labor economies of scale. This scenario represents the low end of the range of potential effects on housing; Scenario 1 represents the high end of this range. Under this scenario, demand would exceed supply for rental housing in the three Texas counties. Demand would also exceed the estimated supply of available hotel and motel rooms in the three Texas counties, as well as the total number of identified RV spaces in the three Oklahoma counties (Table 3.13-55).

Table 3.13-55:
Estimated Construction-Related Housing Demand by Potential Wind Development Scenario

Housing/Geographic Area	Scenario 1[1]			Scenario 2[1]		
	Oklahoma	Texas	Region 1 Total	Oklahoma	Texas	Region 1 Total
Projected Non-Local Employment[2]	460	442	902	239	226	465
Projected Peak Housing Demand						
Rental Housing	92	88	180	48	45	93
Hotel and Motel Rooms	207	199	406	108	102	209
RV Spaces	161	155	316	84	79	163
Estimated Available Housing Units[3]						
Rental Housing	279	38	370	279	38	370
Hotel and Motel Rooms[4]	194	76	273	194	76	273
RV Spaces	48	161	235	48	161	235
Projected Demand as a Share of Existing Resources						
Rental Housing	33%	232%	49%	17%	119%	25%
Hotel and Motel Rooms	107%	262%	149%	55%	134%	77%
RV Spaces	336%	96%	134%	174%	49%	69%

1 Scenario 1 consists of 74 wind generation facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; Scenario 2 consists of four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW.

2 The JEDI Wind model was used to estimate construction workforce requirements by scenario and state. Jobs are FTEs for a period of one year (1 FTE = 2,080 hours). According to the JEDI Wind model analysis, an estimated 44 percent (Oklahoma) and 43 percent (Texas) of workers under Scenario 1 would be hired locally, with 46 percent (Oklahoma and Texas) of the annual construction workforce expected to be hired locally under Scenario 2.

3 Estimated housing unit totals are for the following counties:
Oklahoma = Cimarron, Texas, and Beaver counties
Texas = Hansford, Ochiltree, and Sherman counties
Region 1 Total = The above six counties plus Harper County, Oklahoma (see Table 3.13-10).

4 Assumes an average occupancy rate of 75 percent for the purposes of analysis, with 25 percent of total units assumed to be available.

3.13.6.8.1.4.2 Operations and Maintenance Impacts

Operations and maintenance of the potential wind facilities would employ an estimated total of 140 full-time employees in Oklahoma and 140 full-time employees in Texas under Scenario 1, and 88 full-time employees in each state under Scenario 2. If all these employees permanently relocated to the area, a corresponding demand for permanent housing would be created. This potential demand is compared with housing data in Table 3.13-56. In the short-term, workers relocating would likely stay in hotels or motels while looking for a more permanent residence to rent or purchase.

Economic development organizations in the Oklahoma Panhandle region have identified a potential shortage in permanent housing in and around the city of Guymon in Texas County, with these problems expected to be further exacerbated by this type of wind energy development (Fleming 2013). Estimated demand under Scenario 1 in the three Oklahoma counties would be equivalent to 31 percent of the housing units available for rent or sale in 2012 (140 versus 450). Demand in the three Texas counties would be almost 1.8 times the number of housing units available for rent or sale under Scenario 1 (140 versus 79), and 1.1 times under Scenario 2 (88 versus 79) (Table 3.13-56). This imbalance may be partially offset by some of the housing units currently identified as "other vacant" coming on the market for rent or sale. "Other vacant" housing units comprised 59 percent of the vacant housing in the three Texas counties in 2012.

Table 3.13-56:
Estimated Housing Demand by Potential Wind Development Scenario under Operations and Maintenance

Housing/Geographic Area[2]	Scenario 1[1]			Scenario 2[1]		
	Oklahoma	Texas	Region 1 Total	Oklahoma	Texas	Region 1 Total
Number of Households Permanently Relocating[3]	140	140	280	88	88	177
Vacant Housing Units						
For Rent or Sale	450	79	597	450	79	597
Rented or Sold, Not Occupied	242	113	365	242	113	365
Seasonal, Recreational, or Occasional use	158	192	409	158	192	409
Other Vacant4	1,349	544	2,153	1,349	544	2,153
Total	2,199	928	3,524	2,199	928	3,524

1 Scenario 1 consists of 74 wind generation facilities with a nameplate capacity of 53MW, for a total capacity of 3,885MW; Scenario 2 consists of four facilities with a nameplate capacity of 975MW, for a total capacity of 3,900MW.

2 Estimated housing unit totals are for the following counties:
Oklahoma = Cimarron, Texas, and Beaver counties
Texas = Hansford, Ochiltree, and Sherman counties
Region 1 Total = The above six counties plus Harper County, Oklahoma

3 Number of households relocating is based on estimated total annual employment and assumes that all workers would permanently relocate to the area from elsewhere.

4 According to the U.S. Census Bureau, a housing unit is classified as "other vacant" when it is unoccupied and does not fit into one of the other categories identified in the above table. Common reasons a housing unit is labeled as "other vacant" are that nobody lives in the unit and the owner is making repairs or renovating, does not want to rent or sell, or the unit is being held for settlement of an estate or in foreclosure (Kresin 2013).

3.13.6.8.1.4.3 Decommissioning Impacts

Decommissioning of the wind facilities would require a labor force approximately equal to that needed for their construction. Impacts to housing from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.8.1.5 Community Services

3.13.6.8.1.5.1 Construction Impacts

Increased demands for local services that would likely occur from wind facility construction workers and family members temporarily relocating to the affected areas would be short term. The estimated number of workers and family members expected to temporarily relocate to Region 1 during construction ranges from 558 (Scenario 2) to 1,082 (Scenario 1) (Table 3.13-51). This estimated increase in population would be equivalent to approximately 1.1 percent to 2.1 percent of total Region 1 population in 2012 (Table 3.13-51). The temporary addition of these workers and family members to local communities is not expected to affect the levels of service provided by existing law and fire protection personnel.

Medical facilities located in Region 1 are identified in Table 3.3-12 and discussed with respect to the AC collection system routes in Section 3.13.2.4.2. The temporary relocation of workers and family members to the counties in the region is not expected to affect existing levels of health care and medical services.

The estimated number of children expected to temporarily relocate to Region 1 during peak construction ranges from about 47 (Scenario 2) to 90 (Scenario 1) (Table 3.13-51). These children would likely be located in a number of different school districts throughout Region 1 and would not be expected to affect existing average student/teacher ratios (Table 3.13-13).

Spending by relocating workers and their families would likely generate economic benefits for community commercial and retail services, as would be the case with other local construction-related expenditures.

3.13.6.8.1.5.2 Operations and Maintenance Impacts

Operations and maintenance of the potential wind facilities would employ between 177 (Scenario 2) and 280 (Scenario 1) workers. If these workers and their families were all to relocate from elsewhere, the estimated increase in population would be equivalent to approximately 1.0 percent to 1.6 percent of total Region 1 population in 2012 (Table 3.13-52). The permanent addition of these workers and family members would not be expected to affect the provision of community services in the affected areas.

3.13.6.8.1.5.3 Decommissioning Impacts

Decommissioning of the transmission lines would require a labor force approximately equal to that needed for their construction. Impacts to community services from decommissioning are, therefore, expected to be similar to those from construction.

3.13.6.8.1.6 Tax Revenues

3.13.6.8.1.6.1 Construction Impacts

Construction of the potential wind facilities would generate sales, use, and lodging tax during the construction period. All equipment and material costs are assumed for the purposes of analysis to be subject to sales and use tax. Wind facility equipment would include turbines, blades, and towers. Materials would include transformers, electrical equipment, and construction materials (concrete, rebar, and construction equipment). Estimated equipment and material costs are approximately $95 million for a single 50MW wind facility and $1.79 billion for a single 1,000MW

facility. These costs were estimated using the JEDI Wind model and general wind energy averages. The use of these averages results in total estimated equipment and material costs of $6,981 million and $7,159 million for Scenarios 1 and 2, respectively.

State sales and use tax rates are 4.5 percent in Oklahoma and 6.25 percent in Texas (Tables 3.13-15 and 3.13-14, respectively). Estimated state sales and use tax revenues would range from $158 million to $161 million in Oklahoma and from $217 million to $223 million in Texas, with the higher end of the range in each case estimated for Scenario 2.

None of the potentially affected Texas counties levy local sales and use tax. In the three Oklahoma counties, local county sales and use tax rates are either 1 percent (Texas County) or 2 percent (Cimarron and Beaver counties) (Table 3.13-15). Based on these rates, estimated county sales and use tax revenues per facility would range from $0.9 million to $1.9 million for a 50MW facility and from $17.9 million to $35.7 million for a 1,000MW facility.

3.13.6.8.1.6.2 Operations and Maintenance Impacts

Operations and maintenance of the potential wind facilities would generate annual property or ad valorem tax revenues in the counties where they would be located. Estimated installed costs are approximately $105 million for a single 50MW wind facility and $1.95 billion for a single 1,000MW facility. These costs were estimated using the JEDI Wind model and general wind energy averages. The use of these averages results in total estimated installed costs of $7,774 million and $7,798 million for Scenarios 1 and 2, respectively.

Millage rates for the potentially affected Oklahoma counties range from 52.19 to 80.73 (Table 3.13-19). Adjusting the range of estimated installed costs for a single wind facility by the state assessment ratio (the state share of assessed value subject to taxation) of 22.85, the application of these millage rates would result in ad valorem tax revenues ranging from $1.9 million (for a 50MW facility in Beaver County) to $36 million (for a 1,000MW facility in Texas County).

Average millage rates (expressed per $1,000 of assessed value) in the three potentially affected Texas counties range from 4.131 (Hansford County) to 4.392 (Sherman County) (Table 3.13-18). Using a simplified cost approach, property tax revenues for a single wind facility could range from $4.3 million (for a 50MW facility in Hansford County) to $85.6 million (for a 1,000MW facility in Sherman County).

3.13.6.8.1.6.3 Decommissioning Impacts

The general tax implications of decommissioning the potential wind generation facilities would be similar to those discussed with respect to the converter stations, above (see Section 3.13.5.2.7.1).

3.13.6.8.2 Optima Substation

Employment during construction of the substation would follow a similar bell-shaped pattern as construction of the proposed converter stations (see Figure 3.13-2) but would likely involve fewer workers. Impacts would be similar to those discussed for the Oklahoma converter station, but smaller. Some workers would likely temporarily relocate to the Texas County area for the duration of their employment. Adequate temporary housing likely exists to accommodate this demand, but a potential shortage in temporary housing could occur if construction of the future Optima Substation were to coincide with construction of the Oklahoma converter station, AC collection system routes, or HVDC transmission line in this area. The Applicant proposes to prepare and implement a workforce housing strategy for the Project designed to minimize potential impacts to housing availability.

3.13.6.8.3 TVA Upgrades

A precise ROI has not been identified for the TVA upgrades. Where possible, general impacts associated with the required TVA upgrades are discussed below.

The required TVA upgrades could result in potential impacts to population, economic conditions, housing, property values, community services, and tax revenues. A short-term increase in the influx of temporary workers and increased demand for temporary housing resources and goods and services would be expected during construction activities, particularly construction of the new electric transmission line. The temporary relocation of construction workers to the affected areas could create increased demand for community services such as education, medical facilities, municipal services, police, and fire in addition to retail services. These potential effects would be short term and temporary. New permanent employment associated with the operation of the upgraded facilities would not likely have a noticeable effect on existing short- or long-term population trends or demand for housing and goods and services.

Local expenditures, employment, and construction-related earnings would have a positive impact on the local economy and employment for the duration of construction. Construction of the required TVA upgrades would generate sales and use tax revenues through expenditures on construction supplies and equipment. Long-term economic impacts from the required TVA upgrades would be primarily associated with operation and maintenance-related expenditures for materials and supplies and property tax revenues. The new 500 kV transmission line would be a new facility and would, therefore, result in a larger net increase in property tax revenues than the upgrades to already existing infrastructure. Overall, economic impacts would be expected to be small.

3.13.6.9 Impacts Associated with the No Action Alternative

Under the No Action Alternative, DOE assumes for analytical purposes that the Project would not be constructed. There would be no Project-related impacts to socioeconomics.

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