April 24, 2009

Comanche Peak Nuclear Power Plant, Units 3 & 4
COL Application

Part 3,

Environmental Report

Update Tracking Report

Revision 2

Revision History

Revision	Date	Update Description
0	3/31/2009	No technical changes in Rev.0 Editorial Changes in Chapters: Ch.1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
1	4/19/2009	Updated Chapters: Ch. 1, 2, 3, 4, 5, 8, 9
2	4/24/2009	Updated Chapters: Ch. 1, 2, 4, 5, 10

Chapter 1

Chapter 1 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	1-xv	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00462	Table 1.3-2	1.3-5	Match to NUREG 1555	Change section titles of 4.7, 4.8, 5.11 and 5.13.	0
LU-02	Figure 1.1-5	_	Represent line from CPNPP to DeCordova as a new line.	Change color of line from CPNPP to DeCordova from red to green.	1
CTS-00693	Table 1.2-1	1.2-3 1.2-4 1.2-5 1.2-6 1.2-8 1.2-9	Table needs to accurately reflect the permit conditions and permits required.	Table 1.2-1 updated to reflect only those permits that apply.	1
CTS-00694	Table 1.2-1	1.2-3 1.2-4 1.2-5 1.2-6 1.2-8 1.2-9	Editorial	Adjust column setting and row to improve the readability	1
MET-25	Table 1.2-1	1.2-9	ER Site Audit NRC information need	Add TCEQ 30 TAC 116 State Construction Air Permit	1
ALT-11	1.0	1.0-1	Increase information as discussed with the NRC.	Revised subsection to include a concise statement of the purpose and the need for the proposed project.	2
CTS-00693	Table 1.2-1	1.2-9	Editorial	Removed the information for financial institutions	2

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

The purpose of this project is to develop, construct and operate two units, each with a net electrical output of approximately 1600 MWe as merchant plants using the US-APWR technology to generate electricity specifically for sale in the ERCOT Wholesale Market. This project is the result of a detailed evaluation of the potential environmental conditions as discussed in Chapters 1-7 and the assessment of other alternatives to this project (Chapter 9 and 10) for meeting the 2017 to 2027 market requirements projected by ERCOT and discussed in Chapter 8. ALT-11

The National Environmental Policy Act (NEPA) requires any federal agency taking a "major federal action" to prepare an Environmental Impact Statement (EIS) for the action. The proposed action is the U.S. Nuclear Regulatory Commission (NRC) issuance of a combined construction and operating license (COL) to Luminant Generation Company LLC (Luminant) for the Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4, located in Somervell and Hood counties, Texas. This action includes the proposed construction and operation of CPNPP Units 3 and 4, with the associated support facilities, including new water pipelines connecting with Lake Granbury and new electrical distribution infrastructure in preparation for the future connection to the electric delivery system. This action includes activities related to removal of existing buildings and some buried material from the site, including repair and remediation activities. In accordance with the provisions of Title 10 of the Code of Federal Regulations (CFR) Part 52, Subpart C, "Combined Licenses"(10 CFR 52), the Applicant is submitting to the NRC an application for a combined construction and operating license (COLA) for CPNPP Units 3 and 4. The regulations in 10 CFR 50.30(f) and 10 CFR 52.79(a)(2) require a complete Environmental Report (ER) to support the NRC in preparing an EIS as required by 10 CFR 51.45. This ER is submitted to aid the NRC in fulfilling their obligations under NEPA.

The general format and content is based on the guidance presented in NUREG-1555, "Environmental Standard Review Plan," dated October 1999, and draft section revisions issued in July 2007. This ER is organized into the following chapters:

- Chapter 1 - Introduction
- Chapter 2 - Environmental Description
- Chapter 3 - Plant Description
- Chapter 4 - Environmental Impacts of Construction
- Chapter 5 - Environmental Impacts of Station Operation
- Chapter 6 - Environmental Measures and Monitoring Programs
- Chapter 7 - Environmental Impacts of Postulated Accidents Involving Radioactive Materials

TABLE 1.2-1 (Sheet 7 of 7)
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

Agency	Authority	Requirements	License/Permit No.	Activity Comment	
NRC		Appendix B - Facilities Operating License Environmental Protection Plan, non-radiological		Changes required in the Environmental Protection Plan, non-radiological, to be modified pending final design reviews, approvals, and prior to operation of the facility.	CTS-00694
~~TCEQ~~	~~Clean Air Act~~	~~Prevention of Significant Deterioration (PSD) Permit~~		~~Demonstrate compliance with ambient air standards BACT requirements, Clean Air Mercury Rule, Clean Air Interstate Rule as applicable.~~	CTS-00693
TCEQ	30 TAC 321.255 30 TAC 210.23 30 TAC 309	Evaporation pond liner and size requirements		Certify evaporation pond meets requirements prior to use.	
~~Financial Lending Institutions, if needed~~		~~Phase I Environmental Site Assessment Phase II Intrusive Investigation~~		~~Conduct site assessment and report for submittal to lending institutions as applicable.~~	CTS-00693
TCEQ		Hazardous materials storage (SARA Title III)			CTS-00693
TCEQ		Toxic chemical release inventory reporting form			CTS-00693
	Disposal Facility	Radwaste disposal registration			
PUC of Texas		PUC approval of decommissioning plan			CTS-00693
TCEQ	30 TAC 116	State construction air permit			MET-25

Chapter 2

Chapter 2 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	2-xlii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00611	2.1	2.1-1	Erratum	Change “624,067” to “653,320”; “61,115” to “62,306”; “39,875” to “39,987”; “37,976” to “41,564”; “29,184” to “29,689” to match 2006 US Census instead of 2005 US Census.	0
CTS-00611	2.1.1	2.1-2	Updated reference required to provide 2006 data not 2005 data	Change (US Census 2005) to (US Census 2006) notated as US Census Bureau. “American FactFinder – Texas By Place GCT Population Estimates.” US Census Bureau, Washington, DC. Available URL: Http://factfinder:census.gov/servlet/home/en/official - estimates.html, Accessed July 24, 2008.	0
CTS-00459	2.3.1.1.5	2.3-4	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00455	2.3.3.3.5	2.3-61	Editorial correction	Delete “No” and add “Other than CPNPP Units 1 and 2,”.	0
CTS-00648	2.3.1.1.6	2.3-4	Erratum	Change “0.25 ac” to “0.78 ac”.	0
MET-04	List of Tables	2-xvii and 2-xviii	Erratum	Add “Dallas” in front of “Fort Worth” and “Airport” after Fort Worth	1
MET-14	List of Tables	2-xix 2-xx	Increase information as discussed with the NRC.	Add tables: 2.7-129, 2.7-130, 2.7-131, 2.7-132, 2.7-133, 2.7-134, 2.7-135	1
LU-05	2.2.1.1	2.2-1	Erratum	Revise paragraph to clarify mineral rights.	1
LU-01	2.2.2	2.2-5	Increase information as discussed with the NRC.	Insert sentence and add “CDP” to Pecan Plantation to clarify Pecan Plantation is a housing development and not an incorporated town.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
LU-11	2.2.2	2.2-5	Increase information as discussed with the NRC.	Insert sentence to clarify zoning along Lake Granbury.	1
LU-09	2.2.3	2.2-6	Increase information as discussed with the NRC.	Revised text to include information on Proctor Lake and adjust numbers accordingly.	1
LU-08	Figure 2.2-3		Increase information as discussed with the NRC.	Show location of state parks.	1
SOC-11	2.5.2.7.2.1	2.5-18	Increase information as discussed with the NRC.	Updated with current information and revised text to discuss public safety and medical services for Hood and Somervell counties.	1
SOC-11	2.5.2.7.2.1	2.5-19	Erratum	Update reference (The Nursing Home Project 2006) to (The Nursing Home Project 2006a).	1
SOC-11	2.5.2.7.2.2	2.5-19	Erratum	Update reference citation from TDPS 2004 to TDPS 2006	1
SOC-11	2.5.2.7.2.3	2.5-19	Increase information as discussed with the NRC.	Add new subsections to discuss Bosque, Erath, Johnson, and Tarrant counties public safety and medical services.	1
SOC-11	2.5.2.7.2.3	2.5-19	Increase information as discussed with the NRC.	Updated with current information and revised text to discuss public safety and medical services for Hood and Somervell counties. Update reference citation from TDPS 2004 to TDPS 2006	1
CR-04	2.5.3.6	2.5-25	Increase information as discussed with the NRC.	New subsection to include background for 2.5.3.	1
CR-04	2.5.6	2.5-29	Increase information as discussed with the NRC.	Add 13 new reference notations that are cited in the new Subsection 2.5.3.6.	1
SOC-13	2.5.4.4	2.5-28	Increase information as discussed with the NRC.	Revised Subsection to include information on subsistence populations.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-11	2.5.6	2.5-32	Increase information as discussed with the NRC.	Update reference notation from (The Nursing Home Project 2006) to (The Nursing Home Project 2006a)	1
SOC-11	2.5.6	2.5-34	Increase information as discussed with the NRC.	Update reference notation from (TDPS 2004) information to (TDPS 2006) information.	1
SOC-11	2.5.6	2.5-36	Increase information as discussed with the NRC.	Revised to include 11 new reference notations.	1
MET-03	2.7.1.2.4	2.7-11	Erratum	Add “16” to number of day each year and “by county” to wind events to reconcile thunderstorm information.	1
MET-04	2.7.1.2.8	2.7-17	Erratum	Add “the” in front of “Dallas Fort Worth and Airport” after “Fort Worth” to correct the reference to Forth Worth Airport.	1
MET-13	2.7.2.1.2	2.7-19 and 2.7-23	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-04	2.7.2.1.4	2.7-23	Erratum	Add “Dallas” in front of Fort Worth Airport to correct the reference to Forth Worth Airport.	1
MET-11	2.7.2.1.7	2.7-25	Erratum	Change Table 2.7-34 to Table 2.3-23 to correct reference to the table.	1
MET-13	2.7.3.1	2.7-28	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-12	2.7.3.1	2.7-28	Erratum	Remove “control room” and replace with “low population zone” to correct reference to control room.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
MET-13	2.7.3.2 And 2.7.4.2	2.7-30 and 2.7-31	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-14	2.7.4.3	2.7-33	Increase information as discussed with the NRC.	Insert new Subsection to include evaporate pond results.	1
MET-03	Table 2.7-11	2.7-68	Erratum	Change numbers in average per year (#/yr)	1
MET-13	Table 2.7-11	2.7-68	Erratum	Replaced 2006 with 7/31/2006 to describe which data years were used.	1
MET-13	Table 2.7-85	2.7-68	Erratum	Replaced 2001 – 2006 with 2001 – 2004 and 2006 to describe which data years were used.	1
MET-04	Table 2.7-86	2.7-150	Erratum	Add “Dallas” in front of “Fort Worth Airport” to correct the reference to Forth Worth Airport.	1
MET-04	Table 2.7-96	2.7-162	Erratum	Add “Dallas” in front of Fort Worth and “Airport” after “Fort Worth” to correct the reference to Forth Worth Airport.	1
MET-04	Table 2.7-99	2.7-165	Erratum	Add “Dallas” in front of “Fort Worth Airport” to correct the reference to Forth Worth Airport.	1
MET-14	Table 2.7-129 through Table 2.7-135		Increase information as discussed with the NRC.	Add Tables 2.7-129, 2.7-130, 2.7-131, 2.7-132, 2.7-133, 2.7-134, and 2.7-135.	1
SOC-07	List of Tables	2-xi	Increase information as discussed with the NRC.	Changed the Title of Table 2.5-16 from “Hood and Somervell County 2002 and 2007 Property Taxes” to “Economic Region 2002 and 2007 Property Taxes”	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-06	2.5.2.1	2.5-8	Editorial Correction	Removed “counties” Changed Table 5.8-1 to 5.8-2.	2
SOC-06 SOC-03	2.5.2.1	2.5-10	Errata	Changed number of workers from “4300” to “4953” and from “550” to “494”	2
SOC-07	2.5.2.3.1	2.5-13	Editorial Correction	Changed “Hood and Somervell” to “the cities and” and added “in the economic region”	2
SOC-07	2.5.2.3.1	2.5-13	Increase information as discussed with the NRC.	Revised discussion in subsection to discuss the state and local taxes associated with the proposed units.	2
SOC-07	2.5.6	2.5-31	Editorial correction	Revised reference from (Combs 2007) to (Combs 2007a). Added reference (Combs 2009).	2
SOC-07	2.5.6	2.5-35 2.5-31	Increase information as discussed with the NRC.	Removed reference notation for (Combs 2006). Added two new reference notations as a result of the revisions to subsection 2.5.2.3.1.	2
SOC-07	Table 2.5-16	2.5-64	Increase information as discussed with the NRC.	Revised table to increase information for local taxes.	2

LIST OF TABLES (Continued)

2.5.2.1 Economy

The economic region includes those counties most likely to be affected by the construction and operation of CPNPP Units 3 and 4. Based on the distribution of the workforce, those counties include Bosque, Erath, Hood, Johnson, Somervell, and Tarrant ~~counties~~ (Table 5.8-2~~1~~). The local economic centers near CPNPP are Glen Rose in Somervell County and Granbury in Hood County. The largest economic center within the CPNPP region is Fort Worth in Tarrant County. Table 2.5-10 details total employment and employment levels by industrial sector for the economic region. SOC-06

In Bosque County in 2006, the sectors with the highest employment levels were government and government industries (15.2 percent) and retail trade (9.6 percent). The industry with the largest growth from 2001 – 2006 was real estate with an annual increase of 10.3 percent. The industry with the largest decrease was transporting and warehouse (-5.0 percent annually). Total employment in the county increased by 1.1 percent annually (BEA 2006a).

In Erath County in 2006, the government and government enterprises sector employed the largest amount of people (16.2 percent of employment) followed by the retail trade sector (10.6 percent). The industry with the largest growth from 2001 - 2006 was transporting and warehousing, with an annual increase of 18.1 percent. The industry with the largest decline was manufacturing (-4.8 percent annually). Total employment in the county increased by 1.7 percent annually (BEA 2006b).

In Hood County in 2006, the sectors with the largest employment were retail trade (15.0 percent) and government and government enterprises (12.8 percent). The industry with the largest growth was mining, with an increase of 44.8 percent annual from 2001 – 2006. A large portion of the increase in mining is due to the presence of the Barnett Shale in the county, and mining employment is expected to continue to increase until at least 2015 (Business Wire 2007). The industry with the largest decline was educational services with a decrease of 0.2 percent annually. Total employment in the county increased by 3.5 percent annually (BEA 2006c).

In Johnson County in 2006, the retail trade sector employed the largest amount of people (13.5 percent of employment) followed by the government and government enterprises sector (11.2 percent) and the construction sector (11.1 percent). The industry with the largest growth from 2001 – 2006 was transporting and warehousing, with an annual increase of 13.3 percent. The industry with the largest decline was manufacturing (-2.8 percent annually). Total employment in the county increased by 3.6 percent annually (BEA 2006d).

In Somervell County in 2006, the government and government enterprises sector employed the largest amount of people (14.2 percent of employment) followed by the retail trade sector (7.3 percent). The industry with the largest growth from 2001 – 2006 was real estate, with an annual increase of 11.7 percent. The industry with the largest decline was manufacturing (-5.2 percent). Total employment in the county decreased by 0.5 percent annually (BEA 2006e).

In Tarrant County in 2006, the sectors with the largest employment were retail trade (11.6 percent) and government and government enterprises (10.6 percent). The industry with the largest growth was real estate, with an increase of 7.0 percent annual from 2001 – 2006. The

The heavy construction workforce data were analyzed by Workforce Development Area (WDA). The North Central WDA consists of Collin, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwell, Somervell, and Wise counties. Of these counties, eight are located partially or entirely within the region. The North Central WDA had 6200 employed in heavy and civil engineering construction in 2002. By 2012, this number is projected to increase 19.4 percent or 1200 people. The Tarrant WDA consists solely of Tarrant County. The Tarrant WDA had 5600 people employed in heavy and civil engineering construction in 2002. This number is projected to increase 13.4 percent or 650 people by 2012 (TWC 2002).

Table 4.4-1 shows the type of skilled craftsmen needed for the construction of CPNPP Units 3 and 4. Table 4.4-3 shows the number of craftsmen with those skills in the North Central and Tarrant WDAs. The construction labor force is discussed in Subsection 4.4.2.1.

During the peak phase of construction for CPNPP Units 3 and 4, up to ~~4300~~4953 workers are estimated to be required to complete the facility. In addition to the 1000 operation workers for CPNPP Units 1 and 2, an estimated ~~550~~494 additional operation workers are needed for the new units. The number of operation workers is discussed more fully in Subsection 5.8.2.1. SOC-03 SOC-06 SOC-03 SOC-06

2.5.2.2 Transportation

The CPNPP region is accessible by a transportation network of farm to market roads, federal and state highways, and railway, as well as a public airport. The Paluxy and Brazos Rivers are near the site, but there is no access to CPNPP by water-born transportation methods. Due to the predominantly rural setting and small sizes of the cities present near the site, most traffic is by either personal vehicle or over the road tractor/trailer transport. The transportation analysis focuses primarily on roads near the plant in Hood and Somervell counties. Figure 2.5-5 illustrates the road and highway system of Hood and Somervell counties, while Figure 2.5-6 charts the location of airports and rail systems in the region.

Public transit in Hood and Somervell Counties is limited to bus service, provided by The Transit System (TTS). TTS is a rural public transportation system but also provides travel to the Fort Worth area (SCDC 2007).

2.5.2.2.1 Roads

U.S. Highway 67 (US 67) is the only federal highway in Somervell County. It is located to the south of the site and runs from northeast to southwest through the City of Glen Rose. The only federal highway in Hood County is US 377, a four-lane divided highway, which also runs northeast to southwest and passes through Granbury. Texas State Highway 144 (SH144) passes to the east of the site and connects US 67 to US 377. Numerous farm-to-market (FM) roads traverse the county, providing rural access to the larger populated areas. FM 56 provides the only access to the CPNPP site. FM 56 is a two-lane highway that runs from north to south, connecting US 377 at Tolar to US 67 at Glen Rose. Plant workers are expected to commute, because there are no provisions for housing at the CPNPP site.

For the plant workers who live in Hood County, FM 56 south from Tolar or FM 51, a two-lane highway, southwest from Granbury to FM 56 provides access to CPNPP. For workers in Somervell County, FM 56 north from Glen Rose provides access to the site. For those workers

2.5.2.3.1 Taxes

The tax structure for Texas is found in Titles 1 through 3 of the Texas Code of Laws 1979 and its revisions: Title 1 deals with property taxes, Title 2 deals with state taxation, and Title 3 deals with local taxation. Expectations are that ~~Hood and Somervell~~the cities and counties in the economic region are the tax districts most directly affected by the construction and operation of CPNPP Units 3 and 4. SOC-07

The state of Texas has no personal or corporate income taxes. There is a corporate franchise tax that has a component based on corporate earned surplus. In 2008, however, the margin tax replaces the franchise tax. Under this tax, a company owes one percent of gross receipts less compensation or the costs of goods sold. The rate is reduced to 0.5 percent for retailers and wholesalers, while sole proprietorships, general partnerships, and businesses with total revenues of under $300,000 are exempt (The Greater Austin Chamber of Commerce 2006).

Sales and use tax is imposed on all retail sales, leases and rental of goods, and taxable services. The state tax rate is 6.25 percent. Local agencies can add an additional 0.25 – 2.0 percent, with the state tax rate plus local tax rate not to exceed 8.25 percent (Combs 2007a). Groceries and both prescription and non-prescription drugs are exempt from sales tax. Bosque, Erath, and Hood counties impose a county sales and use tax of 0.5 percent. Johnson, Somervell, and Tarrant counties do not charge a sales and use tax. Cleburne, Granbury, Stephenville, and Tolar tax at a rate of 1.5 percent, while Glen Rose has a sales and use tax of 2 percent. The city of Fort Worth has a tax rate of 1 percent while the Fort Worth MTA and the Fort Worth Crime Control SPD Tax each charge 0.5 percent (Combs 2009). By combining county and city taxes, it can be seen that most populated areas have tax rates at the maximum 8.25 percent. SOC-07

Texas has no state property tax. Property taxes are levied by counties, cities, school districts, and special districts (junior colleges, hospitals, road districts, and others).

~~In 2002, Hood County levied $7,455,898 in property taxes while Somervell collected $5,850,365. The largest school districts collected significantly more: Granbury Independent School District (ISD) collected $33,209,441 while Glen Rose ISD collected $18,833,355 (Combs 2002).~~ In 200~~2~~7~~6~~, Hood County levied ~~$13,143,253 in property taxes,~~ almost double the amount of 2002. Granbury Independent School District (ISD) tax revenues ~~levied $43,428,942, an increase of~~ increased approximately $~~3~~7~~10~~ million since 2002, while lowering the total tax rate by $0.56~~0.29~~. Somervell County showed a similar increase in tax revenues, with an increase of approximately $2.6 million~~$6,483,390 levied~~. Glen Rose ISD levied show ~~$21,879,118,~~ an increase of approximately $5~~3~~ million while decreasing~~increasing~~ the tax rate by $0.20~~05~~ (Combs 200~~2~~7b~~6~~).~~Table 2.5-16 shows property tax rates and amounts for Hood and Somervell counties for 2002 and 2006.~~ All counties show an increase in property tax revenues from 2006 to 2007, with only Bosque and Hood counties increasing their tax rates. SOC-07

Ad valorem taxes are paid on the new CPNPP units. The ad valorem taxes are paid in two categories: (1) personal propertry and (2) real property. The two categories are assessed at the same rate. The taxed amounts are phased in through the years of construction with the total market value assessed January 1 of the year the units are operational. The taxes on CPNPP Units 3 and 4 are expected to be assessed at the same tax rates in effect on CPNPP Units 1 and 2 ~~for each tax jurisdiction. Currently, CPNPP Units 1 and 2 pay taxes to Somervell County,~~

~~Somervell County Water District, and Glen Rose ISD. CPNPP Units 3 and 4 are expected to pay taxes at the same rate~~ and to the same jurisdictions as the existing units. Currently, CPNPP Units 1 and 2 pay taxes to 6 jurisdictions in Hood County and 4 jurisdictions in Somervell County. Personal property taxes make up 99 percent of the total taxes for Somervell County but only 30 percent of the total taxes for Hood County. However, the rates for CPNPP Units 3 and 4 are not finalized. Table 2.5-17 shows the amount of ~~net~~ ad valorem taxes paid by jurisdiction for 2006. SOC-07

Based on Table 2.5-16 and 2.5-17, the ad valorem taxes from CPNPP Units 3 and 4 paid to Somervell County and Glen Rose ISD in 2006 are nearly comparable to the amount received from property taxes. In contrast, the amount of ad valorem taxes paid to Hood County and Granbury ISD are only a fraction of the amount those districts receive through property taxes. The impacts of construction of CPNPP Units 3 and 4 on taxes are discussed in Subsection 4.4.2.2.1 while the impacts of operation on taxes are discussed in Subsection 5.8.2.2.1.

2.5.2.3.2 Political Structure

The CPNPP site is situated on the border of Hood and Somervell counties. The site is also located on the border of Texas House of Representatives Districts 59 and 60, because the boundary follows the county line. The site is entirely within Texas Senate District 22 (Texas Legislative Council 2007).

There are a total of nine congressional districts within the CPNPP region: Districts 6, 11, 12, 13, 17, 19, 24, 26, and 31. The CPNPP site is located within the 17th Texas Congressional District.

Local emergency planning in Texas is the responsibility of the mayors and county judges within their jurisdictions. In Hood County, this responsibility is delegated to the Fire Marshal. Local emergency management includes threat identification and prevention, training for local officials, hazard mitigation programs, and coordinating emergency response operations. In Somervell County, the responsibility is retained by the county judge.

2.5.2.4 Land Use and Zoning

CPNPP is located at the border of Hood and Somervell counties. As the location overlaps the edges of both counties, operation and development of CPNPP has the largest socioeconomic effect on those two counties out of the nineteen counties that are completely or partially within the region of CPNPP.

The largest city that intersects the vicinity of CPNPP is Granbury. Granbury is also the county seat for Hood County. As such, Granbury has land-use zoning laws in place that mandate and regulate acceptable land-use practices. Granbury is the only city in Hood County that has defined zoning laws.

In Somervell County, Glen Rose is the only city that has zoning laws. Outside of the corporate city limits, there are no zoning laws in Somervell County. In Somervell and Hood counties, because there is little zoning or designated land use outside of the communities, code and regulation enforcement is administered through the appropriate town or city, county, state, or federal governmental agency with the appointed oversight powers.

(Combs 2007a) Combs, Susan. Texas Comptroller of Public Accounts. “Sales and Use Tax.” Available URL: http://www.cpa.state.tx.us/taxinfo/sales. Accessed March 28, 2007. SOC-07

(Combs 2007b) Combs, Susan. Texas Comptroller of Public Accounts. "2007 Texas Property Tax Rates by County." Available URL: http://www.window.state.tx.us/taxinfo/proptax/07taxrates. Accessed March 10, 2009. SOC-07

(Combs 2009) Combs, Susan. Texas Comptroller of Public Accounts. "Sales Tax Rate Calculation." Available URL: http://ecpa.cpa.state.tx.us/taxrates/RateCalc.jsp. Accessed March 10, 2009.

(The Cowtown 2007) The Cowtown. “The Cowtown Marathon: Our History.” Available URL: http://www.cowtownmarathon.org/home.asp. Accessed February 23, 2007.

(Craftlister 2005a) Craftlister.com. “Antique Alley and Yard Sale (April).” Available URL: http://www.EventLister.com/E1005303. Accessed February 2, 2007.

(Craftlister 2005b) Craftlister.com. “Antique Alley and Yard Sale (September).” Available URL: http://www.EventLister.com/E1011565. Accessed February 2, 2007.

(Crook and Harris 1952) Crook, W. and R. Harris. The Trinity Aspect of the Archaic Horizon. The Carrollton and Elam Foci. Bulletin of the Texas Archeological and Paleontological Society, Vol. 23, pp. 7-38. CR-04

(Ewell 1895) Ewell, Thomas T. History of Hood County. Reprinted in Hood County History in Picture and Story. Historical Publishers, Fort Worth, 1978.

(Elam 2006) Elam, Richard. Somervell County. The Handbook of Texas Online. The Texas State Historical Association: http://www.tsha.utexas.edu/handbook/online/articles.

(BOP 2007) Federal Bureau of Prisons. “Federal Prison Facilities South Central Region.” Available URL: http://www.bop.gov/locations/maps/SCR.jsp. Accessed February 23, 2007.

(FWCOC 2006) Fort Worth Chamber of Commerce. “Fort Worth Chamber of Commerce Information Center 2006 Major Employers.” Available URL: http://www.fortworthchamber.com/eco/docs/nfo_select_major_employees.pdf. Accessed March 12, 2007.

(FWPD 2009) Fort Worth Police Department. “Fort Worth Police Department.” Available URL: http://www.fortworthpd.com. Accessed March 13, 2009. SOC-11

(Gallagher 1974) Gallagher, Joseph G. Results of Small Survey of Comanche Peak Transmission Lines and Pipeline Right-Of-Ways. Unnumbered report prepared by the Archaeology Research Program, Southern Methodist University, Dallas, Texas, 1974.

(Gallagher and Bearden 1976) Gallagher, Joseph G. and Susan E. Bearden The Hopewell Site: A Late Archaic Campsite in the Central Brazos River Valley. Southern Methodist University, Institute for the Study of Earth and Man, Contributions in Anthropology No. 19. CR-04

(US Census 2000e) U.S. Census Bureau 0. “Census 2000 SF1 Data.” Available URL: http://www.census.gov/Press-Release/www/2001/sumfile1.html. Accessed March 8, 2007.

(US Census 2006) U.S. Census Bureau. “American FactFinder – Texas by Place GCT-T1 Population Estimates.” U.S. Census Bureau, Washington, D.C. Available URL: http://factfinder.census.gov/servlet/home/en/official_estimates.html, Accessed July 24, 2008.

(USDA 2002a) U.S. Department of Agriculture. Census of Agriculture National Agricultural Statistics Service. “Table 1: County Summary Highlights 2002, County Data.” Available URL: http://www.nass.usda.gov/Census/Pull_Data_Census. Accessed March 29, 2007.

(USDA 2002b) U.S. Department of Agriculture. Census of Agriculture National Agricultural Statistics Service. “Table 7: Hired Farm Labor – Workers and Payroll 2002, County Data.” Available URL: http://www.nass.usda.gov/Census/Pull_Data_Census. Accessed March 29, 2007.

(USDA 2002c) U.S. Department of Agriculture. National Agricultural Statistics Service (NASS). “2002 Census of Agriculture County Profiles, Somervell County, Texas.” Available URL: www.nass.usda.gov. Accessed January 26, 2007.

(USDA 2002d) U.S. Department of Agriculture. National Agricultural Statistics Service (NASS). “2002 Census of Agriculture County Profiles, Hood County, Texas.” Available URL: www.nass.usda.gov. Accessed January 26, 2007.

(USDA 2005) U.S. Department of Agriculture. Geospatial Data Gateway. “Soil Survey Geographic (SSURGO) database for Hood and Somervell Counties Texas.” Available URL: http://datagateway.nrcs.usda.gov. (Accessed January 30, 2007).

(Wooldridge 1981) Wooldridge, H. 1981. *Hood Substation 138 KV Line, Brazos Electric Power Cooperative, Inc*. Esprey, Huston and Associates, Inc., Austin, Texas. (January 1, 1981).

(TRE 2004) Trinity Railway Express. “Trinity Railway Express Facts.” Available URL: http://www.trinityrailwayexpress.org/traininfo.html. Accessed August 2, 2007.

(Business Wire 2007) Business Wire. "Study the First Complete Look at Economic Benefits of Barnett Shale to Entire Region." Available URL: http://findarticles.com/p/articles/mi_m0EIN/is_2007_May_16/ai_n27241565. Accessed July 29, 2008.

(Reuters 2008) Reuters. "Texas Energy Sector Booming." PRNewswire. Available URL: http://www.reuters.com/article/pressRelease/idUS191623+28-Mar-2008+PRN20080328. Accessed July 28, 2008.

~~(Combs 2006) Combs, Susan. Texas Comptroller of Public Accounts. Annual Property Tax Report: Tax Year 2006." Available URL: http://www.window.state.tx.us/taxinfo/proptax/annual06/96-318.pdf. Accessed July 29, 2008.~~

SOC-07

TABLE 2.5-16
ECONOMIC REGION 2002 AND 2007 PROPERTY TAXES~~HOOD AND SOMERVELL COUNTY 2002 AND 2006 PROPERTY TAXES~~

S0C-07

	2002		2007~~6~~	
	Total Tax Rate ($)	Total Levy ($)	Total Tax Rate	Total Levy
~~**Hood County**~~				
~~Hood County~~	~~0.3325~~	~~7,455,898~~	~~0.3900~~	~~13,143,253~~
~~Granbury~~	~~0.4400~~	~~1,860,460~~	~~0.4150~~	~~2.904,434~~
~~Lipan~~	~~0.3300~~	~~32,399~~	~~0.4000~~	~~47,584~~
~~Tolar~~	~~0.4600~~	~~55,915~~	~~0.4600~~	~~78,222~~
~~Acton MUD~~	~~0.1322~~	~~924,416~~	~~0.1091~~	~~26,604~~
~~Granbury ISD~~	~~1.7300~~	~~33,209,441~~	~~1.4400~~	~~43,428,942~~
~~Lipan ISD~~	~~1.7500~~	~~913,191~~	~~1.6030~~	~~1,206,294~~
~~Tolar ISD~~	~~1.6700~~	~~1,089,765~~	~~1.5567~~	~~1,825,735~~
~~**Somervell County**~~				
~~Somervell County~~	~~0.3300~~	~~5,850,365~~	~~0.3330~~	~~6,483,390~~
~~Glen Rose~~	~~0.4857~~	~~438,959~~	~~0.4711~~	~~575,852~~
~~Somervell Co. Water Dist.~~	~~0.0044~~	~~79,567~~	~~0.1223~~	~~2,380,863~~
~~Glen Rose ISD~~	~~1.0753~~	~~18,833,355~~	~~1.1278~~	~~21,879,118~~
Bosque County				
Bosque County	0.3395	2,881,379	0.365	3,879,978
Clifton	0.43	420,987	0.3377	432,008
Meridian	0.4228	139,265	0.4274	209,897
Morgan	0.2155	12,027	0.2254	18,338
Valley Mills	0.379	97,906	0.439	165,830
Walnut Springs	0.3146	31,577	0.3043	45,178
Iredell	0.1793	10,946	0.1848	16,576
Cranfills Gap	0.2236	14,488	0.2254	19,793
Clifton ISD	1.5662	5,814,762	1.1675	4,825,159
Meridian ISD	1.3369	1,150,880	1.3342	1,717,902
Morgan ISD	1.43	548,701	1.04	538,682
Valley Mills ISD	1.695	1,816,906	1.314	2,219,619
Walnut Springs ISD	1.1	383,419	0.8999	562,229
Iredell ISD	1.473	587,081	1.1467	742,298
Kopperl ISD	1.5	943,039	1.0393	995,645
Cranfills Gap ISD	1.46	560,793	1.04	473,996
Erath County				
Erath County	0.47	5,842,771	0.4187	8,564,924

TABLE 2.5-16
ECONOMIC REGION 2002 AND 2007 PROPERTY TAXES~~HOOD AND SOMERVELL COUNTY 2002 AND 2006 PROPERTY TAXES~~

S0C-07

	2002		2007~~6~~	
	Total Tax Rate ($)	Total Levy ($)	Total Tax Rate	Total Levy
Erath County				
Dublin	0.6405	450,400	0.699	633,232
Stephenville	0.485	2,514,278	0.445	3,642,297
Middle Trinity Water Dist.	0.015	194,271	0.015	316,787
Three-Way ISD	1.18	283,904	1.04	348,861
Dublin ISD	1.4359	2,352,883	1.2369	3,134,719
Stephenville ISD	1.69	11,364,633	1.192	13,568,803
Bluff Dale ISD	1.3243	562,661	1.0962	1,224,852
Huckabay ISD	1.3999	755,172	1.04	1,006,166
Lingleville ISD	1.3912	550,664	1.1062	702,745
Morgan Mill ISD	1.2457	438,463	1.04	580,316
Hood County				
Hood County	0.3325	7,455,898	0.367	14,412,633
Granbury	0.44	1,860,460	0.415	3,621,038
Lipan	0.33	32,399	0.4	51,267
Tolar	0.46	55,915	0.46	82,081
Acton MUD	0.1322	924,416	0.1025	27,866
Granbury ISD	1.73	33,209,441	1.1712	40,667,901
Lipan ISD	1.75	913,191	1.2343	1,146,053
Tolar ISD	1.67	1,089,765	1.2493	1,764,950
Johnson County				
Johnson County	0.4251	19,480,589	0.4098	34,274,715
Alvarado	0.7787	669,209	0.6973	1,133,006
Burleson	0.6043	5,981,933	0.6618	11,896,094
Godley	0.6195	114,132	0.5	258,884
Grandview	0.7107	281,142	0.7428	450,356
Keene	0.7296	693,358	0.8217	1,312,842
Venus	0.7317	354,933	0.7949	708,260
Cleburne	0.73	7,832,487	0.65	11,351,274
Joshua	0.5247	892,280	0.6562	1,636,730
Rio Vista	0.4989	90,206	0.528	161,290

TABLE 2.5-16
ECONOMIC REGION 2002 AND 2007 PROPERTY TAXES~~HOOD AND SOMERVELL COUNTY 2002 AND 2006 PROPERTY TAXES~~

S0C-07

	2002		2007~~6~~	
	Total Tax Rate ($)	Total Levy ($)	Total Tax Rate	Total Levy
Johnson County				
Hill College - Alvarado	0.0455	231,024	0.0394	369,634
Johnson Co. Fire District	0.03	1,376,876	0.03	1,450,678
Hill College - Cleburne	0.0498	746,511	0.0399	1,006,758
Hill College - Godley	0.0381	59,722	0.0158	109,898
Hill College - Grandview	0.0425	62,375	0.036	101,903
Hill College - Joshua	0.0423	289,665	0.034	369,731
Hill College - Keene	0.045	46,652	0.0414	62,358
Hill College - Rio Vista	0.041	40,219	0.0268	54,438
Hill College - Venus	0.0408	66,538	0.0314	84,748
Alvarado ISD	1.71	7,516,409	1.41	12,100,968
Burleson ISD	1.7799	24,726,713	1.4051	34,005,557
Cleburne ISD	1.6937	22,274,081	1.2368	29,036,641
Grandview ISD	1.585	1,979,580	1.115	2,918,867
Joshua ISD	1.7381	10,237,791	1.46	14,522,508
Keene ISD	1.74	1,504,981	1.04	1,399,137
Rio Vista ISD	1.65	1,362,291	1.18	2,226,707
Venus ISD	1.5	2,131,198	1.18	2,993,159
Godley ISD	1.6133	2,283,340	1.0318	7,533,136
Somervell County				
Somervell County	0.33	5,850,365	0.313	8,483,358
Glen Rose	0.4857	438,959	0.4669	606,625
Somervell Co. Water Dist.	0.0044	79,567	0.1266	3,431,275
Glen Rose ISD	1.0753	18,833,355	0.8784	24,839,584
Tarrant County				
Tarrant County	0.2725	217,224,792	0.2665	306,591,822
Azle	0.691	2,934,628	0.582	3,630,092
Bedford	0.3841	10,220,325	0.4469	13,302,843
Benbrook	0.7725	6,761,596	0.6975	8,946,590
Blue Mound	0.53	326,150	0.5925	442,668
Colleyville	0.3474	8,330,428	0.3559	12,076,730

TABLE 2.5-16
ECONOMIC REGION 2002 AND 2007 PROPERTY TAXES~~HOOD AND SOMERVELL COUNTY 2002 AND 2006 PROPERTY TAXES~~

S0C-07

	2002		2007~~6~~	
	Total Tax Rate ($)	Total Levy ($)	Total Tax Rate	Total Levy
Tarrant County				
Crowley	0.6574	1,971,333	0.5755	3,604,812
Dalworthington Gardens	0.172	373,443	0.2627	760,070
Edgecliff	0.36	505,757	0.3041	525,082
Everman	0.9091	1,019,739	0.8541	1,271,832
Forest Hill	0.925	2,722,690	0.95	3,748,093
Grapevine	0.366	17,921,003	0.3625	21,472,412
Haslet	0.35	928,461	0.2903	1,377,977
Keller	0.438	10,058,869	0.4322	15,343,607
Kennedale	0.7125	2,121,429	0.7225	3,174,458
Lakeside	0.298	173,803	0.298	272,596
Lake Worth	0.312	761,304	0.314	1,284,594
Mansfield	0.71	14,481,193	0.69	26,424,886
N. Richland Hills	0.57	16,161,306	0.57	20,365,275
Pantego	0.4502	883,642	0.3733	912,564
Richland Hills	0.4173	1,567,530	0.4507	1,937,954
Saginaw	0.54	3,700,524	0.456	5,155,069
Southlake	0.462	15,562,936	0.462	22,703,031
Westover Hills	0.5111	1,149,973	0.4156	1,450,037
Arlington	0.634	91,506,473	0.648	113,746,900
Euless	0.4973	9,956,304	0.47	12,242,964
Fort Worth	0.865	207,977,767	0.855	323,701,020
Haltom City	0.4558	5,920,234	0.5983	9,530,295
Hurst	0.499	9,139,758	0.535	12,318,629
River Oaks	0.798	1,283,393	0.7827	1,776,547
White Settlement	0.615	2,395,931	0.613	3,535,980
Watauga	0.5989	5,088,593	0.5808	5,933,251
Sansom Park	0.54	372,687	0.5	521,184
Pelican Bay	0.8751	129,487	0.8985	224,471
Westworth Village	0.5	150,482	0.5	721,455
Tarrant Co. FWSD #1	0.218	163,207	N/A	N/A
Tarrant Co. Jt. College Dist.	0.1394	112,400,154	0.1394	160,880,850
Tarrant Co. WCID #1	0.02	5,295,960	0.02	8,057,666
Tarrant Co.EMSD	0.1	1,895,830	0.064	2,901,891

TABLE 2.5-16
ECONOMIC REGION 2002 AND 2007 PROPERTY TAXES~~HOOD AND SOMERVELL COUNTY 2002 AND 2006 PROPERTY TAXES~~

S0C-07

	2002		2007~~6~~	
	Total Tax Rate ($)	Total Levy ($)	Total Tax Rate	Total Levy
Tarrant County				
Tarrant Co. Hospital Dist.	0.2324	185,258,869	0.2304	264,308,157
Arlington ISD	1.7405	297,046,110	1.278	252,450,796
Birdville ISD	1.617	89,389,755	1.405	96,346,771
Everman ISD	1.607	9,161,423	1.25	12,004,412
Fort Worth ISD	1.6858	274,494,781	1.19	276,273,396
Grapevine-Colleyville ISD	1.6598	128,258,956	1.29	129,786,041
Keller ISD	1.6519	86,604,276	1.3574	127,651,920
Mansfield ISD	1.682	71,402,963	1.45	112,433,679
Lake Worth ISD	1.68	6,509,973	1.535	11,297,182
Crowley ISD	1.723	44,672,352	1.409	60,264,479
Kennedale ISD	1.6231	10,408,820	1.35861	12,197,068
Azle ISD	1.65	17,102,630	1.19	22,312,399
Hurst-Euless-Bedford ISD	1.7119	118,547,437	1.3037	105,529,787
Castleberry ISD	1.619	5,040,593	1.2033	5,463,733
Eagle Mt-Saginaw ISD	1.55	42,520,233	1.3301	73,571,146
Carroll ISD	1.935	66,600,484	1.465	71,264,907
White Settlement ISD	1.58	11,183,992	1.466	18,952,537

Note: Economic Region is defined as Bosque, Erath, Hood, Johnson, Somervell and Tarrant counties.

(Combs 2002), (Combs 2007b~~6~~)

Chapter 3

Chapter 3 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	3-xix	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00452	3.3.1.1	3.3-2	Editorial correction	Change “average” to “estimated”.	0
CTS-00452	3.3.1.2	3.3-2	Editorial correction	Change “average” to “estimated”.	0
CTS-00452	3.3.1.3	3.3-3	Editorial correction	Change “average” to “estimated”.	0
CTS-00452	3.3.1.3	3.4-5	Editorial correction	Remove “monthly average”.	0
CTS-00660	3.4.2.1	3.4-6	Editorial correction	Add a sentence about passive screens of the intake system.	0
CTS-00495	Table 3.4-1	3.4-8	Editorial correction	Superscript the number to represent scientific notation as opposed to a whole number	0
CTS-00612	3.5.1.1.2	3.5-5	To reflect DCD terminology	Add “containment Vessel” before reactor so that it reads: containment vessel reactor coolant drain tank, and change the acronym (RCDT) to (CVDT)	0
CTS-00612	3.5.1.1.2	3.5-6	Erratum	Change the acronym (RCDT) to (CVDT)	0
CTS-00613	3.5.1.5	3.5-8	Editorial correction	Remove “gaseous or airborne” and add “liquid” after radioactive	0
CTS-00468	3.5.4	3.5-16	Erratum	Change “179 gpm” to “7 gpm”.	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00614	3.5.4	3.5-16	Erratum	Change “119.79 gallons per hour (gal/hr)” to “approximately 2 gpm”.	0
CTS-00615	3.7.1	3.7-1	Editorial correction	Change “CPNPP Units 3 and 4 Switching Station (CPNPP Units 3 and 4 Switching Station)” to “Plant Switching Station”.	0
CTS-00649	3.7.1	3.7-1	Editorial correction	Change “plant switching station” to “Plant Switching Station”.	0
CTS-00615	3.7.2	3.7-2	Editorial correction	Change “CPNPP Units 3 and 4 Switching Station” to “Plant Switching Station”.	0
CTS-00615	3.7.2	3.7-2	Editorial correction	Change “Main Power Transformer (MPT)” to “Main Transformer (MT)”.	0
CTS-00616	3.7.2	3.7-3	Editorial correction	Change “MPT” to “MT”	0
CTS-00615	3.7.2	3.7-3	Editorial correction	Change “CPNPP Units 3 and 4 Switching Station” to “Plant Switching Station”.	0
CTS-00617	3.9.4	3.9-11	Erratum	Change “four” to “five”.	0
CTS-00617	3.9.4	3.9-11	Erratum	Change “94” to “74”.	0
CTS-00617	3.9.4	3.9-11	Erratum	Change “50” to “37”.	0
CTS-00618	3.9.4.1.1	3.9-12	Erratum	1st paragraph Change “five” to “four”. Change “three” to “one”. Change “three” to “one”. Change “304” to “309”.	0
CTS-00618	3.9.4.1.2	3.9-12	Erratum	Change area dimensions from “167” to “180”, and from “321” to “355”	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00618	3.9.4.1.2	3.9-12	Erratum	Change “three” to “four”.	0
CTS-00691	Table 3.8-4	3.8-14	Update the proprietary status of information	Remove “Withheld from Public Disclosure Under 10 CFR 2.390 (a) (4)” from the title. Remove “Note: Luminant considers the location of alternative site proprietary.”	1

Chapter 4

Chapter 4 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	4-xvii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00650	4.1.1.1	4.1-1	Erratum	Change “275 ac” to “675 ac”.	0
CTS-00650	4.1.1.1	4.1-1	Erratum	Add “the Blowdown Treatment Facility (BDTF) area,”	0
CTS-00459	4.1.1.1	4.1-1	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00459	4.1.2	4.1-4	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00459	4.2.1.1.5	4.2-3	Erratum	Change “384 ac” to “400 ac”.	0
CTS-00619	4.2.1.2	4.2-4	Editorial correction	Change “cooling water“ to “makeup water and blowdown”.	0
CTS-00620	4.2.1.4	4.2-5	Editorial correction	Change “cooling water” to “makeup water and blowdown system”.	0
CTS-00620	4.2.1.4.1	4.2-6	Editorial correction	Change “cooling water” to “makeup water and blowdown system”.	0
CTS-00621	4.2.1.4.1	4.2-6	Editorial correction	Change “cooling” to “makeup”.	0
CTS-00621	4.2.1.4.1	4.2-6	Editorial correction	Change “cooling water system” to “CWS and UHS”.	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00622	4.2.2.1	4.2-9	Editorial correction	Change “cooling water system” and “raw water system” to “makeup water and blowdown system”, respectively.	0
CTS-00623	Table 4.2-1	4.2-14	Erratum	Change population count from “8186” to “6354” and average daily consumption from “0.383” to “0.362”.	0
CTS-00459	4.3.1	4.3-2	Erratum	Change “384 ac” to “400 ac”.	
CTS-00651	4.3.1	4.3-2	Update	Change acreages on page 4.3-2 of ER that describe area of soil disturbed during construction to agree with the new survey of the BDTF.	0
SOC-11	4.4.2.3	4.4-14	Increase information as discussed with the NRC.	Updated with current information and revised text to discuss public safety and medical services for Hood and Somervell counties.	1
SOC-11	4.4.2.3	4.4-15	Increase information as discussed with the NRC.	Delete paragraph to revise text to discuss public safety and medical services for Hood and Somervell counties.	1
SOC-11	4.4.4	4.4-20	Increase information as discussed with the NRC.	Revised to include 2 new reference notations.	1
SOC-03	List of Tables	4-v	Erratum	Changed title of Table 4.4-2 from “Total Number of Workers per Year for Construction of CPNPP Units 3 and 4” to “Total Number of On-site Workforce per Year for Construction of CPNPP Units 3 and 4”	2
SOC-03	List of Figures	4-vi	Increase information as discussed with the NRC.	Added figure 4.4-1 to show the CPNPP total project staffing	2
SOC-03	4.4.1.1	4.4-1	Increase information as discussed with the NRC.	Revised paragraph to include a discussion of the on site workforce for each quarter.	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-03	4.4.1.1	4.4-1	Errata	Changed “4300” to “5201 in 2014” Added “construction” before “workforce”	2
SOC-03	4.4.1.3	4.4-3	Increase information as discussed with the NRC.	Revised paragraph to include on site peak workforce.	2
SOC-03	4.4.1.3	4.4-3	Errata	Changed “2150” to “2601” and “4300” to “5201”	2
SOC-03	4.4.1.3	4.4-4	Erratum	Changed “4300” to “4395” Changed “2150” to “2601”	2
SOC-03 MET-07	4.4.1.5.3	4.4-8	Errata	Changed “2150” to “2601” Replaced “4300 construction workers” with “5201 total on-site workers” Changed “4300” to “4953”	2
MET-07	4.4.1.6	4.4-8	Increase information as discussed with the NRC.	Revised subsection to discuss air quality impacts from vehicle emissions.	2
MET-07	4.4.1.6	4.4-9	Increase information as discussed with the NRC.	Revised subsection to address additional air quality impacts.	2
MET-09	4.4.1.6	4.4-9	Increase information as discussed with the NRC.	Revised subsection to describe the process to be used to develop and communicate air permit compliance monitoring requirements during construction.	2
SOC-03	4.4.2.1	4.4-10 4.4-11	Increase information as discussed with the NRC.	Revised subsection to provide discussions based on new and updated construction workforce populations for the proposed units.	2
SOC-03	4.4.2.1	4.4-10	Increase information as discussed with the NRC.	Added “six counties of the” before economic region to clarify the number of counties.	2
SOC-06	4.4.2.2	4.4-11	Editorial Correction	Changed Table 5.8-1 to Table 5.8-2	2
SOC-06	4.4.2.2	4.4-11	Increase information as discussed with	Revised subsection to include basis for assumptions.	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
			the NRC.		
SOC-06	4.4.2.2	4.4-12	Increase information as discussed with the NRC.	Revised subsection to include basis for assumptions. Added “economic” in front of “the region”	2
SOC-07	4.4.2.2.1	4.4-12	Increase information as discussed with the NRC.	Revised subsection to provide additional information and to provide clarification.	2
SOC-07	4.4.2.2	4.4-13	Increase information as discussed with the NRC.	Added sentence “During the construction period, ad valoren taxes, sales and use taxes, and property taxes increase in the economic region.” Added “economic” in front of “region”	2
MET-07	4.4.4	4.4-20 4.4-21	Increase information as discussed with the NRC	Added four new reference notations as a result of revisions to subsections 4.4.1.6.	2
SOC-03	Table 4.4-2	4.4-24	Increase information as discussed with the NRC	Changed the title from “Total Number of Workers per Year for Construction of CPNPP Units 3 and 4” to “Total Number of On-site Workforce per Year for Construction of CPNPP Units 3 and 4” Expanded the table to include Construction and Operation and revised total worker numbers	2
SOC-03	Figure 4.4-1		Increase information as discussed with the NRC	Added table to show total project staffing.	2

LIST OF TABLES

LIST OF FIGURES

4.4 SOCIOECONOMIC IMPACTS

The discussion of socioeconomic impacts is divided into three sections. Subsection 4.4.1 describes physical impacts of station construction on the community. Subsection 4.4.2 describes the social and economic impacts of station construction on the surrounding region. Subsection 4.4.3 describes environmental justice impacts as a result of site construction.

4.4.1 PHYSICAL IMPACTS

Construction activities can cause temporary localized physical impacts to off-site structures, roads, air quality, noise, or aesthetics. Many of these impacts can directly or indirectly affect humans near the CPNPP site. As discussed in Subsection 2.5.1, the area near the site is rural, with a low population density. As illustrated in Table 2.5-1, the 2007 projected population within five mi is only 3530 individuals. This is a population density of 45 people per sq mi. This section addresses potential construction impacts that may affect people, buildings, roads, aesthetics, and recreational opportunities.

4.4.1.1 Construction Activities

A detailed description of the CPNPP Units 3 and 4 site and vicinity is provided in Sections 2.1 and 2.2. Within the CPNPP site boundary, rehabilitation of existing buildings and roads is necessary as well as the construction of new buildings.

Construction requires a variety of skilled and nonskilled labor. Table 4.4-1 shows the type of laborers employed for the project based on the percentage of total hours each is expected to contribute. Table 4.4-2 shows the number of workers employed for each year of the construction schedule. Figure 4.4-1 shows the total number of workers on-site for each quarter of the project. SOC-03
The estimated number of ~~construction~~total workers on-site rises to a peak of ~~4300~~5201 in 2014 and then diminishes over the next three years. Completion of the construction phase is discussed in Table 1.1-1. It is assumed that 70 percent of the construction workforce in-migrates SOC-03
to the region. The migration numbers are assumed based on the availability of craft labor as discussed in Subsection 4.4.2.1. Due to the temporary nature of construction work, many construction workers on large projects such as power plant construction move throughout the country to job sites and do not relocate their families for each job. Thus it is assumed that only 25 percent of the construction workforce for CPNPP choose to move their families to the region.

As shown in Table 2.5-1, the 2007 projected permanent population for the area within 10 mi is 32,451. Population distribution details are given in Subsection 2.5.1.

People who could be vulnerable to noise, fugitive dust, and gaseous emissions resulting from construction activities at the plant are listed below in order of most vulnerable to least vulnerable:

- Construction workers and personnel working on-site.
- People working or living immediately adjacent to the site.
- Transient populations such as temporary employees, recreational visitors, and tourists.

As stated in Section 2.1, a railroad spur enters the site on its western boundary and extends to the area south of the new reactor locations as illustrated in Figure 1.1-2. The railroad spur does not need to be upgraded to support equipment delivery. The length of the track on-site is expected to be reduced to allow for the new reactors. Because the rail line spur outside the site boundary makes use of a pre-existing ROW that is already zoned for industrial use and has already been disturbed, construction impacts are expected to be SMALL and no mitigation is necessary.

Plant construction at CPNPP results in an increase in traffic on local roads. Subsection 4.1.1 describes the transport of construction materials and workforce to the site by public roads. Figure 2.5-5 illustrates the road and highway systems of both Hood and Somervell counties. Both construction workers and truck deliveries access the site via FM 56 (Subsection 2.5.2.2). FM 56 passes to the west of the site, connecting FM 51 to U.S. Highway 67 (US 67). FM 56 is a two-lane highway and has turn lanes near the plant entrance.

As discussed in Subsection 2.5.2.2.3, averaged annual daily traffic (AADT) counts in 2004 on FM 56 indicate that 3230 vehicles use FM 56 to the north of the plant entrance while 3020 vehicles use FM 56 to the south of the entrance. The AADT counts indicate that approximately 11,780 vehicles travel on US 67 just east of the intersection with FM 56, and 11,730 vehicles travel on US 67 to the west of the intersection. The AADT counts indicate that 9560 vehicles travel on US 377 just east of the intersection with FM 56, while 9750 travel on US 377 to the west of the intersection (TxDOT 2004).

According to the Highway Capacity Manual, the capacity of a two-lane highway is 1700 vehicles per hour for each direction of travel. The capacity is nearly independent of the directional distribution of the traffic on the facility, except that for extended lengths of two-lane highway, the capacity does not exceed 3200 vehicles per hour for both directions of travel combined (TRB 2000).

Construction is expected to take place during a single shift, with the possibility of night testing or the addition of another shift, as warranted. A conservative estimate of 100 daily truck deliveries is assumed for this analysis, with all deliveries occurring during daytime hours. The total number of ~~construction~~ workers ~~during peak construction is 4300~~on-site at peak is 5201 (4953 construction workers plus 248 operations workers). SOC-03

A traffic study for the CPNPP site was conducted in 1987 during the construction of CPNPP Units 1 and 2 when approximately 8694 persons were employed on-site. The study found an auto-utilization factor of 2.34 persons/vehicle for vehicles entering the site, including factors such as absenteeism and late arrivals. The study also found a higher incidence of carpooling among construction workers (DeShazo, Starek & Tang 1987). Thus a conservative estimate is that carpooling occurs among the construction workforce resulting in an average of two people per vehicle, or ~~2150~~2601 (~~4300~~5201 workers at peak divided by two) vehicles entering or leaving the site at peak times. This is much less than the 3710 vehicles found in the 1987 traffic study (DeShazo, Starek & Tang 1987). Also, after the completion of the 1987 traffic study, improvements in traffic signals, widened lanes, turn lanes, and additional signage were made in the immediate area to handle the large volume of traffic. SOC-03

Construction workers and deliveries have a minimal impact on the interstate and larger state highways in the region as the additional influx of drivers is still within the design of the roadway. Impact on area transportation resources generally decreases with increased distance from the site as varied routes are taken by individual vehicles.

Although the peak construction workforce is expected to be ~~4300~~4953, only ~~2150~~2601 vehicles are expected to be used to transport the workers to and from the CPNPP site due to carpooling. This is less than the demand that was placed on the local two-lane state and county highways and farm to market roads during the construction of Units 1 and 2. With the additional improvements that have been made to the roads since that time, the impact of the construction workers and delivery trucks on local roads, primarily FM 56, is expected to be SMALL within the vicinity of the site. SOC-03

4.4.1.4 Impacts to Aesthetics

The locations of parks and reservoirs in the vicinity and region are described in Subsections 2.2.1.2 and 2.2.3. Visual access to the construction of the units is expected to be mainly plant employees and those residents across the reservoir, because further visual effects are obstructed due to the hilly nature of the area. Section 3.1 describes construction materials which ultimately lessen the visual impact of the CPNPP on the vicinity.

Federal regulations require that any temporary or permanent structure, including all accompaniments, that exceeds an overall height of 200 ft above ground level be appropriately marked with lighting. The tallest structures on-site during the construction period are expected to be the crane used for construction of the facilities. As these structures primarily consist of iron framework, they carry a lower visual weight than the reactor domes, which are the most visible structures on-site as the CPNPP nears completion.

The tallest buildings on-site during construction are the reactor domes of CPNPP Units 1 and 2. As the viewshed analysis in Subsection 2.2.1 states, CPNPP Units 1 and 2 have reactor domes that are 266 ft high. With CPNPP Unit 1 and Unit 2 in operation since 1990 and 1993, respectively, any affect on local viewsheds has already occurred. According to viewshed analysis, the reactor domes are visible from Dinosaur Valley State Park and Oakdale Park. Because the visual effects are inversely proportional to distance, the effects of CPNPP Units 1 and 2 on most other parks in the region are minimal.

Subsection 2.2.1 discusses the visual effect of the reactor domes as a function of distance and angle of vision occupied by the domes. As the distance from the domes increases, the angle of vision occupied by the domes decreases significantly. Most of the parks in the region are located more than 14 mi from the site. Although the reactor domes may be visible at that distance, they occupy less than 1 degree of vision.

The impact of construction at the CPNPP site on aesthetics and recreational opportunities is expected to be SMALL and requires no mitigation. Further discussion on the impact to recreational activities is discussed in Subsection 4.4.2.6.

Construction is expected to take place during a single shift, with the possibility of night testing or the addition of another shift, as warranted. Much of the traffic during the construction period would be at the beginning and end of the work shift. Peak-hour traffic noise would increase along the access road. Traffic noise during the peak hours could be noticeable at the nearby residences. Heavy truck traffic would be the most bothersome and could approach levels of 70 – 90 dBA at 50 ft from the road. A conservative estimate of 100 daily truck deliveries is assumed for this analysis, with all deliveries occurring during daytime hours.

Subsection 4.4.1.3 describes the results of a traffic study for the CPNPP site during the construction of CPNPP Units 1 and 2 in 1987 when approximately 8694 persons were employed on-site. Based on this study, a conservative estimate is that there are ~~2150~~2601 vehicles entering or leaving the site at peak times, based on ~~4300 construction employees~~5201 total on-site workers. This is much less than the 3710 vehicles found in the 1987 traffic study (DeShazo, Starek & Tang 1987). Since the 1987 traffic study, improvements in traffic signals, widened lanes, turn lanes, and additional signage were made in the immediate area to handle the large volume of traffic. SOC-03 MET-07

Although the peak construction workforce is expected to be 4953~~4300~~, the noise impacts from construction workers and deliveries utilizing smaller two-lane state and county highways and farm to market roads, primarily FM 56, are expected to be SMALL to MODERATE due to their intermittent and temporary nature. Potential mitigation measures include encouraging carpooling, reducing speed limits and staggering shifts to avoid traditional traffic congestion time periods. SOC-03

4.4.1.5.4 Noise due to Railroad Spur Construction

As detailed in Section 2.2, a railroad spur enters the site on its western boundary and extends to the area just south of the new reactor locations. The railroad spur does not need to be upgraded to support equipment delivery and the pre-existing ROW is zoned for industrial use, therefore construction impacts are expected to be SMALL.

4.4.1.6 Impacts to Air Quality

Regional air quality, including EPA air quality standards, is discussed in Subsection 2.7.1.2.7. Areas having air quality that is worse than the National Ambient Air Quality Standards (NAAQS) are designated by the EPA as non-attainment areas. The CPNPP is not located in a non-attainment area. The nearest non-attainment area to CPNPP is Johnson County, which is a non-attainment area under the 8-hour ozone standard (EPA 2007).

Temporary and minor impacts to local ambient air quality could occur as a result of normal construction activities. Fugitive dust and fine particulate matter (PM) emissions, including those less than PM10 in size, are generated during earth-moving and material-handling activities. Construction equipment and off-site vehicles used for hauling debris, equipment, and supplies also produce emissions. Carbon dioxide emissions are generated by the use of fuel in vehicles at the rate of 19.4 lb/gal of gasoline or 22.2 lb/gal of diesel (EPA 2009). Construction vehicles also discharge Sulfur dioxide. The EPA's Non-road Diesel Rule requires non-road equipment to use low-sulfur diesel fuel with a 500 ppm sulfur maximum (EPA 2007b).The pollutants of primary concern include PM10 fugitive dust, reactive organic gases, oxides of nitrogen, carbon MET-07

monoxide, and to a lesser extent, sulfur dioxides. Variables affecting construction emissions; e.g., type of construction vehicles, timing and phasing of construction activities, and haul routes, cannot be accurately determined until the project is initiated. Actual construction-related emissions cannot be effectively quantified before the project begins. General estimates are available, however, and the impacts on air quality can be minimized by compliance with all federal, state, and local regulations that govern construction activities and emissions from construction vehicles (EPA 1985).

MET-07

Additional air quality impacts are expected from a concrete batch plant operating during construction. A concrete batch plant requires an air permit to operate and normally the operator or contractor is required to provide that permit. The air quality impact from the concrete batch plant is particulates, which are a concern when loading dry concrete and aggregate into the system. Once water is added into the drum mix, particulates are no longer emitted. Air quality impacts from the concrete batch plant operation are minimal using particulate controls that are required by Texas Commission on Environmental Quality (TCEQ) under Texas Administrative Code (TCEQ 2008). The Nuclear Energy Institute estimates an average of 460,000 cubic yard of concrete is necessary for nuclear power plant construction. This number was derived based on four different reactor models (NEI 2007). An estimated potential to emit particulate at 10 microns (PM10) would be 53 tons, which would qualify the concrete batch plant as a Minor Source under EPA regulations. Because the concrete batch plant is considered a Minor Source, the off-site air quality impact is projected to be SMALL.

Specific mitigation measures to control fugitive dust are identified in a dust control plan, or similar document, prepared prior to project construction. These mitigation measures could include any or all of the following:

- Stabilize construction roads and spoil piles.
- Limit speeds on unpaved construction roads.
- Routinely water unpaved construction roads to control dust.
- Perform housekeeping; e.g., remove dirt spilled onto paved roads.
- Cover haul trucks when loaded or unloaded.
- Minimize material handling; e.g., drop heights, double handling.
- Cease grading and excavation activities during high winds and during extreme air pollution episodes.
- Phase grading to minimize the area of disturbed soils.
- Use temporary or permanent vegetation on road medians and slopes.

MET-09

A construction air monitoring compliance program is developed by evaluating the permits and associated requirements to assess where monitoring for compliance is required or prudent as a best practice. Typical construction monitoring methods are visual or consist of sampling via

technicians or automated systems. Onsite construction procedures are developed to capture the permit and monitoring compliance requirements to ensure they are consistently implemented. Training is developed for the onsite workforce, and applicable personnel receive training and qualification certification prior to mornitoring for compliance. Recurring training is developed and implemented as applicable and monitoring program effectiveness is assured through an audit process. MET-09

While emissions from construction activities and equipment are unavoidable, a mitigation plan minimizes impacts to local ambient air quality, and the nuisance impacts to the public in proximity to the project. A possible mitigation plan includes:

- Perform proper maintenance of construction vehicles to maximize efficiency and minimize emissions.

Impacts to air quality from construction are SMALL with the above measures and do not warrant mitigation beyond these measures.

4.4.2 SOCIAL AND ECONOMIC IMPACTS

This subsection evaluates the demographic, economic, infrastructure, and community impacts to the vicinity and region as a result of constructing two MHI US-APWR reactors at the CPNPP site. The evaluation assesses impacts of construction-related activities and an in-migrating construction workforce on population, regional labor, tax revenues, infrastructure and community services, housing, education, and recreational activities within the vicinity and region.

4.4.2.1 Demography

Population estimates and projections for the region are discussed in Subsection 2.5.1.

Industry, heavy construction, and unemployment numbers are discussed in Subsection 2.5.2.1. The demand for workers is high in the region, with unemployment levels at approximately five percent. The expansion of drilling operations in the Barnett Shale area has increased the number of jobs in the region substantially.

Table 4.4-3 shows the number of people skilled in the various types of craft labor required for CPNPP Units 3 and 4 construction for the North Central and Tarrant WDAs. Subsection 2.5.2.1 describes the counties located in each WDA. The levels are shown for 2004 as well as the projected levels for 2014. The crafts with the most plentiful laborers in the two WDAs are construction laborers followed by carpenters and electricians. The crafts with the least numbers are millwrights, structural ironworkers, and boilermakers. According to the Construction Labor Forcast, a shortages of skilled workers is expected in 2012 in the United States, with very high shortages of boilermakers, carpenters, cement masons, and pipefitters and high shortages of ironworkers, electricians, and sheet metal workers. SOC-03 Using the projected 2014 numbers, the construction of CPNPP Units 3 and 4 requires almost 10 percent of the boilermakers, 43 percent of the millwrights, and 62 percent of the structural ironworkers. It is very unlikely that such high percentages of skilled craftsmen are available for the project. Also, many types of craft labor are location-dependent and the workers must travel from site to site, sometimes across the country.

Thus, a large number of workers are expected to come from ~~the state of Texas or other places outside the region~~outside the region and out of the state of Texas. SOC-03

A study of nuclear power plants found that up to 30 percent of the construction workers came from the local area. The cases with the largest share of local workers occurred when there was rapid population growth in the area and large indigenous construction work forces (Pijawka and Chalmers 1983). Hood and Somervell counties are experiencing rapid population growth along with the Fort Worth metropolitan area. In addition, the North Central and Tarrant WDAs are forecast to have over 17,000 construction laborers by 2014. Thus, it is expected that the CPNPP region has a similarly large share of local workers for the project. For this analysis it is assumed that 30 percent of the required workers come from inside the region while 70 percent come from outside the region.

During peak construction, approximately ~~in the year 2015~~towards the end of 2014, there are expected to be ~~4300~~4953 construction workers on-site in addition to 248 operations workers as shown on Figure 4.4-1. Some of the different trade skills represented in the labor pool include electrical workers, welders, pipe fitters, etc. To ensure that the necessary labor pool is available, as the demand for workers increases, construction companies recruit employees from local technical school programs and work with school administrators to build up curriculum in the necessary labor trade areas. National labor trade union organizers, such as the American Federation of Labor, have made it a high priority to train new entrants in the construction industry as the need for labor ramps up. In addition, local recruiting of craft personnel, supplemental skills training, attractive compensation packages, and use of specialty contractors are expected to mitigate competition for craft workers between industries. SOC-03

The total labor force in the six countries of the economic region in 2006 is 974,824, with 48,965 unemployed (Table 2.5-13). The economic region saw an increase of 4.3 percent in the construction sector from 2001 – 2006, bringing total employment levels to 73,455 people. Table 2.5-10 contains the distribution of labor by industry for the six counties in the economic region. The North Central Workforce Development Area (Collin, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwell, Somervell, and Wise counties) is predicting an increase in heavy construction workers of 19.4 percent by 2012, while the Tarrant County Workforce Development Area is predicting a 13.4 percent increase in workers. SOC-03

It is assumed that 30 percent of the construction workforce comes from within the existing local/regional industry, and the other 70 percent migrate into the region. It is assumed that only ~~T~~twenty-five percent of the construction workers that in-migrate bring a family. Because construction jobs such as CPNPP Units 3 and 4 only provide employment for a few years, it is assumed many construction workers choose not to relocate their families. It is further assumed that a portion of the construction workers do not have families. In 2000, the average family size in the United States was 3.18 people. This family size was multiplied by the 867 workers expected to bring their families, resulting in 3467 people. When added to the in-migrating workers without families, the total population increase due to the in-migrating construction workforce is 6067. At peak construction, 248 operations workers will also be on-site. As discussed in Subsection 5.8.2.1, it is assumed that 50 percent of operations workers in-migrate and that all in-migrating operations workers bring their families. Using the same family size, the 124 in-migrating operations workers and their families increase the population in the area by 496 people. Thus, the total population increase at peak construction is 6563 people. SOC-03

Based on worker settlement pattern of the operations workers for CPNPP Units 1 and 2 discussed in Subsection 5.8.2.1, it is assumed that 42 percent of the total incoming workers settle in Hood County (2757 people), 21 percent in Somervell County (1378 people), 12 percent in Johnson County (788 people), 9 percent in Tarrant County (591 people), 6 percent in Erath County (394 people), and 5 percent in Bosque County (328 people). The remaining workers settle outside the economic region. Hood County has an estimated population of 49,906 people in 2014. The incoming workers increase the population by 5.5 percent. Somervell County has an estimated population of 8104 in 2014, so the population increases by 17 percent. In Johnson County, Cleburne has an estimated population of 34,486 which increases by 2.3 percent. Fort Worth in Tarrant County has an estimated population of 660,343 which increases by only 0.1 percent. This increase is sufficiently small that no impacts are expected in Tarrant County. Stephenville in Erath County has an estimated population in 2014 of 18,118 people and increases by 2.2 percent. Walnut Springs in Bosque County has an estimated population of 855 residents in 2014. The in-migrating workforce increases the population by 38 percent.~~To be conservative, an average household size of four was used to estimate the increase in population in the 50-mi region. With a construction workforce of 4300, the population within the region increases by 5268 people. In 2006, Somervell County and Hood County estimated populations were 7773 and 49,238, respectively (Census 2006). It is assumed that 50 percent settle in Somervell County and 50 percent settle in Hood County. Glen Rose offers a location closer to the site, but Granbury offers more amenities including, but not limited to, more schools, lakefront properties, and convenient shopping. The influx of construction workers and families would likely represent a 34 percent increase in population in Somervell County and a 5 percent increase in population in Hood County. Therefore, construction workers and their families represent a very small percent of the existing county population in Hood County, but a large percent of the county population of Somervell County.~~ SOC-03

During the construction period, an additional impact on area population occurs during refueling for CPNPP Units 1 and 2, when 800 – 1200 additional workers are required. Refueling for each unit occurs every 18 months and lasts for approximately 24 days. A refueling outage for CPNPP Unit 1 coincides with peak construction in 2014, bringing the total number of of workers on-site to approximately 6401 for a period of less than a month. SOC-03

Because of the increase in population is distributed to the six counties of the economic region~~in Hood and Somervell counties~~, the impacts of plant construction on population are anticipated to be SMALL ~~to MODERATE.~~

4.4.2.2 Economy

The characteristics of the region surrounding the CPNPP site, including industry, workforce, and unemployment are described in Subsection 2.5.2.1. The economic region of CPNPP is defined as the counties most likely to be affected by the construction and operation of CPNPP Units 3 and 4. The economic region was determined by the current residency patterns of CPNPP Units 1 and 2 operations workers as it is assumed the CPNPP Units 3 and 4 construction and operation workforce follows a similar settlement pattern. Table 5.8-2~~1~~ shows the cities and counties where the CPNPP Units 1 and 2 workforce resides. Based on the residency patterns, the CPNPP Units 3 and 4 economic region was defined as Bosque, Erath, Hood, Johnson, Somervell, and Tarrant counties Within those counties, the cities of Cleburne, Fort Worth, Glen Rose, Granbury, Stephenville, Tolar, and Walnut Springs are most affected. SOC-06 SOC-06

The in-migration of construction workers to the economic region affects the economy through the creation of new jobs and the increase in goods and services purchased. The U.S. Department of Commerce Bureau of Economic Analysis, Economics and Statistics Division have provided a regional economic model that creates multipliers for industry jobs, earnings and expenditures.

The economic model used is the regional input-output modeling system (RIMS II). This model is based on benchmark national input/output multipliers, and incorporates buying and selling linkages among regional industries to create multipliers for both jobs and monetary expenditures (BEA 2005). The resulting multipliers were used to estimate the number of indirect jobs and expenditure of money in the economic region.

The peak number of ~~construction~~ workers onsite is 5201~~4300~~, with 70 percent of the construction workers (~~3010~~3467 workers) and 50 percent of the operation workers (124 workers) coming from outside the region. These ~~3010~~3591 workers are the ones that have an impact on the economic region. The construction industry was selected from the RIMS II Multipliers in Table 1.5, resulting in a multiplier value of 1.48 (BEA 2005). This means for every new construction worker to the economic region, 0.48 indirect jobs are created. Thus, ~~3010~~3467 construction workers result~~s~~ in ~~1445~~1664 indirect jobs for a total of ~~4455~~5131 jobs. For the operations workers, the power generation and supply multiplier was selected from the RIMS II Multipliers in Table 1.5, resulting in a multiplier value of 2.1 (BEA 2005). This means that for every new operations worker to the region, 1.1 indirect jobs are creating. Thus, 124 operations workers result in 136 indirect jobs. Because most indirect jobs are service~~-~~ related and not highly specialized, it is assumed that most, if not all, indirect jobs are filled by the existing workforce within the ~~50 mi~~economic region. Any permanent effects are discussed in Section 5.8. SOC-06 SOC-06

In the year 2006, there were 48,965 people unemployed in the economic region (Table 2.5-13). Some or all of the indirect jobs created by the construction workforce are expected to be filled by unemployed workers in these counties. The money spent in the local area by these new workers, their families, and the newly employed persons in each county add to the economy of the economic region.

Annual construction labor and material expenditures for the construction period average $240 million a year, with a peak of approximately $516 million in 2014. The majority of annual expenditures would be spent in the economic region, with portions of those funds being spent outside the economic region. Based on the construction multiplier of 1,58 from the RIMS II multipliers in Table 1.5, for every dollar spent for construction expenditures, an additional 0.58 dollars is added to the economic region (BEA 2005). This result in approximately $139 million a year with $299 million at peak. SOC-06

The increase in jobs in the economic region and the influx of money due to the construction expenditures are both beneficial in stimulating the economic region. It is likely new businesses open in the economic region to satisfy the demands of the in-migrating construction workers. Benefits include the creation of jobs, employee purchasing, and increase tax revenues. Thus the impact from plant construction is considered a MODERATE beneficial impact in the economic region.

~~When comparing the influx of construction workers with the relatively small population of the vicinity, the increase in expenditures and benefits is significant. When comparing the influx of~~

~~construction workers with the larger population of the region, the increase in expenditures and benefits is proportionally smaller. Expenditures and benefits include the creation of jobs, employee purchasing, and increased tax revenues. Thus the impacts from plant construction employees are considered a MODERATE to LARGE beneficial impact in the vicinity and a SMALL beneficial impact in the region.~~ SOC-06

4.4.2.2.1 Regional Taxes and Political Structure

Regional taxes and the political structure within the CPNPP region are discussed in Subsection 2.5.2.3. Several types of taxes are generated by construction activities and purchases, and by site workforce expenditures. These taxes would include income taxes on corporate profits, wages, and salaries; sales and use taxes on corporate and employee purchases; real property taxes related to CPNPP; and personal property taxes associated with employees. However, if employees buy or rent existing properties, there is no increase in property tax revenues.

Luminant has agreements with Hood and Somervell counties to pay ad valorem taxes based on the current and new units. Table 2.5-17 shows CPNPP ad valorem taxes for CPNPP Units 1 and 2 for 2006. Based upon information from 2006, Luminant pays the majority of the ad valorem taxes to Glen Rose Independent School District (ISD) followed by Somervell County itself and the Somervell County Water District (TXU 2006b). Lesser amounts are paid to Grandbury ISD, Hood County, and Tolar ISD, while the remaining is paid to the Hood County Library District, the City of Glen Rose, and the town of Tolar (TXU 2006a)(TXU 2006b). Ad valorem taxes for Units 3 and 4 are expected to be similarily distributed to the existing arrangements and provide a substantial increase to the counties, cities, and districts that benefit. SOC-07 SOC-07

Based on Table 2.5-16, tax revenues in Hood and Somervell counties have increased from 2002 – 2007~~6~~. With continued population expansion as well as the addition of ad valorem taxes from Units 3 and 4, tax revenues should continue to increase. However, ad valorem revenues for districts in Hood County are smaller than the revenues to Somervell County districts while at the same time ~~an equal number~~approximately 40 percent of construction workers are expected to reside there based on current operations workforce settlement patterns. ~~Thus ad valorem revenues for Hood County are not sufficient to mitigate the impact to public services in the county.~~ SOC-07 SOC-07

During the construction period, ad valorem taxes, sales and use taxes, and property taxes increase in the economic region. The increase in collected taxes is viewed as a benefit to the state and local jurisdictions in the economic region. It is anticipated that the impacts of construction on the economy of the region would be beneficial and SMALL. Conversely, the impact for Somervell County and to a lesser extent Hood County is anticipated to be LARGE and beneficial. Therefore, no mitigation is warranted.

4.4.2.3 Infrastructure and Community Services

Local public services affected by plant construction include education, transportation, public safety, social services, public utilities, tourism, and recreation (Subsection 2.5.2). In general, impacts to each of these services from plant construction are expected to be minimal. It is likely that the percentage of construction workers, accompanied by their families, moving into the region would concentrate in several established communities with well-developed public

4.4.3.4 Conclusion

Based upon the environmental justice analysis, impacts on minority and low-income populations within the vicinity and region are not disproportionate and thus are expected to be SMALL with no mitigation required.

4.4.4 REFERENCES

(BEA 2005) Bureau of Economic Analysis. RIMS II Multipliers (1997/2005). "Table 1.5 Total Multipliers for Output, Earnings, Employment, and Value Added by Detailed Industry." Available URL: http://www.bea.gov/regional/rims/brfdesc.cfm. (Accessed October 3, 2007).

(Census 2006) U.S. Census. American FactFinder Population Finder. "Somervell County, Texas and Hood County, Texas." http://factfinder.census.gov. (Accessed September 17, 2007).

(EPA 1985) U.S Environmental Protection Agency. *Compilation of Air Pollutant Emission Factors, Vol. I, Stationary Point and Area Sources, Section 11.2* "Construction Operations", AP-42, Fourth Ed. September 1985.

(EPA 2007) U.S. Environmental Protection Agency. Green Book. "Currently Designated Nonattainment Areas for All Criteria Pollutants: Texas." http://www.epa.gov/oar/oaqps/greenbk/ancl.html. (Accessed September 17, 2007).

(EPA 2007) U.S. Environmental Protection Agency. "Nonroad Diesel Equipment." Available URL: http://www.epa.gov/nonread-diesel/. Accessed April 8, 2009. MET-07

(EPA 2007) U.S. Environmental Protection Agency. Overview: Pollutants and Programs. "Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel." Available URL: http://www.epa.gov/OMS/climate/420f05001.htm. Accessed April 7, 2009.

(Executive Order 12898) Executive Order 12898. "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." *Federal Register,* Vol. 59, No. 32, p. 7629, Washington, D.C., February 16, 1994.

(NAR 2007) National Association of Realtors. "Available properties in Granbury and Glen Rose, Texas." Available URL: http://www.realtor.com. (Accessed October 4, 2007).

(NEI 2007) Nuclear Energy Institute. "What's Needed to Build a Reactor." *Nuclear Energy Insight.* August/September 2007. MET-07

(NEPA 1969) *National Environmental Policy Act of 1969*, as amended. 41 USC 4321 et seq. http://www.nepa.gov/nepa/regs/nepa/nepaeqia.htm. (Accessed October 27, 2007).

(TxDOT 2004) Texas Department of Transportation. "2004 Traffic Map, General Highway Maps: Somervell and Hood Counties, Texas."

(BJS 2003) Bureau of Justice Statistics. "Law Enforcement Management and Administrative Statistics: Local Police Departments, 2003." Available URL: http://www.ojp.usdoj.gov/bjs/pub/pdf/lpd03.pdf. Accessed March 16, 2009. SOC-11

(Senter 2009) Senter, Wayne. Port Orchard Independent. South Kitsap Fire and Rescue Chief. "Even in Lean Times, Safety has to be Our First Consideration." Available URL: http://www.pnwlocalnews.com/kitsap/poi/opinion/38164499.html. Accessed February 5, 2009. SOC-11

(Lake Granbury Medical Center 2007) Lake Granbury Medical Center. “About Us.” http://www.lakegranburymedicalcenter.com/body.cfm?id=13. (Accessed March 9, 2007).

(TRB 2000) Transportation Research Board. *Highway Capacity Manual*. The National Academies. Washington, D.C., 2000.

(SCWD 2007) Somervell County Water District. “Wheeler Branch Reservoir Information.” Available URL: http://clients.freese.com/somervell/Geninfo/Statistics.htm. (Accessed September 18, 2007).

(TXU 2006a) TXU Generation Company. “Ad Valorem Tax Tracking Report: Hood County.” (May 3, 2007).

(TXU 2006b) TXU Generation Company. “Ad Valorem Tax Tracking Report: Somervell County.” (May 3, 2007).

(TCEQ 2007a) Texas Commission on Environmental Quality. “Water System Data Sheet: Hood County Public Water Systems.” Available URL: http://www3.tceq.state.tx.us/iwud/dist/index.cfm. (Accessed March 22, 2007).

(TCEQ 2007b) Texas Commission on Environmental Quality. “Water System Data Sheet Report: City of Glen Rose.” Available URL: http://www3.tceq.state.tx.us/iwud/dist/index.cfm. (Accessed March 22, 2007).

(TCEQ 2008) Texas Commission on Environmental Quality. “Air Quality Standard Permit for Concrete Batch Plants.” Available URL: http://www.tceq.state.tx.us/permitting/air/newsourcereview/mechanical/cbp.html. Accessed April 7, 2009. MET-07

(DeShazo, Starek & Tang 1987) DeShazo, Starek & Tang, Inc. "Transportation and Traffic Engineering Study for the Comanche Peak Steam Electric Station." Prepared for Texas Utilities Generating Company. October 22, 1987.

(US HUD 1996) United States Department of Housing and Urban Development, 24 CFR Part 51.103 Criteria and Standards, March 26, 1996.

(USDOT 2006) United States Department of Transportation, Federal Highway Administration, Effective Noise Control During Night Time Construction, March 7, 2006

TABLE 4.4-2
TOTAL NUMBER OF ON-SITE WORKFORCE~~WORKERS~~ PER YEAR FOR CONSTRUCTION OF CPNPP UNITS 3 AND 4 SOC-03

Year	Construction	Operation	Total Workers
2008	0	22	22
2009	0	60	~~140~~60
2010	119	76	~~270~~195
2011	621	92	~~385~~713
2012	886	168	~~726~~1054
2013	2423	213	~~2312~~2636
2014	4953	248	~~3883~~5201
2015	3739	378	~~4085~~4117
2016	598	457	~~3139~~1055
2017	0	494	~~1214~~494
2018	0	464	~~102~~464
2019	0	412	412

SOC-03

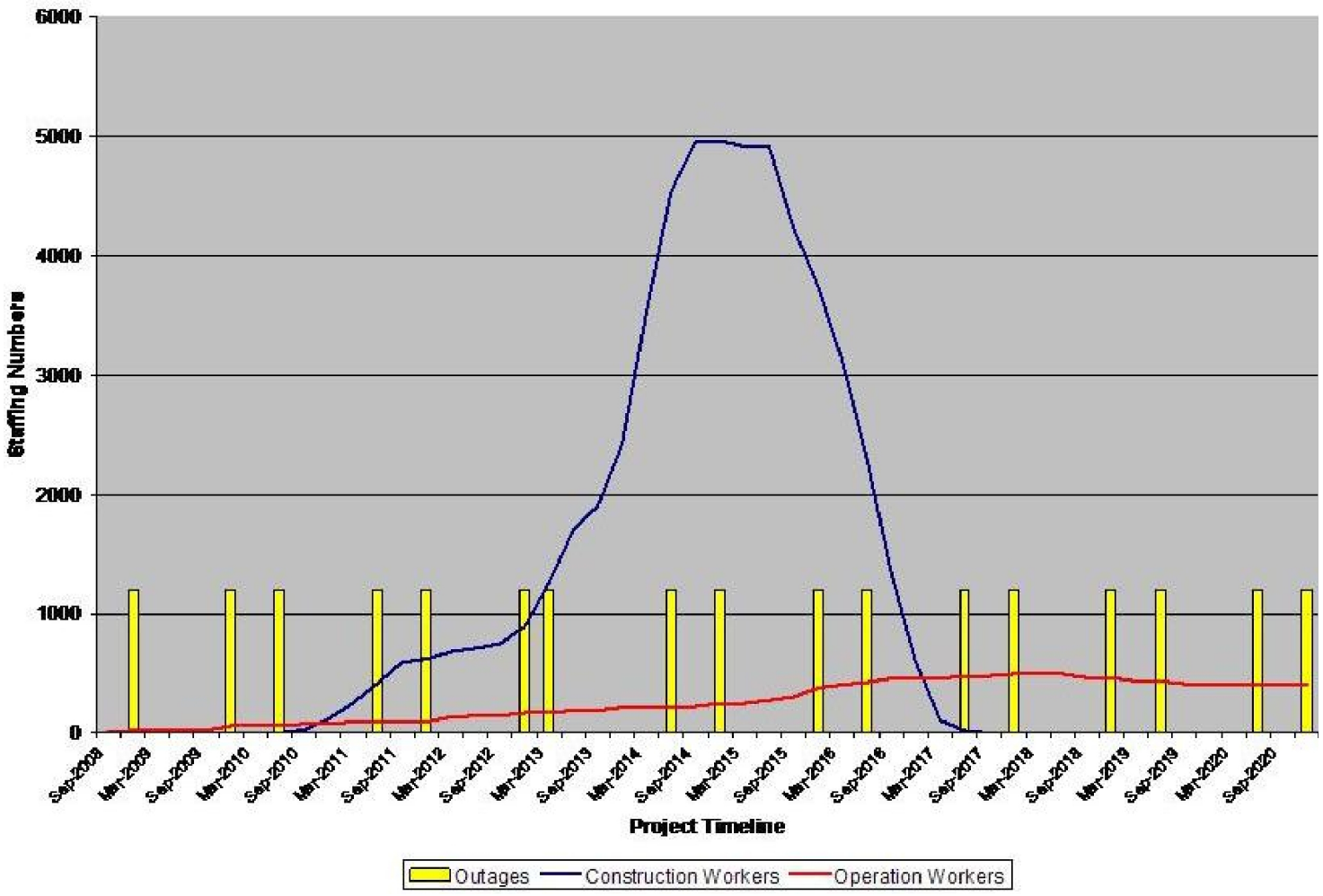

Figure 4.4-1 CPNPP Total Project Staffing

SOC-03

Chapter 5

Chapter 5 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	5-xxii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00624	5.1.3.1.4	5.1-5	Erratum	Change “one mi” to “two mi”.	0
CTS-00624	5.1.3.1.4	5.1-5	Editorial correction	Change “site boundary” to “property boundaries”.	0
CTS-00625	5.1.2	5.1-2	Erratum	Change number of 345-kV transmission lines from “five” to “four”.	0
CTS-00627	5.2.3.5	5.2-16	Editorial correction	Change the discussion regarding the cells and cubicles.	0
CTS-00628	Table 5.3-3	5.3-20	Editorial correction	Change the circulating water flow/tower and drift rate per tower numbers.	0
CTS-00629	Table 5.4-16	5.4-42	Erratum	Change “rad” to “person-rad”.	0
MET-13	5.3.1	5.3-11	Increase information as discussed with the NRC.	Add “Six years of site meteorological data (2001 – 2006) were also used in the analysis.	1
SOC-11	5.8.2.3.1.2	5.8-11 and 5.8-12	Increase information as discussed with the NRC.	Update with current information and revise text to discuss public safety and medical services for Hood and Somervell counties. Update reference citation from TDPS 2004 to TDPS 2006	1
SOC-11	5.8.4	5.8-17	Increase information as discussed with the NRC.	Update reference notation (TDPS 2004) information to (TDPS 2006) information.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
SOC-04	5.8.1.1	5.8-1	Errata	Changed “550” to “494” Changed “1550” to “1494” Added “in 2018” Added sentence to clarify the number of workers after one year.	2
SOC-04	5.8.1.3	5.8-2	Editorial corrections	Removed “or Texas Stae Highway 144 (SH 144)” Changed “SH 144 to Texas State Highway 144”	2
SOC-04	5.8.1.3	5.8-2 5.8-7	Errata	Changed “1550” to “1494” Changed “total of 1550” to “peak total of 1494”	2
SOC-04	5.8.2.1	5.8-8 5.8-9	Increase information as discussed with the NRC.	Revised subsection to address the operation workforce assumptions.	2
SOC-04	5.8.2.1	5.8-9	Erratum	Changed “4300” to “4953”	2
SOC-06	5.8.2.2	5.8-9 5.8-10	Increase information as discussed with the NRC.	Revised subsection to discuss workforce economics.	2
SOC-07	5.8.2.2	5.8-10	Increase information as discussed with the NRC.	Removed “(Table 2.5-13)” Replaced “0.64” with “0.32”	2
SOC-07	5.8.2.2.1	5.8-11	Editorial correction	Changed “operation” to “operational”	2
SOC-07	5.8.2.2.1	5.8-11	Increase information as discussed with the NRC.	Revised paragraph to include wage information.	2
SOC-07	5.8.4	5.8-16	Increase information as discussed with the NRC.	Added two reference notations Updated (TDPS 2004) to (TDPS 2006) information.	2

5.8 SOCIOECONOMIC IMPACTS

The following subsections describe the potential socioeconomic impacts from operating CPNPP Units 3 and 4. Subsection 5.8.1 describes physical impacts of plant operation to the site and vicinity. Subsection 5.8.2 describes social and economic impacts on the region. Subsection 5.8.3 describes environmental justice impacts as a result of plant operation.

5.8.1 PHYSICAL IMPACTS OF STATION OPERATION

This subsection assesses the potential physical impacts due to operation of Units 3 and 4 on the nearby communities or residences. Potential impacts include noise, odors, exhausts, thermal emissions, and visual intrusions. These physical impacts are managed to comply with applicable federal, state, and local environmental regulations and do not significantly affect the CPNPP site and vicinity. For the purpose of this analysis, plant operations workers and local communities, buildings, and roads are described below.

5.8.1.1 Workers and Local Public

There are no residential areas located within the site boundary. Beyond the immediate site boundary, the area is rural with woods and farmland. The nearest community to the CPNPP site is the city of Glen Rose, located 5.2 mi south. The largest community whose border lies within the vicinity of the site is the city of Granbury, located 9.2 mi north. The locations of surrounding communities within the vicinity are further described in Section 2.1. Population distribution is described in Section 2.5. Because of Glen Rose and Granbury's distance from the CPNPP site, residents would not experience any physical impact from operation of Units 3 and 4.

The CPNPP is expected to employ approximately ~~1550~~1494 operations workers in 2018, with 1000 workers for Units 1 and 2, and ~~550~~494 workers for Units 3 and 4. After a year, the number of operations workers decreases to the long-term operations worker level of 412 workers. In addition, 800-1200 temporary workers are required during outages. The impacts from these workers on the local and regional areas are discussed in Subsection 5.8.2. SOC-04

The effect of heat dissipation to the atmosphere from operations of the cooling towers is described in Subsection 5.3.3.1. Noise and air quality impacts from the plant are discussed in Subsection 5.8.1.5. Because there are no residents within the site boundary, there are no impacts due to atmospheric heat dissipation on nearby communities. As noted in Subsection 5.8.1.4, the nearest residence is approximately 0.9 mi to the southwest of the site center point.

5.8.1.2 Buildings

The plant layout including new and existing structures is shown in Figure 2.1-1. Operations activities are not expected to affect any off-site buildings, including industrial, commercial, and residential structures. Current on-site buildings from CPNPP Units 1 and 2 have been constructed to comply with applicable safety standards, which include considerations for shock and vibration from operations activities.

5.8.1.3 Roads

Impacts of new units' operations on transportation and traffic in the region are the greatest on the rural roads of Hood and Somervell counties. Impacts on traffic are determined by four elements: (1) the number of operations workers and their vehicles on the roads; (2) the number of shift changes for the operations workforce; (3) the projected population growth rate in the region; and (4) the capacity of the roads. The largest impacts to roads are expected to be during shift changes.

Figure 2.5-5 illustrates the road and highway systems of both Hood and Somervell counties. Operation workers access the site via Farm to Market 56 (FM 56), ~~or Texas State Highway 144 (SH 144)~~ (Subsection 2.5.2.2). FM 56 passes to the west of the site, connecting FM 51 to U.S. Highway 67 (US 67), while ~~SH 144~~Texas State Highway 144 (SH144) passes to the east of the site and connects US 67 to US 377. Both are 2-lane highways, and FM 56 has turn lanes near the plant entrance. Improvements, such as widening, turn lanes and traffic lighting are currently being made to SH 144. SOC-04

For plant operation, it is expected that CPNPP operates with five crews of approximately 30 workers each. The crews follow a five-week rotation, with one crew in training, one crew off, and the other three crews covering the operational shifts. The operations shifts are 12 hours long. The remaining support personnel, including security, administration, and technicians, work a variety of shifts. The CPNPP is expected to employ a ~~total of 1550~~peak total of 1494 operations workers at the plant for all units. Therefore, the maximum number of vehicles on the roadways from operations is approximately ~~1550~~1494 including workers from all four units. However, the impact at any given time is much less than ~~1550~~1494 vehicles as these vehicles travel on the roadways in different directions and at varying times based on shift schedules, vacations days, sick leave, day of the week, and other factors. Additional impacts may be present during outage periods for Units 1 and 2 (800 – 1200 additional workers) every 18 months as well as for Units 3 and 4 (800-1200 additional workers) every two years. SOC-04 SOC-04

As discussed in Subsection 2.5.2.2.3, the averaged annual daily traffic (AADT) counts in 2004 on FM 56 indicate that 3230 vehicles use the road to the north of the plant entrance while 3020 vehicles use the road to the south of the entrance. The AADT counts indicate that approximately 11,780 vehicles travel on US 67 east of the intersection with FM 56, and 11,730 vehicles travel on US 67 to the west of the intersection. The AADT counts indicate that 9560 vehicles travel on US 377 east of the intersection with FM 56 while 9750 travel on US 377 to the west of the intersection. The AADT counts on SH 144 indicate that 10,570 vehicles travel on the road south of Granbury while approximately 5780 vehicles use the highway going north from Glen Rose (TxDOT 2004).

According to the Highway Capacity Manual, the capacity of a two-lane highway is 1700 vehicles per hour for each direction of travel. The capacity is nearly independent of the directional distribution of the traffic on the facility, except that for extended lengths of two-lane highway, the capacity does not exceed 3200 vehicles per hour for both directions of travel combined (TRB 2000).

During the 1980s, with the construction of CPNPP Units 1 and 2, a study was completed on the increase of traffic in the area surrounding the plant. Approximately 8694 persons were employed

5.8.1.5.3 Noise Due to Operation of Railroad Spur During Operation

An existing railroad spur is to be utilized at the CPNPP site frequently during construction activities but the tracks are expected to be removed during operation of the CPNPP site. Therefore, railroad noise impact on the surrounding community is considered to be of SMALL significance and no mitigation measures are necessary.

5.8.1.5.4 Traffic Noise Due to Operation

Noise due to plant operations traffic depends on: the number of operations workers and their vehicles on the roads; the number of shift changes for the operations workforce; the projected population growth rate in the region; and the capacity of the roads. The largest impacts to roads are expected to be during shift changes. Figure 2.5-5 illustrates the road and highway systems of both Hood and Somervell counties.

Operation workers access the site via Farm to Market 56 (FM 56), or Texas State Highway 144 (SH 144) (Subsection 2.5.2.2). FM 56 passes to the west of the site, connecting FM 51 to U.S. Highway 67 (US 67), while SH 144 passes to the east of the site and connects US 67 to US 377. Both are two-lane highways, and FM 56 has turn lanes near the plant entrance. Improvements, such as widening, turn lanes and traffic lighting are currently being made to SH 144.

For plant operation, it is expected that CPNPP operates with five crews of 30 workers each. The crews follow a five-week rotation, with one crew in training, one crew off, and the other three crews covering the operational shifts. The operations shifts are 12 hours long. The remaining support personnel, including security, administration, and technicians, work a variety of shifts. The CPNPP is expected to employ a ~~total of 1550~~peak total of 1494 operations workers at the plant for all units. Therefore, the maximum number of vehicles on the roadways from operations is approximately ~~1550~~1494 including workers from all four units. However, the impact at any given time is much less than ~~1550~~1494 vehicles as these vehicles travel on the roadways in different directions and at varying times based on shift schedules, vacations days, sick leave, day of the week, and other factors. SOC-04 SOC-04

Additional impacts may be present during outage periods for Units 1 and 2 (800 - 1200 addtional workers) every 18 months as well as for Units 3 and 4 every two years. Additional information on transportation, including current traffic counts, is discussed in Subsection 2.5.2.

According to the Highway Capacity Manual, the capacity of a two-lane highway is 1700 vehicles per hour for each direction of travel. The capacity is nearly independent of the directional distribution of the traffic on the facility, except that for extended lengths of two-lane highway, the capacity does not exceed 3200 vehicles per hour for both directions of travel combined (TRB 2000).

During the 1980s, with the construction of CPNPP Units 1 and 2, a study was completed on the increase of traffic in the area surrounding the plant. Approximately 8694 persons were employed on-site, with an estimated 3710 vehicles entering the site. After the completion of the traffic study, improvements in traffic signals, widened lanes, turn lanes, and additional signage were made to the immediate area to handle the large volume of traffic.

During the ambient noise survey in 2007 and 2008, noise results along roadways ranged from 35 to 70 dBA (daytime traffic and as high as 82 dBA at times) and 36 to 70 dBA (nighttime). The impacts of plant operations are expected to have minimal effects on the interstate highways in the region. Because the increase in operation workers is below historic accounts of traffic volume as well as the improvements to the roads in the surrounding area, the impacts from operation workers on smaller two-lane state and county highways, as well as the local roads, the impacts of plant operations are expected to be SMALL.

Regional air quality is discussed in Section 2.7. Operations activities are expected to be conducted in accordance with the best management practices available during the time of operation. This would include performance of proper maintenance of operational vehicles and equipment to maximize efficiency and minimize emissions, in compliance with applicable federal, state, and local regulations. Actual operational-related emissions cannot be effectively quantified before the plant is completed. Air emissions are expected to be controlled as necessary, to meet requirements of applicable air regulations and permits in place at the time of operation.

Because air emissions from nuclear power plants are minimal, physical impacts to the surrounding population as a result of operation of Units 3 and 4 are SMALL and do not warrant mitigation.

5.8.2 SOCIAL AND ECONOMIC IMPACTS OF STATION OPERATION

This subsection evaluates the demographic, economic, infrastructure, and community impacts to the region as a result of operating CPNPP. The evaluation assesses impacts of operations and of demands placed by the workforce on the region.

5.8.2.1 Demography

The 2007 estimated permanent population within the 50-mi region is 1,538,761. Population projections are discussed in Subsection 2.5.1. As stated in Subsection 5.8.1.1, the CPNPP employs approximately ~~550~~494 operations workers at Units 3 and 4 in 2018 with the number decreasing to 412 after a year. In order to supply the needed workforce, Luminant has partnered with local and state education entities to train operations workers in the region. The Nuclear Power Institute is a statewide partnership with headquarters at Texas A&M University that is working to develop courses, curriculum, and programs to prepare students for careers in the nuclear workforce. A total of ten universities and colleges are participating (NPI 2009). Also, Luminant has created the Luminant Academy at Tyler Junior College to train students in generation, mining, and construction operations for their power plants (TJC 2008). These efforts allow workers for CPNPP Units 3 and 4 to be drawn from the region. Based on preliminary estimates, it is assumed that 50 percent of the new unit employees are hired locally and 50 percent migrate into the region and bring their families with them. The average family size in the United States was 3.18 in 2000. ~~To be conservative, an average family size of four people was used to estimate the increase in the 50-mi region.~~ Therefore, the additional workforce that ~~migrated~~migrates to the region at peak conditions in 2018 (~~240~~123) increases the population in the region by approximately ~~1100~~492 people. SOC-04 SOC-04

The operational workforce for CPNPP Units 1 and 2 is distributed throughout the 50-mi region. Table 5.8-2 shows the cities with more than five workers in residence. The city with the largest

numbers of workers is Granbury with 401 workers, followed by Glen Rose with 194 workers. It is assumed that the operations workers who migrate into the region settle in a pattern similar to the current workers for Units 1 and 2, with ~~40~~42 percent in Hood County and ~~20~~21 percent in Somervell County. The remaining workers settle in other counties in the region, with Johnson County and Tarrant County having the next largest numbers. ~~In 2006, the estimated population of Hood County was 49,238 and the estimated population of Somervell County was 7773.~~ As discussed in Subsection 4.4.2.1, the peak construction worker numbers occur in 2014. By the time of peak operations workers in 2018, the construction workforce has left the region. Therefore, the influx of operations workers and families ~~would likely represent~~represents a ~~0.9 percent increase in population in Hood County and a 2.8 percent increase in population in Somervell County. The operations workers and their families represent a very small percent increase in the existing population in Hood County and a small percent increase in Somervell County's existing population.~~4.8-percent decrease in Hood County, a 10.4-percent decrease in Somervell County, and a 24-percent decrease in Walnut Springs. The remaining areas in the economic region show increases, with Cleburne increasing by 4.2 percent, Fort Worth increasing by 4.8 percent, and Stephenville increasing by 1.6 percent. SOC-04 SOC-04

Worker settlement patterns are also influenced by the available amenities, including recreation opportunities, convenient shopping, quality schooling, and affordable housing. The largest number of these amenities within a close distance is found in Granbury, with numerous golf courses, grocery stores, retail outlets, and schools. This helps explain why nearly twice as many current operations workers live in Hood County as compared to Somervell County. However, this also means that Hood County has a disproportionate impact. Hood County must provide health facilities, water, police and firemen, and housing while receiving less tax benefits than Somervell County.

The "bust effect" is defined as the effect experienced by the community that is the result of an abrupt loss of population. The population in Hood and Somervell counties peaks in the spring of ~~2016, the year after the peak construction workforce and the associated indirect jobs, due to the presence of outage workers for CPNPP Units 1 and 2. The population rises to 68,706 before beginning to decline. With the exodus of a large portion of the construction workforce, the population reaches a low in 2018 of 67,008 people, a net loss of 2742 people or approximately four percent of the peak population. However, this loss is stemmed by the arrival of the operations workers, and the population re-attains peak construction levels by 2020.~~2015, a few months after the peak construction workforce and then declines until the beginning of 2017, when in-migrating operations workers and population growth begin replacing the population lost by the construction workers leaving the area. The ~~bust effect is also offset~~population levels are also influenced by the 800 – 1200 temporary employees required for the scheduled refueling of Units 3 and 4 every two years. These workers are expected to work at the plant for an average of 26 days per outage. There are also refueling workers associated with Units 1 and 2. Refueling for those units occurs every 18 months and involves 800 – 1200 additional workers. It is possible with the number of outages that some temporary workers would remain in the region. Outages occur frequently and are not simultaneous, so a worker might find sufficient income. If any of the outage workers chose to retain in the region, it is likely they would find permanent housing and would reside in the same areas as the operation workers. The impacts of plant operations on local and regional demography are SMALL as the increase in population is offset by the departure of the ~~4300~~4953 construction workers that decreases the strain on community infrastructure. SOC-04 SOC-04

5.8.2.2 Economy

The impacts of the new units' operation on the local and regional economy depend on the economic region's current and projected economy and population. As discussed in Subsection 2.5.2.1, the economic region consists of those counties most likely to be affected by the construction and operation of CPNPP Units 3 and 4. Based on the distribution of the operations workers for CPNPP Units 1 and 2, those counties are Bosque, Erath, Hood, Johnson, Somervell, and Tarrant, counties. During the time period when operational workers move into the ~~vicinity and~~economic region, CPNPP site construction is concluding. In this case, the "bust effect" is the result of construction workers leaving the ~~vicinity~~economic region. Because these workers, even those who commute, partake to some degree in ~~vicinity~~ goods and services in the economic region, certain services experience loss of economic growth. The impact is caused by a decrease of use during the population recovery period. Sales, personal income, and tax revenues may experience a decline. SOC-06

~~The permanent operational workers moving into the vicinity as construction decreases can partially offset this bust. Also, an influx of temporary workers to service refueling outages helps to alleviate economic loss. The region does not experience the same level of impact as local communities due to the bust effect because the number of construction workers leaving does not represent a significant percentage of the region's total population.~~According to Subsection 5.8.2.1, the economic region as a whole does not experience the bust effect. However, the total population of Hood and Somervell counties decreases after the peak construction period. Hood County is projected to recover peak construction population levels by 2019 due to population growth and the operations workers. Somervell County is projected to recover peak construction levels by 2028. SOC-06

Additional jobs in the region result from the multiplier effect attributable to the new operations workforce. In the multiplier effect, each dollar spent on goods and services by an operational worker becomes income to the recipient who saves some but re-spends the remainder. The recipients' re-spending becomes income to others, who in turn save part and re-spend the remainder. The number of times the final increase in consumption exceeds the initial dollar spent is called the "multiplier." The Regional Economic Analysis Division of the U.S. Department of Commerce Bureau of Economic Analysis (BEA) provides multipliers for industry jobs and earnings. The economic model, Regional Input-output Modeling System (RIMS II), incorporates buying and selling linkages among regional industries and was used to estimate the impact of new nuclear plant-related expenditure of money in the region of interest. The wages and salaries of the operating workforce have a multiplier effect that could result in an increase in business activity, particularly in the retail and service industries. Based on the power generation and supply multiplier of the RIMS II Table 1.5 ~~(Table 2.5-13)~~, for every dollar of income for operational plant employees, an additional ~~0.64~~0.32 cents is added to the regional economy (BEA 2005). SOC-07

Using the same category, for every operations job at Units 3 and 4, an estimated 1.1 jobs are created in the ~~50-mi~~economic region, which means that ~~550 direct jobs~~the 123 in-migrating workers at the start of operations result in an additional ~~605~~135 indirect jobs for a total of approximately ~~1155~~258 new jobs in the economic region. Because most indirect jobs are service-related and not highly specialized, it is assumed that most, if not all, indirect jobs are filled by the existing workforce (Table 2.5-13). SOC-06 SOC-06

In the year 2006, there were 48,965 people unemployed in the economic region. Some or all of the indirect jobs created by the operations workforce are expected to be filled by unemployed workers in these counties. The money spent in the local area by these new workers, their families, and the newly employed persons in the counties also add to the economy of the area.

Annual expenditures for operation and maintenance during operation of CPNPP are estimated as $65,000,000 per unit. The majority of annual expenditures would be spent in the economic region with a portion of the funds spent outside the economic region. Based on the power generation and supply multiplier of 1.32 from the RIMS II multiplier in Table 1.5, if the annual expenditures were made entirely within the economic region, a total of $41.6 million would be added to the area. SOC-06

With the anticipated loss of ~~4300~~4953 construction workers, the impact from plant operation employees in the ~~vicinity~~economic region is considered a LARGE beneficial impact due to their influence on the local economy. ~~By comparison, because the number of operational workers is small compared to the large regional population, the impact to the regional economy is SMALL and also beneficial.~~Because the operations workforce creates indirect jobs in the economic region and the operations expenditures also benefit the economy, the impact of plant operations on the economic region is SMALL and also beneficial, and also no mitigation is required.

5.8.2.2.1 Regional Taxes and Political Structure

Regional taxes and the political structure within the CPNPP region are discussed in Subsection 2.5.2.3. Somervell County is the tax district that is expected to be most directly affected by the operation of CPNPP.

Luminant is required by Hood and Somervell counties to pay ad valorem taxes based on the current and new units. Table 2.5-17 shows CPNPP ad valorem taxes for Units 1 and 2 for 2006. On the new units, Luminant is expecting to pay the ad valorem taxes to Somervell and Hood counties on a basis similar to the current requirements. By the time operations begin, Luminant is expected to be paying the entire amount of ad valorem taxes for Units 3 and 4. The majority of the ad valorem taxes go to Somervell County and its districts, while smaller amounts are paid to Hood County and its districts. Based on the ad valorem amounts for 2006 and the property tax revenues for the same time period, the ad valorem taxes may be the largest portion of total tax revenues for some districts in Somervell County once the new units are ~~operation~~operational. SOC-07

Several types of taxes are generated by operations activities and purchases, and by the workforce expenditures within the vicinity. Employees of the CPNPP pay federal personal income taxes on their wages and salaries. Texas residents do not pay a state personal income tax. The counties in the region experience an increase in the amount of sales and use taxes collected. Additional sales and use taxes are generated by retail expenditures of the operating workforce. As discussed in Subsection 2.5.2.3.1, the sales and use tax rate in populated areas in the economic region is 8.25 percent including local and state taxes. If the annual operations expenditures are spent within the economic region, the total sales and use tax revenue is approximately $5.4 million per year per unit for a total of $10.7 million. Of this total, $8.1 million per year goes to the state with the remaining $2.6 million in revenue going to cities, counties, and other local districts. SOC-07

~~Because the ad valorem taxes are paid to jurisdictions in Hood and Somervell counties, the impact of plant operation on the vicinity is anticipated to be LARGE and beneficial. The impacts of operations on tax revenue in the region is expected to be SMALL, based on the larger region population but beneficial due to the increased collections due to plant and worker expenditures.~~Property tax revenues should remain stable or growing as the increasing population occupies the houses vacated by the construction workforce. Sales and use taxes are expected to decrease as the construction workers leave the area and as the construction expenditures are finished. Operations expenditures are approximately $9.1 million a year less than the average construction expenditures. Countering this is the payment of the ad valorem taxes on the new units. Current revenues from CPNPP Units 1 and 2 exceed $24 million annually based on Table 2.5-17. Revenues from CPNPP Units 3 and 4 are expected to be similar. Thus total tax revenues for the economic region continue to increase during operations. The impact of plate operations is expected to be LARGE and beneficial for the economic region. SOC-07

5.8.2.3 Infrastructure and Public Services

Local public services potentially affected by the operation of Units 3 and 4 including (1) public safety, (2) social services, (3) education, (4) tourism, and (5) recreation are diescribed individually in Subsection 2.5.2. It is likely that operations workers and their families would concentrate in several communities with well-developed public services. Diversification of settlement would minimize the likelihood of any one community's services being overburdened.

5.8.2.3.1 Public Services

Public services types identified in this subsection include (1) water supply and wastewater facilities and (2) fire, police and medical services.

5.8.2.3.1.1 Water Supply and Wastewater Facilities

The CPNPP is not anticipating using groundwater as a safety-related or operational source of water. The CPNPP is using Lake Granbury for all operational water uses related to Units 3 and 4 cooling. Water for operation dust suppression and general use is obtained from SCR. An on-site wastewater facility provides sufficient capacity for wastewater treatment related to plant operation for all four units.

As stated in Subsection 5.8.2.1, an operational workforce of 550 increases the population in the 50-mi region by approximately 1100 people. Water systems in the vicinity are generally not operating at or near capacity (Subsection 2.5.2.7.1). Therefore, the water supply and wastewater treatment facilities servicing the CPNPP vicinity are considered sufficient to provide adequate service. Additional information regarding wastewater facilities is discussed in Subsection 2.5.2.7.1.

5.8.2.3.1.2 Police and Fire Protection Services

The Somervell County Sheriff's Department has sole jurisdiction over Somervell County (TDPS 2006~~4~~). As stated in Subsection 2.5.2.7.2, the total number of police officers in Somervell county is 19. The ~~ratio of residents to~~number of police officers per 1000 residents in Somervell County in 2006 is 2.4 and during the construction is 2.0~~389:1~~. The departing construction workers and SOC-11

(EO 1994) Executive Order 12898. Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. Federal Register. Vol. 59. No. 32. p. 7629. Washington, D.C., February 16, 1994.

(Lake Granbury Medical Center 2007) Lake Granbury Medical Center. About Us. http://www.lakegranburymedicalcenter.com/body.cfm?id=13. Accessed March 9, 2007.

(NPI 2009) Nuclear Power Institute. "About NPI." Available URL: http://www.nuclearpowerinstitute.org/index.php/about. Accessed February 4, 2009. SOC-07

(Broemmel, Clark, and Nielsen 2007) Broemmel, J., T. Clark, and S. Nielsen. July-August 2007. Military Review. "The Surge Can Succeed." Military Review, pp. 110-112.

(TDPS 20064) Texas Department of Public Safety. The Texas Crime Report for 20064: Law Enforcement Personnel. Available URL: http://www.txdps.state.tx.us/crimereports/064/cit0664ch7.pdf. Accessed March 928, 20097. SOC-11 SOC-07

(TRB 2000) Transportation Research Board. Highway Capacity Manual. The National Academies. Washington, D.C.

(TxDOT 2004) Texas Department of Transportation. 2004 Traffic Map, General Highway Maps: Somervell and Hood Counties, Texas.

(TJC 2008) Tyler Junior College. "Luminant Academy Open House Set March 26." Available URL: http://www.tjc.edu/news/article.asp?message_id=572. Accessed February 4, 2009. SOC-07

(US Census 2000a) U.S. Census Bureau. American FactFinder. Hood County Housing. http://factfinder.census.gov. Accessed on March 15, 2007.

(US Census 2000b) U.S. Census Bureau. American FactFinder. Somervell County Housing. http://factfinder.census.gov. Accessed March 15, 2007.

(US HUD 1996) United States Department of Housing and Urban Development, 24 CFR Part 51.103 Criteria and Standards, March 26, 1996.

(SCWD 2008) Somervell County Water District. "Phase I - Wheeler Branch Dam and Paluxy River Channel." http://scwd.us/?page_id=9. Accessed July 25, 2008.

Chapter 6

Chapter 6 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	6-xvi	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00630	6.3.1.1	6.3-2	Editorial correction	Change “SWS” to “ESWS”	0
CTS-00631	6.5.1	6.5-2	Editorial correction	Remove “nonradioactive”.	0
CTS-00631	6.5.1	6.5-2	Editorial correction	Change “service water” to “essential service water”	0
CTS-00499	6.7	6.7-3	Editorial correction	Add information for current results regarding humidity date, and remove discussions for future additions.	0
CTS-00499	6.7	6.7-3	Editorial correction	Clean up to match ER 6.4.1 wording for RH instrumentation.	0

Chapter 7

Chapter 7 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	7-xvii	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00470	7.2	7.2-7	Erratum	Change “5.87 x 10^{-1}” to “1.15”.	0

Chapter 8

Chapter 8 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	8-xvi	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
NP-03	8.1	8.1-6	Increase information as discussed with the NRC.	Revised text to address why the plants are not specifically discussed within the context of the need for power analysis.	1
NP-05	8.1	8.1-6	Increase information as discussed with the NRC.	Revised text to discuss the ERCOT assumptions driving generation capacity.	1
NP-09 NP-13	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to clarify that market participants determine how and when to retire or build new capacity.	1
NP-12	8.1	8.1-6	Increase information as discussed with the NRC.	Revised text to explain that market forces determine how to meet the forecast load.	1
NP-18	8.3.1	8.3-1	Increase information as discussed with the NRC.	Added a “pointer” to the definition of “mothballed capacity.”	1
NP-09	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to clarify how ERCOT does their analysis.	1
NP-18	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to provide information regarding mothballed generating capacity.	1
NP-03	8.4.1	8.4-1	Increase information as discussed with the NRC.	Revised text to address why the plants are not specifically discussed within the context of the need for power analysis and at specific points in time, given that the plants would not come on line until about 10 years in the future.	1
NP-09	8.4.1	8.4-2	Increase information as discussed with the NRC.	Revised text to clarify how ERCOT does their analysis.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
NP-09	8.4.1	8.1-4	Increase information as discussed with the NRC.	Expands the discussion of reserve margin.	1
NP-12	8.4.1	8.4-5	Increase information as discussed with the NRC.	Expanded the discussion of reserve margin to indicate the decision to increase the number of plants rests with the market participants.	1
NP-01	8.4.5	8.4-7	Increase information as discussed with the NRC.	Revise text to discuss the 2007 ERCOT assessment and other information that has become available after the 2007 reference. Added subsection 8.4.5 entitled “ERCOT Update”	1
NP-01	8.4.6	8.4-7	Increase information as discussed with the NRC.	Revise references for the increased information.	1
NP-14	Table 8.4-1	8.4-8	Increase information as discussed with the NRC.	Revised table to include the load forecast and reserve margin.	1

Chapter 9

Chapter 9 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	9-xx	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00632	9.2	9.2-9	Erratum	Change “peak” to “units”.	0
CTS-00687	9.3.4.1.3.2	9.3-14	Update the proprietary status of information	Remove (proprietary)	1
CTS-00688	9.3	9.3-30	Update the proprietary status of information	Remove “Attachment proprietary information” and add “Luminant Nuclear Power Plant Siting Report, February 09, 2009, with a modified” and remove the period after Project.	1
CTS-00689	Tables: 9.3-1A 9.3-3 9.3-4 9.3-5 9.3-6 9.3-7 9.3-8 9.3-9 9.3-10 9.3-11 9.3-12 9.3-13 9.3-14 9.3-15 9.3-16 9.3-17 9.3-18 9.3-19 9.3-20 9.3-21 9.3-22 9.3-23 9.3-24 9.3-25 9.3-26 9.3-27	9.3-33, 9.3-36, 9.3-37, 9.3-38, 9.3-39, 9.3-40, 9.3-41, 9.3-42, 9.3-43, 9.3-44, 9.3-45, 9.3-46, 9.3-47, 9.3-48, 9.3-49, 9.3-50, 9.3-51, 9.3-52, 9.3-53, 9.3-54, 9.3-55, 9.3-56, 9.3-58, 9.3-59, 9.3-60, 9. 3-61, 9.3-62, 9.3-63,	Update the proprietary status of information	Remove “Withheld from Public Disclosure Under 10 CFR 2.390 (a) (4)” from the title.	1

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
		9.3-64, 9.3-65 9.3-66, 9.3-67, 9.3-68, 9.3-69, 9.3-70, 9.3-71, 9.3-72, 9.3-73, 9.3-74			
CTS-00690	Figure 9.3-2	-	Editorial Correction	Remove box with "Proprietary Information – Withheld Under 10 CFR 2.399 (a) (4)" and provide figure.	1
ALT-09	9.2	9.2-28	Editorial Correction	Remove the sentence "The levelized cost of electricity produced from pulverized coal fired power plants is $0.033/kWh - $0.041/kWh"	1
ALT-09	9.2	9.2-30	Erratum	Replace $575 with $544	1

Chapter 10

Chapter 10 Tracking Report Revision List

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00615	Acronyms and Abbreviations	10-xvi	Editorial correction	Change “MPT Main Power Transformer” to “MT Main Transformer”.	0
CTS-00459	10.1.1.1	10.1-1	Erratum	Change “200 ac” to “400 ac”.	0
CTS-00461	10.1.3.2.1	10.1-11	Editorial Correction	Remove “diesel generators”, and mention the auxiliary boiler as an air emission source.	0
CTS-00459	Table 10.1-1	10.1-14	Erratum	Change “200 ac” to “400 ac”.	0
CTS-00650	Table 10.1-1	10.1-14	Erratum	Change “659 ac” to “675 ac”.	0
CTS-00633	Table 10.1-1	10.1-14	Erratum	Change 4152 to indicate this is the fourth item in the table and the number cited is 152	0
CTS-00460	10.1	10.1-5	Erratum	Add text to show an additional 250 gpm will be provided for de-mineralized water, and change “fifty gpm” to “three hundred gpm”.	0
CTS-00505	10.1.3.2.2	10.1-12	Editorial correction	Remove “adds on impact”.	0
CTS-00505	10.1.3.2.2	10.1-12	Editorial correction	Remove “not”.	0
CTS-00634	10.4.1.2.1	10.4-3	Erratum	Change “4461” to “4466”.	0
CTS-00459	10.4.2.2.1	10.4-8	Erratum	Change “approximately 200 ac” to “400 ac”.	0

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
CTS-00506	Table 10.4-2	10.4-15	Erratum	Change alignment of “3180”.	0
CTS-00459	Table 10.4-4	10.4-20	Erratum	Change “384 ac” to “400 ac”.	0
NP-17	10.1.1.2	10.1-2	Errata	Changed “construction workers” to “on-site workforce” Changed “reach 4300 in 2013” to “be 5201” Changed “construction” to “on-site”	2
NP-17	10.1	10.1-5	Erratum	Changed “A thermal plume created from cooling water blowdown would be discharged to the Lake Granbury” to “Subsection 5.3.2.1 describes the thermal plume analysis and impacts from CPNPP.”	2
NP-17	10.1.3.1.1	10.1-7	Errata	Changed “550” to “494” Changed “1550” to 1494”	2
NP-17	10.1.3.1.1	10.1-9	Editorial correction	Removed Radiological category discussion	2
NP-17	10.1.3.1.2	10.1-9	Errata	Changed “4300 construction” to “5201” Removed “in 2013”	2
NP-17	10.1.3.2.2	10.1-12	Errata	Changed “550” to “494” Changed “1550” to “1494”	2
NP-17	Table 10.3-1	10.3-6	Increase information as discussed with the NRC.	Changed “avoid” to “reduce”	2
NP-17	10.4.1.1.1	10.4-1	Increase information as discussed with the NRC.	Revised to clarify socioeconomics and to be consistent with other subsections.	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
NP-17	10.4.1.1.1	10.4-2	Errata	Changed “550” to “494” Changed “4300” to “4953” Added “and 248 operations workers” before “on-site” and “at the start of operations” to clarify the socioeconomics and to be consistent with other subsections.	2
NP-17	10.4.1.1.1	10.4-2	Errata	Replace “economy of the region” with “economic region” and added “economic” before “region”	2
NP-17	10.4.1.1.1	10.4-2	Increase information as discussed with the NRC.	Changed “SMALL” to “LARGE” as a result of revisions.	2
NP-17	10.4.1.1.2	10.4-2	Increase information as discussed with the NRC.	Revised subsection to clarify socioeconomics and to be consistent with other subsections.	2
NP-17	10.4.1.1.2	10.4-2	Erratum	Changed “2007” to “2006” Changed “1121” to “48,965” Changed “Hood County and 220 people unemployed in Somervell County.” to “the economic region.”	2
NP-17	10.4.1.1.2	10.4-2	Erratum	Changed “vicinity and a SMALL beneficial impact in the region.” To “economic region” and Changed vicinity to “economic region”	2
NP-17	10.4.1.1.2	10.4-3	Increase information as discussed with the NRC.	Revised subsection to clarify socioeconomics and to be consistent with other subsections.	2
NP-17	10.4.1.2.3	10.4-4	Errata	Changed “989” and “1664” Changed “5289” to “5131” Changed “4300” to “4953” Changed “550” to “494” Changed “682” to “272” Changed “1232” to “766”	2
NP-17	10.4.2.2.2	10.4-9	Errata	Changed 56,592,000 gpd” to “55,690,560 gpd” Changed “consumption” to “forced evaporation”	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
				Removed reference to "(Subsection 2.3.2.2.4)" and replace with "Table 2.3-38"	
NP-17	10.4.2.2.5	10.4-10	Discussed with the NRC	Removed subsection 10.4.2.2.5 as the discussion is not in context.	2
NP-17	10.4.2.2.6	10.4-11	Editorial Correction	Changed subsection 10.4.2.2.6 to 10.4.2.2.5	2
NP-17	10.4.2.2.7	10.4-11	Editorial Correction	Removed subsection 10.4.2.2.7 as the discussion is not in context.	2
NP-17	10.4.2.2.8	10.4-11	Editorial Correction	Changed subsection "10.4.2.2.8" to "10.4.2.2.6"	2
NP-17	Table 10.4-1 (sheet 1 of 2)	10.4-13	Errata	Changed "Net ad" to "Ad" Changed "4300" to "4953" Changed "550" to "494" Aligned the Subheading to the left. Removed subtitle below the line. Added "in $/$100 valuation" to clarify the tax rates.	2
NP-17	Table 10.4-1 (sheet 2 of 2)	10.4-14	Erratum	Removed "Dependence on Foreign Energy" row item Removed "Foreign Trade Deficit" row item.	2
NP-17	Table 10.4-2	10.4-15	Editorial Correction	Replaced footnote "a)" with "Air emissions were calculated using AP 42"	2
NP-17	Table 10.4-3 (Sheet 2 of 3)	10.4-17	Editorial Correction	Removed row "Radioactive Effluents and Emissions" and "Potential Nuclear Accident" row items.	2
NP-17	Table 10.4-4 (Sheet 1 of 4)	10.4-19	Erratum	Changed "4300" to "4953" Changed "550" to "494" Changed "1671" to "1936" Changed "989" to "1801" Changed "521" to "135"	2
NP-17	Table 10.4-4 (Sheet 2 of 4)	10.4-20	Editorial Correction	Removed row for "Foreign Trade Deficit"	2

Change ID No.	Section	ER Rev. 0 Page	Reason for change	Change Summary	Rev. of ER T/R
NP-17	Table 10.4-4 (Sheet 3 of 4)	10.4-21	Editorial Correction	Removed “Potential Nuclear Accident” row item.	2

- A relatively SMALL amount of land would be disturbed during construction of the pipeline and transmission corridors. New pipelines are planned to be placed in the existing right-of-way (ROW). An estimate of the amount of area disturbed by construction of the transmission corridors is currently unavailable because the actual routes have not been determined by Oncor Electrical Delivery Company LLC (Oncor).

- A SMALL potential for limited disturbance to buried historic, archaeological, or paleontological resources could occur.

- Construction debris would be disposed of in permitted off-site landfills.

- A SMALL amount of water would be consumed in implementing various construction activities (see Subsection 4.2.1.3).

- A SMALL temporary increase in the sediment load into Lake Granbury could occur as a result of constructing the intake/discharge structures for the cooling system; minor and short-term effects upon species and habitat could occur along the shoreline of Lake Granbury.

- Construction activities near Squaw Creek Reservoir (SCR) may result in erosion, sediment discharge, and stormwater runoff into the reservoir; relatively SMALL short-term effects upon species and habitat could occur near and within the reservoir.

- Use of equipment could introduce the potential for SMALL petroleum or other related spills that could enter surfacewater.

- Construction at the edge of Lake Granbury and SCR, and transmission lines crossing water bodies might cause a SMALL short-term loss of some aquatic organisms and temporary degradation of aquatic habitat.

- Loss of some herbaceous/grassland habitat, and disruption of some species could occur near and within the construction area of CPNPP Units 3 and 4, and the pipeline and transmission corridors. Some of this land may be revegetated and allowed to enter secondary succession states once construction has been completed. Some dislocated species are expected to recover. The impacts are considered to be SMALL.

10.1.1.2 Unavoidable Socioeconomic Impacts

As discussed in Subsection 4.4.1.1, the peak number of ~~construction workers~~on-site workforce is estimated to ~~reach 4300 in 2013~~be 5201. The projected ~~construction~~on-site workforce constitutes a relatively SMALL increase in population, with respect to the total population of the region. NP-17

The following subsection briefly identifies and describes the unavoidable adverse socioeconomic impacts that would occur as a result of constructing CPNPP Units 3 and 4:

- A SMALL potential for housing and rental space shortages.

returned to Lake Granbury is estimated to be 42,100 ac-ft/yr (depending on cooling tower cycles of concentration). The estimated annual consumptive water loss (water lost to cooling tower evaporation and drift) from Lake Granbury is estimated to be approximately 61,617 ac-ft/yr (Figure 2.3-30), which constitutes a relatively SMALL usage on existing water resources.

- Construction of a pipeline from Wheeler Branch would provide 50 gpm of potable water for use at CPNPP Units 3 and 4. An additional 250 gpm will be provided for de-mineralized water makeup and system flushing. ~~Fifty~~Three hundred gpm represents a relatively SMALL consumptive use of the local potable water supply. CTS-00460

- Blowdown water should meet Texas Pollution Discharge Elimination System (TPDES) permitted standards for discharge into the Lake Granbury and would constitute a relatively SMALL impact.

- Wastewater generation from the floor and equipment drains, stormwater, nonradioactive laboratory wastewater, auxiliary boiler blowdown, and sanitary wastes would meet TPDES permitted standards for wastewater effluents. The wastewater would also meet applicable regulatory Off-site Dose Calculation Manual (ODCM) limits for low level (LL) radioactive waste (radioactive drains, radioactive system leakage, radioactive laboratory drains, and radioactive wastewater) discharge into SCR. The environmental impact would be SMALL.

- Some TPDES permitted wastewater that would include wastewater from equipment drains is discharged into retention ponds. Small amounts of chemical constituents would evaporate into the air from these ponds. The environmental impact would be SMALL.

- ~~A thermal plume created from cooling water blowdown would be discharged to the Lake Granbury.~~Subsection 5.3.2.1 describes the thermal plume analysis and impacts from CPNPP. Summaries of the predicted thermal discharge plume analysis data are provided in Table 5.3-2. The impact would be SMALL because the discharge is unlikely to have any discernable effect on water quality or the aquatic biota. NP-17

- SMALL amounts of stormwater could drain into nearby water bodies. Routine/ maintenance activities at the site and along the pipeline and transmission corridors could result in the potential for SMALL episodic spills of petroleum or chemicals.

- Routine maintenance on the pipeline and transmission corridors could result in a SMALL adverse impact to aquatic and terrestrial species.

- Routine discharges to water in SCR and Lake Granbury could result in a SMALL adverse impact to aquatic biota.

- Water intakes and cooling towers are designed using best available technology (BAT) to minimizing impingement, which is a mitigating measure.

- A continued long-term disruption could occur of some herbaceous/grassland habitat, and disruption of some species near CPNPP Units 3 and 4. Some of this land may be

As described in Subsection 5.8.1.1, operation of the CPNPP Units 3 and 4 is projected to increase the worker population by ~~550~~494. This brings the total to ~~1550~~1494 operation workers, with 1000 workers for CPNPP Units 1 and 2. Because operations commence following construction there should actually be fewer stresses on socioeconomic factors such as housing, community services and infrastructures. Some short-term impacts are discussed below. NP-17

- A SMALL short-term school crowding issue.
- A SMALL additional increase in traffic congestion on local roads. The long-term effect is smaller than that which occurs during the construction phase.
- A relatively SMALL increase in ambient noise levels that may impact workers and nearby residents as a result of increased worker traffic, plant operations, and maintenance on the transmission corridor.
- Operation of vehicles, auxiliary boilers, and the testing and operation of the standby generators, fire pumps, and other equipment would generate relatively SMALL increased quantities of air emissions in the facility's air permit as issued by the Texas Commission on Environmental Quality (TCEQ).

The operational socioeconomic impacts can be at least partially offset through the use of selected mitigation measures. No impacts that are disproportionately high or adverse on minority or low income populations were identified in association with either the construction or operational phases of CPNPP Units 3 and 4.

10.1.3 SUMMARY OF UNAVOIDABLE ADVERSE CONSTRUCTION AND OPERATIONS IMPACTS

This subsection summarizes the unavoidable adverse construction and operations impacts, and describes methods for mitigating the impacts. Through the application of mitigation measures, some of the unavoidable adverse environmental impacts associated with the construction and operation of the CPNPP Units 3 and 4 may be decreased or reduced to the point where they have no measurable effect. The unavoidable impacts are summarized.

10.1.3.1 Construction Impacts

Construction impacts and mitigation measures are summarized in Table 10.1-1. All impacts, other than socioeconomic, from the construction of CPNPP Units 3 and 4, and clearing of the pipeline and transmission corridors are SMALL and relatively short-term in nature. These environmental impacts can either be partly mitigated or may dissipate after construction is complete.

10.1.3.1.1 Environmental

This subsection summarizes the environmental impacts that would result from construction of CPNPP Units 3 and 4.

Land Use

procedures, BMPs, and noise level standards imposed by the Occupational Safety and Health Act (OSHA).

Atmospheric and Meteorological

Negligible air emissions that do not require mitigation would be produced by vehicles and some equipment.

~~Radiological~~ NP-17

~~On-site construction workers would receive a very low incidental external radiation dose from CPNPP Units 1 and 2. After CPNPP Unit 3 becomes operational, CPNPP Unit 4 construction workers would receive an additional, albeit very SMALL incremental dose from this unit as well. Section 4.5 provides an assessment of the potential radiological exposure. Any such exposure is monitored and well within applicable regulatory limits. These impacts could be reduced through employee training and adherence to strict work procedures.~~

10.1.3.1.2 Socioeconomic

This subsection summarizes the socioeconomic impacts that would result from construction of the CPNPP Units 3 and 4. During construction, SMALL socioeconomic impacts might occur as a result of an influx of construction workers. Socioeconomic impacts can be at least partially offset through the use of selected mitigation measures. Most people probably consider socioeconomic impacts to be generally beneficial. Increased tax revenue generated from the proposed project could be used to fund schools, road improvements, and upgrades to the fire protection infrastructure.

As outlined in Subsection 4.4.2.1, the peak workforce ~~in 2013~~ is projected to involve ~~4300 construction~~5201 workers, a relatively small fraction of the total projected population of the region. In addition, the workforce for CPNPP Units 1 and 2 reached 10,000 and there were no significant socioeconomic impacts. Potential impacts are presented below. NP-17

Local roads in the vicinity of CPNPP would experience increased traffic. Mitigation measures that might be implemented to partially offset traffic impacts include encouraging car pooling, staggering shifts, advertising and erecting signs alerting drivers of increased construction traffic, and constructing turn lanes onto the CPNPP site.

Visual effects and noise from the four cooling towers and transmission corridor, would be limited to meet state nuisance rules and pose a SMALL aesthetic impact, which does not warrant any mitigation measures.

As with any large construction project, there is a relatively SMALL to MODERATE potential for an increase in serious accidents among construction workers. The risk would continue through the entire construction phase. The risk can be reduced by introducing a safety program, mandating safety meetings, and having a safety officer supervise construction activities.

Non-hazardous waste would be handled in accordance with TCEQ regulations (e.g. permitted landfills, incineration) and would pose a SMALL impact on the environment. Hazardous RCRA waste would be handled in accordance with RCRA regulations and disposed of at a RCRA permitted waste facility. The impacts of non-hazardous and hazardous waste are considered to be relatively SMALL.

The two proposed CPNPP units would generate small amounts of LL radioactive and potentially very small amounts of mixed waste (waste containing both hazardous and radioactive constituents) that would need to be disposed of. Mixed waste would be stored on-site and disposed of at permitted mixed-waste disposal facilities according to applicable regulations. If mixed waste is properly managed (as done for CPNPP Units 1 and 2), the additional incremental risk of this waste is considered to pose a SMALL risk. In addition, very limited quantities (less than 1 cu yard) of mixed waste has been generated at CPNPP from the operations of CPNPP Units 1 and 2.

CPNPP Units 3 and 4 would generate high-level (HL) spent fuel waste during plant operation. Generation of HL radioactive spent fuel would need to be either reprocessed or isolated. Properly managed, the additional incremental risk of this waste is considered to pose a MODERATE but acceptable risk.

10.1.3.2.2 Socioeconomic

This subsection summarizes the socioeconomic impacts that would result from operation of the CPNPP Units 3 and 4. Some impacts such as growth induced effects may continue beyond the operational life of the CPNPP Units 3 and 4. Because of the smaller number of workers that would be required for operations as opposed to construction, the socioeconomic impacts are generally less intense but are sustained over a longer period of time when compared to that of construction.

As described in Subsection 5.8.1.1, the number of CPNPP work staff is estimated to total ~~1550~~1494 operation workers, with 1000 workers for CPNPP Units 1 and 2, and ~~550~~494 workers for CPNPP Units 3 and 4, a relatively SMALL fraction of the total projected population of the region. | NP-17

When compared to the overall hydrocarbon emission released in the local area, the operation of equipment and employee vehicles would release a relatively SMALL quantity of nonradioactive pollutants to the atmosphere and can be reduced through strict compliance with applicable air pollution control equipment. Visual impact ~~adds on impact~~ from the plant are SMALL and do not warrant mitigation. | CTS-00505

Infrequent loud noises from plant operations and maintenance activities on the pipeline and transmission corridors might result in a SMALL change in ambient noise levels experienced by workers and local residents. Increased noise levels experienced by workers could be mitigated with noise protection equipment. Impacts on nearby residents can be reduced by staging loud intermittent activities during times when they would result in fewer disturbances.

An influx of operational workers would likely ~~not~~ have a SMALL short-term strain on the local school systems because construction workers and their families would relocate. The increase in | CTS-00505

TABLE 10.3-1 (Sheet 1 of 3)
RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF THE HUMAN ENVIRONMENT

	Issues	Short-Term Usage, Benefits, and Impacts	Relationship to Maintenance and Enhancement of Long-Term Environmental Productivity
Usage of Environmental Resources	Depletion of Uranium	As a reactor fuel, uranium provides a short-term supply of relatively clean energy.	The proposed project contributes to the long-term cumulative depletion of the finite global uranium supply.
	Conservation of Finite Fossil Fuel Supplies	During its operational life, CPNPP Units 3 and 4 would ~~avoid~~reduce the consumption of fossil fuels supplies.	Over the long-term, the proposed project would reduce the depletion of global fossil fuel supplies. NP-17
	Materials, Energy, and Water	In the construction and operation phases, energy, and materials would be consumed. Once operational, the proposed plants would generate far more energy than would be used in the construction and operation of the plants. A small amount of water is consumed during the construction and operation of the units.	Construction and operation of the CPNPP Units 3 and 4 would contribute to the cumulative long-term irretrievable use of materials, energy, and water. However, the reactors would provide far more energy than would be consumed in their construction.
	Land Use	The proposed project would result in the continued commitment of land use at the existing site. A small additional amount of land may also be required for the water pipeline and transmission line corridors. In the short term, the project could result in some potential loss in agricultural productivity, and/or natural habitats and woodlands in the transmission corridors. In general, the land required for a nuclear plant, on a Mw/ac basis, is equal to or less than land required for alternative technologies.	The proposed project does not represent a significant long-term land-use impact, as the land could be released for other uses or returned to its natural state after the reactors have been decommissioned.

10.4 BENEFIT-COST BALANCE

This section provides the benefit-cost balance of the proposed project for CPNPP Units 3 and 4. The benefits are analyzed in Subsection 10.4.1, and the costs are analyzed in Subsection 10.4.2. These analyses are supported by the information and data provided in Tables 10.4-1, 10.4-2, 10.4-3, and 10.4-4. Subsection 10.4.3 summarizes the overall benefit-cost balance.

10.4.1 BENEFITS

The benefits associated with construction and operation of the proposed project are described in this subsection and listed in Table 10.4-1. The beneficial impacts of avoided air pollutants are listed in Table 10.4-2. Additional information can be found in Chapter 9, which provides an analysis comparing the proposed project to existing projects that satisfy the electrical power needs including alternative technologies, sites, and plant and transmission systems. Section 9.1 discusses the consequences of a no-action alternative. Section 9.2 compares impacts from alternative energy sources. Section 9.3 discusses the site-selection process and compares the proposed project site, with three alternate sites.

10.4.1.1 Monetary Benefits of Construction and Operation of the Proposed Project

The following subsections consider the monetary benefits of constructing and operating CPNPP Units 3 and 4.

10.4.1.1.1 Tax Payments

Tax payments would be accrued on the proposed project over the duration of the 40-year operating license. Somervell County is the tax district that is expected to be most directly affected by the operation of the proposed project. Tax information for the region is discussed in Subsection 2.5.2.3. Taxes related to construction of the proposed project associated with the wages and salaries of the construction workers are described in Subsection 4.4.2.2.1. Subsection 5.8.2.2.1 discusses regional and annual taxes related to operation of the proposed project. Several tax revenue categories are affected by the construction and operation of the proposed project. These categories include income taxes on corporate profits, wages, and salaries; sales and use taxes on corporate and employee purchases; real property taxes related to the proposed project; and personal property taxes associated with employees.

The state of Texas has no property taxes. Property taxes are levied by counties, cities, school districts, and special districts (junior colleges, hospitals, road districts, and others). Regional taxes and the political structure within the CPNPP region are discussed in Subsection 2.5.2.3. Ad valorem taxes are expected to be paid on the proposed project. The taxed amounts are phased in through the years of construction, with the total market value assessed January 1 of the year the units are operational. The taxes on the proposed project are expected to be assessed at the same tax rates in effect on CPNPP Units 1 and 2 for each tax jurisdiction. Taxes for CPNPP Units 1 and 2 are paid to Somervell County, Somervell County Water District, and Glen Rose Independent School District (ISD), the City of Glen Rose, Hood County, Granbury ISD, Tolar ISD, and Hood County Library District. Luminant is required by Hood and Somervell counties to pay ad valorem taxes based on the existing units. Table 2.5-17 shows ad valorem taxes for CPNPP Units 1 and 2 for 2006. NP-17

During peak construction, there are an estimated ~~4300~~4953 construction workers and 248 operations workers on-site (Subsection 4.4.1.1). The CPNPP is expected to employ approximately ~~550~~494 operations workers for CPNPP Units 3 and 4 at the start of operations (Subsection 5.8.1.1). Several types of taxes are generated by operations activities and purchases, and by the workforce expenditures within the vicinity. Employees of the CPNPP pay federal personal income taxes on their wages and salaries. Although Texas residents do not pay a state personal income tax, the counties in the region receive benefits through the increase in the amount of sales and use taxes collected. Additional sales and use taxes are generated by retail expenditures of the operating plants as well as the operating workforce. NP-17

The increase in collected taxes is viewed as a benefit to the state and local jurisdictions in the region. It is anticipated that the impacts of construction on the ~~economy of the region~~economic region would be beneficial and SMALL. Conversely, the impacts of construction and plant operation for Somervell County and to a lesser extent Hood County are anticipated to be LARGE and beneficial. The impacts of operations on tax revenue in the economic region are expected to be ~~SMALL~~LARGE and beneficial (Sections 4.4 and 5.8). NP-17 NP-17

10.4.1.1.2 Local and State Economy

The in-migration of construction workers is likely to create indirect jobs in the area and increase the amount of money used to purchase goods and services. Subsection 4.4.2.2 discusses the economic benefits related to construction of the proposed project. As stated, every construction job at CPNPP is estimated to provide ~~0.46~~0.48 indirect jobs to the ~~economies of Somervell and Hood counties~~economic region. During peak construction, the proposed project is expected to employ ~~4300~~5201 total workers (Section 4.4). Only ~~50 percent of these workers~~70 percent of the construction workers and 50 percent of the operation workers are expected to migrate into the region. These ~~2150~~3467 construction workers should generate an estimated ~~989~~1664 additional indirect jobs while the 124 operation workers generate 136 indirect jobs within the 50-mi region. NP-17

Subsection 5.8.2.2 discusses the economic benefits related to operating the proposed project. Every operations job is expected to provide ~~1.24~~1.1 indirect jobs to the 50-mi region. Operations are expected to require approximately ~~550~~494 full-time workers plus an estimated 800 to 1200 temporary workers during outages. The ~~550 direct jobs~~123 in-migrating operations workers at the start of operations would result in an additional ~~682~~135 indirect jobs for a total of approximately ~~1232~~258 additional jobs related to operations in the region. Because most indirect jobs are service-related and not highly specialized, it is assumed that most, if not all, indirect jobs are filled by the existing workforce. NP-17

In ~~2007~~2006, there were ~~1121~~48,965 people unemployed in ~~Hood County and 220 people unemployed in Somervell County~~the economic region. Some or all of the indirect jobs created by the construction workforce are expected to be filled by unemployed workers in these counties. The money spent in the local area by these additional workers, their families, and the additionally employed persons in each county would add to the economy of the area. At this time, annual expenditures for operations and maintenance during operation of CPNPP are estimated to be $65,000,000 per unit. The majority of these expenditures would be spent in the region, with portions of these funds being spent outside the region. NP-17

Expenditures and benefits include the creation of jobs, employee purchasing, and increased tax revenues. The impacts from plant construction employees are considered a MODERATE ~~to LARGE~~ beneficial impact in the ~~vicinity and a SMALL beneficial impact in the region~~economic region. With the anticipated loss of construction workers, the impact from plant operation employees in the ~~vicinity~~economic region is considered a LARGE beneficial impact due to their influence on the local economy. ~~By comparison, because the number of operational workers is small compared to the large regional population, the impact to the regional economy is SMALL and also beneficial.~~Because the operations workforce creates indirect jobs in the economic region and the operations expenditures also benefit the economy, the impact of plant operations on the economic region is SMALL and also beneficial and no mitigation is required. NP-17

10.4.1.2 Non-Monetary Benefits

The following subsections consider the non-monetary benefits including technical benefits from construction and operation of CPNPP.

10.4.1.2.1 Net Electrical Generating Benefits

Chapter 8 describes the need for power. As discussed in Chapter 8, there is a growing baseload demand and growing baseload supply shortfall within the Electric Reliability Council of Texas (ERCOT) region. Luminant is the owner and operator of the proposed project. Each turbine generator at CPNPP has a rated and design net output of approximately 1625 MWe for each unit with a NSSS power rating of 446~~1~~6 MWt (Section 3.2). Assuming an average capacity factor of 93 percent, the plant average annual electrical-energy generation over a three-year average is approximately 25,500,000 MWh. These units provide a benefit to ERCOT and Luminant by meeting the growing industrial, commercial, and residential baseload needs and increasing the reliability of electrical service. CTS-00634

10.4.1.2.2 Fuel Diversity, Dampened Price Volatility, and Enhanced Reliability

Energy diversity is an element fundamental to the objective of achieving a reliable and affordable electric power supply system. Achieving a balanced mix of electric generation technologies is crucial to the objectives of lowering the risk of future fuel disruptions, price fluctuations, and adverse consequences that result from changes in regulatory practices (EEI 2006). Recent history indicates that it is particularly risky to develop an over-reliance on any one energy source.

Maintaining fuel diversity is a matter of maintaining a balance of fuel mixes. Relying heavily on gas is a matter of choosing a more limited resource over more abundant fuels. The high natural gas prices and intense, recurring periods of price volatility experienced in recent years have been driven, at least in part, by demand for natural gas used in the electric generation sector. The large number of gas-fired electric plants built in the United States during the last decade has bolstered electric sector demand for natural gas. Natural gas plants have accounted for more than 90 percent of all new electric generating capacity added over the past five years. Natural gas has many desirable characteristics and should be part of the fuel mix, but "over-reliance on any one fuel source leaves consumers vulnerable to price spikes and supply disruptions" (NEI 2005).

The intense volatility in natural gas prices experienced in recent years is likely to continue and leave the ERCOT Market vulnerable. Nuclear plants provide forward price stability that is not

available from generating plants fueled with natural gas. Although nuclear plants are capital-intensive to build, the operation costs are stable and dampen the volatility elsewhere in the electricity market (NEI 2005).

Natural gas is a finite energy source that has uses not readily served by other fuel choices, such as many manufacturing processes. This assessment led the U.S. House of Representatives to prepare a majority staff report that includes the following findings (USHR 2006):

- To enhance competitiveness and protect American jobs, natural gas must not be used for baseload electricity generation or for additional generating capacity. Natural gas should be reserved for industries that use it as a feedstock or for primary energy - and cannot substitute for it by fuel-switching.

- Nuclear energy must become the primary generator of baseload electricity, thereby relieving the pressure on natural gas prices and dramatically improving atmospheric emissions.

The CPNPP Units 3 and 4 benefits are focused mainly in the state of Texas and the ERCOT closed loop electrical system. The benefit to ERCOT would be a large baseload unit that would replace power generated by natural gas, which is currently the largest producer. Natural gas is generally a peaking unit (limited expansion capabilities) that is more expensive than a nuclear system (ERCOT 2006).

Operation of CPNPP advances the congressional goal of obtaining a diversified mix of electrical generating sources. The CPNPP also furthers the stated goal of creating new nuclear baseload generating capacity.

10.4.1.2.3 Effects on Regional Productivity

Construction of CPNPP Units 3 and 4 is anticipated to require a workforce of ~~4300~~4953 people (Section 4.4), which creates about ~~989~~1664 indirect jobs, for a total of ~~5289~~5131 additional permanent or temporary jobs within the 50-mi region. Temporary construction workers and their families increase rental and property demand, spending on goods and services, and sales taxes that most people consider to be a benefit to the local economy. Operation of the plant is anticipated to require approximately ~~550~~494 direct jobs (Section 5.8), with an additional ~~682~~272 indirect jobs for a total of ~~1232~~766 additional jobs in the region. NP-17 NP-17

10.4.1.2.4 Air Pollution and Emissions Avoidance

Natural gas and coal fired electrical generation plants produce air pollutant emissions (e.g., nitrogen oxides, sulfur dioxide). With respect to all industrial sources, power plants account for the following emissions in the United States:

- Sulfur dioxide, 64 percent.

- Nitrogen oxides, 26 percent.

- Carbon dioxide, 36 percent.

SCR as described in Subsections 1.1.2 and 2.2.1.1. Approximately 123 ac of the 7950-ac site are expected to be disturbed for construction of Units 3 and 4 while 152 ac are expected to be disturbed for the cooling towers and approximately ~~200~~400 ac could be disturbed for construction of the Blowdown Treatment Facility (BDTF). A majority of this area was previously affected by prior construction activities for CPNPP Units 1 and 2. A large portion of the area where the cooling towers for the proposed project are planned to be constructed consists of undisturbed woodland that is expected to require clearing. Additional land disturbances are anticipated due to construction of some of the support buildings and refurbishment of existing and permanent roadways. A detailed description of land-use impacts is provided in Section 4.1. CTS-00459

A temporary expansion of the existing water pipeline ROW is expected during pipeline construction as it runs from the CPNPP property boundary northeast to its terminus in Lake Granbury. This expanded ROW was evaluated for potential impacts during the Phase I assessment. There are two prehistoric archaeological sites, 41HD14 and 41HD15, within the off-site APE and neither of the sites are eligible for listing in the NRHP based on their listing criteria.

One additional transmission line corridor (possibly two) is required for the proposed project. Transmission corridors are discussed in Sections 2.2, 4.1, 5.1, and 9.4. Operation of transmission lines has minimal to no effects on land use. Transmission line easements restrict placement of permanent structures in the easement or plantings that may interfere with line maintenance. Otherwise, no restrictions are placed on land use.

While the impacts of the construction of the transmission line corridors are not known at this time, the overall effect of CPNPP Units 3 and 4 construction on land use in the vicinity of the site is expected to be SMALL based on minimal impacts to local transportation systems, pipelines, rivers, and recreational areas.

10.4.2.2.2 Hydrological and Water Use

Sections 4.2 and 5.2 discuss hydrologic alterations for construction and operations. As discussed in these subsections, there are some costs associated with providing water for various needs during construction and operation. Water for construction of CPNPP Units 3 and 4 would be obtained from the Somervell County Water District (SCWD) via a pipeline from Wheeler Branch Reservoir and supplemented by water needed. Such construction activities include concrete batch plant operation, initial fills and flushes, crafts demand, and fire protection (FP) test/fill. Potable water for domestic and sanitary needs would be supplied from SCWD. Construction activities for the proposed project's facilities are expected to require an estimated average and maximum water amount of approximately 300 gpm – 1000 gpm, respectively (Section 4.2). Water would be withdrawn from SCR for dust suppression and general cleanup. Construction potable water consumptive use is estimated at 50 gpm (Section 4.2). Construction plans do not call for dewatering activities that could affect groundwater aquifer flow and quality. Environmental impacts to surface and groundwater would be SMALL and are managed under the provisions of applicable state regulatory programs.

During plant operation, cooling water would be taken from Lake Granbury, an impoundment of the Brazos River. Some of this water would be lost to evaporation and represents a permanent consumptive loss. Water loss primarily as a result of~~consumption~~forced evaporation would result in a net consumption of approximately ~~56,592,000 gpd~~55,690,560 gpd for CPNPP Units 3 and 4 NP-17

during normal operation (~~Subsection 2.3.2.2.4~~Table 2.3-38). This volume should have a minimal effect on Lake Granbury as well as the Brazos River below Lake Granbury. An estimated 44 percent increase in future water consumption is expected in the Brazos River basin. Subsection 5.2.1.4 concludes that based on this minimal use and the majority of this water from surrounding users [DeCordova Bend electric power plant, Wolf Hollow electric power plant, Lake Granbury Surface Water and Treatment System (SWATS), and CPNPP Units 1 and 2] is returned in the form of effluent, water withdrawal is not expected to affect the available water for other water users nor for the natural aquatic ecological communities of the Brazos River basin. Relatively small levels of nonradioactive and radioactive effluents are expected to be introduced into the SCR, where all wastewaters are discharged. Water quality effects of chemical effluents discharged into Lake Granbury during CPNPP operations are discussed in Subsection 5.2.3.4 and are described as SMALL. Subsection 5.4.3 states that radioactive releases in liquid effluents meet the standards for concentrations of released radioactive materials in water as specified in 10 CFR Part 20. Cooling water blowdown that discharges into Lake Granbury results in a small thermal plume. Subsection 5.2.2.3.1 states that impacts of discharge temperature from CPNPP are SMALL. NP-17

10.4.2.2.3 Terrestrial and Aquatic Biology

Ecological effects related to plant construction and operations are discussed in Sections 4.3 and 5.3. Construction of a pipeline to move discharge water from CPNPP to Lake Granbury is anticipated. The selected pipeline location for this project is routing east of the reservoir dam around the southern extent of SCR to the project site. Some costs due to mortality of wildlife during construction are anticipated. These losses are not expected to be large enough to affect the long-term stability of wildlife populations.

As discussed in Section 3.4, intake water taken from Lake Granbury passes through passive submerged screens designed to minimize uptake of aquatic biota and debris. The screens are composed of 3/8-in mesh and are sized for a maximum through screen velocity of less than 0.5 fps. Subsection 5.3.1.2.1 states that impacts to aquatic species from intake operations are SMALL.

10.4.2.2.4 Air Emissions, Effluents, and Wastes

Relatively small amounts of air emissions from gas turbine generators, auxiliary boilers and equipment, and vehicles would be generated. Cooling tower drift deposits some salt on the surrounding vicinity, but the level is unlikely to result in any measurable impact on plants and vegetation. The cooling tower also produces an atmospheric vapor plume.

Small amounts of liquid effluents would be discharged into Lake Granbury. Blowdown goes into Lake Granbury and is the largest effluent of the project. Relatively small amounts of hazardous wastes that need to be managed and disposed pursuant to the Resource Conservation and Recovery Act (RCRA) would be generated. Section 3.6 and Subsection 2.3.3 discuss nonradioactive waste systems while Section 5.5 discusses plant waste.

10.4.2.2.5 ~~Radioactive Emissions, Effluents, and Wastes~~ NP-17

~~Operation of CPNPP would include minor radioactive air emissions into the atmosphere (Table 5.7-5). Relatively small levels of radioactive liquid effluents would be generated and discharged into SCR.~~

~~Low level (LL) radioactive wastes would be generated. These wastes must be stored, and fuel would be generated and must be isolated (or possibly reprocessed) in a repository. Section 3.5 discusses the radioactive waste management system.~~

10.4.2.2.6 Materials, Energy, and Uranium

Construction of the additional nuclear units would result in an irreversible and irretrievable commitment of materials and energy (Section 10.2). Operation of the reactors would contribute to the depletion of uranium.

10.4.2.2.7 ~~Potential for Nuclear Accident~~ NP-17

~~Operation of the CPNPP Units 3 and 4 would pose a very low likelihood of a nuclear accident; the effects of which could range from SMALL to LARGE. Section 7.1 discusses design basis accidents. The results of the CPNPP analysis contained in Table 7.1-12 demonstrates that all accident doses meet the site acceptance criteria of 10 CFR 50.34, "Contents of Applications; Technical Information." Severe accidents are discussed in Section 7.2. The environmental impacts from a postulated severe accident at the CPNPP site could be severe; however, due to the low likelihood of such an accident, the impacts are determined to be SMALL.~~

10.4.2.2.8 Socioeconomic Costs

Sections 4.4 and 5.8 discuss socioeconomic costs related to construction and operation of CPNPP. Additional public and social services might be required to meet the demands of people moving into the area during construction and operation of CPNPP. These costs should be largely offset by increased tax revenues and economic input from those individuals and their families.

10.4.3 SUMMARY

As discussed in Section 8.4, there is a growing baseload demand and growing baseload supply shortfall for the ERCOT region. Timing is important for providing additional power-generating sources. Delays in planning and preparation for meeting projected baseload supply shortfalls could result in widespread rolling blackouts or brownouts. Given the lead time necessary to license and build additional plants, delays can be especially critical. CPNPP helps meet this need by supplying an average annual electrical-energy generation of about 25,500,000 MWh.

The proposed project would generate electricity that results in a significant reduction in emissions, with respect to comparably-sized coal- or gas-fired alternatives. As discussed in this subsection, the proposed CPNPP Units 3 and 4 also have important strategic implications in terms of lessening dependence of the United States on foreign energy supplies and their potential interruption, as well as vulnerability to volatile price changes. While the additional direct and indirect creation of jobs places some temporary burden on local services and infrastructure,

TABLE 10.4-1 (Sheet 1 of 2)
MONETARY AND NON-MONETARY BENEFITS CONSTRUCTING AND OPERATING CPNPP UNITS 3 AND 4

Benefits Category	Project as Proposed		
~~Description of Project~~	~~CPNPP Units 3 and 4 as Proposed~~		NP-17
Taxes and Revenue			
Sales Tax	1% of gross receipts less compensation or the costs of goods sold.		
Property Taxes by Jurisdiction (Total Tax Rate-2002 in $/$100 valuation)	Hood County:	$0.3325	NP-17
	Granbury:	$0.4400	
	Lipan:	$0.3300	
	Tolar:	$0.4600	
	Acton MUD:	$0.1322	
	Granbury ISD:	$1.7300	
	Lipan ISD:	$1.7500	
	Tolar ISD:	$1.6700	
	Somervell County:	$0.3300	
	Glen Rose:	$0.4857	
	Somervell Co. Water Dist.	$0.0044	
	Glen Rose ISD:	$1.0753	
~~Net ad~~Ad valorem taxes paid by County (2006)	Hood County:	$42,695	NP-17
	Somerville County:	$24,361,909	
Effects on Regional Productivity			
Construction Workers	~~4300~~4953 people employed during peak construction.		NP-17
Operational Workers	~~550~~494 people employed during operation.		NP-17
Indirect Jobs Created	An incremental increase in indirect jobs added.		
Net Electrical Generating Benefits			
Generating Capacity	3250 MWe		
Electricity Capacity	25,500,000 MWh annually		

TABLE 10.4-1 (Sheet 2 of 2)
MONETARY AND NON-MONETARY BENEFITS CONSTRUCTING AND OPERATING CPNPP UNITS 3 AND 4

Benefits Category	Project as Proposed	
Fuel Diversity	Increases fuel mix diversity that reduces potential energy disruptions and other adverse consequences.	
Improvements to Local Facilities	Road repairs and improvements and bridge repairs and improvements in the vicinity of CPNPP.	
Air Emission Avoidance	Avoidance of 253 – 3933 tons per year (Tpy) sulfur dioxides; 2610 – 2676 Tpy nitrogen oxides; 1115 – 3625 Tpy carbon monoxide; 8.2 million – 35 million Tpy carbon dioxide; 142 – 18,886 Tpy fine particulates.	
Global Warming and Climate Change	Significant beneficial impact in terms of avoidance of greenhouse gases.	
Cultural Resources	Mitigative work adding to local historic and prehistoric knowledge base.	
Electric Reliability	Enhances electric reliability.	
Price Volatility	Dampens potential for price volatility.	
Hazardous Wastes	Compared with fossil-fueled plants, particularly coal-fired plants, nuclear plants produce significantly less nonradioactive hazardous effluents and waste products.	
Aesthetics	With the exception of a steam and vapor plume, nuclear plants do not produce negative air aesthetics that are associated with fossil-fueled plants.	
Socioeconomics	Increased tax revenue supports improvements to public infrastructure and social services. The increased revenue spurs future growth and development.	
~~Dependence on Foreign Energy~~	~~Reduces dependence on foreign energy and vulnerability to energy disruptions.~~	NP-17
~~Foreign Trade Deficit~~	~~Reduced.~~	NP-17
Fossil Fuel Supplies	Offsets usage.	

TABLE 10.4-2
AVOIDED AIR POLLUTANT EMISSIONS[a]

CTS-00506

Pollutant	Luminant Estimate of a 3180 MW Gas-Fired Plant[b] English Tons per Year (Tpy)	Luminant Estimate of a 3180 MW Coal-Fired Plant[b] English Tons per Year (Tpy)
SO_2	253	3933
NO_x	2676	2610
CO	1115	3625
CO_2	8,200,000	35,000,000
$PM_{2.5}$	142	18,886
PM_{10}	N/A	4344

a) ~~Assumes use of current standard air pollution mitigation technology.~~Air emissions were calculated using AP 42.

NP-17

b) Numbers based on information presented in Subsection 9.2.3.

TABLE 10.4-3 (Sheet 2 of 3)
INTERNAL AND EXTERNAL COSTS OF CPNPP UNITS 3 AND 4

Cost Category	Cost	
Terrestrial and Aquatic Biology	Some wildlife mortality during construction is anticipated; however, these costs are expected not to affect long-term wildlife populations. Building a water pipeline through SCR would have a MODERATE but short-lived impact. Wildlife mortality, including aquatic biota, during operation is expected to be minimal.	
~~Radioactive Effluents and Emissions~~	~~Radioactive waste and minor amounts of radioactive air emissions are generated. Relatively small levels of radioactive effluents are introduced SCR. Effects of these effluents on SCR are SMALL.~~	NP-17
Hazardous and Radioactive Waste	Management and disposal of small amounts of hazardous wastes pursuant the RCRA. Storage, packaging for shipment, and disposal of low-level (LL) radioactive waste and high-level radioactive spent nuclear fuel. Commitment of geological resources for disposal of radioactive spent fuel.	
Air Emissions	Air emissions from gas and diesel generators, auxiliary boilers and equipment, and vehicles that have a SMALL impact on workers and local residents. Cooling tower drift deposits some salt on the surrounding vicinity, but the level is unlikely to result in any measureable impact on plants and vegetation. Cooling tower produces atmospheric plume discharge. Impacts are SMALL.	
Materials, Energy, and Uranium	Irreversible and irretrievable commitments of materials and energy, including depletion of uranium.	
~~Potential Nuclear Accident~~	~~The costs of potential nuclear accidents would be large; however, the probability of such accidents is very small. Therefore, the overall probably weighted costs of potential nuclear accidents are SMALL.~~	NP-17

TABLE 10.4-4 (Sheet 1 of 4)
SUMMARY OF PRINCIPAL BENEFITS AND COSTS FOR CONSTRUCTING AND OPERATING CPNPP UNITS 3 AND 4

Attribute	Benefits	Costs	
Capital and Operating Costs	Provides a relatively clean and abundant form of baseload electricity that is relatively cost-competitive with fossil fuels.	Capital costs are estimated to range between $3600 – $4000 per kW for a combined two-unit construction cost of $11.3 – $12.5 billion. Operational, two-unit costs are estimated to range between $32 – $74 per MWh. Note: These cost estimates are based on industry studies.	
Taxes and Revenue	Luminant would pay 1% of gross receipts less compensation or the costs of goods sold.	N/A	
	Ad valorem taxes are paid on the new CPNPP units.	N/A	
	Increased property tax levied by impacted jurisdictions.	Increased services to in-migrants for housing, education, and public safety.	
Regional Productivity	Provides an influx of ~~4300~~4953 construction workers and ~~550~~494 operational workers.	N/A	NP-17
	Adds ~~1671~~1936 indirect jobs to the 50-mi region (~~989~~1801 during construction and ~~521~~135 during operations).	N/A	NP-17 NP-17
Net Electrical Generation	Provides a combined electrical generation of 25,500,000 MWh annually.	N/A	
Fuel Diversity	Increases fuel mix diversity that reduces potential energy disruptions and other adverse consequences.	N/A	
Electrical Reliability	Enhances electrical reliability.	N/A	

TABLE 10.4-4 (Sheet 2 of 4)
SUMMARY OF PRINCIPAL BENEFITS AND COSTS FOR CONSTRUCTING AND OPERATING CPNPP UNITS 3 AND 4

Attribute	Benefits	Costs	
Price Volatility	Dampens potential for price volatility.	N/A	
Air Pollution	Provides major beneficial impact in terms of avoidance of fossil-fueled power plant air emissions.	Generates some minor amounts of air emissions during construction and some minor levels of radioactive air emissions during operations.	
Aesthetics	Does not contribute to smog that significantly obscures the viewscape when compared to fossil-fueled plants.	Produces a relatively small steam and vapor plume that can obscure the viewscape.	
Global Warming and Climate Change	Offers significant beneficial impact in terms of avoidance of greenhouse gases that may contribute to the greenhouse effect.	N/A	
Dependence on Foreign Energy	Reduces dependence on foreign energy and vulnerability to energy disruptions.	N/A	
~~Foreign Trade Deficit~~	~~Reduces foreign trade deficit.~~	N/A	NP-17
Fossil Fuel Supplies	Offsets usage of finite fossil fuel supplies.	Consumes finite supplies of uranium.	
Land and Land Use	Consumes less land than a comparably gas-fired plant and a comparable coal-fired plant.	The CPNPP Units 3 and 4 construction alters approximately 123 ac, 7950 ac existing CPNPP site and approximately ~~384~~400 ac are expected to be altered for the BDTF. 152 ac are altered for the cooling towers. No explanation of existing transmission corridor is expected.	CTS-00459

TABLE 10.4-4 (Sheet 3 of 4)
SUMMARY OF PRINCIPAL BENEFITS AND COSTS FOR CONSTRUCTING AND OPERATING CPNPP UNITS 3 AND 4

Attribute	Benefits	Costs
Hydrological and Water Use	Produces a cleaner form of energy than either coal- or gas-fired plants. Consumes about the same amount of water as a coal- or gas-fired plant, but results in much lower effluent discharges.	Consumes some water. Produces a thermal plume and small amounts of radioactive waste are discharged.
Terrestrial and Aquatic Species	Produces a relatively cleaner form of energy with about the same level of impacts on terrestrial and aquatic species as is expected from either a comparable coal- or gas-fired plant.	Some cost to wildlife due to mortality as a result of construction and operation of Units 3 and 4.
Hazardous and Radioactive Waste	Produces much less hazardous waste than do fossil-fueled plants, particularly coal-fired plants.	Generates relatively small quantities of hazardous and LL radioactive waste that require storage, packaging for shipment, and disposal. Requires storage and disposal of high-level radioactive spent nuclear fuel. Commitment of geological resources for disposal of radioactive spent fuel.
Materials, Energy, and Uranium	Reduces the amount of finite fossil fuels used if a comparable coal- or gas-fired plant were built instead.	Irreversible and irretrievable commitments of materials and energy, including depletion of uranium.
~~Potential Nuclear Accident~~	~~N/A~~	~~Introduces the potential for a nuclear accident.~~

NP-17