



# DRAFT TECHNICAL MEMORANDUM

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## Region C Water Planning Group 2016 Regional Water Planning Cycle Non-Municipal Demand Projections, Steam Electric Power

**Project No.:** 0312-046-01

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The *2016 Region C Water Plan* (hereafter referred to as the 2016 Plan) will incorporate projections for municipal demands, as well as non-municipal demands for irrigation, livestock, manufacturing, mining, and steam-electric power (SEP). The Texas Water Development Board (TWDB) provided the planning groups with draft non-municipal demand projections. The draft non-municipal demand projections will be reviewed by the individual planning groups, and recommendations will be provided to the TWDB. The TWDB will consider the recommended changes from the planning groups, and the final projections will ultimately be adopted by the planning groups and the TWDB and incorporated into the 2017 State Water Plan. The purpose of this technical memorandum is to document information related to historical SEP usage and provide information supporting recommended modifications to the draft SEP demands.

### BACKGROUND

SEP water use is defined by the TWDB as water used in the production process of SEP, including water used by employees for drinking and sanitation purposes. In 2008, the TWDB, in conjunction with the Bureau of Economic Geology, developed "Water Demand Projections for Power Generation in Texas" (hereafter referred to as the BEG Report). The BEG Report states that future water demand in Texas for the electric generation sector depends on: the rate of economic growth and resultant future demand for electric power; the future types of generation capacity (natural gas combined cycle, pulverized coal, advanced coal, nuclear etc.); whether or not a price is put on carbon dioxide emissions (for mitigation of global warming) such that some power plants have incentive to employ carbon capture and storage technologies; and the extent and success of future efficiency programs.

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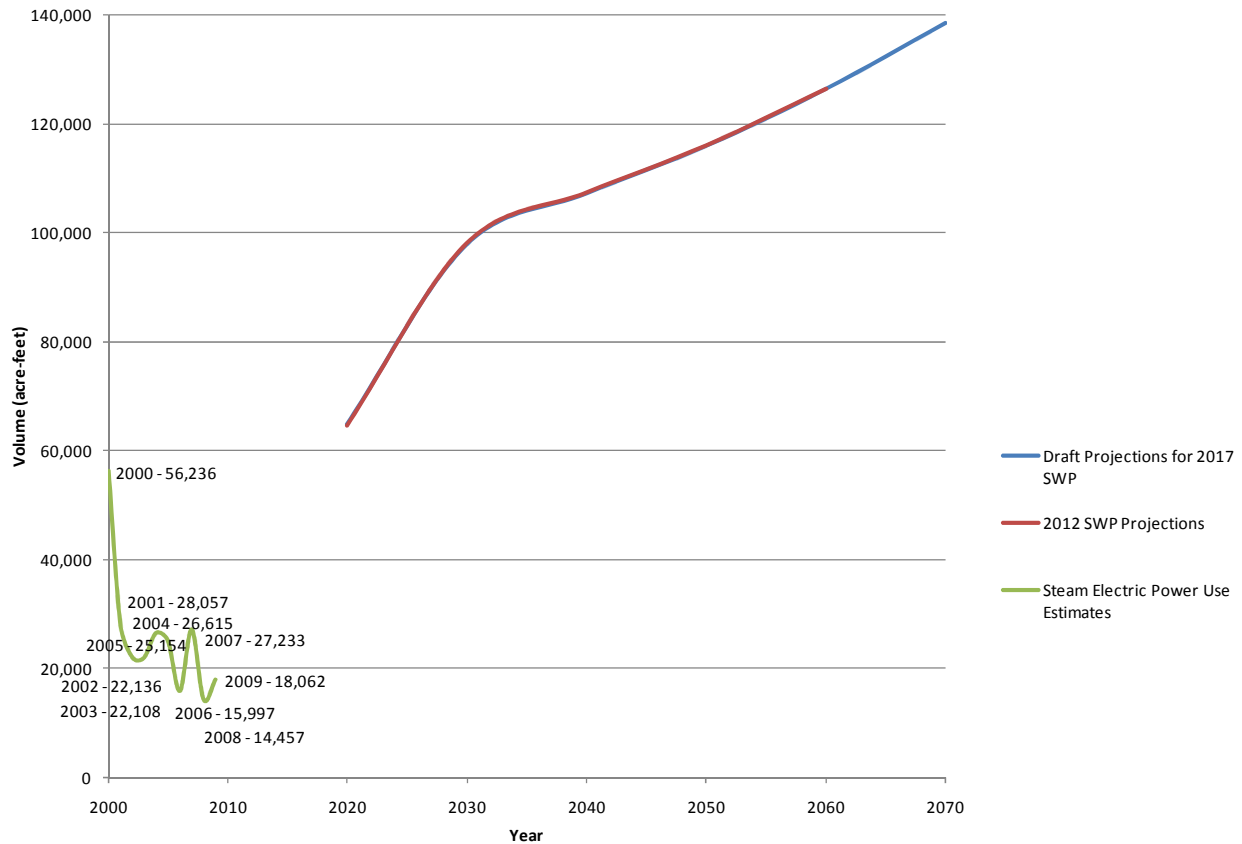
The TWDB solicited an opinion from each planning group regarding SEP projections for the 2007-2012 planning cycle. The TWDB requested that the Region C Water Planning Group (RCWPG) determine whether to adopt the 2006 Plan projections or the projections provided as part of the BEG Report for the 2011 Plan's SEP projections. In response to the request from the TWDB memorandum, an analysis of available projections and data was initiated by the RCWPG. After reviewing the background usage data in RCWPG from previous TWDB reports and the BEG Report, data from the TCEQ, TWDB, and several direct reuse providers was requested. Using this information, the RCWPG determined which projection best matched both the near term demands (through 2020) and long term demands (through 2060) for each county. A decision was made to proceed with one of the following methodologies:

- Preferred option: If the near term and long term projections for either the BEG or the 2006 Plan are consistent with regional estimates, choose the most appropriate projection for a county through the duration of the planning period (2010-2060).
- Hybrid option: If the near term projection for either the BEG Report or 2006 Plan is reasonable, but the long term projection is not, choose the 2010 projection that is most reasonable and modify the most appropriate projection pattern by adding or subtracting the difference from the regional estimates for each decade.

A complete copy of the 2009 RCWPG memo documenting the SEP projections is included in Attachment A. The projections recommended in the 2009 memo were ultimately adopted in the 2012 State Water Plan. Accordingly, the methodology described above is the basis for modifications to the projections recommended in this memorandum.

The TWDB also publishes historical SEP water use estimates. Since the year 2000, the region-wide SEP water use estimates have ranged from 14,457 to 56,236 acre-feet (see Figure 1 for usage information by year). At the time this memo was written, historical data estimates are available through the year 2009. It should be noted that the TWDB historical SEP water use estimates shown in Figure 1 do not appear to include water provided by reuse programs. In the RCWPG, there are at least three facilities that have received reuse water – the Spencer Facility in Denton County, the Florida Power & Light Energy Company Facility in Kaufman County, and the Tractebel Facility in Ellis County. Additionally, there are some differences in usage values between the TCEQ historical consumption data and the TWDB estimates. These discrepancies are addressed in the 2012 State Water Plan (SWP) projections and are documented in Attachment A.

Figure 1. Region C SEP – Comparison of Water Use Estimates and Projections



Source: Texas Water Development Board

One or more of the following criteria must be verified by the Planning Group and the Executive Administrator for consideration of revising the SEP water use projections:

- A SEP facility which has recently located in a county and may not have been included in the Board's database. Documentation and analysis must be provided that justify that the new SEP facility will increase the future SEP water use for the county above the SEP water use projections.
- A SEP facility has recently closed its operation in a county.
- Plans for the construction of a SEP facility in a county at some future date.

The Planning Group must provide the Executive Administrator the following data associated with the identified criteria for justifying any adjustments to the SEP water demand projections:

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- The quantity of water used on an annual basis by a SEP facility that has recently located in a county and was not included in the Board's database.
- The North American Industrial Classification (NAIC) of the SEP facility that has recently located in a county. The NAIC is the numerical code for identifying the classification of establishments by type of activity in which they are engaged as defined by the U.S. Office of Management and Budget and is a successor of the Standard Industrial Classification (SIC).
- Documentation of plans for a SEP facility to locate in a county at some future date will include the following data:
  - Confirmation of land purchased for the facility or lease arrangements for the facility.
  - The quantity of water required by the planned facility on an annual basis.
  - The proposed construction schedule for the facility including the date the facility will become operational.
  - The NAIC for the planned facility.

#### **PROPOSED SEP WATER USE**

A comparison of the draft projections for the 2017 SWP (provided by TWDB), the final 2012 SWP projections, and the proposed RCWPG revisions to the 2017 SWP projections is presented in Table 1 and Figure 2. The majority of the proposed RCWPG county-level projections are identical to the projections from the 2012 SWP. Deviations from the 2012 SWP are explained below:

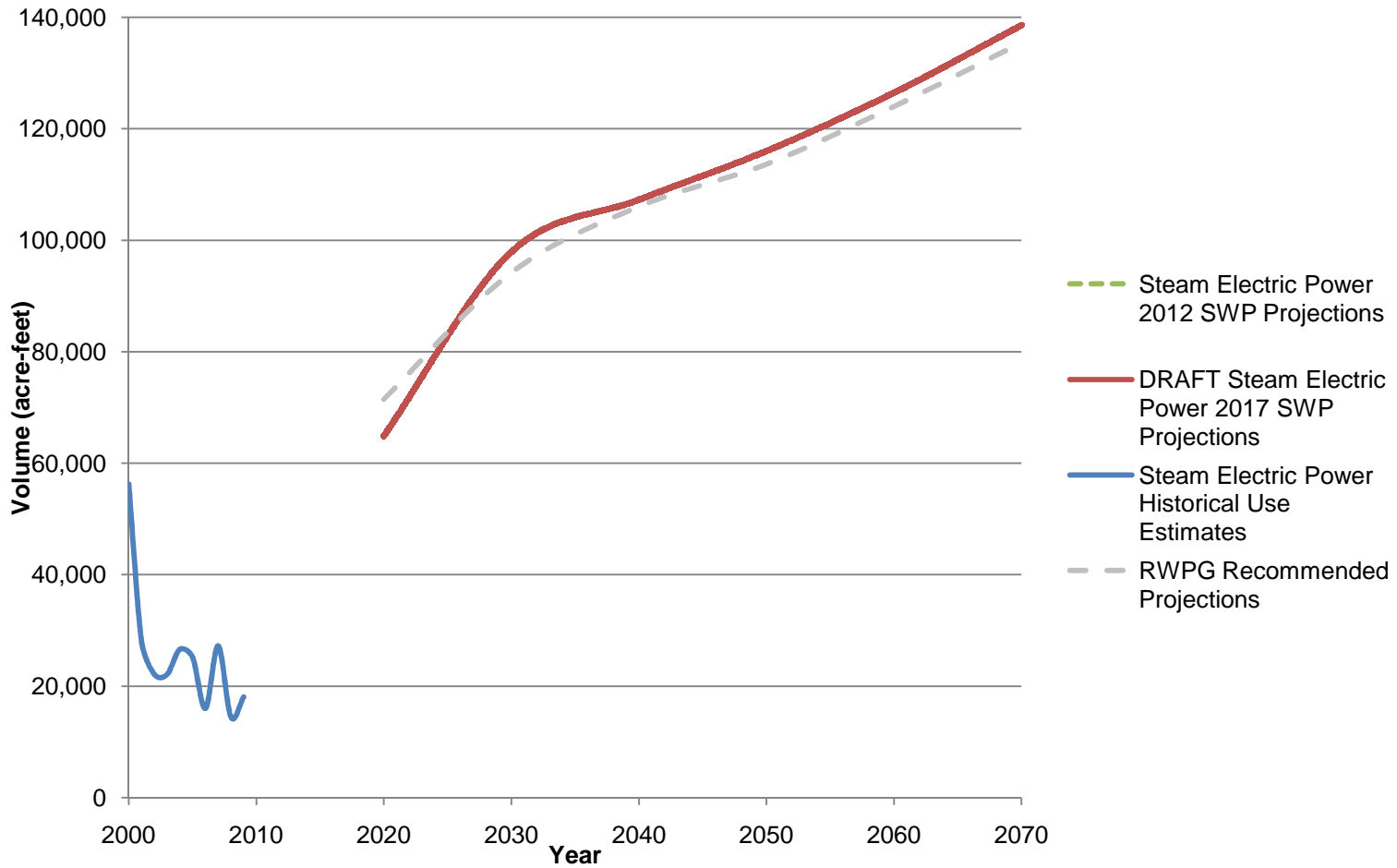
- Collin County – Since the 2011 planning cycle, the Collin Plant has been demolished. Additionally, Collin County is in a non-attainment county so future growth is unlikely. Therefore, the 2008 BEG Report projections now more accurately reflect the conditions in Collin County and are recommended as a proposed revision to the 2017 SWP draft projections, beyond the year 2020.
- Dallas County – Since the 2011 planning cycle, the Parkdale Plant has been demolished (this plant was previously mothballed and not included in near term projections). Additionally, recent usage data from the TWDB indicates consumption in 2007 was approximately 5,000 acre-feet/year. Therefore, it is recommended that the projections from the 2012 SWP be adopted, with the exception of the years 2020 and 2030. In these years, the projections should be adjusted to 5,000 acre-feet/year to more accurately reflect existing conditions (projections will be slightly raised in 2020 and lowered in 2030).
- Freestone County - Recent usage data from the TCEQ water rights database indicates that consumption in 2006 was approximately 25,000 acre-feet/year. Therefore, it is recommended that the draft 2017 SWP projections be adopted, with the exception of the years 2020 - 2040. In these

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**Table 1. Comparison of SEP Demand Projections**

County Name	Draft Projections for 2017 SWP						2012 SWP Projections					RWPG Revisions					
	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2020	2030	2040	2050	2060	2070
Collin	715	1,000	1,200	1,600	2,000	2,638	715	1,000	1,200	1,600	2,000	715	602	740	594	782	724
Cooke	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dallas	3,956	10,991	11,066	11,066	11,066	11,066	4,290	11,918	12,000	12,000	12,000	5,000	5,000	11,066	11,066	11,066	11,066
Denton	646	733	819	906	993	1,088	744	844	944	1,044	1,144	646	733	819	906	993	1,088
Ellis	698	1,450	3,741	5,754	7,878	10,786	698	1,450	3,741	5,754	7,878	698	1,450	3,741	5,754	7,878	10,786
Fannin	6,363	11,474	11,910	12,443	13,092	13,775	6,363	11,474	11,910	12,443	13,092	6,363	11,474	11,910	12,443	13,092	13,775
Freestone	18,518	20,871	24,405	28,712	33,963	40,175	18,210	20,524	23,999	28,234	33,398	25,000	25,000	25,000	28,712	33,963	40,175
Grayson	9,243	12,711	12,711	12,711	12,711	12,711	8,963	12,326	12,326	12,326	12,326	6,163	12,711	12,711	12,711	12,711	12,711
Henderson	427	7,000	8,000	9,000	10,000	11,000	427	7,000	8,000	9,000	10,000	4,000	7,000	8,000	9,000	10,000	11,000
Jack	2,665	2,879	3,092	3,305	3,518	3,745	2,500	2,700	2,900	3,100	3,300	2,665	2,879	3,092	3,305	3,518	3,745
Kaufman	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	8,000	8,000	8,000	8,000	8,000	8,000
Navarro	8,000	13,440	13,440	13,440	13,440	13,440	8,000	13,440	13,440	13,440	13,440	8,000	13,440	13,440	13,440	13,440	13,440
Parker	22	28	56	75	102	139	22	28	56	75	102	260	260	260	260	260	260
Rockwall	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tarrant	2,448	4,168	5,000	5,000	5,000	5,000	2,448	4,168	5,000	5,000	5,000	2,448	4,168	5,000	5,000	5,000	5,000
Wise	1,245	1,216	1,878	2,042	2,748	3,061	1,245	1,216	1,878	2,042	2,748	1,494	1,459	2,254	2,450	3,298	3,673
<b>Total</b>	<b>64,946</b>	<b>97,961</b>	<b>107,318</b>	<b>116,054</b>	<b>126,511</b>	<b>138,624</b>	<b>64,625</b>	<b>98,088</b>	<b>107,394</b>	<b>116,058</b>	<b>126,428</b>	<b>71,452</b>	<b>94,176</b>	<b>106,032</b>	<b>113,641</b>	<b>124,000</b>	<b>135,443</b>
Indicates no changes are proposed from the draft projections for the 2017 SWP.																	

**Figure 2. Region C Steam Electric Power – Comparison of Water Use Estimates, 2012 State Water Plan Projection, Proposed Projections, and Revised Projections**



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years, the projections should be raised to 25,000 acre-feet/year to more accurately reflect existing conditions.

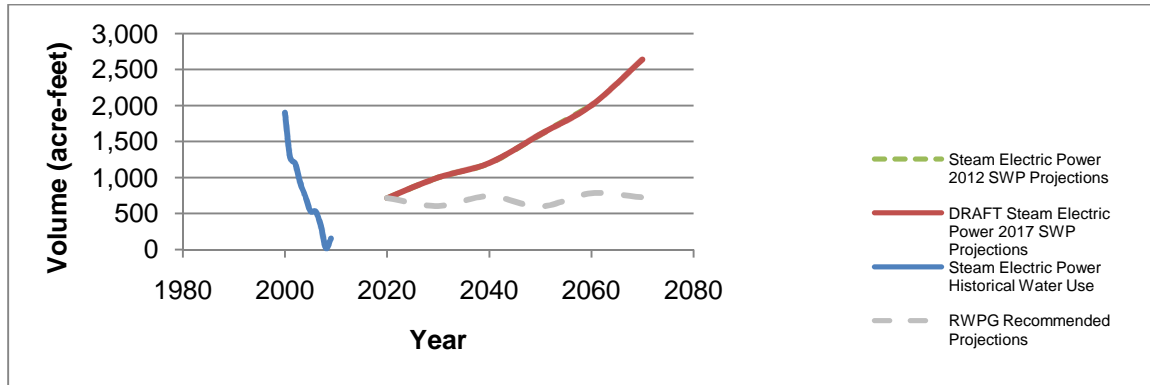
- Grayson County – the 2012 SWP projections included the construction of a new Panda Energy Plant. The construction of this plant has since been delayed. Therefore, it is recommended that the projections from the 2012 SWP be adopted, with the exception of the year 2020. In the year 2020, it is recommended that the demand from the proposed Panda Energy Plant be reduced by 50%.
- Henderson County - Recent usage data from the TCEQ water rights database indicates that consumption in 2006 was approximately 4,000 acre-feet/year. Therefore, it is recommended that the draft 2017 SWP projections be adopted, with the exception of the year 2020. In 2020, the projections should be raised to 4,000 acre-feet/year to more accurately reflect existing conditions.
- Kaufman County – Recent usage data from the reuse provider for the SEP plant in this county indicates that consumption in 2006 was approximately 8,000 acre-feet/year. Therefore, it is recommended that the projections should be lowered to 8,000 acre-feet/year to more accurately reflect existing conditions. Since Kaufman County is designated as a non-attainment county, it is unlikely that new plants will be constructed.
- Parker County - Recent usage data from the TWDB indicates that consumption in 2009 was approximately 260 acre-feet/year. Therefore, it is recommended that the projections should be raised to 260 acre-feet/year throughout the planning period to more accurately reflect existing conditions.
- Wise County – The Bridgeport Gas Processing Plant is planning a 20% expansion of the facility. Therefore, it is recommended that the 2012 SWP projections be increased by 20% to reflect the proposed facility expansion.

**Attachment A**  
**Region C Water Planning Group**  
**2009 Steam Electric Power Demand Projections Memo**  
**(To be included in the final version of memo)**

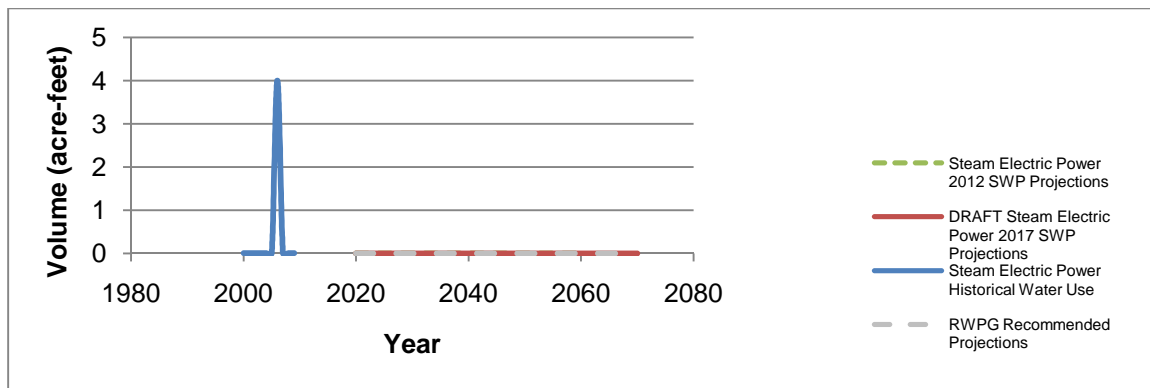


**Attachment B**  
**Steam Electric Power Demand by County**  
**Historical Usage and Projections Comparison**

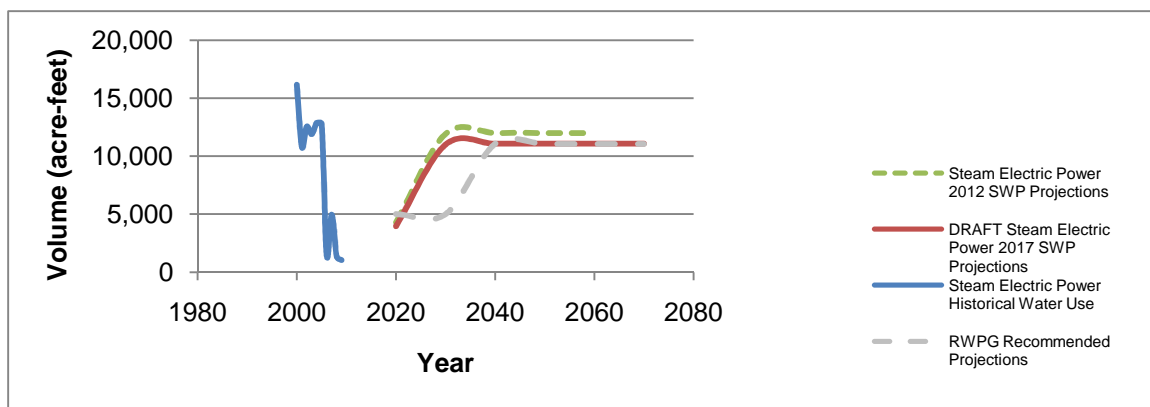
**Figure 1. Collin County Steam Electric Power Comparison**



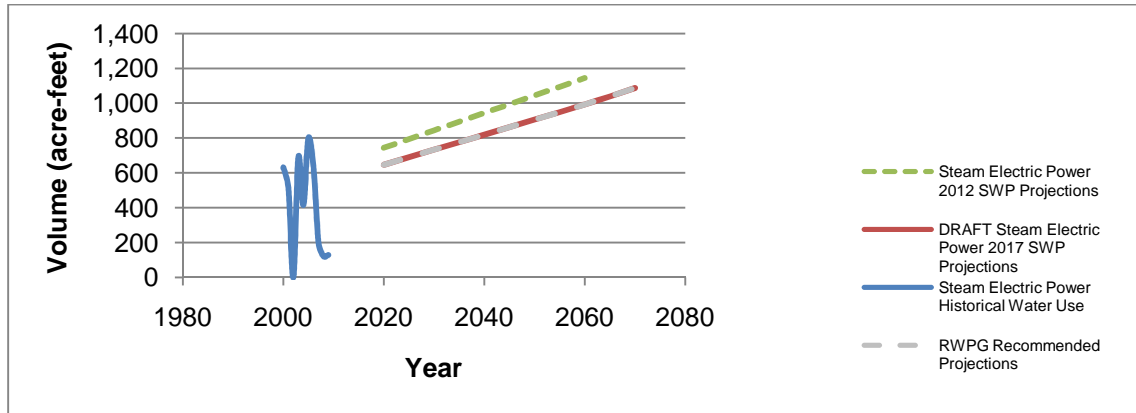
**Figure 2. Cooke County Steam Electric Power Comparison**



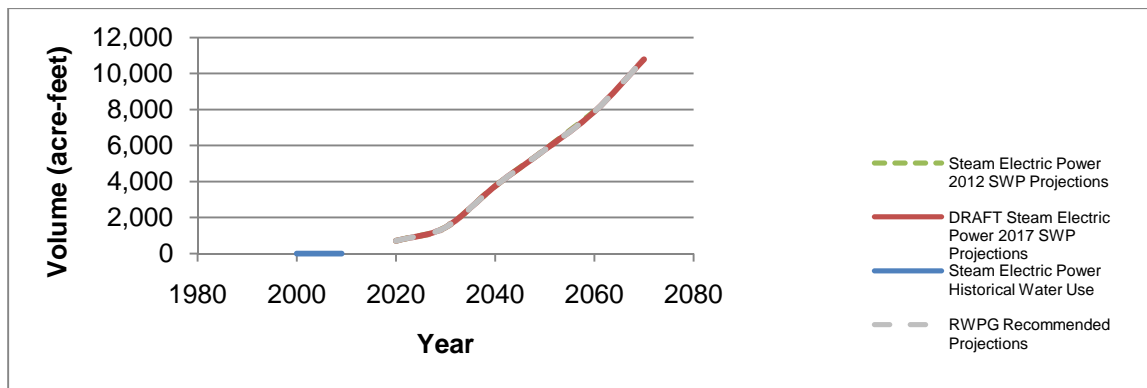
**Figure 3. Dallas County Steam Electric Power Comparison**



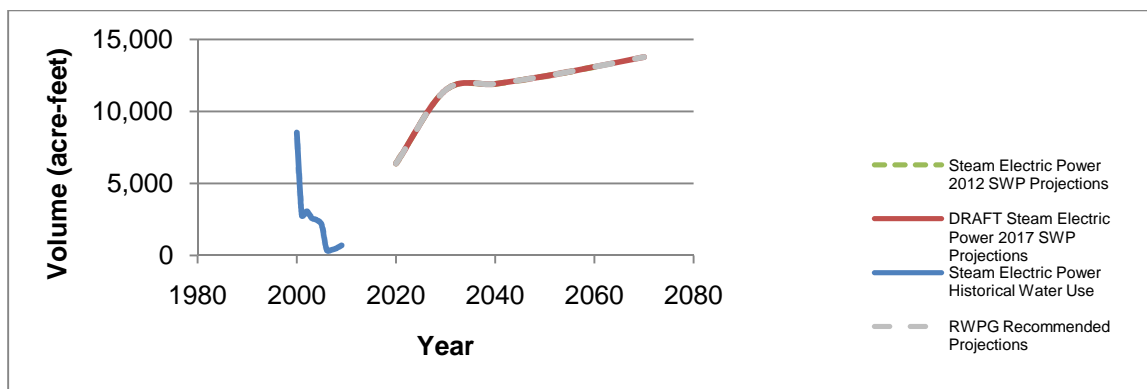
**Figure 4. Denton County Steam Electric Power Comparison**



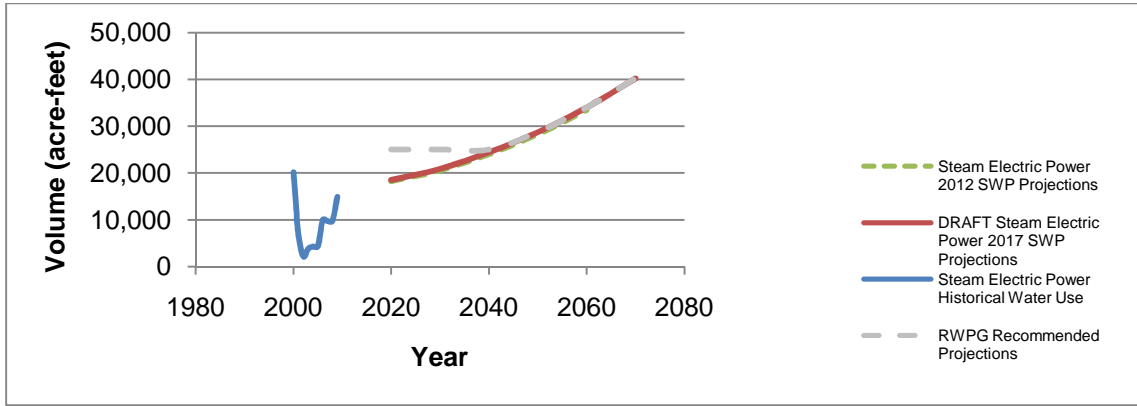
**Figure 5. Ellis County Steam Electric Power Comparison**



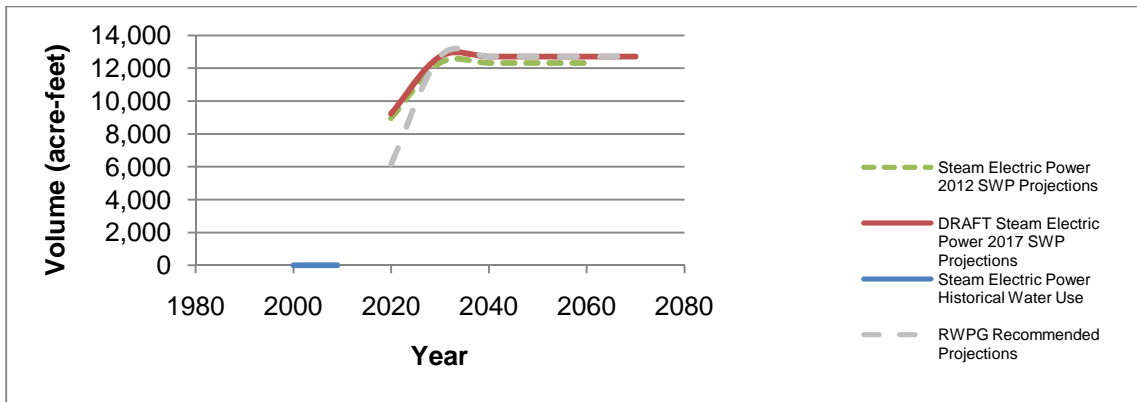
**Figure 6. Fannin County Steam Electric Power Comparison**



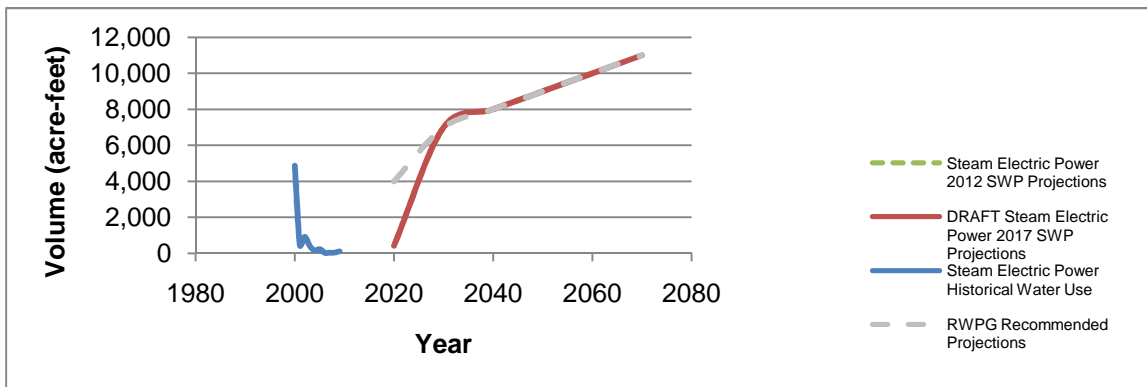
**Figure 7. Freestone County Steam Electric Power Comparison**



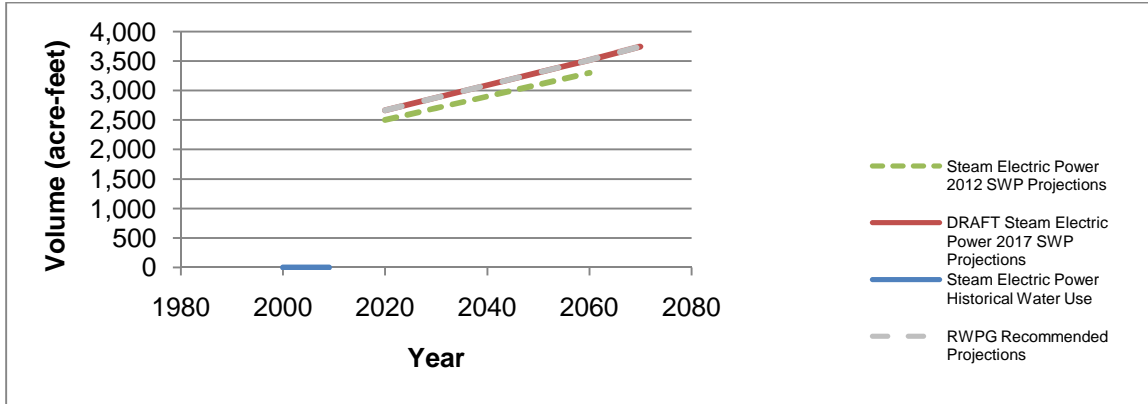
**Figure 8. Grayson County Steam Electric Power Comparison**



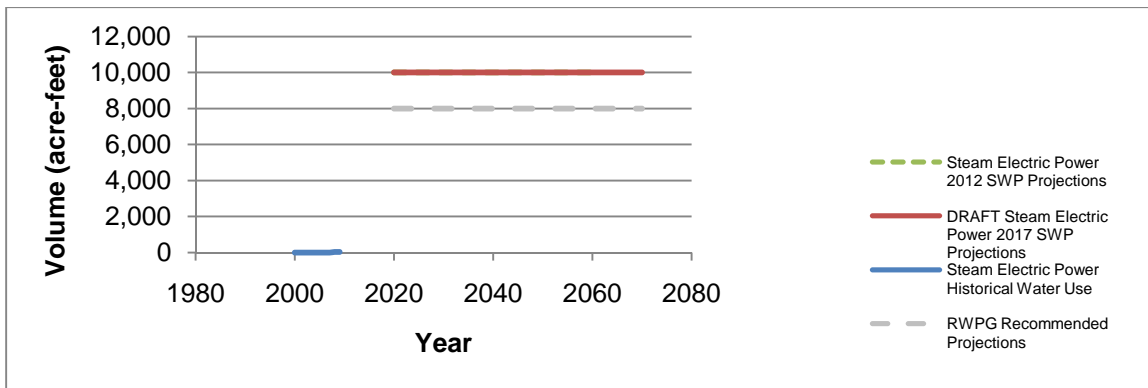
**Figure 9. Henderson County Steam Electric Power Comparison**



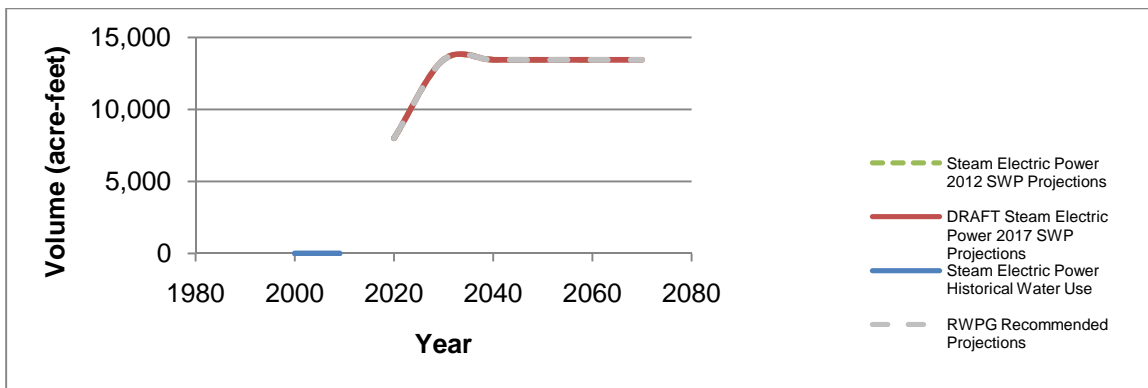
**Figure 10. Jack County Steam Electric Power Comparison**



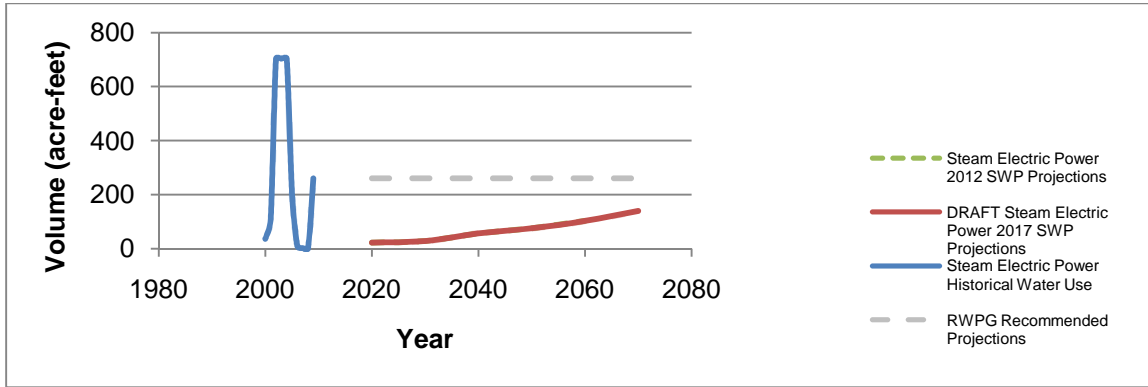
**Figure 11. Kaufman County Steam Electric Power Comparison**



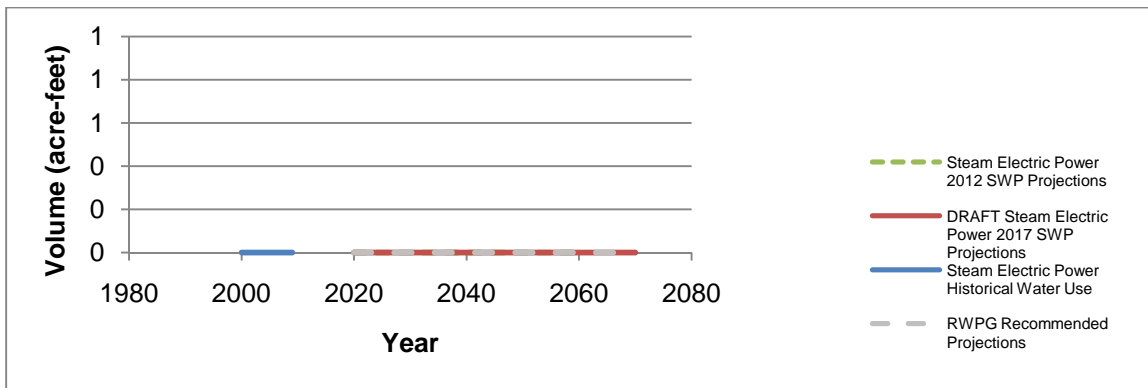
**Figure 12. Navarro County Steam Electric Power Comparison**



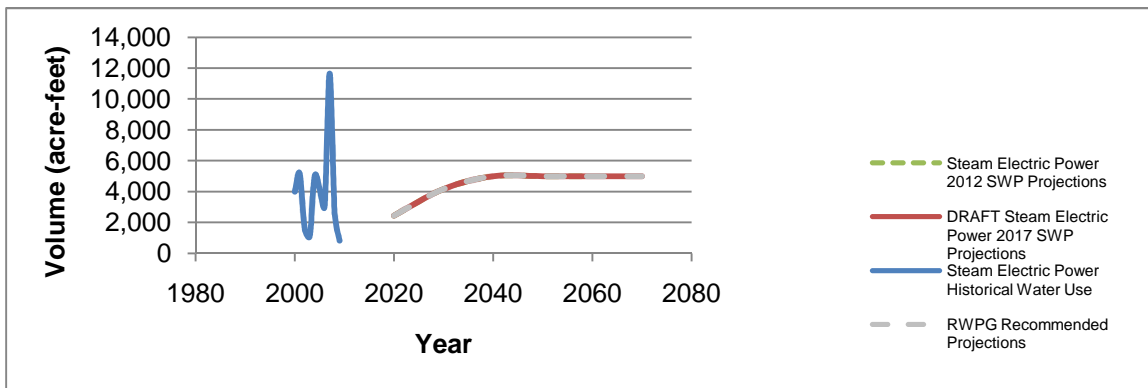
**Figure 13. Parker County Steam Electric Power Comparison**



**Figure 14. Rockwall County Steam Electric Power Comparison**



**Figure 15. Tarrant County Steam Electric Power Comparison**



**Figure 16. Wise County Steam Electric Power Comparison**

