

1 EXECUTIVE SUMMARY

This report will provide the City of Rocky Mount ("Rocky Mount" or "City") with a comprehensive Long-Range Plan ("Plan") for its electric utility system expansion necessary to maintain quality service for projected load levels through the year 2034. This Plan is intended to provide management with a guide for the orderly development of the transmission and distribution system, which will provide long-range service life, minimize system losses, maintain adequate service reliability, and provide flexibility to adapt to moderate changes in system growth patterns. The Long-Range Plan document contains a recommended plan and where applicable, discusses alternatives. These are discussed in detail throughout this plan document.

A. System Load Projections

System non-coincident peak load projections were prepared for Rocky Mount using historical load data, the current Power Supply Projections, as provided by the North Carolina Eastern Municipal Power Association ("NCEMPA"), and trending analysis. The system peak demand projections were developed for the total system, each substation, and each feeder. Low, medium and high projected growth rates were evaluated. The Long-Range Plan projected the system medium load growth, or the most likely growth rate, at approximately 1% per year for the 20-year period of 2015-2034. For the high growth rate evaluation, some additional load was included based on best case land development, as perceived by the City. This adds additional stress to the system to assure that recommended improvements are consistent with the Long-Range Plan and will have a low likelihood of early obsolescence.

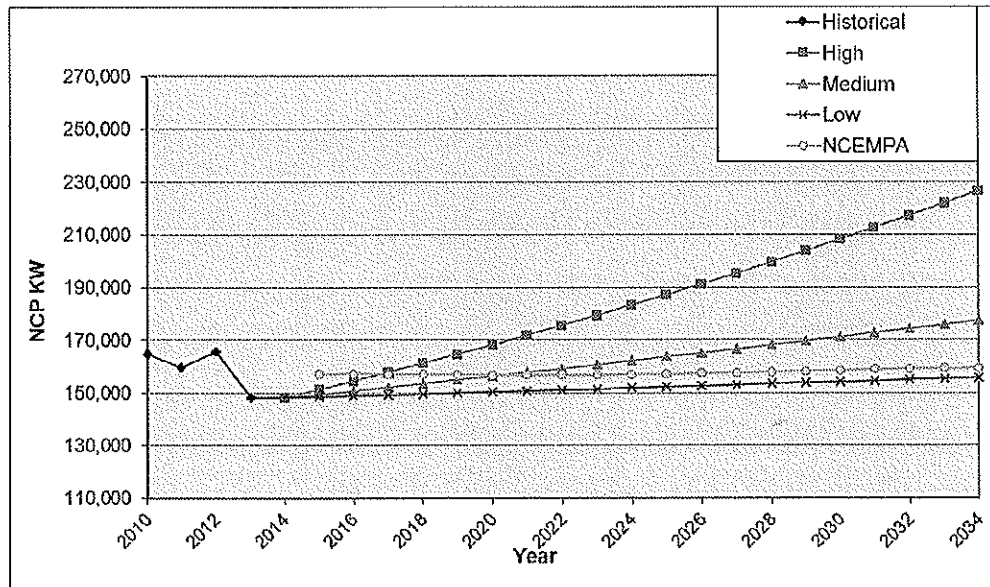
The present system non-coincident peak ("NCP") load in 2014 was 148 MW, and the projected long-range system NCP load using the medium growth rate is 178 MW. This will add roughly 20% to the existing system which returns the City's load back to levels achieved in 2006. Table 1-1, "20 Year Projected System Growth", illustrates the projected annual system peak loads from 2015 through 2034 using the medium growth rate. Figure 1 and Figure 2 reflect the projected demand and energy forecasts, respectively, over the same study period for the low, medium and high growth projections.

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Table 1-1
20-Year Projected System Growth
(Medium Growth Rate)

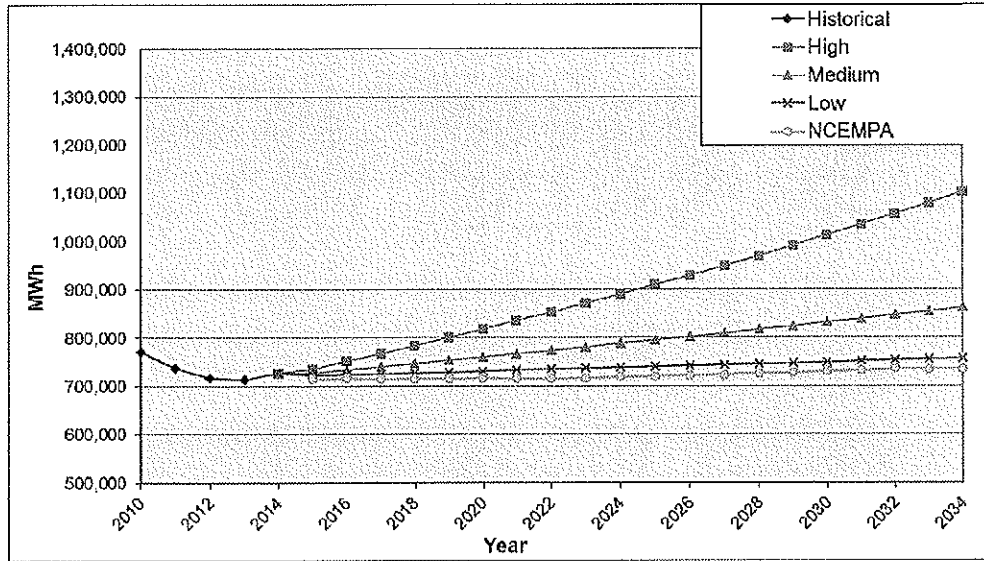
	Year	Non-Coincident Demand Annual Growth (kW)	Energy Purchased Annual Growth (kWh)
ACTUAL	2010	164,544	771,774,581
	2011	159,857	737,341,660
	2012	165,734	717,266,729
	2013	148,214	713,380,816
	2014	148,100	728,045,986
PROJECTED	2015	149,448	726,995,045
	2016	150,808	733,610,700
	2017	152,180	740,286,557
	2018	153,565	747,023,165
	2019	154,962	753,821,076
	2020	156,372	760,680,848
	2021	157,795	767,603,043
	2022	159,231	774,588,231
	2023	160,680	781,636,984
	2024	162,143	788,749,880
	2025	163,618	795,927,504
	2026	165,107	803,170,445
	2027	166,609	810,479,296
	2028	168,126	817,854,657
	2029	169,656	825,297,135
	2030	171,199	832,807,339
	2031	172,757	840,385,885
	2032	174,329	848,033,397
	2033	175,916	855,750,501
	2034	177,517	863,537,830

Figure 1: 20-Year Projected System Peak (kW)



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Figure 2: 20-Year Projected System Energy (kWh)



B. System Evaluation

PowerServices evaluated the City of Rocky Mount's electric system using an engineering model to determine areas where the system may have voltage or capacity deficiencies. The system was analyzed under present conditions and with projected loads over the planning horizon. Based on the modeling results, recommended improvements were identified. The most significant improvement is the addition of Substation 15 used to alleviate voltage and capacity issues in the southwestern portion of the service territory.

A single contingency outage analysis was prepared to evaluate the worst case of a substation failure or loss of one transformer in a substation. For cases where system load could not be adequately served under contingency outage conditions, PowerServices developed recommended projects for circuit improvements. The Plan includes a major contingency project for a second transformer in Substation 6.

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A system reliability review was performed for the City's Substation 14 that serves the northern portion of the service territory and is the only substation on a radial line. This Plan includes system upgrades by completing a 69 kV loop to Substation 14, providing redundancy in the event of a transmission failure.

Lastly, equipment assessments were performed to determine the need for replacement based on age or condition. The review identified four substation transformers requiring replacement along with the rebuild of Substation 7. The City's current plans to replace transmission poles were further evaluated with a recommendation to complete a high resolution system map prior to engineering and construction. Other projects addressed in the Plan include distributed generator refurbishing, SCADA upgrades, and potential upgrade of the City's existing Automated Meter Reading system to an Advanced Metering Infrastructure system that would allow the City to enhance the current peak shaving and customer based load management programs.

C. Cost Summary

The total cost estimate for this Long-Range Plan is \$31,888,198. Many recommendations in this Long-Range Plan are included in the City's current Capital Improvement Program but have updated schedules and budgets. It is important to note that the planning horizon is based on calendar-year loads projected from 2015 through 2034 while individual projects are scheduled and budgeted on a fiscal-year basis, beginning in FY 2016, consistent with the City's financial planning practices. Table 1-2 is a summary of the current budget and improvement costs per step of the Long-Range Plan by substation area. Exhibit F is a comprehensive summary that provides the timing and cost estimates for all projects for the 20-year planning period.

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**Table 1-2
Total Cost Estimation Summary**

Substation	2015-2034 LRP [Projects budgeted FY 2016 - FY 2034]			
	Step 1	Step 2	Step 3	Total
Substation 1	\$700,000			\$700,000
Substation 2	\$45,000			\$45,000
Substation 3				\$0
Substation 4			\$700,000	\$700,000
Substation 5				\$0
Substation 6	\$1,432,798			\$1,432,798
Substation 7	\$1,494,475			\$1,494,475
Substation 8				\$0
Substation 9				\$0
Substation 10	\$750,000		\$700,000	\$1,450,000
Substation 12				\$0
Substation 14 (transmission loop)		\$2,800,000		\$2,800,000
Substation 15	\$250,000		\$4,698,625	\$4,948,625
Transmission Pole Replacement	\$2,120,000	\$2,500,000	\$5,000,000	\$9,620,000
Other System Projects	\$2,781,800	\$2,780,500	\$3,135,000	\$8,697,300
Total Long Range Plan	\$9,574,073	\$8,080,500	\$14,233,625	\$31,888,198