MINUTES
WESTMINSTER CITY COUNCIL
Public Meeting/Council Workshop
Wednesday, June 8, 2022

The City Council of the City of Westminster met in a called meeting on Wednesday June 8, 2022 at 4:00 pm at the Westminster Depot with Mayor Brian Ramey presiding. Those in attendance were:

Brian Ramey	Dale Glymph	Adam Dunn	Daby Snipes
Jimmy Powell	Audrey Reese		

City Administrator, Kevin Bronson
City Clerk, Rebecca Overton
Utility Director, Leigh Baker
Members of the public and press

Notice of the meeting and the agenda was posted on a window at the Depot and at westminstersc.org twenty-four hours prior to the meeting and all persons, organizations and local media requesting notification and the agenda were notified by email.

Call to Order

Mayor Ramey called the meeting to order at 4:00 pm.

Invocation and Pledge of Allegiance

Mrs. Audrey Reese led the Council in the invocation and Mrs. Daby Snipes led the pledge.

Certification of Quorum

Rebecca Overton certified a quorum.

Presentation by Troy Rosier/Public Meeting

Mr. Troy Rosier was present to update Council on the Water System Capital Improvement Plan and to assist with the required public meeting. Mr. Rosier informed Council that having a public meeting is a requirement of the USDA Rural Development loan/grant process. Mr. Rosier pointed out to Council that there are areas of water lines within the water system that date back to the 1970's and 1980's and are in dire need of replacement. He stated that the USDA Rural Development is a great program and that the City would be wise to attempt to secure the project funding through them. Mr. Rosier addressed the priority areas and discussed the importance of maintaining and updating water service lines. Attached to these minutes is a copy of the Water System Capital Improvement Plan, Map, and Public Notice.

At this time a motion by Mrs. Reese and seconded by Mr. Glymph was made to open the floor for public comments. This motion passed unanimously.

A representative from the Boys Camp, which is located off Welcome Church Road, asked Mr. Rosier if the Welcome Church Road repairs and construction would include coming down Wilderness Trail. Mr. Rosier informed this representative that the construction would only be on Welcome Church Road.

After no additional public comments, Mr. Glymph made a motion to close the public comment session of the meeting. This motion was seconded by Mr. Powell and passed unanimously.

Presentation by Richard Tucker on Electrical System Upgrades

Mr. Richard Tucker was present to update Council on the electrical system upgrades. He advised Council that much progress had been made in the areas of right of way clearing and switching over some of the load from a 4.16 KV system to a 12.47 KV system. He stated that about 90% of the updates and upgrades had been completed. A copy of the presentation is attached to these minutes.

Adjourn

Upon a motion by Mayor Ramey and seconded by Mr. Glymph, the motion ***to adjourn the meeting at 5:40 pm*** passed unanimously.

(Minutes submitted by Rebecca Overton)

_____ _____

Mayor Brian Ramey Date

CITY OF WESTMINSTER
WATER DISTRIBUTION SYSTEM
2020 CAPITAL IMPROVEMENT PLAN

Abbreviation Meanings:

HI – Indicates an overall system Hydraulic Improvement either by looping existing mains to reduce head losses and/or increasing lines sizes to increase capacity.

LP – Indicates a Low Pressure problem that will be solved

OLP – "Replacing Old "problematic" Leaking Pipe"

SO – Indicates improving System Operation

FP – Indicates new and/or improved Fire Protection

ST – Indicates improving Supply capacity feed to Storage Tank

PG – New Potential Growth -- new customers

								Running Total
A.	Dr. Johns Road 8" Extension (Campbell Road to Dales Road)							
	12,700	LF	8"	@	$75.00	$ 952,500	$	952,500
	Installation of 8" main to replace old existing "problematic" 6" main. The existing 6" main continously ruptures when exposed to higher than average pressures. New main will save large water lossage by deleting a current continuously running blow-off. Will provide additional supply for growing lake community. HI, OLP, SO, FP, PG							
B.	Hall Street and Gaston Street 6" Replacement Main							
	3,100	LF	6"	@	$0.00	$ 0	$	952,500
	OLP, SO, FP				**Under Construction**			
C.	Welcome Church Road 6" Main (Boys Camp)							
	29,600	LF	10"	@	$90.00	$ 2,664,000	$	3,616,500
	Will provide a redundant looped supply to the US Hwy 123 and Cleveland Pike area,(Note recent U.S. Hwy 123 SCDOT washout and ≈ 300 customers without water). HI, SO FP, PG							
D.	Greenfield Road and Dawn Road 6" Extension							
	2,300	LF	6"	@	$75.00	$ 172,500	$	3,789,000
	OLP, SO, FP							

E. Phillip Lear Road 8" Main

	6,300	LF	8"	@	$80.00	$ 504,000	$	4,293,000

Will provide supply for growing lake community. HI, SO FP, PG

F. Long Creek Road (U.S. 76) 10" and 8" Pump Suction Replacement Main

F1	3,600	LF	10"	@	$90.00	$ 324,000	$	4,617,000
F2	4,300	LF	8"	@	$80.00	$ 344,000	$	4,961,000

HI, LP (Due to pump suction), OLP, SO, FP, ST, PF

G. Coffee Road 8" Connector Main

	6,800	LF	8"	@	$80.00	$ 544,000	$	5,505,000

Helps relieve reliance on Walhalla supply supplementation. HI, LP, SO FP

H, Dr. Johns Road 8" Extension (Dales Road to Ridgefield Road)

	9,600	LF	8"	@	$75.00	$ 720,000	$	6,225,000

Will provide supply for growing lake community. HI, SO FP, PG

I. Thornburg Road 6" Connector Main

	5,600	LF	6"	@	$70.00	$ 392,000	$	6,617,000

HI, SO, FP, PG

J. Dixon Road 6" Connector Main

	5,800	LF	6"	@	$70.00	$ 406,000	$	7,023,000

HI, SO, FP, PG

K. U.S. 123 (Toccoa Hwy)

	2,500	LF	8"	@	$75.00	$ 187,500	$	7,210,500

FP, PG

L. Unity Tank Upsize to 250,000 gallon

Piping, Alt. Valve, Site W	$	320,000	
Tank Foundation	$	30,000	
Tank	$	300,000	
	$	650,000	$ 7,860,500

Growth

M. Long Creek Area

Monitor future residential growth
(Divided by Forestry)

City of Westminster
Water Distribution System
2022 Capital Improvement Plan

N

L.
Ground Storage
Tank Replacement

F1.
3,600 LF 10"

F2.
4,300 LF 8"
Bridge Crossing

G.
6,800 LF 8"

B.
3,100 LF 6"

C.
29,600 LF 10"

D.
2,300 LF 6"

I.
5,600 LF 6"

Proposed
PRV

A.
12,380 LF 8"

J.
5,800 LF 6"

E.
6,300 LF 8"

H.
9,600 LF 8"

K.
2,500 LF 8"

Legend

- 2020_CIP
- Separator
- PRV

Pipe_Size, LifecycleStatus

- 20, Active
- 14, Active
- 12, Active
- 10, Active
- 8, Active
- 6, Active
- 4, Active
- 3, Active
- 2.5, Active
- 2, Active
- Westminster_Roads

1 inch = 3,000 feet

ROSIER GROUP
Engineers & Surveyors

Revised - 10/29/2020

City of Westminster

PUBLIC NOTICE

City of Westminster proposes to file an application for a loan/grant with USDA Rural Development, and will hold a public meeting on Wednesday, June 8, 2022, at the Westminster Depot, 135 E. Main Street, Westminster, SC 29693 at 4:00 p.m. The purpose of the meeting is to give an opportunity to become acquainted with a proposed Rural Development project. All proposed construction is contingent to availability of funds.

WATER SYSTEM IMPROVEMENTS – The proposed project consists of the design and construction of 33,200 LF 10", 42,200 LF 8" and 10,800 LF 6" distribution water mains. Further on existing undersized 40,000 gallon ground storage tank will be replaced with a 250,000 gallon ground tank. The proposed mains will be installed primarily along the following road shoulders: Dr. Johns Road (Campbell Road to Dales Road), Hall Street and Gaston Street, Welcome Church Road (Boys Camp), Greenfield Road and Dawn Road, Phillip Lear Road, Long Creek Road (U.S. 76), Coffee Road, Dr. Johns Road (Dales Road to Ridgefield Road), Thornburg Road, Dixon Road, U.S. 123 (Toccoa Hwy), Unity Tank Upsize to 250,000 gallon, Long Creek Area.

Citizens will have the opportunity to comment on such items as economic and environmental impacts, and alternatives to the project.

Projects funded by USDA Rural Development are equal opportunity programs and discrimination in the program is prohibited by federal law.

Westminster, SC Electric System 2022 Status

by

Richard Tucker, P.E.

Tucker Engineering Associates Inc.

Power metering & Instrumentation Engineering

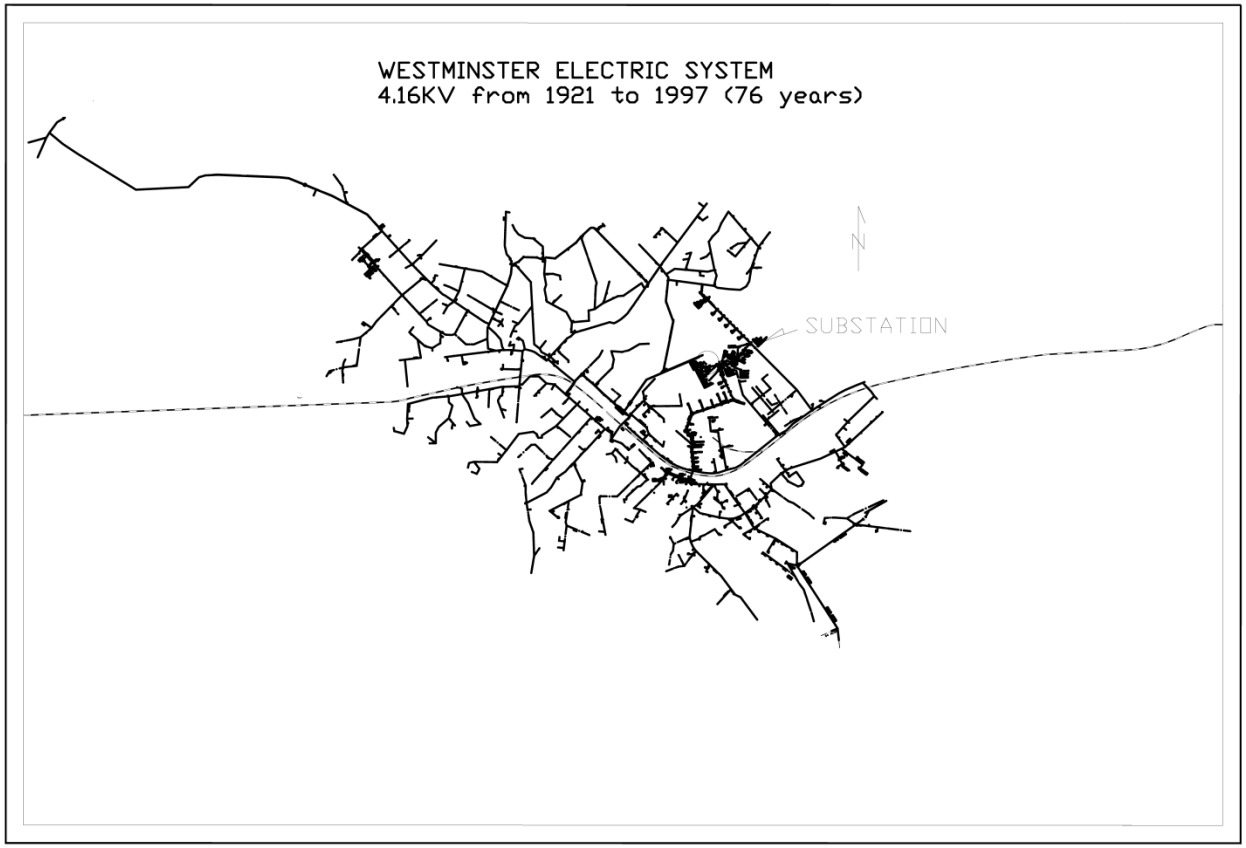
P.O. box 326, Locust, N.C., USA 28097

Tel: 281 827 2961 e-mail:richardaet@aol.com

Year 1921 - The Beginning
4.16KV Substation

This served the City until 1997

Entire Electric System 4.16 KV for 76 years



1996 - Immintent failure of original 4.16KV substation

- By 1996, the old 4.16KV substation buss was completely annealed with black and purple coloring
- The City designed and built a new

  (44 – 12.47)KV substation in 1997
- A temporary “Step down bank” was installed to serve the 4.16KV City loads with immediate 4.16 to 12.47KV conversion work to relieve the temporary Step Down bank.
- Ckt 1201 was intended to be built to serve the North West loads toward the Chau River Pumps after immediate 4.16 to 12.47KV conversion.

Why change from 4.16KV to 12.47KV ?

- For a very small system, 4.16KV has it's role & place
- The City of Westminster had grown beyond that usefulness of a lower voltage EL system
- Line losses are very expensive with 4.16KV EL systems that are beyond 1MVA – The City is now between 6 and 10 MVA
- As P = 1.732 (EI), the same Power delivered at 4.16KV can be delivered with 4.16/12.47 amps or 1/3 the current through the EL system conductors
- The 4.16KV line losses are the square of the current or (9) times that of a 12.47KV EL system

Temporary becomes permanent

- Although the new 44-12.47KV substation avoided the City a massive Outage, the 4.16KV EL system was served by a TEMPORARY “step down bank” which was supposed to be retired within two years.
- Conversion for a new Ckt 1201 was supposed to commence immediately before the 1998 Summer peak.

New 44 – 12.47KV substation comfort

- With the new 44 – 12.47KV substation in place and a fresh system study which was necessary to design the substation, the Electric System was quickly forgotten
- The next year, a forgotten substation temporary component almost failed

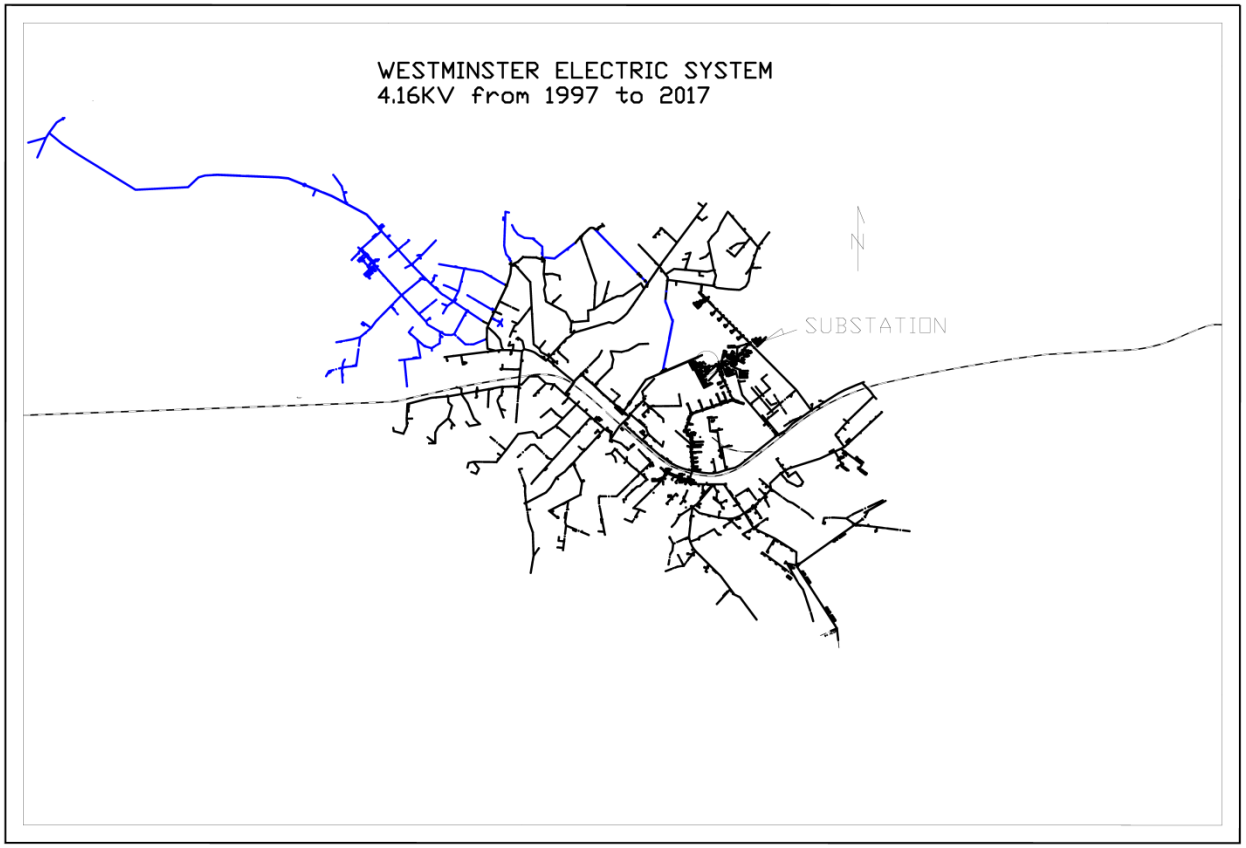
Summer of 1998

- As immediate steps for conversion from 4.16 to 12.47KV were ignored, the step down bank could not handle the Summer peak load and suffered an oil temperature excursion well beyond it's nameplate rating
- The Fire Department was called to spray water onto the step down bank tank bodies for several days until a 1" water line was installed to provide a continuous spray with fans to withstand the Summer peak.
- Ckt 1201 4.16 to 12.47KV conversion was initiated.

New Ckt 1201

- Ckt 1201 was completed by 2000.
- The Step down bank was relieved and the water spray was discontinued.
- The Step down bank was still loaded beyond 70%
- Fast forward to 2017

2000 – New Ckt 1201



Electric System Challenges

- Two Decades of Maintenance Neglect
- Electric System Exposure
  - 44-12.47KV Substation Transformer
  - 12.47 – 4.16 KV Step down Bank
- Reducing Electric System Loses
- Routine Preventative Maintenance

Two Decades
Electric System Degradation

- 1997 44-12.47KV Substation 2017 - 18

  Voltage Regulators Maintenance needed

  12.47KV Circuit Breakers Maintenance needed

  Ckt 1201 Breaker Failure with 6 hour outage

  Ckt 1201 Protective Relay failure – 2 hour outage
- 12.47KV Circuit overloading

  Ckt 1201 Winter peak Outage

  Ckt 1203 Step Down Bank Winter peak Outage
- Tree Clearance non-existent

44-12.47KV Substation

12.47KV Voltage Regulators

44 -12.47KV Substation

12.47KV Circuit Breakers

CKT 1201 breaker failure

- During the fall of 2017, a transformer lead caused a 3ph fault on the #336 MCM main feeder along Simpson Rd.
- The Ckt 1201 breaker failed to open the fault and the feeder conductor fell into the road bed and burned a trench 6” through the asphalt and road bed

Ckt 1201 Ckt Breaker failed

Ckt 1201 feeder burning in road bed

12.47KV Circuits Overloaded

- Ckt 1203 during 2017-18 Winter peak
  Breaker opened; Opened segments of
  load to re – energize; Temp 03 deg F;
  6 hour power interruption of downtown
- Ckt 1201 voltage regulators were set to zero boost (Brown – out) to avoid an outage for the remainder of the town.

Electric System
Tree trimming neglected

- Momentary interruptions were occurring during the Summer of 2017 and escalated in frequency in 2018 such that residence and business owners were restarting electronic systems upwards toward 20 times a day
- All Substation circuits were passing through thick tree limb/bush growth.

44-12.47KV Substation

12.47KV Breakers' IMPRS protective relays

- 2018 – 19 Winter peak Ckt 1203 protective relay failed; Ckt 1203 (step down bank breaker opened for two hours; Ckt 1203 load was shared by Ckt 1201 and Ckt 1202; Ckt 1203 IMPRS relay was repaired;
- Life for chips in IMPRS – 10 yr; 22 years since purchase in 1997.

Westminster Electric System Exposure
44-12.47KV Substation transformer

- The 44-12.47KV 12/16/20 MVA Transformer failure without a spare would incur an outage of over two days and maybe longer. This is a remote chance, but a real possibility.
- Duke Energy found a 10MVA 44-12.47KV transformer for approximately $42,000 installed.
- Fortuatively, the City purchased this 10MVA just two months before the main transformer failed.

Existing 44-12.47KV Substation Transformer

Westminster Electric System Exposure
The 12.47- 4.16KV step down bank
Service to Down Town Critical Functions

- The 4.16KV step down bank still serves over 1/3 of the City Electrical load
- The loss of this bank of transformers would cause an outage of possibly two days to the center City loads which include the Town Hall, Police Station, and other critical City loads.
- According to a 2019 February report from PMPA, Westminster has an approximate 14% electrical energy loss. This is approximately (3) times what other relatively sized 12.47KV operating municipals have as energy loss.
- This is not a surprise. The electrical current through the distribution lines is the ratio of the voltages – 12.47KV/4.16KV = a factor of three (3). The heat loss is the square of that ratio = a factor of nine (9). When the City's distribution is operating at 12.47KV, the losses should be reduced to 14/3 = 4.6% as the other 12.47KV municipals. (14 – 4.6)% x $ 2,876,728 = $ 267,592 savings/yr when fully operational at 12.47KV.

12.47-4.16KV Step Down Bank

Routine Maintenance?

- There had been none until a start in 2018. This is sorely needed for the Electrical System to provide reliable service as an Electrical Energy Provider.
- Leigh Baker, Supt of Utilities, has reversed this. Digging out of problems.

What has been done to correct these neglects?

- All of the Voltage Regulators have been reconditioned by 2022.
- Recommendation is to purchase three more 12.47 Voltage Regulators such that maintenance rotation can be performed and serve as spares

What has been done to correct these neglects?

- The 12.47KV Circuit breakers need refurbishment. Four have been serviced of the 5 circuits anticipated.
- It is recommended to purchase an extra breaker to allow refurbishment “One at a time” and have an extra serving as a spare.

What has been done to correct these neglects?

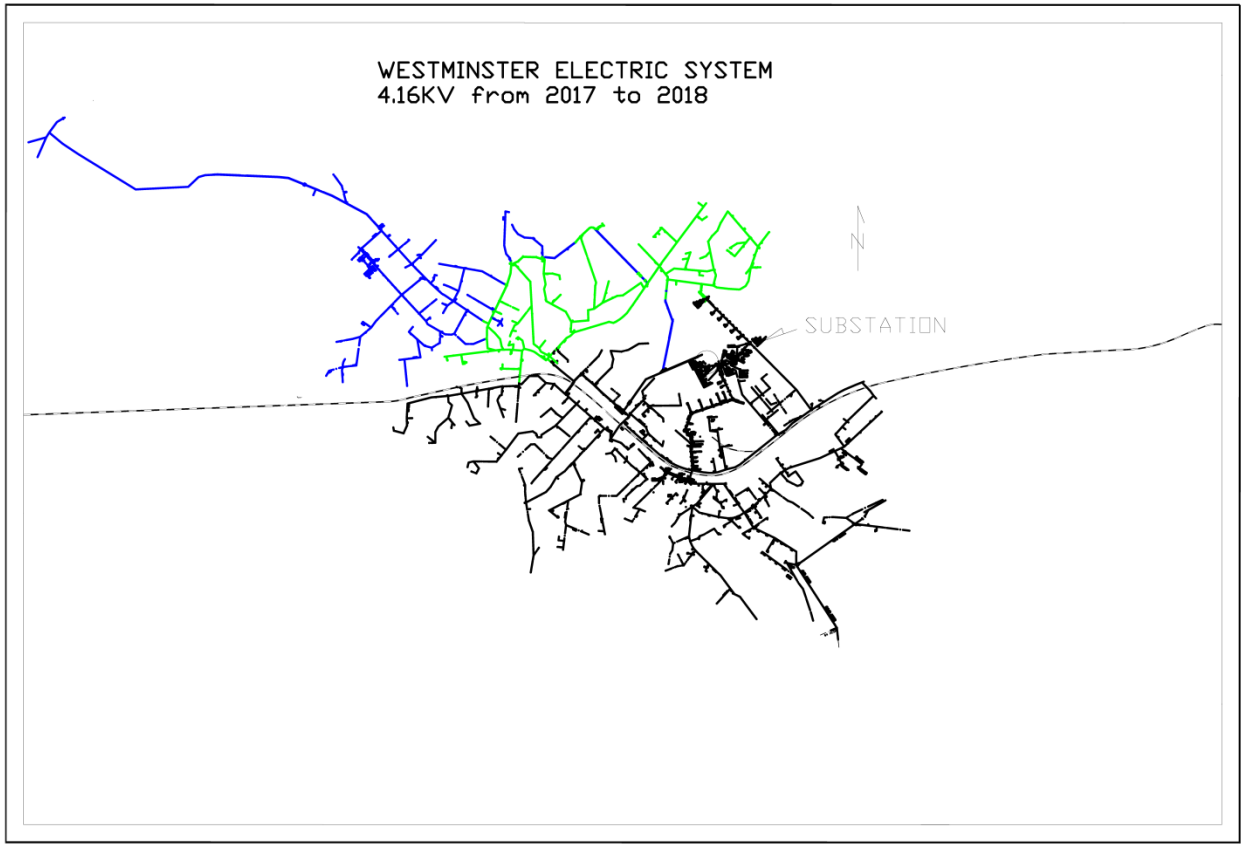
- The Substation protective relays that operate the Circuit Breakers are at the end of their 10 life – in fact, they have lasted 22 years since purchase.
- It has been discussed with Leigh Baker that next year's City budget should allow purchase of new substation ckt breakers

What has been done to correct these neglects?

- The overloaded Ckt 1203 (Step down bank) was slightly relieved via the Walhalla Rd Phase I 4.16KV conversion to 12.47KV

- This was accomplished during the Spring of 2018 to squeeze by the 2018 Summer Peak.

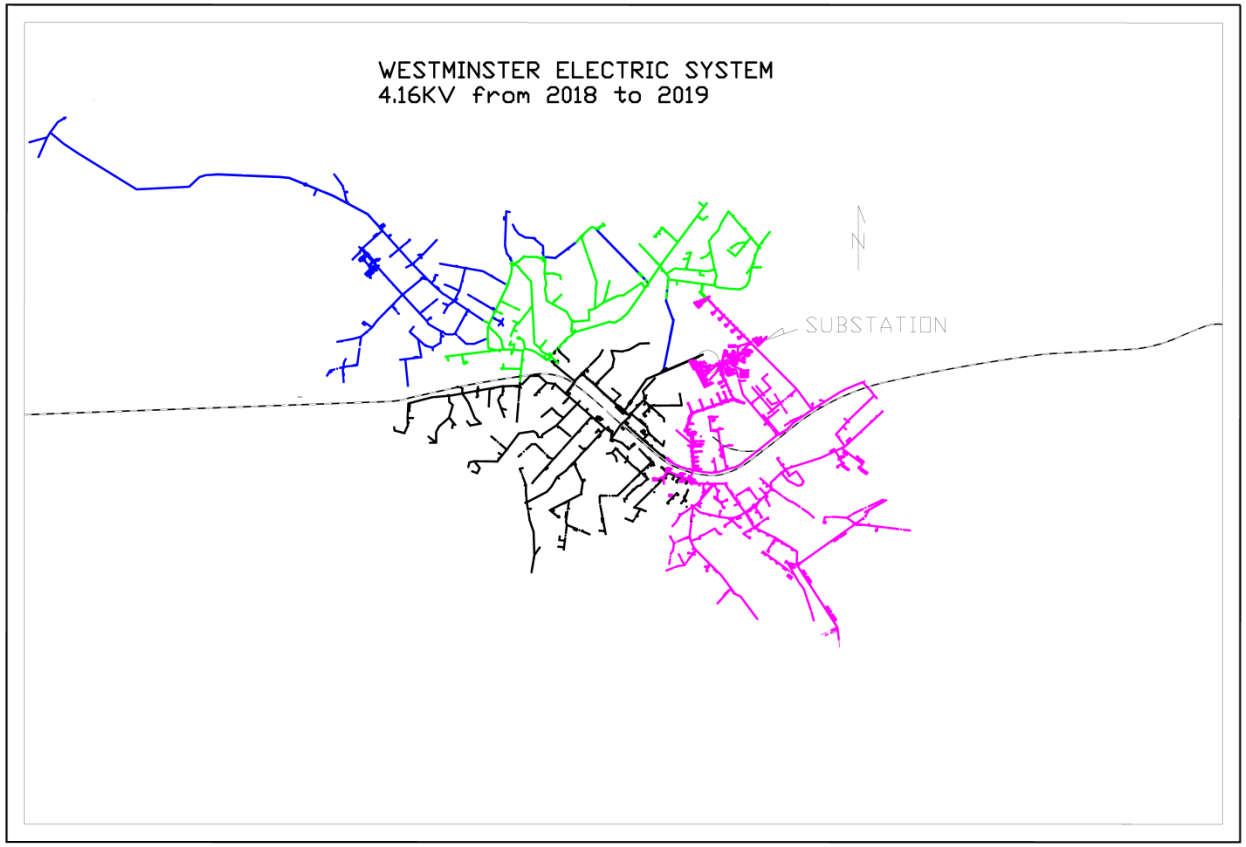
Phase I conversion complete
Load along Walhalla Street



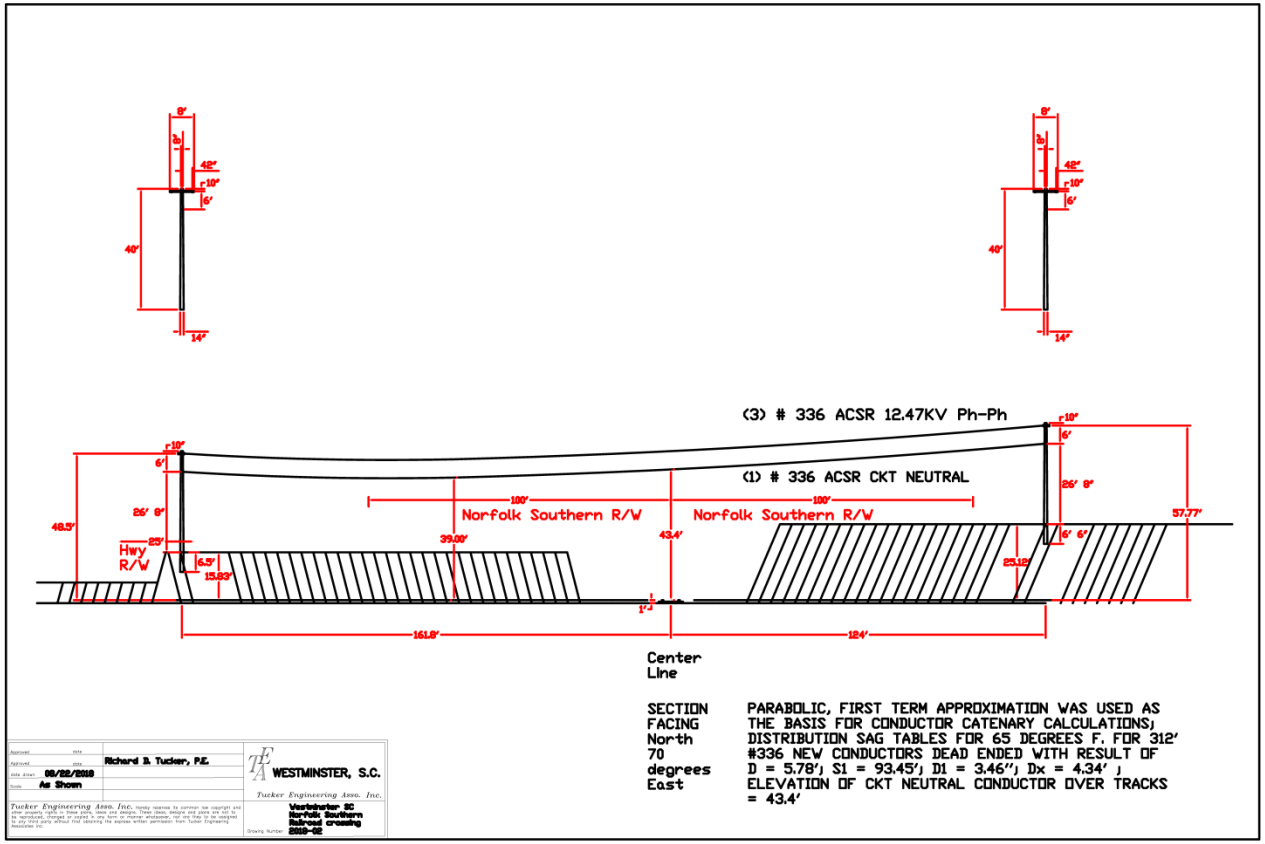
What has been done to correct these neglects?

- The overloaded Ckt 1201 has been relieved just before the 2018/19 Winter Peak with great effort via the new Ckt 1205 requiring Transmission Crossing and a Southern Railroad crossing
- A portion of Ckt 1205 was introduced via the old Jantzen line previously owned by Duke Energy and allowed relief of Ckt 1201 before the 2018/19 Winter Peak.

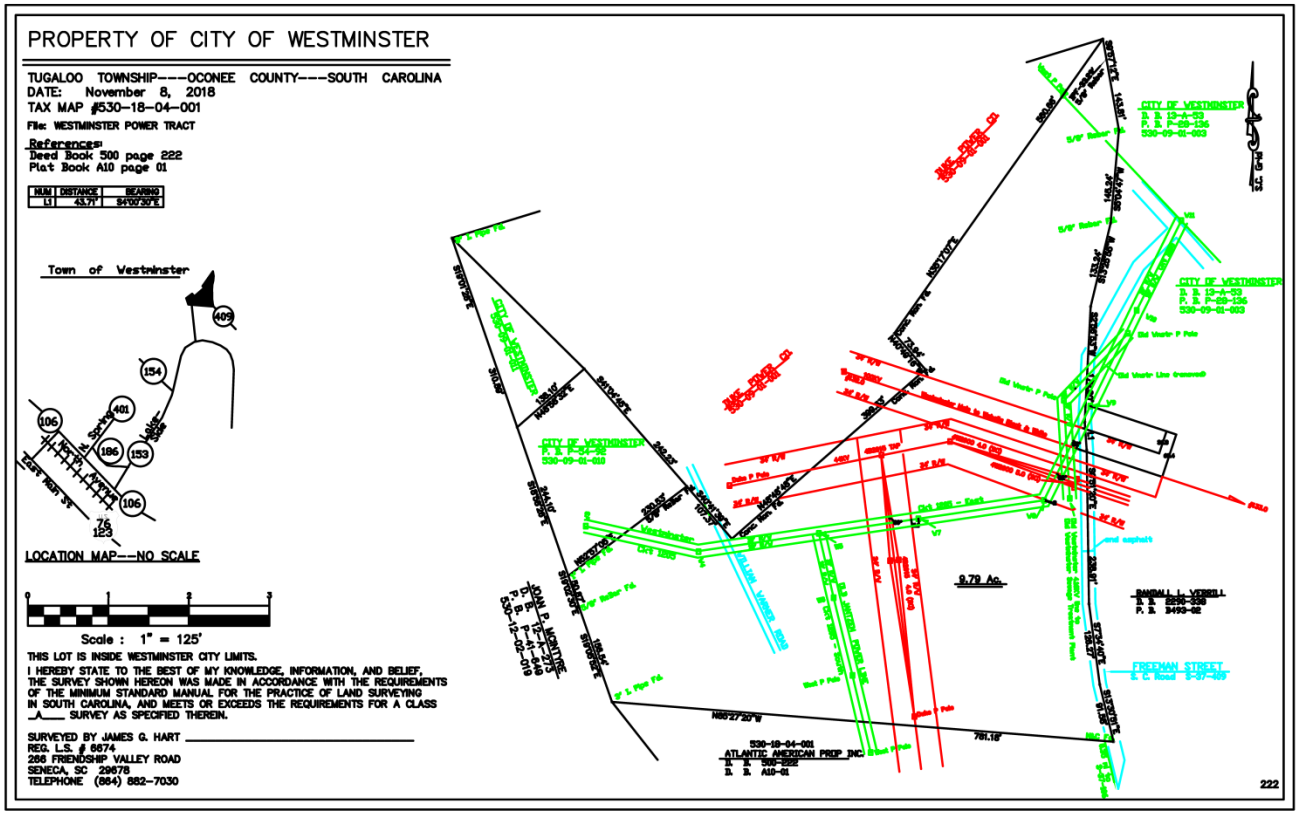
Phase I, II conversion complete



Southern Railroad Crossing for East side of Wesminster loads via New Ckt 1205



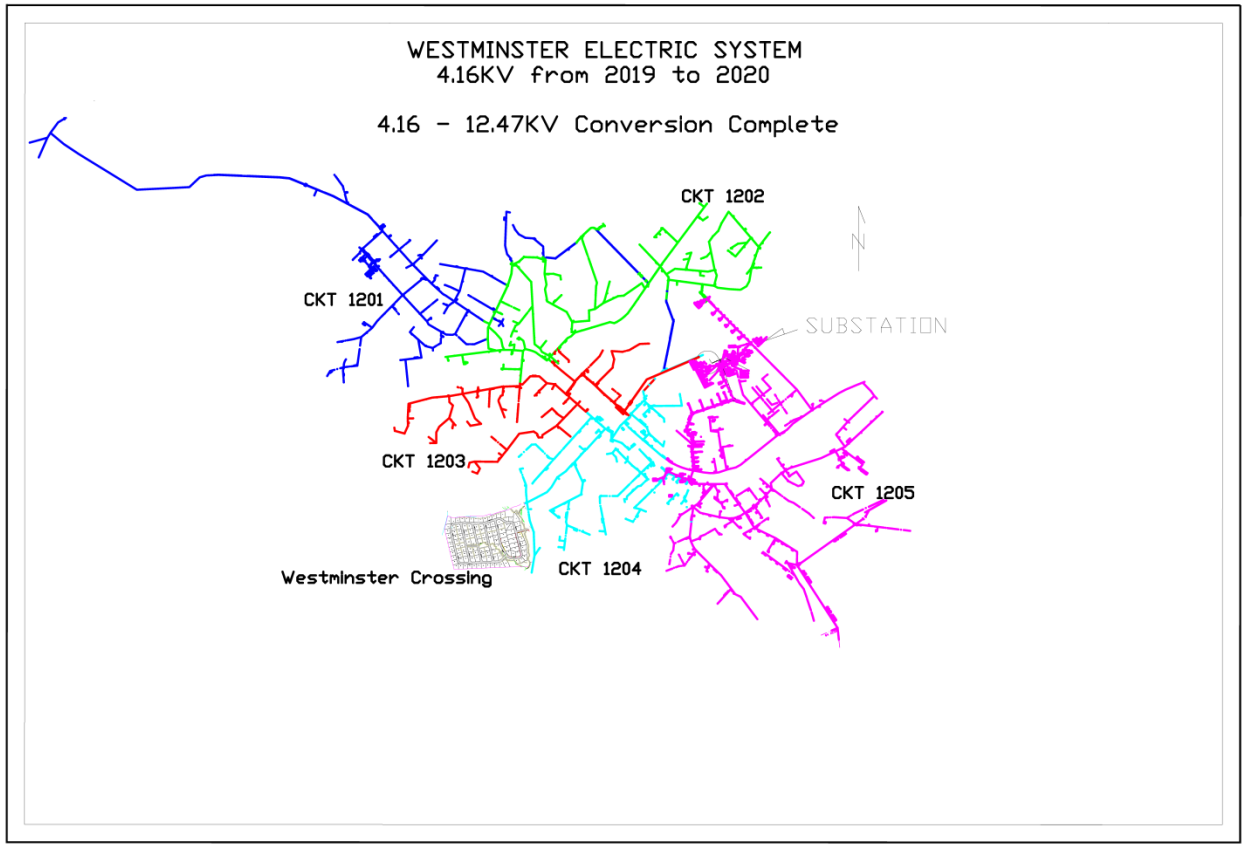
Duke Transmission Crossings to East Wesminster via New Ckt 1205



What has been done to correct these neglects?

- The 12.47-4.16KV step down bank:
  a. It exposes over 1/3 of the City to an extended outage
  b. It provides the greatest energy loss with the lower voltage
- Conversion phases 3 and 4 are almost finished such that the 12.47-4.16 KV Bank can be eliminated

4.16 – 12.47KV Conversion when Complete
Oops! Just in time for new 1MW load



What has been done to correct these neglects?

- The City has been diligent with tree trimming for proper right of way clearance for the Electric System conductors during the 2018 period extending into 2022

- It must be noted that the nuisance tripping has been stopped as now this is a regular requirement for the El System

What now?

- With the completion of the 4.16 to 12.47KV conversion of the total system, it is suggested that a “Five Year Plan” be instituted for planning and budgetary purposes
- Preventive maintenance is key to keeping the Electric System reliable and efficient.
- A two man tree crew is suggested for continuous R/W clearance and spare men.
- Proper Protective Relay/OCR/Fuse Ckt co-ordination

Credit where credit is due

- Not since Howard Adams led the Utilities of Westminster in the 1980s to avert El System disaster has a set of leadership put tremendous effort to save the Westminster Electrical System.
- Chris Carter, City Administrator
- Kevin Bronson, City Administrator
- Leigh Baker, Utilities Supt. and his line Crew
- Mayor Brian Ramey
- The Westminster City Council