KENERGY CORP
HENDERSON, KENTUCKY

CONSTRUCTION WORK PLAN
FOR 2016 – 2020
(July 1-June 30)

KY-65 KENTUCKY

Kenergy
Your Touchstone Energy® Cooperative

Power Services
Engineering & Management Services®

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I hereby certify this 2016-2020 Construction Work Plan was prepared by me or under my direct supervision. I also certify I am a duly registered professional engineer under the laws of the Commonwealth of Kentucky, Registration No. PE 25427.

Electronic Version- Original Signed Copy maintained in PowerServices Office.

February 29, 2016
Micheal W White Jr, PE

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EXECUTIVE SUMMARY

1 EXECUTIVE SUMMARY

A. Introduction and Purpose of Report

The 2016–2020 Construction Work Plan ("CWP") was developed for Kenergy Corp (“Kenergy") as an analysis of the existing system, evaluation of the status of the last Construction Work Plan's project completion, and a recommended plan for the improvements required for accommodating anticipated system peak loads during the four-year period including the summer peak of 2019 and the 2019-2020 winter peak. This CWP was prepared recognizing the need to achieve optimum asset management, while maintaining and improving service reliability. PowerServices was retained to assist Kenergy in the preparation of the CWP and included within this report is the engineering support for a loan application to RUS to finance the proposed construction program.

The system improvements recommended herein are consistent with those proposed in the Long-Range Plan prepared in February 2010. The anticipated demands, member owner growth, average usage, and peak usage are consistent with the most recent Load Forecast, as prepared by Big Rivers Electric Corporation and approved by the Cooperative's Board of Directors. The improvements recommended by this Work Plan are recommended and designed in accordance to the Design Criteria contained herein. The system improvements to be financed by a loan are tabulated in Section 3, Construction Program.

The system improvements in the 2016-2020 Construction Work Plan are those needed to provide service for 57,976 member owners at an annual average monthly residential consumption of 1,300 kWh per member owner with total annual Rural System sales of 1,147,198 MWh at the end of the plan period. On completion of the proposed construction program, the system will adequately service the 2019 summer peak NCP load of 319.2 MW and the 2019-2020 winter peak NCP load of 340.3 MW as projected in accordance with the 2015 BREC Load Forecast, including the Tyson, Valley Grain, and future spot loads.

B. General Basis of Study

The engineering basis of this CWP report included the review of Kenergy’s historical system data and relevant system studies. The projected system peak load and number of member owners served used in this report were based on the 2015 Load Forecast,

developed by GDS Associates, Inc. in cooperation with Big Rivers Electric Corporation ("BREC") and Kenergy and the CWP Substation Forecast, developed by PowerServices and Kenergy. An excerpt from the 2015 BREC Load Forecast and the CWP Substation Forecast are provided in the Exhibit section of this report.

The Cooperative's 2015 Operations and Maintenance review, RUS Form 300, was used to determine construction required to replace physically deteriorated equipment and material, and improve reliability and quality of service, combined with discussions and consensus with the Cooperative engineering and operations staff.

New distribution and power supply construction requirements were evaluated simultaneously as a "one system" approach for the orderly and economic development of the total system. All of the proposed construction and recommendations herein, relative to the power supply and delivery, were discussed with Kenergy's power supplier, BREC.

The details and estimated costs of the line, equipment, and additional requirements to serve 2,370 new member owners (1,570 net new members) during the work plan period are in Section 3- Construction Program.

An analysis, using RUS guidelines and the design criteria herein, of thermal loading, voltages, physical conditions, and reliability was performed on all of the substations, distribution lines, and major equipment of Kenergy's existing electric system. The electric distribution system for Kenergy is modeled using Milsoft Windmil® Distribution Analysis software. The engineering analysis software was used to analyze the distribution circuits to obtain future circuit loading, voltage, and current. Based upon the engineering analysis and Design Criteria, areas of deficiency were identified and improvements proposed to address these areas. Additionally, management and engineering staff reviewed every improvement recommended for inclusion in this CWP to assure its necessity and the accuracy of routing and physical constraints that may impact construction cost.

C. Present System Analysis

The following Present System Analysis discusses features of the existing distribution system, as well as current operational conditions as they apply to the current CWP.

1. Service Area

   Kenergy is an electric distribution cooperative headquartered in Henderson, Kentucky. The Cooperative was established in July 1999 through the consolidation of Henderson-Union Electric Cooperative (organized in 1936) and Green River Electric (organized in 1937). Kenergy provides services to approximately 56,000 homes and businesses in Breckinridge, Caldwell, Crittenden, Daviess, Hancock, Henderson, Hopkins, Livingston, Lyon, McLean, Muhlenberg, Ohio, Union and Webster counties. The Cooperative maintains more than 7,000 miles of power line. A map showing the Members' service territory is provided in Figure 1.1.

Figure 1.1- Kenergy Service Territory

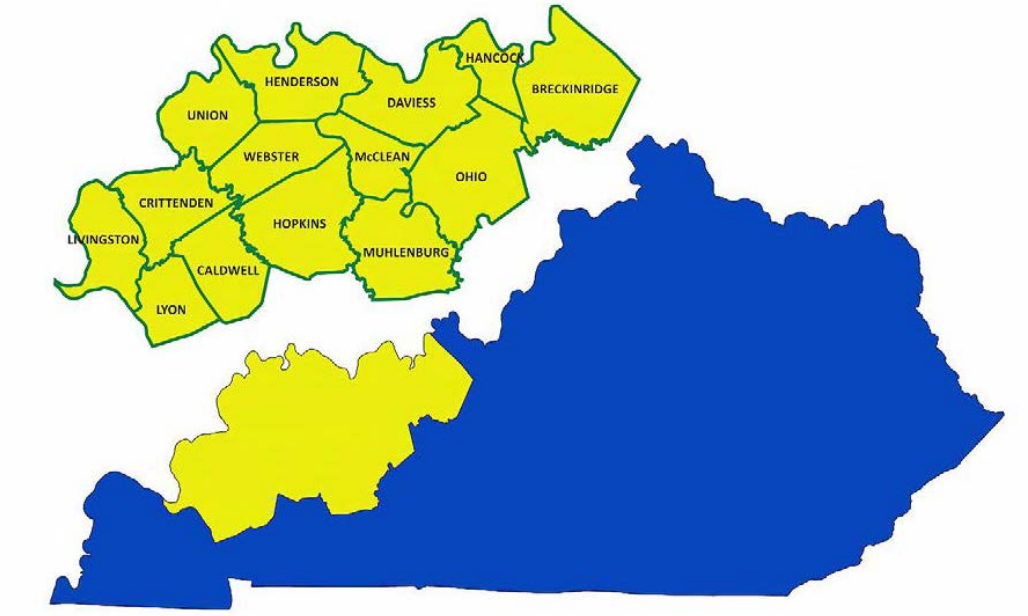


Figure 1.1: KENERGY Service Territory. Source: 2015 BREC Load Forecast.

2. Power Supply

Kenergy purchases power from Big Rivers Electric Corporation ("BREC") pursuant to a power supply contract covering the rural system and all commercial and industrial member owners. Approximately 81% of the accounts served by Kenergy are residential; however, a high proportion of total system energy sales correspond to the large commercial class. Kenergy is unique among electric cooperatives as Kenergy secures the market energy requirements and electric service through BREC's transmission system to two aluminum smelters with a combined load currently exceeding 850 MW. The Kenergy peak system loading in this report refers to the "Rural System" only which represents member owners directly connected to the Kenergy distribution system. A tabulation of general operating statistics is shown in Table 1-1.

Table 1-1 – General Rural System Operating Statistics*

	2014	2015
Miles of Distribution Line	7,113	7,130
Year-End Customers per Month Served	55,932	56,406
Customers per Mile	7.86	7.91
Average Residential Consumption (kWh/month)	1,394	1,317
Total Rural System MWh Purchased	1,240,267	1,193,057
Total Rural System MWh Sold	1,178,466	1,137,157
Percent System Losess for Rural System	4.77%	4.48%

NOTE: Statistics provided by Kenergy Corp

3. Transmission System

BREC constructs, owns, and operates the 69-kV transmission system supply power to the 50 delivery points on the Kenergy system.

4. Substations

Kenergy owns the substations serving the distribution system. There are forty-seven (47) 69 kV to 12.47 kV substations in operation and three (3) 69 kV to 24.9 kV substations in operation. Table T-1, Substation Transformers and Voltage Regulators without Improvements, in the Exhibit section shows the primary and secondary voltage rating and the existing transformer capacity at each substation.

5. Distribution Circuits

The distribution system includes 189 circuits operated at 24.9/14.4 kV or 12.47/7.2 kV. The installed overhead conductor sizes range from #8 CWC to 795 kcmil ACSR, and the underground cable sizes range from #2 AL to 750 MCM AL. Overall, the distribution system is, as noted on the O&M Survey, in satisfactory condition. The individual substation area Present System Analysis engineering model shows the existing loading and voltage problems. These problem areas were verified with the Cooperative's engineer. The CWP without Improvements WindMil® maps illustrate how projected Work Plan loads are expected to affect the existing distribution system voltage and load characteristics.

Voltage regulators are being used on a number of feeders to maintain acceptable voltage levels at system extremities, while deferring costly capital investment as long as feasible without excessive power line losses. In most instances, voltage regulators are used to correct the voltage drop caused by long distances from the source, rather than by large loads. In some instances, voltage regulation is relocated downline from an existing location as an interim step to defer longer line conversions or reconductoring. All voltage is to be maintained within the standards recommended by RUS.

Reconductoring, multi-phasing, and circuit load shifts are recommended where required to provide adequate capacity and voltage levels. The basis for the decision process is found in the Design Criteria Section, and follows prudent utility practice and economics. The individual substation WindMil® diagrams show the calculated voltage drops (120V base) at line extremities and at voltage regulator installations, along with the proposed system improvements.

6. System Energy Losses

The system annual energy losses from 2007 through 2014 are as follows:

Table 1-2 – Rural System Energy Losses

Year	MWh Losses	MWh Purchases	Percent Losses
2007	58,703	1,235,849	4.75%
2008	58,494	1,218,628	4.80%
2009	45,192	1,144,107	3.95%
2010	32,588	1,270,263	2.57%
2011	52,906	1,214,795	4.36%
2012	58,025	1,192,208	4.87%
2013	54,488	1,221,667	4.46%
2014	59,166	1,240,267	4.77%
2015	53,391	1,193,057	4.48%
Average	**52,445**	**1,217,223**	**4.31%**

Total system annual energy losses have averaged 4.31% over the past nine years. These losses are attributed to, but not limited to, line losses on circuit feeders, substation transformers, distribution voltage regulators, single-phase taps, and loading on distribution transformers. The system losses are expected to reduce marginally as the 2016-2020 Construction Work Plan improvements are implemented. Special care was taken in addressing heavily loaded equipment and sizing this equipment to reduce losses. It is important to recognize that weather has a substantial impact on line loss variation.

7. Service Reliability

Service reliability and power quality are important factors used to measure quality of service provided to the member owner. Although weather and delivery point (power supply) related outages are difficult to control, some measures can be taken to promote enhanced resiliency. The Cooperative should continue to maintain a vigorous program of right-of-way clearing to alleviate problematic tree conditions and should continue working with the power supplier for enhanced delivery point reliability. Trees and brush in rights-of-way create hazards that cause outages and obstruct the movement of line crews during storms, thereby increasing outage hours.

The upgrade of inter-substation tie lines will improve reliability by providing available capacity for load shifts, as well as eliminating old, deteriorated conductors from the system. In addition, replacement of old and deteriorated poles and aging wire in accordance with asset management focused replacement programs will lower material failures. These programs will also aid in reducing weather-related outages, particularly those caused by strong winds and ice storms.

The need for increased evaluation of pole attachments by telecommunications and cable companies has recently become apparent. These pole attachers are not always notifying the Cooperative of attachment or following NESC minimum requirements. Better enforcement of pole attachment agreements will also improve reliability by addressing poles that are structurally deficient due to unpermitted communications attachments.

Multi-phasing and load balancing will significantly reduce the number of member owners interrupted during a single-phase outage and will reduce outage time. In many areas where multi-phasing is required, the existing sectionalizing devices cannot be sized to pick up the entire cold load. This significantly increases the outage times, since the line crews must re-energize the line in sections. Continued multi-phasing and the addition of new sectionalizing points will substantially reduce outage hours per member owner.

Table 1-3 provides a service interruption summary based on information derived from the Cooperative's RUS Form 7 and data supplied by the Cooperative from 2007 to 2014. The average annual hour outages per member owner per year are at acceptable levels and within the IEEE 1366-2003 standards. RUS recommends that there be no more than an average of 200 member owner outage minutes (3.3 hours), per member owner, per year, excluding outages caused by major storms or the power supplier, for the last 5 consecutive years in any specific area.

Table 1-3 - Service Interruption Summary

Average Minutes per Member Owner by Cause(1)

Year	Power Supplier	Major Storm	Planned	All Other	Total	Total (less Power Supplier & Major Events)
2007	13.3	46.4	7	114.6	181.3	121.6
2008(2)	50.4	268.2	2.5	134.4	455.5	136.9
2009(2)	95.3	372.5	4.1	179.2	651.1	183.3
2010	12.3	0	1.6	97.2	111.1	98.8
2011(3)	13.4	0.4	5.1	204.4	223.3	209.5
2012	20.3	42.0	1.1	108.9	172.3	110.0
2013	13.8	27.7	3.9	90.9	136.3	94.8
2014	1.8	27.5	6.1	90.6	126	96.74
Average	**27.6**	**98.1**	**3.9**	**127.5**	**257.1**	**131.5**

Note: 1. All data from RUS Form 7.
2. Major Storms: 2008 February ice storm and September Hurricane. 2009 January ice storm
3. 2011 total minutes is due to storms that could not be classified as major events. RUS Form 300.

D. Historical System Data

The Exhibits included in this CWP illustrate historical system data utilized in the detailed analysis of system operations. System historical data was provided by the Cooperative in regard to system peak loads, energy purchased, energy sales, member owners billed, service interruptions, service extensions, commercial loads and circuit loads. This data was compiled and analyzed to identify operational trends, positive and negative, to be addressed in the 2016-2020 Construction Work Plan. Table 1-4 of this section provides a summary of demand and energy projected data and the historical data for the past three years. The 2015 Load Forecast contains substantial historical perspective, with an excerpt provided in the Exhibit section.

E. Projected System Loads

Substation load projections were based on historical growth rates and proposed load additions, including new subdivisions, commercial loads, large power additions, demographics and economy. The diversity of circuit loads and substation loads are considered when evaluating the peak loads on each component of the system. Proposed

substation and distribution line improvements are based upon need at projected load levels in their respective areas.

Table 1-4 reflects demand and energy forecasts for the Kenergy system. These projections are based upon historical system data and the 2015 Load Forecast.

Table 1-4 - Historical and Projected System Data

	Energy Purchased (1)		Energy Sold (2)		Energy Loss (3)		NCP Peak Demand (4)		Customers (5)	
Year	MWh	Percent Change	MWh	Percent Change	MWh	Percent of Purchase	Summer (MW)	Winter (MW)	Average	Percent Change
2011	1,214,795	-4.37%	1,159,289		52,906	4.36%	274.8	262.7	55,210	0.40%
2012	1,192,208	-1.86%	1,131,847	-2.37%	58,025	4.87%	308.3	255.1	55,419	0.38%
2013	1,221,667	2.47%	1,164,706	2.90%	54,488	4.46%	266.2	265.3	55,677	0.47%
2014	1,240,267	1.52%	1,178,466	1.18%	59,166	4.77%	277.6	329.7	55,932	0.46%
2015	1,193,057	-3.81%	1,137,157	-3.51%	52,445	4.40%	282.8	308.8	56,406	0.85%
2016	1,193,057	0.00%	1,135,791	-0.12%	57,267	4.80%	313.1	333.3	56,519	0.20%
2017	1,194,250	0.10%	1,136,926	0.10%	57,324	4.80%	313.5	334.1	56,632	0.20%
2018	1,195,564	0.11%	1,138,177	0.11%	57,387	4.80%	313.9	334.9	56,915	0.50%
2019	1,206,324	0.90%	1,148,421	0.90%	57,904	4.80%	314.4	335.9	57,256	0.60%
2020	1,212,356	0.50%	1,154,163	0.50%	58,193	4.80%	319.2	340.3	57,715	0.80%

1. Projected data based on 2015 BREC Load Forecast and historical data provided by Kenergy on RUS Form 325.
2. Projected energy sales based on 2015 BREC Load Forecast percent change and historical data provided by Kenergy on RUS Form 325.
3. Projected energy loss based upon 2015 BREC Load Forecast.
4. Projected NCP is based on historical Kenergy metered peaks based upon the CWP Station Loading analaysis, Exhibit Table T-2.
5. Project customer growth based on 2015 BREC Load Forecast and historical data provided by Kenergy.

F. Existing and Projected Distribution System Analysis

A distribution system model was provided by Kenergy and is modeled using the Milsoft Distribution Analysis software (WindMil®). The most recent system digital map database and peak system loading data was used to prepare this model. A present system analysis was completed. The Cooperative verified that voltage problems identified in the model were recently experienced on the system. Projected substation and circuit loads were allocated to the model to obtain calculated voltage and loading profiles for each distribution circuit. Recommendations included in the Construction Work Plan were based predominantly on the WindMil® computer analysis. In each case where the distribution model indicated a potential voltage or capacity problem,

management and operations personnel at the Cooperative were involved in the final recommended solutions development. Additionally, these interviews identified problem areas that did not show up on the computer analysis due to local knowledge of proposed subdivisions, increased commercial loads, or poor condition of distribution facilities. The Construction Work Plan recommendations are based on analysis, multiple communications with Cooperative management and engineering and construction personnel, a meeting with Cooperative management and engineering, and an iterative process of developing the most economical plan that will allow the Cooperative to adequately serve the existing and new member owners through CWP planning period. Engineering model results for before and after recommended improvements are given in the Exhibit section.

Each of the distribution circuits was analyzed with respect to adequate voltage and loading conditions based on the Design Criteria. The analysis of the 2019-2020 winter system peak with the existing system configuration revealed the following:

Substations with voltage levels lower than 118 volts or conductor loading greater than 70% along line sections:

- Centertown, Dermont, Geneva, Guffie, Hanson, Lyon, Marion, Morganfield, Niagara, Nuckols, Onton, Race Creek, Sullivan, Weaverton, Weberstown.

The analysis of the 2019 summer peak with the existing system configuration revealed the following:

Substations with voltage levels lower than 118 volts or conductor loading greater than 70% along line sections:

- Beda, Caldwell Springs, Centertown, Dermont, Geneva, Guffie, Hanson, Lewisport, Lyon, Marion, Niagara, Nuckols, St. Joe, Sullivan, Weaverton, Weberstown, Whitesville.

G. Summary of 2016-2020 Construction Work Plan Costs

Following is a summary of the total cost for this 2016-2020 Construction Work Plan with a comparison to the previous CWP . The total cost for the Construction Work Plan is $48,665,421.

Figure 1-2- CWP System Improvements Cost Summary

		2016-2020	2013-2017		
RUS Code	Item	Estimated Cost	Previous CWP	Difference	Percent Diff
100	New Customer Extensions	$11,382,928	$10,354,617	$1,028,311	10%
200	New Tie Lines	$20,092	$0	$20,092	
300	Line Conversions	$10,852,724	$9,259,500	$1,593,224	17%
400	New Substations	$0	$0	$0	0%
500	Substation Improvements	$1,175,000	$2,043,000	($868,000)	-42%
600	Miscellaneous Distribution Equipment				
	601 Transformers	$5,160,074	$3,958,444	$1,201,630	30%
	601 Meters	$1,100,335	$554,820	$545,515	98%
	602 Service Upgrades	$1,456,669	$906,754	$549,915	61%
	603 Sectionalizing Equipment	$2,218,635	$2,606,400	($387,765)	-15%
	604 Line Regulators	$162,000	$548,600	($386,600)	-70%
	605 Capacitors	$45,000	$0	$45,000	
	606 Pole Replacements	$6,984,975	$8,010,750	($1,025,775)	-13%
	608 Misc Construction	$4,534,942	$6,682,412	($2,147,470)	-32%
700	Security Lights	$3,572,047	$1,615,680	$1,956,367	121%
	TOTAL CWP Improvements	**$48,665,421**	**$46,540,977**	**$2,124,444**	**4.6%**

DESIGN CRITERIA

2 DESIGN CRITERIA

Construction proposed herein must meet the following minimum standards for voltage, thermal load, safety, and system reliability. Conditions may require actions that exceed the design criteria given below:

1. Corrective action is required for voltages less than 118 volts on a primary distribution line, assuming a system base of 120 volts. System improvements based on the voltage's calculated value shall be proven in the field before construction approval. (Extrapolation to peak is allowed). The following criteria will be used to evaluate the voltage on the distribution system:
   a. Substation regulation shall be set at 125 volts with a 2 volt bandwidth.
   b. Down-line regulators will be coordinated with substation regulators such that they operate within the range stipulated in Kenergy's Tariffs.
   c. More than one line voltage regulator in series on the main feeder is intended as a temporary solution for voltage correction.

2. All single-phase lines should be reviewed if the peak load exceeds 288 kVA. Multi-phasing or load transfers should be considered if the peak load current exceeds 40 ampere (288 kVA) on the 7.2-kV system or 20 ampere (288 kVA) on the 14.4-kV system.

3. Conversions of single-phase to multiphase can be implemented to correct voltage drop, balance, sectionalizing problem or a combination. Distribution lines are subject to multi-phasing if:
   - Voltage levels do not conform to Criteria #1.
   - The limit of Criteria #2 is exceeded and load transfer is not possible or advantageous.

- The number of consumers exceeds 60 on a single-phase tap.

4. The following loading standards are recommended for thermal protection of Kenergy Corp's equipment. Loading of power transformers is calculated from the base MVA(OA) nameplate rating at 55° C rise and metered power factor. If the actual power factor is not known, 90% will be assumed.
   - Power Transformer 130% winter; 100% summer (ANSI C57)
   - Regulators 120% at 7.5% rise
   - Reclosers 80%
   - Line Fuses 80%
   - Current Limiting Fuses 80%

5. System studies flag conductors loaded to 50% of capacity. Conductors used for primary lines loaded more than 70% of thermal rating will be evaluated for replacement or an alternative action.

6. Any deteriorated conductor is subject to replacement if any or all of the following conditions exist:
   - A section of line has experience repeated damage and repairs to the point of replacement.
   - Records indicate the section of overhead conductor has experienced an outage more than three times in the last year for reasons other than right-of-way or storm.
   - Records indicate the section of underground cable has been repaired or spliced a total of three times.
   - The conductor is copper (CWC or hard drawn) or steel wire. (Larger copper conductors will be evaluated on an individual basis.)

7. A primary distribution line will be rebuilt or relocated if a condition exists in which the line fails to meet applicable National Electric Safety Code requirements.

8. Annual SAIDI, CAIDI, SAIFI targets, number of outages, number of customers and an estimate of lost revenue are used to identify the worst performing feeders. If improvements do not adequately address these sections, additional analysis may be performed.

9. New primary conductor shall be sized on a case by case basis using Economic Conductor Analysis. Kenergy Corp's system cost at the time of the study will be used in the program and their standard conductor sizes for primary follows:
   - #2 ACSR
   - #1/0 ACSR
   - #4/0 ACSR
   - 336.4 ACSR
   - 795 MCM ACSR
   - #2 Aluminum 15 KV URD Cable
   - #4/0 Aluminum 15 KV URD Cable
   - 500 MCM Aluminum 15 KV URD Cable
   - 750 MCM Aluminum 15 KV URD Cable
   - #1/0 Aluminum 25 KV URD Cable
   - #4/0 Aluminum 25 KV URD Cable
   - 500 MCM Aluminum 25 KV URD Cable

10. All new primary construction shall be overhead except new feeders exiting a substation, or in case of favorable conditions such as a subdivision, to meet government agency requirements or ordinances.

11. New substations or upgrades to existing substations will be coordinated with Big Rivers Electric.

12. All construction shall be designed and built according to NESC and RUS construction guidelines or equivalent Kenergy Corp standards.

13. With the exception of dedicated circuits, feeders with a peak load exceeding 5,000 kW will be evaluated for:
    - Load transfer to an adjacent feeder
    - New feeder constructed to serve a portion of load

14. Sectionalizing studies are completed on a rotating cycle. It is Kenergy's intent to study one-fifth of the substation service areas each year. Substation or feeder upgrades may require interim studies.

15. Capacitors are placed on the system based on peak feeder reading from SCADA system. Summer and winter conditions are both studied. A power factor less than 90% is a flag to install a capacitor bank. The capacitor bank will be sized so that leading power factor will not fall below 95% at a load level of 60% of the winter peak loading condition.

16. The installation of a 10 MVA (OA base rating) transformer at a new or existing substation shall be fused on the high side for overcurrent protection. If the installed transformer is larger than 10 MVA, the high side overcurrent protection will be a breaker with relay controls.

17. Reliability of Kenergy system design shall consider single contingency planning. The system shall have the ability to maintain adequate service with loss of a major system element such as a substation transformer or three-phase feeder during non-extreme conditions.

The scope of system improvements will include (when applicable) provision of capacity to meet the single contingency criteria:

a. Critical loads will have first priority.
b. Non-extreme load conditions shall be defined as the average of the minimum and maximum monthly peaks, for each substation transformer during the calendar year.
c. Each substation should have reserve transformer capacity available to support an adjacent substation (OA/FA capacity) equal to projected non-extreme load of both substations if distribution ties are available.
d. Three-phase feeder capacity between two adjoining substations shall be adequate to allow backfeeding during non-extreme load conditions.
e. Planning shall consider minimum tie-line conductor to be 336.4 kcmil ACSR at 12.5/7.2 kV and #4/0 ACSR at 24.9/14.4 kV. Minimum conductor for single-phase taps is 1/0 ACSR, if two-way feed is possible.

CONSTRUCTION PROGRAM

3 CONSTRUCTION PROGRAM

The estimated construction costs necessary to support the forecasted new customer additions, historical periodic replacements, proposed system improvements recommended in the 2016-2020 Construction Work Plan are listed herein. Section 4-Description and Justification includes a discussion of individual project need, project completion schedule, and estimated cost. New line extensions for additional consumers, increased capacity of existing services, and system improvements included are those required for the four-year period of 2016-2020, and are based on Kenergy's historical records for the two-year period ending December 2015 and are increased annually at a rate corresponding to the growth rates from the 2015 BREC Load Forecast.

Periodic replacement of existing poles, crossarms, conductor, cutouts, guys, etc., is required for numerous reasons. When such replacement is made, it is often necessary to install units with greater height or strength requirements, particularly due to newer NESC requirements. When lines are relocated due to road changes or to eliminate cross-country sections, the Cooperative should install poles of strengths suitable for the long-range conductor size and, in some instances, install line conductors in accordance with the Long Range Plan. Normal operations require the routine addition of poles for existing lines, either for telephone attachment or to improve clearance. The cost estimate in this CWP includes estimated loan funds to be expended for these purposes during the work plan period.

Increased cost of construction is a significant and continuing factor that must be considered, particularly as rising Producer Price Indices are reflected in raw materials pricing which in turn causes construction material cost increases. The estimates included in the Construction Work Plan were arrived at considering all the market swings and historical costs based on Kenergy's most recent construction projects. For this reason, cost estimates for construction during 2016-2020 are adjusted to reflect an annual 2% increase in construction labor and materials. Unit costs for proposed projects are shown in Exhibit section of this report. The recommended system improvements are summarized to conform to RUS Form 740c; however, to facilitate discussion and ease of identification, they are listed in the detailed portion of the estimate by substation area. The RUS Form 740c accounting code for each improvement is included in the cost estimate. Projects from the 2013-2017 Construction Work Plan that are being carried forward have been noted with an asterisk using the code number from the previous Construction Work Plan. The 740c code numbering

scheme in this Plan is continued from the previous Construction Work Plan and begins with the next available number under each code series.

A. Status of Previous Work Plan Projects

The following summary is a list of improvements proposed in the previous Construction Work Plan and Construction Work Plan Amendment and the status of each.

Table 3-1: Status of 2013-2017 Construction Work Plan Projects

CFR Code	Eng Status	Substation/Feeder	Description
New Construction/Tie Lines/Distribution- Code 300			
Closed			
358	Closed	Caldwell Springs - Circuit 60-3/Marion - Circuit 70-3	Multi-Phase 1ph ACSR2 to 3ph ACSR2
381	Closed	Caldwell Springs F2	Multi-Phase 1 Phase to 3 ph 2ACSR
359	Closed	Centertown - Circuit 40-3	Multi-Phase 1ph ACSR1/0 to 3ph ACSR1/0
380	Closed	Geneva - Circuit 63-3	Reconductor 3ph ACSR1/0 to 3ph ACSR4/0
309	Closed	Marion - Circuit 70-3	Multi-Phase 1ph ACSR2 to 3ph ACSR2
365	Closed	Niagara - Circuit 80-1	Multi-Phase 1ph ACSR2 to 3ph ACSR2
366	Closed	Nuckols - Circuit 42-3	Reconductor 3ph CU2 to 3ph ACSR336
312	Closed	Pleasant Ridge - Circuit 26-3	Multi-Phase and Reconductor 1ph ACSR4 to 3ph ACSR1/0
369	Closed	Providence - Circuit 81-4	Conversion from 12.47kV to 24.9kV
317	Closed	Race Creek - Circuit 82-3	Multi-Phase 1ph ACSR2 to 3ph ACSR2, Extension of 1ph ACSR1/0
375	Closed	South Hanson 2 - Circuit 53-3	Multi-Phase 1ph ACSR1/0 to 3ph ACSR1/0
337	Closed	South Hanson 2 - Circuit 53-6	Multi-Phase 1ph to 3ph ACSR2, Extension of UG1/0 AL
376	Closed	St. Joe - Circuit 32-1	Extension of 3ph ACSR2, Multi-Phase 1ph ACSR2 to 3ph ACSR2
377	Closed	Thruston 1 - Circuit 11-5	Extension of 1ph ACSR2
379	Closed	Weberstown - Circuit 14-1	Multi-Phase 1ph ACSR2 to 3ph ACSR2
Carryover			
370	Carryover	Providence - Circuit 81-1	Multi-Phase 1ph ACSR2 to 3ph ACSR2
364	Carryover	Masonville - Circuit 23-2	Reconductor 3ph CU1/0 to 3ph ACSR336
360	Carryover	Guffie - Circuit 31-1	Reconductor 3ph CU1/0 & ACSR3/0 to ACSR336
361	Carryover	Hanson - Circuit 51-4	Reconductor 3ph ACSR1/0 to 3ph ACSR4/0
374	Deferred	South Dermont 1 - Circuit 18-2	Reconductor 3ph CU1/0 to 3ph ACSR336

Substation Upgrades-Code 500			
502	Closed	Guffie	Substation Upgrades
503	Closed	St. Joe	Substation Upgrades

B. Summary of 2016-2020 Recommended Plan

This section is a summary of the recommended improvements for this 2016-2020 Construction Work Plan. This section will discuss the high growth areas and the types of improvements recommended for resolving all voltage and capacity problems through CWP time period. A detailed description and justification for each recommended improvement can be found in Section 4.

1. Service to New Members- RUS 100 & 601

   Historical information was reviewed for a 24-month period from 2014 to 2015 to project new member services and meter requirements for the 2016-2020 CWP-period. While the most recent period data was used to reflect the current economic factors, Kenergy did review the historical growth and cost trends for the past 10 years in the future projections. The historical number of services was increased approximately 0.5% per year for the 2016-2020 CWP based on the 2015 Load Forecast. Member overhead, underground, single phase transformer, and three phase transformer requirements were projected based on past experience. The historical costs were inflated by 2.0 percent per year. The cost per service has increased significantly since the past work plan period due mainly to increases in the customer meter and transformer material costs.

Table 3-2: Summary of Costs to Serve a New Member

RUS Code	Category Description	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
101	Underground Lines- New Members	$983,249	$1,008,031	$1,033,411	$1,059,403	$4,324,093
102	Overhead Lines- New Members	$1,699,421	$1,742,253	$1,786,119	$1,831,042	$7,058,835
103	Construction New Service- URD	$240,000				
100	**Total New Line Extensions**	**$2,922,670**	**$2,750,284**	**$2,819,529**	**$2,890,445**	**$11,382,928**
601	Single Phase Transformers- New Members	$1,118,497	$1,147,423	$1,177,060	$1,207,422	$4,650,402
601	Three Phase Transformers- New Members	$88,478	$90,248	$92,053	$93,894	$364,672
601	Meters- New Members	$266,254	$272,056	$277,984	$284,040	$1,100,335
601	**Total New Transformers and Meters**	**$1,473,229**	**$1,509,727**	**$1,547,096**	**$1,585,356**	**$6,115,409**

Table 3-3: Construction to Serve New Members- Code 100

2016-2020 CWP Summary of Code 100

New Members	2-Year Average 2014-2015	Estimated 48-Month Work Plan Period 2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
CONSTRUCTION-NEW SERVICES-OH-103						
CONSTRUCTION-NEW SERVICES-UG-103*		**$240,000**				
TOTAL NEW SERVICES	**586**	**588**	**591**	**594**	**597**	**2,370**
TOTAL UNDERGROUND SERVICES		240	242	243	244	969
TOTAL OVERHEAD SERVICES		348	349	351	353	1401
AVERAGE COST PER SERVICE	**$4,473**	**$4,562**	**$4,654**	**$4,747**	**$4,842**	**$4,701**
AVERAGE SERVICE LENGTH (FT/SERVICE)	**262**	**264**	**265**	**266**	**267**	**265**
TOTAL NEW LINE FOR SERVICES-UG (MILE)		**10.5**	**10.6**	**10.7**	**10.8**	**42.7**
TOTAL NEW LINE FOR SERVICES-OH (MILE)		**18.9**	**19.1**	**19.3**	**19.4**	**76.7**
TOTAL NEW LINE FOR SERVICES-FOOTAGE	**153,444.9**	**155,148.0**	**156,500.9**	**157,861.6**	**159,230.1**	**628,741**
TOTAL NEW LINE FOR SERVICES-MILES	**29.1**	**29.4**	**29.6**	**29.9**	**30.2**	**119.1**
TOTAL COST NEW UG LINES-SERVICES		**$1,223,249**	**$1,008,031**	**$1,033,411**	**$1,059,403**	**$4,324,093**
TOTAL COST NEW OH LINES- SERVICES		**$1,699,421**	**$1,742,253**	**$1,786,119**	**$1,831,042**	**$7,058,835**
AVERAGE COST- FOOTAGE- SERVICES	**$17.07**	**$17.29**	**$17.57**	**$17.86**	**$18.15**	**$17.72**
TOTAL COST NEW LINES FOR SERVICES	**$2,618,886**	**$2,922,670**	**$2,750,284**	**$2,819,529**	**$2,890,445**	**$11,382,928**

* Construction costs for a new underground member

Table 3-4: Construction to Serve New Members- Code 601

New Members	2-Year Average 2014-2015	Estimated 48-Month Work Plan Period 2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
New Single Phase Transformers						
Number of New Transformers	692	696	700	704	708	2,808
Number of New 1-PH Underground		285	286	288	289	1,148
Number of New 1-PH Overhead		411	414	416	419	1,660
Single Phase Underground Transformer-Cost		$458,005	$468,804	$481,524	$492,860	$1,901,194

Single Phase Overhead Transformer- Cost		$660,492	$678,619	$695,535	$714,562	$2,749,208
Avg Cost/Transformer	$1,576	$1,607	$1,639	$1,672	$1,705	$1,656
New Three Phase Transformers-Pad Mount						
Number of New Transformers	10	10	10	10	10	40
Avg Cost/Transformer	$8,674	$8,848	$9,025	$9,205	$9,389	$9,117
New Meters						
Number of New Meters	20,177	1708	1711	1714	1717	6,850
Number of New Meters- Underground		698	699	701	702	2,800
Number of New Meters- Overhead		1010	1012	1013	1015	4,050
Underground Meter- Cost		$108,809	$111,144	$113,691	$116,131	$449,775
Overhead Meter- Cost		$157,445	$160,912	$164,293	$167,910	$650,560
Avg Cost/Meter	$153	$156	$159	$162	$165	$161
TOTAL COST NEW TRANSFORMERS-1PH	**$1,090,263**	**$1,118,497**	**$1,147,423**	**$1,177,060**	**$1,207,422**	**$4,650,402**
TOTAL COST NEW TRANSFORMERS-3PH PAD	**$86,743**	**$88,478**	**$90,248**	**$92,053**	**$93,894**	**$364,672**
TOTAL COST NEW METERS	**$3,083,574**	**$266,254**	**$272,056**	**$277,984**	**$284,040**	**$1,100,335**
TOTAL COST NEW TRANSFORMERS & METERS	**$4,260,581**	**$1,473,229**	**$1,509,727**	**$1,547,096**	**$1,585,356**	**$6,115,409**

2. Service Changes to Existing Members-RUS 602

Historical information was reviewed for a 24-month period from 2014-2015 to project service upgrades to existing members for the CWP period. The historical number of services was increased approximately 0.5% per for the 2016-2020 CWP period, based on the 2015 BREC Load Forecast. The historical costs were inflated by 2.0 percent.

Table 3-5: Service Changes to Existing Members- Code 602

	2-Year Average	Estimated 48-Month Work Plan Period				
	2014-2015	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
Service Upgrades- RUS 602						
Number of Services	92	93	94	95	96	378
Average Cost/Service	$3,666	$3,739	$3,814	$3,890	$3,968	$3,853
Total Service Upgrades- RUS 602	**$337,238**	**$347,722**	**$358,490**	**$369,550**	**$380,908**	**$1,456,669**

3. Sectionalizing- RUS 603

Sectionalizing costs were based on the combination of historical work order, specific equipment purchases, and location specific sectionalizing equipment installations. The historical costs were inflated by 2.0 percent annually. The specific projects are totaled using the CWP cost of construction. A detailed description and justification for each recommended improvement can be found in Section 4.

Table 3-6: Sectionalizing Equipment- Code 603

	2-Year Average	Estimated 48-Month Work Plan Period				
	2014-2015	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
Sectionalizing WO- RUS 603						
Number of Work Orders	13	14	15	16	17	62
Average Total Cost	$465,656	$474,969	$484,468	$494,157	$504,041	$489,409
Total Designated Projects- 603-X	$0	$65,250	$65,250	$65,250	$65,250	$261,000
Total Sectionalizing WO- RUS 603	**$465,656**	**$540,219**	**$549,718**	**$559,407**	**$569,291**	**$2,218,635**

4. Pole Replacements-RUS 606

Historical information was reviewed for a 24-month period from 2014-2015 to project pole replacement costs for the CWP period. The historical costs were inflated by 2.0 percent.

Table 3-7: Pole Replacements- Code 606

	2-Year Average	Estimated 48-Month Work Plan Period				
	2014-2015	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
Pole Replacements- RUS 606						
Number of Poles	600	603	607	611	615	2,436
Average Cost/Pole	$2,728	$2,782	$2,838	$2,895	$2,953	$2,867
Total Pole Replacements- RUS 606	**$1,636,671**	**$1,677,751**	**$1,722,658**	**$1,768,691**	**$1,815,875**	**$6,984,975**

5. Miscellaneous Construction- RUS 608

Historical information was reviewed for a 24-month period from 2014-2015 to project conductor replacement costs for the CWP period. The historical costs were inflated by 2.0 percent.

Table 3-8: Miscellaneous Construction- Code 608

	2-Year Average	Estimated 48-Month Work Plan Period				
	2014-2015	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
Misc Construction - RUS 608						
Number of Projects	761	765	769	773	777	3,084
Average Total Cost	$1,078,710	$1,100,285	$1,122,290	$1,144,736	$1,167,631	$1,133,736
Total Misc Construction- RUS 608	**$1,078,710**	**$1,100,285**	**$1,122,290**	**$1,144,736**	**$1,167,631**	**$4,534,942**

6. Security Lights- RUS 701

Historical information was reviewed for a 24-month period from 2014-2015 to security light costs for the CWP period. The historical costs were inflated by 2.0 percent.

Table 3-9: Security Lights- Code 701

	2-Year Average	Estimated 48-Month Work Plan Period				
	2014-2015	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL
Security Lights- RUS 701						
Number of Lights	1281	1288	1295	1302	1309	5,194
Average Cost/Light	$654	$667	$681	$694	$708	$688
Total Security Lights- RUS 701	**$838,107**	**$859,541**	**$881,496**	**$903,986**	**$927,023**	**$3,572,047**

7. New Tie Lines-RUS 200

The following tie lines are part of the construction plan. Total tie line construction is estimated at $20,092.

CWP CODE	RUS CAT	DISTRICT	STATION	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
201	200	HENDERSON	64	WEAVERTON	NEW CONSTRUCTION SINGLE PHASE 1/0 ACSR	0.1	$6,700
202	200	OWENSBORO	40	CENTERTOWN	NEW CONSTRUCTION THREE PHASE 336 ACSR	0.1	$13,392

8. Line Conversions- RUS 300

As discussed in the Executive Summary, Kenergy's entire distribution system is modeled in WindMil®. For each section of line that had capacity or voltage problems based on the year 2019-2020 projections, alternatives were developed and reviewed by Kenergy. There was an iterative planning process which included management, engineering, and this consultant in the decisions of selected improvements. Some feeders with voltage drop problems were addressed by means of voltage regulators and/or capacitors. In areas where feeder regulation already existed, or where design criteria dictated, the lines were reconductored or multi-phased, as required. Where conductor capacity was insufficient, the conductor was replaced. Phase balancing to relieve voltage design criteria violations was evaluated and documented external to the CWP. A detailed description and justification for each recommended improvement can be found in Section 4.

Table 3-10: Line Conversion and Changes- RUS 300

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
301	LYON	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
302	LYON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.1	$130,680
303	LYON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1	$118,800
304	BEDA	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.3	$273,240
305	CENTERTOWN	CONVERSION UNDERGROUND	0.4	$90,000
306	EAST OWENSBORO	CONVERSION THREE PHASE TO DUAL CIRCUIT THREE PHASE 336 ACSR	0.75	$168,750
307	EAST OWENSBORO	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	0.2	$23,760
310	PHILPOT	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.4	$33,480
312	SOUTH OWENSBORO	UNDERGROUND IMPROVEMENT	0.1	$70,000
313	ADAMS LANE	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850

314	GENEVA	VOLTAGE CONVERSION TO 25KV- UPGRADE TRANSFORMER	1	$45,000
360*	GUFFIE	CARRYOVER. CONVERSION THREE PHASE CU 1/0 TO THREE PHASE 336 ACSR	1.43	$169,884
361*	HANSON	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.2	$261,360
364*	MASONVILLE	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.7	$201,960
370*	PROVIDENCE	CARRYOVER. CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.9	$75,330
371	ALL	SYSTEM WIDE- UNDERGROUND CABLE REPLACEMENT	8	$1,600,000
372	ALL	SYSTEM WIDE- OVERHEAD CONDUCTOR REPLACEMENT	100	$5,400,000
374*	SOUTH DERMONT	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.2	$142,560
383	HANSON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1	$118,800
384	MORGANFIELD	VOLTAGE CONVERSION TO 25KV	13.5	$398,860
385	MORGANFIELD	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	2.1	$175,770
386	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
387	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
388	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.8	$66,960
390	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.1	$8,370
391	ONTON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.5	$297,000
392	WEAVERTON	CONVERSION THREE PHASE TO DUAL CIRCUIT THREE PHASE 336 ACSR	1.1	$247,500
393	WEAVERTON	CONVERSION SINGLE PHASE TO THREE PHASE 336 ACSR	2	$217,620
394	WEAVERTON	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	1.4	$117,180
395	WEAVERTON	CONVERSION TWO PHASE TO THREE PHASE 1/0 ACSR	0.3	$25,920
396	WEAVERTON	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.1	$8,370
397	ZION	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.3	$25,110
398	CALDWELL SPRINGS	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.1	$283,500
399	LYON	CONVERSION TWO PHASE TO THREE PHASE 1/0 ACSR	0.4	$34,560

9. New Substations-RUS 400

   No new substations are recommended in this plan.

10. Increased Substation Capacity-RUS 500

    Based on the projected substation loading analysis, provided in the Exhibit section of this report, there are no substation transformers or station regulators that need to be upgraded during this work plan. However, additional capacity is necessary in support of other system improvement projects or to address backfeed capacity issues. The Horse Fork station will require the construction of an additional transformer bay in addition to repairing damage to the existing

transformer bay 1. Horse Fork station provides vital backfeed capacity to a number of adjacent stations; in addition the station load is becoming more difficult to backfeed from other stations necessitating station transformer redundancy. Total station changes construction is estimated at $1,175,000.

Table 3-11: Substation Changes- RUS 500

CWP CODE	RUS CAT	DISTRICT	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
504	500	HENDERSON	WEAVERTON	STATION UPGRADE FOR NEW CIRCUIT	1	$200,000
505	500	OWENSBORO	EAST OWENSBORO	STATION UPGRADE FOR NEW CIRCUIT	1	$150,000
506	500	OWENSBORO	HORSE FORK	REBUILD STATION TRANSFORMER BAY 1 $1,100,000	1	$0
507	500	OWENSBORO	HORSE FORK	STATION UPGRADE TO DUAL STATION TRANSFORMER CAPACITY	1	$825,000

Substation Changes- Code 500 Details:

- Weaverton Circuit Upgrade. The Weaverton Station area has a number of voltage and conductor capacity issues and to address these issues, a new circuit will be constructed to divide the existing distribution load. In order to support the new circuit, an existing open circuit bay at the station will be made-ready to serve the new distribution lines. The additional circuit bay will require the necessary foundations, switches, and station feeder protective equipment.

- East Owensboro Circuit Upgrade. The East Owensboro Station area will serve a new large commercial customer load, Gateway Commons, which is projected to be a 1 MW load. The addition of this large customer will create conductor loading, voltage, and contingency issues and to address these issues, a new circuit will be constructed to divide the existing distribution load. In order to support the new circuit, an existing open circuit bay at the station will be made-ready to serve the new distribution lines. The additional

circuit bay will require the necessary foundations, switches, and station feeder protective equipment.

- Horse Fork Station. The Horse Fork Station was already planned in this CWP to be converted into a dual transformer station due to the loading and lack of spare capacity in contingency situations due to the station's existing single transformer. However, in late 2015, a catastrophic failure occurred within the Horse Fork Station (cause unknown) which completely destroyed the station's single bay. Therefore, the station will be rebuilt as a two transformer bay station. At this time, the rebuilding cost of station bay 1 ($1,100,000) will be reimbursed by the Cooperative's insurance and as such is not listed as a Code 500 cost. The construction of station bay 2 will be completed in coordination with the bay 1 rebuild and will require the purchase and installation of a new station transformer, 2-circuit low side structure, high side protection, grounding grid, oil containment, and foundations. The estimated cost for the station bay 2 project is $825,000.

11. Sectionalizing and Arc Flash Hazard Mitigation- RUS 603

System protection through fault interrupting and sectionalizing is critical for human life and property protection, and improved reliability. In addition, properly selected and sized devices will reduce the number of consumers interrupted during a power outage and reduce the outage time. The 2012 NESC now requires Arc Flash Hazard assessment, and an important component of assessment and hazard mitigation is the speed of fault and arc interruption. This is an important consideration in system sectionalizing and device application. During the evaluation of the Kenergy distribution system, specific protective devices were noted for upgrade, removal, installation, or to have control setting changes. A detailed description and justification for each recommended improvement can be found in Section 4. Total Sectionalizing construction, Code 603, is estimated at $2,218,635 with $261,000 in designated projects shown in Table 3-12.

Table 3-12: Sectionalizing Specific Locations- RUS 603

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
603-2	SULLIVAN	UPGRADE RECLOSER. 35A.	1	$4,500
603-3	SULLIVAN	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-4	DIXON	UPGRADE RECLOSER. 50A.	1	$4,500
603-5	DIXON	UPGRADE RECLOSER. 50A.	1	$4,500
603-6	SEBREE	UPGRADE RECLOSER. 50A.	1	$4,500
603-7	ONTON	UPGRADE RECLOSER. 50A.	1	$4,500
603-8	ONTON	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-9	ONTON	RECLOSER CHANGE. RELOCATE.		$0
603-10	ONTON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-11	ONTON	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-12	ONTON	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-13	ONTON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-14	ONTON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-15	HANSON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-16	HANSON	UPGRADE RECLOSER. 50A.	1	$4,500
603-17	HANSON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-18	SOUTH HANSON2	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-19	SOUTH HANSON2	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-20	SOUTH HANSON1	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-21	SOUTH HANSON1	INSTALL RECLOSER. 50A.	1	$4,500
603-22	GENEVA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-23	WEAVERTON	UPGRADE RECLOSER. 50A.	1	$4,500
603-24	ADAMS LANE	UPGRADE RECLOSER. 50A.	1	$4,500
603-25	RACE CREEK	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-26	ZION	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-27	ZION	UPGRADE RECLOSER. 50A.	1	$4,500
603-28	NIAGARA	UPGRADE RECLOSER. 50A.	1	$4,500
603-29	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-30	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS. INSTALL RECLOSERS. 50A.	2	$9,000
603-31	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-32	NIAGARA	UPGRADE RECLOSER. 50A.	1	$4,500
603-33	GUFFIE	UPGRADE RECLOSER. 50A.	1	$4,500
603-34	GUFFIE	UPGRADE RECLOSER. 70A.	1	$4,500
603-35	UTICA	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-36	UTICA	UPGRADE RECLOSER. 50A.	1	$4,500

603-37	UTICA	UPGRADE RECLOSER. 50A.	1	$4,500
603-38	UTICA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-39	PLEASANT RIDGE	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-40	WHITESVILLE	INSTALL RECLOSERS. 70A.	6	$27,000
603-41	SACRAMENTO	UPGRADE RECLOSER. 50A.	1	$4,500
603-42	NUCKOLS	UPGRADE RECLOSER. 70A.	1	$4,500
603-43	CENTERTOWN	UPGRADE RECLOSER. 50A.	1	$4,500
603-44	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-45	BEDA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-46	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-47	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-48	BEDA	UPGRADE RECLOSER. 35A.	1	$4,500
603-49	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-50	BEDA	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-51	WEST OWENSBORO	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-52	MASONVILLE	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-53	EAST OWENSBORO	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-54	DERMONT	UPGRADE RECLOSER. 50A.	1	$4,500
603-55	PHILPOT	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-56	PHILPOT	UPGRADE RECLOSER. 50A.	1	$4,500
603-57	HAWESVILLE	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-58	ONTON	LOAD SHIFT. CHANGE OPEN POINTS.		$0

12. Distribution Line Voltage Regulators- RUS 604

Voltage regulators are utilized throughout the Kenergy system to correct potential low voltages. Additional voltage regulators have been recommended as a short-term least cost alternative to extensive multi-phasing or line reconductoring improvements. Additionally, some existing voltage regulators are recommended for replacement because they will become overloaded during the CWP period. A detailed description and justification for each recommended improvement can be found in Section 4. Total Voltage Regulator construction, Code 604, is estimated at $162,000 in designated projects shown in Table 3-13.

Table 3-13: Line Regulators- RUS 604

CWP CODE	RUS CAT	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
604-19	604	LYON	INSTALL REGULATORS- THREE PHASE- 150A	3	$45,000
604-21	604	HANSON	INSTALL REGULATORS- THREE PHASE- 100A	3	$36,000
604-22	604	WEAVERTON	INSTALL REGULATORS- THREE PHASE- 100A	3	$36,000
604-23	604	ZION	INSTALL REGULATORS- THREE PHASE- 150A	3	$45,000

13. Distribution Line Capacitors-RUS 605

Capacitors have been recommended as needed throughout the Kenergy system to address voltage issues along heavily loaded feeders and to address station power factor issues. A detailed description and justification for each recommended improvement can be found in Section 4. Total Capacitor construction, Code 605, is estimated at $45,000 in designated projects shown in Table 3-14.

Table 3-14: Distribution Capacitors- RUS 605

CWP CODE	RUS CAT	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
605-2	605	MARION	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-3	605	MARION	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-4	605	MORGANFIELD	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-5	605	DIXON	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-6	605	LITTLE DIXIE	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-7	605	ONTON	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-8	605	HANSON	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-9	605	GUFFIE	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-10	605	NUCKOLS	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
			TOTAL RUS CODE 605		**$45,000**

14. System Wide- RUS 371 & RUS 372

- RUS CODE 371. Replace approximately 2.0 miles/year of underground cable on the Kenergy system. Based on existing records, Kenergy is beginning to experience an increase in failures on vintage XLP, unjacketed underground cable with concentric neutrals. Underground sections with three failures are replaced as indicated in the Design Criteria: Item 5. Kenergy is projecting eight miles of underground cable should be replaced over the 4-year CWP period. Since the last CWP period, Kenergy's experience has been that similar project construction is approximately $200,000 per mile.

- RUS CODE 372. Reconductor approximately 25 miles per year of single-phase and three phase copper and #4 ACSR (or smaller aluminum conductors) with new overhead ACSR sized by load requirements, to replace aging conductor and improve reliability. It is estimated that 33% of the total conductor replacement is three phase, and the remaining is single phase based on the previous CWP. Since the last CWP period, Kenergy's experience has been that similar project construction is approximately $54,000 per mile, which a blended cost incorporating the single phase and three phase replacement costs.

C. 2016-2020 CWP DETAILED COST ESTIMATE SUMMARY

Shown below is a summary of the 2016-2020 CWP showing all RUS category codes.

Kenergy Cost Estimate Summary
2016-2020 Construction Work Plan

RUS CODE	Description	Quantity		Projected Cost 2016-2018	Projected Cost 2018-2020	Total
100	Consumer Additions					
101	Underground 969	42.72	Mi.	$2,231,280	$2,092,813	$4,324,093
102	Overhead 1401	76.75	Mi.	$3,441,673	$3,617,161	$7,058,835
	total 2,370	119.46				
	Subtotal - New Line- Code 100			**$5,672,953**	**$5,709,974**	**$11,382,928**
200	New Tie Lines	0.2	Mi.	$6,700	$13,392	$20,092
300	Line Changes	152.4	Mi.	$5,406,240	$5,446,484	$10,852,724
400	New Substations					
500	Increased Substation Capacity			$350,000	$825,000	$1,175,000
601	Distribution Equipment					
	Transformers- Customer Additions					
	Underground	1,188	Qty	$1,105,535	$1,160,331	$2,265,866
	Overhead	1,660	Qty	$1,339,110	$1,410,097	$2,749,208
	Total	2,848	Qty			
	Transformers- Voltage Conversion					
	Underground	4	Qty	$10,000		$10,000
	Overhead	75	Qty	$135,000		$135,000
	Subtotal- Transformers					
	Underground	1,192	Qty	$1,115,535	$1,160,331	$2,275,866
	Overhead	1,735	Qty	$1,474,110	$1,410,097	$2,884,208
	Total	2,927	Qty	$2,589,646	$2,570,428	$5,160,074
	Subtotal Meters					
	Underground	2,800	Qty	$219,953	$229,822	$449,775
	Overhead	4,050	Qty	$318,358	$332,202	$650,560
	Total	6,850	Qty	$538,311	$562,024	$1,100,335
	Subtotal - Distribution Equipment-601			**$3,127,956**	**$3,132,452**	**$6,260,409**
602	Increased Service Capacity	378	Qty	$706,211	$750,458	$1,456,669
603	Sectionalizing			$1,089,937	$1,128,698	$2,218,635
604	Voltage Regulators			$162,000		$162,000
605	Capacitors	2700	kVAR	$45,000		$45,000
606	Pole Replacement			$3,400,410	$3,584,566	$6,984,975
607	Autotransformers-Work Order					
608	Misc Construction			$2,222,575	$2,312,367	$4,534,942
	Subtotal - All 600 Codes			**$10,754,089**	**$10,908,541**	**$21,662,630**
701	Security Lights	5,194	Qty	$1,741,037	$1,831,010	$3,572,047
	Subtotal - Other Distribution- All 700 Codes			**$1,741,037**	**$1,831,010**	**$3,572,047**
				2016-2018	2018-2020	
	SUBTOTAL 2016-2020			**$23,931,020**	**$24,734,401**	
	TOTAL 2016-2020					**$48,665,421**

DESCRIPTION AND JUSTIFICATION

4 DESCRIPTION AND JUSTIFICATION

A. Summary of System Improvements

The following pages provide a description and justification for the proposed construction work plan projects. The improvements proposed are those necessary to maintain adequate voltage and capacity through the end of the CWP period. These recommended projects are associated with the rehabilitation of the existing system and the integration of the new consumers into the Kenergy system, including enhancements to meet the Kenergy reliability goals. Alternate projects were considered and included additional line regulation, switching load to other electric lines or stations, and power factor correction. Phase balancing to relieve line voltage issues was evaluated and documented externally to the projects listed in the CWP report. Line and equipment costs used in the construction cost estimates are given in the report's Exhibit section. Costs of carry-over projects were updated based on this CWP's cost factors. Projects from the 2013-2017 Construction Work Plan that are being carried forward have been noted with an asterisk using the code number from the previous Construction Work Plan. The following listings Table 4-1 and 4-2 detail the specific construction projects recommended for the 2016-2020 CWP:

Table 4-1: 2016-2020 Construction Work Plan- System Improvements By Project Code

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
201	WEAVERTON	NEW CONSTRUCTION SINGLE PHASE 1/0 ACSR	0.1	$6,700
202	CENTERTOWN	NEW CONSTRUCTION THREE PHASE 336 ACSR	0.1	$13,392
301	LYON	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
302	LYON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.1	$130,680
303	LYON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1	$118,800
304	BEDA	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.3	$273,240
305	CENTERTOWN	CONVERSION UNDERGROUND	0.4	$90,000
306	EAST OWENSBORO	CONVERSION THREE PHASE TO DUAL CIRCUIT THREE PHASE 336 ACSR	0.75	$168,750
307	EAST OWENSBORO	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	0.2	$23,760
310	PHILPOT	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.4	$33,480
312	SOUTH OWENSBORO	UNDERGROUND IMPROVEMENT	0.1	$70,000
313	ADAMS LANE	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
314	GENEVA	VOLTAGE CONVERSION TO 25KV- UPGRADE TRANSFORMER	1	$45,000
360*	GUFFIE	CARRYOVER. CONVERSION THREE PHASE CU 1/0 TO THREE PHASE 336 ACSR	1.43	$169,884
361*	HANSON	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.2	$261,360

4 DESCRIPTION AND JUSTIFICATION

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
364*	MASONVILLE	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.7	$201,960
370*	PROVIDENCE	CARRYOVER. CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.9	$75,330
371	ALL	SYSTEM WIDE- UNDERGROUND CABLE REPLACEMENT	8	$1,600,000
372	ALL	SYSTEM WIDE- OVERHEAD CONDUCTOR REPLACEMENT	100	$5,400,000
374*	SOUTH DERMONT	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.2	$142,560
383	HANSON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1	$118,800
384	MORGANFIELD	VOLTAGE CONVERSION TO 25KV	13.5	$398,860
385	MORGANFIELD	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	2.1	$175,770
386	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
387	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
388	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.8	$66,960
390	NIAGARA	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.1	$8,370
391	ONTON	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.5	$297,000
392	WEAVERTON	CONVERSION THREE PHASE TO DUAL CIRCUIT THREE PHASE 336 ACSR	1.1	$247,500
393	WEAVERTON	CONVERSION SINGLE PHASE TO THREE PHASE 336 ACSR	2	$217,620
394	WEAVERTON	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	1.4	$117,180
395	WEAVERTON	CONVERSION TWO PHASE TO THREE PHASE 1/0 ACSR	0.3	$25,920
396	WEAVERTON	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.1	$8,370
397	ZION	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.3	$25,110
398	CALDWELL SPRINGS	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.1	$283,500
399	LYON	CONVERSION TWO PHASE TO THREE PHASE 1/0 ACSR	0.4	$34,560
504	WEAVERTON	STATION UPGRADE FOR NEW CIRCUIT	1	$200,000
505	EAST OWENSBORO	STATION UPGRADE FOR NEW CIRCUIT	1	$150,000
506	HORSE FORK	REBUILD BAY 1	1	$0
507	HORSE FORK	STATION UPGRADE TO DUAL STATION TRANSFORMER CAPACITY	1	$825,000
603-2	SULLIVAN	UPGRADE RECLOSER. 35A.	1	$4,500
603-3	SULLIVAN	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-4	DIXON	UPGRADE RECLOSER. 50A.	1	$4,500
603-5	DIXON	UPGRADE RECLOSER. 50A.	1	$4,500
603-6	SEBREE	UPGRADE RECLOSER. 50A.	1	$4,500
603-7	ONTON	UPGRADE RECLOSER. 50A.	1	$4,500
603-8	ONTON	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-9	ONTON	RECLOSER CHANGE. RELOCATE.		$0
603-10	ONTON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-11	ONTON	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-12	ONTON	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-13	ONTON	INSTALL ELECTRONIC RECLOSER.	1	$18,000

4 DESCRIPTION AND JUSTIFICATION

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
603-14	ONTON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-15	HANSON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-16	HANSON	UPGRADE RECLOSER. 50A.	1	$4,500
603-17	HANSON	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-18	SOUTH HANSON2	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-19	SOUTH HANSON2	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-20	SOUTH HANSON1	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-21	SOUTH HANSON1	INSTALL RECLOSER. 50A.	1	$4,500
603-22	GENEVA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-23	WEAVERTON	UPGRADE RECLOSER. 50A.	1	$4,500
603-24	ADAMS LANE	UPGRADE RECLOSER. 50A.	1	$4,500
603-25	RACE CREEK	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-26	ZION	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-27	ZION	UPGRADE RECLOSER. 50A.	1	$4,500
603-28	NIAGARA	UPGRADE RECLOSER. 50A.	1	$4,500
603-29	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-30	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS. INSTALL RECLOSERS. 50A.	2	$9,000
603-31	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-32	NIAGARA	UPGRADE RECLOSER. 50A.	1	$4,500
603-33	GUFFIE	UPGRADE RECLOSER. 50A.	1	$4,500
603-34	GUFFIE	UPGRADE RECLOSER. 70A.	1	$4,500
603-35	UTICA	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-36	UTICA	UPGRADE RECLOSER. 50A.	1	$4,500
603-37	UTICA	UPGRADE RECLOSER. 50A.	1	$4,500
603-38	UTICA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-39	PLEASANT RIDGE	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-40	WHITESVILLE	INSTALL RECLOSERS. 70A.	6	$27,000
603-41	SACRAMENTO	UPGRADE RECLOSER. 50A.	1	$4,500
603-42	NUCKOLS	UPGRADE RECLOSER. 70A.	1	$4,500
603-43	CENTERTOWN	UPGRADE RECLOSER. 50A.	1	$4,500
603-44	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-45	BEDA	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-46	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-47	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-48	BEDA	UPGRADE RECLOSER. 35A.	1	$4,500
603-49	BEDA	UPGRADE RECLOSER. 50A.	1	$4,500
603-50	BEDA	INSTALL ELECTRONIC RECLOSER.	1	$18,000
603-51	WEST OWENSBORO	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-52	MASONVILLE	LOAD SHIFT. CHANGE OPEN POINTS.		$0
603-53	EAST OWENSBORO	LOAD SHIFT. CHANGE OPEN POINTS.		$0

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
603-54	DERMONT	UPGRADE RECLOSER. 50A.	1	$4,500
603-55	PHILPOT	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-56	PHILPOT	UPGRADE RECLOSER. 50A.	1	$4,500
603-57	HAWESVILLE	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
603-58	ONTON	LOAD SHIFT. CHANGE OPEN POINTS.		$0
604-19	LYON	INSTALL REGULATORS- THREE PHASE- 150A	3	$45,000
604-21	HANSON	INSTALL REGULATORS- THREE PHASE- 100A	3	$36,000
604-22	WEAVERTON	INSTALL REGULATORS- THREE PHASE- 100A	3	$36,000
604-23	ZION	INSTALL REGULATORS- THREE PHASE- 150A	3	$45,000
605-2	MARION	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-3	MARION	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-4	MORGANFIELD	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-5	DIXON	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-6	LITTLE DIXIE	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-7	ONTON	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-8	HANSON	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-9	GUFFIE	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
605-10	NUCKOLS	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000

* Carry over projects from previous work plan.

Table 4-2: 2016-2020 Construction Work Plan- System Improvements By Station

STATION NAME	CWP CODE	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
ADAMS LANE	313	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
ADAMS LANE	603-24	UPGRADE RECLOSER. 50A.	1	$4,500
BEDA	304	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.3	$273,240
BEDA	603-44	UPGRADE RECLOSER. 50A.	1	$4,500
BEDA	603-45	LOAD SHIFT. CHANGE OPEN POINTS.		$0
BEDA	603-46	UPGRADE RECLOSER. 50A.	1	$4,500
BEDA	603-47	UPGRADE RECLOSER. 50A.	1	$4,500
BEDA	603-48	UPGRADE RECLOSER. 35A.	1	$4,500
BEDA	603-49	UPGRADE RECLOSER. 50A.	1	$4,500
BEDA	603-50	INSTALL ELECTRONIC RECLOSER.	1	$18,000
CALDWELL SPRINGS	398	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.1	$283,500
CENTERTOWN	202	NEW CONSTRUCTION THREE PHASE 336 ACSR	0.1	$13,392
CENTERTOWN	305	CONVERSION UNDERGROUND	0.4	$90,000
CENTERTOWN	603-43	UPGRADE RECLOSER. 50A.	1	$4,500
DERMONT	603-54	UPGRADE RECLOSER. 50A.	1	$4,500
DIXON	603-4	UPGRADE RECLOSER. 50A.	1	$4,500

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
DIXON	603-5	UPGRADE RECLOSER. 50A.	1	$4,500
DIXON	605-5	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
EAST OWENSBORO	306	CONVERSION THREE PHASE TO DUAL CIRCUIT THREE PHASE 336 ACSR	0.75	$168,750
EAST OWENSBORO	307	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	0.2	$23,760
EAST OWENSBORO	505	STATION UPGRADE FOR NEW CIRCUIT	1	$150,000
EAST OWENSBORO	603-53	LOAD SHIFT. CHANGE OPEN POINTS.		$0
GENEVA	314	VOLTAGE CONVERSION TO 25KV- UPGRADE TRANSFORMER	1	$45,000
GENEVA	603-22	LOAD SHIFT. CHANGE OPEN POINTS.		$0
GUFFIE	360*	CARRYOVER. CONVERSION THREE PHASE CU 1/0 TO THREE PHASE 336 ACSR	1.43	$169,884
GUFFIE	603-33	UPGRADE RECLOSER. 50A.	1	$4,500
GUFFIE	603-34	UPGRADE RECLOSER. 70A.	1	$4,500
GUFFIE	605-9	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
HANSON	361*	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.2	$261,360
HANSON	383	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1	$118,800
HANSON	603-15	INSTALL ELECTRONIC RECLOSER.	1	$18,000
HANSON	603-16	UPGRADE RECLOSER. 50A.	1	$4,500
HANSON	603-17	INSTALL ELECTRONIC RECLOSER.	1	$18,000
HANSON	604-21	INSTALL REGULATORS- THREE PHASE- 100A	3	$36,000
HANSON	605-8	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
HAWESVILLE	603-57	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
HORSE FORK	506	REBUILD BAY 1	1	$0
HORSE FORK	507	STATION UPGRADE TO DUAL STATION TRANSFORMER CAPACITY	1	$825,000
LITTLE DIXIE	605-6	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
LYON	301	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
LYON	302	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.1	$130,680
LYON	303	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1	$118,800
LYON	399	CONVERSION TWO PHASE TO THREE PHASE 1/0 ACSR	0.4	$34,560
LYON	604-19	INSTALL REGULATORS- THREE PHASE- 150A	3	$45,000
MARION	605-2	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
MARION	605-3	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
MASONVILLE	364*	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.7	$201,960
MASONVILLE	603-52	LOAD SHIFT. CHANGE OPEN POINTS.		$0
MORGANFIELD	384	VOLTAGE CONVERSION TO 25KV	13.5	$398,860
MORGANFIELD	385	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	2.1	$175,770
MORGANFIELD	605-4	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
NIAGARA	386	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850
NIAGARA	387	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.5	$41,850

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
NIAGARA	388	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.8	$66,960
NIAGARA	390	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.1	$8,370
NIAGARA	603-28	UPGRADE RECLOSER. 50A.	1	$4,500
NIAGARA	603-29	LOAD SHIFT. CHANGE OPEN POINTS.		$0
NIAGARA	603-30	LOAD SHIFT. CHANGE OPEN POINTS. INSTALL RECLOSERS. 50A.	2	$9,000
NIAGARA	603-31	LOAD SHIFT. CHANGE OPEN POINTS.		$0
NIAGARA	603-32	UPGRADE RECLOSER. 50A.	1	$4,500
NUCKOLS	603-42	UPGRADE RECLOSER. 70A.	1	$4,500
NUCKOLS	605-10	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
ONTON	391	CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	2.5	$297,000
ONTON	603-10	INSTALL ELECTRONIC RECLOSER.	1	$18,000
ONTON	603-11	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
ONTON	603-12	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
ONTON	603-13	INSTALL ELECTRONIC RECLOSER.	1	$18,000
ONTON	603-14	INSTALL ELECTRONIC RECLOSER.	1	$18,000
ONTON	603-58	LOAD SHIFT. CHANGE OPEN POINTS.		$0
ONTON	603-7	UPGRADE RECLOSER. 50A.	1	$4,500
ONTON	603-8	LOAD SHIFT. CHANGE OPEN POINTS.		$0
ONTON	603-9	RECLOSER CHANGE. RELOCATE.		$0
ONTON	605-7	INSTALL THREE PHASE 300 KVAR CAPACITOR BANK	1	$5,000
PHILPOT	310	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.4	$33,480
PHILPOT	603-55	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
PHILPOT	603-56	UPGRADE RECLOSER. 50A.	1	$4,500
PLEASANT RIDGE	603-39	LOAD SHIFT. CHANGE OPEN POINTS.		$0
PROVIDENCE	370*	CARRYOVER. CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.9	$75,330
RACE CREEK	603-25	LOAD SHIFT. CHANGE OPEN POINTS.		$0
SACRAMENTO	603-41	UPGRADE RECLOSER. 50A.	1	$4,500
SEBREE	603-6	UPGRADE RECLOSER. 50A.	1	$4,500
SOUTH DERMONT	374*	CARRYOVER. CONVERSION THREE PHASE TO THREE PHASE 336 ACSR	1.2	$142,560
SOUTH HANSON1	603-20	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
SOUTH HANSON1	603-21	INSTALL RECLOSER. 50A.	1	$4,500
SOUTH HANSON2	603-18	LOAD SHIFT. CHANGE OPEN POINTS.		$0
SOUTH HANSON2	603-19	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
SOUTH OWENSBORO	312	UNDERGROUND IMPROVEMENT	0.1	$70,000
SULLIVAN	603-2	UPGRADE RECLOSER. 35A.	1	$4,500
SULLIVAN	603-3	LOAD SHIFT. CHANGE OPEN POINTS.		$0
UTICA	603-35	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	QTY	COST ESTIMATE
UTICA	603-36	UPGRADE RECLOSER. 50A.	1	$4,500
UTICA	603-37	UPGRADE RECLOSER. 50A.	1	$4,500
UTICA	603-38	LOAD SHIFT. CHANGE OPEN POINTS.		$0
WEAVERTON	201	NEW CONSTRUCTION SINGLE PHASE 1/0 ACSR	0.1	$6,700
WEAVERTON	392	CONVERSION THREE PHASE TO DUAL CIRCUIT THREE PHASE 336 ACSR	1.1	$247,500
WEAVERTON	393	CONVERSION SINGLE PHASE TO THREE PHASE 336 ACSR	2	$217,620
WEAVERTON	394	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	1.4	$117,180
WEAVERTON	395	CONVERSION TWO PHASE TO THREE PHASE 1/0 ACSR	0.3	$25,920
WEAVERTON	396	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.1	$8,370
WEAVERTON	504	STATION UPGRADE FOR NEW CIRCUIT	1	$200,000
WEAVERTON	603-23	UPGRADE RECLOSER. 50A.	1	$4,500
WEAVERTON	604-22	INSTALL REGULATORS- THREE PHASE- 100A	3	$36,000
WEST OWENSBORO	603-51	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.		$0
WHITESVILLE	603-40	INSTALL RECLOSERS. 70A.	6	$27,000
ZION	397	CONVERSION SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.3	$25,110
ZION	603-26	LOAD SHIFT. CHANGE OPEN POINTS.		$0
ZION	603-27	UPGRADE RECLOSER. 50A.	1	$4,500
ZION	604-23	INSTALL REGULATORS- THREE PHASE- 150A	3	$45,000

B. Project Descriptions and Justifications- New Customers, Conversions and Line Changes

The following pages provide a description and justification for the proposed construction work plan projects specifically the Code 100 New Customers, Code 200 Tie Lines, and Code 300 Line Conversions.

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	EAST OWENSBORO
LOCATION	PLEASANT VALLEY RD. @ HAYDEN RD.
740C CODE	103
ESTIMATED COST:	$240,000
COMPLETION YEAR	2016
DESCRIPTION:	CONSTRUCT 0.8 MILES OF THREE PHASE 500 MCM UNDERGROUND. OH13110001 TO OH715266. CONSTRUCTION TO SERVE NEW CUSTOMERS. GATEWAY COMMONS.

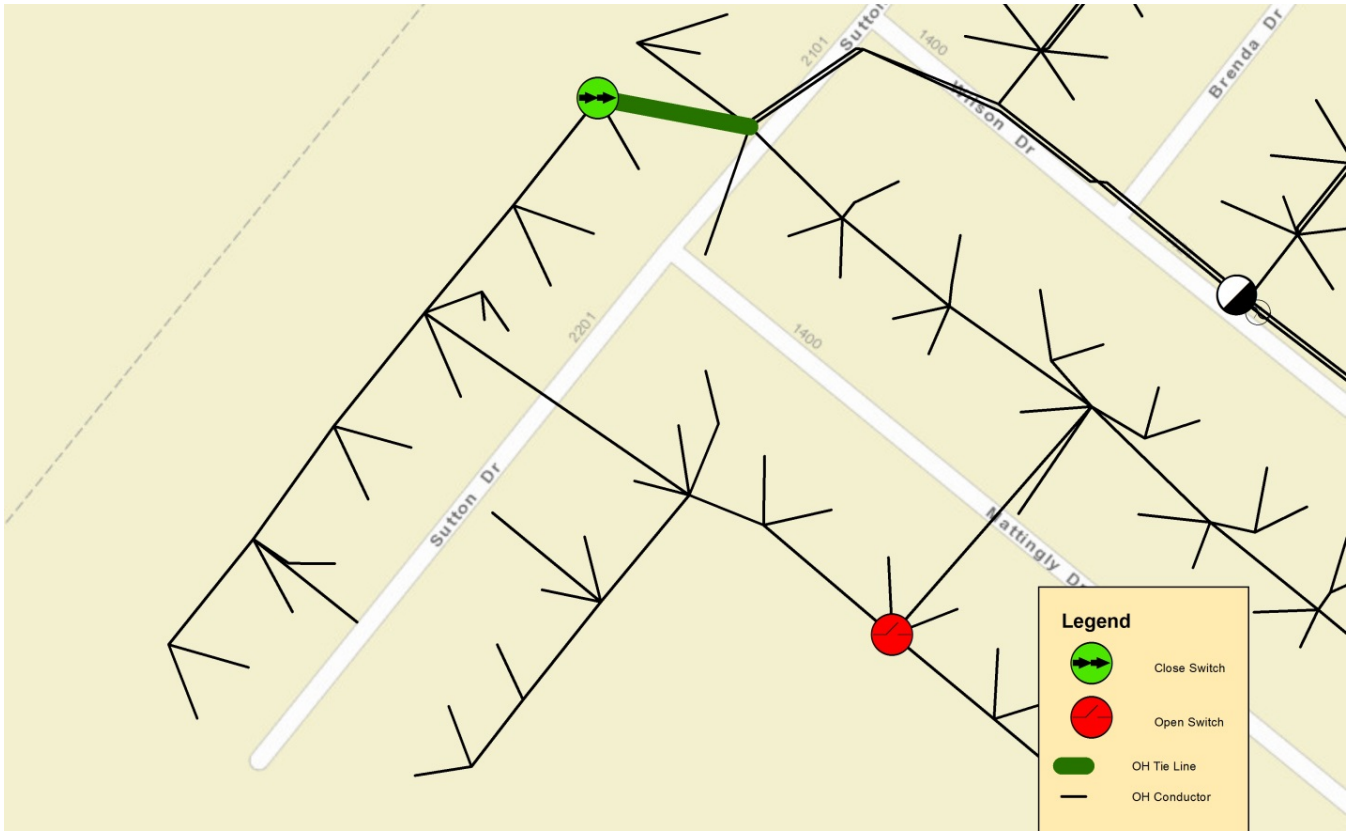
ASSOCIATED PROJECTS:

ALTERNATES:

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

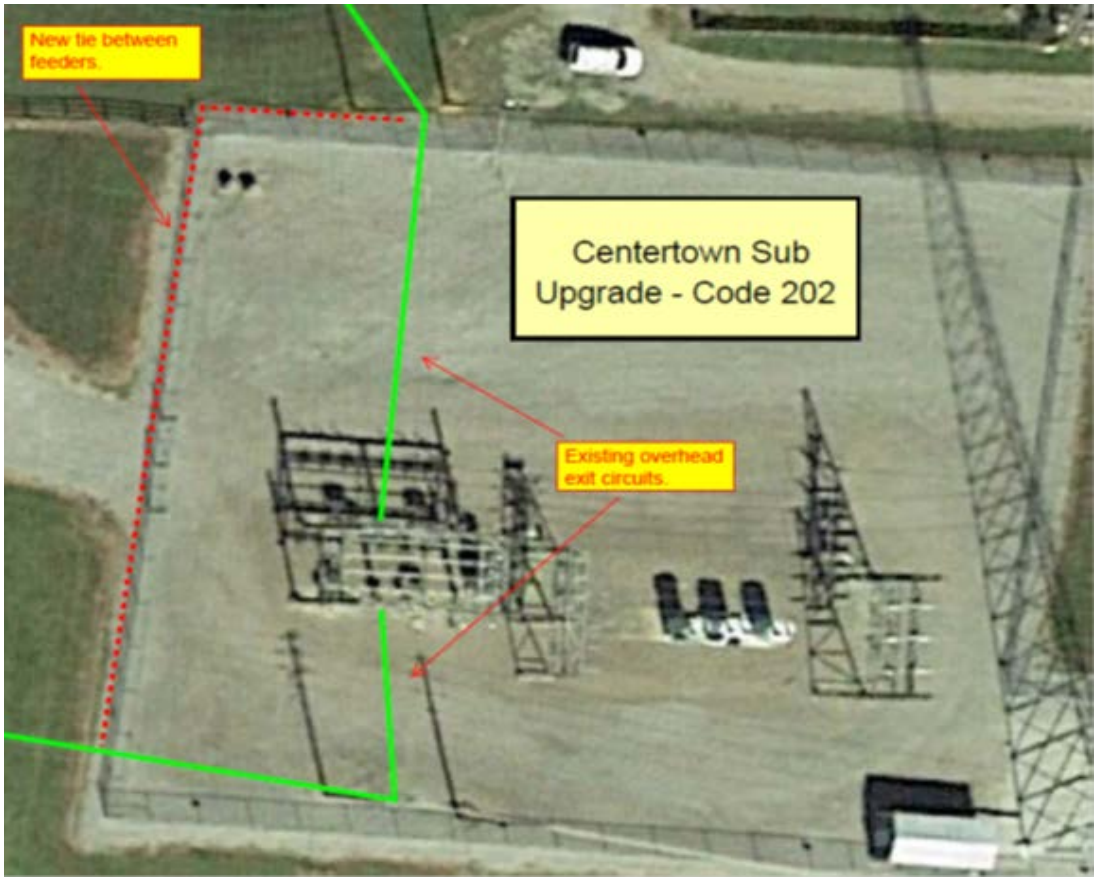
SUBSTATION AREA:	WEAVERTON
LOCATION	SUTTON DR. @ WILSON DR.
740C CODE	201
ESTIMATED COST:	$6,700
COMPLETION YEAR	2017
DESCRIPTION:	CONSTRUCT NEW 1PH, 1/0 ACSR TIE LINE FROM END OF LINE CONVERSION PROJECT AT SECTION # OH332203 TO EXISTING LINE # OH332214. CONNECT TIE LINE TO PHASE "C".
ASSOCIATED PROJECTS:	OPEN SECTION # OH332154 AT END OF # OH40955350 AND CLOSE # OH332214 TO END OF NEW TIE LINE ON PHASE "C".
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

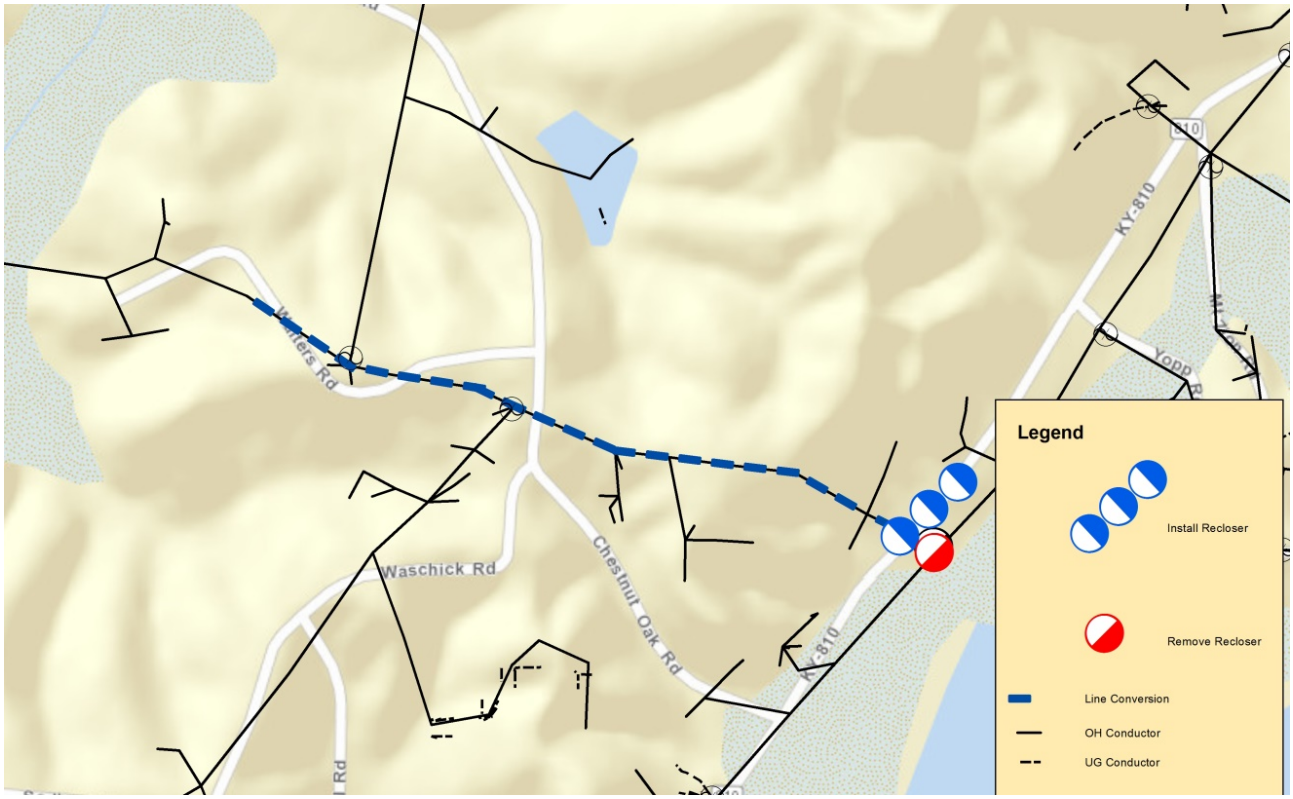
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	CENTERTOWN
LOCATION	CENTERTOWN SUB
740C CODE	202
ESTIMATED COST:	$13,392
COMPLETION YEAR	2019
DESCRIPTION:	.1 MILE 336 ACSR THREE PHASE TIE LINE- CIRCUIT 1 TO CIRCUIT 3. INSTALL GOAB SWITCHES ON BOTH CIRCUITS AND NEW TIE LINE. NEW LINE TO BE USED FOR STATION CIRCUIT INNER-TIE.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	REBUILD STATION LOWSIDE BUS TO IMPROVE CIRCUIT TIE AND TRANSFER CAPACITY



NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	LYON
LOCATION:	KY-810 @ Chestnut Oak Rd.
740C CODE:	301
ESTIMATED COST:	$41,850
COMPLETION YEAR:	2018
DESCRIPTION:	CONVERT 0.5 MILES OF SINGLE PHASE 2 ACSR TO THREE PHASE 1/0 ACSR. OH307763 TO OH306612. LOW VOLTAGE AT END OF LINE. DIFFICULT TO PHASE BALANCE.
ASSOCIATED PROJECTS:	CWP 399. REMOVE SINGLE PHASE OCR AND INSTALL THREE 35 A OCRS. PUT THREE MAIN TAPS ON DIFFERENT PHASES.
ALTERNATES:	NONE.



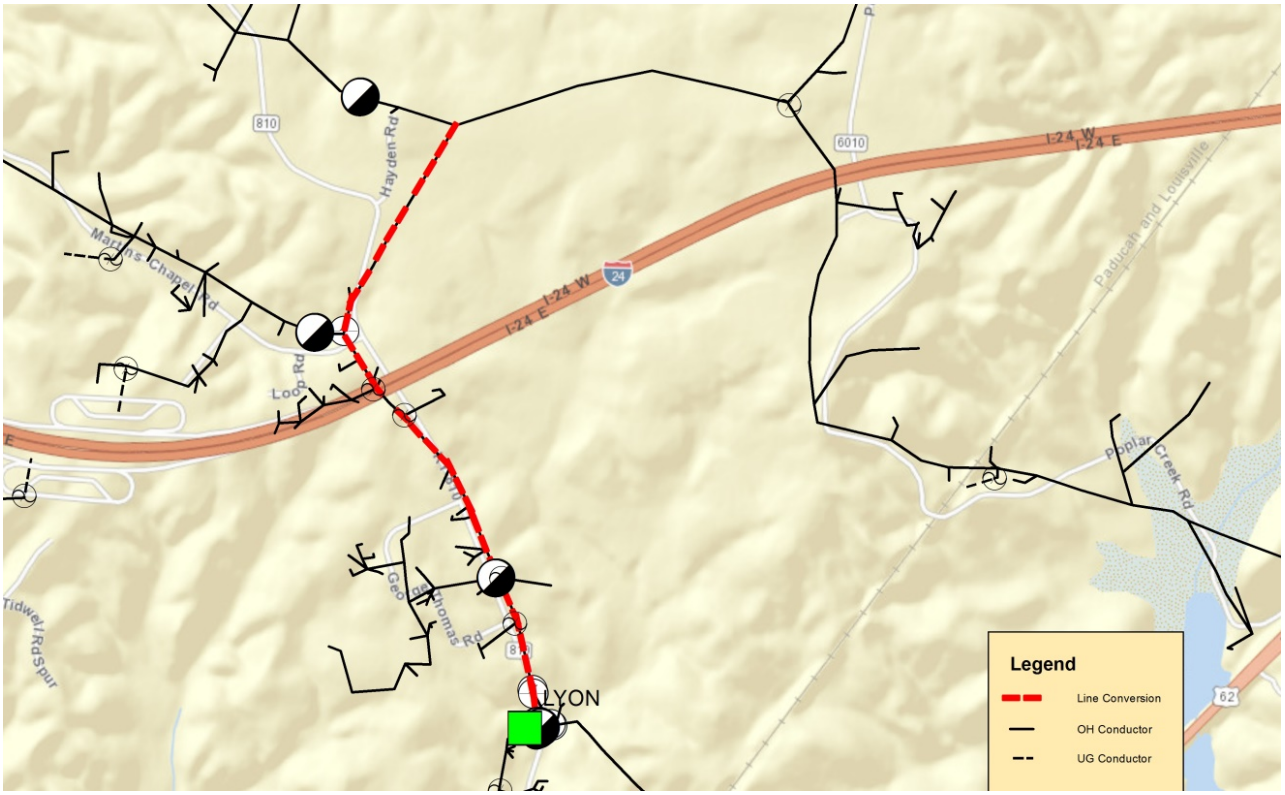
4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	LYON
LOCATION	LYON SUBSTATION TO HAYDEN RD.
740C CODE	302
ESTIMATED COST:	$130,680
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 1.1 MILES OF 1/0 ACSR THREE PHASE TO THREE PHASE 336 ACSR. OH306654 TO OH306401. SINGLE LOSS CONTINGENCY PROJECT TO ADDRESS BACKFEED ISSUES BETWEEN LYON AND CALDWELL SPRINGS STATIONS.

ASSOCIATED PROJECTS:

ALTERNATES: NONE.



4 DESCRIPTION AND JUSTIFICATION

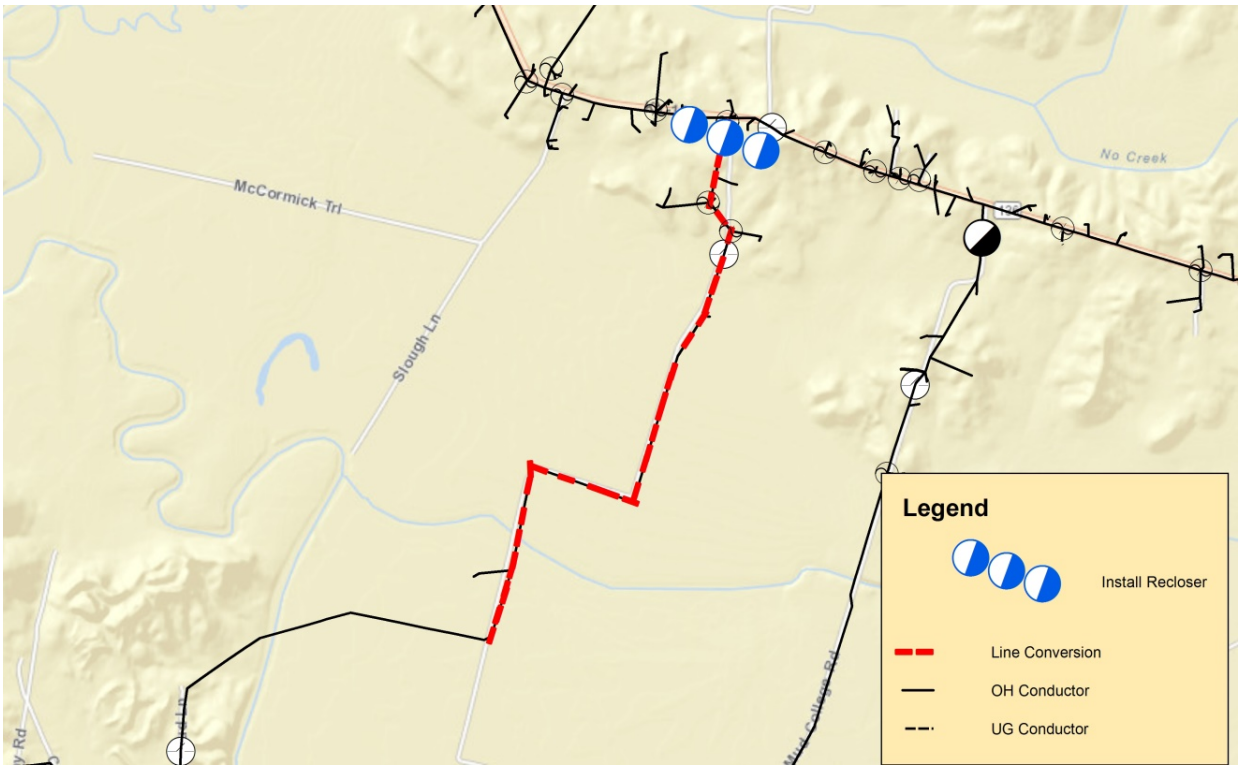
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	LYON
LOCATION	KY-93 @ POPLAR CREEK RD.
740C CODE	303
ESTIMATED COST:	$118,800
COMPLETION YEAR	2017
DESCRIPTION:	CONVERT 1 MILES OF 2 ACSR THREE PHASE TO THREE PHASE 336 ACSR. OH306351 TO OH307238. SINGLE LOSS CONTINGENCY PROJECT TO ADDRESS BACKFEED ISSUES BETWEEN LYON AND CALDWELL SPRINGS STATIONS.
ASSOCIATED PROJECTS:	CWP 604-19
ALTERNATES:	NONE.

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

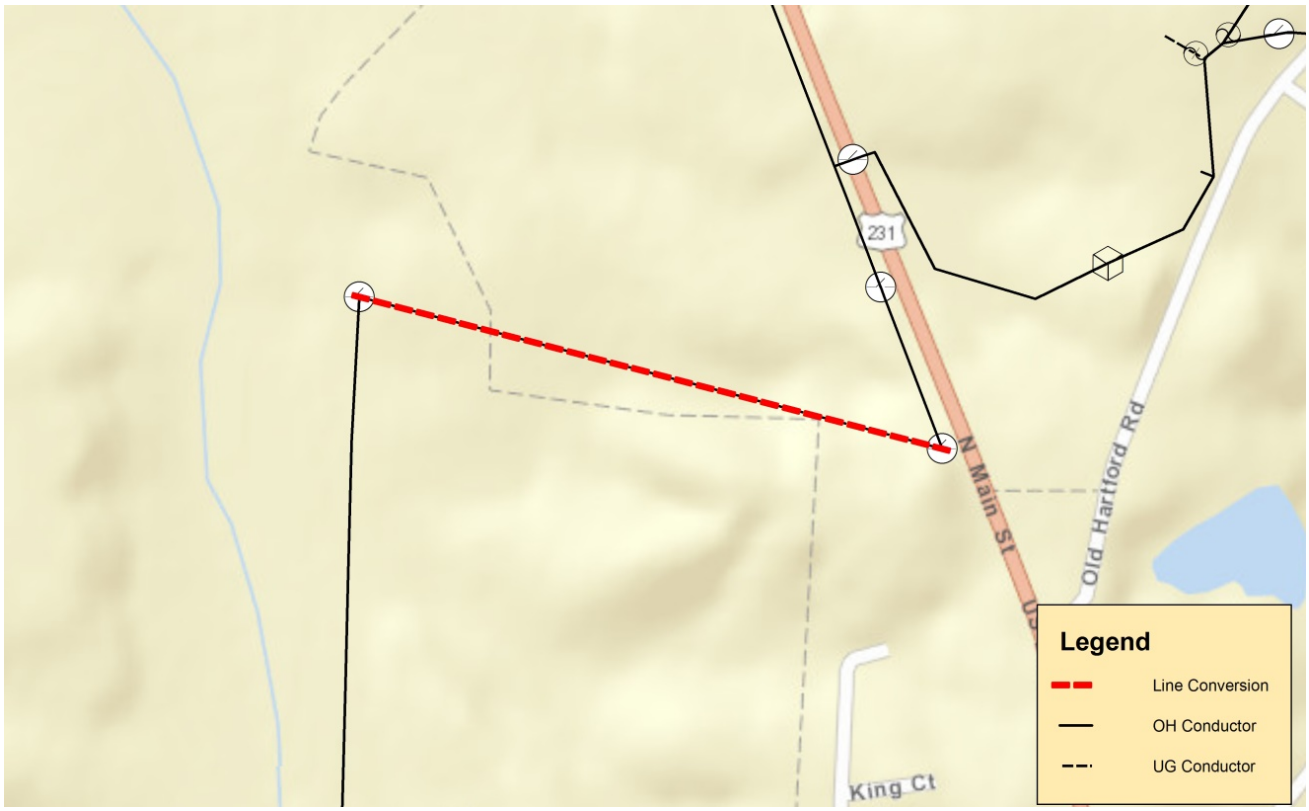
SUBSTATION AREA:	BEDA
LOCATION	JOHNSON SCHOOL RD
740C CODE	304
ESTIMATED COST:	$273,240
COMPLETION YEAR	2018
DESCRIPTION:	2.3 MILES THREE PHASE 4A TO 336 ACSR THREE PHASE. OH701292 TO OH702219. SINGLE LOSS CONTINGENCY UPGRADE TO ADDRESS VOLTAGE ISSUES BACKFEEDING CENTERTOWN LOAD.
ASSOCIATED PROJECTS:	INSTALL THREE PHASE RECLOSER.
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

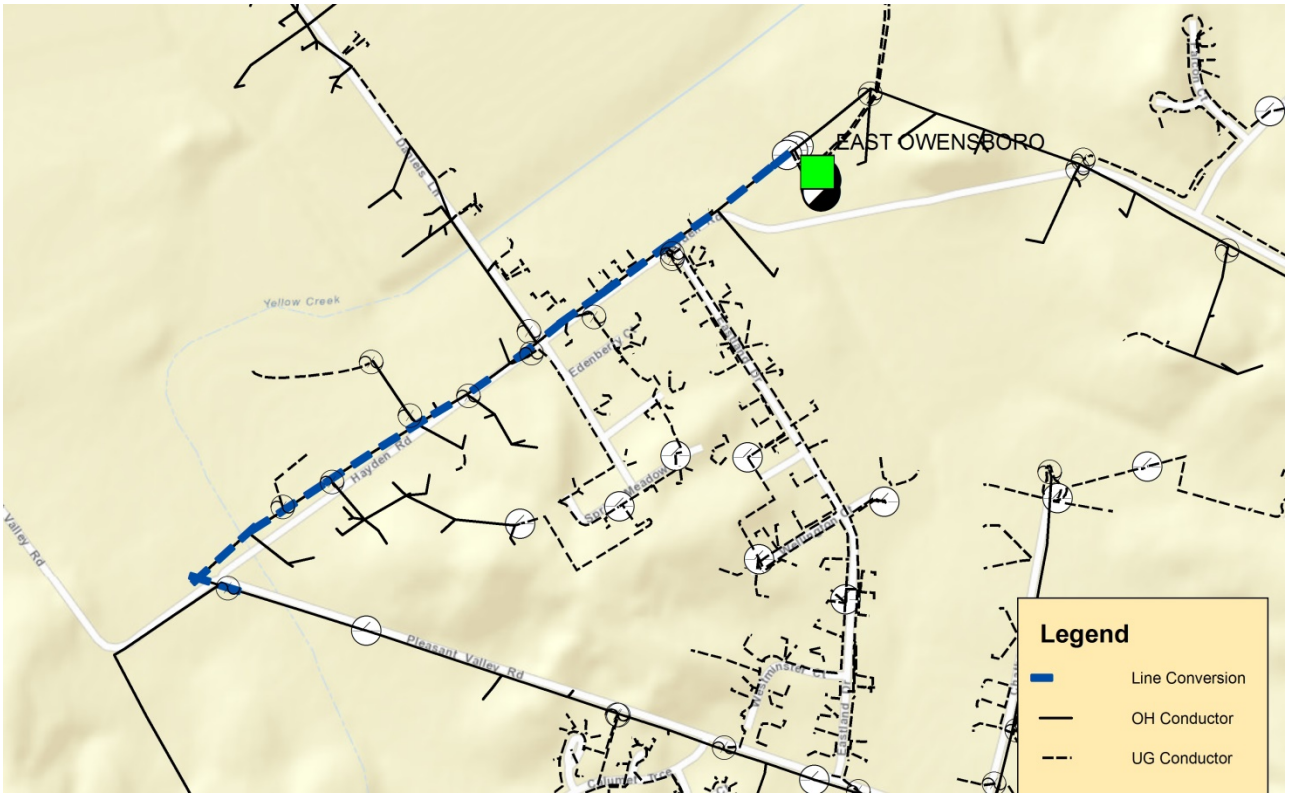
SUBSTATION AREA:	CENTERTOWN
LOCATION	N MAIN ST AND OLD HARTFORD RD
740C CODE	305
ESTIMATED COST:	$90,000
COMPLETION YEAR	2016
DESCRIPTION:	.4 MILE THREE PHASE 2 AL UG TO 4/0 AL UG. UG703785. OLDER UNDERGROUND CABLE PROVIDING BACKFEED CAPABILITY TO COMMERCIAL CUSTOMERS.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

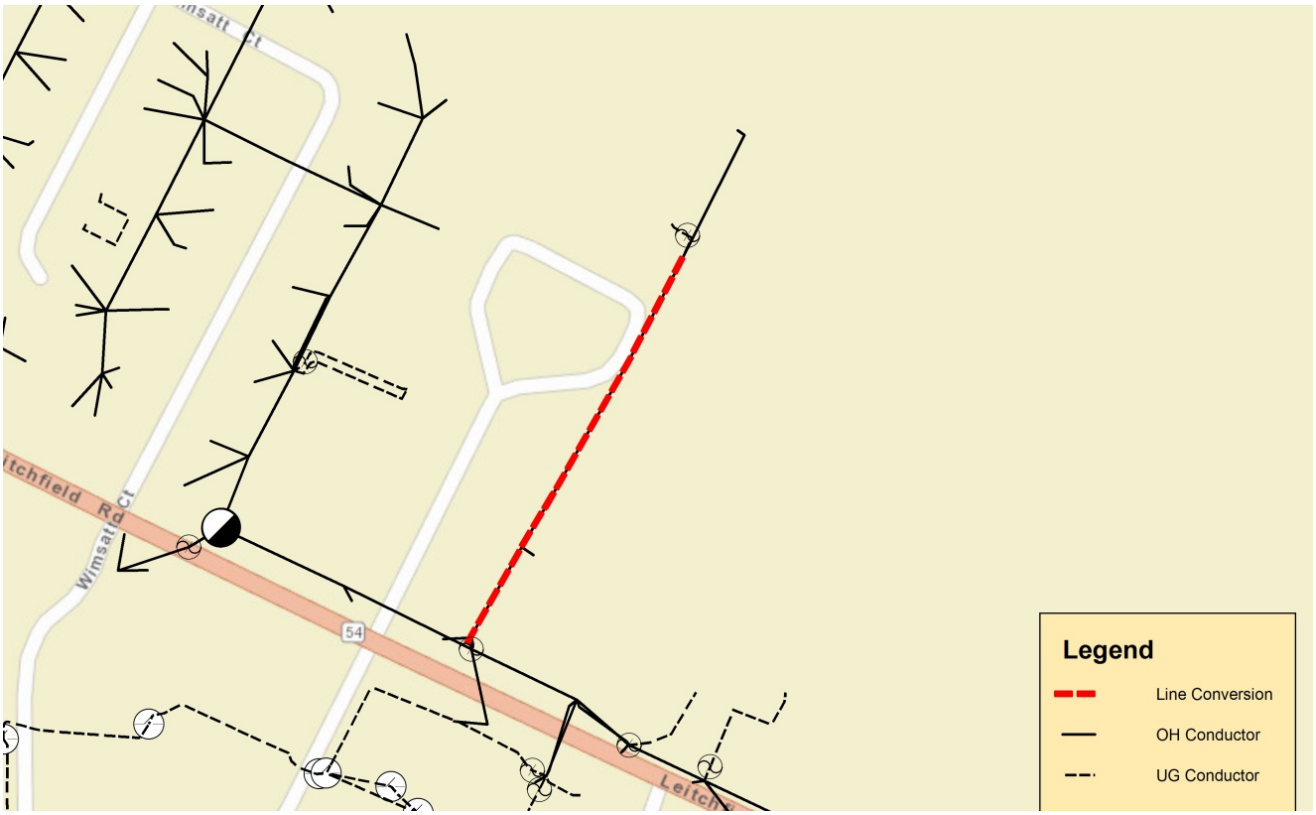
SUBSTATION AREA:	EAST OWENSBORO
LOCATION	HAYDEN RD
740C CODE	306
ESTIMATED COST:	$168,750
COMPLETION YEAR	2018
DESCRIPTION:	.75 MILE THREE PHASE 336 ACSR TO DUAL CIRCUIT 336 ACSR. EAST OWENSBORO STATION TO OH1873888833. CIRCUIT LOADING AND CONTINGENCY FOR NEW GATEWAY COMMONS LOAD.
ASSOCIATED PROJECTS:	CWP 103
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

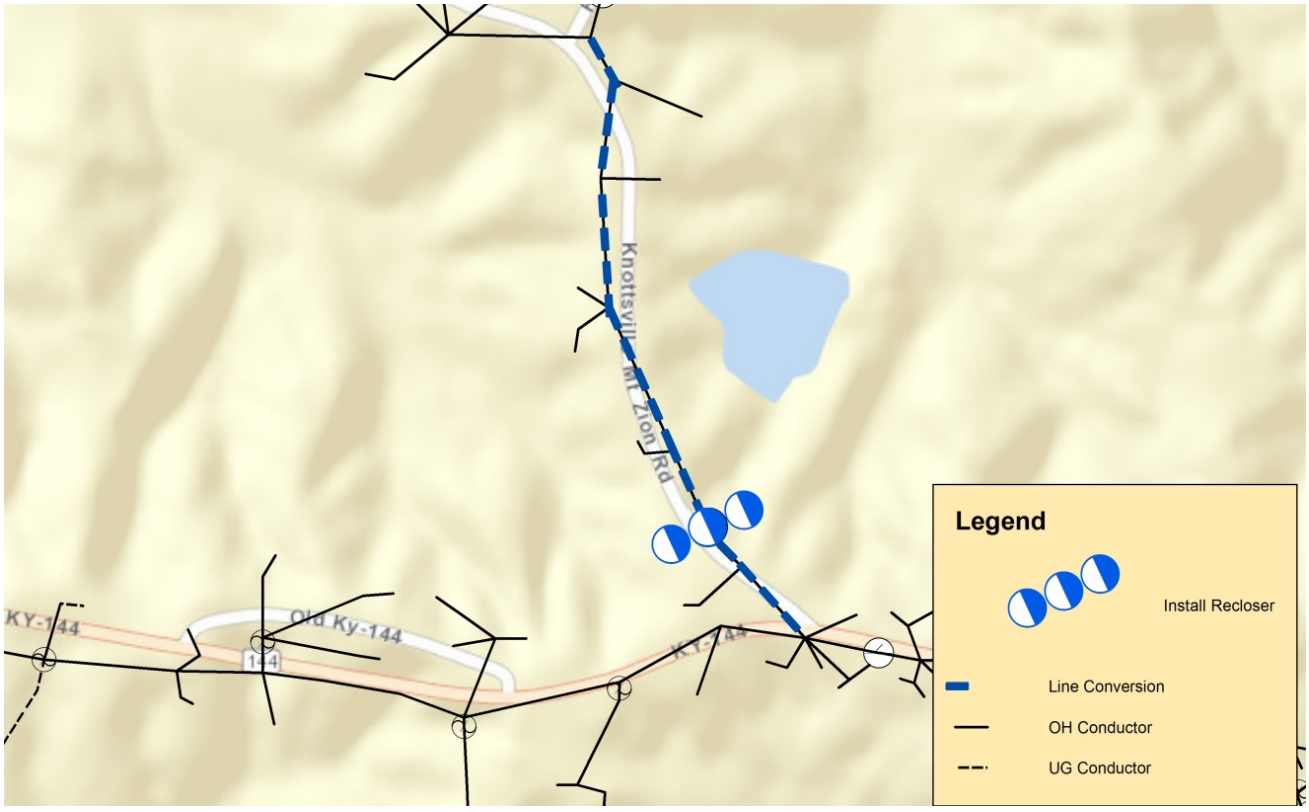
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	EAST OWENSBORO
LOCATION	LEITCHFIELD ROAD
740C CODE	307
ESTIMATED COST:	$23,760
COMPLETION YEAR	2018
DESCRIPTION:	0.2 MILES OF THREE PHASE 6 ACSR TO THREE PHASE 336 ACSR. OH715266 TO OH715263. CONTINUATION OF THE CWP 103 UNDERGROUND EXTENSION TO TIE INTO EXISTING OVERHEAD THREE PHASE LINES FOR FUTURE CONTINGENCY AND TO ALLEVIATE LINE LOADING.
ASSOCIATED PROJECTS:	CWP 306
ALTERNATES:	NONE



NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	PHILPOT
LOCATION	KNOTTSVILLE MT ZION RD
740C CODE	310
ESTIMATED COST:	$33,480
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 0.4 MILES OF SINGLE PHASE TO THREE PHASE 1/0 ACSR. TAP WITH 41A. OH726313 TO OH724526. ADDRESSES LOAD BALANCE ISSUE ON CIRCUIT AND LOW VOLTAGE AT REGULATOR.
ASSOCIATED PROJECTS:	INSTALL THREE 35A OCRS.
ALTERNATES:	NONE



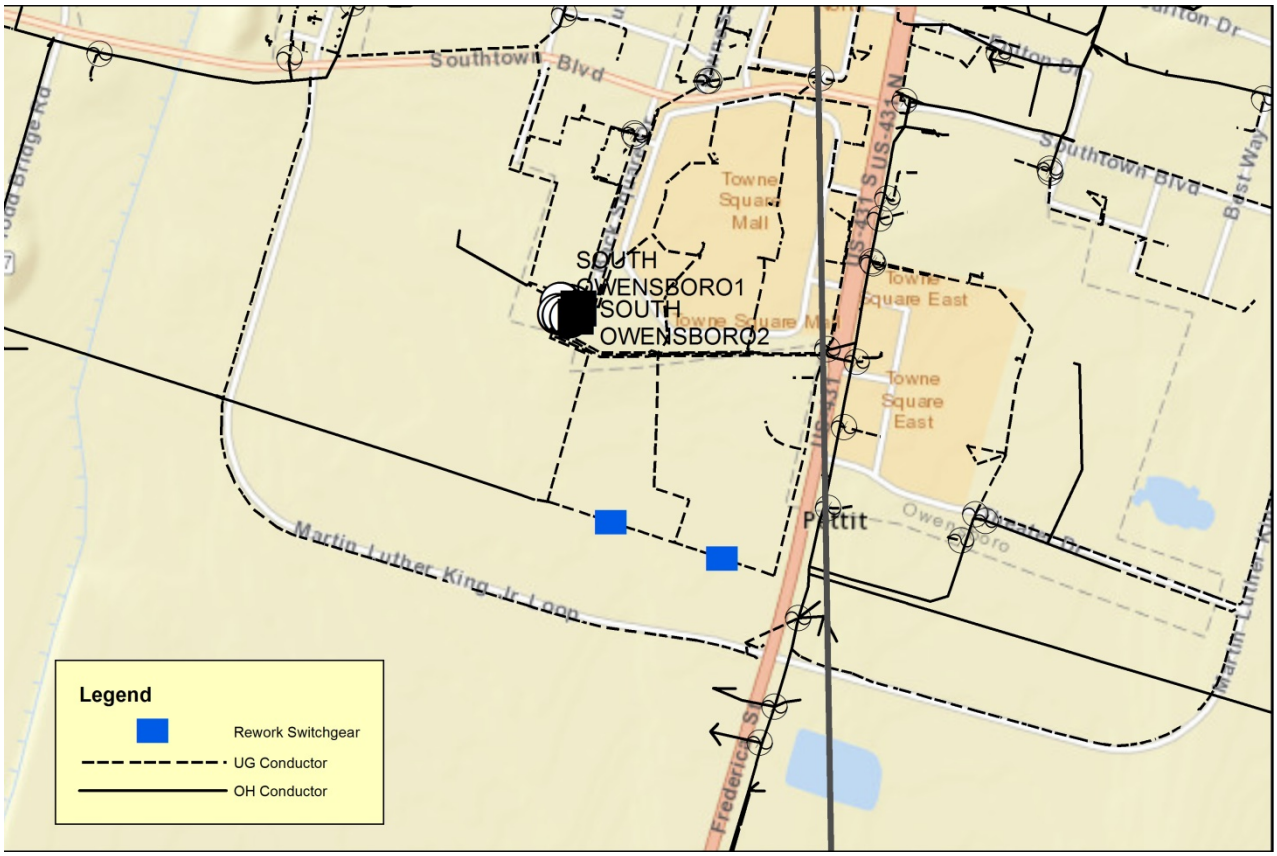
4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	SOUTH OWENSBORO
LOCATION	MLK LOOP
740C CODE	312
ESTIMATED COST:	$70,000
COMPLETION YEAR	2016
DESCRIPTION:	REWORK URD SWITCHGEAR AT UG1723311857 & UG1363250682. CURRENT EQUIPMENT IS LOCATED IN AN AREA WITH RECENT FLOODING AND IS LIVE FRONT.

ASSOCIATED PROJECTS:

ALTERNATES: NONE



4 DESCRIPTION AND JUSTIFICATION

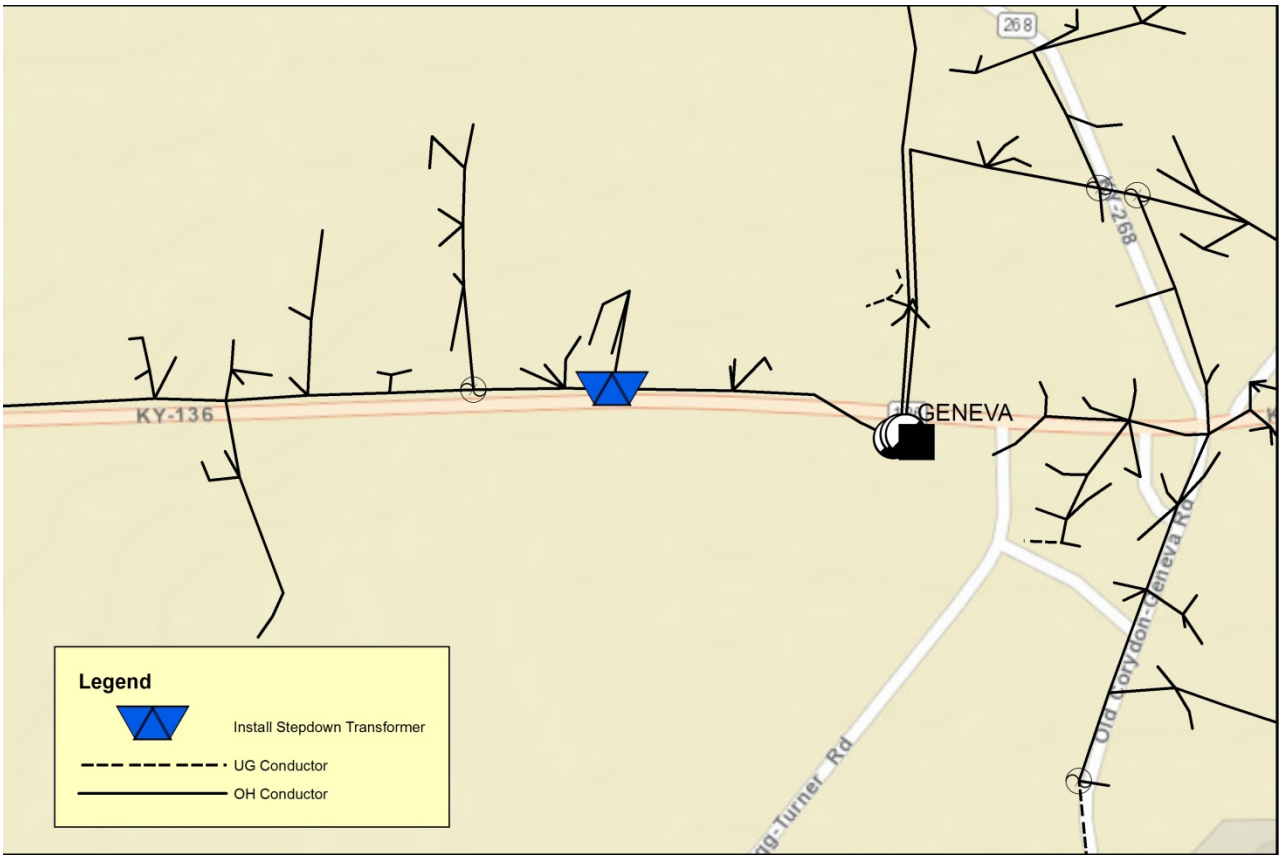
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	ADAMS LANE
LOCATION	KY-812 AT AIRLINE RD
740C CODE	313
ESTIMATED COST:	$41,850
COMPLETION YEAR	2020
DESCRIPTION:	CONVERT 0.5 MILES OF SINGLE PHASE 2 ACSR TO THREE PHASE 1/0 ACSR. OH-1191869708 TO OH335948. TAP HAS OVER 40A.
ASSOCIATED PROJECTS:	INSTALL 50A RECLOSERS ON ALL PHASES.
ALTERNATES:	NONE

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

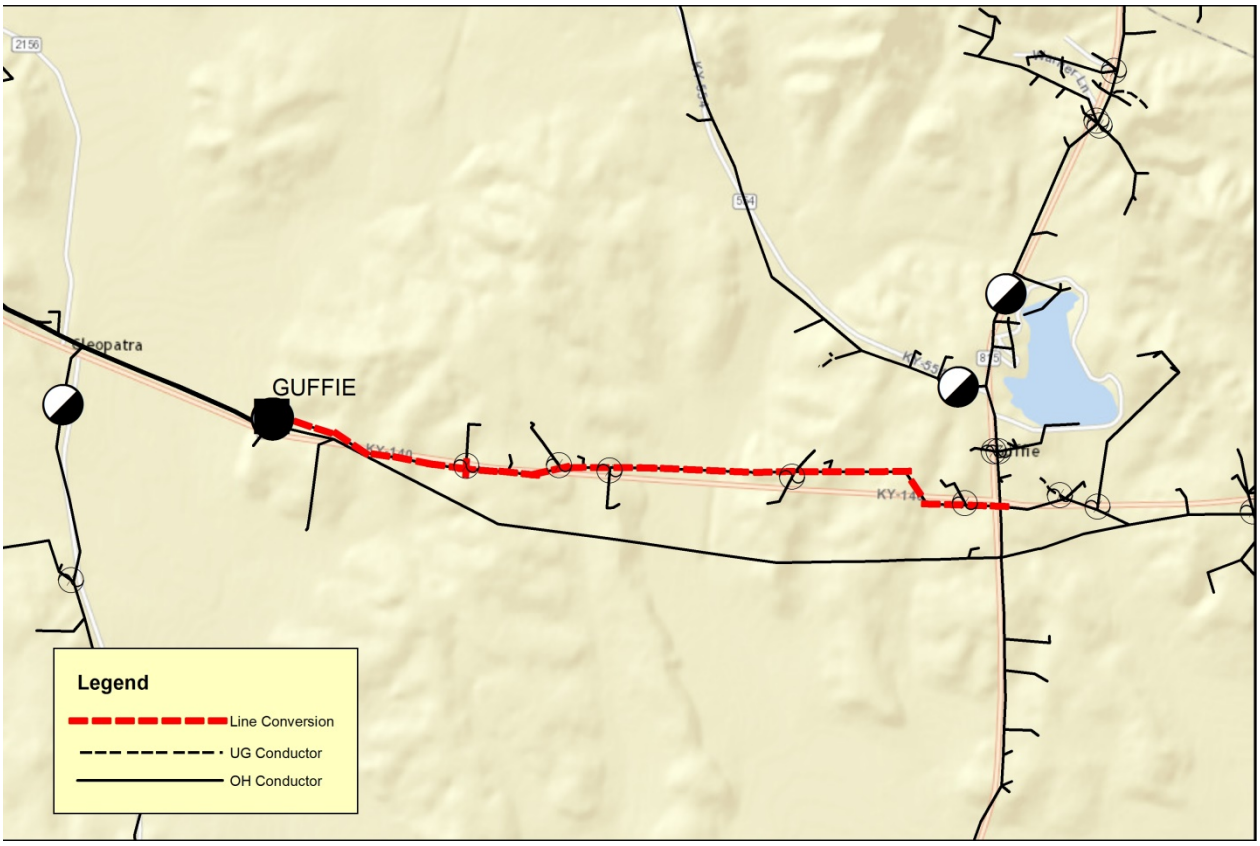
SUBSTATION AREA:	GENEVA
LOCATION	GENEVA SUB CIRCUIT 3
740C CODE	314
ESTIMATED COST:	$45,000
COMPLETION YEAR	2016
DESCRIPTION:	UPGRADE STEP UP TRANSFORMER FROM 1000KVA TO 1667KVA. TRANSFORMER LOADED AT 113% DURING WINTER PEAK.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	INSTALL 1000KVA UNITS DOWNLINE FROM CURRENT LOCATION TO OH331142. COMPLETE VOLTAGE CONVERSION FROM OH-843759569 TO OH331142.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	GUFFIE
LOCATION	GUFFIE SUB TO HWY 815
740C CODE	360*
ESTIMATED COST:	$169,884
COMPLETION YEAR	2020
DESCRIPTION:	CARRY OVER PROJECT. CONVERT 1.43 MILES OF THREE PHASE 1/0 CU AND 3/0 ACSR TO THREE PHASE 336 ACSR ON SECTIONS OH500790 TO OH529147. THE PROJECT IS RECOMMENDED TO IMPROVE LOW VOLTAGE BELOW 117V AT MULTIPLE END POINTS ALONG CIRCUIT 1. CIRCUIT CONDUCTOR LOADING OF 1/0 SECTIONS WILL ALSO BE REDUCED TO ACCEPTABLE LEVELS.
ASSOCIATED PROJECTS:	CWP 605-9 CAPACITOR
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

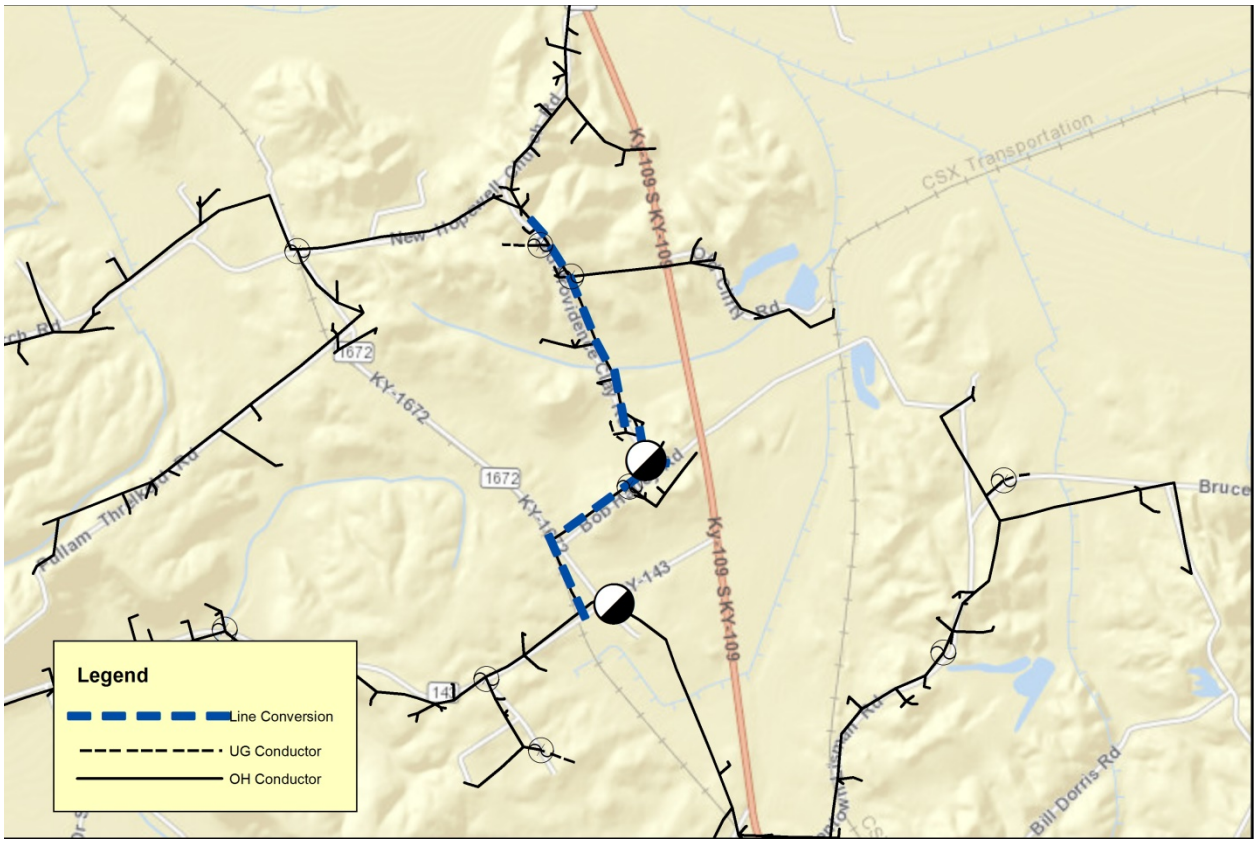
SUBSTATION AREA:	HANSON
LOCATION	BROWN RD. @ KY-862
740C CODE	361*
ESTIMATED COST:	$261,360
COMPLETION YEAR	2019
DESCRIPTION:	CARRY OVER PROJECT. CONVERT 2.2 MILES OF THREE PHASE 1/0 ACSR TO 336 ACSR. OH100419 TO OH102277. LOW VOLTAGE AT OH100235 LOAD ON 1/0 ACSR OF 114.5V. MAINLINE LOADING OF 1/0 ACSR CONDUCTOR OVER 70%, VOLTAGE LOW COMING INTO LINE REGULATORS AT HICKLIN RD.
ASSOCIATED PROJECTS:	CWP 383
ALTERNATES:	ADDITIONAL PF CORECTION WILL NOT CORRECT VOLTAGE ISSUES AT LINE END. SHIFTING LOAD BY NEW TIE LINE TO SOUTH HANSON CREATES VOLTAGE ISSUES ON SOUTH HANSON THAT WILL REQUIRE 336 CONVERSION.

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	MASONVILLE
LOCATION	HWY 298/OLD HARTFORD RD
740C CODE	364*
ESTIMATED COST:	$201,960
COMPLETION YEAR	2019
DESCRIPTION:	CARRY OVER PROJECT. 1.7 MILES OF THREE PHASE 1/0 CU TO 336 ACSR. OH704163 TO OH704247. CAPACITY FLAG ON 1/0 THREE PHASE. ADDED CAPACITY FOR LOSS CONTENGENIES. PROJECT WILL ALSO REDUCE CONDUCTOR LOADING ON 1/0 CU MAINLINE.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	PROVIDENCE
LOCATION	HWY 1672 ALONG BOB HATLEY ROAD;OLD PROVIDENCE CLAY ROAD
740C CODE	370*
ESTIMATED COST:	$75,330
COMPLETION YEAR	2019
DESCRIPTION:	CARRY OVER PROJECT. MULTI-PHASE 1PH ACSR2 TO 3PH ACSR2. IMPROVE CONDUCTOR LOADING AND LOAD BALANCE OF MAINLINE.
ASSOCIATED PROJECTS:	REMOVE SINGLE OCR AND INSTALL THREE 35A RECLOSERS.
ALTERNATES:	NONE

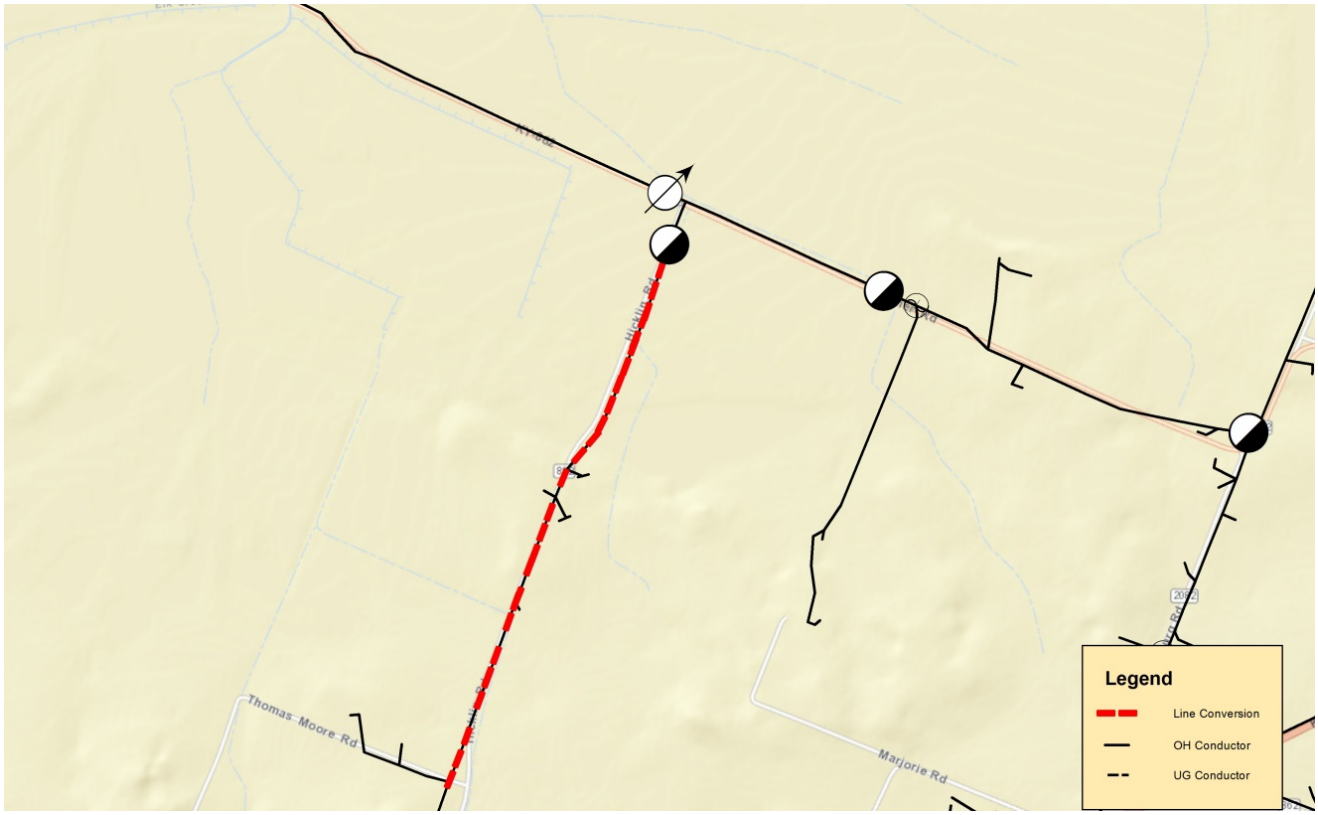


NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	SOUTH DERMONT
LOCATION	HWY 54 (LEITCHIELD ROAD)
740C CODE	374*
ESTIMATED COST:	$142,560
COMPLETION YEAR	2019
DESCRIPTION:	CARRY OVER PROJECT. CONVERT 1.2 MILES OF THREE PHASE 1/0 CU TO THREE PHASE 336 ACSR. OH97418525 TO OH728689. PROJECT TO IMPROVE LINE LOADING ON MAINLINE CONDUCTOR AND IMPROVE BACKFEED CONTINGENCIES.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE

NEW DISTRIBUTION CONSTRUCTION ITEM:

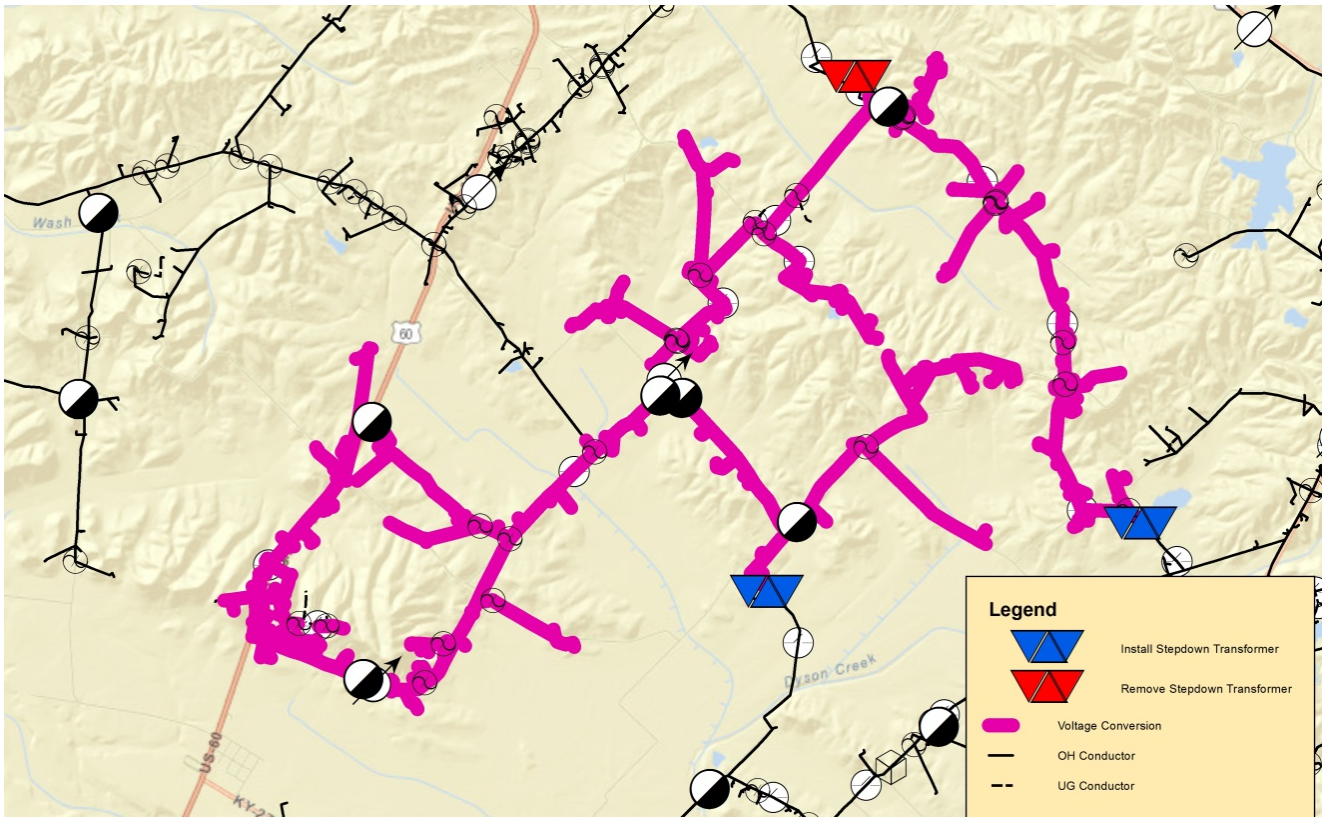
SUBSTATION AREA:	HANSON
LOCATION	CASNER RD. @ HICKLIN RD.
740C CODE	383
ESTIMATED COST:	$118,800
COMPLETION YEAR	2017
DESCRIPTION:	CONVERT 1 MILE OF 1/0 ACSR TO 336 ACSR. OH102187 TO OH102199. VOLTAGE SUPPORT AT END OF LINE NEAR SPOT LOAD. OH1590839207.
ASSOCIATED PROJECTS:	CWP 361*
ALTERNATES:	SECOND SET OF CIRCUIT REGULATION.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	MORGANFIELD
LOCATION	MORGANFIELD CIRCUIT 2
740C CODE	384
ESTIMATED COST:	$398,860
COMPLETION YEAR	2017
DESCRIPTION:	VOLTAGE CONVERSION TO 25KV. REMOVE 3-1000KVA STEP DOWN TRANSFORMERS AT OH327435 OVER CAPACITY. INSTALL TWO NEW SETS OF 1000KVA TRANSFORMERS DOWNLINE TO OH319980 AND OH320375. REMOVE REGULATORS REG41925049. CONVERSION OF 22.5 MILES OF SINGLE PHASE, 11.1 MILES OF THREE PHASE, 188 OVERHEAD TRANSFORMERS, AND 6 PADMOUNT TRANSFORMERS. ESTIMATED 40% OF LINES AND TRANSFORMERS WILL NEED TO BE REINSULATED. PROJECT WILL IMPROVE SERVICE TO 194 CUSTOMERS.
ALTERNATES:	UPGRADE STEP TRANSFORMERS, RECONDUCTOR TO IMPROVE LINE CAPACITY.

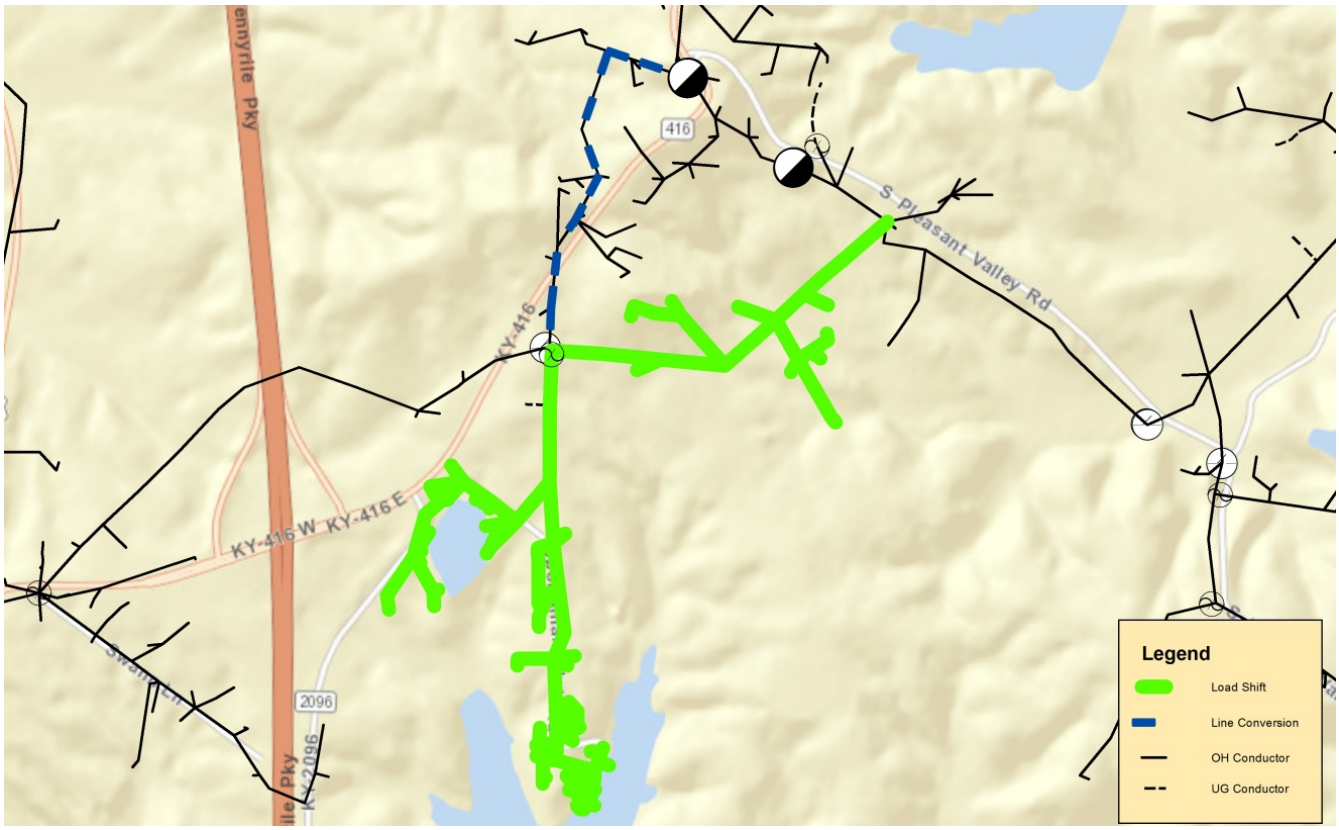


NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	MORGANFIELD
LOCATION	MCFALL RD. @ US-60
740C CODE	385
ESTIMATED COST:	$175,770
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 2.1 MILES OF 2 ACSR SINGLE PHASE TO 1/0 ACSR THREE PHASE. OH320941 TO OH320939. PROJECT IS PART OF THE LOSS CONTINGENCY PLANNING FOR MORGANFIELD CIRCUIT 2 WHICH AFTER THE 25KV CONVERSION WILL NOW TIE HOT WITH THIS AREA OF MORGANFIELD CIRCUIT 3.
ASSOCIATED PROJECTS:	CWP 384
ALTERNATES:	CURRENT LOSS CONTINGENCY USES SULLIVAN STATION, WHICH IS A LONG DISTANCE AND MUST USE STEP TRANSFORMERS DUE TO THE VOLTAGE DIFFERENCE.

NEW DISTRIBUTION CONSTRUCTION ITEM:

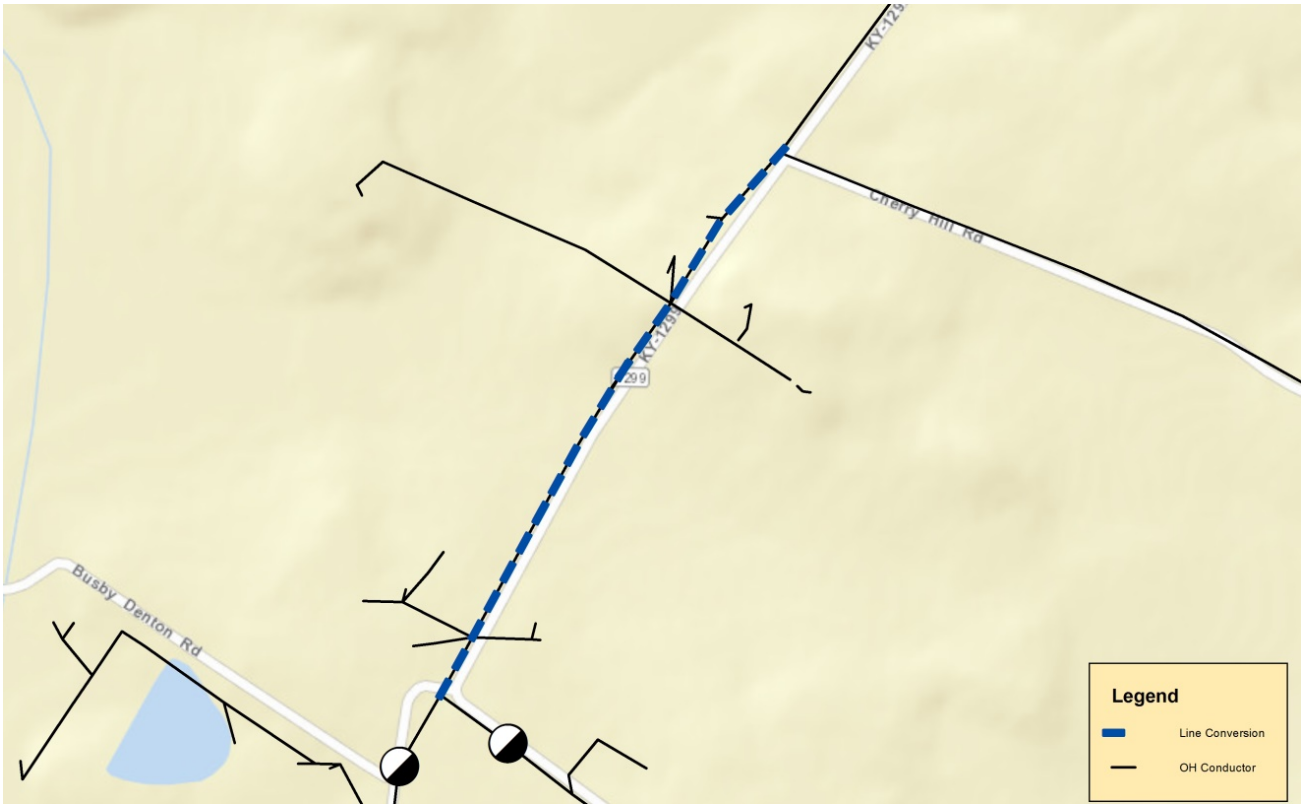
SUBSTATION AREA:	NIAGARA
LOCATION	KY-416 @ S PLEASANT VALLEY RD.
740C CODE	386
ESTIMATED COST:	$41,850
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 0.5 MILES OF SINGLE PHASE TO 1/0 ACSR THREE PHASE FROM OH325155 TO OH325123. SINGLE PHASE TAP WITH 52A, PROJECT WILL ALLEVIATE CONDUCTOR LOADING AND IMPROVE CIRCUIT LOSSES.
ASSOCIATED PROJECTS:	CHANGE LINE FEED TO OH325205 AND OH325113.
ALTERNATES:	NONE, NO OTHER LINE CHANGES POSSIBLE, OTHER SINGLE PHASE TIE LOADED AT 40A.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	NIAGARA
LOCATION	CHERRY HILL RD. @ KY-1299
740C CODE	387
ESTIMATED COST:	$41,850
COMPLETION YEAR	2020
DESCRIPTION:	CONVERT 0.5 MILES OF SINGLE PHASE TO THREE PHASE 1/0 ACSR. TAP WITH 42A. OH325631 TO OH325646.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE, RADIAL TAPS.



4 DESCRIPTION AND JUSTIFICATION

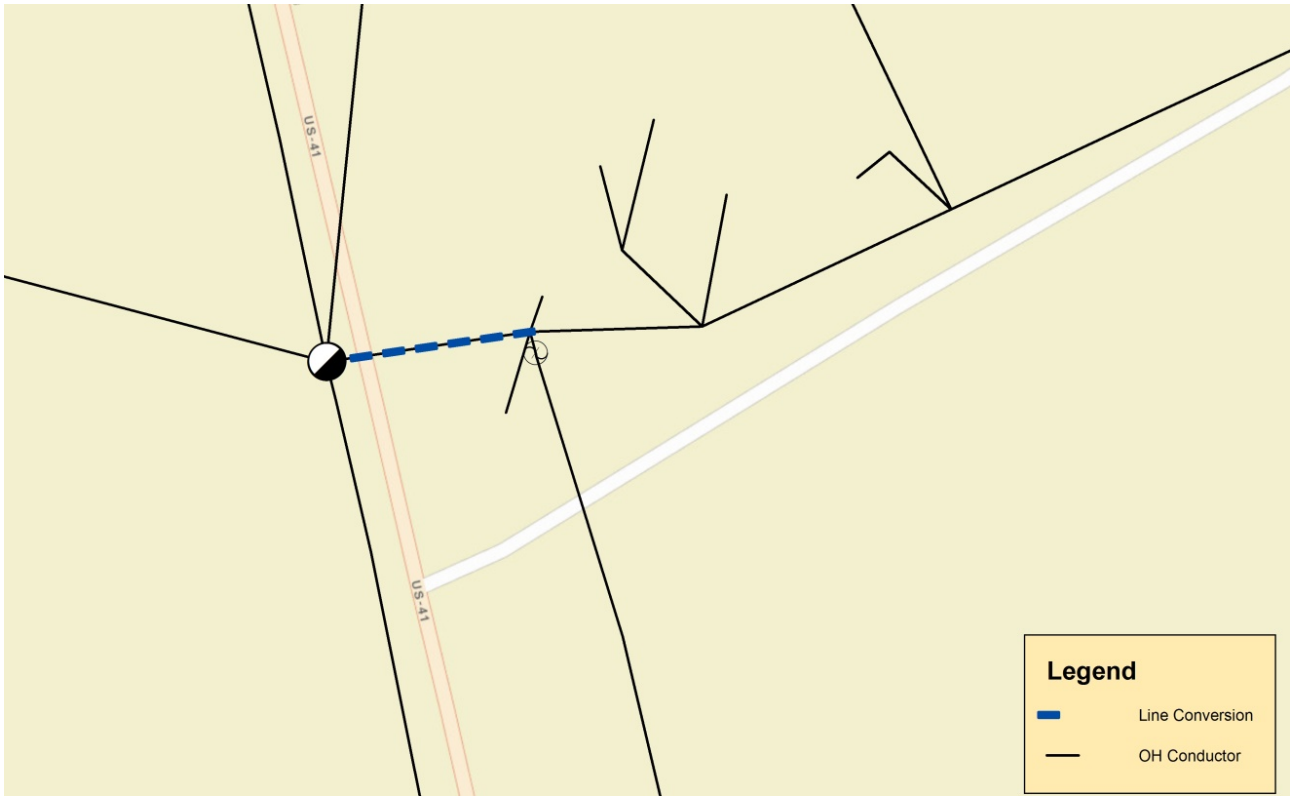
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	NIAGARA
LOCATION	KY-416 @ N PLEASANT VALLEY RD.
740C CODE	388
ESTIMATED COST:	$66,960
COMPLETION YEAR	2019
DESCRIPTION:	SINGLE LOSS CONTINGENCY. CONVERT 0.8 MILES SINGLE PHASE TO THREE PHASE 1/0 ACSR. THREE PHASE PROJECT IMPROVES BACKFEED TO 1.2 MW OF RADIAL LOAD ON CIRCUIT 2 BY ADDING BACKUP CIRCUIT 1 FEED.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

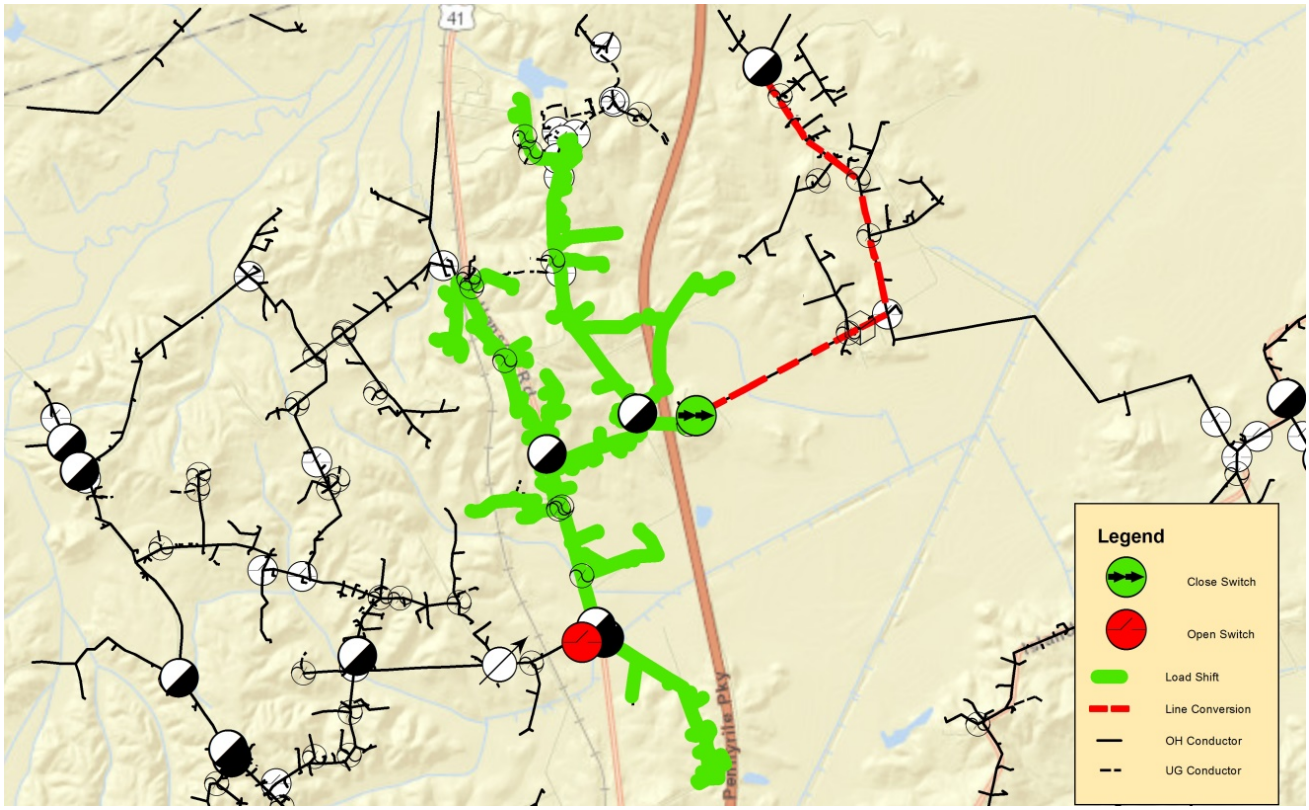
SUBSTATION AREA:	NIAGARA
LOCATION	US-41 NEAR WILLETT LN.
740C CODE	390
ESTIMATED COST:	$8,370
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 0.1 MILES OF SINGLE PHASE TO THREE PHASE 1/0 ACSR. TAP WITH 42A. OH325193.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	ONTON
LOCATION	PENNYRILE PARKWAY
740C CODE	391
ESTIMATED COST:	$297,000
COMPLETION YEAR	2017
DESCRIPTION:	CONVERT 2.5 MILES OF 4A & 1/0 ACSR TO 336 ACSR. OH519183 TO OH520034. SINGLE LOSS CONTINGENCY PROJECT FOR BACKFEED CAPACITY TO SOUTH HANSON.
ASSOCIATED PROJECTS:	SHIFT LOAD OPEN AT OH270834123 AND CLOSE AT OH519967, 575 KW FROM SOUTH HANSON. REMOVE 70A RECLOSERS.
ALTERNATES:	NONE

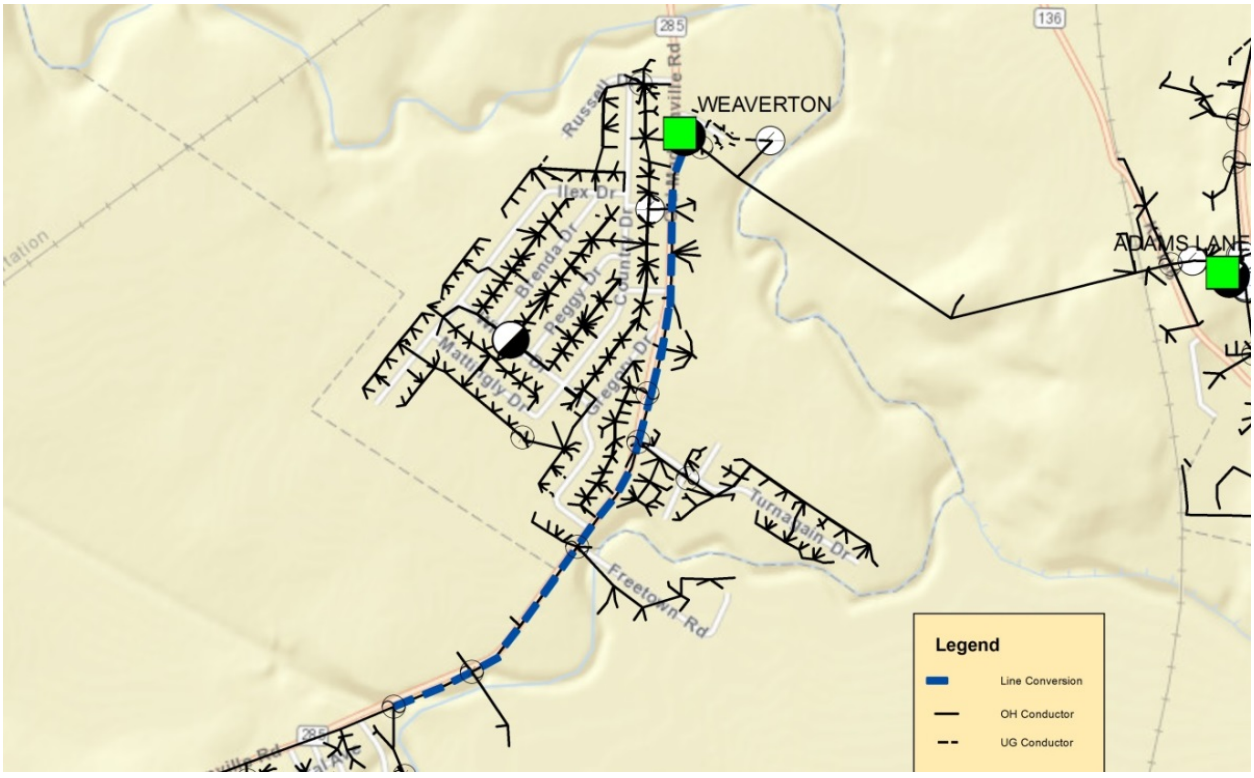


4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	WEAVERTON
LOCATION	WEAVERTON SUBSTATION
740C CODE	392
ESTIMATED COST:	$247,500
COMPLETION YEAR	2016
DESCRIPTION:	CONVERT 1.1 MILES 3PH, 3/0 ACSR CIRCUIT (6402) TO DOUBLE CIRCUIT, 336 ACSR FROM THE SUBSTATION TO SECTION # OH332265 TO REDUCE FEEDER LOADING OF 228 AMPS, OVERLOAD OF EXISTING CONDUCTOR AND RESULTING END OF LINE LOW VOLTAGE AND REDUCES LOSSES. ALSO PROVIDES BACKFEED CONTIGENCY BETWEEN 6402 AND 6404.
ASSOCIATED PROJECTS:	CWP 393

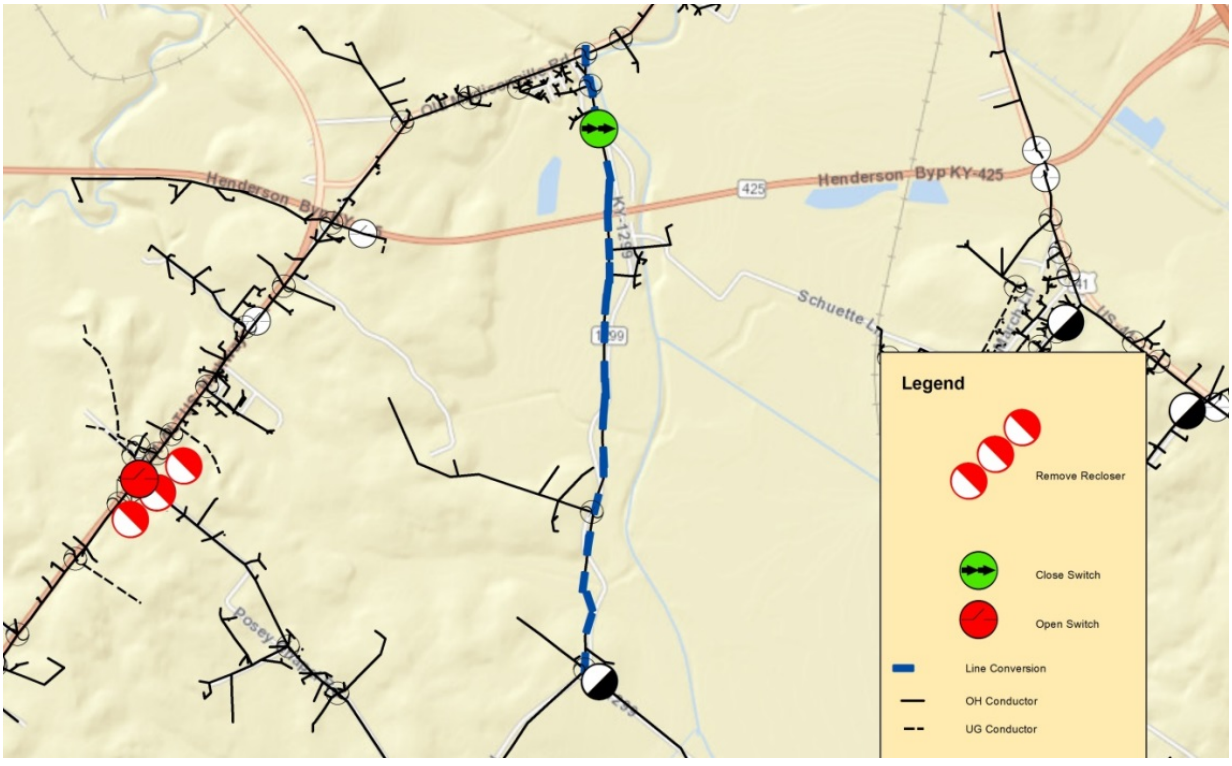
ALTERNATES: CONSTRUCT NEW STATION AT LOAD CENTER. WAS EVALUATED AND DETERMINED DISTRIBUTION PROJECTS ARE MORE COST EFFECTIVE. ANALYSIS IN FIGURE F-5.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

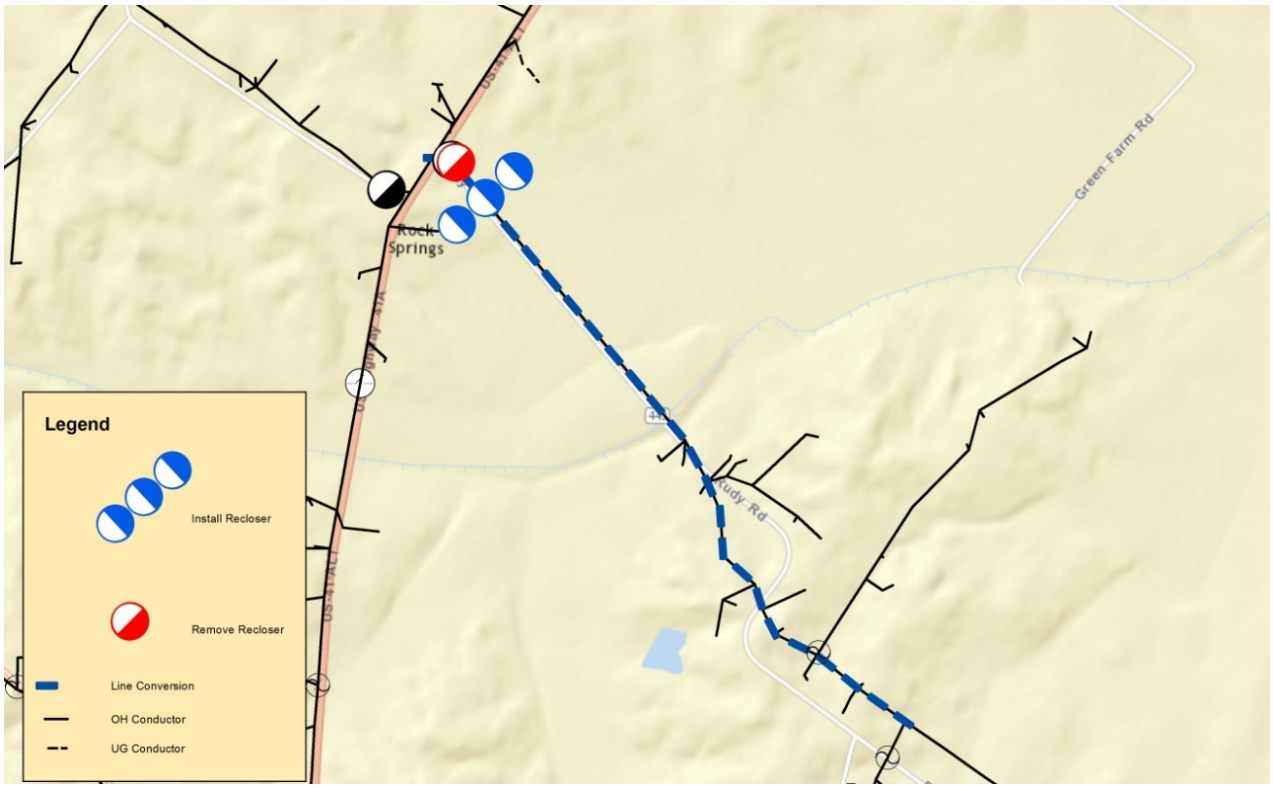
SUBSTATION AREA:	WEAVERTON
LOCATION	OLD MADISONVILLE RD. @ KY-1299
740C CODE	393
ESTIMATED COST:	$217,620
COMPLETION YEAR	2017
DESCRIPTION:	CONVERT 2 MILES 1PH, 4 ACSR TO 3PH, 336 ACSR FROM SECTION OH332250 TO OH332730. TRANSFER LOAD FROM CIRCUIT 6402 TO NEW 6404 AS PART OF THE 6402/6404 DOUBLE CIRCUIT PROJECT FOR REDUCING 6402 FEEDER LOADING AND END OF LINE LOW VOLTAGE AND REDUCES LOSSES. OPEN SECTION # OH332586, CLOSE OH332856 TO OH332255 FOR LOAD SWITCH FROM 6402 TO NEW 6404 FEEDER. RETIRE THREE EXISTING 70-L RECLOSERS, DEVICE REC409740.
ASSOCIATED PROJECTS:	RETIRE THREE EXISTING 70-L RECLOSERS, DEVICE REC409740.
ALTERNATES:	RECONDUCTOR AT CURRENT LINE END TO 336 ACSR. ANALYSIS IN FIGURE F-5 COMPARING STATION RELOCATION TO DISTRIBUTION UPGRADES.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

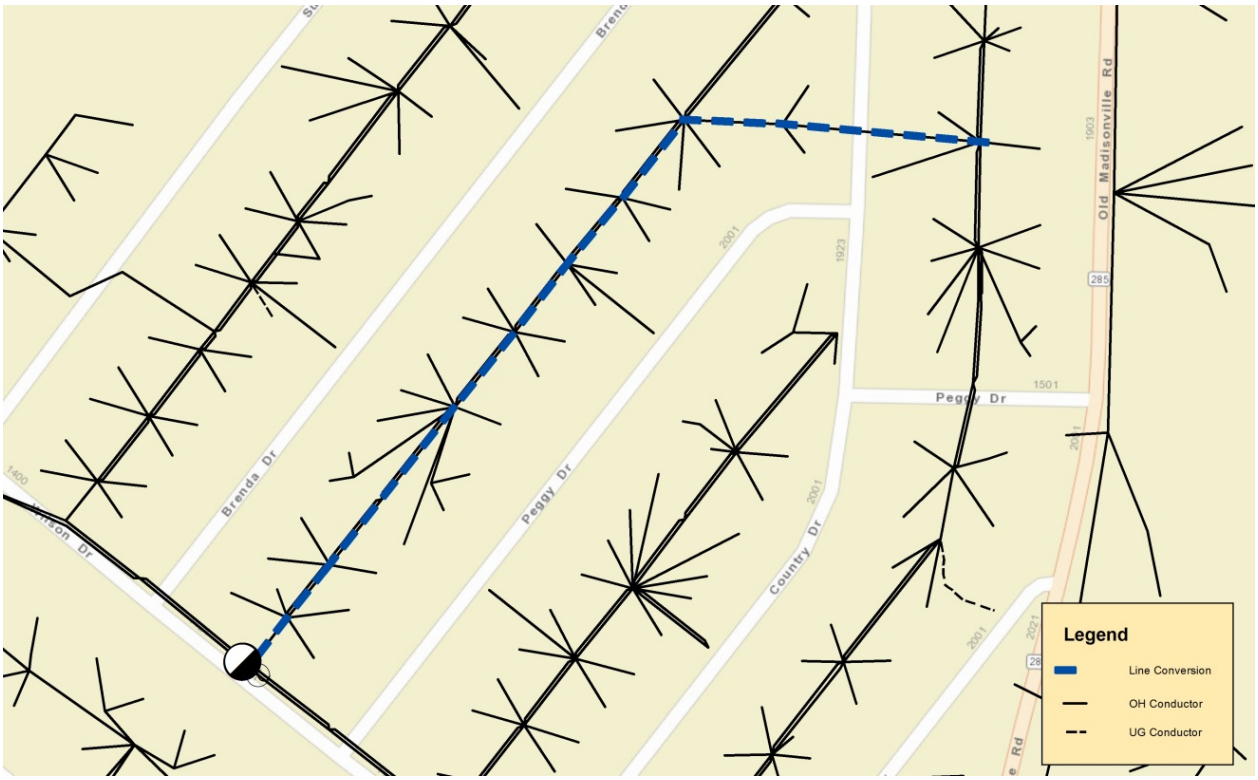
SUBSTATION AREA:	WEAVERTON
LOCATION	HWY 41A @ RUDY RD.
740C CODE	394
ESTIMATED COST:	$117,180
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 1.4 MILES 1PH, 2 ACSR TO 3PH, 1/0 ACSR FROM SECTION # OH325331 TO OH325367. THE EXISTING 1PH LINE IS OVER 40 AMPS. THE PROJECT WILL IMPROVE SYSTEM LOAD BALANCE, REDUCE END OF LINE LOW VOLTAGE AND REDUCE LOSSES.
ASSOCIATED PROJECTS:	RETIRE SINGLE PHASE DEVICE AT REC41502002. INSTALL THREE NEW 50-L, 1PH RECLOSERS AS PART OF 3PH CONVERSION PROJECT AT SECTION OH325331.
ALTERNATES:	NONE, OTHER SINGLE PHASE FEED AT 40A.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	WEAVERTON
LOCATION	COUNTRY DR. @ PEGGY DR.
740C CODE	395
ESTIMATED COST:	$25,920
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 0.3 MILE 2PH, 4 ACSR TO 3PH, 1/0 ACSR FROM SECTION #OH332173 TO OH332180. PROJECT IS NEEDED FOR LOAD BALANCE, IMPROVED VOLTAGE DROP, REDUCED LOSSES AND TO SUPPORT LOAD SHIFT FROM OVERLOADED 1PH LINE # OH332143.
ASSOCIATED PROJECTS:	CWP 396
ALTERNATES:	NONE.



4 DESCRIPTION AND JUSTIFICATION

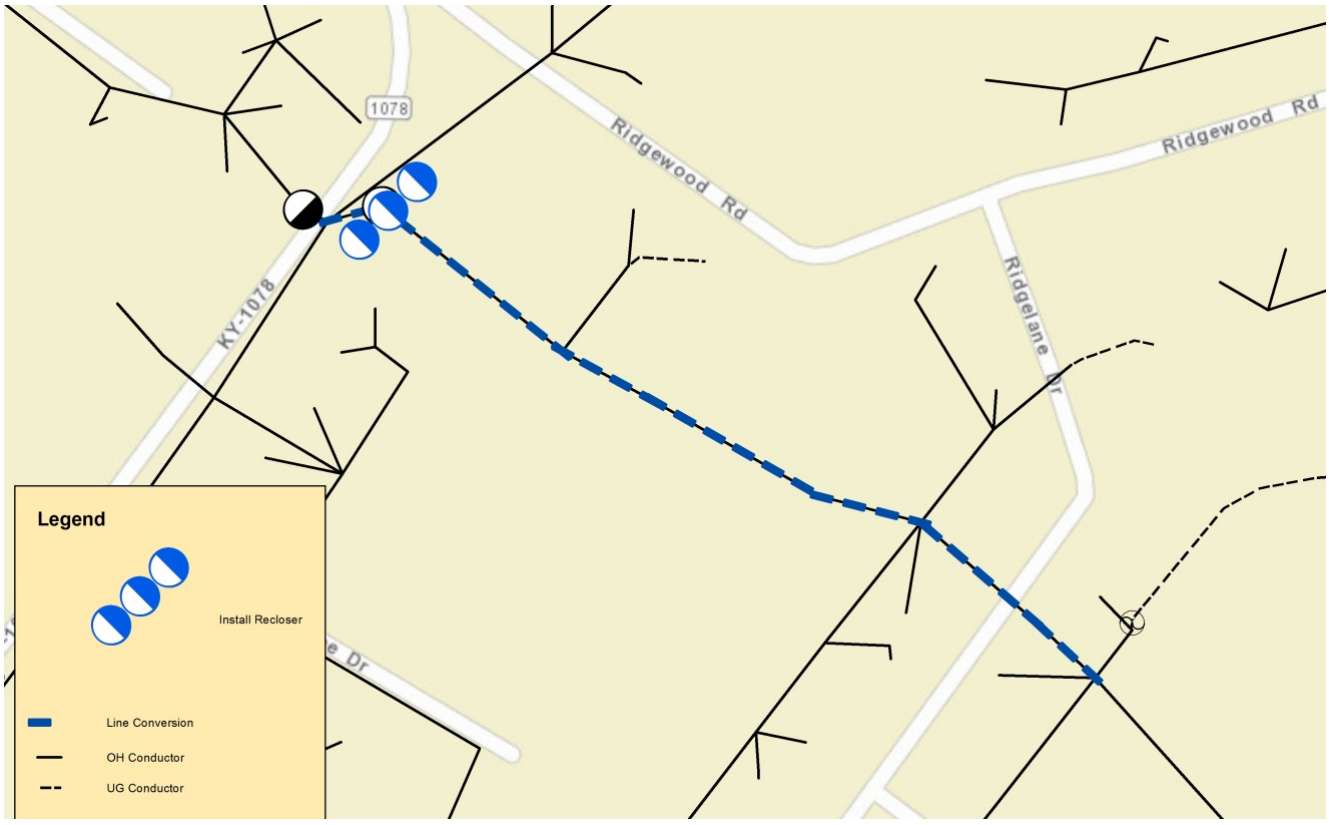
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	WEAVERTON
LOCATION	WILSON DR. @ BRENDA DR.
740C CODE	396
ESTIMATED COST:	$8,370
COMPLETION YEAR	2019
DESCRIPTION:	CONVERT 0.1 MILE 1PH, 4 ACSR TO 3PH, 1/0 ACSR FROM #OH298234926 TO #OH332203. THIS PROJECT IS PART OF THE PREVIOUS PROJECT NEEDED FOR LOAD BALANCE AND SHIFTING LOAD FROM OVERLOADED 1 PH LINE OH332143.
ASSOCIATED PROJECTS:	RETIRE 50-L RECLOSER AT SECTION # REC40955003.
ALTERNATES:	NONE

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

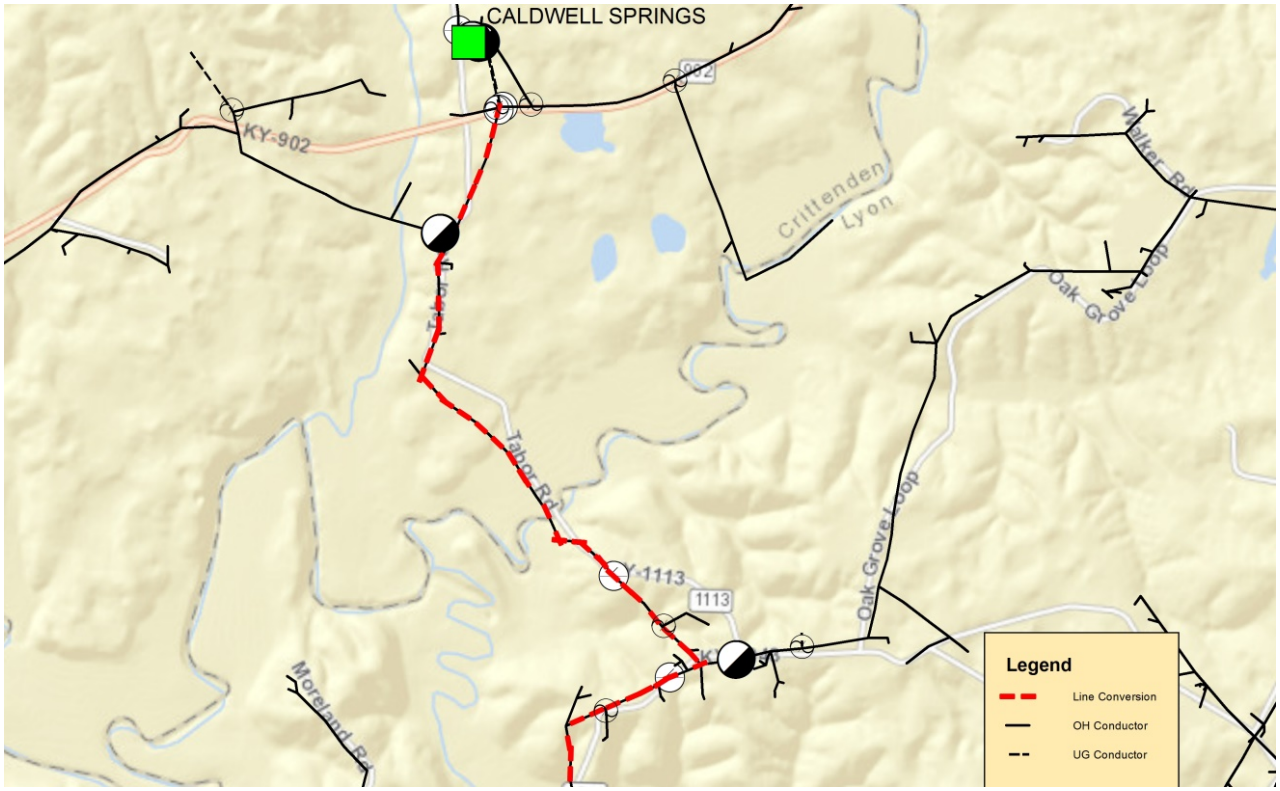
SUBSTATION AREA:	ZION
LOCATION	KY-1078 @ RIDGEWOOD RD.
740C CODE	397
ESTIMATED COST:	$25,110
COMPLETION YEAR	2020
DESCRIPTION:	CONVERT 0.3 MILES OF SINGLE PHASE TO 1/0 ACSR THREE PHASE FROM OH334116 TO OH334928. SINGLE PHASE LINE HAS 42A.
ASSOCIATED PROJECTS:	INSTALL 3-35A RECLOSERS.
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

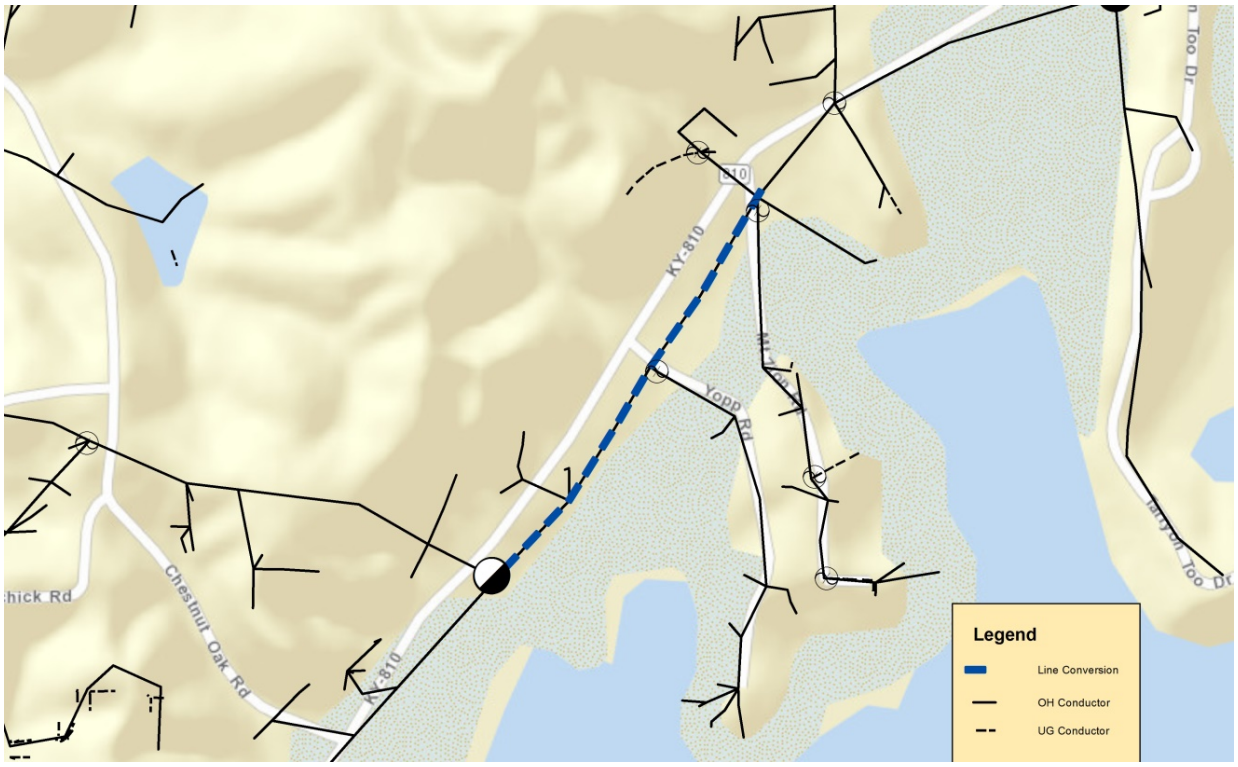
SUBSTATION AREA:	CALDWELL SPRINGS
LOCATION	CALDWELL SPRINGS SUBSTATION/TABOR RD
740C CODE	398
ESTIMATED COST:	$283,500
COMPLETION YEAR	2017
DESCRIPTION:	CONVERT 2.1 MILES OF 1/0 ACSR THREE PHASE TO THREE PHASE 336.4 ACSR. OH300532 TO OH300120. SINGLE LOSS CONTINGENCY PROJECT TO ADDRESS BACKFEED CAPACITY TO LYON CIRCUIT 1. PROJECT WILL ALSO ADDRESS LOW VOLTAGE BELOW 117V.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE. NO OTHER STATIONS TIE TO LYON STATION.



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	LYON
LOCATION	KY-810 @ Mt Zion Rd.
740C CODE	399
ESTIMATED COST:	$34,560
COMPLETION YEAR	2018
DESCRIPTION:	CONVERT 0.4 MILES OF TWO PHASE TO THREE PHASE 1/0 ACSR. OH307427 TO OH307431. LOW VOLTAGE AT END OF THE LINE BELOW 117V. DIFFICULT TO PHASE BALANCE DUE TO LOADED SINGLE PHASE TAPS.
ASSOCIATED PROJECTS:	CWP 301
ALTERNATES:	VOLTAGE REGULATION. NO CORRECTION FROM ADDITIONAL POWER FACTOR CAPACITORS.



C. Project Descriptions and Justifications- Sectionalizing

The following pages provide a description and justification for the proposed Code 603 Sectionalizing construction work plan projects. The following Table 4-3 is a listing of all sectionalizing projects and included in this Section are the detailed descriptions for selected projects.

Table 4-3: Sectionalizing Projects- Code 603

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	COST ESTIMATE	COMPLETION YEAR	DESCRIPTION-DETAIL
603-2	SULLIVAN	UPGRADE RECLOSER. 35A.	$4,500	2016	CHANGE 25A TO 35A OCR. REC42527001. 24A
603-3	SULLIVAN	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2016	SHIFT LOAD. LOW VOLTAGE. SINGLE PHASE LINE WITH 45A. OPEN AT SW43028001 AND CLOSE FUS41982001.
603-4	DIXON	UPGRADE RECLOSER. 50A.	$4,500	2016	CHANGE 35A TO 50A OCR. REC42048001. 38A
603-5	DIXON	UPGRADE RECLOSER. 50A.	$4,500	2016	CHANGE 35A TO 50A OCR. REC42029001. 33A.
603-6	SEBREE	UPGRADE RECLOSER. 50A.	$4,500	2016	CHANGE 35A TO 50A OCR. REC42173001. 28A.
603-7	ONTON	UPGRADE RECLOSER. 50A.	$4,500	2016	CHANGE 25A TO 50A OCR. REC24314001. 34A
603-8	ONTON	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2016	LOAD SHIFT. SHIFT 8A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A. OPEN AT OH1921722003 AND CLOSE AT OH420216430.
603-9	ONTON	RECLOSER CHANGE. RELOCATE.	$0	2016	REMOVE 70A OCRS. LOADING FROM LOAD SHIFT MOVE OCRS DOWNLINE FOR SECTIONALIZING. REC26423001.
603-10	ONTON	INSTALL ELECTRONIC RECLOSER.	$18,000	2016	INSTALL 3- 70HVT. OH519995.
603-11	ONTON	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2016	INSTALL 3- 50A OCR. OH520019.
603-12	ONTON	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2016	CHANGE SETTINGS. 70HVT DUE TO LOADING. REC26310001.
603-13	ONTON	INSTALL ELECTRONIC RECLOSER.	$18,000	2016	UPGRADE 70A OCR TO ELECTRONIC. REC20235001.

4 DESCRIPTION AND JUSTIFICATION

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	COST ESTIMATE	COMPLETION YEAR	DESCRIPTION-DETAIL
603-14	ONTON	INSTALL ELECTRONIC RECLOSER.	$18,000	2017	UPGRADE 70A OCR TO ELECTRONIC. REC22314001.
603-15	HANSON	INSTALL ELECTRONIC RECLOSER.	$18,000	2017	UPGRADE 70A OCR TO ELECTRONIC. REC32515001. 96A LOAD. ALTERNATIVE INSTALL GOAB WITH FAULT INDICATORS.
603-16	HANSON	UPGRADE RECLOSER. 50A.	$4,500	2017	INSTALL 50A OCR. 28A. FUS2073591908.
603-17	HANSON	INSTALL ELECTRONIC RECLOSER.	$18,000	2017	UPGRADE 50A OCR TO 70HVT. REC34514001. 76A LOAD.
603-18	SOUTH HANSON2	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2017	LOAD SHIFT. SHIFT 1 MW OF LOAD FROM HANSON TO SOUTH HANSON 2. COORDINATE LOAD SHIFT WITH SOUTH HANSON 2 TO ONTON PROJECTS. OPEN POINT AT OH100308 AND CLOSE AT SW32405001. SECTIONALIZING AND REGULATOR PROJECTS ARE ASSIGNED TO HANSON.
603-19	SOUTH HANSON2	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2018	CHANGE SETTINGS. 70HVT DUE TO LOADING. REC32404004. 105A.
603-20	SOUTH HANSON1	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2018	CHANGE SETTINGS. 80HVT DUE TO LOADING. REC30322001. 120A.
603-21	SOUTH HANSON1	INSTALL RECLOSER. 50A.	$4,500	2018	INSTALL 50A OCR. 32A. FUS482517087.
603-22	GENEVA	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	LOAD SHIFT. SHIFT 17A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A. OPEN AT OH331672 AND CLOSE AT OH332048.
603-23	WEAVERTON	UPGRADE RECLOSER. 50A.	$4,500	2018	Replace Existing 35-H Recloser To 50-L Recloser At Device REC41502002 Due To Overload
603-24	ADAMS LANE	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE 35A TO 50A OCR. REC40977001. 32A.
603-25	RACE CREEK	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	40A ON SINGLE PHASE LINE AT OH337347. CHANGE POINTS TO SHIFT LOAD. NEW OPEN AT UG2112910937 AND CLOSE AT UG2109877059.
603-26	ZION	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	LOAD SHIFT. SHIFT 5A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A REC41042001. OPEN AT OH335821 AND CLOSE AT OPN301459.
603-27	ZION	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE 35A TO 50A OCR. REC41024001. 39A.

4 DESCRIPTION AND JUSTIFICATION

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	COST ESTIMATE	COMPLETION YEAR	DESCRIPTION-DETAIL
603-28	NIAGARA	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE 35A TO 50A OCR. REC41549002. 32A.
603-29	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	LOAD SHIFT. SHIFT 22A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A OH322726. OPEN AT OH322762 AND CLOSE AT OPN301920.
603-30	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS. INSTALL RECLOSERS. 50A.	$9,000	2018	LOAD SHIFT. SHIFT 10A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A ON OH325630 . OPEN AT OH325135 AND CLOSE AT SW41526001. INSTALL 50A RECLOSERS ON BOTH SIDES OF SINGLE PHASE LINE CHANGE.
603-31	NIAGARA	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	LOAD SHIFT. SHIFT 5A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A ON OH336398 . OPEN AT OH336062 AND CLOSE AT OH336066.
603-32	NIAGARA	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE 35A TO 50A OCR. REC41508002. 38A.
603-33	GUFFIE	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE OCR FROM 35 TO 50. REC22812001. 30A.
603-34	GUFFIE	UPGRADE RECLOSER. 70A.	$4,500	2018	SUMMER. CHANGE OCR TO 70A. REC18823001
603-35	UTICA	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2018	CHANGE SETTINGS.OCR 50HVT DUE TO LOADING. REC21212001.
603-36	UTICA	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE OCR 35A TO 50A. REC23203002. 35A
603-37	UTICA	UPGRADE RECLOSER. 50A.	$4,500	2018	CHANGE OCR 35A TO 50A. REC23203002
603-38	UTICA	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	LINE LOADING. LINE CHANGE. SHIFT 10A. OPEN LINE AT OH531389 AND CLOSE SWITCH SW23009001.
603-39	PLEASANT RIDGE	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2018	LINE LOADING. LINE CHANGE. OPEN SW23312001 AND CLOSE SW23307001. LOAD ON SAME CIRCUIT.
603-40	WHITESVILLE	INSTALL RECLOSERS. 70A.	$27,000	2019	REC21606001 70L LOADING. REMOVE RECLOSERS AND ADD 70'S DOWNLINE ON EACH LEG OF SPLIT. OH713218 AND OH1074352354.
603-41	SACRAMENTO	UPGRADE RECLOSER. 50A.	$4,500	2019	35A OCR TO 50A. REC30710002.
603-42	NUCKOLS	UPGRADE RECLOSER. 70A.	$4,500	2019	CHANGE OCR 50A TO 70A. REC25116003
603-43	CENTERTOWN	UPGRADE RECLOSER. 50A.	$4,500	2019	35A OCR TO 50A. REC31322002.
603-44	BEDA	UPGRADE RECLOSER. 50A.	$4,500	2019	35A TO 50A. REC25407001. 29A

CWP CODE	STATION NAME	DESCRIPTION SUMMARY	COST ESTIMATE	COMPLETION YEAR	DESCRIPTION-DETAIL
603-45	BEDA	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2019	LOAD SHIFT. SHIFT 7A BEDA TO UTICA CIRCUIT 2. CREATE OPEN POINT AT OH700119. CLOSE AT SWITCH SW-492206413. ALLEVIATE 40A SINGLE PHASE LINE. UPGRADE UTICA OCR.
603-46	BEDA	UPGRADE RECLOSER. 50A.	$4,500	2019	35A TO 50A. REC25319004. 36A.
603-47	BEDA	UPGRADE RECLOSER. 50A.	$4,500	2019	35A TO 50A. REC25308002.29A
603-48	BEDA	UPGRADE RECLOSER. 35A.	$4,500	2019	25A TO 35A. REC25423001. 21A
603-49	BEDA	UPGRADE RECLOSER. 50A.	$4,500	2020	35 TO 50A. REC25308001. 36A AFTER LOAD SHIFT.
603-50	BEDA	INSTALL ELECTRONIC RECLOSER.	$18,000	2020	REC27410002. 70A TO ELECTRONIC OCR. LOADING. TWO PHASES 70+, ONE AT 50A.
603-51	WEST OWENSBORO	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2020	LINE LOADING. CHANGE SETTINGS. OCR 75HVT. REC14924004.
603-52	MASONVILLE	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2020	LOAD SHIFT. CREATE OPEN AT FUS700416. CLOSE AT UG1330823758. ALLEVIATE 40A SINGLE PHASE LINE.
603-53	EAST OWENSBORO	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2020	LOAD SHIFT. SHIFT 1.2 MW LOAD FROM SOUTH DERMONT 2 TO EAST OWENSBORO. LOAD SHIFT AFTER NEW CIRCUIT, UNDERGROUND TIE, AND THREE PHASE CONVERSION PROJECTS. OPEN AT OH715263 AND CLOSE AT OH715266 .
603-54	DERMONT	UPGRADE RECLOSER. 50A.	$4,500	2020	35 TO 50A. REC11220002. 39A.
603-55	PHILPOT	RECLOSER CHANGE. CHANGE CONTROL SETTINGS.	$0	2020	LINE LOADING. CHANGE SETTINGS. OCR HVT. REC13305001.
603-56	PHILPOT	UPGRADE RECLOSER. 50A.	$4,500	2020	35 TO 50A. REC13409001. 31A.
603-57	HAWESVILLE	RECLOSER CHANGE. CONTROL SETTINGS.	$0	2020	LINE LOADING. CHANGE SETTINGS. OCR HVT. REC05723001.
603-58	ONTON	LOAD SHIFT. CHANGE OPEN POINTS.	$0	2016	LOAD SHIFT. 450KW FROM ONTON CIRCUIT 2 TO BEECH GROVE CIRCUIT 1. LOW VOLTAGE BELOW 117 V ALONG LONG TWO PHASE LINES DUE TO ONTON VOLTAGE DROP.

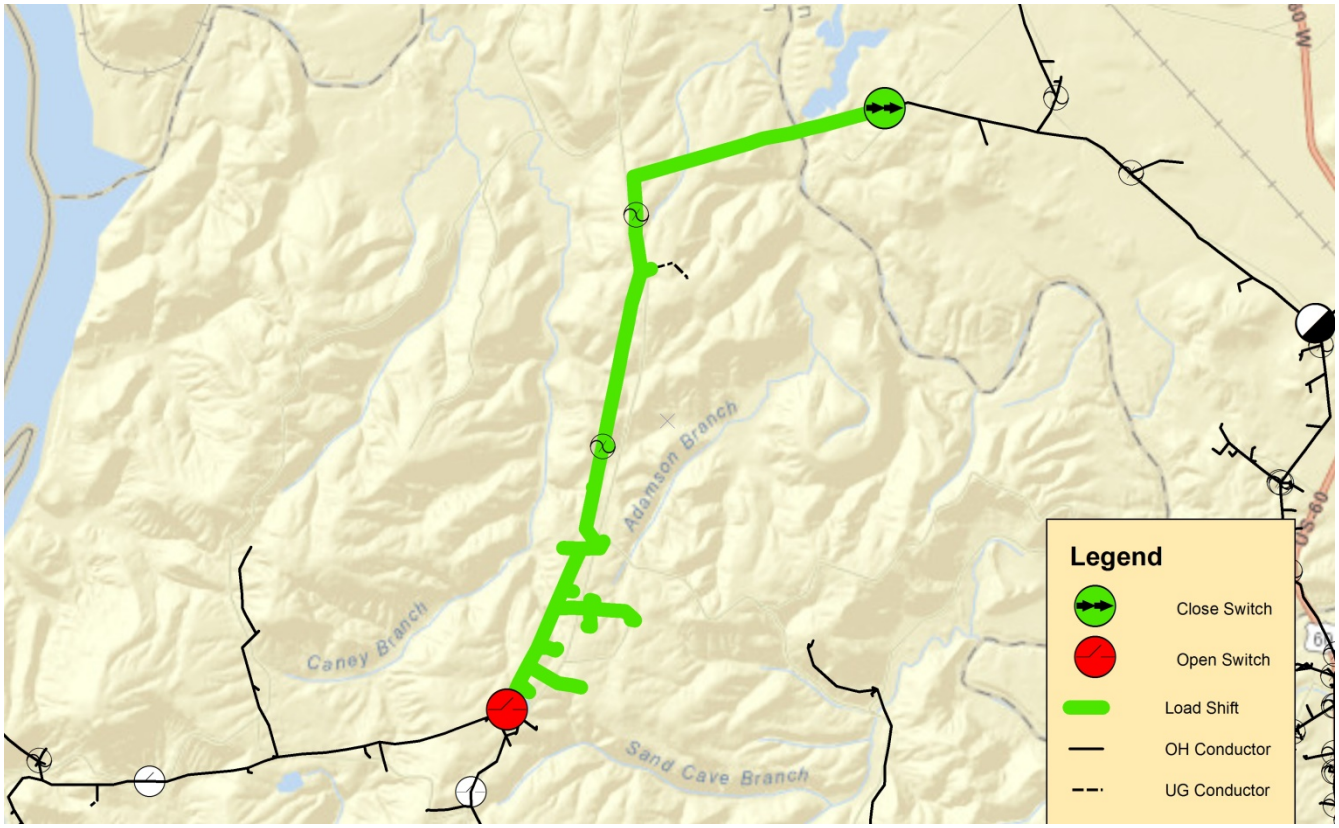
Protective Equipment Summary

Size	Quantity	Cost
35A	2	$9,000
50A	24	$108,000
70A	8	$36,000
ELECTRONIC	6	$108,000
Total	12	$261,000

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

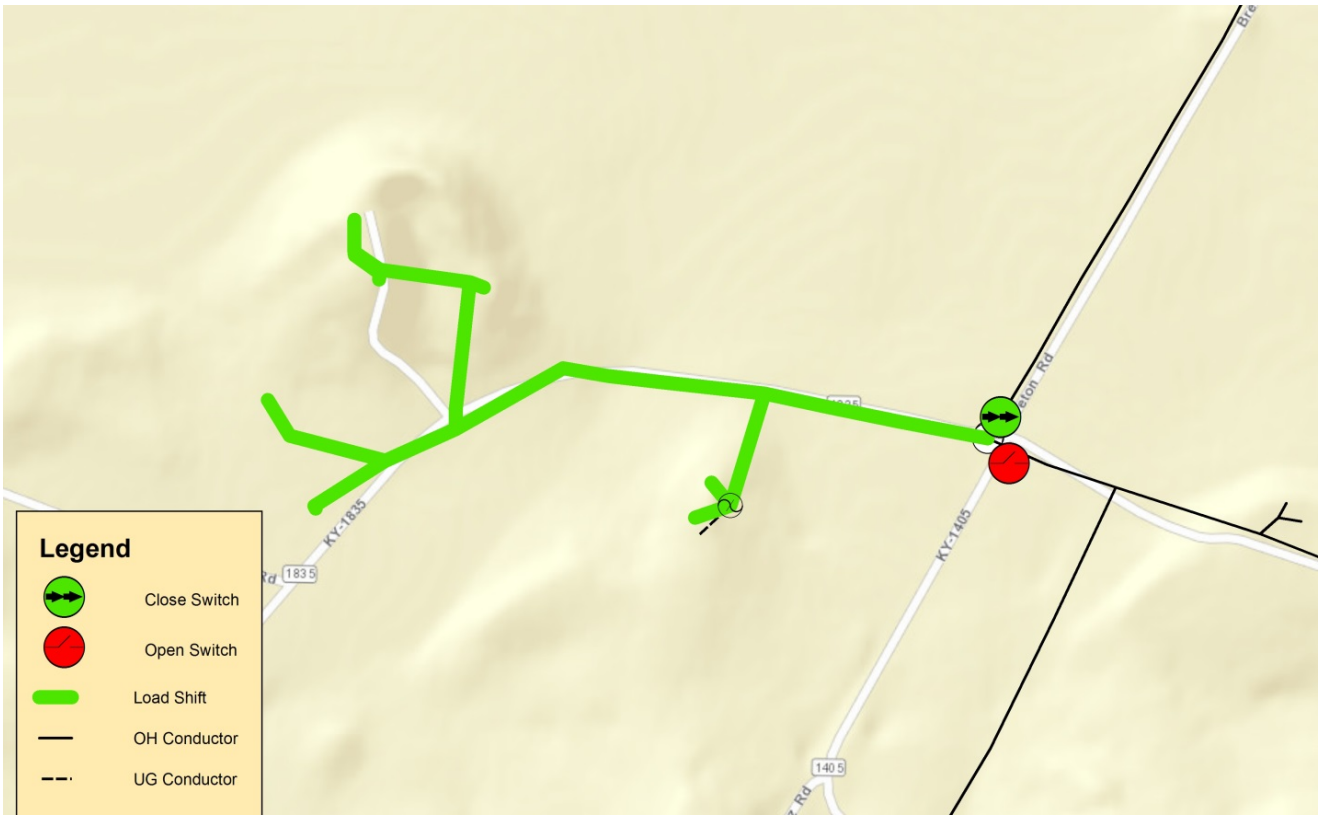
SUBSTATION AREA:	SULLIVAN
LOCATION	
740C CODE	603-3
ESTIMATED COST:	$0
COMPLETION YEAR	2016
DESCRIPTION:	SHIFT LOAD. LOW VOLTAGE. SINGLE PHASE LINE WITH 45A. OPEN AT SW43028001 AND CLOSE FUS41982001.
ASSOCIATED PROJECTS:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

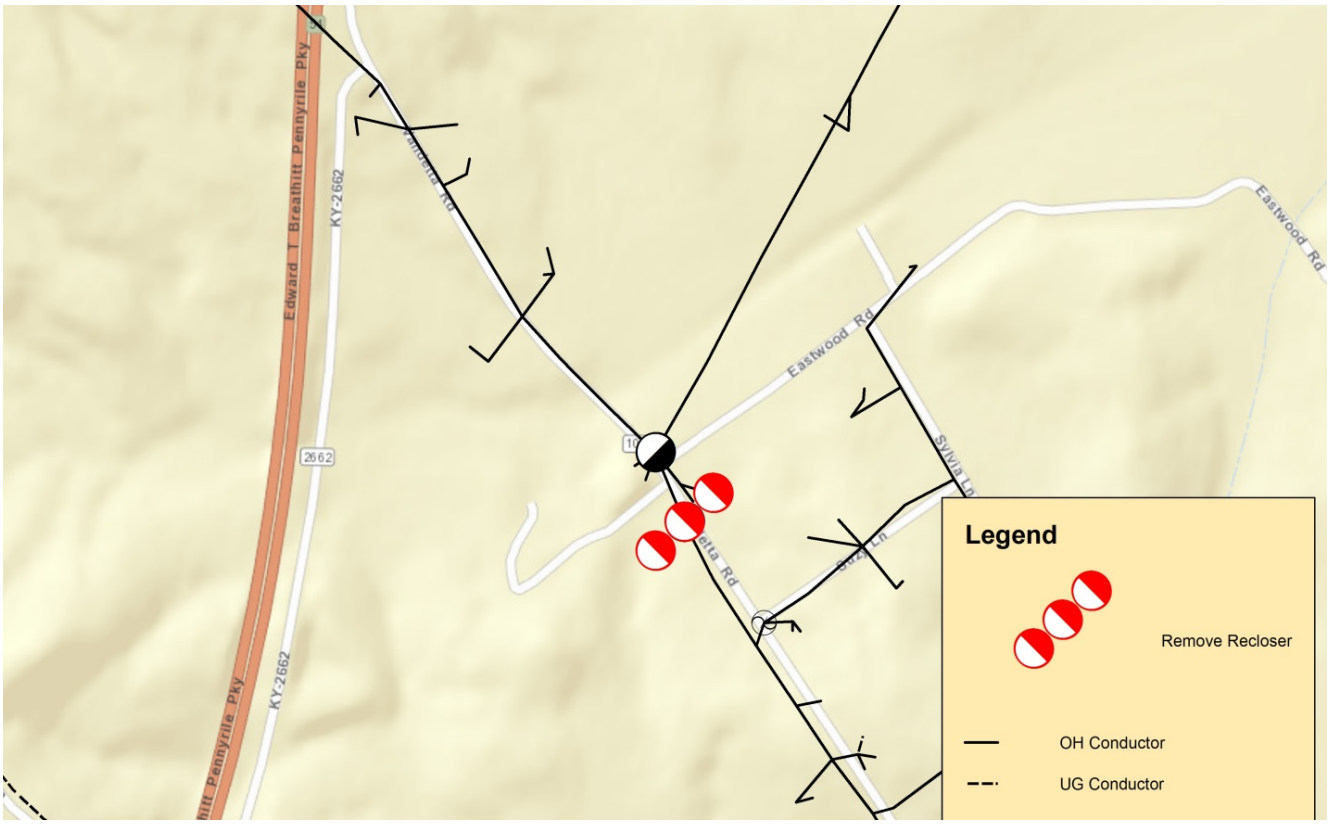
SUBSTATION AREA:	ONTON
LOCATION	BRETON RD @ KY-1835
740C CODE	603-8
ESTIMATED COST:	$0
COMPLETION YEAR	2016
DESCRIPTION:	LOAD SHIFT. SHIFT 8A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A. OPEN AT OH1921722003 AND CLOSE AT OH420216430.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

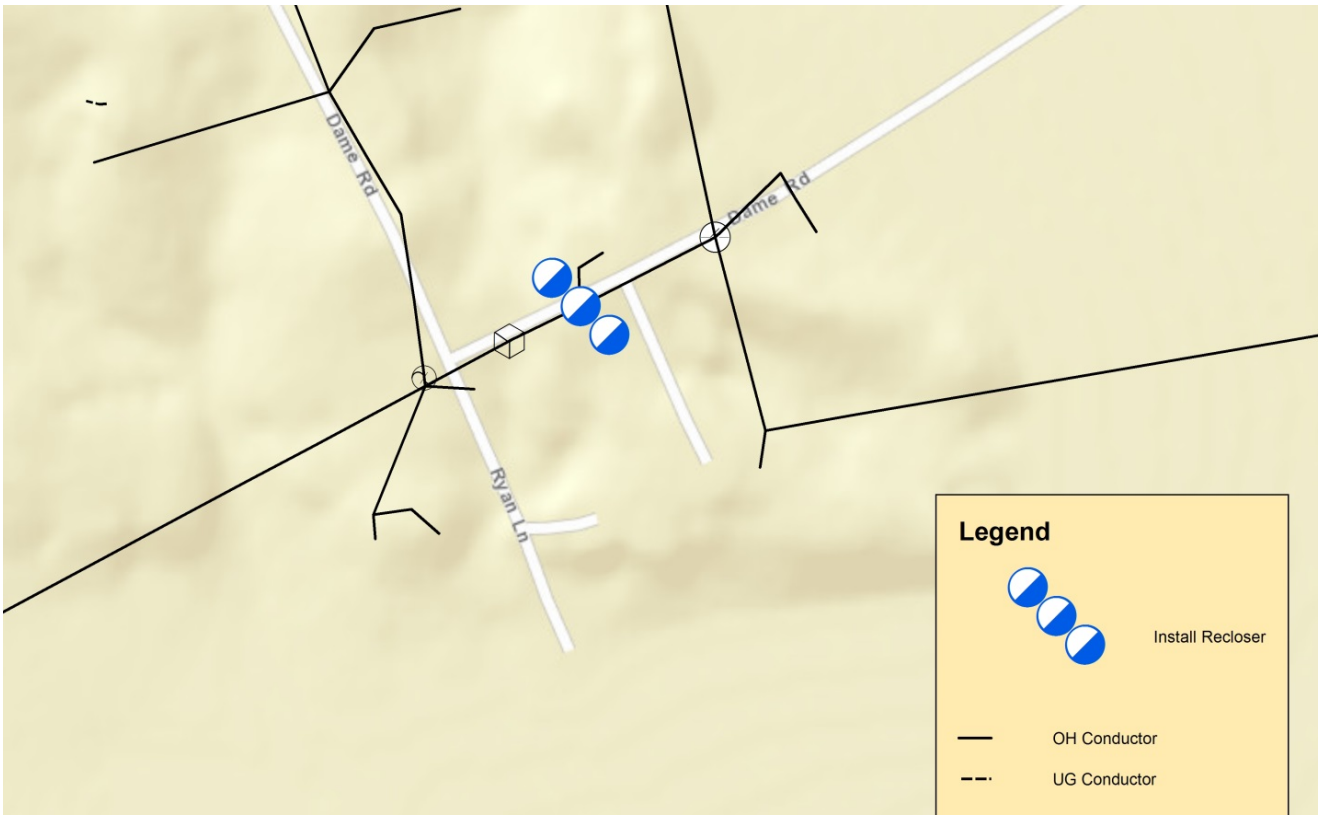
SUBSTATION AREA:	ONTON
LOCATION	VANDETTA RD. @ EASTWOOD RD.
740C CODE	603-9
ESTIMATED COST:	$0
COMPLETION YEAR	2016
DESCRIPTION:	REMOVE 70A OCRS. LOADING FROM LOAD SHIFT MOVE OCRS DOWNLINE FOR SECTIONALIZING. REC26423001.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

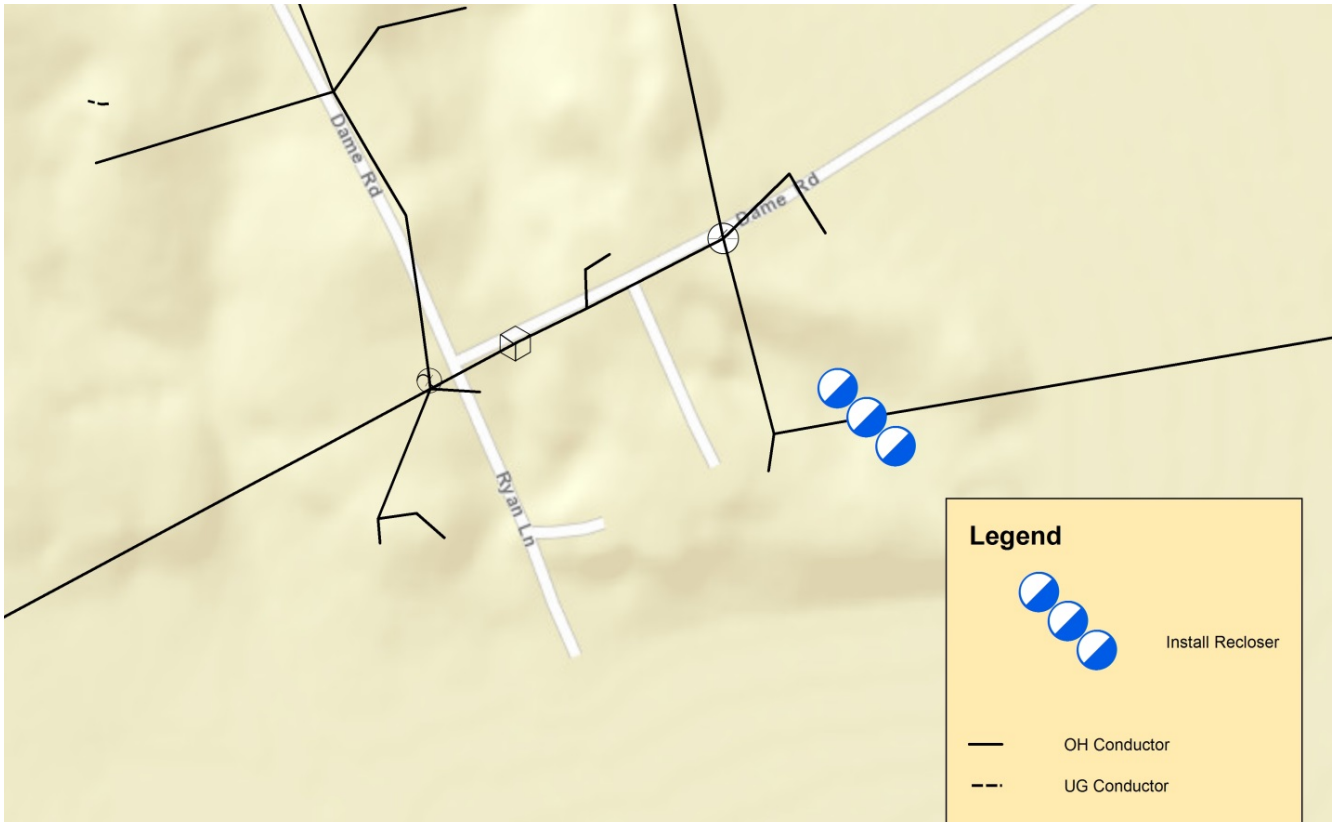
SUBSTATION AREA:	ONTON
LOCATION	DAME ROAD
740C CODE	603-10
ESTIMATED COST:	$18,000
COMPLETION YEAR	2016
DESCRIPTION:	INSTALL 3- 70HVT. OH519995.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	ONTON
LOCATION	DAME RD
740C CODE	603-11
ESTIMATED COST:	$4,500
COMPLETION YEAR	2016
DESCRIPTION:	INSTALL 3- 50A OCR. OH520019.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

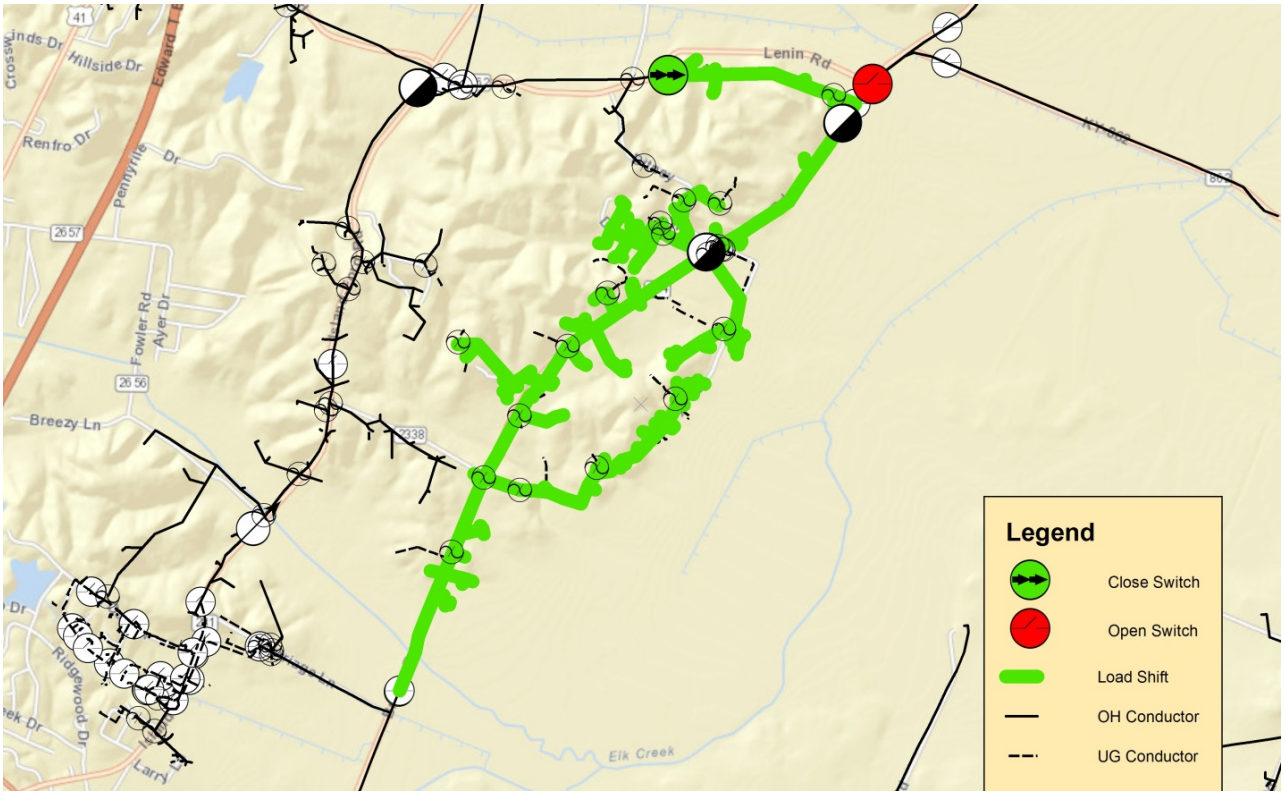
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	HANSON
LOCATION	CARROLL GENTRY RD. @ BROWN RD.
740C CODE	603-16
ESTIMATED COST:	$4,500
COMPLETION YEAR	2017
DESCRIPTION:	INSTALL 50A OCR. 28A. FUS2073591908.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	SOUTH HANSON2
LOCATION	LENIN RD. @ BROWN RD.
740C CODE	603-18
ESTIMATED COST:	$0
COMPLETION YEAR	2017
DESCRIPTION:	LOAD SHIFT. SHIFT 1 MW OF LOAD FROM HANSON TO SOUTH HANSON 2. COORDINATE LOAD SHIFT WITH SOUTH HANSON 2 TO ONTON PROJECTS. OPEN POINT AT OH100308 AND CLOSE AT SW32405001. SECTIONALIZING AND REGULATOR PROJECTS ARE ASSIGNED TO HANSON.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



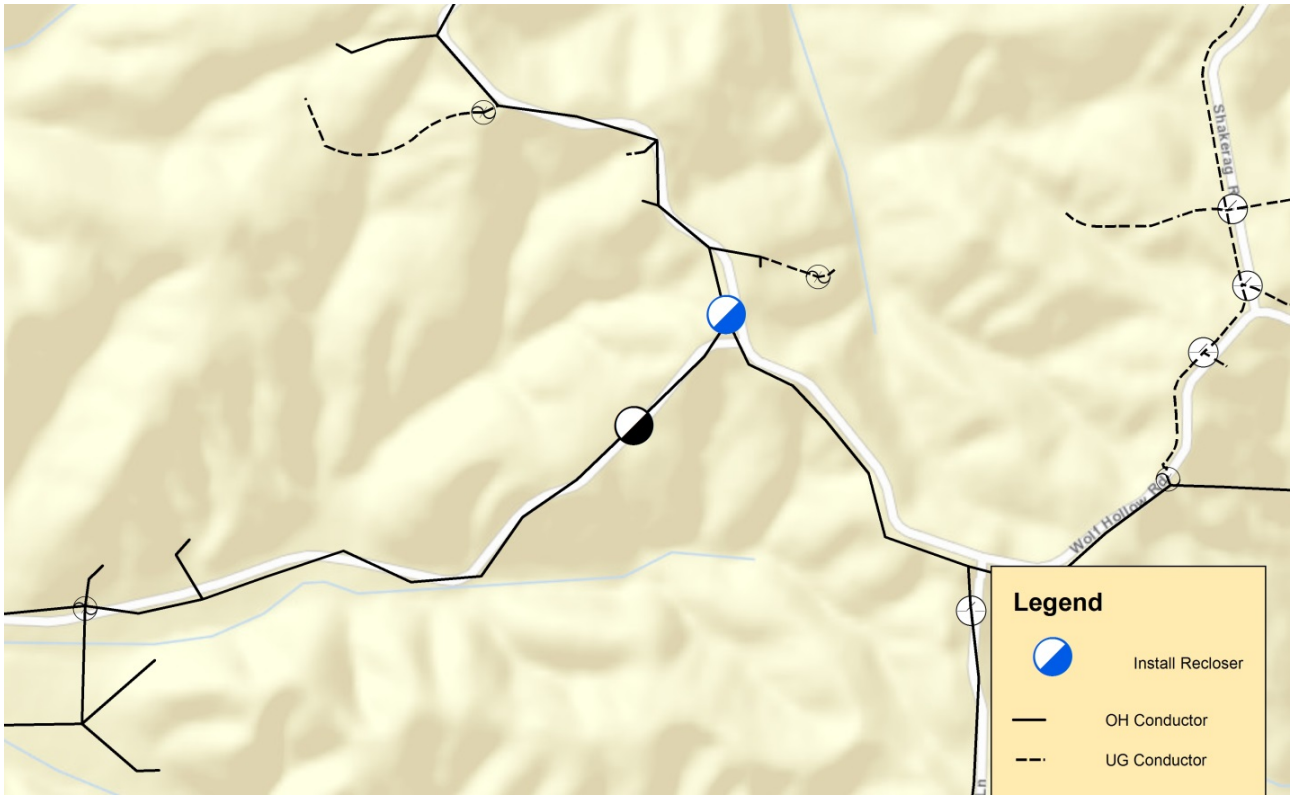
4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	SOUTH HANSON1
LOCATION	WOLF HOLLOW RD @ LEROY RD
740C CODE	603-21
ESTIMATED COST:	$4,500
COMPLETION YEAR	2018
DESCRIPTION:	INSTALL 50A OCR. 32A. FUS482517087.

ASSOCIATED PROJECTS: NONE

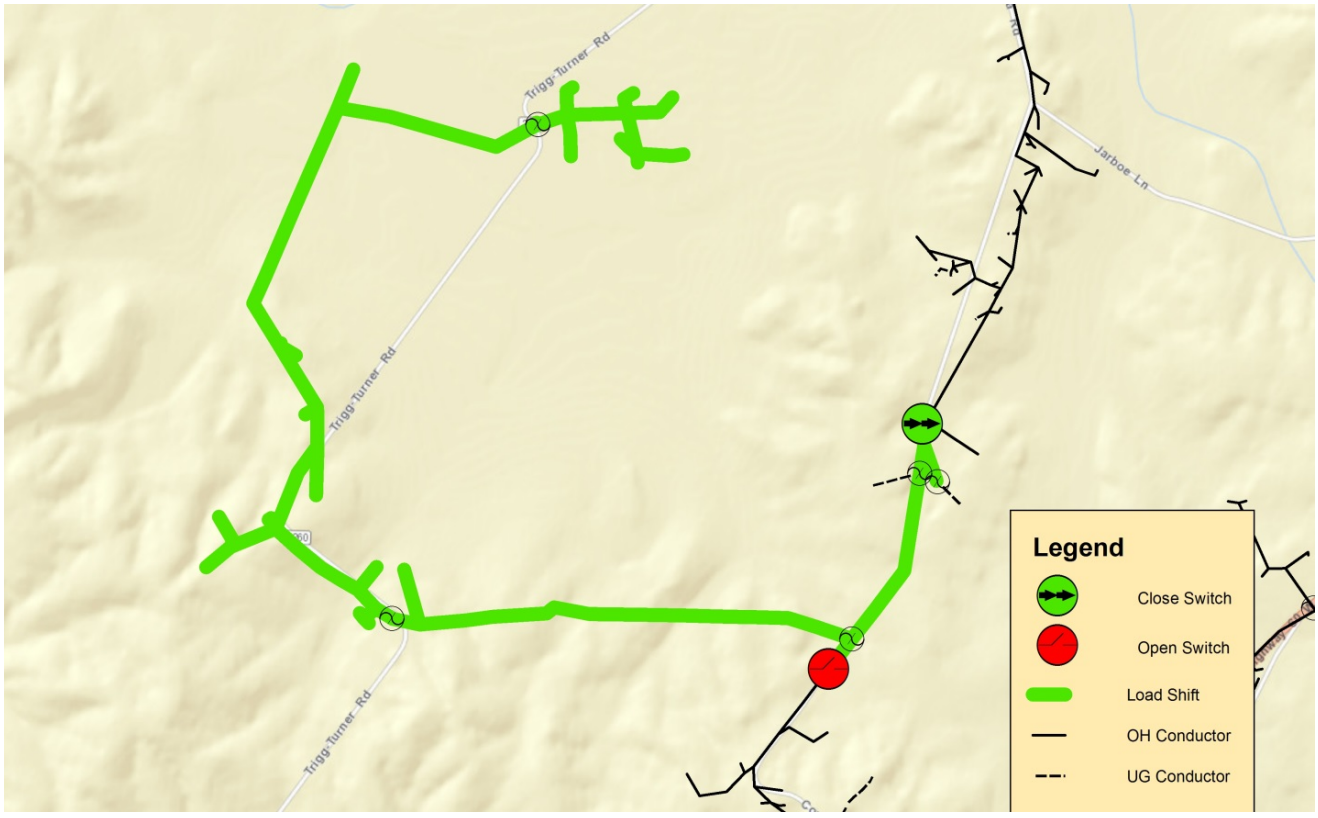
ALTERNATES: NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

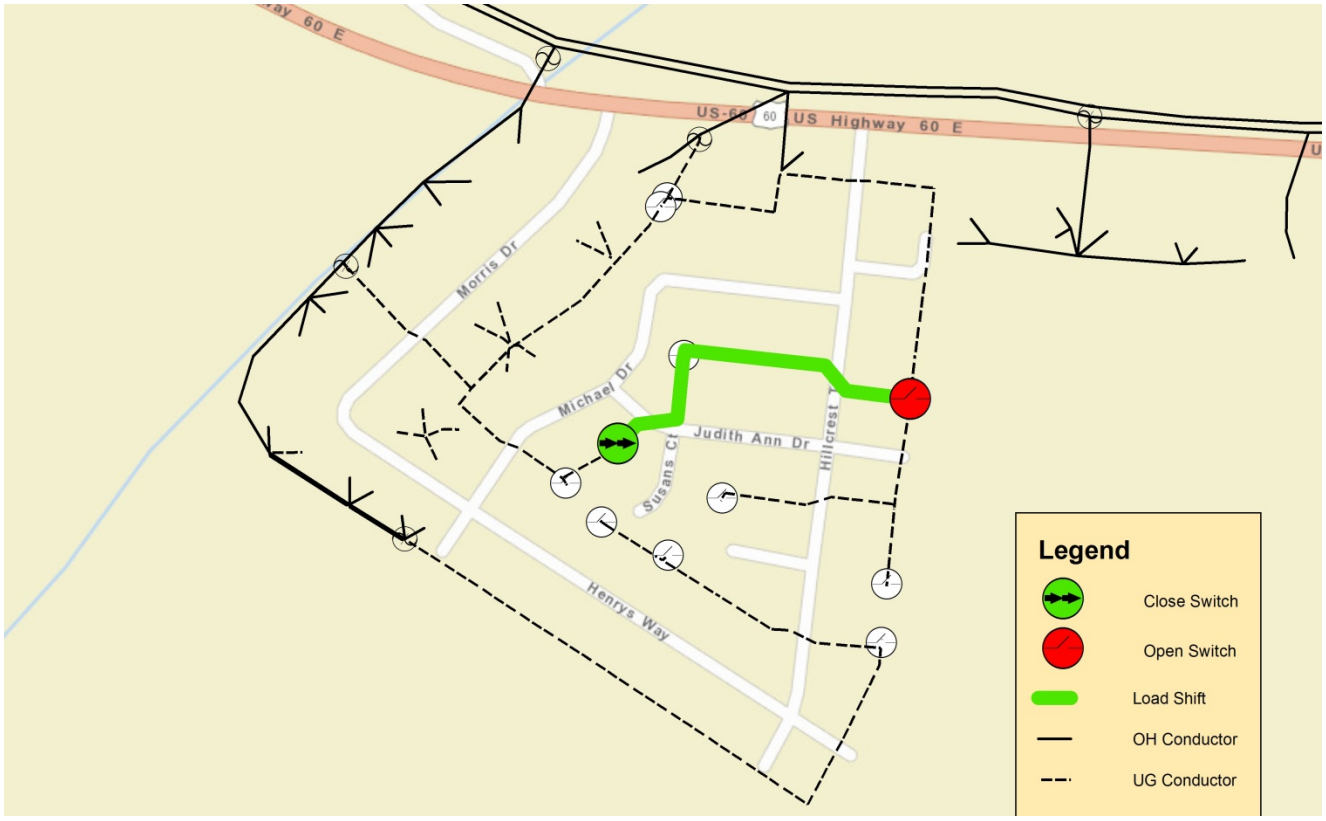
SUBSTATION AREA:	GENEVA
LOCATION	CORYDON-GENEVA RD
740C CODE	603-22
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	LOAD SHIFT. SHIFT 17A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A. OPEN AT OH331672 AND CLOSE AT OH332048.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

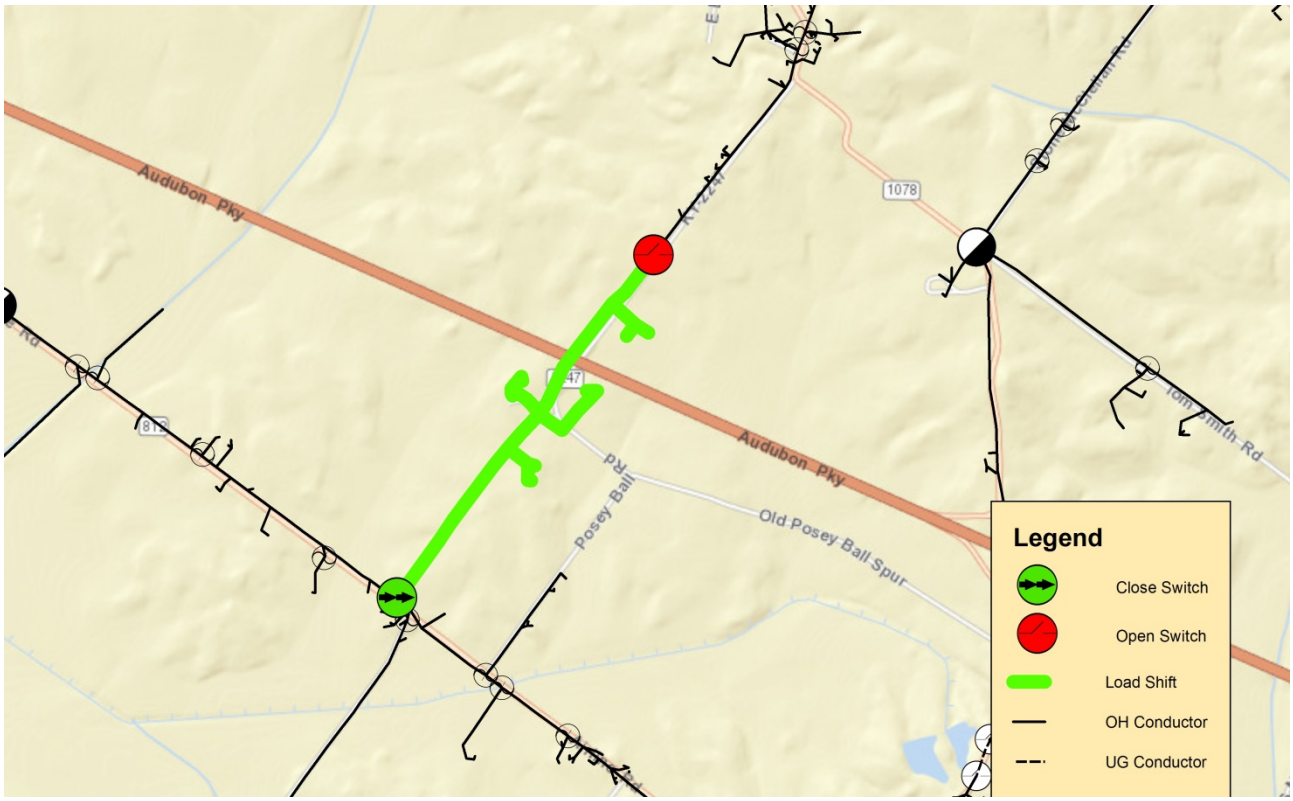
SUBSTATION AREA:	RACE CREEK
LOCATION	JUDITH ANN DR
740C CODE	603-25
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	40A ON SINGLE PHASE LINE AT OH337347. CHANGE POINTS TO SHIFT LOAD. NEW OPEN AT UG2112910937 AND CLOSE AT UG2109877059.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

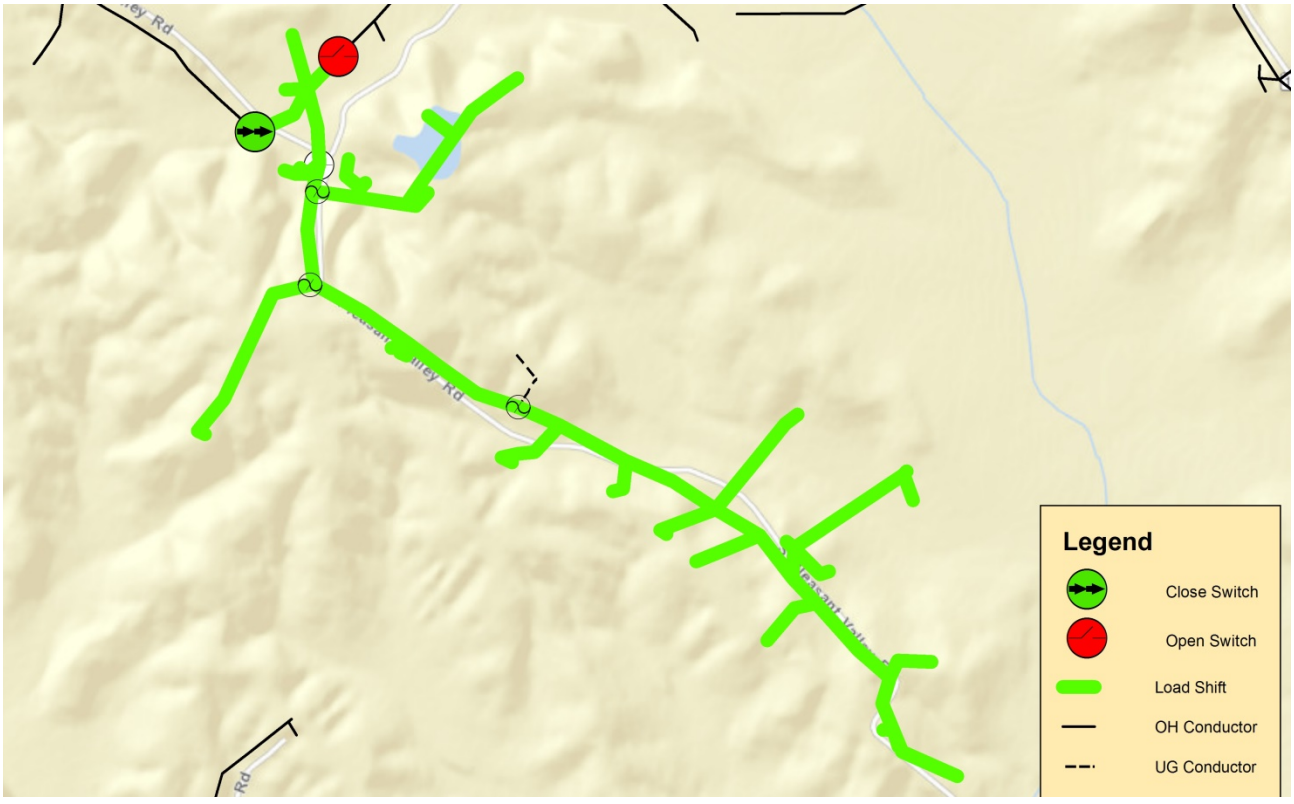
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	ZION
LOCATION	AUDUBON PKY
740C CODE	603-26
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	LOAD SHIFT. SHIFT 5A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A REC41042001. OPEN AT OH335821 AND CLOSE AT OPN301459.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



NEW DISTRIBUTION CONSTRUCTION ITEM:

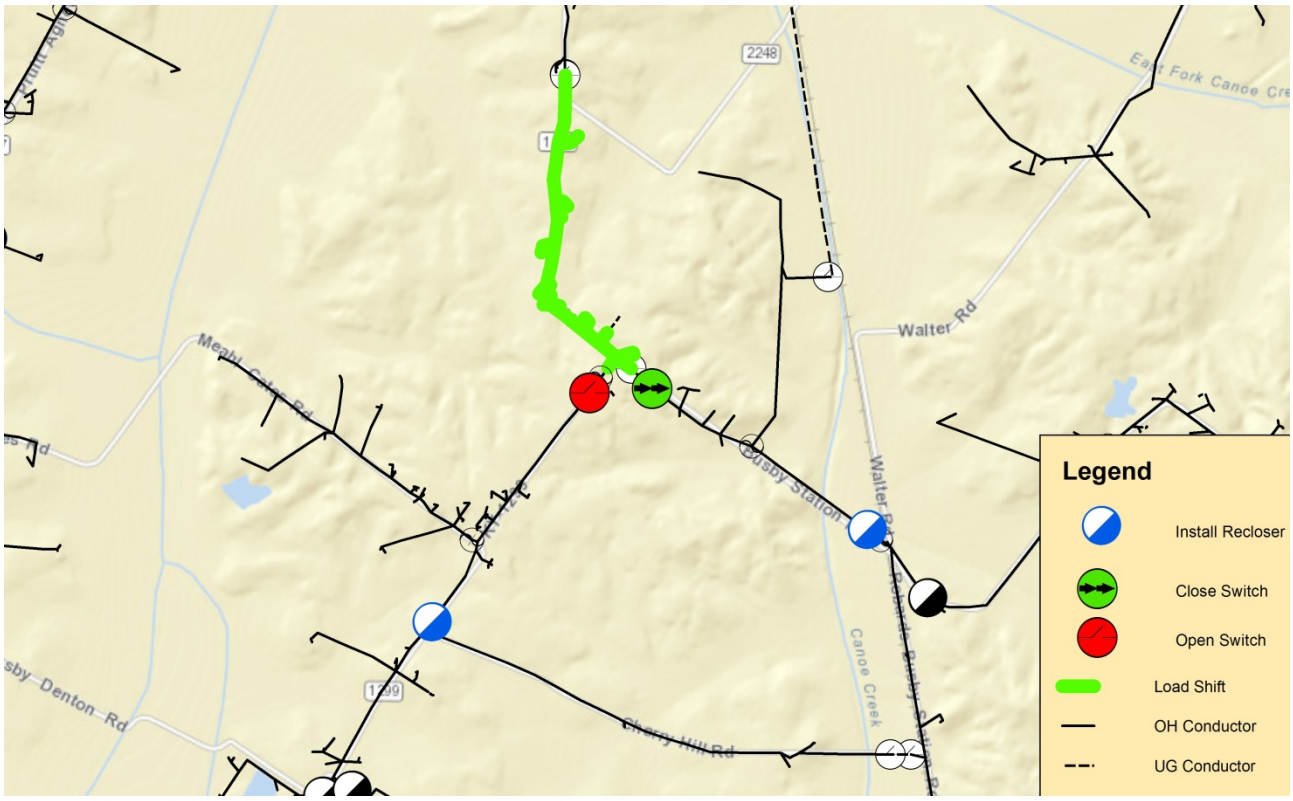
SUBSTATION AREA:	NIAGARA
LOCATION	PLEASANT VALLEY RD
740C CODE	603-29
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	LOAD SHIFT. SHIFT 22A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A OH322726. OPEN AT OH322762 AND CLOSE AT OPN301920.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

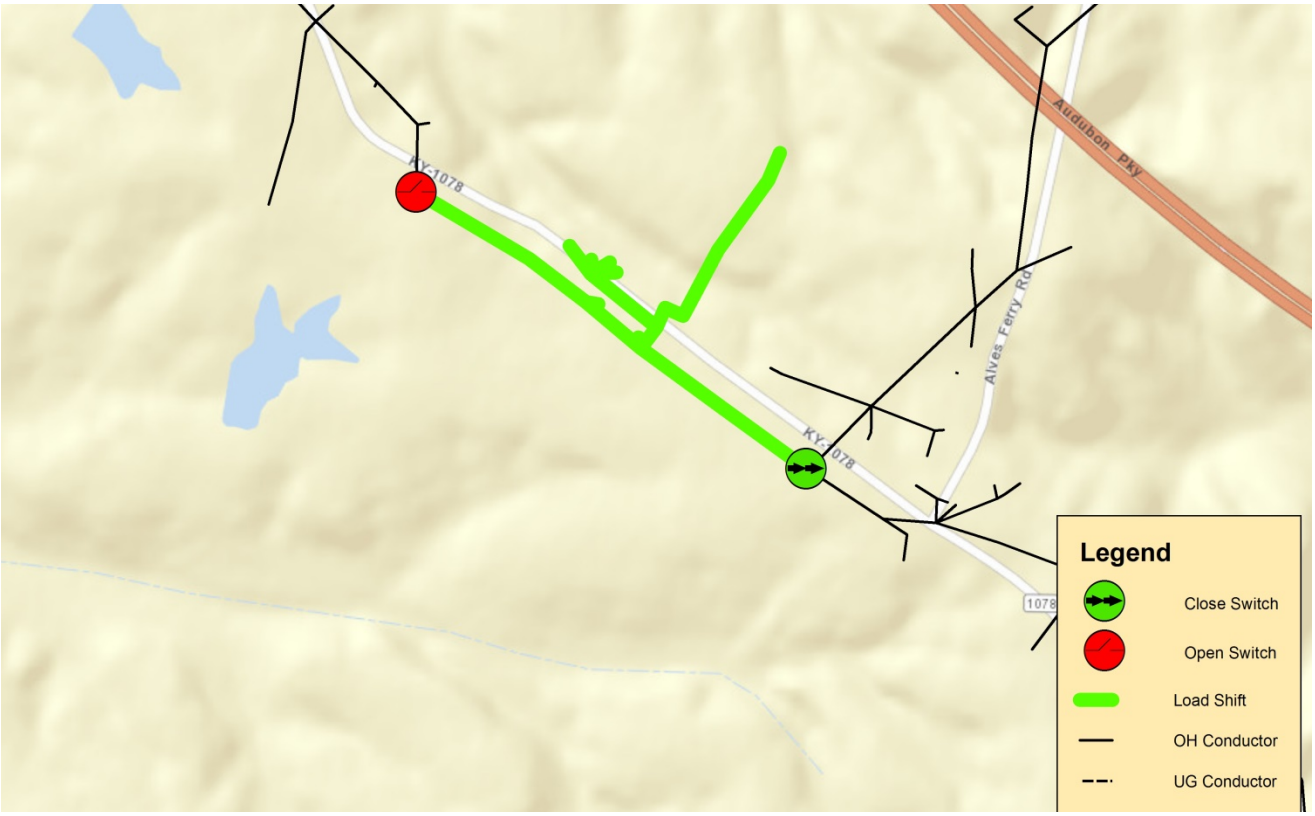
SUBSTATION AREA:	NIAGARA
LOCATION	BUSBY STATION
740C CODE	603-30
ESTIMATED COST:	$9,000
COMPLETION YEAR	2018
DESCRIPTION:	LOAD SHIFT. SHIFT 10A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A ON OH325630 . OPEN AT OH325135 AND CLOSE AT SW41526001. INSTALL 50A RECLOSERS ON BOTH SIDES OF SINGLE PHASE LINE CHANGE.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

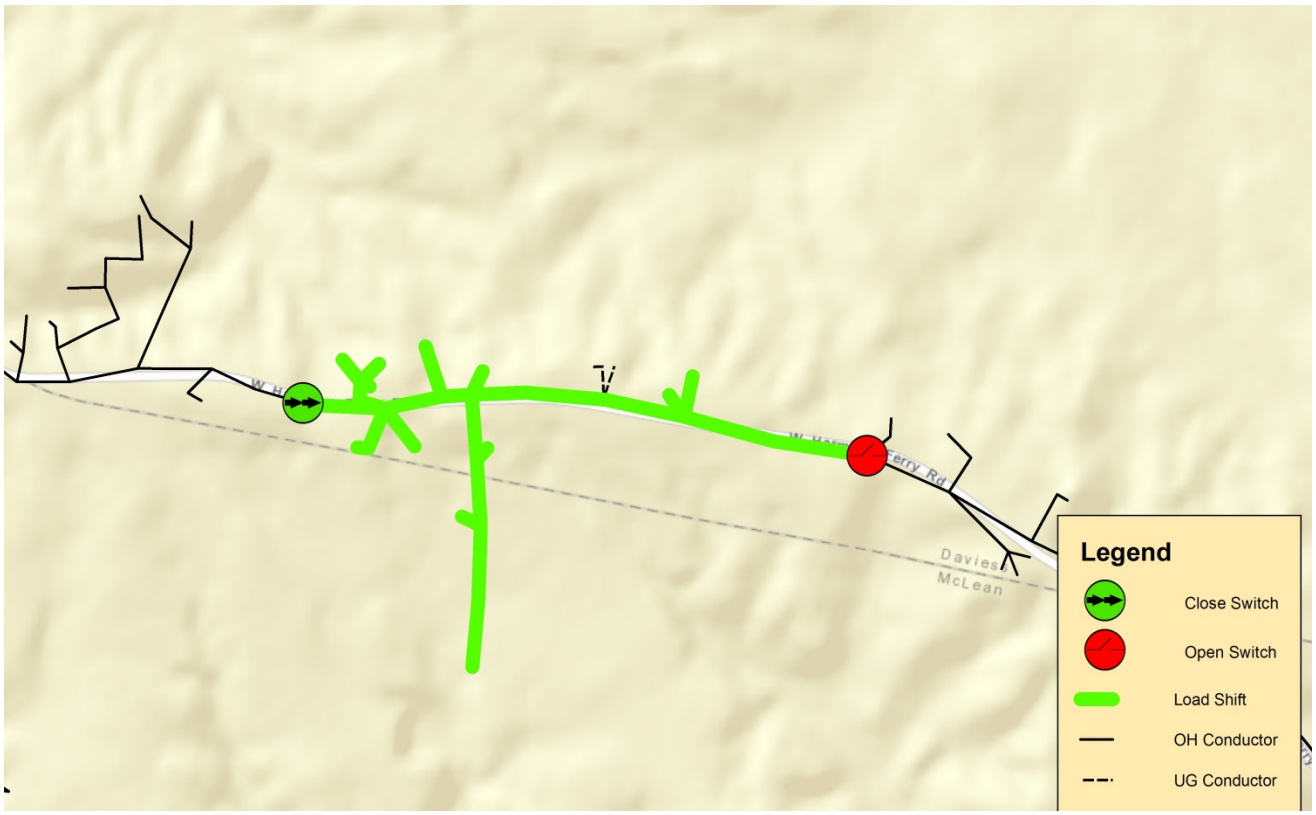
SUBSTATION AREA:	NIAGARA
LOCATION	KY-1078
740C CODE	603-31
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	LOAD SHIFT. SHIFT 5A SINGLE PHASE LOAD TO RELIEVE LINE LOADING OVER 40A ON OH336398 . OPEN AT OH336062 AND CLOSE AT OH336066.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

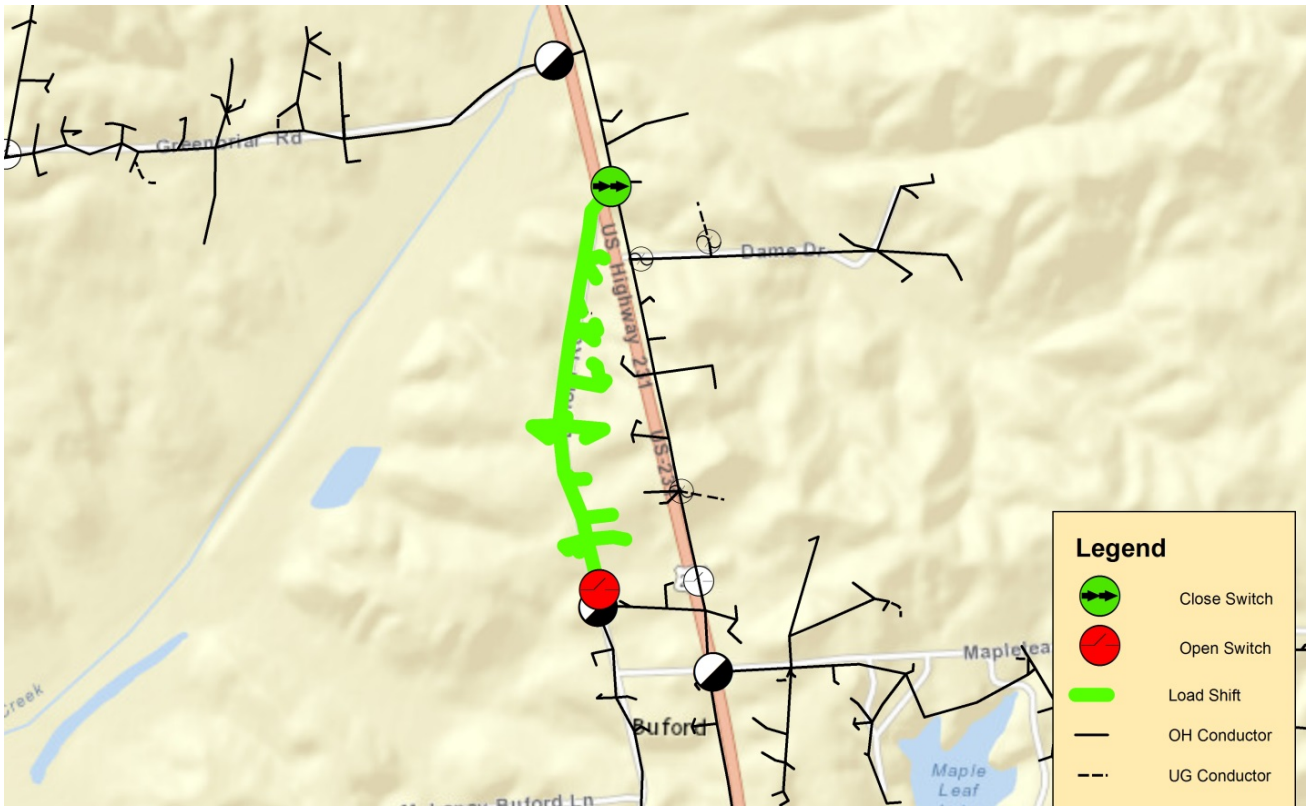
SUBSTATION AREA:	UTICA
LOCATION	HAMILTON FERRY RD
740C CODE	603-38
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	LINE LOADING. LINE CHANGE. SHIFT 10A. OPEN LINE AT OH531389 AND CLOSE SWITCH SW23009001.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

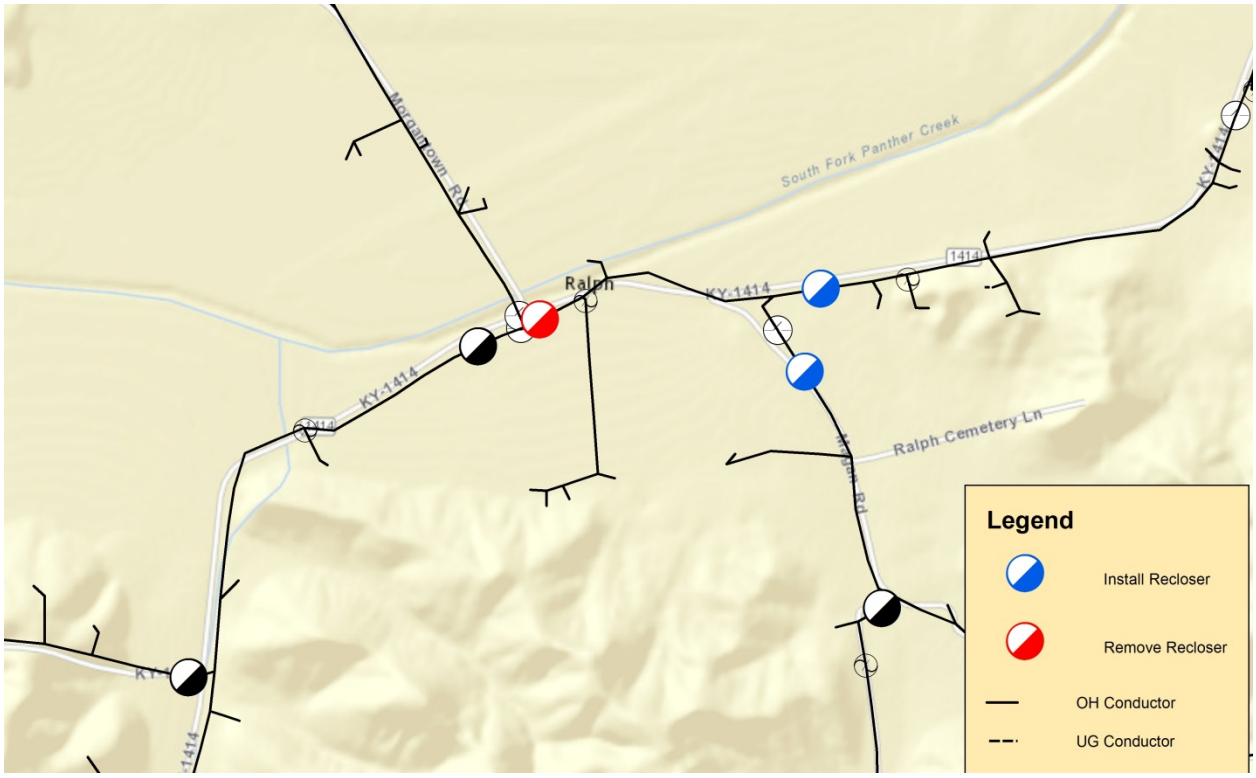
SUBSTATION AREA:	PLEASANT RIDGE
LOCATION	US HWY 231 @ DAME DR.
740C CODE	603-39
ESTIMATED COST:	$0
COMPLETION YEAR	2018
DESCRIPTION:	LINE LOADING. LINE CHANGE. OPEN SW23312001 AND CLOSE SW23307001. LOAD ON SAME CIRCUIT.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

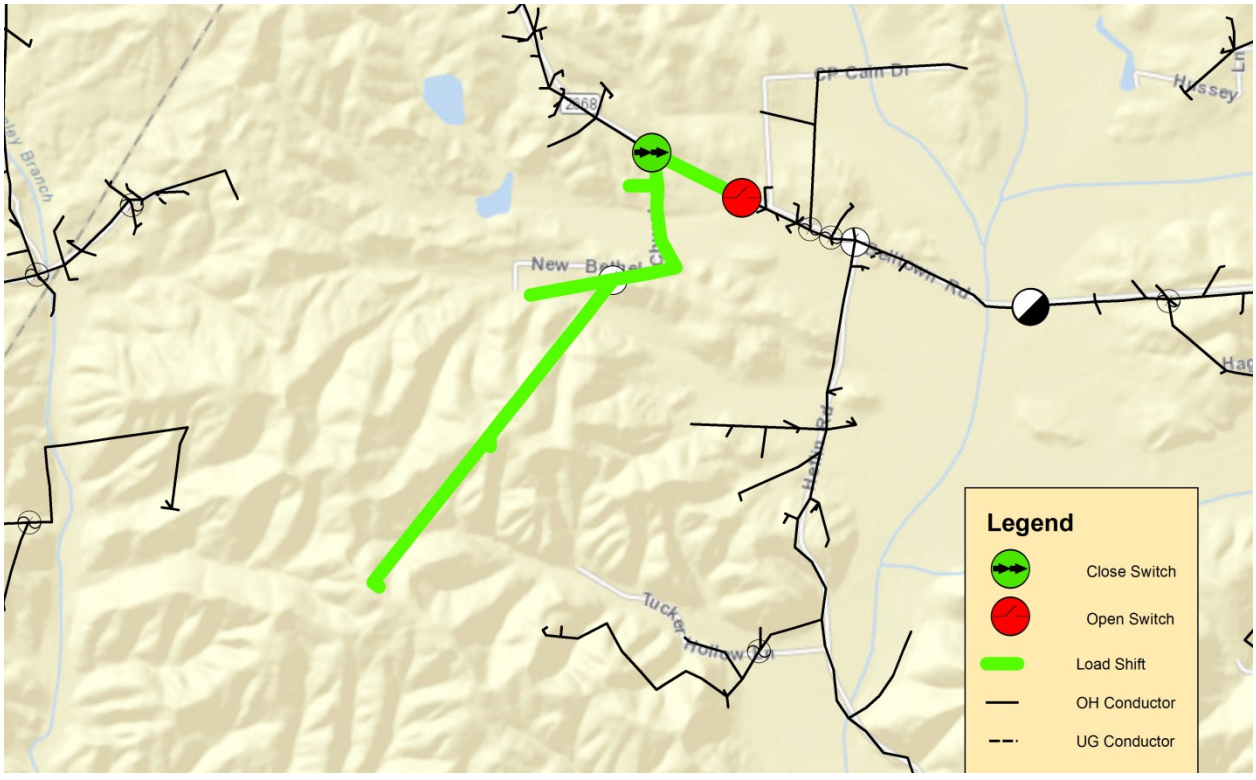
SUBSTATION AREA:	WHITESVILLE
LOCATION	KY-1414 @ MORGANTOWN RD.
740C CODE	603-40
ESTIMATED COST:	$27,000
COMPLETION YEAR	2019
DESCRIPTION:	REC21606001 70L LOADING. REMOVE RECLOSERS AND ADD 70'S DOWNLINE ON EACH LEG OF SPLIT. OH713218 AND OH1074352354.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	BEDA
LOCATION	BELLTOWN RD. @ NEW BETHEL CHURCH RD.
740C CODE	603-45
ESTIMATED COST:	$0
COMPLETION YEAR	2019
DESCRIPTION:	LOAD SHIFT. SHIFT 7A BEDA TO UTICA CIRCUIT 2. CREATE OPEN POINT AT OH700119. CLOSE AT SWITCH SW-492206413. ALLEVIATE 40A SINGLE PHASE LINE. UPGRADE UTICA OCR.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



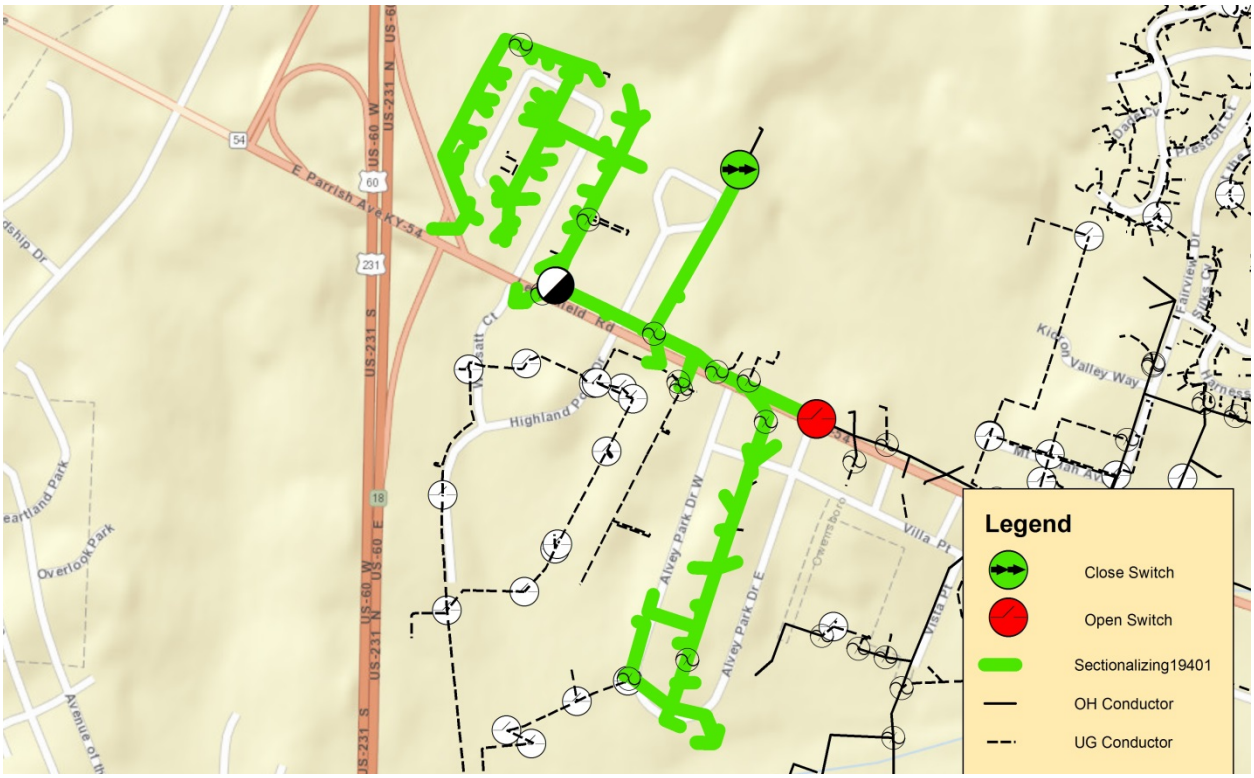
NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	MASONVILLE
LOCATION	CRESENT HILL DR. @ LOFTWOOD DR.
740C CODE	603-52
ESTIMATED COST:	$0
COMPLETION YEAR	2020
DESCRIPTION:	LOAD SHIFT. CREATE OPEN AT FUS700416. CLOSE AT UG1330823758. ALLEVIATE 40A SINGLE PHASE LINE.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE

4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

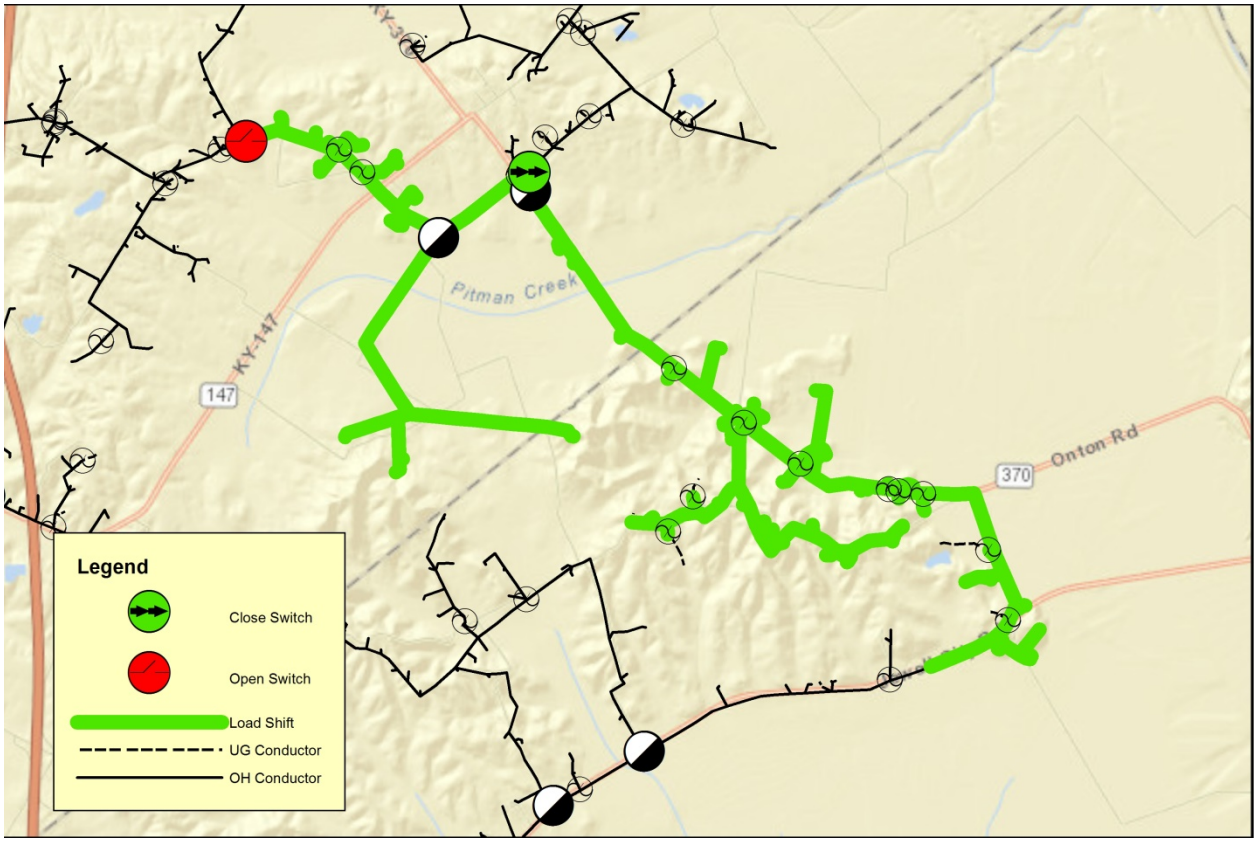
SUBSTATION AREA:	EAST OWENSBORO
LOCATION	LEITCHFIELD RD @ WIMSATT CT
740C CODE	603-53
ESTIMATED COST:	$0
COMPLETION YEAR	2020
DESCRIPTION:	LOAD SHIFT. SHIFT 1.2 MW LOAD FROM SOUTH DERMONT 2 TO EAST OWENSBORO. LOAD SHIFT AFTER NEW CIRCUIT, UNDERGROUND TIE, AND THREE PHASE CONVERSION PROJECTS. OPEN AT OH715263 AND CLOSE AT OH715266.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	NONE



4 DESCRIPTION AND JUSTIFICATION

NEW DISTRIBUTION CONSTRUCTION ITEM:

SUBSTATION AREA:	ONTON
LOCATION	KY-370
740C CODE	603-58
ESTIMATED COST:	$0
COMPLETION YEAR	2016
DESCRIPTION:	LOAD SHIFT. 450KW FROM ONTON CIRCUIT 2 TO BEECH GROVE CIRCUIT 1. LOW VOLTAGE BELOW 117 V ALONG LONG TWO PHASE LINES DUE TO ONTON VOLTAGE DROP.
ASSOCIATED PROJECTS:	NONE
ALTERNATES:	UPGRADE MAINLINE CIRCUIT 1 REGULATORS TO 200A AND INSTALL SECOND SET OF REGULATION ON TWO PHASE LINE.



D. Project Descriptions and Justifications- Regulators

The following pages provide a description and justification for the proposed Code 604 Regulator construction work plan projects. The following Table 4-4 is a listing of all line regulation projects proposed.

Table 4-4: Regulator Projects- Code 604

CWP CODE	STATION NAME	QTY	COST ESTIMATE	COMPLETION YEAR	DESCRIPTION-DETAIL
604-19	LYON	3	$45,000	2016	REMOVE REGULATORS. INSTALL 150A REGULATORS AT SECTION WITH BI-DIRECTIONAL CONTROLS. OH307258
				LOCATION	THOMASON RD/KY 819
604-21	HANSON	3	$36,000	2016	INSTALL 100A REGULATORS ON SECTION OH100270. LOW VOLTAGE 117.3 V. 988KW FED ON 2 ACSR 119V INCOMING. ALSO WOULD ASSIST ANY BACKFEED WITH SOUTH HANSON.
				LOCATION	BROWN RD @ LENIN RD
604-22	WEAVERTON	3	$36,000	2016	REMOVE EXISTING 3PH, 100A REGULATOR BANK REG409831 AND INSTALL 3-100A AT THE END OF SECTION #OH332683. THE 100A REGULARTORS ARE OVERLOADED AT EXISTING LOCATION BUT WITH THE 6402 DOUBLE CIRCUIT PROJECT, THE UPLINE VOLTAGE DROP IS REDUCED ALLOWING THE REGULATORS TO BE MOVED DOWNLINE, WITHIN LOADING LIMITS BUT ARE STILL NEEDED FOR END OF LINE VOLTAGE IMPROVEMENTS.
				LOCATION	US HIGHWAY 41A BEFORE CAMELOT DR
604-23	ZION	3	$45,000	2016	REMOVE 100A REGULATORS AND INSTALL 150A REGULATORS. REG41076003.
				LOCATION	EXISTING LOCATION

Regulator Equipment Summary

Size	Quantity	Cost
100A	6	$72,000
150A	6	$90,000
200A	0	$0
Total	12	$162,000

E. Project Descriptions and Justifications- Capacitors

The following pages provide a description and justification for the proposed Code 605 Capacitor construction work plan projects. The following Table 4-5 is a listing of all capacitor projects proposed.

Table 4-5: Capacitor Projects- Code 605

CWP CODE	STATION NAME	QTY	COST ESTIMATE	COMPLETION YEAR	DESCRIPTION- DETAIL	LOCATION
605-2	MARION	1	$5,000	2016	LOW VOLTAGE. INSTALL 300 KVAR. LOAD BALANCE. OH313613	KY-91 @ HILLSIDE DR
605-3	MARION	1	$5,000	2016	LOW VOLTAGE. INSTALL 300 KVAR. OH316820	CHICKADEE LN
605-4	MORGANFIELD	1	$5,000	2016	INSTALL 300KVAR AT OH328508. VOLTAGE LOW AT REGULATOR.	HILLTOP RD NEAR KY-947
605-5	DIXON	1	$5,000	2016	INSTALL 300KVAR AT OH308946. SOME PHASE IMBALANCE FROM LARGE TAPS. PF 98.9 TO 99.5.	KY-132, .75 MILES FROM CARVILLE CLARK RD
605-6	LITTLE DIXIE	1	$5,000	2016	UPGRADE EXISTING 150KVAR. INSTALL 300KVAR AT CAP41464004.	EXISTING
605-7	ONTON	1	$5,000	2016	INSTALL 300KVAR AT OH528218. SUMMER PF=93.	KY-370 @ FRED EASTWOOD RD
605-8	HANSON	1	$5,000	2016	INSTALL 300KVAR AT OH521378. STATION WINTER 96PF TO 98PF.	KY-862 @ BROWN RD
605-9	GUFFIE	1	$5,000	2016	INSTALL 300KVAR AT OH527429. STATION WINTER.	KY-554 @ GREENBACK RD
605-10	NUCKOLS	1	$5,000	2016	INSTALL 300 KVAR AT OH518047. LOW VOLTAGE AT OH521526.	NUCKOLS-OLD BUCK CREEK RD

Capacitor Equipment Summary

Size	QTY	Cost
300 KVAR	9	$45,000

EXHIBITS

FIGURE F-1: 2015 LOAD FORCAST EXCERPT

KENERGY CORP.

2015 LONG-TERM LOAD FORECAST - BASE CASE FORECAST

RURAL SYSTEM REQUIREMENTS - NO DSM ADJUSTMENT

Year	Actual Energy (MWh)	Normal Energy (MWh)	Percent Growth	Summer NCP (kW)	Summer Normal NCP (kW)	Percent Growth	Load Factor	Winter NCP (kW)	Winter Normal NCP (kW)	Percent Growth	Load Factor
1999	995,896	926,630		242,135			47.0%	197,919			57.4%
2000	1,039,824	943,057	1.8%	232,705		-3.9%	51.0%	196,037		-1.0%	60.6%
2001	1,042,643	1,030,224	9.2%	231,219		-0.6%	51.5%	218,282		11.3%	54.5%
2002	1,097,150	1,046,863	1.6%	242,810		5.0%	51.6%	196,821		-9.8%	63.6%
2003	1,081,171	1,062,447	1.5%	236,194		-2.7%	52.3%	235,479		19.6%	52.4%
2004	1,109,089	1,066,335	0.4%	244,804		3.6%	51.7%	220,873		-6.2%	57.3%
2005	1,172,365	1,114,166	4.5%	260,280		6.3%	51.4%	230,890		4.5%	58.0%
2006	1,155,880	1,141,486	2.5%	262,625		0.9%	50.2%	226,742		-1.8%	58.2%
2007	1,235,849	1,168,613	2.4%	274,843		4.7%	51.3%	247,169		9.0%	57.1%
2008	1,218,628	1,190,460	1.9%	261,136		-5.0%	53.3%	257,119		4.0%	54.1%
2009	1,144,107	1,197,549	0.6%	257,112		-1.5%	50.8%	279,942		8.9%	46.7%
2010	1,270,263	1,209,637	1.0%	276,957		7.7%	52.4%	251,992		-10.0%	57.5%
2011	1,214,795	1,199,189	-0.9%	274,841		-0.8%	50.5%	262,704		4.3%	52.8%
2012	1,192,208	1,204,575	0.4%	283,792		3.3%	48.0%	230,936		-12.1%	58.9%
2013	1,221,667	1,209,619	0.4%	258,490		-8.9%	54.0%	242,793		5.1%	57.4%
2014	1,240,267	1,189,007	-1.7%	248,964	265,964	-3.7%	56.9%	309,978	258,978	27.7%	45.7%
2015		1,214,627	2.2%		275,793	3.7%	50.3%		262,950	1.5%	52.7%
2016		1,215,030	0.0%		276,811	0.4%	50.1%		265,374	0.9%	52.3%
2017		1,216,288	0.1%		277,964	0.4%	50.0%		266,459	0.4%	52.1%
2018		1,229,651	1.1%		279,252	0.5%	50.3%		267,680	0.5%	52.4%
2019		1,240,439	0.9%		280,675	0.5%	50.5%		269,035	0.5%	52.6%
2020		1,246,722	0.5%		282,234	0.6%	50.4%		270,526	0.6%	52.6%
2021		1,256,191	0.8%		283,927	0.6%	50.5%		272,152	0.6%	52.7%
2022		1,269,367	1.0%		285,756	0.6%	50.7%		273,914	0.6%	52.9%
2023		1,283,756	1.1%		287,721	0.7%	50.9%		275,811	0.7%	53.1%
2024		1,295,522	0.9%		289,821	0.7%	51.0%		277,843	0.7%	53.2%
2025		1,308,249	1.0%		292,055	0.8%	51.1%		280,010	0.8%	53.3%
2026		1,321,460	1.0%		294,426	0.8%	51.2%		282,312	0.8%	53.4%
2027		1,332,793	0.9%		296,931	0.9%	51.2%		284,750	0.9%	53.4%
2028		1,348,820	1.2%		299,572	0.9%	51.4%		287,323	0.9%	53.6%
2029		1,363,116	1.1%		302,348	0.9%	51.5%		290,032	0.9%	53.7%

ANNUAL GROWTH RATES							
1999-2004	2.2%	2.8%	0.2%		2.2%		
2004-2009	0.6%	2.3%	1.0%		-0.4%	4.9%	
2009-2014	1.6%	-0.1%	-0.6%		2.3%	2.1%	-0.4%
2014-2019		0.9%		1.1%	-2.4%	0.8%	2.9%
2019-2024		0.9%		0.6%	0.2%	0.6%	0.2%
2024-2029		1.0%		0.8%	0.2%	0.9%	0.2%
2014-2029		0.9%		0.9%	-0.7%	0.8%	1.1%

Energy includes distribution losses
NCP values represent the highest 1-hour peak at the rural system level in each season and include distribution losses.

FIGURE F-1: 2015 LOAD FORCAST EXCERPT

KENERGY CORP

2015 LONG-TERM LOAD FORECAST - RANGE FORECASTS

RURAL SYSTEM REQUIREMENTS

Year	Base Case (MWh)	Weather Adjusted (MWh)	ECONOMIC SCENARIOS Optimistic (MWh)	ECONOMIC SCENARIOS Pessimistic (MWh)	WEATHER SCENARIOS Extreme (MWh)	WEATHER SCENARIOS Mild (MWh)
1999	995,896	926,630				
2000	1,039,824	943,057				
2001	1,042,643	1,030,224				
2002	1,097,150	1,046,863				
2003	1,081,171	1,062,447				
2004	1,109,089	1,066,335				
2005	1,172,365	1,114,166				
2006	1,155,880	1,141,486				
2007	1,235,849	1,168,613				
2008	1,218,628	1,190,460				
2009	1,144,107	1,197,549				
2010	1,270,263	1,209,637				
2011	1,214,795	1,199,189				
2012	1,192,208	1,204,575				
2013	1,221,667	1,209,619				
2014	1,240,267	1,189,007				
2015		1,209,065	1,296,536	1,132,391	1,279,281	1,140,012
2016		1,206,483	1,311,504	1,117,002	1,276,722	1,137,738
2017		1,204,657	1,328,007	1,103,850	1,274,709	1,136,077
2018		1,214,839	1,351,586	1,106,477	1,285,382	1,145,839
2019		1,222,504	1,371,608	1,108,666	1,293,229	1,153,092
2020		1,225,611	1,384,858	1,108,494	1,296,948	1,155,708
2021		1,232,881	1,401,926	1,109,939	1,304,545	1,162,863
2022		1,243,235	1,422,271	1,115,984	1,315,441	1,172,165
2023		1,254,746	1,443,676	1,123,270	1,327,759	1,183,448
2024		1,263,550	1,463,623	1,126,999	1,336,461	1,191,785
2025		1,273,113	1,482,922	1,132,979	1,346,922	1,200,746
2026		1,282,872	1,503,036	1,139,505	1,356,828	1,209,786
2027		1,290,486	1,521,592	1,144,190	1,365,249	1,217,418
2028		1,302,431	1,542,699	1,154,711	1,377,587	1,228,361
2029		1,312,648	1,564,075	1,162,398	1,388,289	1,238,257

ANNUAL GROWTH RATES						
1999-2004	2.2%	2.8%				
2004-2009	0.6%	2.3%				
2009-2014	1.6%	-0.1%				
2014-2019		0.6%	2.9%	-1.4%	1.7%	-0.6%
2019-2024		0.7%	1.3%	0.3%	0.7%	0.7%
2024-2029		0.8%	1.3%	0.6%	0.8%	0.8%
2014-2029		0.7%	1.8%	-0.2%	1.0%	0.3%

FIGURE F-1: 2015 LOAD FORCAST EXCERPT

KENERGY CORP.

PEAK DAY WEATHER SCENARIOS

TOTAL & RURAL SYSTEM DEMANDS

Extreme Total Degree Days - Evansville, IN				
	Normal		**Extreme**	
Degree Days	5,893	6,179	6,407	6,580
Probability	50%	20%	10%	5%
Occurs Once Every	2 Years	5 Years	10 Years	20 Years

TOTAL SYSTEM NCP DEMAND

	SUMMER NCP KW				**WINTER NCP KW**			
Year	**Base Case (50%)**	**Extreme (20%)**	**Extreme (10%)**	**Extreme (5%)**	**Base Case (50%)**	**Extreme (20%)**	**Extreme (10%)**	**Extreme (5%)**
2015	1,294,656	1,298,526	1,303,772	1,308,256	1,293,052	1,316,591	1,330,765	1,343,576
2016	1,317,954	1,320,709	1,325,946	1,330,421	1,309,062	1,330,005	1,344,151	1,356,937
2017	1,326,689	1,328,041	1,333,259	1,337,717	1,326,526	1,346,152	1,360,255	1,373,000
2018	1,327,631	1,330,152	1,335,399	1,339,884	1,327,527	1,348,495	1,362,689	1,375,516
2019	1,328,610	1,331,687	1,336,959	1,341,464	1,328,485	1,350,135	1,364,402	1,377,294
2020	1,329,722	1,332,047	1,337,319	1,341,824	1,329,572	1,350,608	1,364,884	1,377,784
2021	1,331,183	1,333,405	1,338,697	1,343,218	1,331,131	1,352,092	1,366,430	1,379,385
2022	1,332,634	1,335,622	1,340,952	1,345,507	1,332,552	1,354,414	1,368,861	1,381,913
2023	1,334,217	1,338,112	1,343,486	1,348,078	1,334,103	1,357,013	1,371,583	1,384,745
2024	1,335,918	1,339,875	1,345,277	1,349,893	1,335,812	1,358,898	1,373,551	1,386,788
2025	1,337,724	1,341,806	1,347,239	1,351,881	1,337,641	1,360,956	1,375,701	1,389,020
2026	1,339,622	1,343,779	1,349,244	1,353,913	1,339,579	1,363,058	1,377,897	1,391,300
2027	1,341,624	1,345,262	1,350,749	1,355,438	1,341,643	1,364,657	1,379,565	1,393,030
2028	1,343,707	1,347,731	1,353,260	1,357,983	1,343,809	1,367,270	1,382,297	1,395,869
2029	1,345,927	1,349,812	1,355,375	1,360,127	1,346,111	1,369,483	1,384,609	1,398,270

RURAL SYSTEM CP DEMAND

	SUMMER CP KW				**WINTER CP KW**			
Year	**Base Case (50%)**	**Extreme (20%)**	**Extreme (10%)**	**Extreme (5%)**	**Base Case (50%)**	**Extreme (20%)**	**Extreme (10%)**	**Extreme (5%)**
2015	274,896	278,766	284,012	288,496	262,165	285,704	299,878	312,689
2016	275,448	278,203	283,440	287,915	264,175	285,118	299,264	312,050
2017	276,129	277,481	282,699	287,157	264,839	284,465	298,568	311,313
2018	276,940	279,461	284,708	289,193	265,633	286,601	300,795	313,622
2019	277,919	280,996	286,268	290,773	266,591	288,241	302,508	315,400
2020	279,031	281,356	286,628	291,133	267,678	288,714	302,990	315,890
2021	280,492	282,714	288,006	292,527	269,237	290,198	304,536	317,491
2022	281,943	284,931	290,261	294,816	270,658	292,520	306,967	320,019
2023	283,526	287,421	292,795	297,387	272,209	295,119	309,689	322,851
2024	285,227	289,184	294,586	299,202	273,918	297,004	311,657	324,894
2025	287,033	291,115	296,548	301,190	275,747	299,062	313,807	327,126
2026	288,931	293,088	298,553	303,222	277,685	301,164	316,003	329,406
2027	290,933	294,571	300,058	304,747	279,749	302,763	317,671	331,136
2028	293,016	297,040	302,569	307,292	281,915	305,376	320,403	333,975
2029	295,236	299,121	304,684	309,436	284,217	307,589	322,715	336,376

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FIGURE F-2: CWP 740C SAMPLE

USDA-RUS

Form Approved
OMB No. 0572-0032

COST ESTIMATES AND LOAN BUDGET

FOR ELECTRIC BORROWERS

BORROWER AND LOAN DESIGNATION: Kentucky 65, Kentucky

To: U.S. Dept. of Agriculture, RUS, Washington, D. C. 20250

COST ESTIMATES AS OF: (Month, Year)

INSTRUCTIONS *See tabs "Pg1 Instr" through "Pg4 Instr"*

SECTION A. COST ESTIMATES

LOAN PERIOD 4 YEARS

					BORROWER'S COST ESTIMATES	RUS USE ONLY
1. DISTRIBUTION						
100 a. New Line: (Excluding Tie-Lines)						
Construction		Consumers		Miles		
101	Underground	969		43.0	$ 4,324,093	
102	Overhead	1401		76.7	$ 7,058,835	
	Total Consumers. .	2370	Total Miles	119.7	$ 11,382,928	
			Less Contributions		$ -	
			Subtotal (New Line - code 100).		$ 11,382,928	
200 b. New Tie-Lines						
	Line Designation			Miles		
201	WEAVERTON	NEW CONSTRUCTION SINGLE PHASE 1/0 ACSR		0.10	$ 6,700	
202	CENTERTOWN	NEW CONSTRUCTION THREE PHASE 336 ACSR		0.10	$ 13,392	
203					$ -	
204					$ -	
205					$ -	
206					$ -	
	Subtotal from page 1A		Miles	0.00	$ -	
	Subtotal (Includes subtotals from pages 1A).		Miles	0.20	$ 20,092	
300 c. Conversion and Line Changes						
	Line Designation			Miles		
360*	GUFFIE	THREE PHASE CU 1/0 TO THREE PHASE 336 ACSR		1.43	$ 169,884	
361*	HANSON	THREE PHASE TO THREE PHASE 336 ACSR		2.20	$ 261,360	
364*	MASONVILLE	THREE PHASE TO THREE PHASE 336 ACSR		1.70	$ 201,960	
370*	PROVIDENCE	SINGLE PHASE TO THREE PHASE 1/0 ACSR		0.90	$ 75,330	
374*	SOUTH DERMONT	THREE PHASE TO THREE PHASE 336 ACSR		1.20	$ 142,560	
301	LYON	SINGLE PHASE TO THREE PHASE 1/0 ACSR		0.50	$ 41,850	
302	LYON	THREE PHASE TO THREE PHASE 336 ACSR		1.10	$ 130,680	
303	LYON	THREE PHASE TO THREE PHASE 336 ACSR		1.00	$ 118,800	
304	BEDA	THREE PHASE TO THREE PHASE 336 ACSR		2.30	$ 273,240	
305	CENTERTOWN	UPGRADE THREE PHASE URD TO 4/0 AL 25KV		0.40	$ 90,000	
	Subtotal from page 1A		Miles	138.65	$ 9,347,060	
	Subtotal . (Includes subtotals from pages 1A)		Miles	151.38	$ 10,852,724	
400 d. New Substations, Switching Stations, Metering Points, etc.						
	Station Designation		kVA	kV to kV		
401					$ -	
402					$ -	
403					$ -	
404					$ -	
405					$ -	
406					$ -	
	Subtotal				$ -	

* These are projects Carried Forward from the last CWP.

COST ESTIMATE AND LOAN BUDGET FOR ELECTRIC BORROWERS	BORROWER AND LOAN DESIGNATION	Kentucky 65, Kentucky

SECTION A. COST ESTIMATES (Page 1 Continuation Sheet)

				BORROWER'S COST ESTIMATES	RUS USE ONLY
200	b. New Tie-Lines *(Continued)*				
	Line Designation		Miles		
215				$ -	
216				$ -	
217				$ -	
218				$ -	
219				$ -	
220				$ -	
221				$ -	
222				$ -	
223				$ -	
224				$ -	
	Miles		0.00		
	Subtotal (transfers to page 1)			$ -	
300	c. Conversion and Line Changes *(Continued)*				
	Line Designation		Miles		
306	EAST OWENSBORO	THREE PHASE TO DUAL CIRCUIT 3PH 336 ACSR	0.75	$ 168,750	
307	EAST OWENSBORO	THREE PHASE TO THREE PHASE 336 ACSR	0.20	$ 23,760	
310	PHILPOT	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.40	$ 33,480	
312	SOUTH OWENSBORO	UNDERGROUND UPGRADE	0.10	$ 70,000	
313	ADAMS LANE	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.50	$ 41,850	
314	GENEVA	VOLTAGE CONVERSION TO 25KV	0.00	$ 45,000	
371	SYSTEM WIDE- UNDERGROUND CABLE REPLACEMENT		8.00	$ 1,600,000	
372	SYSTEM WIDE- OVERHEAD CONDUCTOR REPLACEMENT		100.00	$ 5,400,000	
383	HANSON	THREE PHASE TO THREE PHASE 336 ACSR	1.00	$ 118,800	
384	MORGANFIELD	VOLTAGE CONVERSION TO 25KV	13.50	$ 253,860	
385	MORGANFIELD	SINGLE PHASE TO THREE PHASE 1/0 ACSR	2.10	$ 175,770	
386	NIAGARA	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.50	$ 41,850	
387	NIAGARA	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.50	$ 41,850	
388	NIAGARA	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.80	$ 66,960	
390	NIAGARA	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.10	$ 8,370	
391	ONTON	THREE PHASE TO THREE PHASE 336 ACSR	2.50	$ 297,000	
392	WEAVERTON	THREE PHASE TO DUAL CIRCUIT 336 ACSR	1.10	$ 247,500	
393	WEAVERTON	SINGLE PHASE TO THREE PHASE 336 ACSR	2.00	$ 217,620	
394	WEAVERTON	SINGLE PHASE TO THREE PHASE 1/0 ACSR	1.40	$ 117,180	
395	WEAVERTON	TWO PHASE TO THREE PHASE 1/0 ACSR	0.30	$ 25,920	
396	WEAVERTON	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.10	$ 8,370	
397	ZION	SINGLE PHASE TO THREE PHASE 1/0 ACSR	0.30	$ 25,110	
398	CALDWELL SPRINGS	THREE PHASE TO THREE PHASE 336 ACSR	2.10	$ 283,500	
399	LYON	TWO PHASE TO THREE PHASE 1/0 ACSR	0.40	$ 34,560	
316				$ -	
317				$ -	
318				$ -	
319				$ -	
320				$ -	
321				$ -	
322				$ -	
323				$ -	
324				$ -	
325				$ -	
326				$ -	
327				$ -	
328				$ -	
329				$ -	
330				$ -	
331				$ -	
332				$ -	
333				$ -	
334				$ -	
335				$ -	
	Subtotal (transfers to page 1)		M 138.65	$ 9,347,060	

	SECTION A. COST ESTIMATES *(cont.)*			BORROWER'S COST ESTIMATES	RUS USE ONLY
500	e. Substation, Switching Station, Metering Point Changes				
	Station Designation	Description of Changes			
504	WEAVERTON	STATION UPGRADE FOR NEW CIRCUIT		$ 200,000	
505	EAST OWENSBORO	STATION UPGRADE FOR NEW CIRCUIT		$ 150,000	
507	HORSE FORK	STATION UPGRADE TO DUAL TRANSFORMER CAPACITY		$ 825,000	
508					
509				$ -	
510				$ -	
511				$ -	
512				$ -	
513				$ -	
	Subtotal From Page 2A			$ -	
	Subtotal			$ 1,175,000	
600	f. Miscellaneous Distribution Equipment				
601	(1) Transformers and Meters				
	Construction	Transformers	Meters		
	Underground	1,192	2,800	$ 2,725,641	
	Overhead	1,735	4,050	$ 3,534,768	
	AMR Meters			$ -	
	Subtotal code 601 . . . (included in total of all 600 codes below)			$ 6,260,409	
602	(2) Sets of Service Wires to increase Capacity			$ 1,456,669	
603	(3) Sectionalizing Equipment			$ 2,218,635	
604	(4) Regulators			$ 162,000	
605	(5) Capacitors			$ 45,000	
606	(6) Pole Replacements			$ 6,984,975	
607	(7) Miscellaneous Replacements				
608	(8) Conductor Replacements			$ 4,534,942	
609	(9) Rehabilitation				
610	(10) Cutout Replacements				
	(11)			$ -	
	Subtotal ***ALL*** *600 codes*			$ 21,662,630	
700	g. Other Distribution Items				
701	(1) Engineering Fees			$ -	
702	(2) Security Lights			$ 3,572,047	
703	(3) Reimbursement of General Funds (see attached)			$ -	
704	(4) SCADA & AMR Infrastructure			$ -	
	Subtotal			$ 3,572,047	
	TOTAL DISTRIBUTION.			**$ 48,665,420**	
800	2. Transmission				
	a. New Line				
	Line Designation	Voltage	Wire Size	Miles	
801					
802				$ -	
803				$ -	
804				$ -	
805				$ -	
806				$ -	
807				$ -	
808				$ -	
809				$ -	
810				$ -	
	Subtotal - Miles from Page 2A				
	Total Miles				
	Subtotal From Page 2A			$ -	
	Subtotal			$ -	

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FIGURE F-3: RUS FORM 300

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL UTILITIES SERVICE

REVIEW RATING SUMMARY

BORROWER DESIGNATION: KY 65

DATE PREPARED: August 5, 2015

Ratings on form are: 0: Unsatisfactory -- No Records; 1: Corrective Action Needed; 2: Acceptable, but Should be Improved -- See Attached Recommendations; 3: Satisfactory -- No Additional Action Required at this Time; NA: Not Applicable

PART I. TRANSMISSION and DISTRIBUTION FACILITIES

	(Rating)
1. Substations (Transmission and Distribution)	
a. Safety, Clearance, Code Compliance	3
b. Physical Conditions: Structure, Major Equipment, Appearance	3
c. Inspection Records - Each Substation	3
d. Oil Spill Prevention	3
2. Transmission Lines	
a. Right-of-Way: Clearing, Erosion, Appearance, Intrusions	N/A
b. Physical Condition: Structure, Conductor, Guying	N/A
c. Inspection Program and Records	N/A
3. Distribution Lines - Overhead	
a. Inspection Program and Records	3
b. Compliance with Safety Codes: Clearances	3
Foreign Structures	3
Attachments	2
c. Observed Physical Condition from Field Checking: Right-of-Way	2
Other	3

	(Rating)
4. Distribution - Underground Cable	
a. Grounding and Corrosion Control	3
b. Surface Grading, Appearance	3
c. Riser Pole: Hazards, Guying, Condition	3
5. Distribution Line Equipment: Conditions and Records	
a. Voltage Regulators	2
b. Sectionalizing Equipment	3
c. Distribution Transformers	3
d. Pad Mounted Equipment	
Safety: Locking, Dead Front, Barriers	3
Appearance: Settlement, Condition	3
Other	2
e. Kilowatt-hour and Demand Meter Reading and Testing	3

PART II. OPERATIONS and MAINTENANCE

	(Rating)
6. Line Maintenance and Work Order Procedures	
a. Work Planning & Scheduling	3
b. Work Backlogs: Right-of-Way Maintenance	3
Poles	3
Retirement of Idle Services	3
Other	3

7. Service Interruptions

a. Average Annual Minutes/Consumer by Cause (Complete for each of the previous 5 years)

PREVIOUS 5 YEARS (Year)	POWER SUPPLIER a.	MAJOR EVENT b.	PLANNED c.	ALL OTHER d.	TOTAL e.	(Rating)
2010	0.15		2.06	92.94	107.15	3
2011	5.80	77.11	5.25	135.43	223.59	3
2012	20.34	41.98	1.07	108.94	172.33	3
2013	13.75	27.71	3.94	90.88	136.28	3
2014	1.80	27.46	6.11	90.63	126.00	3

b. Emergency Restoration Plan: 3

	(Rating)
8. Power Quality	
a. General Freedom from Complaints	3
9. Loading and Load Balance	
a. Distribution Transformer Loading	3
b. Load Control Apparatus	3
c. Substation and Feeder Loading	3
10. Maps and Plant Records	
a. Operating Maps: Accurate and Up-to-Date	3
b. Circuit Diagrams	3
c. Staking Sheets	3

PART III. ENGINEERING

		(Rating)
11. System Load Conditions and Losses		
a. Annual System Losses	4.51%	3
b. Annual Load Factor	45.4%	3
c. Power Factor at Monthly Peak	94.0%	3
d. Ratios of Individual Substation Annual Peak kW to kVA		3
12. Voltage Conditions		
a. Voltage Surveys		3
b. Substation Transformer Output Voltage Spread		3

	(Rating)
13. Load Studies and Planning	
a. Long Range Engineering Plan	3
b. Construction Work Plan	3
c. Sectionalizing Study	3
d. Load Data for Engineering Studies	3
e. Load Forecasting Data	3

PART IV. OPERATION AND MAINTENANCE BUDGETS

YEAR	For Previous 2 Years		For Present Year	For Future 3 Years		
	2013	2014	2015	2016	2017	2018
	Actual $ Thousands	Actual $ Thousands	Budget $ Thousands	Budget $ Thousands	Budget $ Thousands	Budget $ Thousands
Normal Operation	4,172	4,133	4,020	4,277	4,362	4,449
Normal Maintenance	8,633	8,749	9,226	9,858	10,055	10,256
Additional (Deferred) Maintenance						
Total	12,805	12,882	13,246	14,135	14,417	14,705

14. Budgeting: Adequacy of Budgets for Needed Work 3 *(Rating)*

15. Date Discussed with Board of Directors 9/8/2015 *(Date)*

EXPLANATORY NOTES

ITEM NO.	COMMENTS
Part I Sec 3b	Telephone and cable attachments need to be transferred from abandoned poles and be more timely in responding to transfer notices
Part I, Sec 3c	Some trees in yards in need of trimming for better clearance from lines
Part II, Sec 7a	The 2011 "All Other" category score was 204.39 minutes. This exceeds the 200 minutes or less recommended by this section for a "satisfactory" rating. On May 26, 2011 Kenergy was dealing with a minor storm on the heels of a major event (Tmed) storm on May 25, 2011. The storm of May 26, 2011 did not reach a magnitude as to be classified as a major event and therefore contributed 28.3 minutes to the 2011 "All Other" category. Had this minor event not occurred, Kenergy's 2011 "All Other" category would have been 176.09 which would be in-line with previous years. Kenergy continues to evaluate it's reliability through the AAR After Action Review process for major and minor events. Kenergy is in the process of installing a new radio system which brings with it vehicle GPS capabilities. Kenergy believes this will greatly enhance our ability to respond. Kenergy is also investigating an AMI solution that would bring quicker clarity to our OMS Outage Management System and thereby further increase our reliability and response capabilities.

		TITLE	DATE
RATED BY:		V. P. Engineering V. P. Operations	08/05/15
REVIEWED BY:		President & CEO	08/05/15
REVIEWED BY:		RUS GFR	08/05/15

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FIGURE 4: SYSTEM LOSS AND ECONOMIC CONDUCTOR

The data contained in this Section details the calculations for the cost of losses and the economic conductor evaluation.

A. Cost of Losses

The cost of losses was calculated based on the wholesale power costs obtained from Kenergy of $0.045 per kWh for energy and $13.81 per kW for demand. The calculated load factor was based on average of 2012, 2013, and 2014 monthly billing demands yielding an average annual load factor of 46.5% for the Rural System. The cost of losses for one kW of loss at peak is $233.00. The calculation is present below.

FIGURE F-4: SYSTEM LOSS CALCULATION
2016-2020 KENERGY CWP
ANNUAL COST OF LOSS PER KW

LOAD LOSS CALCULATION	
COST FOR DEMAND	1KW*DR*DF
COST FOR ENERGY	(.84(LF^2)+.16(LF))*1KW*ER*8760

DR EXISTING POWER DEMAND RATE	13.81
LF THREE YEAR AVERAGE LOAD FACTOR	46.5%
ER EXISTING POWER ENERGY RATE	0.045
DF= THREE YEAR ANNUAL DEMAND FACTOR	9.57

LOAD LOSS

COST FOR DEMAND	**$ 132.18**
COST FOR ENERGY	**$ 100.82**
ANNUAL COST FOR 1KW OF PEAK LOSS	**$ 233.00**

LOAD FACTOR CALCULATION					DEMAND FACTOR*	
	Peak Load (kW)			Three Year	Percent of	Percent of Peak
Month	2014	2013	2012	Average	Peak	Squared
January	329,679	255,843	255,147	280,223	99.46%	0.99
February	293,368	265,274	239,132	265,925	94.39%	0.89
March	254,682	240,101	206,463	233,749	82.97%	0.69
April	198,609	203,161	197,787	199,852	70.94%	0.50
May	226,875	224,123	259,735	236,911	84.09%	0.71
June	263,706	266,546	300,161	276,805	98.25%	0.97
July	270,780	266,146	308,272	281,733	100.00%	1.00
August	277,640	266,181	291,231	278,351	98.80%	0.98
September	261,329	256,646	260,209	259,395	92.07%	0.85
October	218,513	216,783	200,303	211,866	75.20%	0.57
November	249,748	229,379	225,411	234,846	83.36%	0.69
December	234,161	255,905	238,293	242,786	86.18%	0.74
System Peak	329,679	266,546	308,272	281,733		9.57
Ann. MWh Purch.	1,240,267	1,221,667	1,192,208	1,218,048		
Ann. Load Factor	42.95%	52.32%	44.15%	46.5%		
Notes : (1) Data from Kenergy and 2015 Load Forecast						
Notes : (*) PEAK RESPONSIBILITY FACTORS (% OF PEAK=LOAD, % OF PEAK SQUARED=LOSS)						

B. Economic Conductor Selection

Economic conductor selection includes the consideration of the initial construction costs and the associated losses of selected conductors to be compared. Each conductor was analyzed at different load levels. Alternative conductors will have a different evaluation cost for each load level which is comprised of the construction cost plus the variable costs related to line losses. In addition, since a distribution line is used for many years, economic factors are also considered such as load growth, cost of losses, power cost increases, and the present worth. The analysis was broken down into overhead conductors and underground cables. For overhead conductors, an analysis was completed for both 12.47kV and 25kV considering both new and reconductor construction. The underground analysis focused on new 12.47kV construction only.

12.47kV Operating Voltage

The following general guidelines were developed based upon the analysis for overhead and underground conductors operating at 12.47/7.2kV.

Single Phase Overhead

New and reconductored single phase lines should be generally constructed with 1/0 ACSR unless there is no possibility of load growth. If load growth is limited 2 ACSR should be used. 2 ACSR is adequate for loads up to 288 kW (40 Amps)

Three Phase Overhead-New Construction

New three phase 12.47 kV distribution lines should be constructed with the following conductors:

- For loads less than 750kW: 2 ACSR
- For loads between 750-1800kW: 1/0 ACSR
- For loads between 1800-2100kW: 4/0 ACSR
- For load greater than 2100kW: 336 ACSR

Three Phase Overhead-Conversion of Existing Construction

Existing three phase distribution lines should be reconductored based on the following:

- For loads less than 750kW: 2 ACSR
- For loads between 750-1800kW: 1/0 ACSR
- For loads between 1800-2550kW: 4/0 ACSR
- For load greater than 2550kW: 336 ACSR

Underground Construction

New underground distribution lines should be constructed based on the following:

- For loads less than 600kW: 2 AL URD
- For loads between 600-2100kW: 1/0 AL URD
- For loads between 2100-4050kW: 4/0 AL URD
- For load greater than 4050kW: 500 AL URD

The economic conductor selection curves for 12.47kV construction are presented below:

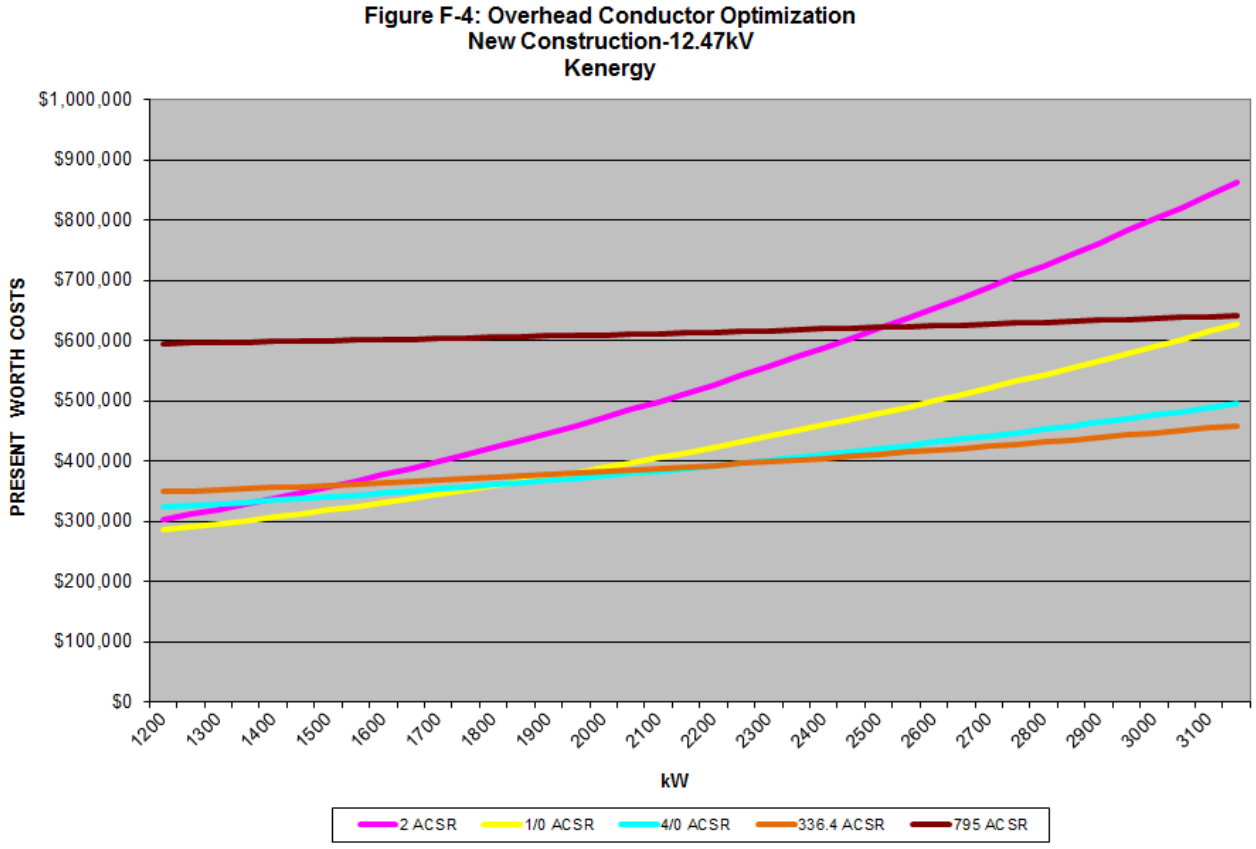


FIGURE 4: SYSTEM LOSS AND ECONOMIC CONDUCTOR

Figure F-4: Overhead Conductor Optimization
Reconductor-12.47kV
Kenergy

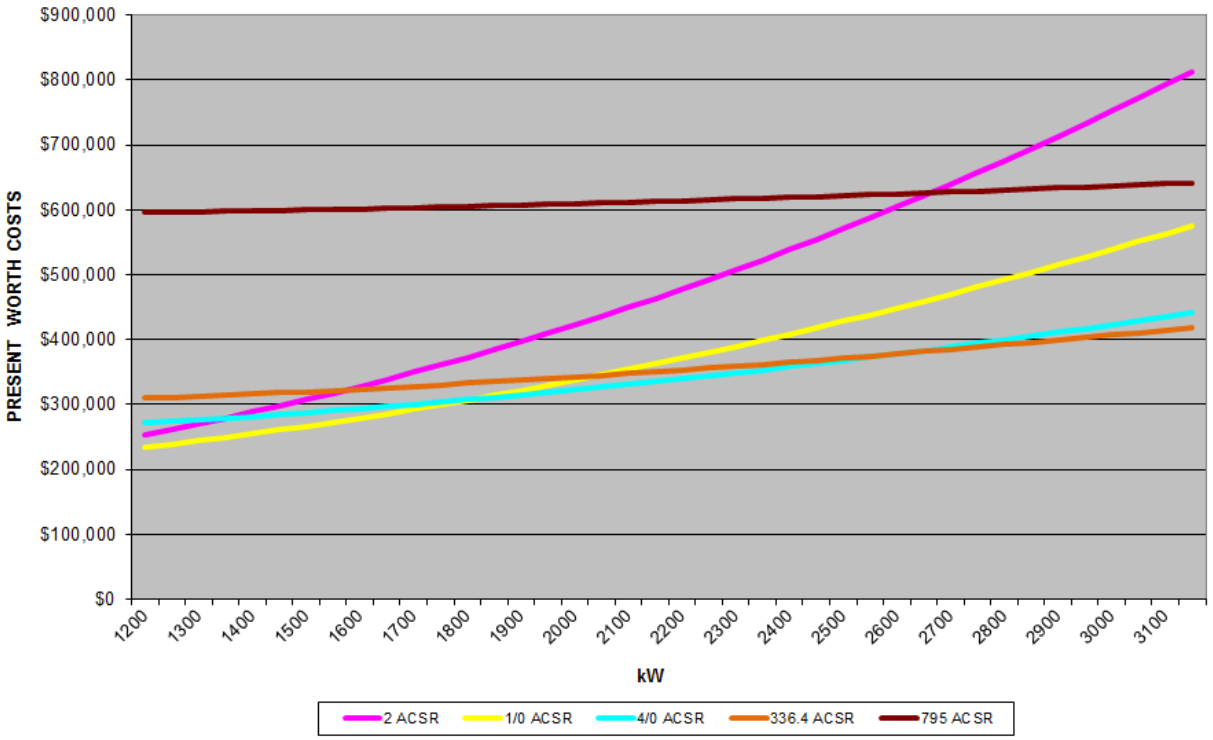
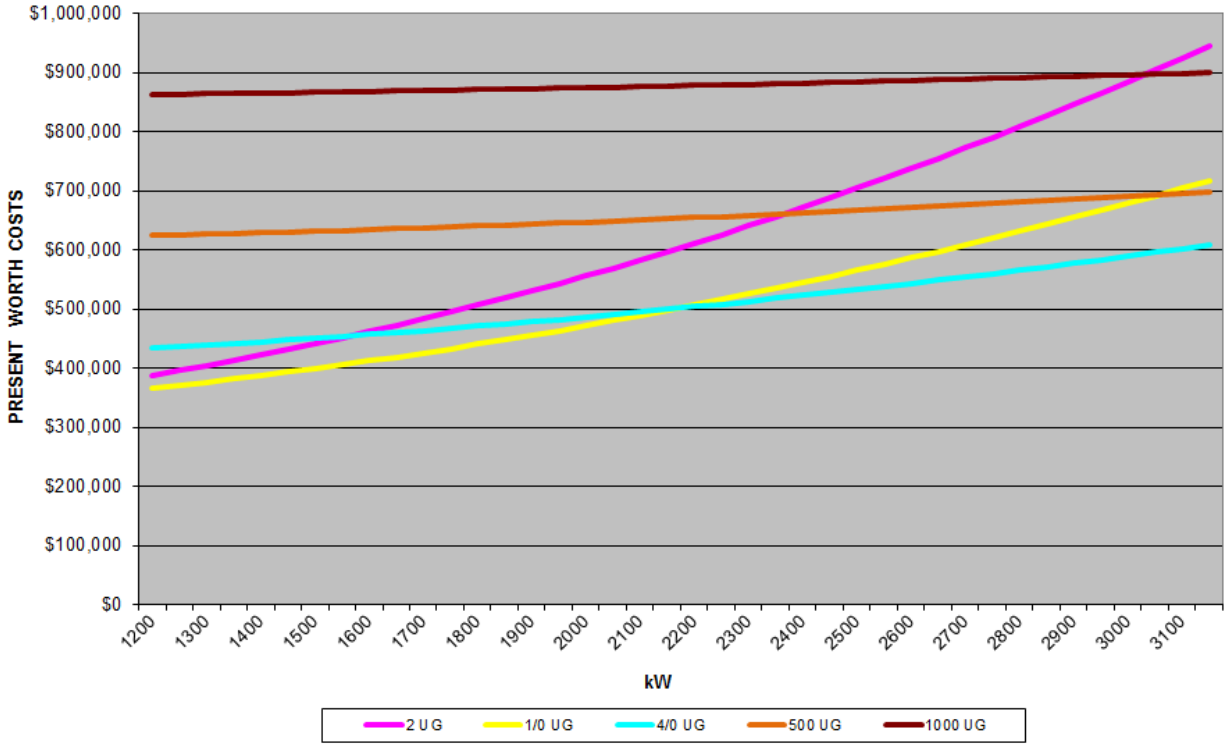


Figure F-4: Underground Conductor Optimization
New Construction-12.47kV
Kenergy



25kV Operating Voltage

The following general guidelines were developed based upon the analysis for overhead and underground conductors operating at 24.9/14.4 kV.

Single Phase Overhead

New and reconductored single phase lines should be generally constructed with 1/0 ACSR unless there is no possibility of load growth. If load growth is limited 2 ACSR should be used. 2 ACSR is adequate for loads up to 288 kW (40 Amps)

Three Phase Overhead-New Construction

New three phase 25 kV distribution lines should be constructed with the following conductors:

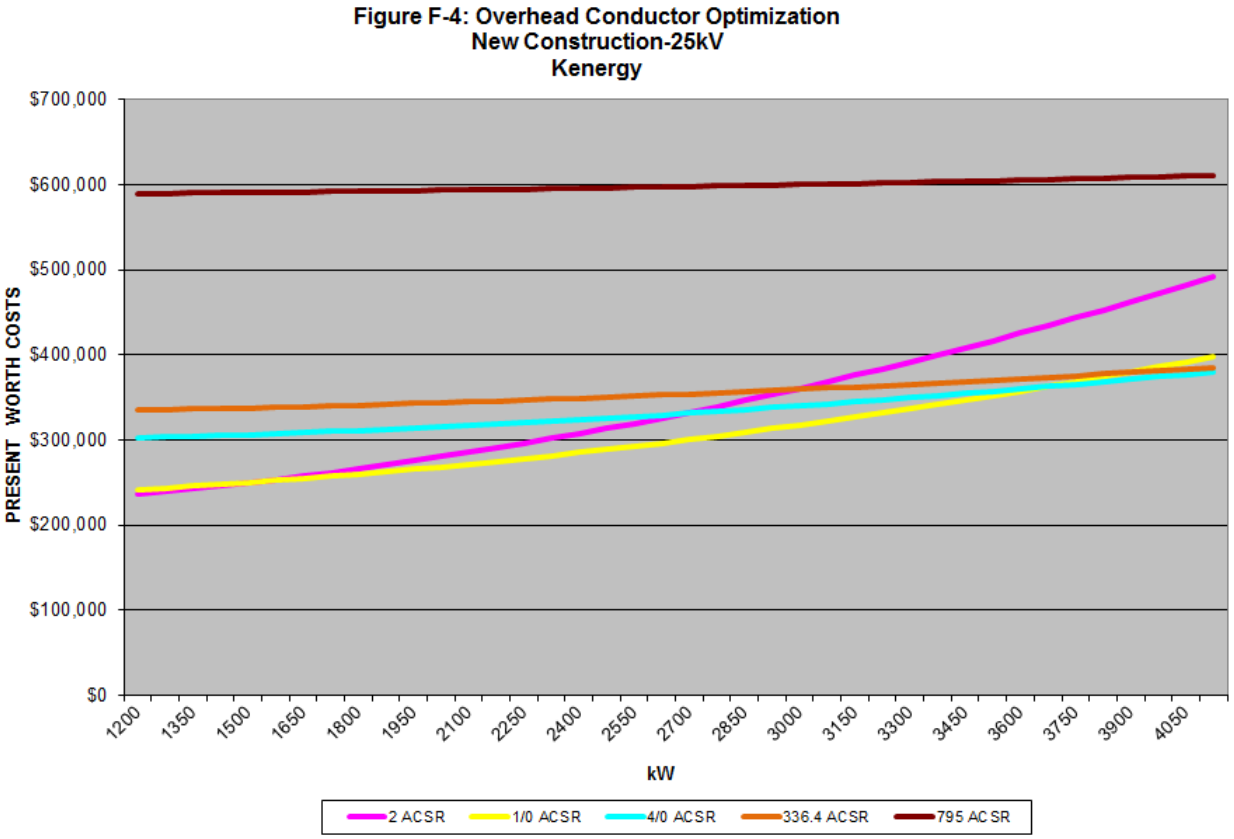
- For loads less than 1500kW: 2 ACSR
- For loads between 1500-3600kW: 1/0 ACSR
- For loads between 3600-4350kW: 4/0 ACSR
- For load greater than 4350kW: 336 ACSR

Three Phase Overhead-Conversion of Existing Construction

Existing three phase 25 kV distribution lines should be reconductored based on the following:

- For loads less than 1500kW: 2 ACSR
- For loads between 1500-3450kW: 1/0 ACSR
- For loads between 3450-5250kW: 4/0 ACSR
- For load greater than 5250kW: 336 ACSR

FIGURE 4: SYSTEM LOSS AND ECONOMIC CONDUCTOR



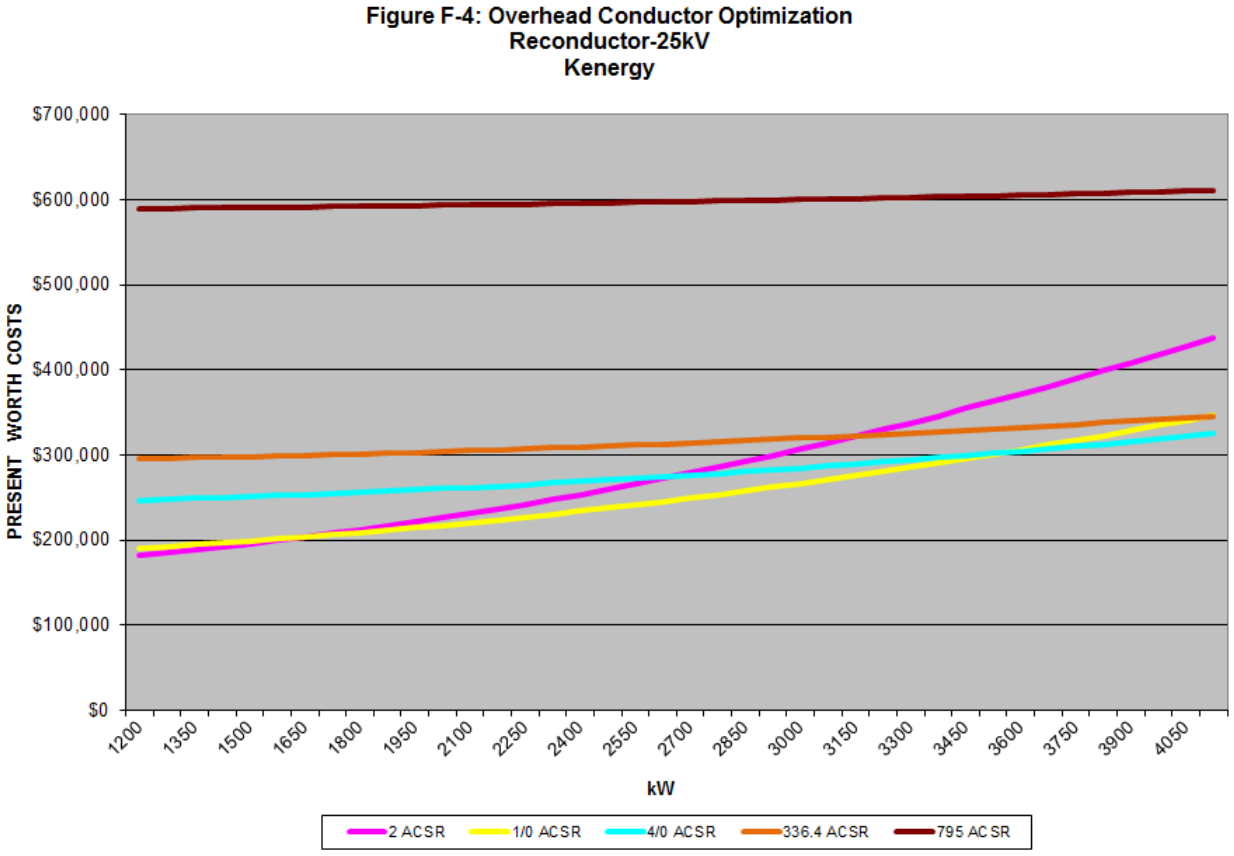


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FIGURE F-5: WEAVERTON STATION EXPLORATORY COST ANALYSIS

Exploratory Study 1: WEAVERTON STATION RELOCATION

(All costs are the the accumulated present worth of the inflated cost)

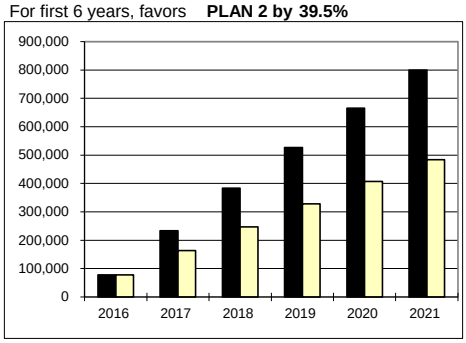
COMPARISON OF PRESENT WORTH ANALYSIS PLAN 1 vs PLAN 2

TOTAL COSTS ($)

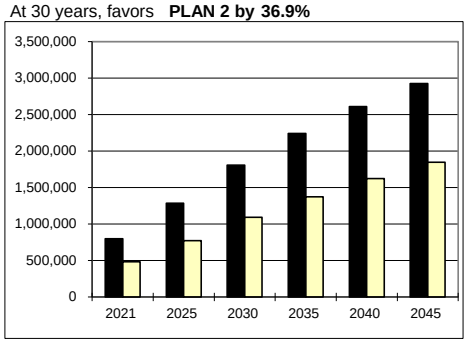
(Capitalized Costs + Losses)

	PLAN 1	PLAN 2
2016	77,500	77,500
2017	233,200	163,500
2018	383,000	247,100
2019	527,100	328,400
2020	665,900	407,300
2021	799,600	484,100
2025	1,287,200	771,100
2030	1,805,600	1,090,100
2035	2,241,400	1,371,800
2040	2,610,900	1,622,600
2045	2,926,700	1,847,400

For first 6 years, favors **PLAN 2 by 39.5%**



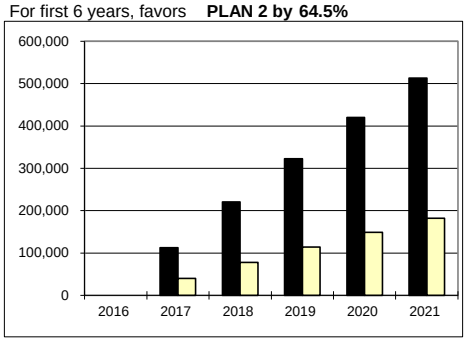
At 30 years, favors **PLAN 2 by 36.9%**



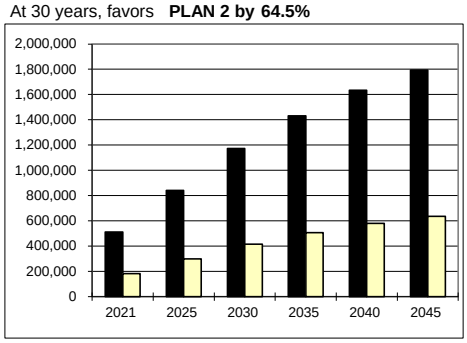
TOTAL CAPITALIZED COSTS ($)

	PLAN 1	PLAN 2
2016	0	0
2017	112,800	40,000
2018	220,300	78,100
2019	322,600	114,400
2020	420,000	149,000
2021	512,900	181,900
2025	842,000	298,700
2030	1,172,600	415,900
2035	1,431,600	507,800
2040	1,634,600	579,800
2045	1,793,600	636,200

For first 6 years, favors **PLAN 2 by 64.5%**



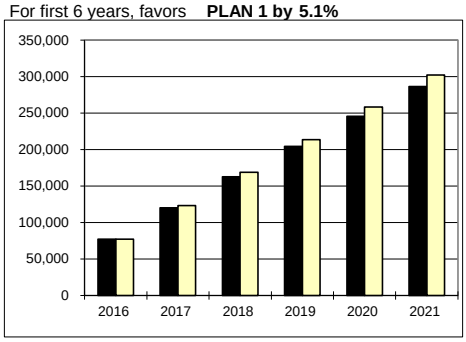
At 30 years, favors **PLAN 2 by 64.5%**



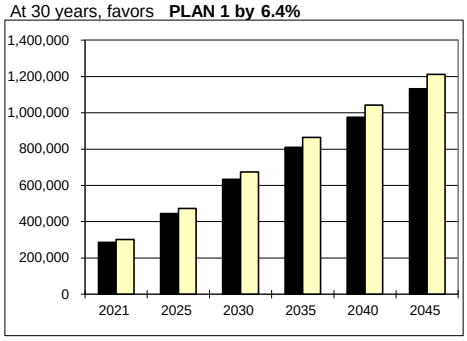
TOTAL COST OF LOSSES ($)

	PLAN 1	PLAN 2
2016	77,500	77,500
2017	120,300	123,500
2018	162,700	169,000
2019	204,500	213,900
2020	245,900	258,300
2021	286,700	302,200
2025	445,300	472,500
2030	633,000	674,100
2035	809,800	864,000
2040	976,300	1,042,800
2045	1,133,100	1,211,200

For first 6 years, favors **PLAN 1 by 5.1%**



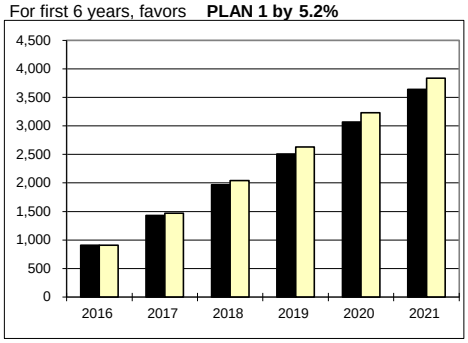
At 30 years, favors **PLAN 1 by 6.4%**



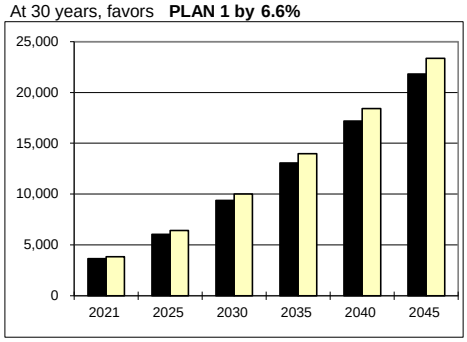
TOTAL ACCUMULATED LOSSES (MWh)

	PLAN 1	PLAN 2
2016	910	910
2017	1,430	1,470
2018	1,970	2,040
2019	2,510	2,630
2020	3,070	3,230
2021	3,640	3,840
2025	6,040	6,420
2030	9,360	9,990
2035	13,070	13,960
2040	17,200	18,400
2045	21,800	23,350

For first 6 years, favors **PLAN 1 by 5.2%**



At 30 years, favors **PLAN 1 by 6.6%**



6.19% Fixed Charge Rate
2.00% Annual cost inflation rate - Construction
5.00% Annual present worth rate - Cost of construction
1.10% Annual growth rate - kW demand
1.50% Annual cost inflation rate of energy - kWh
5.00% Annual present worth rate - Cost of kWh losses

PLAN 1 WEAVERTON STATION RELOCATION
PLAN 2 WEAVERTON DISTRIBUTION UPGRADES

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Exploratory Study 1: WEAVERTON STATION RELOCATION

COMPARISON OF PRESENT WORTH ANALYSIS PLAN 1 vs PLAN 2

ENGINEER: POWERSERVICES

COMPANY: KENERGY

PLAN 1: WEAVERTON STATION RELOCATION

NOTE: Area (or circuit) growth rate given at 1.10%
Thus, losses increase annually at 2.21%

YEAR	DESCRIPTION of CONSTRUCTION	CHANGES PEAK kW LOSSES	ESTIMATED COST of NEW CONSTRUCTION: PRESENT YEAR EST. COST	INFLATED COST 2.00%	PRESENT WORTH 5.00%	FIXED CHARGES 6.19%	DEMAND and ENERGY LOSSES and COSTS: kW LOSSES Ann. Peak Month Avg.	kWh LOSSES Annual Accumulated	INFLATED COST OF: ANNUAL kW 1.50%	INFLATED COST OF: ANNUAL kWh 1.50%
2016							260.0 221.0	911,664 911,664	36,465	41,025
	$ 77,490 TOTAL COST for Year					**$ 0**			**$ 36,465**	**$ 41,025**
	$ 77,490 ACCUMULATED through Year End					**$ 0**			**$ 36,465**	**$ 41,025**
2017	NEW STATION CONSTRUCTION	-117.0	1,000,000	1,020,000	971,429	60,169	148.8	521,582	21,175	23,823
	NEW TRANSMISSION CONSTRUCTION		825,000	841,500	801,429	49,640	126.4	1,433,246		
	NEW STATION EXITS		50,000	51,000	48,571	3,008				
	155,673 TOTAL for Year		1,875,000	1,912,500	1,821,429	**112,818**			**20,167**	**22,689**
	233,163 ACCUM. thru Year		1,875,000			**112,818**			**56,632**	**63,714**
2018							152.0 129.2	533,120 1,966,366	21,968	24,716
	149,789 TOTAL for Year					**107,445**			**19,926**	**22,418**
	382,952 ACCUM. thru Year		1,875,000			**220,263**			**76,558**	**86,131**
2019							155.4 132.1	544,913 2,511,279	22,791	25,641
	144,167 TOTAL for Year					**102,329**			**19,688**	**22,150**
	527,119 ACCUM. thru Year		1,875,000			**322,592**			**96,246**	**108,281**
2020							158.8 135.0	556,967 3,068,247	23,645	26,602
	138,794 TOTAL for Year					**97,456**			**19,453**	**21,885**
	665,913 ACCUM. thru Year		1,875,000			**420,048**			**115,698**	**130,166**
2021							162.4 138.0	569,288 3,637,534	24,530	27,598
	133,659 TOTAL for Year					**92,815**			**19,220**	**21,624**
	799,572 ACCUM. thru Year		1,875,000			**512,864**			**134,919**	**151,790**
2022							165.9 141.1	581,881 4,219,416	25,449	28,631
	128,751 TOTAL for Year					**88,396**			**18,990**	**21,365**
	928,323 ACCUM. thru Year		1,875,000			**601,259**			**153,909**	**173,155**
2023							169.6 144.2	594,753 4,814,168	26,402	29,704
	124,060 TOTAL for Year					**84,186**			**18,764**	**21,110**
	1,052,383 ACCUM. thru Year		1,875,000			**685,445**			**172,673**	**194,265**
2024							173.4 147.4	607,909 5,422,078	27,391	30,816
	119,574 TOTAL for Year					**80,177**			**18,539**	**20,858**
	1,171,958 ACCUM. thru Year		1,875,000			**765,623**			**191,212**	**215,123**
2025							177.2 150.6	621,357 6,043,435	28,417	31,970
	115,286 TOTAL for Year					**76,359**			**18,318**	**20,608**
	1,287,243 ACCUM. thru Year		1,875,000			**841,982**			**209,530**	**235,731**

Complete 30 year analysis was completed but not included in printed document.

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Exploratory Study 1: WEAVERTON STATION RELOCATION

COMPARISON OF PRESENT WORTH ANALYSIS PLAN 1 vs PLAN 2

ENGINEER: POWERSERVICES

COMPANY: KENERGY

PLAN 2: WEAVERTON DISTRIBUTION UPGRADES

NOTE: Area (or circuit) growth rate given at 1.10%
Thus, losses increase annually at 2.21%

			ESTIMATED COST of NEW CONSTRUCTION				DEMAND and ENERGY LOSSES and COSTS			
		CHANGES PEAK kW LOSSES	PRESENT YEAR EST. COST	INFLATED COST 2.00%	PRESENT WORTH 5.00%	FIXED CHARGES 6.19%	kW LOSSES Ann. Peak Month Avg.	kWh LOSSES Annual Accumulated	INFLATED COST OF: ANNUAL kW 1.50%	INFLATED COST OF: ANNUAL kWh 1.50%
YEAR	**DESCRIPTION of CONSTRUCTION**									
2016							260.0	911,664	36,465	41,025
							221.0	911,664		
	$ 77,490 TOTAL COST for Year					**$ 0**			**$ 36,465**	**$ 41,025**
	$ 77,490 ACCUMULATED through Year End					**$ 0**			**$ 36,465**	**$ 41,025**
2017	CWP 504- NEW CIRCUIT EXIT	-106.0	200,000	204,000	194,286	12,034	159.8	560,153	22,741	25,585
	CWP 392 DUAL CIRCUIT		247,500	252,450	240,429	14,892	135.8	1,471,817		
	CWP 393 LINE CONVERSION		217,620	221,972	211,402	13,094				
	86,045 TOTAL for Year		665,120	678,422	646,117	**40,020**			**21,658**	**24,367**
	163,535 ACCUMULATED thru Year		665,120			**40,020**			**58,123**	**65,392**
2018							163.3	572,544	23,593	26,543
							138.8	2,044,360		
	83,589 TOTAL for Year		0	0	0	**38,114**			**21,399**	**24,075**
	247,124 ACCUMULATED thru Year		665,120			**78,134**			**79,523**	**89,467**
2019							166.9	585,209	24,477	27,537
							141.9	2,629,569		
	81,231 TOTAL for Year		0	0	0	**36,299**			**21,144**	**23,788**
	328,355 ACCUMULATED thru Year		665,120			**114,433**			**100,667**	**113,255**
2020							170.6	598,154	25,393	28,569
							145.0	3,227,723		
	78,965 TOTAL for Year		0	0	0	**34,571**			**20,891**	**23,504**
	407,320 ACCUMULATED thru Year		665,120			**149,004**			**121,558**	**136,758**
2021							174.4	611,386	26,344	29,639
							148.2	3,839,109		
	76,789 TOTAL for Year		0	0	0	**32,924**			**20,641**	**23,223**
	484,108 ACCUMULATED thru Year		665,120			**181,928**			**142,199**	**159,981**
2022							178.2	624,911	27,331	30,749
							151.5	4,464,020		
	74,697 TOTAL for Year		0	0	0	**31,357**			**20,395**	**22,945**
	558,805 ACCUMULATED thru Year		665,120			**213,285**			**162,594**	**182,926**
2023							182.2	638,734	28,355	31,900
							154.8	5,102,754		
	72,686 TOTAL for Year		0	0	0	**29,863**			**20,151**	**22,671**
	631,491 ACCUMULATED thru Year		665,120			**243,149**			**182,745**	**205,597**
2024							186.2	652,864	29,417	33,095
							158.3	5,755,618		
	70,752 TOTAL for Year		0	0	0	**28,441**			**19,910**	**22,400**
	702,242 ACCUMULATED thru Year		665,120			**271,590**			**202,655**	**227,997**
2025							190.3	667,306	30,518	34,335
							161.8	6,422,923		
	68,892 TOTAL for Year		0	0	0	**27,087**			**19,672**	**22,132**
	771,134 ACCUMULATED thru Year		665,120			**298,677**			**222,328**	**250,129**

Complete 30 year analysis was completed but not included in printed document.

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Table T-1: Substation Transformers Loading Analysis- Summer
2016-2020 Kenergy CWP

Substation Transformer	Summer Capacity (MVA)	Peak Load (KW)			Power Factor @Peak	Percent Loaded	
		2012 Actual	2019 Forecast	CWP Projected (1)		2012	CWP
Adams Lane	10	5,242	5,379		92.8%	52%	54%
Beda	10	7,731	7,751		94.4%	77%	78%
Beech Grove	10	4,193	4,204	4,654	93.9%	42%	47%
Bon Harbor	10	8,029	8,085		93.5%	80%	81%
Caldwell Springs	10	1,957	2,388		94.7%	20%	24%
Centertown	3.75	1,827	1,832		93.7%	49%	49%
Crossroads	10	5,197	5,211		97.7%	52%	52%
Dermont	10	7,588	7,769		94.0%	76%	78%
Dixon	10	4,190	4,201		93.5%	42%	42%
East Owensboro	10	4,815	7,200		94.0%	48%	72%
Geneva	10	5,978	6,180		93.4%	60%	62%
Guffie	10	7,284	7,335		93.8%	73%	73%
Hanson	5	2,635	3,495	2,507	90.7%	53%	50%
Hawesville	10	7,899	7,955		93.1%	79%	80%
Horse Fork	15	12,053	12,270		91.5%	80%	82%
Hudson #1	10	8,541	8,373		90.8%	85%	84%
Hudson #2(Tyson)	10	9,273	9,790		89.9%	93%	98%
Lewisport #1	10	6,648	6,597		92.4%	66%	66%
Lewisport #2	10	2,780	2,759		92.4%	28%	28%
Little Dixie	7.5	3,218	3,487		96.1%	43%	46%
Lyon	10	6,251	6,343		95.8%	63%	63%
Maceo	10	3,428	3,437		93.6%	34%	34%
Madisonville	10	5,197	5,234		98.4%	52%	52%
Marion	10	6,707	6,725		92.4%	67%	67%
Masonville	10	4,847	7,169		96.5%	48%	72%
Morganfield	10	8,761	9,423		95.7%	88%	94%
Niagara	10	6,499	6,545		95.0%	65%	65%
Nuckols	10	4,841	4,853		95.4%	48%	49%
Onton	10	4,374	4,924	5,049	90.5%	44%	50%
Philpot #1	10	5,618	5,587		94.3%	56%	56%
Philpot #2	10	4,037	4,015		94.3%	40%	40%
Pleasant Ridge	10	4,789	4,823		95.5%	48%	48%
Providence	10	4,799	4,833		94.9%	48%	48%
Race Creek	10	5,936	5,977		95.7%	59%	60%
Riverport	10	3,623	4,122		86.2%	36%	41%
Sacramento	3.75	3,023	3,203		94.7%	81%	85%
Sebree	5	4,400	4,412		94.7%	88%	88%
South Dermont #1	10	10,705	9,132		93.8%	107%	91%
South Dermont #2	10	8,910	7,403		87.4%	89%	74%
South Hanson #1	10	4,724	4,525		93.3%	47%	45%
South Hanson #2	10	6,026	5,772	7,335	93.3%	60%	73%
South Owensboro #1	10	5,417	6,182		94.8%	54%	62%
South Owensboro #2	10	6,020	6,990		94.8%	60%	70%
Stanley	5	2,887	2,894		94.8%	58%	58%
St. Joe	7.5	5,103	5,545		96.1%	68%	74%
Sullivan	10	2,618	2,878		92.0%	26%	29%
Thruston #1	10	5,436	4,489		93.0%	54%	45%
Thruston #2	10	5,391	4,452		93.0%	54%	45%
Utica	10	6,227	6,244		95.0%	62%	62%
Weaverton	10	4,918	4,953		92.2%	49%	50%
Weberstown	10	5,806	5,847		94.1%	58%	58%
West Owensboro	12	7,860	8,275		92.4%	66%	69%
Whitesville	10	7,407	7,426		93.5%	74%	74%
Wolf Hills	10	3,258	3,429		93.2%	33%	34%
Yager	5	119	119		75.4%	2%	2%
Zion	10	7,329	7,380		96.4%	73%	74%

(1) CWP Load Shifts: 450kW from Onton to Beech Grove Station- CWP 603-58
988kW from Hanson to South Hanson2- CWP 603-18
575kW from South Hanson2 to Onton- CWP 391

Table T-1: Substation Transformers Loading Analysis- Winter
2016-2020 Kenergy CWP

Substation Transformer	Winter Capacity (MVA)	Peak Load (KW)			Power Factor @Peak	Percent Loaded	
		2014 Actual	Projected 2019-2020	CWP Projected (1)		2014	CWP
Adams Lane	13	5,830	6,022		99.7%	45%	46%
Beda	13	9,390	9,444		99.5%	72%	73%
Beech Grove	13	5,087	5,116	5,566	99.1%	39%	43%
Bon Harbor	13	6,493	6,595		99.3%	50%	51%
Caldwell Springs	13	2,683	2,773		100.2%	21%	21%
Centertown	4.875	3,126	3,144		99.0%	64%	64%
Crossroads	13	7,063	7,104		100.0%	54%	55%
Dermont	13	6,435	6,566		98.6%	49%	51%
Dixon	13	5,668	5,700		98.9%	44%	44%
East Owensboro	13	4,011	5,732		98.6%	31%	44%
Geneva	13	7,876	8,000		99.7%	61%	62%
Guffie	13	8,143	8,271		98.9%	63%	64%
Hanson	6.5	4,434	4,960	3,972	97.2%	68%	61%
Hawesville	13	8,191	8,319		98.8%	63%	64%
Horse Fork	19.5	7,284	7,530		98.1%	37%	39%
Hudson #1	13	7,795	8,220		94.7%	60%	63%
Hudson #2(Tyson)	13	7,309	8,408		92.3%	56%	65%
Lewisport #1	13	6,299	6,038		97.4%	48%	46%
Lewisport #2	13	2,709	2,597		97.4%	21%	20%
Little Dixie	9.75	4,005	4,080		99.7%	41%	42%
Lyon	13	5,828	5,967		99.6%	45%	46%
Maceo	13	4,050	4,073		99.1%	31%	31%
Madisonville	13	5,430	5,515		97.1%	42%	42%
Marion	13	7,970	8,016		99.0%	61%	62%
Masonville	13	4,536	4,818		100.0%	35%	37%
Morganfield	13	11,029	11,802		98.5%	85%	91%
Niagara	13	9,221	9,366		99.7%	71%	72%
Nuckols	13	5,618	5,716		99.0%	43%	44%
Onton	13	7,400	7,543	7,668	98.6%	57%	59%
Philpot #1	13	4,627	4,723		99.4%	36%	36%
Philpot #2	13	3,720	3,797		99.4%	29%	29%
Pleasant Ridge	13	6,486	6,588		99.8%	50%	51%
Providence	13	6,721	6,826		99.4%	52%	53%
Race Creek	13	6,953	7,062		99.5%	53%	54%
Riverport	13	4,162	4,186		88.4%	32%	32%
Sacramento	4.875	4,251	4,275		99.1%	87%	88%
Sebree	6.5	4,588	4,614		98.3%	71%	71%
South Dermont #1	13	4,335	4,760		98.7%	33%	37%
South Dermont #2	13	4,931	5,126		98.7%	38%	39%
South Hanson #1	13	7,815	7,922		98.8%	60%	61%
South Hanson #2	13	8,897	9,019	10,582	98.8%	68%	81%
South Owensboro #1	13	3,668	3,696		98.9%	28%	28%
South Owensboro #2	13	4,601	4,756		98.9%	35%	37%
Stanley	6.5	3,778	3,800		99.9%	58%	58%
St. Joe	9.75	4,857	4,985		99.2%	50%	51%
Sullivan	13	3,182	3,767		98.4%	24%	29%
Thruston #1	13	5,560	5,626		99.1%	43%	43%
Thruston #2	13	4,750	4,806		99.1%	37%	37%
Utica	13	8,145	8,192		99.4%	63%	63%
Weaverton	13	5,890	5,983		98.9%	45%	46%
Weberstown	13	8,299	8,429		99.2%	64%	65%
West Owensboro	15.6	6,895	7,330		98.9%	44%	47%
Whitesville	13	8,567	8,616		98.5%	66%	66%
Wolf Hills	13	3,059	3,107		99.8%	24%	24%
Yager	6.5	108	123		76.1%	2%	2%
Zion	13	9,901	10,057		99.9%	76%	77%

(1) CWP Load Shifts: 450kW from Onton to Beech Grove Station- CWP 603-58
988kW from Hanson to South Hanson2- CWP 603-18
575kW from South Hanson2 to Onton- CWP 391

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Table T-2: CWP Total System and Substation NCP Load Forecast- Summer
2016-2020 Kenergy CWP

Substation	Summer Station Billing Data (6)											Maximum Station Peak 2012-15	2016 LF GR	2016 LF GR-ADJ	2016 GR-KW	2017 LF GR	2017 LF GR-ADJ	2017 GR-KW	2018 LF GR	2018 LF GR-ADJ	2018 GR-KW	2019 LF GR	2019 LF GR-ADJ	2019 GR-KW	Growth Code- Adjust Factor		CWP Load Growth- KW	Future Station NCP Analysis- CWP		
	Jul-12	Aug-12	Jul-13	Aug-13	Sep-13	Jul-14	Aug-14	Sep-14	Jul-15	Aug-15	Sep-15																	Growth Adjusted-Station Peak	Spot Loads-KW	Final CWP-Station Peak
ADAMS LANE	5242	5075	4736	4704	4717	4877	4966	4474	5107	4595	4288	5242	0.4%	0.1%	7.74	0.4%	0.2%	8.75	0.5%	0.2%	9.74	0.5%	0.2%	10.75	A	0.40	37	5279	100	5379
BEDA	7731	7251	6752	6810.4	6467	6836	6985	6279	7309	6895	6687	7731	0.4%	0.1%	4.28	0.4%	0.1%	4.83	0.5%	0.1%	5.38	0.5%	0.1%	5.92	L	0.15	20	7751		7751
BEECH GROVE	4193	3966	3849	3590	3376	3622	4044	3480	3927	3797	3849	4193	0.4%	0.1%	2.32	0.4%	0.1%	2.62	0.5%	0.1%	2.92	0.5%	0.1%	3.21	L	0.15	11	4204		4204
BON HARBOR	8029	7284	7361	7238.2	6875	6901	7122	6525	7258	7089	6687	8029	0.4%	0.1%	11.85	0.4%	0.2%	13.40	0.5%	0.2%	14.92	0.5%	0.2%	16.46	A	0.40	57	8085		8085
CALDWELL SPRINGS	1957	1704	2307	2164.4	1963	2151	2080	1795	2197	2074	2184	2307	0.4%	0.1%	1.28	0.4%	0.1%	1.44	0.5%	0.1%	1.60	0.5%	0.1%	1.77	L	0.15	6	2313	75	2388
CANNELTON	1377	1328	1299	1043.2	1218	386	719	386	165	149	143	1377	0.4%	0.1%	0.76	0.4%	0.1%	0.86	0.5%	0.1%	0.96	0.5%	0.1%	1.06	L	0.15	4	1381		1381
CENTERTOWN	1827	1702	1713	1617.8	1594	1614	1562	1445	1719	1777	1577	1827	0.4%	0.1%	1.01	0.4%	0.1%	1.14	0.5%	0.1%	1.27	0.5%	0.1%	1.40	L	0.15	5	1832		1832
CROSSROADS	5197	4925	4698	4678.6	4303	4471	4393	4154	4659	4374	4264	5197	0.4%	0.1%	2.88	0.4%	0.1%	3.25	0.5%	0.1%	3.62	0.5%	0.1%	3.98	L	0.15	14	5211		5211
DERMONT	7588	6687	7685	7652.8	7238	7316	7381	6778	7659	7271	6960	7685	0.4%	0.1%	11.34	0.4%	0.2%	12.82	0.5%	0.2%	14.28	0.5%	0.2%	15.76	A	0.40	54	7739	30	7769
DIXON	4190	3966	3884	3659	3668	3495	3607	3460	3797	3849	3810	4190	0.4%	0.1%	2.32	0.4%	0.1%	2.62	0.5%	0.1%	2.91	0.5%	0.1%	3.21	L	0.15	11	4201		4201
EAST OWENSBORO	4815	4549	4504	4523	4069	5579	5767	5456	6033	6052	5722	6052	0.4%	0.1%	8.93	0.4%	0.2%	10.10	0.5%	0.2%	11.25	0.5%	0.2%	12.41	A	0.40	43	6095	1105	7200
GENEVA	5978	5576	5378	5397.8	5424	6137	4970	5035	4986	4750	4947	6137	0.4%	0.1%	9.06	0.4%	0.2%	10.24	0.5%	0.2%	11.41	0.5%	0.2%	12.58	A	0.40	43	6180		6180
GUFFIE	7284	6022	5789	5845	5456	5944	5815	5646	6078	5918	5767	7284	0.4%	0.1%	10.75	0.4%	0.2%	12.15	0.5%	0.2%	13.54	0.5%	0.2%	14.93	A	0.40	51	7335		7335
HANSON	2635	2598	2590	2404	2419	2605	2987	2430	2622	2521	2478	2987	0.4%	0.1%	1.65	0.4%	0.1%	1.87	0.5%	0.1%	2.08	0.5%	0.1%	2.29	L	0.15	8	2995	500	3495
HAWESVILLE	7899	7258	7063	7043.8	6616	6752	6823	6389	7206	6707	6474	7899	0.4%	0.1%	11.66	0.4%	0.2%	13.18	0.5%	0.2%	14.68	0.5%	0.2%	16.19	A	0.40	56	7955		7955
HORSE FORK	12053	11526	9677	11854	11431	10057	11457	11068	10428	10316	10532	12053	0.4%	0.1%	17.79	0.4%	0.2%	20.11	0.5%	0.2%	22.40	0.5%	0.2%	24.71	A	0.40	85	12138	132	12270
HUDSON	17302	19096	5314	5132.4	5054	16887	17217	16887	17341	16848	17062	17341	0.4%	0.1%	25.59	0.4%	0.2%	28.93	0.5%	0.2%	32.23	0.5%	0.2%	35.55	A	0.40	122	17463	700	18163
LEWISPORT	9331	8372	7906	8158.2	8379	8100	8307	7770	8871	8197	7744	9331	0.4%	0.1%	5.16	0.4%	0.1%	5.83	0.5%	0.1%	6.49	0.5%	0.1%	7.15	L	0.15	25	9356		9356
LITTLE DIXIE	3218	3218	2989	3058.6	3478	3434.4	3318	3387	3158	3033	3292	3478	0.4%	0.1%	1.92	0.4%	0.1%	2.17	0.5%	0.1%	2.42	0.5%	0.1%	2.67	L	0.15	9	3487		3487
LYON COUNTY	6251	5275	4722	5197	4100	4584	4510	3879	4717.4	4294	4709	6251	0.4%	0.1%	9.23	0.4%	0.2%	10.43	0.5%	0.2%	11.62	0.5%	0.2%	12.82	A	0.40	44	6295	48	6343
MACEO	3428	3052	3072	3175.2	2845	3097	3110	2702	3162	3039	2974	3428	0.4%	0.1%	1.90	0.4%	0.1%	2.14	0.5%	0.1%	2.38	0.5%	0.1%	2.63	L	0.15	9	3437		3437
MADISONVILLE	5197	4193	4082	5009	4050	3700	3823	3804	4296	3953	4536	5197	0.4%	0.1%	7.67	0.4%	0.2%	8.67	0.5%	0.2%	9.66	0.5%	0.2%	10.65	A	0.40	37	5234		5234
MARION	6707	6195	5502	5559.8	6026	5197	5430	4795	5456	5683	5683	6707	0.4%	0.1%	3.71	0.4%	0.1%	4.19	0.5%	0.1%	4.67	0.5%	0.1%	5.14	L	0.15	18	6725		6725
MASONVILLE	4847	4316	6895	6065.2	5793	5955	5923	5676	6279	6059	5962	6895	0.4%	0.1%	3.82	0.4%	0.1%	4.31	0.5%	0.1%	4.80	0.5%	0.1%	5.28	L	0.15	18	6913	256	7169
MORGANFIELD	8761	8230	7906	8145.4	8599	7640	8210	8366	8081	7757	8689.6	8761	0.4%	0.1%	12.93	0.4%	0.2%	14.62	0.5%	0.2%	16.28	0.5%	0.2%	17.96	A	0.40	62	8823	600	9423
NIAGARA	6499	6085	5780	5961.6	5579	5463	5877	5197	5877.4	5696	5605	6499	0.4%	0.1%	9.59	0.4%	0.2%	10.84	0.5%	0.2%	12.08	0.5%	0.2%	13.33	A	0.40	46	6545		6545
NUCKOLS	4841	4633	4517	4309.2	4147	4432	4348	4173	4536	4173	4108	4841	0.4%	0.1%	2.68	0.4%	0.1%	3.03	0.5%	0.1%	3.37	0.5%	0.1%	3.71	L	0.15	13	4853		4853
ONTON	4374	4005	4011	3978.8	4076	4423	4419	4228	4811	4510	4267	4811	0.4%	0.1%	2.66	0.4%	0.1%	3.01	0.5%	0.1%	3.35	0.5%	0.1%	3.69	L	0.15	13	4824	100	4924
PHILPOT	9435	8605	8346	7996.4	8016	8204	8197	7543	8443	8119	7420	9435	0.4%	0.4%	34.81	0.4%	0.4%	39.44	0.5%	0.5%	44.05	0.5%	0.5%	48.72	H	1.00	167	9602		9602
PLEASANT RIDGE	4789	4368	4309	4205.6	3985	4089	4186	3830	4303	3985	3972	4789	0.4%	0.1%	7.07	0.4%	0.2%	7.99	0.5%	0.2%	8.90	0.5%	0.2%	9.82	A	0.40	34	4823		4823
PROVIDENCE	4799	4563	4352	4228.4	4117	4092	4271.8	3912	4197	4024	3918	4799	0.4%	0.1%	7.08	0.4%	0.2%	8.01	0.5%	0.2%	8.92	0.5%	0.2%	9.84	A	0.40	34	4833		4833
RACE CREEK	5936	5780	5268	5287.6	4938	5041	5262	4685	5223	5093	4828	5936	0.4%	0.1%	8.76	0.4%	0.2%	9.90	0.5%	0.2%	11.03	0.5%	0.2%	12.17	A	0.40	42	5977		5977
RIVERPORT	3623	3977	1848	1819.8	1831	3807	3791	3967	3750	3892	4112	4112	0.4%	0.1%	2.28	0.4%	0.1%	2.57	0.5%	0.1%	2.86	0.5%	0.1%	3.15	L	0.15	11	4122		4122
S. OWENSBORO	11405	12960	10731	10743.8	10387	10342	10485	10025	10530	10199	10381	12960	0.4%	0.1%	19.13	0.4%	0.2%	21.62	0.5%	0.2%	24.09	0.5%	0.2%	26.57	A	0.40	91	13051	120	13171
SACRAMENTO	3023	2900	2806	2614.6	2744	2971	2981	2900	3195	2751	3033	3195	0.4%	0.1%	1.77	0.4%	0.1%	2.00	0.5%	0.1%	2.22	0.5%	0.1%	2.45	L	0.15	8	3203		3203
SEBREE	4400	4014	4063	3972.2	3771	3153	3441	3146	3479.8	3353	3159	4400	0.4%	0.1%	2.44	0.4%	0.1%	2.75	0.5%	0.1%	3.06	0.5%	0.1%	3.37	L	0.15	12	4412		4412
SOUTH DERMONT	19479	18533	15772	15221.6	14904	14638	14936	14133	15902	15662	15027	15902	0.4%	0.4%	58.68	0.4%	0.4%	66.48	0.5%	0.5%	74.24	0.5%	0.5%	82.12	H	1.00	282	16184	352	16536
SOUTH HANSON	10225	9850	9487	9033.2	8748	9020	9325	8255	9402.4	8884	8670	10225	0.4%	0.1%	15.09	0.4%	0.2%	17.06	0.5%	0.2%	19.01	0.5%	0.2%	20.96	A	0.40	72	10298		10298
ST. JOE	5103	4364	4594	5018.8	4740	4734	4798	4393	5135	4909	5430	5430	0.4%	0.1%	3.01	0.4%	0.1%	3.39	0.5%	0.1%	3.78	0.5%	0.1%	4.16	L	0.15	14	5445	100	5545
STANLEY	2887	2744	2605	2770.2	2667	2592	2524	2362	2650	2615	2689.2	2887	0.4%	0.1%	1.60	0.4%	0.1%	1.80	0.5%	0.1%	2.01	0.5%	0.1%	2.21	L	0.15	8	2894		2894
SULLIVAN	2618	2424	2313	2294	2320	2216	2871	2838	2385	2501	2404	2871	0.4%	0.1%	1.59	0.4%	0.1%	1.79	0.5%	0.1%	2.00	0.5%	0.1%	2.20	L	0.15	8	2878		2878
THRUSTON	8878	8508	8392	8197.2	7944	7206	7238	6875	7757	7569	7037	8878	0.4%	0.1%	13.10	0.4%	0.2%	14.81	0.5%	0.2%	16.50	0.5%	0.2%	18.20	A	0.40	63	8940		8940
UTICA	6227	5560	5482	5469.2	5365	5203	5508	5203	5631	5378	5456	6227	0.4%	0.1%	3.45	0.4%	0.1%	3.89	0.5%	0.1%	4.33	0.5%	0.1%	4.77	L	0.15	16	6244		6244
W. OWENSBORO	7860	7400	7245	7089.2	6752	6830	7128	6551	7478	7258	7096	7860	0.4%	0.4%	29.00	0.4%	0.4%	32.86	0.5%	0.5%	36.69	0.5%	0.5%	40.59	H	1.00	139	7999	276	8275
WEAVERTON	4918	4542	4445	4497.2	4186	4193	4193	5774	3953	3901	3694	4918	0.4%	0.1%	7.26	0.4%	0.2%	8.21	0.5%	0.2%	9.14	0.5%	0.2%	10.08	A	0.40	35	4953		4953
WEBERSTOWN	5806	5465	5275	5058.8	4791	5115	5266	4704	5504	5145	4899	5806	0.4%	0.1%	8.57	0.4%	0.2%	9.69	0.5%	0.2%	10.79	0.5%	0.2%	11.90	A	0.40	41	5847		5847
WHITESVILLE	7407	6862	6642	6726.2	6409	6474	6454	6253	6636	6448	6292	7407	0.4%	0.1%	4.10	0.4%	0.1%	4.63	0.5%	0.1%	5.15	0.5%	0.1%	5.68	L	0.15	20	7426		7426
WOLF HILLS	3258	3034	3405	3206.4	2861	2912	2989	2432	2957	2726	2874	3405	0.4%	0.1%	5.03	0.4%	0.2%	5.68	0.5%	0.2%	6.33	0.5%	0.2%	6.98	A	0.40	24	3429		3429
YEAGER	119	102	111	111.8	105	93	117	109	84	109	104	119	0.4%	0.1%	0.07	0.4%	0.1%	0.07	0.5%	0.1%	0.08	0.5%	0.1%	0.09	L	0.15	0	119		119
ZION	7329	6590	6674	6642	6104	6201	6506	5774	6467	6292	5994	7329	0.4%	0.1%	10.82	0.4%	0.2%	12.23	0.5%	0.2%	13.62	0.5%	0.2%	15.03	A	0.40	52	7380		7380
TOTAL STATIONS NCP	**308,272**	**291,231**	**266,146**	**266,181**	**256,646**	**270,780**	**277,640**	**261,329**	**282,799**	**272,189**	**269,488**	**312,616**	**0.4%**	**0.1%**		**0.4%**	**0.1%**		**0.5%**	**0.1%**		**0.5%**	**0.2%**				**2,091**	**314,707**	**4,494**	**319,201**
												CWP BASELOAD	**2015 Average LF Growth Factors- CWP Adjustments**												**CWP Adj Factors**					**Total System NCP**

NCP RESULTS NOT ACCURATE
NCP STATION PEAK

2016-2019 CWP COMPARISON OF YR2019 CWP AND 2015 LOAD FORECAST PROJECTS

		2015 Load Forecast- Demand Growth									Load Forecast- Extreme Weather			Rural System	Adjustments to Load Forecast (5)		Total System
	Base Load-KW	0.37%	YR2016	0.42%	YR2017	0.46%	YR2018	0.51%	YR2019	2015 LF 4YR NCP		LF Factor	Weather Adjusted		Direct Load-KW	Spot Load-KW	
2016-2019 CWP Normalized Comp (1)	292,736	0.4%	1,080	0.42%	1,224	0.5%	1,367	0.5%	1,512	297,918		4%	311,026	311,026		1,000	312,026
2016-2019 CWP LF Base (2)	312,616	0.4%	1,154	0.42%	1,307	0.5%	1,459	0.5%	1,614	318,150			318,150	318,150		1,000	319,150
2015 Load Forecast-pg. 55 NCP (3)	275,793	0.4%	1,018	0.42%	1,153	0.5%	1,288	0.5%	1,424	280,675		4%	293,025	293,025	15,000	1,000	309,025
2015 Load Forecast-pg. 82 CP (4)	290,773													290,773	15,000	1,000	306,773

(1) CWP Normalized Base Load is the average of the peaking month for per year based upon the NCP normalized monthly demands, Load Forecast growth and weather factors are applied.

(2) CWP Proposed Base Load is based upon the total of each station's NCP peak during the analysis period. Load Forecast growth is applied. Weather extremes are already present in the actual readings. No individual station loading adjustments are applied.

(3) 2015 Load Forecast NCP is taken from Page A-11 (pg. 55 pdf) Rural System Requirements for YR2015. Load Forecast growth and weather extremes are applied.

(4) 2015 Load Forecast CP is taken from Page B-15 (pg. 82 pdf) Rural System CP Demand for YR2019, 5% Extreme Base Case. No factors applied as all factors are already accounted for.

(5) Base Load forecasts are adjusted by Direct Serve Load to equate to the total of the station NCPs. Spot Load is singular loading not considered by the existing Load Forecast.

(6) The peak NCP reading during the analysis period is highlighted in green unless noted as an exception, noted in red.

(7) Extreme Weather adjustment is based upon the percentage increase between the 50% Base Case and the 5% Extreme Case for YR2019, Page B-15.

Power Services
Engineering & Management Services

Table T-2: CWP Total System and Substation NCP Load Forecast- Winter
2016-2020 Kenergy CWP

Substation	Winter Station Billing Data (6) Jan-12	Feb-12	Jan-13	Feb-13	Jan-14	Jan-15	Feb-15	Maximum Station Peak 2012-15	2016 LF GR	2016 LF GR-ADJ	2016 GR-KW	2017 LF GR	2017 LF GR-ADJ	2017 GR-KW	2018 LF GR	2018 LF GR-ADJ	2018 GR-KW	2019 LF GR	2019 LF GR-ADJ	2019 GR-KW	Growth Code- Adjust Factor		CWP Load Growth- KW	Future Station NCP Analysis- CWP: Growth Adjusted-Station Peak	Spot Loads-KW	Final CWP-Station Peak
ADAMS LANE	5811	4525	5082	5696	5830	5331.2	5446	5830	0.9%	0.6%	36.55	0.4%	0.3%	16.31	0.5%	0.3%	18.32	0.5%	0.3%	20.31	A	0.68	92	5922	100	6022
BEDA	6357	6402	6409	6636	9390	7853.8	7964	9390	0.9%	0.2%	21.64	0.4%	0.1%	9.62	0.5%	0.1%	10.79	0.5%	0.1%	11.94	L	0.25	54	9444		9444
BEECH GROVE	4439	3681	3797	4050	5087	4801.6	4847	5087	0.9%	0.2%	11.73	0.4%	0.1%	5.21	0.5%	0.1%	5.84	0.5%	0.1%	6.47	L	0.25	29	5116		5116
BON HARBOR	4957	4523	4730	4802	6493	5819	5534	6493	0.9%	0.6%	40.71	0.4%	0.3%	18.16	0.5%	0.3%	20.41	0.5%	0.3%	22.62	A	0.68	102	6595		6595
CALDWELL SPRINGS	1918	1840	1925	2022	2683	2540.2	2657	2683	0.9%	0.2%	6.18	0.4%	0.1%	2.75	0.5%	0.1%	3.08	0.5%	0.1%	3.41	L	0.25	15	2698	75	2773
CANNELTON	586	616	661	619	557	395.2	735	735	0.9%	0.2%	1.70	0.4%	0.1%	0.75	0.5%	0.1%	0.84	0.5%	0.1%	0.93	L	0.25	4	740		740
CENTERTOWN	2335	2380	2307	2478	3126	2690	2800	3126	0.9%	0.2%	7.20	0.4%	0.1%	3.20	0.5%	0.1%	3.59	0.5%	0.1%	3.97	L	0.25	18	3144		3144
CROSSROADS	4860	4886	5016	5352	7063	6544.8	6512	7063	0.9%	0.2%	16.28	0.4%	0.1%	7.24	0.5%	0.1%	8.11	0.5%	0.1%	8.98	L	0.25	41	7104		7104
DERMONT	5210	4128	4692	4640	6435	5663.6	5502	6435	0.9%	0.6%	40.34	0.4%	0.3%	18.00	0.5%	0.3%	20.22	0.5%	0.3%	22.42	A	0.68	101	6536	30	6566
DIXON	4143	3884	4247	4380	5668	5572.8	5491	5668	0.9%	0.2%	13.06	0.4%	0.1%	5.81	0.5%	0.1%	6.51	0.5%	0.1%	7.20	L	0.25	33	5700		5700
EAST OWENSBORO	3370	2825	2812	2722	4011	4555.4	4322	4555	0.9%	0.6%	28.56	0.4%	0.3%	12.74	0.5%	0.3%	14.32	0.5%	0.3%	15.87	A	0.68	71	4627	1105	5732
GENEVA	6017	5184	5949	6279	7876	7393.6	6525	7876	0.9%	0.6%	49.38	0.4%	0.3%	22.03	0.5%	0.3%	24.75	0.5%	0.3%	27.44	A	0.68	124	8000		8000
GUFFIE	5858	5832	6216	6458	8143	7382.8	7305	8143	0.9%	0.6%	51.05	0.4%	0.3%	22.78	0.5%	0.3%	25.59	0.5%	0.3%	28.37	A	0.68	128	8271		8271
HANSON	3069	3041	3218	3164	4434	4374	4290	4434	0.9%	0.2%	10.22	0.4%	0.1%	4.54	0.5%	0.1%	5.09	0.5%	0.1%	5.64	L	0.25	25	4460	500	4960
HAWESVILLE	5910	5676	6305	6188	8191	7426	7491	8191	0.9%	0.6%	51.35	0.4%	0.3%	22.91	0.5%	0.3%	25.74	0.5%	0.3%	28.54	A	0.68	129	8319		8319
HORSE FORK	7163	7698	6445	6644	7284	7179.8	6748	7284	0.9%	0.6%	45.67	0.4%	0.3%	20.37	0.5%	0.3%	22.89	0.5%	0.3%	25.38	A	0.68	114	7398	132	7530
HUDSON	14975	14651	16102	15688	15146	15675	15682	15682	0.9%	0.6%	98.32	0.4%	0.3%	43.87	0.5%	0.3%	49.28	0.5%	0.3%	54.64	A	0.68	246	15928	700	16628
LEWISPORT	7063	6655	7024	7018	8586	7711.2	7970	8586	0.9%	0.2%	19.79	0.4%	0.1%	8.80	0.5%	0.1%	9.86	0.5%	0.1%	10.91	L	0.25	49	8635		8635
LITTLE DIXIE	3192	2808	3102	3162	4005	4056.4	3936	4056	0.9%	0.2%	9.35	0.4%	0.1%	4.16	0.5%	0.1%	4.66	0.5%	0.1%	5.16	L	0.25	23	4080		4080
LYON COUNTY	4177	4044	4091	4303	5828	7888.4	5404	5828	0.9%	0.6%	36.54	0.4%	0.3%	16.30	0.5%	0.3%	18.31	0.5%	0.3%	20.30	A	0.68	91	5919	48	5967
MACEO	2948	2851	3162	3065	4050	3635.2	3661	4050	0.9%	0.2%	9.34	0.4%	0.1%	4.15	0.5%	0.1%	4.65	0.5%	0.1%	5.15	L	0.25	23	4073		4073
MADISONVILLE	4335	3843	4983	4990	5430	5093.2	5340	5430	0.9%	0.6%	34.05	0.4%	0.3%	15.19	0.5%	0.3%	17.07	0.5%	0.3%	18.92	A	0.68	85	5515		5515
MARION	6143	5586	5761	6318	7970	7445.6	7355	7970	0.9%	0.2%	18.37	0.4%	0.1%	8.16	0.5%	0.1%	9.16	0.5%	0.1%	10.13	L	0.25	46	8016		8016
MASONVILLE	2456	2300	3493	3104	4536	4024	3933	4536	0.9%	0.2%	10.46	0.4%	0.1%	4.65	0.5%	0.1%	5.21	0.5%	0.1%	5.77	L	0.25	26	4562	256	4818
MORGANFIELD	8081	7296	8126	8443	11029	10180	9474	11029	0.9%	0.6%	69.15	0.4%	0.3%	30.85	0.5%	0.3%	34.66	0.5%	0.3%	38.43	A	0.68	173	11202	600	11802
NIAGARA	6687	6059	6480	7147	9221	8210.2	8268	9221	0.9%	0.6%	57.81	0.4%	0.3%	25.79	0.5%	0.3%	28.98	0.5%	0.3%	32.13	A	0.68	145	9366		9366
NUCKOLS	4504	4290	4692	5087	5618	5631.2	5683	5683	0.9%	0.2%	13.10	0.4%	0.1%	5.82	0.5%	0.1%	6.53	0.5%	0.1%	7.22	L	0.25	33	5716		5716
ONTON	4844	4717	4847	5187	7400	7141	7099	7400	0.9%	0.2%	17.06	0.4%	0.1%	7.58	0.5%	0.1%	8.50	0.5%	0.1%	9.41	L	0.25	43	7443	100	7543
PHILPOT	6506	6098	6856	6869	8327	7477.8	7471	8327	0.9%	0.9%	76.77	0.4%	0.4%	34.35	0.5%	0.5%	38.65	0.5%	0.5%	42.91	H	1.00	193	8519		8519
PLEASANT RIDGE	4581	4419	4536	4964	6486	5909.8	5605	6486	0.9%	0.6%	40.67	0.4%	0.3%	18.14	0.5%	0.3%	20.38	0.5%	0.3%	22.60	A	0.68	102	6588		6588
PROVIDENCE	4948	4892	5041	5419	6721	6448	6411	6721	0.9%	0.6%	42.14	0.4%	0.3%	18.80	0.5%	0.3%	21.12	0.5%	0.3%	23.42	A	0.68	105	6826		6826
RACE CREEK	4977	4504	4925	5268	6953	5922.8	5670	6953	0.9%	0.6%	43.59	0.4%	0.3%	19.45	0.5%	0.3%	21.85	0.5%	0.3%	24.23	A	0.68	109	7062		7062
RIVERPORT	4266	4263	4375	4863	4162	4158	3957	4162	0.9%	0.2%	9.59	0.4%	0.1%	4.26	0.5%	0.1%	4.78	0.5%	0.1%	5.29	L	0.25	24	4186		4186
S. OWENSBORO	7426	6908	7232	7141	8204	7944.4	7614	8204	0.9%	0.6%	51.43	0.4%	0.3%	22.95	0.5%	0.3%	25.78	0.5%	0.3%	28.58	A	0.68	129	8332	120	8452
SACRAMENTO	2906	2790	2952	3159	4251	3709.8	3807	4251	0.9%	0.2%	9.80	0.4%	0.1%	4.35	0.5%	0.1%	4.88	0.5%	0.1%	5.40	L	0.25	24	4275		4275
SEBREE	4193	3969	4082	4478	4588	4273.6	4251	4588	0.9%	0.2%	10.57	0.4%	0.1%	4.70	0.5%	0.1%	5.27	0.5%	0.1%	5.83	L	0.25	26	4614		4614
SOUTH DERMONT	9532	8929	8476	8139	9266	9266.4	9318	9318	0.9%	0.9%	85.91	0.4%	0.4%	38.44	0.5%	0.5%	43.25	0.5%	0.5%	48.02	H	1.00	216	9534	352	9886
SOUTH HANSON	11288	10666	12001	12999	16679	16284.4	16103	16679	0.9%	0.6%	104.57	0.4%	0.3%	46.66	0.5%	0.3%	52.42	0.5%	0.3%	58.11	A	0.68	262	16941		16941
ST. JOE	3366	3532	3775	3872	4857	4655.8	4452	4857	0.9%	0.2%	11.19	0.4%	0.1%	4.98	0.5%	0.1%	5.58	0.5%	0.1%	6.17	L	0.25	28	4885	100	4985
STANLEY	2667	2527	2563	2686	3778	3308	3198	3778	0.9%	0.2%	8.71	0.4%	0.1%	3.87	0.5%	0.1%	4.34	0.5%	0.1%	4.80	L	0.25	22	3800		3800
SULLIVAN	2534	2262	2404	2586	3182	3745.4	2929	3745	0.9%	0.2%	8.63	0.4%	0.1%	3.84	0.5%	0.1%	4.30	0.5%	0.1%	4.76	L	0.25	22	3767		3767
THRUSTON	7562	6804	7471	7938	10271	8592.6	8191	10271	0.9%	0.6%	64.39	0.4%	0.3%	28.73	0.5%	0.3%	32.28	0.5%	0.3%	35.79	A	0.68	161	10432		10432
UTICA	5683	5236	5890	6357	8145	7257.6	7011	8145	0.9%	0.2%	18.78	0.4%	0.1%	8.34	0.5%	0.1%	9.36	0.5%	0.1%	10.35	L	0.25	47	8192		8192
W. OWENSBORO	5171	4633	5119	5249	6895	6143	5903	6895	0.9%	0.9%	63.57	0.4%	0.4%	28.45	0.5%	0.5%	32.00	0.5%	0.5%	35.53	H	1.00	160	7054	276	7330
WEAVERTON	4413	3933	4335	4614	5890	4691.6	4737	5890	0.9%	0.6%	36.93	0.4%	0.3%	16.48	0.5%	0.3%	18.51	0.5%	0.3%	20.52	A	0.68	92	5983		5983
WEBERSTOWN	5970	5849	6147	6087	8299	7603.2	7512	8299	0.9%	0.6%	52.03	0.4%	0.3%	23.21	0.5%	0.3%	26.08	0.5%	0.3%	28.91	A	0.68	130	8429		8429
WHITESVILLE	6214	6150	6402	6966	8567	7769.6	7614	8567	0.9%	0.2%	19.75	0.4%	0.1%	8.78	0.5%	0.1%	9.84	0.5%	0.1%	10.89	L	0.25	49	8616		8616
WOLF HILLS	2054	1946	2323	2458	3059	2732.8	2579	3059	0.9%	0.6%	19.18	0.4%	0.3%	8.56	0.5%	0.3%	9.61	0.5%	0.3%	10.66	A	0.68	48	3107		3107
YEAGER	114	109	124	122	108	119.6	122	122	0.9%	0.2%	0.28	0.4%	0.1%	0.13	0.5%	0.1%	0.14	0.5%	0.1%	0.16	L	0.25	1	123		123
ZION	7368	6493	7141	7400	9901	8566.6	8515	9901	0.9%	0.6%	62.08	0.4%	0.3%	27.70	0.5%	0.3%	31.12	0.5%	0.3%	34.50	A	0.68	155	10057		10057
TOTAL STATIONS NCP	**255,147**	**239,132**	**255,843**	**265,274**	**329,679**	**308,796**	**300,946**	**331,683**	**0.9%**	**0.5%**		**0.4%**	**0.2%**		**0.5%**	**0.2%**		**0.5%**	**0.2%**				**4,168**	**335,851**	**4,494**	**340,345**
								CWP BASELOAD	**2015 Average LF Growth Factors- CWP Adjustments**												**CWP Adj Factors**					**Total System NCP**

NCP RESULTS NOT ACCURATE
NCP STATION PEAK

2016-2019 CWP COMPARISON OF YR2019 CWP AND 2015 LOAD FORECAST PROJECTS

	Base Load-KW	2015 Load Forecast- Demand Growth: 0.92%	YR2016	0.41%	YR2017	0.46%	YR2018	0.51%	YR2019	2015 LF 4YR NCP	Load Forecast- Extreme Weather (7):	LF Factor	Weather Adjusted	Rural System	Adjustments to Load Forecast (5): Direct Load-KW	Spot Load-KW	Total System
2016-2019 CWP Normalized Comp (1)	299,558	0.9%	2,762	0.41%	1,236	0.5%	1,390	0.5%	1,544	306,490		16%	353,995	353,995		1,000	354,995
2016-2019 CWP LF Base (2)	331,683	0.9%	3,058	0.41%	1,368	0.5%	1,539	0.5%	1,709	339,359			339,359	339,359		1,000	340,359
2015 Load Forecast NCP (3)	262,950	0.9%	2,424	0.41%	1,085	0.5%	1,220	0.5%	1,355	269,035		16%	310,735	310,735	15,000	1,000	326,735
2015 Load Forecast CP (4)	315,400													315,400	15,000	1,000	331,400

(1) CWP Normalized Base Load is the average of the peaking month for per year based upon the NCP normalized monthly demands, Load Forecast growth and weather factors are applied.
(2) CWP Proposed Base Load is based upon the total of each station's NCP peak during the analysis period. Load Forecast growth is applied. Weather extremes are already present in the actual readings. No individual station loading adjustments are applied.
(3) 2015 Load Forecast NCP is taken from Page A-11 (pg. 55 pdf) Rural System Requirements for YR2015. Load Forecast growth and weather extremes are applied.
(4) 2015 Load Forecast CP is taken from Page B-15 (pg. 82 pdf) Rural System CP Demand for YR2019, 5% Extreme Base Case. No factors applied as all factors are already accounted for.
(5) Base Load forecasts are adjusted by Direct Serve Load to equate to the total of the station NCPs. Spot Load is singular loading not considered by the existing Load Forecast.
(6) The peak NCP reading during the analysis period is highlighted in green unless noted as an exception, noted in red.
(7) Extreme Weather adjustment is based upon the percentage increase between the 50% Base Case and the 5% Extreme Case for YR2019, Page B-15.

Power Services
Engineering & Management Services

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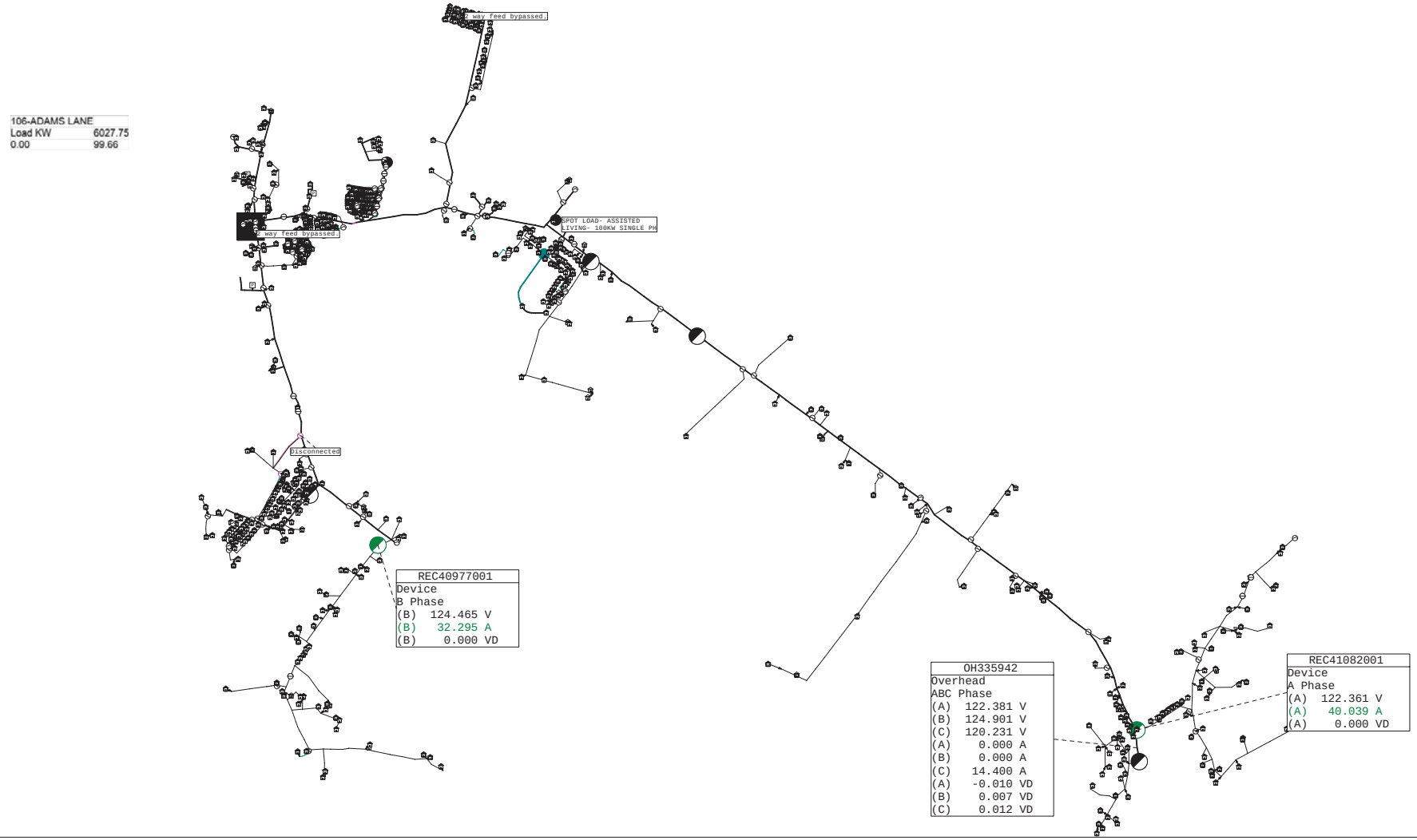
TABLE T-3: CONSTRUCTION WORK PLAN UNIT COSTS
2016-2020 KENERGY CWP

NEW CONSTRUCTION- TIE LINES		
	SIZE	COST/MILE
NEW SINGLE PHASE	2ACSR	$60,300
NEW SINGLE PHASE	1/0 ACSR	$67,000
NEW THREE PHASE	1/0 ACSR	$92,880
NEW THREE PHASE	4/0 ACSR	$120,528
NEW THREE PHASE	336 ACSR	$133,920
NEW SINGLE PHASE UNDERGROUND	1/0 AL	$125,000
NEW THREE PHASE UNDERGROUND	500 MCM	$300,000
LINE CONVERSION		
	SIZE	COST/MILE
SINGLE PHASE TO SINGLE PHASE	1/0 ACSR	$59,400
SINGLE PHASE TO VEE PHASE	1/0 ACSR	$75,000
SINGLE PHASE TO THREE PHASE	1/0 ACSR	$83,700
SINGLE PHASE TO THREE PHASE	336 ACSR	$108,810
VEE PHASE TO THREE PHASE	2 ACSR	$60,300
VEE PHASE TO THREE PHASE	1/0 ACSR	$86,400
VEE PHASE TO THREE PHASE	336 ACSR	$112,320
THREE PHASE TO THREE PHASE	4/0 ACSR	$106,920
THREE PHASE TO THREE PHASE	336 ACSR	$118,800
THREE PHASE TO DUAL CIRCUIT THREE PHASE	336 ACSR	$225,000
RECONDUCTOR: SINGLE PHASE	2 ACSR	$51,000
RECONDUCTOR: THREE PHASE	1/0 ACSR	$80,000
SWITCHGEAR REPLACEMENT	THREE PHASE	$35,000
UNDERGROUND CABLE REPLACEMENT-1PH	1/0 AL 25KV	$150,000
UNDERGROUND CABLE REPLACEMENT-3PH	THREE PHASE	$225,000

VOLTAGE CONVERSION		
REINSULATE SINGLE PHASE	PER MILE	$8,500
REINSULATE THREE PHASE	PER MILE	$25,000
INSTALL LINE SU/SD TRANSFORMER	(3)-1000 KVA	$35,000
INSTALL LINE SU/SD TRANSFORMER	(3)-1667 KVA	$45,000
UPGRADE LINE SU/SD TRANSFORMER	(1)-3000 KVA PAD	$50,000
UPGRADE LINE SU/SD TRANSFORMER	(1)-5000 KVA PAD	$65,000
INSTALL (1) DUAL VOLTAGE TRANSFORMER	POLE	$1,800
INSTALL (1) DUAL VOLTAGE TRANSFORMER	PAD	$2,500

MISCELLANEOUS- EQUIPMENT		
SINGLE POLE MOUNT RECLOSER	1	$4,500
THREE PHASE RECLOSER-ELECTRONIC	1	$18,000
FIXED CAPACITOR BANK	300 KVAR	$5,000
FIXED CAPACITOR BANK	600 KVAR	$7,500
VOLTAGE REGULATOR	(1)-100A	$12,000
VOLTAGE REGULATOR	(1)-150A	$15,000
VOLTAGE REGULATOR	(1)-200A	$18,000

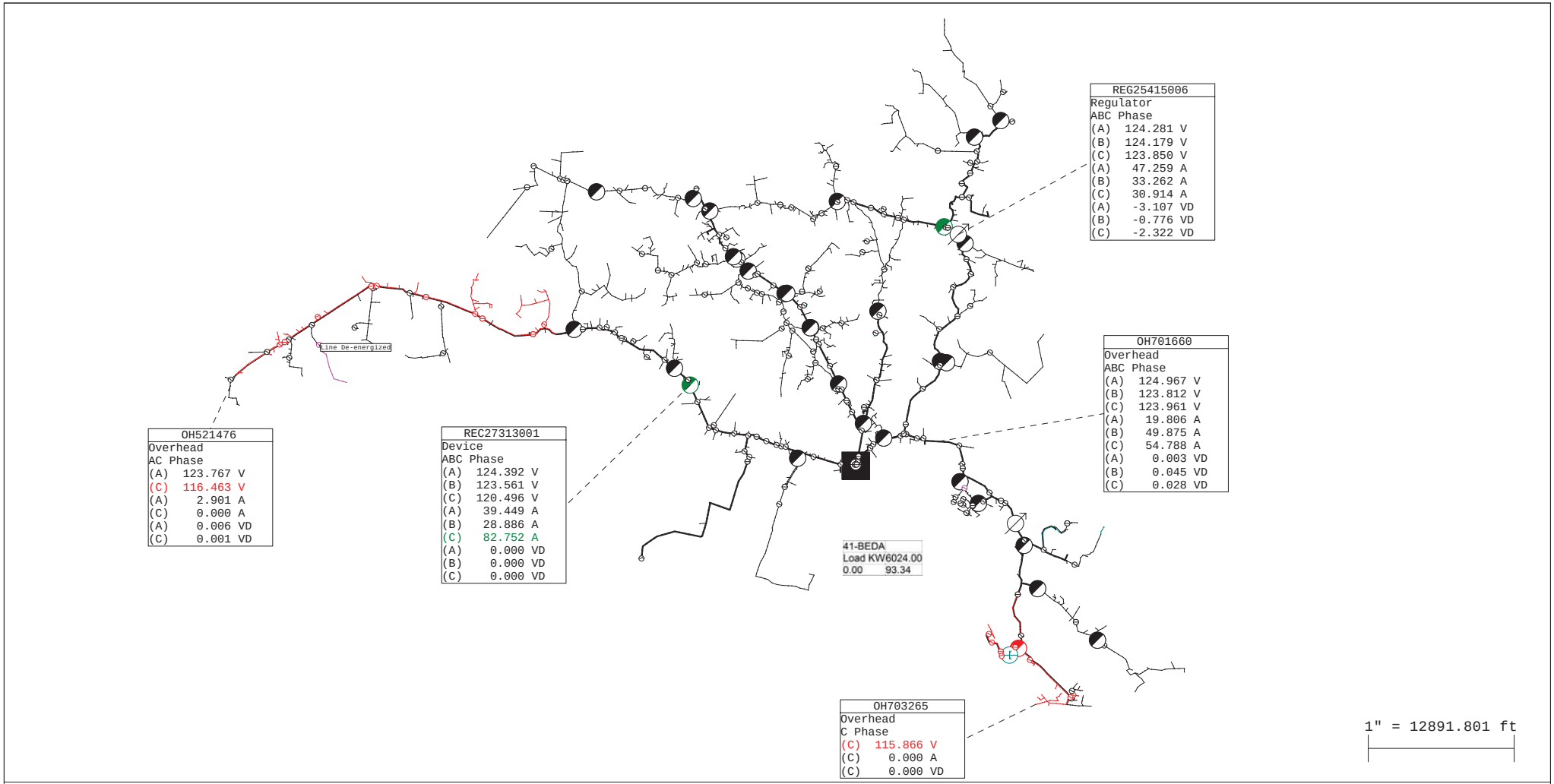
APPENDICES



KENERGY

ADAMS LANE
2016-2020 NO IMPROVEMENTS

POWERSERVICES
2016-20 Model-9252015 Extract v2 WINTER CWP

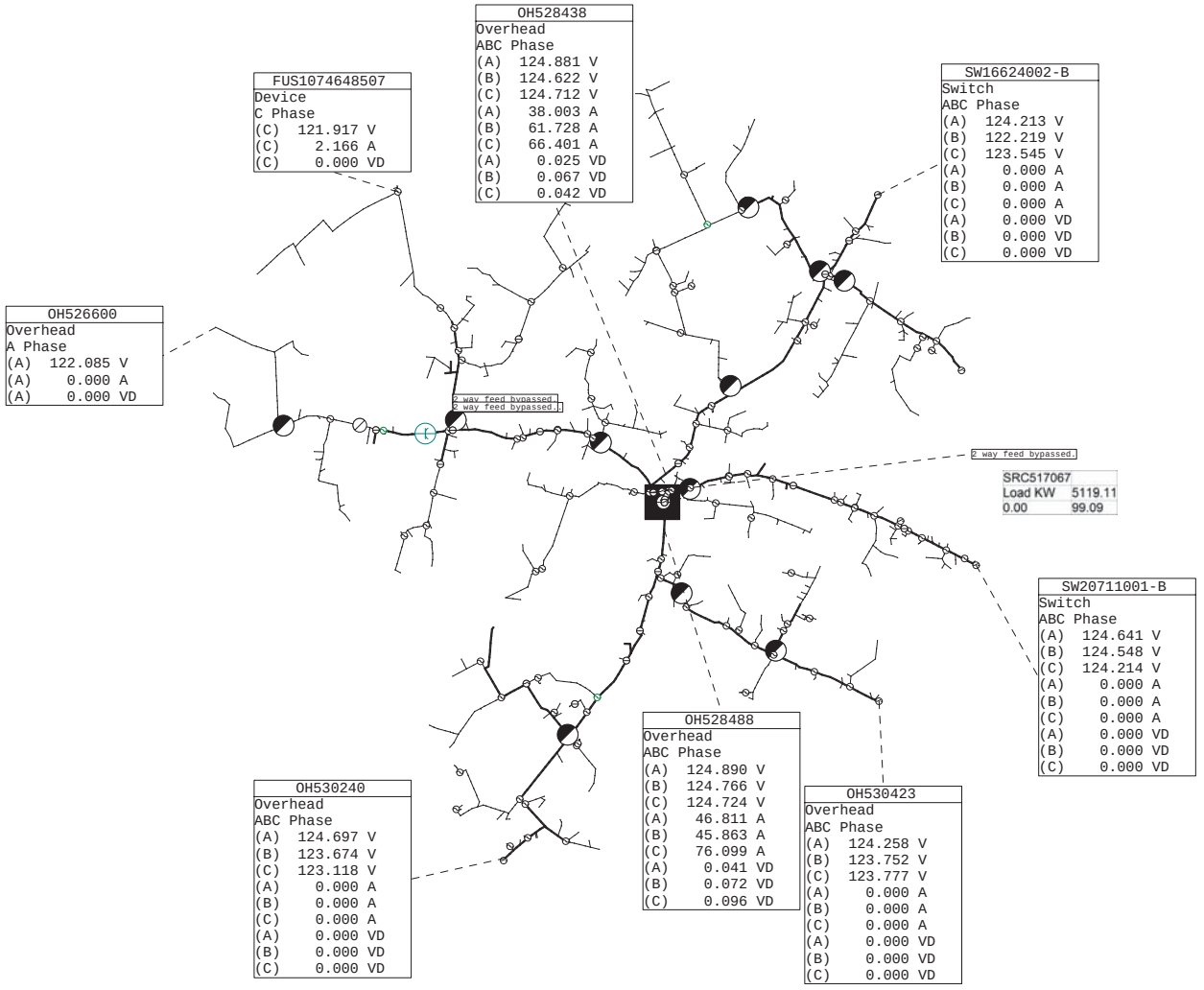


KENERGY

BEDA
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

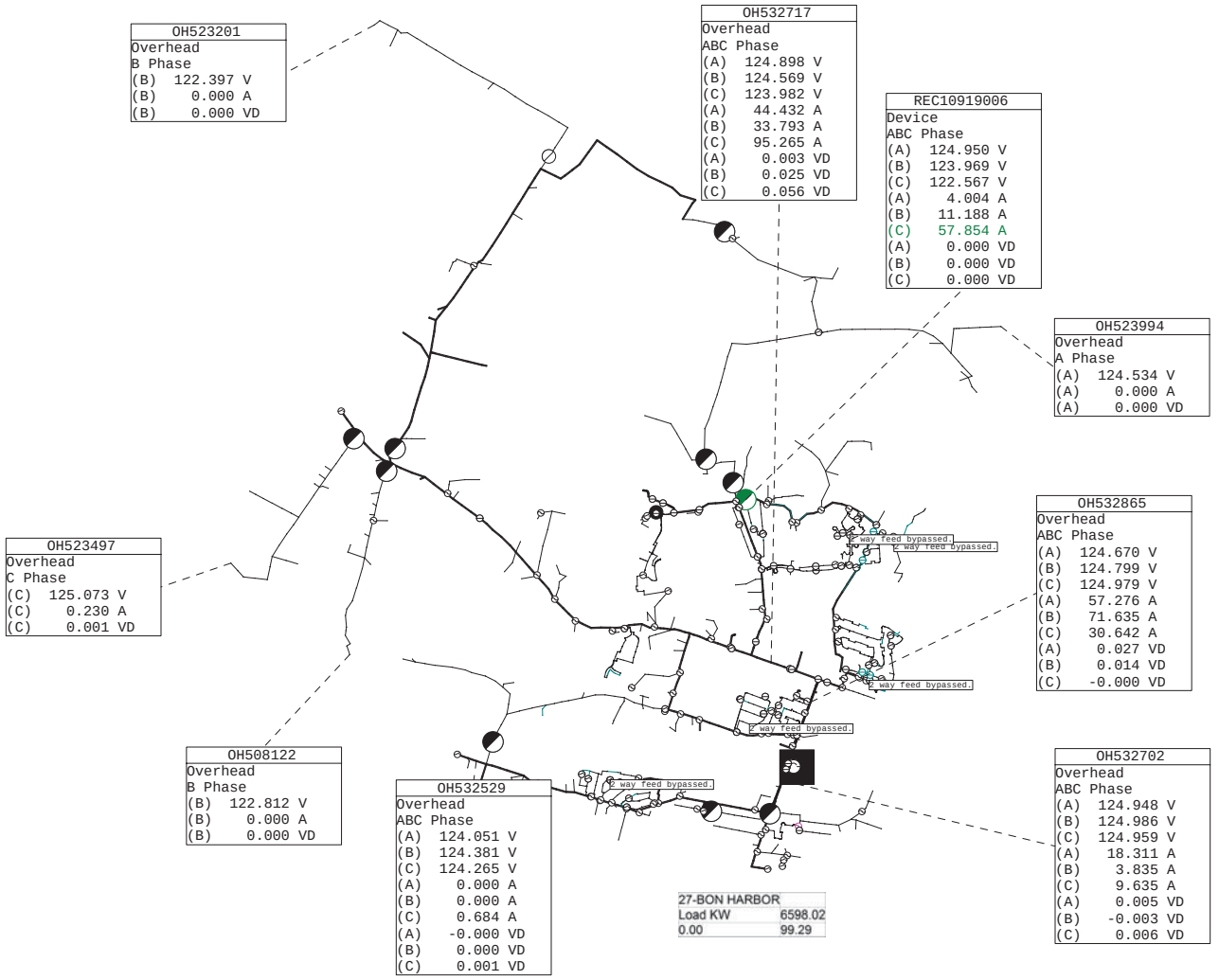


KENERGY

BEECH GROVE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

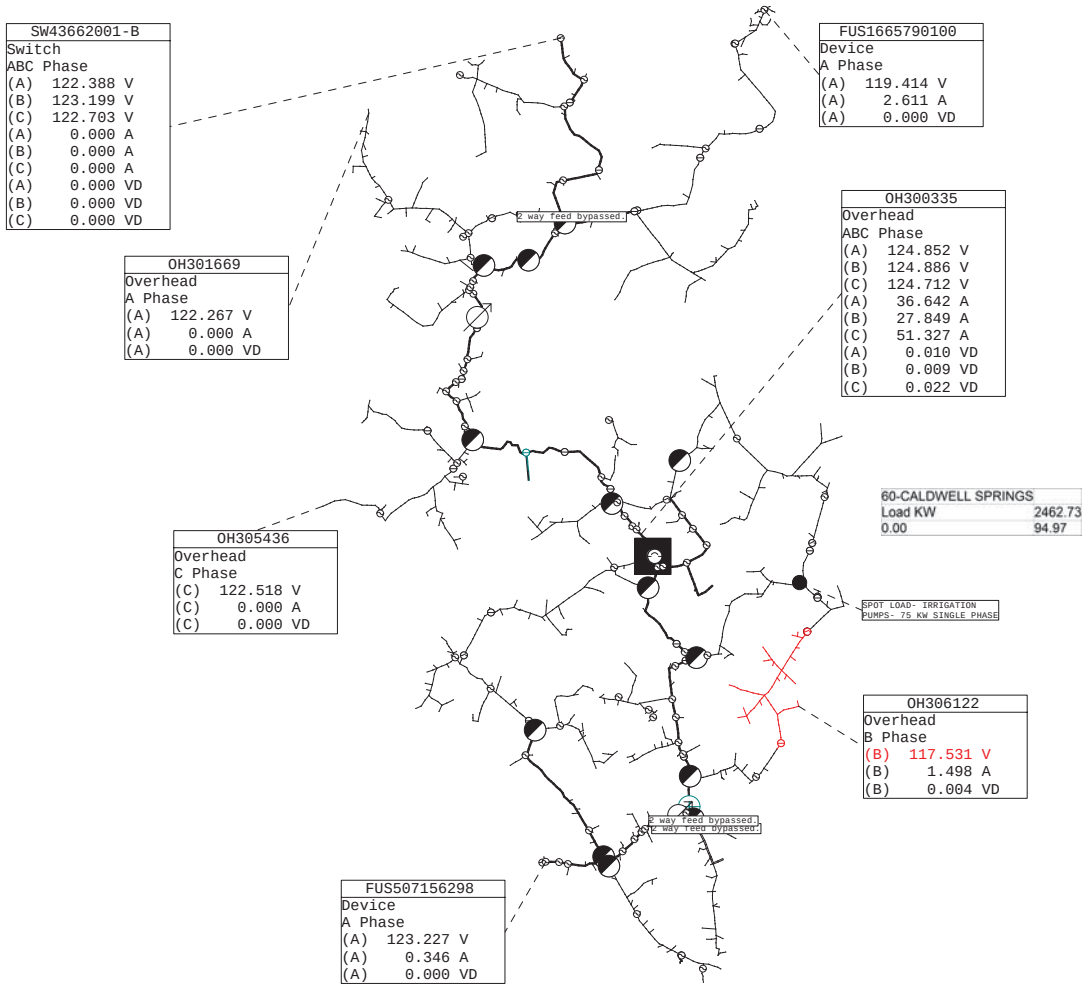


KENERGY

BON HARBOR
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP



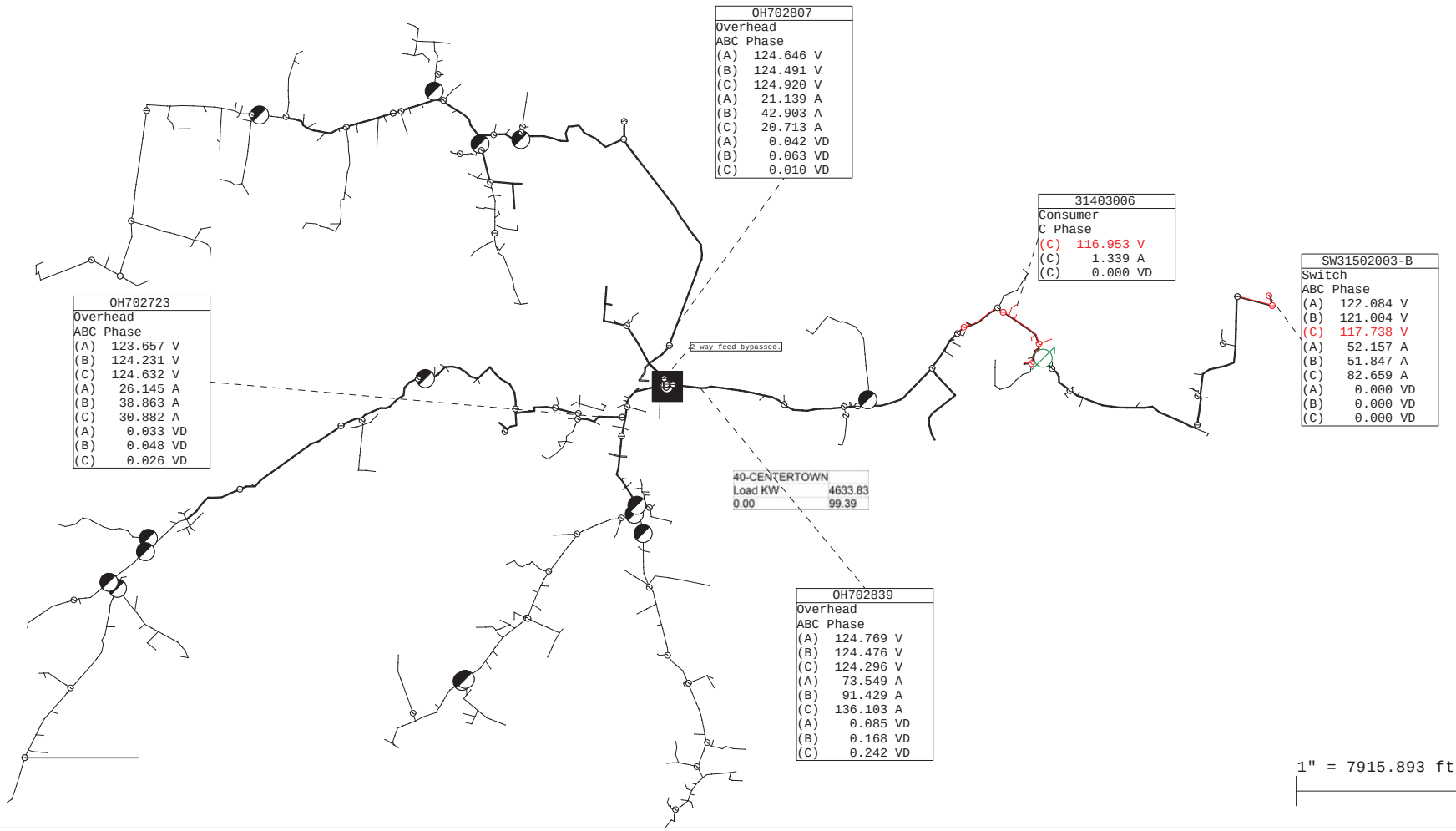
1" = 15549.063 ft

KENERGY

CALDWELL SPRINGS
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

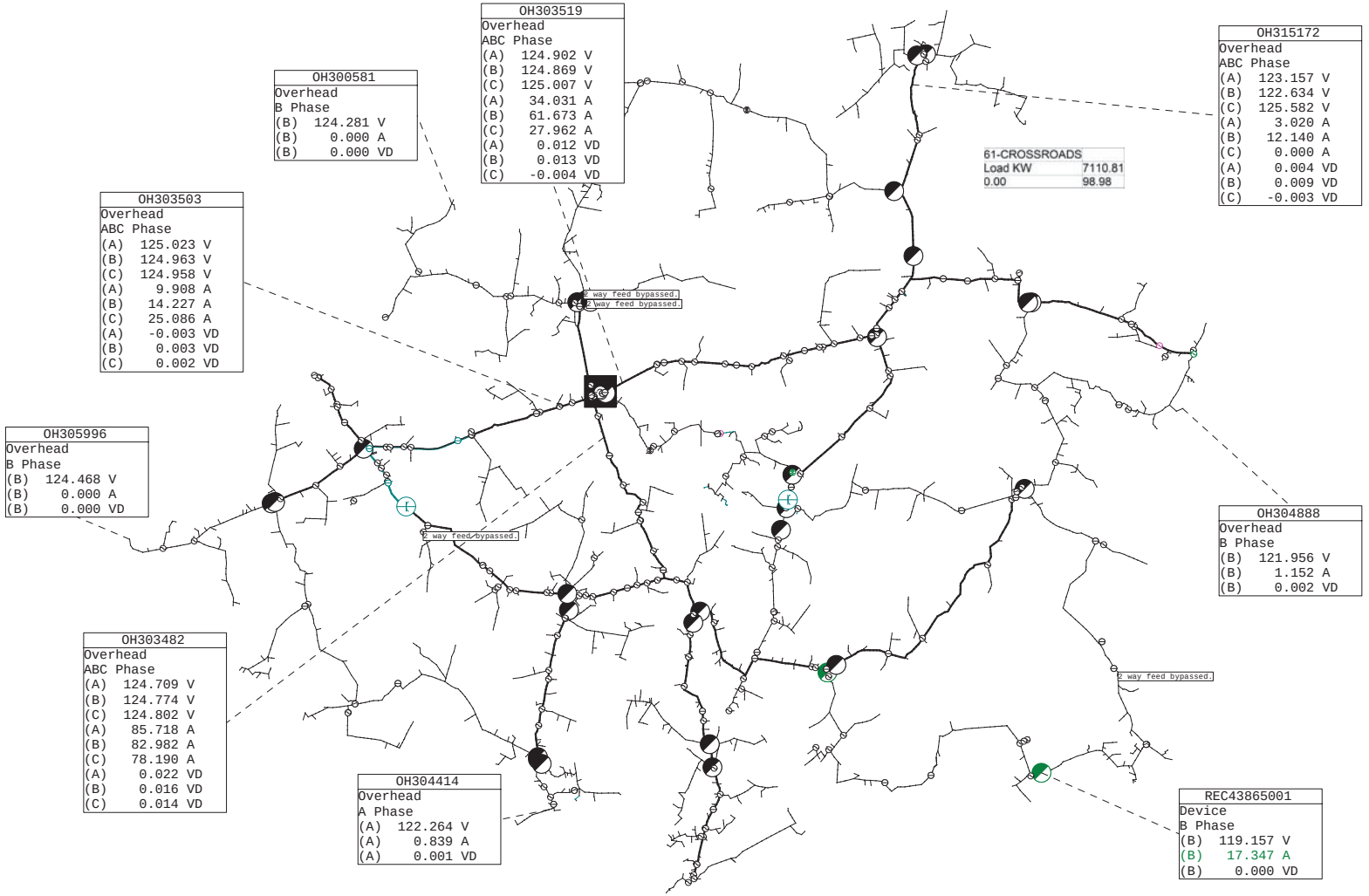


KENERGY

CENTERTOWN
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

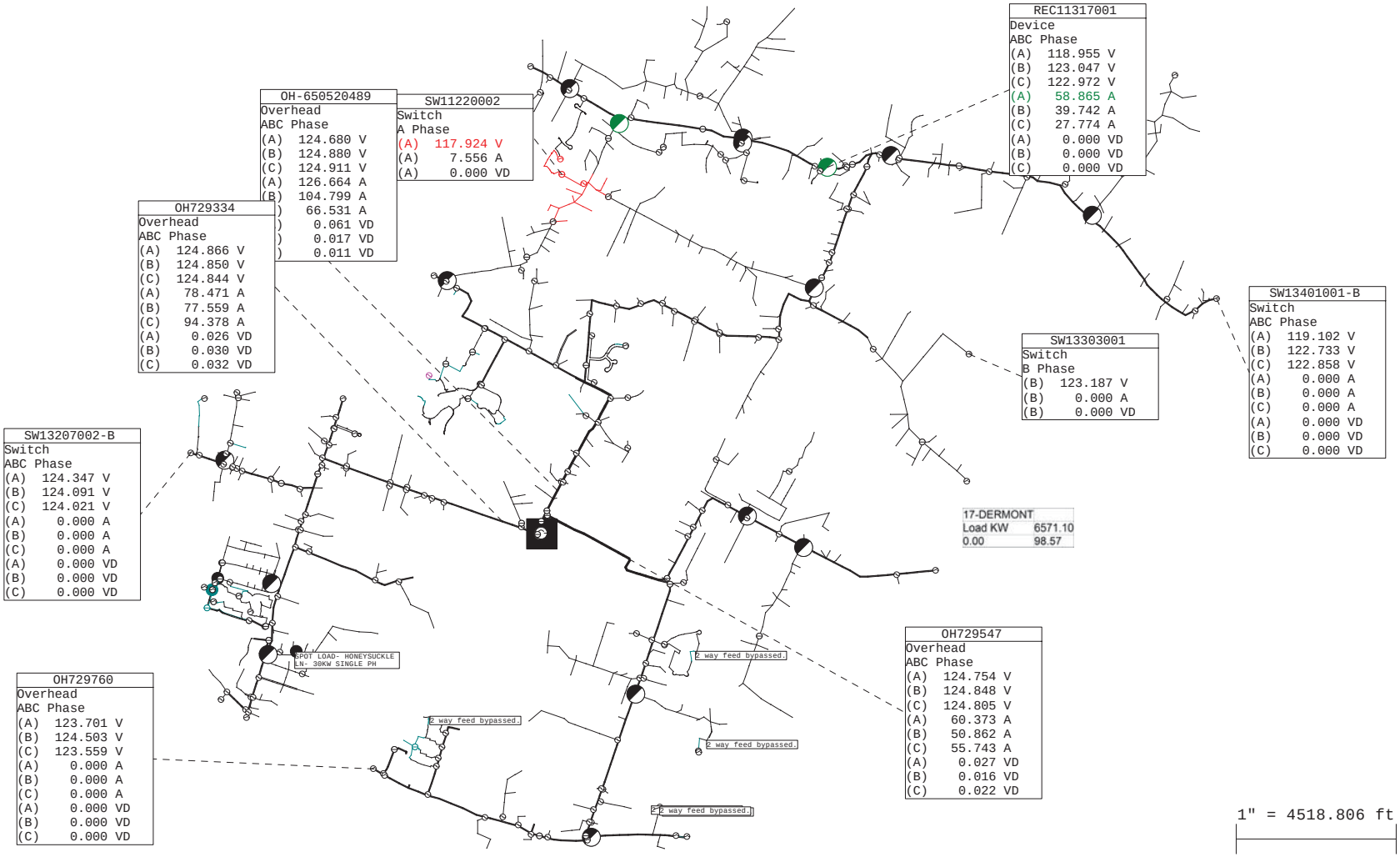


KENERGY

CROSSROADS
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

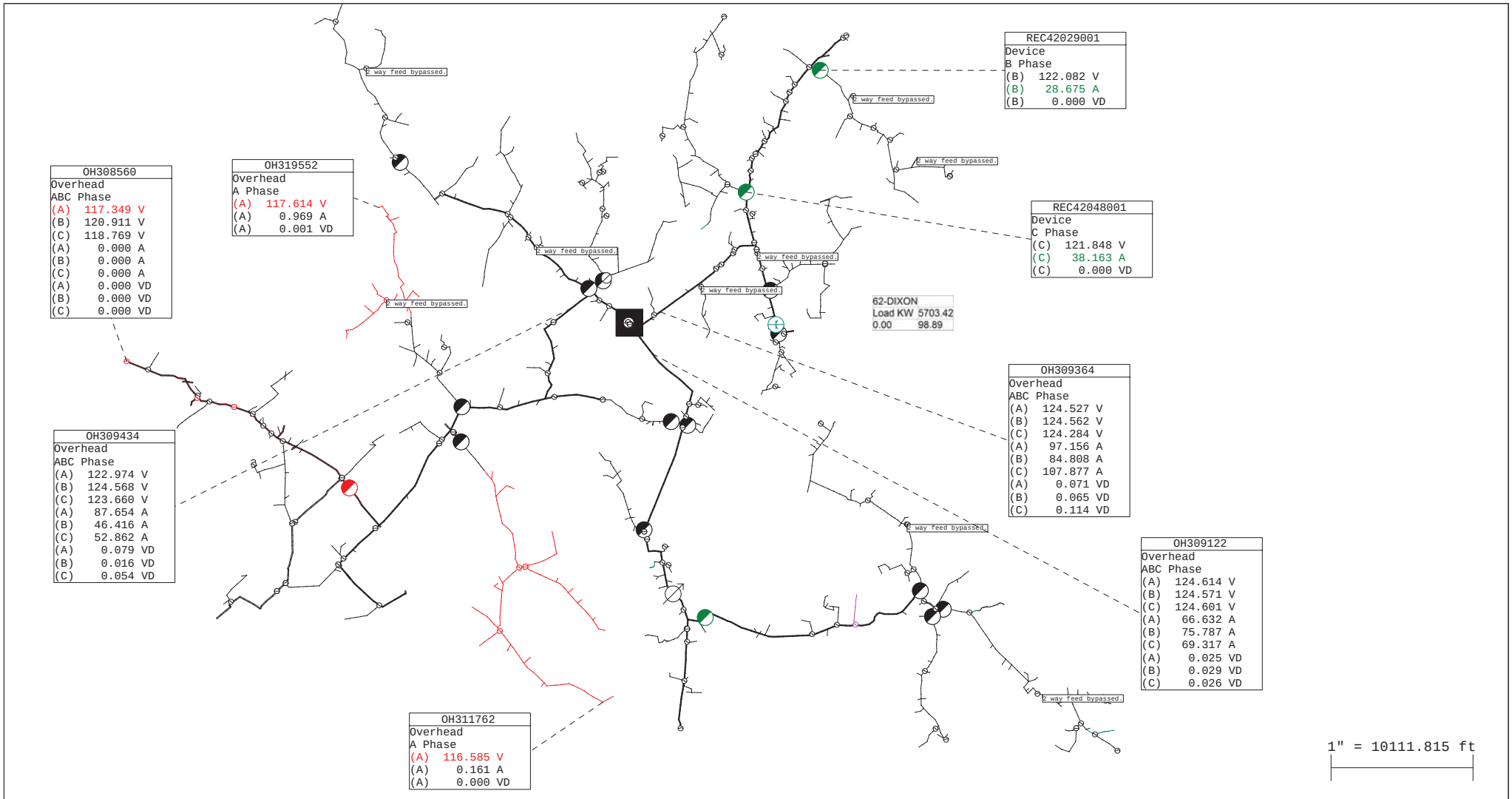


KENERGY

DERMONT
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

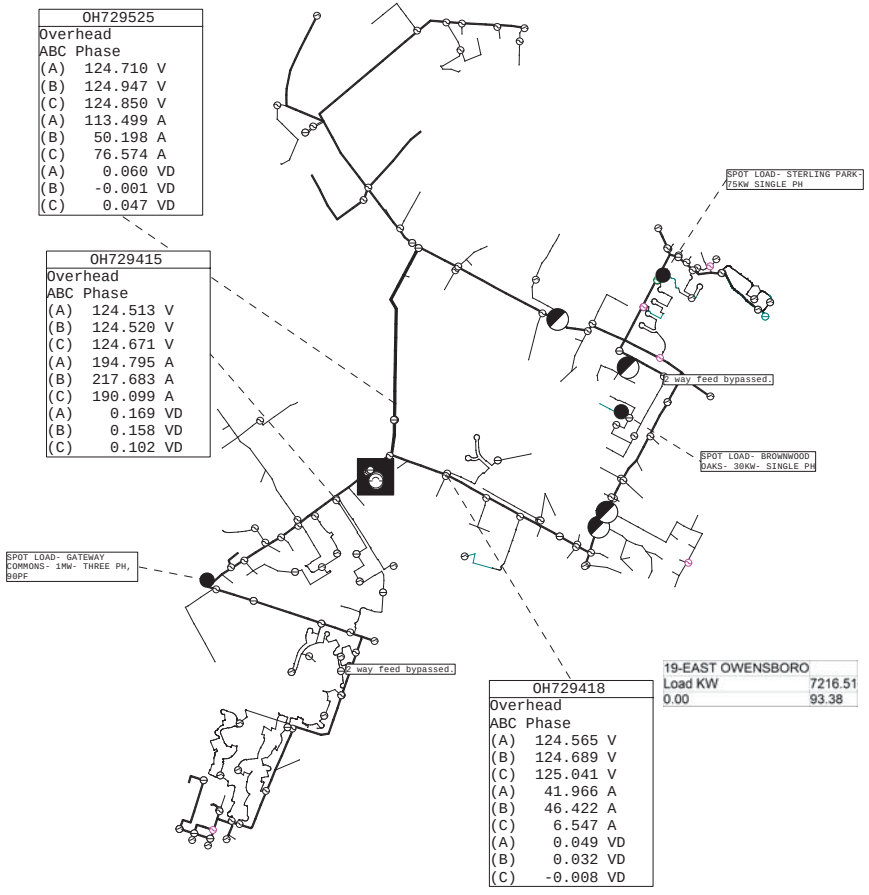


KENERGY

DIXON
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP



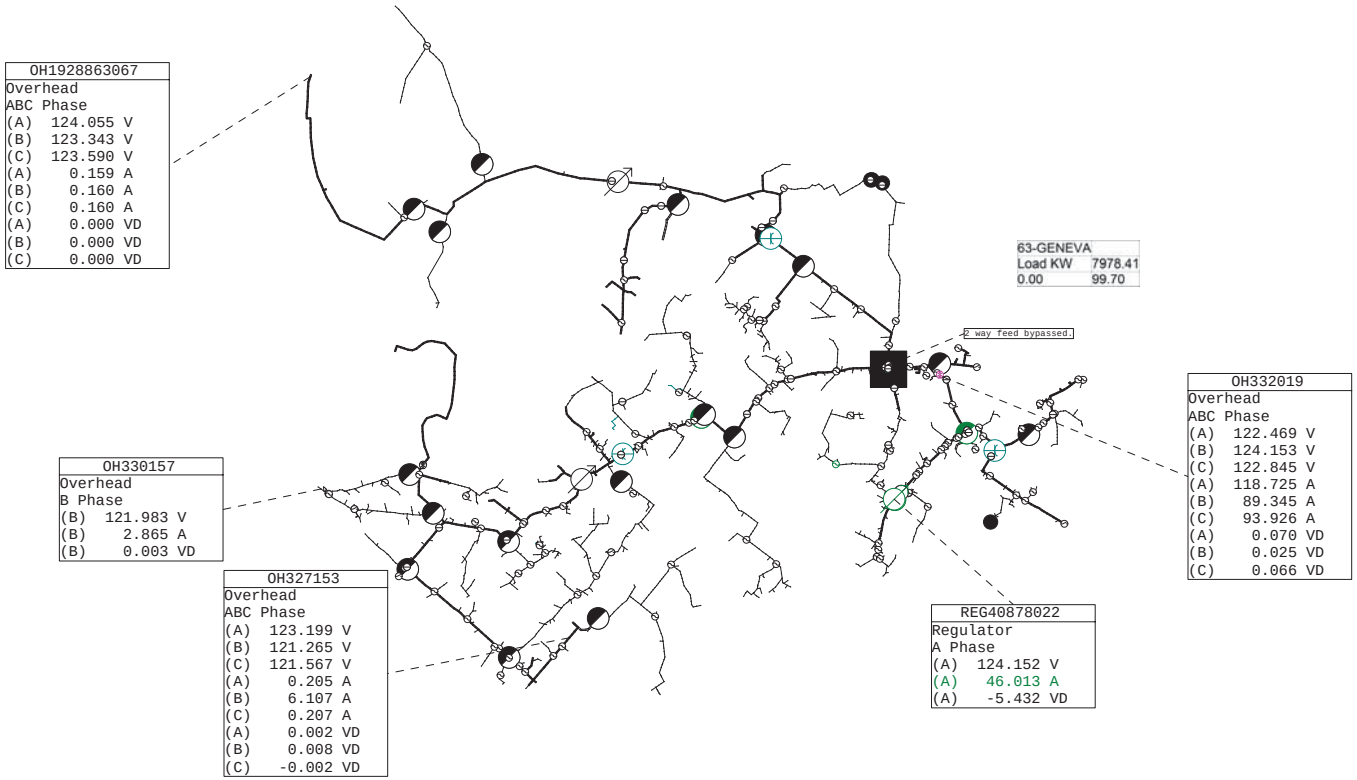
1" = 3928.644 ft

KENERGY

EAST OWENSBORO
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

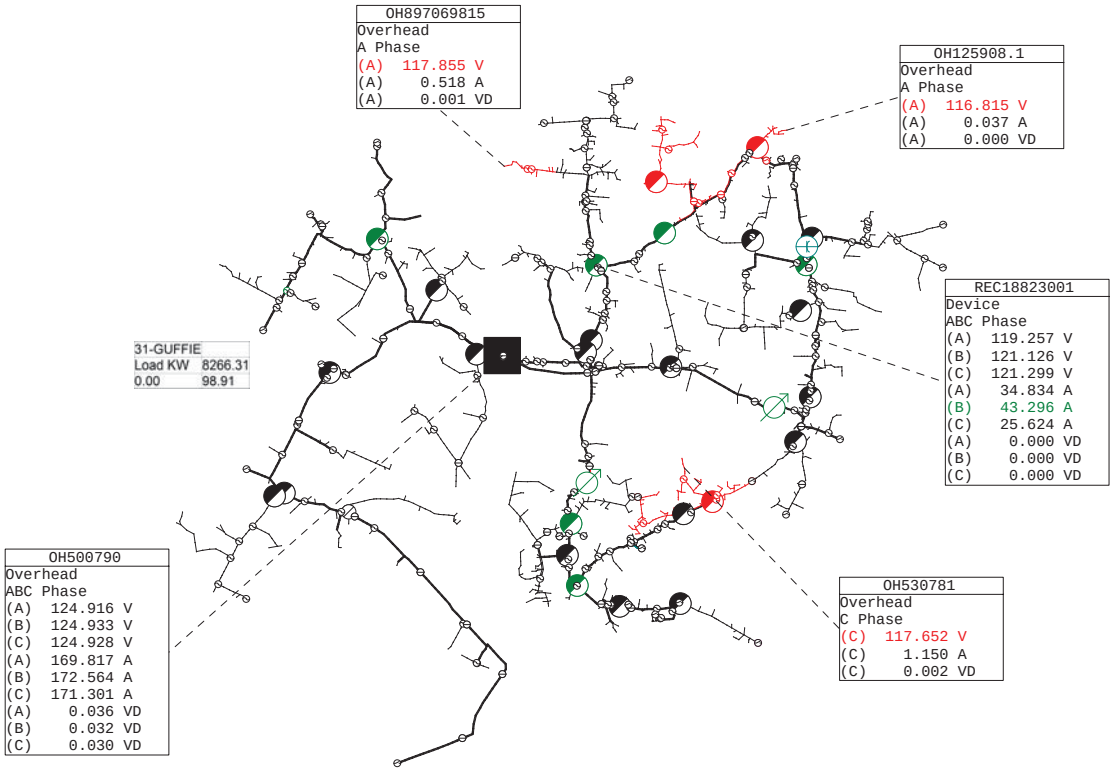


KENERGY

GENEVA
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

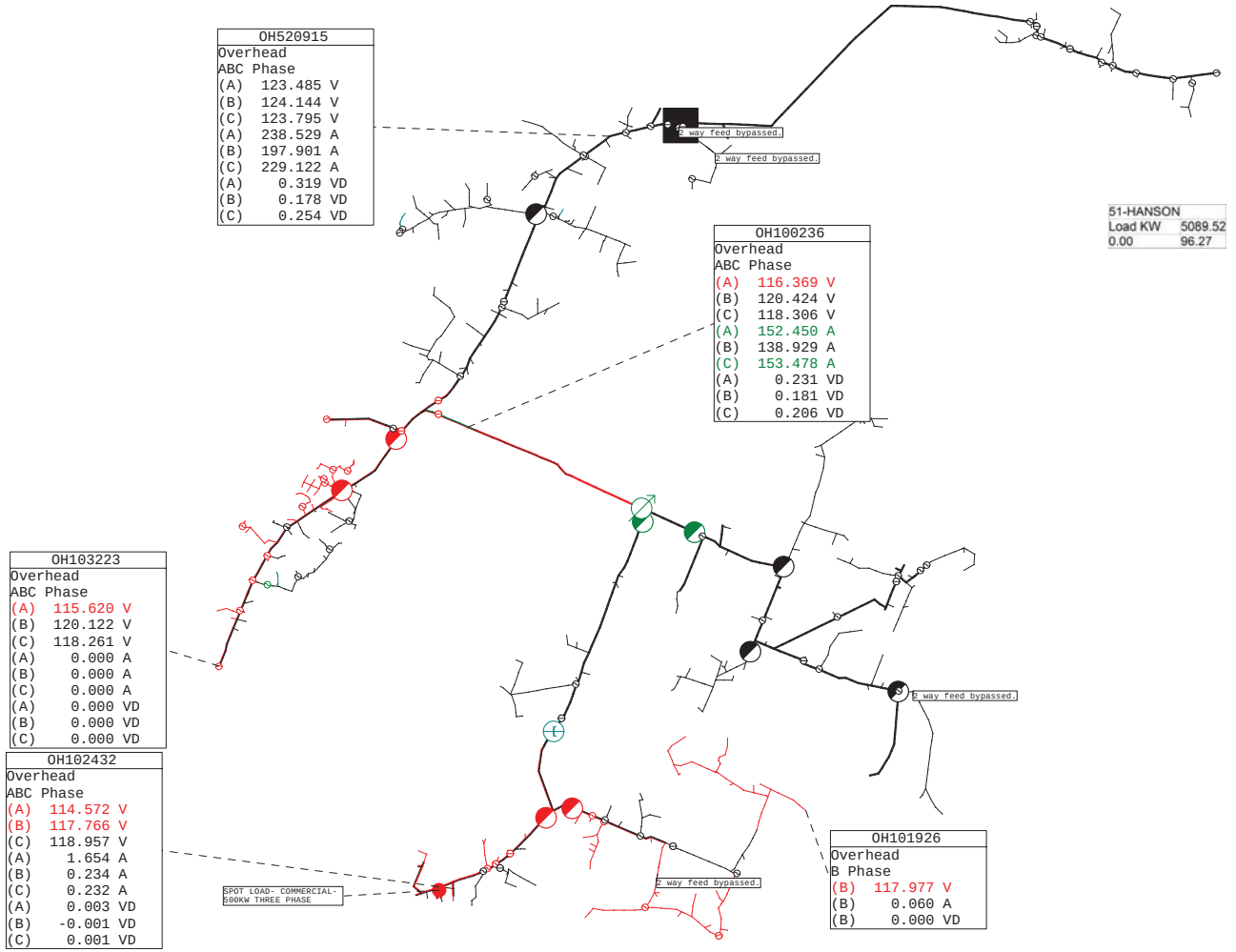


KENERGY

GUFFIE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

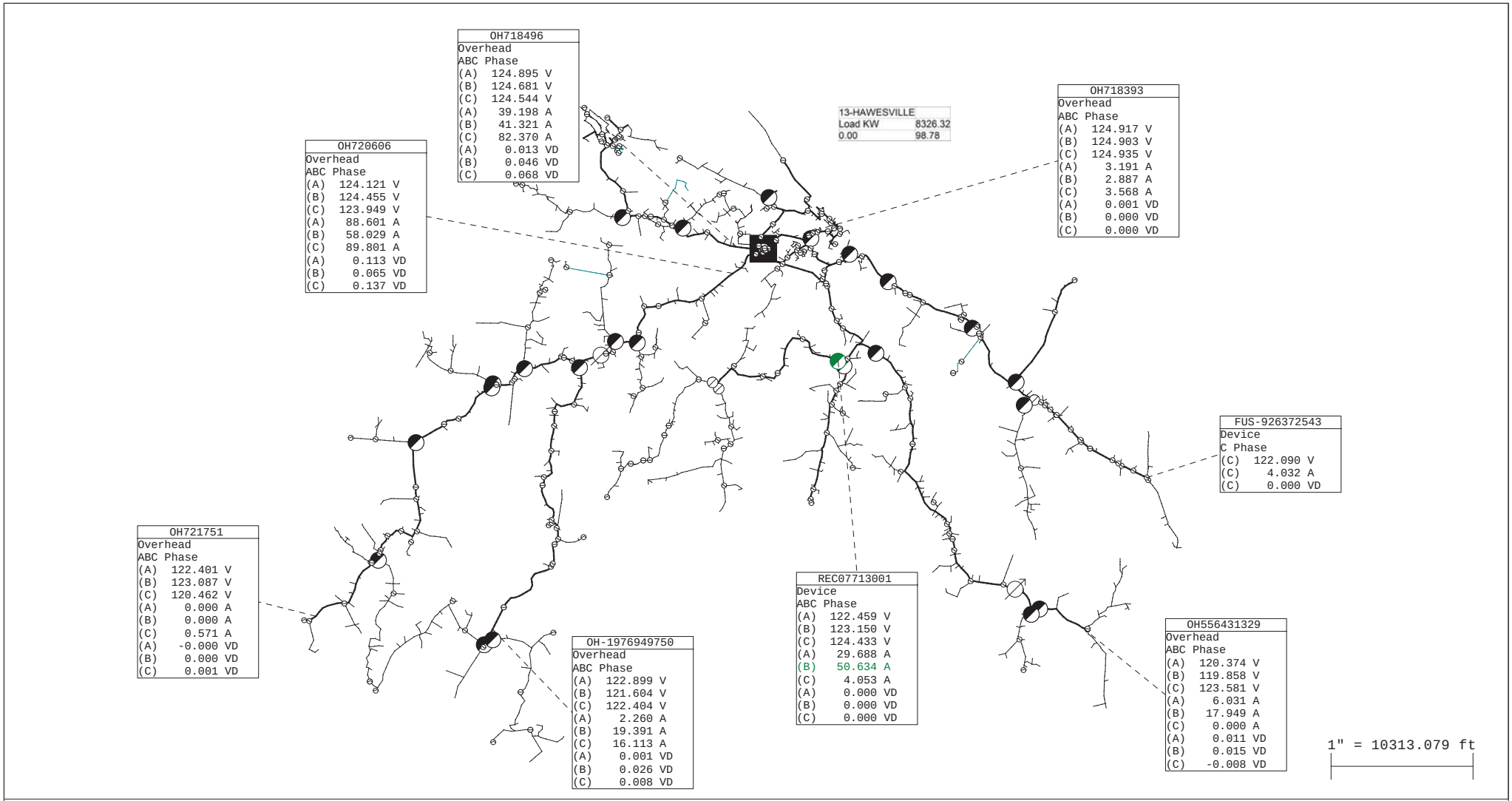


KENERGY

HANSON
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

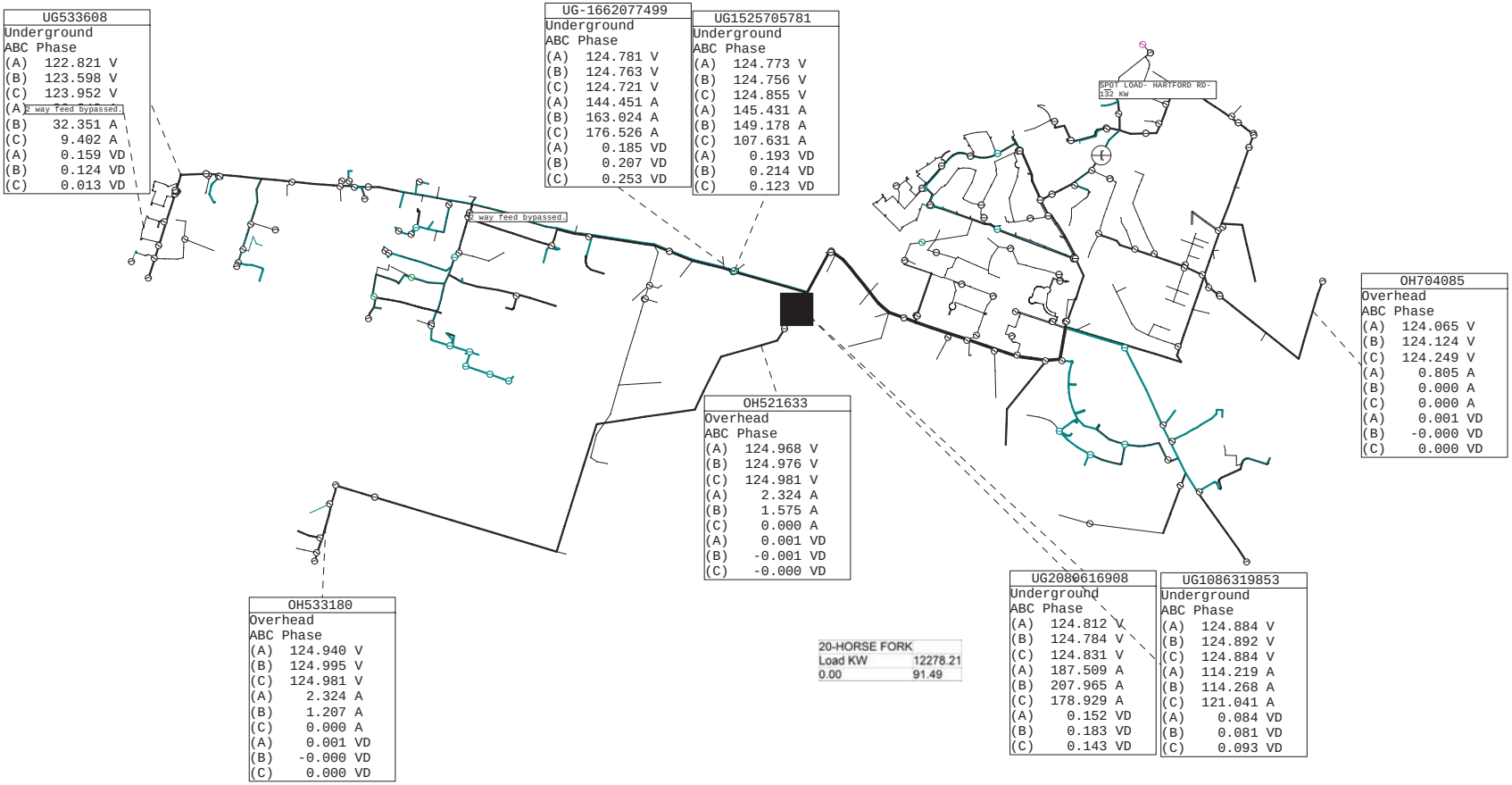


KENERGY

HAWESVILLE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

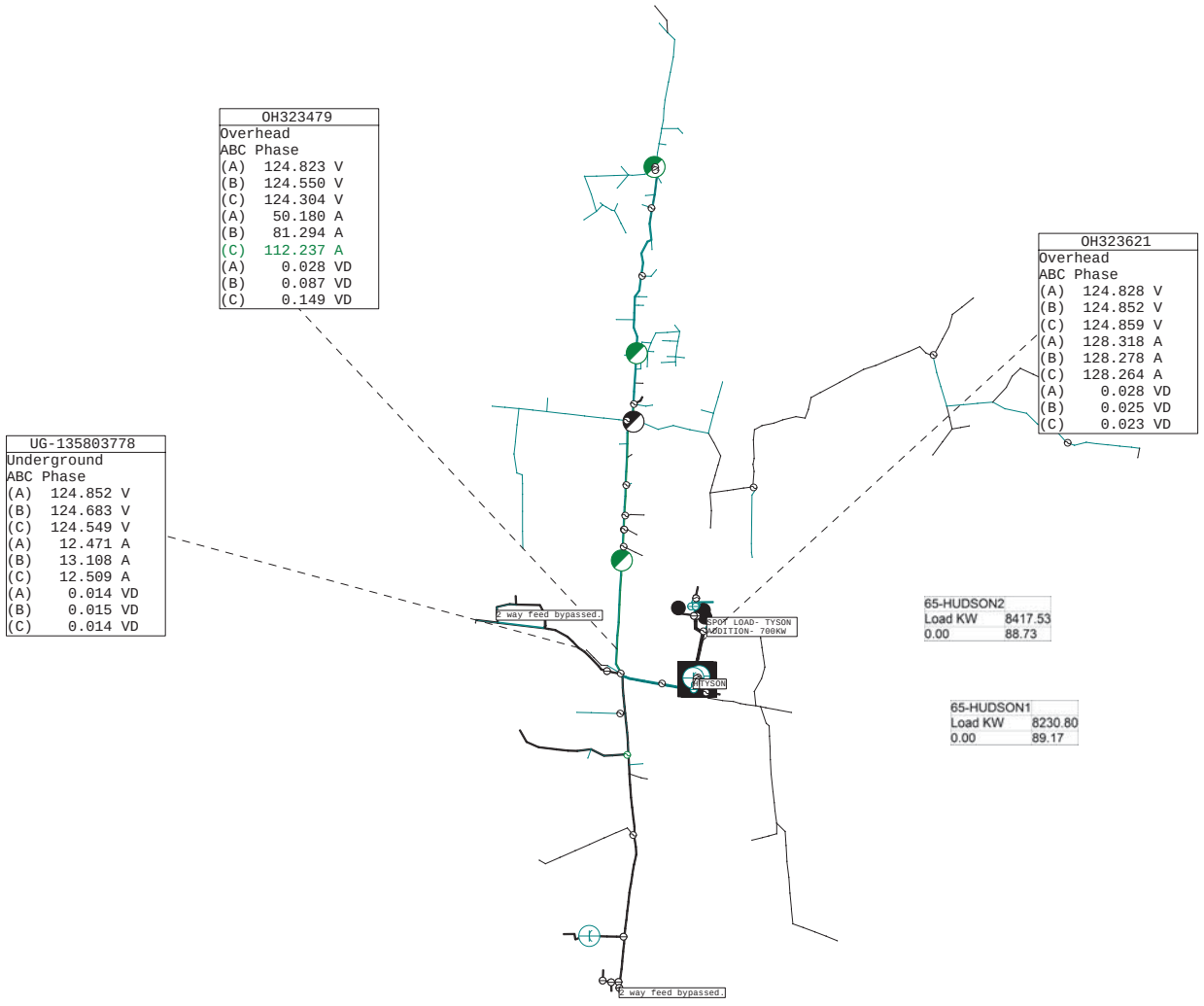


KENERGY

HORSE FORK
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

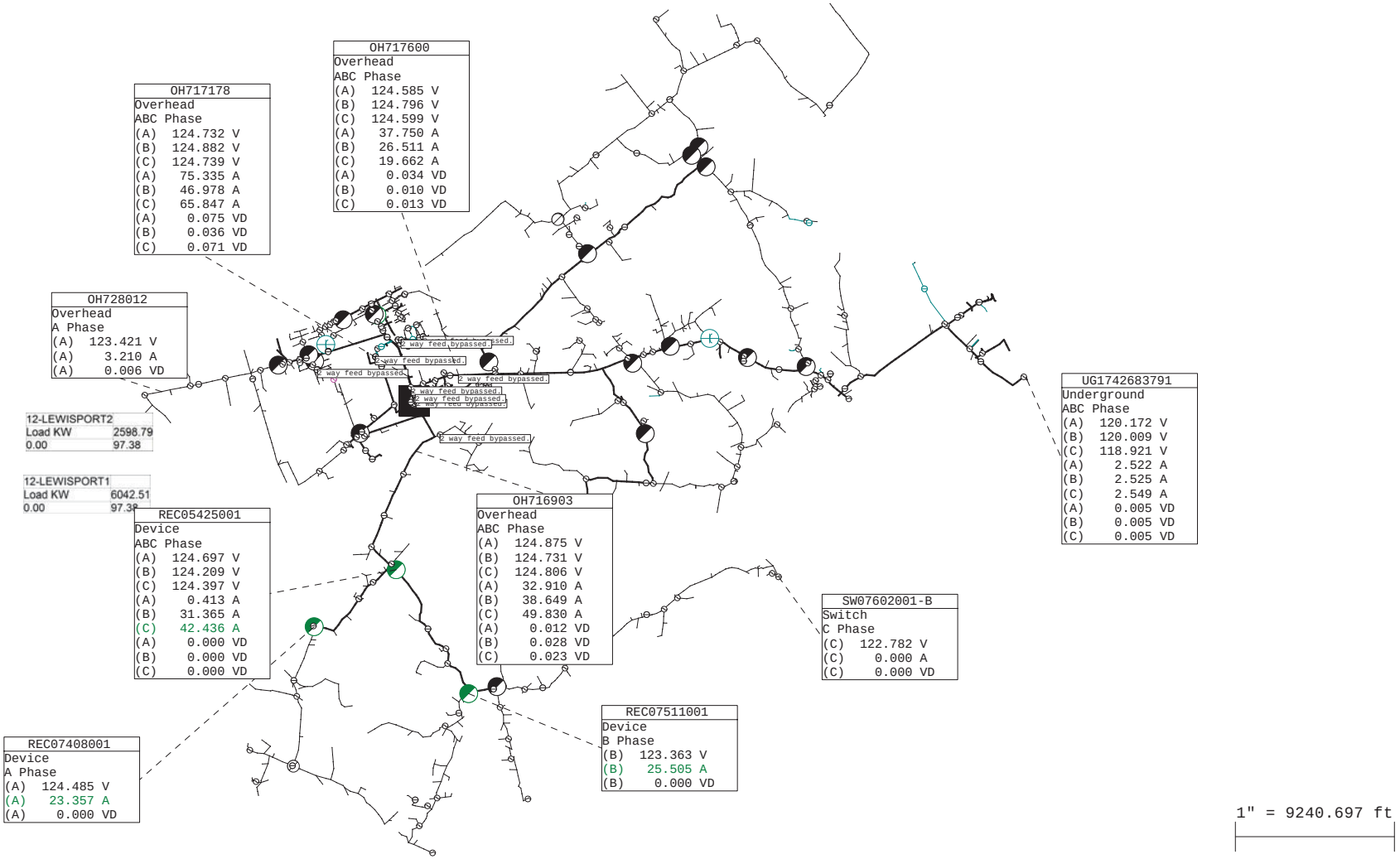


KENERGY

HUDSON 1 _2
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

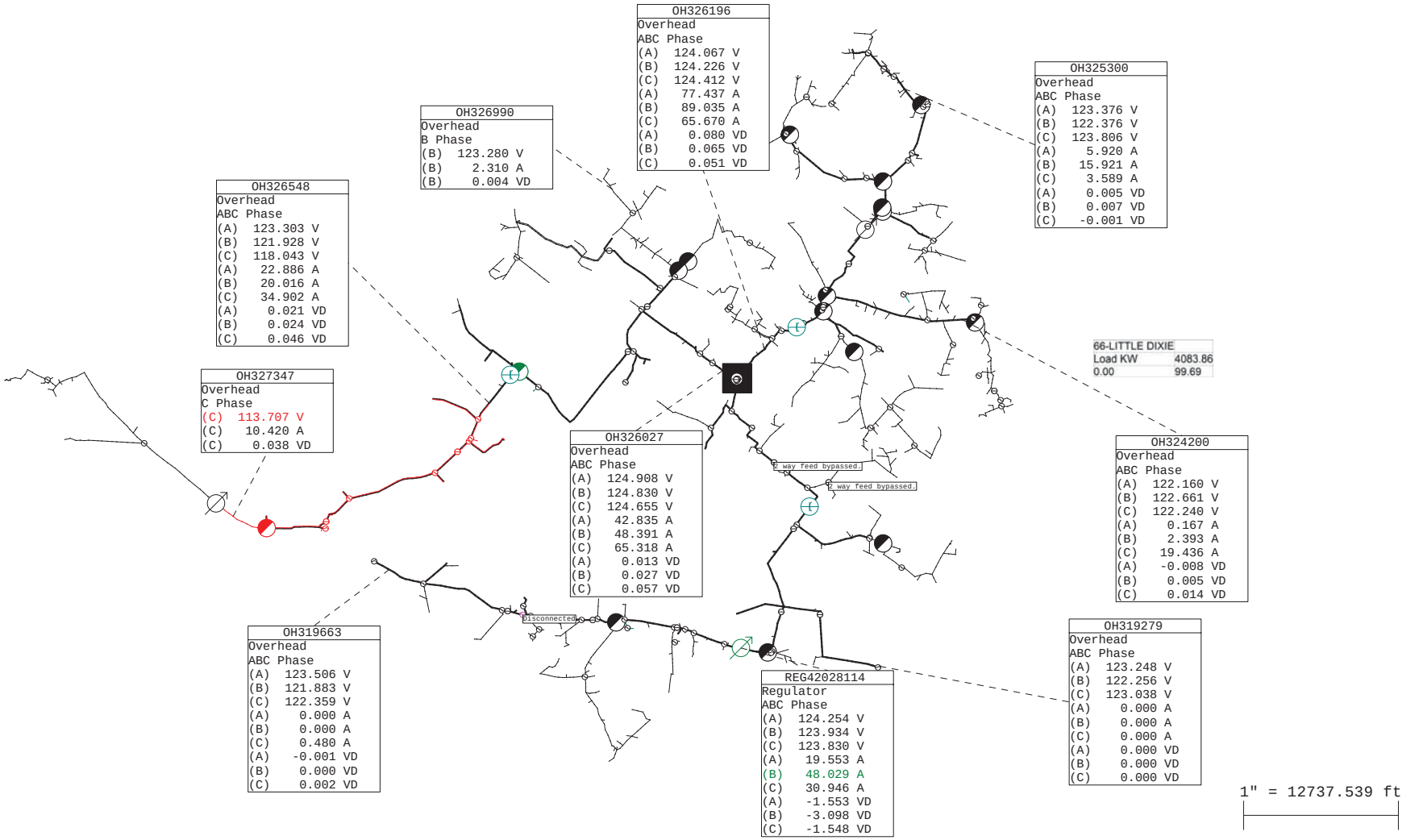


KENERGY

LEWISPORT 1 _2
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

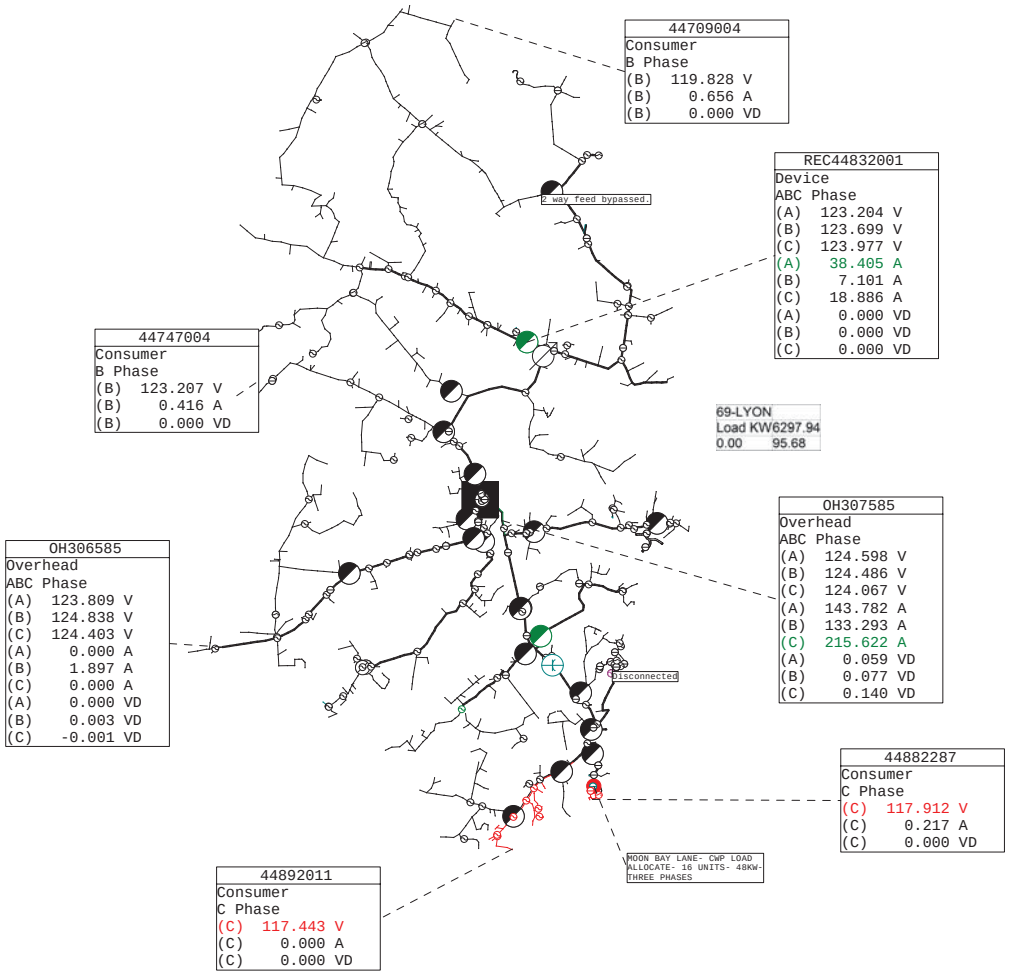


KENERGY

LITTLE DIXIE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP



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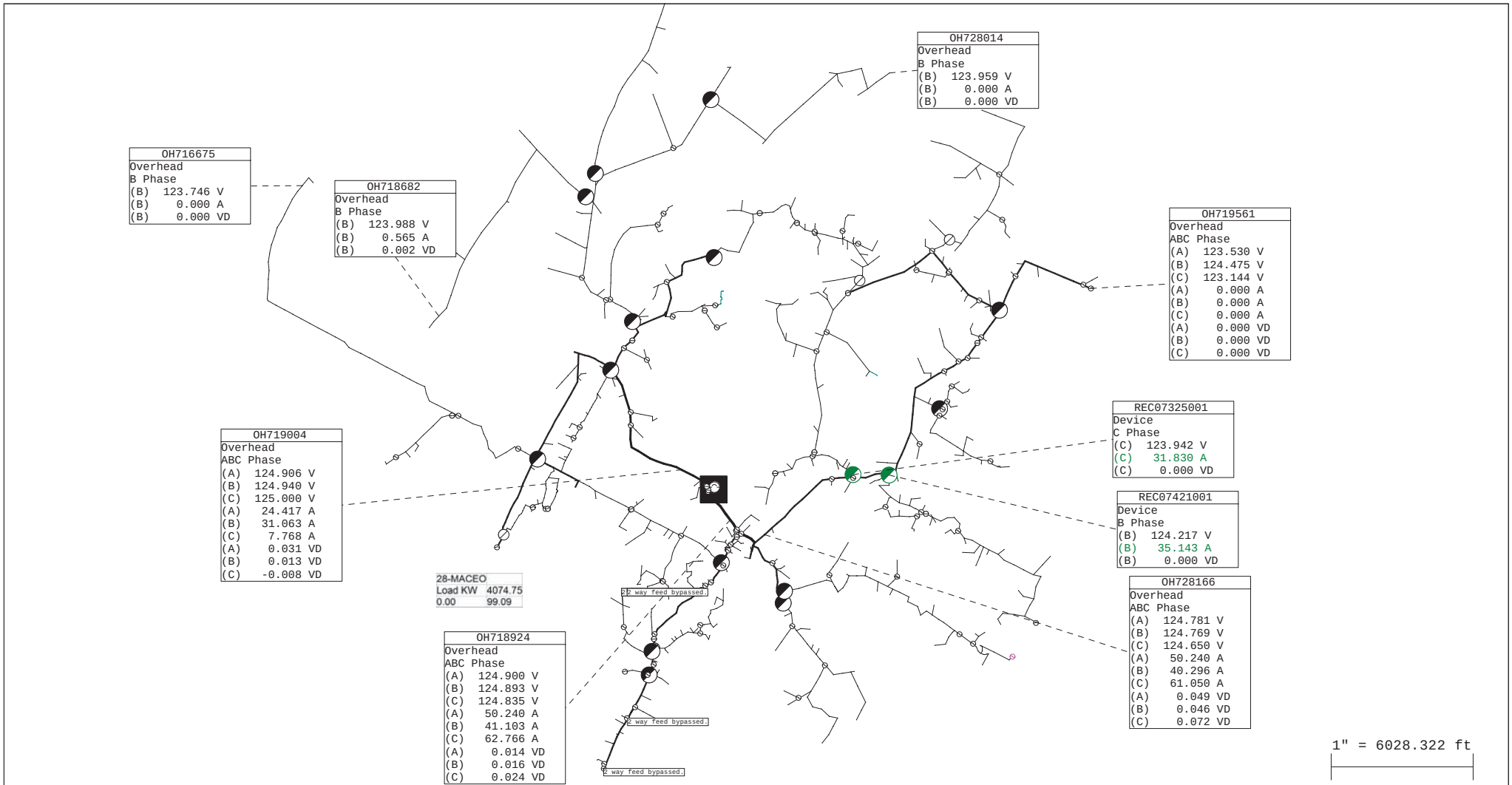
KENERGY

LYON
2016-2020 NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

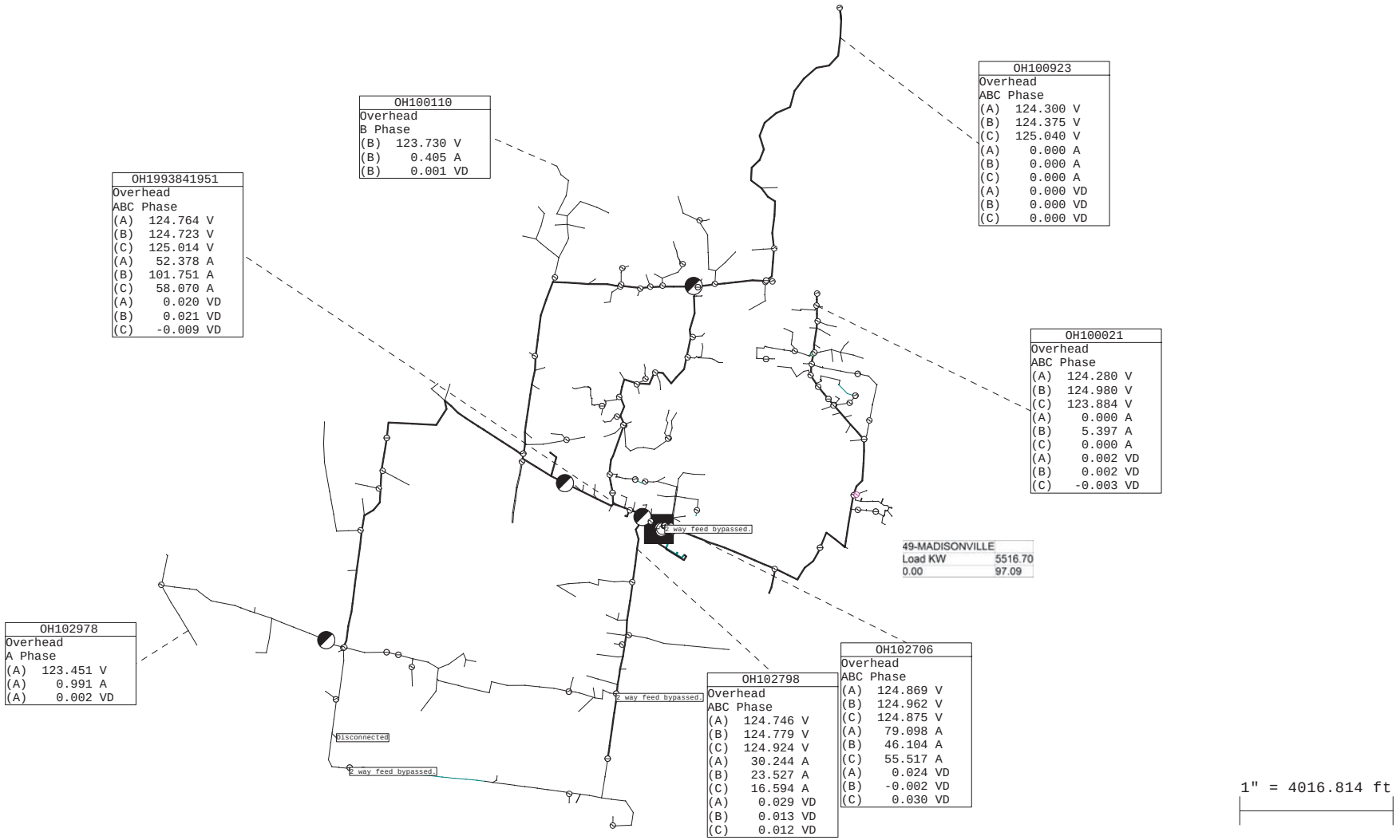


KENERGY

MACEO
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

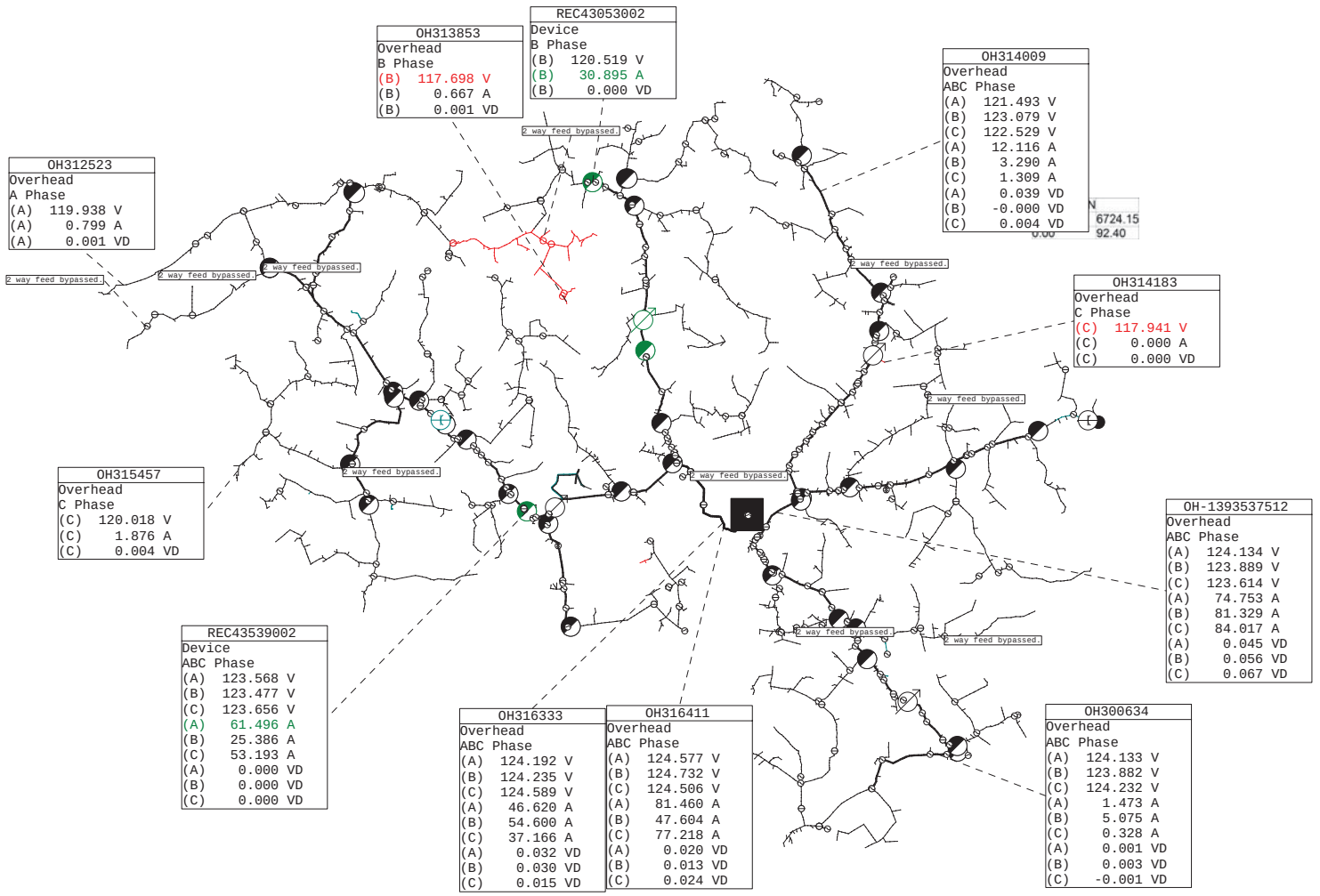


KENERGY

MADISONVILLE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

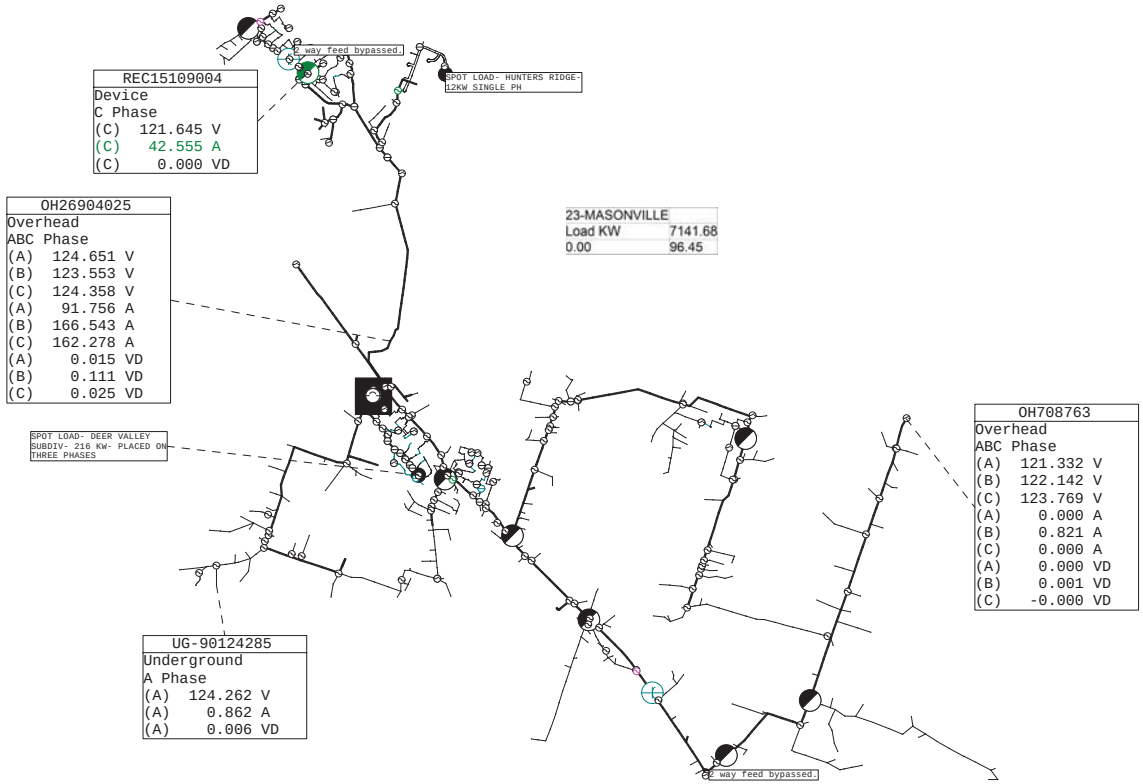


KENERGY

MARION
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP



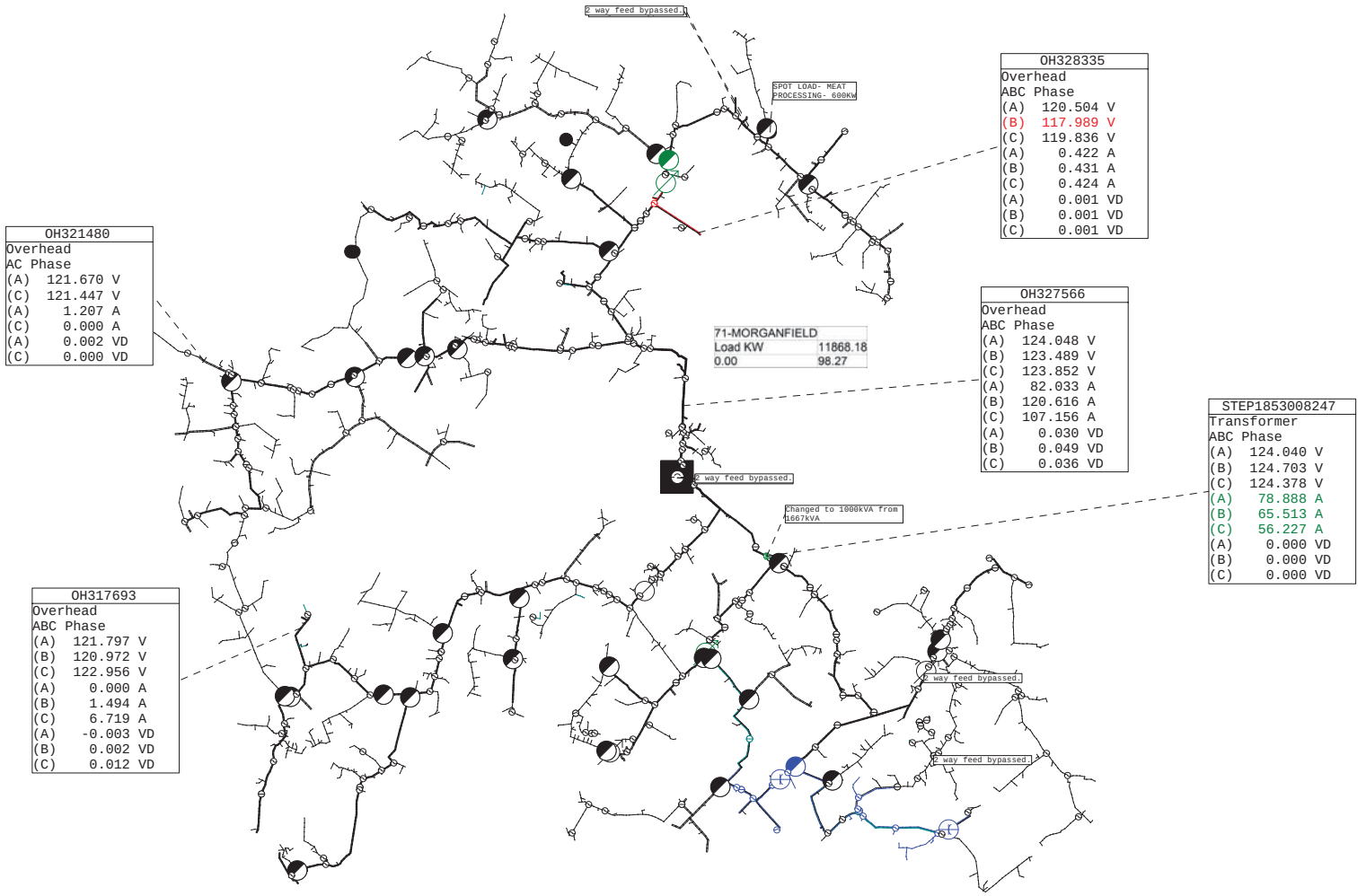
1" = 7240.799 ft

KENERGY

MASONVILLE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

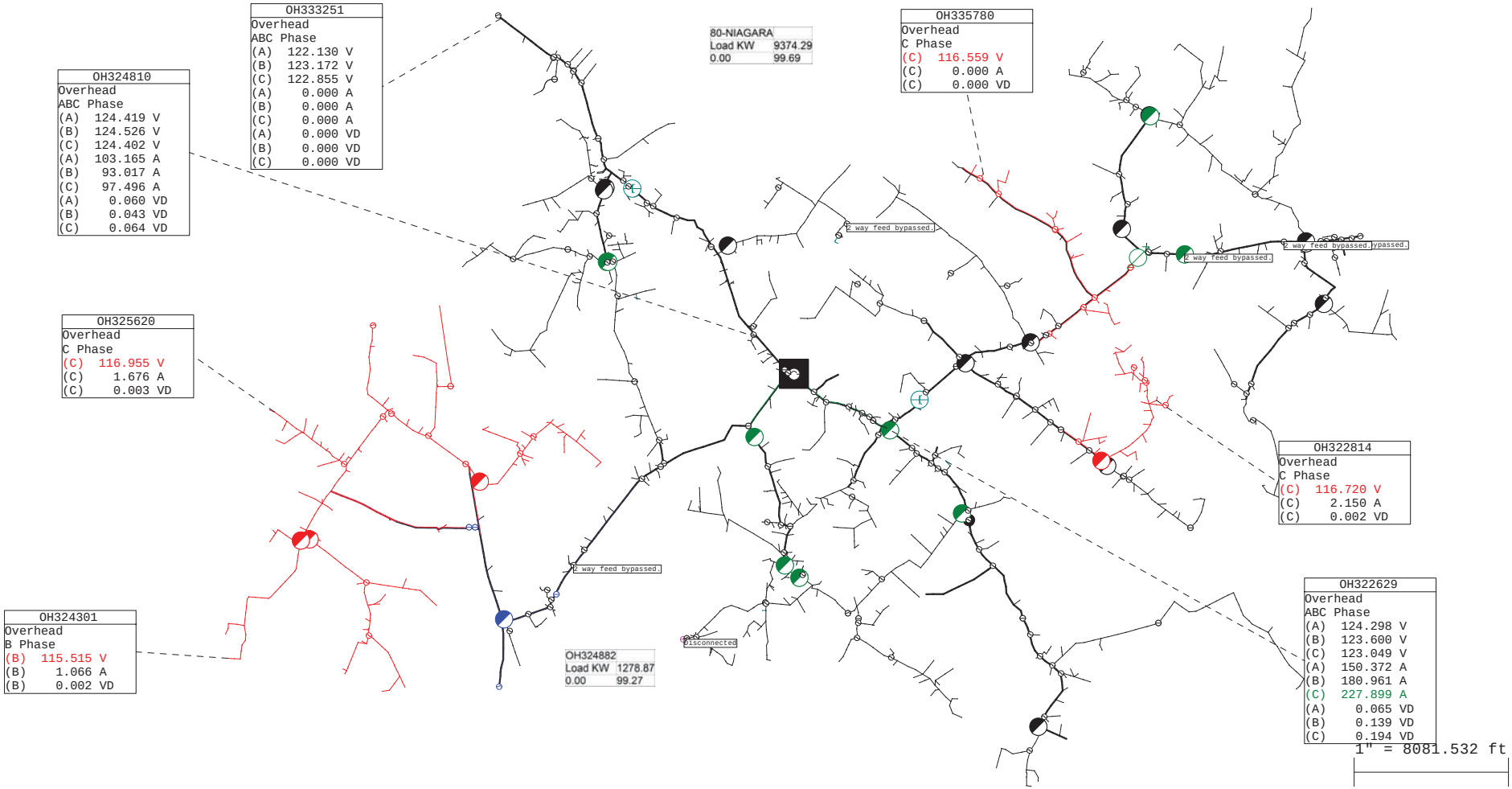


KENERGY

MORGANFIELD
2016-2020 NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

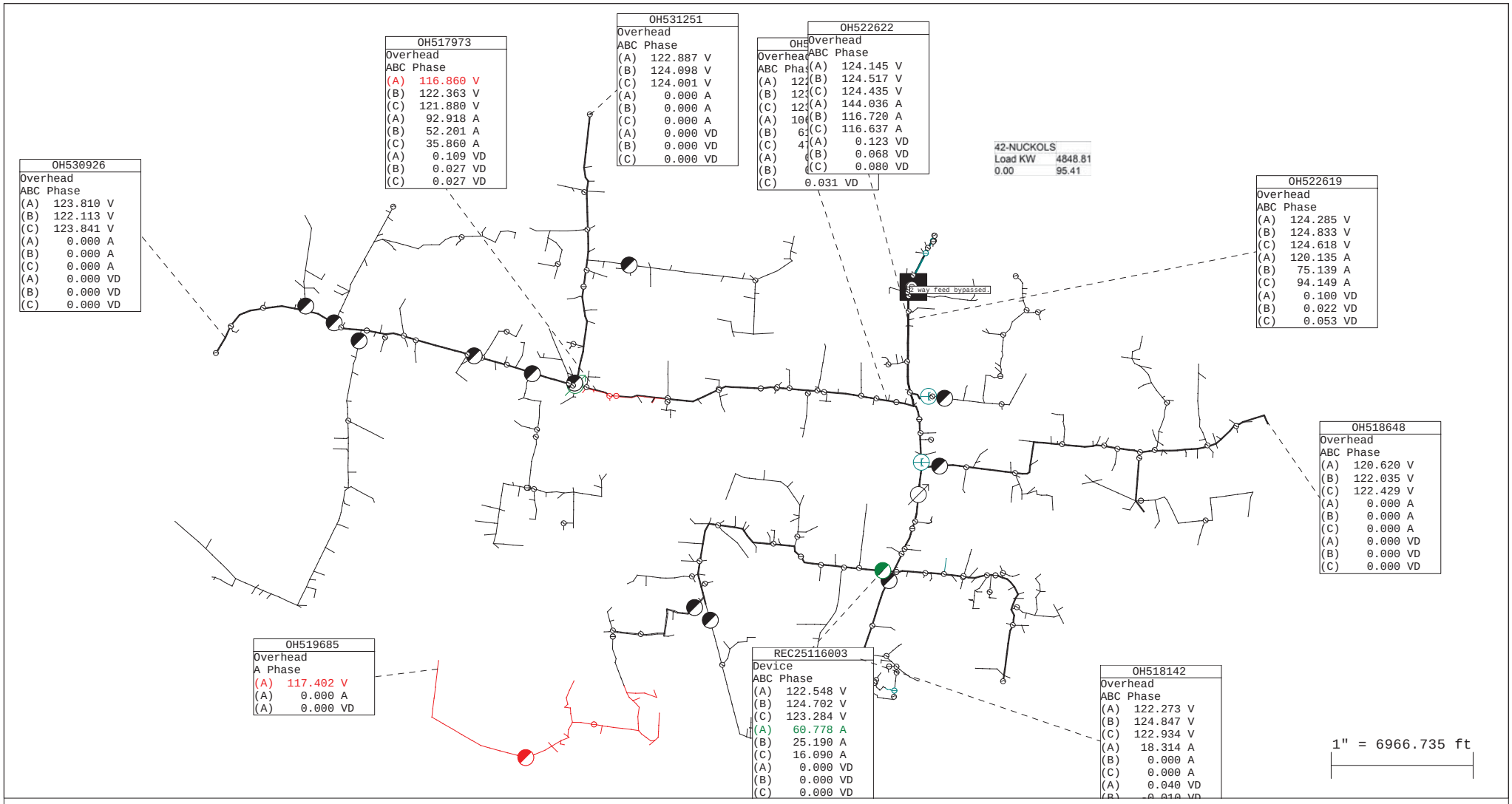


KENERGY

NIAGARA
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

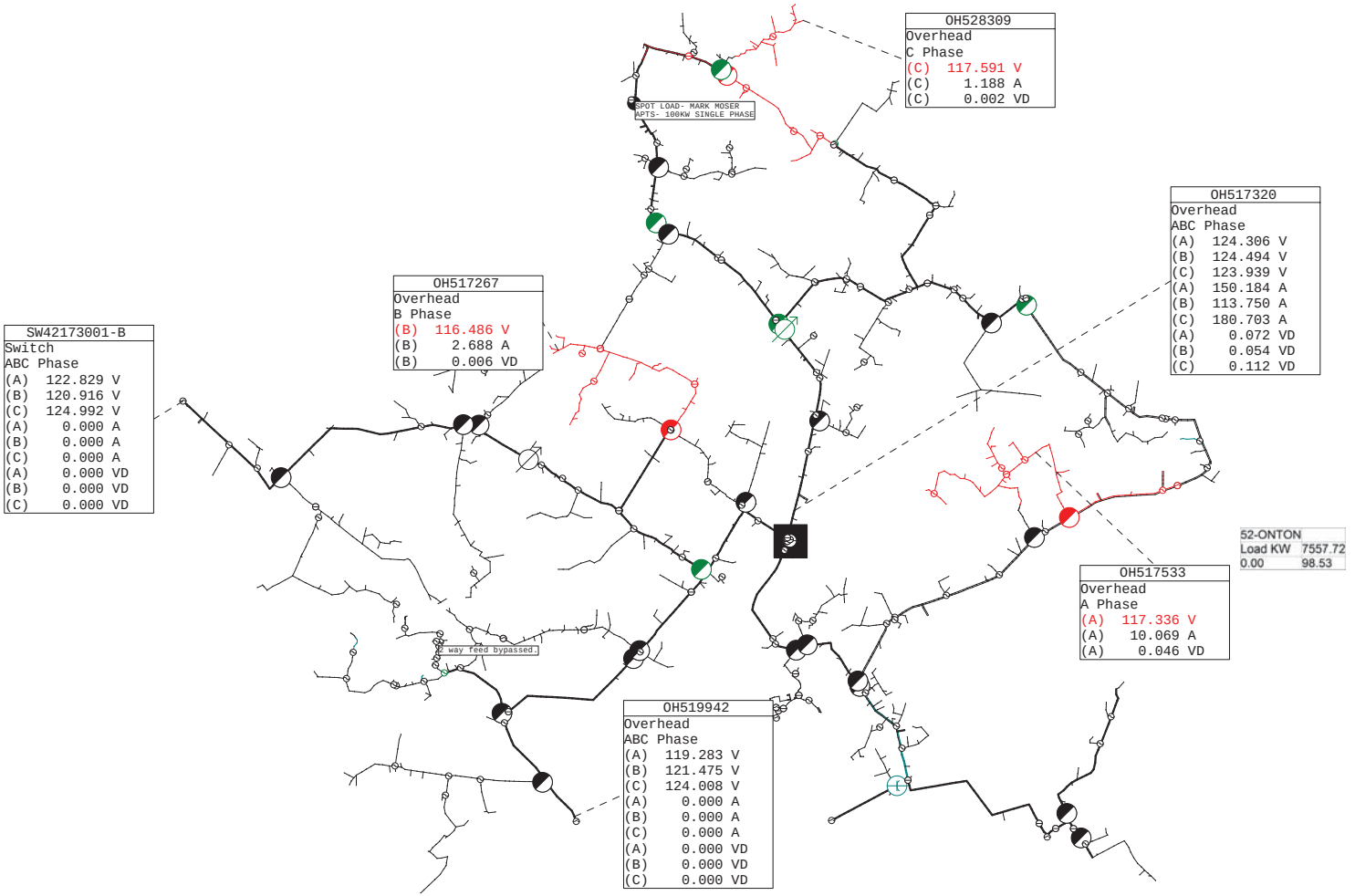


KENERGY

NUCKOLS
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

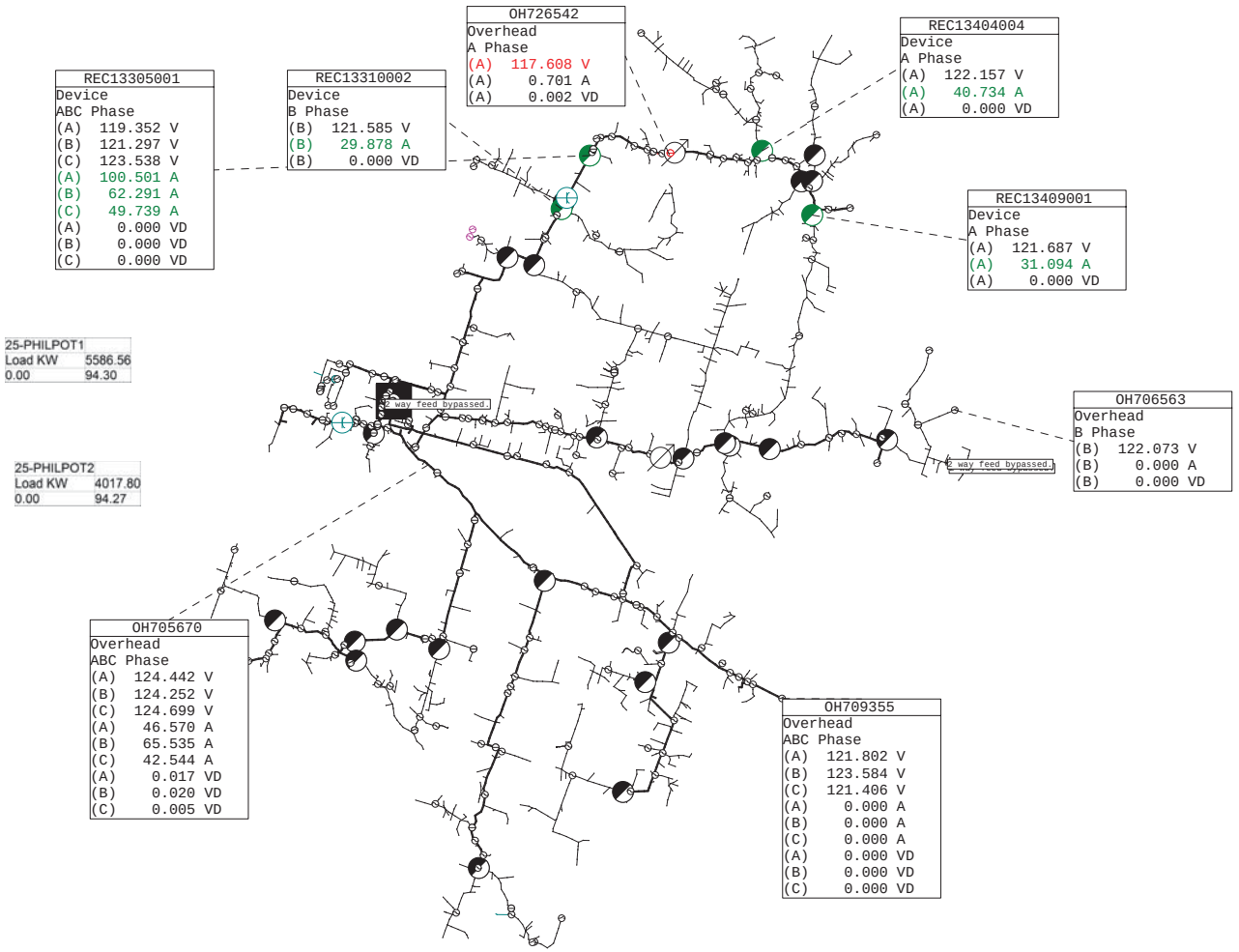


KENERGY

ONTON
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

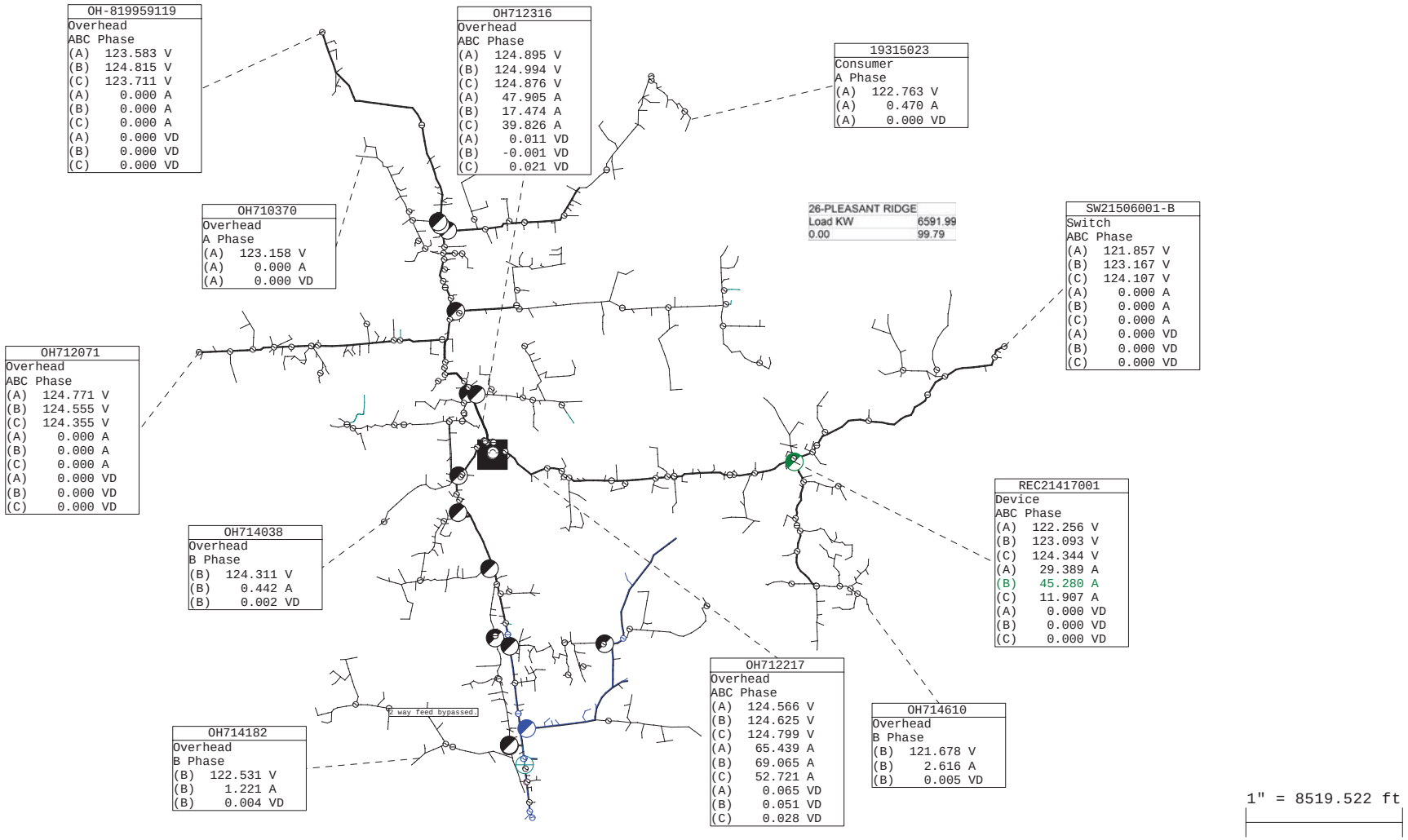


KENERGY

PHILPOT
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

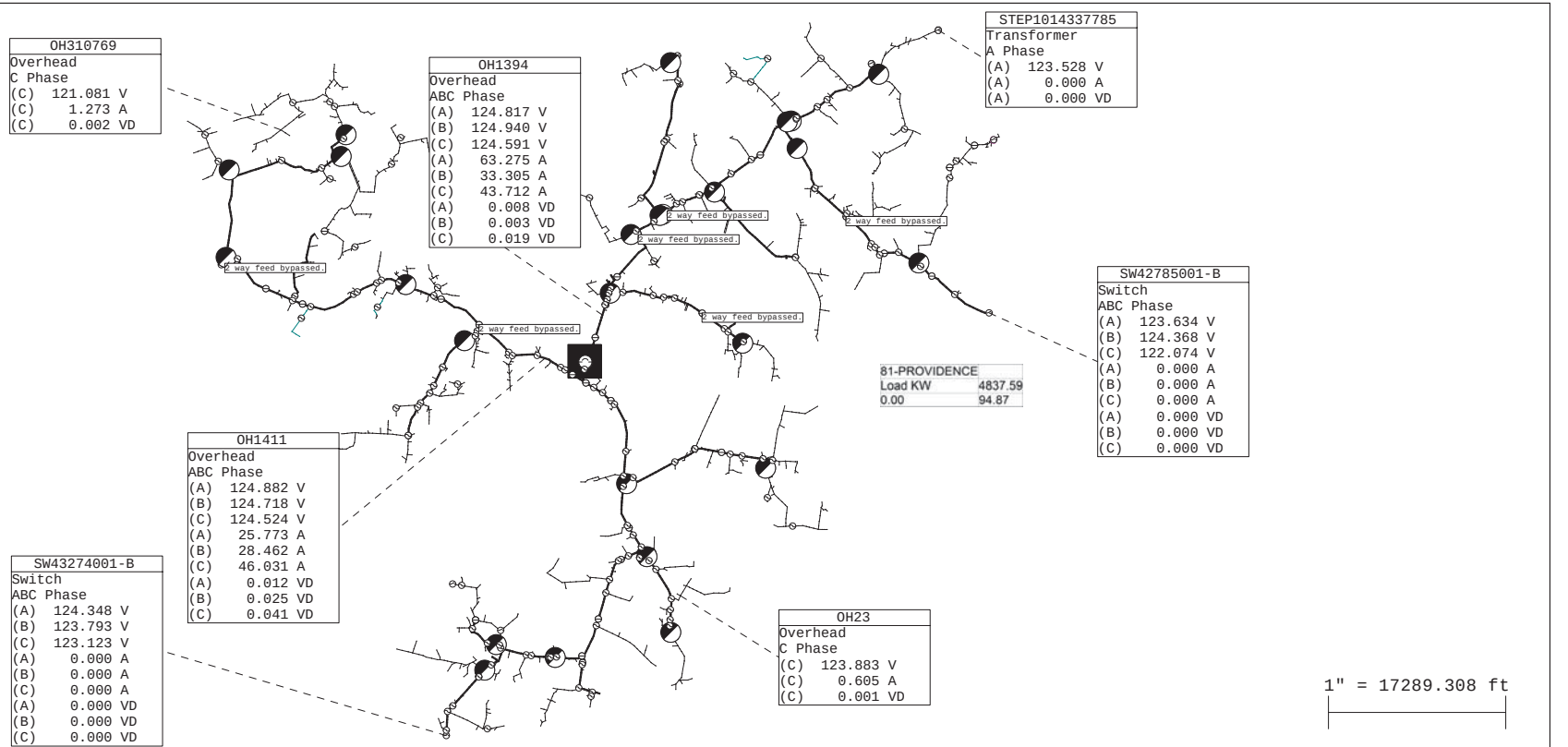


KENERGY

PLEASANT RIDGE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

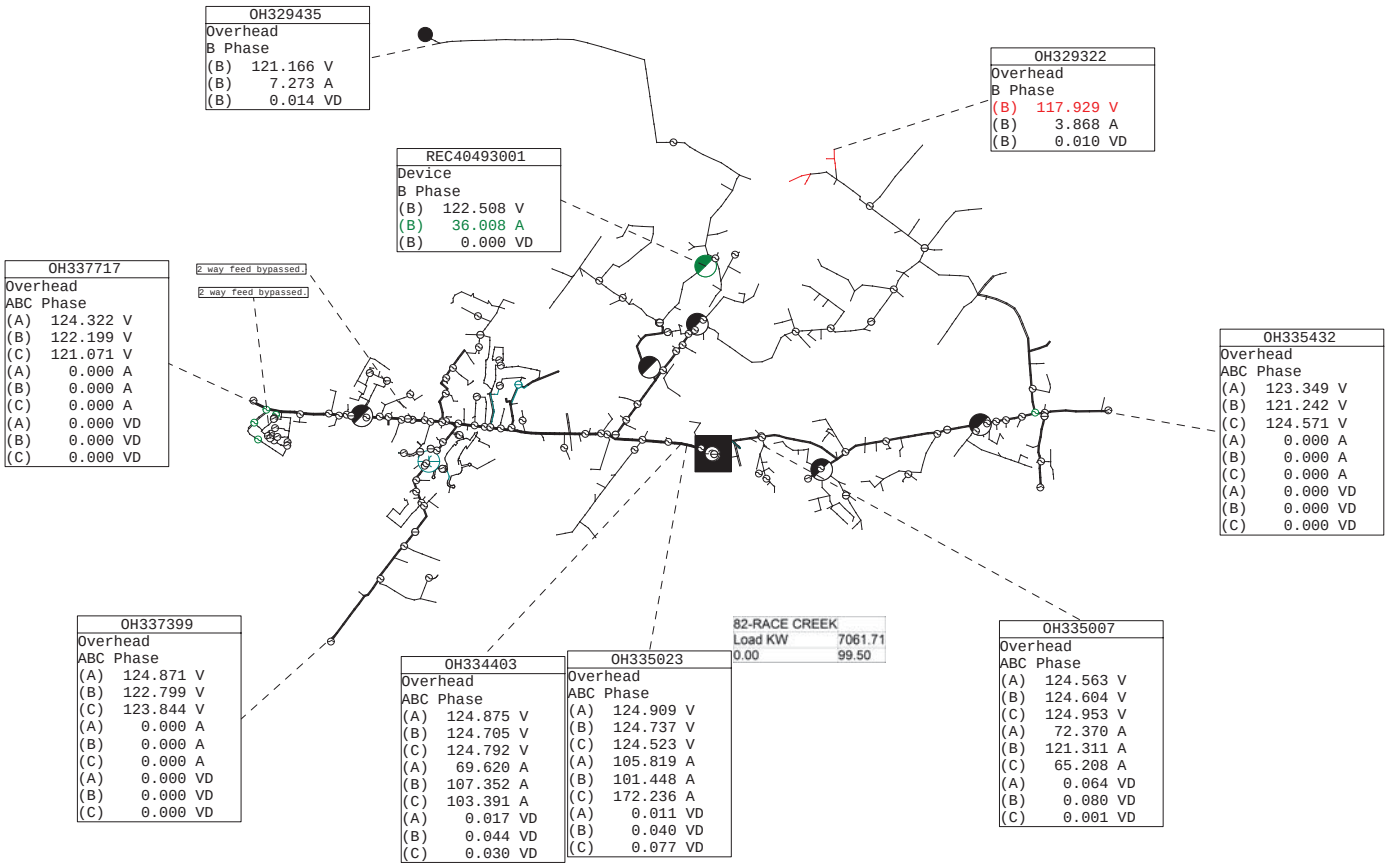


KENERGY

PROVIDENCE
2016-2020 NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP



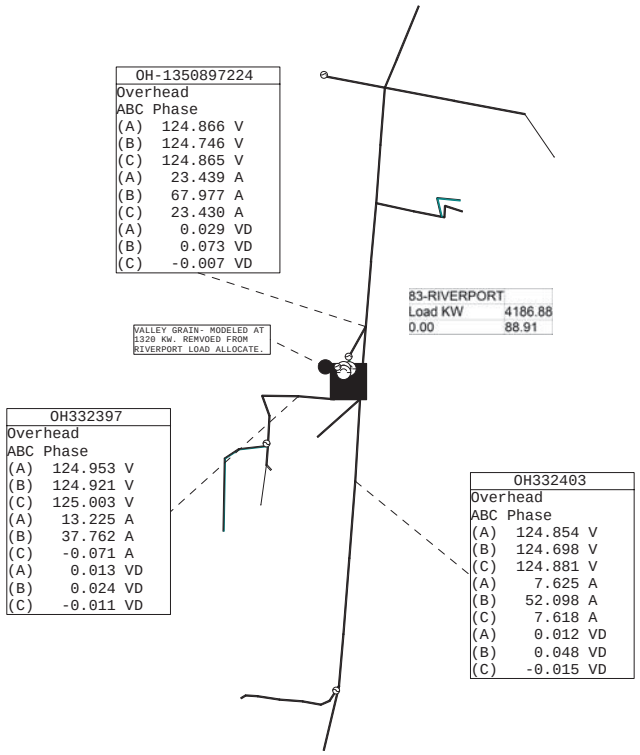
1" = 7258.408 ft

KENERGY

RACE CREEK
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP



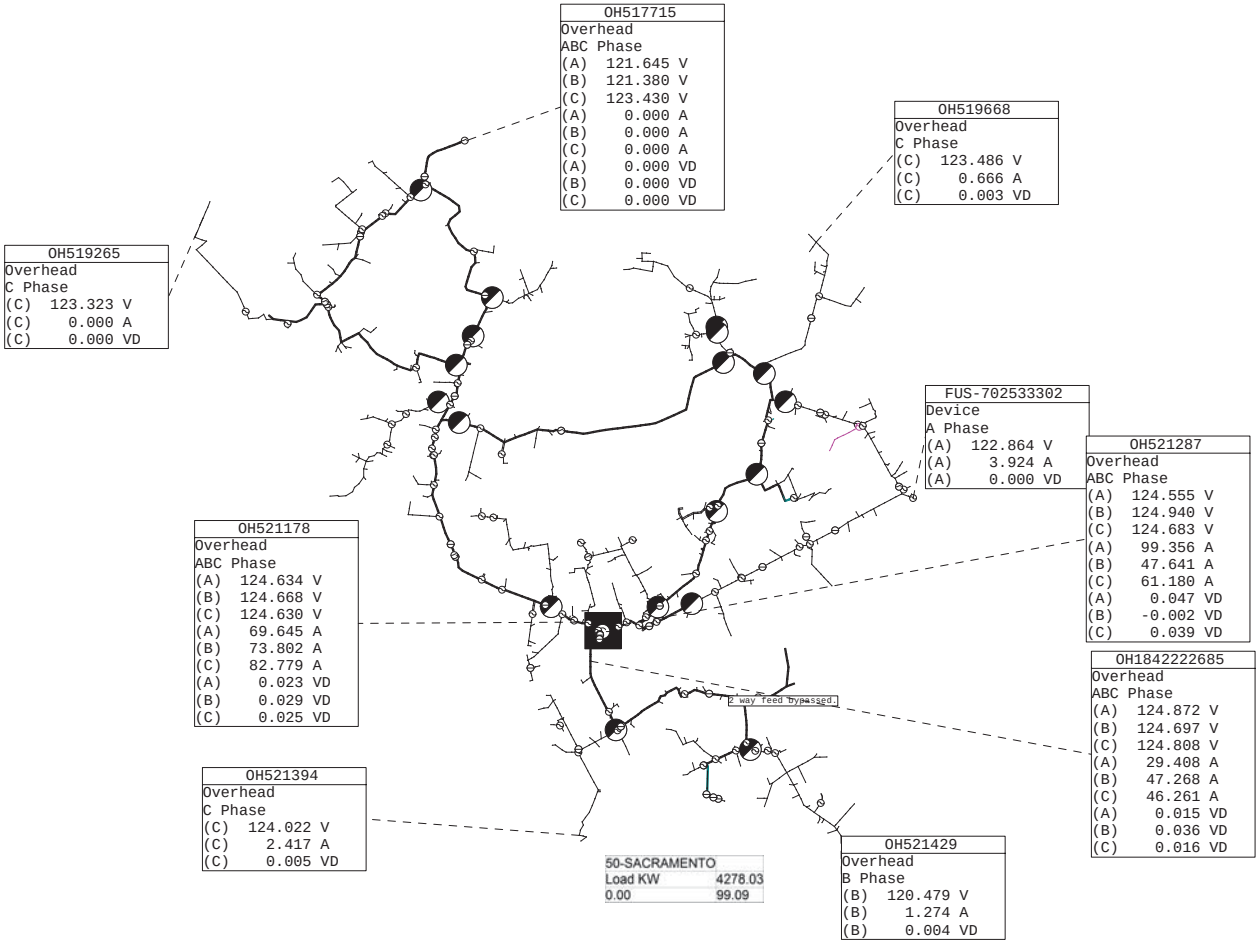
1" = 931.085 ft

KENERGY

RIVERPORT
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

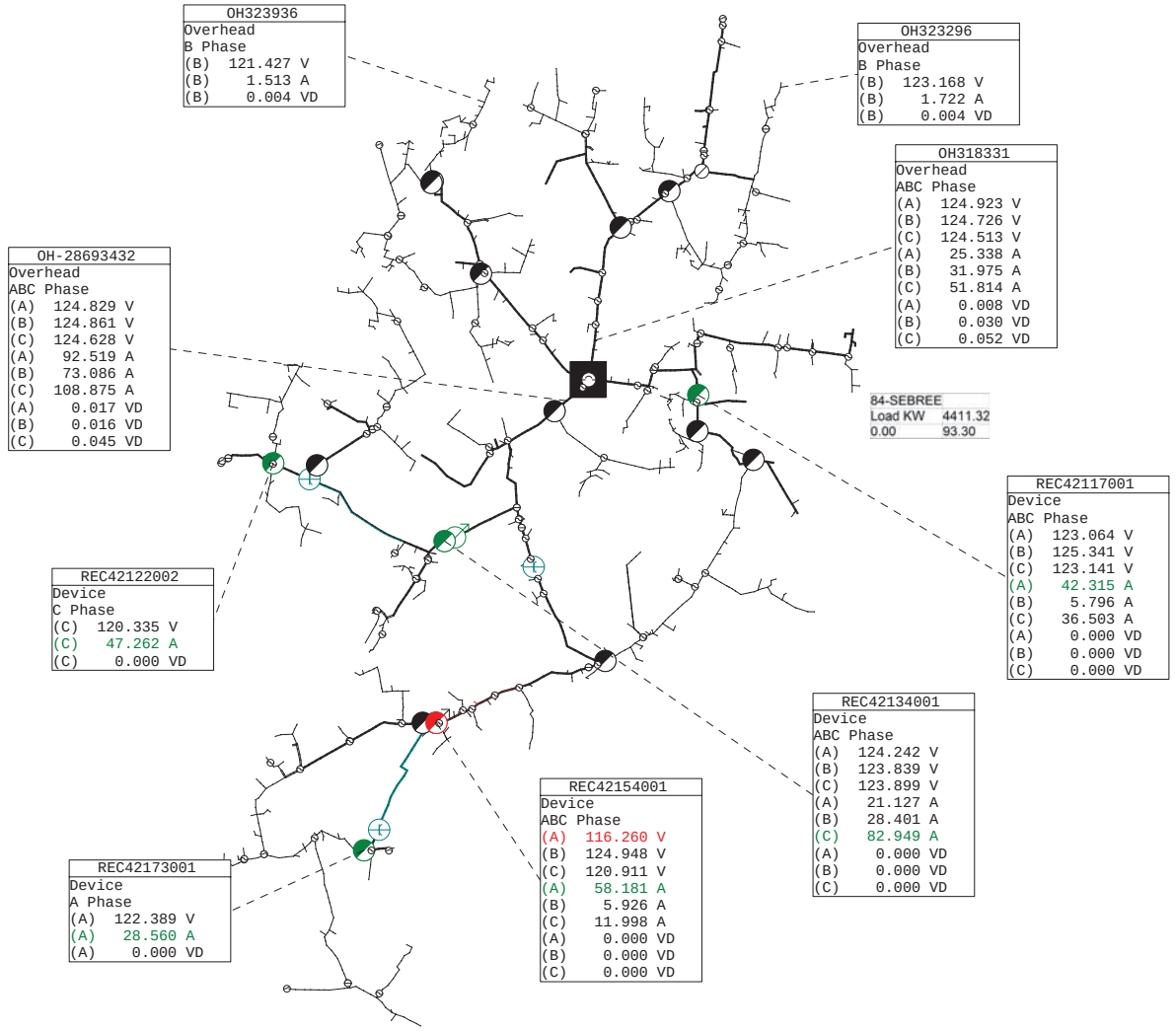


KENERGY

SACRAMENTO
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

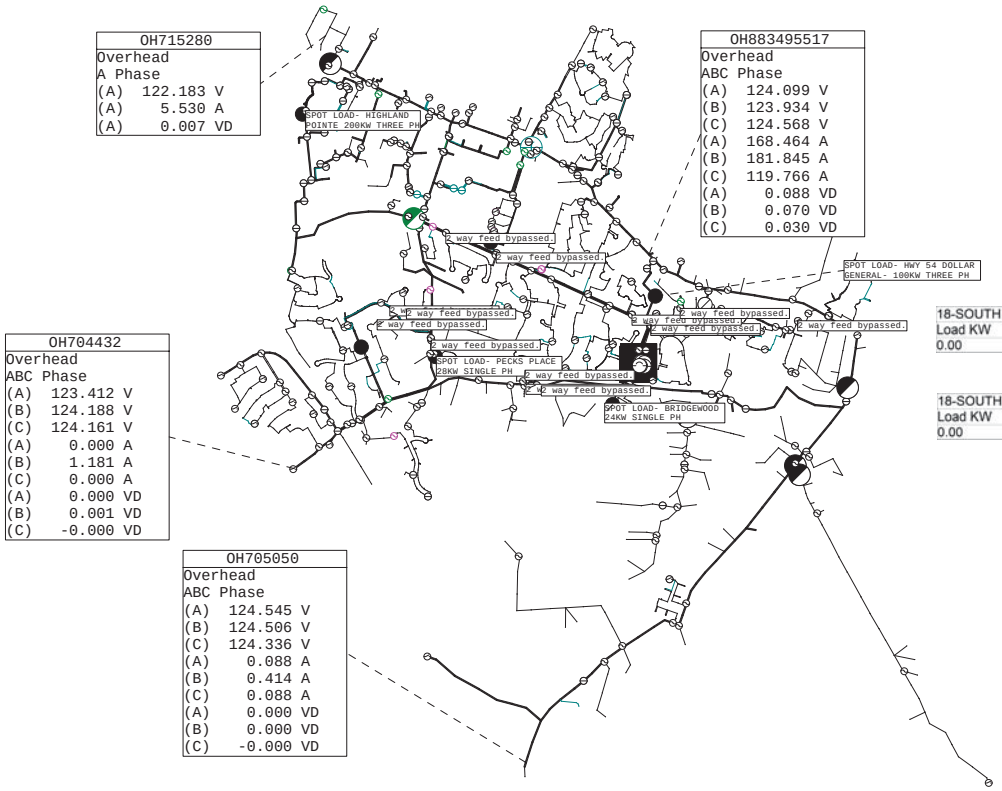


KENERGY

SEBREE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

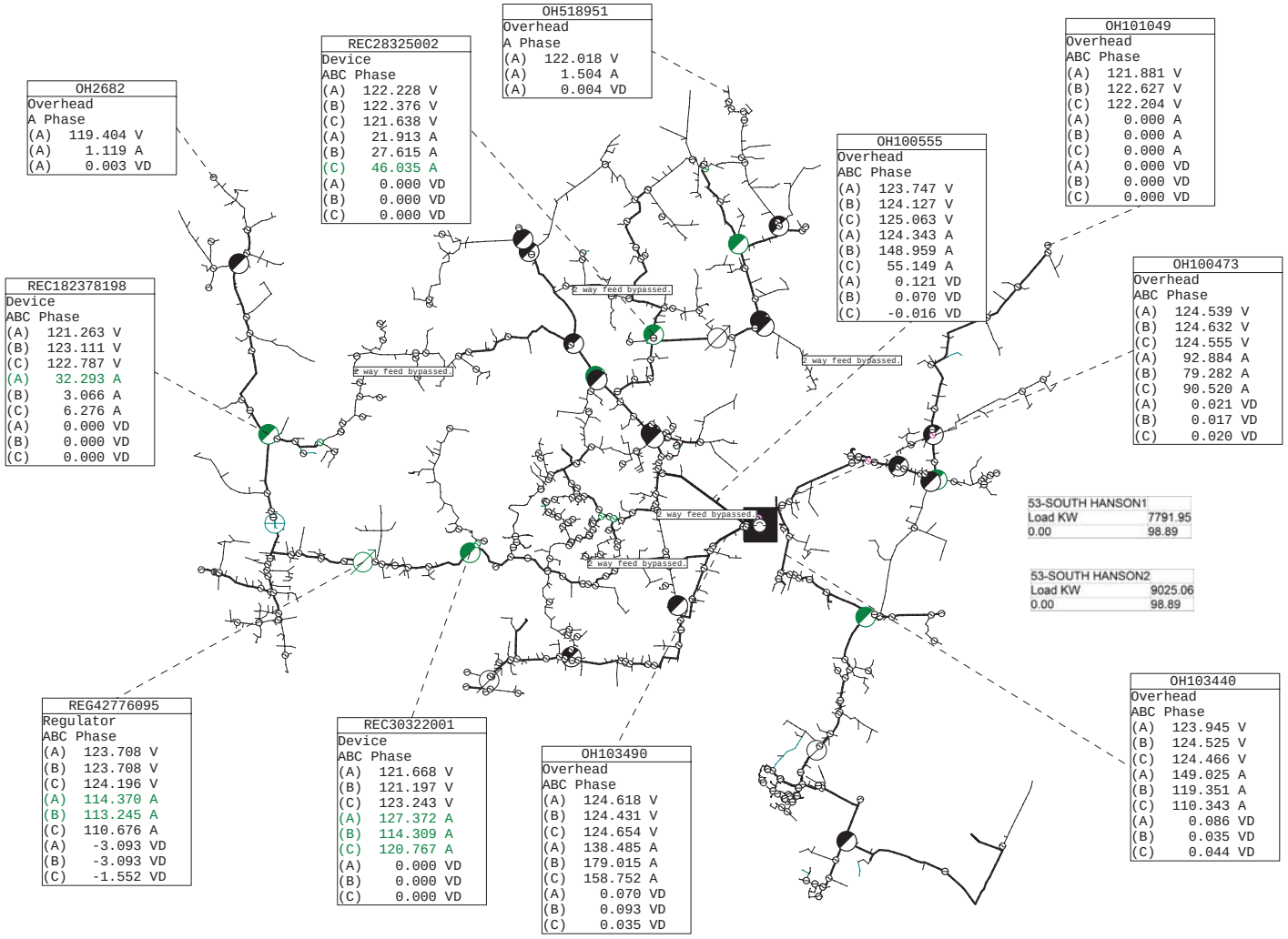


KENERGY

SOUTH DERMONT
2016-2020 NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP



KENERGY

SOUTH HANSON 1 _2
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

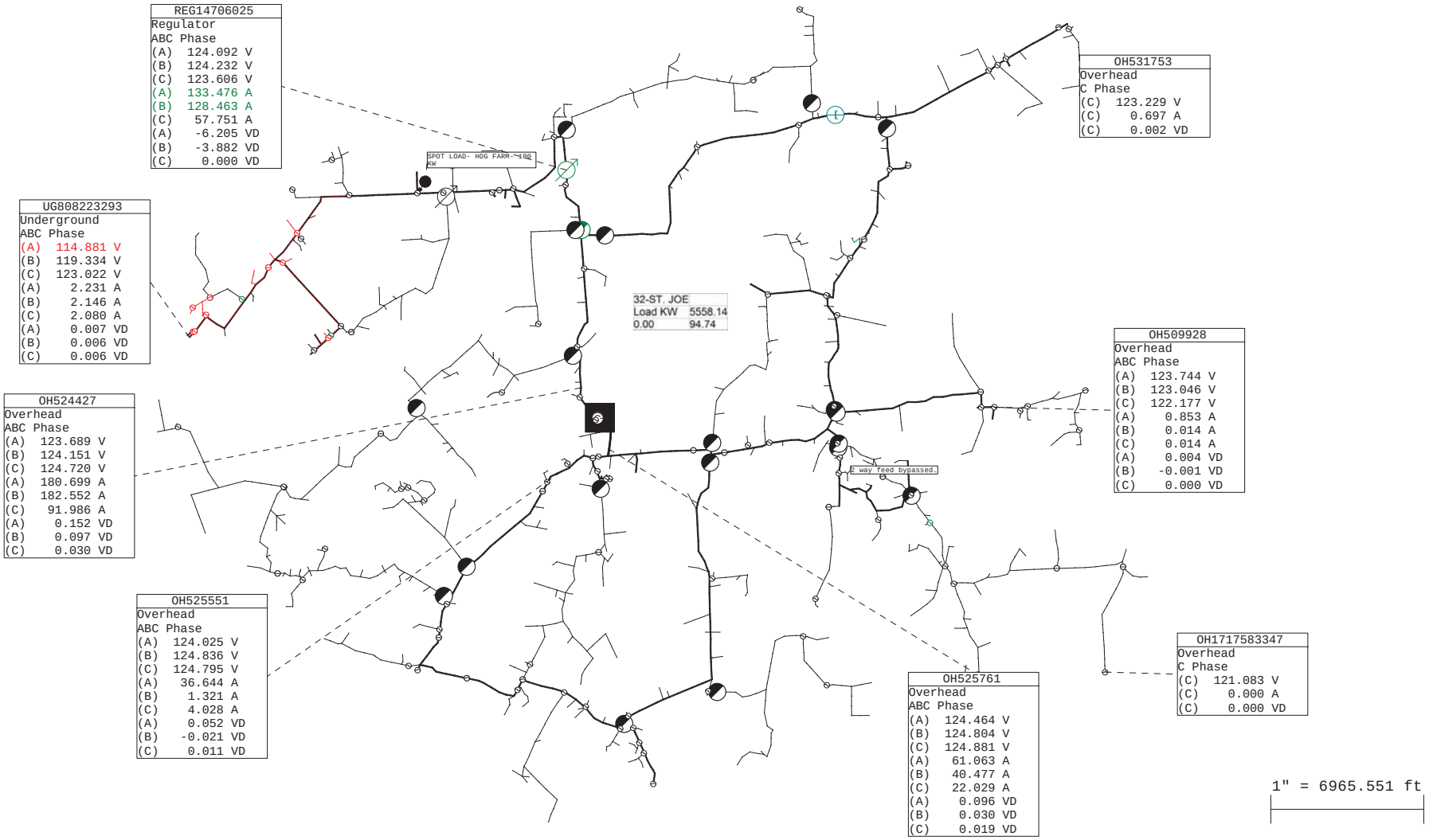
2016-20 Model-9252015 Extract v2 WINTER CWP

KENERGY

SOUTH OWENSBORO
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

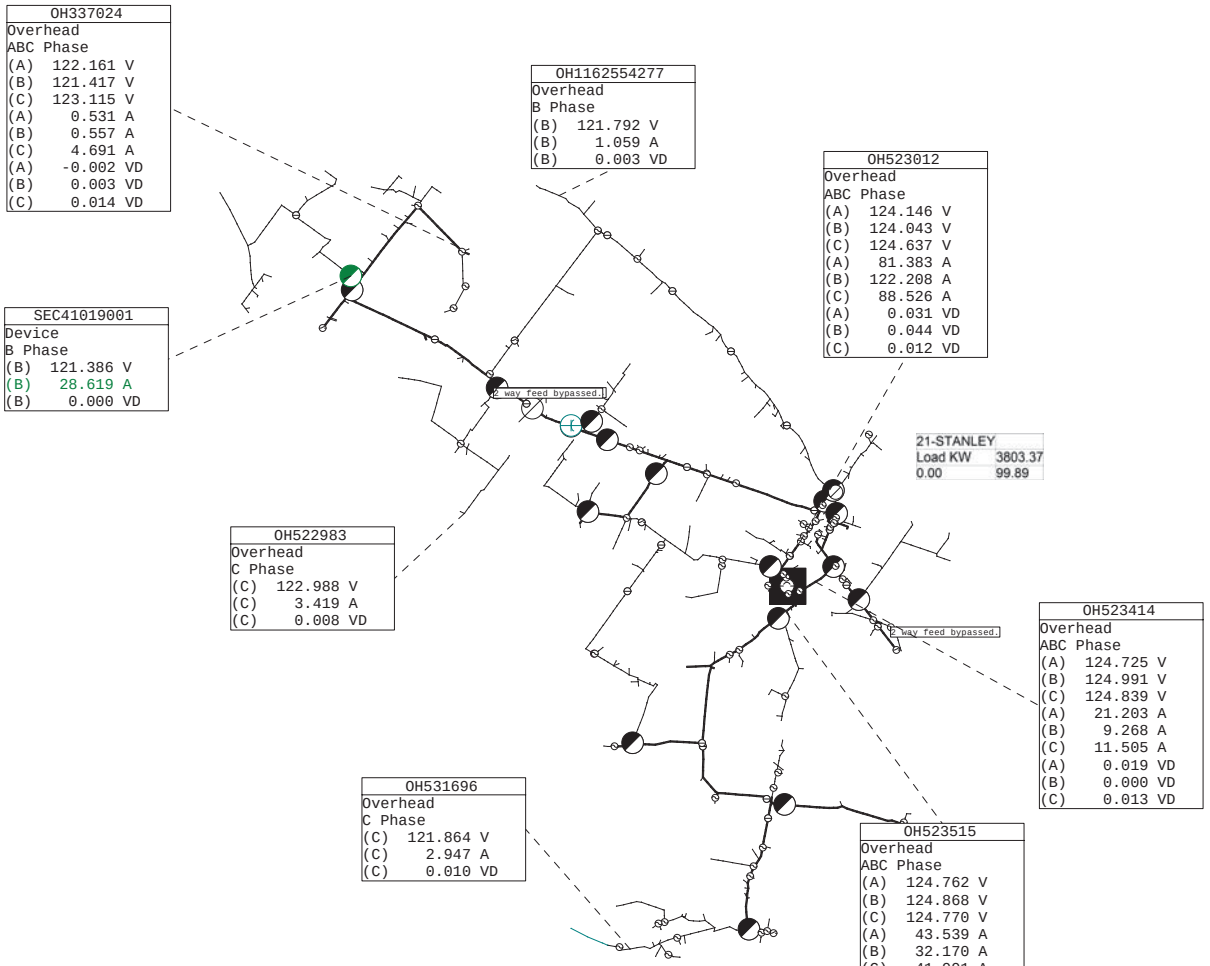


KENERGY

ST. JOE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

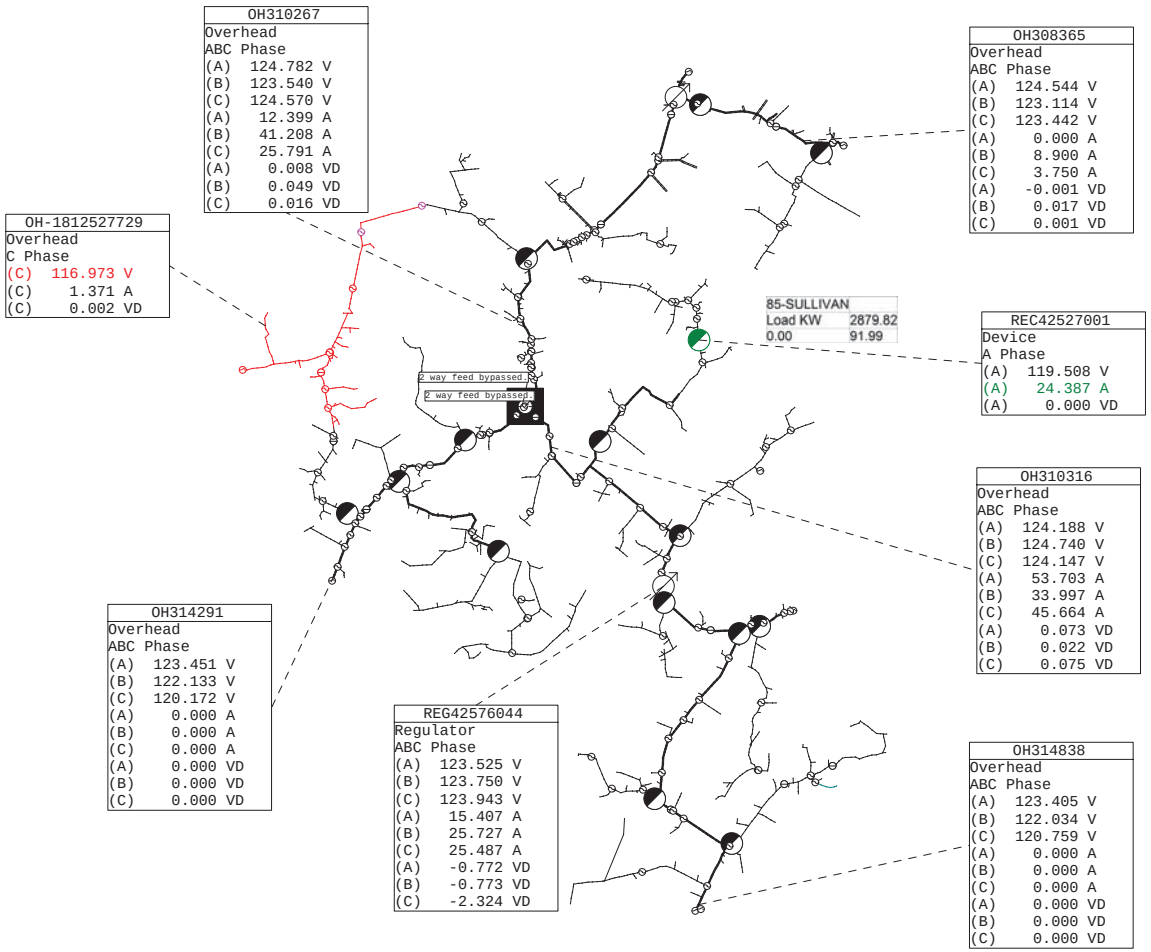


KENERGY

STANLEY
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

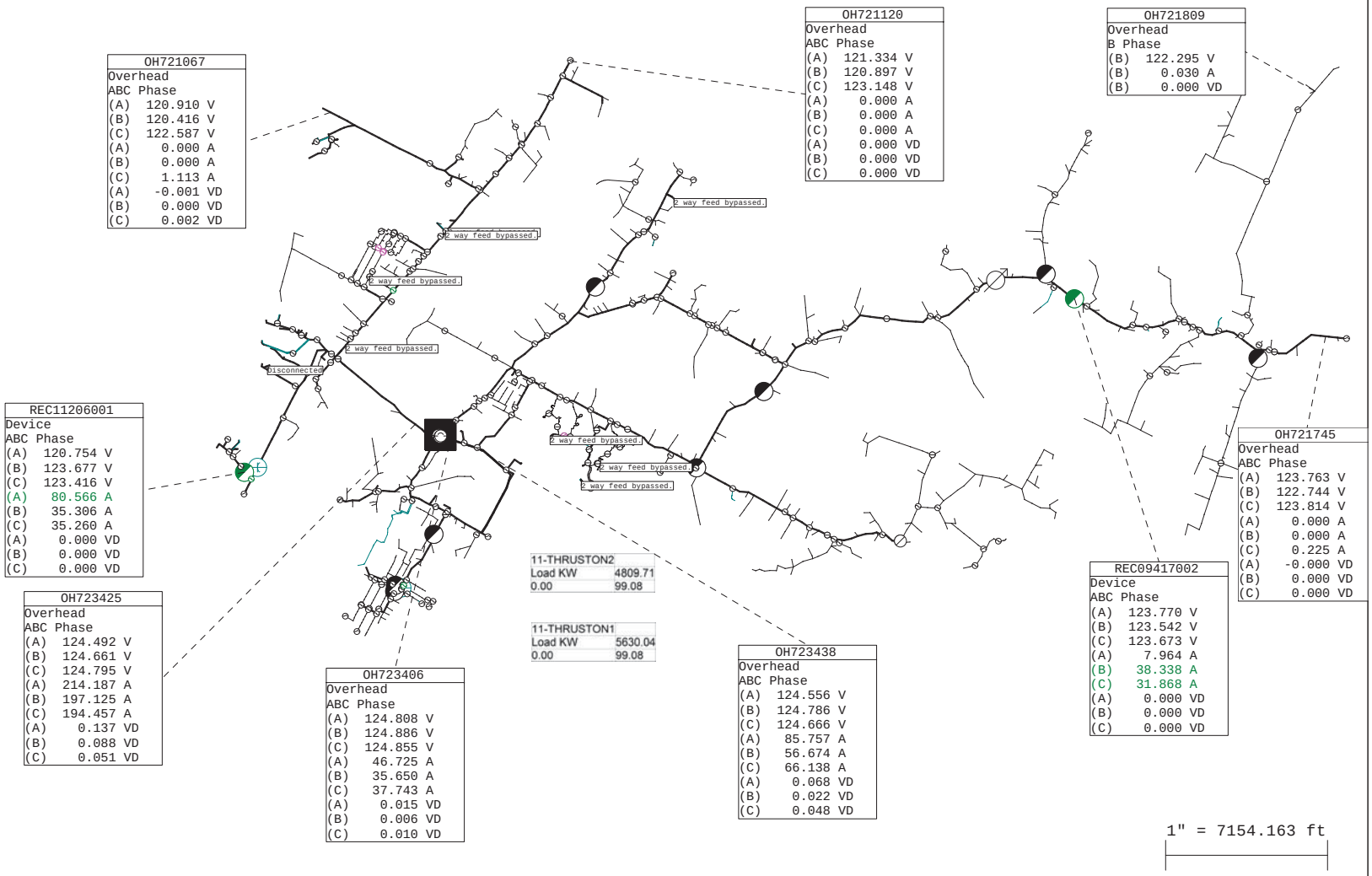


KENERGY

SULLIVAN
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

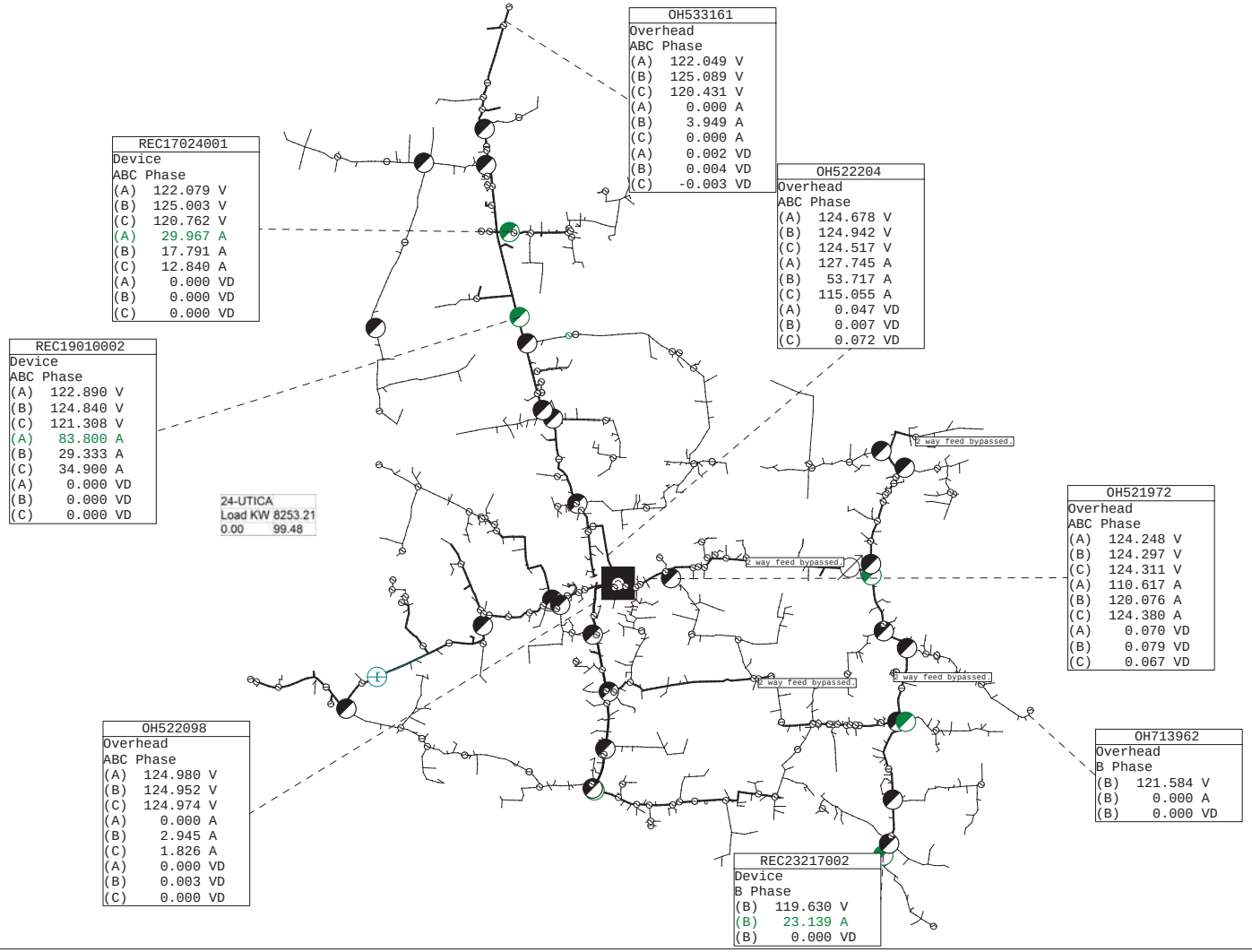


KENERGY

THRUSTON 1 _2
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

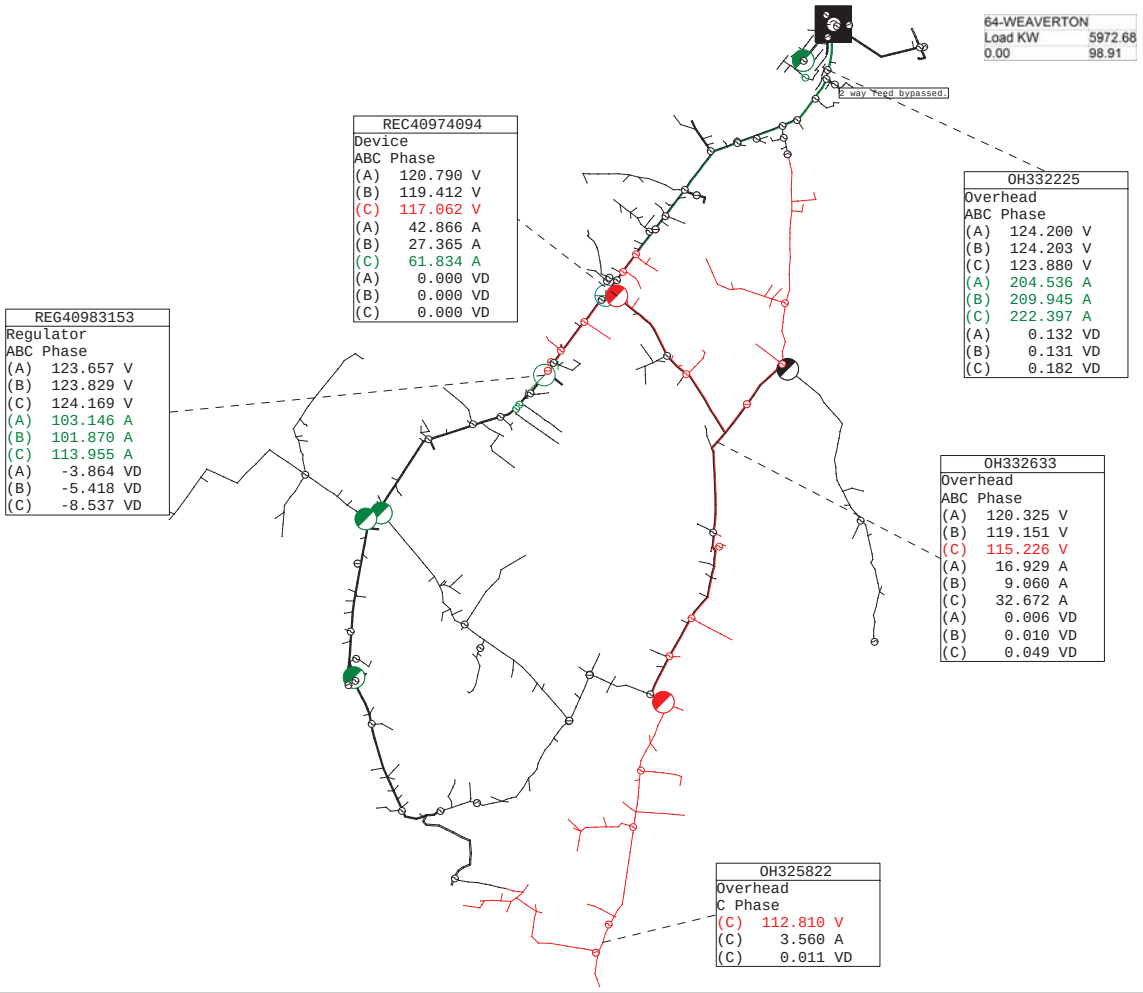


KENERGY

UTICA
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

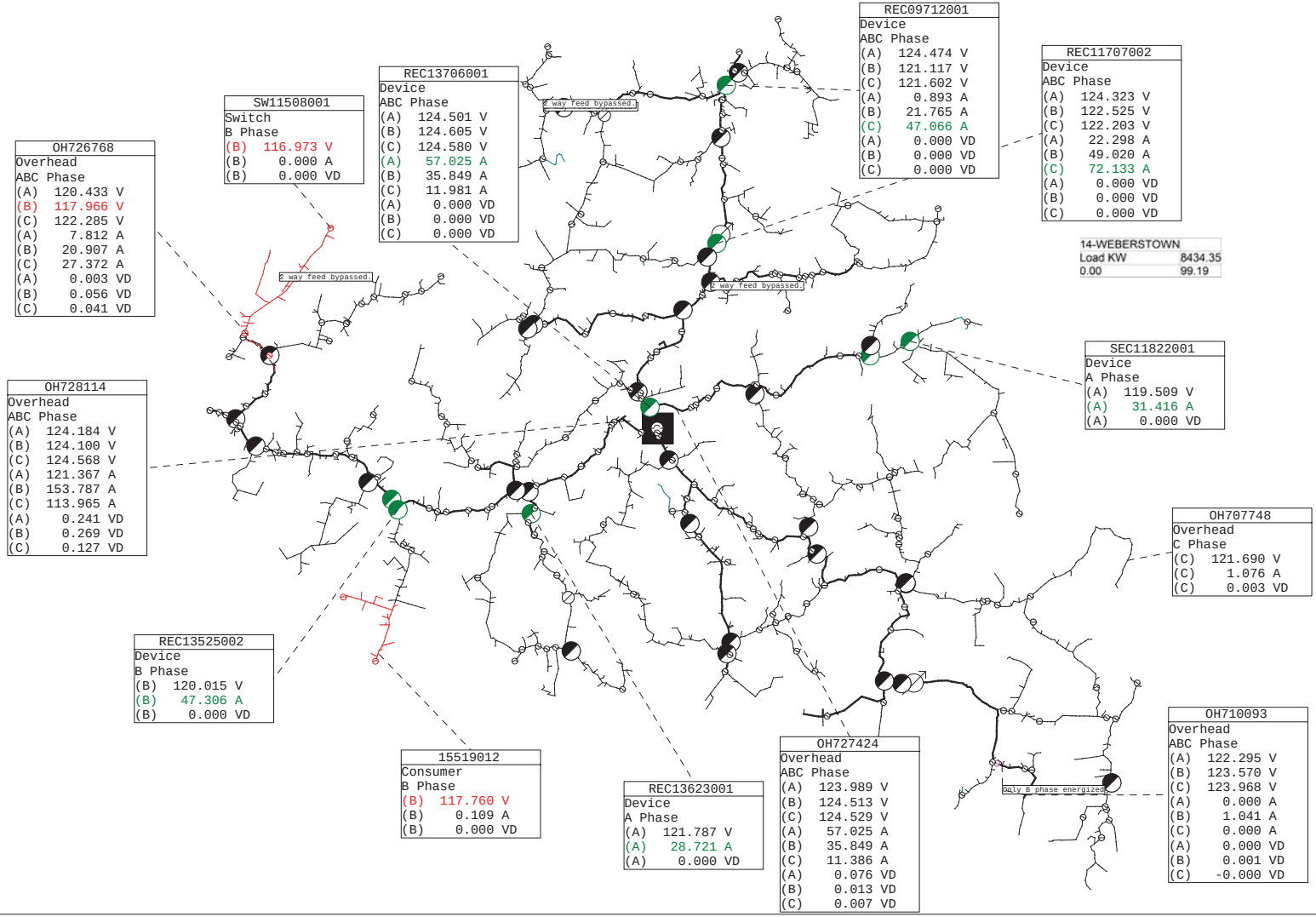


KENERGY

WEAVERTON
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

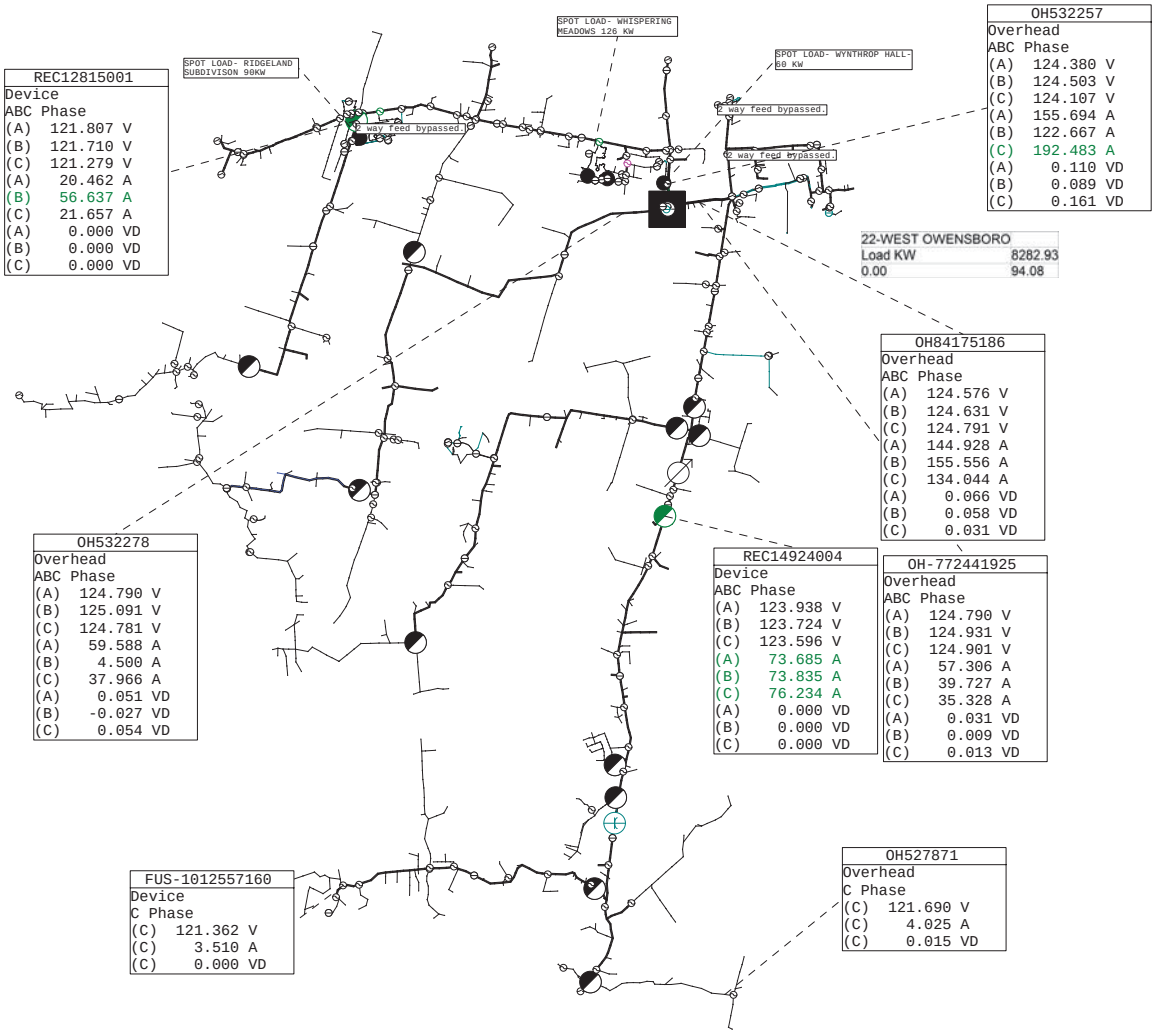


KENERGY

WEBERSTOWN
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

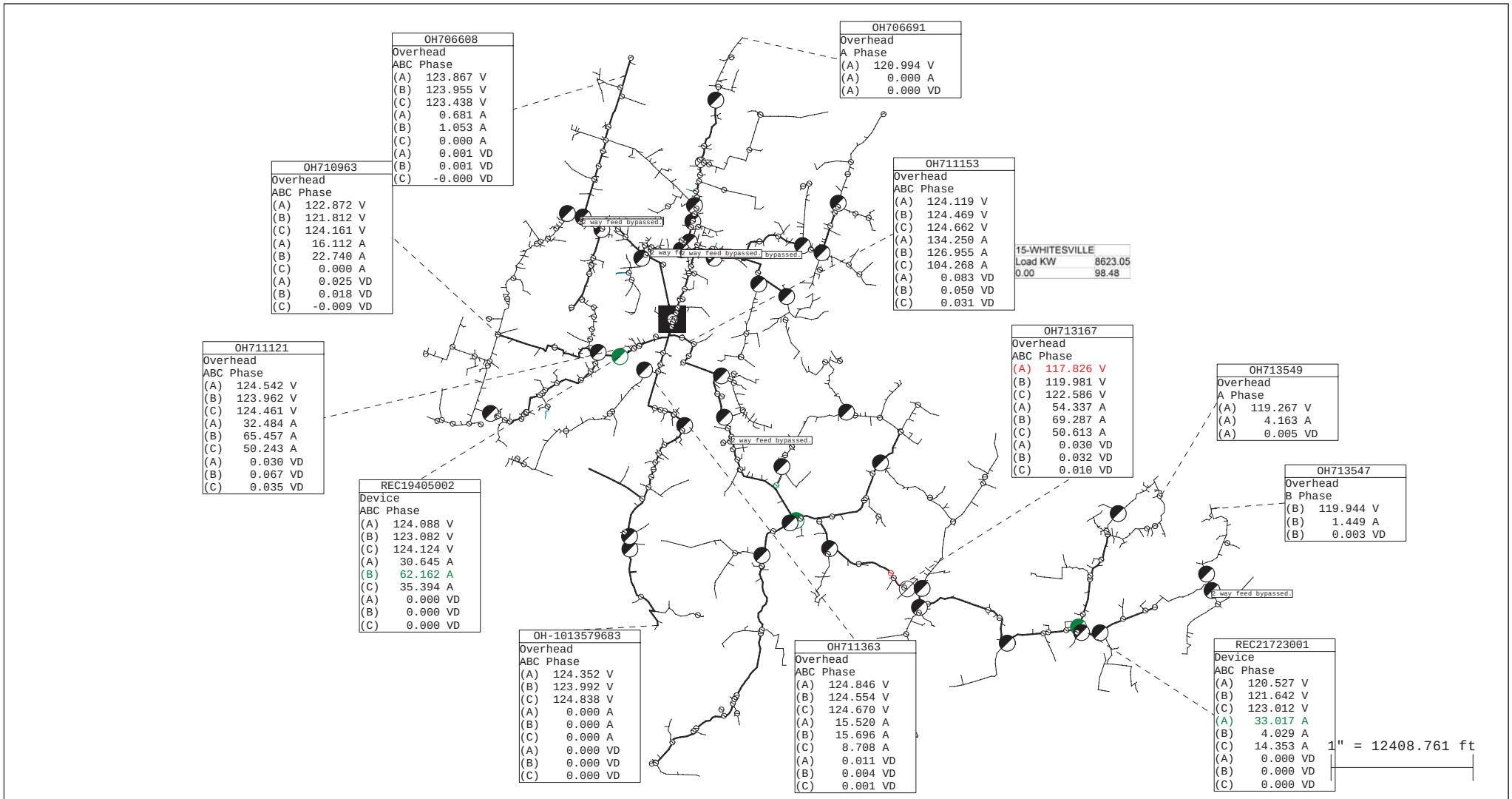


KENERGY

WEST OWENSBORO
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

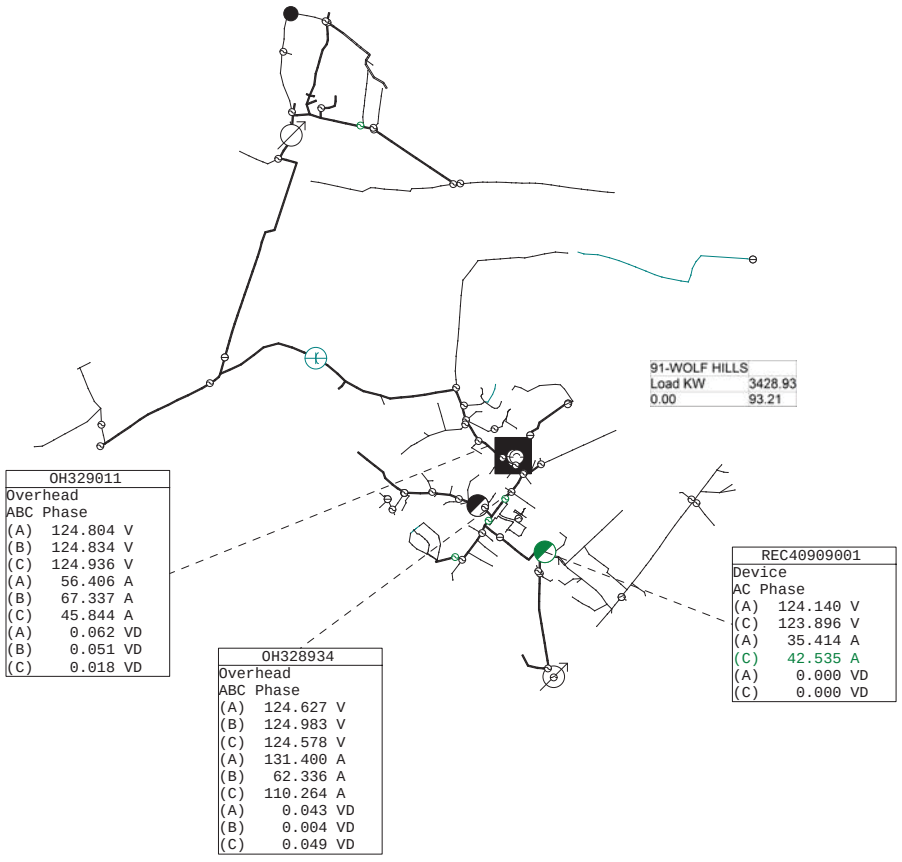


KENERGY

WHITESVILLE
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

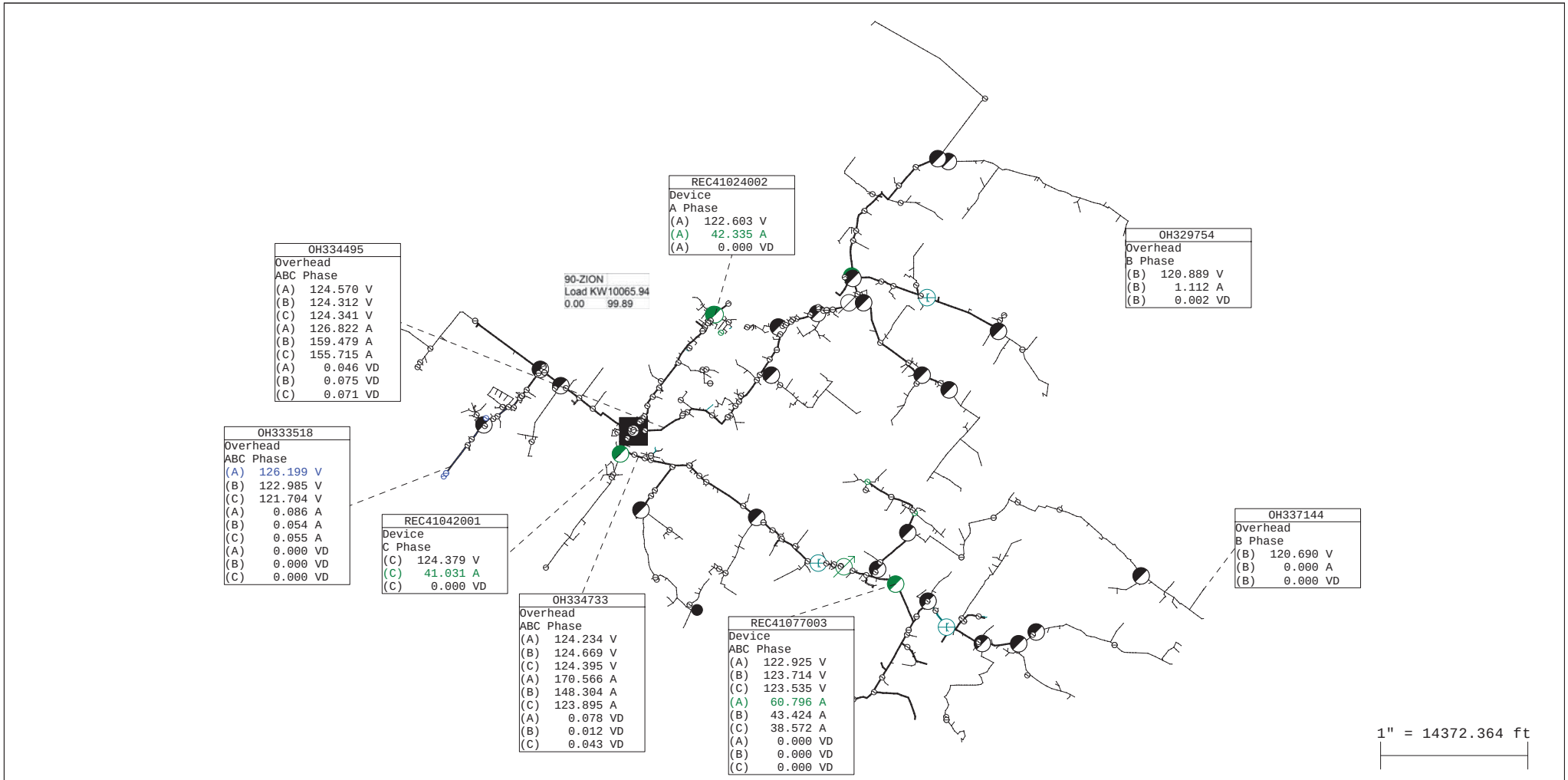


KENERGY

WOLF HILLS
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 SUMMER CWP

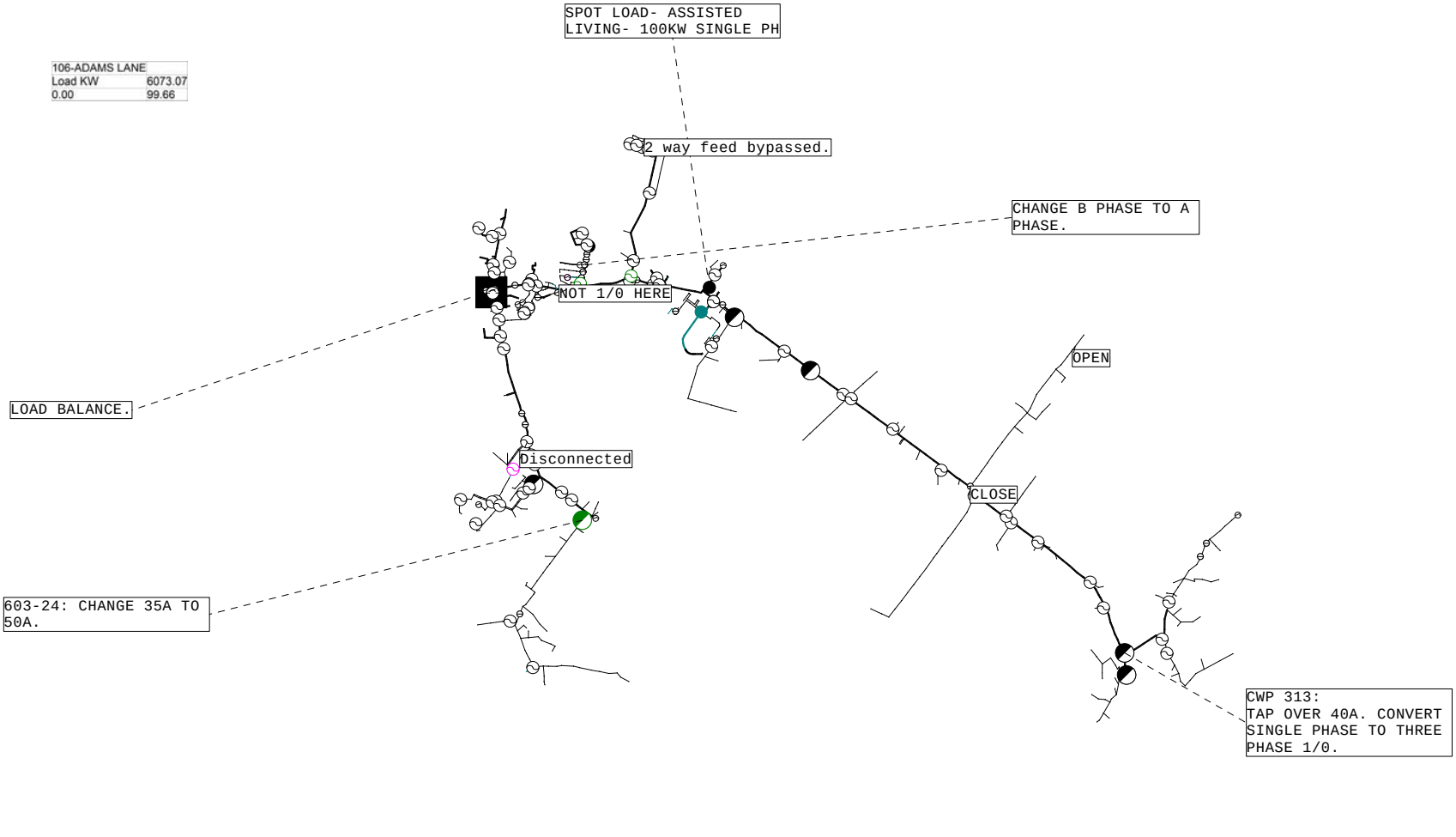


KENERGY

ZION
2016-2020 WITH NO IMPROVEMENTS

POWERSERVICES

2016-20 Model-9252015 Extract v2 WINTER CWP

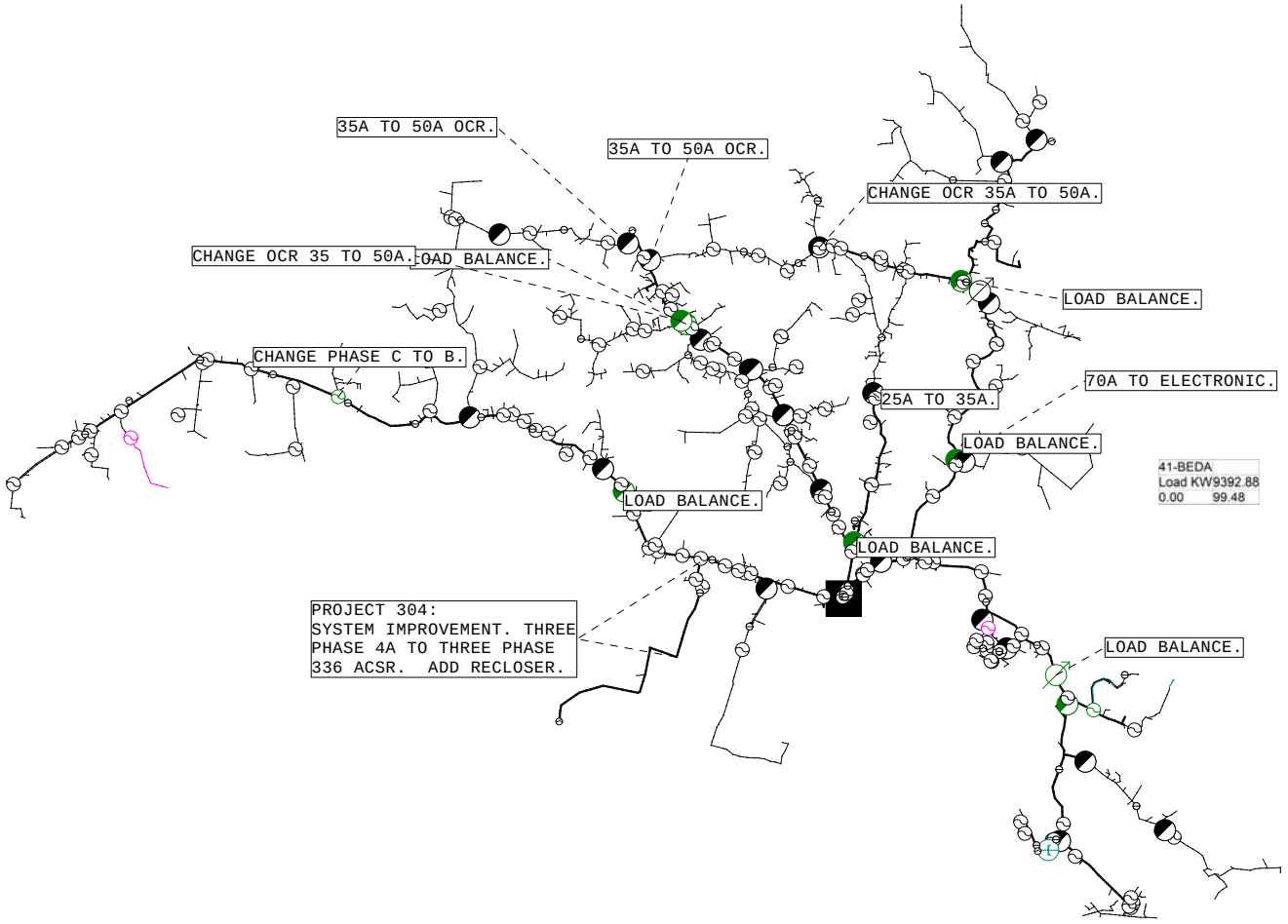


KENERGY

ADAMS LANE
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING



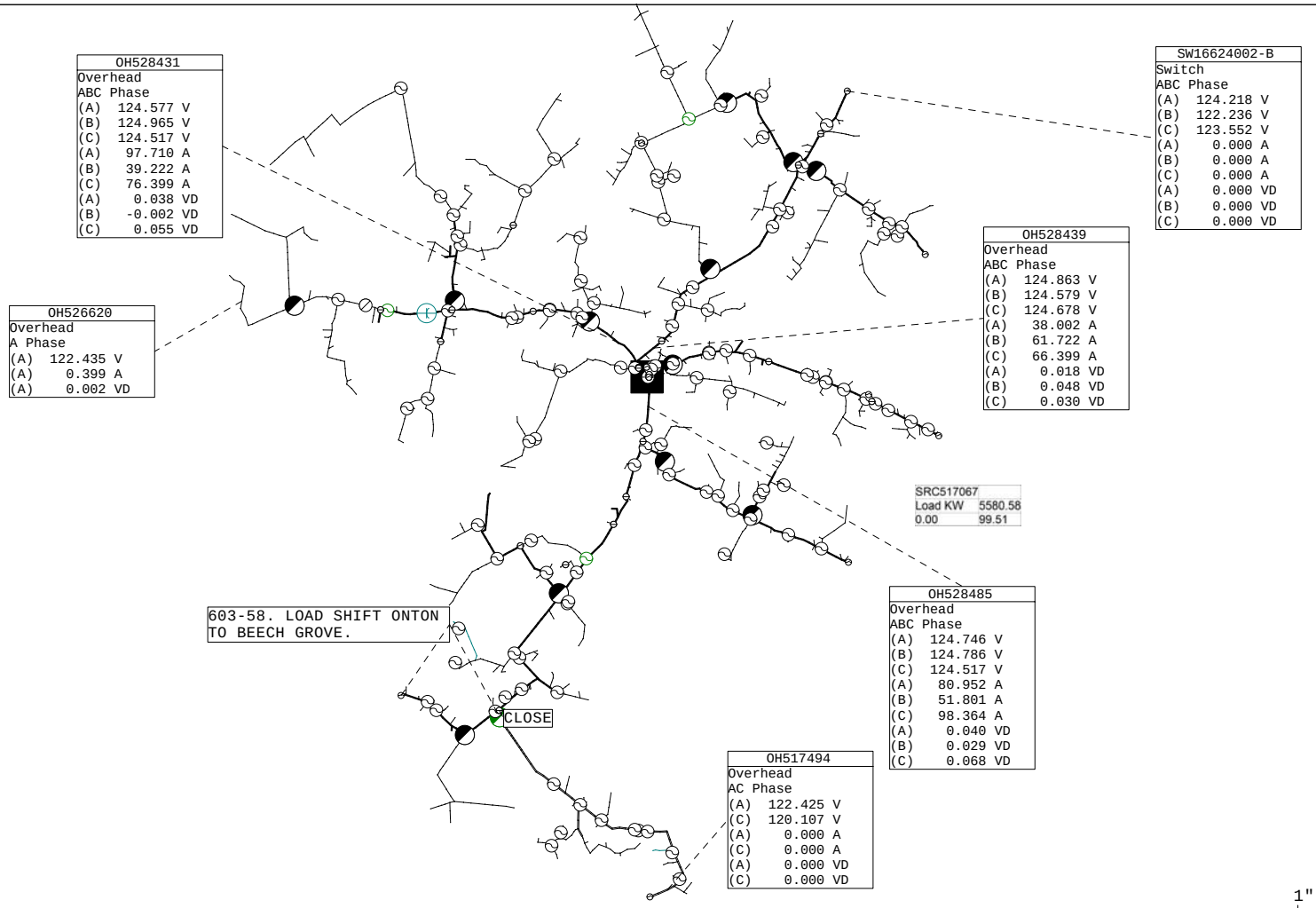
1" = 12451.106 ft

KENERGY

BEDA
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING

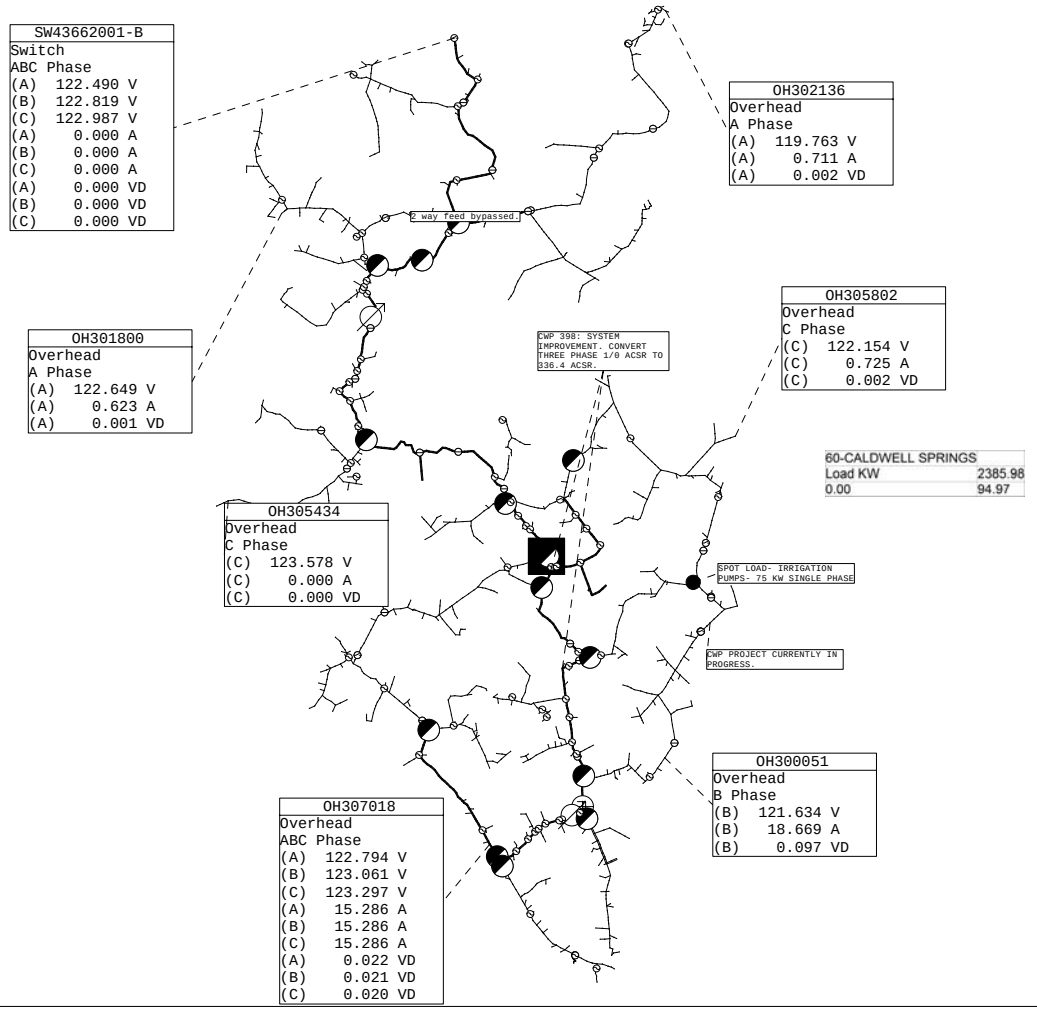


KENERGY

BEECH GROVE
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING

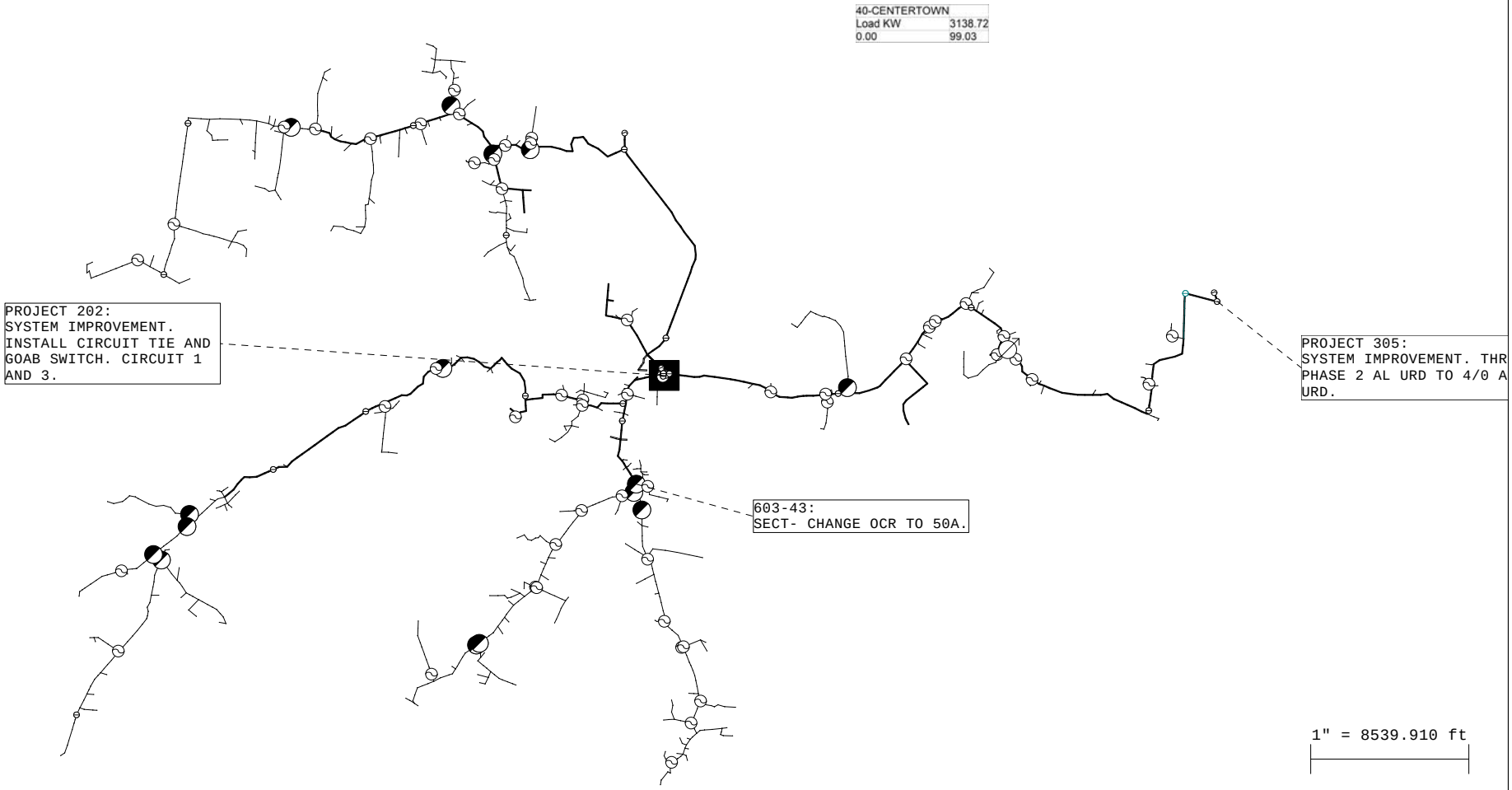


KENERGY

CALDWELL SPRINGS
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING

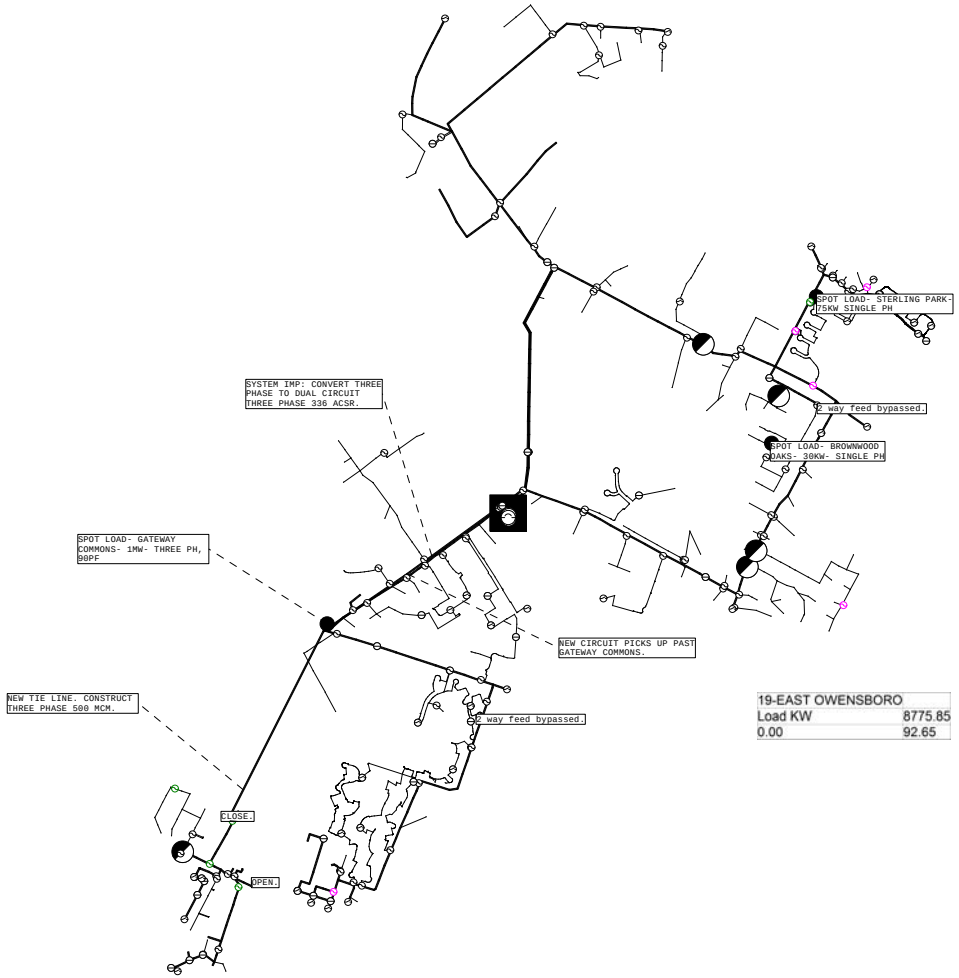


KENERGY

CENTERTOWN
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING



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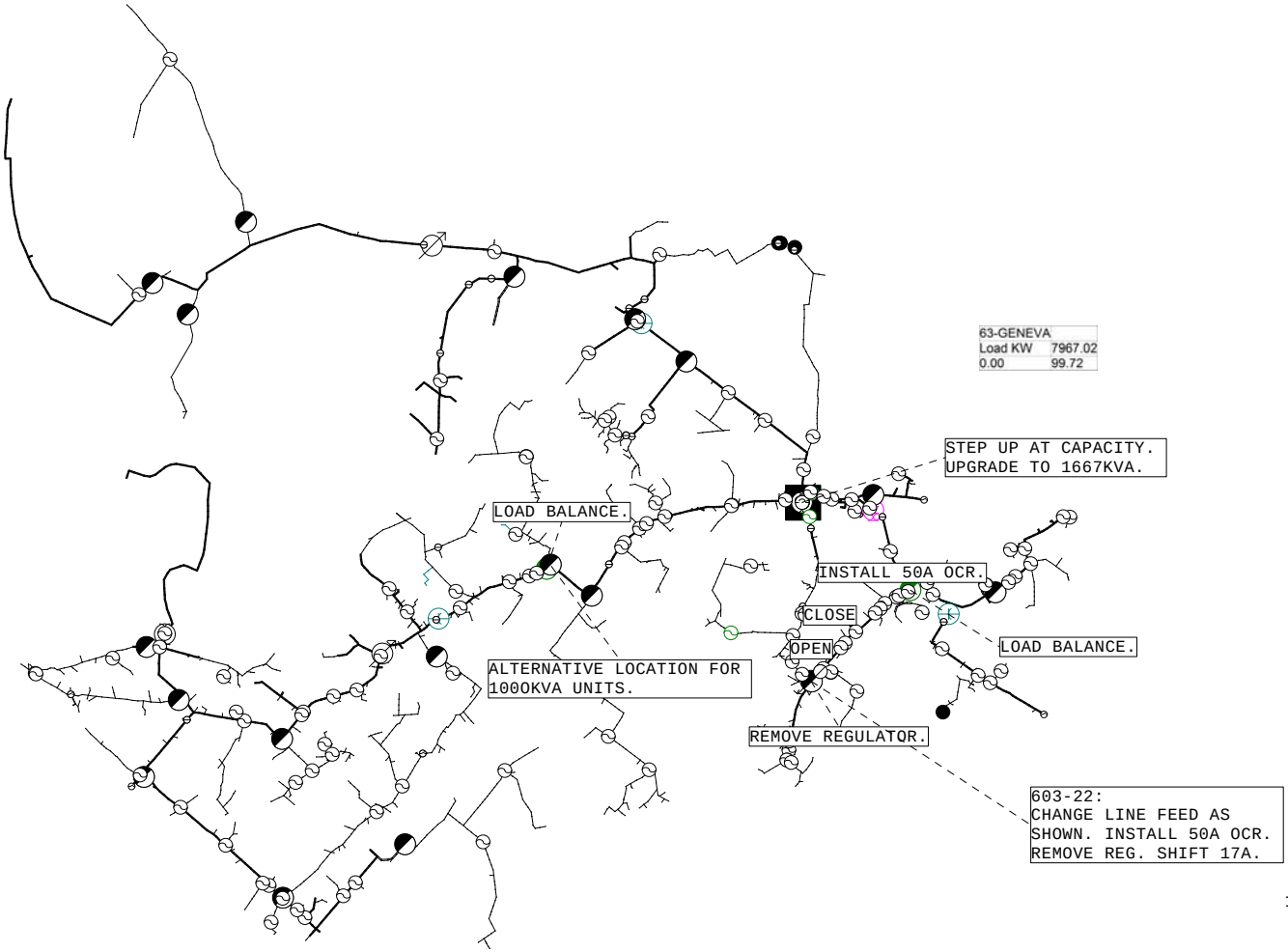
KENERGY

EAST OWENSBORO
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING

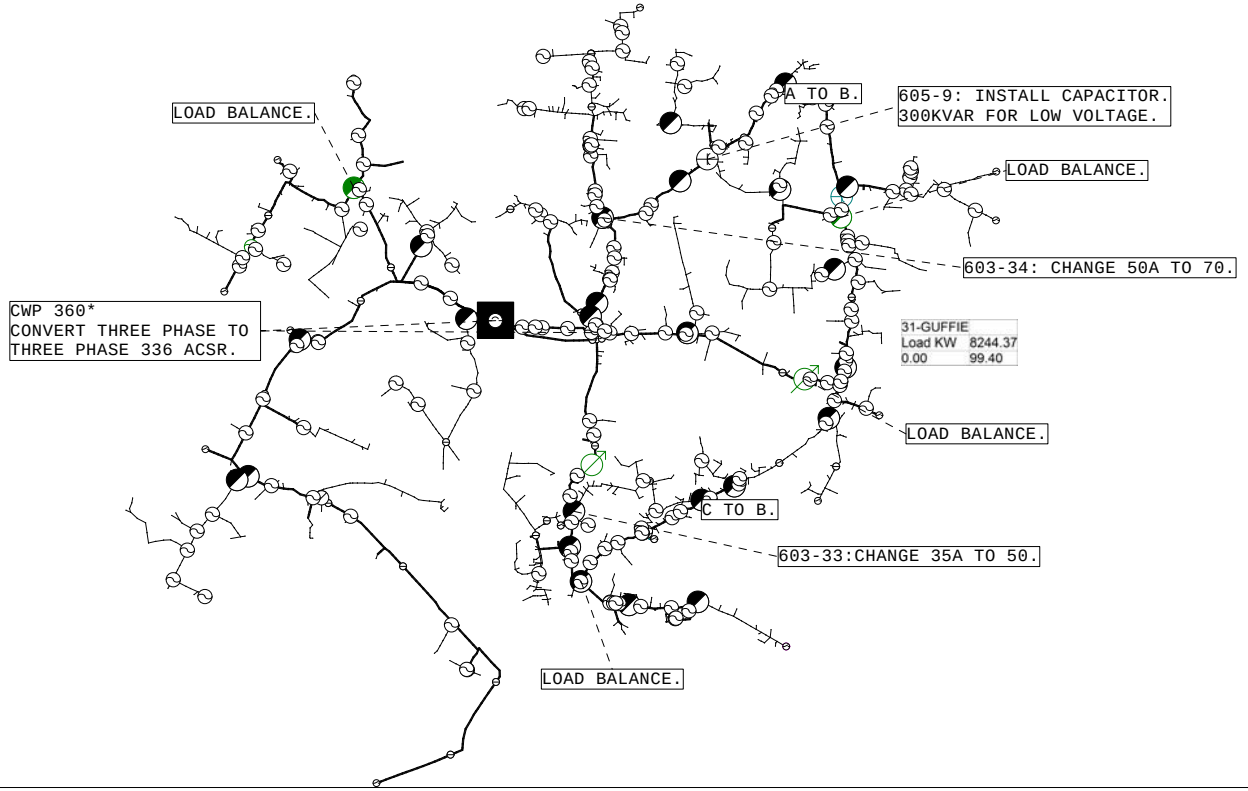


KENERGY

GENEVA
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING



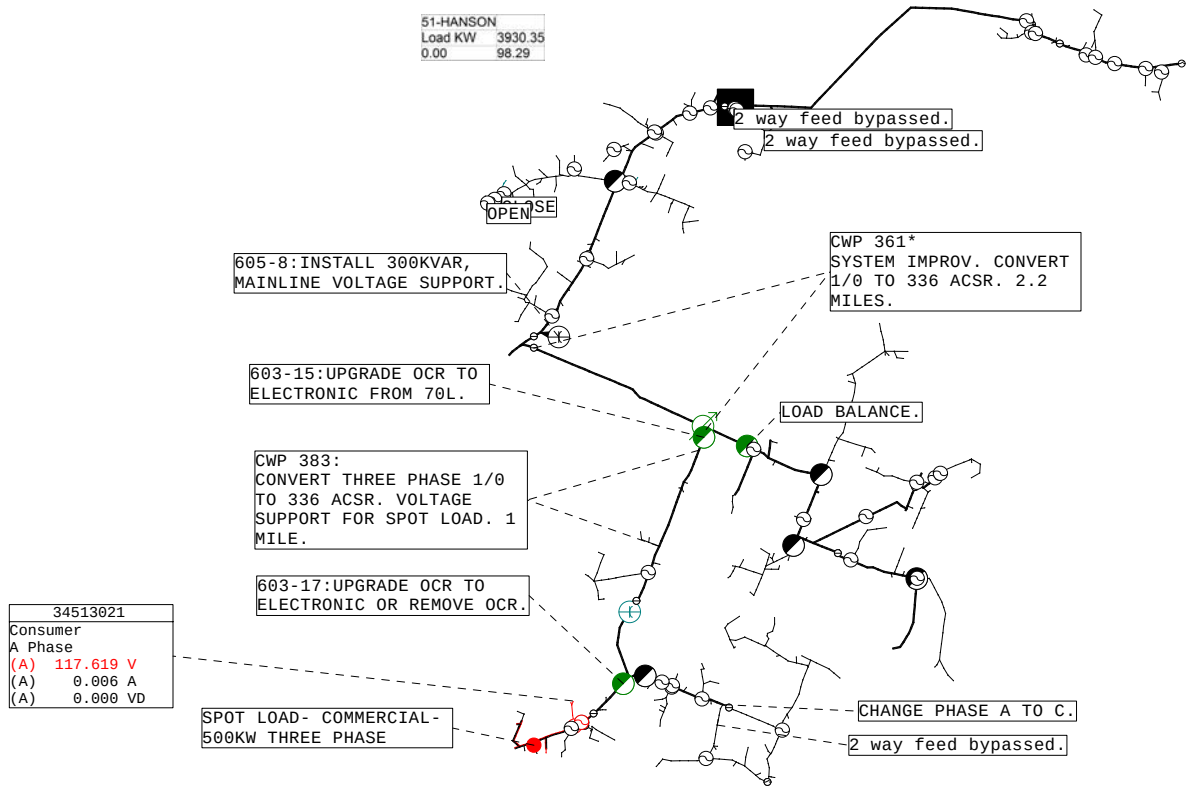
1" = 13797.208 ft

KENERGY

GUFFIE
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING

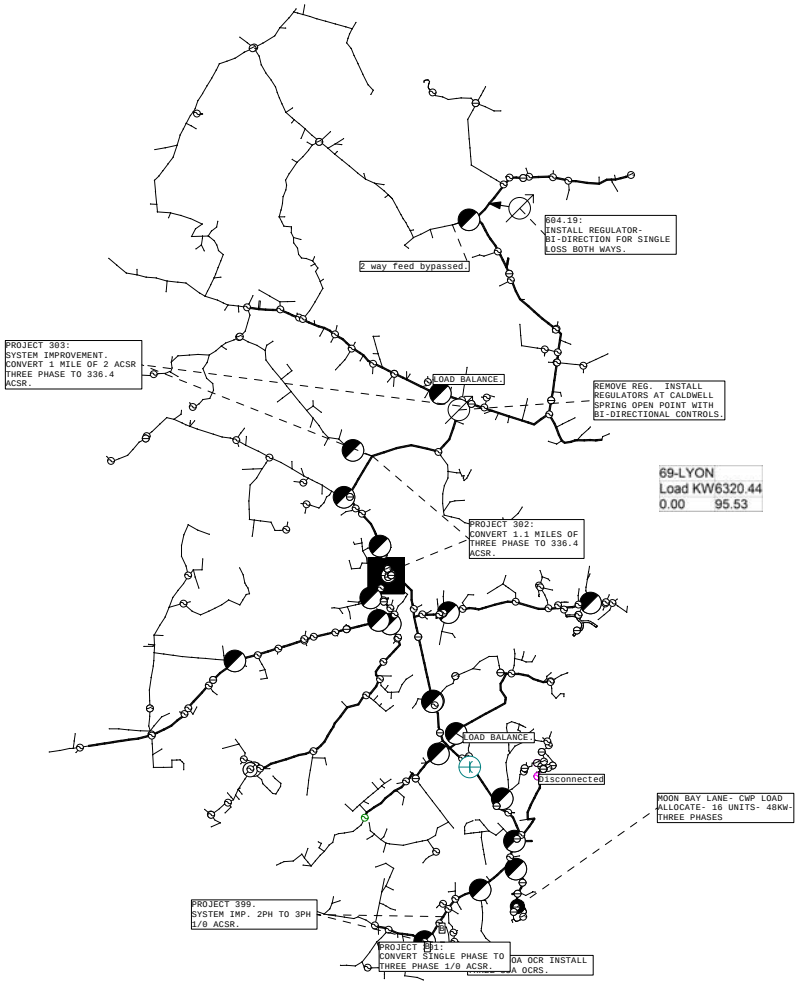


KENERGY

HANSON
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING



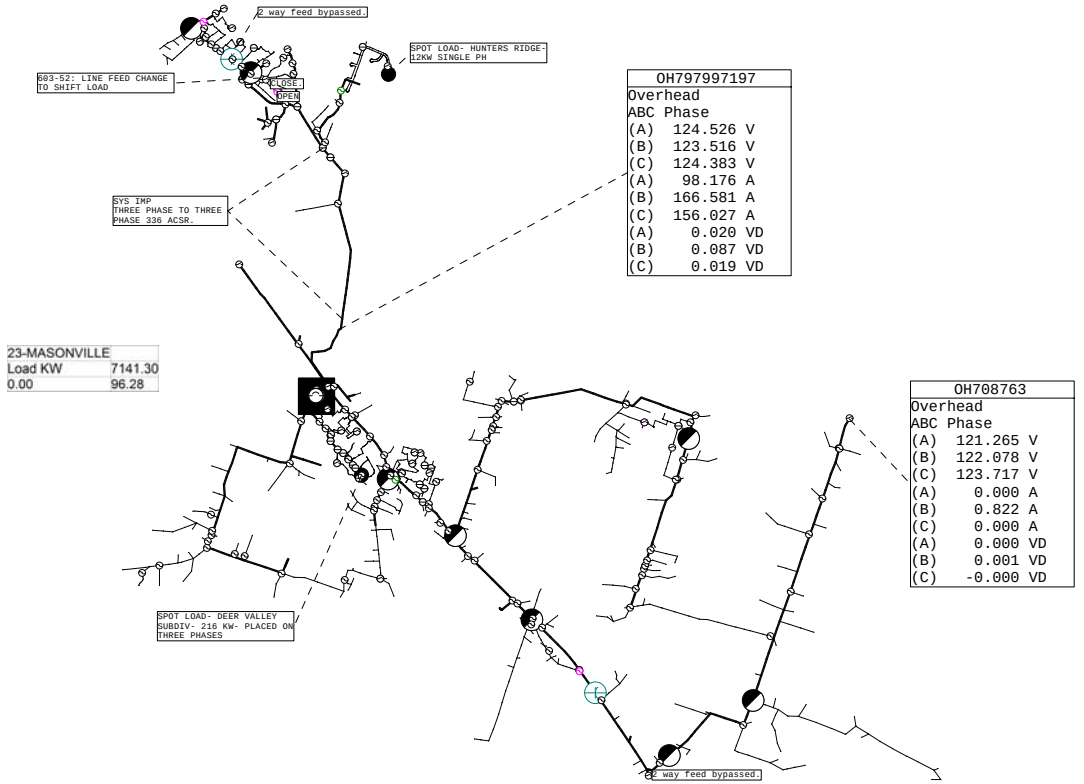
1" = 8820.067 ft

KENERGY

LYON
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING

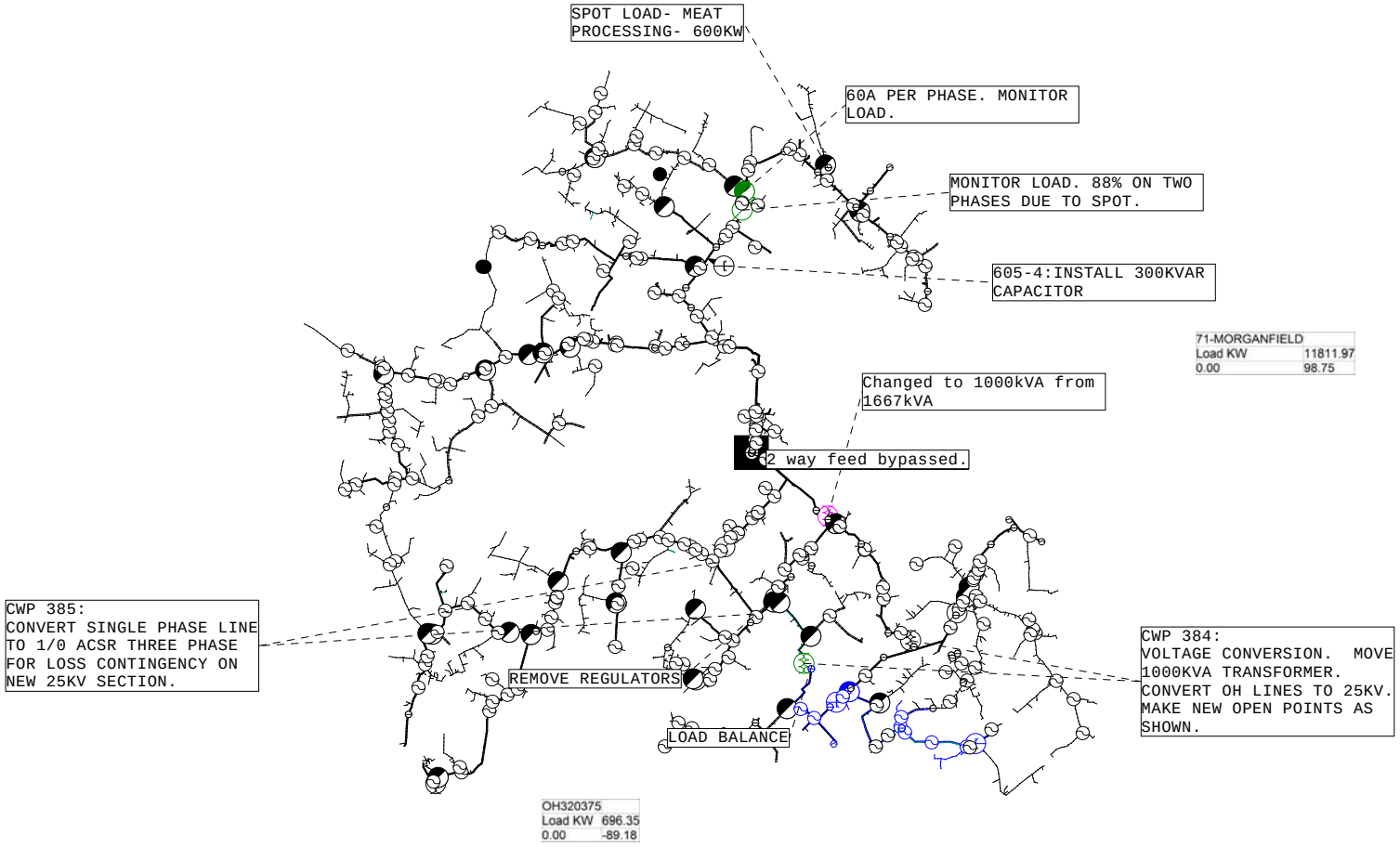


KENERGY

MASONVILLE
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING

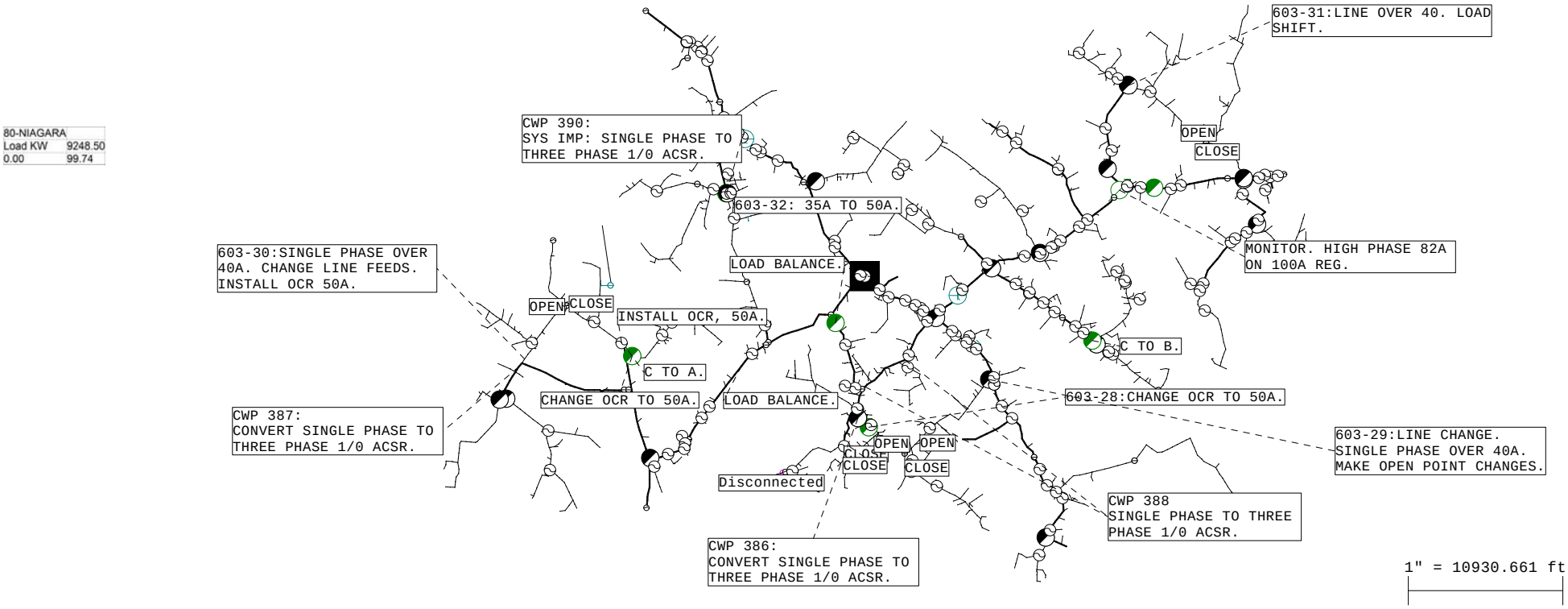


KENERGY

MORGANFIELD
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING

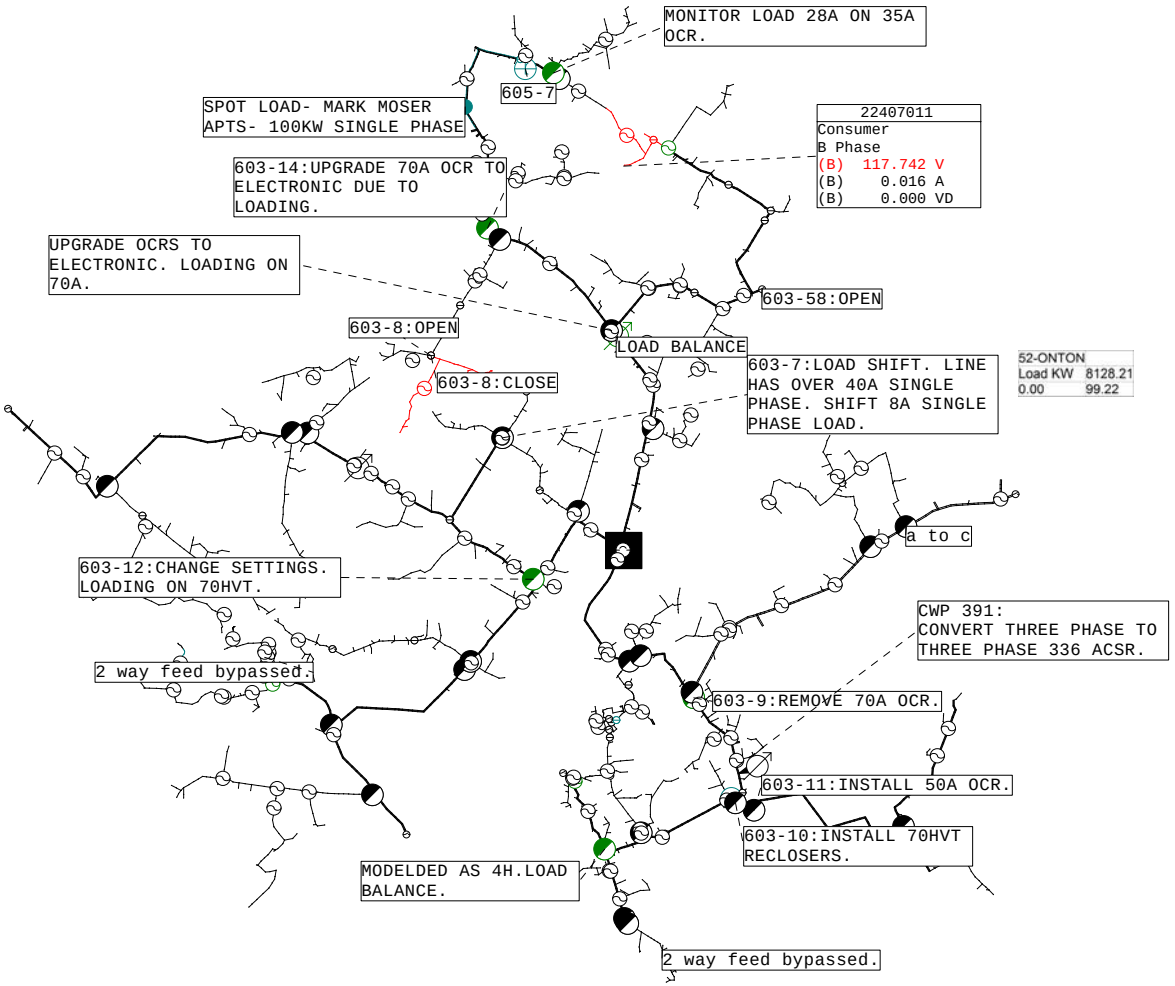


KENERGY

NIAGARA
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING

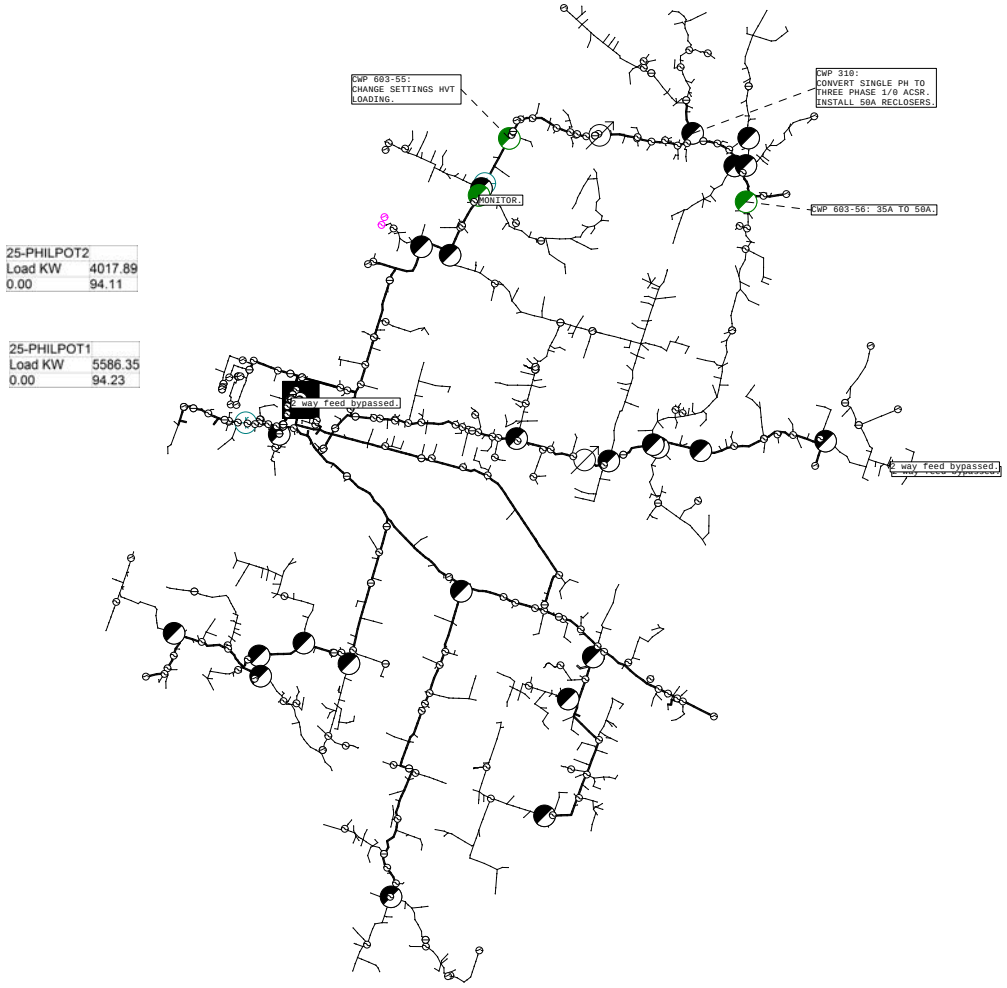


KENERGY

ONTON
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING



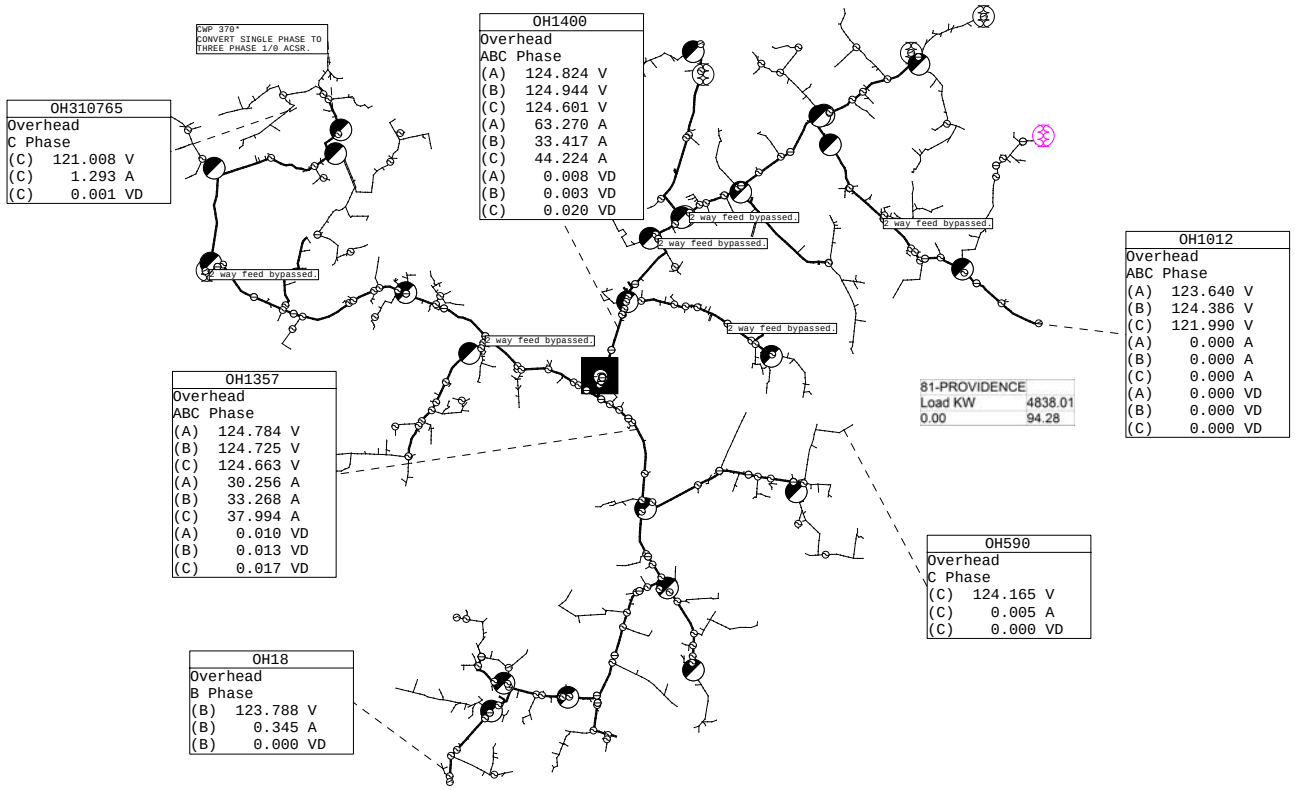
1" = 10251.099 ft

KENERGY

PHILPOT
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING

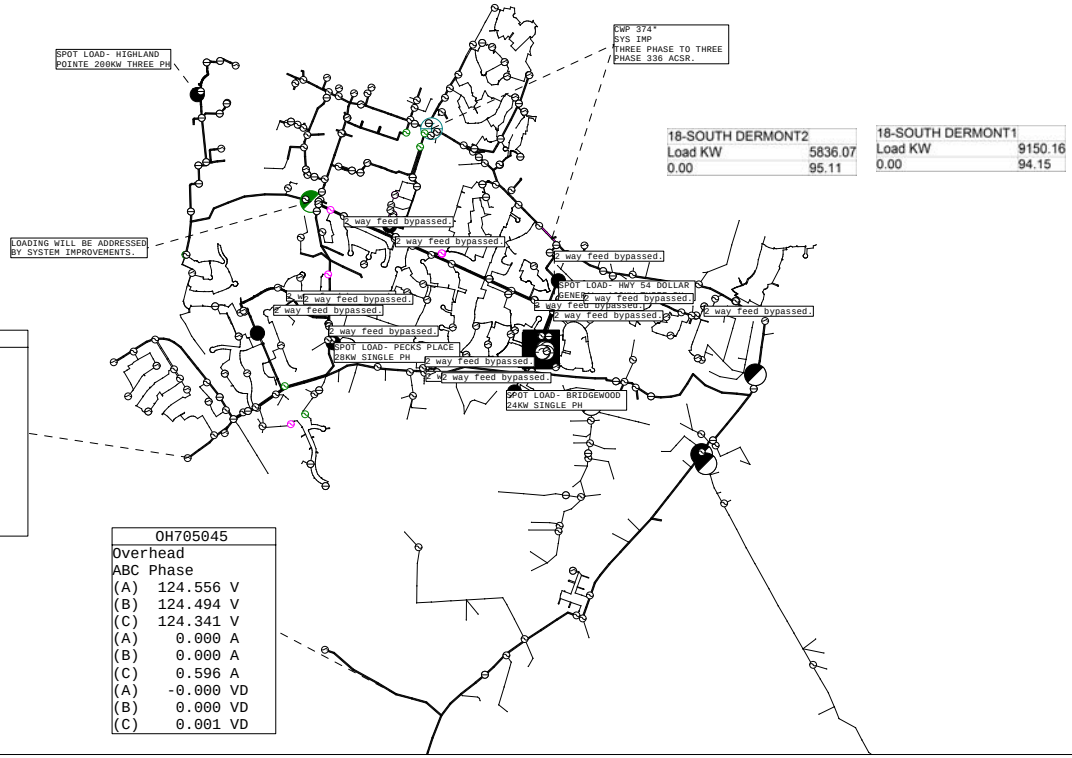


KENERGY

PROVIDENCE
2016-2020 IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING



18-SOUTH DERMONT2	
Load KW	5836.07
0.00	95.11

18-SOUTH DERMONT1	
Load KW	9150.16
0.00	94.15

OH704432
Overhead
ABC Phase
(A) 123.392 V
(B) 124.180 V
(C) 124.157 V
(A) 0.000 A
(B) 1.181 A
(C) 0.000 A
(A) 0.000 VD
(B) 0.001 VD
(C) -0.000 VD

OH705045
Overhead
ABC Phase
(A) 124.556 V
(B) 124.494 V
(C) 124.341 V
(A) 0.000 A
(B) 0.000 A
(C) 0.596 A
(A) -0.000 VD
(B) 0.000 VD
(C) 0.001 VD

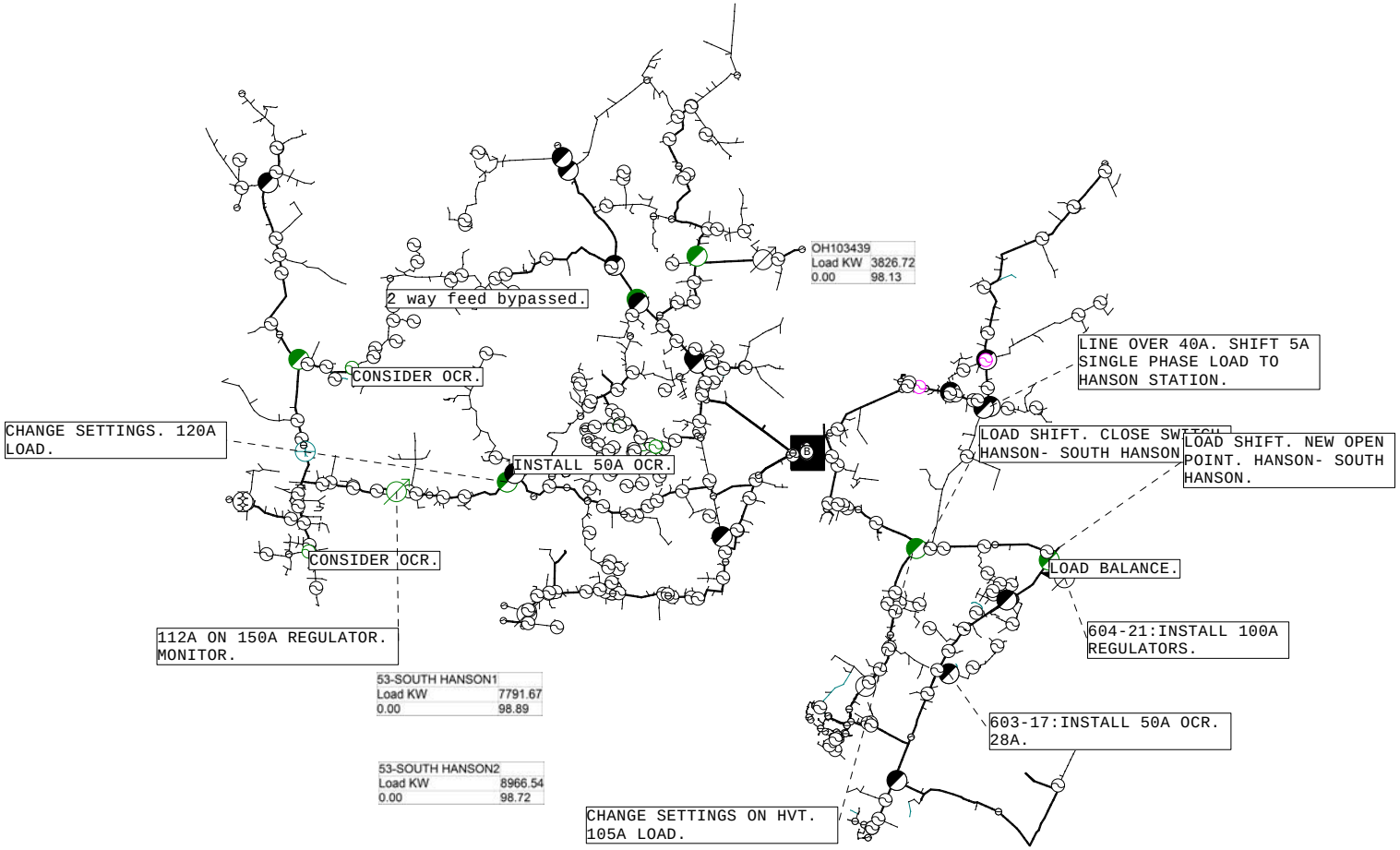
1" = 4149.765 ft

KENERGY

SOUTH DERMONT
2016-2020 IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING

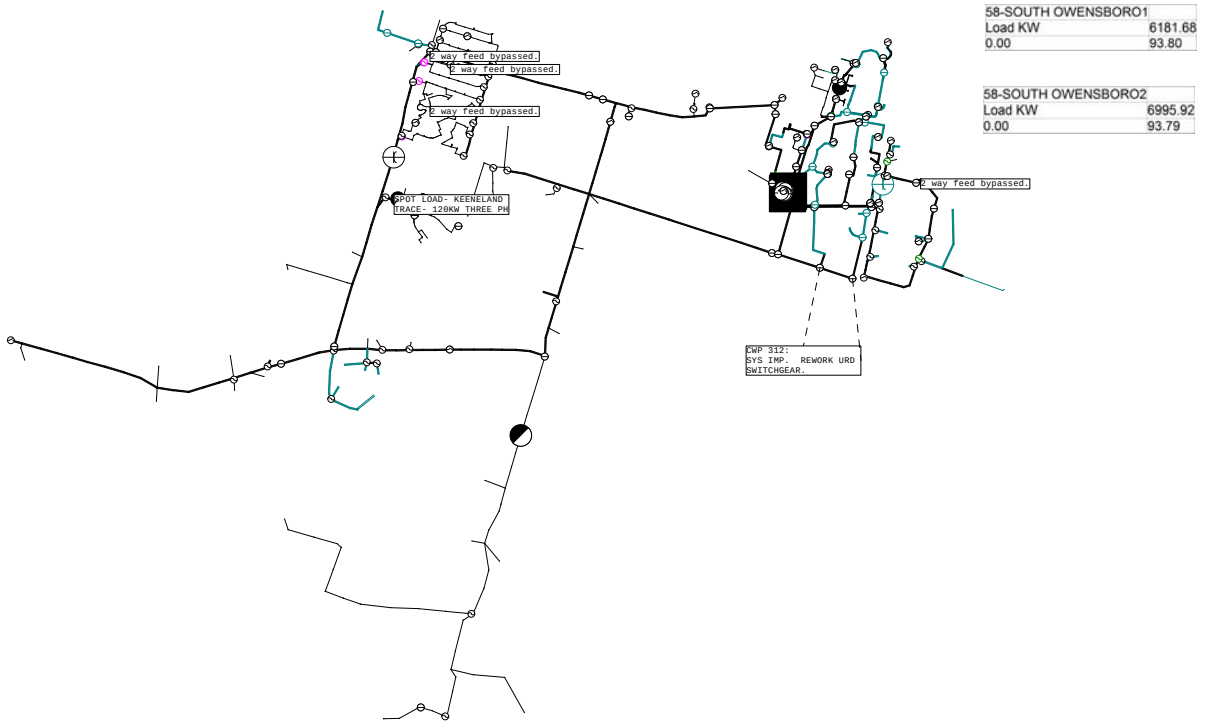


KENERGY

SOUTH HANSON 1 _2
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING



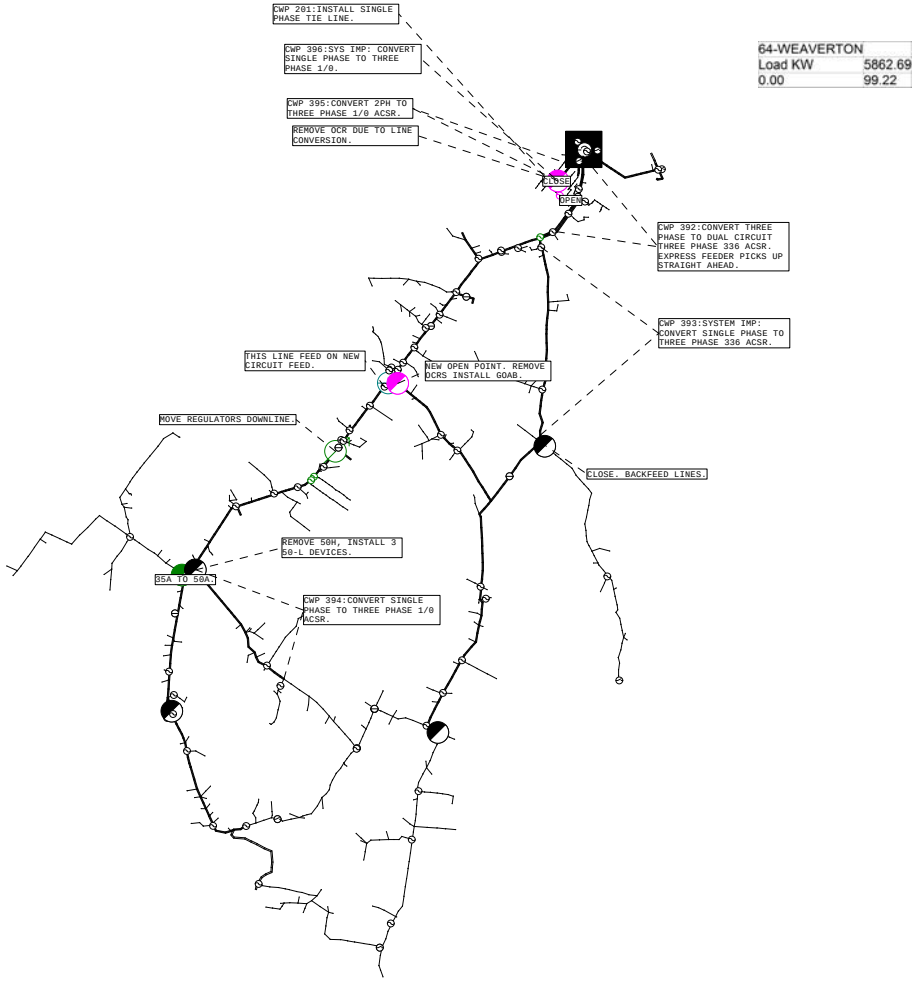
1" = 3807.263 ft

KENERGY

SOUTH OWENSBORO
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING



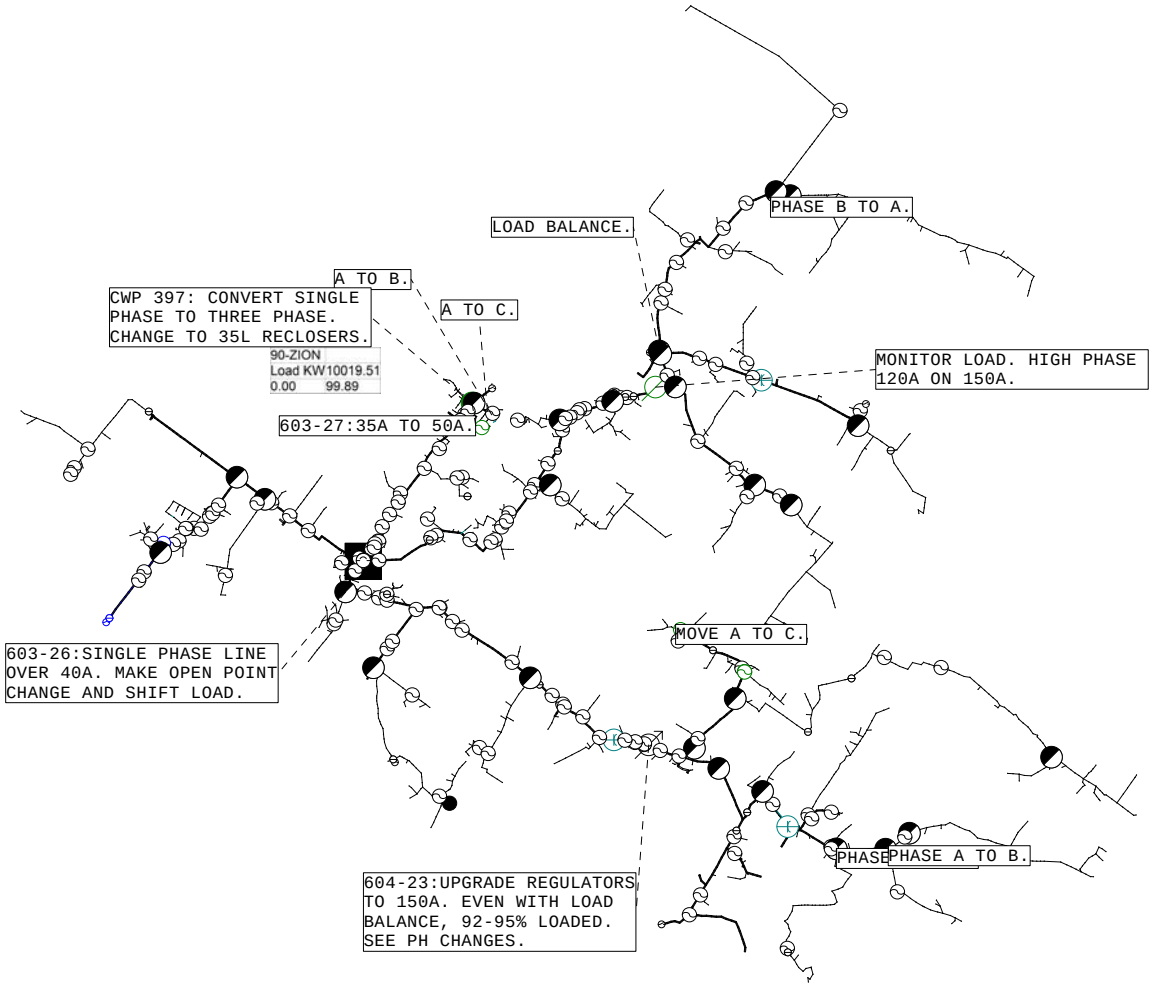
1" = 9545.780 ft

KENERGY

WEAVERTON
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP SUMMER 011515 WORKING



KENERGY

ZION
2016-2020 WITH IMPROVEMENTS

POWERSERVICES

CWP WINTER 011215 WORKING