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October 1, 2013

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PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

VIA UNITED PARCEL SERVICE

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120

Re: Biennial Inspection, Maintenance, Repair and Replacement Plan – West Penn Power Company for the period January 1, 2015 – December 31, 2016
Docket No. M-2009-2094773

Dear Secretary Chiavetta:

In accordance with 52 Pa. Code § 57.198, enclosed for filing on behalf of West Penn Power Company ("West Penn") is an original and one copy of the Biennial Inspection, Maintenance, Repair and Replacement Plan (the "Plan") for the period January 1, 2015 through December 31, 2016. Please date stamp the extra copy and return it in the postage-prepaid envelope provided.

This Plan is designed consistent with the guidelines established by the National Electric Safety Code, the Codes and Practices of the Institute of Electrical and Electronic Engineers, Federal Energy Regulatory Commission Regulations, and the American National Standards Institute, Inc. The Plan also has been designed to reduce the risk of outages on West Penn's system and form the basis of its inspection and maintenance goals and objectives as outlined in West Penn's annual and quarterly reliability reports filed with the Pennsylvania Public Utility Commission ("Commission").

West Penn respectfully requests that the Commission accept its Biennial Inspection, Maintenance, Repair and Replacement Plan. If you have any questions, please contact me or Tiffanne Cowan at (330) 761-4474.

Sincerely,

David J. Karafa/ms

David J. Karafa
President, Pennsylvania Operations

Enclosure

c: D. Searfoorce

WestPenn Power
A FirstEnergy Company

Biennial Inspection, Maintenance, Repair and Replacement Plan of West Power Company ("West Penn Power")

For the period of January 1, 2015 – December 31, 2016

Submitted by:
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WestPenn Power
A FirstEnergy Company

Table of Contents

WestPenn Power
A FirstEnergy Company

Revisions to Approved Plan

The Commission accepted West Penn Power Company's ("West Penn Power") current Biennial Inspection, Maintenance, Repair and Replacement Plan ("I&M Plan") for 2013 and 2014 on April 23, 2012. The table below illustrates, in summary fashion, the proposed changes to the 2015 and 2016 plan that differ from the 2013-2014 I&M Plan.

West Penn Power *2013-2014 Plan*	**West Penn Power** *Proposed Program (effective January 1, 2015)*
Substation Inspections – page 12	
Monthly safety & security inspection including visual equipment, structures and hardware. Readings and open cabinet visual inspection on a six-month basis.	Inspections will consist of three components: 1. Monthly Safety & Security, Visual Equipment and Recording of Deficiencies and Relay Operations 2. Safety/Security, Visual Equipment Inspection and Record Readings 3. Seasonal Maintenance

Section 57.198(n)(1). Vegetation Management. *The statewide minimum inspection and treatment cycle for vegetation management is between 4-8 years for distribution facilities. An EDC shall submit a condition-based plan for vegetation management for its distribution system facilities explaining its treatment cycle.*

Program Description

West Penn Power performs vegetation management in order to promote the continued safe and reliable operation of the distribution system. Vegetation management may be performed utilizing one of three methods: Standard Specification, Inspect/Maintain or Enhanced techniques. The Standard Specification for vegetation management is designed to support line reliability, maintain access, make repairs, or restore service and to support safe and reliable service. The Standard vegetation specification provides vegetation to be pruned to achieve five years of clearance, removal of selected incompatible trees within the clearing zone corridor, removal of certain defective limbs that are overhanging primary conductors, controlling selected incompatible brush mechanically and/or using herbicide, and removal of off-corridor priority trees that are dead, dying, diseased, and leaning or significantly encroaching the corridor.

Portions of a circuit that experience high customer interruption minutes due to vegetation-caused outages may be targeted to receive the Standard Specification as well as enhanced vegetation removal techniques, which includes removal of certain healthy limbs, based on tree species and condition, which overhang primary conductors.

For portions of a circuit that have not experienced significant reliability issues due to vegetation-caused outages, a proactive Inspect/Maintain process will target selective vegetation removal for continued reliable system operation. This may include the extension of a cycle which will not exceed eight years. This process involves inspection of the vegetation to evaluate the extent of potential for vegetation to interfere with energized conductors. Factors to consider in the evaluation are the voltage and height of the conductor, the type of tree, its growth rate and branching habit. Trees that will impact safety or reliability will be maintained to the Standard Specification.

Methods used to manage and control vegetation include manual control methods using hand-operated tools, mechanical control using equipment mounted saws, mowers or other devices, and various herbicide application techniques such as, selective basal herbicide applications, stem foliage applications and cut stubble applications.

Further detailed information regarding West Penn Power's vegetation management program may be found in the Vegetation Management Distribution Specifications.

Inspection Plan[1]

	Area	Inspections and Treatments Planned[1] Total Circuit Miles	
		2015	2016
West Penn Power *19,756 total circuit miles*	Arnold *1,548 total circuit miles*	350	359
	Boyce *509 total circuit miles*	113	110
	Butler *1,351 total circuit miles*	332	302
	Charleroi *1,462 total circuit miles*	349	321
	Clarion *1,481 total circuit miles*	141	63
	Hyndman *338 total circuit miles*	53	52
	Jeannette *1,193 total circuit miles*	278	258
	Jefferson *1,463 total circuit miles*	354	322
	Latrobe *1,177 total circuit miles*	270	285
	McConnellsburg *918 total circuit miles*	159	359
	McDonald *641 total circuit miles*	170	132
	Pleasant Valley *1,044 total circuit miles*	271	242
	St. Marys *1,191 total circuit miles*	289	290
	State College *1,682 total circuit miles*	376	379
	Uniontown *1,238 total circuit miles*	296	311
	Washington *1,301 total circuit miles*	281	318
	Waynesboro *1,221 total circuit miles*	293	141

Section 57.198(c). Time frames. *The plan must comply with the inspection and maintenance standards in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's*

[1] Subject to change.

unique circumstances or a cost/benefit analysis to support an alternative approach that will support the level of reliability required by law.

Justification

Distribution vegetation management activities are performed in accordance with the following:

- Generally accepted industry practices
- ANSI Z133.1 and A-300 Standards and according to the requirements given by OSHA and the National Electrical Safety Code (NESC)

In 2012, West Penn Power implemented the Vegetation Management program methods used by Pennsylvania Power Company ("Penn Power"), Pennsylvania Electric Company ("Penelec") and Metropolitan Edison Company ("Met-Ed") on a five-year cycle. West Penn Power's new Vegetation Management program calls for the completion of 100% of the entire service territory within a five-year cycle compared to the previously approved plan plan which completed the entire service territory within an eight-year cycle. West Penn Power prioritizes the first zone of trimming, which is from the substation to the first protection device. Also, West Penn Power has implemented a heavier trim practice with more ground to sky trimming and removal of danger trees. Additionally, West Penn Power is committed to an increased level of spending over the next several years that will improve the reliability of the West Penn Power electrical system.

The standard specification seeks to control all vegetation in the space defined as the "distribution clearing zone." The distribution clearing zone is a corridor measured at a tree edge, whichever is greater in width. The corridor is measured vertically to fifteen feet above the highest conductor attached to the pole or structure. In addition to the standard specification, West Penn Power has applied a practice described as "enhanced maintenance" to select line sections. Enhanced maintenance is intended to improve tree related reliability. This practice involves removing overhanging limbs beyond the prescribed fifteen feet as well as aggressive hazard tree mitigation.

As part of West Penn Power's approach to improved tree related reliability, the Company continues to analyze the circuit electrical protection schemes and gives added attention to those line sections that serve high numbers of customers. While following the existing protection schemes, three distinct line sections have been identified and defined. Zone 1 is defined as the three-phase circuitry from the circuit breaker to the first protective device which serves the entire circuit customer load. Zone 2 is defined as the three-phase circuitry beyond the first protective device which typically serves a large percentage of the circuit customer load. Zone 3 is defined as all single phase and two-phase circuitry which serves smaller percentages of the circuit customer load.

West Penn Power's vegetation management program allows for prioritization of the first zone of trimming, which is from the substation to the first protective device. The table below shows the West Penn Power mileage that will be trimmed each year under the five-year program. As shown in the following table, West Penn Power plans to complete 100% of the Zone 1 trim area within the first three years with 100% of all miles trimmed within five years.

Approved 5-Year Cycle					
		Zone 1 (Substation to first protective device)		Total	
Cycle Year	Year	Cumulative Cycle Miles	% of Total	Cumulative Cycle Miles	% of Total
1	2012	678	49%	4,360	22%
2	2013	1,155	83%	8,520	43%
3	2014	1,433	103%	12,480	63%
4	2015	1,710	123%	16,440	83%
5	2016	1,988	143%	20,400	103%
6	2017	2,266	163%	24,360	123%
7	2018	2,543	183%	28,320	143%
8	2019	2,821	203%	32,280	163%
Total System Miles		**1,388**		19,800	

Section 57.198(m). Record Keeping. *Maintain records of inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs.*

In order to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs, West Penn Power will maintain inspection and maintenance records either electronically or in hard copy as required by state law.

Section 57.198(n)(2). Pole Inspections. *Distribution poles shall be inspected at least as often as every 10 – 12 years except for the new southern yellow pine creosoted utility poles which shall be initially inspected within 25 years, then within 12 years annually after the initial inspection. Pole inspections must include:*

i. Drill tests at and below ground level
ii. A shell test
iii. Visual inspection for holes or evidence of insect infestation
iv. Visual inspection for evidence of unauthorized backfilling or excavation near the pole
v. Visual inspection for signs of lightning strikes
vi. A load calculation

Program Description

West Penn Power shall visually inspect distribution wood poles on a twelve year cycle. The purpose for inspecting distribution wood poles is to identify and repair unsafe conditions or conditions that may adversely affect service reliability or system performance, and to comply with the state regulatory agencies and the National Electrical Safety Code.

This preventative maintenance inspection for wood poles will include a visual inspection as well as hammer-sounding as needed. The inspection consists of the recording of abnormal conditions from the groundline to the top of the pole including but not limited to the following:

- Damage – broken or leaning
- Equipment – crossarms, insulators, conductors, oil leaking
- Testing for decayed internal wood

In addition to the visual inspection, poles showing incipient decay or poles that are thirty-five years old or older will be bored to further assess the condition of the pole. This inspection consists of the recording of tests performed and abnormal conditions detected including but not limited to the following:

- Boring – testing for internal decay
- Verification of shell thickness

Further detailed information regarding West Penn Power's inspection of wood poles may be found in the Distribution Inspection & Maintenance Practice – Wood Poles.

Inspection Plan[2]

	Area	Pole Inspections Planned (Number of Poles) 2015	2016
West Penn Power *491,302 total poles*	Arnold *42,498 total poles*	3,541	3,541
	Boyce *12,411 total poles*	1,034	1,034
	Butler *32,070 total poles*	2,672	2,672
	Charleroi *43,828 total poles*	3,652	3,652
	Clarion *11,539 total poles*	962	962
	Hyndman *5,642 total poles*	470	470
	Jeannette *34,808 total poles*	2,900	2,900
	Jefferson *32,326 total poles*	2,694	2,694
	Kittanning *20,266 total poles*	1,689	1,689
	Latrobe *29,987 total poles*	2,499	2,499
	McConnellsburg *16,223 total poles*	1,519	1,519
	McDonald *15,830 total poles*	1,319	1,319
	Pleasant Valley *28,874 total poles*	2,406	2,406
	St. Marys *27,434 total poles*	2,286	2,286
	State College *38,484 total poles*	3,207	3,207
	Uniontown *34,931 total poles*	2,911	2,911
	Washington *32,276 total poles*	2,690	2,690
	Waynesboro *29,875 total poles*	2,490	2,490

[2] Subject to change based on addition or removal of equipment.

Section 57.198(n)(3). Inspection Failure. *If a pole fails the groundline inspection and shows dangerous conditions that are an immediate risk to public or employee safety or conditions affecting the integrity of the circuit, then the pole shall be replaced within 30 days of the date of inspection.*

Corrective Maintenance

Wood poles and supporting structures with recorded defects that West Penn Power could reasonably expect to create an immediate risk to public or employee safety or conditions affecting the integrity of the circuit shall be repaired/replaced within 30 days. All remaining deficiencies will be prioritized on a case-by-case basis.

Section 57.198(c). Time frames. *The plan must comply with the inspection and maintenance standards set forth in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's unique circumstances or a cost/benefit analysis to support an alternative approach that will support the level of reliability required by law.*

Justification

The practice of performing wood pole inspections on a twelve year cycle is based on accepted electric utility practices. National Electrical Safety Code (NESC) Rule 12.121.A states "*lines and equipment shall be inspected at such intervals as experience has shown to be necessary.*" A periodicity of twelve years between inspections allows enough time for proper planning and remediation prior to any emergent problems having a negative impact on personal safety, equipment integrity or service reliability.

Regarding load calculations, West Penn Power's design personnel base line designs on FirstEnergy's Distribution Line Construction Standards and Distribution Engineering Practices. The Company's Construction Standards are created based on NESC Heavy Loading (NESC C2-2007, Section 250) since the majority of FirstEnergy's service territory lies within this zone, and since these standards provide basic guidance for most designs encountered by distribution line design personnel. The Engineering Practices provide detailed guidance for both guying and pole loading to be used when designers encounter more complex design needs, again based on NESC Heavy Loading. Per the NESC, both of these resources include safety factors such that the deterioration of poles in service shall not reduce the strength capability of the pole below the required strength. Further, as the Company receives requests from other entities to attach their facilities to West Penn Power poles, an assessment of the pole's ability to accommodate the new strength requirement is performed.

Section 57.198(m). Record Keeping. *Maintain records of inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs.*

In order to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs, West Penn Power will maintain

inspection and maintenance records either electronically or in hard copy as required by state law.

Section 57.198(n)(4). Distribution overhead line inspections. *Distribution lines shall be inspected by ground patrol a minimum of once every 1 – 2 years. A visual inspection must include checking for:*

i. Broken insulators
ii. Conditions that may adversely affect operation of the overhead distribution line
iii. Other conditions that may adversely affect operation of the overhead distribution line

Program Description

West Penn Power shall visually inspect overhead lines and equipment on a six-year cycle. The purpose for inspecting overhead lines and equipment is to identify and repair unsafe conditions or conditions that may adversely affect service reliability, and to comply with the requirements of state regulatory agencies and the National Electrical Safety Code. This program shall be limited to overhead facilities.

Approximately one-sixth of all circuits will be inspected annually to levelize labor commitments and expenses. This preventative maintenance will consist of a visual inspection and recording of abnormal conditions including but not limited to the following types of overhead circuit equipment:

- Conductors (wire and cable) – excessive slack, condition, damage, clearances
- Supporting structures (wood poles) – deteriorated condition, sustained damage (lightning, vehicle, woodpecker holes)
- Pole hardware (including insulators) – condition, damage
- Guying – condition, damage
- Pole-mounted distribution equipment (including overhead transformers) – condition, damage

Further information regarding West Penn Power's inspection of Distribution Overhead Lines may be found in the Distribution Inspection & Maintenance Practice – Overhead Circuits and Equipment.

Inspection Plan[3]

	Area	Overhead Line Inspections Planned (Number of Circuits) 2015	2016
West Penn Power *794 total circuits*	Arnold *72 total circuits*	14	8
	Boyce 38 total circuits	7	6
	Butler *62 total circuits*	13	12
	Charleroi *68 total circuits*	8	14
	Clarion *17 total circuits*	2	3
	Hyndman *6 total circuits*	1	2
	Jeannette *66 total circuits*	12	11
	Jefferson *35 total circuits*	8	7
	Kittanning *32 total circuits*	8	7
	Latrobe *39 total circuits*	9	4
	McConnellsburg *24 total circuits*	2	3
	McDonald *20 total circuits*	4	2
	Pleasant Valley *42 total circuits*	2	4
	St. Marys *51 total circuits*	6	10
	State College *75 total circuits*	15	14
	Uniontown *50 total circuits*	9	9
	Washington *39 total circuits*	15	3
	Waynesboro *58 total circuits*	24	5

[3] Subject to change based on addition or removal of equipment.

Section 57.198(n)(5). Inspection Failure. *If critical maintenance problems are found that affect the integrity of the circuits, they shall be repaired or replaced no later than 30 days from discovery.*

Corrective Maintenance

Supporting structures with recorded defects that West Penn Power could reasonably expect to affect the integrity of the circuits shall be repaired/replaced within 30 days. All remaining deficiencies will be prioritized on a case-by-case basis.

Section 57.198(c). Time frames. *The plan must comply with the inspection and maintenance standards in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's unique circumstances or a cost/benefit analysis to support an alternative approach that will support the level of reliability required by law.*

Justification

The practice of performing overhead line inspections on a six-year cycle is based on accepted electric utility practices and the experience of West Penn Power. National Electrical Safety Code (NESC) Rule 12.121.A states *"lines and equipment shall be inspected at such intervals as experience has shown to be necessary."* A periodicity of six years between inspections has historically been utilized and has proven to be successful in addressing emergent problems in a timely manner, allowing for proper planning and remediation prior to the emergent problem having a negative impact on personal safety, equipment integrity or service reliability. This experience does not justify the expense of an increased cycle.

In addition to an inspection every six years, there are many other opportunities for West Penn Power personnel to view the overhead line facilities and identify any potential issues. West Penn Power's overhead line inspection program coincides with other equipment inspections, such as the annual recloser inspections. In order to address specific reliability concerns and to assess some worst performing circuit performance, additional circuit assessments are performed in addition to West Penn Power's six-year inspection program. Any emergent priority overhead line problems identified during these other inspections are similarly addressed in a timely manner.

Section 57.198(m). Record Keeping. *Maintain records of inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs.*

In order to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs, West Penn Power will maintain inspection and maintenance records either electronically or in hard copy as required by state law.

Section 57.198(n)(6). Distribution transformer inspections. *Overhead distribution transformers shall be visually inspected as part of the distribution line inspection every 1 – 2 years. Above-ground pad-mounted transformers shall be inspected at least as often as every 5 years and below-ground transformers shall be inspected at least as often as every 8 years. An inspection must include checking for:*

i. Rust, dents or other evidence of contact
ii. Leaking oil
iii. Installation of fences or shrubbery that could adversely affect access to and operation of the transformer
iv. Unauthorized excavation or changes in grade near the transformer

Program Description

West Penn Power inspects overhead distribution transformers as part of the overhead line inspection. Above-ground pad-mounted transformers are inspected on a five-year cycle and below-ground transformers are inspected on an eight-year cycle. The purpose for inspecting distribution transformers is to identify and repair unsafe conditions or conditions that may adversely affect service reliability, and to comply with the requirements of state regulatory agencies and the National Electrical Safety Code.

Overhead distribution transformers – visual inspection and recording of abnormal conditions including but not limited to the following:

- Equipment condition – oil leakage, arresters, rust, dents or evidence of contact

Above-ground pad-mounted equipment (transformers and switchgear) – inspection and recording of abnormal conditions including but not limited to the following:

- Equipment condition – oil leakage, cabinet damage, holes, washout
- Security – locking mechanisms
- Accessibility – as required for operation and maintenance purposes, including the installation of fences or shrubbery that could adversely affect access to and operation of the transformer and unauthorized excavation or changes in grade near the transformer
- Warning labels – electrical hazard warning label and landscaping instructions notice

Below-ground transformers – visual inspection and recording of abnormal conditions including but not limited to the following:

- Accessibility – verify cover is secured
- Equipment condition – visually inspect baffle

Further detailed information regarding West Penn Power's inspection of distribution transformers may be found in the Distribution Inspection & Maintenance Practice – Underground Equipment.

Inspection Plan[4]

	Area	Type	Transformer Inspections Planned (Total Transformers) 2015	2016
West Penn Power *312,260 total transformers*	Arnold	Overhead Transformers *24,038 total transformers*	2,826	2,036
		Above-Ground Pad-mounted *2,267 total transformers*	601	491
	Boyce	Overhead Transformers *10,034 total transformers*	2,103	1,369
		Above-Ground Pad-mounted *3,910 total transformers*	729	666
	Butler	Overhead Transformers *19,109 total transformers*	3,431	3,000
		Above-Ground Pad-mounted *3,766 total transformers*	666	672
	Charleroi	Overhead Transformers *26,739 total transformers*	3,678	5,055
		Above-Ground Pad-mounted *2,897 total transformers*	723	638
	Clarion	Overhead Transformers *5,579 total transformers*	1,029	663
		Above-Ground Pad-mounted *632 total transformers*	52	102
	Hyndman	Overhead Transformers *2565 total transformers*	172	405
		Above-Ground Pad-mounted *206 total transformers*	0	111
	Jeannette	Overhead Transformers *26,447 total transformers*	3,618	4,004
		Above-Ground Pad-mounted *4,948 total transformers*	1,160	1,001
	Jefferson	Overhead Transformers *14,301 total transformers*	2,827	3,414
		Above-Ground Pad-mounted *655 total transformers*	136	131
	Kittanning	Overhead Transformers *10,472 total transformers*	2,652	1,898
		Above-Ground Pad-mounted *841 total transformers*	222	147
	Latrobe	Overhead Transformers *17,470 total transformers*	3,760	2,036
		Above-Ground Pad-mounted *2,482 total transformers*	594	319
	McConnellsburg	Overhead Transformers *7,957 total transformers*	798	799
		Above-Ground Pad-mounted *951 total transformers*	126	170
	McDonald	Overhead Transformers *8,063 total transformers*	1,544	1,116
		Above-Ground Pad-mounted *1,294 total transformers*	139	313
	Pleasant Valley	Overhead Transformers *16,698 total transformers*	722	1,683
		Above-Ground Pad-mounted *1,576 total transformers*	229	270
	St. Marys	Overhead Transformers *14,110 total transformers*	1,353	2,446
		Above-Ground Pad-mounted *1,000 total transformers*	266	140

[4] Subject to change based on addition or removal of equipment.

West Penn Power *312,260 total transformers*	State College	Overhead Transformers *18,894 total transformers*	4,493	3,740
		Above-Ground Pad-mounted *5,553 total transformers*	804	1,218
	Uniontown	Overhead Transformers *19,231 total transformers*	3,996	2,394
		Above-Ground Pad-mounted *1,834 total transformers*	594	320
	Washington	Overhead Transformers *14,889 total transformers*	4,700	1,314
		Above-Ground Pad-mounted *2,212 total transformers*	628	371
	Waynesboro	Overhead Transformers *14,005 total transformers*	5,310	1,385
		Above-Ground Pad-mounted *4,635 total transformers*	1,054	1,276

Section 57.198(c). Time frames. *The plan must comply with the inspection and maintenance standards in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's unique circumstances or a cost/benefit analysis to support an alternative approach that will support the level of reliability required by law.*

Justification

The practice of performing distribution overhead transformers on a six-year cycle, above-ground transformers on a five-year cycle and below-ground transformers on an eight-year cycle is based on accepted electric utility practices and the experience of West Penn Power. National Electrical Safety Code (NESC) Rule 12.121.A states *"lines and equipment shall be inspected at such intervals as experience has shown to be necessary."*

The above periodicities between inspections have proven to be successful in addressing emergent problems in a timely manner, allowing for proper planning and remediation prior to the emergent problem having a negative impact on personal safety, equipment integrity or service reliability.

Section 57.198(m). Record Keeping. *Maintain records of inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs.*

In order to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs, West Penn Power will maintain inspection and maintenance records either electronically or in hard copy as required by state law.

Section 57.198(n)(7). Recloser inspections. *Three-phase reclosers shall be inspected on a cycle of 8 years or less. Single-phase reclosers shall be inspected as part of the EDC's individual distribution line inspection plan.*

Program Description

West Penn Power visually inspects distribution line reclosers annually. The purpose for inspecting distribution line reclosers is to identify and repair unsafe conditions or conditions that may adversely affect service reliability or system performance, and to comply with the requirements of state regulatory agencies and the National Electrical Safety Code.

The annual preventative maintenance consists of counter readings and field inspection. The counter readings are obtained to assess system performance based on the number of operations. The field inspection includes but is not limited to the following:

- Type of recloser and current rating
- *Counter reading*
- Condition – rust, dents, physical damage, leaks, lightning damage
- Equipment – surge arresters, tank-ground connections, by-pass switches, control battery, pole
- *Grounds – damage, condition*

Further detailed information regarding West Penn Power's inspection of reclosers may be found in the Distribution Inspection & Maintenance Practice – Line Reclosers.

Inspection Plan[5]

	Area	Recloser Inspections Planned *Total Number of Reclosers*	
		2015	2016
West Penn Power 3780 *total reclosers*	Arnold *312 total reclosers*	312	312
	Boyce *268 total reclosers*	268	268
	Butler *324 total reclosers*	324	324
	Charleroi *273 total reclosers*	273	273
	Clarion *76 total reclosers*	76	76
	Hyndman *64 total reclosers*	64	64
	Jeannette *326 total reclosers*	326	326
	Jefferson *188 total reclosers*	188	188
	Kittanning *133 total reclosers*	133	133
	Latrobe *210 total reclosers*	210	210
	McConnellsburg *154 total reclosers*	154	154
	McDonald *163 total reclosers*	163	163
	Pleasant Valley *154 total reclosers*	154	154
	St. Marys *148 total reclosers*	148	148
	State College *165 total reclosers*	165	165
	Uniontown *225 total reclosers*	225	225
	Washington *281 total reclosers*	281	281
	Waynesboro *316 total reclosers*	316	316

[5] Subject to change based on addition or removal of equipment.

Section 57.198(c). Time frames. *The plan must comply with the inspection and maintenance standards in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's unique circumstances or a cost/benefit analysis to support an alternative approach that will support the level of reliability required by law.*

Justification

The practice of performing annual recloser inspections is based on accepted electric utility practices and the experience of West Penn Power. National Electrical Safety Code (NESC) Rule 12.121.A states *"lines and equipment shall be inspected at such intervals as experience has shown to be necessary."* A periodicity of one year between inspections has proven to be successful in addressing emergent problems in a timely manner, allowing for proper planning and remediation prior to the emergent problem having a negative impact on personal safety, equipment integrity or service reliability.

Section 57.198(m). Record Keeping. *Maintain records of inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs.*

In order to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs, West Penn Power will maintain inspection and maintenance records either electronically or in hard copy as required by state law.

Section 57.198(n)(8). Substation inspections. *Substation equipment, structures and hardware shall be inspected on a cycle of 5 weeks or less.*

Program Description

West Penn Power inspects its distribution substations twelve times annually. The purpose of these monthly inspections of the distribution substations is to ensure that any developing substation problems are identified and addressed in a timely manner in support of system reliability and electrical safety.

There are three types of the preventative maintenance inspections that are performed at West Penn Power substations during a twelve month period. The chart below illustrates the type of inspection is done each month[6]:

Inspection Type	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Safety and Security of Facilities/Visual Equipment Inspection/Reporting and Recording of Deficiencies and Relay Operations (Class C)	X	X	X	X	X	X	X	X	X	X	X	X
Safety/Security, Visual Equipment Inspection and Record Readings (Class B)			X			X			X			X
Seasonal Maintenance (Class A)						X						X

The following is a summary of each type of inspection that is conducted at West Penn Power substations:

1. *Safety and Security of Facilities and Visual Equipment Inspection of Electrical Equipment and Reporting/Recording Identified Deficiencies and Relay Operations (Class C).* Monthly visual inspection of substation equipment, structures and hardware that also includes the recording of abnormal conditions or deficiencies. This inspection includes but is not limited to the following:
   - General condition – read and record ambient temperature
   - Perimeter fence inspection (gate locks, fence and gate grounds, warning signs
   - Yard and facility inspection (equipment grounds, vegetation condition, general yard condition, equipment condition, oil levels and leaks, structure/hardware condition, hotspots, conductors/switches/connections)
   - Building inspection (security, integrity, indication lights)
   - Visual inspection of major equipment (power transformers, circuit breakers, instrument transformers, etc.)
   - Relays, electronic controls, and panel meters for alarms and targets
   - Batteries and chargers

[6] For illustrative purposes only.

2. *Safety and Security, Visual Equipment Inspection and Record Readings (Class B).* In addition to the safety and security and visual equipment inspection that is performed monthly, every three months an additional visual inspection that includes the recording of readings is performed. This inspection includes but is not limited to all items listed under the Class C inspection as well as the following types of substation equipment:
   - Recording of amps and load readings
   - Recording of counter and gauge readings
   - Inspection/test of carrier communication equipment
   - Inspection of microwave/radio sites and engine generators – generator alarms and battery

3. *Seasonal Maintenance - Summer and Winter Readiness (Class A).* In addition to the monthly and three-month inspections, every six months a more comprehensive inspection of the substation and substation equipment is performed. This inspection includes but is not limited to all items listed under the Class C and B inspections as well as the following types of substation equipment:
   - Servicing fire protection equipment
   - Servicing eye wash stations
   - Yard lighting
   - Servicing filters and HVAC systems
   - Servicing of equipment cabinet heaters
   - Servicing engine generators

Further detailed information regarding West Penn Power's inspection of substations may be found Section 20P – Substation Patrol Inspection of the Substation Practice Manual.

Inspection Plan[7]

	Area	Substation Inspections Planned *Number of Substations*	
		2015	2016
West Penn Power	Arnold	624	624
	Boyce	324	324
	Butler	492	492
	Charleroi	564	564
	Jeannette	420	420
	Jefferson	636	636
	Kittanning	312	312
	Latrobe	324	324
	Pleasant Valley	576	576
	St. Marys	444	444
	State College	456	456
	Washington	384	384
	Waynesboro	444	444

Section 57.198(c). Time frames. *The plan must comply with the inspection and maintenance standards in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's unique circumstances or a cost/benefit analysis to support an alternative approach that will support the level of reliability required by law.*

Justification

Providing a trained, physical presence within the substation on a regular, periodic basis has proven very successful in detecting the degradation of facilities not always captured by existing local and remote surveillance and monitoring tools. A periodicity of one month between inspections has proven to be successful in addressing emergent problems in a timely manner, allowing for proper planning and remediation prior to the emergent problem having a negative impact on person safety, equipment integrity or service reliability.

Acceptance of this program would allow FirstEnergy to establish a uniform maintenance program across all FirstEnergy Pennsylvania Operating Companies.

As a result of advancement in today's technologies, substation equipment inspections have been refined to leverage these advancements in order to ensure the highest levels

[7] Subject to change based on the addition or removal of equipment.

of safety and reliability of substations and substation equipment in a more efficient manner. With today's technology, equipment inspections along with patrol inspection results can now be captured by field personnel on site and integrated and tracked electronically in the maintenance database. Enhanced software programs allow condition-based maintenance to target specific equipment and trigger maintenance based on equipment condition. The counter readings that are obtained during the three-month inspection (Class B) are then utilized to trigger this condition-based maintenance. Predictive and condition-based programs not only extend the operating life of the equipment, they also optimize the necessary maintenance interval, improve service reliability, and reduce down time that is typically experienced when equipment is taken off line which reduces exposure of the grid more consistently and efficiently.

As part of this revised program, monthly patrol inspections of distribution substations will continue to be performed in order to focus on safety and security as well as in identifying equipment deficiencies that could have a negative impact on reliability. Load and counter readings will be recorded every three months in order to allow local engineering to conduct planning and load study activities. A seasonal inspection will be added for the spring and fall.

Section 57.198(m). Record Keeping. *Maintain records of inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs.*

In order to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs, West Penn Power will maintain inspection and maintenance records either electronically or in hard copy as required by state law.