

BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Ohio)
Edison Company, The Cleveland Electric)
Illuminating Company and The Toledo)
Edison Company for Authority to Provide) Case No. 23-301-EL-SSO
for a Standard Service Offer Pursuant to R.C.)
4928.143 in the Form of an Electric Security)
Plan)

DIRECT TESTIMONY OF

SHAWN T. STANDISH

ON BEHALF OF

**OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY**

APRIL 5, 2023

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Shawn Standish. My business address is 501 Parkway Blvd, York,
4 Pennsylvania 17404.

5 **Q. PLEASE IDENTIFY YOUR EMPLOYER AND DESCRIBE YOUR CURRENT**
6 **POSITION.**

7 A. I am employed by FirstEnergy Service Company (“FESC”) as the Director of Vegetation
8 Management for the FirstEnergy Corp. (“FirstEnergy”) distribution and transmission
9 utilities, including Ohio Edison Company (“OE”), The Cleveland Electric Illuminating
10 Company (“CEI”), and The Toledo Edison Company (“TE”) (collectively, the
11 “Companies”). I am responsible for the design and implementation of utility vegetation
12 management standards and specifications, for both distribution and transmission, including
13 maintenance of vegetation along transmission corridors or distribution circuits, clearance
14 for construction of new facilities, administration of forestry contracts, and compliance with
15 applicable regulatory standards. I am also responsible for communicating with state and
16 federal regulatory authorities regarding vegetation management policies.

17 **Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND BACKGROUND.**

18 A. I am the Director of Vegetation Management at FESC, for whom I have worked since
19 October 2004 with one-and-a-half years as a contractor and seventeen years as a direct
20 employee. I hold a Bachelor of Science degree in Forest Science from the Pennsylvania
21 State University. I am an International Society of Arboriculture (“ISA”) certified arborist,
22 ISA Certified Arborist Utility Specialist, and hold a Pennsylvania pesticide license. For
23 FESC, prior to my current position, I have served as a field specialist responsible for the

1 implementation of the vegetation maintenance program, a supervisor in Transmission
2 Vegetation Management Operations, and the manager of the Program Management
3 department. Prior to FESC, I worked for three years for Consumers Energy in Michigan
4 and for three years in the residential tree and plant health care industry.

5 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

6 A. The purpose of my testimony is to describe the Companies' current vegetation management
7 plan. I also explain operational challenges the Companies face in implementing,
8 maintaining, and managing their vegetation management plan. In addition, I describe the
9 Companies' proposed enhanced vegetation management program as part of their fifth
10 electric security plan ("ESP V").

11 **Q. ARE YOU SPONSORING ANY ATTACHMENTS AS PART OF YOUR**
12 **TESTIMONY?**

13 A. Yes. As referenced in more detail below, I am sponsoring the following attachments:

- 14 • Attachment STS-1: Companies' Customer Average Interruption Duration Index
15 ("CAIDI") and System Average Interruption Frequency Index ("SAIFI") from Tree-
16 Caused Outages.
- 17 • Attachment STS-2: Work Papers-Estimated O&M Expense for the Companies'
18 Vegetation Management Program.
- 19 • Attachment STS-3: Work Papers-Estimated Economic Benefits of the Enhanced
20 Vegetation Management Program.

21

1 **II. THE COMPANIES' CURRENT VEGETATION MANAGEMENT PLAN**

2 **Q. PLEASE DESCRIBE THE COMPANIES' APPROACH TO VEGETATION**
3 **MANAGEMENT.**

4 A. Vegetation management is critical to a utility's provision of safe and reliable service. The
5 Companies' vegetation management plan prescribes a four-year maintenance cycle during
6 which each Company performs vegetation management within its distribution clearing
7 zone. The distribution clearing zone is a corridor measured at fifteen (15) feet on either side
8 of the pole line or to the established large tree edge. The corridor is measured vertically to
9 fifteen (15) feet above the highest conductor attached to the pole or structure. The
10 Companies' goal is to obtain clearance for the entire four-year cycle. However, if four
11 years' clearance is not attainable, there must be twelve (12) feet of clearance around the
12 distribution conductors. The Companies currently spend approximately \$45 million per
13 year on their vegetation management plan.

14 **Q. HOW DO THE COMPANIES MAINTAIN CLEARANCE FOR THE FOUR-YEAR**
15 **CYCLE?**

16 A. The Companies perform vegetation maintenance by manually or mechanically controlling
17 selected incompatible¹ brush and/or using herbicide, and by removing (i) selected
18 incompatible trees within the clearing zone corridor, (ii) certain defective limbs that are
19 overhanging primary conductors, and (iii) off-corridor priority trees, which are those
20 priority trees outside of the distribution clearing zone. Priority trees are trees located

¹ Incompatible vegetation is vegetation (such as brush or trees) that may grow tall enough to interfere with overhead electric facilities or otherwise impede access and/or the ability to visually inspect the distribution corridor from structure to structure to ensure continued safe and reliable electric service.

1 adjacent to the corridor that are dead, dying, diseased, declining, structurally defective,
2 severely leaning, or significantly encroaching on areas where electric facilities are at risk of
3 arcing or failing should the tree or portions of the tree fall near or into the facilities or
4 otherwise grow towards or into the facilities. The Companies identify priority trees that
5 pose a risk to the distribution system and target identified priority trees for pruning or
6 removal consistent with industry standards. Incompatible vegetation is addressed on a case-
7 by-case basis given the threat it poses to the distribution system.

8 **Q. ARE THERE INDUSTRY STANDARDS THE COMPANIES FOLLOW WHEN**
9 **PERFORMING VEGETATION MANAGEMENT?**

10 A. Yes. The Companies and their contractors follow a set of Vegetation Management
11 Standards (“Standards”) in accordance with the American National Standards Institute
12 (“ANSI”) industry standards and amendments and Best Management Practices (“BMPs”)
13 as described in more detail below. The Standards are developed by the industry in
14 conjunction with the Tree Care Industry Association and once approved, are published by
15 the ANSI. The Standards outline accepted standards for arboricultural operations and
16 utility vegetation management. The ISA publishes the BMPs as companion guides to each
17 of the Standards. Standards and BMPs also include integrated vegetation management
18 (“IVM”) strategies that utilities may use, subject to site-specific needs, which provides a
19 number of benefits, as explained in more detail below.

1 **Q. WHAT IS INTEGRATED VEGETATION MANAGEMENT AND HOW DOES IT**
2 **BENEFIT CUSTOMERS?**

3 A. IVM is a system of managing plant communities whereby managers set objectives, identify
4 compatible vegetation² and incompatible vegetation, define the timeframe for control, and
5 perform an evaluation and selection of control options and implement the most appropriate
6 control method or methods to achieve set objectives. Control methods include manual,
7 mechanical, chemical, biological, and cultural³ options. All options are evaluated to
8 determine the best management practice for each site-specific location to address
9 incompatible vegetation, in the safest and most cost effective and efficient way. This
10 includes, for example, treating brush on the corridor before it has the potential to grow tall
11 enough to interfere with the facilities or impede line of sight. Through IVM, the goal is to
12 create and sustain a compatible, stable, and low growing plant community on the corridor,
13 which will then compete with other plant species to limit the growth of additional
14 incompatible tree species over time. IVM practices can generate numerous benefits such
15 as lowering vegetation management costs, creating safer sites, facilitating greater system
16 reliability, and creating more effective long-term vegetation control and management.

17

² Compatible vegetation is defined by the IVM Best Management Practices, the special companion publication to ANSI A300 Part 7, as “vegetation that is desirable or consistent with the intended use of the site. For example, plant species that will never grow sufficiently close to violate minimum clearance distances with electric conductors.”

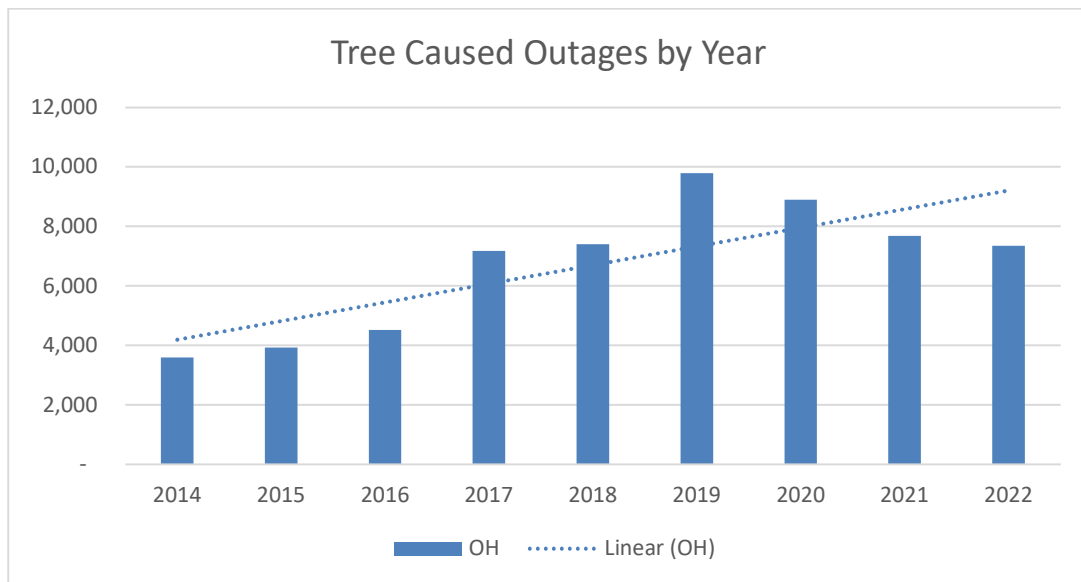
³ Cultural control options use compatible land uses which preclude the growth of incompatible vegetation, such as agricultural crops or pastures, parks, or other managed landscapes.

1 **III. VEGETATION MANAGEMENT CHALLENGES**

2 **Q. PLEASE DESCRIBE THE OPERATIONAL CHALLENGES THE COMPANIES**
3 **FACE IN IMPLEMENTING THEIR VEGETATION MANAGEMENT PLAN.**

4 A. When implementing their vegetation management plan, the Companies continue to face
5 operational challenges, including a marked increase in tree-caused outages. Specifically,
6 since 2014, the Companies have experienced an increase in tree-caused outages of 104%,
7 or an annual trend of 13%, as shown in Table 1.

8 **Table 1**



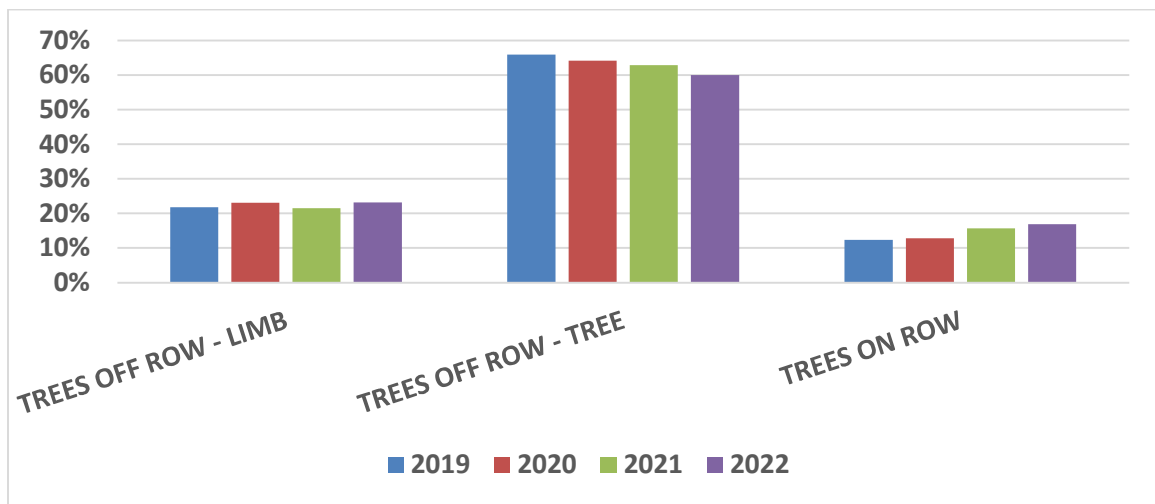
9 The Companies’ tree-caused outages largely correlate with adverse weather conditions that
10 impact the Companies’ service territories. Adverse weather impacts cause vegetation,
11 either on-ROW or off-ROW, to damage the distribution system and lead to more
12 “vegetation” related outages. As such, adverse weather conditions continue to be a leading
13 cause for tree-caused outages, especially in the Companies’ densely forested service
14 territories. While Table 1 shows that tree-caused outages have decreased in the last few

1 years due to less severe weather conditions, after hitting a peak in 2019, the Companies are
2 still experiencing more tree-caused outages than in prior years.

3 **Q. WHICH TREES IN THE COMPANIES' SERVICE TERRITORY ARE MORE**
4 **PRONE TO CAUSING OUTAGES?**

5 A. Off-ROW trees. In 2019, the Companies began tracking certain details of tree-caused
6 outages such as identifying whether outages were caused by trees and/or limbs located
7 outside of the distribution corridor (aka "off-corridor" or "off-ROW") or within the
8 distribution corridor (aka "on-corridor" or "on-ROW"). According to the Companies'
9 review, since 2019, the majority of tree-caused outages in the Companies' service
10 territories were attributable to off-ROW trees as illustrated in Table 2.

11 **Table 2**



12 A review of all tree-caused outage data revealed that approximately 80% of the outages
13 were caused by trees and/or limbs outside the distribution zone corridor falling onto the
14 Companies' facilities, which is shown by adding the Trees Off ROW-Limb with Trees Off
15 ROW-Tree portions of Table 2.

1 **Q. HOW HAVE TREE-CAUSED OUTAGES IMPACTED THE COMPANIES’**
2 **RELIABILITY PERFORMANCE?**

3 A. Since 2014, the Companies have experienced significant increases in SAIFI attributed to
4 trees, excluding major storms: 60% at TE, 60% at CEI, and 111% at OE, which is
5 approximately 78% in the aggregate for the Companies. When major storms are included,
6 the increases in SAIFI attributed to trees are even greater: 220% at TE, 50% at CEI, and
7 76% at OE, for an average of approximately 85% in the aggregate for the Companies. *See*
8 Attachment STS-1.

9 **Q. WHAT ARE THE COMPANIES PROPOSING TO IMPLEMENT TO ADDRESS**
10 **THESE CHALLENGES?**

11 A. As discussed in the testimony of Companies’ Witness McMillen, the Companies propose a
12 Vegetation Management Cost Recovery Rider (“Rider VMC”) to provide the Companies
13 an opportunity to true up their cost recovery to reflect actual O&M cost. Additionally, the
14 Companies propose to implement an eight-year enhanced vegetation management program,
15 as discussed below. The opportunity to recover actual O&M cost through Rider VMC will
16 support the Companies’ vegetation management activities, including the enhanced
17 vegetation management program, which is estimated to provide greater distribution system
18 reliability to customers, create safer work conditions for the Companies’ employees and
19 contractors, create safer conditions for the general public, create long-term vegetation
20 management costs savings, and have positive environmental impacts.

21

1 **IV. ENHANCED VEGETATION MANAGEMENT PROPOSAL**

2 **Q. PLEASE EXPLAIN THE COMPANIES' PROPOSAL TO ENHANCE**
3 **VEGETATION MANAGEMENT THROUGH ESP V.**

4 A. The Companies propose an eight-year enhanced vegetation management program, which
5 will focus on removing on- and off-corridor trees, removing overhang, and controlling
6 brush in the distribution clearing zone in a more proactive manner. In an effort to reduce
7 tree caused outages, reduce outage restoration time, and reduce future maintenance costs,
8 the Companies propose implementing an enhanced vegetation management program that
9 will focus on the proactive use of industry BMPs and IVM for the removal of priority trees,
10 incompatible trees and brush in the distribution clearing zone, and overhanging limbs in
11 Zone 2 and Zone 3, while maintaining previously removed overhang in Zone 1.⁴ The
12 program would encompass two four-year cycles to enhance vegetation maintenance
13 beyond minimum regulatory commitments and would include the following:

- 14 1. Removal of priority trees: The Companies will expand the scope of priority tree
15 identification and removal. Priority trees are the leading cause of outages and may
16 pose a threat to electric facilities prior to the next scheduled maintenance.
17 Currently, the Companies remove priority trees that are identified in the field as an
18 immediate threat to the safety of the public or facilities. The enhanced vegetation
19 management program would expand the scope of removal of priority trees across
20 the system. The Companies propose to enhance the scope of work to include

⁴ Zone 1 is defined as the section of line leaving a substation to the first protective device. Zone 2 is defined as the section of line from the first protective device to the end of the 3-phase construction. Zone 3 is defined as the remaining sections of line, 2-phase and single-phase, through the end of the primary conductor.

1 priority trees that are not classified as an immediate threat but that may still impact
2 the distribution system prior to the next regularly scheduled maintenance,
3 especially for major events. This enhancement is necessary to better align the
4 Companies' practices with more rigorous Standards and BMPs, as well as reduce
5 future outages and improve reliability.

6 2. Removal of on-corridor incompatible trees and brush: These activities will allow
7 for the removal or control of vegetation that meets cycle clearance guidelines and
8 is expected to lead to long-term, decreasing costs. Currently, on-corridor
9 incompatible trees and brush are being pruned to meet cycle clearance for
10 regulatory requirements only. The enhanced vegetation program will better align
11 the Companies with more rigorous Standards and BMPs for IVM by creating and
12 sustaining a compatible, stable, and low growing plant community on the corridor,
13 which will then compete with other plant species to limit the growth of additional
14 incompatible tree species over time. Additionally, this approach will be consistent
15 with and further enhance the Companies' environmental stewardship initiatives
16 while also serving as a long-term, cost-effective strategy for maintaining on-
17 corridor vegetation.

18 3. Removal of vegetation overhanging the corridor: This initiative allows for the
19 removal of overhang in all Zones, which is an increasing driver of outages.
20 Currently, the Companies remove overhang in Zone 1 but not Zone 2 or Zone 3.
21 Enhancing the practice to include removal in Zones 2 and 3 would target all
22 vegetation overhanging primary conductors for removal and better align with more
23 rigorous Standards and BMPs. Additionally, removing vegetation overhanging the

1 corridor will promote contractor, employee, and public safety, and will improve
2 reliability over time for all customers by decreasing limb-caused outages.

3 **Q. HOW DOES ADOPTING A MORE PROACTIVE APPROACH TOWARD**
4 **VEGETATION MANAGEMENT ALIGN WITH MORE RIGOROUS INDUSTRY**
5 **STANDARDS AND BMPS?**

6 A. While the Companies are currently satisfying all applicable regulatory requirements with
7 respect to their existing vegetation management plan, adopting a more proactive approach
8 through the enhanced vegetation management program enables the Companies to exceed
9 regulatory requirements. For instance, under the new enhanced vegetation management
10 program, the Companies, in addition to continuing to meet their regulatory compliance
11 obligations for vegetation management, would also incorporate more proactive vegetation
12 management activities such as controlling additional on-corridor brush and targeting
13 additional overhang for removal in Zone 2 and Zone 3. This more proactive approach is
14 beneficial because reducing the on-corridor brush prevents that brush from becoming on-
15 corridor trees that may need to be controlled in the next cycle. Thus, if the enhanced
16 vegetation management program is approved, over the course of two cycles (eight years),
17 the Companies would meet all regulatory commitments while performing additional
18 vegetation management work in the most efficient manner consistent with more rigorous
19 Standards and BMPs.

20 **Q. WHAT ARE THE ESTIMATED COSTS OF THE COMPANIES' VEGETATION**
21 **MANAGEMENT PROGRAM DURING THE TERM OF ESP V?**

22 A. If approved, the enhanced vegetation management program spend will begin June 1, 2024.
23 The Companies' estimated average incremental O&M expense of the proposed program is

1 \$48.4 million per year in years 1-4 of ESP V, and \$26.6 million per year in years 5-8,
 2 including inflationary increases for contractor rates, for a total of \$299.8 million over the
 3 8-year term of ESP V. Total estimated O&M expense for the Companies' vegetation
 4 management program is \$759.8 million over the 8-year term of ESP V, as shown in Table
 5 3.

6 **Table 3**

\$M	Minimum Regulatory Requirements	Additional Reliability Improvements
Year 1	\$51.7	\$46.8
Year 2	\$53.3	\$47.8
Year 3	\$54.9	\$48.9
Year 4	\$56.5	\$50.0
Year 5	\$58.2	\$26.0
Year 6	\$60.0	\$26.4
Year 7	\$61.8	\$26.8
Year 8	\$63.6	\$27.3
Total	\$460.0	\$299.8

7
 8 **Q. HOW DID THE COMPANIES ESTIMATE THE COSTS OF THE PROPOSED**
 9 **VEGETATION MANAGEMENT PROGRAM?**

10 A. The estimated costs are based on historical workload to be completed annually and an
 11 estimate of the average cost to be incurred for each work type. The Companies estimate
 12 the total workload over the term of ESP V to include, at a minimum, the removal of over
 13 500,000 trees, 15,000 circuit miles of overhanging vegetation, and maintenance of over
 14 40,000 acres of undergrowth. This estimate is based on the number of trees the Companies
 15 currently trim while factoring in the number of trees that would qualify for removal and/or
 16 controlling based on field observations. Additionally, the estimate takes into account the

1 size and scope of unmaintained areas based on field observations. Attachment STS-2
2 provides workpapers supporting the Companies' cost estimates.

3 **Q. WHAT TYPES OF BENEFITS HAVE THE COMPANIES IDENTIFIED**
4 **RELATED TO THE PROPOSED VEGETATION MANAGEMENT PROGRAM?**

5 A. As previously discussed, the Companies' proposed vegetation management program is
6 integral to providing safe, reliable service. The Companies estimate several quantitative
7 and qualitative benefits to customers from the proposed vegetation management program.
8 These benefits impact four different categories: (1) reliability, (2) safety (3) cost, and (4)
9 the environment.

10 **Q. WHAT RELIABILITY BENEFITS HAVE THE COMPANIES IDENTIFIED?**

11 A. The program is expected to promote the safe and reliable delivery of power to the
12 Companies' customers. Optimizing the removal of priority trees, overhang brush, and
13 overall incompatible vegetation will result in a decrease in outages caused by vegetation.
14 The Companies estimate an improvement in reliability that results in a reduction of the
15 average SAIFI and CAIDI by 6% to 7% over the 8-year program, compared to recent
16 historical results.

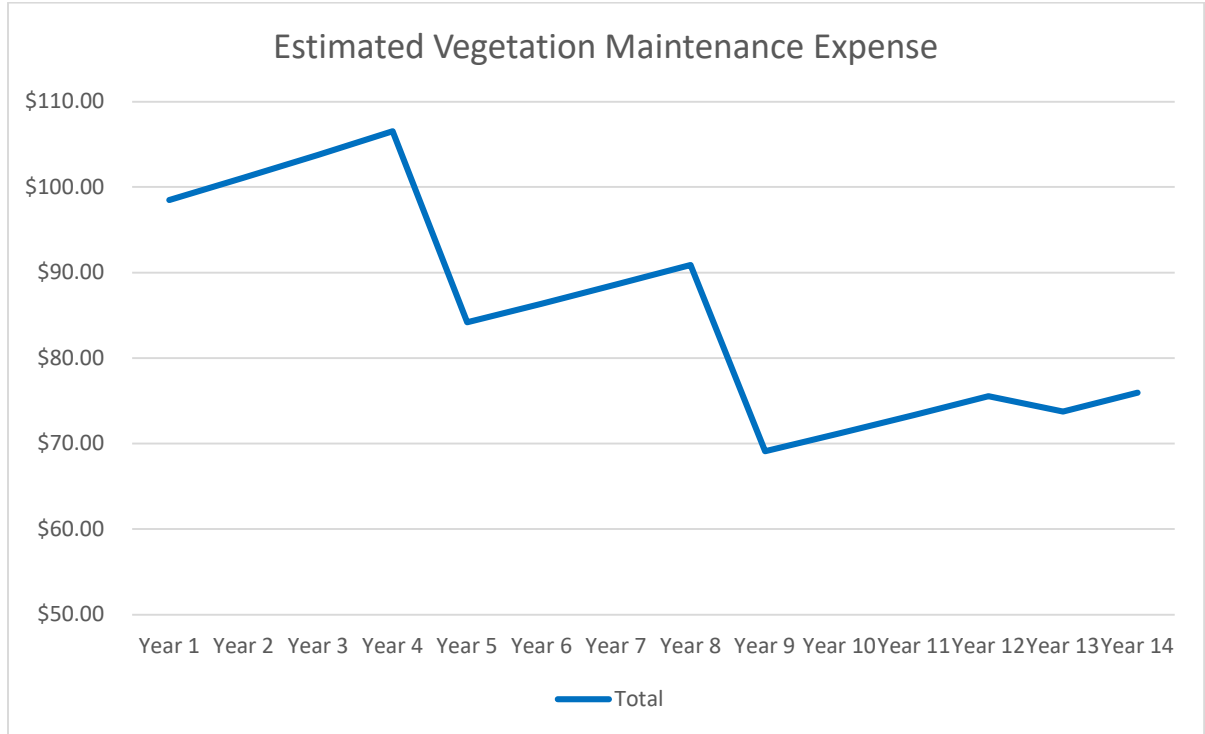
17 **Q. WHAT SAFETY BENEFITS HAVE THE COMPANIES IDENTIFIED?**

18 A. The program is expected to create accessible and sustainable rights-of-way, which results
19 in safer work conditions for employees and contractors, as well as the general public. It is
20 safer to perform vegetation maintenance in a more proactive manner when the brush is less
21 dense, easier to access, and easier to control. Additionally, reducing the amount of brush
22 and trees on-corridor assists with reducing hazard exposure, both electrical and non-
23 electrical, to employees and contractors during inspections and storm restoration. Further,

1 reducing the amount of trees and brush reduces hazard exposure, both electrical and non-
2 electrical, to the general public should a major outage occur due to storm damage or other
3 damage.

4 **Q. WHAT COST RELATED BENEFITS HAVE THE COMPANIES IDENTIFIED?**

5 A. If the proposed enhanced vegetation management program is approved, the Companies’
6 vegetation management costs are expected to decrease by 21%, or \$22 million in year 5
7 and by another 24%, or \$22 million, starting in year 9. Further, the Companies anticipate
8 that the proposed vegetation management program will reduce future storm O&M
9 expenses, estimated at \$2 to \$3 million per year, starting in year 5. The Companies’ long-
10 term estimated vegetation maintenance O&M expenses are summarized below in Table 4:

Table 4

2 **Q. DID THE COMPANIES ESTIMATE THE COST SAVINGS TO CUSTOMERS**
 3 **FROM THE RELIABILITY IMPROVEMENTS OF THE PROPOSED**
 4 **VEGETATION MANAGEMENT PROGRAM?**

5 A. Yes. The Companies calculated the estimated cost savings to customers of \$963 million
 6 nominally and \$574 million on a net present value over ten years. To calculate the
 7 estimated cost savings, the Companies use the United States Department of Energy
 8 Interruption Cost Estimator (“ICE”) tool consistent with the Companies’ approved grid
 9 modernization case (i.e., Case No. 16-841-EL-UNC *et al.* aka Grid Mod I) and the
 10 Companies’ pending grid modernization case (i.e., Case No. 22-0704-EL-UNC aka Grid
 11 Mod II). The ICE tool uses current reliability performance as the starting point for the
 12 Companies, and then applies the estimated incremental SAIFI and CAIDI improvements
 13 to identify the economic value of improved reliability for customers. The Companies used

1 average aggregate CAIDI and SAIFI reliability performance standards, including major
2 storms, over the years 2019 to 2022 as the ICE tool's reliability starting point. The
3 Companies then applied the estimated incremental SAIFI and CAIDI improvements from
4 the proposed vegetation management program of approximately 6% and 7%, respectively,
5 which resulted in the estimated cost savings to customers. Attachment STS-3 provides
6 workpapers supporting these estimated benefits.

7 **Q. WHAT ENVIRONMENTAL BENEFITS HAVE THE COMPANIES IDENTIFIED?**

8 A. The enhanced vegetation program will lead to diverse early successional plant communities
9 that are beneficial to insects, animals, birds, etc. This is a significant point of emphasis
10 because the habitat the Companies are maintaining is what the native flora and fauna
11 depend on to survive and flourish. Research shows that the appropriate use of IVM creates
12 the type of right-of-way that supports the needs of the utility to provide safe and reliable
13 power to customers, while also supporting ecological benefits. Indeed, FESC participates
14 in the Pennsylvania State Game Lands 33 Research Project,⁵ which is oldest continuous,
15 internationally recognized, vegetation management research projects in existence. The
16 Pennsylvania State Game Lands 33 Research Project started in 1952 and continues today,
17 providing a wealth of research information on vegetation management techniques and their
18 impact on wildlife and the beneficial habitat created on the rights-of-way. The enhanced
19 vegetation program will enable the Companies to better align their practices with
20 environmental BMPs to help support the local ecological communities.

⁵ Learn more about the Pennsylvania State Game Lands 33 (SGL 33) research project here:
<https://sites.psu.edu/transmissionlineecology/history/>

1 **Q. IS THE COMPANIES' PROPOSED ENHANCED VEGETATION**
2 **MANAGEMENT PROGRAM REASONABLE?**

3 A. Yes. The estimated qualitative and quantitative benefits of the enhanced vegetation
4 management program exceed the estimated costs. With the completion of this program,
5 the rights-of-way will be in a more sustainable condition, leading to improved and more
6 predictable reliability, reduced future spend, and diverse early successional plant
7 communities that are beneficial to insects, animals, birds, etc. Based on these significant
8 qualitative and quantitative benefits, the Commission should approve the proposed
9 vegetation management program.

10

11 **V. CONCLUSION**

12 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

13 A. Yes. I reserve the right to supplement my testimony

Companies' CAIDI and SAIFI from Tree-Caused Outages.

The Companies' SAIFI and CAIDI from tree-caused outages has continued to increase since 2014, while the Companies have continued to meet their regulatory vegetation maintenance requirements. The Companies' reliability performance including major storms has been negatively impacted by the minimum regulatory work being completed since 2014. The minimum regulatory requirements do not address the growing need to remove off-corridor trees and most of the overhanging vegetation that is directly impacting Ohio customers. The frequency and duration of tree caused outages has nearly doubled since 2014.

Table 1 summarizes the Companies' reliability performance from tree-caused outages including and excluding major storms, from 2014 to 2022.

Table 1

	2022 vs. 2014		Avg. Annual Trend
SAIFI Including Major Storms	+0.11	84.6%	+0.014
SAIFI Without Major Storms	+0.07	77.8%	+0.009
CAIDI Including Major Storms	+145	64.4%	+18.13
CAIDI Without Major Storms	+10	6.3%	+1.25

Tables 2 through 5 illustrate the Companies' annual performance from 2014 to 2022 in further detail.

Table 2

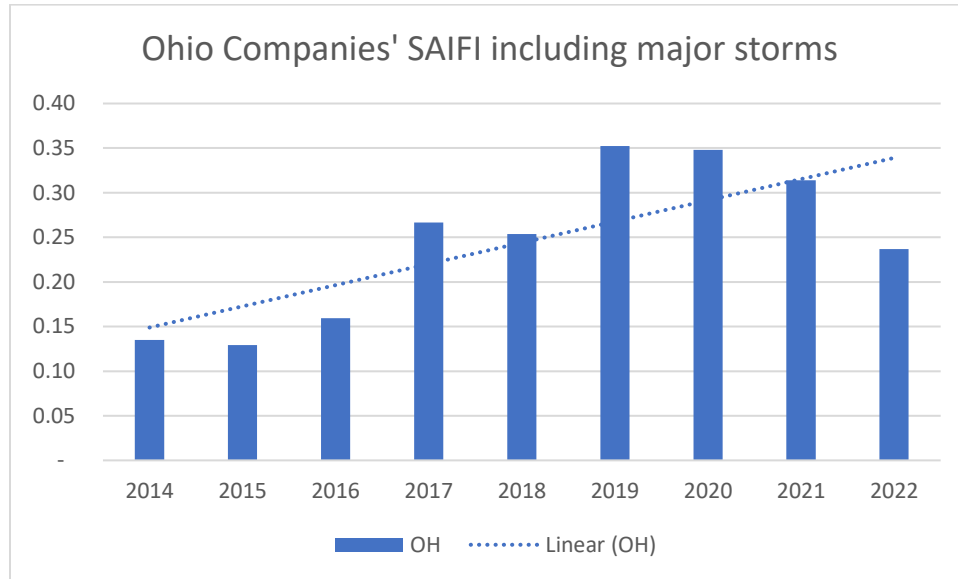


Table 3

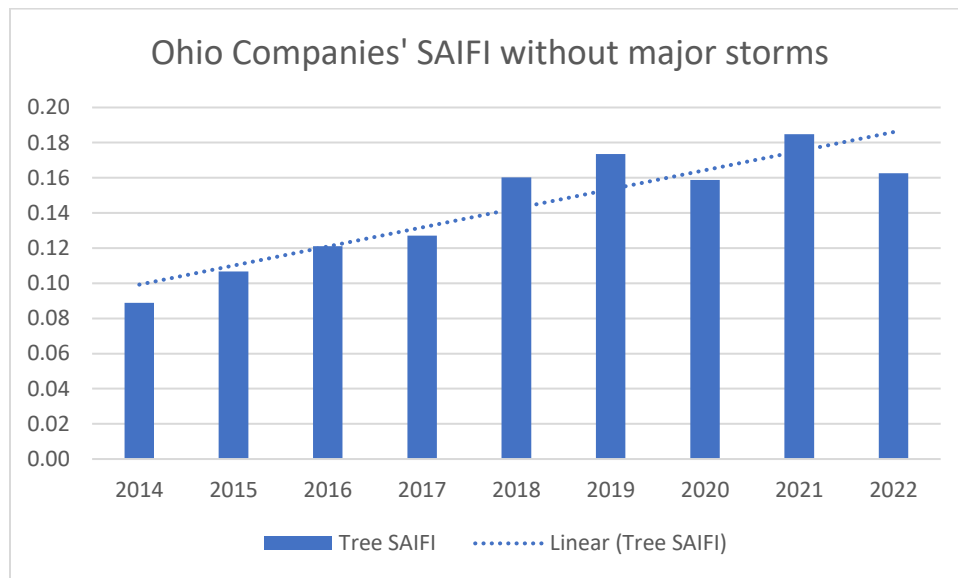


Table 4

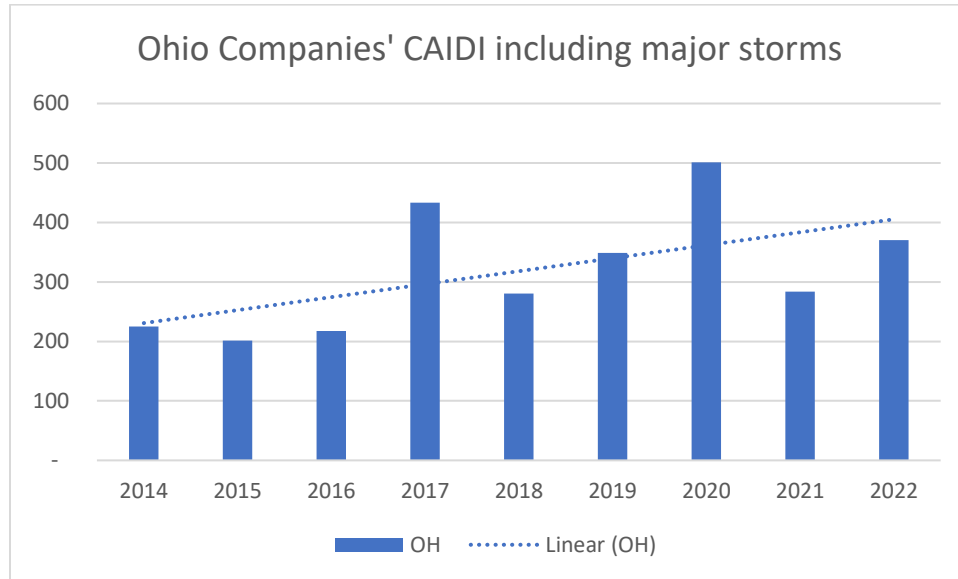
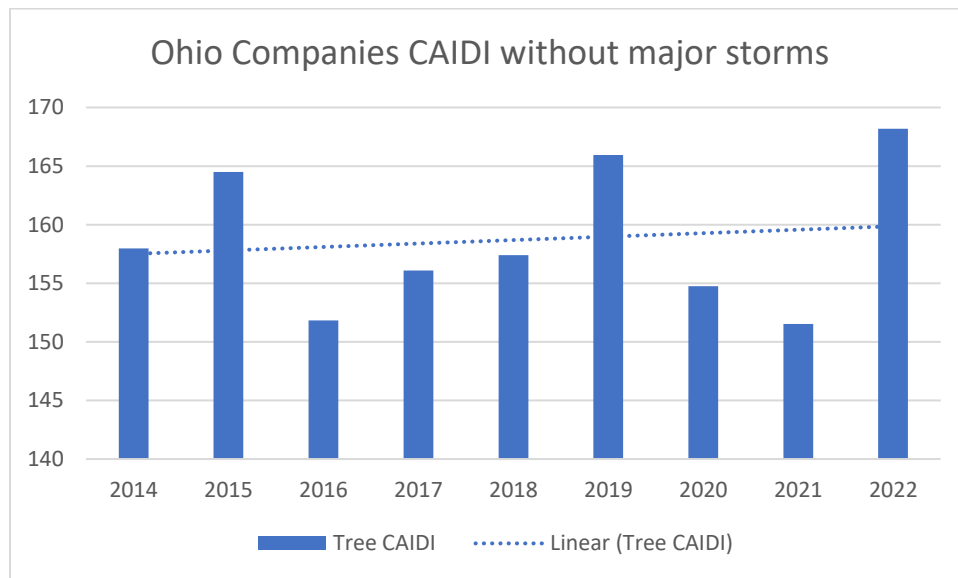


Table 5



Year	Total					
	Minimum Regulatory Requirements	Additional Reliability Improvements	On-Corridor Trees	Off-Corridor Trees	Overhang Removal	Brush Removal
1	\$ 51.7	\$ 46.8	\$ 17.0	\$ 9.0	\$ 11.8	\$ 9.0
2	\$ 53.3	\$ 47.8	\$ 17.5	\$ 9.3	\$ 11.8	\$ 9.3
3	\$ 54.9	\$ 48.9	\$ 18.0	\$ 9.5	\$ 11.8	\$ 9.5
4	\$ 56.5	\$ 50.0	\$ 18.6	\$ 9.8	\$ 11.8	\$ 9.8
5	\$ 58.2	\$ 26.0	\$ 4.9	\$ 4.0	\$ 11.8	\$ 5.3
6	\$ 60.0	\$ 26.4	\$ 5.0	\$ 4.1	\$ 11.8	\$ 5.4
7	\$ 61.8	\$ 26.8	\$ 5.2	\$ 4.3	\$ 11.8	\$ 5.6
8	\$ 63.6	\$ 27.3	\$ 5.3	\$ 4.4	\$ 11.8	\$ 5.8
9	\$ 65.5	\$ 3.6	\$ -	\$ -	\$ -	\$ 3.6
10	\$ 67.5	\$ 3.7	\$ -	\$ -	\$ -	\$ 3.7
11	\$ 69.5	\$ 3.8	\$ -	\$ -	\$ -	\$ 3.8
12	\$ 71.6	\$ 3.9	\$ -	\$ -	\$ -	\$ 3.9
13	\$ 73.8	\$ -	\$ -	\$ -	\$ -	\$ -
14	\$ 76.0	\$ -	\$ -	\$ -	\$ -	\$ -

Year	OE					
	Minimum Regulatory Requirements	Additional Reliability Improvements	On-Corridor Trees	Off-Corridor Trees	Overhang Removal	Brush Removal
1	\$ 27.1	\$ 27.0	\$ 8.0	\$ 6.0	\$ 7.0	\$ 6.0
2	\$ 27.9	\$ 27.6	\$ 8.2	\$ 6.2	\$ 7.0	\$ 6.2
3	\$ 28.7	\$ 28.2	\$ 8.5	\$ 6.4	\$ 7.0	\$ 6.4
4	\$ 29.6	\$ 28.8	\$ 8.7	\$ 6.6	\$ 7.0	\$ 6.6
5	\$ 30.5	\$ 14.5	\$ 2.3	\$ 1.7	\$ 7.0	\$ 3.5
6	\$ 31.4	\$ 14.7	\$ 2.4	\$ 1.8	\$ 7.0	\$ 3.6
7	\$ 32.3	\$ 14.9	\$ 2.4	\$ 1.8	\$ 7.0	\$ 3.7
8	\$ 33.3	\$ 15.1	\$ 2.5	\$ 1.9	\$ 7.0	\$ 3.8
9	\$ 34.3	\$ 2.6	\$ -	\$ -	\$ -	\$ 2.6
10	\$ 35.3	\$ 2.7	\$ -	\$ -	\$ -	\$ 2.7
11	\$ 36.4	\$ 2.7	\$ -	\$ -	\$ -	\$ 2.7
12	\$ 37.5	\$ 2.8	\$ -	\$ -	\$ -	\$ 2.8
13	\$ 38.6	\$ -	\$ -	\$ -	\$ -	\$ -
14	\$ 39.8	\$ -	\$ -	\$ -	\$ -	\$ -

Year	CEI					
	Minimum Regulatory Requirements	Additional Reliability Improvements	On-Corridor Trees	Off-Corridor Trees	Overhang Removal	Brush Removal
1	\$ 18.1	\$ 14.8	\$ 7.0	\$ 2.0	\$ 3.8	\$ 2.0
2	\$ 18.6	\$ 15.1	\$ 7.2	\$ 2.1	\$ 3.8	\$ 2.1
3	\$ 19.2	\$ 15.4	\$ 7.4	\$ 2.1	\$ 3.8	\$ 2.1
4	\$ 19.8	\$ 15.8	\$ 7.6	\$ 2.2	\$ 3.8	\$ 2.2
5	\$ 20.4	\$ 8.7	\$ 2.0	\$ 1.7	\$ 3.8	\$ 1.2
6	\$ 21.0	\$ 8.8	\$ 2.1	\$ 1.8	\$ 3.8	\$ 1.2
7	\$ 21.6	\$ 9.0	\$ 2.1	\$ 1.8	\$ 3.8	\$ 1.2
8	\$ 22.3	\$ 9.1	\$ 2.2	\$ 1.9	\$ 3.8	\$ 1.3
9	\$ 22.9	\$ 0.6	\$ -	\$ -	\$ -	\$ 0.6
10	\$ 23.6	\$ 0.7	\$ -	\$ -	\$ -	\$ 0.7
11	\$ 24.3	\$ 0.7	\$ -	\$ -	\$ -	\$ 0.7
12	\$ 25.1	\$ 0.7	\$ -	\$ -	\$ -	\$ 0.7
13	\$ 25.8	\$ -	\$ -	\$ -	\$ -	\$ -
14	\$ 26.6	\$ -	\$ -	\$ -	\$ -	\$ -

Year	TE					
	Minimum Regulatory Requirements	Additional Reliability Improvements	On-Corridor Trees	Off-Corridor Trees	Overhang Removal	Brush Removal
1	\$ 6.6	\$ 5.0	\$ 2.0	\$ 1.0	\$ 1.0	\$ 1.0
2	\$ 6.8	\$ 5.1	\$ 2.1	\$ 1.0	\$ 1.0	\$ 1.0
3	\$ 7.0	\$ 5.2	\$ 2.1	\$ 1.1	\$ 1.0	\$ 1.1
4	\$ 7.2	\$ 5.4	\$ 2.2	\$ 1.1	\$ 1.0	\$ 1.1
5	\$ 7.4	\$ 2.8	\$ 0.6	\$ 0.6	\$ 1.0	\$ 0.7
6	\$ 7.6	\$ 2.9	\$ 0.6	\$ 0.6	\$ 1.0	\$ 0.7
7	\$ 7.8	\$ 2.9	\$ 0.6	\$ 0.6	\$ 1.0	\$ 0.7
8	\$ 8.1	\$ 3.0	\$ 0.6	\$ 0.6	\$ 1.0	\$ 0.8
9	\$ 8.3	\$ 0.4	\$ -	\$ -	\$ -	\$ 0.4
10	\$ 8.6	\$ 0.4	\$ -	\$ -	\$ -	\$ 0.4
11	\$ 8.8	\$ 0.4	\$ -	\$ -	\$ -	\$ 0.4
12	\$ 9.1	\$ 0.4	\$ -	\$ -	\$ -	\$ 0.4
13	\$ 9.4	\$ -	\$ -	\$ -	\$ -	\$ -
14	\$ 9.6	\$ -	\$ -	\$ -	\$ -	\$ -

- Additional Reliability Improvements include On-Corridor Trees, Off-Corridor Trees, Overhang Removal, and Brush Removal.

Year	Minimum Regulatory Requirements	Additional Reliability Improvements	Total
4	\$ 56.5	\$ 50.0	\$ 106.5
5	\$ 58.2	\$ 26.0	\$ 84.2
\$ Decrease			\$ 22.3
% Decrease			21%

Year	Minimum Regulatory Requirements	Additional Reliability Improvements	Total
8	\$ 63.6	\$ 27.3	\$ 90.9
9	\$ 65.5	\$ 3.6	\$ 69.1
\$ Decrease			\$ 21.8
% Decrease			24%

Estimated Economic Benefits of the Enhanced Vegetation Management Program

	<u>SAIFI Improvement</u>		
(1)	Current	1.25	Company Records
(2)	Up to % Improvement	7%	Assumption
(3)	New	1.17	Line (1) x (1- Line(2))
(4)			
(5)	<u>CAIDI Improvement</u>		
(6)	Current	216.8	Company Records
(7)	Up to % Improvement	6%	Assumption
(8)	New	203.8	Line (1) x (1- Line(2))
(9)			
(10)	% of Total Improvement		
(11)	Year 1	0%	Assumption
(12)	Year 2	5%	Assumption
(13)	Year 3	17%	Assumption
(14)	Year 4	33%	Assumption
(15)	Year 5	50%	Assumption
(16)	Year 6	67%	Assumption
(17)	Year 7	75%	Assumption
(18)	Year 8	83%	Assumption
(19)	Year 9	92%	Assumption
(20)	Year 10	100%	Assumption
(21)			
(22)	Initial Year Benefit	\$ 152,557,979	ICE Output
(23)	Growth Rate	3.0%	Assumption
(24)	Weighted Avg Cost of Capital	7.3%	Approved cap structure, ROE, current cost of debt
(25)			
(26)	Benefit		
(27)	Year 1	\$ -	Line (11)x Line (22)
(28)	Year 2	\$ 7,914,873	Line (12) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(29)	Year 3	\$ 26,974,793	Line (13) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(30)	Year 4	\$ 55,568,074	Line (14) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(31)	Year 5	\$ 85,852,675	Line (15) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(32)	Year 6	\$ 117,904,340	Line (16) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(33)	Year 7	\$ 136,621,654	Line (17) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(34)	Year 8	\$ 156,355,893	Line (18) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(35)	Year 9	\$ 177,151,227	Line (19) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(36)	Year 10	\$ 199,053,560	Line (20) x Line (22) x (1 - Line (23))^ (Yr. - 1)
(37)	Total	\$ 963,397,088	Sum(Line(27):Line(36))
(38)	NPV	\$ 573,512,754	NPV(WACC, Line(26):Line(35))