

**STATE OF NEW JERSEY
OFFICE OF ADMINISTRATIVE LAW
BEFORE THE HONORABLE IRENE JONES**

**IN THE MATTER OF THE VERIFIED)
PETITION OF ROCKLAND ELECTRIC)
COMPANY FOR APPROVAL OF)
CHANGES IN ELECTRIC RATES, ITS)
TARIFF FOR ELECTRIC SERVICE,)
AND ITS DEPRECIATION RATES, AND)
FOR OTHER RELIEF)**

BPU DOCKET NO. ER19050552
OAL DOCKET NO. PUC07548-2019

**DIRECT TESTIMONY OF
MAXIMILIAN CHANG AND CHARLES SALAMONE
ON BEHALF OF THE
DIVISION OF RATE COUNSEL**

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FILED: October 11, 2019

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Attachment RC-ENG-1

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1 I. **STATEMENT OF QUALIFICATIONS**

2 **Q. Would the members of the Engineering Review Panel (“Panel”) please state**
3 **your names, positions, and business addresses.**

4 A. My name is Charles Salamone, PE. I am Owner of Cape Power Systems
5 Consulting, LLC a power systems consulting Company with an address of 630
6 Cumberland Dr., Flagler Beach, Florida and I am a subcontractor of Synapse
7 Energy Economics, Inc. (“Synapse”).

8 My name is Maximilian Chang. I am a Principal Associate with Synapse Energy
9 Economics, an energy consulting company located at 485 Massachusetts Avenue,
10 Cambridge, Massachusetts.

11 **Q. On whose behalf are you submitting testimony in this proceeding?**

12 A. We are submitting testimony on behalf of the New Jersey Division of Rate
13 Counsel (“Rate Counsel”).

14 **Q. Mr. Salamone, please describe your education and professional background.**

15 A. I hold a Bachelor of Science Degree in Electrical Engineering from Gannon
16 University. I joined the Engineering Department of Commonwealth Electric
17 Company in 1973. At that time, I became a Junior Planning Engineer where my
18 primary responsibilities were to assist in the planning, analysis, and design of the
19 transmission and distribution systems of Commonwealth Electric Company, later
20 known as NSTAR. I generally followed the normal progression of positions with
21 increasing levels of responsibility within the planning area until taking the
22 position of Director of System Planning at NSTAR in 2000. I held that position

1 until starting Cape Power Systems Consulting, LLC in 2005. During my career
2 with NSTAR, in addition to the responsibilities associated with overseeing
3 System Planning, I served as Chair of the New England Power Pool (“NEPOOL”)
4 Planning Policy Subcommittee (1997-1998), Chair of the NEPOOL Regional
5 Transmission Planning Committee (1998-1999), and Vice Chair of the NEPOOL
6 Reliability Committee (1999-2000). As a consultant, I have been providing
7 consulting services to a number of power system industry clients since 2005. I am
8 a Registered Professional Engineer with the Commonwealth of Massachusetts. I
9 am also a senior member of the Power Engineering Society of the Institute of
10 Electrical and Electronic Engineers. A copy of my resume is attached as
11 **Attachment RC-ENG-1.**

12 **Q. Mr. Salamone, have you previously testified before utility regulatory**
13 **agencies?**

14 A. Yes. I have previously testified before the New Jersey Board of Public Utilities
15 (“BPU” or “Board”), the Federal Energy Regulatory Commission (“FERC”), the
16 Massachusetts Department of Public Utilities, and the Massachusetts Energy
17 Facilities Siting Board on a number of technical matters relating to ratemaking
18 and system planning.

19 **Q. Mr. Chang, please describe your professional background at Synapse Energy**
20 **Economics.**

21 A. My experience is summarized in my resume, which is attached as **Attachment**
22 **RC-ENG-2.** I am an environmental engineer and energy economics analyst who
23 has analyzed energy industry issues for ten years. In my current position at

1 Synapse Energy Economics, I focus on economic and technical analysis of many
2 aspects of the electric power industry, including: (1) utility reliability performance
3 and distribution investments, (2) utility mergers and acquisitions, (3) nuclear
4 power, (4) wholesale and retail electricity markets, and (5) energy efficiency and
5 demand response alternatives. I have been an author and project coordinator for
6 the last two biennial New England Avoided Energy Supply Component reports,
7 which were used by energy efficiency program administrators in the six New
8 England states to evaluate energy efficiency programs.

9 **Q. Mr. Chang, please describe your educational background.**

10 A. I hold a Master of Science degree from the Harvard School of Public Health in
11 Environmental Health and Engineering Studies, and a Bachelor of Science degree
12 from Cornell University in Biology and Classical Civilizations.

13 **Q. Mr. Chang, have you previously submitted testimony before the New Jersey
14 Board of Public Utilities?**

15 A. Yes. I filed testimony before the Board in dockets GO12050363 (South Jersey
16 Gas Energy Efficiency), EM14060581 (Exelon-PHI Merger), ER14030250
17 (RECO Storm Resiliency), GM15101196 (AGL Southern Company Merger),
18 ER17030308 (ACE Rate Case), ER18010029 (PSE&G Rate Case), and
19 EO18020196 (ACE Infrastructure Investment Program), EO18070728 (JCP&L
20 Infrastructure Investment Program), and EO18060629 (PSE&G Energy Strong
21 II).

1 **Q. Mr. Chang, have you previously testified before other utility regulatory**
2 **agencies?**

3 A. Yes. I have previously testified before the District of Columbia Public Service
4 Commission, the Hawaii Public Utilities Commission, the Illinois Property Tax
5 Appeal Board, the Maine Public Utilities Commission, the Maryland Public
6 Service Commission, and the Massachusetts Department of Public Utilities. I
7 have also filed testimony before the Delaware Public Utilities Commission, the
8 Kansas Commerce Corporation, the Illinois Commerce Commission, and the
9 United States District Court for the District of Maine.

10 **II. PURPOSE AND SUMMARY OF RECOMMENDATIONS**

11 **Q. What is the purpose of your testimony in this proceeding?**

12 A. The purpose of our testimony is to review aspects of Rockland Electric
13 Company's (the "Company" or "RECO") petition ("Petition") to seek approval
14 from the New Jersey Board of Public Utilities (the "Board") for an increase in
15 base rates. As filed, the Company is seeking to recover an increase of \$20.4
16 million from ratepayers.¹

17 **Q. Please summarize your findings and recommendations.**

18 A. We find and conclude the following:

- 19 • The Company is showing a slight improvement for both SAIDI and
20 SAIFI metrics in the last ten years. There has been a fluctuation in
21 reliability in the last three years indicating that improvements in

¹ Direct Testimony of the RECO Accounting Panel at Page 11, lines 22-24. (May 3, 2019). Revised July 30, 2019.

1 reliability need to be sustained. The recent completion of the Company's
2 Storm Hardening program² should result in improvements in reliability in
3 future years.

- 4 • We recommend that the Company set its vegetation management budget
5 to test-year spending expense. As a point of reference, the Company's
6 2018 vegetation management spending was \$1.6 million to address
7 Hazard trees, including, but not limited to ash tree removal.
- 8 • The Board should reject the Company's proposed \$500,000/year Ash tree
9 removal program. Hazard trees, regardless of species have and should be
10 removed as part of the Company's ongoing vegetation management
11 process. The Company should continue to address Hazard trees as part of
12 both the Board's 2016 Enhanced Vegetation Management requirements³
13 and as part of the Company's normal vegetation management practices.
- 14 • The Board should reject the Company's post-test year adjustments since
15 most of the adjustments are for projects not permitted under the Board's
16 policy on post-test year adjustments or are "blankets."⁴ Further, the
17 Company has not demonstrated that any of the post-test year adjustments
18 are major in consequence as required by the BPU in the Elizabethtown
19 Water Company Order⁵ and re-affirmed in the Board's recent ACE Base

² I/M/O the Petition of Rockland Electric Company for Approval of Electric Base Rate Adjustments Pursuant to the Storm Hardening Program, BPU Dot. No. ER18191114 (Mar. 13, 2019).

³ N.J.A.C 14:5-9.1 to -9.12.

⁴ "Blankets" are an accounting convention used to group the costs of certain labor and equipment together for the purpose of convenience.

⁵ See I/M/O Elizabethtown Water Company, BPU Docket No. WR8504330, (Order, May 23, 1985).

1 Rate Case Order.⁶ Although two of the post-test-year projects will each
2 result in more than \$1,000,000 in capital spending, each project only
3 represent approximately six (6) percent of the three-year average of \$24.9
4 million in utility construction spending incurred by the Company between
5 2016 through 2018.⁷

6 **III. RELIABILITY PERFORMANCE**

7 **Q. Please summarize your findings regarding the Company’s overall reliability**
8 **performance.**

9 A. As discussed in more detail below, we find that the Company’s system reliability
10 has slightly improved over the last ten years. However, the Company did not meet
11 its minimum reliability requirements in 2016 for Customer Average Interruption
12 Duration Index (“CAIDI”).⁸ Moreover, the Company experienced two incidents
13 with distribution automation reclosers that resulted in longer than anticipated
14 interruptions.

15 **Q. Please explain what the relevant reliability metrics represent.**

16 A. System Average Interruption Frequency Index (“SAIFI”) measures the number of
17 sustained interruptions of the system during the year. CAIDI represents the
18 average duration of sustained interruptions experienced by customers and is
19 represented in hours. Lower values for SAIFI and CAIDI indicate improved

⁶ See I/M/O Atlantic City Electric Company, BPU Docket No. ER18060638 (Order, July 25, 2018).

⁷ RCR-ROR-18

⁸ RCR-ENG-2, Attachment 2016 RECO Annual Reliability Report.

1 reliability. Under N.J.A.C. §14:5-8.2, New Jersey electric distribution companies
2 are required to report their annual SAIFI and CAIDI metrics. The Company also
3 reports System Average Interruption Duration Index (“SAIDI”), which measures
4 the duration of sustained interruptions of the system during the year.⁹

5 **Q. Does the Company report a single value for each reliability metric?**

6 A. No. The Company reports two values: (1) a value for reliability metrics that
7 considers all events and (2) a separate reliability metrics value that excludes
8 “Major Events.” Major Events are defined under N.J.A.C. 14:5-1.2 as
9 interruptions affecting at least 10 percent of customers within an operating area.¹⁰

10 This includes, but is not limited to, tornadoes, thunderstorms, snowstorms, heat
11 waves, and ice storms.¹¹ Because Major Events are unpredictable, outages metrics
12 excluding Major Events is better for determining general reliability of the
13 Company’s distribution system.

14 **Q. Does your testimony address Major Events?**

15 A. Not directly. Our testimony generally addresses the Company’s reliability
16 performance under “blue sky” conditions that exclude the Major Events defined
17 by New Jersey BPU regulations. The Company’s investments in the Storm
18 Hardening program address Major Events, and should provide ancillary
19 improvements in day-to-day reliability performance. Therefore, while some of

⁹ Mathematically, CAIDI equals SAIDI divided by SAIFI.

¹⁰ N.J.A.C. 14:5-1.2.

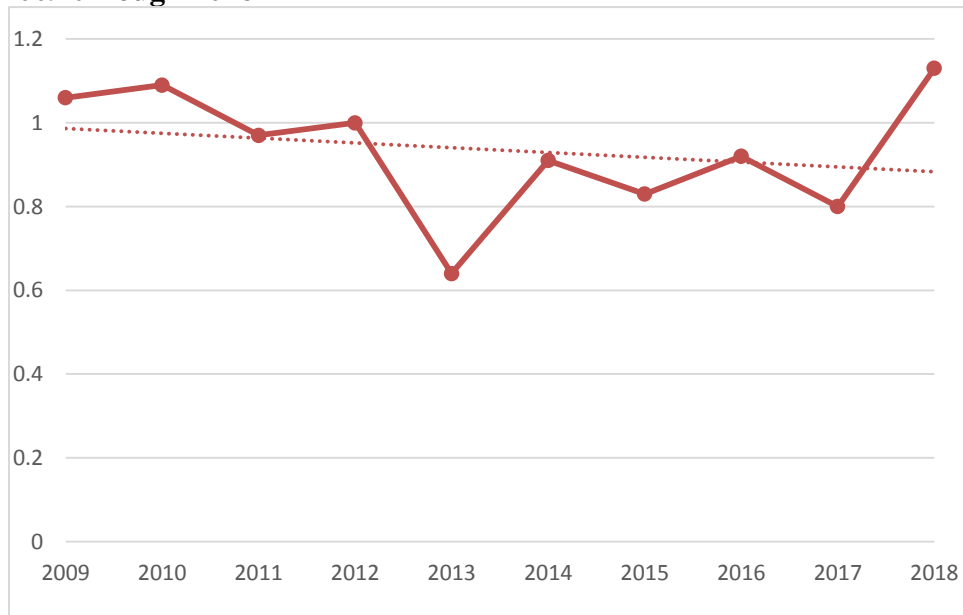
¹¹ Major Events also include periods when a Company provides mutual assistance to another utility.

1 those improvements will affect our findings in this proceeding, our testimony
2 does not directly address Major Events.

3 **Q. What has been the Company's reported reliability performance over the last**
4 **few years?**

5 A. The Company's historical and linear trends in reliability performance for SAIFI,
6 SAIDI, and CAIDI are shown in the three charts below.

7 **Figure 1 RECO Reported SAIFI and Trendline (excluding major events)**
8 **2009 through 2018¹²**

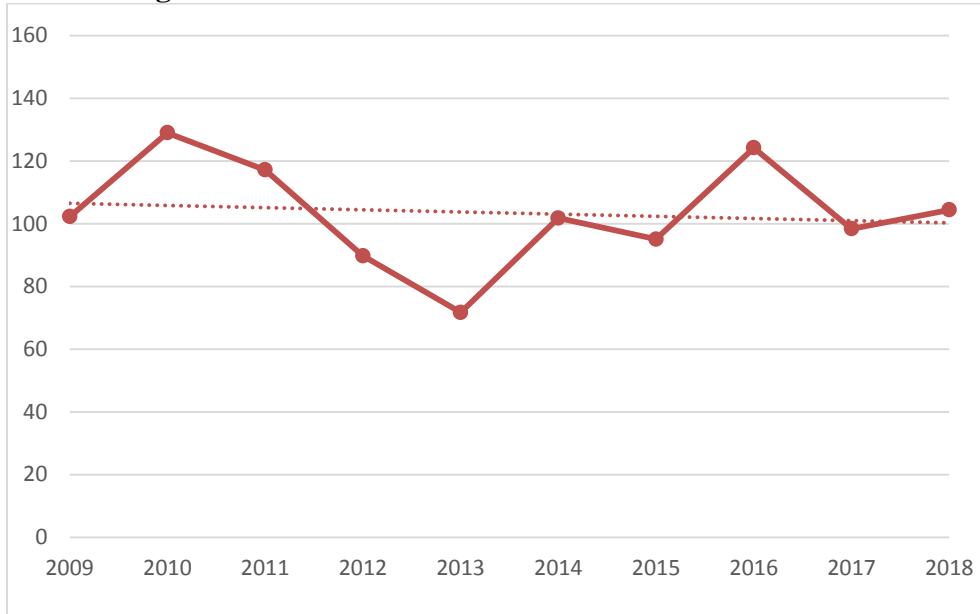


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¹² RCR-ENG-2, Attachment 2018 Annual Service Performance Report.

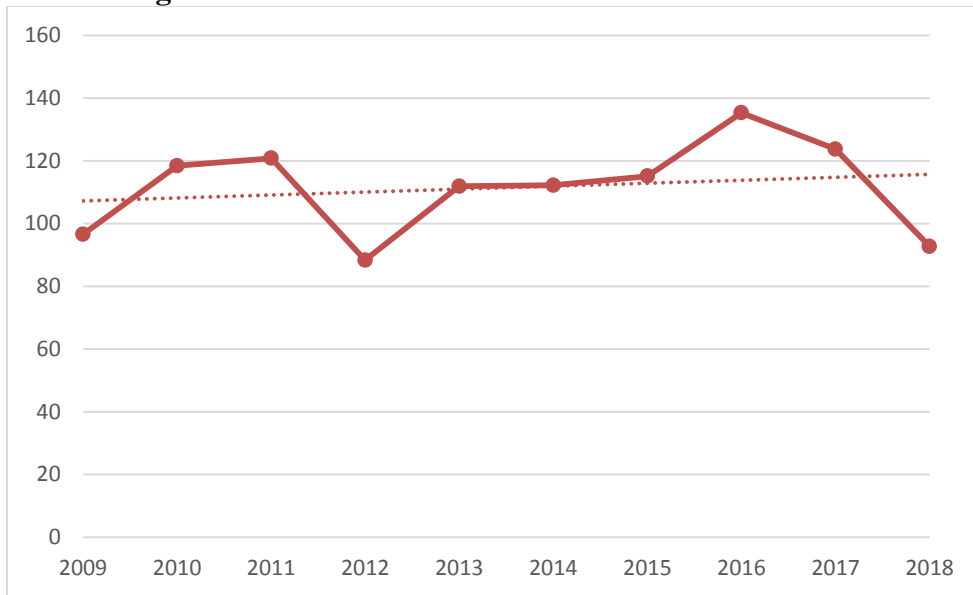
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Figure 2 RECO Reported SAIDI and Trendline (excluding major events) 2009 through 2018¹³



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Figure 3 RECO Reported CAIDI and Trendline (excluding major events) 2009 through 2018¹⁴



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¹³ Ibid.

¹⁴ Ibid.

1 Data through 2018 show that the Company's SAIFI and SAIDI reliability
2 performance trendlines are generally improving. However, the Company's SAIFI
3 and SAIDI performance appear to have experienced an uptick in the last year due
4 to increase in outages highlighted by the Company. The Company's trendline for
5 CAIDI shows a slight increase over the last ten years. Because CAIDI equals
6 SAIDI divided by SAIFI, improvements in SAIDI will generally result in
7 improvements in CAIDI. Notwithstanding this general rule, the mathematical
8 relationship can create a situation where improvements in SAIFI can result in an
9 increase in CAIDI, or situations where SAIDI and SAIFI improve at the same rate
10 such that the CAIDI values do not change.

11 **Q. Earlier, you noted that the Company is not required to report SAIDI, but**
12 **you have included the Company's SAIDI performance. Why?**

13 A. We have included SAIDI values to provide a more comprehensive picture of the
14 Company's reliability trends since we have noted that CAIDI value sometimes
15 decrease due to increases in SAIFI, rather than any real improvement in the
16 system as shown in Figure 1 and Figure 3 for the 2018 reliability metrics. The
17 jump in the Company's reported SAIFI resulted in a large decrease in CAIDI for
18 the year.

19 **Q. Has the Company commented on the increase in SAIFI metrics in 2018?**

20 A. Yes. In the 2018 Annual System Performance Report, the Company noted that
21 large substation interruptions can skew the Company's performance in any given

1 year as was the case in 2018.¹⁵ Specifically, the Company stated that “While
2 weather affected vegetation growth had a large impact on the performance of the
3 electric transmission and distribution system during the year, the biggest impact to
4 the Company’s overall performance was the result of two large substation events.
5 Had these events not occurred, both SAIFI and CAIDI would have been much
6 more in line with historical norms.”¹⁶ The Company provides some additional
7 details regarding the two outages. Specifically, the first outage occurred in the
8 Closter Substation, but the Company was not able to categorize the outage that
9 impacted 7,071 customers.¹⁷ The second outage was caused by squirrel contact on
10 a 13.2 kV switch inside the Franklin Lakes substation that impacted 2,350
11 customers.¹⁸ The two events impacted a total of 9,421 customers, which is close
12 to the 9,465 customer impacted by primary wire/cable outages reported in Table
13 2.3 of the 2018 Annual System Performance report.¹⁹

14 **Q. Are there specific outages that are of interest to note?**

15 A. Yes, we have identified two outages relating to the Company’s distribution
16 automation reclosers. In both incidences, the recloser did not automatically close
17 as designed resulting in faults to the circuit. The two events occurred on different
18 circuits and the Company provided the following description of each incident:

19 The largest event occurred on December 2, 2018 on
20 Wyckoff Avenue, Mahwah NJ. The outage was the result
21 of equipment failure. A phase off the pin caused a pole fire,

¹⁵ RCR-ENG-2, 2018 Annual System Performance Report. Page 20.

¹⁶ Ibid.

¹⁷ RCR-ENG-INF-2.

¹⁸ Ibid.

¹⁹ RCR-ENG-2, 2018 Annual System Performance Report at Page 32.

1 resulting with the replacement of the pole. The Tie
2 Recloser on the circuit did not close automatically as
3 expected, resulting in a larger outage and delayed
4 restoration. The event accounted for 1,013 (39%) of the
5 2,614 customer-hours of interruption experienced by
6 customers.²⁰

7 The second largest event occurred on January 12, 2018 on
8 Youngs Road, Mahwah. The outage was the result of
9 equipment failure due to downed primary wire. The
10 Counting Recloser on the circuit failed to auto operate
11 causing a larger outage and delaying restoration. The event
12 accounted for 996 (14%) of the 7,232 customer-hours of
13 interruption experienced by customers.²¹

14 We do not expect that the Company's distribution equipment to perform as
15 designed 100% of the time. The Company noted that it could not replicate the
16 cause of the incident and also noted that the recloser passed a functional test.²²

17 The Company also noted that the recloser in question was not part of the
18 Company's \$8 million in distribution automation investments that were part of the
19 Company's Storm Hardening Program.²³

20 **Q. Has the Company noted any other changes in reliability performance not**
21 **captured in the reported reliability metrics?**

22 A. Yes, the Company notes that it experienced an increase in voltage flickers and
23 Momentary Average Interruption Frequency Index ("MAIFI") across its service
24 territory.²⁴ Specifically, the Company noted, "Customer voltage and flicker light

²⁰ RCR-ENG-2, 2018 Annual System Performance Report at Page 53.

²¹ RCR-ENG-2, 2018 Annual System Performance Report at Page 48.

²² RCR-ENG-INF-3

²³ Ibid.

²⁴ MAIFI addresses momentary outages or flickers that would not be considered sustained interruptions and captured under SAIFI. Generally, SAIFI interruptions last longer than five minutes.

1 complaints were up 58% from their 2017 levels. MAIFI also was significantly
2 higher in 2018 than 2017, almost doubling, indicating a greater number of
3 transient faults affecting the system.”²⁵ We understand that the Company is not
4 obligated to report MAIFI to the Board, but tracks MAIFI internally. Transient
5 outages may be the result of tree contact, which would manifest in increases in
6 both tree outage values and durations.

7 **Q. Do you have any recommendations for the Board regarding the Company’s**
8 **reliability performance?**

9 A. In this proceeding, we recommend that the Board continue to monitor the
10 Company’s reliability performance to determine if there is continued
11 improvement in the Company’s reliability performance or if short-term
12 aberrations in reliability performance are indicative of more systematic issues. We
13 expect to see that the Company’s investments included in the Storm Hardening
14 proceeding will have ancillary benefits in day-to-day reliability performance.

15 **IV. VEGETATION MANAGEMENT**

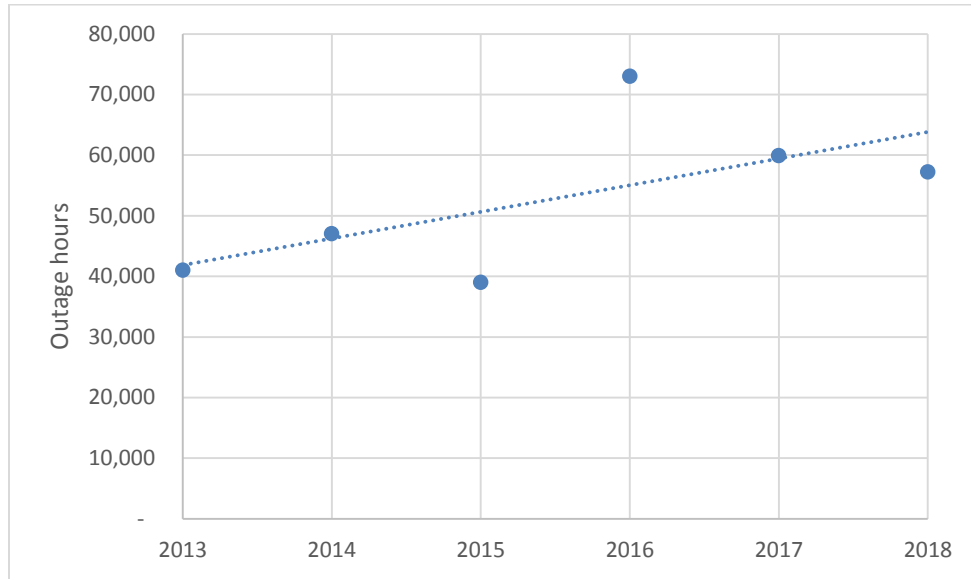
16 **Q. Does the Company provide tree-related outage data?**

17 A. Yes, as shown in the figure below, the trend in the Company’s vegetation
18 management outage durations since 2013 have increased.

²⁵ RCR-ENG-2, 2018 Annual System Report, Page 19.

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Figure 4 RECO 2013-2018 Tree-Related Outage Duration and Trend Line (hours)²⁶



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The Company reported that both the number of vegetation contact incidences throughout the year was up from 2017 levels and customers affected by vegetation contacts was 35% higher than the 19-year average going back to 2000.²⁷ However, as shown in Figure 4, the duration of the vegetation related outages in 2018 was lower than compared to 2017. The Company believes that above average rainfall in the last two years has resulted in more vegetation growth.²⁸ On some circuits this has resulted in accelerated tree trimming.²⁹

11

Q. Has vegetation management spending increased in the last few years?

12

A. Yes. Vegetation management spending has increased, partially due to new

13

vegetation management requirements made effective in 2016. Consequently, the

²⁶ RCR-ENG-2, Figure 2.5, page 30.

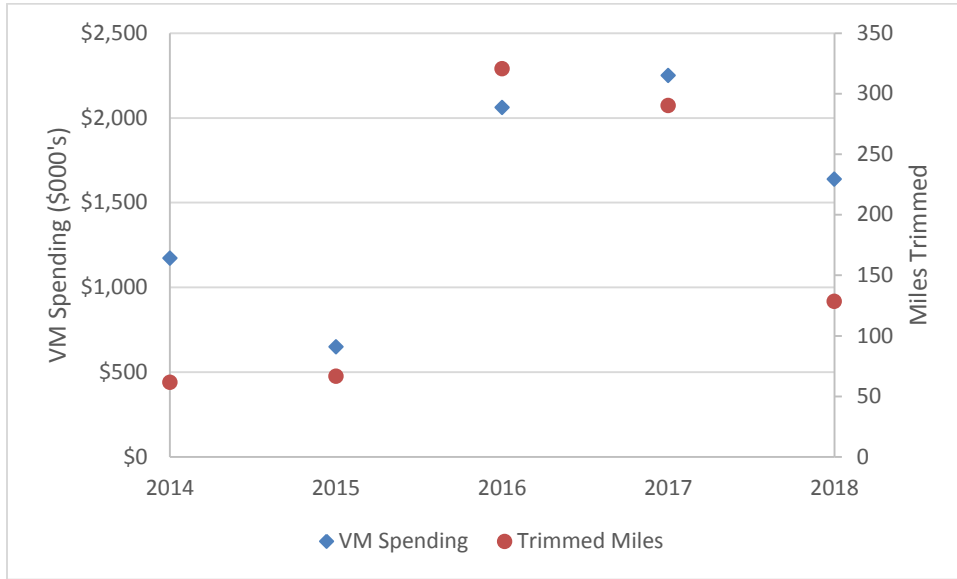
²⁷ RCR-ENG-2, Attachment 2018 Annual System Report at Page 20.

²⁸ RCR-ENG-2, 2018 Annual System Report at Page 74.

²⁹ Ibid.

1 miles trimmed per year has also increased since 2015. Both trends are shown in
2 the figure below.

3 **Figure 5 RECO Historical Vegetation Management Spending and Miles**
4 **Trimmed³⁰**



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7 Figure 5 also shows an increase in the amount of tree trimmed miles starting in
8 2016 with the implementation of the Board's vegetation management rules. The
9 Company reports that there are approximately 890 miles of distribution lines
10 within its service territory.³¹ The figure also shows that vegetation management
11 spending and tree trimmed miles decreased in 2018 compared to 2016 and 2017.
12 We note that the Company's 2018 vegetation management was approximately
13 \$1.6 million. The Company does not provide a reason for the drop in 2018
14 vegetation management spending and miles trimmed. The Company did not

³⁰ S-RECO-ENG-2 and RCR-ENG-37

³¹ S-RECO-ENG-7

1 provide a specific line item break-out for vegetation management expenses in its
2 9+3 test-year update.

3 **Q. What has been the historical vegetation management budget for the**
4 **Company?**

5 A. The Company's annual vegetation management budget appears to be \$1.5
6 million.³² This budget appears to be fixed for 2016 through 2018.³³

7 **Q. Has the Board undertaken steps to address tree-related outages across**
8 **electric distribution companies throughout the State?**

9 A. Yes. The Board promulgated new Vegetation Management Regulations in 2016,
10 which include:³⁴

- 11 • Four-year trim cycle;
- 12 • Hazard tree identification and management program;
- 13 • The removal of overhanging vegetation from the substation to the first
14 protective device starting in January 2016; and
- 15 • Additional reporting requirements for vegetation management.

16 **Q. Do the Board's Vegetation Management Regulations justify additional**
17 **vegetation management expenses for the Company?**

18 A. Yes, as shown in Figure 5, the Company has increased vegetation management
19 spending to meet the BPU's new regulations governing vegetation management. ,
20 The Company's 2018 spending was \$1.63 million to address the Board's

³² S-RECO-ENG-7

³³ S-RECO-ENG-2

³⁴ N.J.A.C 14:5-9

1 vegetation management requirements and to address the removal of Hazard trees,
2 including Ash tree removals without the need to create species-specific line items.

3 **V. PROPOSED ASH TREE REMOVAL PROGRAM**

4 **Q. Please summarize your concerns regarding the Company's proposed Ash**
5 **Tree Removal Program.**

6 A. We are concerned about the precedent which would be set by permitting the
7 Company to set aside funding specific for future Ash Tree removals when the
8 Company has historically removed any Hazard Trees, including the Ash Tree, as
9 part of its routine vegetation management expenses. The Company should
10 continue to remove all Hazard Trees, including the Ash Tree, in a prudent and
11 reasonable manner when required by the circumstances.

1 **Q. Has the Company provided breakdown of the proposed Ash Tree Removal**
2 **Program?**

3 **A.** Yes, to the extent that the Company estimated that there are approximately 17,000
4 Ash Trees within its service territory, and that the Company estimates that it will
5 cost on average \$700/tree.³⁵ This results in a total Ash Tree removal cost of \$11.9
6 million (\$12 million as noted by the Company).³⁶ In this proceeding, the
7 Company is seeking to obtain an initial funding of \$500,000 per year.

8 **Q. Does the Company define “Hazard Trees”?**

9 **A.** Yes, while the Company’s Hazard Tree Mitigation Program does not identify
10 species, it states that a Hazard Tree is a “structurally unsound tree that could
11 strike a target when it falls. As used in this clause the target of concern is electric
12 supply lines.”³⁷

13 **Q. Do you have any concerns regarding the Company’s Ash Tree removal**
14 **program?**

15 **A.** Yes. We are concerned not about the need to remove dangerous Ash trees that
16 have been afflicted with the Emerald Ash Borer, but with the need to designate
17 such a specific program beyond the Company’s routine requirement to remove
18 Hazard trees. It is an unfortunate fact that there will always be some infestation
19 afflicting trees. The New Jersey Department of Environmental Protection lists a

³⁵ Direct Testimony of Capital Budget and Plant Addition Panel. May 3, 2019. Page 57, lines 17-19.

³⁶ Id at Page 57, lines 22-23.

³⁷ Id. at Attachment TD-003 Hazard Tree Mitigation Program, Page 4.

1 number of pests and diseases that are afflicting trees across the State.³⁸ These
2 include: (1) Asian Long-horned Beetle, (2) Bacterial Leaf Scorch, (3) Emerald
3 Ash Borer, (4) Gouty Oak Gall, (5) Gypsy Moth, (6) Hemlock Woolly Adelgid,
4 (7) Oak Wilt, (8) Southern Pine Beetle, and (9) Verticillium Wilt. Thus, we see
5 the Ash Tree removal subprogram more appropriate categorized under the
6 Company's historical Hazard Tree removal activities. We see no reason that the
7 Company should create a separate program to address Ash Tree removal at this
8 time.

9 **Q. Earlier you noted that tree-related outages and durations have increased for**
10 **the Company. Why would you exclude this Ash Tree removal program?**

11 A. The Company notes that it has only recently started to track species of trees that
12 are removed.³⁹ As part of its new three-year removal contract, it will do so.⁴⁰ The
13 Company currently undertakes a Hazard Tree Mitigation Program that has
14 removed 3,195 trees since 2014.⁴¹ The Company's five-year average spending on
15 just tree removal is approximately \$59,184.⁴² We do note that in a separate
16 response, the Company indicated that it had removed 6,405 trees between 2014
17 and 2018.⁴³ While the difference in the actual number of removed trees is not
18 clear, the Company removes trees that are a danger to its system regardless of

³⁸ https://www.state.nj.us/dep/parksandforests/forest/community/Verticillium_Wilt.htm. Accessed October 4, 2019.

³⁹ RCR-ENG-29

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² RCR-ENG-36

⁴³ RCR-ENG-57

1 species. Therefore, a separate program targeting a specific type of hazard tree is
2 neither necessary nor prudent.

3 **VI. POST-TEST-YEAR ADJUSTMENTS**

4 **Q. Please summarize your concerns regarding the Company's Post-Test-Year**
5 **Adjustments.**

6 A. We understand that Rate Counsel witness Ms. Andrea Crane has sponsored
7 testimony that also addresses concerns regarding the Company's post-test-year
8 adjustments. We find that the Company has not specifically identified the
9 importance of any one of the projects in its list, and therefore we believe that it
10 would be inappropriate to include any of the Company's post-test-year
11 adjustments. We do not believe that the Company post-test year projects meet the
12 Board's Elizabethtown Water standard.

13 **Q. Does the Company provide a list of post-test-year adjustments?**

14 A. Yes, the Company provided details of \$15.5 million of post-test-year projects.⁴⁴
15 Using the Company's updated Exhibit P-3 Schedule 12 as the basis of the
16 projects, we have a general sense of the types of projects included in the
17 Company's post-test-year adjustments. These are shown in the following table:

⁴⁴ Exhibit P-3 Schedule 12 (9+3 Update)

1 **Table 1 RECO Exhibit P-3 Schedule 12 (9+3 Update) (\$000's)**
 2

Project	In-Service Date	Jul-Sept 2019	Oct-Dec 2019	Jan-Mar 2020	Total Project Costs
Individual Projects					
Ringwood Breaker 983/984-78-2	201905	\$4			\$4
Sweetwater Lane, Ringwood	201907	\$809			\$809
Allendale Breaker T588-239 Replacement	201910		\$350		\$350
Old Tappan - Howard Dr	201910		\$470		\$470
Wyckoff Automation/Resiliency	201910		\$416		\$416
Montvale- Main St 4kV Conversion	201911		\$325		\$325
Franklin Lakes-Old Mill Road Wyckoff Support	201912		\$550		\$550
Oakland - Long Hill Rd Hendrix	201912		\$350		\$350
Orangeburg Rd UG Circuit 30-7-13	201912		\$410		\$410
Allendale 39-1 and 39-6 Reroute	202003			\$1,650	\$1,650
Blanche Rd UG Circuit 28-3-13	202003			\$1,590	\$1,590
Harrington Park - Hackensack Ave Hendrix Rebuild	202003			\$300	\$300
AMI Program	various	\$18	\$126	\$89	\$233
Orchard Ridge at Mahwah	201907	\$126			\$126
West Milford - Marshall Hill Road	201912		\$97		\$97
Blankets					
Distribution Reliability Blanket	various	\$50	\$71	\$238	\$359
Electric Distribution Blankets	various	\$1,256	\$1,313	\$95	\$3,520
Electric Meter and Transformer Blankets	various	\$159	\$251	\$174	\$584
Smart Grid Automation and Resiliency Program	various	\$1,371	\$752	\$500	\$2,623
U/G Circuit Relocation and Rebuild	various	\$116	\$573		\$689
All Other Electric Blankets	various	\$61	\$10	\$20	\$91
Company Total		\$3,970	\$6,064	\$5,512	\$15,546

3

4 **Q. Do you have any post-test year recommendations?**

5 A. Yes, we recommend excluding all of the Company's post-test year adjustments.

6 The Company has not demonstrated that the costs associated with the project are

1 consistent with the Board’s Elizabethtown Water Standard that projects may be
2 included if there is a clear likelihood that projects are in service within six months
3 beyond the end of the test year, that such rate base additions are major in nature and
4 consequence, and that such additions be substantiated with very reliable data.⁴⁵

5 **Q. Do you think the Company’s proposed post-test-year blankets should be**
6 **recovered in this case?**

7 A. No, we do not include the \$8.09 million in post-test-year projects that the
8 Company has categorized as blankets in Schedule P-3. The Company notes that
9 “Blankets are an accounting convention, long accepted by the Board and its Staff,
10 whereby, for the sake of convenience, the costs of certain labor and equipment are
11 grouped together.”⁴⁶ Rate Counsel has consistently excluded post-test year
12 adjustments for blanket projects as identified by the Company since these
13 programs are routine spending.

14 **Q. Please explain why you have excluded other specific projects.**

15 A. The Company’s remaining post-test year adjustment of \$7.4 million encompasses
16 fourteen individual projects. Twelve of the fourteen projects are reported to cost
17 less than \$1 million dollars. The average per-project cost for the twelve projects is
18 \$350,000 and totaling \$4.2 million combined. These twelve projects do not meet
19 the Elizabethtown requirement of being major in nature and consequence. As
20 such, we have excluded from our post-test year recommendations.

⁴⁵ I/M/O Elizabethtown Water Company Rate Case, BPU Docket No. WR8504330 (Order, 5/23/85). Page 2

⁴⁶ Direct Testimony Capital Budget and Plant Addition Panel. page 26, lines 19-21.

1 **Q. Please explain why you have excluded the Allendale 39-1 and Blanche Road**
2 **Underground projects from your post-test year adjustments.**

3 A. We have excluded the \$1.6 million projected post-test year cost for the Allendale
4 39-1 and 39-6 reroute project because it is our understanding from discussions
5 with the Company that the project has not started construction. This projects
6 would benefit 3,000 or approximately 3 percent of the Company's customer
7 base.⁴⁷ In addition, we have excluded the \$1.5 million Blanche Road
8 Underground Circuit 28-3-13. This projects would benefit 2,600 or approximately
9 3 percent of the Company's customer base.⁴⁸ Over the past three years, the
10 Company's utility construction expenditures averaged \$24.9 million per year.⁴⁹
11 The Allendale 39-1 reroute, and the Blanche Road project would each only
12 represent about 6 percent of the average annual construction expenditure. As
13 such, these projects are so relatively minor that we do not believe that the two
14 projects meet the Elizabethtown test for post-test year adjustments. For these
15 reasons, we do not believe it would be appropriate to include the Company's
16 proposed post-test-year adjustments at this time.

17 **VII. CONCLUSIONS AND RECOMMENDATIONS**

18 **Q. What are your recommendations?**

19 A. Our findings and recommendations are summarized as follows:

⁴⁷ Direct Testimony Capital Budget and Plant Addition Panel. page 22, line 12.

⁴⁸ Direct Testimony Capital Budget and Plant Addition Panel. page 23, line 12.

⁴⁹ RCR-ROR-18

- 1 • The Company is showing a slight improvement for both SAIDI and
2 SAIFI metrics in the last ten years. There has been a fluctuation in
3 reliability in the last three years indicating that improvements in
4 reliability need to be sustained. The recent completion of the Company's
5 Storm Hardening program⁵⁰ should result in improvements in reliability in
6 future years.
- 7 • We recommend that the Company set its vegetation management budget
8 to its test-year spending amount. As a point of reference, the Company's
9 2018 vegetation management spending was \$1.6 million that includes
10 spending to address Hazard trees, including but not limited to ash tree
11 removals.
- 12 • The Board should reject the Company's proposed \$500,000/year Ash tree
13 removal program. Hazard trees, regardless of species have and should be
14 removed as part of the Company's ongoing vegetation management
15 activities. The Company should continue to address Hazard trees as part
16 of both the Board's 2016 Enhanced Vegetation Management
17 requirements⁵¹ and as part of the Company's normal vegetation
18 management practices.
- 19 • The Board should reject the Company's post-test-year adjustments. The
20 Company has not demonstrated that any of the post-test year adjustments
21 are major in consequence as required by the BPU in the Elizabethtown

⁵⁰ I/M/O the Petition of Rockland Electric Company for Approval of Electric Base Rate Adjustments Pursuant to the Storm Hardening Program, BPU Dkt. No. ER18191114 (Mar. 13, 2019).

⁵¹ N.J.A.C 14:5-9.1 to -9.12.

1 Water Company Order and re-affirmed in the recent ACE Base Rate case
2 Order. Although two of the post-test-year projects will each result in more
3 than \$1,000,000 in capital spending, each project only represent
4 approximately six (6) percent of the three-year average of \$24.9 million
5 in utility construction spending incurred by the Company between 2016
6 and 2018. Accordingly, none of the post-test year adjustments would
7 qualify as major in nature and consequence.

8 **Q. Does this conclude your testimony?**

9 A. Yes. However, we reserve our right to modify our testimony based on additional
10 information provided by the Company. Specifically, we reserve the right to
11 modify our recommendation regarding the Company's vegetation management
12 budget following the Company's Discovery Responses on its 12+0 test-year
13 update, among others.

ATTACHMENT
RC-ENG-1



Charles P. Salamone P.E.

Profession: Power systems analysis and assessment, with a special emphasis on transmission planning, performance and design

Nationality: U.S. Citizen

Years of Experience: 40 years

Education B.S.E.E, Power System Engineering, 1973
Gannon University, Erie, PA

Position: Owner/Manager, Cape Power Systems Consulting

Web/Email: www.CapePowerSystems.com csalamone@capepowersystems.com

Contact Number: 774-271-0383

Summary: Mr. Salamone provides professional services based on 40 years of electric utility industry experience in the areas of Transmission Planning, Substation Planning, Distribution Planning, ISO-New England Planning Procedures, New England Power Pool Procedures, Congestion Management, Generator Interconnections, Planning/Capital Budget Management, Meter Engineering, and State (Mass DPU and New Jersey Rate Council) and Federal (FERC) Regulatory Agency Filing Development and Expert Witness Testimony

Experience:

2005- Pres. Cape Power Systems Consulting

Established a power system design, analysis, planning and assessment consulting company to work directly with diverse power system stakeholders.

- Worked with a number of clients for the development of analysis, reports and presentations in support of regulatory and technical review/approval process for transmission and distribution projects
- Provided technical assistance for transmission planning activities for an Independent System Operator including support for major transmission system expansion programs and development of a 10 year transmission plan
- Worked with a large Massachusetts Utility as an expert witness in support of State regulatory reviews for the siting of a major transmission system upgrade plan



Charles P. Salamone P.E.

- Worked with state regulatory agencies in support of electric utility rate case proceedings including expert witness testimony and assessment of electric utility performance
- Worked with multiple state regulatory agencies in support of review of electric utility smart grid initiatives including review of the technical performance, system benefits and viability of proposed electric utility programs
- Developed and conducted a comprehensive training program for implementation of an Energy Management System (EMS) based transmission system security assessment application for a large Massachusetts utility
- Worked with clients to conduct load flow assessment of transmission system performance for feasibility and reliability performance studies across New England and New York

1979-2005 NSTAR (Previously Boston Edison and Commonwealth Electric)

2000-2005 *Director System Planning*

NSTAR (Previously Boston Edison and Commonwealth Electric) Boston, MA

- Responsible for long term planning of Company transmission, substation and distribution systems
- Successfully managed the studies, design, internal and external review and regulatory approval for a \$250M 345 kV underground transmission expansion project serving the greater Boston area
- Managed numerous generator interconnection studies, design and approvals
- Successfully managed studies, design and approval for congestion mitigation plans and expansion project
- Oversaw transmission and distribution planning efforts to establish a comprehensive 10 year \$300 million system expansion plan
- Served as Company representative on NEPOOL Reliability Committee and the New England Transmission Expansion Advisory Committee
- Served as Company expert witness for system planning related regulatory proceedings at both the state and federal levels.
- Supervised a staff of 10 senior engineers

1989-1999 *Manager, System Planning and Meter Services*

Commonwealth Electric Company, Wareham, MA

- Develop risk based prioritized \$10 million construction budget procedures
- Supervise a staff of 6 professional engineers and 4 analysts
- Served as chair of the NEPOOL Regional Transmission Planning Committee (currently the NEPOOL Reliability Committee)
- Process billing determinant and interval data for all major system customers
- Lead implementation of first MV90 meter data processing system
- Develop annual performance analysis reports for all transmission and major distribution systems



Charles P. Salamone P.E.

- Manage multiple FERC tariff based transmission customer and generation developer system impact studies
- Served as expert Company witness in State and FERC regulatory proceedings
- Implemented a risk index for prioritization of all transmission and major distribution construction projects
- Implemented automated electronic processing of major customer billing data, which significantly reduced time needed to generate bills
- Served as lead member on information technology company merger team
- Implemented process and equipment to perform all tie line, generator and wholesale customer meter testing
- Served as chair of the NEPOOL Planning Process Subcommittee, which established numerous NEPOOL policies for transmission/generator owners
- Served as Vice-Chair of the NEPOOL Reliability Committee

1984-1989 ***Meter Engineer***

Commonwealth Electric Company, Plymouth, MA

- Designed and supervised installation of 15 generator meter data recorders
- Developed customer load plotting and analysis software
- Developed meter equipment order data processing system for four remote offices
- Implemented PC control of meter test boards, which significantly reduced processing and record keeping time
- Managed programming of all electronic meter registers to insure accurate data registration

1979-1984 ***Computer Application Engineer***

Commonwealth Electric Company, Wareham, MA

- Implemented numerous technical and analytical software applications for engineering analysis
- Served as member of decision team for implementation of a new SCADA system

1978-1979 ***San Diego Gas & Electric, Planning Engineer***

San Diego Gas & Electric Company, San Diego, CA

- Performed extensive stability analysis for a new 230 kV transmission interconnection with Mexico
- Performed transmission design and performance analysis for a new 250 mile 500 kV line from San Diego to Arizona

1973-1978 ***New England Gas & Electric Association, Planning Engineer***

New England Gas & Electric Association, Cambridge, MA

- Performed extensive stability analysis for a new 560 MW generating plant on Cape Cod
- Developed transmission plan for a new 345 kV transmission line on Cape Cod
- Developed plans for design and siting of new 115 / 23 kV substations on Cape Cod

ATTACHMENT

RCR-ENG-2

Maximilian Chang, Principal Associate

Synapse Energy Economics | 485 Massachusetts Avenue, Suite 2 | Cambridge, MA 02139 | 617-453-7027
mchang@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics Inc., Cambridge, MA. *Principal Associate*, 2013 – present, *Associate*, 2008 – 2013.

Consults and provides analysis of technologies and policies, electric policy modeling, evaluation of air emissions of electricity generation, and other topics including energy efficiency, consumer advocacy, environmental compliance, and technology strategy within the energy industry. Conducts analysis in utility rate-cases focusing on reliability metrics and infrastructure issues and analyzes the benefits and costs of electric and natural gas energy efficiency measures and programs.

Environmental Health and Engineering, Newton, MA. *Senior Scientist*, 2001 – 2008.

Managed complex EPA-mandated abatement projects involving polychlorinated biphenyls (PCBs) in building-related materials. Provided green building assessment services for new and existing construction projects. Communicated and interpreted environmental data for clients and building occupants. Initiated and implemented web-based health and safety awareness training system used by laboratories and property management companies.

The Penobscot Group, Inc., Boston, MA. *Analyst*, 1994 – 2000.

Authored investment reports on Real Estate Investment Trusts (REITs) for buy-side research boutique. Advised institutional clients on REIT investment strategies and real estate asset exchanges for public equity transactions. Wrote and edited monthly publications of statistical and graphical comparison of coverage universe.

Harvard University Extension School, Cambridge, MA. *Teaching Assistant*, 1995 – 2002.

Teaching Assistant for Environmental Management I and Ocean Environments.

Brigham and Women's Hospital, Boston, MA. *Cancer Laboratory Technician*, 1992 – 1994.

Studied the biological mechanism of tumor eradication in mouse and human models. Organized and performed immunotherapy experiments for experimental cancer therapy. Analyzed and authored results in peer-reviewed scientific journals.

EDUCATION

Harvard University, Cambridge, MA
Master of Science in Environmental Science and
Engineering, 2000

Cornell University, Ithaca, NY
Bachelor of Arts in Biology and Classics, 1992

REPORTS

Knight, P., E. Camp, D. Glick, M. Chang. 2018. *Analysis of the Avoided Costs of Compliance of the Massachusetts Global Warming Solutions Act*. Supplement to 2018 AESC Study. Synapse Energy Economics for Massachusetts Department of Energy Resources and Massachusetts Department of Environmental Protection.

Knight, P., Chang, M., White, D., Peluso, N., Ackerman, F., Hall, J., Chernick, P., Harper, S., Geller, S., Griffiths, B., Deman, L., Rosenkranz, J., Gifford, J., Yuen, P.Y., Snook, E., Shoesmith, J. 2018. *Avoided Energy Supply Costs in New England: 2018 Report*. Synapse Energy Economics for Avoided-Energy-Supply-Component (AESC) Study Group.

Fagan, B., M. Chang, S. Fields. 2017. *Fair and Non-Discriminatory Transmission Access on Prince Edward Island: Compliance of Maritime Electric Company Ltd. (MECL) Open Access Transmission Tariff with US Federal Energy Regulatory Commission Standards*. Synapse Energy Economics for Carr, Stevenson and Mackay (CSM), Counsel to the Prince Edward Island Regulatory and Appeals Commission.

Horowitz, A., A. Allison, N. Peluso, B. Fagan, M. Chang, D. Hurley, P. Peterson. 2017. *Comments on the United States Department of Energy's Proposed Grid Resiliency Pricing Rules (FERC Docket RM18-1-000)*. Prepared for Earthjustice.

Kallay, J., A. Napoleon, M. Chang. 2016. *Opportunities to Ramp Up Low-Income Energy Efficiency to Meet State and National Climate Policy Goals*. Synapse Energy Economics.

Malone, E., W. Ong, M. Chang. 2015. *State Net-to-Gross Ratios: Research Results and Analysis for Average State Net-to-Gross Ratios Used in Energy Efficiency Savings Estimates*. Synapse Energy Economics for the United States Environmental Protection Agency.

Vitolo, T., M. Chang, T. Comings, A. Allison. 2015. *Economic Benefits of the Proposed Coolidge Solar I Solar Project*. Synapse Energy Economics for Coolidge Solar I, LLC.

Chang, M. 2014. *Making the Grid More Resilient within Reason: Case Study in Public Service Electric and Gas "Energy Strong" Petition*.

White, D. E., M. Chang, B. Biewald. 2013. *State Energy Efficiency Embedded in Annual Energy Outlook Forecasts: 2013 Update*. Synapse Energy Economics for U.S. Environmental Protection Agency.

Hornby, R., P. Chernick, D. White, J. Rosenkranz, R. Denhardt, E. A. Stanton, J. Gifford, B. Grace, M. Chang, P. Luckow, T. Vitolo, P. Knight, B. Griffiths, B. Biewald. 2013. *Avoided Energy Supply Costs in New England: 2013 Report*. Synapse Energy Economics for Avoided-Energy-Supply-Component (AESC) Study Group.

Nogee, A., M. Chang, P. Knight, E.A. Stanton. 2013. *Electricity Market Restructuring and the Nuclear Industry*. Synapse Energy Economics for Whitt Law.

Koplow, D., M. Chang. 2013. *Vogtle 3 and 4 Conditional Loan Guarantee: Review of Documents Pertaining to Department of Energy Conditional Loan Guarantees for Vogtle 3 & 4*. Synapse Energy Economics and Earth Track.

Chang, M., D. White, E. Hausman. 2012. *Risks to Ratepayers: An Examination of the Proposed William States Lee III Nuclear Generation Station, and the Implications of "Early Cost Recovery" Legislation*. Synapse Energy Economics for Consumers Against Rate Hikes.

Fagan, R., M. Chang, P. Knight, M. Schultz, T. Comings, E. Hausman, R. Wilson. 2012. *The Potential Rate Effects of Wind Energy and Transmission in the Midwest ISO Region*. Synapse Energy Economics for Energy Future Coalition.

Chang, M., D. White, P. Knight, B. Biewald. 2012. *Energy Benefits Resulting from the Investment of 2010 RGGI Auction Revenues in Energy Efficiency*. Synapse Energy Economics for Regulatory Assistance Project.

Chang, M., D. White, E. Hausman, N. Hughes, B. Biewald. 2011. *Big Risks, Better Alternatives: An Examination of Two Nuclear Energy Projects in the US*. Synapse Energy Economics for Union of Concerned Scientists.

Hornby, R., P. Chernick, C. Swanson, D. White, J. Gifford, M. Chang, N. Hughes, M. Wittenstein, R. Wilson, B. Biewald. 2011. *Avoided Energy Supply Costs in New England: 2011 Report*. Synapse Energy Economics for Avoided-Energy-Supply-Component (AESC) Study Group.

Chang, M., D. White, L. Johnston, B. Biewald. 2010. *Electricity Energy Efficiency Benefits of RGGI Proceeds: An Initial Analysis*. Synapse Energy Economics for Regulatory Assistance Project.

Fisher, J., J. Levy, P. Kirshen, R. Wilson, M. Chang, J. Kallay, C. James. 2010. *Co-Benefits of Energy Efficiency and Renewable Energy in Utah*. Synapse Energy Economics for the State of Utah Energy Office.

Napoleon, A., W. Steinhurst, M. Chang, K. Takahashi, R. Fagan. 2010. *Assessing the Multiple Benefits of Clean Energy: A Resource for States*. Synapse Energy Economics for US Environmental Protection Agency.

Hornby, R., P. Chernick, C. Swanson, D. White, I. Goodman, B. Grace, B. Biewald, C. James, B. Warfield, J. Gifford, M. Chang. 2009. *Avoided Energy Supply Costs in New England: 2009 Report*. Synapse Energy Economics for Avoided-Energy-Supply-Component (AESC) Study Group.

Biewald, B., D. White, J. Fisher, M. Chang, L. Johnston. 2009. *Incorporating Carbon Dioxide Emissions Reductions in Benefit Calculations for Energy Efficiency: Comments on the Department of Energy's Methodology for Analysis of the Proposed Lighting Standard*. Synapse Energy Economics for New York State Attorney General.

ABSTRACTS

Koehler, D., M. Chang. 1999. "Search and Disclosure: Corporate Environmental Reports." *Environment* 41 (2): 3.

Makoto, N., P. S. Goedegebuure, U. L. Burger, M. Chang, T. J. Eberlein. 1995. "Successful adoptive immunotherapy (AIT) is dependent on the infiltration of host CD8+ and CD4+ T cells into tumor." *Surgical Forum* 66:528–531.

Burger, U.L., M. Chang, P. S. Goedegebuure, T. J. Eberlein. 1994. "Changes in host T-cell concentrations but not in donor TIL concentrations at the tumor site following adoptive immunotherapy." *Surgical Forum* 45 (0): 513–515.

Burger, U.L., M. Chang, S. L. Adams, D. D. Schoof, T. J. Eberlein. 1993. "The role of CD4+ and CD8+ T-cells during TIL+ rIL-2 treatment in cancer immunotherapy." *Surgical Forum* 64:467–469.

Zuber, M., D. L. Leonard-Vidal, A. L. Rubinstein, A. F. Massaro, M. Chang, D. D. Schoof, T. J. Eberlein. 1990. "In vivo efficacy of murine tumor-infiltrating lymphocytes (TIL) reactivated by anti-CD3." *Journal of Cancer Research and Clinical Oncology* 116; A3.112.28.

Eberlein, T.J., A. F. Massaro, S. Jung, A. L. Rubinstein, U. L. Burger, M. Chang, D. D. Schoof. 1989. "Cyclophosphamide (Cy) immunosuppression potentiates tumor-infiltrating lymphocytes (TIL) therapy in the mouse." Proceedings Annual Meeting: American Association Cancer Research. A30.A1472.

TESTIMONY

New Jersey Board of Public Utilities (Docket No. EO18060629 and GO18060630): Direct testimony on Public Service Electric and Gas' petition for approval of the Second Energy Strong Program. On behalf of the New Jersey Division of Rate Counsel. March 1, 2019.

New Jersey Board of Public Utilities (Docket No. EO18070728): Direct testimony on Jersey Central Power and Light Company's petition for an Infrastructure Investment Program. On behalf of the New Jersey Division of Rate Counsel. December 17, 2018.

New Jersey Board of Public Utilities (Docket No. EO18020196): Direct testimony on Atlantic City Electric Company's petition for an Infrastructure Investment Program. On behalf of the New Jersey Division of Rate Counsel. September 4, 2018.

New Jersey Board of Public Utilities (Docket No. ER18010029 and GR18010030): Direct testimony on Public Service Electric and Gas' petition for base rate adjustments. On behalf of the New Jersey Division of Rate Counsel. August 6, 2018.

Illinois Commerce Commission (Docket No. 18-0211): Direct Testimony regarding Ameren Illinois Company's voltage optimization plan and the importance of prioritizing low-income communities. On behalf of the People of the State of Illinois, represented by the Office of the Illinois Attorney General. March 7, 2018.

Maryland Public Service Commission (Docket No. 9431): Direct testimony on the applications of US Wind and Skipjack Wind for the development of offshore wind projects pursuant to the Maryland Offshore Wind Energy Act of 2013. On behalf of Maryland Office of People's Counsel. February 15, 2017.

Kansas Corporation Commission (Docket No. 16-KCPE-593-ACQ): Direct testimony on clean energy and coal fleet retirement concerns related to the petition of Great Plains Energy Inc., Kansas City Power and Light, and Westar Energy, Inc. for the acquisition of Westar by Great Plains Energy. On behalf of Sierra Club. December 16, 2016.

Maryland Public Service Commission (Docket No. 9424): Direct testimony on Delmarva Power and Light Company's application for a rate adjustment to recover smart grid costs. On behalf of Maryland Office of People's Counsel. October 7, 2016.

Maryland Public Service Commission (Docket No. 9418): Direct testimony on Potomac Electric Power Company's application for a rate adjustment to recover smart grid costs. On behalf of Maryland Office of People's Counsel. July 6, 2016.

Illinois Commerce Commission (Docket No. 16-0259): Direct and rebuttal testimony on Commonwealth Edison Company's annual formula rate update and revenue requirement reconciliation on distribution and business intelligence investments. On behalf of the Office of Illinois Attorney General. June 29, 2016 and August 11, 2016.

Illinois Property Tax Appeal Board (Case Nos. 12-02297, 12-01248) Direct testimony on history of nuclear deregulation in Illinois and the impact of deregulation on Exelon nuclear units. On behalf of Byron Community School District. April 2016.

Maryland Public Service Commission (Docket No. 9406): Direct testimony on Baltimore Gas and Electric Company's application for a rate adjustment to recover smart grid costs. On behalf of Maryland Office of People's Counsel. February 8, 2016.

New Jersey Board of Public Utilities (Docket No. ER14030250): Direct testimony on Rockland Electric Company's petition for investments in storm hardening measures. On behalf of the New Jersey Division of Rate Counsel. September 4, 2015.

Hawaii Public Utilities Commission (Docket No. 2015-0022): Direct testimony on reliability, clean energy, competition, and management and performance concerns related to the petition of NextEra Corporation and Hawaiian Electric Companies (HECO) for the acquisition of HECO by NextEra. On behalf of the Hawaii Division of Consumer Advocacy. August 10, 2015.

Delaware Public Service Commission (Docket No. 14-193): Direct testimony evaluating the benefits and commitments of the proposed Exelon-Pepco merger. On behalf of the Delaware Department of Natural Resources. December 12, 2014.

State of New Jersey Board of Public Utilities (Docket No. EM14060581): Direct testimony on the reliability commitments filed by Exelon Corporation and Pepco Holdings, Inc. in their joint petition for

the merger of the two entities. On behalf of the New Jersey Division of Rate Counsel. November 14, 2014.

District of Columbia Public Service Commission (Formal Case No. 1119): Direct and answer testimony on the reliability, risk, and environmental impacts of the proposed Exelon-Pepco merger. On behalf of the District of Columbia Government. November 3, 2014 and March 20, 2015.

United States District Court District of Maine (C.A. No. 1:11-cv-00038-GZS): Declaration regarding the ability of the New England electric grid to absorb the impact of a spring seasonal turbine shutdown at four hydroelectric facilities. On behalf of Friends of Merrymeeting Bay and Environment Maine. March 4, 2013.

State of Maine Public Utilities Commission (Docket 2012-00449): Testimony regarding the Request for Approval of Review of Second Triennial Plan Pertaining to Efficiency Maine Trust. On behalf of the Maine Efficiency Trust. January 8, 2013.

New Jersey Board of Public Utilities (Docket No. GO12050363): Testimony regarding the petition of South Jersey Gas Company for approval of the extension of energy efficiency programs and the associated cost recovery mechanism pursuant to N.J.S.A 48:3-98:1. On behalf of the New Jersey Division of Rate Counsel. November 9, 2012.

Resume updated October 2019.

**DOCUMENTS CITED
IN TESTIMONY**

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG
Date of Response: June 28, 2019
Responding Witness: Capital Budget & Plant Addition Panel

Question No. : 2

Please provide a copy of the Company's Annual System Performance report for each of the last five years.

RESPONSE: (do not edit or delete this line or anything above this)

Attached are the Company's Annual System Performance reports for the years 2014 to 2018.



Orange & Rockland

**Rockland Electric Company
(Orange and Rockland Utilities, Inc.)**

Service Reliability Filing
For 2018 System Performance

Prepared By:
Performance and Operational Engineering
May 2019

2.1. 2018 System Performance Overview

RECO’s 2018 SAIFI and CAIDI reliability performance, calculated in accordance with the revisions to the reliability rules approved by the Board in 2015, and measured in minutes, are shown in the table below.

	2018		Benchmark		Minimum	
	SAIFI	CAIDI	SAIFI	CAIDI	SAIFI	CAIDI
RECO	1.13	92.7	0.92	110.3	1.18	129.7
Eastern	.91	93.1	0.77	110.7	1.03	130.4
Northern	2.08	92.0	1.60	109.3	1.86	141.4

Overall, in 2018, the RECO service territory experienced a SAIFI of 1.13 interruptions per customer served and a CAIDI of 92.7 minutes of interruption. The 2018 SAIFI performance for RECO bettered the minimum performance level of 1.18 by 5%, but exceeded the benchmark of 0.92 by 23%. The 2018 CAIDI performance of 92.7 minutes bettered both the 110.3 minute benchmark as well as the minimum standard of 129.7 minutes. This mixed performance can be attributed, in part, to the inverse relationship between SAIFI and CAIDI experienced by RECO customers over the past ten years and as shown in Figures 1, 2 and 3 on the following two pages, but is inconsistent with expectations and with previous years’ performance.

The Company experienced three weather events which qualified for exclusion from the reliability indices for 2018. All three were Company-wide events affecting both RECO’s Eastern and Northern Divisions. In addition to the excludable weather events affecting its performance, the Company faced significant reliability challenges in 2018 due mostly to above average precipitation throughout the year. Rainfall totals were well above the 100-year average, with the total rainfall of 70.34 inches being the third greatest since 1869² (only 1983 and 2011 had greater annual rainfall totals).

Customer voltage and flicker light complaints were up 58% from their 2017 levels. Momentary Average Interruption Frequency Index (“MAIFI”) also was significantly higher in 2018 than 2017, almost doubling, indicating a greater number of transient faults affecting the system. Although not used by the BPU as a performance measurement index, RECO uses MAIFI as an internal measurement tool.

² The Company uses several sources, including paid services, for weather forecasting and in estimating weather impact to the service territory. For historical rainfall totals, the Company uses records for Central Park, New York due to the completeness of the records (the company will also use data collected from Teterboro Airport in Teterboro, NJ and Stewart Airport in Newburgh, NY when available).

These factors, coupled with field observations made throughout the year, are indicative of a greater number of vegetation contacts, both transient as well as permanent, along circuit mainline sections of the distribution system. The excessive vegetation growth had a direct impact on the operation of the electric distribution system. Vegetation contact outages throughout the year were up from 2017 levels and customers affected by vegetation contacts were 35% above the 19-year average going back to 2000 (see Table 1 below).

While weather affected vegetation growth had a large impact on the performance of the electric transmission and distribution system during the year, the biggest impact to the Company's overall performance was the result of two large substation events. Had these events not occurred, both SAIFI and CAIDI would have been much more in line with historical norms.

The 2018 SAIFI performance was the Company's highest since 2010 and is attributable primarily to two factors: an estimated 28% increase in the number of customers affected by interruptions on overhead sections of the electric distribution system as compared with 2017 (66,443 customers versus 51,697 customers); and a fivefold increase in the number of customers affected by an interruption involving a substation or transmission line as discussed above. The number of customers affected by a substation or transmission line interruption was the highest level since 2006.

10 Year Company SAIFI Trend

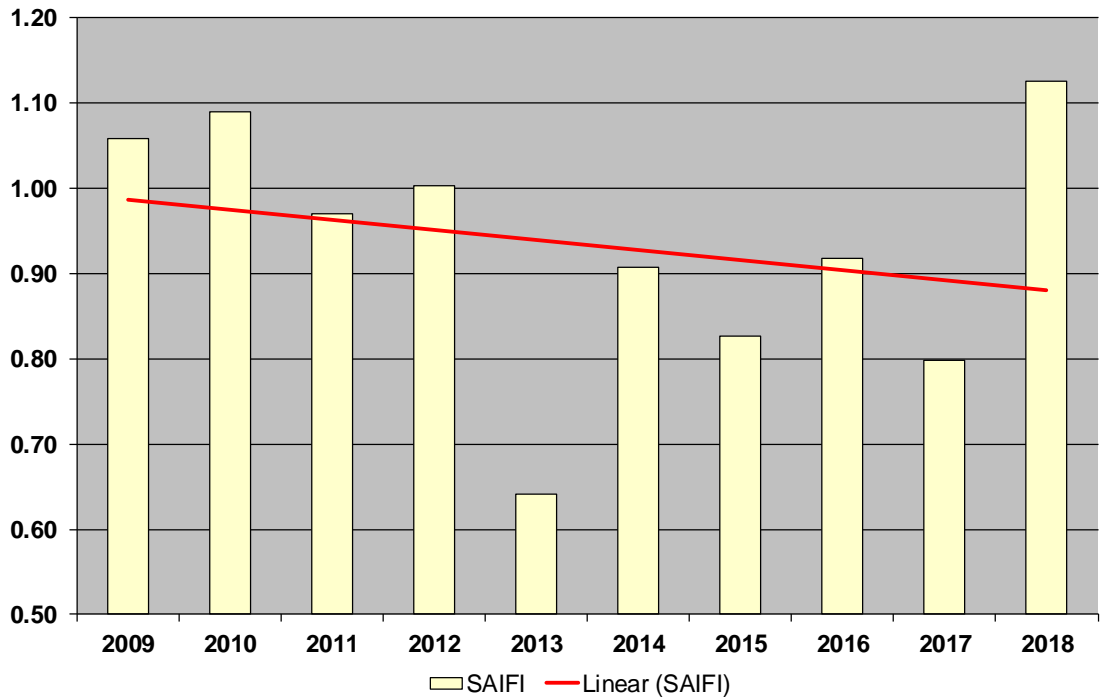


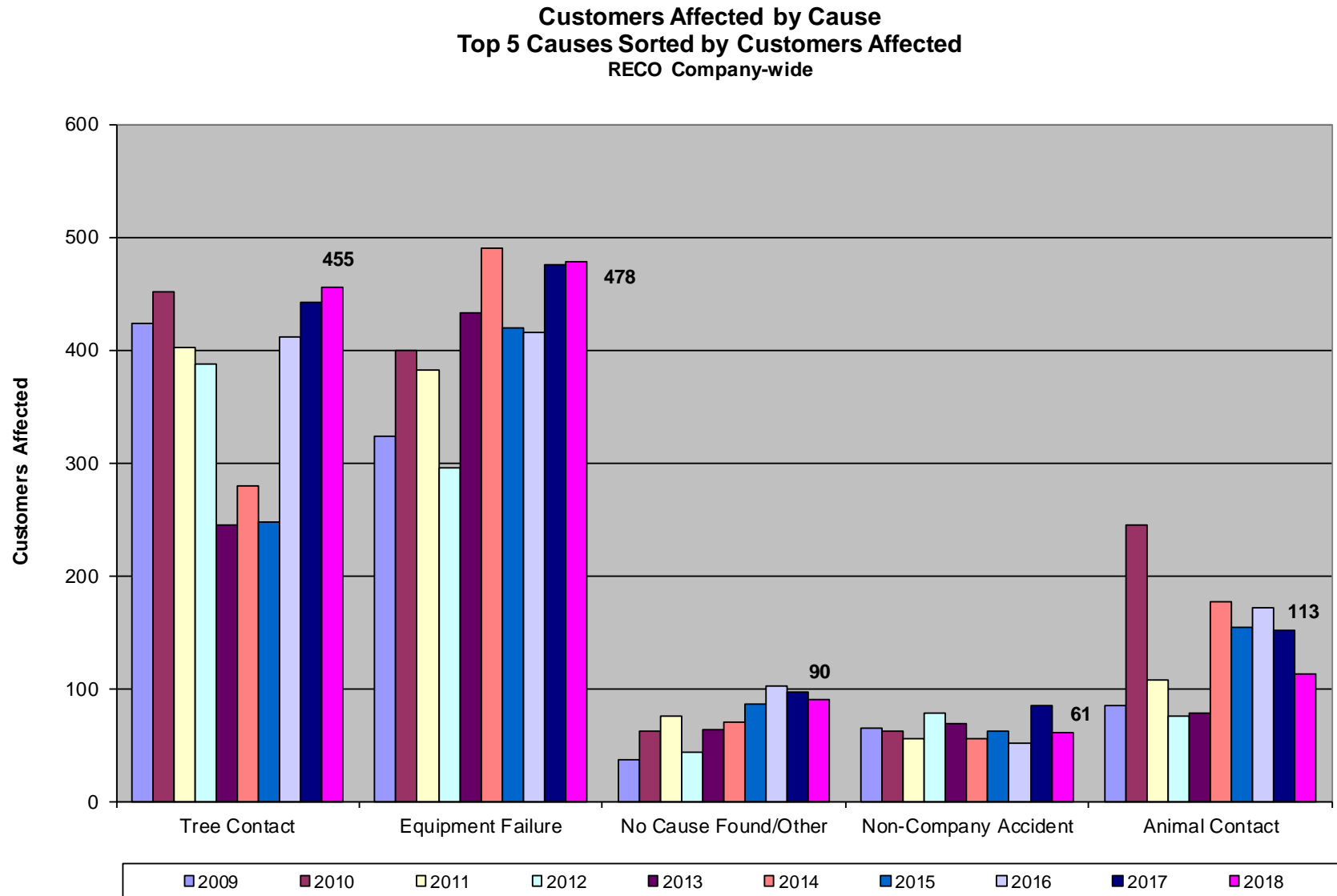
Figure 1

Table 2.1 – RECO Key Performance Indicators

	SAIFI	CAIDI	SAIDI
Benchmark	0.92	110.3	101.5
Minimum	1.18	129.7	153.0
2009	1.06	96.6	102.3
2010	1.09	118.4	129.0
2011	0.97	120.8	117.2
2012	1.00	88.3	89.8
2013	0.64	111.9	71.7
2014	0.91	112.2	101.8
2015	0.83	115.1	95.1
2016	0.92	135.3	124.2
2017	0.80	123.7	98.4
2018	1.13	92.7	104.4

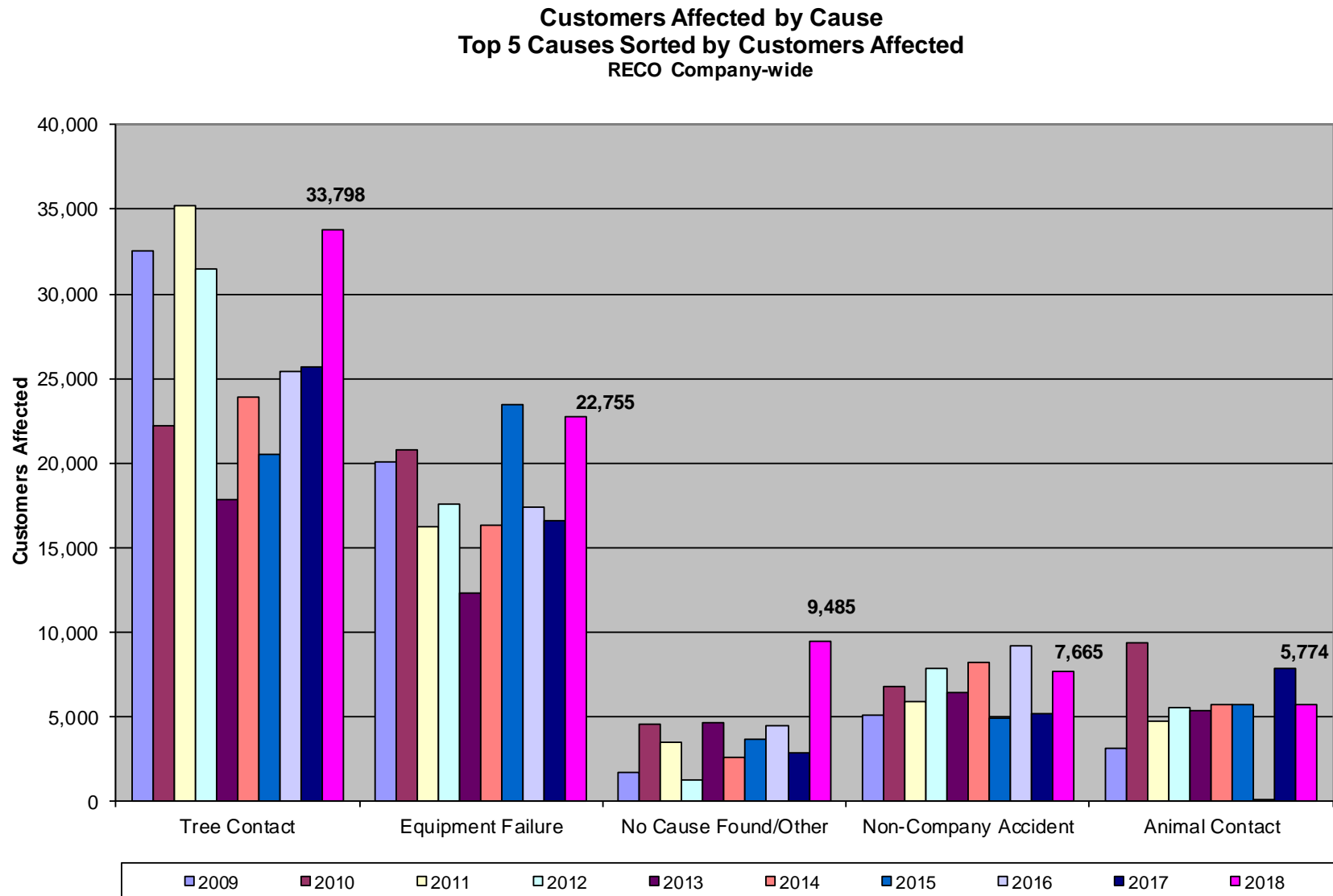
[Return to Company List of Figures and Tables Menu](#)

Figure 2.3 - 10-Year Comparison – Number of Interruptions by Cause for the Top 5 Causes Affecting Customers



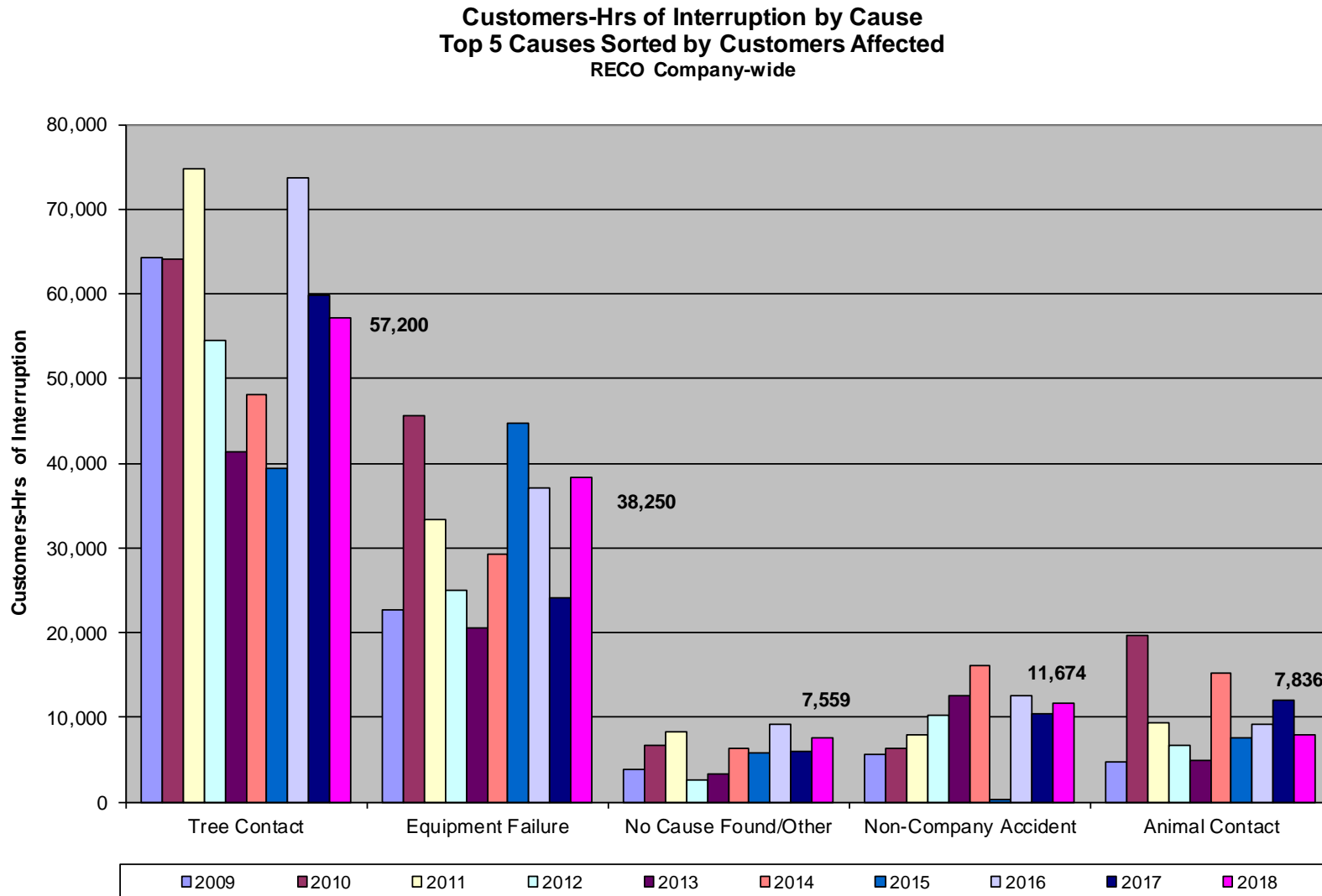
[Return to Company List of Figures and Tables Menu](#)

Figure 2.4 - 10-Year Comparison – Top 5 Customers Affected Causes



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Figure 2.5 - 10-Year Comparison – Customers- Hours of Interruption by Cause for the Top 5 Causes Affecting Customers



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The largest impact of customers affected involved three (11%) of the twenty-six incidents and accounted for 5,870 (82%) of the 7,232 customer-hours of interruption. The three incidents were the result of two tree contacts and one equipment failure.

The most impactful event occurred on the Sunday morning of July 22, 2018 on Shadyside Road, Ramsey when a large tree fell across all three phases locking out the circuit. The event accounted for 4,317 (60%) of the 7,232 customer-hours of interruption experienced by customers.

The second largest event occurred on January 12, 2018 on Youngs Road, Mahwah. The outage was the result of equipment failure due to downed primary wire. The Counting Recloser on the circuit failed to auto operate causing a larger outage and delaying restoration. The event accounted for 996 (14%) of the 7,232 customer-hours of interruption experienced by customers.

The third largest event occurred on July 23, 2018 also on Youngs Road, Mahwah. The outage was the result of tree contact – a large leader across three phase primary. The event accounted for 555 (8%) of the 7,232 customer-hours of interruption experienced by customers.

The remaining outages were the result of four Tree Contacts, four Pre-Arranged – Company, one Overload – Company, four Non-Company Accident – Motor Vehicle, two No Cause Found, four equipment failures and three Animal Contacts – Squirrel. In total, the 23 events resulted in 1,362 (18%) of the total customer- hours of interruption experienced by customers.

Vegetation Distribution trimming in Eastern Division is scheduled on a four-year cycle, and was last completed in November 2017; this includes removal of any “danger trees” to minimize potential future outages. The next cycle trimming is scheduled for 2021.

Historically, circuit 43-5-13 is not a worst performing circuit. A small number of outages on mainline sections of the circuit that have affected a large number of customers have had a significant impact on the overall performance of the circuit in the past several years. In 2017, the one outage accounted for 2,040 (69%) of the 2,948 customer-hours of interruption. The interruption was due to a Non-Company Motor Vehicle Accident involving a pole which brought the phases down onto the vehicle. The fault location was de-energized for safety until the passengers could be extricated safely and repairs completed. In 2018, three of the twenty-six incidents accounted for 5,870 (82%) of the 7,232 customer-hours of interruption.

The largest impact of customers affected involved four (15%) of the twenty-six incidents and accounted for 2,266 (72%) of the 2,614 customer-hours of interruption. The four incidents were the result of two Tree Contacts, one Equipment Failure and one Animal Contact - Squirrel.

The largest event occurred on December 2, 2018 on Wyckoff Avenue, Mahwah NJ. The outage was the result of equipment failure. A phase off the pin caused a pole fire, resulting with the replacement of the pole. The Tie Recloser on the circuit did not close automatically as expected, resulting in a larger outage and delayed restoration. The event accounted for 1,013 (39%) of the 2,614 customer-hours of interruption experienced by customers.

The second largest event occurred on June 21, 2018 on Wyckoff Avenue, Mahwah NJ. The outage was the result of tree contact across all three phases. The event accounted for 485 (19%) of the 2,614 customer-hours of interruption experienced by customers.

The third largest event occurred on April 4, 2018 on Fardale Avenue, Mahwah NJ. The outage was the result of tree contact beyond a fused cutout. The event accounted for 219 (8%) of the 2,614 customer-hours of interruption experienced by customers.

The fourth largest event occurred on June 11, 2018 on Forest Avenue, Ramsey NJ. The outage was the result of squirrel contact beyond a fused cutout. The event accounted for 152 (6%) of the 2,614 customer-hours of interruption experienced by customers.

The remaining outages were the result of five Tree Contacts, seven Pre-Arranged – Company, one Non-Company Accident – Other, seven Equipment Failures and two Animal Contacts – Squirrel. In total, the 23 events resulted in 744 (28%) of the total customer- hours of interruption experienced by customers.

Vegetation Distribution trimming in Eastern Division is scheduled on a four-year cycle, and was last completed in 2018 and is currently scheduled to be completed again in 2021.

In 2010, the Company installed Distribution Automation devices (reclosers) on the circuit as part of the NJ Smart Grid project.

In 2017, the Company completed system improvement work via transformer replacements on Forest Rd and Mayfair Dr. This work will help alleviate recurring outages due to animal contact in this area.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG
Date of Response: June 28, 2019
Responding Witness: Capital Budget & Plant Addition Panel

Question No. : 29

With reference to the direct testimony of the Capital Budget and Plant Addition Panel on page 36, line 15;

- a. please provide a copy of the tree report referenced on page 36, lines 18 and 19.
- b. please provide the number of trees removed for each of the past five years.
- c. please identify the number of ash trees removed annually for the past five years.

RESPONSE: (do not edit or delete this line or anything above this)

- a. Please see the report “Utility Forest Condition Assessment of Orange and Rockland Utilities Service Territory” is set forth in attachment RCR-ENG-29.
- b. Although not specifically labeled as “danger trees,” the Company has removed 3,195 trees from the RECO distribution system between January 1, 2014 and June 15, 2019. This number encompasses customer requested removals, municipal requested removals, and danger trees. Yearly counts are set forth in the table below:

Year	Trees Removed
2014	785
2015	597
2016	927
2017	640
2018	142
2019 YTD	104
Total	3,195

- c. Until recently, the Company has not recorded the species of the trees removed, but will do so when dedicated danger tree crews are employed, beginning with the start of the next three-year contract in January 2020. The Company's parent (*i.e.*, Orange and Rockland Utilities, Inc.) has been tracking ash tree removal specifically in New York since 2018. Based on Orange and Rockland's experience, ash trees have comprised approximately 65% of all danger tree removals.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG
Date of Response: July 11, 2019
Responding Witness: Rockland Electric Company

Question No. : 36

Please provide the annual spending for tree removal work for each of the past five years

RESPONSE: (do not edit or delete this line or anything above this)

The Company spent the following amounts for tree removal work of all types during the past five years:

2014 – \$31,731
2015 – \$41,575
2016 – \$57,378
2017 – \$155,506
2018 - \$9,730

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG
Date of Response: July 11, 2019
Responding Witness: Rockland Electric Company

Question No. : 37

Please provide the annual miles trimmed by the Company for vegetation management for the last five years.

RESPONSE: (do not edit or delete this line or anything above this)

The completed mileages for 2014-2018 for the RECO Distribution vegetation management system is as follows:

<u>Year</u>	<u>Miles Completed</u>
2014	61.5 miles
2015	66.6 miles
2016	320.4 miles
2017	290.1 miles
2018	128.2 miles

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG
Date of Response: August 14, 2019
Responding Witness: Capital Budget and Plant Addition Panel

Question No. : 57

With reference to Attachment RCR-ENG-29 on page 3 and the Company's 2017 Annual Service Reliability Filing Report on page 133:

- a. Please provide a copy of the Company's Hazard Tree Program;
- b. Please provide a copy of the Company's database of unmitigated hazard tree referenced in the Company's 2017 Annual Service Reliability Filing Report on page 133; and
- c. Please provide the annual number of Hazard Trees mitigated for the past five years.

RESPONSE: (do not edit or delete this line or anything above this)

- a. Please see the attachment, "TD-003 Hazard Tree Mitigation Program."
- b. At the conclusion of 2017, RECO had zero unmitigated hazard trees.
- c. For the past five years, the Company mitigated the following number of hazard trees (including customer and municipal requested tree removals):

2014 – 1,600 trees;
2015 – 29 trees;
2016 – 3,103 trees;
2017 – 703 trees; and
2018 – 970 trees.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG-INF
Date of Response: September 20, 2019
Responding Witness: Capital Budget and Plant Addition Panel

Question No. : 2

The Service Reliability Filing for 2018 System Performance, a copy of which was provided in response to RCR-ENG-2, in the second paragraph on page 20 discusses two large substation events. Rate Counsel requested the details on these two events.

RESPONSE: (do not edit or delete this line or anything above this)

On November 27, 2018, the Closter Substation was affected by an outage that resulted in a brief interruption to 7,071 customers. The Company was not able to identify with certainty the cause of this interruption. However, the Company believes that wind likely played a factor, as gusts measuring in the 30 – 40 mph range were recorded.

On May 4, 2018, a squirrel made contact with a 13.2 kV switch inside the Franklin Lakes Substation resulting in an interruption to 2,350 customers.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ENG-INF
Date of Response: September 25, 2019
Responding Witness: Capital Budget and Plant Addition Panel

Question No. : 3

The Service Reliability Filing for 2018 System Performance, a copy of which was provided in response to RCR-ENG-2, in the third paragraph on page 48 discusses a recloser that did not operate. Rate Counsel requests additional data as to why the recloser did not operate including whether these are devices installed under the distribution automation program. In addition, were any of the other larger outages mentioned on page 48 due to the mis-operation of reclosers?

RESPONSE: (do not edit or delete this line or anything above this)

The maintenance records associated with the recloser incident (referred to in the third paragraph on page 48 of the Service Reliability Filing for 2018 System Performance), indicate that the Company made no changes to the recloser involved in the incident. This would indicate that the recloser passed a functional test and that the Company could not replicate the cause of the incident. Given these circumstances, the Company cannot identify with certainty why the recloser did not operate.

This recloser is part of a Smart Grid Autoloop. It was not installed as part of the distribution automation program.

None of the other larger outages, referred to on page 48 of the Service Reliability Filing for 2018 System Performance, were due to the mis-operation of reclosers.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set RCR-ROR
Date of Response: June 28, 2019
Responding Witness: Rockland Electric Company

Question No. : 18

Please state RECO's actual capital spending for electric utility service during each of the last three years (i.e., 2016-2018) and on a projected basis for 2019-2021.

RESPONSE: (do not edit or delete this line or anything above this)

RECO's utility construction expenditures for 2016-2018 were as follows:

2016: \$22.2 million;
2017: \$21.4 million; and
2018: \$31.1 million.

RECO does not disclose its projected utility construction expenditures.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set S-RECO-ENG
Date of Response: July 3, 2019
Responding Witness: Capital Budget & Plant Addition Panel

Question No. : 2

Please provide the annual vegetation management capital and Operations & Maintenance budgets for the previous five (5) years.

RESPONSE: (do not edit or delete this line or anything above this)

Please see the two attachments which show the budgeted and actual vegetation management Operations & Maintenance budgets for 2014 through 2018. The Company typically does not budget for specific capital tree trimming, because those tree trimming costs are included in the cost of a project and not separated out in the capital budgeting process.

Company Name: Rockland Electric Company
Case Description: Rockland Electric Company 2019 Rate Case
Case: ER19050552

Response to BPU Interrogatories – Set S-RECO-ENG
Date of Response: July 3, 2019
Responding Witness: Capital Budget & Plant Addition Panel

Question No. : 7

Please provide the percentage of the distribution system that has been trimmed for each of the last four (4) years. If 100 percent of the system was not trimmed during this four-year cycle, please explain why.

RESPONSE: (do not edit or delete this line or anything above this)

The completed mileages for 2015-2018 for the RECO Distribution vegetation management system is as follows:

<u>Year</u>	<u>Miles Completed</u>	<u>Notes</u>
2015	66.6 miles	West Milford Sub (158.5 miles), moved to 2016 program
2016	320.4 miles	
2017	290.1 miles	(59.0) miles deferred into the 2018 DVM program
2018	128.2 miles	(79.2) miles deferred into the 2019 DVM program

There are approximately 890 distribution miles on the RECO system. Between 2015 and 2018, the Company trimmed 805 distribution miles, or 91% of the distribution system. During this period, the Company experienced significant upward pressure on budgeted maintenance costs. Since 2016, the RECO distribution vegetation management program has realized significant increased costs for the Overhang Removal (a unit that is approximately 425% greater than the cost of “regular” unit mile of distribution vegetation management), as well as an increase in local police flagging costs. Over the last several years, the police flagging costs have dramatically increased from nearly \$0 in 2016, to \$219,500 in 2017, to \$394,000 in 2018. These increased costs have put pressure on the Company’s \$1,500,000 distribution vegetation management budget. When vegetation management work was deferred from the end of one year, it was the first New Jersey vegetation management work completed the next year.