

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF DUKE ENERGY INDIANA, LLC)
PURSUANT TO IND. CODE §§ 8-1-2-42.7 AND 8-1-2-61,)
FOR (1) AUTHORITY TO MODIFY ITS RATES AND)
CHARGES FOR ELECTRIC UTILITY SERVICE)
THROUGH A STEP-IN OF NEW RATES AND CHARGES)
USING A FORECASTED TEST PERIOD; (2) APPROVAL)
OF NEW SCHEDULES OF RATES AND CHARGES,)
GENERAL RULES AND REGULATIONS, AND RIDERS;)
(3) APPROVAL OF A FEDERAL MANDATE)
CERTIFICATE UNDER IND. CODE § 8-1-8.4-1; (4))
APPROVAL OF REVISED ELECTRIC DEPRECIATION)
RATES APPLICABLE TO ITS ELECTRIC PLANT IN)
SERVICE; (5) APPROVAL OF NECESSARY AND)
APPROPRIATE ACCOUNTING DEFERRAL RELIEF;)
AND (6) APPROVAL OF A REVENUE DECOUPLING)
MECHANISM FOR CERTAIN CUSTOMER CLASSES)

CAUSE NO. 45253

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

TESTIMONY OF

ERIC M. HAND – PUBLIC’S EXHIBIT NO. 6

OCTOBER 30, 2019

Respectfully submitted,



Scott Franson

Attorney No. 27839-49

Deputy Consumer Counselor

TESTIMONY OF OUCC WITNESS ERIC M. HAND
CAUSE NO. 45253
DUKE ENERGY INDIANA, LLC

I. INTRODUCTION

1 **Q: Please state your name and business address.**

2 A: My name is Eric Mark Hand, and my business address is 115 W. Washington Street,
3 Suite 1500 South Tower, Indianapolis, Indiana 46204.

4 **Q: By whom are you employed and in what capacity?**

5 A: I am employed by the Indiana Office of Utility Consumer Counselor ("OUCC") as
6 a Utility Analyst in the Electric Division. My educational and professional
7 experience is detailed in Appendix EMH-1.

8 **Q: What have you done to prepare your testimony in this proceeding?**

9 A: I read Duke Energy Indiana, LLC's ("DEI") petition and supporting testimonies
10 including the proposed changes to DEI's current Tariff (I.U.R.C. No. 14)
11 provisions, rates and riders. I prepared multiple sets of data requests ("DR")
12 including questions pertaining to vegetation management and reviewed DEI's
13 responses. I reviewed prior cases, including Cause Nos. 43663 (Indiana Utility
14 Regulatory Commission ("Commission") Tree-Trimming Investigation) and 43839
15 (Vectren South Electric Rates). I also read the Indiana Rulemaking on Vegetation
16 Management - RM 10-04. I read academic and industry publications about the
17 Emerald Ash Borer ("EAB") on my own and in conjunction with courses I
18 completed through Purdue University.

19 **Q: What is the purpose of your testimony?**

20 A: My testimony focuses on DEI's proposed vegetation management initiatives and

1 cost estimates for its distribution and transmission systems. I explain why the
2 OUCC opposes DEI's proposed revenue requirement for vegetation management
3 of its distribution system and propose the IURC approve a lower amount. I explain
4 that DEI's vegetation management revenue requirement should be subject to its
5 Credit Rider (also known as Rider 67).

6 Ultimately, I recommend a *pro forma* revenue requirement for vegetation
7 management routine maintenance operation and maintenance ("O&M") of the
8 distribution system be set at \$32 million and subject to DEI's credit rider, so that
9 any amount not spent on such routine maintenance in a given year will be returned
10 to DEI's ratepayers. I also recommend the Commission set DEI's capitalization of
11 the Hazard Tree Removal Program ("HTRP") for its distribution system at \$5
12 million for the test year. I further recommend the Commission deny DEI's test year
13 capitalized transmission system HTRP costs that are attributable to the EAB
14 Program.

15 **Q: To the extent you do not address a specific item or adjustment, does this mean**
16 **you agree with those portions of Petitioner's proposal?**

17 A: No. Excluding any specific adjustments or amounts DEI proposes does not indicate
18 my approval of those adjustments or amounts. Rather, the scope of my testimony
19 is limited to the specific items addressed herein.

II. DEI VEGETATION MANAGEMENT REQUEST AND INITIATIVES

20 **Q: What cost recovery does DEI propose for vegetation management O&M?**

21 A: DEI requests an annual *pro forma* revenue requirement of approximately \$56.6
22 million to perform vegetation management (routine maintenance), including \$49

1 million for its distribution system and \$7.6 million for vegetation maintenance of
2 its transmission system.

3 **Q: What are DEI's plans for vegetation management as set forth in its case?**

4 A: DEI requests a total revenue requirement for vegetation management for its
5 distribution and transmission systems that is much higher than what is included in
6 its current rates. The distribution system request consists of two components --
7 Routine Maintenance (O&M) and the HTRP (capital).

8 DEI proposes "increasing routine maintenance over the next three years to
9 achieve an average five-year vegetation trim cycle" (Christie, page 12, lines 9-10).
10 DEI also proposes to "ramp up its Hazard tree removal primarily to address the
11 EAB" (Christie, page 12, lines 8-9). DEI's current rates include a revenue
12 requirement of "approximately \$13 million in operation and maintenance (O&M)
13 costs per year through its base rates" (Christie, page 6, line 20-21). DEI now seeks
14 an O&M revenue requirement for Routine Maintenance of \$39 million for 2020,
15 \$49 million for 2021, and \$49 million every year thereafter. In addition, DEI
16 proposes HTRP capital spending for its distribution system of \$30 million for 2020,
17 \$20 million for 2021, and \$20 million annually thereafter. DEI does not disclose
18 how much of its forecasted distribution system HTRP costs are due to EAB.

19 With respect to its transmission system, DEI forecasts vegetation
20 management spending of \$19.25 million for 2019 consisting of \$7.65 million for
21 O&M and an \$11.6 million capital budget spend. Of the \$11.6 million, \$7.1 million
22 is designated for the EAB Program. For 2020, DEI forecasts transmission system
23 vegetation management spending in the amount of \$20.91 million, consisting of

1 \$7.61 million for O&M and a \$13.3 million capital budget spend. Of the \$13.3
2 million, \$6.7 million is designated for the EAB Program (Abbott, page 16, lines 4-
3 15).

4 **Q: Did DEI adequately describe its vegetation management plan?**

5 A: No. At least six DEI witnesses (Timothy A. Abbott, TK Christie, Brian P. Davey,
6 Christa L. Graft, Cicely M. Hart and Stan C. Pinegar) discuss DEI's requested
7 vegetation management spend, but none explain with any degree of specificity why
8 its forecasted test year vegetation management spend (O&M and capital) should be
9 \$90 million.

10 **Q: What are DEI's proposed vegetation management initiatives?**

11 A: DEI's proposed distribution system vegetation management initiatives include (1)
12 increasing the vegetation management routine maintenance over the next three
13 years to achieve an average five-year trim cycle (Christie, page 12, lines 9-10) and
14 (2) ramping up its HTRP primarily to address the EAB (Christie, page 12, lines 8-
15 9). With respect to its transmission system, DEI's represents it intends to spend
16 approximately \$7 million per year for 2019 and beyond on an EAB Program
17 (Abbott, page 16, lines 12-15).

18 **Q: Do you agree with DEI's proposed vegetation management initiatives?**

19 A: No. DEI's proposed vegetation management initiatives are not well defined or well
20 supported. For instance, DEI has not explained in its case what it would do over
21 the next three years to achieve an average five year trim cycle. Nor has DEI
22 explained how it would even achieve such a pace during a period of scarce tree
23 trimming resources, as it asserts in Mr. Christie's testimony, p. 8. Also, DEI has
24 not demonstrated its HTRP, including its EAB Program, will be as effective at

1 reducing outages than more traditional and well accepted routine vegetation
2 management practices. The closer vegetation is to the power lines, the more likely
3 it is to cause interruptions. Trees and limbs within the easement present the greatest
4 risk of service interruptions. DEI's case has not established the benefit of its costly
5 HTRP, which is for hazard trees outside DEI's routine maintenance tree trimming
6 zones. DEI should place its priority on established industry standards and routines.

7 DEI notes the importance of regular routine vegetation management while
8 also acknowledging it failed in this regard (Christie, page 5, line 20 – page 6, line
9 2). Although DEI aspires to have a five-year trim cycle, Mr. Christie testifies recent
10 challenges, as discussed below, resulted in an average trim cycle for 2014 - 2018
11 “closer to seven and a half years.” (Christie, page 5, line 20 – 22). However, he
12 added that for the past two years, the average trim cycle has been closer to 16 years
13 due to resource issues and an increase in costs, as discussed below (Christie, page
14 5, line 20 – page 6, line 2). Thus, in the base period in this rate case, DEI took a
15 more aggressive approach with respect to its HTRP while neglecting the routine
16 vegetation management.

17 **Q: Did DEI provide a cost benefit analysis for each of its vegetation initiatives?**

18 **A:** No. DEI did not include in its case any cost benefit analysis for any of its vegetation
19 initiatives (routine maintenance, HTRP, EAB Program). DEI's response to OUCC
20 DR 34.19 (OUCC Attachment EMH-1) states, “Duke Energy Indiana has not

1 performed a cost benefit analysis for these distribution vegetation management
2 initiatives.”

3 **Q: Mr. Christie testifies “Duke Energy Indiana has an integrated vegetation**
4 **management program” (Christie, page 6, line 7). Does DEI have a written**
5 **vegetation management program?**

6 A: No. The OUCC asked DEI to provide a copy of the integrated vegetation
7 management program Mr. Christie referenced in his testimony (OUCC DR 34.4
8 (OUCC Attachment EMH-2)). DEI provided no documents in response to the
9 request and responded that the integrated management plan is not captured in a
10 single document “but rather is comprised of various components such as work
11 planning, tree pruning, tree felling, herbicide application and reactive pruning” (See
12 OUCC DR 34.4 (OUCC Attachment EMH-2)). DEI’s response to OUCC DR 34.5,
13 which asked for DEI’s integrated vegetation management plan as referenced by Mr.
14 Christie on page 6, line 16 of his testimony, yielded the same answer (OUCC
15 Attachment EMH-3). There is no written plan or program provided for the
16 Commission’s or the OUCC’s review.

17 **Q: Did DEI discuss its HTRP in its annual Vegetation Management Report?**

18 A: No. As required by the Commission’s November 30, 2010 Final Order in Cause
19 No. 43663, DEI submits an annual document titled “Duke Energy Indiana’s
20 Submission of Vegetation Management Report and Vegetation Management Plan.”
21 DEI’s 2018 Report and Plan was filed on March 27, 2019 (OUCC Attachment
22 EMH-4). The plan DEI included in that filing is titled “Duke Energy Midwest
23 Vegetation Management Program” (March 2019), which is a regional program (IN,
24 KY, OH). DEI’s 2018 Vegetation Management Report and Vegetation

Management Plan does not describe DEI's EAB Program or the HTRP. It merely provides a description of "Hazard Tree Removals" (OUCC Attachment EMH-4, p. 19 of 21). The absence of any discussion of either program is inconsistent with the urgency and importance DEI asserts about these programs in this rate case. So too is the lack of support for a \$90 million vegetation management spend.

III. DISTRIBUTION SYSTEM VEGETATION MANAGEMENT

Q: What revenue requirement increase is DEI proposing for its distribution system vegetation management?

A: As noted above, DEI indicates it currently "recovers approximately \$13 million in O&M costs per year through its base rates" (Christie, page 6, lines 19-21). Moreover, in the past five years DEI spent an average of approximately \$13 million per year on distribution system vegetation management. Furthermore, during the last two years DEI performed routine maintenance on a 16-year cycle. In other words, DEI has not kept pace with reasonable routine vegetation maintenance. However, DEI is proposing dramatic vegetation cost increases starting in 2020 at an annual O&M revenue requirement of \$39 million and increasing to \$49 million in 2021 and thereafter. In his testimony (page 13), Mr. Christie includes a table showing distribution system vegetation management costs for routine maintenance and hazard tree removal:

(\$ in Millions)	2018	2019	2020	2021
Routine Maintenance	\$14	\$13	\$39	\$49
Hazard Tree Removal	\$11	\$30	\$30	\$20
Total	\$25	\$43	\$69	\$69

1 **Q: Do you agree with DEI's proposed distribution system vegetation routine**
2 **maintenance cost increases shown above?**

3 A: No. I disagree with the dramatic cost increase in routine maintenance starting in
4 2020 at \$39 million and increasing to \$49 million/year in 2021 and thereafter.
5 Because DEI did not adhere to a 5-7 year trim cycle in the past, reaching 5-7 year
6 trim cycle now may temporarily result in higher costs, as there likely will be more
7 vegetation to trim where DEI has not trimmed in the last 4 to 16 years. DEI's
8 requested revenue requirement for its distribution system vegetation management
9 is not supported by its historical practice and is not supported by any study showing
10 it needs to spend \$49 million per year on a going forward basis. Moreover, as
11 proposed by DEI, a revenue requirement of the requested \$49 million would be
12 recovered and embedded in rates without any requirement that DEI actually spend
13 this amount on vegetation management.

14 DEI did not explain or provide a cost basis for its forecasted routine
15 maintenance tripling from \$13 million in 2019 to \$39 million in 2020, and
16 increasing further to \$49 million in 2021 and after. DEI proposes a three-year
17 accelerated project, which drives up the forecasted costs per year, but only forecasts
18 costs through the first two years of the project. DEI does not forecast reduced
19 annual costs after project completion, so its proposal retains the elevated funding
20 level as an on-going revenue requirement even after project completion. When an
21 acceptable annual trim cycle is attained, the on-going annual routine maintenance
22 should be less costly than the ramped up annual remedial cost needed to attain the
23 acceptable vegetation trimming cycle.

1 DEI did not provide a cost benefit analysis for its initiative to ramp-up
2 routine maintenance. Nor did it explain its proposed cost estimates in testimony.
3 DEI indicates its plan includes "...increasing the routine maintenance over the next
4 three years to achieve an average five-year trim cycle" (Christie, Page 12, lines 9-
5 10). DEI forecasts \$39 million in 2020 and \$49 million/year for 2021 and beyond
6 to attain a five-year trim cycle in three years (2020-2022), at a total three-year cost
7 of \$137 million.

8 DEI's annual O&M spend on routine vegetation maintenance for 2017 and
9 2018 averaged only \$12.05 million/year $((\$9.8 \text{ million} + \$14.3 \text{ million})/2 = \12.05
10 million). (Christie, page 7, Table 1) Mr. Christie also notes, "for the past two years,
11 the trim cycle has been closer to 16 years . . ." (Christie, page 6, lines 1-2). DEI's
12 obligation is to perform routine vegetation management that is consistent with good
13 practice. DEI has not kept pace with that practice. Now DEI seeks a revenue
14 requirement amount that outsteps its past practice. DEI is asking for money to reach
15 and maintain a five-year vegetation trim cycle. There is no evidence DEI has ever
16 achieved that pace or that it will be able to do so.

17 Certain factors affecting cost projections are either unstated or ambiguous.
18 For example, DEI's Petition (Page 11), Ms. Hart (page 3) and Mr. Pinegar (Page
19 11) all state DEI's distribution system includes over 22,000 miles; however, Mr.
20 Christie (page 3) indicates approximately 16,000 miles, and DEI's response to
21 OUCC DR 34.2 indicates 31,440 miles (OUCC Attachment EMH-5). Importantly,

1 cost per mile and cost forecasts can vary widely depending upon which distance is
2 correct.

3 **Q: Do you agree \$39 million for 2020 routine distribution vegetation management**
4 **revenue requirement and \$49 million for 2021 and thereafter is appropriate to**
5 **maintain a five-year cycle?**

6 A: No. Based on my review, DEI has never spent that amount much in a year on
7 vegetation management. Moreover, DEI has not provided any study to support Mr.
8 Christie's contention that a \$49 million revenue requirement is necessary to sustain
9 a five-year maintenance trim cycle (Christie, page 13, line 9 - 10) or that it would
10 be capable of procuring that amount of what Mr. Christie indicates is a scarce
11 resource (Christie, page 8, line 15).

12 **Q: Mr. Christie contends that due to scarce resources, cost per mile vegetation**
13 **management costs have tripled in years 2014 through 2018 (Christie, page 8,**
14 **line 21). Did Mr. Christie explain why?**

15 A: No. DEI provided no study to explain or verify the sharp increase in costs or to
16 establish an increasing cost trend is expected to continue. DEI's proposal makes no
17 allowance for the possibility the market will correct itself. For instance, new
18 vegetation management companies may enter the market place or existing ones may
19 ramp-up their operations. If DEI accounted for such a change, it did not indicate
20 this information in its case in chief. Its \$49 million price tag for maintaining a five-
21 year cycle for routine maintenance is not supported with any analysis or otherwise
22 explained.

23 Also, reducing the HTRP, which includes the EAB Program, from a
24 forecasted \$30 million per year back to a historical rate of less than \$5 million/year
25 might decrease demand and reduce prices for routine vegetation management.

1 DEI's failure to perform its routine vegetation management responsibilities at a
2 reasonable pace should not be ignored. DEI's ratepayers should not be required to
3 fund a program DEI has not established it is capable of implementing.

4 **Q: Are there other factors that could cause the spike in costs DEI experienced to**
5 **be temporary?**

6 A: Yes. Costs may be affected by past trim cycles employed. Because DEI failed to
7 maintain a reasonable cycle, particularly in the last few years, this also could have
8 temporarily contributed to the higher costs experienced in recent years. This is due
9 to more trees needing to cut, which would increase costs. To the extent DEI did not
10 adhere to an appropriate trim cycle and recently performed maintenance where
11 maintenance was deferred, the cost to remedy this delay could increase the cost of
12 its routine vegetation management. Again, this is due to the need to trim more
13 vegetation per mile. DEI's proposed acceleration of its multiple initiatives may be
14 expected to increase its vegetation management spending.

15 **Q: For how many years will DEI spend \$49 million on routine maintenance?**

16 A: DEI did not disclose for how long it will spend \$49 million per year on routine
17 maintenance. Mr. Christie testifies DEI is increasing routine maintenance over the
18 next three years to achieve an average five-year trim cycle (Christie, page 12, lines
19 8-10). Mr. Christie does not explain what this means. For instance, he does not
20 state which five-year period is used to calculate that average. In any case, his
21 testimony indicates the pace of routine maintenance over the next three years is
22 temporary.

1 **Q: Are there other concerning factors?**

2 A: Yes. DEI testimony provides no spending forecast beyond 2021. Once embedded
3 in base rates, these projects could be unilaterally cancelled without a reduction in
4 rates, thereby being a financial windfall for DEI until its next rate case.
5 Additionally, there is no recognition of vegetation management effectively
6 completed through TDSIC projects, FMCA projects, and Storm Reserve projects.

7 **Q: Is there a solution to the lack of certainty with respect to DEI's spending on**
8 **routine distribution system maintenance (vegetation management)?**

9 A: Yes. Because of the uncertainties and variabilities explained above, DEI's revenue
10 requirement for routine distribution system maintenance (vegetation management)
11 should be subject to DEI's Credit Rider. If DEI chooses to spend less for routine
12 maintenance (vegetation management) in a given year than what the Commission
13 authorizes as an O&M revenue requirement, then the difference should be returned
14 to ratepayers through DEI's Credit Rider (Rider 67).

15 **Q: What is your recommendation with respect to DEI's revenue requirement for**
16 **routine distribution system maintenance (vegetation management)?**

17 A: I recommend DEI's vegetation management *pro forma* annual revenue requirement
18 for its distribution system be capped at \$32 million so long as it is subject to the
19 Credit Rider. This amount is based on a seven-year cycle and the 2018 costs per
20 mile asserted by Mr. Christie in his testimony (See Christie, Table 1, page 7). In
21 making this calculation I assumed a cost per mile of \$14,178 multiplied by 16,000
22 miles divided by 7 years.

IV. HAZARD TREE REMOVAL PROGRAM

23 **Q: Please describe DEI's HTRP.**

24 A: Mr. Christie described DEI's HTRP as follows:

1 Duke Energy Indiana has begun an aggressive program to remove
2 all hazard trees that are likely to cause a problem with Duke Energy
3 Indiana's distribution system from outside the Company's right of
4 way. The Company is in the process of addressing living trees that
5 are diseased as well as dead trees that have the potential to impact
6 Duke Energy Indiana's assets. As mentioned above, Duke Energy
7 Indiana is also removing all Ash trees that are within 45 feet of the
8 centerline of our overhead distribution lines.
9

10 (See Christie, page 9, line19 – page 20, line 3.)

11 **Q: Do you oppose DEI's HTRP proposal?**

12 A: Yes. DEI indicates total HTRP costs for four years (2018-2021) would be \$91
13 million compared to only \$50.4 million DEI expended on routine vegetation
14 management during the four-year period 2015-2018 (Christie, pages 7 & 13). DEI
15 acknowledges it has not been doing the higher priority and more beneficial
16 vegetation management within authorized areas ["...for the past two years, the
17 average trim cycle has been closer to 16 years (instead of 5 years) due to resource
18 issues and increase in costs, ..." (Christie, Page 5, line 22 – Page 6, line 2)]. DEI
19 seeks instead to spend nearly twice the amount that it spent on routine maintenance
20 during the last four years. DEI will expend additional time and money to secure
21 required owner permission for tree removals, and for which DEI did not establish
22 there is a substantial benefit. DEI failed to submit a cost benefit analysis for its
23 HTRP (OUCC DR 34.19 (OUCC Attachment EMH-1)) as justification for this
24 project. DEI only provided two pages of testimony about its HTRP in Mr.
25 Christie's testimony (Christie, page 9, line 13 – page 11, line 6). DEI did not

1 provide a study or information to justify its \$20 million to \$30 million annual
2 HTRP.

3 **Q: Do you agree any tree (living, dying or dead) that could potentially reach**
4 **power lines is a “hazard tree” which should be removed?**

5 A: No. Applicable to all trees, including ash trees with EAB, tree-trimming in
6 accordance with standard, and routine vegetation management practices, lessens
7 the risk of trees falling into powerlines. Trimming branches closest to the
8 powerlines will displace the tree's center of gravity by making the side of the tree
9 closest to the powerlines weigh less than the other side of the tree; hence, the tree
10 would tend to fall away from the powerlines since gravity and physics still apply.

11 **Q: What should be DEI's vegetation management priority?**

12 A: DEI should focus its efforts on routine vegetation management. DEI's highest
13 priority should be to address vegetation already contacting lines or very close to
14 lines. Proximity is a key driver of potential vegetation caused outages.

15 **Q: Do you acknowledge there may be instances in which it would be appropriate**
16 **for a utility to remove or trim trees outside of the easement?**

17 A: Yes. With landowner permission, or as allowed under emergency conditions, it
18 would be appropriate for a utility to remove or trim trees outside of the easement.

19 **Q: What amount do you recommend DEI be authorized to include in rate base**
20 **for its HTRP?**

21 A: DEI proposes to spend \$30 million in 2020 reduced to \$20 million in 2021. This
22 represents an unprecedented spending level on a program that did not exist before
23 2010, and only reached \$11 million in the base year (2018). DEI's HTRP revenue
24 requirement should be set at a level based on DEI's actual history of addressing
25 hazard trees. DEI's actual average (2011-2018) spending level for HTRP equates

1 to \$4.96 million per year. I recommend DEI's new HTRP capital addition for the
2 test year be \$5 million.

V. EMERALD ASH BORER PROGRAM

3 **Q: How does DEI's EAB Program relate to its other vegetation management**
4 **initiatives?**

5 A: Ash trees are prevalent throughout Indiana; therefore, the demise of ash trees due
6 to EAB will potentially impact vegetation management initiatives in electric
7 utilities' distribution and transmission systems.

8 **Q: What is the impact of the EAB on ash trees?**

9 A: EAB is an insect that kills untreated ash trees. The EAB began spreading radially
10 in the United States from Detroit, Michigan in 2002, and it will continue spreading.
11 However, EAB is not the sudden emergency and pending disaster to electric lines
12 utilities portray. Ash trees will die eventually, but death by EAB is a multi-year
13 process. DEI should be able to handle ash tree removals through a seven-year
14 vegetation management cycle without requiring accelerated expensive campaigns.

15 **Q: Is the EAB new to Indiana?**

16 A: No. The alleged potential impact of EAB on an Indiana electric utility was
17 considered in Cause No. 43839 in which the Commission disallowed Vectren South
18 Electric's entire EAB revenue requirements request:

19 While Vectren South presented some evidence in support of its
20 request, there is significant evidence that the Company failed to put
21 forth for our consideration. There is no evidence before us that there
22 is any federal, state, or local requirement that mandates the removal
23 of ash trees. There is no evidence demonstrating that ash trees
24 affected by EAB have caused any actual increased system reliability
25 risk for any electric utility, located in Indiana or elsewhere. There
26 was no explanation as to why dead ash trees outside the right-of-
27 way but within striking distance of utility lines pose any greater risk

1 to Vectren South's system than similarly situated dead trees of
2 another species.

3 In addition, we are not persuaded by the Company's claim that
4 without these additional funds, its existing Vegetation Management
5 budget would be insufficient. It is less expensive for Vectren South
6 to remove a tree than to trim it, and once removed, the Company
7 will not incur additional trimming costs. Regarding the trees
8 themselves, Mr. Hand's testimony explains that since EAB does not
9 affect the roots or trunk of the tree, affected ash are less susceptible
10 to falling than other infected trees suffering from root deterioration
11 or trunk hollowing/rot. Further, because the EAB ash trees suffer
12 first from leaf loss, they are less susceptible to being blown over.
13 Further, as water and nutrients are less able to reach the treetop and
14 limbs, EAB affected ash will grow at a slower than normal rate,
15 posing even less of a risk of horizontal encroachment from the side
16 or vertical encroachment from below.

17 Having considered all of the evidence, we find that Vectren South
18 has failed to demonstrate that it requires additional funds for an EAB
19 infestation program beyond its regular appropriate vegetation
20 management practices. We find further that there is insufficient
21 evidence to support Vectren South's claim that EAB will pose a
22 significant increased risk to system reliability. As such, Vectren
23 South's proposed EAB adjustment is disallowed.

24 (Cause No. 43839 F/O 4/27/2011, Page 54) (emphasis added.)

25 What the Commission recognized for Vectren South Electric in its Final Order in
26 Cause No. 43839 remains true for DEI today. The EAB kills ash trees; however,
27 living, dying or dead ash trees pose no more threat to utility lines than other living,
28 dying or dead trees. The EAB has been in the Midwest since 2002. DEI should be
29 able to handle the EAB within the normal cost of routine vegetation management.

30 **Q: Does the EAB increase the cost of a utility's routine vegetation management?**

31 **A:** No. First, EAB could potentially save utilities money because dying or dead trees
32 do not need to be trimmed, since trees are no longer growing towards utility lines.

1 Utilities should be projecting less annual vegetation management costs due to EAB
2 rather than seeking additional funds for EAB.

3 Second, as noted in the Cause No. 43839 Final Order (Vectren South
4 Electric Rates), it is generally cheaper to remove a tree than to trim it. Therefore,
5 it saves even more money each subsequent trim cycle, since one need not trim a
6 tree that has been removed. OUCC DR 32.3 (OUCC Attachment EMH-6) requested
7 DEI/Duke Energy's vegetation management work descriptions and cost allowances
8 for tree-trimming and tree removals; however, no pertinent information was
9 provided.

10 Third, EAB reduces the cost of vegetation management during normal trim
11 cycles before ash tree removal. The length of the process of an ash tree dying due
12 to EAB is so long, during the early years before visible detection of symptoms the
13 tree growth is slowed,¹ as the tree's water flow is disrupted. The slower growth rate
14 means less frequent trimming is needed and fewer branches and less foliage need
15 to be removed.

16 **Q: Do ash trees killed by the EAB pose a sudden or increased threat to a utility's**
17 **power lines?**

18 **A:** No. First, an ash tree infected by the EAB is not a sudden threat. The dying process
19 is approximately five to seven years, and is so slow, visual detection (leaf loss in
20 upper half of tree) does not usually happen until years two or three. By this time,
21 it is too late to save the tree. Even after death by the EAB, the ash tree remains
22 more structurally sound, often 5-10 more years, than other species of dead trees and

¹ Cause No. 43839, Commission's Final Order dated April 27, 2011, Page 54.

1 may not fall over for 10-20 years. Ash trees (alive, dying, or dead from the EAB)
2 do not pose an immediate threat to utility power lines. If a utility maintains a
3 normal vegetation management trim cycle of four to seven years, the utility has two
4 or more trim cycles in which to remove the dead tree during its normal vegetation
5 management practices. There is no need for an urgent ash tree removal project,
6 which unnecessarily increases costs.

7 After death by the EAB, the ash tree remains structurally sound for longer
8 than other dead trees due to specifics unique to ash trees killed by the EAB. The
9 EAB attacks only the growth layer of the tree that is immediately under the bark,
10 so the trunk's core strength is not diminished.² The EAB larvae tunnel under the
11 bark and around the trunk's perimeter, thereby killing the tree by cutting off the
12 water supply flow to the upper parts of the tree. The core of the trunk and the roots
13 are not attacked by the EAB; therefore, the tree remains structurally strong for
14 several years, thereby posing less risk to utility lines than other dead trees.

15 **Q: Is there a need to go outside the normal vegetation management areas to**
16 **remove living, dying or dead ash trees?**

17 A: No. As an ash tree dies from the EAB, it dies from the top downward, losing leaves,
18 twigs and eventually branches. The loss of leaves reduces wind resistance, thereby
19 reducing the risk of the tree being blown over in storms. As twigs then branches
20 fall during the extended dying process, the tree becomes shorter, less top-heavy,
21 and less likely to fall. As the tree becomes shorter, it becomes less likely to contact
22 the power lines when it eventually does fall many years later. There is no need for

² Cause No. 43839, Commission's Final Order dated April 27, 2011, Page 54.

an aggressive and costly utility project to seek out and remove living, dying or dead ash trees.

VI. TRANSMISSION SYSTEM VEGETATION MANAGEMENT

Q: What cost increases is DEI proposing for transmission system vegetation management?

A: DEI is anticipating the following (Abbott, page 16, lines 4-15):

(\$ in Millions)	2018	2019	2020
O&M expenditures	\$5.62	\$ 7.65	\$ 7.61
Capital spend*	\$4.30	\$11.60	\$13.30
Total	\$9.92	\$19.25	\$20.91

*includes EAB of	\$ 1.70	\$ 7.10	\$ 6.70
-------------------------	----------------	----------------	----------------

Q: Why are the transmission system vegetation costs so much lower than the distribution system vegetation costs?

A: There are several reasons. First, there are only 5,288 miles of transmission lines³ compared to 16,000 miles of distribution lines⁴. Transmission corridor trees are generally clear-cut. Then, regrowth is controlled by herbicide spraying rather than repeated cycle tree-trimming, leaving far fewer trees left to maintain. Also, transmission lines generally are more geographically remote and physically higher so larger equipment can be used for vegetation management than is possible for neighborhood distribution lines.

Q: Do you agree with DEI's proposed transmission system vegetation management costs?

A: I have no objection to DEI's proposed \$7.6 million O&M expense for routine maintenance of its transmission system. This O&M revenue requirement should also be subject to DEI's Credit Rider. However, I recommend the Commission

³ DEI Testimony of Abbott, Page 2, Lines 16-18.

⁴ DEI Testimony of Christie, Page 3, Line 15.

1 deny DEI's capitalized test year transmission system costs attributable to the EAB,
2 for the same reasons I provided above.

VII. RECOMMENDATIONS

3 **Q: What do you recommend?**

4 A: I recommend the Commission find DEI's *pro forma* revenue requirement for the
5 routine maintenance of its distribution system be \$32 million per year, and such
6 revenue requirement be subject to DEI's Credit Rider. In the event DEI spends less
7 than \$32 million in any year on routine vegetation maintenance of its distribution
8 system, unspent funds should be returned to ratepayers through the Credit Rider.

9 I recommend the Commission set DEI's capitalization of the HTRP for its
10 distribution system at \$5 million for the test year.

11 I recommend the Commission allow DEI's revenue requirement for the
12 routine vegetation maintenance of its transmission system at \$7.6 million per year,
13 and such revenue requirement be subject to DEI's Credit Rider. Should DEI spend
14 less than \$7.6 million in any year on routine transmission system vegetation
15 maintenance, those unspent funds should be returned to ratepayers through the
16 Credit Rider.

17 **Q: Does this conclude your testimony?**

18 A: Yes.

19

APPENDIX EMH-1

1 **Q: Would you summarize your educational background?**

2 A: I graduated from Rose-Hulman Institute of Technology with a Bachelor of Science
3 degree in Mathematical Economics. I received a Masters in Business
4 Administration from Indiana University with majors in Management, Marketing,
5 and International Business. As part of my continuing education, I have attended
6 the National Association of Regulatory Utility Commissioners' ("NARUC")
7 Regulatory Studies Program in 2010 and 2012 in East Lansing, Michigan plus
8 numerous energy related conferences and seminars.

9 **Q: Please describe your professional experience.**

10 A: I have been an OUCC Electric Division Utility Analyst for over nine years and have
11 participated in various proceedings involving utility planning, special contracts,
12 economic development rates/riders, rate cases and other tariff-related matters. Prior
13 experience included a 30-year automotive industry career with administrative
14 positions in manufacturing, engineering, and contracts; culminating in management
15 positions in finance, contracts, and information technology. Additionally, I have
16 served the last 19 years on the Board of Trustees of TriCo Regional Sewer Utility,
17 the largest regional wastewater district in Indiana.

18 **Q: Have you previously testified before the Commission?**

19 A: Yes. I have participated in proceedings where I reviewed Indiana's investor-owned
20 ("IOU") utilities and municipal electric utilities' special contracts, standard tariffs
21 changes, FMCA cases, and rate cases.

OUCG
IURC Cause No. 45253
Data Request Set No. 34
Received: October 1, 2019

OUCG 34.19

Request:

Please provide a copy of DEI's cost benefit analysis for each of the following distribution vegetation management initiatives:

- A. Routine Maintenance
- B. Remedial/Catch-up Routine Maintenance
- C. Additional Vegetation Clearances
- D. Hazard Tree Removal
- E. Emerald Ash Borer.

Objection:

Duke Energy Indiana objects to this request to the extent it requires a calculation or compilation not maintained in the normal course of business and that it has not performed and which it objects to performing.

Response:

Subject to and without waiving or limiting its objections, Duke Energy Indiana has not performed a cost benefit analysis for these distribution vegetation management initiatives. These activities are necessary to provide safe and reliable service to the Company's customers.

Witness: TK Christie

OUCG
IURC Cause No. 45253
Data Request Set No. 34
Received: October 1, 2019

OUCG 34.4

Request:

Please provide a copy of DEI's integrated vegetation management program as referenced by T.K. Christie on page 6, line 7 of Petitioner's Exhibit 27.

Response:

Duke Energy Indiana Distribution integrated vegetation management program is not captured in a single document, but rather is comprised of various components such as work planning, tree pruning, tree felling, herbicide application and reactive pruning.

Witness: TK Christie

OUCG
IURC Cause No. 45253
Data Request Set No. 34
Received: October 1, 2019

OUCG 34.5

Request:

Please provide a copy of DEI's integrated vegetation management plan as referenced by T.K. Christie on page 6, line 16 of Petitioner's Exhibit 27.

Response:

Refer to response OUCG 34.4.

Witness: TK Christie

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

INVESTIGATION BY THE INDIANA)
UTILITY REGULATORY)
COMMISSION, UNDER IC §§ 8-1-2-58)
AND 59, TO INVESTIGATE ELECTRIC)
UTILITY TREE-TRIMMING)
PRACTICES AND TARIFFS RELATING)
TO SERVICE QUALITY IN THE STATE)
OF INDIANA.)
RESPONDENTS: ALL INDIANA)
JURISDICTIONAL ELECTRIC)
UTILITIES)

CAUSE NO. 43663

**DUKE ENERGY INDIANA'S SUBMISSION OF 2018 VEGETATION
MANAGEMENT REPORT AND VEGETATION MANAGEMENT PLAN**

Respondent Duke Energy Indiana, LLC hereby submits its 2018 Vegetation
Management Report and Vegetation Management Plan in accordance with the November 30,
2010 Order in this Cause.

Respectfully submitted,

DUKE ENERGY INDIANA, LLC

By Melanie D Price
Counsel for Duke Energy Indiana, LLC

Melanie D. Price, Atty. No. 21786-49
Kelley A. Karn, Atty. No. 22417-29
Duke Energy Business Services LLC
1000 East Main Street
Plainfield, Indiana 46168
(317) 838-1254 (telephone)
(317) 838-1842 (facsimile)
melanie.price@duke-energy.com
kelley.karn@duke-energy.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing submission was delivered electronically this 27th day of March 2019, to the following:

OUC

William Fine
Randall C. Helmen
Office of Utility Consumer Counselor
Suite 1500 South
115 W. Washington Street
Indianapolis, Indiana 46204
Email: wfine@oucc.in.gov
Email: rhelmen@oucc.in.gov
Email: infomgt@oucc.in.gov

IP&L

Teresa E. Morton
Barnes & Thornburg LLP
11 South Meridian Street
Indianapolis, Indiana 46204
Email: tmorton@btlaw.com

IMPA and IMEA

Michael B. Cracraft
Steven W. Krohne
Ice Miller
One American Square Suite 2900
Indianapolis, Indiana 46282
Email: michael.cracraft@icemiller.com
steven.krohne@icemiller.com

WVPA

Randolph G. Holt
Wabash Valley Power Association, Inc.
722 N. High School Road
Indianapolis, Indiana 46224
Email: R_holt@wvpa.com

VECTREN SOUTH

Robert E. Heidorn
P. Jason Stephenson
Southern Indiana Gas & Electric Company,
Inc.
d/b/a Vectren Energy Delivery of Indiana, Inc.
One Vectren Square
Evansville, Indiana 47702
Email: rheidorn@vectren.com
Email: jstephenson@vectren.com

INDIANA STATEWIDE

Charles W. Ritz III
Parr Richey Obremskey Frandsen &
Patterson LLP
225 W. Main Street
P.O. Box 668
Lebanon, Indiana 46052
Email: critz@parrlaw.com

NIPSCO

Christopher C. Earle
NiSource Corporate Services
150 W. Market Street, Suite 600
Indianapolis, Indiana 46204
Email: cearle@nisource.com

HOOSIER

Jeffrey W. Hagedorn
Huber, Goffinet & Hagedorn
727 Main Street
Tell City, Indiana 47586
Email: jhagedorn@psci.net

I&M

Jeffrey M. Peabody
Barnes & Thornburg LLP
11 South Meridian Street
Indianapolis, Indiana 46204
Email: jpeabody@btlaw.com

By Melanie D Price
Counsel for Duke Energy Indiana, LLC

Melanie D. Price, Atty. No. 21786-49
Kelley A. Karn, Atty. No. 22417-29
Duke Energy Business Services LLC
1000 East Main Street
Plainfield, Indiana 46168
(317) 838-1254 (telephone)
(317) 838-1842 (facsimile)
melanie.price@duke-energy.com
kelley.karn@duke-energy.com



Duke Energy Indiana

Annual Vegetation Management Report for Calendar Year 2018

Cause No. 43663

2018 Vegetation Management – Financial Report (Budget vs. Actual)

2018 Original Budget: \$34,582,610

2018 Actual Expenditures: \$34,825,176

The above reflects the expenditures associated with the vegetation management program to support approximately 16,000 distribution miles and approximately 6,000 transmission miles in the State of Indiana. The above dollars exclude expenses incurred on major event days as defined by the major event day methodology detailed in "IEEE Std. 1366, IEEE Guide for Electric Power Distribution Reliability Indices".

2018 Vegetation Management Reliability Report (Tree SAIFI):

Total Tree System Average Interruption Frequency "SAIFI": 0.24

Total Indiana SAIFI from all causes for 2018 is 1.06. Tree SAIFI was approximately 24% of total Indiana SAIFI.

Tree SAIFI is defined as System Average Interruption Frequency Index for tree related events only. The SAIFI index is the average number of interruptions a customer would expect to have over a given period of time that were caused by trees in the State of Indiana.

The above indices exclude major event days as defined by the major event day methodology detailed in "IEEE Std. 1366, IEEE Guide for Electric Power Distribution Reliability Indices".

2018 Vegetation Management Customer Complaints Report

With regard to customer complaints, Duke Energy tracks in detail tree trimming and vegetation management inquiries or complaints that are filed with the Commission. For this annual report, Duke Energy Indiana has included the customer concerns that were not resolved in the field and were escalated to management for resolution. Duke Energy Indiana had 22 customer complaints related to tree trimming/vegetation management; 17 were informal complaints to the Consumer Affairs Division that have been reviewed, with 15 closed and two pending. There were 5 complaints referred to management, which were reviewed as noted with three closed and two pending.

Duke Energy Indiana uses advance customer notification as well as its Call Center to minimize and manage inquiries related to tree trimming and vegetation management. These inquiries may be passed on to the Vegetation Management team to help further inform or educate customers regarding tree trimming questions and concerns. Through these processes, inquiries were generally resolved in the field.

Complaints Referred to the Commission

For the year 2018, Duke Energy had 15 informal complaints to the Consumer Affairs Division related to vegetation management, with two pending and two from 2017 that are now closed. Below is a brief description of the complaints and resolutions.

Complaint	Description	Resolution	Status
1	Transmission easement dispute & tree trimming/clearing.	Customer's attorney contacted Duke Energy Legal Dept. 2-14-2017 related to easements on the 6940 Transmission line and tree trimming/removal; also expressed concerns that not all owners along the easement were treated the same. Customer filed a complaint at the Commission. The CAD and Director of the CAD upheld Duke Energy's easement rights to cut down the trees in the easement across their property. The customer appealed the Director's decision to the full Commission. The Commission affirmed the Director's decision, upheld Duke Energy's easement rights and found no evidence that Duke Energy violated any vegetation management	Closed

Complaint	Description	Resolution	Status
		regulations. The customer filed a complaint for damages with the local county court. The Court dismissed the complaint upholding Duke Energy's easement rights. No appeal was filed. Vegetation management is scheduled to begin in March 2019.	
2	Customer expressed concern that Wright Tree, contractor for Duke Energy, was cutting down trees beyond the 10-foot easement.	Vegetation Manager addressed the concerns with owner 12/4/2017, explained that the measurement was 10 feet from the power line, without respect to the property line, customer not satisfied and filed complaint with CAD. CAD found Duke within their rights and the complaint was not substantiated, dismissed case and closed.	Closed
3	Customer complained that Contractor trimmed trees without consent.	Contractor placed Door Hanger on 1/17/2018 and customer did not contact Duke Energy with concerns before trimming.	Closed
4	Debris left after Transmission Vegetation Management crews trimmed trees.	This is not a Duke Energy Customer; Customer was provided with information to file a claim with the contractor. Customer has not followed up with Duke Energy.	Closed
5	Customer complained about trees that are browning after trimming and concerned about use of herbicides on the tree.	Met with customer on site and assured him that the Company did not use herbicides on the tree in question.	Closed
6	Customer did not want trees removed unless the Company agreed to remove the stump or re-landscape his property.	Trees were trimmed and Duke Energy offered to remove the trees and haul away the wood, but did not grind stumps or landscape, per policy.	Closed
7	Customer complained that we removed trees without his consent.	Upon investigation, it was ascertained that the trees were heavily trimmed, but not removed. Duke Energy agreed to remove trees and debris to resolve issue.	Closed
8	Customer had concerns about debris left behind by County when	Duke Energy agreed to clearing and cutting firewood for	Closed

Complaint	Description	Resolution	Status
	dredging the ditch prior to Duke Energy performing vegetation management.	customer's use. Customer satisfied with the plan.	
9	Vendor left debris behind that customer wanted cleared.	Crews were sent on two occasions to clean up debris.	Closed
10	Trimming crew left debris and Customer made multiple calls to Duke Energy to have it removed.	Crew sent to clean up debris.	Closed
11	Customer claimed that Duke Energy exceeded its Transmission easement. Customer also complained about debris left behind.	Easement presented to Customer. Customer threatened Duke and Vendor. Proceeded with assistance from Law enforcement.	Closed
12	Customer questioned Duke Energy's practice of clearing in easement; presented 1962 document related to easement.	It was explained the customer's document wasn't related to Transmission easement and trimming commenced.	Closed
13	Customer questioning the width of Transmission ROW easement. Also said Duke Energy left windrowed trees with wild cherry leaves that are deadly to his cattle.	Duke Energy has been negotiating for two years to try and true up the easement measurements but Customer has not given consent.	Pending
14	Customer doesn't want his Ginkgo Balboa tree trimmed to the 10' from the power lines as this will be more than 25% of the tree and it will probably die. This tree is an endangered species.	Vegetation Manager met with Customer 10/17/2018 and came to agreement on how to trim without removing more than 25%, and will still be able to maintain adequate clearance.	Closed
15	Customer has dead tree in his yard and private contractors have refused to cut it down until Duke Energy removes the portion hanging over the line.	Bucket truck was needed and work was scheduled with Customer.	Closed
16	Customer was concerned with debris left behind.	Vegetation Manager has spoken with Customer multiple times and there should be a crew on-site soon.	Closed
17	Customer wrote Duke Energy a letter wanting to know why we didn't trim a tree that had fallen.	Vegetation Management has tried to contact customer several times but he calls have not been returned.	Pending

Complaints Referred to Management

There were five complaints that were not quickly resolved in the field and were referred to manager level for resolution, one of these was carried over from 2017. Below is a brief description of these complaints and resolutions.

Complaint	Description	Resolution	Status
1	Customer said she wasn't notified in advance and heavy machinery was used that caused deep ruts and broke a line for irrigation system.	Ruts, etc. were fixed and reimbursement issued for repair of irrigation line.	Closed
2	Customer had previous issue with Duke Energy trimming and wanted trees she selected to be planted in replacement.	Vegetation Management Specialist arranged to cut trees and replace with landscape species. Customer selected trees but didn't want them to be planted in the Fall, the planting is scheduled for Spring of 2019.	Pending
3	Customer had prior issues with Duke and Townsend Tree Service trimming. Refusal of current trimming proposed.	Met with Customer and they wanted private tree service to do required trimming. They found that cost to be too high and agreed to allow Townsend to trim. Work was completed by Townsend.	Closed
4	Customer wants neighbor's Black Walnut tree in SE corner removed, says it is over her service drop.	Met with Customer and neighbor; she has 3-5 Ft of separation to the secondary service. Neighbor says he will use private contractor with Duke Energy doing a service drop to resolve issue. Closed, no work to be done.	Closed
5	Customer claims Townsend Tree Service damaged fence while trimming trees.	Attempts were made to repair fence but customer is demanding large sums of money, case is going to Small Claims court between Customer and Townsend.	Pending



Midwest Vegetation Management Program

CONTENTS

GOAL, OBJECTIVES AND PURPOSE

DEFINITIONS

FEDERAL, STATE, LOCAL LAWS

PROPERTY ACCESS RIGHTS / REQUIREMENTS

WORK QUALITY AND SAFETY STANDARDS

CLEARANCE SPECIFICATIONS AT THE TIME OF ROUTINE MAINTENANCE

INSPECTIONS AND MONITORING

VEGETATION CONTROL METHODS

Tree side trimming
Hazard tree removals
Tree removals
Brush removal
Right-of-way mowing
Herbicide

CONTRACTOR RESPONSIBILITIES

Standards to follow
Inclusions
Supervision and oversight
Response
Communications
Reporting
Personnel training
Fitness for duty
Public representation
Solicitation
Customer notification
Contractor safety



SECTION 1 – GOAL, OBJECTIVE AND PURPOSE

Duke Energy's vegetation management goal is to balance the need for safe and reliable utility service with safe and cost-effective vegetation management practices.

The primary objective of the Duke Energy Midwest Vegetation Management Program (DEM VMP) is to control the growth of incompatible vegetation along its electric lines in order to help provide safe and reliable service to our customers. This is accomplished by using qualified personnel to monitor the condition of the utility rights-of-way and by initiating various vegetation control practices to reduce, manage or eliminate incompatible growth. This integrated vegetation management program is essential in providing safe and reliable electric service by ensuring that trees and brush near or within rights-of-way are periodically trimmed or removed to help reduce potential outages and hazards near our facilities.

The consistent implementation of industry accepted vegetation management practices reduces the likelihood of tree and power line conflicts, as well as service interruptions, and allows for the full utilization of the operating system.



SECTION 2 – DEFINITIONS

ANSI A300- American National Standards Institute (ANSI) A300 for Tree Care Operations, provides the generally accepted industry performance standards for the care and management of trees, shrubs, and other woody plants.

ASSET PROTECTION- Duke Energy department that oversees right-of-way issues.

BRUSH- A perennial woody stem less than six inches DBH (diameter at breast height).

CONTRACTOR- Corporation to whom the Vegetation Management work is awarded.

HAZARD TREES- A tree that is dead, structurally unsound, diseased, shallow-rooted, leaning or otherwise defective that could strike electrical lines or equipment of the distribution or transmission system if it falls or is cut.

INTEGRATED VEGETATION MANAGEMENT- Vegetation plan that combines various components including pruning, mowing and herbicide applications to manage the growth of vegetation on the electric utility rights-of-way.

LEGAL- Duke Energy Legal Department.

PRIMARY LINE- Electric conductor(s) that carry greater than 600 volts of electricity.

RIGHT-OF-WAY (ROW)- A strip of land that an electric utility uses to construct, operate, inspect, maintain, repair or replace an overhead or underground power line. The ROW allows the utility to provide clearance from trees, buildings and other structures that could interfere with the line installation, maintenance and operation. ROW may include licenses, easements and other rights to access property.

SECONDARY LINE- Electric conductor(s) that carry 600 volts or less of electricity.

SINGLE PHASE- A type of electric power line construction that contains one conductor carrying primary voltage.

THREE PHASE- A type of electric power line construction that contains three conductors carrying primary voltage.

TRANSMISSION LINE– a set of electrical conductors that carry 69 kV or more of electricity.

TWO PHASE- A type of electric power line construction that contains two conductors carrying primary voltage.

TREE- A perennial woody stem equal or greater than six inches in DBH (diameter at breast height) is classified as a tree.



SECTION 3 – *FEDERAL, STATE, LOCAL LAWS*

Contractor shall perform all work in conformance with DEM VMP requirements and work specifications, Occupational Health and Safety Administration (OSHA) regulations, American National Standards Institute (ANSI) A300 and Z133, and all federal, state, county, and municipal laws, ordinances and regulations applicable to said work.

The governing entities include but are not limited to:

Indiana Utility Regulatory Commission
Indiana Department of Transportation
Kentucky Public Service Commission
Kentucky Department of Transportation
Public Utility Commission of Ohio
Ohio Department of Transportation
Kentucky Agriculture Pesticide Department
Ohio Agriculture Pesticide Department
Hamilton County Park Division
Cincinnati Forestry Department
Butler County Park Division
Department of Natural Resources
Occupational Health and Safety Administration (OSHA)
Indiana Department of Environmental Management
American National Standards Institute (ANSI)



SECTION 4 – *PROPERTY ACCESS RIGHTS / REQUIREMENTS*

The rights to access, inspect, or perform the work associated with vegetation management practices include, but are not limited to, established legal instruments, easements, public road rights-of-way, municipal ordinances, state statutes, regulatory rules, tariffs and other legal authority. The Duke Energy Midwest Vegetation Management (DEM VM) Specialist should, when necessary, utilize the available supporting documents to pursue the completion of necessary work activities in order to maintain vegetation growth to the established standards of acceptance in the provision of safe and reliable electric service. If there are objections, restrictions or limitations that prevent completion of the necessary work activities, the DEM VM Specialist should contact the Right-of-Way Services Department or Legal Department for specialized assistance.

A list of items to determine property access rights include, but are not limited to:

- Existing property easement, prescriptive easements, public road rights-of-way and / or agreements
- State statutes
- Municipal codes
- Commission rules and regulations
- Customer consent



SECTION 5 – WORK QUALITY AND SAFETY STANDARDS

All work shall be performed in conformance with DEM VMP Requirements, OSHA regulations, American National Standards Institute (ANSI) A300, ANSI Z133, Tree Care Industry Association's (formerly the National Arborist Association) standards, Dr. Shigo's *Field Guide for Qualified Line Clearance Tree Workers*, National Electrical Safety Code (NESC), International Society of Arboriculture Best Management Practices, and all federal, state, county, and municipal laws, statutes, ordinances and regulations applicable to said work.

Clearance to obtain safety and reliable electric service are based on, but not limited to, consideration of the following:

National Electrical Safety Code (NESC)

ANSI A300 Standard - American National Standards Institute A300 for Tree Care Operations

ANSI Z133 Standard - American National Standards Institute Z133 for Tree Care Operations - Safety Requirements

OSHA Standard 29 CFR 1910.269 - Occupational Safety and Health Administration Standard 29 CFR 1910.269 (a)(1)(i)(E) for Electric Power Generation, Transmission, and Distribution

Field Guide for Qualified Line Clearance Tree Workers by Dr. Alex Shigo



SECTION 6 — *CLEARANCE SPECIFICATIONS AT THE
TIME OF ROUTINE MAINTENANCE*

TRANSMISSION CONDUCTORS 230KV AND 345KV

- As a best practice, the ROW should be maintained to the outside edge of ROW
- No overhanging/encroaching branches permitted
- DEM VMP's goal is to eliminate any incompatible vegetation within the maintained ROW

TRANSMISSION CONDUCTORS 69KV AND 138KV

- Minimum of 15 feet clearance to the side of all conductors
- Minimum of 15 feet clearance below the lowest conductor
- No overhanging/encroaching branches permitted
- As a best practice, the ROW should be maintained to the outside edge of ROW
- DEM VMP's goal is to eliminate any incompatible vegetation within the maintained ROW that has a mature height of greater than 15 feet

TWO AND THREE PHASE PRIMARY DISTRIBUTION LINES

- Minimum of 10 feet clearance to the side from all conductors or to the previously established width
- Underneath the primary: minimum of 10 feet clearance below the conductors
- Overhang: Bucket: Multi-phased lines will be pruned as high as the buckets will reach but no less than 60' above ground. In any case where overhang is allowed to remain, all hazardous overhang (dead, dying, diseased, structurally unsound, etc.) shall be removed.
- Conventional: If lines are being maintained conventionally, remove all unsuitable overhanging and encroaching limbs and branches above the conductor unless direction is given, or authorization is obtained from the owner. Unsuitable overhang includes limbs that are of smaller diameters, weak, diseased or decaying or that are positioned in a horizontal manner. Mature, well-established hardwood trees with structurally sound overhanging limbs or branches more than 6 in. in diameter may remain.



SINGLE PHASE PRIMARY DISTRIBUTION LINES

- Minimum of 10 feet clearance to the side from all conductors or to the previously established width
- Underneath the primary: minimum of 10 feet clearance below the conductors
- Overhanging branches above the conductors shall be removed to a minimum height of 15 feet, and at a 45-degree angle. All dead and structurally weak branches overhanging any primary voltage wires shall be removed

OPEN WIRE SECONDARY LINES

- 5 feet clearance to the side from open wire secondary lines
- 5 feet clearance above and below open wire secondaries

SERVICE CONDUCTORS AND STREET LIGHT CONDUCTORS

Pruned to remove any obvious line-damaging limbs in contact with the conductors



SECTION 7 — *INSPECTION AND MONITORING*

Aerial inspections shall be performed on each transmission circuit (69kv and above) a minimum of two times per year in order to observe vegetation conditions on the transmission system. These aerial inspections may be coordinated with routine transmission facility inspections but should provide for the capabilities to specifically identify unsuitable vegetation conditions.

Any unsuitable vegetation conditions shall be noted along with location, structure numbers, or other information that will provide details necessary to return to the location by ground to address the condition. This information shall also be recorded in the appropriate database logs.

Vegetation conditions observed that pose an immediate threat to the operation of the line or public safety shall be reported immediately to the Duke Energy System Operations Control Center and the Duke Energy Midwest Vegetation Management (DEM VM) Specialist responsible for that area.

Vegetation related ground inspections shall be performed on an as needed basis as determined by the field DEM VM Specialist.



SECTION 8 – *VEGETATION CONTROL METHODS*

- **TREE SIDE TRIMMING-** Trees found along the right-of-way edge will, in most cases, encroach upon the electrical conductors through the side growth of their limbs. The maintenance of these trees requires the removal or partial removal of those potentially interfering limbs. Industry standards dictate the proper methods of “pruning” such limbs so as to minimize any damages to the tree. These methods are referred to as natural trimming, drop crotch or lateral trimming techniques. Stubbing and tearing of bark shall be avoided. Tree trimming may be performed by aerial buckets where accessibility permits. In some areas that are less accessible, off-road buckets may be assigned to perform the work. In other remote areas, boom mounted cutting devices or helicopters may be employed to perform the pruning activities. In terrain where no mechanical equipment can access the trees at issue, the contractor may resort to manual climbing of the trees in order to perform the pruning operations.
- **HAZARD TREE REMOVALS-** Trees found adjacent to or within the right-of way that are dead, structurally unsound, diseased, shallow-rooted, leaning or otherwise defective that could strike electrical lines or equipment of the distribution or transmission system that are cut down. Stumps from downed (live) trees shall be treated with herbicides where appropriate and possible.
- **TREE REMOVALS-** Trees which are in close proximity to electrical facilities can require a substantial amount of maintenance in order to prevent them from causing reliability problems. In many cases these trees must be pruned extensively. These trees may be identified for removal and the property owners are consulted.
- **BRUSH REMOVAL-** Incompatible brush within the transmission and distribution right-of-way corridors is eliminated if possible. When such vegetation is eliminated, it will normally be cut down either by manual or mechanical means. If the stems are of a smaller size or are a result of the re-sprouting of previously removed stems, the vegetation may be controlled by the application of approved and environmentally acceptable herbicides, and applied in compliance with all applicable regulations. All chemicals used in line clearing operations shall be registered with the EPA, the applicable Ohio, Indiana and/or Kentucky regulating state authority and are subject to approval by DEM VMP.
- **RIGHT-OF-WAY MOWING-** In situations where brush height is of significant size and therefore not conducive to herbicide applications, the right-of-way may be mechanically mowed with brush hogs or other mowing equipment. This equipment is typically used where there are substantial areas of such brush along with heavy densities.
- **HERBICIDE-** Because of a variety of terrain, differences in soil, land use, and vegetation types, we use integrated vegetation management practices which include environmentally acceptable chemical control methods as a supplement or substitute to mowing or hand cutting.



SECTION 9 – CONTRACTOR RESPONSIBILITIES

STANDARDS TO FOLLOW- Contractor shall perform all work in conformance with DEM VMP requirements, OSHA regulations, ANSI 300, ANSI Z133, Tree Care Industry Association's (formerly the National Arborist Association) standards, Dr. Shigo's *Field Guide for Qualified Line Clearance Tree Workers*, NESC, International Society of Arboriculture Best Management Practices and all federal, state, county, and municipal laws, ordinances, rules and regulations applicable to said work.

INCLUSIONS- Contractor shall furnish all labor, tools, transportation, equipment and materials necessary to perform the work. Herbicides used for stump treatment during maintenance operations in compliance with these specifications shall be furnished by the Contractor.

SUPERVISION AND OVERSIGHT- Contractor must have on-site supervision responsible for all work in each area that work is undertaken. Each supervisor, general foreman and/or lead person on miscellaneous work crews (reactive crews) must have a cellular phone or other suitable method of communications. Contractor must make all telephone numbers available to Duke Energy representatives. All other crews must have a suitable means of communication to respond to emergencies and daily work needs. The Contractor must provide the location of office facilities, contact names and telephone numbers for all supervisors and general foremen to Duke Energy prior to the commencement of any work under the contract. Contractor shall immediately advise the DE VM Specialist of any changes in the contact names and numbers as they occur.

RESPONSE- Contractor agrees that supervisors or general foremen shall respond to Duke Energy or property owner/customer calls within one hour of the call during the day and two hours at night. Contractor agrees to make available at least one general foreman per designated area at all times during the term of the contract. The number of general foremen required may vary depending upon the areas awarded.

COMMUNICATIONS- Contractor must have at least one English speaking employee per work group.

REPORTING- Contractor shall work with DE VM Specialist(s) to determine crew reporting procedures and ensure that the DE VM Specialist(s) are aware of crew locations. Contractor is also responsible for ensuring that notification is given if any work under the contract is suspended or stopped during normally scheduled times.

PERSONNEL TRAINING- Contractor shall be responsible for its personnel completing training and demonstrating necessary levels of competence to perform the work. Duke Energy shall not be obligated to pay for services performed by personnel who have not been trained and who have not demonstrated competence. Contractor shall have and maintain all relevant employee documentation. Contractor shall comply with all applicable laws that may impact Contractor's employment obligations under the contract agreement, including the Immigration Reform and Control Act of 1986 and Form I-9 requirements. Without limiting the generality of the foregoing, Contractor shall perform all required employment eligibility and verification checks and maintain all required employment records as specified in their contracts.



FITNESS FOR DUTY- Contractor shall be responsible for its personnel's compliance with Duke Energy's hygiene and substance abuse requirements. Contractor's employees, agents or other personnel shall begin each day in clean, neat clothing, and shall observe all Duke Energy hygiene regulations and rules in effect while at the locations. Duke Energy has an Alcohol/Drug Abuse Procedure included in its Fitness For Duty Policy. Copies of said Fitness For Duty Policy and Alcohol Drug Abuse Procedure shall be supplied to Contractor by Duke Energy. Under said Alcohol/Drug Abuse Procedure, Contractor shall be considered to be a supplier performing sensitive services for Duke Energy. Contractor shall therefore implement and administer an alcohol/drug abuse policy acceptable to Duke Energy and at least as stringent as that of Duke Energy. Contractor agrees that Duke Energy and/or its agents shall be permitted access to Contractor's documentation of Contractor's alcohol/drug abuse policy as necessary for Duke Energy to evaluate conformity with the policy.

PUBLIC REPRESENTATION- Contractor acknowledges and agrees that the personnel it retains or hires to perform the work give the impression to the public that they represent Duke Energy. Accordingly, such personnel must be respectful, professional and courteous. Contractor will provide and maintain vehicles, equipment and tools that are safe to operate and present a positive public image. All Contractors' vehicles shall have a standard decal identifying the contract company. Contractor shall provide its employees with cards to distribute to customers/property owners on request. Cards should provide the name and telephone number of a supervisor or general foreman who can be reached about service, inquiries or claims. All contractor employees shall carry identification and provide it for inspections upon request.

SOLICITATION- Neither Contractor, nor Contractor's personnel, shall during hours worked pursuant to the contract, solicit work from, or propose sales to customers of Duke Energy or its affiliated utilities.

CUSTOMER NOTIFICATION- Contractor shall comply with State notice requirements. Contractor shall notify the property owner or the owner's agent of upcoming work by means of oral communication, notification letters, brochures, and/or door hangers. This communication shall occur within a minimum of fourteen calendar days prior to commencement of the work. If notification is done orally, the door hanger materials and information shall be given to the property owner or the owner's agent. Duke Energy will provide the door hangers and associated materials, which will describe the work. Contractor shall attach as part of the door hanger and associated materials a telephone number for the Contractor's supervisor or general foreman.

CONTRACTOR SAFETY- Accidents, injuries, near misses, and Contractor caused interruptions, involving the public or Contractor personnel must be reported to appropriate Duke Energy personnel. In case of power interruption or damage, the Contractor shall notify the Owner immediately. The Contractor shall conduct a prompt and thorough investigation of such incidents. Contractor and/or its liability or other insurance carrier shall conduct a prompt and thorough investigation of such incidents and provide the DE VM Specialist with an accident investigation report within five business days of the occurrence.

OUCG
IURC Cause No. 45253
Data Request Set No. 34
Received: October 1, 2019

OUCG 34.2

Request:

State the number of lineal miles of distribution lines in each state.

- A. Indiana
- B. Kentucky
- C. Ohio.

Objection:

Duke Energy Indiana objects to this request on the basis that it is vague, ambiguous, and not reasonably calculated to lead to the discovery of admissible evidence. The term "lineal miles" is not defined or reasonably limited in scope. Further, the "lineal miles" of distribution lines in Kentucky and Ohio is not relevant to this proceeding.

Response:

Subject to and without waiving or limiting its objections, and interpreting "lineal miles" as the length of both distribution secondary and primary conductor added together where the number of individual conductors do not add a multiplier to the value, Duke Energy Indiana responds as follows:

Q34-2	2018	2019 Q2
A. Indiana	31233.19	31440.69
B. Kentucky	2887.08	2964.47
C. Ohio	16370.52	16723.02

Witness: Cicely M. Hart

OUC
IURC Cause No. 45253
Data Request Set No. 32
Received: September 27, 2019

OUC 32.3

Request:

Please provide DEI/Duke Energy's vegetation management work descriptions and cost allowances for tree trimming and tree removal.

Objection:

Duke Energy Indiana objects to this data request on the basis that it is vague, ambiguous, and not reasonably calculated to lead to the discovery of admissible evidence. The term "cost allowances" is not defined or reasonably limited in scope.

Response:

Subject to and without waiving or limiting its objections, and in the spirit of cooperation, Duke Energy Indiana responds as follows:

Please see Attachments OUC 32.2-A and OUC 32.2-B for Transmission Vegetation Management standards that Duke Energy Indiana adheres to.

Witness: TK Christie

AFFIRMATION

I affirm, under the penalties for perjury, that the foregoing representations are true.



Eric M. Hand
Utility Analyst
Indiana Office of Utility Consumer Counselor
Cause No. 45253
Duke Energy Indiana, LLC

October 30, 2019
Date

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing was served by electronic mail this 30th day of October to the following:

DEI

Kelley A. Karn
Melanie D. Price
Elizabeth A. Herriman
Andrew J. Wells
Duke Energy Business Services, LLC
kelly.karn@duke-energy.com
melanie.price@duke-energy.com
beth.herriman@duke-energy.com
andrew.wells@duke-energy.com

Kay E. Pashos
Mark R. Alson
Ice Miller LLP
kay.pashos@icemiller.com
mark.alson@icemiller.com

Nucor

Anne E. Becker
Amanda Tyler
Ellen Tennant
Lewis & Kappes, P.C.
abecker@Lewis-Kappes.com
atyler@Lewis-Kappes.com
atennant@Lewis-Kappes.com

Peter J. Mattheis
Shaun C. Mohler
Stone Mattheis Xenopoulos & Brew, PC
pjm@smxblaw.com
smohler@smxblaw.com

Sierra Club

Kathryn A. Watson
Cantrell Strenski & Mehringer, LLP
kwatson@csmlawfirm.com
Tony Mendoza
tony.mendoza@sierraclub.org

Walmart

Eric E. Kinder
Barry A. Naum
Spilman Thomas & Battle, PLLC
ekinder@spilmanlaw.com
bnaum@spilmanlaw.com

INDUSTRIAL GROUP

Tabitha L. Balzer
Aaron A. Schmoll
Todd A Richardson
Lewis & Kappes, P.C.
TBalzer@Lewis-Kappes.com
ASchmoll@LewisKappes.com
trichardson@LewisKappes.com

CAC, INCAA, EWG

Jennifer A. Washburn
Margo Tucker
Citizens Action Coalition of Indiana, Inc.
jwashburn@citact.org
mtucker@citact.org

SDI

Robert K. Johnson, Esq.
rjohnson@utilitylaw.us

Damon E. Xenopoulos
Stone Mattheis Xenopoulos & Brew, PC
dex@smxblaw.com

Kroger

Kurt J. Boehm, Esq.
Jody Kyler Cohn
Boehm, Kurtz & Lowry
kboehm@bkllawfirm.com
JKylerCohn@BKLLawfirm.com

Kevin Higgins
Energy Strategies, LLC
khiggins@energystrat.com

John P. Cook
John Cook & Associates
john.cookassociates@earthlink.net

ICC

Jeffery A. Earl
Bose McKinney LLP
jearl@boselaw.com

ChargePoint

David T. McGimpsey
Bingham Greenebaum Doll LLP
dmcimpsey@bgdlegal.com

FEA Dept. of Navy

Shannon M. Matera, Esq.
NAVFAC Southwest, Dept. of the Navy
Shannon.Matera@navy.mil

Cheryl Ann Stone, Esq.
NSWC Crane, Dept. of the Navy
Cheryl.Stone1@navy.mil

Kay Davoodi
Larry Allen
Utility Rates and Studies Office
NAVFAC HQ, Dept. of the Navy
Khojasteh.Davoodi@navy.mil
larry.r.allen@navy.mil

Hoosier Energy

Christopher M. Goffinet
Huber Goffinet & Hagedorn
cgoffinet@hepn.com

Mike Mooney
Hoosier Energy REC, Inc.
mmooney@hepn.com

ILDC

Neil E. Gath
Gath Law Office
ngath@gathlaw.com

Erin Hutson
LIUNA
ehutson@liuna.org

Wabash Valley

Randolph G. Holt
Jeremy Fetty
Liane K. Steffes
Parr Richey
r_holt@wvpa.com
jfetty@parrlaw.com
lsteffes@parrlaw.com

Greenlots

Erin C. Borissov
Parr Richey
eborissov@wvpa.com

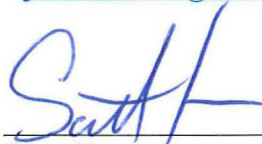
OUCC Consultants

David J. Garrett
Resolve Utility Consulting PLLC
dgarrett@resolveuc.com

Glenn A. Watkins
Jennifer R. Dolen
Technical Associates, Inc.
watkinsg@tai-econ.com
jenny.dolen@tai-econ.com

Lane Kollen
J. Kennedy & Associates
lkollen@jkenn.com

David Dismukes
Julie McKenna
Acadian Consulting
daviddismukes@acadianconsulting.com
juliemckenna@acadianconsulting.com



Scott Franson
Deputy Consumer Counselor

**INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR
PNC CENTER**

115 West Washington Street, Suite 1500 South
Indianapolis, IN 46204

infomgt@oucc.in.gov

317/232-2494 – Telephone

317/232-5923 – Facsimile