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Homogenizing the Law of Stray Voltage: An Electrifying Attempt to Corral the Controversy

Peter G. Yelkovac

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I. INTRODUCTION

Historically and during modern times, America's farmers have often been forced to contend with such natural disasters as droughts, floods, tornadoes, hurricanes, debilitating crop diseases, and insect infestations. Many contemporary American dairy farmers, unlike their crop-growing peers, must cope with an enemy that emanates not from a natural source but, rather, from the seemingly innocuous electricity used to energize their equipment. This emanation of electricity, known as "stray voltage," or "neutral-to-earth voltage,"[1] can severely inhibit or destroy the milk-producing capability of their dairy cattle.

Stray voltage refers to low-voltage electricity existing in the zone between an electrically charged, metallic piece of equipment, such as a drinking or feeding trough or milking machine, and the ground or earth.[2] When a cow contacts the metal machine or a metallic object near that machine, the current travels through the cow's body and into the earth, causing the cow to experience a slight, electrical shock.[3] As a result of repeated exposure to these slight shocks, a cow can develop severe behavioral problems and, subsequently, develop physiological problems, rendering the cow a much less-effective milk producer.[4]

Although the occurrence of stray voltage appears, at first glance, to be an isolated or rare problem, statistics illustrate the prevalence of this phenomenon

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1. Stray or neutral-to-earth voltage is also known by various other names, including tingle voltage, transient voltage, neutral-to-ground voltage, extraneous voltage, and metal structures-to-earth voltage. R.D. Appleman & R.J. Gustafson, *Source of Stray Voltage and Effect on Cow Health and Performance*, 68 J. DAIRY SCI. 1554 (1985). A farmers' research group labels the problem "objectionable current." Mike Flaherty, *Farmers' Hidden Enemy? Group Says "Stray Voltage" Damaging Dairy Production*, WIS. STATE J., May 16, 1993, at 1C.

2. J.L. Albright et al., *Diary Farm Analysis and Solution of Stray Voltage Problems*, AGRI-PRACTICE, May-June 1991, at 23; Robert J. Gustafson et al., *Understanding and Dealing with Stray Voltage Problems*, BOVINE PRACTITIONER, Nov. 1982, at 4; E. Keith Folger & Jerry D. Martens, *Solving Stray-Voltage Problems Down on the Farm*, TRANSMISSION & DISTRIBUTION, Dec. 1990, at 52.

3. Albright et al., *supra* note 2, at 23.

4. H.A. CLOUD ET AL., STRAY VOLTAGE PROBLEMS WITH DAIRY COWS 2-3 (1987). *See infra* notes 50-63 and accompanying text for a more detailed description of the behavioral and physiological problems that can accompany the occurrence of stray voltage.

on dairy farms nationwide. Experts on stray voltage estimate that possibly 100,000 farmers in the United States, and at least 20,000 farmers in Canada, are burdened with problematic levels of stray voltage.[5] A Wisconsin government official estimated that in Wisconsin, 10,000 dairy farmers face problems with stray voltage and that thirty percent of dairy farmers nationwide suffer from similar problems.[6]

The causes or sources of stray voltage can vary widely but most often stem from problems in an electrical provider's[7] transmission and distribution system or in a farmer's wiring or equipment.[8] Stray voltage can also result from a combination of problems in the electrical systems of both the farmers and electrical providers. Some stray voltage may always be present as an inherent part of supplying electricity; however, problems in the electrical systems can elevate the levels of voltage to an undesirable level, causing an electrical current

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5. Paul Berton, *A Shock for Farmers*, MACLEAN'S, Jan. 7, 1985, at 66.

6. Bob Secter, *'Stray Voltage'—A Shocking Barnyard Woe*, L.A. TIMES, March 17, 1991, at 1; *60 Minutes* (CBS television broadcast, April 7, 1991) (transcript on file with *Valparaiso University Law Review* and can be obtained from Burrelle's Transcripts, P.O. Box 7, Livingston, New Jersey, 07039) [hereinafter *60 Minutes*]. In addition, agriculture officials in Minnesota estimate that stray voltage has affected 11% of the 15,000 dairy farms within the state. Paul Hoversten, *Stray Voltage Short-Circuiting Farms; Dairy States Experience Most Trouble*, USA TODAY, Oct. 7, 1992, News section, at 10A; Marilyn Wheeler, *Professor Cites Stray Voltage as a Possible Cause of Health Problems*, ST. PAUL PIONEER PRESS (St. Paul, Minn.), Oct. 17, 1993, at 8B (citing Minnesota Environmental Quality Board task force findings that 11% of Minnesota's 15,174 dairy farmers encountered stray voltage trouble during the half-decade preceding the task force's survey).

Contrary to popular perception, Wisconsin is not the only state with a sizable contingent of dairy farms. Dairy farms exist in such states as Indiana, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New York, Ohio, Pennsylvania, and Virginia, among several others. JOHN FRASER HART, THE LAND THAT FEEDS US 186 (1991). As one geographer has pointed out, New York State dairy farmers receive an even higher percentage of their income from dairy farming than do their Wisconsin colleagues. *Id.* at 192.

In September, 1993, California bypassed Wisconsin as the nation's leading dairy state; however, California's dairy farming system is more mechanized and composed of larger farms than the family-farm-oriented Wisconsin system. Robert Imrie, *Holy Cow! Wisconsin Dethroned*, POST-TRIBUNE (Gary, Ind.), Oct. 23, 1993, at B4.

7. Hereinafter, the term "electrical provider" will refer to public utilities, municipally owned utilities, and electrical cooperatives. Although most dairy farms are not serviced by municipally owned utilities, by virtue of their rural locations, stray voltage suits against municipal utilities do exist. A New York legal journal reported that two New York dairy farming families sued their municipally owned utility, alleging that the utility's improperly grounded power lines led to injurious levels of stray voltage on their respective dairy farms. The farmers sought $5 million in damages from this municipally owned utility. Gary Spencer, *Damage for Dairy Cows Declared Actionable*, N.Y. L.J., March 3, 1993, Third Department, Appellate Division, at 1.

8. David Ludington, *Sources of Stray Voltage/Current, in* U.S. DEP'T OF AGRICULTURE, EFFECTS OF ELECTRICAL VOLTAGE/CURRENT ON FARM ANIMALS: HOW TO DETECT AND REMEDY PROBLEMS 2-1 (Alan M. Lefcourt ed., U.S. Dep't of Agriculture 1991) [hereinafter EFFECTS OF ELECTRICAL VOLTAGE]. *See infra* notes 29-41 and accompanying text for a more explicit discussion of the electrical sources of the problem.

to flow through the cattle and into the ground or earth.[9]

Researchers recognize that stray voltage problems are not limited solely to dairy farms.[10] Stray voltage can affect other farm animals such as beef cattle, chicken, and swine.[11] Cattle, however, are especially sensitive to electricity because they lack a strong hoof structure, walk on soft hoof tissue,[12] and contact moisture on a continuous basis. Cattle eat and drink with moist mouths and, given modern farming practices, walk in both urine and water on concrete surfaces.[13] This high moisture level provides an enhanced electrical contact with the earth, thereby facilitating the passage of stray voltage through the cattle and into the earth.[14]

The stray voltage crisis, while detailed often in both electrical and farming trade publications,[15] has only recently been brought to the attention of the general public. For instance, a *60 Minutes* television special that aired in 1991 chronicled the experiences of one Wisconsin farmer whose cattle were adversely

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9. CLOUD ET AL., *supra* note 4, at 3.

10. *Id.* at 9.

11. *Id.* Research reveals that swine can perceive voltages on watering systems at a 0.25 volt level, but that larger shocks of 2.8 volts and 3.6 volts have been required to alter their drinking patterns and water consumption, respectively. *Id.*

12. *Id.* at 8.

13. Cattle also walk in feces on concrete floors. Daniel J. Aneshansley & R.C. Gorewit, *Physiological and Behavioral Effects*, *in* EFFECTS OF ELECTRICAL VOLTAGE, *supra* note 8, at 3-1.

14. *Id.* at 3-5. The human body, unlike that of cattle and other farm animals, does not provide a favorable electrical contact with the earth because humans wear rubber footgear and have relatively dry skin. *Id.* Nevertheless, in some instances, farmers have reported receiving slight shocks from stray voltage while showering in the farm house or while touching equipment in the milking parlor. *See, e.g.*, Sari Horwitz, *Case of the Shocked Cows Goes to Trial; Md. Farmer Says Herd Bothered by 'Stray Voltage' From Utility*, WASH. POST, March 31, 1986, at D3; Mike Flaherty, *Stray Voltage a Hot Issue on Dairy Farms*, WIS. STATE J., Jan. 27, 1991, at 1G. While humans may suffer significant negative effects after exposure to electromagnetic fields (EMFs), *see infra* note 17, research has revealed that farm animals are generally not adversely affected by these fields, even where such fields emanate from power lines running directly overhead. Flaherty, *supra* note 1, at 1C (indicating that a scientific review of the body of literature on EMFs conducted for the Oak Ridge Laboratories failed to disclose a substantial link between EMFs and animal health). Researchers have, however, earmarked this area as one deserving and demanding more extensive study in the future. Lloyd B. Craine, *Recommendations for Research*, *in* EFFECTS OF ELECTRICAL VOLTAGE, *supra* note 8, at 6-6.

15. One of the leading experts in the field of stray voltage, the late Dr. Robert D. Appleman, noted that between the years of 1977 and 1982, many articles and news releases on the subject were published. Robert D. Appleman, *Introduction* to SOURCES OF STRAY VOLTAGE, *supra* note 8, at 1-2. Appleman also noted that between 1980 and 1983, "at least 12 articles, notes, or references related to the subject" were published in *Hoard's Dairyman*, a popular dairy farming magazine received by most dairy farmers. *Id.* During the last decade, the body of literature on the subject has grown substantially. *See, e.g.*, *supra* notes 2-8.

affected by stray voltage.[16] In comparison with the current controversy and debate over the subject of the effects of electromagnetic fields on human health,[17] the attention directed at the effects of stray voltage on cattle has been

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16. *60 Minutes*, *supra* note 6. In this segment, the farmer criticized his electrical provider, Consumer's Power, for allowing the problem to continue despite persistent complaints. *Id.* In addition to the *60 Minutes* segment on stray voltage, Cable News Network reported on another western Michigan dairy farmer who filed suit against Consumer's Power, alleging that stray voltage on his farm harmed his dairy cattle. SCIENCE AND TECHNOLOGY WEEK (Cable News Network, Inc., television broadcast, Apr. 25, 1992) (available in LEXIS, News library, CNN file). After the second showing of the *60 Minutes* report, the general counsel of Consumer's Power assailed the report, labeling it "radically biased" and a "knowing and reckless disregard for the truth." *T.V. Series Zaps Consumers with Old Rerun on 'Wired' Cows*, ELECTRICAL WORLD, Aug., 1992, at 11. Company officials contended that the televised report improperly focused on one Consumer's Power customer, to the exclusion of 35,000 other farmers, and failed to reveal that the power provider offers free assistance to farmers who suspect a stray voltage problem. *Id.* Another Consumer's Power official pointed out that in 99 out of 100 reports of stray voltage to the company, investigations revealed that the problem stemmed from a defect in the farmer's wiring system, and not the utility's system. *Id.*

The *60 Minutes* segment spawned at least one stray voltage lawsuit against a power provider. After viewing the segment, a dairy farming couple in Ohio initiated a $10 million suit against their provider for alleged stray voltage damage to their herd. Scott Stephens, *Suit Says Utility Damaged Cow Herd; Grafton Farmers Seek $10 Million*, PLAIN DEALER (Cleveland), Feb. 17, 1993, at 4B.

17. Electromagnetic fields and stray voltage are different concepts, but both involve electricity that has escaped, in some manner or form, from a power system. Electromagnetic fields are generally discussed within the context of high-voltage power lines and are fields that emanate from these lines. Stray voltage does not usually involve high-voltage power lines but, rather, refers to energy that has already reached the consumer. *See, e.g.*, *infra* notes 29-41 and accompanying text for a more detailed discussion of the nature of stray voltage. Scientists and non-scientists have addressed prolifically the health-related and legal controversies surrounding EMFs. *See, e.g.*, David L. Chandler, *Report Reasserts Link Between Cancer, Magnetic Fields*, POST-TRIB. (Gary, Ind.), Nov. 12, 1992, at A6 (presenting details of a Swedish scientific report that found an increased incidence of leukemia in children exposed to EMFs from high-voltage power lines and that this increased risk posed by EMF exposure represented a low risk overall). For an introduction to the legal aspects of the EMF controversy, see Bill Richards, *Elusive Threat: Electric Utilities Brace for Cancer Lawsuits Though Risk Is Unclear*, WALL ST. J., Feb. 5, 1993, at A1; Roy W. Krieger, *On the Line*, A.B.A. J., Jan. 1994, at 40-45; *see also* Stanley Pierce and Charlotte A. Biblow, *Electromagnetic Fields Attract Lawsuits*, NAT'L L. J., Feb. 8, 1993, at 20. At least two journal articles also detail the EMF legal controversy. *See* Kristopher D. Brown, Note, *Electromagnetic Field Injury Claims: Judicial Reaction to an Emerging Public-Health Issue*, 72 B.U. L. REV. 325 (1992) (examining the body of case law on EMFs, with a strong focus on personal injury claims and property condemnation suits); Philip S. McCune, Note, *Power Line Health Controversy: Legal Problems and Proposals for Reform*, 24 U. MICH. J.L. REF. 429 (1991). McCune's note examines various jurisdictional approaches, in the courts, to handling EMF litigation and presents a proposed solution to the EMF dilemma, including the placement of power lines away from population centers, burying power lines underground, and developing alternative methods of limiting human exposure to the lines. *Id.* at 463-66. While these methods have the potential to achieve great success in alleviating the problems inherent in EMFs, they would prove inapplicable to solving stray voltage problems. Requiring cattle to remain away from electrified devices would be impractical and economically infeasible for the farmer, and buyouts of the farms would be both too costly for electrical providers and counter-productive for the farmers who earn their livelihood by tending to

minor. The stray voltage problem, however, is anything but minor to the electrical providers and the dairy farmers who must rectify injurious levels of stray voltage.

The stray voltage dilemma has spawned extensive and expensive litigation, pitting dairy farmers against their power providers. Juries have awarded damages to farmers who have prevailed on the merits in stray voltage suits in amounts ranging from several thousand dollars to one million dollars.[18] In addition, farmers and power providers often settle stray voltage disputes out of court, with settlement amounts sometimes reaching as high as several hundred thousand dollars.[19] These verdicts and settlements illustrate the amount of money at stake in a typical stray voltage suit.

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their herds.

18. *See* ZumBerge v. Northern States Power Co., 481 N.W.2d 103 (Minn. Ct. App. 1992) (affirming award of $1,000,000 in damages); Wisconsin Elec. Power Co. v. California Union Ins. Co., 419 N.W.2d 255 (Wis. Ct. App. 1987) (pointing out that a jury awarded more than one million dollars in damages and that the farmer settled with the power company for approximately $1,035,000 prior to the trial court's entry of final judgment); Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349 (Ind. Ct. App. 1986) (finding electrical provider liable for $343,000 in damages); Hensley v. Howell-Oregon Elec. Coop., Inc., Slip Opinion Nos. 1419, 14197 (consolidated) (Mo. Ct. App. Sept. 19, 1986) (available in WESTLAW, Allstates file) (affirming award of more than $170,000 in damages); Slater v. Pennsylvania Power Co., 557 A.2d 368 (Pa. Super. Ct. 1989) (upholding award of $81,374 in damages); Fink v. Lafayette Elec. Coop., 454 N.W.2d 808 (Wis. Ct. App. 1990) (available in LEXIS, States library) (affirming jury award of $500,000 in damages for economic loss and reversing as duplicative an award of $200,000 for annoyance and inconvenience); Zorn v. Electric Research & Mfg. Coop., Inc., 350 N.W.2d 739 (Wis. Ct. App. 1984) (available in LEXIS, States library) (awarding 90% of the complainants' alleged damages, amounting to $72,000).

Several pending lawsuits seek even higher monetary damages for stray voltage-related injuries. *See, e.g., Dairy Farmer Asks Utility to Pay for Shocked Stock*, BUFFALO NEWS (Buffalo, N.Y.), May 4, 1993, at A8 (detailing complaint of a New York farmer seeking $1.5 million in actual damages and an additional $2 million in punitive damages from his power provider). In October of 1993, an attorney filed a large class action suit on behalf of more than 200 Michigan dairy farmers who sought relief for alleged stray voltage injuries. The attorney expected that, eventually, 3000 farmers could join the plaintiff class and that the damages could total $1 billion. *Farmers' Billion-Dollar Suit Jolts Consumers Power, Stray Voltage Hazard Ignored by Utility, Says Law Firm*, PR NEWSWIRE, Oct. 27, 1993 (available in WESTLAW, Papers file) [hereinafter *Billion-Dollar Suit*].

19. *See* Kate Gurnett, *Bankrupt Farm Blames NiMo's Wires*, CAPITAL DIST. BUS. REV., Apr. 18, 1988, § 1, at 1 (noting one settlement of $450,000 in New York State); David McKay, *Voltage Suspected, Farmers Sue in Cow Deaths*, DETROIT FREE PRESS, May 27, 1992, § NWS, at 1B (noting that owners of one dairy farm accepted a settlement of $750,000 from a Michigan power provider in 1988); *Shocking Effect on Cows Comes from Stray Voltage*, CHI. TRIB., Dec. 8, 1986, at 3 (stating that one Wisconsin farmer settled a $6.1 million lawsuit against a utility, with undisclosed settlement terms). One southern Indiana dairy farming couple recently settled out of court with their power provider for an undisclosed sum. The couple lost 50 cattle because of an electrical short in the power provider's substation that served as the power source for the farm. *Shocked Cows*, VIDETTE-MESSENGER (Porter County, Ind.), Feb. 16, 1993, at 12A.

The body of law on the subject, however, lacks the uniformity that this highly technical area demands. For example, courts differ in their pronouncements of the duty owed by power providers to their dairy farm customers regarding stray voltage and in their willingness to allow strict products liability as a cause of action in stray voltage suits.[20] Because of the lack of uniformity in this area, the law fails to address properly an inherently technical problem such as stray voltage. The disparate standards of care essentially ensure that a farmer's chance for recovery in a negligence action depends to a large degree upon the farm's location within a particular state. Moreover, the availability of a cause of action sounding in strict products liability facilitates the farmer's recovery by obviating the need for the farmer to demonstrate fault on the part of the power provider. Farmers in states that do not recognize this cause of action in stray voltage cases face greater difficulty in recovering under fault-based, negligence theories.[21]

Moreover, power providers who must effectuate expensive and time-consuming stray voltage reduction programs in order to meet prescribed state stray voltage standards, and thereby avoid a proliferation of adverse monetary judgments, stand at a disadvantage in ensuring optimum levels of profitability when compared with providers in other states with lax stray voltage standards. An additional problem arises for those power providers whose operations furnish power to customers in more than one state. Essentially, these power providers may be subject to vastly different legal treatment from state to state. Thus, this lack of uniformity poses several problems for the farmer and the power provider. In an attempt to reveal the dimensions of the stray voltage dilemma and to formulate a plausible solution to this lack of uniformity, this Note addresses several aspects of the treatment of stray voltage within America's legal system.

Section II of this Note explains the non-legal, technical side of stray voltage itself, focusing briefly on its causes, effects, and practical solutions.[22] An understanding of the legal dimensions of stray voltage necessitates at least a basic comprehension of the technical side of stray voltage. Section III of this Note examines the fora in which stray voltage problems are resolved.[23] This Section provides a glimpse into the available administrative and judicial avenues that can be used to remedy a stray voltage problem. Also, this Section reveals a plethora of confusion over the manner in which stray voltage should be treated

20. *See infra* notes 115-254 and accompanying text.

21. Thus, a dairy farmer in Pennsylvania, for example, might have a much stronger opportunity to recover from a power provider for injuries caused by stray voltage than a similarly situated farmer in Ohio.

22. *See infra* notes 28-65 and accompanying text.

23. *See infra* notes 66-108 and accompanying text.

within the legal system. Section IV explores the standards of care owed to the farmer by power providers with regard to preventing or remedying stray voltage problems.[24] Then, in Section V, this Note analyzes the polarized treatment of stray voltage within strict products liability law.[25] The treatment of stray voltage within this area of the law reveals the greatest disparity between courts and illustrates the compelling need for uniformity. Finally, in Section VI, this Note proposes a model state stray voltage statute designed to provide a uniform approach to the treatment of stray voltage within each state and between the state legal systems.[26] This solution will attempt to address the problem in a manner that is equitable and encourages teamwork, rather than animosity, between the farmers and their power providers.[27]

II. ONE SMALL STEP TOWARD AN UNDERSTANDING OF A LARGE PROBLEM: DELVING INTO STRAY VOLTAGE SOURCES, EFFECTS, AND SOLUTIONS

Although a full understanding of the concepts underlying stray voltage and its effects on dairy cattle necessitates a strong comprehension of both farming and electrical technologies, a basic understanding of the sources and effects of, and solutions to, the problem of stray voltage is easy to achieve. In a nutshell, stray voltage refers to a small level of voltage, usually less than ten volts, measured between two points in contact with an animal, such as a metallic machine and the earth.[28] Its sources and effects will be addressed in order.

A. A Cursory Understanding of Electrical Circuits: The Stray Voltage Backdrop

Stray voltage may be best understood in the context of an electrical circuit in which electricity flows from a source to its destination and then, its energizing power spent, back to its source again.[29] An understanding of this concept is crucial, for electricity does not simply dissipate upon use but, rather,

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24. *See infra* notes 109-86 and accompanying text.

25. *See infra* notes 187-254 and accompanying text.

26. *See infra* notes 255-60 and accompanying text.

27. Ensuring that stray voltage problems will be resolved in a cordial, efficient manner constitutes perhaps the largest obstacle in resolving the many problems inherent in the stray voltage controversy. *See* Appleman, *supra* note 15, at 1-1. A joint effort between all involved parties facilitates the effective resolution of the electrical problems that lead to stray voltage. Gustafson et al., *supra* note 2, at 10.

28. Ludington, *supra* note 8, at 2-1; CLOUD ET AL., *supra* note 4, at 1.

29. Truman C. Surbrook & Norman D. Reese, *Stray Voltage Sources and Identification Procedures, in* STRAY VOLTAGE: PROCEEDINGS OF THE NATIONAL STRAY VOLTAGE SYMPOSIUM 65 (1984) [hereinafter STRAY VOLTAGE SYMPOSIUM].

must return to its source.[30] To deliver electricity to the farmer-customer, two electrical systems exist: (1) the power provider's transmission and distribution system; and (2) the farmer-customer's on-farm electrical system. The electrical provider's transmission and distribution system transfers electricity from an electrical provider's substation, through high voltage power lines, to a farmer-customer's transformer.[31] The crucial element in this system is the substation, which serves as the source of the power provider's electricity.[32] Once the electricity has reached the farmer-customer's transformer, the on-farm electrical system begins to operate.[33]

To complete its circuit, after its use, electricity must flow back to its respective power source—that is, the farmer-customer's transformer or the power provider's substation, respectively. Because its energizing ability has already been spent on electrifying the customer's appliance or machine, electricity flows back to its source in low voltage levels. Electricity can return to its source through two different pathways: (1) through lines known as "neutral lines"; or (2) through the earth itself.[34] Most electricity returns to its respective power source through lines known as "neutral lines."[35]

Not all electricity returns to its source through these neutral lines, however. Some electricity returns to its source by flowing through the earth, reaching the earth by traveling down various grounding wires.[36] The grounding wires are connected to the neutral lines and also to the earth, thereby allowing the current to flow into the earth from the neutral lines. The earth pathway relieves the neutral lines from shouldering the burden of returning all of the spent electricity to its source.[37]

Under perfect operating conditions, very low levels of electricity return to

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30. *Id.*

31. The substation serves as the source of the power provider's electricity. CLOUD ET AL., *supra* note 4, at 19. *See also* Ludington, *supra* note 8, at 2-18.

32. Surbrook & Reese, *supra* note 29, at 67.

33. Ludington, *supra* note 8, at 2-19, 2-20, 2-21. The farmer-customer's transformer is especially important because it serves as the on-farm power source, converting the high voltage electricity into a usable form. The transformer also serves as the "turnstile" where the power provider's system and the on-farm electrical system are joined. *Id.*

34. Surbrook & Reese, *supra* note 29, at 67-68. Spent electricity travels through the earth naturally and easily.

35. *Id.* Electricity returning to the customer's transformer from the energized equipment flows through the "secondary neutral line," while electricity that is returning to the substation flows through the "primary neutral line." Ludington, *supra* note 8, at 2-20, 2-21.

36. Surbrook & Reese, *supra* note 29, at 66-67.

37. *Id.* The power provider's electrical system is grounded into the earth at various intervals along the path back to the substation. The customer's electrical system is grounded into the earth at various points along the path back to the customer's transformer.

the power sources through the neutrals and through the earth with little fanfare. Nevertheless, a problem or defect in the electrical provider's system[38] or in the consumer's on-farm system[39] can cause excessive levels of low-level voltage, generally ranging from one to ten volts, to exist in the neutral system. Because all metal pipes and cattle feeding systems are generally connected to the neutral system to ensure that the equipment is safe for use, excess levels of electricity in the neutral system can escape into the cow when the cow makes contact with an electrified machine or even a material object touching the machine.[40] This excess current then travels through the cow and into the earth, slightly shocking the cow in the process.[41] This process can occur regularly, as a cow must eat and drink on a daily basis, thereby providing many opportunities for stray voltage to travel into the cow as it touches an electrically charged metallic drinking trough, feeding machine, or other equipment in the surrounding vicinity.

Although stray voltage may be present on farmsteads throughout the country, this voltage need not exist at troublesome levels. Several corrective devices are available to reduce, if not eliminate totally, harmful levels of stray voltage on dairy farms. Researchers categorize the available corrective methods or devices as follows: (1) voltage reduction methods; (2) gradient control devices; and (3) isolation of the neutral wires.[42] The first method, the voltage control method, reduces the troublesome levels of stray voltage in situations where the voltage results from imbalances in current on the neutral wires on or

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38. Ludington, *supra* note 8, at 2-21. A primary problem in the electrical provider's system that may precipitate injurious levels of stray voltage is the occurrence of an imbalanced load on the electrical provider's power system. If a change in a power load at another customer's house, farm, or factory occurs, the load that other customers receive, including dairy farmers situated on that same circuit, may be higher than usual. This imbalanced load can create a stray voltage problem because the power provider's neutral line (i.e., the primary neutral) and the farmer's neutral line (i.e., the secondary neutral) are connected at the customer's transformer in accordance with standardized safety requirements. Thus, the electricity from the power provider's primary neutral can escape into the customer's secondary neutral, thereby allowing harmful levels of stray voltage to enter the farmstead. *Id.*

39. *Id.* at 2-2. Typical on-farm problems include: (1) imbalanced loads in the on-farm power supply system, where motors, lights or other equipment draw more current than other equipment, thereby producing higher currents, and stray voltage, in the secondary neutral system. *Id.* at 2-1; (2) improper wiring or grounding. *Id.* at 2-2; and (3) Old or defective wiring or electrical systems. Jerry Lush, *Stray Voltage—What Is It and How It Can Be Prevented*, SIOUX VALLEY ELECTRIC MAG., Feb. 1989, at 12.

40. CLOUD ET AL., *supra* note 4, at 8. In addition to a cow's contact with electrified equipment such as the feeder, waterer, or metal stall, stray voltage can also enter the cow when the cow contacts a metal grate, a concrete floor on which the cow stands, or the concrete milking parlor floor on which the parlor operator stands. *Id.*

41. *Id.*

42. *Id.* at 17.

off the farm, from undersized neutrals, or from equipment grounding problems.[43] Such methods include removing bad connections and faulty loads, improving poor wiring and grounds, balancing loads, or cleaning, grounding, or reinsulating to control leaking current.[44]

A second method of controlling stray voltage involves the use of a gradient control device, known as the equipotential plane, to negate the effects of stray voltage.[45] Equipotential planes are flat, metallic sheets, often made of wire mesh, placed directly into the floor of an affected building.[46] These planes prevent electricity from flowing directly through the animal and into the earth, because the pathway into the earth is metallic and, therefore, not as attractive to the current as that of the plain earth or a concrete floor.[47]

The third and final method, known as isolation, mitigates the effects of stray voltage by preventing the voltage from reaching the cattle. Essentially, the most effective type of isolation involves the separation of the primary and secondary neutral wires so that the stray voltage cannot flow as easily into the farmer's electrical system from the power provider's system.[48] This method may provide a safe and effective means of eliminating harmful levels of stray voltage from the farmstead.

Researchers have observed that any of these devices may effectively combat stray voltage and that the selection of the proper device may depend upon the specific situation at hand.[49] Thus, although stray voltage poses a difficult problem for dairy farmers, available corrective devices facilitate the resolution of stray voltage problems on dairy farms.

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43. *Id.*; Robert Gustafson, *Mitigation*, *in* EFFECTS OF ELECTRICAL VOLTAGE, *supra* note 8, at 4-1.

44. Gustafson, *supra* note 43, at 4-1.

45. CLOUD ET AL., *supra* note 4, at 19.

46. Gustafson, *supra* note 43, at 4-4; David W. Kammel, *Guidelines for Installing an Equipotential Plane* 1 (Univ. of Wisc.—Madison Cooperative Extension 1988).

47. *Id.*

48. CLOUD ET AL., *supra* note 4, at 20-21.

49. *Id.* Obviously, the installation of equipotential planes mandates their placement below the surface of the floor. Thus, if stray voltage occurs at problematic levels in buildings with concrete floors, this method might be costly because it would require that the old floor be torn-up and a new floor be installed. The first method perhaps is the easiest and the cheapest but might prove ineffective in eliminating the stray voltage if the stray voltage source resulted from a problem in the power provider's system. The installation of an isolation transformer would effectively eliminate most problems stemming from the power provider's system, but these devices also are costly. *See infra* note 259.

B. The Cow Reacts: Behavioral and Physiological Effects of Stray Voltage

The occurrence of stray voltage on dairy farms can precipitate numerous changes in a cow's behavior, rendering the cow more difficult to control and less-effective as a milk producer.[50] In severe cases, these behavioral changes can lead to debilitating physiological problems that negatively affect the health of the cow.[51] Researchers have identified several symptoms that evidence the possible occurrence of a stray voltage problem on the farm.

First, cattle may attempt to avoid, or may exhibit extensive nervousness upon entering, the affected area. As one scientist has noted, the essential behavioral response of an animal to an annoying stimulus is avoidance of that stimulus.[52] Unlike humans, however, cattle may not be able to avoid entirely any exposure to stray voltage because of the restrictive environment in which they live.[53] Nevertheless, cattle can demonstrate many signs that indicate a dislike for an environment. Cattle may, for example, become unusually nervous

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50. *See, e.g.*, Potomac Edison Co. v. Burdette, 551 A.2d 1276, 1277 (Md. Ct. Spec. App. 1987) (citing testimony of farmer that the behavior of his cattle changed dramatically and that the milk production of his cattle dropped upon exposure to stray voltage); Slater v. Pennsylvania Power Co., 557 A.2d 368, 369 (Pa. Super. Ct. 1989) (citing several behavioral problems in, and decreased milk production by, cattle affected by stray voltage); Fink v. Lafayette Elec. Coop., 454 N.W.2d 808 (Wis. Ct. App. 1990) (available in LEXIS, States library). Many other stray voltage cases point to similar behavioral and functional changes.

51. *See infra* note 63 and accompanying text.

Although repeated exposure to electrical shocks may change a cow's behavioral patterns and trigger a downturn in a cow's milk production and health, stray voltage is not the sole source of decreased milk production. Diseases or poor milking practices may also lead to diminished milking. *See infra* note 58.

If the dairy farmer fails to prove that stray voltage caused a decrease in milk production, or if the power provider can demonstrate that sources other than stray voltage caused a decrease in milk production, the power provider will likely prevail at trial. In fact, the plaintiff may incur difficulty in proving causation because of the esoteric nature of the problem.

For instance, in one Wisconsin case, a dairy farmer was unable to prove that stray voltage caused an injury to his dairy cattle. *Jury Rejects Stray Voltage Claims*, WIS. STATE J., Aug. 14, 1993, at 8B. In this case, the power provider successfully argued that several diseases could have caused the cattle's afflictions. *Id.* The farmer's attorney in the case conceded prior to trial that proving a power provider's responsibility for stray voltage is a difficult task. He asserted that the difficulty lies in proving "the precise instrument with which it occurred, and the mechanisms by which it was delivered. . . . There's no real clear and definitive act. What we have to do is rely on the detective work of the veterinarian." *Farmer Seeks Damages for Crippled Cows*, ST. PAUL PIONEER PRESS (St. Paul, Minn.), Aug. 4, 1993, at 3B (quoting attorney William Campbell).

52. Aneshansley & Gorewit, *supra* note 13, at 3-7; one U.S. Department of Agriculture engineer has pointed out that because modern dairy cattle are "finely tuned" by virtue of their special diets and specially controlled genetic composition, they have an enhanced susceptibility to adverse situations, such as stray voltage exposure. Secter, *supra* note 6, at 1.

53. Aneshansley & Gorewit, *supra* note 13, at 3-7, 3-8.

at milking time while in a milking parlor that houses a stray voltage problem.[54] They exhibit their nervousness by dancing or stepping around often while on the floor of the parlor stall.[55] Increased defecation or urination may accompany this nervousness.[56] Cattle may also demonstrate a reluctance to enter the parlor or a great eagerness to leave the parlor after milking.[57] Thus, the occurrence of several types of unusual behavior upon entering the parlor typifies a stray voltage problem.[58]

A cow exposed to stray voltage upon eating or drinking from metal equipment may also demonstrate behavioral traits that indicate a potential stray voltage problem. A cow that senses stray voltage while eating from a feeder may display greater reluctance to consume a normal amount of food.[59] Likewise, a cow affected by stray voltage emanating from a water cup may be less likely to drink the usual amount of water.[60]

These behavioral changes, while seemingly innocuous when viewed in isolation, may precipitate even larger problems upon their aggregation over time. First, the milk production of the affected cattle may suffer.[61] A cow may not produce as much milk as expected or may require a longer milking time to produce a normal amount of milk.[62] The alteration of a cow's behavioral pattern can eventually lead to a damaging infection such as mastitis, a bacterial infection of the mammary gland.[63] Moreover, these conditions may have a

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54. *Id.* at 3-14; *see also* Gustafson et al., *supra* note 2, at 17.

55. Gustafson et al., *supra* note 2, at 17.

56. Aneshansley & Gorewit, *supra* note 13, at 3-14.

57. *Id.*

58. The occurrence of these behavioral symptoms, however, does not automatically reveal a stray voltage problem. *Id.* Other factors may cause these behavioral effects, including the following: malfunctioning equipment; rough handling; or conditioned expectations of being chased into the milking parlor. *Id. See also* John H. Kirk, *Possible Causes of Stray Voltage-Like Signs in Dairy Cows, in* STRAY VOLTAGE SYMPOSIUM, *supra* note 29, at 62; Oakley v. Consol. Rail Corp., No. 88-CV-364, 1992 U.S. Dist. LEXIS 12142 (N.D.N.Y. Aug. 11, 1992) (upholding jury verdict against plaintiff on issue of liability in case where weight loss and decline in milk production of dairy cattle resulted from exposure to chemical pollutant on old railroad ties).

59. Aneshansley & Gorewit, supra note 13, at 3-14.

60. *Id.*

61. CLOUD ET AL., *supra* note 4, at 2.

62. *Id.*

63. *Id.* Farmers often cite mastitis as one consequence of the repeated exposure of their cattle to stray voltage. *See, e.g.*, Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349, 352 (Ind. Ct. App. 1986); ZumBerge v. Northern States Power Co., 481 N.W.2d 103, 105 (Minn. Ct. App. 1992). For a textbook example of the potentially serious physical consequences of a cow's exposure to stray voltage, see Johnson v. Steele-Waseca Coop. Elec., 469 N.W.2d 517, 518 (Minn. Ct. App. 1991) (describing the effects of stray voltage on cattle at the farm: reduced milk let-out; problems with reproduction; mastitis; a decreased appetite; nervous behavior; and a lowered resistance to disease, resulting in a loss of cattle).

concurrent effect on dairy farmers themselves. Dairy farmers may experience a heightened stress level as they spend more time managing the herd, milking the cattle, and paying veterinary bills.[64] In serious cases, stray voltage can eventually decimate the farmer's milking operation and propel the farmer into bankruptcy.[65] Thus, stray voltage may have serious effects on both the cattle themselves and the dairy farmers who must dedicate their efforts to resolving the problem.

III. HANDLING THE DISPUTES: SHOULD STRAY VOLTAGE CASES BE RESOLVED IN ADMINISTRATIVE AGENCIES OR THE COURTS?

The initial inquiry in situations where a dairy farmer wishes to seek relief from a power provider for stray voltage injuries is the proper forum in which the suit should be heard. Essentially, two primary fora exist in which these disputes can be brought. The first, and most common, forum is the court system of a state.[66] The second forum is a state's public service commission

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64. Lush, *supra* note 39, at 12; CLOUD ET AL., *supra* note 4, at 2. One Wisconsin dairy farmer's plight is detailed in Fink v. Lafayette Elec. Coop., 454 N.W.2d 808 (Wis. Ct. App. 1990) (available in LEXIS, States library).

65. Several cases illustrate the potentially devastating consequences of stray voltage exposure. In ZumBerge v. Northern States Power Co., 481 N.W.2d 103, 105 (Minn. Ct. App. 1992), the plaintiff dairy farmers had maintained a herd that, as of 1975, constituted one of the top 100 herds out of 30,000 dairy farms in the state. By 1983, seven years after the dairy farmers first noticed stray voltage-related problems with the herd, the milk production of the cattle fell below the statewide average. *Id.* In another Minnesota case, two dairy farmers claimed that stray voltage-related problems forced them to sell their herd and raise soybeans and corn. The farmers received a jury award of $405,000 for their injury and indicated that they would use the award to re-enter dairy farming. *Jurors Order Payments Over Stray Voltage*, VIDETTE MESSENGER (Porter County, Ind.), June 20, 1992, at D1. In addition to forcing farmers to leave voluntarily the dairy farming business, stray voltage problems may also compel farmers to file bankruptcy. *See, e.g.*, Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349, 352 (Ind. Ct. App. 1986) (recognizing that stray voltage ruined the plaintiff dairy farmers' entire dairy herd and forced the farmers to file bankruptcy to avoid a foreclosure sale).

The economic consequences of stray voltage may be particularly devastating for smaller dairy farm operations. Statistics reveal that dairy farms in Illinois, for instance, are decreasing in number and that larger farms are increasing their market share. *Hog, dairy farms adapt or disappear*, CHI. TRIB., Feb. 28, 1993, § 7, at 11. For example, in 1950, 147,000 dairy farms, housing one million cows, existed in Illinois. *Id.* However, in 1992, only 3,000 Illinois dairy farms remained, housing only 182,000 cattle. As a third-generation Illinois dairy farmer with 120 cattle laments: "Our overhead is killing us. . . . They'd have to triple the price that you pay at the store for us to get a decent wage." *Id.* A costly problem such as stray voltage could feasibly lower the smaller farmer's profit margin significantly, forcing the small farmer to abandon the business entirely.

66. *See, e.g.*, Zorn v. Elec. Research & Mfg. Coop., Inc., 350 N.W.2d 739 (Wis. Ct. App. 1984) (available in LEXIS, States library); ZumBerge v. Northern States Power Co., 481 N.W.2d 103 (Minn. Ct. App. 1992); Slater v. Pennsylvania Power Co., 557 A.2d 368 (Pa. Super. Ct. 1989); Kolpin v. Pioneer Power & Light Co., 453 N.W.2d 214 (Wis. Ct. App. 1990); Otte v. Dayton Power & Light Co., 523 N.E.2d 835 (Ohio 1988); G & K Dairy v. Princeton Elec. Plant Board, 781 F. Supp. 485 (W.D. Ky. 1991) (applying Kentucky law).

or public utility commission, charged with regulating a state's public utilities.[67] Initially, the type of relief sought by the farmer may, in itself, be forum-determinative.[68]

A. *Stray Voltage Suits in the Courts*

State statutes empowering public service or utility commissions often provide no avenue through which a power provider's customer can seek relief from the power provider in the form of monetary damages.[69] Consequently, a dairy farmer whose cattle are affected by stray voltage and who seeks to obtain monetary damages may be forced to bring the case in a trial court.

Power provider defendants in several stray voltage cases have argued unsuccessfully that a statutory duty of the public service or utility commission to ensure that adequate service is provided to electrical customers mandates that stray voltage cases be heard solely in an administrative agency, rather than by the courts.[70] The power provider in *Schriner v. Pennsylvania Power & Light Company*,[71] for instance, sought a determination from a Pennsylvania appellate court that the Public Utility Commission, rather than a trial court, had primary jurisdiction over a stray voltage suit.[72] In this case, the defendants contended that a state statute granted jurisdiction in stray voltage cases to the Public Utility Commission.[73] A state statute provided that the Public Utility Commission was responsible for ensuring the reasonableness, efficiency, safety, or adequacy of

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67. *See, e.g., In re* a Complaint Against Lake Region Coop. Elec. Ass'n, Docket No. E-119/C-92-318 (Minn. Pub. Utilities Comm'n 1992) (available in LEXIS, States library); West Penn Power Co. v. Pennsylvania Pub. Utility Comm'n, 478 A.2d 947 (Pa. Commw. Ct. 1984).

68. However, the legal status of the power provider, i.e., whether the provider is a public utility or an incorporated electrical cooperative, may also bear upon the forum selection process. In some states, electrical cooperatives do not fall within the jurisdiction of the state public service or public utility commission. *See infra* note 257.

69. *See, e.g.*, Garcia v. PT&T Co., No. 91558, 1980 Cal. PUC LEXIS 376, at *10-11 (Cal. Pub. Util. Comm'n Apr. 15, 1980) (recognizing that the Commission's power to award damages is limited to reparation matters only); Elkin v. Bell Telephone Co. of Pa., 420 A.2d 371, 375 (Pa. 1980) (holding that because the state legislature did not grant the state public utility commission the power to award damages, the state court system retained jurisdiction over all damage actions involving a public utility). *But see* South Eastern Ind. Nat. Gas. Co. v. Ingram, 617 N.E.2d 943, 947 (Ind. Ct. App. 1993) (discussing IND. CODE § 8-1-2-107, which allows for a person injured by a utility's violation of an administrative regulation to recover monetary damages from the utility).

70. *See* Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128 (Pa. Super. Ct. 1985); *accord* Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349 (Ind. Ct. App. 1986); Ohio v. Morris, Case No. CA-6432 (Ohio Ct. App. 1984) (available in LEXIS, States library) (determining that stray voltage damage claims belong in the court system and hinting that the Public Utility Commission's failure to adopt any regulations dealing with stray voltage helped compel this result).

71. 501 A.2d 1128 (Pa. Super. Ct. 1985).

72. *Id.* at 1129.

73. *Id.* at 1130.

the services, facilities, or rates of public utilities in the state.[74] The court inquired into whether a stray voltage suit triggered the application of this statute.[75] The court also asked whether the subject of stray voltage was so complex as to necessitate special administrative competence not possessed by a judge or jury.[76]

In holding that the Commission lacked primary jurisdiction over the case, the court articulated three bases for its decision. First, the court reasoned that a stray voltage suit did not concern the adequacy, efficiency, or safety of a utility's services, facilities, or rates but, rather, involved "traditional concepts of negligence which only tangentially address the reasonableness, adequacy, and sufficiency of the electric service being provided [by the utility]."[77] Second, the court thought that the subject of stray voltage was not so complex as to demand the special expertise of the Commission.[78] Finally, the court indicated that the inability of the Commission to award damages to an injured party would render an administrative decision wasteful, as the requested relief could not be granted even if the Commission ruled in favor of the farmer.[79] Thus, the court refused to order the resolution of the suit by the Commission. Indeed, as the *Schriner* court's holding demonstrates, several factors militate against designating a state public utility or service commission as the primary forum in which to resolve disputes over stray voltage.

B. Stray Voltage Complaints in Administrative Agencies

While a public service or utility commission may lack statutory authority to render monetary judgments against a power provider for stray voltage injuries or to consider a stray voltage complaint, at least two courts and one commission have indicated that a public service or utility commission is empowered, under a state electrical service statute, to provide some form of relief to farmers whose cattle are affected by stray voltage.

In *Wehr v. Ohio Edison Company*,[80] for instance, an Ohio appellate court upheld a trial court's dismissal of a stray voltage complaint on the grounds that the complaint should have been filed with the state public utility commission and

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74. *Id.* (citing 66 PA. CONS. STAT. ANN. § 1501 (1979)).

75. *Id.*

76. Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128, 1130 (Pa. Super. Ct. 1985).

77. *Id.* The court noted that the suit sounded in the utility's failure to warn the consumers of the stray voltage system, to allow stray voltage to escape onto the farm negligently, and to supervise the correction of the problem. *Id.*

78. *Id.*

79. *Id.*

80. No. 92 C.A. 24, 1993 WL 525562 (Ohio Ct. App. Dec. 15, 1993) (available in WESTLAW, States library).

not the court system.[81] The court in *Wehr* commented that Ohio statutory law empowers the state public utility commission to hear and decide service-related complaints against in-state utilities.[82] The court cited an Ohio Supreme Court decision in support of the proposition that a utility's failure to warn farmers of the dangers of stray voltage constitutes a tort claim actionable in the state court system.[83] However, the *Wehr* court distinguished the present case from a tort suit sounding in negligent failure to warn.[84] In the present case, the farmers' complaint did not allege a claim of failure to warn; consequently, the court concluded that this omission transformed the suit into a complaint about service actionable in the state public utility commission rather than in the courts.[85] Thus, the *Wehr* decision suggests that in Ohio, a stray voltage complaint may be actionable in the state administrative process under the authority of a state statute that enables consumers to sue their power providers for service-related complaints.

However, the viability of an administrative avenue of relief for dairy farmers rests on precarious footing in Ohio because of the unsettled position of Ohio appellate courts on the issue. Approximately a decade before the *Wehr* decision, another Ohio appellate court rejected the contention that stray voltage complaints could be resolved through the administrative process.[86] Therefore, although the most recent authority supports the proposition that a carefully worded complaint may enable a farmer to seek relief in the Ohio Public Utility Commission, this position remains tenuous at the present time.

Moreover, at least one Pennsylvania court seemed to accept the notion that a stray voltage complaint could be based on a state service statute, thereby giving credence to the argument that a utility commission serves as a proper forum in which to resolve certain disputes over stray voltage.[87] In *West Penn Power Company v. Pennsylvania Public Utility Commission*,[88] a power provider appealed a decision of the Public Utility Commission that had ordered the utility to reimburse two dairy farmers for seventy-five percent of the cost of buying and installing corrective devices designed to alleviate an on-farm stray voltage problem.[89] In an earlier ruling, a Public Utility Commission administrative law

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81. *Id.* at *2.
82. *Id.* at *1.
83. *Id.* at *2 (citing Kazmaier Super Market Inc. v. Toledo Edison Co., 61 Ohio St. 3d 147 (1991)).
84. *Wehr*, 1993 WL 525562, at *2.
85. *Id.* at *2.
86. *See supra* note 70.
87. West Penn Power Co. v. Pennsylvania Pub. Util. Comm'n, 478 A.2d 947 (Pa. Commw. Ct. 1984).
88. 478 A.2d 947 (Pa. Commw. Ct. 1984).
89. *Id.* at 948.

judge had found that the utility did not contravene its duty toward the dairy farmers, but the Public Utility Commission imposed the seventy-five percent reimbursement order after eschewing the administrative law judge's findings of law.[90] On appeal, the court held that the Public Utility Commission's inconsistent posture on the case dictated that the utility be relieved from any judgment levied against it.[91] In holding for the utility, the court noted that the Commission could sustain a complaint under this section[92] only if the utility had violated its duty and that, absent a violation, the Commission lacked the authority to require the utility to take action.[93]

The statute under which relief was sought in *West Penn Power Company* prescribed the necessary level of service owed by public utilities to their customers and the public, and the court's holding seemed to imply[94] that the court would have ordered the utility to reimburse the customers had the Public Utility Commission found that the utility contravened its duty under the statute. This implication, however, directly conflicts with the holding in *Schriner v. Pennsylvania Power & Light Company*,[95] in which another Pennsylvania court held that stray voltage did not trigger the application of Pennsylvania's electrical service statute.[96]

In addition to judicial decisions that have expressly or impliedly recognized a farmer's ability to complain to an administrative agency about stray voltage, at least one public utility commission explicitly asserted that a state service statute empowered it to consider a stray voltage complaint. The Minnesota Public Utilities Commission asserted jurisdiction over an electrical cooperative for alleged stray voltage problems incurred on dairy farms in Minnesota.[97] The Commission maintained that its jurisdiction was predicated on a Minnesota statute giving the Commission jurisdiction "over complaints about the service

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90. *Id.*

91. *Id.* at 950.

92. 66 PA. CONS. STAT. ANN. § 1501 (1979). This section states: "Every public utility shall furnish and maintain adequate, efficient, safe, and reasonable service and facilities, and shall make all such repairs, changes, alterations, substitutions, extensions, and improvements in or to such service and facilities as shall be necessary or proper for the accommodation, convenience, and safety of its patrons . . . ." *Id.*

93. West Penn Power Co. v. Pennsylvania Pub. Util. Comm'n, 478 A.2d 947 (Pa. Commw. Ct. 1984).

94. Although the court did not expressly state this proposition, its opinion focused upon the administrative law judge's decision as the rationale for its inability to award the desired relief. If the court believed that it was powerless to award this relief, it seemingly would have directly addressed this point. *See infra* note 101.

95. 501 A.2d 1128 (Pa. Super. Ct. 1985).

96. *Id.* at 1130.

97. *In re* a Complaint Against the Lake Region Coop. Elec. Ass'n, Docket No. E-119/C-92-318 (Minn. Pub. Utilities Comm'n 1992) (available in LEXIS, States library).

standards and practices of electric co-operatives."[98] The Minnesota statute defined a service as "electricity [or] the installation, removal, or repair of equipment or facilities for delivering or measuring such gas and electricity."[99] Thus, the Commission's assertion of jurisdiction rested on the notion that stray voltage involves a complaint about service. Essentially, the Minnesota Public Utilities Commission's assertion of jurisdiction conflicts with the holdings of courts in Pennsylvania, Ohio, and Indiana, all of which have held that stray voltage does not constitute a "service problem" to be remedied by a public service or utility commission.[100]

Thus, the question of whether a state service statute furnishes a foundation upon which aggrieved farmers can bring their stray voltage complaints to the public utility commission may depend upon the respective court's interpretation of whether stray voltage involves issues of "service" and seems to rest at least in part upon the type of relief sought, either prospective relief or damages for injury to the cattle.[101] Nevertheless, even absent the availability of relief in an administrative agency, a farmer aggrieved by a stray voltage problem can pursue a claim against the power provider in a trial court. Indeed, no reported stray voltage cases have denied an aggrieved farmer access to the courts, regardless of relief sought.

An examination of relevant case law on the topic generally reveals the existence of a high level of disagreement over whether stray voltage complaints may be resolved through an administrative process.[102] Several courts have indicated that stray voltage complaints fail to trigger the application of state

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98. *Id.* (citing MINN. STAT. § 216B.17, subdivision 6a. (1990)). Minnesota allows a complaint against a public utility or a cooperative to be raised before and investigated by the Public Utility Commission where the complaint alleges that a "practice, act or omission affecting or relating to the production, transmission, delivery or furnishing of . . . electricity . . . is in any respect unreasonable, insufficient or unjustly discriminatory, or that any service is inadequate . . . ." MINN. STAT § 216B.17, subdivision 1 (1990).

99. MINN. STAT. § 216B.02, subdivision 6 (1990).

100. *See supra* notes 70-79 and accompanying text.

101. The opinion in West Penn Power Co. v. Pennsylvania Pub. Util. Comm'n, 478 A.2d 947, 950 (Pa. Commw. Ct. 1984), seemed to imply that the Pennsylvania Public Utility Commission possesses the power to order reimbursement of expenses to an aggrieved party for the installation of corrective devices when appropriate. The source of power that enables the Commission to order such relief was not articulated in the case and cannot be readily discerned from an examination of Pennsylvania statues governing the Public Utility Commission. These statutes, however, do not seem to preclude the award of this type of semi-prospective, corrective relief. *See* 66 PA. CONS. STAT. ANN. §§ 331-33, 501-13 (1979 & Supp. 1992).

102. *See* Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128, 1130 (Pa. Super. Ct. 1985) (holding that a stray voltage complaint "only remotely" concerned the services provided by the power provider); Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349, 354 (Ind. Ct. App. 1986) (holding that a stray voltage case centering on products liability issues did not involve crucial questions over the sufficiency of electrical service provided).

statutes that empower a public utility or service commission to hear customers' service-related concerns.[103] However, the express language of the *Wehr*[104] court's opinion, the implications of the Pennsylvania Commonwealth Court's holding in *West Penn Power Company*,[105] and the actions of the Minnesota Public Utility Commission[106] suggest otherwise. In Pennsylvania and Minnesota, farmers have been able to institute legal proceedings in a public utility or service commission based upon the notion that stray voltage is a service problem.[107] Conversely, other courts have expressly rejected this notion, explaining that stray voltage is not a proper subject for consideration by these administrative agencies.[108] These discordant views contribute to the dissonance that exists over the problem of stray voltage and its proper resolution in the legal system.

This dissonance may have a practical effect on the farmer who wishes to initiate a proceeding against a power provider to compel that provider to install devices to mitigate stray voltage. For example, the farmer who wishes to institute a proceeding in a public utility or service commission, to avoid the expense and time required to maintain the action in court, might be dissuaded from doing so because of the possibility of a protracted legal battle over the question of whether such a commission is empowered to hear stray voltage complaints.

A statute that squarely addresses this issue would eliminate some of the confusion and obviate the need for any future legal battles over the issue; the farmer and the power company would know with certainty in which forum stray voltage complaints should be instituted. The model statute will propose that stray voltage cases should be heard exclusively in the trial-level court system of each state. The establishment of a specific, clearly delineated standard of care in the proposed statute should provide easy-to-follow guidelines to assist the juries charged with deciding the cases, thereby eliminating any need for a specialized commission to hear the cases. In addition, relegating stray voltage cases to the court system will also sidestep the question of whether stray voltage constitutes a service complaint, eliminating or rendering moot future debate over this point.

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103. *See supra* notes 70-79 and accompanying text.
104. *See supra* notes 80-99 and accompanying text.
105. 478 A.2d 947 (Pa. Commw. Ct. 1984).
106. *See supra* notes 97-100 and accompanying text.
107. *See supra* notes 87-100 and accompanying text.
108. *See supra* notes 70-79 and accompanying text.

IV. ESTABLISHING THE PROPER STANDARD OF CARE IN STRAY VOLTAGE CASES

Although various courts have phrased in slightly different terms the general standard of care that an electrical provider[109] owes to its customers, most courts agree that the applicable standard of care is either a high standard or a standard commensurate with the inherent hazardousness of providing the dangerous instrumentality of electricity to consumers.[110] Several courts have explicitly maintained that an electrical supplier's duty to exercise the highest practicable degree of care extends not only to cases in which humans are injured or killed[111] but also to cases in which property is damaged.[112] Regardless

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109. Other utilities, such as telephone companies, may not be held to the same standard of care as electrical providers in stray voltage cases. *See* Schmidt v. General Telephone Co. of Wisconsin, 407 N.W.2d 566 (Wis. Ct. App. 1987) (available in LEXIS, States library) (holding that the dangers of transmitting power over telephone lines are a fraction of those attending power transmitted over electric lines and, therefore, that a telephone company will not be held to the heightened standard of care imposed on power providers who transmit electricity).

110. Simon v. Southwestern La. Elec. Memb. Corp., 390 So. 2d 1265, 1267 (La. 1980); Temple v. McComb City Elec. Light & Power Co., 42 So. 874, 874 (Miss. 1907) (holding that electrical providers "are bound, and justly bound, to the very highest measure of skill and care in dealing with these deadly agencies."); *accord* Wells v. French Broad Elec. Memb. Corp., 315 S.E. 2d 316, 320 (N.C. Ct. App. 1984) (citing Snow v. Power Co., 256 S.E.2d 227, 231 (N.C. 1979) (holding that an electrical provider "must use a high degree of foresight and must exercise the utmost diligence consistent with the practical operation of its business")); Beck v. Carolina Power and Light Co., 291 S.E.2d 897, 900 (N.C. Ct. App. 1982) (noting that power companies must observe the "highest degree of care" to protect the public from electricity's injurious potential because the "hazards inherent in the business [of providing power] are great."); Otte v. Dayton Power and Light Co., 523 N.E.2d 835, 840 (Ohio 1988) (citing Hetrick v. Marion-Reserve Power Co., 48 N.E.2d 103 (Ohio 1943)); Kohli v. Public Util. Comm'n of Ohio, 479 N.E.2d 840 (Ohio 1985) (holding that the "highest degree of care," rather than mere reasonably prudent care, is the applicable standard of care in Ohio); Slater v. Pennsylvania Power Co., 557 A.2d 368, 370 (Pa. Super. Ct. 1989) (citing Kintner v. Claverack Rural Elec. Coop., Inc., 478 A.2d 858 (Pa. Super. Ct. 1984)); *see also* Louis Lawrence Boyle, *Electrifying Solutions for the Shocking and Disparate Treatment of Electricity Within Product Liability Law*, 93 DICK. L. REV. 851, 863 nn.82-83 (1989).

111. Many reported cases involving electricity and predicated on a theory of recovery in tort have as their subject fatal or non-fatal injuries to a person or persons as a result of electrocution or other contact with live-wire power sources. Thus, the duty owed by an electrical provider to the public is most often addressed in this context. Cases involving electricity's effects on property or animals are much less prevalent. Stray voltage and power surge cases are illustrative of the types of cases brought by electrical consumers for damage done by lower voltage electricity (i.e., electrical current not carried over high tension power lines when the incident occurred) to their property itself. *See, e.g.*, Read v. Southern Pine Elec. Power Ass'n, 515 So. 2d 916 (Miss. 1987) (indicating that home appliances burned-out as a result of irregular voltage levels entering a home from an electrical transformer). Another type of case involving property damage stems from the electrocution of farm animals by high-voltage, charged wires. *See, e.g.*, Kintner v. Claverack Rural Elec. Coop., Inc., 478 A.2d 858 (Pa. Super. Ct. 1984) (finding a heightened standard of care applicable where defendant electrical cooperative's high-voltage power lines fell on and electrocuted fourteen dairy cattle).

of the different expressions of the duty owed by electrical providers to the public and electrical customers, courts generally have refused to hold that electrical suppliers are insurers of the electricity, and thus responsible for any and all injuries or damage that occur, even absent a showing of negligence.[113]

Although the law in most states recognizes a significant duty owed by

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112. Slater v. Pennsylvania Power Co., 557 A.2d 368, 370-71 (Pa. Super. Ct. 1989). The court in *Slater* rejected the defendant utility's argument that utilities are only under a duty to exercise the highest practicable degree of care where injuries to or deaths of humans have occurred. In rejecting the utility's argument, the court noted that although the utility exclusively cited cases involving injury to people by electricity, the utility failed to cite any case that rejected a heightened standard of care in property damage actions. *Id.* at 371. Thus, the court reaffirmed that under Pennsylvania law, the high standard of care owed by an electrical provider to the public applied to cases involving property damage. *See also* Hensley v. Howell-Oregon Elec. Coop., Slip Opinion Nos. 1419, 14197 (Consolidated) (Mo. Ct. App., Sept. 19, 1986) (available in LEXIS, States library); *contra* Thompson v. St. Croix Elec. Coop., 477 N.W.2d 363 (Wis. Ct. App. 1991) (available in WESTLAW, Allstates library) (holding that a heightened standard of care did not apply in a stray voltage case because stray voltage only involved economic loss and not loss to human life or health).

113. Gunn v. Edison Sault Elec. Co., 179 N.W.2d 680, 682 (Mich. Ct. App. 1970). The *Gunn* court held that an electrical provider complies with the law upon providing such protection as to "safely guard against any contingency that is reasonably to be anticipated." *Id.* The court further noted that a plane flying into a high-tension power line did not constitute a foreseeable contingency and that the utility's "failure to anticipate and guard against a happening which would not have arisen but for exceptional or unusual circumstances is not negligence." *Id. See also* Eastern Shore Pub. Serv. Co. v. Corbett, 177 A.2d 701, 709 (Md. 1962); Read v. Southern Pine Elec. Power Ass'n, 515 So. 2d 916, 919 (Miss. 1987) (holding that electrical providers are not absolute insurers against injury); Upton v. Magnolia Elec. Power Ass'n, 511 So. 2d 939, 943 (Miss. 1987) (noting that a power provider's responsibility to the customer ends when the current reaches the customer in a safe manner to protect life and property); Hamilton v. Laclede Elec. Coop., 294 S.W.2d 11, 15 (Mo. 1956); Rogers v. Chimney Rock Pub. Power Dist., 345 N.W.2d 12, 16 (Neb. 1984) (maintaining that power providers are not insurers of the safety of people or property); *accord* Southwestern Pub. Serv. Co. v. Artesia Alfalfa Growers' Ass'n, 353 P.2d 62, 69 (N.M. 1960). *See also* Boyle, *supra* note 110, at 851, 863-64 nn.85-86 (1989). As one court has noted, a power supplier is responsible for "exercis[ing] the utmost diligence consistent with the *practical operation of its business*." Snow v. Duke Power Co., 256 S.E.2d 227, 231 (N.C. 1979) (emphasis added). This statement implies that an electrical provider simply cannot insure its services against all potential eventualities. The inherently hazardous nature of electricity, when coupled with the fact that electrical providers are, generally, for-profit entities and with the fact that the public demands a high quality product at a reasonable price, would seem to militate against utilities and cooperatives serving as insurers. One economist observed:

> [T]here often seems to be a conflict between private and public interests. The basic objective of private corporations is profit maximization, while the public interest demands adequate service at the lowest possible price. However, this conflict is more apparent than real for a public utility cannot maximize profit in the long run without providing adequate service at prices acceptable to the public, while the public in the long run cannot receive adequate service at reasonable prices except from a utility which is financially healthy.

CHARLES F. PHILLIPS, REGULATION OF PUBLIC UTILITIES 6-7 (1984).

electrical providers to their customers, several states have expounded more explicitly upon this general standard in cases involving injury caused by stray voltage. Appellate courts and at least one state agency have expressed divergent views over what they believe to be the proper standard of care to be employed in stray voltage situations.[114] Thus, the applicable standard of care owed to a farmer by a power provider with regard to stray voltage might be predicated, in part or as a whole, upon the power provider's affirmative duty to warn the customer of the presence of stray voltage,[115] responsibility to meet electrical standards appearing in safety codes or statutes,[116] or duty to observe official state public service commission regulations.[117]

A. The Electrical Provider's Duty to Warn

One argument advanced by plaintiffs in stray voltage cases is that of the power provider's responsibility to warn the farmer of the possible presence of stray voltage in structures on the farm.[118] The Supreme Court of Ohio has recognized the viability of a cause of action for the negligent failure to warn the

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114. *See infra* notes 118-60 and accompanying text.

115. Wells v. French Broad Elec. Memb. Corp., 315 S.E.2d 316 (N.C. Ct. App. 1984); Otte v. Dayton Power & Light Co., 523 N.E.2d 835 (Ohio 1988); Kohli v. Public Utilities Comm'n of Ohio, 479 N.E.2d 840 (Ohio 1985).

116. *Otte*, 523 N.E.2d at 835. *See infra* notes 132-62.

117. *See infra* notes 163-86 (describing Wisconsin's regulations). Although a state agency may adopt a set of regulations prescribing a minimum level of care that a defendant must meet in order to avoid subjecting itself to an administrative investigation, this standard need not serve as the exclusive standard in all cases. A defendant who meets a standard of care established under a regulation may still be found liable on a common law claim in court if the common law duty exceeds that established by a regulation. However, in the case of the Wisconsin regulations, the standard established by the Public Service Commission is substantial and mandates extensive action by power providers. *See infra* text accompanying notes 163-86. Thus, a Wisconsin dairy farmer would likely be unable to hold a power provider to a higher duty in court than that established under the state regulation. Theoretically, however, the possibility exists that a power provider could meet the dictates of a detailed regulatory scheme and still fall short in court. This possibility lends further support to the argument advanced in this note. A power provider should be held to a single standard of care with regard to stray voltage, rather than multiple standards.

118. *See, e.g.*, ZumBerge v. Northern States Power Co., 481 N.W.2d 103, 107 (Minn. Ct. App. 1992); Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128, 1130 (Pa. Super. Ct. 1985) (noting that plaintiffs' complaint alleged that the utility was negligent in failing to advise the farmers of corrective measures that could have eliminated the stray voltage on the farm); *see also* Public Serv. Ind., Inc.v. Nichols, 494 N.E.2d 349 (Ind. Ct. App. 1986) (holding that a farmer whose cattle were adversely affected by stray voltage could recover from a utility based, in part, on a theory of failure to warn within a products liability context); Gorsuch v. Black Hills Elec. Coop., 1989 WL 389040 (LRP Jury) (Custer County, S.D. Cir. Ct. 1989) (rendering a jury verdict for the power provider on the issue of the provider's failure to warn the dairy farmer of the dangers of stray voltage).

farmer of the possible presence of stray voltage on the farmstead[119] and has urged power providers to warn their farm customers that stray voltage might affect their cattle.[120] Moreover, the Indiana Court of Appeals has recognized that, within the products liability context, power providers may be held liable for the negligent failure to warn their customers of the dangers of stray voltage.[121] In cases dealing with other injurious aspects of electricity, some courts have imposed a duty to warn upon electrical providers where the type of injury that has occurred would be the type of injury foreseeable by the electrical provider under the circumstances.[122]

Although a farmer might proceed with a stray voltage case sounding in negligent failure to warn, one court has contended, in the context of a products liability suit, that the failure to warn theory of recovery is inapposite in stray voltage cases.[123] In *Wells v. French Broad Electric Membership Cooperative*,[124] the Court of Appeals of North Carolina held that an official of an electrical provider was not under a duty to warn a dairy farmer of the possible injurious effect of stray voltage because the official lacked actual and constructive knowledge of the fact that the farmer's dairy herd suffered mastitis as the result of stray voltage.[125] The court noted that the official lacked actual knowledge of the possible stray voltage problem because he apparently "was not aware of the possibility that stray voltage caused the mastitis until he was notified by plaintiff. . . ."[126]

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119. Otte v. Dayton Power & Light Co., 523 N.E.2d 835 (Ohio 1988) (reinstating a jury verdict that held electrical providers 51% at fault, under a theory of failure to warn, for stray voltage that harmed a cattle herd).

120. Kohli v. Public Utilities Comm'n of Ohio, 479 N.E.2d 840 (Ohio 1985) (affirming Public Utilities Commission decision to absolve electric utility of liability for stray voltage-related injuries to cattle).

121. *Nichols*, 494 N.E.2d at 349. Note that the availability of this cause of action in the products liability arena depends on whether the court recognizes electricity as a product. *See infra* notes 187-244 and accompanying text for an extensive discussion of this issue. To allow for an injured party to recover in a products liability suit sounding in failure to warn, the manufacturer of the product—here the electrical provider—must have knowledge of the need for a warning and must have failed to issue a clear and understandable warning. W. PAGE KEETON ET AL., PROSSER AND KEETON ON TORTS 685-86 (5th ed. 1984).

122. *See, e.g.*, Burk v. Missouri Power & Light Co., 420 S.W.2d 274, 277 (Mo. 1967). The *Burk* court, addressing a utility's failure to warn of the danger of high-voltage power lines, indicated that the failure of a power provider to warn is negligent only when "under all the facts and circumstances in evidence, defendant, in the exercise of the highest degree of care, should reasonably have anticipated that someone lawfully in the area was likely to be injured as a result of contact with those high voltage wires." *Id.* at 277. *See also* Wassilie v. Alaska Village Elec. Coop., Inc., 816 P.2d 158 (Alaska 1991) (available in LEXIS, States library).

123. Wells v. French Broad Elec. Memb. Coop., 315 S.E.2d 316, 320 (N.C. Ct. App. 1984).

124. 315 S.E.2d 316 (N.C. Ct. App. 1984).

125. *Id.*

126. *Id.*

Moreover, the *Wells* court pointed to the record and reasoned that the power company was under no duty to warn the farmer of "the potential deleterious effects of stray voltage on dairy herds" because "scientific discovery of this theory is recent, research still ongoing, and findings on this subject inconclusive."[127] During the early years of stray voltage research, this argument would have been a strong one because of the paucity of information available on the stray voltage dilemma.[128] The contemporary plausibility of this argument, however, is questionable in light of the proliferation of scientific research on stray voltage during the last decade.[129]

As one legal authority on the subject of stray voltage pointed out, the trend among courts hearing stray voltage suits is to find that an electrical provider cannot escape liability merely by professing ignorance of the problem.[130] Moreover, the *Wells* court also noted that North Carolina law subjects a power provider to liability only where "there is no reason to believe that users will realize the dangerous condition of the product."[131] Therefore, power

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127. *Id.*

128. Although stray voltage has been known to exist since the mid-twentieth century, the problem has only garnered wide exposure in the last decade. *See* Appleman, *supra* note 15, at 1-1.

129. *See supra* notes 1-64. As a pioneer in the field of stray voltage has asserted: "Today, stray voltage/current is a recognized phenomenon. The theoretical basis for stray voltage/current problems is understood, sources can be identified, and cost-effective solutions exist." Appleman, *supra* note 15, at 1-1. However, the same commentator also offered a caveat about the subject:

> [I]t is important to realize that the currents required for perception, behavioral change, or psychological effects to occur are widely variable. Furthermore, symptoms associated with stray voltage/current problems are not unique and many factors other than stray voltage/current can cause similar behavior, health, and/or production problems.

Id.

130. Washington D.C. attorney Christine Ryan, *quoted in No Ducking Stray Voltage*, RURAL ELECTRIFICATION MAG., June 1990, at 15.

131. Wells v. French Broad Elec. Memb. Corp., 315 S.E.2d 316, 320 (N.C. Ct. App. 1984) (citing Stegall v. Oil Co., 133 S.E.2d 138, 142 (N.C. 1963)). The failure to warn of obvious dangers is most often addressed in the products liability context. As one scholar has noted:

> It is clear that there should be no liability for failing to warn someone of a risk or hazard which he appreciated to the same extent as a warning would have provided . . . . [C]ourts have usually meant by obvious danger a condition that would ordinarily be seen and the danger of which would ordinarily be appreciated by those who would be expected to use the product.

KEETON ET AL., *supra* note 121, at 686-87.

This concept presents an interesting question for courts in determining liability for negligent failure to warn. Power providers have undoubtedly enhanced their knowledge of the stray voltage problem in recent years, as demonstrated through the occurrence of various seminars and conferences aimed at educating power company employees of the problem and through trade journal articles focusing on the subject. *See, e.g.*, Folger & Martens, *supra* note 2, at 52-57. However, dairy farmers, too, have developed a greater appreciation for and understanding of the complexities inherent in the stray voltage dilemma. Dr. Appleman noted that *Hoard's Dairyman*, a popular trade magazine, "published at least 12 articles, notes or references related to the subject between 1980 and

providers may be required to warn their dairy farm customers of the possibility of harmful levels of stray voltage on the farm in order to escape liability for the negligent failure to warn. In addition to the requirement of a warning to farmers, several jurisdictions have adopted other means of establishing the proper standard of care in stray voltage cases, including compliance with safety standards and codes or compliance with specific requirements established by a regulatory order.

B. Safety Standards and Codes Establishing the Requisite Standard of Care

The furnishing of electricity in a manner that is safe, effective, and efficient, as well as profitable to the power company, demands a Herculean effort. The sheer magnitude of the amount of electricity that must be generated to meet the needs of customers, when coupled with the technicalities inherent in the generation and transmission of electricity from the power plant to the farmstead, render the electrical process a detailed and involved one.

Although the system of providing electricity can be explained as a circuit in which electrical current travels to the farm from the power plant and then back to the power plant,[132] the various technical equipment and handling requirements are expressed as standards in guides known as safety codes. These standardized codes play a crucial role in the stray voltage controversy because they provide reliable indicia of the customary procedures used nationally in the treatment of electricity. The reliability and efficacy of these codes are exemplified by their adoption into law by state legislatures.[133]

These codes can have a significant effect on the resolution of stray voltage cases in certain courts. The Supreme Court of Ohio, for example, pointed to these standardized codes when determining whether a power provider was liable for stray voltage that harmed cattle on the consumers' farms.[134] In general, courts that have examined the codes in other types of cases involving electrical injury have placed disparate value on the weight to be accorded to these

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1983." Appleman, *supra* note 15, at 1-2. These early articles have been supplemented extensively with a plethora of information on the subject in recent years, including information readily available from county extension services, universities, and various trade organizations. *See, e.g.*, CLOUD ET AL., *supra* note 4; Gustafson et al., *supra* note 2, at 4-15. In addition, the subject has received exposure in the popular media—*see, e.g.*, *60 Minutes*, *supra* note 6.

132. *See supra* note 29.

133. *See, e.g.*, ALASKA STAT. § 18.60.580 (1991) (adopting into law the National Electrical Safety Code in its entirety); MONT. CODE ANN. § 69-4-201 (1992) (adopting into law the *National Electrical Safety Code's* provisions on construction of power facilities and devices). IOWA ADMIN. CODE r. 250-25.2 & -25.2(1) (establishing the *National Electrical Safety Code* as the minimum standard for constructing, operating and maintaining electric transmission lines).

134. *See infra* notes 143-57 and accompanying text.

standards in establishing a utility's negligence.[135]

Two primary national safety codes that shed light on the stray voltage controversy are the *National Electrical Safety Code*[136] and the *National Electrical Code.*[137] Each of these codes is published on an annual basis and represents an adopted compilation of the prevailing standards in two respective areas. The *National Electrical Safety Code*, published by the Institute of Electrical and Electronics Engineers, provides the safety standards to be observed in constructing, maintaining, and handling electrical equipment, lines, and devices on equipment owned and operated by the power provider, on the

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135. Several cases stand for the proposition that an electrical supplier's mere compliance with the *National Electrical Safety Code* does not automatically relieve the supplier of negligence: Olinde v. Louisiana, 391 So. 2d 1243, 1246 (La. Ct. App. 1980) (holding that the foreseeability of the injury and other circumstances surrounding the injury must be examined even if the applicable code provisions are properly observed); Washburn v. Grundy Elec. Coop., 804 S.W.2d 424 (Mo. Ct. App. 1991) (holding that mere compliance with a standard code, such as the *National Electrical Safety Code*, does not necessarily preclude a finding of a breach of duty by the power provider); Shell Oil Co. v. Songer, 710 S.W.2d 615 (Tx. Ct. App. 1986) (holding that since the *National Electrical Safety Code* had not been enacted as a law or government regulation, its provisions were admissible only to demonstrate industry custom, provided that the proponent of the Code's admissibility initially established that the Code's rules were generally observed in the industry); Ruhs v. Pacific Power & Light Co., 671 F.2d 1268 (10th Cir. 1982) (reasoning that observance of the *National Electrical Safety Code* evidences proper conduct under a common law reasonableness standard if such observance is established as customary in the industry); *cf.* Folks v. Kansas Power and Light Co., 755 P.2d 1319 (Kan. 1988) (holding that compliance with the *National Electrical Safety Code*—or any standard imposed legislatively, administratively, or by an industry—will not preclude a finding of negligence where the circumstances dictate that greater care is needed); *cf.* Burk v. Missouri Power & Light Co., 420 S.W.2d 274 (Mo. 1967) (noting that the *National Electrical Safety Code* establishes minimum standards but not a complete duty); Johnson v. Interstate Power Co., 481 N.W.2d 310 (Iowa 1992) (maintaining that a violation of the *National Electrical Safety Code* is not negligence per se but is evidence of negligence); *accord* Arkansas Valley Elec. Coop. Corp. v. Davis, 800 S.W.2d 420 (Ark. 1990); *cf.* Barmeyer v. Montana Power Co., 657 P.2d 594, 602 (Mont. 1983) (holding that a violation of those provisions of the *National Electrical Safety Code* incorporated into law under state statute is negligence per se and that a violation of any other provision is evidence of negligence); *accord* Telecky v. Yampa Valley Elec. Ass'n, Inc., 837 P.2d 253, 254 (Colo. Ct. App. 1992). *See also* Taplin Farms v. Ryder Sales & Serv., Inc. 451 N.W.2d 804 (Wis. Ct. App. 1989) (unpublished opinion available on WESTLAW, Allstates file). *See generally* Daniel E. Feld, *Annotation, Admissibility in Evidence, on Issue of Negligence, of Codes or Standards of Safety Issued or Sponsored by Governmental Body or by Voluntary Association*, 58 A.L.R.3D 148 (1974 & Supp. 1993) (presenting and summarizing cases that center on the evidentiary admissibility of safety codes, such as the *National Electrical Safety Code* and the *National Electrical Code*).

136. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC., NATIONAL ELECTRICAL SAFETY CODE (1993 ed.).

137. NATIONAL FIRE PROTECTION ASSOCIATION, INC., NATIONAL ELECTRICAL CODE (1993 ed.).

power provider's side of the electrical distribution system.[138] The *National Electrical Code*, published by the National Fire Protection Association, provides safety standards to be observed in installing and maintaining the consumer's electrical equipment and conductors connecting to transmission facilities of the electrical providers.[139]

Neither the *National Electrical Safety Code* nor the *National Electrical Code* addresses explicitly the phenomena of stray voltage itself. Nevertheless, the *National Electrical Safety Code* deals extensively with effective grounding and electrical safety techniques, such as the isolation of the farm and power provider's neutral wires.[140] Effective grounding, while possibly costly, may serve to reduce, if not eliminate, harmful stray voltage emanating from the electrical provider's system.[141] In apparent recognition of the expense and difficulty involved in isolation of these wires, the *National Electric Safety Code* has forewarned involved parties that "[c]ooperation of all . . . utilities, customers of these utilities, and others may be necessary to obtain effective

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138. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. *supra* note 136, at 1. The Code presents as its purpose and scope the following: "The purpose of these rules is the practical safeguarding of persons during the installation, operation, or maintenance of electric supply and communication lines and associated equipment . . . . employed by a public or private electric supply . . . or similar utility in the exercise of its function of a utility." *Id.* The Code prescribes that "All electric supply and communication lines and equipment shall be designed, constructed, operated and maintained to meet the requirements of these rules." *Id.*

139. NATIONAL FIRE PROTECTION ASSOCIATION, INC., *supra* note 137, at 1. This Code presents as its purpose and scope the following:

> The purpose of this Code is the practical safeguarding of persons and property from hazards arising from the use of electricity . . . [and] contains provisions considered necessary for safety. Compliance therewith and proper maintenance will result in an installation essentially free from hazard but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

Id.

The Code indicates that its scope is limited to that of electrical equipment not under control of a power provider. As such, the Code indicates that it does not cover:

> (5) Installations under the exclusive control of electric utilities for the purpose of communications or metering; or for the generation, control, transformation, transmission, and distribution of electrical energy located in buildings used exclusively by utilities for such purposes or located outdoors on property owned or leased by the utility or on public highways, streets, roads, etc., or outdoors by established rights on private property.

Id. at 2.

Moreover, an explanatory note provides, in simplified language, that the Code is intended to cover "all premises wiring or wiring other than utility-owned metering equipment, on the load side of the service point of buildings, structures, or any other premises not owned or leased by the utility." *Id.* at 2.

140. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC., *supra* note 136, at 17-27, especially 26-27.

141. *See supra* note 44 and accompanying text.

isolation between primary and secondary neutrals."[142]

The primary stray voltage case that addresses the power provider's duty to observe these national safety codes is *Otte v. Dayton Power & Light Company*,[143] decided by the Supreme Court of Ohio in 1988. In *Otte*, several dairy farmers sued an electric utility for damage caused to their cattle by stray voltage.[144] The farmers alleged that their cattle suffered several, typical symptoms of exposure to stray voltage, including reduced milk production, mastitis, dancing and kicking in the milking parlor, skittish behavior when entering the parlor, and urinating and vomiting in the parlor.[145] The court noted that the cattle were apparently affected by the voltage when contacting such grounded electrical devices as the milking equipment in the barn.[146]

The plaintiffs admitted that the stray voltage emanated from the wiring on their side of the electrical system, and not from the utility's equipment.[147] The court held that the utility owed no duty to inspect or repair the farmers' distribution systems in a situation where stray voltage "backed up onto the Ottes' wires."[148] The court reasoned that the mere "fact that the Ottes' wires offered a low resistance path for the unused voltage to escape is hardly negligence on the part of [Dayton Power and Light]."[149]

In determining that the utility owed no duty to inspect or repair its customer's equipment for defects or problematic areas, the court reasoned that its "consistent" posture had been that a utility must exercise "the highest degree of care in its business of delivering electricity to its sundry customers."[150] The court defined the "highest degree of care" to be the utility's compliance with the *National Electric Safety Code* and maintained that, in the present case,

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142. INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC., *supra* note 136, at 27.

143. Otte v. Dayton Power & Light Co., 523 N.E.2d 835 (Ohio 1988).

144. *Id.* at 837. The farmers advanced several different causes of action in their complaint including: negligence, failure to warn, breach of contract, strict liability in tort, and violation of a statutory duty mandating that adequate service be provided to utility customers. *Id.* The level of stray voltage entering the milking parlor in this case was less than three volts. *Id.* at 836.

145. *Id.* The combination of these various symptoms evidences a classic, textbook case of stray voltage exposure. *See supra* notes 50-60.

146. Otte v. Dayton Power & Light Co., 523 N.E.2d 835, 836 (Ohio 1988).

147. *Id.* The plaintiffs admitted "that there was no evidence of any defect such as loose connectors, bad resistors, bad insulators or any other conditions in DP & L's [i.e., the defendant's] transmission lines." *Id.*

148. *Id.*

149. *Id.*

150. Otte v. Dayton Power & Light Co., 523 N.E. 2d 835, 836 (Ohio 1988). Note that this degree of care is required in many states. *See supra* note 110.

the utility met all of the standards in the code.[151] The court pointed out that a utility could not feasibly control and ensure the proper functioning of the consumer's equipment as would be necessary to prevent stray voltage.[152] The *Otte* court's position is reflected in the opinions of several other courts that have considered the question of a power provider's responsibility for inspecting or repairing a customer's electrical system.[153] Thus, because the problem emanated from the farmer's side of the system, the court refused to find the utility negligent for failing to inspect or repair the faulty equipment and further refused to impose an affirmative duty on the utility to alleviate the problem.[154]

Although the court rejected any notion of a duty predicated on inspection and repair of customer's facilities, the court explained that a power provider had a duty to inform its customers of the requisite *National Electric Code* standards.[155] The court cited the Illinois Supreme Court's opinion in *Elgin Airport Inn, Inc. v. Commonwealth Edison Co.*[156] in support of the proposition that while a power provider cannot itself control its customers' equipment, it can

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151. *Id.* at 840. An appellate-level Ohio court has suggested that the Ohio Supreme Court's opinion in *Otte* should be limited to the court's decision that strict liability in tort cannot be advanced against a public utility. Brauning v. Cincinnati Gas & Elec. Co., 560 N.E.2d 811 (Ohio Ct. App. 1989). The *Brauning* court has contended that compliance with the *National Electric Safety Code*, alone, is "not dispositive" of the question of whether an electrical provider has breached its duty to its customers. *Id.* Because the appeal of the *Brauning* case to the Ohio Supreme Court was dismissed *sua sponte*, the Ohio Supreme Court did not, and apparently has not, reinforced or clarified its holding in *Otte*. *See* Fortman v. Dayton Power & Light Co., 609 N.E.2d 1296 (Ohio Ct. App. 1992) (hinting that the current state of the law in Ohio is unclear).

152. *Otte*, 523 N.E.2d at 840. The court quoted from the Illinois Supreme Court's opinion in Elgin Airport Inn, Inc. v. Commonwealth Edison Co., 432 N.E.2d 259, 261 (Ill. 1982). In *Elgin*, the court stated that a power provider "cannot, either practically or legally, control the details of what appliances with what protective devices its customers are plugging in, or vary its rates accordingly . . . ." *Id.*

153. *See, e.g.*, Naki v. Hawaiian Elec. Co. Ltd., 442 P.2d 55 (Haw. 1968). The *Naki* court observed: "The burden imposed on the company if it were required to inspect every customer's privately owned wires and appliances would impair substantially the company's ability to perform its vital function. It might well force the company to discontinue serving private residences." *Id.* at 58-59.

154. Otte v. Dayton Power & Light Co., 523 N.E.2d 835, 841 (Ohio 1988). The court, however, upheld the jury's verdict that found the utility liable for failing to warn the farmers of the problem; the court indicated that the failure to warn claim constituted "the only possible tort we can posit." *Id.* at 840. Indeed, juries have refused to award damages to dairy farmers whose own actions or equipment, rather than a power provider's, caused a stray voltage problem. *See, e.g.*, Van Alst v. East Central Elec., No. C3-93-977, 1994 Minn. App. LEXIS 10 (Minn. Ct. App. Jan. 4, 1994) (upholding jury verdict that found dairy farmers 80% liable and power provider 15% liable for stray voltage injury to dairy cattle); *Farmers Denied Stray Voltage*, CAP. TIMES (Madison, Wis.), Jan. 23, 1993, at 3A (detailing jury verdict against dairy farmers who sought relief from their power provider).

155. *Otte*, 523 N.E.2d at 840-41.

156. 432 N.E.2d 259 (Ill. 1982).

"insist on compliance with general standards like the national electric code, which will inevitably lag behind the state of the art."[157]

A Wisconsin court in the context of a stray voltage case, *Taplin Farms, Inc. v. Ryder Sales and Service, Inc.*,[158] adopted a somewhat different perspective on the relationship between a power provider's compliance with electrical code provisions and the proper standard of care in stray voltage cases.[159] The court in *Taplin* suggested, *sua sponte*, that even if electrical code provisions[160] were to be considered safety statutes, a power provider's adherence to such a statute would not automatically absolve the provider of any liability for a stray voltage injury.[161] The court maintained that the enactment of safety statutes did not eliminate the standard of care required under common law negligence where "a reasonable man would have taken precautions."[162] Thus, this opinion implied that compliance with applicable electrical code provisions would not necessarily relieve the power provider of liability in stray voltage cases, even upon the enactment of these provisions into law.

As these cases demonstrate, compliance with the necessary electrical code provisions might constitute fulfillment of the duty owed by a power provider to the farmer-customer or might simply serve as one indication that a power provider has conducted itself with the proper degree of care. Again, the weight to be accorded to compliance with electrical code provisions represents yet another issue lacking uniform resolution by state court systems. This lack of uniformity evidences an especially troublesome irony in light of the stated intent behind these codes—that is, to present a safe, standardized, and uniform approach toward the maintenance of electrical devices and facilities.

C. A Standard of Care Imposed by Administrative Regulation

Although reported decisions evidence disagreement over the specific duty owed by a power provider to a farmer in stray voltage cases, one state has adopted a mandate that leaves no doubt as to at least a minimum standard of care to which a utility must conform. The state of Wisconsin, through two administrative regulations, has established a standard of care to be observed by

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157. *Otte*, 523 N.E.2d at 841 (citing Elgin v. Airport Inn, Inc. v. Commonwealth Edison Co., 432 N.E.2d 259, 261 (Ill. 1982)).

158. 451 N.W.2d 804 (Wis. Ct. App. 1989) (available in LEXIS, States library).

159. *Id.*

160. The court was probably referring to the *National Electrical Safety Code* and the *Wisconsin State Electrical Code*, which governed all electrical work performed on new or remodeled agricultural facilities in the state of Wisconsin. Kammel, *supra* note 46.

161. Taplin Farms v. Ryder Sales & Serv., Inc., 451 N.W.2d 804 (Wis. Ct. App. 1989) (available in LEXIS, States library).

162. *Id.* (citing Kemp v. Wisconsin Elec. Power Co., 172 N.W.2d 161, 164-65 (Wis. 1969)).

a utility toward dairy farmers within that state.[163] The Wisconsin Public Service Commission, in watershed orders issued in 1989[164] and 1990,[165] established an exacting standard of care that a utility under its jurisdiction[166] must observe before and after stray voltage affects a dairy farmer's operation.[167]

In 1989, the first of two Public Service Commission regulations set forth the requirements to be observed by Wisconsin public utilities in recognizing and correcting stray voltage problems on dairy farms.[168] The regulation contained rather detailed and intensive findings of fact and a set of obligations to be observed regarding stray voltage.[169] The 1989 order required each public utility to begin or to continue to implement the techniques listed in the regulation in an effort to eliminate stray voltage from dairy farms throughout the state.[170] The Commission, in its findings of fact, enumerated several methods of attacking the problem. The Commission suggested that the proper "planning, installation, operation and maintenance of both the electric utility's and the farmer's electrical systems and equipment" served as the most effective means of eliminating stray voltage from the farmstead.[171] The Commission suggested further that such devices as neutral isolation, equipotential planes, and electronic grounding systems served as effective means of combating the problem, until the faulty electrical system itself could be replaced or upgraded.[172]

The Commission's 1989 regulation established a "level of concern" that, when exceeded, would compel the initiation of mitigative or corrective action by

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163. *See infra* notes 164-65.

164. PUBLIC SERVICE COMMISSION OF WISCONSIN, INVESTIGATION ON THE COMMISSION'S OWN MOTION INTO THE PRACTICES, POLICIES AND PROCEDURES CONCERNING STRAY VOLTAGE FOR ELECTRIC DISTRIBUTION UTILITIES IN WISCONSIN (1989) [hereinafter 1989 WISCONSIN INVESTIGATION].

165. PUBLIC SERVICE COMMISSION OF WISCONSIN, INVESTIGATION ON THE COMMISSION'S OWN MOTION INTO THE PRACTICES, POLICIES AND PROCEDURES CONCERNING STRAY VOLTAGE FOR ELECTRIC DISTRIBUTION UTILITIES IN WISCONSIN (1990) [hereinafter 1990 WISCONSIN INVESTIGATION].

166. The Wisconsin order only applied to utilities under the jurisdiction of the Public Service Commission. 1990 WISCONSIN INVESTIGATION, *supra* note 165, at 11. Thus, electrical cooperatives were excluded from the ambit of the order. *Id.* at 1. In Wisconsin, the term "public utility" excludes "a cooperative association organized under ch. 185 for the purpose or producing or furnishing heat, light, power or water to its members only." WIS. STAT. ANN. § 196.01 (West 1992).

167. 1990 WISCONSIN INVESTIGATION, *supra* note 165.

168. *Id.*

169. 1989 WISCONSIN INVESTIGATION, *supra* note 164.

170. *Id.* at *43-*45.

171. *Id.* at *42.

172. *Id.*

the utility.[173] The Commission maintained that a utility's duty to alleviate the stray voltage problem arose when a cow experienced "production or behavioral problems" and the voltage level exceeded one milliampere in the area contacted by the cow.[174]

Furthermore, the Commission's 1989 order required Wisconsin public utilities to initiate or to continue to effectuate the methods of combating stray voltage promulgated in the regulation. In addition, the order explicitly directed each public utility to submit to the Commission, in written form, its tariffs, plans, and policy statements on the manner in which the utility planned to combat the problem.[175] In addition, within the regulation's findings of fact section, but not integrated into the order itself, the Commission recognized the importance of educating the farmer on stray voltage sources, effects, and solutions.[176] Consequently, the Commission encouraged the utilities to work with it to develop a uniform handout that explained clearly and understandably stray voltage and its solutions.[177] Likewise, in its findings of fact, the Commission stressed the importance of a utility's responding to the farmer's stray voltage complaints and communicating effectively with the farmer to solve stray voltage problems.[178]

Although this initial order of 1989 established a series of requirements that utilities under the Commission's jurisdiction were to follow, another stringent order was soon imposed on the utilities. In 1990, the Commission issued this second regulation that established, in an even more strongly worded order, the ultimate duty of a utility to solve stray voltage problems.[179] In the findings of fact of the 1990 order, the Commission reasserted[180] that utilities were bound to ensure that stray voltage levels on dairy farms did not exceed one milliampere. The Commission pronounced that its figure of one milliampere

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173. *Id.* at *41. This level of concern later served as the focus of the Commission's 1990 investigation.

174. *Id.* One milliampere is equivalent to nearly one-half volt. *Wisconsin Makes Utilities Responsible for Stray Voltage Affecting Cows*, ELECTRIC UTILITY WEEK, Oct. 1, 1990, at 16; *Straight Answers to Your Questions About Stray Voltage* (Wisconsin Power & Light Co. brochure).

175. 1989 WISCONSIN INVESTIGATION, *supra* note 164, at *41-43. These policy-oriented documents were to include such information as the following: screening and diagnostic procedures; plans to rebuild or replace three-phase open delta electrical wiring methods; rural tree trimming policies; grounding procedures; visual and hands-on inspection procedures of rural electrical systems; and policies on neutral isolation. *Id.*

176. 1989 WISCONSIN INVESTIGATION, *supra* note 164, at *34-35.

177. *Id.* at *35.

178. *Id.* at *34-35. To more effectively facilitate this communication, the Commission urged the utilities to provide to their customers any diagnostic test results obtained from testing conducted by utility technicians. *Id.* at *34.

179. 1990 WISCONSIN INVESTIGATION, *supra* note 165.

180. Its assertion first appeared in the Ultimate Findings of Fact of the 1989 regulation.

was a rigid requirement: "If the utility system is causing stray voltage in the cow contact area greater than 1.0 milliampere, it is not providing adequate service to that customer."[181]

One Wisconsin utility official has contended that Wisconsin's dairy farmers should be viewed as "special needs" customers who should be required to install special equipment to ensure that their electrical service is uninterrupted and adequate.[182] However, the explicit wording of the Public Service Commission's 1990 order rejects this contention.[183] The 1990 order states: "The Commission does not view the dairy farm customers in need of neutral isolation service because of off-farm utility conditions as 'special needs' customers. . . . Providing a system that does not cause stray voltage problems to the customer is to be considered basic service, not special needs."[184]

In addition to prescribing the level at which the utility must act to correct the problem, the 1990 order also indicated that the utility, and not the dairy farmer, must pay any cost attending the installation of corrective devices.[185] The order also established that if circumstances necessitated the utility's installing an on-farm device to mitigate the problem, the utility would be responsible for maintaining the device.[186] Thus, this order, when coupled with its 1989 counterpart, established a firm standard mandating a prescribed course of conduct for a public utility prior to and after the occurrence of any stray voltage problem by a Wisconsin dairy farmer.

Undoubtedly, courts and administrative agencies differ in their perspectives on the proper duty owed by the power provider to the dairy farmer whose cattle suffer stray voltage-related injuries. This inconsistency is not conducive to the resolution of an inherently technical problem such as stray voltage. Indeed, the standard of care question demands uniformity, because the technicalities inherent in stray voltage preclude an easy determination of a power provider's duty. The determination of the proper duty owed by a power provider to a farmer should not be left to caprice or to an entirely subjective determination by a fact finder within each state and, ideally, should not differ completely from state to state. The adoption by states of a uniform standard would facilitate the resolution of

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181. 1990 WISCONSIN INVESTIGATION, *supra* note 165.

182. *Wisconsin Makes Utilities Responsible for Stray Voltage Affecting Cows*, *supra* note 174. The official analogized dairy farmers with computer companies that needed to install special equipment to ensure the proper supply of power. *Id.*

183. 1990 WISCONSIN INVESTIGATION, *supra* note 165, at 3, 9.

184. *Id.*

185. *Id.* at 6, 10.

186. *Id.* The order also allows the utility to include the costs of installation in the rate base. *Id.* Thus, the cost of correction or mitigation of the problem indirectly affects all customers of the utility.

stray voltage cases, eliminating the need for the farmer and power provider to litigate the issue fully and with enormous expense.

Further, standardization would enhance the efficiency of the courts in attempting to resolve stray voltage cases, as judges could avoid tying-up their courtrooms with long and costly litigation on the issue. Cases could be decided consistently and with greater guidance for juries charged with the determination of whether a power provider negligently allowed stray voltage to affect the herd. Predictability of result would likely follow, as farmers and power providers would no longer have to rely on the uncertainty of a jury determination regarding the standard of care to be employed by power providers on dairy farms. A stray voltage statute would standardize the law on the subject within a state. In addition to this benefit, a uniform statutory standard would also serve to equalize the law among the various states, resulting in a uniform, consistent approach nationwide. The proposed statute formulates a uniform standard that requires appropriate warnings and inspections, designed to educate farmers about the problem and to force power providers, as well as dairy farmers themselves, to take corrective action before the problems breed litigation.

V. STRAY VOLTAGE UNDER STRICT PRODUCTS LIABILITY LAW

Perhaps the largest amount of discordance on the topic of stray voltage exists in the varying opinions on the treatment of stray voltage within section 402A of the *Restatement (Second) of Torts*.[187] Adopted in 1964, this section of the *Restatement* allows a party injured by a defective product to maintain a cause of action in strict liability against the manufacturer where the following prongs are met: first, a product must exist in a defective condition unreasonably dangerous to the person or property of the user or consumer;[188] second, the product must have been sold to the customer;[189] third, the seller of the product must be engaged in the business of selling the product;[190] and finally, the consumer must obtain the product in a condition unaltered substantially from its condition at the time of its sale.[191]

A. Refusing to Allow Stray Voltage Suits Sounding in Strict Products Liability

Courts that have refused to allow a cause of action against a power provider under section 402A in the context of a stray voltage case have done so because they have perceived difficulties in recognizing electricity as a product or in

187. *See infra* notes 192-254 and accompanying text.
188. RESTATEMENT (SECOND) OF TORTS § 402A(1) (1965).
189. *Id.*
190. *Id.* § 402A(1)(a).
191. *Id.* § 402A(1)(b).

recognizing that stray voltage itself can serve as a salable product. First, a primary theory under which courts have denied claims under section 402A is that electricity is a service and not a product.[192] For instance, in *G & K Dairy v. Princeton Electric Plant Board*,[193] a federal court, interpreting Kentucky law, held that a strict products liability action could not be maintained by Kentucky dairy farmers in a stray voltage case because electricity was a service and not a product.[194] In making its determination, the court examined a Kentucky statute governing the state's public utilities and state public service commission regulations in an attempt to discern whether the state considered electricity a product or a service.[195] The court noted that the statute defined a "service" as "including any practice relating to the service of any utility, including, the voltage of electricity."[196] The court also maintained that administrative regulations referred "consistently" to a utility's furnishing of electricity as a service.[197] In addition, the court contended that the utility's status as a recipient of electricity from the Tennessee Valley Authority, rather than a generator of its own electricity, militated in favor of holding that the utility's furnishing of power was a service rather than a product.[198]

Similarly, in *Otte v. Dayton Power & Light Company*,[199] the Supreme Court of Ohio discussed extensively the reasons for its finding that electricity was a service rather than a product.[200] The court branded the question of the nature of electricity a "perplexing" one.[201] In refusing to allow recovery

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192. Zoller v. Niagara Mohawk Power Corp., 525 N.Y.S.2d 364, 366 (N.Y. App. Div. 1988) (citing Farina v. Niagara Mohawk Power Corp., 438 N.Y.S.2d 645, 646-47 (N.Y. App. Div. 1981)); Otte v. Dayton Power & Light Co., 523 N.E.2d 835 (Ohio 1988); G & K Dairy v. Princeton Elec. Plant Bd., 781 F. Supp. 485 (W.D. Ky. 1991) (applying Kentucky law).

193. 781 F. Supp. 485, 489 (W.D. Ky. 1991) (applying Kentucky law).

194. *Id.* at 489.

195. *Id.* (citing KY. REV. STAT. ANN. § 278.010(11) (Baldwin 1989)).

196. *Id.*

197. G & K Dairy v. Princeton Elec. Plant Bd., 781 F. Supp. 485, 489 (W.D. Ky. 1991).

198. *Id.*

199. Otte v. Dayton Power & Light Co., 534 N.E.2d 835, 838 (Ohio 1988).

200. *Id.*

201. *Id.* An examination of decisions in which this question has been addressed reveals that this court's description of the problem as "perplexing" is an apt characterization. *See* Ernest Baynard, *Should Strict Products Liability Apply to the Sale of Electricity?*, 55 TENN. L. REV. 317 (1988). Baynard indicated that "the issue of whether electricity is a product or something else, such as a service, has confused those courts confronted with the issue." *Id.* at 320-21. The dilemma is exemplified by the Colorado Supreme Court's holding in Smith v. Home Light & Power Company, 734 P.2d 1051, 1056 (Colo. 1987) (holding that electricity can be a product but that the delivery of the product, including the lines and power system, is a service). A California appellate court has held that the characterization of electricity as a product or a service was of little consequence because public policy concerns necessitated the imposition of strict products liability on electrical providers for injuries precipitated by the electricity they furnished. Pierce v. Pacific Gas & Elec. Co., 212 Cal. Rptr. 283, 292 (Cal. Ct. App. 1985). Marshall Shapo, perhaps the leading scholar

under a section 402A theory, the court asserted that, by its nature, electricity is not a product and that the proper focus in a stray voltage suit is the electrical provider's distribution system.[202] The court stated:

> A "product" is anything made by human industry or art. Electricity appears to fall outside this definition. This is so because electricity is the flow of charged particles along a conductor. [The power company] does not manufacture electrically charged particles, but rather, sets in motion the necessary elements that allow the flow of electricity. What we have here is a purported defect in the distribution system. Such a system is, in our view, a service.[203]

Moreover, in *Zoller v. Niagara Mohawk Power Corporation*,[204] a New York appellate court refused to overrule its own previous holding that electricity was not a product.[205] In *Zoller*, dairy farmers sued a power company, alleging that stray voltage emanating from the company's side of the system injured their cattle.[206] The court, in a one-sentence notation, rejected the farmers' section 402A claim, citing its earlier holding in *Farina v. Niagara Mohawk Power Corporation*.[207] In *Farina*, the court had refused to allow a strict products liability claim where a man was electrocuted by electricity passing through transmission lines owned by the power company.[208] The court's holding was based, in part, on its refusal to classify electricity as a product. The *Farina* court reasoned that "throughout the discussions in the commentaries and the cases dealing with those who have been injured through contact with electrical lines, there is the implicit suggestion that electricity . . . is not a product within the contemplation of the doctrine's authors."[209] Thus, based in part on this assertion, the *Farina* court refused to allow a cause of action in strict products liability for the injury caused by electricity.[210]

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on the subject of products liability, recognized the amazing nature of the problem. Shapo observed that possibly the "most extraordinary arguments about the definition of 'product' have raged around the question of whether it embraces electricity." MARSHALL S. SHAPO, LAW OF PRODUCTS LIABILITY 7-13 (2d ed. 1990).

202. Otte v. Dayton Power & Light Co., 534 N.E.2d 835, 838 (Ohio 1988).

203. *Id.*

204. 525 N.Y.S.2d 364 (N.Y. App. Div. 1988).

205. *Id.* at 366.

206. *Id.*

207. Farina v. Niagara Mohawk Power Corp., 438 N.Y.S.2d 645, 646-47 (N.Y. App. Div. 1981).

208. *Id.*

209. *Id.* at 647.

210. *Id.* Another panel of New York's intermediate-level appellate court also refused to recognize that electricity could be classified as a product, even when the electricity had passed through the customer's meter. Bowen v. Niagara Mohawk Power Co., 590 N.Y.S.2d 628, 631-32 (N.Y. App. Div. 1992). The *Bowen* court cited with approval the Ohio Supreme Court's holding

In addition, several courts have perceived that the nature of stray voltage precluded it from serving as the subject of a "sale" because stray voltage is not sold to the consumer. For example, the Ohio Supreme Court in *Otte* and the federal district court in *G & K Dairy* pointed to difficulties in classifying the sale of stray voltage as the sale of a product, as required by section 402A.[211] The *Otte* court contended that efforts to equate the manufacturing and selling of electricity and, more particularly, stray voltage, with that of any other consumer product constituted an "intellectual disaster."[212] The court reasoned that stray voltage itself is not salable because its low voltage level differs tremendously from the much higher level of voltage normally transmitted through high voltage lines to the consumer.[213] The court reasoned further that the stray voltage itself was "nothing more than a byproduct of the transmission of electrical power and did not escape until after it passed through the [customers'] meter."[214]

Moreover, according to the *Otte* court, electrical customers did not pay for "individual electrically charged particles" but rather for the length of time that electrical current flowed through their electrical systems.[215] Thus, the court contended, the customers did not pay for any individual product but, rather, "for the *privilege of using [the utility's] service.*"[216]

Like the *Otte* court, the *G & K Dairy* court also pointed to difficulties in classifying stray voltage as a salable product. The *G & K Dairy* court noted that section 402A necessitated the sale of the particular product by an agency "engaged in the business" of selling that product.[217] The court, quoting the

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in Otte v. Dayton Power & Light Co., 523 N.E.2d 835 (Ohio 1988), which recognized that furnishing electricity to a consumer constituted a service and not a product. *Id.* at 297-98. The *Bowen* court found compelling the *Otte* court's public policy argument against holding a power provider strictly liable for electrical damage or injury. *Id.* at 298. In the instant case, the *Bowen* court concluded that imposing strict products liability on a power provider, when a tree fell on power lines and caused a power surge, would not have impacted significantly the later conduct of the power provider. *Id.*

211. Otte v. Dayton Power & Light Co., 523 N.E.2d 835, 838 (Ohio 1988); G & K Dairy v. Princeton Elec. Plant Bd., 781 F. Supp. 485 (W.D. Ky. 1991) (applying Kentucky law).

212. *Otte*, 523 N.E.2d at 838.

213. *Id.* The court indicated that the stray voltage in the present case measured approximately three volts versus the standard [high] voltage level of 120 to 140 volts. *Id.* at 839.

214. *Id.*

215. Otte v. Dayton Power & Light Co., 523 N.E. 2d, 835, 839 (Ohio 1988).

216. *Id.* (emphasis added).

217. G & K Dairy v. Princeton Elec. Plant Bd., 781 F. Supp. 485, 489-90 (W.D. Ky. 1991) (applying Kentucky law).

holding in *Otte* and that of a Wisconsin appellate-level court,[218] indicated that stray voltage itself is not sold to a consumer and lacks any type of benefit that would render it salable.[219] Moreover, according to the court, the electrical provider in the case was engaged in the business of "providing electrical service to its customers" and not in selling stray voltage.[220] Thus, the court refused to find that these necessary components of a section 402A claim were satisfied.

The court in *Kolpin v. Pioneer Power & Light Company*[221] also recognized the difficulty in characterizing stray voltage as a marketed or marketable product.[222] The Wisconsin Court of Appeals contended that the stray voltage itself had not been sold to the injured dairy farmers and that stray voltage is a "basic phenomena of electricity" rather than a product sold to the consumer.[223] The court noted that Wisconsin courts had, in certain circumstances, recognized that electricity could be labeled a product and be sold to a consumer, thereby forming the basis of a claim in strict products liability.[224] The court pointed to the decision of the Wisconsin Supreme Court in *Ransome v. Wisconsin Electric Power Company* as an illustration of the type of case in which electricity might be characterized as a salable product.[225]

In *Ransome*, a power company's transformer exploded after lightning struck a power line, causing high levels of voltage to enter the plaintiff's house.[226] The court in *Ransome* allowed the homeowner to maintain a strict products liability suit, holding that such extremely high voltage was "'defective and unreasonably dangerous' within the meaning of the products liability doctrine when it entered a private residence."[227] The *Kolpin* court, however, distinguished *Ransome* from its factual setting by reasoning that in the present case, the dairy farmers' problem "had nothing to do with any defect in Pioneer's lines or equipment or the electricity sent through the company's system to their farm."[228] The *Kolpin* court pointed to the holding in *Otte* in support of the proposition that stray voltage was not a salable product but rather a "'normal

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218. Kolpin v. Pioneer Power & Light Co., 453 N.W.2d 214, 219 (Wis. Ct. App. 1990) (holding that dairy farmers could not recover under strict products liability theory in stray voltage case).

219. *G & K Dairy*, 781 F. Supp. at 489-90 (applying Kentucky law).

220. *Id.*

221. 453 N.W.2d 214 (Wis. Ct. App. 1990).

222. *Id.* at 219 (noting that Wisconsin first recognized the doctrine of § 402A strict products liability in Dippel v. Sciano, 155 N.W.2d 55, 63 (Wis. 1967)).

223. *Id.*

224. Kolpin v. Pioneer Power & Light Co., 453 N.W.2d 214, 219 (Wis. Ct. App. 1990).

225. *Id.* at 218 (citing Ransome v. Wisconsin Elec. Power Co., 275 N.W.2d 641, 648-49 (Wis. 1979)).

226. *Ransome*, 275 N.W.2d at 648-49.

227. *Id.*

228. *Kolpin*, 453 N.W.2d at 219.

and natural condition' common to all power distribution systems."[229] These courts have rejected section 402A claims in stray voltage cases. However, this position is not uniformly held, as other courts have indicated a willingness to allow this cause of action in nearly identical circumstances.

B. The Other Side of the Line: Stray Voltage Suits in Strict Products Liability

While several courts have refused to find that electricity or stray voltage was a product or a salable product, both a Pennsylvania[230] and an Indiana[231] court have found that stray voltage constitutes a product and have affirmed the viability of a section 402A claim where stray voltage precipitated injury. In *Schriner v. Pennsylvania Power & Light Company*,[232] a Pennsylvania appellate court considered, in a case of first impression and in the context of a stray voltage problem, whether electricity could be characterized as a product for section 402A purposes.[233] In allowing a cause of action under strict products liability, the court held that electricity could be so classified.[234] The court, agreeing with the reasoning of the Wisconsin Supreme Court in *Ransome*, indicated that while the distribution of electricity could possibly constitute a service, "the electricity itself, in the contemplation of the ordinary user, is a consumable product."[235] The *Schriner* court did not distinguish, in its opinion, between electricity and stray voltage.

Moreover, in making its determination, the *Schriner* court rejected as inapposite several cases that the defendant electrical provider had cited as establishing the position that electricity was not a product under section 402A.[236] The court examined, for example, the opinion in *Farina v. Niagara Mohawk Power Corporation*[237] and concluded that because the *Farina* court had considered this pivotal question in dictum, the New York court really had

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229. Koplin v. Pioneer Power & Light Co., 453 N.W.2d 214, 219 (Wis. Ct. App. 1990).

230. Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128 (Pa. Super. Ct. 1985).

231. Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349 (Ind. Ct. App. 1986).

232. 501 A.2d 1128 (Pa. Super. Ct. 1985).

233. *Id.* at 1131.

234. *Id.* at 1132.

235. *Id.* at 1133 (citing Ransome v. Wisconsin Power Co., 275 N.W.2d 641, 643 (Wis. 1979)).

236. Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128, 1132-33 (Pa. Super. Ct. 1985). The court examined the following opinions: Pilkington v. Hendricks County Rural Elec. Memb. Corp., 460 N.E.2d 1000 (Ind. Ct. App. 1984) (pointing out that the doctrine of strict liability cannot be asserted against Indiana electric utilities); Rodgers v. Chimney Rock Pub. Power Dist., 345 N.W.2d 12 (Neb. 1984) (refusing to adopt strict products liability with regard to electrical injuries); Farina v. Niagara Mohawk Power Corp., 438 N.Y.S.2d 645 (N.Y. App. Div. 1981).

237. 438 N.Y.S.2d 645 (N.Y. App. Div. 1981) (holding that strict products liability could not be asserted against power provider in a case involving the electrocution of a worker who died after touching high voltage electric power lines as he attempted to remove an antenna from a house).

not issued a binding holding as to the proper classification of electricity.[238]

Like the court in *Schriner*, the Indiana Court of Appeals in *Public Service Indiana, Inc. v. Nichols*[239] also recognized that electricity could serve as a product for section 402A purposes.[240] The court addressed briefly the question of whether electricity was a product, focusing more extensively upon the parties' arguments over whether the transmission and distribution lines, and not the electricity itself, were the crucial "products" within the ambit of section 402A.[241] In this case, the farmer whose cattle were injured by stray voltage contended that the utility's transmission and distribution lines, through which the damaging current was delivered, served as the crucial products in the case.[242] The power provider, conversely, argued that it should be absolved of liability for the stray voltage because its neutral line was the cause of the injury and because this line was not a product.[243]

The *Nichols* court rejected the farmers' argument that utility lines were products but allowed the farmers to bring a cause of action under section 402A.[244] The court maintained that the crucial inquiry in electrical injury cases was "whether the product has been placed into the stream of commerce prior to the injury causing accident."[245] The court continued, "Electricity is considered to be placed into the stream of commerce when it reaches its destination in a home or factory."[246] The court asserted that the electrical transmission and distribution lines could not serve as the products in this action because they were merely a "means of distributing a product."[247] In addition, the court noted, the lines were never placed into the stream of commerce because they remained under the power provider's ownership and exclusive control.[248] Regardless, the court indicated that the power provider remained under a duty to supply safe electricity and held that "if the end product is unsafe and results in injury, we will not deny the injured party's right to seek recovery under a theory of strict liability merely because the product is delivered through lines that are not a part of the end product."[249] Thus, the court's holding

238. *Schriner*, 501 A.2d at 1132.
239. 494 N.E.2d 349 (Ind. Ct. App. 1986).
240. Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349, 355 (Ind. Ct. App. 1986).
241. *Id.* at 355-56.
242. *Id.*
243. *Id.*
244. Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349, 355-56 (Ind. Ct. App. 1986).
245. *Id.*
246. *Id.* at 355 (citing Petroski v. Northern Ind. Pub. Serv. Co., 354 N.E.2d 736, 747 (Ind. Ct. App. 1976)).
247. *Id.* at 356.
248. Public Serv. Ind., Inc. v. Nichols, 494 N.E.2d 349, 356 (Ind. Ct. App. 1986).
249. *Id.*

enabled the farmers to maintain a strict products liability cause of action.

The critical inquiry in the *Nichols* court's decision, namely the question of whether electricity has been sold through its introduction into the stream of commerce, also figured heavily into the *Schriner* court's decision to allow a cause of action under section 402A. As the *Schriner* court asserted, a section 402A claim necessitates not only that a product exist but also that the product be sold to a consumer, such that the electricity "enters the stream of commerce."[250] According to the court, the sale of electricity occurs when the electrical current leaves the power provider's transmission lines and passes through the consumer's meter.[251] Thus, the court allowed the farmers to proceed under strict products liability.[252] In so holding, the *Schriner* court rejected the electrical provider's argument that public policy concerns militated against the imposition of strict liability on electrical providers.[253] Thus, in the context of a stray voltage suit, the *Schriner* court, like the *Nichols* court,

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250. Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128, 1133 (Pa. Super. Ct. 1985). *Accord*: Pierce v. Pacific Gas & Elec. Co., 212 Cal. Rptr. 283, 292 (Cal. Ct. App. 1985); Petroski v. Northern Ind. Pub. Serv. Co., 354 N.E.2d 736, 747 (Ind. Ct. App. 1976); Hedges v. Public Serv. Co. of Ind., 396 N.E.2d 933, 935 (Ind. Ct. App. 1979); Kentucky Util. Co. v. Auto Crane Co., 674 S.W.2d 15, 18 (Ky. Ct. App. 1983); Kemp v. Wisconsin Elec. Power Co., 172 N.W.2d 161, 166-67 (Wis. 1969).

251. *Schriner*, 501 A.2d at 1133-34 (citing Williams v. Detroit Edison Co., 234 N.W.2d 702, 707 (Mich. Ct. App. 1975) (holding that strict products liability could not be asserted where a person died after touching a power line because the power provider still controlled the electricity at the time of injury)); Pierce v. Pacific Gas & Elec. Co., 212 Cal. Rptr. 283, 292 (Cal. Ct. App. 1985) (holding that a utility is subject to strict products liability for injury to a person caused by electricity that has been delivered to the customer's premises); Aversa v. Public Serv. Elec. & Gas Co., 451 A.2d 976 (N.J. Super Ct. Law. Div. 1982) (holding that a strict products liability claim may be asserted where an injury is sustained from electricity that is placed in the stream of commerce).

252. The court observed:

> [I]f electricity "in a defective condition unreasonably dangerous" passes through the meter of a user or consumer and into the stream of commerce, causing physical harm to the ultimate user or consumer, or to his property, the doctrine of strict liability in tort may be applied against the public utility which "engaged in the business of selling such a product" [if the product was] "expected to and [did] reach the user or consumer without substantial change in the condition in which it was sold."

Schriner v. Pennsylvania Power & Light Co., 501 A.2d 1128, 1134 (Pa. Super. Ct. 1985) (citing RESTATEMENT (SECOND) OF TORTS § 402A(1) (1965)).

253. *Id.* at 1134. Several persuasive law review articles have addressed this point. *See, e.g.*, Baynard, *supra* note 201; Gregory G. Hollows, *Torts of Electric Utilities: Can Strict Liability Be Plugged In?*, 11 LOY. L.A. L. REV. 775 (1978) (arguing that law and public policy militate in favor of addressing electrical injuries in the negligence rather than strict products liability context). The court in Otte v. Dayton Power & Light Co., 523 N.E.2d 835, 840 (Ohio 1988), roundly criticized the holding in *Schriner*. The *Otte* court contended that the *Schriner* court failed to discuss thoroughly the "public policy ramifications of [its] holding . . . [and] the heavily regulated nature of a public utility." *Id.* at 839 n.2.

recognized that damage to property caused by electricity could be addressed under section 402A.

Clearly, courts disagree profoundly on the viability of the theory of strict products liability in stray voltage suits. The availability of this theory of recovery is a boon for the farmer who can recover from the power provider without having to demonstrate conclusively that the power provider was negligent in allowing the stray voltage to affect the cattle. Thus, this theory may facilitate a judgment for the plaintiff at the expense of the power provider who has, in essence, been forced to serve as an insurer of its electricity if stray voltage is characterized as a defective product. Alternatively, in states that refuse to recognize this cause of action in stray voltage cases, the plaintiff must turn to alternative, negligence-based theories of recovery that may or may not prove successful.[254] The power providers in these states might escape liability merely because the courts refused to recognize strict products liability in stray voltage cases, while their brethren in neighboring states would be subject to strict liability in nearly identical circumstances. Again, as these scenarios demonstrate, the need for uniformity to ensure that power providers and farmers receive consistent treatment in a highly technical area is evident. The statute proposed by this Note will attempt to obviate the confusion over the treatment of stray voltage under section 402A by rendering this theory of recovery inapplicable in stray voltage cases.

VI. ACHIEVING A PRACTICAL AND UNIFORM SOLUTION TO STRAY VOLTAGE PROBLEMS: A MODEL STATUTORY APPROACH

While farmers and power providers have at their disposal an array of practical devices to help combat stray voltage in the barn, the need for a means of addressing the problem in the courts is acute. One possible option centers on a perpetuation of the current system of allowing each jurisdiction, or even each court, to address the problem in its own manner, thereby fueling the existing lack of uniformity on the subject.

A second possibility might be to allow state public utility or service commissions to promulgate rules and regulations that prescribe the proper course of conduct owed by a utility to a dairy farmer with respect to stray voltage. One disadvantage of this method, however, is evidenced by an examination of its use in Wisconsin, where two Public Service Commission orders mandated that all public utilities under the agency's jurisdiction reduce stray voltage from their transmission systems to less than one milliampere.[255] In Wisconsin, this

254. *See, e.g., supra* notes 192-229 and accompanying text.
255. *See supra* notes 163-86 and accompanying text.

order applied only to public utilities under the regulatory auspices of the Public Service Commission.[256] Thus, privately owned electrical cooperatives were not bound by the order.[257] Since these regulations do not govern the conduct of cooperatives, the cooperatives may be held to a lower standard of care where stray voltage-related injuries have occurred. The holding of at least one Wisconsin appellate case has borne this fact out.[258]

While regulations promulgated by administrative agencies may prescribe a uniform course of conduct that utilities under their jurisdiction must observe, the failure of such regulations to cover the activity of other electrical providers, such as cooperatives, may result in power providers within the same state being treated differently, depending solely upon their corporate status. This disparate treatment further perpetuates and fuels the lack of uniformity plaguing stray voltage case law. Moreover, because many, if not most, dairy farms are located in rural areas served by electrical cooperatives, this disparate treatment may have an even more profound effect upon the resolution of stray voltage cases. Such a regulation may have the effect of establishing, in essence, two separate standards, with the applicable standard triggered solely by the answer to the question of whether the power provider falls under the control of the public utility commission.

Although administrative orders may effectively prescribe the course of conduct to be observed by public utilities, but not necessarily all power providers, in stray voltage cases, one particular method seems to allow for the highest degree of uniformity in the treatment of stray voltage problems.

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256. *See supra* note 166.

257. *Id.* Wisconsin's statutory provision exempting electrical cooperatives from the jurisdiction of a public utility or service commission is not unique. *See, e.g.*, 15 PA. CONS. STAT. ANN. § 7334 (Supp. 1992) (exempting electrical cooperatives from the jurisdiction and control of the Pennsylvania Public Utility Commission); several other states have identical or similar provisions. *See, e.g.*, ALA. CODE § 37-6-27 (1992); CONN. GEN. STAT. ANN. § 33-241 (1987) (exempting cooperatives from the jurisdiction of the Connecticut Department of Public Utility Control generally but requiring cooperatives to observe the Department's promulgated construction and maintenance standards for electric lines, provided that these standards do not exceed those prescribed by the *National Electric Safety Code*); LA. REV. STAT. ANN. § 12: 426 (West 1969 & Supp. 1993) (exempting, with limited exceptions, cooperatives from the jurisdiction of the Louisiana Public Service Commission unless cooperative members choose to submit to the Commission's jurisdiction); N.Y. RURAL ELEC. COOP. LAW § 67 (McKinney 1948); TENN. CODE ANN. § 65-25-223 (1992). Other states exempt municipally owned utilities from the jurisdiction of a state's electrical regulatory agency. *See, e.g.*, 20 ILL. COMP. STAT. ANN. 5/3-105 (West 1993); *see also* Poudre Valley Rural Elec. Ass'n v. Loveland, 807 P.2d 547 (Colo. 1991) (explaining that the state public utility commission lacks jurisdiction over municipally owned utilities that operate inside the boundaries of the municipalities).

258. Thompson v. St. Croix County Elec. Coop., 477 N.W.2d 363 (Wis. Ct. App. 1991) (available in LEXIS, States library) (holding that the dangers posed by stray voltage do not constitute a great risk to human health or life and, therefore, do not require the imposition of a heightened standard of care on electric cooperatives that allow stray voltage to enter a dairy farm).

Uniformity in the legal treatment of stray voltage can best be accomplished through the formulation and adoption of a model statute by states experiencing a rash of stray voltage complaints or by states wishing to take proactive, preventative steps to avoid problems in the future. This statute would first establish the appropriate forum for resolution of stray voltage disputes. Second, the statute would prescribe the applicable standard of care to be observed by power providers—public utilities and electric cooperatives, as well as municipal utilities—with regard to the handling of stray voltage on dairy farms. The statute would then address the treatment of stray voltage within strict products liability law, thereby ending the dispute over the viability of this theory in stray voltage cases. This model state statute might read as follows:

TITLE I: UNIFORM TREATMENT OF NEUTRAL-TO-EARTH VOLTAGE ACT

Section
1000. Purpose
1001. Definitions
1002. Scope/Applicability
1003. Proper Forum for Stray Voltage Complaints and Available Remedies
1004. Standard of Care Owed by Power Provider to Dairy Farmer
1005. Availability of Strict Products Liability as Theory of Recovery

§ 1000. Purpose
The purpose of this Act shall be to provide and establish uniform standards that will apply to all complaints brought by dairy farmers against power providers concerning the presence of neutral-to-earth voltage, sometimes known as stray voltage, on dairy farms in the state.

§ 1001. Definitions
(a) "Neutral-to-earth voltage" means low-voltage electricity that exists in the plane between an electrically charged piece of on-farm equipment and the earth or the ground.
(b) "Stray voltage" means, for the purposes of this statute, neutral-to-earth voltage.
(c) "Power provider" or "electrical provider" means any public or municipal utility or electrical cooperative organization that functions to provide electrical power to customers in the state.
(d) "Dairy farmer" means any person engaged in the occupation or avocation of raising five or more cattle for the purposes of milk production.

§ 1002. Scope/Applicability
This chapter shall apply to all power providers in the state.

§ 1003. Proper Forum for Stray Voltage Complaints and Available Remedies
Upon the power provider's failure to observe the requirements of this Act, an aggrieved dairy farmer may pursue legal action in the appropriate trial court. This Act expressly removes stray voltage complaints from within the purview of the state public utility or service commission.

§ 1004. Standard of Care Owed by Power Provider to Dairy Farmer
(a) In recognition of the fact that some stray voltage may exist as an inherent part of any electrical system, the mere presence of stray voltage does not constitute negligence *per se* on the part of a power provider. However, power providers must ensure that the provisions of this Act are observed.
(b) General rule: Power providers must observe the following duties regarding the incidence of stray voltage on dairy farms:

(1) Power providers must warn their dairy farm customers of the possible presence of neutral-to-earth voltage on the farm. Warnings must be issued two times per year and must be mailed, under separate cover, to the dairy farmers in their service area. Warnings shall not be included as an insert in the farmers' electric bill or in the envelope containing the bill. Warnings shall include:

(i) the definition of neutral-to-earth voltage;

(ii) the effects that too high of a level of neutral-to earth voltage may have on dairy cattle;

(iii) a statement indicating that stray voltage can result from a problem in either the power provider's or farmer's electrical systems, or in both systems; and

(iv) a listing of possible solutions to the problem.

(2) Power providers must supply their customers with the applicable *National Electrical Code* provisions governing equipment known or suspected to cause stray voltage on the farm, as evidenced in electrical and agricultural trade journals. Farmers should ensure that their farms comply substantially with the *Code*. The failure of farmers to comply with the *Code* does not absolve power providers of their duty to observe the provisions of this statute. However, the failure of farmers to observe the applicable *Code* provisions may be considered by the finder of fact in determining the amount of damages to be awarded for

violation of this statute, if such damages are sought by a farmer who alleges violation of this statute.
(3) Power providers must inspect all parts of their transmission and distribution systems bi-monthly to ensure that no obvious defects in the power providers' electrical equipment are causing injurious stray voltage problems on their customers farms.
(4) Power providers must install isolation transformers at each dairy farm to help reduce the incidence of stray voltage. If an isolation transformer would be an objectively unreasonable solution to a stray voltage problem on a dairy farm, the power provider must install another mitigative device or devices to help reduce the level of stray voltage, up to a cost of $5000 per farm.
(5) Violation of any one of the above four provisions will constitute a breach of the standard of care owed by a power provider to dairy farm customers.

§ 1005. Availability of Strict Products Liability as Theory of Recovery
The theory of strict products liability in stray voltage cases cannot be asserted by a dairy farmer against a power provider. A dairy farmer attempting to recover damages from a power provider for the occurrence of stray voltage when this voltage emanates from the power provider's system may attempt to pursue other avenues of recovery in products liability, as guided by the standard of care established in § 1004. Thus, for the purposes of this statute only, stray voltage will be viewed as a product. This provision has no applicability to electrical problems unrelated to the incidence of stray voltage on dairy farms and should not be construed as labeling electricity a product in other contexts.

The adoption of this statute would serve as an important step toward standardizing the treatment of stray voltage within the law of a state or, if adopted by most states having dairy farms, within the law among several states. Indeed, the provision in the statute pronouncing the court system as the only proper forum for stray voltage cases would eliminate any confusion on the part of the farmer over the proper place in which to file a complaint. This provision would also eliminate any debate over the power of public utility or service commissions to hear stray voltage complaints.

Further, because stray voltage will be classified for purposes of this statute as a product, rather than a service, requiring the filing of suits in a court rather than in an administrative agency is logically sound. Since public utility or

service commissions usually are empowered to hear only service-related complaints from electrical customers, the classification of stray voltage as a product under this statute would militate in favor of eviscerating stray voltage complaints from an agency's jurisdiction. The statute would view stray voltage as a product-oriented problem rather than a service-oriented complaint. Although foreclosing the filing of a complaint in an administrative agency, the statute preserves the farmer's due process rights to redress a grievance by allowing the farmer to file an actionable claim in a trial court. The unfettered ability of a trial court to award both equitable and legal relief enables an aggrieved farmer to seek the appropriate relief from the power provider upon the provider's violation of its statutorily imposed duty.

Moreover, this statute would effectively allow farmers to be warned about the potential for stray voltage problems on dairy farms and the need for inspection and resolution of any problematic on-farm stray voltage sources. The requirement that the warning be sent under separate cover would help ensure the readability of the warning and also stress its importance. Also, farmers would be informed of their responsibility to meet the standards advanced in the *National Electrical Code*, thereby encouraging them to contact their electricians to ensure that their on-farm wiring is up-to-code. As an added incentive to comply with the applicable safety provisions, a farmer who failed to meet the *Code's* requirements would face the possibility of receiving a smaller award in a suit in which damages are sought.

In addition, the requirement that the power providers inspect and maintain their systems will serve to ensure that these companies will maintain a continual awareness toward any stray voltage problems that might arise on their systems. Although power providers assuredly inspect and maintain their transmission and distribution systems on a regular basis, the explicit prescription in this statute will place the power providers on notice of the need to remain alert for signs of any stray-voltage-producing defects that might otherwise be ignored or overlooked.

Furthermore, the installation of isolation transformers, while a costly proposition, would serve as an effective means of reducing or eliminating stray voltage levels on dairy farms.[259] A statutory provision that allows for the part of the cost to be included in the rate base would help reduce the overall cost of this corrective device to the power provider while spreading the cost over a larger base of consumers. Moreover, a state's willingness to set up a fund to reimburse the power providers for part of the cost of installing the transformers

259. *No Ducking Stray Voltage*, RURAL ELECTRIFICATION MAGAZINE, June 1990, at 15. This article noted that the cost of an isolation transformer can amount to $600. *Id.*

would also help relieve some of the financial burden of installing these devices. The percentage that the state might be willing to pay would probably vary, depending on the importance of dairy farming to the state's economy and on available monetary resources.[260]

Moreover, refusing to allow suits sounding in strict products liability would effectively clarify any confusion over the viability of this theory in stray voltage cases. The heightened duty placed on power providers to warn the consumer and to eliminate stray voltage through the installation of isolation transformers or through other corrective methods obviates the need for a cause of action sounding in strict products liability. To allow such a theory to apply would be to place an even higher duty on the power providers. In light of the promulgated requirements, such a duty would be unnecessary, especially because the Act would not foreclose other products liability claims; a violation of the Act would still allow aggrieved farmers to seek recourse in the courts under applicable breach of warranty theories, for example.

Finally, this statute could constitute an especially attractive solution in the eyes of those state legislators who wish to avoid alienating a state's farm and power provider lobbies. Although the Wisconsin regulations prescribe more extensive duties and provide a more exact standard, i.e., that no power provider may exceed one milliampere of stray voltage on a dairy farm, Wisconsin's strict standard is unlikely to achieve legislative sanction in states with either a low population of dairy farmers or a more active power provider lobby. While the statute proposed in this Note may not solve all of the problems inherent in the incidence of stray voltage on dairy farms, such an approach would serve as an effective, practical, and uniform method of confronting and resolving the sinewy issues that often arise in stray voltage cases.

VII. CONCLUSION

Stray voltage problems are endemic on America's dairy farms. The multiplicity of problems surrounding the incidence of stray voltage can eventually lead to litigation between dairy farmers and their electrical providers. The complicated, technical nature of the problem and risks at stake for both parties when stray voltage affects dairy cattle would seem to militate in favor of a uniform, consistent approach in the legal treatment of stray voltage issues.

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260. The author realizes that other necessary budgetary expenditures may effectively preclude state contribution to the power providers for their resolution of the problem. Many states might also find stray voltage to be a private problem, that is, between the farmers and their power providers, and consequently refuse to fund any corrective program. In such a case, the percentage of the cost that the power provider could include in its rate base might be adjusted to help dilute the burden of purchasing and installing the equipment.

However, the existing body of stray voltage case law fails to achieve this goal. An examination of jurisdictional differences over the fora in which stray voltage disputes are to be resolved, the applicable standard of care in stray voltage cases, and the treatment of the phenomenon within strict products liability law illustrate the need for a uniform, clarified approach to the problem. A model stray voltage statute, addressing these issues, could serve as an effective means of clarifying and providing a uniform approach to stray voltage law both within a state and among the states. Adoption of a stray voltage statute by each state with a sizable contingent of dairy farmers would, at the very least, help to corral a controversy much like farmers corral their cattle. At best, such a statute could serve as a powerful solution to a shocking problem.

Peter G. Yelkovac