

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA**

DOMINION RESOURCES INC. et al	:	CIVIL ACTION
	:	
vs.	:	
	:	No. 15-224
ALSTOM GRID, INC.	:	

MEMORANDUM

KEARNEY, J.

October 3, 2016

Enforcing valid patent rights may require obtaining a jury verdict establishing infringement followed by showing loss profits or reasonable royalties. If the jury finds infringement, the patent holder may then ask the Court for equitable relief to stop further infringement, an award of enhanced damages for willful egregious infringement and, in extraordinary cases, attorney's fees. When a jury returns a verdict of willful infringement, we hold an evidentiary hearing to carefully evaluate the credibility of witnesses and address legal arguments on the equitable claims, enhanced damages and attorney's fees. After our attentive jury's verdict of willful infringement of a valid patent and evaluating the credibility of several witnesses, studying extensive oral argument and reviewing the substantial record adduced during our injunction hearing, we issue findings of fact and conclusions of law with analysis supporting our accompanying Order granting permanent injunctive relief narrowly tailored to our jury's findings of willful infringement with enhanced damages, but find no basis for attorney's fees or declaratory relief.

I. Findings of fact.

1. This patent dispute challenges an aspect of computer software which helps manage and conserve voltage for electric utilities delivering power to our homes, hospitals and businesses.

2. As of 2013, approximately 3,300 electric utilities provided more than 3.7 Billion megawatt hours of electricity.¹

3. One expert opined without contradiction of at least 25 states requiring electric utilities to increase energy efficiency.²

4. In addition to educating end users on energy efficiency (e.g., LED bulbs), utilities are rapidly developing “smart grids” described by the Department of Energy as using “computer-based remote control and automation” “capable of monitoring everything from power plants to customer preferences to individual appliances.”³

5. As part of this effort, electric utilities began replacing the old “spinning wheel” meters outside our homes with smart meters which generate advanced metering infrastructure data (“AMI”) sent remotely to the electric utilities to assist in managing power output and more accurately bill the consumer for actual usage.⁴ AMI is now referred to as “the combination of the electronic meters with two way communications technology for information, monitor and control.”⁵

6. Experts expect 70% of all electric meters in the United States will be smart meters by 2020.⁶

7. Another energy efficiency strategy is to develop technology to optimize the electric grid to reduce electric line losses. Conservation voltage reduction (“CVR”) is a

“technique for improving the efficiency of the electrical grid by optimizing voltage on the feeder lines” running from electric power substations to homes and businesses.⁷

8. Utilities developed a variety of CVR approaches ranging from: an automatic reduction manually imposed by an operator at the substation for all meters, to automated computer modeling based on characteristics of the systems, to using voltage sensors along distribution lines to measure voltage along feeder lines rather than at the meter on the building wall.⁸

9. CVR is described as a “developing market” with “a lot to play for and a lot of competitors playing for it.”⁹ There is no guarantee of success in this rapidly evolving CVR market. An expert forecasted global CVR revenues could grow if successful from 2016 revenues of approximately \$100 million to revenues of over \$775 million in four years.¹⁰ We have no ability to measure the potential success of any particular CVR solution in an evolving marketplace.

10. This case involves yet another form of innovative automated CVR through software which generates data measuring voltage at the delivery point of a selected number of smart meters through adding and deselecting from a subset of meters.

Dominion’s initial steps toward a patent.

11. Dominion Resources, Inc. and Virginia Electric and Power Company (collectively “Dominion”) are electric utilities.

12. Beginning in July 2007, Dominion began researching a way to use smart meters to achieve CVR.

13. Dominion used AMI data, specifically the voltage measurements from each smart meter, to remotely send back voltage measurements. Dominion, and other utilities, used AMI

data from subsets of smart meters to formulate the amount of voltage used by the smart meters to achieve CVR.¹¹

14. In January 2009, Dominion started testing a subset of 7-10 smart meters and observing the AMI data reported from those meters. Dominion compiled AMI data. When a meter's voltage usage reported voltage outside the standard range of the meters in its subset, Dominion reported these variances in an exception report.¹²

15. On August 24, 2009, Dominion decided to use its voltage exception reports to identify which subset of smart meters would serve as monitoring points. This additional step allowed Dominion to directly measure a consumer's voltage, instead of using estimates, to safely keep consumers in a lower voltage range.¹³

16. After learning about this use of subsets in Summer 2010, Dominion decided it "could really have a tremendous impact on our consumers and the utility industry" and decided "we better file for patents right away. And so that was the start of really looking at the algorithm and then making the decision that we would move to commercialize it."¹⁴

17. Dominion decided to develop a "framework to support a business that would actually sell this new commercial product."¹⁵

18. Dominion decided not to seek outside investors because "this is going to be Dominion's and we are going to develop this."¹⁶

19. In May 2010, Dominion applied for a patent for its idea of using AMI data for CVR.¹⁷

20. The United States Patent Office initially denied Dominion's application. During the process, Dominion met with a patent examiner and changed the patent. Among changes, the patent now included the element of receiving the information from a smart meter outside the

range, adding the variable smart meter to the subset and deselecting a smart meter from the subset.¹⁸

21. In late 2010, Dominion worked with Lockheed Martin and Bridge Energy to develop its AMI-based CVR invention into a software product to be marketed to electric utilities.¹⁹

22. Dominion named its new product EDGE to perform the AMI-based CVR.²⁰

23. Beginning in 2010, Dominion began working on creating a corporate framework to sell EDGE. By 2012²¹, Dominion created a wholly owned subsidiary called Dominion Voltage, Inc. (“DVI”) to sell the EDGE product to electric utilities.²²

24. DVI is the subsidiary of Dominion Alternative Energy Holdings, a holding company with no employees. Dominion Alternative Energy Holdings is a subsidiary of Dominion Resources, Inc.²³

25. As part of its business strategy, Dominion transferred its employees who created EDGE to DVI to continue updating the EDGE product.²⁴

26. As described at both the jury trial and injunction hearing, Dominion eventually hired Todd Headlee as DVI’s CEO because Dominion needed start-up and sales experience to sell EDGE.²⁵ Mr. Headlee initially did not want the position because “utilities aren’t known typically for innovation or doing anything dramatic in terms of developing new smart grid technology” but decided to join because “what the patent described in terms of the invention, the method of doing CVR, using the AMI system seemed very innovative, and I thought something I could easily build a business around.”²⁶

27. As described at both the jury trial and the injunction hearing, Dominion funds DVI and, as a wholly owned subsidiary, owns DVI’s profits and losses.²⁷ “A requirement of

[DVI's] planning process is that you look out three to five years, and we were a big part of the larger Dominion Resources, and so we would project what revenues and expenses we would have moving out for the planning period.”²⁸

Alstom's e-terradistribution product.

28. Defendant Alstom Grid Inc. (“Alstom”) supplies software to electric utilities to manage their electric grids. Alstom characterizes its software as a distribution management system (“DMS”).

29. Alstom sells a DMS system called e-terradistribution.²⁹ Alstom developed e-terradistribution approximately ten years ago.³⁰ It is “a suite of configurable applications for the operational needs” of electric utilities.³¹ Alstom’s e-terradistribution can operate either with, or without, AMI.³²

30. Alstom describes this function of its e-terradistribution system as being part of its lode volt/var management (“LVM”) module. This module is one of the modules within one application of many applications provided by its e-terradistribution product. Alstom’s expert describes LVM as providing “recommendations to manage demand, improve the voltage quality, and provide reactive support to the surrounding distribution system.”³³

Dominion's and Alstom's initial interactions.

31. In September 2011, Dominion’s Phillip Powell presented the EDGE product at the Electric Utility Consultants, Inc. (“EUCI”) Trade Show. Ethan Boardman, an Alstom employee, attended this EUCI Trade Show and Dominion’s Powell spoke with him there.³⁴

32. On June 11, 2012, Dominion’s Powell attended an Alstom presentation at another EUCI Trade Show.³⁵

33. Alstom discussed performing CVR through the AMI functionality within Alstom's LVM module of e-terristribution.³⁶

34. During the June 2012 EUCI Trade Show, Dominion's Powell approached Alstom's Boardman after Alstom's presentation and told him Alstom's concept of AMI functionality through its LVM module closely tracked Dominion's patent pending software captured in Dominion's EDGE product.³⁷

Dominion begins to find a market of interested consumers.

35. On December 3, 2012, DVI sold its EDGE pilot program to its first consumer, Central Lincoln.³⁸

36. Baltimore Gas & Electric issued a Request for Proposal on January 18, 2013 for a smart grid distribution system pilot project. It described one of its three main objectives to install a volt/VAR CVR solution.³⁹

37. On April 4, 2013, DVI installed EDGE on Central Louisiana Electric Company ("CLECO") servers.⁴⁰ Earlier that year, CLECO issued a Request for Proposal. DVI submitted a proposal for its EDGE product to achieve CVR in February 2013.⁴¹ Alstom submitted a proposal highlighting the AMI functionality within the LVM module of e-terristribution to achieve CVR in January 2014.⁴²

38. DVI offered EDGE as a stand-alone AMI-based CVR solution priced at \$8 per smart meter.⁴³

39. On May 6, 2013, Hawaii Electric Company ("HECO") issued a Request for Clarification for their CVR Pilot. HECO asked bidders to address all CVR solutions.⁴⁴ DVI submitted a proposal for its EDGE product to achieve CVR and HECO awarded DVI a pilot contract on December 13, 2013.⁴⁵ In May 2015, Alstom made a presentation to HECO about its

DMS by touting the AMI functionality within the LVM module of e-terristribution to achieve CVR.⁴⁶

40. On May 13, 2013, DVI sold EDGE to Modesto Irrigation District.⁴⁷

Dominion obtains the '883 Patent.

41. On May 7, 2013, the U.S. Patent Office granted Patent No. US 8,437,883 (“883 Patent”) to Dominion. DVI’s product EDGE practices this patent on behalf of Dominion.⁴⁸

Alstom’s efforts while Dominion sells its patented EDGE product.

42. Duke Energy Corp. (“Duke”) is an electrical utility. Duke is a client of both Dominion and Alstom but Duke uses Alstom’s e-terristribution DMS system.

43. In June 2013, Duke asked Alstom representatives when Alstom would upgrade Duke’s DMS to have AMI functionality within the LVM module of e-terristribution. Alstom wanted to configure the AMI functionality within the LVM module of e-terristribution because consumers wanted AMI integration.⁴⁹

44. On June 24, 2013, Alstom wrote an e-mail describing the “proposal for greatly increasing IDMS usage of AMI data on several fronts as part of Duke’s Ohio IVVC and Carolinas Grid Modernization projects. The importance of this work for e-terristribution is huge in terms of marketing because it will move us forward to regain our leading position in AMI integration—using AMI as a consumer (“prosumer”) level equivalent to SCADA.”⁵⁰

45. Three days later on June 27, 2013, Dominion’s Powell attended an Alstom EUCI Trade Show presentation on AMI functionality within Alstom’s LVM module of e-terristribution. Dominion’s Powell asked Alstom’s Boardman to meet and discuss how Alstom’s work overlapped with Dominion’s now patented EDGE product. Mr. Powell followed up to schedule a meeting with Alstom but the meeting never happened.⁵¹

46. On July 24, 2013, DVI sold EDGE to the City of Naperville.⁵²
47. On September 16, 2013, Alstom representatives saw DVI's press release touting its sale of EDGE to the City of Naperville and decided to market its products to the City of Naperville.⁵³
48. On November 7, 2013, Alstom and Duke signed a Statement of Work to begin configuring the AMI functionality within the LVM module of Duke's e-terristribution. While the parties signed the Statement of Work, they did not immediately begin configuring the AMI functionality within the LVM module of Duke's e-terristribution.⁵⁴
49. On December 19, 2013, DVI and Central Lincoln signed a contract for a full deployment of EDGE in its electrical grid.⁵⁵
50. In December 2013, Alstom received a patent search report flagging Dominion's '883Patent while researching Duke's request to configure the AMI functionality within the LVM module of e-terristribution.⁵⁶
51. Alstom's counsel candidly concedes Alstom missed the search report.⁵⁷ Alstom's personnel reviewing the search report overlooked the significance of its own search report.
52. On December 30, 2013, Mr. Powell sent information regarding EDGE and his AMI-based CVR invention to Alstom.⁵⁸
53. Lansing Board of Water & Light issued a Request for Proposal on January 3, 2014 for a Volt/VAR Optimization Pilot. Lansing Board of Water & Light requested a system with real time voltage reads with an AMI system.⁵⁹
54. On March 24, 2014, DVI sold EDGE to City of Glendale.⁶⁰

55. Pacific Gas & Electric (hereafter “PG&E”) issued a Request for Information for a Smart Grid Pilot Project to address Voltage and Reactive Power Optimization.⁶¹ DVI submitted a proposal for its EDGE product to achieve CVR. Alstom submitted a proposal highlighting the AMI functionality within the LVM module of e-terristribution to achieve CVR.⁶² DVI won PG&E’s pilot program. DVI and PG&E signed a contract for EDGE on May 15, 2014.⁶³

56. In June 2014, Duke and Itron, a meter manufacturer, presented a webinar. Duke discussed how Alstom intended to configure the AMI functionality within the LVM module of Duke’s e-terristribution product.⁶⁴

57. On July 1, 2014, Alstom and Duke signed a Statement of Work to begin the technical design and testing to configure the AMI functionality within the LVM module of Duke’s e-terristribution.⁶⁵

58. On July 25, 2014, Alstom employee Andy Geissbuehler told Alstom of Dominion’s concerns with Alstom’s “integrated distribution management system” because Dominion owned patents in the same area.⁶⁶

59. In July 2014, Jesse Gantz, an Alstom project manager, submitted a winning internal award application abstract for an Alstom Open Innovation Initiative. The abstract describes building the AMI functionality within the LVM module of e-terristribution.⁶⁷

60. On August 11, 2014, Carlos Brown, a Dominion Director, spoke with Alstom’s Doug McDonald regarding Dominion’s patents and sent a follow up e-mail attaching Dominion’s ’883 Patent.⁶⁸

61. Alstom signed the Statement of Work to configure the AMI functionality within the LVM module of Duke’s e-terristribution on July 1, 2014. It received direct notice of Dominion’s ’883 Patent on August 11, 2014.⁶⁹

62. On August 25, 2014, Alstom's McDonald asserted Alstom did not believe its e-terristribution 3.3 software infringed on Dominion's '883 Patent.⁷⁰

63. With knowledge of Dominion's '883 Patent, Alstom continued to configure the AMI functionality of the LVM module of Duke's e-terristribution.

64. Alstom expected the Duke project would take approximately 18 to 24 months to configure.⁷¹

65. Alstom held meetings over a "month or two" with Duke and smart meter manufacturer Itron to create a 60-page project design.⁷²

66. Alstom and Duke then started development which included modeling Duke's consumer information and building a replica of Duke's system at Alstom's offices for beta testing.⁷³

67. Alstom conducted tests and debugged the Duke system before Alstom delivered the infringing technology to Duke. Alstom then conducted test cycles at Duke, putting the technology on Duke's systems, doing off-line testing, and then testing the technology on-line.⁷⁴

68. Alstom completed this testing cycle at Duke three times, going back and fixing bugs between each test. After the on-site tests, Alstom and Duke both signed off on the technology.⁷⁵

Alstom does not address Dominion's concerns on the '883 Patent.

69. On August 26, 2014, Dominion's counsel wrote to Alstom following up on Dominion's August 11, 2014 notice of Dominion's '883 Patent and advising Alstom may need to license the '883 Patent.⁷⁶

70. Alstom did not believe it infringed on the Dominion's '883 Patent because the '883 Patent "was talking about a specific measurement way to do CVR, and we use a model-based system, not direct measurement system."⁷⁷

71. Alstom believed it could not infringe because the AMI functionality within the LVM module is part of its model-based system, DMS.⁷⁸

72. The infringing AMI functionality within the LVM module is included as part of Alstom's DMS system. Consumers pay for e-terristribution and the AMI functionality within the LVM module is included and Alstom offers it without charge.⁷⁹

73. Alstom did not review Dominion's patent claims with the specific skill in the art of reading patent claims.⁸⁰

74. Instead, the patent search did not trigger inquiry and Alstom's business people did not appreciate the '883 Patent's art as applied to Alstom's e-terristribution.

75. On September 17, 2014, several representatives from Alstom and Dominion met. Alstom repeated its position it did not infringe the '883 Patent but Alstom "could anticipate that they would be at some point in the future."⁸¹

76. Instead, in October 2014, Alstom marketed the AMI functionality within the LVM module of e-terristribution interface to First Energy to help sell its DMS.⁸²

77. On October 30, 2014, Dominion asked Alstom for more information about the AMI functionality within the LVM module of e-terristribution work being introduced with Duke. Alstom represented it was working with Duke to obtain a confidentiality waiver to share information with Dominion.⁸³

78. On November 6, 2014, Dominion met with Alstom. Alstom told Dominion it executed a release for Duke to share information with Dominion a while ago. Dominion told

Alstom its work with Duke might entitle Dominion to monetary damages because of the '883 Patent.⁸⁴

79. On November 11, 2014, Duke and Alstom signed a confidentiality waiver to share information with Dominion. Alstom also agreed to defend and/or settle, indemnify, and hold harmless and pay all damages for Duke for any infringement claim brought by Dominion challenging upgrading the LVM module for AMI data.⁸⁵

80. In early November 2014, Alstom decided internally not to share information with DVI about the AMI functionality within the LVM module of Duke's e-terristribution despite signing the non-disclosures and waivers of confidentiality.⁸⁶

81. In December 2014, Alstom asked Duke not to share information with DVI regarding AMI functionality within the LVM module of Alstom's e-terristribution system of Duke fearing "it may have a negative impact on [Alstom's] ability to defend any lawsuit."⁸⁷

Dominion sues but Alstom continues selling e-terristribution.

82. On January 16, 2015, Dominion sued Alstom alleging, among other things, Alstom directly infringed '883 Patent (under 35 U.S.C. § 271(a)) and Alstom indirectly infringed the '883 Patent by actively inducing Duke's infringement under § 271(c) and contributing to Duke's infringement under § 271(c). Dominion described Alstom's infringement as willful and deliberate.⁸⁸

83. Four days later, Duke and smart meter manufacturer Itron canceled a scheduled and advertised presentation at a DistribuTECH conference about using AMI functionality within the LVM module of e-terristribution because of Duke's concerns over Dominion's patent infringement claim.⁸⁹

84. On January 30, 2015, Alstom published Release Notes for e-terradistribution 3.3. Its Release Notes described AMI functionality within the LVM module of e-terradistribution as a key feature.⁹⁰

85. Alstom continued to advertise the AMI functionality within the LVM module of e-terradistribution in marketing material for electrical utilities.⁹¹

86. In February 2015, Alstom agreed to lift the cap on its indemnification of Duke for infringement litigation with Dominion. Alstom's parent company provided a guarantee in the event Alstom could not fully indemnify Duke.⁹²

87. On March 2, 2015, Duke and Alstom signed a contract for software support for the e-terradistribution 3.3 for five years.⁹³

88. Dominion continued to move forward with selling its '883 Patent included in EDGE.

89. Southern California Edison issued a Request for Proposal and under Volt/VAR Control technical specifications requested voltage information be obtained from AMI meters either directly or through a DMS.⁹⁴ DVI sold EDGE to Southern California Edison on March 20, 2015.⁹⁵

90. On April 7, 2015, DVI sold EDGE to Duck River Electric Cooperative.⁹⁶

91. On April 10, 2015, DVI sold EDGE to Nevada Energy.⁹⁷

92. On April 22, 2015, DVI sold EDGE to Hydro Ottawa.⁹⁸

93. On June 17, 2015, DVI sold EDGE to Pedernales Electric Cooperative.⁹⁹

94. On October 27, 2015, Dominion filed an Amended Complaint alleging imminent infringement of the '883 Patent under the Declaratory Judgment Act. Dominion alleged Alstom indirectly infringed by inducing Duke to infringe and by contributing to Duke's infringement.¹⁰⁰

95. In December 2015, while in litigation here, Alstom induced Duke's infringement of the '883 Patent by configuring the AMI functionality within the LVM module of Alstom's e-terristribution software and installing it on Duke Energy's systems. This final installment on Duke's system, approximately a year after Dominion sued, involved "maybe 20 people on-site, weeks of preparation" until midnight to configure the AMI functionality within the LVM module of Alstom's e-terristribution software on Duke's servers.¹⁰¹

96. On April 4, 2016, the parties cross-moved for summary judgment. Alstom argued, among other things, we should invalidate the '883 Patent due to prior art.¹⁰²

97. On May 6, 2016, we denied Dominion's motion for summary judgment and allowed Alstom's affirmative defense of patent invalidity based on prior art to proceed.¹⁰³

98. We held the jury trial from June 23 through July 1, 2016. Dominion argued the AMI functionality within the LVM module of Alstom's e-terristribution software, as installed on Duke's servers, literally infringed Dominion's '883 patent and sought lost profits. Alstom asked the jury to invalidate Dominion's patents.

99. On July 1, 2016, the jury returned its detailed verdict finding the AMI functionality within the LVM module of Alstom's e-terristribution software, as installed on Duke's servers, literally infringed on Dominion's '883 Patent.¹⁰⁴

100. The jury specifically found Alstom willfully induced Duke's infringement of Dominion's '883 patent.¹⁰⁵

101. The jury rejected Alstom's invalidity defense.¹⁰⁶

102. The jury found Dominion did not establish a basis for lost profits but awarded Dominion a reasonable royalty of \$486,000.¹⁰⁷

Post-trial steps and additional Alstom conduct with e-terradistribution.

103. The parties agree the jury's verdict grants Duke an implied license to use the AMI functionality within the LVM module of e-terradistribution 3.3 for 500,000 meters.

104. Given Alstom's extensive efforts during the litigation, Duke does not need Alstom's assistance to operate the AMI functionality within the LVM module for the 500,000 meters. Alstom does not provide Duke with technical support under the Statement of Work to configure the AMI functionality within the LVM module which is the genesis of the induced infringement verdict.

105. We heard evidence and argument on Dominion's permanent injunction request on September 15-16, 2016. We heard testimony from John Jarosz, economic expert for Dominion, Dr. Richard Brow, technical expert for Dominion, Jesse Gantz, a project engineer at Alstom, Leslie Ponder of Duke Energy, and Michael Chase, damages expert for Alstom. We carefully evaluated the credibility of their testimony. We also admitted many documents not introduced during the jury trial.

106. During the injunction hearing, Alstom admitted it "stopped selling the accused functionality to our customers and to new potential customers. We have also investigated modification to the software to prevent it from infringing on the accused AMI LVM functionality....We will remove the use of exception reports, as well as voltage measurement from high/low exception reports from AMI meters from both the bellwether meter selection algorithm, as well as the LVM solution itself" regardless of whether an injunction is issued.¹⁰⁸

107. During the injunction hearing, Alstom's Gantz described efforts at designing a new version of e-terradistribution which will not configure the AMI functionality within the

LVM module to infringe on Dominion's patent. It will take approximately six to eight weeks to design, implement, and test the new software.¹⁰⁹

108. In response to our questions, Alstom believes changes to the future versions of e-terristribution software, rather than an immediate patch to invalidate potentially infringing aspects of its LVM module, is more appropriate.¹¹⁰

109. We find Alstom's business explanation credible, but we need to promptly eliminate any risk of ongoing or imminently possible infringement with consumers we first heard of during the injunction hearing.

110. During the injunction hearing, Alstom admitted Florida Power & Light, Madison Gas & Electric, Nashville Electric Service, Pennsylvania Power & Light, and Snohomish County Public Utility District have Alstom's e-terristribution 3.3.

111. While these customers may elect not to do so, the AMI functionality within the LVM module of these five consumers' e-terristribution can be configured to infringe on Dominion's '883 patent.¹¹¹

112. Alstom admitted Madison Gas & Electric, Nashville Electric Service, and Snohomish County Public Utility District have e-terristribution 3.3 with an AMI interface but the interface cannot accept and use AMI voltage measurements in the LVM module.¹¹²

113. Alstom admitted Pennsylvania Power & Light and Florida Power & Light have e-terristribution 3.3 but do not have an AMI interface.¹¹³

114. The AMI functionality within the LVM module of Florida Power & Light, Madison Gas & Electric, Nashville Electric Service, Pennsylvania Power & Light, and Snohomish County PUD's e-terristribution 3.3 does not infringe on Dominion's '883 patent as configured today.¹¹⁴

115. Alstom represents it will not provide assistance to Florida Power & Light, Madison Gas & Electric, Nashville Electric Service, Pennsylvania Power & Light, and Snohomish County Public Utility District to build or enhance the AMI interface to configure the AMI functionality within the LVM module of e-terristribution 3.3.¹¹⁵

116. DVI and Alstom directly compete for electric utilities seeking AMI-based CVR solutions. No other AMI-based CVR exists. Utilidata uses proprietary data to receive voltage feedback from a sensor to perform CVR. Utilidata does not use AMI data and cannot measure voltage at the consumer's home.¹¹⁶

II. Analysis

On July 1, 2016, a jury selected by the parties found the AMI functionality within the LVM module of Alstom's e-terristribution, as installed with Duke Energy's systems, literally infringed on Dominion's valid '883 Patent. The jury found Alstom actively induced Duke's infringement and Alstom willfully infringed on Dominion's '883 patent. While finding no evidence of lost profits, the jury awarded Dominion a reasonable royalty of \$486,000.¹¹⁷

Dominion also seeks injunctive relief, enhanced damages, and reasonable attorney's fees.¹¹⁸ Dominion requests (1) we enjoin Alstom from making or selling the infringing AMI functionality within the LVM module; (2) we enjoin Alstom from providing assistance to Duke for the infringing AMI functionality within the LVM module; (3) we order Alstom remove the infringing AMI functionality within 30 days of our Order and Dominion be allowed to confirm removal; (4) we allow Dominion to inspect any Alstom product which has AMI functionality going forward; (5) we extend the permanent injunction until May 5, 2030; (6) we award enhanced damages of \$1,458,000 and reasonable attorneys' fees for time spent defending

Alstom's prior art invalidity claims; and, (6) a declaratory judgment Alstom would be liable for induced infringement should it sell the infringing AMI functionality.¹¹⁹ Alstom argues we must deny Dominion's motion.¹²⁰

A. Dominion demonstrated grounds for a limited permanent injunction.

"According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief": (1) it has suffered irreparable harm; (2) remedies at law are inadequate; (3) considering the balance of hardships between Dominion and Alstom, an injunction is warranted; and (4) public interest would not be disserved by an injunction.¹²¹

We begin our analysis with the present state of Alstom's infringing conduct. Alstom's Gantz admits since the jury verdict, Alstom has "stopped selling the accused functionality to our customers and to new potential customers. We have also investigated modification to the software to prevent it from infringing on the accused AMI LVM functionality. ...We will remove the use of exception reports, as well as voltage measurements from low/high exception reports from AMI meters from both the bellwether meter selection algorithm, as well as the LVM solution itself."¹²² Mr. Gantz testified Alstom is making these modifications to the AMI functionality within the LVM module even if we do not enjoin Alstom.¹²³

1. Irreparable Harm

Dominion suffered irreparable harm from Alstom's willfully induced infringement of the '883 Patent.

a. Dominion can suffer irreparable harm when its patent is infringed even when its agent DVI sells the patented product.

Dominion is an electric utility. It invented a patented way to use AMI data to conserve and reduce voltage. Executives at Dominion turned the invention into a marketable product on

believing other electric utilities would purchase its product to conserve voltage and reduce energy use. But Dominion, the patent holder, is an electric utility and does not market and sell products. Dominion created DVI, a wholly owned subsidiary, to sell EDGE to other electric utilities. DVI is Dominion's sales agent for EDGE with the '883 Patent. Dominion funds DVI so DVI's losses and potential profits flow back to Dominion's bottom line.

A patent owner may suffer irreparable harm from the loss of its right to exclude under *eBay*.¹²⁴ A parent company holding a patent can be irreparably harmed through the harm suffered by a subsidiary selling the patent.¹²⁵ In *Novozymes*, the parent company held but did not practice its patent. The parent's U.S. based subsidiary practiced the patent through a non-exclusive licensing agreement.¹²⁶ The district court denied standing to the subsidiary as a non-exclusive licensee of the patent.¹²⁷ The parent could not recover the subsidiary's lost profits¹²⁸ because the parent and subsidiary were separate corporations without an exclusive license but the parent, as here, did recover reasonable royalties.¹²⁹

The district court granted the parent an injunction. The parent company suffered irreparable harm because defendant infringed on its right to exclude others from its patent.¹³⁰ The parent company also suffered irreparable harm because it expected revenues from its subsidiary, as well as the value of the parent's patents to increase because of the subsidiary's marketing.¹³¹ "The subsidiary markets one of the two [patented products], and [the parent] expects its patents to exclude competitors from marketing either of them. In those circumstances, even though [the parent] does not market the [patented product] itself, it has suffered irreparable harm beyond the reasonable royalty."¹³²

Dominion suffered irreparable harm. Alstom infringed on Dominion's unique solution and detracted from Dominion's developing an innovative image by bringing the same AMI-

based CVR solution to market. Dominion's '883 Patent gives Dominion a right to exclude Alstom from its AMI-based CVR solution. Dominion is also harmed because Dominion expects DVI to successfully market EDGE and return profits and market share. Dominion and DVI do not have a licensing agreement but uncontradicted evidence confirms DVI is Dominion's agent created to sell EDGE. DVI markets EDGE for Dominion and Dominion expects its validly issued '883 Patent to exclude Alstom from marketing the same technology. Even though Dominion does not market EDGE itself, "it has suffered irreparable harm beyond the reasonable royalty."¹³³

b. Dominion establishes a causal nexus.

"The purpose of the causal nexus requirement is to establish the link between the infringement and the harm, to ensure that there is 'some connection' between the harm alleged and the infringing acts."¹³⁴ Dominion is harmed by lost uniqueness in the CVR market and Alstom caused this harm by selling Dominion's patented technology in the same market.

Dominion markets and sells its patented AMI-based CVR technology called EDGE to electric utilities. Alstom markets and sells the infringing AMI functionality within the LVM module of its distribution management system, e-terradistribution, to electric utilities. Electric utilities seek CVR solutions in their requests for proposals and some electric utilities issue a request for proposal solely for CVR solutions. For example, Pacific Gas & Electric ("PG&E") issued a request for proposal for a CVR solution pilot program. Alstom placed a bid and highlighted the infringing AMI functionality within the LVM module of e-terradistribution. Dominion also placed a bid offering its patented EDGE product. PG&E selected Dominion over Alstom but both parties offered identical AMI solutions.

Alstom would not be in this litigation absent for the AMI functionality within the LVM module of its e-terradistribution 3.3 product. Duke asked Alstom to add the AMI functionality within the LVM module of e-terradistribution. Alstom included the AMI functionality within the LVM module in its product release notes and e-terradistribution marketing material. We now know five other utilities presently have some capability to configure the AMI functionality within the LVM module.

Alstom argues Dominion cannot show the causal nexus between the harm and infringement because except Duke, not one of Alstom's customers has the interface to use the AMI functionality within the LVM module of e-terradistribution. This argument fails to mention Duke *asked* for the infringing functionality which shows "some connection" between demand for the infringing product and a potential lost sale of Dominion. If we looked only at Duke, we would punish Dominion for swiftly asserting its patent rights and halting Alstom's sales and marketing progress with other electric utilities. The causal nexus requirement is satisfied because Alstom's marketing and configuration of the AMI functionality within the LVM module of e-terradistribution 3.3 has "some connection" to the lost sales, reputational harm, price erosion, and marketing disadvantages harming Dominion.¹³⁵

c. Dominion and Alstom directly compete.

Dominion's EDGE product directly competes against Alstom's infringing AMI functionality within the LVM module of e-terradistribution. "Direct competition in the same market is certainly one factor suggesting strongly the potential for irreparable harm."¹³⁶

Dominion created a unique solution in the CVR market. EDGE uses the AMI voltage readings from smart meters to reduce voltage in a different manner than other CVR solutions. As the jury found, Alstom offers this same AMI-based CVR solution by infringing on

Dominion's '883 Patent. No other company offers an AMI-based CVR solution to electric utilities.¹³⁷ But for Alstom's infringement, Dominion would be the only company offering an AMI-based CVR solution to electric utilities.

Alstom argues Dominion and Alstom do not directly compete because the relevant market is companies offering CVR solutions, not AMI-based CVR solutions. Alstom argues AMI-based CVR solution is an impermissibly narrow market definition under *BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc.*¹³⁸ In *BIC*, the Federal Circuit reviewed the district court's award of lost profits.¹³⁹ The plaintiff, Windsurfing, patented and sold sailboards and defendant, BIC, infringed on Windsurfing's patent in constructing sailboards. BIC sold low-priced sailboards designed for entry level customers and Windsurfing sold high-priced sailboards designed for competition.¹⁴⁰ The district court calculated lost profits by "presuming that Windsurfing would have captured a share of BIC's sales in proportion to Windsurfing's share of the sailboard market."¹⁴¹ The Federal Circuit held the district court improperly segmented the sailboard market to only compare BIC and Windsurfing and ignored other companies which sold sailboards at prices between BIC and Windsurfing.¹⁴²

Sailboards may require different user skill levels but are essentially the same item. This comparison does not apply to different methods of voltage reduction which achieve the same end goal of CVR. Dominion's '883 Patent is a novel method of conserving voltage in an electric grid. The CVR market is more similar to the fuel economy market for cars. A Tesla and a Chevy Malibu Hybrid achieve the same overarching goal of reduced fossil fuel use but they do not directly compete because Tesla is battery operated and Chevy Malibu is gas and electric operated. Dominion and Alstom operate in the CVR market generally but because of Alstom's infringement, they directly compete for consumers seeking AMI-based CVR solutions.

d. Dominion will lose future sales.

Dominion will lose future sales if Alstom is not enjoined from configuring the infringing AMI functionality within the LVM module of e-terradistribution. Dominion invented AMI-based CVR in 2009 and began creating a market for AMI-based CVR in 2011. “Loss of market share in this nascent market is a key consideration in finding that Plaintiff suffers irreparable harm – Plaintiff is losing market share at a critical time in the market’s development, market share that it will not have the same opportunity to capture once the market matures.”¹⁴³

Alstom argues Dominion’s lost future sales are pure speculation. Dominion’s invention is approximately six years old and the ’883 patent is just over three years old. EDGE is a novel product. John Jarosz, Dominion’s expert, could not predict the future market. Dominion will suffer lost sales because Alstom’s infringement started shortly after Dominion started selling EDGE in the nascent AMI-based CVR market.¹⁴⁴

Alstom further argues Mr. Jarosz “does not establish that DVI will lose sales to Alstom Grid specifically, let alone that DVI will lose such sales because of the accused functionality.”¹⁴⁵ Dominion only markets one product line, EDGE, which is entirely AMI-based CVR. Absent evidence not shown to us, Dominion’s loss of a sale to Alstom could credibly be found to derive from the AMI functionality within the LVM module of e-terradistribution.

e. Dominion will lose potential business relationships.

Dominion will lose potential business relationships because the price and product design differences between EDGE and e-terradistribution and because of the different company structures between Dominion and Alstom.¹⁴⁶ EDGE is the first product Dominion brought to market. Dominion is building a customer base. Alstom sells software products to electric

utilities as its core business function. Alstom has strong existing business relationships with customers. EDGE is a stand-alone product unlike Alstom's infringing AMI functionality within the LVM module housed in e-terristribution 3.3, a multi-purpose distribution management system. Dominion charges for each EDGE meter but Alstom offers the infringing AMI functionality within the LVM module embedded in the e-terristribution price. If Alstom continued infringing, an electric utility who is already an Alstom e-terristribution customer but who seeks an AMI-based CVR solution could be a lost potential business relationship to Dominion.

f. Dominion will suffer reputational damage and marketing harms.

Dominion will suffer reputational and marketing harm because Alstom's continued infringement destroys Dominion's ability to offer a one-of-kind product and reputation as a cutting-edge innovator. "The value of continued infringement is unknown. Defendant has taken from plaintiff not only this important business, but the recognition of being a technology innovator and the first global supplier of the patented technology, and an unquantifiable amount of business opportunities flowing therefrom. Such harms are not compensable in damages."¹⁴⁷ Alstom argues Dominion's reputational harm is not "concrete and corroborated" because Dominion does not have evidence of harmed reputation.¹⁴⁸ Alstom is citing the standard applied by district courts in reviewing a motion for a preliminary injunction. "A preliminary injunction is an extraordinary remedy" and the court must decide if irreparable harm to the plaintiff is likely *before* the case is decided on the merits.¹⁴⁹ Preliminary injunction cases do not apply here. We decided the case on the merits after an exhaustive review of evidence.

g. Continued infringement will erode price.

Fundamental principles of supply and demand will force Dominion to lower the price for EDGE if Alstom continues to infringe. Alstom already offers the infringing product for no price as an add-on. Alstom offered Xcel Energy the infringing AMI functionality within the LVM module for free.¹⁵⁰ EDGE is a stand-alone product unlike Alstom's infringing AMI functionality within the LVM module housed in e-terradistribution 3.3's multi-purpose distribution management system. Dominion charges for each EDGE meter, and Alstom offers the infringing AMI functionality within the LVM module under the e-terradistribution 3.3 price. If Alstom continues infringing, Dominion would need to lower its price to compete for CVR consumers because those consumers otherwise have no incentive to pay for something they get arguably for free.

Alstom argues "the fact that Duke would not have paid DVI's price only serves as evidence that DVI's prices are too high; it does not provide the requisite causation to show that any alleged sale was because of the limited functionality at issue."¹⁵¹ Alstom's argument is confusing. Duke testified it was not aware of EDGE in 2013 when Duke approached Alstom about AMI-based CVR so the testimony solicited about whether Duke would have paid DVI's price is hypothetical.¹⁵² Alstom hypothetically argues if Duke had to choose between the two products and did not buy EDGE, a product offering *only AMI based-CVR*, it is proof Dominion's price is too high but does not prove Alstom's sale of e-terradistribution to Duke had anything *to do with the infringing AMI functionality*. This argument does not make sense; if hypothetically Duke picks between EDGE and Alstom's e-terradistribution 3.3 then the infringing functionality *must be the causation* because the desired AMI functionality is the only feature those products have in common.

Alstom argues price erosion cannot be shown because “no Alstom Grid customer who purchased e-terristribution has ever used the accused AMI-LVM functionality.” Alstom’s argument fails to acknowledge Alstom told its consumer not to use the AMI functionality within the LVM module of e-terristribution. Because Alstom offers its CVR solution arguably for free, Dominion would have to lower its price to compete for CVR consumers if Alstom continues infringing.

h. Dominion’s willingness to grant a license.

A patent holder’s unwillingness to license its patent is a factor in finding irreparable harm but permanent injunctions are not foreclosed simply because a patent holder licensed its patent.¹⁵³ The parties disagree about whether Dominion offered to license its patent or license its product in the pre-litigation letter sent by Dominion counsel stating Alstom “may need a license to Dominion Patents and possibly to other Dominion technology.”¹⁵⁴ In a later email, Dominion suggests giving “a blanket license for EDGE” and Dominion’s officer testified the pre-litigation letter also referred to a license for EDGE.¹⁵⁵ Imprecise language aside, Dominion filed a patent infringement action against Alstom less than five months after the initial offer of a license and, taken with the other factors, show Dominion would suffer irreparable harm if Alstom continued infringing the ’883 Patent.

2. No adequate remedies at law.

Monetary damages are not adequate because AMI-based CVR is a new market and without accurate forecasts, it is difficult to predict demand and market share. Alstom’s infringing activity commenced so close in time to Dominion bringing EDGE to market, it is impossible to reconstruct a “but for” economic picture. Dominion lost the “recognition of being a technology innovator and the first global supplier of the patented technology, and an

unquantifiable number of business opportunities flowing from the innovative technology. Such harms are not compensable in damages.”¹⁵⁶

Alstom argues the jury’s award of reasonable royalties for past infringement implies monetary damages are adequate remedy for future infringement. Alstom’s argument lacks merit. If an award of money damages for past infringement cuts off a patent holder’s motion for permanent injunction for future infringement, then permanent injunctions would be obsolete instead of a common occurrence after an infringement verdict.¹⁵⁷ Granting a permanent injunction after an award of money damages is a common occurrence.¹⁵⁸

Alstom also argues a post-verdict article reporting “[DVI’s] Headlee said that a permanent injunction was DVI’s primary goal, seeking payments instead ‘could be an option but first, we had to get a verdict to get them to stop’” shows money damages are adequate. We disagree. Mr. Headlee is a businessman acknowledging the real world possibilities if we do not grant a permanent injunction. Dominion is entitled to a permanent injunction because monetary damages will not adequately remedy Dominion’s injury.

3. Balance of hardships tips in favor of Dominion.

Alstom’s representations, through Jesse Gantz and counsel, moot extensive analysis of the balance of hardships. A jury found Alstom willfully infringed Dominion’s patent rights.

On balance, Alstom suffers no hardship by a limited injunction. Mr. Gantz admitted since the jury verdict Alstom has “stopped selling the accused functionality to our customers and to new potential customers. We have also investigated modification to the software to prevent it from infringing on the accused AMI LVM functionality. ... We will remove the use of exception reports, as well as voltage measurements from low/high exception reports from AMI meters from both the bellwether meter selection algorithm, as well as the LVM solution itself.”¹⁵⁹ Mr. Gantz

testified Alstom is making these modifications to the AMI functionality within the LVM module even if we do not enjoin Alstom.¹⁶⁰ Alstom will suffer no hardship under the permanent injunction because it agrees not to sell regardless of our Order.¹⁶¹

4. Public interest is served by a permanent injunction.

The public interest is served by permanently enjoining Alstom because our Order defends the property rights of patent owners. This injunction protects a company who invented a new product and took the financial risk to market it. Our injunction also serves the public interest because Dominion's invention conserves energy and will save customers money. We hope to encourage companies to innovate in the energy conservation area after investing time and expertise.

The public interest is not disserved by a permanent injunction because this injunction will only affect six electric utilities out of approximately 3,300 in the United States. Alstom voluntarily stopped configuring the AMI functionality within the LVM module of e-terradistribution for all future customers. The AMI functionality within the LVM module of e-terradistribution for five customers is not configured so it is a dormant functionality and does not harm the public interest. Alstom will be enjoined from assisting Duke with the infringing AMI functionality within the LVM module of its e-terradistribution. Duke testified it would not use the infringing AMI functionality within the LVM module if we enjoined Alstom from assisting Duke. Duke's customers will not be harmed nor will the power grid be harmed if Duke never "goes live" with 500,000 infringing smart meters. Duke is also not injured after negotiating an unlimited indemnification from Alstom guaranteed by Alstom's parent.

5. Scope of a permanent injunction.

a. General injunction.

Upon the entry of our October 3, 2016 Order¹⁶², Alstom is permanently enjoined from making, using, selling, offering to sell, or importing any product including the infringing AMI functionality within the LVM module of Alstom's e-terristribution software, including as installed with Duke Energy's systems.

b. Injunction concerning Duke Energy.

Alstom is permanently enjoined from providing programming, maintenance, and/or other support services in connection with the currently-installed infringing AMI functionality at Duke Energy. Duke is not an innocent consumer. Duke and Alstom discussed configuring the AMI functionality within the LVM module of e-terristribution in June 2013 and signed Statements of Work to begin configuration in July 2014. Less than a month after Alstom and Duke actively commenced work, Alstom and Duke received notice from Dominion of its belief Alstom's project with Duke likely infringed on Dominion's patents. Duke and Alstom continued the 12-18 month project, extensively testing, debugging, and installing the interface to configure the AMI functionality of the LVM module of e-terristribution. After this litigation began, but before the jury entered a verdict, Alstom and Duke signed a software support contract.

"One is entitled to repair that which is sold free of liability for infringement."¹⁶³ In *ePlus, Inc. v. Lawson Software, Inc.* the Federal Circuit upheld a permanent injunction enjoining a party from servicing and maintaining products sold before the injunction.¹⁶⁴ The Federal Circuit distinguished *ePlus* from cases where it allowed servicing an infringing product. In *Fonar Corp. v. General Electric Co.*, the patent holder failed to mark its products so the district court allowed the infringer to repair infringing products sold before the litigation began.¹⁶⁵ In *Odetics, Inc. v.*

Storage Technology Corp., the infringer could service infringing products sold during the laches period because the patent holder failed to assert its patent infringement claims.¹⁶⁶

Alstom did not configure the AMI functionality within the LVM module of Duke's e-terristribution during a laches period nor did Dominion default as a patent holder. Alstom induced Duke's infringement and completed the bulk of the configuration with full knowledge it might be infringing on Dominion's '883 Patent. Duke and Alstom signed a software support contract during this litigation. Duke is not entitled to repair because Alstom did not sell and configure the AMI functionality of the LVM module free of liability for infringement. None of this is surprising. Alstom indemnified Duke for any litigation costs and damages related to Dominion's patents. Duke suffers little or no loss compared to Dominion's infringed patent rights moving forward.

c. Injunction concerning five customers with e-terristribution 3.3.

As to the five customers (Florida Power & Light, Madison Gas & Electric, Nashville Electric Service, Pennsylvania Power & Light, and Snohomish County PUD) who have a version of e-terristribution where the AMI functionality within the LVM module can be configured to infringe on Dominion's '883 patent, Alstom is permanently enjoined from providing programming, or any assistance to build or enable the infringing AMI functionality of the LVM module of those consumers' e-terristribution 3.3. Alstom must also promptly inform these five consumers if they attempt to configure the AMI functionality within the LVM module themselves, they will be infringing on Dominion's patents. The jury did not award Dominion a reasonable royalty for these five customers so they have no implied license to use Dominion's patented technology.

d. Dominion cannot inspect Alstom’s products.

We deny Dominion’s request to inspect, at Alstom’s cost, Alstom’s e-terradistribution versions 3.3 and later to ensure AMI functionality has been removed. Dominion’s request is overbroad and outside the equitable relief granted in permanent injunctions.¹⁶⁷ To ensure future compliance, Alstom will provide Dominion with a quarterly certification signed by Alstom’s general counsel and trial counsel attesting Alstom is complying with the injunction subject to this Court’s enforcement. This minimally invasive measure, arguably consistent with counsel’s obligation to this Court, also provides the patent holder and the public with comfort as to Alstom’s compliance.

B. Enhanced Damages

We award Dominion \$972,000 in enhanced damages under 35 U.S.C. § 284 because Alstom willfully and egregiously induced Duke’s infringement while aware of Dominion’s ’883 Patent. We can award enhanced damages under § 284 because a “reasonable royalty found, like actual damages, may be increased under the statute....reasonable royalty allowed here is general damage and not profits.”¹⁶⁸ We find Alstom’s conduct egregious under *Halo* and the *Read* factors. Alstom’s behavior in continuing to configure Duke’s system after notice evidences subjective bad faith. Additionally, seven of the nine *Read* factors weigh in favor of awarding enhanced damages. We do not award up to three times the reasonable royalties recognizing these factors.

1. The *Halo* impact.

On June 13, 2016, the Supreme Court decided *Halo Electronics, Inc. v. Pulse Electronics, Inc.* which changed our test for awarding enhanced damages.¹⁶⁹ Before *Halo*, we determined awards of enhanced damages under Federal Circuit’s *Seagate* test. *Seagate* required

the patent holder to “show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent.”¹⁷⁰ The district court did not take the “state of mind of the accused infringer” and determined objectiveness of the recklessness “by the record developed in the infringement proceedings.” If the record of the infringement proceedings raised a “substantial question” of validly or non-infringement, the first step is not satisfied.¹⁷¹ The second step of *Seagate* required the patent holder to show by clear and convincing evidence the risk of infringement “was either known or so obvious that it should have been known to the accused infringer.”¹⁷²

The principal issue with the *Seagate* test is finding “objective recklessness” of the infringer “which excludes from discretionary punishment many of the most culpable offenders.”¹⁷³ Requiring “objective recklessness” of the infringer is made worse because *Seagate* “makes dispositive the ability of the infringer to muster a reasonable (even though unsuccessful) defense at the infringement trial.”¹⁷⁴

“[T]he Supreme Court’s decision in *Halo* expressly rejected the notion that recklessness must be found...the Court explained that an infringer’s subjective bad faith *alone* may support an award of enhanced damages.”¹⁷⁵ Under *Halo*, we assess the infringer’s state of mind “at the time of the challenged conduct . . . *not if they muster a reasonable (even though unsuccessful) defense at the infringement trial.*”¹⁷⁶

In the post-*Halo* decision *Innovention Toys v. MGA Entertainment*, the jury found willful infringement and the district court awarded enhanced damages.¹⁷⁷ The Federal Circuit reversed the district court’s finding of willfulness because under *Seagate* the “obviousness challenge presented by [defendant] in the litigation was not objectively unreasonable.”¹⁷⁸ The Supreme Court vacated and remanded for further consideration in light of *Halo*.¹⁷⁹

On remand, the Federal Circuit held “the [Supreme] Court held that objective reasonableness of the infringer’s litigation defense does not preclude a finding of willful misconduct.”¹⁸⁰ Under *Halo*, “the predicate of willful misconduct is established by the jury’s finding that [defendant] was subjectively willful.”¹⁸¹ The district court should conduct its discretionary review with an “emphasis on egregiousness; willful misconduct has already been established by a verdict that *Halo* does not warrant disturbing.”¹⁸²

The jury found Alstom willfully induced Duke’s infringement.¹⁸³ Under *Halo*, “willful misconduct” is established by a jury finding of willful infringement.¹⁸⁴ Alstom’s established willful misconduct requires we turn to the egregiousness of Alstom’s conduct at the time of infringement. Duke and Alstom signed Statements of Work on July 1, 2014 to begin configuring the AMI functionality within the LVM module of Duke’s e-terradistribution. In late July 2014, Alstom already knew of Dominion’s concern, including asking questions about Alstom’s work with Duke. Less than a month after Alstom and Duke began infringing, Dominion told Alstom and Duke that Alstom’s project with Duke likely infringed on Dominion’s patents.

Yet Alstom and Duke continued configuring the infringing AMI functionality. Alstom held meetings with Duke and manufacturer Itron and created a 60 page project design which took a “month or two.”¹⁸⁵ Alstom and Duke then started development which included modeling Duke’s customer information and building a replica of Duke’s system at Alstom’s offices for beta tests. Alstom conducted tests and debugged Duke’s system. Alstom delivered the infringing technology to Duke. Alstom then conducted test cycles at Duke, putting the technology on Duke’s systems, doing off-line testing, and testing the technology on-line. Alstom completed this testing cycle at Duke three times, going back and fixing bugs between each test. After the on-site tests, Alstom and Duke both signed off on the technology. The final installment on

Duke's system took place "with maybe 20 people on-site, weeks of preparation" until midnight and then the AMI functionality within the LVM module of Alstom's e-terradistribution software, as installed with Duke's system literally infringed on Dominion's '883 Patent.¹⁸⁶

Alstom's conduct is egregious because it had direct notice from Dominion and Dominion's *outside counsel* of the '883 Patent from the second month of the intense lengthy installation project with Duke. Alstom estimated the entire installation at Duke took 18-24 months and Alstom and Duke were on notice of possible infringement for almost the entire duration of the project.

Alstom argues its conduct is not egregious or willful because at the time of actual infringement, in December 2015, Alstom already asserted good faith defenses of non-infringement and invalidity in the litigation. Alstom attempts to use its state of mind on the final day of a 12-18 month project to argue its conduct is not egregious because "it was December 2015. We were in litigation."¹⁸⁷ Alstom's argument goes against the letter and the spirit of *Halo* and tries to return to the *Seagate* test where a good faith litigation defense could defeat enhanced damages. The Supreme Court criticized the *Seagate* test because it allowed "someone who plunders a patent—infringing it without any reason to suppose his conduct is arguably defensible—can nevertheless escape any comeuppance under § 284 solely on the strength of his attorney's ingenuity."¹⁸⁸

For Alstom's argument to succeed we would have to ignore reality and view Alstom's inducement of Duke similar to flipping on a light switch one day in December 2015. The facts are Alstom and Duke discussed configuring the AMI functionality within the LVM module in 2013. Alstom and Duke signed Statements of Work in July 2014 to begin the project. Alstom and Duke were on notice by August 2014 they might be infringing on Dominion's '883 Patent.

Alstom and Duke continued their project to configure the AMI functionality of the LVM module. Dominion sued Alstom for induced infringement on January 16, 2015. Alstom and Duke continued their project to configure the AMI functionality of the LVM module. Dominion and Alstom litigated this induced infringement claim for the next eleven months while Alstom and Duke continued their project to configure the AMI functionality of the LVM module. In December 2015, the literal infringement occurs.

Alstom asks us to ignore the first eight sentences above and the seventeen month history they represent and focus on December 2015 with blinders on. We cannot do so. We double the damages and award Dominion \$972,000 in enhanced damages because looking at the totality of the circumstances, particularly the jury's finding of willfulness and Alstom's egregious conduct under the *Read* factors examined below.¹⁸⁹ We do not find Alstom's conduct so egregious to warrant treble damages under § 284 because two *Read* factors, closeness of the case and behavior as a party to litigation, weigh in Alstom's favor.¹⁹⁰ Additionally, there is only an inference of copying present.

2. *Read* factors

We decide to award enhanced damages in light of the *Read* factors designed by the Federal Circuit.¹⁹¹ While *Halo* changed the test for determining willful misconduct in enhanced damages, we continue to use the *Read* factors to aid our discretion.¹⁹² “An award need not rest on any particular factor, and not all relevant factors need to weigh in favor of an enhanced award.”¹⁹³ We use the *Read* factors, not as a formal checklist, but looking at the totality of the circumstances and deciding by the preponderance of the evidence whether Alstom's conduct is egregious.¹⁹⁴

a. Inference of copying.

Alstom had the means and opportunity to copy Dominion's patent. We do not require evidence of blatant copying.¹⁹⁵ In *WBIP*, the accused infringer attended a trade show where the patent owner presented its product before the accused infringer developed an infringing product.¹⁹⁶ While not a "smoking gun" to prove copying, it supports the inference the accused infringer "was at least reckless as to whether it copied."¹⁹⁷ Alstom attended a September 2011 trade show where Dominion presented its EDGE product and discussed AMI-based CVR. Alstom presented the infringing AMI functionality within the LVM module for the first time 9 months after Alstom attended the trade show where Dominion presented AMI-based CVR.

Alstom argues it developed the "accused functionality no later than July 2007, nearly three years before the '883 patent was filed."¹⁹⁸ While Alstom may have conceptualized using AMI functionality within the LVM module in 2007, it was merely a concept. Alstom did not publically present its AMI-based CVR solution until after Alstom saw Dominion's EDGE product. If Alstom already could do the same AMI-based CVR for five years before Dominion presented in 2011, we find it incredible why it would wait until June 24, 2013 to describe the plan to configure the AMI functionality within the LVM module of Duke's systems "huge in terms of marketing because it will move us forward to regain our leading position in AMI integration."¹⁹⁹ Alstom had the means and opportunity to copy Dominion's patent. Alstom's presence at the 2011 trade show supports the inference Alstom "was at least reckless as to whether it copied" Dominion's patent.²⁰⁰

b. No good faith belief in non-infringement or invalidity.

Alstom did not have a good faith belief in non-infringement or invalidity because it did not conduct a proper review of Dominion's patents after August 11, 2014 when Alstom had

direct notice. Alstom did not believe it infringed on the Dominion '883 Patent because the Dominion patent “was talking about a specific measurement way to do CVR, and we use a model-based system, not direct measurement system.”²⁰¹ Alstom believed because the AMI functionality within the LVM module is part of a model-based system, the DMS, it could not infringe. Alstom admits not having someone with the specific skill in the art of reading patent claims reviewing Dominion’s patent. “It is fundamental that one cannot avoid infringement merely by adding elements if each element recited in the claims is found in the accused device.”²⁰² Alstom’s belief it did not infringe because the AMI functionality within the LVM module is housed in the “model-based system” DMS is based entirely on the opinion of people without expertise in reading patent claims. On balance, it is not a good faith belief in non-infringement.²⁰³

c. Alstom’s behavior as a party to the litigation.

This factor is neutral in the award of enhanced damages. Alstom’s behavior “as a party to the litigation” is not egregious.²⁰⁴ Alstom did not commit litigation misconduct like “discovery abuses, failure to obey orders of the court, or acts that unnecessarily prolong litigation.”²⁰⁵ Dominion urges us to consider Alstom’s outside court behavior. We disagree because *Read* asks to us judge Alstom “as a party to the litigation” not Alstom’s outside court behavior during the litigation.

d. Alstom’s size and financial condition.

Alstom’s size and financial condition supports awarding enhanced damages. Alstom Grid, Inc. is part of a French parent company Alstom. On November 2, 2015, during the course of this litigation, General Electric purchased Alstom.²⁰⁶ Alstom had direct notice of Dominion’s '883 Patent on August 11, 2014. The healthy financial condition of Alstom Grid allowed it to

induce Duke's infringement by offering Duke unlimited indemnity for any litigation and damages related to Dominion's patents in November 2014. The healthy financial condition of Alstom's parent company allowed it to continue inducing Duke's infringement after Dominion sued on January 16, 2015. In February 2015, Alstom gave Duke uncapped indemnity and its parent company guaranteed indemnity if Alstom is unable to pay.

Alstom's size and financial condition weigh in favor of awarding enhanced damages because, but for Alstom's ability to indemnify Duke, the infringing AMI functionality of the LVM module might have never been configured to infringe on Dominion's '883 patent.

e. Closeness of the issues in the case.

This factor is neutral in our award of enhanced damages. The affirmative defenses of invalidity due to prior art and obviousness were close calls. We denied Dominion's motion for summary judgment on validity and its Rule 50(a) motion.²⁰⁷ We allowed Alstom's invalidity defense to proceed to the jury because of the closeness of the issue.

f. Duration of Alstom's misconduct and its remedial actions.

The duration of Alstom's misconduct weighs in favor of awarding enhanced damages. The duration is egregious because Alstom had direct notice from Dominion and Dominion's *outside counsel* of the '883 Patent from the second month of the intense lengthy installation project with Duke.²⁰⁸ Alstom estimated the entire installation at Duke took 18-24 months and Alstom was on notice of possible infringement for almost the entire duration of the project. We also factor Alstom's recent post-verdict decision to avoid any possible infringing activity as showing belated efforts. Alstom is not willing to issue a patch to correct the infringing software but prefers, for business reasons, to issue a complete new version of its e-terradistribution software. In so doing, Alstom allows Duke and possibly the five other consumers to go live.

Our injunction addresses this risk as Alstom's unwillingness to immediately issue a patch tellingly indicates ongoing intransigence in light of the jury's verdict.

g. Alstom's remedial actions.

This factor weighs in favor of awarding enhanced damages because Alstom did not take full remedial action after learning of possible infringement. Instead, Alstom continued working with Duke to configure the infringing AMI functionality within the LVM module right through this litigation. Alstom argues it took remedial action because in December 2015, Alstom told Duke not to use the AMI functionality within the LVM module until this litigation resolved. We do not consider Alstom's instruction to Duke in December 2015 to be full remedial action. Alstom spent the previous eleven months building the foundation, handed Duke the infringing product, and then told Duke to not use the infringing product with full knowledge the technology might be infringing on Dominion's '883 Patent. Alstom could have taken remedial action long before telling Duke not to go live in December 2015.

Alstom also argues it took remedial action because it will not configure the AMI functionality within the LVM module of the five customers who have e-terristribution 3.3 and is no longer selling a version of e-terristribution with the capability to configure the AMI functionality within the LVM module. This post-verdict remedial action does not outweigh their pre-verdict lack of fulsome remedial action. It does, however, persuade us not to award treble enhanced damages.

h. Alstom's motivation to harm.

This *Read* factor weighs in favor of enhanced damages because Alstom's motivation to harm came from its touted desire for a competitive advantage over Dominion. Alstom knew of Dominion's AMI-based CVR through trade shows when it decided to implant the AMI

functionality within the LVM module of its e-terristribution 3.3 and later versions. In June 2013, Alstom discussed configuring the AMI functionality within the LVM module of Duke's e-terristribution, "[t]he importance of this work for e-terristribution is huge in terms of marketing because it will move us forward to regain our leading position in AMI integration—using AMI as a customer (“prosumer”) level equivalent to SCADA.”²⁰⁹ In September 2013, Alstom received Dominion's press release about Dominion's sale of EDGE to the City of Naperville and decided to try for the City of Naperville's business too. Alstom is motivated to harm because Alstom wants to “regain” the lead in the AMI-based CVR market and needs to beat Dominion, the only other competitor.

i. Alstom's attempts to conceal its misconduct.

This factor weighs in favor of awarding enhanced damages because Alstom took the carrot and stick approach with Dominion from August 2014 until Dominion sued in January 2015.

On October 30, 2014, Dominion asked Alstom for more information about the AMI functionality within the LVM module of e-terristribution work being introduced with Duke. Alstom represented working with Duke to obtain a confidentiality waiver to share information with Dominion. In early November, Alstom decided internally not to share information with Dominion about the AMI functionality within the LVM module of Duke's e-terristribution.

On November 6, 2014, Alstom said it signed a release form for Duke to share information with Dominion a “while ago” and, once Duke signed off, Alstom would share the information. Dominion's CEO reached out to Duke's CEO to try and get this waiver signed. On November 11, 2014, Duke and Alstom signed the confidentiality waiver to share information with Dominion even though Alstom decided it would not share information. In December 2014,

Alstom stopped and asked Duke not to share information with Dominion either. Alstom did not tell Dominion. Alstom kept offering Dominion the carrot of information but then found another hurdle to delay giving information to Dominion.

Even during the litigation, Alstom did not admit its ongoing actions with Duke. Dominion discovered the extent of infringement with Duke through third party discovery. Alstom referred to other customers in large scale document production and Dominion possibly should have found this information during discovery. Again, Alstom's conduct in secretly proceeding with Duke and being less than fully candid concerning the other five consumers is enough to find this factor weighs in favor of some measure of enhanced damages.

C. Dominion has not shown a basis for requested attorney's fees.

We deny Dominion's request for attorneys' fees incurred responding to Alstom's prior art invalidity claim. The award of attorneys' fees in a patent case is reserved for "exceptional" cases. Under *Octane Fitness*, "an 'exceptional' case is simply one that stands out from others with respect to the substantive strength of a party's litigating position...or the unreasonable manner in which the case was litigated."²¹⁰ We look at the totality of circumstances to decide if a case is "exceptional."²¹¹

Alstom's litigation conduct is not exceptional because Alstom's prior art defense is not meritless. We denied Dominion's motion for summary judgment on validity and its Rule 50(a) motion.²¹² We allowed Alstom's invalidity defense to go to the jury because we did not find it meritless. While Alstom's behavior outside court warranted enhanced damages, Alstom's litigation conduct is not "exceptional" and its prior art invalidity claim did not stand out from other cases as unreasonable.²¹³

D. Declaratory Judgment

Dominion requests declaratory judgment stating Alstom would be liable for induced infringement should it sell its software with the AMI functionality within the LVM module configured like Duke Energy's systems. To grant a declaratory judgment, Dominion must show "sufficient allegation of immediacy and reality" at that time to meet the actual controversy requirement for a declaratory judgment suit."²¹⁴ Dominion does not sufficiently show potential infringement is immediate and real so its request for declaratory judgment is denied.²¹⁵

III. Conclusions of law

1. Dominion will suffer irreparable harm if Alstom continues infringing.
2. Dominion has no adequate remedy at law.
3. The balance of hardships weighs in favor of Dominion.
4. The public interest will not be disserved by enjoining Alstom.
5. The jury compensated Dominion for Duke's 500,000 meters. The jury's award did not include Alstom's maintenance and service of Duke's infringing product. We will enjoin Alstom's further servicing of the infringing product.
6. Alstom's e-terradistribution 3.3 as presently installed on Florida Power & Light, Madison Gas & Electric, Nashville Electric Service, Pennsylvania Power & Light, and Snohomish County PUD does not infringe on the '883 Patent. Those five consumers' e-terradistribution 3.3 can be configured to infringe on Dominion's '883 patent in the same manner as the infringing AMI functionality within the LVM module as installed with Duke Energy's systems. The substantial risk of Alstom moving forward with these consumers warrants limited injunctive relief.
7. Alstom's conduct at the time of infringement is willful and egregious.

8. Alstom's manner of litigating its prior art defense is not exceptional under the totality of the circumstances particularly given the significance of the case to the parties and the diligent professional efforts of all counsel.

9. There is no immediate and real infringement of Dominion's '883 patent warranting declaratory relief.

IV. Conclusion

Dominion and Alstom vigorously litigated patent infringement, invalidity and damages. They selected an attentive jury which heard from several witnesses and reviewed over a hundred admitted exhibits. The jury found Alstom, through its AMI functionality within the LVM module of its e-terristribution 3.3 software installed with Duke Energy's systems, willfully and literally infringed on Dominion's '883 Patent. In the accompanying Order, we partially grant Dominion's request for permanent injunctive relief and enhanced damages but deny the requests for attorney's fees and a declaratory judgment.

¹ ECF Doc. No. 331, Joint Appendix "JA", JA_005611.

² JA_005612-13.

³ JA_005614-15.

⁴ We are aware many types of AMI data exist. When we use the term "AMI data", we refer to the real time voltage measurements received from smart meters located in a customer's home.

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- ⁵ JA_005615-16.
- ⁶ JA_005615-16.
- ⁷ JA_005617-18.
- ⁸ JA_005619-20.
- ⁹ JA_005625-26.
- ¹⁰ JA_005625-26.
- ¹¹ N.T. June 23, 2016 PM p. 84:2-14.
- ¹² N.T. June 23, 2016 PM p. 115:16-116:1.
- ¹³ N.T. June 23, 2016 PM p. 110:6-111:9.
- ¹⁴ N.T. June 24, 2016 PM p. 69:12-17.
- ¹⁵ N.T. June 24, 2016 PM p. 70:11-15.
- ¹⁶ N.T. June 24, 2016 PM p. 71:22-23.
- ¹⁷ N.T. June 23, 2016 PM p. 83:10-21.
- ¹⁸ N.T. June 23, 2016 PM p. 118:12- 119:9.
- ¹⁹ N.T. June 23, 2016 PM p. 127:25-128:20.
- ²⁰ JA_003059.
- ²¹ N.T. June 24, 2016 PM p. 70:4-17.
- ²² JA_002985.
- ²³ JA_009812.
- ²⁴ N.T. June 24, 2016 PM p. 67:7-68:22.
- ²⁵ N.T. June 24, 2016 PM p. 72:8-73:5.
- ²⁶ N.T. June 27, 2016 AM p. 60:14-16; 61:17-20.
- ²⁷ JA_002985.
- ²⁸ N.T. June 24, 2016 p. 75:2-7.

²⁹ JA_000850-51.

³⁰ JA_009039.

³¹ *Id.*

³² *Id.*

³³ JA_009041.

³⁴ JA_008989; N.T. June 23, 2016 AM p. 136:24-139:12.

³⁵ N.T. June 23, 2016 AM p. 139:19-22.

³⁶ N.T. June 23, 2016 AM p. 140:8-141:15.

³⁷ N.T. June 23, 2016 AM p. 141:23- 142:3.

³⁸ Trial Ex. 9.

³⁹ Trial Ex. 228.

⁴⁰ N.T. June 27, 2016 AM p, 85:20-25.

⁴¹ Trial Ex. 261.

⁴² Trial Ex. 222.

⁴³ JA_000718.

⁴⁴ Trial Ex. 218.

⁴⁵ Trial Ex. 34.

⁴⁶ Trial Ex. 178.

⁴⁷ Trial Ex. 15.

⁴⁸ JA_002871.

⁴⁹ Trial Ex. 49.

⁵⁰ Trial Ex. 49. Supervisory Control and Data Acquisition System (“SCADA”) is data measured by the LVM module of e-terristribution. Data measured includes voltages and currents, amp flows and power flows. N.T. June 29, 2016 AM p. 111:10-16. SCADA measures voltage on the

primary (utility) side. AMI data measures voltage directly in the “last mile” which the term electric utilities use for the consumer’s home. N.T. June 28, 2016 PM p. 153:20-154:19.

⁵¹ N.T. June 23, 2016 PM p. 142:12-143:7.

⁵² Trial Ex. 16.

⁵³ Trial Ex. 51.

⁵⁴ JA_002187; JA_002613.

⁵⁵ Trial Ex. 17.

⁵⁶ JA_004441-42.

⁵⁷ N.T. September 16, 2016 PM p. 29:1-12:14.

⁵⁸ N.T. June 23, 2016 AM p. 146:18-148:19.

⁵⁹ Trial Ex. 233.

⁶⁰ Trial Ex. 19.

⁶¹ Trial Ex. 219.

⁶² Trial Ex. 224.

⁶³ Trial Ex. 21.

⁶⁴ JA_002565-94.

⁶⁵ JA_009112.

⁶⁶ JA_002422.

⁶⁷ Trial Ex. 69.

⁶⁸ JA_002424.

⁶⁹ JA_009112; JA_002424.

⁷⁰ N.T. June 27, 2016 AM p. 26:12-25:12.

⁷¹ N.T. September 15, 2016 PM p. 21:22-23.

⁷² N.T. September 15, 2016 PM p. 19:23-20:4.

⁷³ N.T. September 15, 2016 PM p. 20:5-16.

⁷⁴ N.T. September 15, 2016 PM p. 20:17-21:4.

⁷⁵ N.T. September 15, 2016 PM p. 21:3-4.

⁷⁶ JA_009869.

⁷⁷ N.T. June 30, 2016 AM p. 26:2-4.

⁷⁸ JA_001490-01.

⁷⁹ Trial Ex. 236 at 60.

⁸⁰ JA_000640-41; JA_001459; JA_007552.

⁸¹ JA_000577. Although the parties dispute the accuracy of this statement, after evaluating witness credibility and review of the admitted exhibits, we find Dominion's specific testimony more credible than Alstom's denial.

⁸² Trial Ex. 584.

⁸³ JA_002536-37.

⁸⁴ JA_002539.

⁸⁵ JA_001995.

⁸⁶ N.T. June 30, 2016 AM p. 73:2-7.

⁸⁷ JA_002545.

⁸⁸ ECF Doc. No. 1.

⁸⁹ JA_002542; N.T. June 29, 2016 AM p. 34:13-35:14.

⁹⁰ Trial Ex. 209.

⁹¹ Trial Ex. 41.

⁹² JA_002544-45.

⁹³ JA_010047.

⁹⁴ Trial Ex. 217.

⁹⁵ Trial Ex. 27.

⁹⁶ Trial Ex. 29.

⁹⁷ Trial Ex. 32.

⁹⁸ Trial Ex. 30.

⁹⁹ Trial Ex. 33.

¹⁰⁰ ECF Doc. No. 94.

¹⁰¹ N.T. September 15, 2016 PM p. 19:23-21:23; JA_001312-13.

¹⁰² ECF Doc. No. 140.

¹⁰³ ECF Doc. No. 184 at 2.

¹⁰⁴ ECF Doc. No. 295.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ N.T. September 15, 2016 PM p. 6:14-25.

¹⁰⁹ N.T. September 15, 2016 PM p. 6:12-25; JA_009800.

¹¹⁰ N.T. September 15, 2016 PM p. 33:6-36:12.

¹¹¹ N.T. September 15, 2016 PM p. 11:7-12:6.

¹¹² JA_009799.

¹¹³ N.T. September 15, 2016 p. 11:18-24.

¹¹⁴ N.T. September 15, 2016 PM p. 11:7-12:6.

¹¹⁵ N.T. September 15, 2016 PM p. 23:5-8.

¹¹⁶ N.T. June 27, 2016 AM p. 92:17-93:24.

¹¹⁷ ECF Doc. No. 295.

¹¹⁸ ECF Doc. No. 297.

¹¹⁹ ECF Doc. No. 319-3.

¹²⁰ ECF Doc. No. 320-3.

¹²¹ *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006).

¹²² N.T. September 15, 2016 PM p. 6:14-25.

¹²³ *Id.* 7:21-23.

¹²⁴ *Id.* at 392 (“For example, some patent holders, such as university researchers or self-made inventors, might reasonably prefer to license their patents, rather than undertake efforts to secure the financing necessary to bring their works to market themselves. Such patent holders may be able to satisfy the traditional four-factor test, and we see no basis for categorically denying them the opportunity to do so.”).

¹²⁵ *Novozymes A/S v. Genencor Intern., Inc.*, 474 F. Supp. 2d 592, 612 (D. Del. 2007).

¹²⁶ *Id.* at 596-97.

¹²⁷ *Id.* at 602.

¹²⁸ Alstom’s arguments conflate the standards for recovery of lost profits, recovery of reasonable royalties, and granting an injunction. We are determining whether to grant Dominion an injunction.

¹²⁹ *Id.* at 602-03.

¹³⁰ *Id.* at 612.

¹³¹ *Id.*

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Apple Inc. v. Samsung Electronics Co., Ltd.*, 809 F.3d 633, 640 (Fed. Cir. 2015) (“*Apple IV*”).

¹³⁵ *Apple IV*, 809 F.3d at 640.

¹³⁶ *Presidio Components, Inc. v. American Technical Ceramics Corp.*, 702 F.3d 1351, 1363 (Fed. Cir. 2012).

¹³⁷ Alstom’s damages expert, Michael Chase, testified about having possibly read something about another AMI-based CVR solution but his testimony was unclear and lacked detail. No other testimony or evidence discusses a third AMI-based CVR product.

¹³⁸ *BIC Leisure Products, Inc. v. Windsurfing Intern., Inc.*, 1 F.3d 1214, 1218 (Fed. Cir. 1993).

¹³⁹ *Id.* We are governed by *eBay* when granting permanent injunctions. Lost profit awards are governed by *Panduit Corp. v. Stahl Bros. Fibre Work, Inc.*, 575 F.2d 1152 (6th Cir. 1978) which is not at issue here.

¹⁴⁰ *BIC*, 1 F.3d at 1218.

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ *TiVo Inc. v. EchoStar Communications Corp.*, 446 F. Supp. 2d 664, 669-70 (E.D. Tex. 2006) *affirmed in part, reserved and remanded on other grounds*, 516 F.3d 1290 (Fed. Cir. 2008).

¹⁴⁴ *TiVo*, 446 F. Supp. 2d at 669-70.

¹⁴⁵ ECF Doc. No. 320 at 13.

¹⁴⁶ *Celsis In Vitro, Inc. v. CellzDirect, Inc.*, 664 F.3d 922, 930 (Fed. Cir. 2012) (Upholding district court finding of irreparable harm based in part on loss of business opportunities. “As the district court explained: ‘There is no effective way to measure the loss of sales or potential growth – to ascertain the people who do not knock on the door...because of the existence of the infringer’.”)

¹⁴⁷ *TruePosition Inc. v. Andrew Corp.*, 568 F. Supp. 2d 500, 531-32 (D. Del. 2008). The district court uses this language to explain why there is no adequate remedy at law but we think it applies equally to the reputational damage and marketing harm suffered by Dominion because of the innovation of the patent and the novelty of the market.

¹⁴⁸ *Pruvit Ventures, Inc., v. Forevergreen International LLC, et al.*, No. 15-00571, 2015 WL 9876952 at *5 (E.D. Tex. Dec. 23, 2015). *Pruvit* is a report and recommendation of a magistrate judge for a motion for an emergency preliminary injunction and all cases cited in *Pruvit* are motions for preliminary injunctions.

¹⁴⁹ *Winter v. Natural Resources Defense Council, Inc.*, 555 U.S. 7, 21-24 (2008).

¹⁵⁰ Trial Ex. 236 at 60.

¹⁵¹ ECF Doc. No. 320 at 15.

¹⁵² N.T. June 29, 2016 AM p. 54:15-20.

¹⁵³ *eBay*, 547 U.S. at 393.

¹⁵⁴ JA_009869.

¹⁵⁵ JA_002540; JA_000571.

¹⁵⁶ *TruePosition*, 568 F. Supp. 2d at 531-32.

¹⁵⁷ Stacy Streur, *The Ebay Effect: Tougher Standards but Courts Return to the Prior Practice of Granting Injunctions for Patent Infringement*, 8 NW. J. TECH. & INTELL. PROP. 67, 68 (2009). “In the three years since the *eBay* decision, there have been sixty-eight district court decisions considering whether permanent injunctive relief should be granted in a patent infringement action. In sixteen of those cases, the plaintiff’s request for an injunction was denied. In fifty-two of those cases the request for an injunction was granted.”

¹⁵⁸ See *Acumed LLC v. Stryker Corp.*, 551 F.3d 1323, 1329 (Fed. Cir. 2008)(affirming district court’s grant of a permanent injunction after an award of money damages at trial); *i4i Ltd. Partnership v. Microsoft Corp.*, 598 F.3d 831, 839 (Fed. Cir. 2010)(affirming district court’s grant of a permanent injunction after an award of money damages at trial); *Novozymes*, 474 F. Supp. 2d 592, 594 (district court awarding a reasonable royalty for past infringement and a permanent injunction).

¹⁵⁹ N.T. September 15, 2016 PM p. 6:14-25.

¹⁶⁰ *Id.*, p. 7:21-23.

¹⁶¹ N.T. September 15, 2016 PM p. 72:1-10:12.

¹⁶² We deny Alstom’s request during oral argument to delay the effect of our injunction. After evaluating witnesses and exhibits, we lack confidence Alstom will immediately act. We credit Alstom’s post-verdict steps in the partial enhanced damages, but will not stay the steps necessary to ensure no further infringement of the ’883 Patent.

¹⁶³ *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 522 (Fed. Cir. 2012).

¹⁶⁴ *Id.*

¹⁶⁵ *Id.* (citing *Fonar Corp. v. General Electric Co.*, 107 F.3d 1543, 1555 (Fed. Cir. 1997)).

¹⁶⁶ *Id.* (citing *Odetics, Inc. v. Storage Technology Corp.*, 185 F.3d 1259, 1273-74 (Fed. Cir. 1999)).

¹⁶⁷ During oral argument, Dominion volunteered the only case cited in its brief in support of inspections actually did not support its argument. *Extreme Networks, Inc. v. Enterasys Networks*, No. 07-00229, 2008 WL 4756498 (W.D. Wisc. Oct. 29, 2008) (district court denied plaintiffs request for inspections “as overbroad”).

¹⁶⁸ *Overman Cushion Tire Co. v. Goodyear Tire & Rubber Co.*, 66 F.2d 361, 362 (2d. Cir. 1933); see also *WBIP, LLC v. Kohler*, ---F.3d---, 2016 WL 3902668 at *2 (Fed. Cir. July 19, 2016)

(affirming district court's award of enhanced damages on the reasonable royalty award by the jury).

¹⁶⁹ *Halo Electronics, Inc. v. Pulse Electronics, Inc.*, ___U.S. ___, 136 S.Ct. 1923 (2016).

¹⁷⁰ *Id.* at 1930 (citing *In re Seagate Technology, LLC*, 497 F.3d 1360, 1371 (2007)(en banc)).

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ *Id.* at 1932.

¹⁷⁴ *Id.* at 1933.

¹⁷⁵ *WBIP, LLC v. Kohler*, 2016 WL 3902668 at *15-16 (affirming district court's award of 50% enhanced damages because "the district court has the discretion to decide whether the case is sufficiently egregious...and to decide the amount of enhancement that is warranted (up to the statutory limit of treble damages)).

¹⁷⁶ *Id.* (citing *Halo*, 136 S.Ct. at 1933).

¹⁷⁷ *Innovention Toys, LLC v. MGA Entertainment, Inc.*, --- Fed. Appx. ---, 2016 WL 4151240 at *1 (Fed. Cir. August 5, 2016).

¹⁷⁸ *Id.*

¹⁷⁹ *Innovention Toys, LLC v. MGA Entertainment, Inc.*, 136 S.Ct. 2483, 2488-84 (June 20, 2016).

¹⁸⁰ *Innovention Toys*, 2016 WL 4151240 at *1.

¹⁸¹ *Id.* at *2.

¹⁸² *Id.* See also *Imperium IP Holdings (Cayman), Ltd. v. Samsung Electronics Co., Ltd.*, ---F. Supp. 3d ---, 2016 WL 4480542 at *6 (E.D. Tex. August 24, 2016) (district court held the predicate of willful misconduct was jury's finding of willful infringement and the district court used its discretion to award treble enhanced damages).

¹⁸³ ECF Doc. No. 295.

¹⁸⁴ *Innovention Toys*, 2016 WL at 4151240 at *2.

¹⁸⁵ N.T. September 15, 2016 PM p. 19:23-20:4.

¹⁸⁶ See generally N.T. September 15, 2016 PM p. 19:20-21:16.

¹⁸⁷ N.T. September 16, 2016 PM p. 125:14-16. *See also* “The Court: How about the argument that these justifications are brought in later by lawyers? Mr. Haslam: *Halo* says at the time of infringement. When is the time of infringement?” N.T. September 16, 2016 PM p. 127:13-18.

¹⁸⁸ *Halo*, 136 S.Ct. at 1933.

¹⁸⁹ *Id.*

¹⁹⁰ *WBIP*, 2016 WL 3902668 at *15-16 (“the district court has the discretion to decide whether the case is sufficiently egregious...and to decide the amount of enhancement that is warranted (up to the statutory limit of treble damages”).

¹⁹¹ *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 827 (Fed. Cir. 1992) abrogated in part on other grounds by *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1997).

¹⁹² *Imperium*, 2016 WL 4480542 at *6-7 (using the *Read* factors to award treble enhanced damages); *Radware, Ltd. v. F5Networks, Inc.*, No. 13-2024, 2016 WL 442790 at *6-8 (N.D. Cal. August 22, 2016) (using *Read* factors to deny an award of enhanced damages); *Artic Cat Inc. v. Bombardier Recreational Products, Inc.*, --- F. Supp. 3d ---, 2016 WL 4249951 at *6-9 (S.D.Fla July 27, 2016) (using *Read* factors to award treble enhanced damages); *Finjan, Inc., v. Blue Coat Systems, Inc.*, No. 13-3999, 2016 WL 3880774 at *16 (N.D.Cal. July 18, 2016)(using *Read* factors to deny an award of enhanced damages) *but see* *Trustees of Boston University v. Everlight Electronics Co., Ltd.*, --- F. Supp. 3d ---, 2016 WL 3976617 at *2 (D.Mass. July 22, 2016) (district court stated “[w]hile the *Read* factors remain helpful to this Court’s analysis, the touchstone for awarding enhanced damages after *Halo* is egregiousness” and did not use *Read* factors to deny an award of enhanced damages); *Presidio Components, Inc. v. American Technical Ceramics, Corp.*, No. 14-2061, 2016 WL 4377096 at *21 (S.D.Cal. August 17, 2016)(denying an award of enhanced damages without using the *Read* factors)).

¹⁹³ *Imperium*, 2016 WL 4480542 at *6 (citing *SRI Int’l., Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1469 (Fed. Cir. 1997).

¹⁹⁴ *Halo*, 136 S.Ct. at 1934.

¹⁹⁵ *WBIP, LLC v. Kohler Co.*, No. 11-10374, 2014 WL 585854 at *7 (D.Mass. Feb. 12, 2014) (enhanced damages award affirmed by the Federal Circuit post-*Halo* in *WBIP, LLC v. Kohler*, --- F.3d---, 2016 WL 3902668 (Fed. Cir. July 19, 2016)).

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ ECF Doc. No. 320-1 at 20.

¹⁹⁹ Trial Ex. 49.

²⁰⁰ *Id.*

²⁰¹ JA_001490-91.

²⁰² *A.B. Dick Co. v. Burroughs Corp.*, 713 F.2d 700, 703 (Fed. Cir. 1983).

²⁰³ For enhanced damages, we look at Alstom employees' actions to determine there is no good faith belief in non-infringement. We deny Dominion's requests for attorneys' fees because we do not find the defenses argued by Alstom's counsel at trial unreasonable or lacked good faith.

²⁰⁴ *Read*, 970 F.2d at 827.

²⁰⁵ *i4i*, 598 F.3d at 859.

²⁰⁶ JA_005611

²⁰⁷ ECF Doc. No. 184 at 2.

²⁰⁸ *See* §B(1) for a detailed description of Alstom's misconduct.

²⁰⁹ Trial Ex. 49.

²¹⁰ *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, _ U.S. _, 134 S.Ct. 1749, 1756 (2014).

²¹¹ *Id.*

²¹² ECF Doc. No. 184 at 2.

²¹³ *Id.*

²¹⁴ *Teletronics Pacing Systems, Inc. v. Ventritex, Inc.*, 983 F.2d 1520, 1527 (Fed. Cir. 1992).

²¹⁵ Our Order today enjoins Alstom from assisting the five customers who potentially could configure the AMI functionality within the LVM module of their e-terradistribution and providing any assistance to Duke in operating the infringing AMI functionality within the LVM module of their e-terradistribution.