

KEEPING THE LEDS ON AND THE ELECTRIC MOTORS RUNNING: CLEAN TECH IN COURT AFTER EBAY

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ABSTRACT

The recent rise of non-practicing patentees (NPPs) in the clean technology space comes at a time when the international community is debating the role of intellectual property rights in the deployment and implementation of technologies to combat climate change. While the impact of intellectual property rights on the deployment of clean technology has been studied, less attention has been given to the role intellectual property regimes play in maintaining the operation of those technologies already deployed in the fight against global warming. This iBrief focuses on clean technologies that have already achieved substantial market penetration and observes that recent trends in patent law are, to a large extent, allowing those technologies to continue working to reduce carbon emissions. Specifically, the course correction in the law of patent injunctions brought about by eBay v. MercExchange and the endorsement of court-imposed ongoing royalty payments in Paice v. Toyota demonstrate an important shift in patent law that is tempering the impact of clean tech NPPs in Title 35 infringement actions in federal courts. However, these trends have caused a tactical adjustment by clean tech NPPs—namely, filing suits in the U.S. International Trade Commission (ITC), where the remedy of an exclusion order is available. These ITC cases could adversely affect implemented clean technologies.

INTRODUCTION

¶1 A sure sign that a technology space is maturing is the advent of infringement actions by NPPs. These individuals, patent-holding companies or other non-practicing patent holders—often derided as patent “trolls”—do not commercialize their patented technology but

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instead generate revenue through licensing. They approach firms they believe to be manufacturing or selling embodiments of their patented technology and use the threat of infringement suits as a stick in negotiations.

¶2 So it is in clean technology: the clean tech patent “trolls” have arrived. Their presence is being felt by major green-tech implementers, particularly in the hybrid vehicle space, in energy-efficient lighting technologies such as light-emitting diodes (LEDs) and, most recently, by utilities and companies developing and deploying smart grid technologies.

¶3 The rise of NPPs in clean technologies coincides with a renewed sense of urgency in deploying such technologies to combat climate change. While the impact of intellectual property rights on the deployment and implementation of clean technology has been studied, less attention has been given to the roles that intellectual property regimes play in maintaining the operation of such technologies already deployed and functioning to fight global warming.

¶4 This iBrief focuses on clean technologies that are making an impact because they have already achieved substantial market penetration. This iBrief also observes that recent trends in patent law allow those technologies to further reduce carbon emissions. Specifically, the course correction on patent injunctions brought about by *eBay, Inc. v. MercExchange, L.L.C.*² and the endorsement and operation of court-awarded ongoing royalty payments in *Paice, L.L.C. v. Toyota Motor Corp.*³ demonstrates an important shift in patent law. Some clean tech NPPs have changed tactics as a result and turned to the ITC where the *eBay* ruling does not apply and the remedy of an importation ban is available. However, in patent infringement actions in federal courts, this shift in the law is tempering the impact of clean tech NPPs and keeping the LEDs on and the electric motors running.

I. EBAY AND THE NON-PRACTICING PATENTEE

¶5 In *eBay*, the U.S. Supreme Court—reversing long-standing Federal Circuit precedent that patent infringement automatically

² 547 U.S. 388 (2006).

³ 504 F.3d 1293, 1296–97 (Fed. Cir. 2007).

triggers injunctive relief—held that district courts must first employ the traditional four-factor equitable test before issuing a permanent injunction under the Patent Act.⁴ An important concurrence written by Justice Kennedy (joined by Stevens, Souter and Breyer) noted the recent trend of NPP litigation and reasoned that it may change the calculus for the permanent injunction analysis.⁵ The concurring justices observed that, in the case of an NPP, “the economic function of the patent holder present[s] considerations quite unlike earlier cases.”⁶ Kennedy concluded that legal damages are likely to be sufficient in NPP litigation, where “the threat of an injunction is employed simply for undue leverage in negotiations.”⁷

¶6 In the wake of *eBay*, there has been some significant clean tech patent litigation involving NPPs. The in- and out-of-court results of these cases have been heavily shaped by the new *eBay* requirements. This change in patent law, brought about by *eBay*, helps to combat climate change by allowing important clean technologies to remain in the market. Three examples are hybrid vehicles, energy-efficient lighting technologies, particularly LEDs, and smart grid technology.

II. INFRINGING ICON

A. A Hybrid Vehicle Startup Takes on an Icon

¶7 Toyota is the acknowledged leader in the hybrid car industry.⁸ In 2006—the year the *eBay* decision came down—the Prius accounted for more than 40% of hybrid sales in the U.S. By April 2008, the Prius went platinum, with a worldwide sales figure exceeding one million.⁹ The EPA reports that the 2010 Prius was the

⁴ See *eBay*, 547 U.S. at 391–92.

⁵ *Id.* at 396 (Kennedy, J., concurring) (“An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees.”).

⁶ *Id.*

⁷ *Id.* at 396.

⁸ See Hybrid Sales Figures/Tax Credits for Hybrids, ELECTRIC DRIVE TRANSP. ASS’N, http://www.electricdrive.org/index.php?ht=d/Articles/cat_id/5514/pid/2549 (last visited Aug. 27, 2010).

⁹ See One Million Priuses Sold, MATTER NETWORK (May 16, 2008), <http://www.matternetwork.com/2008/5/one-million-toyotas-sold.cfm>.

most fuel-efficient car available of its model year.¹⁰ As of September 2009, cumulative global sales of Toyota hybrid vehicles hit the two million mark.¹¹ Toyota estimates the net effect of its hybrid vehicle sales, which are dominated by the Prius, has been an 11 million ton reduction in carbon dioxide emissions.¹²

¶8 Toyota was not first to develop hybrid gas-electric automotive technology. Dr. Severinsky and his startup company, Paice L.L.C., began developing power trains for hybrid gas-electric vehicles in the early 1990s.¹³ From the start, Paice impressed the academic and investment communities. The University of Maryland incubator program for promising startup companies accepted Paice shortly after its inception.¹⁴ The company also received a capital infusion of \$19 million from a private foundation.¹⁵

¶9 Paice filed a patent application on its hybrid vehicle technology in 1992.¹⁶ The invention addressed the problem of combining power from gas and electric sources in hybrid vehicles. In conventional cars, the wheels are driven by torque, or rotational force, supplied by an internal combustion engine (ICE). In hybrid gas-electric vehicles, torque is supplied by a combination of an ICE and an electric motor. A hybrid drive train must be able to combine and control the relative torque contributions of an ICE and an electric motor.

¶10 Paice's early patent application was directed to a hybrid electric vehicle in which the drive train uses a microprocessor and a

¹⁰ See *Most and Least Efficient Fuel Efficient Vehicles*, FUELECONOMY.GOV, <http://www.fueleconomy.gov/feg/best/bestworstNF.shtml> (last visited Aug. 27, 2010).

¹¹ Toyota Press Release, *Worldwide Sales of Toyota Motor Corp. Hybrids Top 2 Million Units*, available at <http://media.toyota.ca/pr/tci/en/worldwide-sales-of-toyota-motor-101335.aspx> (Sep. 4, 2009).

¹² See *id.* ("As of August 31, 2009, TMC calculates that TMC hybrid vehicles, since 1997, have led to approximately 11 million fewer tons of CO₂ emissions—considered to be a cause of global warming—than would have been emitted by gasoline-powered vehicles of similar size and driving performance.") (internal citations omitted).

¹³ See Brief in Opposition for Paice, LLC at 2, *Toyota Motor Corp. v. Paice, LLC*, 504 F.3d 1293 (Fed. Cir. 2007) (No. 07-1120) (May 12, 2008), 2008 WL 877884 at *2 [hereinafter *Brief in Opposition*].

¹⁴ *Id.* at 3.

¹⁵ *Id.*

¹⁶ *Id.* at 2.

controllable torque transfer unit (CTTU) that accepts torque input from both the ICE and the electric motor.¹⁷ The microprocessor controls the amount of torque provided by the ICE and the electric motor by locking or releasing a bevel gear assembly and holding torque inputs constant.¹⁸ The application issued in 1994 as U.S. Patent No. 5,343,970 (the ‘970 Patent), with one key claim limitation reciting that the CTTU provides controllable and variable amounts of torque from two sources (the ICE and the electric motor) to the drive wheels.¹⁹

¶11 The following year, Toyota initiated its first project to bring hybrid vehicles to mass production, resulting in the launch of the first generation Prius (Prius I) in Japan in 1997.²⁰ After the Prius I was launched in the U.S. in 2000, Paice invited Toyota to attend a demonstration of its patented hybrid vehicle system.²¹ Toyota representatives attended the demonstration, but ignored Paice’s subsequent offers to license the technology.²² Although Toyota acknowledged that Paice had “made great developments in the hybrid field,” the automaker declined to take a license because it had “no intentions of developing [Paice’s] technology.”²³

¶12 In 2002, Paice approached Toyota again, sending the automaker a copy of an industry presentation and proposing a meeting.²⁴ Once again, Toyota acknowledged that Paice’s system showed “excellent performance,” but refused to meet.²⁵ In 2003, Toyota rebuffed additional overtures from Paice.²⁶

¶13 Toyota introduced the second generation Prius (Prius II) in 2003. In the following year, Paice sued the automaker in the Eastern District of Texas, alleging that the Prius II, the Toyota Highlander

¹⁷ Paice, LLC v. Toyota Motor Corp., 504 F.3d 1293, 1296 (Fed. Cir. 2007) (“[T]he drive train disclosed in the ‘970 patent employs a microprocessor and a controllable torque transfer unit (“CTTU”) that accepts torque input from both the ICE and the electric motor.”).

¹⁸ *Id.* at 1297.

¹⁹ See U.S. Patent No. 5,343,970 col.23 l.59–68 (filed Sept. 21, 1992).

²⁰ See *Brief in Opposition*, *supra* note 12, at 3–4.

²¹ See *id.* at 4.

²² *Id.*

²³ *Id.*

²⁴ See *id.* at 5.

²⁵ See *Brief in Opposition*, *supra* note 12, at 5.

²⁶ *Id.*

and the Lexus RX400h sport utility vehicle infringed three Paice patents, including the '970 patent.²⁷

¶14 Like Paice's patented system, the Toyota hybrid drive train also combines torque from an ICE with torque from an electric motor.²⁸ However, instead of bevel gears, the Toyota system has a "planetary" gear unit with a central "sun" gear that meshes with several planetary gears, which in turn meshes with a peripheral ring gear.²⁹ The output shaft from the ICE is connected to the planetary gears, but the output shaft from the electric motor is connected to the ring gear, instead of both output shafts connecting to the same structure.³⁰

¶15 These technical distinctions lead to a split verdict on infringement. In December 2005, a jury found that the accused vehicles did not literally infringe Paice's patents, but did infringe two claims of the '970 patent under the doctrine of equivalents.³¹ The jury awarded approximately \$4.3 million in past damages and an ongoing royalty of \$25 per infringing vehicle.³²

B. Injunction Denied Under eBay

¶16 Having succeeded on infringement, Paice moved for a permanent injunction.³³ Less than a month after the hearing on the injunction motion (and before the district court ruled on the motion), the Supreme Court handed down the *eBay* decision. The district court was now bound to conduct the traditional four-factor analysis.³⁴

¶17 To be awarded a permanent injunction, Paice had to demonstrate:

- (1) that it has suffered an irreparable injury;
- (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury;
- (3) that, considering the balance of hardships between the

²⁷ See *Paice*, 504 F.3d at 1300–01.

²⁸ *Id.* at 1299.

²⁹ *Id.*

³⁰ See *id.* at 1299–1300.

³¹ See *Paice LLC v. Toyota Motor Corp.*, 2006 U.S. Dist. LEXIS 61600, at *3 (E.D. Tex. Aug. 16, 2006).

³² *Paice*, 504 F.3d at 1302–03.

³³ See *Paice*, 2006 U.S. Dist. LEXIS 61600, at *1.

³⁴ See *id.* at *1–3 (citing *eBay, Inc. v. MercExchange, LLC*, 126 S. Ct. 1837, 1839–41).

plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.³⁵

¶18 The district court held that Paice failed to establish irreparable harm, rejecting the argument that its licensing efforts were hampered by the lack of injunctive relief.³⁶ The court found no evidence that Paice's inability to successfully license its technology was due to the absence of an injunction.³⁷ The court also noted that, due to Paice's licensing business model, the company did not compete with Toyota for market share or brand recognition.³⁸

¶19 As to the second factor, the court cited *eBay* for the proposition that infringing a patentee's right to exclude alone is insufficient to warrant injunctive relief and found that monetary relief would vindicate Paice's patent rights.³⁹ The court rejected Paice's contention that the infringement claims covered "the heart of what the Prius is all about."⁴⁰ Somewhat counterintuitively, the court instead held that the infringement claims, which relate to the hybrid transmissions of the vehicles, form only a small aspect of the overall vehicles.⁴¹ In this regard, the court relied upon the jury's damages award and reasonable royalty rate, which indicated that the infringement claims constitute a very small part (twenty-five dollars) of the value of the vehicle as a whole.⁴² The court also noted that Paice continued to extend licensing offers to Toyota throughout post-trial motions, which further demonstrated that Paice viewed monetary relief as adequate.⁴³

¶20 The court found the balance of hardships weighed against enjoining Toyota because of the likely damage to the automaker's

³⁵ *Paice*, 2006 U.S. Dist Lexis 61600, at *3-4 (citing *eBay*, 547 U.S. at 391).

³⁶ *See Paice*, 2006 U.S. Dist. LEXIS 61600, at *12-13.

³⁷ *Id.*

³⁸ *See id.* at *14.

³⁹ *See id.* at *14-15.

⁴⁰ *See id.* at *15 ("[T]he Court disagrees with Plaintiff regarding the import of the two claims found infringed to the accused vehicles as a whole. The infringed claims relate to the hybrid transmissions of the accused vehicles, but form only a small aspect of the overall vehicles.").

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.* at *16 (citation omitted) ("It is also of note that Plaintiff, throughout post-trial motions, has extended Defendants an offer to license its technology. This offer further demonstrates the adequacy of monetary relief from Plaintiff's point of view.").

business and related businesses.⁴⁴ According to the court, Paice's assertion that it would face extinction absent an injunction and Toyota would experience only minor economic losses if enjoined ignores the reality of the economic situation surrounding the accused vehicles.⁴⁵ Specifically, the court found that an injunction would likely interrupt Toyota's business and related businesses, such as dealers and suppliers.⁴⁶ More broadly, the court stated that the "burgeoning hybrid market" could be stifled by an injunction because of development costs.⁴⁷

¶21 With regard to the final factor, the court concluded that the public interest favors neither party.⁴⁸ While the court acknowledged the long-recognized public interest in enforcing patent rights, it noted that this interest is served by non-injunctive relief such as monetary damages.⁴⁹ The court specifically rejected Toyota's argument that an injunction would be contrary to the public interest in reducing American dependence on foreign oil.⁵⁰ The court noted that Toyota's hybrid vehicles are not the only products of their kind on the market, and that there was no evidence that U.S. demand for hybrid vehicles could not be met by hybrid alternatives made by other automobile manufacturers.⁵¹

¶22 This leaves open the possibility that reducing dependence on foreign oil could satisfy the public interest factor if the availability of alternative products is limited. Perhaps a court would deny an injunction in a case where a product in an immature clean technology space with limited or no alternative or substitute products infringed a patent.

⁴⁴ *Id.* ("[T]wo of the accused vehicles were introduced to the market during the 2006 model year and enjoining their sales will likely interrupt not only Defendants' business but that of related businesses, such as dealers and suppliers.").

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.* at *17.

⁴⁹ *Id.* at *16–17.

⁵⁰ *Id.* at *17 ("Insofar as Defendants argue that an injunction would be contrary to the public interest in reducing dependence of foreign oil, the Court finds this argument unavailing.").

⁵¹ *Id.*

¶23 The district court concluded that the factors as a whole favored Toyota and therefore denied the injunction.⁵² However, instead of leaving the parties to negotiate a license going forward, the court ordered an ongoing royalty of \$25 per infringing vehicle.⁵³ The order stated, in relevant part that

Defendants are hereby ORDERED, for the remaining life of the '970 patent, to pay Plaintiff an ongoing royalty of \$25.00 per infringing Prius II, Toyota Highlander, or Lexus RX400H (the 'infringing vehicles').⁵⁴

C. The Federal Circuit Endorses an Ongoing Royalty

¶24 Both parties appealed the infringement verdict.⁵⁵ The Federal Circuit upheld the jury verdict of no literal infringement because Toyota's product lacked elements of Paice's patent claims.⁵⁶ As to infringement under the doctrine of equivalents, the Federal Circuit found that there was enough evidence that Toyota had an infringing equivalent structure that met the district court's construction of the CTTU claim term.⁵⁷ Specifically, Toyota's system accepts inputs from multiple sources, i.e., input at the planetary gears from the ICE output shaft and input at the ring gear from the electric motor output shaft, and the CTTU is controlled to transfer variable amounts of torque, i.e., the microprocessor dictates the amount of torque sent from each input, and ultimately the amount of torque output to the drive shaft.⁵⁸

⁵² *Id.* at *18.

⁵³ *Id.* at *19.

⁵⁴ *Id.*

⁵⁵ *See* Paice LLC v. Toyota Motor Corp., 504 F.3d 1293, 1296 (Fed. Cir. 2007).

⁵⁶ *See id.* at 1313 (internal quotation marks omitted) (“[T]here is no single device or component in Toyota's design that can be characterized as multi-input.”).

⁵⁷ *See id.* at 1307 (“This rebuttal testimony, in conjunction with the testimony given during each side's case in chief, provided the jury with an ample basis upon which to evaluate the insubstantiality of the differences between the CTTU limitation and the accused structure.”).

⁵⁸ *See id.* at 1299–1300 (citation omitted) (“Toyota's drive train is designed around a 'planetary gear unit' (or 'power-splitting device'), having a central 'sun' gear that meshes with several 'planetary gears' . . . which in turn mesh with a peripheral ring gear . . . [T]he output shaft from the ICE is connected to the planetary carrier (and thus to the planetary gears), whereas the output shaft from the MG2 is connected to the ring gear. . . . [A] microprocessor associated with Toyota's drive train is able to control the amount of torque provided by both the ICE and MG2.”).

¶25 In addition, Paice appealed the district court's ongoing royalty arrangement.⁵⁹ At the Federal Circuit, Paice argued, *inter alia*, that the district court did not have the statutory authority to order an ongoing royalty.⁶⁰ The Federal Circuit (Lourie and Prost, with Rader concurring in the result) disagreed and held that awarding an ongoing royalty for patent infringement in lieu of an injunction may be appropriate under some circumstances.⁶¹ However, the opinion cautioned that such relief should be awarded only when necessary to effectuate a remedy and is not justified "as a matter of course whenever a permanent injunction is not imposed."⁶² In this regard, the Federal Circuit suggested that the district court allow the parties to negotiate a prospective license and would step in only to assess a reasonable royalty rate if the parties fail to agree.⁶³

¶26 In a footnote, the opinion distinguished an ongoing royalty—which the panel endorsed—from a compulsory license, which the panel said was not at issue.⁶⁴ The panel noted that a compulsory license permits anyone meeting certain criteria to use the licensed work or technology.⁶⁵ An ongoing royalty, on the other hand, is limited to a particular set of defendants—here, those found to have infringed Paice's patents—and is not available to other auto manufacturers.⁶⁶ Perhaps the true distinction to be made is between

⁵⁹ *Id.* at 1296.

⁶⁰ *Id.* at 1314 ("Paice argues that the district court did not have the statutory authority to issue this order.").

⁶¹ *Id.* ("Under some circumstances, awarding an ongoing royalty for patent infringement in lieu of an injunction may be appropriate.").

⁶² *Id.* at 1315.

⁶³ *See id.* ("[W]here the district court determines that a permanent injunction is not warranted, the district court may wish to allow the parties to negotiate a license amongst themselves regarding future use of a patented invention before imposing an ongoing royalty. Should the parties fail to come to an agreement, the district court could step in to assess a reasonable royalty in light of the ongoing infringement.").

⁶⁴ *See id.* at 1313 n.13 ("We use the term ongoing royalty to distinguish this equitable remedy from a compulsory license.").

⁶⁵ *Id.* ("The term 'compulsory license' implies that *anyone* who meets certain criteria has congressional authority to use that which is licensed.").

⁶⁶ *See id.* ("By contrast, the ongoing-royalty order at issue here is limited to one particular set of defendants; there is no implied authority in the court's order for any other auto manufacturer to follow in Toyota's footsteps and use the patented invention with the court's imprimatur.").

an open compulsory license available to all and a limited compulsory license only available to the infringing party in suit.

¶27 In his concurrence, Judge Rader highlighted the majority's distinction as one of semantics and noted that "calling a compulsory license an 'ongoing royalty' does not make it any less a compulsory license."⁶⁷ Judge Rader also averred that he would have gone further than to merely suggest that the district court may allow the parties to negotiate a license before stepping into the fray.⁶⁸ He would require the district court to remand the issue of an ongoing royalty to the parties, or at least obtain permission from both parties before setting an ongoing royalty.⁶⁹

¶28 It was unclear as to how the district court arrived at the \$25 per vehicle figure, and the panel was unable to determine whether the district court abused its discretion.⁷⁰ Accordingly, the case was remanded with an order to reevaluate the ongoing royalty rate.⁷¹

D. The District Court Raises the Royalty Rate

¶29 On remand, the district court considered new evidence on damages, including an expert report by each party's damages expert.⁷² The court ordered the rate increased to approximately \$98 per infringing vehicle, or 0.48% on each Prius, 0.32% on each Toyota Highlander and 0.26% on each Lexus RX400h.⁷³ The court's final calculation was based on the application of a 25% "rule of thumb" to Toyota's profit margin of 9%, which yields an initial figure of

⁶⁷ *Id.* at 1316 (Rader, J., concurring).

⁶⁸ *See id.* (citation omitted) ("[T]his court should do more than suggest that 'the district court *may* wish to allow the parties to negotiate a license amongst themselves . . . before imposing an ongoing royalty.'").

⁶⁹ *See id.* ("[T]his court should *require* the district court to remand this issue to the parties, or to obtain the permission of both parties before setting the ongoing royalty rate itself.").

⁷⁰ *Id.* at 1315.

⁷¹ *Id.*

⁷² Before stepping in to reset the ongoing royalty rate, the court allowed the parties to go through mediation and exhaust their efforts to set a rate themselves. *See Paice, LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620, 623 (E.D. Tex. 2009) ("[T]he Court has given the parties full and fair opportunity to set their own ongoing royalty rate. . . . Unfortunately, the parties were unable to reach an agreement.").

⁷³ *See Paice*, 609 F. Supp. 2d at 630–31.

2.25%.⁷⁴ The court then reduced that figure by one-third to 1.5%, guided by past damage awards and because Toyota makes less profit on its hybrid vehicles than on its non-hybrids.⁷⁵ Finally, the court excluded the value of the ICE from the royalty base because it is not a core component of Paice's invention.⁷⁶ Taking 1.5% of \$6,500 (the value of the hybrid drive train less the ICE, as determined by one of the damages experts), the court arrived at the ongoing royalty rate of \$98 per vehicle.⁷⁷

^{¶30} The court decided to raise the rate for several reasons. First, Toyota is now an adjudged infringer, and this change affects the damages calculus by altering the post-judgment negotiating positions of the parties.⁷⁸ Moreover, the court noted that Toyota's continued infringement post-verdict is willful, and any new lawsuit could result in the imposition of treble damages.⁷⁹ The court further observed that higher oil and gas prices have made Paice's hybrid technology more valuable and increased Toyota's hybrid sales.⁸⁰ In addition, producing hybrid vehicles allows Toyota to meet the heightened U.S. fuel efficiency standards,⁸¹ and the popularity of the infringing vehicles has enhanced Toyota's reputation as a green company.⁸²

⁷⁴ *Id.* at 630.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *See id.* at 630 (“[T]he law must ensure that an adjudged infringer who voluntarily chooses to continue his infringing behavior must adequately compensate the patent holder for using the patent holder’s property. . . . The Court . . . takes into account the changed legal and factual circumstances occurring since the first hypothetical negotiation.”); *see also id.* at 624 (“Once a judgment of validity and infringement has been entered . . . the calculus is markedly different because different economic factors are involved.”).

⁷⁹ *Id.* at 626 (footnote omitted) (“Toyota never considers the fact that its continued infringement is willful and that a new lawsuit by Paice would likely result in treble damages and could potentially be considered an exceptional case.”).

⁸⁰ *See id.* at 628 (citations omitted) (“Paice contends, and the Court agrees, that higher oil and gas prices make the fuel efficiency advantages of the Paice technology even more valuable. The rise in gasoline prices has significantly increased Toyota’s hybrid sales.”).

⁸¹ *Id.* at 629 (“[T]here is little doubt that Toyota’s offering of hybrid vehicles helps it meet the CAFE standards.”).

⁸² *Id.* (citation omitted) (“Toyota’s dominance in the hybrid industry and the popularity of its infringing vehicles have enhanced Toyota’s reputation as a ‘green’ company.”).

E. eBay and Paice Bode Well for Toyota...

¶31 Although Toyota is saddled with an ongoing royalty until the '970 patent term expires in 2011, and the rate was ultimately quadrupled, the judgment circumvented a potentially serious disruption of Toyota's business and permits the current stream of popular hybrid vehicles to continue flooding our roads and reducing our carbon emissions. At the same time, it provides Paice with a reliable revenue stream as compensation for its innovation. The income can fund its development of hybrid vehicle systems, and the advanced technology will presumably be available to Toyota and other implementers of hybrid vehicles to license.

¶32 The *eBay* and *Paice* precedents will undoubtedly continue to affect the production of Toyota's hybrid vehicles as the automaker has been targeted again by Paice, in the Eastern District of Texas, and by another NPP wielding hybrid vehicle patents. In July of 2007, while the initial lawsuit was still pending, Paice filed a second suit against Toyota asserting three patents, including the '970 Patent. In this suit, Paice alleged that the Toyota Camry hybrid infringes the '970 patent and that the second generation Prius, the Highlander SUV, the Lexus RX400h SUV, the Camry hybrid and two additional Lexus models infringe the '970 patent as well as U.S. Patent Nos. 7,104,347 and 7,237,634.⁸³

¶33 In July 2009, Paice filed a Second Amended Complaint, which dropped allegations that the two Lexus models infringed the '970 patent. According to the amended pleading, Paice had entered into a covenant not to assert the '970 patent against the Lexus GS450h and the Lexus LS600h.⁸⁴ As of the date of this writing, Paice's other allegations appear to be going forward.

¶34 The ink had barely dried on U.S. Patent No. 7,392,871 ('871 Patent) when Paice again accused Toyota of infringement.⁸⁵ The '871 patent issued on July 1, 2008, the same day Paice filed suit in the Eastern District of Texas. The '871 Patent is the latest addition to

⁸³ See First Amended Complaint at 4–5, *Paice, LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620 (E.D. Tex. 2009) (No. 07-CV-180), 2007 WL 4826972 at *4–5.

⁸⁴ See Second Amended Complaint at 4, *Paice, LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620 (E.D. Texas 2009) (No. 07-cv-180-DF) 2007 WL 3188987 (July 22, 2009).

⁸⁵ See *generally* Complaint at 3, *Paice, LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620 (E.D. Texas 2009) (No. 2:08-cv-261) 2004 WL 4908845 (July 1, 2004).

a family of patents that cover improvements to Paice's '970 Patent. The '871 patent claims a hybrid vehicle having three AC electric motors each with an AC-DC converter.⁸⁶ The '871 Patent explains that providing three motors (one is a starting motor, the other two are traction motors) conveys mechanical and efficiency advantages, such as eliminating the need for a fore-and-aft driveshaft and allowing traction control to be centrally accomplished by a microprocessor.⁸⁷ Paice's complaint alleges that Toyota directly infringes the '871 patent by making and selling the Highlander hybrid SUV and the Lexus RX400h hybrid SUV, and that the carmaker induces and contributes to infringement by encouraging others to operate the vehicles.⁸⁸ Again, Paice asked the court for an injunction.⁸⁹

¶35 An individual inventor recently brought another infringement suit against Toyota. Conrad O. Gardner is a Washington State engineer, patent attorney and the named inventor on eight patents, several of which relate to hybrid vehicle technology. Gardner recently sued Toyota in the Western District of Washington, accusing the automaker of infringing U.S. Patent No. 7,290,627 ('627 Patent), entitled "Extended range motor vehicle having ambient pollutant processing" by manufacturing and selling the second generation Prius, the Camry and the Highlander.⁹⁰

¶36 The '627 Patent is directed to a hybrid vehicle control system which controls the relative contribution of driving force from an internal combustion engine and an electric motor by sensing the vehicle's speed and transferring the driving force contributions accordingly.⁹¹ Gardner's Second Amended Complaint noted that the '627 patent had an early priority date (based on a parent patent application filed in April 1992), more than two years before Toyota began investigating the development of a commercial hybrid automobile.⁹²

⁸⁶ See U.S. Patent No. 7,392,871 col.56 l.42–67 (filed May 8, 2006).

⁸⁷ See *id.* at col.51 l.11–23.

⁸⁸ See Complaint for Patent Infringement, at 3, Gardner v. Toyota Motor Corp., 2009 WL 4110305 (W.D. Wash. Nov. 19, 2009) (No. 2:08-CV-632), 2008 WL 4520587.

⁸⁹ See *id.* at 4.

⁹⁰ See *id.* at 5.

⁹¹ See U.S. Patent No. 7,290,627 col.2 l.54–col.3 l.28 (filed June 23, 1997).

⁹² See Complaint for Patent Infringement, *supra* note 93, at 4–5.

¶37 Gardner accuses Toyota of having knowledge of his patented technology as early as January 1994.⁹³ Specifically, the complaint alleges that the U.S. Patent and Trademark Office (PTO) cited a Gardner patent against one of Toyota's hybrid technology patent applications during prosecution of Toyota's applications.⁹⁴

¶38 Toyota has made some headway in fighting Gardner's infringement allegations. In November 2009, the court granted Toyota's motion for partial summary judgment, by which independent claim 6 of the '627 patent is invalidated for indefiniteness under Section 112, second paragraph.⁹⁵ This provision provides that patent claims must "particularly point[] out and distinctly claim[]" the subject matter of the invention.⁹⁶ Claim 6 recites an engine powering a vehicle at "high speeds" and a charging path for charging a battery at "lower speeds."⁹⁷ The claim later recites the term "said speed demands." The court held that the claim was indefinite because it was unclear as to which of the earlier recited speeds provide the antecedent basis for "said speed demands."⁹⁸

F. ...and for Clean Technologies

¶39 The market penetration of the Prius makes it an important early success in commercializing and popularizing emissions reduction technologies. In the absence of *eBay*, this suite of district court patent infringement lawsuits targeting Toyota would be a serious threat to the positive environmental impact of the Prius. Instead, the Supreme Court's decision on patent injunctions provides courts with the necessary flexibility to balance the interests of the NPP with the public interest.

¶40 The *Paice* district court decision to deny injunctive relief illustrates this new flexible approach to patent injunctions. In

⁹³ *See id.* at 4–5.

⁹⁴ *Id.*

⁹⁵ *See Gardner v. Toyota Motor Corp.*, No. 2:08-CV-632, 2009 WL 4110305 (W.D. Wash. Nov. 19, 2009).

⁹⁶ 35 U.S.C. § 112 (2006).

⁹⁷ U.S. Patent No. 7,290,627 at col.12 l.24–35 (filed June 23, 1997).

⁹⁸ *See Gardner v. Toyota Motor Corp.*, No. 2:08-CV-632, 2009 WL 4110305, at *6 (W.D. Wash. Nov. 19, 2009) (“[T]he lack of express or implicit antecedent basis for the ‘said speed demands’ element, and the multiple competing constructions offered render the claim insolubly ambiguous. . . . [T]he Court finds claim 6 of the ‘627 patent indefinite and therefore invalid.”).

crafting an appropriate remedy, the court was able to consider the parties' concerns, such as Paice's licensing efforts and Toyota's research and development costs. The court also weighed in on a fundamental patent damages question regarding the proportion of the vehicle represented by the components covered by the infringing claims. Systemic concerns like the impact of an injunction on related businesses in Toyota's network of dealers and suppliers were addressed, and even policy issues such as reducing American dependence on foreign oil entered the analysis. Implementers of clean technologies have the freedom, under *eBay*, to have their concerns heard by the court and to submit public interest arguments relating to climate change. With regard to these considerations, the parties' concerns can be heard fully, and the court can weigh more information in order to reach the right result.

¶41 Furthermore, an award of an ongoing royalty, permissible after the Federal Circuit *Paice* decision, is an additional remedial tool that district courts have at their disposal as an alternative to an injunction. With this equitable discretion, the district court can maintain a *de facto* technology transfer arrangement that has allowed the deployment of beneficial clean technologies. The court can set a reasonable price term for an arrangement in which the parties may be unwilling or unable to reach an agreement.

¶42 Not only do *eBay* and *Paice* improve the results of litigation; they may reduce the number of infringement actions brought by NPPs or bring early ends to such suits by encouraging parties to reach agreements on licensing. From the perspective of the NPPs, litigation may be a less attractive option. Permanent injunctions are much less likely, and NPPs' biggest stick has been eliminated. Nevertheless, the possibility of a court-awarded ongoing royalty may provide new incentive for both clean tech implementers and NPPs to devote appropriate time and energy to negotiating their own licensing terms. The prospect of a court determining and imposing its own royalty rate on litigants, *sua sponte*, could provide a powerful incentive for the parties to settle out of court.

G. Clean Tech NPPs Running to the Border?

¶43 There is, however, at least one exception to this positive trend—clean tech NPPs seeking exclusion orders from the ITC.⁹⁹ The *eBay* decision has made the ITC a particularly attractive forum for NPPs because the new law of patent injunctions imposed by *eBay* does not apply to ITC actions.¹⁰⁰ ITC actions are not Title 35 cases; the ITC is governed by 19 U.S.C. § 1337. Accordingly, the ITC may impose injunctive relief in the form of an exclusion order, *i.e.*, a ban on importation of infringing products into the U.S., without analyzing the equitable injunction factors. As a result of losing the stick of the injunction in district courts, some NPPs are turning to the ITC to regain the upper hand with the threat of an exclusion order.

¶44 Indeed, Paice looked to this forum to escape the effects of *eBay* and get injunctive relief. After the district court denied granting an injunction, and after the Federal Circuit affirmed the court-imposed ongoing royalty, Paice turned its attention to the ITC. The strategy proved successful as Toyota ultimately agreed to license Paice's entire portfolio of patented technologies.¹⁰¹ In September 2008, Paice filed a complaint with the ITC, asking the agency to investigate whether Toyota's importation of the third generation Prius, the Camry Hybrid, and the Lexus HS250h and RX450h (Accused Products) infringes the '970 Patent. Paice is requesting a permanent limited exclusion order barring importation of the Accused Products into the U.S.¹⁰²

¶45 According to the ITC complaint, Toyota made judicial admissions, in the form of discovery responses and stipulations in the prior district court actions, that the drive trains of the Accused

⁹⁹ The U.S. International Trade Commission is a federal agency that investigates trade and importation issues, including conducting quasi-judicial proceedings involving alleged infringement of intellectual property rights by importation of accused products pursuant to 19 U.S.C. § 1337.

¹⁰⁰ See, *e.g.*, *In re Certain Hybrid Electric Vehicles and Components Thereof*, 337-TA-688, Order No. 12 at 11 (U.S.I.T.C. May 21, 2010) (internal citations omitted) (on file with author).

¹⁰¹ See Joann Muller, *Toyota Settles Hybrid Patent Case*, FORBES.COM (July 19, 2010), <http://www.forbes.com/2010/07/19/toyota-prius-paice-severinsky-business-autos-hybrid.html> ("Terms of the settlement weren't disclosed, but Paice's chairman, Frances M. Keenan, said Toyota had agreed to license all 23 of Paice's patents, not just the one at issue in the ITC claim.")

¹⁰² See Complaint at ¶ 54, *In re Certain Hybrid Electric Vehicles and Components Thereof*, USITC Inv. No. 337-TA-688 (Sep. 3, 2009).

Products are materially the same as those found to infringe the '970 Patent.¹⁰³ Moreover, Paice asserted that Toyota should be precluded from challenging the infringement, validity and enforceability of the '970 Patent because those issues were "fully and finally litigated against Toyota" in the district court, giving rise to collateral estoppel.¹⁰⁴ Paice further asserted that res judicata also precludes Toyota from challenging the validity and enforceability of the '970 Patent because the Accused Products are materially identical to the vehicles held to infringe Paice's patent in the district court case.¹⁰⁵

¶46 In November 2009, Paice moved for summary determination on the issues of infringement, validity and enforceability on the grounds of collateral estoppel and res judicata.¹⁰⁶ In a response issued in December 2009, the ITC's investigative staff agreed with Paice and supported its motion.¹⁰⁷ The response noted that, although the Accused Products are different from those at issue in the federal court case, Toyota admitted that the Accused Products' hybrid drive trains are materially the same as those found to infringe in that lawsuit.¹⁰⁸

¶47 Everything seemed to fall into place for Paice in the ITC action. In March 2010, the ALJ presiding over the case granted Paice's motion for summary determination that the Accused Products infringe the '970 Patent.¹⁰⁹ The same decision denied Toyota's motion to terminate the investigation based on the doctrine of claim

¹⁰³ See *id.* at ¶ 25.

¹⁰⁴ See *id.* at ¶¶ 48–53.

¹⁰⁵ See *id.*

¹⁰⁶ See Paice's Motion for Summary Determination Regarding Infringement, Validity and Enforceability, *In re* Certain Hybrid Electric Vehicles and Components Thereof, USITC Inv. No. 337-TA-688 (Nov. 25, 2009).

¹⁰⁷ See Response of the Commission Investigative Staff to Complainant's Motion for Summary Determination Regarding Infringement, Validity and Enforceability, *In re* Certain Hybrid Electric Vehicles and Components Thereof, USITC Inv. No. 337-TA-688 (Dec. 22, 2009) (on file with author).

¹⁰⁸ See *id.* at 8 ("[A]lthough the models at issue in this investigation (the Toyota Camry Hybrid, Prius III, Lexus RX450h, and Lexus HS250h) were not at issue in *Paice I*, these models are materially the same as the Adjudicated Products in *Paice I*. Indeed, Toyota admits that 'the hybrid drive trains of the Toyota Camry Hybrid, Toyota Prius Generation III Hybrid, Lexus RX450h, and Lexus HS250h are materially the same as those of the Lexus RX400h and Toyota Highlander Hybrid [Adjudicated Products].'").

¹⁰⁹ See Certain Hybrid Elec. Vehicles & Components Thereof, Inv. No. 337-TA-688, USITC Order No. 6 (Mar. 3, 2010) (completed).

preclusion,¹¹⁰ though Toyota was subsequently permitted to renew this motion.¹¹¹ Shortly thereafter, the ALJ also granted Paice's motion for summary determination that issue preclusion barred Toyota from challenging the validity of the '970 Patent.¹¹² The ALJ rejected Toyota's argument that it should be able to challenge the validity of the '970 Patent because the Supreme Court's *KSR v. Teleflex* decision on the legal analysis for obviousness constituted a change in the law that triggered an exception to issue preclusion.¹¹³

¶48 Finally, in what was perhaps the straw that broke the camel's back, the ALJ denied Toyota's renewed motion for summary determination that the ITC investigation was barred by claim preclusion.¹¹⁴ This doctrine prevents relitigation of a prior claim, including issues that were or could have been raised in a previously decided action, unless an exception to the rule applies.¹¹⁵ Toyota asserted that the ITC investigation involved the same claim as the prior district court litigation between the parties and that no exception to claim preclusion applies.¹¹⁶ The motion turned on whether Paice

¹¹⁰ *Id.*

¹¹¹ See Certain Hybrid Electric Vehicles and Components Thereof, Inv. No. 337-TA-688, USITC Order No. 12 (May 21, 2010) (completed) ("On April 6, 2010, the ALJ held a telephone conference with the parties discussing the Commission Opinion and, *inter alia*, whether Toyota could renew its motion for summary determination terminating the investigation based on claim preclusion. On that same day, the ALJ notified the parties via e-mail that he would permit Toyota to renew its motion.").

¹¹² See Certain Hybrid Electric Vehicles and Components Thereof, Inv. No. 337-TA-688, USITC Order No. 11 (May 21, 2010) ("[T]he ALJ GRANTS Paice's motion for summary determination that the '970 Patent is valid as Toyota is barred under issue preclusion from relitigating the validity of the '970 Patent.").

¹¹³ See *id.* at 7–8 ("[T]he Supreme Court did not change the law on obviousness, but rather emphasized that the law did not require a specific TSM test, rather that the law was constant from *Graham* forward.").

¹¹⁴ See Certain Hybrid Electric Vehicles and Components Thereof, Inv. No. 337-TA-688, USITC Order No. 12 at 13 (May 21, 2010) (completed) ("[T]he ALJ finds that Paice's claim is not precluded because an exception to claim preclusion applies in this investigation. Toyota's motion for summary determination terminating this investigation is hereby DENIED.").

¹¹⁵ See *id.* at 8 ("Under the doctrine of *res judicata* or claim preclusion, '[a] final judgment on the merits of an action precludes the parties or their privies from relitigating issues that were or could have been raised in that action.' . . . Claim preclusion will not apply to extinguish the entire claim, however, if an exception to the rule exists.") (internal citations omitted).

¹¹⁶ See *id.* at 4 ("Toyota argues that all of the parties acknowledge that the instant investigation involves the same 'claim' as the prior district court litigation because

was unable “to seek a certain remedy or form of relief” in the district court litigation that was available with the ITC.¹¹⁷ If this exception applied, then the ITC investigation could not be barred by claim preclusion.

^{¶49} The ALJ held that Paice was not precluded from pursuing the ITC investigation because the exception relating to available remedies applied in this instance.¹¹⁸ The ALJ found meaningful differences between the relief provided by an exclusion order from the ITC and that of a permanent injunction that was available to Paice in the district court action.¹¹⁹ The bases for the two remedies differ significantly. An exclusion order is a trade remedy intended to protect U.S. industries from unfair importation practices and is directed at infringing products, whereas injunctive relief flows from a patentee’s right to exclude and targets infringing parties.¹²⁰ The ALJ also noted that the U.S. trade statute contemplated that ITC investigations would provide relief to patent holders in addition to the remedies provided under the Patent Act.¹²¹

there is no dispute that the Accused Products, namely the Toyota Prius III, Toyota Camry Hybrid, Lexus RX450h and the Lexus HS250h, are ‘essentially the same’ as the Adjudicated Products and that differences between them are merely colorable. Therefore, since the claim is the ‘same,’ Paice is precluded from this investigation unless an exception to claim preclusion applies.”) (internal citations omitted).

¹¹⁷ *Id.* at 9 (“The focus of the inquiry is whether the relief provided by an exclusion order is a ‘certain remedy or form of relief’ that was not available in the district court.”).

¹¹⁸ *See id.* (“The ALJ finds that while Paice’s claim in the instant investigation is based on the same ‘claim’ as in Paice I, Paice is not precluded from pursuing the instant investigation because an exception to the general rule of claim preclusion applies in this investigation, namely that Paice was unable to seek ‘a certain remedy or form of relief’ in the district court.”).

¹¹⁹ *See id.* (“[T]he relief provided by an exclusion order and that of a permanent injunction are meaningfully different.”).

¹²⁰ *See id.* at 9-11 (“The bases for these remedies are significantly different: remedies provided under Section 337 of the Tariff Act of 1930 are trade remedies intended to protect domestic industries from unfair importation practices, while injunctive relief under Section 283 of the Patent Act is an equitable remedy based on a patentee’s rights under that statute. . . . [E]xclusion orders issued by the ITC are directed at the infringing products, regardless of the party seeking to import the goods. In contrast, injunctions issued by district courts are directed at specific parties in the litigation.”) (internal citations omitted).

¹²¹ *See id.* at 10 (citing 19 U.S.C. § 1337(a)(1), “Section 337 investigations were specifically intended to provide relief to patent holders in addition to the relief provided under the Patent Act.”)

¶50 *eBay* indirectly supported the notion that an ITC exclusion order and a permanent injunction under the Patent Act are materially different remedies. In a 2007 ITC opinion, the Commission stated that the ITC is not bound by the Supreme Court decision.¹²² The ALJ cited this opinion and drew additional support from its explanation that the patent injunction analysis is different from that for an exclusion order.¹²³ Thus, while the *eBay* decision tempered the effect of NPP suits in federal courts, highlighting the patent injunction analysis may have indirectly bolstered the right of NPPs that fail to win injunctive relief in court to pursue an exclusion order with the ITC.

¶51 Just a couple of months after the ALJ denied Toyota's motion on claim preclusion and allowed Paice to pursue the ITC investigation, Toyota decided it had had enough. In July 2010, the parties announced that they had settled their patent disputes.¹²⁴ Although the terms of the agreement are confidential, the reports and statements by individuals involved reveal two interesting elements of the deal. First, a compromise statement in a PR Newswire article gently notes Toyota's infringement of the '970 Patent on the one hand and its independent development of the technology on the other:

The parties agree that, although certain Toyota vehicles have been found to be equivalent to a Paice patent, Toyota invented, designed and developed the Prius and Toyota's hybrid technology independent of any inventions of Dr. Severinsky and Paice as part of Toyota's long history of innovation.¹²⁵

¶52 Second, and more importantly, Toyota took a license to Paice's entire patent portfolio. The chair of Paice's board, Frances M. Keenan, confirmed that "Toyota had agreed to license all 23 of

¹²² *See id.* at 11 (citing *Certain Baseband Processors*, 337-TA-543, 2007 LEXIS 621 at *102, n.230 (June 19, 2007) ("[T]he Commission has stated that it is not required to follow the Supreme Court's decision in *eBay Inc. v. Mercexchange LLC*").

¹²³ *See id.* ("The Commission [in *Certain Broadband Processors*] explained how the analysis for whether a patentee is entitled to an injunction is different from determining whether a patentee is entitled to an exclusion order. Thus, relief under Section 337 is not the same as injunctive relief in district courts.") (internal citation omitted).

¹²⁴ *Toyota and Paice Reach Settlement of Patent Disputes*, PR NEWSWIRE (July 19, 2010), <http://www.prnewswire.com/news-releases/toyota-and-paice-reach-settlement-of-patent-disputes-98757134.html>.

¹²⁵ *Id.*

Paice's patents, not just the one at issue in the ITC claim."¹²⁶ The last patent under license will expire in 2019.¹²⁷

¶53 With its ITC action, Paice was able to successfully enter into a licensing agreement with Toyota. Furthermore, eBay and Paice may be contributing to the steady stream of out-of-court settlements and licensing arrangements in another clean tech subsector: LEDs.

III. LITIGIOUS LED PROFESSOR

¶54 Another clean tech sub-sector that has seen significant NPP litigation in both federal court and the ITC is energy-efficient lighting products, particularly LEDs. The sheer ubiquity of LEDs may be one reason for this; LEDs are used by the billions in a wide array of applications, from instrument panels to traffic lights to cell phones, as an energy-efficient substitute for incandescent bulbs. Thus, there are a tremendous number and diversity of products in disparate sectors to target for infringement suits.

¶55 LEDs have many advantages over standard incandescent light bulbs, including much greater energy efficiency. LEDs are substantially more efficient than incandescents because they produce more light per watt than standard bulbs and radiate very little heat, a major source of wasted energy in incandescents.¹²⁸ Another efficiency advantage comes from the ability of LEDs to emit light of a particular color without the use of color filters, which are required by traditional lighting sources for colored light and can compromise efficiency.¹²⁹

¶56 The most litigious NPP in this field is Columbia University Professor Emeritus Gertrude Neumark Rothschild. Professor Rothschild is a renowned LED innovator and the sole named inventor

¹²⁶ See Joann Muller, *Toyota Settles Hybrid Patent Case*, FORBES.COM (July 19, 2010), <http://www.forbes.com/2010/07/19/toyota-prius-paice-severinsky-business-autos-hybrid.html> ("Terms of the settlement weren't disclosed, but Paice's chairman, Frances M. Keenan, said Toyota had agreed to license all 23 of Paice's patents, not just the one at issue in the ITC claim.").

¹²⁷ See Hilary Russ, *Toyota, Paice Resolve Patent Battle Over Hybrids*, LAW360 (July 19, 2010), <http://ip.law360.com/articles/181844>.

¹²⁸ See generally *Solid-State Lighting: Using Light-Emitting Diodes*, U.S. DEPT. OF ENERGY, http://www1.eere.energy.gov/buildings/ssl/using_leds.html (last visited Aug. 28, 2010).

¹²⁹ Light-emitting diode, WIKIPEDIA, THE FREE ENCYCLOPEDIA, http://en.wikipedia.org/wiki/Light-emitting_diode (last visited Aug. 28, 2010).

on U.S. Patent Nos. 4,904,618 ('618 patent) and 5,252,499 ('499 patent), directed to methods of making LEDs capable of emitting shorter wavelength (*e.g.*, green or blue) light.

¶57 Rothschild's patents address the problem of "doping" wide band gap semiconductor materials, an essential step in creating adequate conductance for the materials to function as LEDs.¹³⁰ Doping is a process by which impurities are added to a semiconductor to increase the number of free charge carriers.¹³¹ Rothschild's technology has had a major impact on LEDs by making production of green, blue and other short wavelength LEDs more economically viable.

¶58 Rothschild began her patent enforcement activity in 2005 in the federal courts by targeting major firms that manufacture and sell LEDs and products that contain LEDs. In 2005, Rothschild filed three separate patent infringement complaints against LED manufacturers Philips Lumileds (Philips), Cree, Inc. (Cree) and Osram GmbH (Osram) in the Southern District of New York, alleging infringement of the '618 and '499 patents.

¶59 Professor Rothschild has also been litigating through the ITC. In February 2008, she filed a complaint with the ITC, alleging that several electronics giants—like Hitachi, LG Electronics, Matsushita, Motorola, Nokia, Samsung, Sony and Toshiba—infringed the '499 patent. In March 2009, she filed a second complaint with the ITC, accusing six more electronics companies, based in China and Taiwan, of infringing the '499 patent.

A. *Settlement Success Spurred by eBay and Paice?*

¶60 Professor Rothschild has had tremendous success in securing licensing agreements from accused infringers.¹³² Some of this

¹³⁰ See U.S. Patent No. 4,904,618 col.1 1.9–17; see generally Doping (semiconductor), WIKIPEDIA, THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/Doping_\(semiconductor\)](http://en.wikipedia.org/wiki/Doping_(semiconductor)) (last visited Aug. 28, 2010).

¹³¹ Doping (semiconductor), WIKIPEDIA, THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/Doping_\(semiconductor\)](http://en.wikipedia.org/wiki/Doping_(semiconductor)) (last visited Aug. 28, 2010).

¹³² According to her attorney, Rothschild has reached settlements or licensing agreements with more than 40 companies generating more than \$27 million. Peter Clarke, Mitsubishi deal brings professor's LED patent haul to \$27 million,

success was undoubtedly attributable to the seminal innovations that her patents protect and some favorable rulings. However, it is important to note that much of Professor Rothschild's licensing activity has come despite the substantially reduced threat of an injunction after *eBay*. Perhaps some of the accused infringers who took licenses from Professor Rothschild—some of whom did so shortly after the *Paice* decisions ordered and endorsed a court-imposed ongoing royalty—preferred to negotiate their own licensing price term rather than have the court do it for them.

¶61 The Osram, Philips, and Epistar settlements are notable for their timing in this regard. Osram and Rothschild settled their lawsuit in October 2006,¹³³ just three months after the Eastern District of Texas ordered Toyota to pay Paice an ongoing royalty of \$25 per infringing vehicle. Similarly, Philips reached a deal with Rothschild in March 2008,¹³⁴ less than five months after the Federal Circuit affirmed the lower court's decision in *Paice* and endorsed its imposition of an ongoing royalty. In May 2008, Taiwanese LED maker Epistar struck a deal with Rothschild without litigation. Under the terms of the agreement, Rothschild granted Epistar a worldwide license to use the technology in the '618 and '499 patents.¹³⁵

¶62 Philips may have been nudged to the negotiating table by an unfavorable claim construction decision. The settlement followed the court's decision granting in part Rothschild's motion for reconsideration of its claim construction opinion. In the court's original opinion, it construed the term "doping . . . with . . . atomic hydrogen" to mean "incorporating atomic hydrogen not produced by disintegration of ambient gases."¹³⁶ However, on reconsideration, the court found that its prior limiting construction of the term based

EETIMES (Nov. 6, 2009, 5:38 AM),

<http://www.eetimes.com/showArticle.jhtml?articleID=221600592>.

¹³³ Stipulation and Order of Dismissal with Prejudice, *Rothschild v. Osram GmbH*, No. 7:05-CV-5941 (S.D.N.Y. Oct. 18, 2006).

¹³⁴ Sidley Announces Settlement of Patent Infringement Claims against LED Manufacturer, SIDLEY AUSTIN L.L.P. - NEWS & RESOURCES - NEWS & MEDIA (Mar. 10, 2008),

<http://www.sidley.com/newsresources/newsandpress/Detail.aspx?news=3511>.

¹³⁵ Epistar Obtained a Worldwide License from Professor Gertrude Neumark Rothschild, EPISTAR PRESS RELEASE (May 8, 2008), <http://www.epistar.com.tw/rptreport/2008-05-08%20press%20release.pdf>.

¹³⁶ *Rothschild v. Cree, Inc.*, 2007 U.S. Dist. LEXIS 33134, at *45 (S.D.N.Y. May 3, 2007).

on statements by the patentee during the application process, was in error and revised it to mean “doping with atomic hydrogen (from any source).”¹³⁷ This broadening of the claim term may have strengthened Rothschild’s infringement case and encouraged Philips to settle.

¶63 Of the federal court defendants, Cree battled the longest. Rothschild alleged that the North Carolina LED maker’s methods of producing gallium nitride and aluminum gallium nitride LEDs infringe the ‘618 and ‘499 patents.¹³⁸ The court denied Cree’s motion for summary judgment that it did not infringe one of Rothschild’s patents because the court determined that the preamble of an asserted patent claim should not be part of the infringement analysis.¹³⁹

¶64 The preamble of claim 10, the only asserted independent claim of the ‘499 patent, claims a “method of forming a low resistivity semiconductor from a wide band-gap semiconductor substrate that has a tendency to become compensated when it is doped[.]”¹⁴⁰ Cree tried to dispose of the ‘499 patent on summary judgment by arguing that this preamble should be part of the infringement analysis, and that its production process does not infringe the patent because it does not include the elements of the preamble.¹⁴¹

¶65 Cree also contended that Rothschild waived her right to raise the issue of excluding the preamble from the infringement analysis because she failed to make that argument earlier in the case, and, in particular, remained silent about it during the court’s claim construction proceedings.¹⁴² The court disagreed, noting a lack of precedent on such waivers and that depriving Rothschild of the

¹³⁷ Rothschild v. Cree, Inc., 2007 U.S. Dist. LEXIS 48127, at *14 (S.D.N.Y. July 2, 2007)

¹³⁸ Complaint, Rothschild v. Cree, Inc., No. 05-CV-5939 (S.D.N.Y. June 27, 2005).

¹³⁹ Rothschild v. Cree, Inc., 567 F. Supp. 2d 572, 578 (S.D.N.Y. 2008).

¹⁴⁰ *Id.* at 574–75.

¹⁴¹ *Id.* at 575–76 (contending that its LED manufacturing process does not meet the limitation of “forming a low resistivity semiconductor from a wide band-gap semiconductor substrate” found in the preamble of claim 10 of the ‘499 patent).

¹⁴² *Id.* at 576 (“Cree further argues that, by her long delay in raising the issue [of the limiting effect of the preamble], plaintiff has waived her right to do so.”).

argument would cause her substantial prejudice, likely destroying her infringement claim against Cree.¹⁴³

¶66 Generally, a claim's preamble becomes part of the infringement analysis (*i.e.*, the preamble is "limiting") if it recites essential features of the invention.¹⁴⁴ Stated another way, if the body of the claim recites a structurally complete invention, the preamble is not necessary for a determination of infringement.¹⁴⁵

¶67 The court found that the body of claim 10 adequately describes a complete process and that reference to the preamble is not necessary to supply any missing steps or make the claim body comprehensible.¹⁴⁶ Rather, the court determined that the preamble merely specifies a desirable result achieved by the process recited in the body of the claim, *i.e.*, formation of a low-resistivity semiconductor from a wide-gap semiconductor substrate.¹⁴⁷ Accordingly, the court held that the preamble was not part of the infringement analysis.¹⁴⁸ Because Cree's non-infringement arguments hinged on elements of the preamble, the court denied the motion for summary judgment.¹⁴⁹

¶68 The case was subsequently transferred to the District of Massachusetts,¹⁵⁰ and in a recent decision, Rothschild successfully

¹⁴³ *Id.* at 576–77 (“[D]epriving plaintiff of the right to contend that the scope of Claim 10 of the ‘499 patent is not limited by its preamble would likely be fatal to her infringement claim against Cree . . . it would be an unconscionably harsh penalty for a procedural error that apparently caused Cree no more than minor inconvenience . . . the Court rules that plaintiff has not waived her right to contend that . . . the preamble does not limit the scope of the claim.”).

¹⁴⁴ *See id.* at 577 (citing *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 952–53 (Fed. Cir. 2006)).

¹⁴⁵ *Id.* at 578 (citing *Poly-America, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004) (“[A] preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’”)).

¹⁴⁶ *Id.* (“[T]he body of Claim 10 adequately describes a complete process; reference to the preamble is not necessary to supply missing steps or to render understandable and enabling any of the steps described.”).

¹⁴⁷ *Id.* (“[T]he preamble merely specifies the desirable result achieved by the process described in the body of the claim.”).

¹⁴⁸ *Id.*

¹⁴⁹ *Rothschild*, 567 F. Supp. 2d 572, 578–79.

¹⁵⁰ *Rothschild v. Cree, Inc.*, 2010 U.S. Dist. LEXIS 47223 at *12 (D. Mass. May 13, 2010) (“This Court granted the motion and this case was transferred to the

fought off Cree's attempts to invalidate the '618 and '499 patents,¹⁵¹ but was unable to dispose of the charge that the patents failed to name a co-inventor.¹⁵² Cree finally settled with Rothschild in June of 2010¹⁵³ and the case was dismissed.¹⁵⁴

¶69 Rothschild's ITC actions have also spurred a string of settlements. The ever-expanding list of respondents-cum-licensees includes Toshiba, Panasonic, Sony Ericsson, LG Electronics, Motorola, Samsung, Sanyo, Sharp, Philips Electronics, Xiamen, Tekcore, Tyntek, Arima, Lucky Light and Exceed Perseverance. In November 2009, Mitsubishi took a license from Rothschild without litigation.

¶70 Thus, like Toyota's hybrid vehicles, the energy-efficient LEDs remain deployed and continue to reduce the carbon footprints of the products that use them. This is because most of the LED and electronics manufacturers targeted by Rothschild have taken licenses that allow them to continue to produce their wares. It is difficult to ascertain how much of a role *eBay* and *Paice* played in motivating Rothschild and her adversaries to negotiate settlements, but the new realities of these decisions established the backdrop for many of the Rothschild settlement agreements, and the current status of U.S. patent law under *eBay* and *Paice* encourages such agreements.

IV. SMART GRID NPPS FIZZLE OUT

¶71 As major utility companies across the U.S. deploy smart grid technology to manage the energy consumption of their customers, NPP patent infringement suits related to this clean tech subsector are filed with increasing frequency. Both utilities rolling out smart grid systems and developers of the systems and components thereof, such

United State[s] District Court for the District of Massachusetts by order dated January 19, 2010.”)

¹⁵¹ *See id.* at *65 (“Since Cree did not satisfy this burden, its motion for summary judgment of invalidity of the '618 Patent due to lack of enablement is denied. . . . The Court also denies Cree's motion for summary judgment of invalidity of the '499 Patent.”).

¹⁵² *Id.* at *123 (“Rothschild's motion for partial summary judgment on Cree's 35 United States Code Section 102(f) defense . . . is denied.”).

¹⁵³ Notice of Motion and Joint Motion for Entry of Stipulation of Dismissal with Prejudice, *Rothschild v. Cree, Inc.*, No. 10 -10133 (D. Mass. June 18, 2010).

¹⁵⁴ Stipulation of Dismissal with Prejudice; Order, *Rothschild v. Cree, Inc.*, No. 10-CV-10133 (D. Mass. June 29, 2010).

as smart meters, have been targeted in these cases. Almost as quickly as these cases have appeared, however, at least one has fizzled out and another has seen a settlement agreement lead to dismissal of key defendants.

¶72 Thomas David Petite is the named inventor on over twenty-five U.S. patents relating to wireless communications technologies. Many of these patents are directed to energy applications. Petite founded SIPCo, LLC (SIPCo) and IPCo, LLC, doing business as Intus^{IQ} (“Intus”), and many of his patents are owned by one of these entities. SIPCo and Intus have also taken charge of many wireless communications patents in the field issued to other inventors.

¶73 Both SIPCo and Intus are technology licensing companies that seek to license their patents to firms that develop or implement wireless technologies for both energy and non-energy applications. SIPCo and Intus are particularly active in the energy and smart grid space. According to the companies’ websites, Intus runs the “Essential Wireless Mesh” (EWM) program to “provide[] support for successful market entry” of licensees using the EWM patents and technology,¹⁵⁵ and SIPCo is a “partnering member” of this “eco-inventor-based organization.”¹⁵⁶ In addition, SIPCo recently announced the launch of a Smartgrid Licensing Program.¹⁵⁷

¶74 Though SIPCo and Intus have headed to court in two recent actions to enforce patents against two major utilities and a host of smart grid technology companies, like Paice and Rothschild, their impact on clean tech implementation has also been blunted by quick settlements.

¶75 In January 2009, Intus sued ten companies involved in developing and implementing smart metering technologies. The

¹⁵⁵ Essential Wireless Mesh, INTUSIQ: YOUR INTELLECTUAL PROPERTY AND RIGHTS MANAGEMENT COMPANY, <http://www.myhousepliance.com/> (last visited Aug. 28, 2010).

¹⁵⁶ Home Page, SIPCO, http://sipcollc.com/Home_Page.html (“SIPCo LLC is a partnering member of ‘Essential Wireless MeshTM,’ or EWMTM, an eco-inventor based organization run by Intus^{IQ} which promotes the power of creating, developing and innovating solutions using wireless technology.”) (last visited Aug. 28, 2010).

¹⁵⁷ *Id.* (“SIPCO LLC an EWM partner is pleased to announce its SMARTGRID LICENSING PROGRAM with ICAP Ocean Tomo. The program was created in partnership with the utility companies request for a broadbased technology and IP license.”).

complaint, filed in the Eastern District of Texas, alleged infringement of two related patents directed to wireless network technology.¹⁵⁸ U.S. Patent Nos. 6,249,516 and 7,054,271 are entitled “Wireless network gateway and method for providing same” and are directed to wireless networks systems and servers for such systems that optimize the routes between each client and server.

¶76 The named defendants included Texas utility Reliant Energy (Reliant), Texas electric distribution and transmission company Oncor Electric Delivery Company (Oncor) and many smart meter and software companies such as Comverge, Sensus Metering Systems, Tantalus Systems, Tendril Networks and Trilliant Networks. As of the date of this writing, court documents indicate that at least three defendants have settled their claims with Intus. In May 2009, the court signed an order dismissing the claims against Oncor.¹⁵⁹ Two months later, similar orders were entered to dismiss the claims between Intus and defendants Reliant and Comverge.¹⁶⁰

¶77 A second lawsuit, initiated by SIPCo, lasted just five months before the parties settled the case. In July 2009, SIPCo sued Florida Power & Light Co. and FPL Group Inc. (collectively “FPL”) in U.S. District Court for the Southern District of Florida, alleging that the wireless network technology in the utility’s smart grid system infringed three SIPCo patents relating to smart grid technology.¹⁶¹ According to the complaint, the allegedly infringing technology was used as part of the Energy Smart Miami initiative to implement smart grid technology in Miami-Dade County.¹⁶² SIPCo later filed an amended complaint that added smart grid solutions provider Silver Spring Network as a defendant.¹⁶³

¶78 The family of patents-in-suit comprises U.S. Patent Nos. 6,437,692, 7,053,767 and 7,468,661, each entitled “System and

¹⁵⁸ Complaint, IP Co. v. Oncor Elec. Delivery Co., No. 2:09-CV-037 (E.D. Tex. Jan. 29, 2009).

¹⁵⁹ Order on Joint Motion to Dismiss, IP Co. v. Oncor Elec. Delivery Co., No. 2:09-CV-37 (S.D. Fla. May 26, 2009).

¹⁶⁰ Order, IP Co. v. Oncor Elec. Delivery Co., No. 2:09-CV-37 (S.D. Fla. July 22, 2009).

¹⁶¹ Complaint, Sipco, LLC v. Florida Power & Light Co., No. 1:09-CV-22209 (S.D. Fla. July 27, 2009).

¹⁶² *See id.* at ¶¶ 16, 20.

¹⁶³ Amended Complaint, Sipco, LLC v. Florida Power & Light Co., No. 1:09-CV-22209 (S.D. Fla. Sept. 4, 2009).

method for monitoring and controlling remote devices” (collectively “SIPCo patents”). Petite is a named co-inventor on each patent.

¶79 The SIPCo patents are directed to cost-effective methods and systems for collecting, formatting and monitoring data from remote devices. According to the specifications of the SIPCo patents, the disclosed systems avoid the expense of installing and connecting local networks of sensors, actuators and controllers, as was previously done in control system solutions for distributed systems. The systems accomplish this by integrating local gateways with a wide area network, or WAN, which allows the server to host application specific software that previously had to be hosted in application specific local controllers. The SIPCo patents explain:

[T]he data monitoring and control devices of the present invention need not be disposed in a permanent location as long as they remain within signal range of a system compatible transceiver that subsequently is within signal range of a local gateway interconnected through one or more networks to [the] server

¶80 By early January 2010, the case was over. The parties filed a joint dismissal in late December 2009 indicating that the parties had entered into a confidential settlement agreement, and the court issued a final order of dismissal on January 5, 2010.¹⁶⁴ On January 3, 2010, SIPCo announced that Silver Spring had “taken a license to SIPCO’s Essential Wireless MeshTM patent portfolio.”¹⁶⁵

¶81 While several defendants remain in the Intus suit, the rapid rate of settlements and dismissals in both cases have largely averted disruption of smart grid technology roll-outs and bode well for the continued deployment of these technologies in the future. In a post-*eBay* and post-*Paice* world, NPPs and their adversaries have powerful incentives to negotiate their own licensing agreements.

V. CONCLUSION

¶82 Concurrent with the increasing level of urgency in deploying clean technologies to combat climate change is an increase in the

¹⁶⁴ Final Order of Dismissal and Order Denying All Pending Motions as Moots, *Sipco, LLC v. Florida Power & Light Co.*, No. 1:09-CV-22209 (S.D. Fla. Jan. 5, 2010).

¹⁶⁵ SIPCO NEWS, SIPCO HOME PAGE (Jan. 3, 2010), <http://sipcollc.com> (“SIPCO, LLC is pleased to announce that Silver Spring Networks, Inc. has taken a license to SIPCO’s Essential Wireless MeshTM patent portfolio.”).

number of patent infringement claims brought by NPPs. Typically, these disputes involve products that have already achieved substantial market penetration. The Supreme Court's *eBay* decision, which reinstated the application of the traditional permanent injunction test in patent cases, and the Federal Circuit's *Paice* decision, which endorsed court-imposed ongoing royalties following infringement verdicts, together provide courts with important tools in handling such clean tech NPP suits. The reduced threat of an injunction and the new risk of a court-imposed ongoing royalty may stop such lawsuits before they begin by encouraging parties to negotiate among themselves and reach licensing agreements out of court. Alternatively, should the parties litigate to trial, the courts now have the flexibility to weigh all relevant factors, including the parties' concerns and public policy considerations relating to climate change. These developments also may drive clean tech NPPs to litigate in the ITC, where the remedy of an exclusion order is available. Such cases could adversely affect implemented clean technologies. Overall, however, these trends and tools are likely to reduce the instances of clean tech NPP litigation in federal courts and help the courts reach the right results when lawsuits do arise, and are therefore likely to keep deployed clean technologies working to combat climate change.