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NOTES

IF IT IS BROKEN, YOU SHOULD NOT FIX IT: THE THREAT FAIR REPAIR LEGISLATION POSES TO THE MANUFACTURER AND THE CONSUMER

MARISSA MACANENEY[†]

INTRODUCTION

It slipped out of your pocket, it fell off of your lap, it plunged into the toilet—however the accident happened, it left your precious mobile device in less than perfect condition . . . so now what? In 2016, more than three-quarters of Americans owned a smartphone, making smartphone use almost ubiquitous.¹ Unfortunately, the rate at which Americans damage their smartphones is similarly high. More than thirty percent of smartphone owners have damaged their phone's display screen at least once, and twenty-one percent of people are currently using a phone with a damaged screen.² Other common forms of damage include damage to speakers, cameras, batteries, power buttons, home buttons, and headphone jacks.³

Unsurprisingly, the cell phone repair market is booming. It has annual revenues over \$4 billion, and that figure is on the rise due to increasingly complex and fragile devices.⁴ The current repair market, however, is tightly controlled by electronic

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¹ Adam Lella, *U.S. Smartphone Penetration Surpassed 80 Percent in 2016*, COMSCORE (Feb. 3, 2017), <https://www.comscore.com/Insights/Blog/US-Smartphone-Penetration-Surpassed-80-Percent-in-2016>.

² Robert Nazarian, *How Bad is the Cracked Smartphone Screen Epidemic? Motorola Gives Us the Lowdown*, DIGITAL TRENDS (Oct. 30, 2015, 8:30 AM), <https://www.digitaltrends.com/mobile/motorola-shattershield-cracked-smartphone-screen-survey/>.

³ *Common Issues*, CELL PHONE REPAIR, <https://www.cellphonerepair.com/common-issues/general/> (last visited Sep. 24, 2018).

⁴ *Cell Phone Repair: US Market Research Report*, IBISWORLD (Dec. 2017), <https://www.ibisworld.com/industry-trends/specialized-market-research-reports/consumer-goods-services/personal/cell-phone-repair.html>.

manufacturers.⁵ Recently, consumers, third party repair technicians, and repair organizations have been lobbying for the passage of “fair repair legislation” allocating them the “right to repair.”⁶ This type of legislation was introduced in eighteen states in 2017 and 2018.⁷ It would mandate that all manufacturers of electronic equipment sell spare parts to consumers and independent repair shops.⁸ It would also require manufacturers to provide detailed diagnostic and service manuals to the public.⁹ Many manufacturers are lobbying against the legislation, citing consumer safety and security, brand reputation, product quality, and intellectual property concerns.¹⁰ Conversely, consumers and repair technicians cite job security,¹¹ product life, and financial concerns as justifications for the passage of fair repair legislation. The push for fair repair legislation is geared toward many industries, including medical technology, agriculture and farming, consumer electronics, and data center equipment.¹² This Note will focus on the consumer electronics industry, which is the main target of the proposed legislation.

⁵ Stephen Nellis, *Exclusive: Apple Makes iPhone Screen Fixes Easier as States Mull Repair Laws*, REUTERS (June 7, 2017, 1:02 AM), <https://www.reuters.com/article/us-apple-repair-exclusive/exclusive-apple-makes-iphone-screen-fixes-easier-as-states-mull-repair-laws-idUSKBN18Y0BF>.

⁶ Emily Matchar, *The Fight for the “Right to Repair,”* SMITHSONIAN.COM (July 13, 2016), <https://www.smithsonianmag.com/innovation/fight-right-repair-180959764/>.

⁷ *17 States Now Weighing Right to Repair Bills as Momentum Grows*, REPAIR.ORG (Jan. 18, 2018), <https://repair.org/news/2018/1/18/17-states-now-weighing-right-to-repair-bills-as-momentum-grows> (listing Hawaii, Illinois, Iowa, Kansas, Massachusetts, Minnesota, Missouri, North Carolina, Nebraska, New Hampshire, New Jersey, New York, Oklahoma, Tennessee, Virginia, Vermont, and Washington as the states that have introduced Fair Repair legislation); Press Release, Eggman Introduces Legislation to Create a “Right to Repair” for Electronics, California State Assembly Democratic Caucus (Mar. 7, 2018), <https://a13.asmdc.org/press-releases/20180307-eggman-introduces-legislation-create-right-repair-electronics>.

⁸ *Fair Repair Legislative Template*, at § 3(1)(a), (b), REPAIR.ORG, <https://repair.org/legislation> (last visited Sep. 24, 2018).

⁹ *Id.*

¹⁰ See discussion *infra* Part II.

¹¹ *The Repair Association*, REPAIR.ORG, <https://repair.org> (last visited Oct. 4, 2018) (stating that over three million Americans are currently employed in repair industries). By eliminating the third-party repair market, many Americans employed in repair industries fear that their jobs are at risk.

¹² *Id.*

This Note argues that fair repair legislation is not fair for manufacturers, and suggests that legislators look to a solution that has proved workable in an analogous context in the automobile repair industry. Part I outlines the history of the electronic device repair market and discusses the proposed state legislation. It concludes that federal copyright law is insufficient, current state proposals are flawed, and that a different solution is necessary. Part II will discuss alternate solutions in the automobile industry, legislation tailored to the agriculture industry, and recent concessions by a well-known manufacturer. Part III will propose a standardized practice to reconcile the deficits in the proposed state legislation while harmonizing consumer needs with adequate manufacturer protection.

I. BACKGROUND

When a consumer's electronic device is damaged, there are three main options to avoid a whole unit replacement—return the device to the original manufacturer or to an authorized service provider for a repair service,¹³ go to a third-party repair shop for an unauthorized repair,¹⁴ or attempt a do-it-yourself repair at home.¹⁵ These three options require different levels of expertise and varying degrees of authenticity, as well as a significant price differential.¹⁶

Oddly enough, the “right to repair” crusade did not start in Silicon Valley, but in rural Nebraska, where farmers are fighting for access to diagnostic and repair information for their computerized tractors.¹⁷ John Deere embeds specialized software into its high-end equipment and charges hundreds of thousands of dollars for some tractors.¹⁸ John Deere maintains tight control over its repair market, and without access to spare parts and

¹³ APPLE, *Contact Apple Support*, <https://support.apple.com/repair> (last visited Sep. 24, 2018).

¹⁴ Victor Luckerson, *We've Spent Almost \$6 Billion on iPhone Repairs Since 2007*, TIME (Sept. 20, 2012), <http://business.time.com/2012/09/20/weve-spent-almost-6-billion-on-iphone-repairs-since-2007/>.

¹⁵ TIMOTHY L. WARNER, *THE UNAUTHORIZED GUIDE TO IPHONE, IPAD, AND IPOD REPAIR: A DIY GUIDE TO EXTENDING THE LIFE OF YOUR IDEVICES!* 5–6 (2013).

¹⁶ Claer Barrett, *Fix It Yourself—The Growing Demand for the Right to Repair*, THE FINANCIAL TIMES LIMITED (Aug. 5, 2017), at 4.

¹⁷ Alex Fitzpatrick, *Hand Me That Wrench: Farmers and Apple Fight Over the Toolbox*, TIME (June 22, 2017), <http://time.com/4828099/farmers-and-apple-fight-over-the-toolbox/>.

¹⁸ Emily Matchar, *supra* note 6.

repair manuals for the technologically complex equipment, rural farmers are forced to haul heavy equipment hundreds of miles to an authorized service provider.¹⁹

There is embedded software in everything from tractors to refrigerators, from tablets to insulin pumps, from cell phones to televisions, and everything in between.²⁰ According to the U.S. Copyright Office, “the reach of software is almost infinite.”²¹ With the increasing complexity and fragility of software-embedded electronic devices, it is essential to promote a standardized practice amongst manufacturers, consumers, repair technicians, and repair organizations, with regards to repairability.

A. *Federal Copyright Law and State Contract Law*

In an analysis of repairability legislation, it is essential to consider the intersection of federal copyright law and state contract law. Federal copyright law is equipped with several doctrines permitting and prohibiting conduct including the reuse, resale and, possibly, repair of software-embedded products.²² State contract law is pertinent because almost every software-embedded product comes with some type of contract that may purport to restrict certain uses of a product.²³ The Supreme Court recently considered this intersection of law in *Impression Products v. Lexmark Int'l, Inc.*²⁴

In *Impression Products*, Lexmark, a printing toner cartridge manufacturer, owned a patent that covered components of the cartridges and the manner in which they were used.²⁵ A consumer could either purchase the toner cartridge at full price with no restrictions, or buy a cartridge at a discounted rate through Lexmark’s “Return Program.”²⁶ If a consumer pursued the latter option, she had to sign a contract permitting her to use the toner cartridge only once, and prohibiting her from transferring the cartridge to anyone except Lexmark.²⁷ Lexmark

¹⁹ *Id.*

²⁰ See U.S. COPYRIGHT OFF., SOFTWARE-ENABLED CONSUMER PRODUCTS i (Dec. 2016), <https://www.copyright.gov/policy/software/software-full-report.pdf>.

²¹ *Id.* at 2–3.

²² See *id.* at 12.

²³ *Id.* at 62–63.

²⁴ 137 S. Ct. 1523, 1526 (2017).

²⁵ *Id.* at 1525.

²⁶ *Id.*

²⁷ *Id.*

challenged Impression Products, who bought used ink cartridges, refilled them, and resold them, arguing that Impression Products was infringing on Lexmark's patent rights.²⁸ The Supreme Court determined that once a product passes into commerce, the manufacturer has exhausted its control over the product under the "first sale" doctrine found within federal law.²⁹ In other words, Lexmark exhausted its patent rights in the "Return Program" cartridges and cannot place post-sale restrictions on the cartridges, at least as a matter of federal patent law.³⁰ In Chief Justice Roberts' majority opinion, he used the example of an automobile repair shop, and claimed that the repair business works because the shop is free to repair and resell vehicles as long as consumers are bringing in the cars they own.³¹ Roberts said the "smooth flow of commerce would sputter if companies that make thousands of parts that go into a vehicle could keep their patent rights after the first sale."³² The Supreme Court acknowledged that while Lexmark could not enforce an express post-sale restriction on reuse, repair, or resale, it may be able to enforce the restriction as a matter of contract law.³³

The U.S. Copyright Office recently determined that federal copyright law and the threat of copyright infringement do not prevent a flourishing repair aftermarket.³⁴ According to its report, existing copyright law doctrines facilitate repair activities, and it is unnecessary to reform federal copyright law to explicitly permit these activities.³⁵ In fact, Congress enacted § 117(c) of the Copyright Act to provide a specific defense to copyright infringement in an attempt to protect independent

²⁸ *Id.*

²⁹ *Id.* at 1527.

³⁰ *Id.* at 1532–33.

³¹ *Id.* at 1532.

³² *Id.*

³³ *Id.* at 1526.

³⁴ See SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at ii.

³⁵ See SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 33. Idea and expression dichotomy is a principle that narrows the scope of copyright protection, and protects only the actual code, rather than principles, processes, or procedures—it allows people to use any ideas, methods, or processes that make the program function, as long as they do not copy the code lines. *Id.* at 14. *Scènes à faire* is a doctrine that prevents the protection of standard, stock, or widely accepted techniques, such as hardware design standards, adopted by most computer manufacturers. *Id.* at 16. Fair use is another copyright doctrine that enables "fair use" of copyrighted materials. *Id.* at 17. Courts have held that reverse engineering a gaming console to develop a computer program qualifies as fair use. *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596, 608 (9th Cir. 2000).

service organizations who perform machine repairs.³⁶ Because of the protections already afforded to repair services in federal copyright law, the Office suggests a reliance on state contract law.³⁷ “[C]opyright has long coexisted with contract law, providing a background of default provisions against which parties are generally free to order their own commercial dealings to suit their needs and the realities of the marketplace.”³⁸ Although state laws and contracts cannot directly conflict with federal copyright law, the courts have saved statutes and contracts from preemption so long as they contain an “extra element” not expressly found within the federal law.³⁹ While the term “extra element” provides little judicial guidance, some courts have found that an agreement between parties in a contract is sufficient to meet the “extra element” standard.⁴⁰ In other words, with regards to repairs, when a consumer purchases electronic equipment, she has all the freedom to repair and tinker under federal copyright law, unless otherwise agreed.⁴¹

Electronic manufacturers often include shrink-wrap terms of service agreements and end-user license agreements (“EULAs”) in product packaging,⁴² which assert proprietary rights,⁴³ place a limitation on warranties,⁴⁴ and restrict the rights of users, while

³⁶ 17 U.S.C. § 117(c) (2012); H.R. REP. NO. 105-551, at 27 (1998) (“The goal is to maintain undiminished copyright protection afforded under the Copyright Act to authors of computer programs, while making it possible for third parties to perform servicing of the hardware.”).

³⁷ See SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 63.

³⁸ U.S. COPYRIGHT OFF., DMCA SECTION 104 Report 164 (Aug. 2001), available at http://www.copyright.gov/reports/studies/dmca/dmca_study.html.

³⁹ 17 U.S.C. § 301(a) (2012); see also MELVILLE NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT 10 (2017).

⁴⁰ Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, S. CAL. L. REV. 1239, 1272 (1995); See also *Nat'l Car Rental Sys. v. Comput. Assocs. Int'l*, 991 F.2d 426, 433 (8th Cir. 1993), *cert. denied*, 114 S. Ct. 176 (1993) (holding that a contract limiting a user's rights in a purchased computer program is not preempted by federal law because the restrictions placed within the contract are distinct from copyright law restrictions, and “[t]he contractual restriction on use of the programs constitutes an extra element that makes this...qualitatively different from a [cause of action] for copyright”).

⁴¹ See SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 63-65.

⁴² Lemley, *supra* note 40, at 1241-42. The theory behind shrinkwrap agreements involves the presumption that purchasers will read the agreements before tearing open the packaging and using the product. These agreements are often unbargained and imposed on mass-market purchasers, yet they are widely enforced under the Uniform Commercial Code provided they are not unconscionable and do not violate public policy. *Id.*

⁴³ *Id.* at 1242.

⁴⁴ *Id.* at 1245.

simultaneously expanding the rights of the manufacturer.⁴⁵ These agreements may include restrictions on reverse engineering, and may bar repairs at unapproved service facilities.⁴⁶ For example, the Barnes & Noble Nook Terms of Service agreement, which is included in the box that contains the e-reader device, states: “Except as may be expressly permitted by this Agreement, you may not, directly or indirectly . . . disassemble, reverse engineer, emulate, decompile, tamper with, [or] create derivative works from . . . the technology used to provide the Service”⁴⁷ In other words, if a Nook user removes the back cover from her e-reader in a repair attempt, she has violated the Terms of Service agreement and Barnes & Noble is free to suspend service to the device.⁴⁸ Since the Copyright Office has decided, at least for now, to leave federal copyright law unreformed with regards to repairability, these issues must be resolved within contract law, which is entirely under state control.⁴⁹

B. *Proposed State Legislation*

1. Increased Access to Repair Information

The “fair repair” legislation introduced by twelve states is nearly uniform, and encompasses several identical provisions.⁵⁰ First, each bill requires original equipment manufacturers (“OEMs”) to “make available to independent repair providers or owners of products manufactured by such OEM diagnostic and repair information . . . for no charge or for the same charge and in the same format such OEM makes available to its authorized repair provider.”⁵¹ This provision attempts to provide consumers

⁴⁵ *Id.* at 1245–46.

⁴⁶ Jeff Langenderfer, *End-User License Agreements: A New Era of Intellectual Property Control*, 28 J. OF PUB. POL’Y & MARKETING. 202, 202 (2009).

⁴⁷ *Nook Terms of Service*, BARNES & NOBLE, INC. § 2(d), <https://nook.barnesandnoble.com/u/Terms-of-Service-NOOK-Simple-Touch/379003279?cids2Pid=43313> (last visited Sep. 24, 2018).

⁴⁸ Sophia Bennett, *Repair & Resell: Do You Have the Right to Fix Your Own Gadgets?*, INST. FOR LOC. SELF-RELIANCE (Feb. 14, 2015), <https://ilsr.org/digital-repair/>.

⁴⁹ SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 63–64.

⁵⁰ *Working Together to Make Repair-Friendly Public Policy*, REPAIR.ORG, <http://repair.org/legislation/> (last visited Sep. 24, 2018).

⁵¹ S. 618-B § 2(A), 2017–2018 Reg. Sess. (N.Y. 2017); *e.g.*, S. B. 888 § 4(a), 110th Reg. Sess. (Tenn. 2017); H.B. 663 § 75-151(a)(1), Gen. Assemb., Reg. Sess. (N.C. 2017); Assemb. B. 4934 § 2(1), 217th Leg. Sess. (N.J. 2017).

and independent repair organizations with detailed repair manuals and information that they cannot otherwise access. Currently, most electronic manufacturers do not release repair manuals to the general public,⁵² but if this legislation is enacted, manufacturers would be forced to provide access to this information, likely through an in-box document, an online database,⁵³ or at the request of the consumer.

Security-related functions are expressly included in the majority of the proposed state legislation, so manufacturers of consumer electronic products which contain such functions would also be mandated to provide diagnostic and repair information.⁵⁴ This mandatory disclosure would include all information and parts as are necessary to reset the security-related function.⁵⁵

2. Extension of Product Life

One proposed bill requires manufacturers who sell electronic goods for \$100 or more to provide independent servicers, repair facilities, and consumers with “sufficient service literature and functional parts to effect the repair of a product or device for at least seven years after the date of the manufacture, regardless if the seven years exceeds the warranty period for the product or device.”⁵⁶ The bill defined an “electronic good[]” as essentially any device or equipment that included or utilized software, which casts a very wide net, and includes everything from consumer goods like mobile phones and tablets, to large-scale equipment like a professional basketball scoreboard, or an advanced robotic surgical system.⁵⁷ This provision does not specify the means by

⁵² Kyle Wiens, *The Shady World of Repair Manuals: Copyrighting for Planned Obsolescence*, WIRED (Nov. 12, 2012), <https://www.wired.com/2012/11/cease-and-desist-manuals-planned-obsolence/>.

⁵³ S. 618-B § 1(J)(IV), 2017–2018 Reg. Sess. (N.Y. 2017) (mentioning the “launch of OEM web sites”).

⁵⁴ *See, e.g.*, Assemb. B. 4934 § 2(2)(d), 217th Leg. Sess. (N.J. 2017); H.B. 663 § 75-151(e), Gen. Assemb., Reg. Sess. (N.C. 2017); Legis. B. 67 § 3(b)(4), 105th Leg., 1st Sess. (Neb. 2017).

⁵⁵ *See, e.g.*, Assemb. B. 4934 § 2(2)(d), 217th Leg. Sess. (N.J. 2017); H.B. 663 § 75-151(e), Gen. Assemb., Reg. Sess. (N.C. 2017); Legis. B. 67 § 3(b)(4), 105th Leg., 1st Sess. (Neb. 2017).

⁵⁶ S.B. 136 § 2, 2014 Leg. Assemb., 89th Sess. (S.D. 2014). SB 136 failed in the committee stage, however twelve different states introduced legislation akin to South Dakota’s failed proposal. *South Dakota Senate Bill 136*, LEGISCAN (2014), <https://legiscan.com/SD/bill/SB136/2014>.

⁵⁷ S.B. 136 § 1, 2014 Leg. Assemb., 89th Sess. (S.D. 2014).

which to achieve the end result of providing consumers with “literature and functional parts” and does not consider the average electronic product lifespan.⁵⁸

3. A “Fair and Reasonable” Market for Spare Parts

Another provision found in the proposed fair repair legislation requires manufacturers to sell spare parts to consumers and repair facilities upon “fair and reasonable terms.”⁵⁹ “Fair and reasonable terms” is a subjective standard, but each proposed bill provides relevant factors to consider when determining what meets the standard. These factors include the cost to the OEM for “preparing and distributing the information” but exclude the costs incurred for research, development, design, and implementation of the spare parts.⁶⁰ Another factor the state legislation suggests manufacturers consider when gauging spare parts pricing is “the ability of aftermarket technicians to afford the information.”⁶¹ There is no mention of how to determine affordability. Additional factors for consideration include “the price charged by a manufacturer for similar information,” “the means by which the information is distributed,” and “the extent to which the information is used.”⁶² While these factors are valuable in determining “fair and reasonable,” the manufacturer is left with much discretion to choose the factors that sway the price in whichever direction it desires.

4. Protection of Manufacturer’s Intellectual Property

The proposed fair repair legislation includes a statement that the legislation is not to be interpreted to require manufacturers to divulge trade secrets.⁶³ “Trade secret” is defined broadly throughout the proposed state bills as anything,

⁵⁸ *Id.* § 2.

⁵⁹ *See, e.g.*, S. 618-B § 2(A)(II), 2017-2018 Reg. Sess. (N.Y. 2017); Legis. B. 67 § 3(b), 105th Leg., 1st Sess. (Neb. 2017); H.B. 1178 § 35(a), 99th Gen. Assemb., 1st Reg. Sess. (Mo. 2017).

⁶⁰ *See, e.g.*, H.B. 3030 § 5(2), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); S. 618-B § 2(I)(II), 2017-2018 Reg. Sess. (N.Y. 2017); Legis. B. 67 § 2(4)(b), 105th Leg., 1st Sess. (Neb. 2017).

⁶¹ *See, e.g.*, Legis. B. 67 § 2(4)(e), 105th Leg., 1st Sess. (Neb. 2017); H.B. 3030 § 5(5), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); Assemb. B. 4934 § 1(5), 217th Leg. Sess. (N.J. 2017).

⁶² S.B. 888 §§ 3(4)(C), (F), (G), 110th Reg. Sess. (Tenn. 2017).

⁶³ H.B. 3030 § 35(a), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); *e.g.*, Legis. B. 67 § 4, 105th Leg., 1st Sess. (Neb. 2017); S. B. 888 § 5, 110th Reg. Sess. (Tenn. 2017); S. 618-B § 2(D)(3), 2017-2018 Reg. Sess. (N.Y. 2017).

tangible or intangible, that contains intellectual property, including secretly held and confidential designs, processes, procedures, formulas, inventions, or improvements, as well as technical, merchandising, and production information.⁶⁴ While this provision was likely intended as a protective measure for manufacturers, there is no distinction between what is required to be disclosed in repair manuals and what is protected by federal law as a trade secret.

5. Disclosure of Post-Purchase Obligations

One state's bill requires manufacturers to clearly express to consumers any "post-purchase obligations" including "limitations on equipment resale, repair, reconfiguration, or reuse for any purpose" prior to the completion of the purchase.⁶⁵ A manufacturer's failure to disclose these obligations up front would entitle the consumer to a full refund up to one year after purchase, or until the end of the initial product warranty.⁶⁶ The South Dakota Senate did not expressly describe the type of disclosure mandated, but the language implied that traditional shrink-wrap terms of use agreements and EULAs would not sufficiently satisfy the statutory requirements, as the bill requires disclosure of post-purchase obligations before the sale is complete.

C. Problems with the Proposed State Legislation

1. Consumer Safety is at Risk

The "fair repair" legislation introduced by the twelve states noted above requires manufacturers to release diagnostic and repair manuals for all electronic products sold in the market, in the same manner and format that the manufacturer provides to an authorized service provider.⁶⁷ This provision poses a safety risk to consumers, especially when individuals purchase third-party components for their repairs, such as lithium ion batteries

⁶⁴ See, e.g., S. 96 § 1, 190th Gen. Ct. Sess. (Mass. 2017); S. B. 888 § 3(12), 110th Reg. Sess. (Tenn. 2017); 75-150(11), Gen. Assemb., Reg. Sess. (N.C. 2017).

⁶⁵ S.B. 136, § 3, 2014 Leg. Assemb., 89th Sess. (S.D. 2014).

⁶⁶ *Id.* (allowing a consumer to obtain a full refund up until the end of a product warranty if that is longer than one year).

⁶⁷ S. 618-B § 2(A), 2017-2018 Reg. Sess. (N.Y. 2017); e.g. S. B.888 § 4(a), 110th Reg. Sess. (Tenn. 2017); H.B. 663 § 75-151(a)(1), Gen. Assemb., Reg. Sess. (N.C. 2017); Assemb. B. 4934 § 2(1), 217th Leg. Sess. (N.J. 2017).

from secondhand dealers.⁶⁸ Lithium ion batteries found in smartphones are acutely sensitive to physical stress, and if punctured—by, for example, a screwdriver during a repair attempt—they may overheat, catch fire, explode, or inflict a hazardous shock.⁶⁹ In fact, if a consumer takes the back cover off of an iPhone 7, she is greeted with the phrase “Authorized Service Provider Only,” and “Potential for fire or burning. Do not disassemble, puncture, crush, heat, or burn,” in small font inscribed on the battery.⁷⁰ The Consumer Product Safety Commission recommends that all replacement parts be purchased from the source company to ensure the safety standards of the electronic device are maintained. This recommendation is only met if repairs are completed through authorized service providers.⁷¹ By making repair information publicly accessible, vulnerable consumers are more likely to attempt repairs on their own, and to be left exposed to risks of injuries and property damage. In light of these consumer safety concerns, mandatory public disclosure of all repair information could be dangerous, and ultimately is unnecessary, since there are plenty of authorized repair facilities available with the requisite information and training.

Broad fair repair legislation also threatens patient safety in the medical field. One state’s proposed bill encompasses all software-enabled electronic goods that sell for \$100 or more, including medical devices and equipment.⁷² The broad brush used by the proposed legislation would permit an untrained third party to repair and resell medical devices, without any standards or accountability.⁷³ Also, some medical devices are designed to be

⁶⁸ Press Release, U.S. Con. Prod. Safety Comm., CPSC, CTIA Remind Consumers to “Shop Safely” When Choosing Replacement Mobile Device Batteries (July 29, 2013), available at <https://www.cpsc.gov/newsroom/news-releases/2013/cpsc-ctia-remind-consumers-to-shop-safely-when-choosing-replacement-mobile-device-batteries-->.

⁶⁹ *Id.*; see Joshua Sherman, *Explosions? Electrocutation? Fatal Phone Accidents Are Rarer Than You Think*, DIGITAL TRENDS (July 16, 2013, 9:00 AM), <https://www.digitaltrends.com/mobile/explosions-electrocutation-fatal-phone-accidents-are-rarer-than-you-think/>.

⁷⁰ Aaron Tilley, *First Look Inside The iPhone 7: Teardown Shows Intel Inside*, FORBES (Sept. 16, 2016, 3:00 AM), <https://www.forbes.com/sites/aarontilley/2016/09/16/inside-iphone-7-teardown-intel-modem/#4a06d000c3cd>.

⁷¹ Joshua Sherman, *supra* note 69.

⁷² S.B. 136, 2014 Leg. Assemb., 89th Sess. (S.D. 2014).

⁷³ Brief for Medical Device Manufacturers Association as Amicus Curiae Supporting Respondent at 6–9, *Impression Prods., Inc. v. Lexmark Int’l, Inc.*, 137 S. Ct. 1523 (2017) (No. 15-1189).

“single-use only,” and are not intended to enter the repair market.⁷⁴ Medical device manufacturers often rely on this designation to ensure compliance with performance, patient safety, and FDA requirements,⁷⁵ so by ignoring this designation and freely permitting repairs of any and all electronics, patient safety will be compromised.

2. Brand Reputation is at Risk

Additionally, by providing every consumer and non-authorized repair facility with the same information as authorized service providers, without the requisite training and certification, the facility can offer services “of sub-standard quality insufficient to maintain the reputational value of the . . . product.”⁷⁶ Manufacturers are heavily invested in their brand, and go to extraordinary lengths for quality control, which involves training and vetting authorized service providers.⁷⁷ As applied to ink cartridges in electronic printers, for example, “[i]f the printer jams or the ink smears, consumers are likely to curse the company whose nameplate is on the front of the printer, regardless of who supplied the cartridge,” or battery, screen, or service, in the electronic repair market.⁷⁸ The proposed state

⁷⁴ *Id.* at 6–7.

⁷⁵ *Id.* at 2.

⁷⁶ *Queen City Pizza, Inc. v. Domino's Pizza, Inc.*, 124 F.3d 430, 440–41 (3d Cir. 1997). Domino's Pizza had a standard franchise agreement that required all pizza ingredients, beverages, and packaging materials used by a franchisee conform to the standards set by Domino's Pizza. The agreement also provided Domino's with the discretion to require all materials be purchased exclusively from Domino's. The Court of Appeals for the Third Circuit held that this was not a violation of the Sherman Act, and that franchises depend on uniformity. Antitrust laws were not designed to disrupt the franchise business organization. *Id.* Manufacturers should be able to uphold the same quality standards with regards to their electronic devices, and the repair market. *Cf. id.*

⁷⁷ Letter from Consumer Technology Association, Computing Technology Industry Association, CITA-The Wireless Association, and NetChoice, to the Nebraska Legislature Judiciary Committee Re: Opposition to LB1072, Fair Repair Act (Feb. 23, 2016), available at <https://www.ctia.org/docs/default-source/legislative-activity/coalition-letter-in-opposition-to-nebraska-lb-1072---digital-right-to-repair.pdf>.

⁷⁸ Brief for Qualcomm Incorporated as Amicus Curiae Supporting Respondent at 13, *Impression Prods., Inc. v. Lexmark Int'l, Inc.*, 137 S. Ct. 1523 (2017) (No. 15-1189). Much like the toner cartridge repair business, the mobile phone repair market is saturated with non-authentic parts, however even when these third-party repairs are performed, the original manufacturer's logo remains stamped on the electronic device. Similarly, when these aftermarket parts malfunction, a user is likely to blame the company whose logo is prominent on the device, rather than the

legislation does not mention any protective measures for brand reputation in the event that a non-authorized service provider provides substandard service or uses third-party spare parts, and, unfortunately, the original manufacturer's logo or name will stay affixed to an altered, unapproved product. State legislators must consider the damage to a reputable brand, before implementing a burdensome disclosure requirement.

3. Electronics Have a Natural End-of-Life

One state bill requires a manufacturer who sells electronics to provide repair information and parts for seven years, even if the warranty period for the product expires before that time.⁷⁹ Manufacturers are required to maintain and repair the databases for every product sold within the last seven years, and also maintain and update that information throughout that seven-year period.⁸⁰ Additionally, they are required to make every spare part available for the repair or replacement of all parts for every electronic sold.⁸¹ However, it is impractical to force manufacturers to remain bound to customers for seven years in an age of rapid innovation. The average smartphone has a life expectancy of 4.7 years, while flat-panel televisions have the longest life expectancy of any consumer electronic at 7.4 years.⁸² All consumer electronics typically come equipped with a free twelve-month warranty,⁸³ yet this provision extends the free warranty period by 600%, which will inevitably increase the costs borne by manufacturers, as they will be held responsible for providing the information and parts for all potential repairs throughout the seven-year period. This provision places an undue burden on manufacturers through the maintenance of an unreasonable and costly seven-year relationship with a consumer.

aftermarket company who produced faulty parts, thereby threatening the original manufacturer's brand reputation. *Id.*

⁷⁹ S.B. 136, § 2, 2014 Leg. Assemb., 89th Sess. (S.D. 2014).

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Chris Ely, *The Life Expectancy of Electronics*, CONSUMER TECHNOLOGY ASSOCIATION (Sep. 16, 2014), <https://www.cta.tech/News/Blog/Articles/2014/September/The-Life-Expectancy-of-Electronics.aspx>.

⁸³ Aaron Crowe, *When You Should (and Shouldn't) Buy an Extended Warranty*, U.S. NEWS (Dec. 19, 2013), <https://money.usnews.com/money/personal-finance/articles/2013/12/19/when-you-should-and-shouldnt-buy-an-extended-warranty>.

4. "Fair and Reasonable" is Indeterminate

All of the proposed fair repair legislation requires manufacturers to sell spare parts to consumers and repair facilities upon "fair and reasonable terms" and provides relevant factors to consider when determining what meets the standard.⁸⁴ Although manufacturers are permitted to include the cost of "preparing and distributing the information," they are prohibited from including any costs associated with researching, designing, developing, and implementing a spare parts market.⁸⁵ This poses a burden on manufacturers, by requiring them to expend time, energy, and effort to compile repair manuals, assemble spare parts, and generate a repair system without compensation for their effort.⁸⁶

Some of the state legislation also suggests that manufacturers consider "the ability of aftermarket technicians or shops to afford the information" when gauging spare parts pricing.⁸⁷ This factor lacks practicality and would require the determination of affordability to all aftermarket technicians, which would consist of an evaluation of the financial situation of several thousand private parties.⁸⁸

Manufacturers are also advised to consider the price charged by other manufacturers for similar repair information.⁸⁹ There is currently no market for repair information and spare parts,⁹⁰ so this factor is not useful in defining "fair and reasonable." Traditionally, price determination relies on a manufacturer's operating costs, availability of supply, customer value, and future

⁸⁴ See, e.g., S. 618-B § 2(A)(II), 2017-2018 Reg. Sess. (N.Y. 2017); Legis. B. 67 § 3(b), 105th Leg., 1st Sess. (Neb. 2017); H.B. 1178 § 35(a), 99th Gen. Assemb., 1st Reg. Sess. (Mo. 2017).

⁸⁵ See, e.g., H.B. 3030 § 5(2), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); S. 618-B § 2(I)(II), 2017-2018 Reg. Sess. (N.Y. 2017); Legis. B. 67 § 2(4)(b), 105th Leg., 1st Sess. (Neb. 2017).

⁸⁶ See *AvidAir Helicopter Supply, Inc. v. Rolls-Royce Corp.*, 663 F.3d 966, 970 (8th Cir. 2011).

⁸⁷ See, e.g., Legis. B. 67 § 2(4)(e), 105th Leg., 1st Sess. (Neb. 2017); H.B. 3030 § 5(5), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); Assemb. B. 4934 § 1(5), 217th Leg. Sess. (N.J. 2017).

⁸⁸ *How Much Home Can I Afford?*, FAIRWINDS CREDIT UNION (2018), <https://www.fairwinds.org/calculators/home-and-mortgage/home-affordability-calculator.html>. The factors that determine home affordability including personal income, assets, debt, costs and credit score are the same factors that would apply to an affordability calculation for spare parts. *Id.*

⁸⁹ See, e.g., Assemb. B. 4934 § 1(3), 217th Leg. Sess. (N.J. 2017); H.B. 663 § 75-150(5)(c), Gen. Assemb., Reg. Sess. (N.C. 2017).

⁹⁰ Wiens, *supra* note 52.

demand.⁹¹ Price determination does not involve a consideration of the prices charged by other manufacturers, and it is nonsensical to suddenly consider this new factor, especially given that there is no current market for “similar” information and parts.

Another factor manufacturers are urged to consider in price determination is “the means by which the information is distributed.”⁹² However, they are expressly prohibited from considering the cost associated with the development and implementation of those means.⁹³ It is neither fair nor reasonable to prevent a manufacturer from considering the “means” of information distribution without considering the price associated with those means. This factor is essentially useless in gauging what is a “fair and reasonable” price and is appropriately excluded from a few of the proposed state bills.⁹⁴

Finally, manufacturers are suggested to consider “the extent to which the information is used.”⁹⁵ One bill specifically mentions that “extent” includes the numbers of users, and the frequency, duration, and volume of use.⁹⁶ This would require manufacturers to compile a massive amount of consumer tracking data. Yet, the data collection costs are unfairly excluded in the “fair and reasonable” price determination.

5. Repair Manuals are Trade Secrets

The proposed fair repair legislation also includes a limitation involving trade secrets such as “[n]othing in this Act shall be construed to require an original equipment manufacturer to divulge a trade secret.”⁹⁷ When taken at face value, this seems to

⁹¹ Wedad Elmaghraby & Pinar Keskinocak, *Dynamic Pricing in the Presence of Inventory Considerations: Research Overview, Current Practices, and Future Directions*, 49 *MANAGEMENT SCIENCE* 1287, 1287 (2003).

⁹² See, e.g., H.B. 3030 § 1(6), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); Legis. B. 67 § 2(4)(f), 105th Leg., 1st Sess. (Neb. 2017); S. 618-B § 1(J)(VI), 2017-2018 Reg. Sess. (N.Y. 2017).

⁹³ S. 618-B § 1(J)(II), 2017-2018 Reg. Sess. (N.Y. 2017).

⁹⁴ There is no mention of this factor in the proposed Iowa, North Carolina, Massachusetts Missouri, or Minnesota bills.

⁹⁵ See, e.g., Legis. B. 67 § 2(4)(g), 105th Leg., 1st Sess. (Neb. 2017); S.B. 888 § 3(4)(G), 110th Reg. Sess. (Tenn. 2017); S. 618-B § 1(J)(VII), 2017-2018 Reg. Sess. (N.Y. 2017).

⁹⁶ Assemb. B. 4934 § 1(7), 217th Leg. Sess. (N.J. 2017).

⁹⁷ H.B. 3030 § 35(a), 100th Gen. Assemb., Reg. Sess. (Ill. 2017); e.g., Legis. B. 67 § 4, 105th Leg., 1st Sess. (Neb. 2017); S.B. 888 § 5, 110th Reg. Sess. (Tenn. 2017); S. 618-B § 2(D)(3), 2017-2018 Reg. Sess. (N.Y. 2017).

be a protective clause for manufacturers. However, in preceding sections, the legislation mandates the release of schematic diagrams and repair manuals, which obliterates the “protective” intention of the trade secret clause.⁹⁸ The United States Court of Appeals for the Eighth Circuit determined that repair manuals and information can be protected as trade secrets, regardless of whether the information can be discerned by others through other means, including reverse engineering.⁹⁹ Authorized service providers pay a fee to gain access to repair information,¹⁰⁰ enter into non-disclosure agreements,¹⁰¹ and face steep penalties for violating the agreements.¹⁰² In fact, the potential penalty for copyright infringement for sharing repair manuals and information is as high as \$150,000 per document,¹⁰³ which emphasizes the high value placed on trade secrets. The Business Council of New York, a trade organization that includes many manufacturers, opposes fair repair legislation in part because the requirement to release information necessary for repair infringes upon intellectual property rights.¹⁰⁴ According to this organization, the provision included in current proposed fair repair legislation is not sufficient to protect trade secrets, and would obligate manufacturers to “send massive amounts of data related to highly sensitive and technical aspects of equipment to almost any retail provider who requests it.”¹⁰⁵ Trade secrets are

⁹⁸ S. 618-B § 2(A), 2017-2018 Reg. Sess. (N.Y. 2017).

⁹⁹ *AvidAir Helicopter Supply, Inc. v. Rolls-Royce Corp.*, 663 F.3d 966, 975 (8th Cir. 2011). Rolls-Royce’s “Distributor Overhaul Information Letters,” which contained “details about processes, procedures, techniques and material specifications” intended for the repair market qualified as protectable trade secrets. *Id.* at 970.

¹⁰⁰ *Apple Authorized Service Provider Program*, APPLE, <https://support.apple.com/en-lamr/aasp-program> (last visited Sep. 24, 2018) (requiring organizations to have a credit line in order to obtain Service Provider status).

¹⁰¹ See *Non-Disclosure Agreement*, VERIZON COMMUNICATIONS § 3, available at http://www22.verizon.com/wholesale/attachments/widget_esign_NDA_v012814_REV IEW.pdf.

¹⁰² Wiens, *supra* note 51.

¹⁰³ 17 U.S.C. § 504(c) (2012).

¹⁰⁴ Memorandum from Johnny Evers at The Business Council to New York State Legislature Re: S-618-B and A-8192 (June 7, 2017), available at <http://www.bcnys.org/inside/Legmemos/2017-18/s618-a8192-mandates-sale-of-digital-electronic-equipment.html>.

¹⁰⁵ *Id.*

increasingly valuable and are considered to be the “largest single factor driving economic growth and development,” which only further emphasizes the critical importance of protection.¹⁰⁶

6. Consumer Security is Threatened

An additional provision found within all of the proposed state legislation provides that manufacturers of consumer products that contain security-related functions are also required to provide diagnostic and repair information, and must release all information as is necessary to reset the security-related function.¹⁰⁷ One example of a security-related function is the TouchID sensor on the iPhone, which is paired with the “Secure Enclave” chip and stores fingerprint data, passcodes, and other cryptographic information.¹⁰⁸ Apple Inc., as the manufacturer of the iPhone, would be required to facilitate TouchID repair, which could make devices vulnerable to hackers, and would permit sensitive information to enter the hands of untrained consumers.¹⁰⁹ iPhones currently require the use of a “Horizon Machine” to replace an old TouchID sensor with a new one.¹¹⁰ These machines carefully pair the new sensor with the Security Enclave chip and the iPhone’s processor in a matter of twelve minutes.¹¹¹ In an effort to protect consumer safety, Apple rolled out 400 of these machines to third-party repair centers, including many authorized service providers, at the end of 2017 to ensure that the pairing process was taking place entirely within the machine instead of in the hands of unskilled aftermarket

¹⁰⁶ Robert J. Shapiro & Kevin A. Hassett, *The Economic Value of Intellectual Property*, in USA FOR INNOVATION 20 (2005), available at <http://www.sonecon.com/docs/studies/IntellectualPropertyReport-October2005.pdf>; see also David S. Almeling, *Seven Reasons Why Trade Secrets Are Increasingly Important*, 27 BERKELEY TECH. L.J. 1091, 1104 (2012).

¹⁰⁷ See, e.g., Assemb. B. 4934 § 2(2)(d), 217th Leg. Sess. (N.J. 2017); H.B. 663 § 75-151(e), Gen. Assemb., Reg. Sess. (N.C. 2017); Legis. B. 67 § 3(b)(4), 105th Leg., 1st Sess. (Neb. 2017).

¹⁰⁸ Jason Koebler, *The Next iPhone Could Put 15,000 Repair Companies Out of Business*, MOTHERBOARD (Mar. 8, 2017, 2:05 PM), https://motherboard.vice.com/en_us/article/vvjbzx/the-next-iphone-could-put-15000-repair-companies-out-of-business.

¹⁰⁹ *Id.*

¹¹⁰ Stephen Nellis, *Apple Makes iPhone Screen Fixes Easier as States Mull Repair Laws*, REUTERS (June 7, 2017, 1:02 AM), <https://www.reuters.com/article/us-apple-repair-exclusive/exclusive-apple-makes-iphone-screen-fixes-easier-as-states-mull-repair-laws-idUSKBN18Y0BF>.

¹¹¹ *Id.*

technicians.¹¹² While this move may be viewed as a concession, and permits some third party repair organizations to repair security function, it is still unclear how new repair legislation would factor into security function repair at the consumer level. Although Apple has not disclosed the price of the Horizon calibration machines, the presumption is that not every consumer or small third party repair shop will be able to afford a machine, and will thus continue to resort to insecure repairs and remain subject to security threats.¹¹³ Additionally, Apple's iPhone XS does not have a fingerprint sensor, and instead uses "FaceID" enabled by a camera equipped with facial recognition capabilities.¹¹⁴ FaceID utilizes gaze-detection, infrared mapping and neural networks, yet the proposed state legislation does not account for these technology advances and does not consider the risk associated with giving consumers or non-authorized repair facilities access to this sensitive information.

7. Consumers Will Pay the Price for "Fair Repair"

Although fair repair legislation advocates cite narrow price options as one reason to push passage of the state bills, their concern is misplaced. Currently, manufacturers rely, in part, on the repair market to generate income and cover costs.¹¹⁵ If the repair market opens up to all consumers and unauthorized repair shops, technology companies will be forced to increase the price point of all electronic devices to ensure that they are bringing in enough capital to cover all costs, and earn all profits at the time of the initial sale.¹¹⁶ This up-front cost will include the price of research, design, development and implementation of the delivery system for repair information, and the spare parts market.¹¹⁷ With the elimination of the authorized repair market, manufacturers will have no choice but to raise their retail prices, and consumers will end up paying a steep price for their "right to repair."

¹¹² *Id.*

¹¹³ David Carnoy, *Apple Will Share its Secret iPhone Screen-repair Machines*, CNET (June 7, 2017, 8:03 AM), <https://www.cnet.com/news/apples-iphone-screen-repair-machines-move-into-more-stores/>.

¹¹⁴ APPLE, <https://www.apple.com/iphone-xs/specs/> (last visited Oct. 16, 2018).

¹¹⁵ See Brief for Qualcomm Inc. as Amicus Curiae Supporting Respondent at 16–17, *Impression Products, Inc. v. Lexmark Int'l, Inc.*, 137 S. Ct. 1523 (2017) (No. 15-1189).

¹¹⁶ See *id.*

¹¹⁷ See *id.* at 6.

Additionally, since new, advanced technology with complicated features comes with a higher price sticker than older technology, it is likely that the cost for enabling unauthorized repair facilities and consumers to perform electronic repairs themselves, whether through a complicated calibration machine, or spare parts and tools, will also be high.¹¹⁸ Consumers currently have the option to purchase extended warranties for their electronic devices,¹¹⁹ which gives consumers the option to insure their electronics in the event of an accident or malfunction for a period of time. Manufacturers are able to exclude this additional warranty price from the initial sale cost and offer it as an add-on instead. However, if manufacturers are obligated to provide information, repair manuals, and spare parts for a certain period of time, the extended warranty cost will likely be tacked on to the retail price of all consumer electronics, regardless of whether the consumer was interested in the extra protection.

8. Fair Repair Legislation Will Stifle Innovation

The proposed state legislation implies that all electronics must be repairable, and these restrictions may discourage manufacturers from innovation and creativity.¹²⁰ According to the U.S. Copyright Office,

[i]f the law provides more expansive legal benefits for certain types of products or software, manufacturers may have an incentive to reengineer their products to fit within those definitions. Conversely, if the law limits or eliminates legal benefits for other products or software, manufacturers may have an incentive to remove features benefitting consumers, or to add extraneous features that increase costs without providing corresponding benefits for the consumer.¹²¹

In other words, forcing manufacturers to comply with fair repair legislation could cast a shadow on design and engineering, and ultimately harm the end user. Besides consumers, small businesses are in jeopardy because a small in-state manufacturer may be unable to both create sophisticated products and to

¹¹⁸ *See id.* at 7.

¹¹⁹ In 2016, consumers spent \$23 billion on protection plans for their appliances, electronics, computers, and mobile phones. *The A-Team of Extended Warranties*, WARRANTY WEEK (Sep. 21, 2017), <https://www.warrantyweek.com/archive/ww20170921.html>.

¹²⁰ *See* SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 2 n.9.

¹²¹ *Id.* at 11.

design detailed and accessible repair manuals due to limited funding and resources.¹²² “Consumer demand, creative vision, and business considerations” should drive which new products enter the free market, not rigid and arcane repairability legislation.¹²³

9. Retroactively Altering Private Contracts is Unconstitutional Without a Valid Protective Purpose

The Contract Clause of the Constitution has been narrowed significantly over the past century and is often thought of as the least understood provision of the Constitution. In one of the most recent Contract Clause cases, *Energy Reserves Group v. Kan. Power & Light Co.*, the Supreme Court held that the Kansas Natural Gas Protection Act, which imposed price controls on the intrastate gas market as applicable to contracts executed before 1977, did not violate the Contract Clause.¹²⁴ The Court’s reasoning was grounded in the idea that the gas industry was already highly regulated by the state for consumer protection reasons, and the Act was “rationally related” to the goal of protection.¹²⁵

New Hampshire and Washington introduced fair repair legislation in early 2018, and both bills had a significant difference from all previously introduced bills.¹²⁶ New Hampshire’s bill would require any manufacturer of any digital electronic product sold on or after December 31, 2010 to make repair manuals available, free of charge, and to offer all potential spare parts for purchase.¹²⁷ Washington’s bill would bestow the same requirements, but would pertain only to products sold on or after January 1, 2012.¹²⁸ These bills do not fit within the Court’s parameters as described in *Energy Reserves Group*.¹²⁹ These fair repair bills would not seek to protect consumers, and in fact, would do just the opposite, by permitting unskilled consumers to

¹²² David Owen, *Capitol-ism: Notes from the 2014 Legislative Session*, SOUTH DAKOTA CHAMBER OF COMMERCE & INDUSTRY (Feb. 18, 2014), <http://sdchamber.biz/newslettersreports/capitolism/february182014capitolism/>.

¹²³ SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 11 n.51.

¹²⁴ *Energy Reserves Group, Inc. v. Kan. Power and Light Co.*, 459 U.S. 400, 416 (1983).

¹²⁵ *Id.* at 418–19.

¹²⁶ H.B. 1733-FN § 358-T:2, 2018 Reg. Sess. (N.H. 2018); H.B. 2279 § 3(1), 65th Leg., 2018 Reg. Sess. (Wash. 2018).

¹²⁷ H.B. 1733-FN § 358-T:2, 2018 Reg. Sess. (N.H. 2018).

¹²⁸ H.B. 2279 § 3(1), 65th Leg., 2018 Reg. Sess. (Wash. 2018).

¹²⁹ *Energy Reserves Group*, 459 U.S. at 416.

do the work of trained professionals. Additionally, these bills place a tremendous burden on manufacturers by requiring them to make repair manuals and spare parts for products they produced more than eight years ago, much longer than the average lifespan of many of the electronics.¹³⁰ Even if these states are seeking to protect consumers' wallets, that concern must not prevail over consumers' safety. The State has no right to retroactively interfere in the private contracts between consumers and manufacturers by adding burdensome provisions, especially at the expense of consumer safety, under *Energy Reserves Group*.¹³¹ Therefore, New Hampshire and Washington's new fair repair bills are unconstitutional and must not pass.

II. ALTERNATE SOLUTIONS

A. *The Automobile Approach*

Although electronic device repairability legislation is new, there was a push for fair repair legislation pertaining to the automobile industry several years ago. In 2012, the "Right to Repair" Act was passed in Massachusetts to ensure automobile owners and independent repair facilities had access to all repair information and diagnostic tools necessary to repair an automobile.¹³² This legislation, much like the legislation proposed for electronic devices, attempts to prevent the disclosure of trade secrets¹³³ and mandates the sale of repair information at less than fair market value.¹³⁴ However, this Act allows manufacturers to exclude "diagnostic, service and repair information necessary to reset an immobilizer system."¹³⁵ A vehicle immobilizer is a security device,¹³⁶ and under the Massachusetts law, manufacturers are not required to release the information needed to reset these systems; moreover, if this information is released, it must be accessed through a secure

¹³⁰ See H.B. 1733-FN § 358-T:2, 2018 Reg. Sess. (N.H. 2018); H.B. 2279 § 3(1), 65th Leg., 2018 Reg. Sess. (Wash. 2018).

¹³¹ *Energy Reserves Group*, 459 U.S. at 416.

¹³² H.B. 4362 § 2, 2012 Reg. Sess. (Mass. 2012).

¹³³ *Id.* § 4.

¹³⁴ *Id.* § 2.

¹³⁵ *Id.*

¹³⁶ Jan C. van Ours & Ben Vollaard, *The Engine Immobiliser: A Non-Starter for Car Thieves*, 126 THE ECON. J., 1264, 1265 (2014).

data release system.¹³⁷ The Massachusetts law allows manufacturers to maintain tight control over an automobile's security features.

After the Massachusetts repair law passed, automobile manufacturers created a memorandum of understanding ("MOU") with the two largest associations representing independent mechanics.¹³⁸ A memorandum of understanding "expresses a convergence of will between the parties, which is expressed by an intended common line of action," and depending on the language and clauses within the agreement, may constitute a legally binding agreement.¹³⁹ Within this MOU, manufacturers agreed to provide access to diagnostic and repair information on "fair and reasonable terms," for any automobiles with a model year of 2002 or later.¹⁴⁰ Additionally, starting with 2018 models, manufacturers agreed to standardize diagnostic tools to work on all vehicles, not just those from one specific manufacturer.¹⁴¹ The MOU also excludes security systems from the required information disclosure, and provides a remedy for independent repair facilities and consumers if manufacturers fail to comply with the agreement—the manufacturer has thirty days to cure the failure, and if the defect is not cured, the issue can be referred to a dispute resolution panel comprised of members from each party.¹⁴²

B. *The Wyoming Approach*

The Wyoming "Right to Repair" Act lacks the breadth of the other proposed bills and applies only to farming equipment.¹⁴³ It requires farming equipment manufacturers to make diagnostic and repair documentation available to independent repair technicians and consumers free of charge, or for the same price authorized repair facilities pay.¹⁴⁴ This repair information

¹³⁷ H.B. 4362 § 2, 2012 Reg. Sess. (Mass. 2012).

¹³⁸ Alliance of Automobile Manufacturers, Association of Global Automakers, Automotive Aftermarket Industry Association, Coalition for Auto Repair Equality, Memorandum of Understanding (Jan. 15, 2014), <http://www.autocare.org/workarea/DownloadAsset.aspx?id=1440&gmssopc=1> [hereinafter Memorandum of Understanding].

¹³⁹ JOHN VAN DER PUIL & ARJAN VAN WEELE, INTERNATIONAL CONTRACTING: CONTRACT MANAGEMENT IN COMPLEX CONSTRUCTION PROJECTS 242–243 (2014).

¹⁴⁰ Memorandum of Understanding, *supra* note 138, at § 2(a).

¹⁴¹ *Id.* § 2(c)(i).

¹⁴² *Id.* §§ 2(d), 6.

¹⁴³ H.B. 0199 § 1(a), 2017 Reg. Sess. (Wyo. 2017).

¹⁴⁴ *Id.* § 1(a)(i).

includes information pertaining to embedded software within the equipment,¹⁴⁵ and information related to security-related functions.¹⁴⁶ The bill also mandates that farm equipment manufacturers make all diagnostic repair tools available for purchase on “fair and reasonable terms,” and provides a list of factors to consider, just like the proposed electronic device repair bills.¹⁴⁷

One important distinction between the Wyoming repair bill and the electronic device repair bills is that the Wyoming bill does not require manufacturers to sell farm equipment parts if the parts are no longer available to the manufacturer.¹⁴⁸ This prevents manufacturers from keeping inventory of every spare part and tool required for every potential repair for any product they ever produced, thus reducing the manufacturer’s burden.¹⁴⁹ While the provisions are almost identical to the proposed bills for electronic devices in other states, its narrow scope is more appropriate considering the large size and difficulty of transporting farming equipment to repair facilities, the expertise farmers possess with regards to the equipment they operate daily, and the reliance farmers have on their equipment to earn a living.¹⁵⁰ Since handheld electronic devices are easy to transport to an authorized repair facility, and are not necessary for earning a living in the same way tractors are, they should not be subject to the same fair repair legislation.

C. *Apple’s Recent Concessions*

As states continue to mull over new repair legislation, Apple has attempted to reconcile the consumer and repair technicians’ demand for the “right to repair” their devices. For example, Apple’s Repair Terms & Conditions now include an additional option for device repair, called a “Do-It-Yourself (DIY) Parts

¹⁴⁵ *Id.* § 1(a)(ii).

¹⁴⁶ *Id.* § 1(d).

¹⁴⁷ *Id.* § 1(c).

¹⁴⁸ *Id.* § 1(e)(i).

¹⁴⁹ *Id.*

¹⁵⁰ Matt Hickman, *Farmers Fight for the Right to Repair Their Own Tractors*, MOTHER NATURE NETWORK (July 21, 2016, 2:31 PM), <https://www.mnn.com/your-home/organic-farming-gardening/blogs/tractor-scheme-farmers-fight-right-fix-their-own-john-deeres>.

Service.”¹⁵¹ This service option provides that Apple will ship a consumer a replacement part if it determines that DIY Parts Service is available to the consumer.¹⁵² Additionally, Apple has changed its warranty policy to accommodate third-party screen repairs and modifications.¹⁵³ Prior to 2017, a screen repair or modification performed by an unauthorized third party would automatically void the product’s warranty.¹⁵⁴ Under the new policy, retail store employees and authorized service providers are free to repair a device, even if it has a third-party screen, as long as the requested repair is unrelated to the screen.¹⁵⁵ The DIY Parts Service option and the more flexible warranty reflect Apple’s concessions to the organizations lobbying for fair repair legislation.

Apple has also significantly decreased the price point for display repairs at the retail store, or at an authorized service provider.¹⁵⁶ For customers who have Apple’s cell phone warranty plan, AppleCare+, the price for repairing a cracked display screen is \$29, down \$70 from last year.¹⁵⁷ Warrantied customers are eligible to use this repair option twice before the price increases.¹⁵⁸ Customers can rest assured that the replacement screen is a genuine Apple part, is fully compatible with the device, and meets the strict standards imposed on electronic manufacturers in the United States.¹⁵⁹

¹⁵¹ *Repair Terms and Conditions* § 1.4(a), APPLE (last visited Sep. 24, 2018), <https://www.apple.com/legal/sales-support/terms/repair/generalservice/servicetermsen/>.

¹⁵² *Id.*

¹⁵³ *Id.* § 1.11.6.

¹⁵⁴ See Chance Miller, *Apple Shifts Policy, Says Third-party Screen Repairs No Longer Void iPhone Warranty*, 9TO5MAC (Feb. 25, 2017, 10:20 AM), <https://9to5mac.com/2017/02/25/iphone-warranty-third-party-screen/>.

¹⁵⁵ See *id.* The repair technician at Apple or at an authorized service provider must first inspect the device for any evidence of fraud or tampering. *Id.* If the third-party display causes the authorized repair to fail, or otherwise damages the device, the customer must pay the out-of-warranty cost to rectify these issues. *Id.* Also, if the issue is related to the third-party display, the customer is required to pay the out-of-warranty repair price or may be denied repair service completely. *Id.* If the customer wants to replace the third-party display with a genuine Apple display, the customer must pay the out-of-warranty cost. *Id.*

¹⁵⁶ Samantha Murphy Kelly, *It Will Now Cost Just \$29 to Fix a Cracked iPhone*, CNN (Sept. 8, 2016, 1:55 PM), <http://money.cnn.com/2016/09/08/technology/iphone-cracked-screen-price-lowered/index.html>.

¹⁵⁷ *Id.*

¹⁵⁸ *iPhone Screen Repair*, APPLE (last visited Sep. 24, 2018), <https://support.apple.com/iphone/repair/screen-damage>.

¹⁵⁹ *Id.*

In early 2016, users who had their iPhone 6 or 6 Plus TouchID buttons repaired by a non-authorized service provider experienced an error called “Error 53” when they attempted to update the software on their device.¹⁶⁰ This error disabled or “bricked,” the user’s device.¹⁶¹ Apple came under fire for this error, and almost immediately issued a “patch” to the mobile operating system to restore the device, and eliminate the error message.¹⁶² In addition to the update, Apple permitted customers who had their TouchID buttons repaired by non-authorized service providers to bring in their devices for verification by an Apple technician, and to re-enable the TouchID.¹⁶³ This verification process was to ensure customer security,¹⁶⁴ and is indicative of a changing climate with regards to repairs.¹⁶⁵

III. PROPOSED REPAIR REFORMS

The “right to repair” movement originated with rural farming equipment, and the proposed legislation tailored to this equipment appears to truly be “fair” repair legislation.¹⁶⁶ Farmers know their equipment best, and considering the heavy weight of tractors, the scarcity of authorized service providers, and the dependence farmers have on their equipment, it is fair to mandate that manufacturers offer diagnostic and repair information and parts for sale.¹⁶⁷ The mounting security concerns involved in the repair of personal handheld electronics are not relevant to computerized tractors, and the safety concerns are minimal as well.¹⁶⁸ The narrow scope of the Wyoming bill is appropriate,¹⁶⁹ and other states should use this bill as a template for repair bills tailored to the needs of the farming and agricultural industry.

¹⁶⁰ Amit Chowdhry, *Apple Releases Software Update That Fixes ‘Error 53,’* FORBES (Feb. 18, 2016, 3:39 PM), <https://www.forbes.com/sites/amitchowdhry/2016/02/18/apple-error-53-fix/#682297146585>.

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Repair.org Achievements*, REPAIR.ORG (last visited Sep. 24, 2018), <https://repair.org/fair-repair/>.

¹⁶⁶ See H.B. 0199 § 1(a), 2017 Reg. Sess. (Wyo. 2017).

¹⁶⁷ Fitzpatrick, *supra* note 17.

¹⁶⁸ *Id.*

¹⁶⁹ H.B. 0199 § 1(a), 2017 Reg. Sess. (Wyo. 2017).

As applied to consumer electronics, however, it is impractical to require electronic manufacturers to comply with a legislative quilt of mismatched and insufficient repair bill provisions. Instead, a standardized practice analogous to the memorandum of understanding in place in the automobile industry would serve electronic manufacturers, consumers, and repair shops well.¹⁷⁰ This standardized practice should include various provisions from proposed state legislation, provide more definite terms, and contain more protective measures for manufacturers.

Manufacturers should be required to offer certain specialized repair equipment for sale to all consumers and third-party repair facilities. Manufacturers should offer consumers or repair technicians the option to purchase the specialized equipment necessary to complete a repair, such as a screwdriver for a screen replacement, or the Horizon machine for pairing sensors. Manufacturers should also consider the purchase of such equipment as a factor in a determination of whether a repair facility can be deemed an authorized service provider.

Additionally, manufacturers should not be mandated to disclose diagnostic and repair information for security-related functions. The automobile MOU appreciated this concern, and properly excluded security-related function information from the mandated disclosure.¹⁷¹ Modern technology stores a wealth of security information, and granting the public access to this information makes consumer devices vulnerable to hackers and identity theft.¹⁷² Repairs involving complicated electronic security functions should be left to the original manufacturers who know how to best operate the systems and protect consumer information.

It is essential that any repair legislation shield manufacturers from liability as soon as a consumer or unauthorized repair facility performs a repair. Any unauthorized or at-home repairs should void the original manufacturer warranty because it is unfair to hold manufacturers accountable for a repair process they had no control over.¹⁷³ There is a legitimate reason for authorized repair facilities, as they expand consumer rights by giving consumers more options, while maintaining the quality of product and standards of service the

¹⁷⁰ See Memorandum of Understanding, *supra* note 138.

¹⁷¹ *Id.*

¹⁷² Koebler, *supra* note 108.

¹⁷³ See SOFTWARE-ENABLED CONSUMER PRODUCTS, *supra* note 20, at 27–28.

manufacturer desires. If a consumer chooses to utilize an authorized repair facility, she can keep her warranty valid, but if she chooses to repair her own display screen, the manufacturer should no longer be held liable for future repairs or damage caused by or related to the repair process.

Intellectual property must also be clearly protected. It is unfair to require manufacturers to provide detailed repair manuals for every part of a consumer electronic to consumers and repair technicians.¹⁷⁴ Manufacturers spend years on product development and assembly, but this effort is wasted if schematic diagrams and detailed step-by-step product repair instructions are freely accessible to the public. Repair manuals are protectable intellectual property and should be treated as such.¹⁷⁵ Perhaps a solid foundation for reconciliation starts with the most commonly sought-after repair: display screen replacement. Instead of requiring a manufacturer to divulge manuals and diagrams for every electronic part, the option to purchase a manual geared specifically towards an outer casing screen replacement, as well as a genuine replacement display screen would permit consumers and third-party repair organizations to tackle a very common electronic repair. This narrow scope should not greatly increase a manufacturer's costs, as many manufacturers already have spare display screens available for repair purposes at authorized service providers, and screen replacement does not carry the same grave safety risks as battery replacement.¹⁷⁶ However, if manufacturers agree to sell genuine display screens, and provide repair manuals for screen replacement, it is essential for the original manufacturer warranty to be voided. If you break it, and you fix it, you have to pay the price of losing protection under your original warranty.

Manufacturers should also not be required to keep an inventory of spare parts, repair tools or repair manuals for every electronic device they have manufactured for an unspecified period of time. Most of the current proposed legislation does not

¹⁷⁴ Memorandum from Johnny Evers at The Business Council to New York State Legislature Re: S-618-B and A-8192 (June 7, 2017), available at <http://www.bcny.org/inside/Legmemos/2017-18/s618-a8192-mandates-sale-of-digital-electronic-equipment.html>.

¹⁷⁵ See *AvidAir Helicopter Supply, Inc., v. Rolls-Royce Corp.*, 663 F.3d 966, 975 (8th Cir. 2011).

¹⁷⁶ Rick Broida, *Can an Ordinary Joe Replace a Busted iPhone Screen?*, CNET (May 14, 2014, 2:13 PM), <https://www.cnet.com/how-to/can-an-ordinary-joe-replace-a-busted-iphone-5s-screen/>.

set a time frame for manufacturers to be held liable for this information and equipment,¹⁷⁷ and the bill that does set a time frame—seven years—does not account for the average lifespan of consumer electronics. It is imperative that an agreement between technology companies and repair organizations provide a reasonable time frame, certainly not seven years.¹⁷⁸ A determination of this time frame should take into consideration how long technology is relevant for, the burden placed on manufacturers to maintain the inventory, the time and cost required to update the repair information, and the average product lifespan. The maximum amount of time a manufacturer should be required to provide information and parts to the public should be the maximum potential coverage period under an optional extended warranty associated with the electronic device, which is traditionally between two and three years from the date of purchase.¹⁷⁹

Finally, this standardized practice should include the provision from the South Dakota bill which required manufacturers to clearly express to consumers any “post-purchase obligations” including limitations on repair, prior to the completion of the sale.¹⁸⁰ Currently, many manufacturers include shrink-wrap agreements in electronic device packaging,¹⁸¹ but it is more reasonable to require consumers to physically sign (or e-sign) an agreement before the sale is complete, and before the product is opened and used. This could be executed through a simple agreement signed at a retail store register, or on a retail website, for online orders. Shrink-wrap agreements are a far cry from a “meeting of the minds,”¹⁸² and although a pre-purchase agreement outlining post-purchase obligations would remain non-negotiable, consumers would at least be made aware of the

¹⁷⁷ See, e.g., S. 618-B, 2017-2018 Reg. Sess. (N.Y. 2017); S.B. 888, 110th Reg. Sess. (Tenn. 2017); H.B. 663, Gen. Assemb., Reg. Sess. (N.C. 2017); Assemb. B. 4934, 217th Leg. Sess. (N.J. 2017).

¹⁷⁸ S.B. 136 § 2, 2014 Leg. Assemb., 89th Sess. (S.D. 2014).

¹⁷⁹ *Geek Squad Protection Plans*, BEST BUY (last visited Sep. 24, 2018), <https://www.bestbuy.com/site/geek-squad/geek-squad-protection/pcmcat159800050001.c?id=pcmcat159800050001> (offering an optional two year extended warranty for mobile phones and three year extended warranty for computers, tablets and cameras).

¹⁸⁰ S.B. 136 § 3, 2014 Leg. Assemb., 89th Sess. (S.D. 2014).

¹⁸¹ Lemley, *supra* note 40, at 1272.

¹⁸² *Id.* at 1289; A contract requires a bargain in which there is a manifestation of mutual assent, which is often described as a “meeting of the minds.” See Restatement (Second) of Contracts § 17, comment (c).

restrictions prior to the purchase and could consider these restrictions when deciding which manufacturers to buy from. This allows manufacturers to maintain protective clauses in their contracts, but also theoretically advises consumers of their rights and restrictions before they open and use the electronic device.

CONCLUSION

Fair repair legislation is not fair for all parties involved. In the ever-expanding world of software-embedded hardware, and increasingly complex and fragile devices, it is of the utmost importance to address repairability issues. Unfortunately, the current proposed state legislation, as it applies to consumer electronic devices, does not adequately address manufacturer or consumer needs. It is essential for manufacturers, consumers, and repair organizations to create a standardized practice to address all of the safety, security, brand reputation, intellectual property, pricing, and innovation concerns. If an agreement inclusive of the important provisions highlighted in Part III, and analogous to the agreement reached in the automobile industry, can be reached, consumers, manufacturers, and third-party repair providers will end up with more options, longer product life, and more adequate protection.