

February 2021

Consumer Electronic Right to Repair Laws: Focusing on an Environmental Foundation

Joshua Turiel

Follow this and additional works at: <https://scholarship.law.wm.edu/wmelpr>



Part of the [Consumer Protection Law Commons](#), and the [Environmental Law Commons](#)

Repository Citation

Joshua Turiel, *Consumer Electronic Right to Repair Laws: Focusing on an Environmental Foundation*, 45 Wm. & Mary Env'tl. L. & Pol'y Rev. 579 (2021), <https://scholarship.law.wm.edu/wmelpr/vol45/iss2/8>

Copyright c 2021 by the authors. This article is brought to you by the William & Mary Law School Scholarship Repository.

<https://scholarship.law.wm.edu/wmelpr>

CONSUMER ELECTRONIC RIGHT TO REPAIR LAWS: FOCUSING ON AN ENVIRONMENTAL FOUNDATION

JOSHUA TUIEL*

On September 10, 2019, Apple introduced a new generation of iPhones.¹ “Like clockwork,”² an “adoring crowd”³ gathered at Apple’s headquarters in Cupertino, California for the annual unveiling of the latest gadgets.⁴ As reports of the new devices circulated through the press and social media, analysts swiftly predicted that Apple would sell seventy to seventy-five million units in 2019 alone.⁵ That is just a drop in the bucket compared to the number of electronic devices in the world. In September 2018, CEO Tim Cook announced that Apple had sold nearly two billion devices running iOS, the operating system that powers Apple’s most popular mobile devices—iPhone, iPad, and iPod Touch.⁶ Samsung has sold

* JD Candidate, William & Mary Law School, 2021; BA Sociology and Mass Communications, University of California, Berkeley, 2009. The author would like to thank Elliot, Judy, Rachel, Shayna, Eddy, Miguel, and all of his friends and family for their support and encouragement. The author would also like to thank the wonderful people at the Center for Legal and Court Technology for their support throughout his law school career. Last but not least, the author would like to acknowledge the staff of the *William & Mary Environmental Law and Policy Review* for their tireless and diligent work.

¹ *iPhone 11 Pro and iPhone 11 Pro Max: The Most Powerful and Advanced Smartphones*, APPLE (Sept. 10, 2019), <https://www.apple.com/newsroom/2019/09/iphone-11-pro-and-iphone-11-pro-max-the-most-powerful-and-advanced-smartphones/> [<https://perma.cc/BGS7-LYQJ>].

² Greg Kumparak, *Here’s Everything Apple Announced Today at the iPhone 11 Event*, TECHCRUNCH (Sept. 10, 2019), <https://techcrunch.com/2019/09/10/apple-event-roundup-iphone-11/> [<https://perma.cc/L3SE-B5XF>].

³ Ewan Spence, *What Will Apple Announce at Tuesday’s Massive Launch Event? Predictions on the New iPhone 11 and iPhone 11 Pro*, FORBES (Sept. 9, 2019), <https://www.forbes.com/sites/ewanspence/2019/09/09/apple-iphone11-iphone11max-iphone11maxpro-predictions-leak-September-10th/#4874178e3fdc> [<https://perma.cc/PGF5-VFJA>].

⁴ Kelly McCarthy, *Apple Announces iPhone 11, Takes on Netflix, Hulu with Low Streaming Price*, ABC NEWS (Sept. 10, 2019), <https://abcnews.go.com/Business/highly-anticipated-apple-event-kicks-off-big-announcement/story?id=65509044> [<https://perma.cc/CP55-G53B>].

⁵ Chris Smith, *Tons of Sources Now Say That iPhone 11 Preorders Are Crushing It*, BGR (Sept. 17, 2019), <https://bgr.com/2019/09/17/iphone-11-preorders-vs-iphone-xs-sales-improved-significantly/> [<https://perma.cc/PTZ3-VUJQ>].

⁶ See Malcolm Owen, *How Apple Has Hit 2 Billion iOS Devices Sold, and When it Will Hit 2 Billion iPhones*, APPLEINSIDER (Sept. 13, 2018), <https://appleinsider.com/articles/18/09/13/how-apple-has-hit-2-billion-ios-devices-sold-and-when-it-will-hit-2-billion-iphones> [<https://perma.cc/83CB-FD6K>].

more than two billion phones.⁷ Over 225 million televisions were sold each year from 2012 to 2017.⁸ The internet's rise brought a flood of connected devices, from tablets and personal assistants to speakers and cameras.⁹ In 2019, Americans used an average of eight networked devices each, and that number is expected to reach 13.6 by 2022.¹⁰

In the hoopla of device announcements, pre-orders, sales, and holiday shopping, it is easy to ignore the fate of older devices that are destined to be replaced by new models. In 2010, 384 million electronic devices—including computers, televisions, and mobile devices—were discarded in the United States.¹¹ They became what is known as electronic waste, or “e-waste”.¹² Vast quantities of e-waste collect in landfills, where it becomes an environmental hazard.¹³ Discarded electronics “represent a toxic time bomb waiting to enter America’s landfills and water table.”¹⁴

Although there is debate about our culture’s rapid technological upgrade cycle—some see it as a necessary ingredient of innovation and the beauty of the free market while others see artificial limits on the life span of products in the pursuit of profit—one thing is clear: the longer a device is used, the longer it takes to become e-waste.¹⁵ In years past, it

⁷ Chaim Gartenberg, *Samsung Has Sold 2 Billion Galaxy Phones in Less Than a Decade*, VERGE (Feb. 20, 2019), <https://www.theverge.com/2019/2/20/18233599/samsung-galaxy-phones-sold-2-billion-users-unpacked-2019> [https://perma.cc/U6NX-965K].

⁸ *Global TV Unit Sales From 2012 to 2017*, STATISTA, <https://www.statista.com/statistics/461316/global-tv-unit-sales/> [https://perma.cc/V7HJ-5Y6B] (last visited Nov. 24, 2020).

⁹ Grant Stimmel, *The 13 Absolute Best-Selling Amazon Tech Products (of 2019)*, PRODUCT HYPE (Jan. 2, 2019), <https://blog.producthype.co/best-amazon-tech-products-2019/> [https://perma.cc/VJPS-T4RR].

¹⁰ *IoT Has Quietly and Quickly Changed our Lives*, NCTA (Feb. 1, 2019), <https://www.ncta.com/whats-new/iot-has-quietly-and-quickly-changed-our-lives> [https://perma.cc/J74N-WAM3].

¹¹ *Facts and Figures on E-Waste and Recycling*, ELECTRONICS TAKEBACK COAL. (Jan. 13, 2016), http://www.electronicstakeback.com/wp-content/uploads/Facts_and_Figures_on_EWaste_and_Recycling.pdf [https://perma.cc/QNU3-E6XT].

¹² EPA, IMPROVED INFORMATION COULD BETTER ENABLE EPA TO MANAGE ELECTRONIC WASTE AND ENFORCE REGULATIONS 1 (2013).

¹³ *Id.* at 2.

¹⁴ GILES SLADE, MADE TO BREAK: TECHNOLOGY AND OBSOLESCENCE IN AMERICA 2 (2006).

¹⁵ See CTA’s *Alcorn Spars with Right-to-Repair Advocates at FTC “Nixing the Fix” Workshop*, WASH. INTERNET DAILY (July 17, 2019), <https://advance.lexis.com/document?crd=462370fd-b934-4bd2-a552-3b4da5dcaea4&pddocfullpath=%2Fshared%2Fdocument%2Flegalnews%2Furn%3AcontentItem%3A5WKY-MRH1-DYRJ-819B-00000-00&pdcontentcomponentid=272155&pdmfid=1000516&pdisurlapi=true> [https://perma.cc/UB8M-YS7M]; Jamie Allendorf, *How Big Tech Stopped Right to Repair in New York*, MEDIUM (Aug. 2, 2018), <https://medium.com/u-s-pirg/how-big-tech-stopped-right-to-repair-in-new-york-9109a7565596> [https://perma.cc/NA6R-AHGQ]; *Repair Revives End-of-Life Electronics*, REPAIR

was common for consumers and independent repair shops to perform basic repairs to extend the lives of electronic devices.¹⁶ “It was relatively commonplace to expect users could repair broken devices on their own a decade ago, as consumer devices were far simpler to maintain and modify.”¹⁷ However, many of the major electronics manufacturers now restrict repairs to authorized repair shops of their choice.¹⁸ By doing so, consumers lose the ability to repair devices themselves or to have repairs made at a local independent repair shop.¹⁹ Faced with the choice between an expensive repair at an authorized shop or a new device, consumers often opt for the latter, banishing their fixable devices to the e-waste pile.²⁰

Legislation that would help stem the tide of e-waste—called right to repair—has been proposed in twenty states.²¹ These bills face significant legal hurdles separate from environmental concerns. Federal copyright law covers much of the software and repair materials.²² “Manufacturers retain exclusive rights to diagnostic software and repair tools,”²³ as well as repair manuals.²⁴ As devices have become more technologically complicated, purely mechanical equipment now use embedded software.²⁵ Even the bucolic scene of a farmer tinkering with his tractor has been upended by embedded software that only allows repairs to be performed at a licensed John Deere facility.²⁶ Consumer electronics are no different—their repairability, too, is restricted by embedded software.²⁷

ASS’N, <https://repair.org/the-environment> [<https://perma.cc/ZED2-BWVD>] (last visited Nov. 24, 2020).

¹⁶ Mike Wuerthele & Malcolm Owen, *Editorial: Arguing over iPhone “Right to Repair” Is Good, but a Solid Middle-Ground Is Needed*, APPLEINSIDER (May 6, 2019), <https://appleinsider.com/articles/19/05/06/editorial-arguing-over-iphone-right-to-repair-is-good-but-a-solid-middle-ground-is-needed> [<https://perma.cc/PCX3-BRRZ>].

¹⁷ *Id.*

¹⁸ Daniel Cadia, *Fix Me: Copyright, Antitrust, and the Restriction on Independent Repairs*, 52 U.C. DAVIS L. REV. 1701, 1703 (2019).

¹⁹ *Id.*

²⁰ *Id.*

²¹ Nathan Proctor, *California Becomes 20th State in 2019 to Consider Right to Repair Bill*, U.S. PUB. INT. RSCH. GRP. (Mar. 18, 2019), <https://uspirg.org/news/usp/california-becomes-20th-state-2019-consider-right-repair-bill> [<https://perma.cc/3L93-YJS7>].

²² See Cadia, *supra* note 18, at 1709–10.

²³ *Id.* at 1703.

²⁴ Anjanette H. Raymond, *Pliers and Screwdrivers as Contributory Infringement Devices: Why Your Local Repair Shop Might Be a Copyright Infringer, and Why We Must Stop the Crazyness*, 12 NW. J. TECH. & INTELL. PROP. 67, 81 (2014).

²⁵ Cadia, *supra* note 18, at 1703.

²⁶ *Id.*

²⁷ Marissa MacAnaney, *If It Is Broken, You Should Not Fix It: The Threat Fair Repair Legislation Poses to the Manufacturer and the Consumer*, 92 ST. JOHN’S L. REV. 331, 334 (2018).

Contract law also plays a critical role in the right to repair debate.²⁸ “Electronic manufacturers often include shrink-wrap terms of service agreements and end-user license agreements in product packaging, which assert proprietary rights, place a limitation on warranties, and restrict the rights of users, while simultaneously expanding the rights of the manufacturer.”²⁹ This Note does not address copyright or contract issues. They have been, and undoubtedly will again be, addressed elsewhere.³⁰ This Note presupposes that these legal impediments can be overcome and that a reasonable balance can be struck between consumer and manufacturer rights in order to examine the environmental aspects of right to repair laws.

This Note will argue that environmental considerations could provide an essential foundation for consumer electronic right to repair laws. This idea is not unprecedented—the European Union’s right to repair regulations already focus on the environment and the United States has successfully passed laws with an environmental focus pertaining to automobile right to repair and e-waste recycling.

Part I of this Note will set the stage by examining the e-waste problem and the debate around right to repair legislation. Part II will investigate the consumer electronic right to repair legislation that has been proposed in the United States. Part III will argue for an increased environmental focus by looking at three arenas that can serve as a guide. First, recently enacted rules in the European Union show how the proposed United States laws can be tailored to maximize environmental benefits. Second, automobile right to repair legislation in this country shows that environmental-based legislation is feasible. Third, existing federal and state waste management statutes show that the groundwork has already been laid for consumer electronic right to repair.

I. WHAT’S AT ISSUE

A. *The E-Waste Problem*

Electronic waste is a significant problem, both in scope and consequence. The scope is massive: by 2016, the world had generated 44.7 million metric tons of e-waste.³¹ The United States holds the dubious distinction of being the largest e-waste producer in the world.³² “We do

²⁸ *Id.* at 336–37.

²⁹ *Id.*

³⁰ See generally Cadia, *supra* note 18; MacAnaney, *supra* note 27; Raymond, *supra* note 24.

³¹ C.P. BALDÉ ET AL., THE GLOBAL E-WASTE MONITOR 2017: QUANTITIES, FLOWS, AND RESOURCES 2, 4 (2017).

³² Katie Campbell & Ken Christensen, *Where Does America’s E-Waste End Up? GPS*

not have enough time, money, or space in the continental United States to create enough landfills to store and then ignore America's growing pile of electronic trash."³³ Regrettably, America's e-waste problem transcends its borders—much of it is exported to less developed nations.³⁴

The health and environmental consequences of e-waste are equally distressing. Our favorite devices present problems both at the beginning and end of their life cycles. The manufacturing process consumes a large amount of resources.³⁵ The creation of a single silicon chip, for example, requires over eight gallons of water.³⁶ This risks the viability of water supplies near manufacturing plants.³⁷ These plants can contaminate local water supplies, as seen in Phoenix, Arizona where semiconductor manufacturing contaminated groundwater wells with toxic chemicals.³⁸ Furthermore, workers in the factories that make electronic components risk becoming ill from the toxic chemicals they are exposed to.³⁹

A different set of dangers emerge when electronic devices are discarded. Consumer electronics contain various metals and toxic substances—"the most common are lead, cadmium, chromium, mercury, copper, manganese, nickel, arsenic, zinc, iron, and aluminum."⁴⁰ When a device is discarded, the toxic substances it contains enter an uncertain path fraught with potentially harmful effects.⁴¹ Globally, seventy-six percent of e-waste ends up in landfills or is recycled under unsafe conditions.⁴² In landfills, these toxins contaminate the soil and water.⁴³

Recycling is not a cure-all for the world's e-waste woes.⁴⁴ To be clear, companies that devote substantial resources to recycling should be

Tracker Tells All, PBS NEWSHOUR (May 10, 2016), <https://www.pbs.org/newshour/science/america-e-waste-gps-tracker-tells-all-earthfix> [<https://perma.cc/W8FF-T2XE>].

³³ SLADE, *supra* note 14, at 3.

³⁴ Campbell & Christensen, *supra* note 32.

³⁵ LESLIE A. BYSTER ET AL., CHALLENGING THE CHIP: LABOR RIGHTS AND ENVIRONMENTAL JUSTICE IN THE GLOBAL ELECTRONICS INDUSTRY 205 (Ted Smith et al. eds. 2006).

³⁶ *Id.*

³⁷ *Id.* at 206.

³⁸ *Id.*

³⁹ *Id.* at 207.

⁴⁰ Kristen Grant et al., *Health Consequences of Exposure to E-Waste: A Systematic Review*, 1 LANCET GLOB. HEALTH 350, 351 (2013).

⁴¹ See BALDÉ ET AL., *supra* note 31, at 4–6.

⁴² *Id.* at 5.

⁴³ K. Dharini et al., *Hazardous E-Waste and its Impact on Soil Structure*, 80 IOP CONF. SERIES: EARTH ENV'T SCI. 4 (2017).

⁴⁴ Vianney Vaute, *Recycling Is Not the Answer to the E-Waste Crisis*, FORBES (Oct. 29, 2018), <https://www.forbes.com/sites/vianneyvaute/2018/10/29/recycling-is-not-the-answer-to-the-e-waste-crisis/#d28004b7381c> [<https://perma.cc/KD78-3RTD>].

lauded for their efforts. Apple invented a recycling robot named Daisy that can disassemble 200 iPhones per hour, placing the salvaged materials back into the manufacturing process.⁴⁵ Microsoft, Dell, HP, and Phillips formed the E-Waste Solutions Alliance for Africa, which seeks to “encourage the development of more sustainable recycling policies in places where the e-waste problem has been particularly rampant.”⁴⁶ These efforts to establish safe and responsible recycling programs are a crucial part of solving the e-waste problem. All devices, even those that are highly repairable, eventually reach end of life.

However, recycling programs “barely scratch[] the surface of the growing e-waste crisis” as they struggle to keep up with the flood of discarded electronics.⁴⁷ The current state of e-waste recycling also presents environmental and health risks. Much of the e-waste from developed nations, including the United States, is exported to Asia or Africa,⁴⁸ where it is recycled in “inefficient, toxicant-producing settings.”⁴⁹ Workers, often migrants in “small scale family-run workshops” use primitive techniques, including breaking down components via open air burning and acid baths.⁵⁰ Discarded materials are dumped in “yards, roadsides, open fields, irrigation canals, riverbanks, ponds, and rivers.”⁵¹ These recycling processes damage local communities.⁵² “[A]irborne chemicals, most notably polybrominated diphenyl ethers, are leaching into bodily tissues of workers and innocent civilians, as well as into the air, soil, and water of nearby communities.”⁵³

⁴⁵ *Apple Expands Global Recycling Programs*, APPLE (Apr. 18, 2019), <https://www.apple.com/newsroom/2019/04/apple-expands-global-recycling-programs/> [<https://perma.cc/XT4G-84SS>].

⁴⁶ MICROSOFT, *DEVICE SUSTAINABILITY AT MICROSOFT: FISCAL YEAR 2019* (2019); Heather Clancy, *Dell Steps Up E-Waste Recycling With African Hub*, FORBES (Dec. 5, 2013), <https://www.forbes.com/sites/heatherclancy/2013/12/05/dell-steps-up-e-waste-recycling-with-african-hub/#5b730909265f> [<https://perma.cc/9ZMT-7RMG>].

⁴⁷ Vaute, *supra* note 44.

⁴⁸ John Vidal, *Toxic E-Waste Dumped in Poor Nations, Says United Nations*, OUR WORLD (Dec. 16, 2013), <https://ourworld.unu.edu/en/toxic-e-waste-dumped-in-poor-nations-says-united-nations> [<https://perma.cc/FGJ6-W6HV>].

⁴⁹ Naomi Lubick, *International Environmental Health: Shifting Mountains of Electronic Waste*, 120 ENV'T HEALTH PERSPS. A148, A148 (2012).

⁵⁰ Xia Huo et al., *Elevated Blood Lead Levels of Children in Guiyu, an Electronic Waste Recycling Town in China*, 115 ENV'T HEALTH PERSPS. 1113, 1115 (2007).

⁵¹ *Id.* at 1113.

⁵² *Id.*

⁵³ Kurt Daum et al., *Toward a More Sustainable Trajectory for E-Waste Policy: A Review of a Decade of E-Waste Research in Accra, Ghana*, 14 INT'L J. ENV'T RES. & PUB. HEALTH 1, 2 (2017).

The negative effects of primitive recycling techniques seep out beyond the areas where the recycling takes place via polluted air and water.⁵⁴ A study of Accra, Ghana, a hub of informal electronics recycling, found high levels of metals in the Odaw River, which feeds into the Gulf of Guinea.⁵⁵ This type of contamination poses a serious threat to wildlife.⁵⁶ “Most heavy metals and organic pollutants found in the freshwaters and salt-water coasts are detrimental to the behavior, physiology, metabolism, reproduction, development, and growth of several aquatic specimens.”⁵⁷ Human health is endangered when contaminated wildlife is consumed.⁵⁸ “These metal concentrations that originate from e-waste burning were also found in places where livestock and local urban fauna reside and graze. For many people . . . their livestock intended for consumption are exposed to these very same conditions.”⁵⁹

The toxins that are released when electronic devices are discarded or crudely recycled also directly harm human health.⁶⁰ In Guiyu, China, residents living near e-waste recycling facilities suffer from “high incidence of skin damage, headaches, vertigo, nausea, chronic gastritis, and gastric and duodenal ulcers,”⁶¹ as well as cancer, diabetes, hypertension, cardiovascular disease, fertility problems, and neurodevelopmental disabilities.⁶² Detrimental health effects hit children especially hard.⁶³

This is the background against which right to repair laws should be considered. When a consumer chooses to repair a device rather than purchase a new one, one fewer device enters the e-waste stream, thereby helping stem the tide of health and environmental damage.

B. The Right to Repair Debate

Advocates for right to repair legislation point to environmental consequences as one benefit, but much of the debate focuses on consumer

⁵⁴ *Id.*

⁵⁵ *Id.* at 6.

⁵⁶ *Id.* at 5.

⁵⁷ *Id.* at 6.

⁵⁸ *Id.*

⁵⁹ Daum et al., *supra* note 53, at 6.

⁶⁰ Megan Avakian, *E-Waste: An Emerging Health Risk*, NAT'L INST. ENV'T HEALTH SCI. (Feb. 2014), https://www.niehs.nih.gov/research/programs/geh/geh_newsletter/2014/2/spotlight/ewaste_an_emerging_health_risk_cfm [<https://perma.cc/M6QV-PCY3>]; Grant et al., *supra* note 40, at 356–57.

⁶¹ Huo et al., *supra* note 50, at 1113.

⁶² Grant et al., *supra* note 40, at 357.

⁶³ *Id.*

protection. Right to repair legislation is largely framed as a way to preserve property rights over devices that the consumer has purchased.⁶⁴ As one state Senator explained, “[w]e should all [be] able to choose where and how we repair our equipment.”⁶⁵ Right to repair is also seen as a way to protect the livelihoods of tens of thousands of independent technicians and as a way to prevent manufacturers from fleecing consumers with overpriced repairs or costly premature upgrades.⁶⁶ Advocates also point out that a healthy independent repair market is more convenient for consumers who are not located near the manufacturer’s authorized repair facilities. “If you’re among the 2 million people who live in Nebraska, don’t let anything happen to your iPhone. The state has exactly one Apple store. Warranty mail-in services can help, but take days to do what [an independent shop] can do in hours.”⁶⁷

Manufacturers oppose right to repair legislation for multiple reasons, most notably “consumer safety and security, brand reputation, product quality, and intellectual property concerns.”⁶⁸ First, manufacturers argue that independent repairers risk physical injury, “especially when individuals purchase third-party components for their repairs, such as lithium ion batteries.”⁶⁹ They note that “[l]ithium 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.”⁷⁰ Right to repair advocates are quick to note, however, that most repairs are easily manageable by the average tinkerer,⁷¹ and that “the simplest and least restrictive solution is a legal waiver of all liabilities from any injury resulting from third-party repairs.”⁷²

Manufacturers further argue that their devices will be less secure if crucial components can be repaired by unknown entities.⁷³ For example,

⁶⁴ *Policy Objectives*, REPAIRASS’N, <https://repair.org/policy> [<https://perma.cc/2XKP-WZ89>] (last visited Nov. 24, 2020).

⁶⁵ Kyle Wiens, *You Bought That Gadget, and Dammit, You Should Be Able to Fix It*, WIRED (Mar. 22, 2017), <https://www.wired.com/2017/03/right-to-repair-laws/> [<https://perma.cc/AC9B-RTEL>].

⁶⁶ Kelsey Weber, *10 Reasons to Support Right to Repair*, IFIXIT (Oct. 2, 2018), <https://www.ifixit.com/News/11590/10-reasons-to-support-right-to-repair> [<https://perma.cc/2P3H-6QNW>].

⁶⁷ Wiens, *supra* note 65.

⁶⁸ MacAneney, *supra* note 27, at 332.

⁶⁹ *Id.* at 340–41.

⁷⁰ *Id.* at 341.

⁷¹ Cadia, *supra* note 18, at 1718.

⁷² *Id.* at 1720.

⁷³ Allendorf, *supra* note 15.

Apple worries that loosening its grip on the TouchID system, which secures devices via the user's fingerprint, "could make devices vulnerable to hackers."⁷⁴ Manufacturers also contend that releasing the information contained in repair manuals and schematics endangers their intellectual property.⁷⁵ "[T]he 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.'"⁷⁶ Finally, manufacturers argue that implementing right to repair requirements would stifle the innovation that consumers demand, and that consumers seek the benefits that come with less repairable devices.⁷⁷

To protect these interests, consumer electronics manufacturers use a variety of techniques to prevent independent repairs. Proprietary parts, such as specialized screws and connectors, prevent physical access to devices.⁷⁸ Most notably, embedded software limits the ability of consumers and unaffiliated repair shops to access the products.⁷⁹ The software acts as "an added layer of digital complexity, requiring diagnostic software to fully fix any problems. To further complicate the issue, the only way to acquire diagnostic software is from either the manufacturer or a licensed repair provider answering directly to the manufacturer."⁸⁰ Thus, many devices, the type of which could, in years past, be repaired quite easily, now can only be repaired by the manufacturer.⁸¹ This gives manufacturers virtually complete control over the repair market.⁸² "The manufacturers have effectively created a monopoly on repairs by shutting out independent third parties."⁸³

For example, Nikon plans to completely terminate its authorized repair program by March 2020, forcing consumers to send their products to Nikon-operated repair centers.⁸⁴ Nikon previously stopped providing

⁷⁴ MacAneney, *supra* note 27, at 347.

⁷⁵ *Id.* at 346.

⁷⁶ *Id.*

⁷⁷ CTA's Alcorn Spars with Right-to-Repair Advocates at FTC "Nixing the Fix" Workshop, *supra* note 15.

⁷⁸ Cadia, *supra* note 18, at 1717–18.

⁷⁹ Raymond, *supra* note 24, at 69–70.

⁸⁰ Cadia, *supra* note 18, at 1703.

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

⁸⁴ Steve Dent, *Nikon Ends its Authorized Third-Party Repair Program*, ENGADGET (Dec. 10, 2019), <https://www.engadget.com/2019-12-10-nikon-ends-authorized-third-party-repairs.html> [<https://perma.cc/H496-UMMD>].

parts to independent repair shops in 2012.⁸⁵ Apple, meanwhile, launched an independent repair program (partly as a response to proposed right to repair legislation), but instituted terms that lawyers and independent repairers have called “draconian.”⁸⁶ Under Apple’s plan, independent repair shops must share customer information with Apple, must agree to only use Apple authorized parts, and must give Apple the ability to audit their operations for up to five years after they leave the program.⁸⁷ Violating the agreement is punishable by a \$1,000 fine per transaction, which is “potentially business-destroying.”⁸⁸

Some argue that manufacturers have more nefarious motives behind their opposition to right to repair. They believe that the “increasing rate” at which consumers replace electronic devices is not incidental to technological progress, but is the result of manufacturers deciding to make products less durable.⁸⁹ As far back as the Great Depression, manufacturers realized that if they designed their products to fail prematurely, consumers would spend more money replacing them.⁹⁰ “‘Planned obsolescence’ is the catch-all phrase used to describe the assortment of techniques used to artificially limit the durability of a manufactured good in order to stimulate repetitive consumption.”⁹¹ Not only has planned obsolescence become common in various sectors of the economy, it has been accepted by consumers.⁹² One industrial designer succinctly stated that “[o]ur whole economy is based on planned obsolescence. . . . We do that for the soundest reason: to make money.”⁹³

Technology companies have been accused of engaging in planned obsolescence.⁹⁴ “Things used to be made to last—but the life span of modern electronics is much shorter than it once was, and keeps getting shorter. The trend means more sales for manufacturers, and there is increasing concern that our products are designed to become obsolete more quickly.”⁹⁵

⁸⁵ *Id.*

⁸⁶ Juli Clover, *Apple Makes Independent Repair Shops Sign Draconian Contracts to Get Official Parts*, MACRUMORS (Feb. 6, 2020), <https://www.macrumors.com/2020/02/06/apple-independent-repair-shops-contracts/> [<https://perma.cc/LLE8-5Q5S>].

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ Nicole Buseman, *A Second-Generation Solution to Electronic Waste: The New York Approach*, 37 COLUM. J. ENV'T L. 245, 246 (2012); SLADE, *supra* note 14, at 5.

⁹⁰ SLADE, *supra* note 14, at 5.

⁹¹ *Id.*

⁹² *Id.* at 4.

⁹³ *Id.* at 153.

⁹⁴ Allendorf, *supra* note 15.

⁹⁵ *Id.*

Making devices harder to repair furthers this goal.⁹⁶ By removing the capability for consumers to repair their own devices or to have them repaired at local shops, consumers are forced to pay the manufacturer for a new device or an expensive repair.⁹⁷

II. PROPOSED RIGHT TO REPAIR LAWS IN THE UNITED STATES

Federal efforts to enact a right to repair have been unsuccessful, in part due to industry lobbying.⁹⁸ Two bills introduced in 2015 stalled—the You Own Devices Act and the Unlocking Technology Act.⁹⁹ However, federal interest in right to repair may be revived.¹⁰⁰ Recently, the Federal Trade Commission conducted a workshop “to probe whether manufacturer restrictions on third-party repairs can undercut the consumer protections in the 1975 Magnuson-Moss Warranty Act.”¹⁰¹

In the absence of federal action, right to repair laws covering consumer electronics have been proposed in twenty states.¹⁰² The proposed bills contain minor variations but are largely similar in scope and substance.¹⁰³ Three main areas are addressed: the information needed to make the repair, the tools needed to make the repair, and the parts needed to make the repair.¹⁰⁴ These bills do not ignore manufacturer concerns—they include provisions to protect intellectual property and limit the materials that manufacturers must provide.¹⁰⁵

First, the proposed bills seek to ensure that the knowledge required to make repairs is accessible to consumers and independent repairers.¹⁰⁶ A typical bill mandates that “[a]n original equipment manufacturer of equipment sold, offered for sale, or used in this State shall make available . . . to any independent repair provider or owner . . . the same diagnostic, service, or repair documentation” that is provided to authorized repair providers.¹⁰⁷ Trade secrets are excluded from this requirement,

⁹⁶ Weber, *supra* note 66.

⁹⁷ *Id.*

⁹⁸ Cadia, *supra* note 18, at 1703–04.

⁹⁹ H.R. 905, 115th Cong. (1st. Sess. 2017); H.R. 1587, 114th Cong. (1st. Sess. 2015).

¹⁰⁰ CTA’s Alcorn Spars with Right-to-Repair Advocates at FTC “Nixing the Fix” Workshop, *supra* note 15.

¹⁰¹ *Id.*

¹⁰² Proctor, *supra* note 21.

¹⁰³ MacAnaney, *supra* note 27, at 337–38.

¹⁰⁴ *Id.* at 337–39, 353.

¹⁰⁵ See, e.g., S.B. 425, 30th Leg., Reg. Sess. (Haw. 2019).

¹⁰⁶ See A.B. 589(2)(a)(1), 218th Leg., Reg. Sess. (N.J. 2018).

¹⁰⁷ *Id.*

and manufacturers are not required to release “nondiagnostic and non-repair information provided by a manufacturer to an authorized repair provider pursuant to the terms of an authorizing agreement.”¹⁰⁸

Second, these bills disallow lack of repairability due to unavailability of proprietary tools and other repair equipment.¹⁰⁹ “Each original equipment manufacturer . . . shall offer for sale to owners and independent repair providers all diagnostic repair tools, incorporating the same diagnostic, repair, and remote diagnostics capabilities that the original equipment manufacturer makes available to its own repair or engineering staff or an authorized repair provider.”¹¹⁰

Finally, manufacturers would be required to make the replacement parts they supply to authorized manufacturers available to consumers and independent shops.¹¹¹ Under the proposed laws, manufacturers must offer for sale “service parts, including updates to the firmware of the parts.”¹¹² Most of the bills only require manufacturers to provide these resources to owners and independent repairers for as long as they provide them to authorized repairers.¹¹³ California’s proposed law goes further, requiring at least seven years of parts availability for devices priced over one hundred dollars.¹¹⁴ This is similar to the European Union directives, discussed in Part III. Additionally, a typical bill requires that the sale of materials be on fair and reasonable terms, defined as “an equitable price” based on factors that include “[t]he cost to the original equipment manufacturer for preparing and distributing the information or tools.”¹¹⁵

Manufacturers would be shielded from liability for damages caused by third-party parts and diagnostic information.¹¹⁶ Once a manufacturer “provides diagnostic, service, or repair documentation to aftermarket diagnostic tool manufacturers, diagnostic providers, or service information publications and systems [it] shall have fully satisfied its obligations under this subsection and shall not be responsible for the content and functionality of aftermarket diagnostic tools, diagnostics, or service information systems.”¹¹⁷

¹⁰⁸ H.F. 2299(1)(5), 91st Leg., Reg. Sess. (Minn. 2019).

¹⁰⁹ Haw. S.B. 425(3)(b)-(4).

¹¹⁰ *Id.* at 425(4).

¹¹¹ Minn. H.F. 2299(2)(a)(2).

¹¹² *Id.*

¹¹³ Haw. S.B. 425(3)(a)(1)-(2).

¹¹⁴ A.B. 1163, 2019-2020 Leg., Reg. Sess. (Cal. 2019).

¹¹⁵ Haw. S.B. 425(5)(b)(2).

¹¹⁶ A.B. 589(2)(c), 218th Leg., Reg. Sess. (N.J. 2018).

¹¹⁷ *Id.*

III. EXISTING LAWS AS GUIDES

A. *The European Union Approach*

The European Union (“EU”) recently passed right to repair legislation that, unlike the bills that have been proposed in the United States, was drafted with a focus on environmental concerns.¹¹⁸ The EU measures were adopted under the Ecodesign Directive, which “provides consistent EU-wide rules for improving the environmental performance of products.”¹¹⁹ To achieve this goal, EU right to repair places objective requirements on manufacturers that reflect a desire to keep products functioning as long as possible.

The regulations do not currently apply to portable consumer electronics, however, the Members of the European Parliament have called for extending the directive to mobile phones.¹²⁰ They voted to compel cell phone manufacturers to use a common power charging port and cord, thereby reducing waste from multiple charging systems.¹²¹ Similarly, a Dutch publication recently reported that the EU plans to require cell phones to have user-replaceable batteries.¹²² “The idea behind the change towards removable batteries is to make sure that users can more easily change one of the speediest-wearing parts of the phone without needing to take it to a specialist—thus reducing the amount of electronics wastage dead batteries can incite.”¹²³

The current directives—which apply to home appliances (washing machines, dishwashers, and refrigerators), digital displays, and lighting—demonstrate the EU’s focus on the environment.¹²⁴ The laws require that

¹¹⁸ *The New Ecodesign Measures Explained*, EUR. COMM’N (Oct. 1, 2019), https://ec.europa.eu/commission/presscorner/api/files/document/print/en/qanda_19_5889/QANDA_19_5889_EN.pdf [<https://perma.cc/7DU9-87GY>].

¹¹⁹ *Ecodesign*, EUR. COMM’N, https://ec.europa.eu/growth/industry/sustainability/ecodesign_en [<https://perma.cc/U743-XX53>] (last visited Nov. 24, 2020).

¹²⁰ *Ecodesign Directive: From Energy Efficiency to Recycling*, EUR. PARLIAMENT (May 24, 2018), <https://www.europarl.europa.eu/news/en/headlines/society/20180522STO04021/ecodesign-directive-from-energy-efficiency-to-recycling> [<https://perma.cc/U3XH-SYCZ>].

¹²¹ Tim Hardwick, *EU Lawmakers Vote Overwhelmingly in Favor of Common Charging Standard, Despite Apple’s Protestations [Updated]*, MACRUMORS (Jan. 31, 2020), <https://www.macrumors.com/2020/01/31/eu-votes-in-favor-of-charging-cable-standard/> [<https://perma.cc/EA23-UR74>].

¹²² Gareth Beavis, *All New iPhones Might be Forced to Have a Removable Battery*, TECH RADAR (Feb. 26, 2020), <https://www.techradar.com/news/all-new-iphones-might-be-forced-to-have-a-removable-battery> [<https://perma.cc/6L58-DTVQ>].

¹²³ *Id.*

¹²⁴ *Ecodesign*, *supra* note 119.

manufacturers provide spare parts for a period of seven to ten years after the last unit leaves the factory.¹²⁵ The regulations limit the use of proprietary parts by mandating that “manufacturers shall ensure that these spare parts can be replaced with the use of commonly available tools and without permanent damage to the appliance.”¹²⁶

Furthermore, unlike the proposed laws in the United States that only require manufacturers to provide to consumers and independent repairers what they provide to their authorized shops, the EU regulations require availability of certain parts for a predetermined period of time.¹²⁷ For example, electronic display manufacturers must make available the “internal power supply, connectors to connect external equipment[,] . . . capacitors, batteries and accumulators, DVD/Blue-Ray module if applicable and HD/SSD module if applicable for a minimum period of seven years after placing the last unit of the model on the market.”¹²⁸ Similarly, refrigerator manufacturers must provide “thermostats, temperature sensors, printed circuit boards and light sources” for a minimum of seven years, and “door handles, door hinges, trays and baskets” for a minimum of ten years after the last model unit is sold.¹²⁹ This assures that even if a manufacturer is not willing to perform a repair, third-party repairers will have access to the parts required to fix common problems.

The EU regulations also detail the type of maintenance information that must be provided.¹³⁰ Regardless of whether such information is provided to an authorized repair provider, manufacturers must share certain documentation to aid third-party repairers, including “a disassembly map or exploded view,” “technical manual of instructions for repair,” “wiring and connection diagrams,” “diagnostic fault and error codes (including manufacturer-specific codes, where applicable),” and “instructions for installation of relevant software and firmware including reset software.”¹³¹

Violators face harsh consequences. “A failure to meet these standards, like other environmental product requirements, can result in a ban on the sale of non-compliant products within the EU.”¹³² One limitation

¹²⁵ *Id.*

¹²⁶ Commission Regulation 2019/2021, 2019 O.J. (L 315) 259 (EU).

¹²⁷ See S.B. 425, 30th Leg., Reg. Sess (Haw. 2019).

¹²⁸ Commission Regulation 2019/2021, 2019 O.J. (L 315) 258 (EU).

¹²⁹ Commission Regulation 2019/2019, 2019 O.J. (L 315) 198 (EU).

¹³⁰ Commission Regulation 2019/2023, 2019 O.J. (L 315) 299–300 (EU).

¹³¹ *Id.*

¹³² Jonathan D. Cocker & Clotile Guyot-Rechard, *Eco-design Laws Mandate Right to Repair*, LEXOLOGY: ENV'T L. INSIGHTS (Feb. 11, 2019), <https://www.lexology.com/library/detail.aspx?g=20d34afb-f78f-4ac4-b0cb-c19103410774> [<https://perma.cc/2X93-7RZV>].

of the EU scheme is worth noting: it only applies to professional repairers.¹³³ Interestingly, the standard to determine who is a professional repairer has not yet been decided, but it is clear that these laws do not apply to consumers.¹³⁴

Because the EU regulations primarily promote environmental benefits, they differ from the proposed United States laws, which focus on consumer rights. Most of the proposed United States laws mandate independent repair availability only to the extent that the repairs are available at manufacturer-affiliated facilities.¹³⁵ Whereas the proposed United States laws do not require “the original manufacturer to sell equipment or service parts if the parts are no longer available to the original manufacturer,”¹³⁶ EU regulations mandate availability of parts and repair information for a set period of time.¹³⁷

Similarly, while EU directives require that parts be easily replaceable with common tools, a typical United States bill only requires that manufacturers provide “diagnostic repair tools incorporating the same diagnostic, repair, and remote diagnostic capabilities that the original manufacturer makes available to its own repair or engineering staff or any authorized repair provider.”¹³⁸ Therefore, if a manufacturer chooses to withhold diagnostic tools and parts from authorized repairers, consumers and independent repairers have no remedy under the law to obtain them, leading to an increased number of devices being discarded.¹³⁹

B. *Automobile Right to Repair Laws*

Although the push for consumer electronic right to repair legislation is relatively young (beginning around 2013),¹⁴⁰ it is not a novel concept in American law.¹⁴¹ Automotive right to repair laws based on environmental concerns are already on the books.¹⁴² These laws can serve as

¹³³ Roger Harrabin, *EU Brings in “Right to Repair” Rules for Appliances*, BBC NEWS (Oct. 1, 2019), <https://www.bbc.com/news/business-49884827> [<https://perma.cc/8D5D-E93F>].

¹³⁴ *Id.*

¹³⁵ MacAnaney, *supra* note 27, at 337.

¹³⁶ H.B. 1342, 66th Leg., Reg. Sess (Wash. 2019).

¹³⁷ *Ecodesign*, *supra* note 119.

¹³⁸ Wash. H.B. 1342.

¹³⁹ *See id.*

¹⁴⁰ *About Us*, REPAIRASS’N, <https://repair.org/history> [<https://perma.cc/P6E2-B7RH>] (last visited Nov. 24, 2020).

¹⁴¹ *See* 42 U.S.C. § 7521(m) (1990).

¹⁴² *See id.*

models for consumer electronic right to repair laws that directly seek environmental benefits.

To limit dangers from vehicle emissions, the Clean Air Act of 1990 required automobile manufacturers to include an On-Board Diagnostic (“OBD”) module in every car and small truck sold in the United States.¹⁴³ OBD modules are small computers that “monitor, control, and record the emissions released by automobile engines. They also store information about emissions system faults for later retrieval.”¹⁴⁴ To facilitate access to the information that they contain, OBD connectors must be “standard and uniform on all motor vehicles” and access to OBD emission data must be “unrestricted and shall not require any access code or any device which is only available from a vehicle manufacturer.”¹⁴⁵

Because Congress understood the ramifications of mandating use of a new technology without assuring that independent repair shops could work with it, the law requires that vehicle manufacturers provide access to emissions-related OBD diagnostic information.¹⁴⁶ “[T]he Clean Air Act of 1990 requires manufacturers to supply service technicians with relevant maintenance and repair information. . . . Congress, for all practical purposes, relaxed copyright protections and insisted upon releasing key information to the right groups of people so that we could all breathe cleaner air.”¹⁴⁷ In 1995, the Environmental Protection Agency promulgated this requirement with the Service Information Rule.¹⁴⁸

In other words, the legislation went a step further than simply regulating vehicle emissions—it required manufacturers to provide service information to independent repair shops.¹⁴⁹ Congress could have left it to the manufacturers to manage OBD diagnostics and repairs, but they understood that doing so would likely lead to fewer people repairing their emissions systems.¹⁵⁰ As noted by advocates of the Service Information Rule, “the policy change will also promote clean air and automotive safety because drivers will be more likely to fix leaky exhaust systems and bad

¹⁴³ *Case Overview, On-Board Diagnostic Service Info Rule*, PA. STATE UNIV., http://lobby.la.psu.edu/_107th/093_OBD_Service_Info/frameset_obd.html [<https://perma.cc/8UQB-CS55>] (last visited Nov. 24, 2020).

¹⁴⁴ *Motor & Equip. Mfrs. Ass'n v. Nichols*, 142 F.3d 449, 453 (D.C. Cir. 1998).

¹⁴⁵ 42 U.S.C. § 7521(m)(4) (1990).

¹⁴⁶ *Id.* § 7521(m)(5).

¹⁴⁷ Raymond, *supra* note 24, at 72–73.

¹⁴⁸ *Nichols*, 142 F.3d at 454.

¹⁴⁹ *Id.* at 453–54.

¹⁵⁰ See *Case Overview, On-Board Diagnostic Service Info Rule*, *supra* note 143, at 1, 7.

brakes if given more options to buy parts and service.”¹⁵¹ This is analogous to consumers who choose to repair an electronic device, rather than discard it and purchase a new device, when they have access to cheaper and easier repairs at an independent shop or at home.

California went a step further, under what is referred to as OBD II.¹⁵² OBD II “expanded the OBD service information requirements in California by directing car companies to make all manuals and technical service bulletins Internet-accessible, supply tools, and offer training to all non-dealer service companies in the state.”¹⁵³ The California Air Resources Board noted that “several of the provisions incorporated in the OBD II regulation are intended to make it easier for independent shops to diagnose and repair vehicles accurately and in a cost-effective manner.”¹⁵⁴ Additionally, California requires manufacturers to repair emissions problems under warranty “if the vehicle is less than 3 years old and has less than 50,000 miles” and allows for the use of aftermarket parts.¹⁵⁵ These requirements clearly establish a right to repair that promotes environmental benefits while placing a burden on manufacturers.

The Clean Air Act contains significant limitations—it only applies to emissions data from OBD systems at the exclusion of other information that would be useful to independent mechanics.¹⁵⁶ Therefore, it strikes a balance that requires disclosure of information necessary to limit emissions while protecting other industry data. Despite these limits, vehicle manufacturers resisted providing OBD repair information to independent mechanics based on the same principles that technology companies cite in their right to repair opposition.¹⁵⁷ The Clean Air Act “set in motion a series of conflicts among automobile manufacturers, dealers, independent service companies, parts manufacturers, consumer advocates, and environmentalists. . . . [M]anufacturers did not have any incentive to supply information on how to use OBD systems to any business other than their own franchised dealerships.”¹⁵⁸ Manufacturers and their trade associations argued that OBD information is their intellectual property

¹⁵¹ *Id.* at 7.

¹⁵² *On-Board Diagnostic II (OBD II) Systems Fact Sheet*, CAL. AIR RES. BD. (Sept. 19, 2019), <https://ww2.arb.ca.gov/resources/fact-sheets/board-diagnostic-ii-obd-ii-systems-fact-sheet> [<https://perma.cc/L4UG-JC6U>].

¹⁵³ *Case Overview, On-Board Diagnostic Service Info Rule*, *supra* note 143, at 5.

¹⁵⁴ *On-Board Diagnostic II (OBD II) Systems Fact Sheet*, *supra* note 152.

¹⁵⁵ *Id.*

¹⁵⁶ *Case Overview, On-Board Diagnostic Service Info Rule*, *supra* note 143, at 3.

¹⁵⁷ *Id.* at 8–9.

¹⁵⁸ *Id.* at 2.

and that “as the original designers, they are more qualified to maintain vehicles, especially in the latter stages of a vehicle’s life expectancy.”¹⁵⁹ Despite industry opposition, Congress was able to compel industry behavior for environmental gain.

Automotive right to repair laws show that despite industry concerns, consumers support right to repair, and compromise can be reached. In Massachusetts, voters overwhelmingly passed a ballot measure calling for right to repair protections for 2018 model year and newer vehicles.¹⁶⁰ That law resembles the proposed electronics laws—it requires automakers to furnish the same diagnostic and repair information that they provide to their franchise dealers.¹⁶¹ After bitter opposition, automakers backed what they perceived as a “decent compromise” and agreed to make the Massachusetts law a national standard.¹⁶²

C. *Recycling and Conservation Laws*

The framework for enacting consumer electronic right to repair laws under conservation and waste-reduction principles already exists. Much as the Clean Air Act was the foundation for automotive right to repair laws, federal and state legislation already oversees waste management and could be expanded to include right to repair.¹⁶³

Federally, the Resource Conservation and Recovery Act (“RCRA”) is the most significant legislation.¹⁶⁴ First enacted in 1976 and amended multiple times since, RCRA “is our nation’s primary law governing the disposal of solid and hazardous waste.”¹⁶⁵ Although RCRA does not reach consumer electronics, it could provide the basis for right to repair. Importantly,

¹⁵⁹ *Id.* at 8.

¹⁶⁰ *Massachusetts “Right to Repair” Initiative, Question 1 (2012)*, BALLOTPEDIA, [https://ballotpedia.org/Massachusetts_%22Right_to_Repair%22_Initiative,_Question_1_\(2012\)](https://ballotpedia.org/Massachusetts_%22Right_to_Repair%22_Initiative,_Question_1_(2012)) [<https://perma.cc/4Z5P-R8T5>] (last visited Nov. 24, 2020) (showing the ballot measure passed with 87.7% of the vote); see also Miles Moore, *Right to Repair Law Deemed “Success” by Auto Care Association*, TIRE BUS. (Aug. 12, 2018), <https://www.tirebusiness.com/article/20180817/NEWS/180819947/right-to-repair-law-deemed-success-by-auto-care-association> [<https://perma.cc/D32V-UJYH>].

¹⁶¹ *Massachusetts “Right to Repair” Initiative, Question 1 (2012)*, *supra* note 160.

¹⁶² Gabe Nelson, *Automakers Agree to “Right to Repair” Deal*, AUTO. NEWS (Jan. 25, 2014), <https://www.autonews.com/article/20140125/RETAIL05/301279936/automakers-agree-to-right-to-repair-deal> [<https://perma.cc/M8JR-CXF6>].

¹⁶³ See *History of the Resource Conservation and Recovery Act (RCRA)*, EPA, <https://www.epa.gov/rcra/history-resource-conservation-and-recovery-act-rcra> [<https://perma.cc/B868-58MP>] (last visited Nov. 24, 2020); Buseman, *supra* note 89, at 248.

¹⁶⁴ See *History of the Resource Conservation and Recovery Act (RCRA)*, *supra* note 163.

¹⁶⁵ *Id.*

Congress has expressed interest in bringing e-waste under the purview of the federal government. The Responsible Electronics Recycling Act (“RERA”), which would classify e-waste as hazardous and place it under the control of federal statute,¹⁶⁶ has received bipartisan support.¹⁶⁷ RERA has failed to become law, but it shows that Congress is concerned about the problems that right to repair can help alleviate.¹⁶⁸

Furthermore, RCRA’s purpose aligns with the environmental benefits that right to repair legislation would provide. RCRA states that “[t]he objectives of this Act are to promote the protection of health and the environment and to conserve valuable material and energy resources by . . . minimizing the generation of hazardous waste.”¹⁶⁹ The Act goes on to declare that it is “the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible.”¹⁷⁰ To achieve this goal, RCRA covers all phases of waste generation by serving as “a cradle-to-grave management system.”¹⁷¹ By keeping consumer electronic devices in circulation longer, right to repair laws would serve these goals by limiting the amount of e-waste that is generated.

Although federal legislation would provide a nationally uniform structure, it is perhaps more likely that states will take the lead in these efforts. Due to RCRA’s current limitations, most e-waste management activity has occurred at the state level.¹⁷² “Congress’s failure to produce a solution in the face of the continually increasing volume of discarded e-waste has created a vacuum of national regulation, leaving the states to act separately in the absence of a federal policy.”¹⁷³ Currently, twenty-five states and the District of Columbia have passed e-waste recycling legislation.¹⁷⁴

New York enacted the Electronic Equipment Recycling and Reuse Act (“EERRA”), which is considered “the most comprehensive approach

¹⁶⁶ H.R. 2791, 113th Cong. (2013).

¹⁶⁷ Lindsay Elliott-Smith, *Electronic Wasteland: Combatting the E-Waste Surge Through Federal Regulation*, 2016 LSU J. ENERGY L. & RES. CURRENTS 1, 4.

¹⁶⁸ *Id.*

¹⁶⁹ 42 U.S.C.S. § 6902 (LexisNexis 2020).

¹⁷⁰ *Id.*

¹⁷¹ EPA, 25 YEARS OF RCRA: BUILDING ON OUR PAST TO PROTECT OUR FUTURE 3 (2020).

¹⁷² Buseman, *supra* note 89, at 248.

¹⁷³ *Id.* at 252.

¹⁷⁴ Jennifer Schultz, *Electronic Waste Recycling*, NAT’L CONF. STATE LEGISLATURES (Sept. 17, 2018), <http://www.ncsl.org/research/environment-and-natural-resources/e-waste-recycling-legislation.aspx> [<https://perma.cc/J4Q8-EGA4>].

to e-waste.”¹⁷⁵ EERRA imposes recycling requirements on different actors over the life cycle of a product.¹⁷⁶ Manufacturers shoulder the heaviest burdens.¹⁷⁷ EERRA “places responsibility for managing end-of-life covered electronic equipment primarily on manufacturers, with oversight by the Department of Environmental Conservation.”¹⁷⁸ The Act mandates a range of activities, including providing collection of discarded electronic devices at no cost to consumers, providing public education, and properly labeling products.¹⁷⁹ Similarly, Maine’s law dictates that “costs associated with consolidation, handling and recycling be internalized by the manufacturers of electronic products and components before the point of purchase.”¹⁸⁰ Failure to comply results in a sales prohibition within the state.¹⁸¹

These laws are characteristic of the “extended producer responsibility” model, which places the burden of device disposal on manufacturers.¹⁸² This model “is intended to give producers incentives to change their product design in order to reduce the cost of waste management.”¹⁸³ Right to repair provisions would be a natural extension of these requirements insofar as they compel manufacturers to alter their operations in order to minimize the impact of e-waste.

CONCLUSION

Consumer electronics right to repair laws that have been proposed in the United States raise complicated issues about consumer and industry rights, copyright and contract law, and views towards innovation and ownership. While those issues are debated, e-waste continues to ravage the planet and harm health. Placing environmental protection at the heart of right to repair could anchor these debates to tangible benefits for all.

¹⁷⁵ Buseman, *supra* note 89, at 249.

¹⁷⁶ *Electronic Waste Recycling*, N.Y. STATE DEP’T ENV’T CONSERVATION, <http://www.dec.ny.gov/chemical/65583.html> [<https://perma.cc/VW32-BGGG>] (last visited Nov. 24, 2020).

¹⁷⁷ *Covered Electronic Equipment Manufacturer Requirements*, N.Y. STATE DEP’T ENV’T CONSERVATION, <https://www.dec.ny.gov/chemical/66845.html> [<https://perma.cc/9QG5-RD3P>] (last visited Nov. 24, 2020).

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ ME. STAT. tit. 38, § 1610 (2018).

¹⁸¹ *Id.*

¹⁸² Emily G. Brown, *Time to Pull the Plug? Empowering Consumers to Make End-of-Life Decisions for Electronic Devices Through Eco-Labels and Right to Repair*, 2020 U. ILL. J.L. TECH. & POL’Y 227, 233 (2020).

¹⁸³ *Id.*

Environmental protection should serve as a guiding light to legislators as they deliberate right to repair laws. Lawmakers can look to EU regulations as a model of environmentally focused policies that aim to keep devices in circulation for as long as possible. Automotive right to repair shows that legislation can enforce environmentally conscious policies while placing reasonable limitations on the information that must be shared. Right to repair can be integrated into federal and state legislation regulating waste and recycling.

Technology companies provide valuable products and services that vastly improve our lives. However, while their devices can easily be replaced with a faster, sleeker new model, our planet cannot. We must focus on the right to repair our environment when we discuss the right to repair our devices.