

RIGHT TO REPAIR

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IN SUPPORT OF BILL SB0412

February 1, 2021

Introduction

Years ago, if a consumer had problems with an appliance or electronics, parts and schematics required to fully service the product were easily obtainable. In recent years, it has become increasingly difficult to source components for electronics repair.

Original Equipment Manufacturers (OEMs) have restricted access to the parts and tools required for independent repairs to be performed. Some have clamped down so hard that even authorized repair centers are unable to obtain parts to do their job, having to replace the entire unit rather than replace a charge port.¹ Manufacturer authorized repair centers are often not competitive or viable options by their very design.

This bill seeks to lower barriers to entry for independent repair shops, recognizing that they are a vital part of addressing the demand for quick and cost effective repairs. Independent repair is valued by consumers for its price, accessibility, and transparency. Consumers will have their needs met best by competition among independent firms. In my experience, companies that profit from decreased competition in the repair industry use fear/uncertainty/doubt to scare legislators into sidelining the bill. I have provided all of their arguments below with cited counter-arguments. I believe that all arguments from companies that benefit from having monopolies in the repair industry that lack citations should be treated with reasonable skepticism.

¹ [Louis Rossmann]. (2017, February 22). What does authorized repair do? Let's find out! [Video file]. Retrieved from youtube.com/watch?v=OR5ZUI0Q-NI

Arguments in Favor

~Facts regarding Right to Repair~

Consumers own their electronic devices and should have the right to choose the best repair option for them — Once a device is purchased, the consumer should have full ownership. Manufacturers should not dictate the way in which devices are repaired. However, manufacturers are exerting unfair pressure on independent repair to cease and desist, by denying access to crucial materials such as original components and schematics.² These business practices reduce choice for consumers when their device needs to be repaired. This bill will lower barriers to entry for small independent repair providers, so that they remain a viable option for consumers. If consumers are able to perform essential repairs on their cars (e.g. replacing the brakes or changing the oil), it raises the question of why this should be different for their personal electronics.

Repair is a fast-track to the middle class — In a time of increasing wealth inequality, I can't think of a better industry for people to make their way into the middle class. I employ many people who did horribly in school, who are my best technicians. If you are good at solving puzzles and have a detective's mindset, you can do very well at repair even if you were a terrible student - as I myself was. There is a low barrier to entry to get started - you don't need a 4 year college education or \$50,000 in tools to get into the field. Many people I meet who do well for themselves started doing this on the side after they were done working a minimum wage job at the end of the day and turned it into a \$45,000-\$90,000/year job for themselves.

Repairing devices is a potential learning experience for America's youth — Schools nationwide are investing in STEM curriculum to help students compete in the global marketplace.³ Access to schematics and parts means that students of all ages will be able to safely make repairs and learn new and innovative technologies first-hand. As technology advances, so do the number of devices and appliances that utilize it. We need to prepare our children for this future by giving them the opportunity to understand and repair their devices. This knowledge of and experience with repair will aid them in becoming self-sufficient in the job market

²<https://www.techdirt.com/articles/20160703/14212934886/apples-ip-lawyers-may-force-youtub-e-macbook-repair-videos-offline-over-schematic.shtml>

³ <https://www.bls.gov/careeroutlook/2014/spring/art01.pdf>

Vendors are abusing customs enforcement to place an unfair burden on unauthorized repair — Vendors, such as Apple, have allegedly directed US Customs and Border Protection to stop aftermarket components, such as screens, from entering the country. While some of these components are counterfeit, many are explicitly branded as non-original. However, Apple and US customs enforcement agents seem to draw no distinction, preventing a wide array of previously viable repairs. After the passage of this legislation, independent repair providers will have open and legal access to necessary parts, eliminating reliance on grey-market providers.

Electronic devices should be repaired to avoid E-waste — Recent trends in sales and maintenance show that vendors prefer to replace rather than repair.⁴ This practice creates expensive and unnecessary waste.⁵ If the manufacturer refuses to repair devices, the consumer should be allowed to contract with independent technicians to perform the repairs. Being forced to write off entire devices, because a relatively inexpensive or easily repaired part failed, is not economically or environmentally viable.

- Producing a computer along with its monitor takes at least 1.5 tons of water, 48 pounds of chemicals, and 530 pounds of fossil fuels.⁶
- The excessive amount of lead in e-waste, if released into the environment, could cause severe damage to human blood and kidneys, as well as central and peripheral nervous systems.⁷

There is demand for independent repair — Manufacturers are pushing consumers to have their devices serviced by a limited set of authorized repair providers. Unfortunately, such repairs often take too long and cost too much, as they often offer repair services that demand entire unit replacements rather than specific component repairs. Customers who are disadvantaged economically, and/or geographically get the short end of the stick having to travel long distances to an authorized repair center, to hear that their only option is a \$1500 repair for their \$2000 device. This dynamic is incentivized by profit and easily perpetuated by restriction of repair materials. Access to service documentation, parts, and diagnostic utilities would allow independent technicians to provide consumers with more options. Even if repairs are made using genuine, used, or 3rd party parts, built-in “digital locks” will detect and disable the machine until authorized technicians “unlock” the device. This intentionally disables certain functions, and in some cases, the entire device.

- The sole purpose of this locking technology is to prevent consumers and third party professional repair companies to repair devices without an authorised representative of the manufacturer being involved or, in the case of some Apple Inc. products, to disable

⁴ <https://globalewaste.org/wp-content/uploads/2018/10/Global-E-waste-Monitor-2017.pdf>

⁵ https://www.epa.gov/sites/production/files/2019-11/documents/2017_facts_and_figures_fact_sheet_final.pdf

⁶ https://collections.unu.edu/eserv/UNU:6341/Global-E-waste_Monitor_2017_electronic_single_pages_.pdf

⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4957139/>

devices that have been repaired. This leads to an unfair monopoly, stifles competition and frustrates potentially millions of consumers who may have paid good money for their devices.

- *The Nebraska Farm Bureau*, representing 58,000 families, voted 176 to 1 in favor of similar legislation because farmers have experienced these issues and have missed vital harvests and created costly unnecessary downtime. This “locking” is a new addition to more recent generations of equipment.⁸
- Even the *US Military* has been prevented from repairing their equipment by prohibitive service restrictions causing downtime during training exercises.⁹
- Replacing an iPhone home button has the potential to disable the entire device even when the repair is performed properly¹⁰.

Rebuttal of Arguments Against

~Dispelling myths surrounding Right to Repair~

“The bill is a solution in search of a problem” — Consumers and business owners are taking time out of their day to speak with their representatives because there is a problem.

Take the example of a Macbook Pro laptop that does not turn on. In the past, if a charging chip died inside a \$3000 Macbook Pro, you could have it fixed, independently of the manufacturer, for anywhere between \$79 to \$450. A technician could spend an hour working on the bad motherboard, find the bad chip amongst the hundreds of components on the board, and replace it. Let’s say the charging chip died – a technician could go online, buy an ISL9239 charging chip for \$15, and fix the board for their customer.

Fast forward to today, with the newest Macbook Pro which uses the Intersil ISL9240 charging chip. This chip is not available to anyone outside of the manufacturer. If that \$3000 MacBook Pro’s charging chip becomes defective, Apple will offer to fix it for \$1500 by replacing the entire board—this is costly, and also erases all user data. This chip is not available for purchase because Apple has created exclusivity agreements with Intersil so they do not sell this chip to independent repair shops or electronics wholesalers. **The only way professional repair companies can get this chip is by buying another item that uses it, such as Apple’s “Smart Battery Case” that they sell for \$129. After harvesting the chip from its board, technicians**

⁸ <https://www.theguardian.com/environment/2017/mar/06/nebraska-farmers-right-to-repair-john-deere-apple>

⁹ <https://www.nytimes.com/2019/11/20/opinion/military-right-to-repair.html>

¹⁰ [Michael Oberdick]. (2017, April 12). Don't reset your device if you broke your home button. [Video file]. Retrieved from <https://youtu.be/MaV8Gtpeehk>

are left with a battery case containing a worthless lithium ion battery that now needs to be disposed as E-waste.¹¹

This process:

- Is time consuming for the technician, increasing turnaround time and price to the customer.
- Is expensive for the technician as he or she is purchasing an entire device to harvest one chip, rather than buying the one chip they need, increasing turnaround and price to the customer.
- Is incredibly wasteful, as the lithium ion battery as well as the case are now worthless, and need to be disposed of.

Authorized repair services have no competitive pressure that would incentivize them to offer services that consumers need, such as data recovery. It's plausible that manufacturers don't make money on repairs, but they definitely do make money by selling replacement devices. Lobbyists for these companies draw attention to tools already available but they omit the true availability and functionality of such tools.

- Apple's "RepairCal" software is a prime example: The software is used by the manufacturer to calibrate displays and sensors. Although technically available for independent repair, it will not function appropriately outside an authorized repair environment as it needs to contact Apple servers. This means that even if the independently completed repair is flawless, calibration cannot be completed to restore full functionality to the user.

“Unauthorized repair is unsafe” — In short, there is no credible evidence suggesting that independent repair technicians or their customers are in any danger. In a 2019 AutoZone Commercial titled “I did it”, a mother and young daughter were able to service the brakes of a motor vehicle.¹² We allow American citizens to service their own brakes without any prior mandatory education, yet lobbyists argue that simple electronics repairs, such as battery replacements, are too dangerous. The decision of whether to allow Americans to repair devices should not be up to the vendors but to the consumers who are ultimately accountable. In regards to off-highway, commercial and industrial equipment, their respective safety and emissions components are protected by OSHA guidelines and EPA regulations to ensure safety for operators, employees and the environment.

¹¹ <https://youtu.be/HJ2jyo7pAmE?t=769>

¹² <https://www.ispot.tv/ad/ok12/autozone-i-did-it>

“Independent repair providers are not accountable” — No, they are not accountable under this bill. However, they are completely accountable under existing business licensing rules. If a repair shop were to harm consumer devices, it would receive negative reviews and its license to conduct business would be revoked. Specifically, the Department of Consumer Affairs can revoke a business’ license for doing substandard work, and provides consumers with a way to get their money back from unscrupulous dealers. The Department of Consumer Affairs can also remove such dealers from the marketplace by revoking their “*Electronics and Home Appliance Service Dealer*” license. There is absolutely no need for redundant expression of the concept that service providers should be held accountable for their actions. In addition, consumers are fully liable for their choices regarding repairing their own property.

“Unauthorized repair does not have the training to do the job properly” — Here you can find an example of a company listed as authorized on Apple's website for iPhone repair telling a potential customer their charge port and headphone jack are soldered to the board, when they are not.¹³ Here, CBC News showcases an Apple Genius quoting a customer \$1100 to \$1900 to fix a machine by replacing the top case, logic board, and display assembly when all it needed was a \$5 cable replaced (a \$150-\$200 repair at most repair shops), which was fixed in the moment by bending back a bent pin.¹⁴ Authorized repair providers are often held to strict rules by the manufacturer— rules that often prevent them from doing actual repairs, and instead only offer full device swap-outs & replacements. Sadly, ten minutes of research is often all that is needed to be better informed than a manufacturer authorized repair provider.

“Security will be compromised” — Providing the schematic for the arrangement of hardware components does not, in any way, unlock the software of a device. Most parts are already available in some form, such as salvage from old hardware, and independent repair providers already exist without any negative impact on digital security. The only true security issue present is “Security Through Obscurity,” a widely debunked practice of relying on attackers not knowing how a product works in an attempt to secure it.¹⁵ This bill will encourage manufacturers to design products that are as close as possible to being truly secure. The assertion that independent repair providers seek to profit from software or video-game piracy is unfounded. Replacing a fan or battery is not the same as breaking a digital lock. Further, the ESA, a lobbying organization for the video game industry has admitted repeatedly that their digital locks are regularly picked—**without** a repair bill.

“Quality and branding will be compromised” — Independent repair shops are competing with each other and authorized repair. As a result, they have a financial incentive to provide quality

¹³ <https://www.youtube.com/watch?v=OR5ZUI0Q-NI&t=146>

¹⁴ <https://www.youtube.com/watch?v=XneTBhRPYk>

¹⁵ <https://www.schneier.com/crypto-gram/archives/2002/0515.html#1>

and honest services. There is no compelling evidence to suggest that independent repair technicians in general provide lower-quality services or act in any malicious manner. Consumers recognize that it is often the independent repair providers who uphold higher quality standards, especially if they are given access to official schematics and parts.

“Consumers already have many options” — Consumers have the following options, each with its own issues:

- *Repair by original vendor:* Has a financial interest in making repairs inaccessible and unattractive (in terms of time, money, and types of services) to promote the purchase of replacement devices.
- *Authorized repair providers:* Are bound by the conditions of the original vendors, and as a result, are unwilling to provide a wide array of repairs. Some authorized repair providers must maintain a quota of selling a certain amount of new devices to maintain their status, further compromising their willingness to provide simple, affordable repairs.
- *Independent repair providers:* Cannot easily access original schematics and parts without this legislation. In addition, they live in fear of industry actions and litigation.
- *Small independent repair providers:* Cannot access original schematics and parts at all, because they are not established in the market. They are in danger of going out of business or never starting a business.

“Independent repair technicians should seek authorization” — Authorization or certification from either the manufacturer or an organization like CompTIA comes at a cost to the repair technician which is passed along to the consumer. It is up to the technician and their customers to determine if this added cost has any tangible benefit since neither authorization nor certification of electronics repair has any official oversight. More importantly, authorized repair technicians are prevented from completing certain repairs at the discretion of the manufacturer.

“Trade secrets will be compromised” — The information that is needed to repair electronic products is already obtainable by measuring values on a known functional unit. A schematic is simply a standardized format for displaying that information and does not include proprietary software, firmware, or similarly proprietary information. Right to repair groups are only asking for a method to update embedded software/firmware to prevent a company holding back updates only they can perform. They are not asking for copies of proprietary firmware, as has been alleged by opponents of the bill.

“There will be a major burden upon OEMs” — Repair technicians are not asking for repair materials to be made available free of charge. They would prefer to pay a reasonable price and compensate vendors for their efforts in adapting and publishing those materials. However, as vendors allegedly already provide materials to authorized repair, the materials already theoretically exist and can be redistributed.

“Copyrights will be infringed” — As the bill is worded, the materials that manufacturers must provide to independent repair are simply alternate formats of what was already sold to the

customer. This would include schematics which are documentation of the types of components used, information that is already present in the physical products sold to consumers.

- As of 2018, the DMCA has been amended to include protection for repairing devices.¹⁶
- Old appliances such as stereos, televisions, and computers would often come with schematics to aid self-service. As this is no longer the case, legislation is required.
- *Atari Games Corp. v. Nintendo of America Inc.*, 975 F.2d 832 (Fed. Cir. 1992)
"Atari did not violate Nintendo's copyright by deprocessing computer chips in Atari's rightful possession." These attempts included deciphering by chemically stripping the device, microscopically examining it, and hand copying the binary object code to learn how it operates and were all declared fair use. Atari had to illegally obtain source code to "break the lock" and *only on that fact*, were found guilty of infringement.¹⁷

“No other states have passed this legislation” — This is not a compelling argument against the legislation. It is merely a reflection of an abundant supply of lobbyists willing to read the fallacious arguments listed above off a script. The Washington State Senate was the first to exercise skepticism of lobbyists’ arguments against right-to-repair, and their questions to the lobbyists went largely unanswered. In the near future, one state is sure to be the first to pass the legislation. That state will be the first to see the economic benefits of easy access to repair. Eventually, it could be adopted at the federal level.

¹⁶ <https://www.copyright.gov/1201/2018/>

¹⁷ <https://www.copyright.gov/fair-use/summaries/atari-nintendo-fedcir1992.pdf>