Representative Scott Conklin
Chair, House Commerce Committee

Representative Joe Emrick
Republican Chair, House Commerce Committee

RE: Informational meeting on Right-to-Repair
Testimony for the record
Nathan Proctor
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Thank you Chair Conklin, Republican Chair Emrick, and members of the committee for this opportunity to discuss an important topic.

My name is Nathan Proctor, and I run the Right to Repair campaigns for the Public Interest Research Group -- or PIRG -- network, which includes PennPIRG. PennPIRG is a member-based, non-partisan, non-profit organization which advocates for the public in Pennsylvania -- for the environment, public health and democracy -- with support from our thousands of dues-paying members. We see ourselves as helping to counterbalance the influence of special interests, to advance common-sense solutions that improve our lives.

Right to Repair is very much one of these common-sense solutions.

I have been working on Right to Repair for some six-plus years, and we have issued more than a dozen reports about Right to Repair topics, including wheelchair repair, tractor repair, the economic and environmental impacts of repair and more.

We have compiled a significant amount of information concerning this topic, and while I hope to provide a brief summary in these pages, there is more than I can report. However, I believe that we can sum up all of our work in a really simple premise: Manufacturers have a clear incentive to control the repair of their products, and they do so across nearly all types of product. And by controlling repair, these manufacturers harm the public.

When something breaks, you fix it. That's just common sense. But when only the manufacturer or their "authorized technician" has the necessary parts, tools or information needed, they can charge whatever they want or push you into buying a new device. These manufacturer-imposed repair restrictions affect a wide variety of products from toasters to tablets, and even tractors. The result is surging repair costs and a massive amount of waste. For example, Americans dispose of some [416,000 cell phones every day](#). Meanwhile, farmers across the country report losing time in the field waiting on "authorized" dealer service.

In my overview, I'd like to discuss the repair process and how it is restricted, and the impact that has on the public.

Repair process part 1: Diagnosis

The repair process begins with diagnosing the problem. In order to figure out what is going wrong, you might need to access the error code, and the description of what that code means. You might need to access an error log generated by the device. In other words, in some cases you need a service manual that reviews how to access error codes and how to interpret them, or you need digital diagnostics tools. Manufacturers restrict access to both the service documentation and diagnostic software.

For example, your phone might know exactly why it is shutting off periodically, or at least have very useful information about the issue. You, as the product owner, have no way of retrieving that information. Only when the device is connected to a "trusted" service computer, which is highly restricted by the manufacturer, will your phone share that diagnostic information.

Diagnostic software tools are important to independent repair shops. In early 2020, U.S. PIRG Education Fund and iFixit surveyed 302 independent phone technicians, and 89% of independent repair technicians said their businesses would be more successful if they had access to repair software from Apple and Samsung.

In other cases, manufacturers refuse to provide the service manual -- or provide a restricted version which doesn't tell you what you need to know. Willie Cade, a regional director for Repair.org and a member of the Nebraska Farm Bureau, acquired the Diagnosis and Tests Service Manual covering five popular John Deere machines. Of the roughly 700 error codes the manual lists, 89% state that the farmer should contact their John Deere Dealer with very little other information to help the farmer address the issue.

That's not a service manual, that's a sales brochure.

Repair process part 2: Replace what's broken

Once you know what the problem is, you need to repair or swap the broken part. Some manufacturers will sell you parts, many will not.

For some devices, you can find aftermarket parts (parts made by other suppliers). In many cases, it is impossible because of the software embedded on those parts. Most modern televisions stop working because the circuitry fails, but if television makers like Sony won't sell you spare parts, where would you get that circuit board? Not only does a lack of options for parts cause fixable products to be sent to the scrap heap, fewer options also means higher costs for spare parts, which can be as much as replacing the whole device.

Another common practice is to replace a large portion of the device instead of just the components that are malfunctioning. For example, as documented by the Wall Street Journal, Apple-Authorized repair shops will replace the entire motherboard for most errors which include a fault on some portion of that laptop motherboard. Meanwhile, an independent shop

might be able to replace just the small part which is broken, saving hundreds of dollars in parts costs, cutting the repair cost from around $1,000 to around $300.

Repair process part 3: Restoring the device to working order

After the part is installed, there is often additional calibration, software pairing or other authentication needed for the part to be recognized and function properly.

We are all fairly accustomed to needing to configure our electronics software, but we have a reasonable expectation that we'll be able to do it ourselves. For example, when you buy a printer, you need to install the driver so the printer and computer communicate properly. This is a very similar process to installing many kinds of parts, which require embedded instructions to communicate with other parts of the device. Many manufacturers refuse to allow access to these necessary files, known as firmware. Imagine if the manufacturer of your printer required you to pay for a dealer representative to come out and install the printer driver.

Many farm equipment repairs which included changes in the electronics are *impossible* without access to software tools. The equipment is designed to require a dealership computer to connect to it in order to return to working order.

It's not just about software -- sometimes you need calibration information, the kind you would expect to find in the product's service manual. We recently heard from a farmer in Oklahoma who fixed his hydraulic injectors, but his dealer refused to tell him the configuration settings for those injectors. This isn't secretive intellectual property. It's basic technical information needed for repair.

Why repair restrictions matter

Repair restrictions like these are ubiquitous across every industry. So what impact does this have, and why does it matter?

It costs consumers a ton of money. Our research finds that repair can save the average household about $330 per year, which totals $40 billion across the country. This number is so staggering in part because we are spending so much on new electronics, some $1,400 per household per year.

Repair restrictions increase the digital divide. As the FTC wrote in their "Nixing the Fix" report to Congress last year, "[t]he higher cost of repairs disproportionally burdens Americans in financial distress" and that "the burden of repair restrictions may fall more heavily on communities of color and lower-income communities." If we could refurbish older electronics and keep them working, it would create low-cost products which can help all Americans get the technology they need to connect.

These restrictions hurt small businesses. Repair shops often tell me that they are terrified by the knowledge that Apple could push a software update at any moment that would make

screen repair impossible outside of Apple stores -- and because iPhones are by far the most popular phones, and screen repair is the most common repair, that would put them out of business. It's hard to plan for the future if that kind of threat is hanging over your head like the sword of Damocles. Those shops need legal protection to grow and thrive.

Finally, disposable electronics are incompatible with a livable planet. A phone takes about 122 pounds of carbon to make, mostly from mining and smelting the components. Americans replace some 140-150 million phones a year. If we used our phones for one year longer on average, it has the same climate benefits as taking 636,000 cars off the road. According to the U.S. EPA, electronic waste is the fastest growing part of our waste stream.

There is a better way. We can empower repair, cut costs, cut waste, support local businesses and more. It's common-sense and the issue is not going away until Americans can fix their stuff again.

Thank you.