

Before the

**U.S. COPYRIGHT OFFICE
LIBRARY OF CONGRESS**

In the matter of exemption to prohibition on circumvention
of copyright protection systems for access control technologies

Docket No. 2017-10

Submitted on Behalf of Petitioner Institute of Scrap Recycling Industries, Inc.

**Proposed Class 5:
Computer Programs -- Unlocking**

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Petitioner Institute of Scrap Recycling, Inc. (“ISRI”) submits this comment in response to the Copyright Office’s Notice of Proposed Rule Making¹ (“NPRM”) in support of Proposed Class 5 and respectfully asks the Librarian of Congress to exempt this class of works from 17 U.S.C. § 1201(a)(1)’s prohibition on the circumvention of access control technologies for the period 2018-2021.

I. Commenter Information

Petitioner ISRI is a Washington, DC-based trade association representing more than 1,300 companies—ranging from small, family-owned businesses to large, multi-national corporations—operating at more than 4,000 facilities in the United States and 34 countries worldwide. ISRI members are manufacturers and processors, brokers, and industrial consumers of scrap commodities, including ferrous and nonferrous metals, paper, electronics, rubber, plastics, glass, and textiles.

The U.S. electronics recycling industry has shown tremendous growth over the past 13 years. This maturing segment of the scrap recycling industry provides a boost of approximately \$19.2 billion, including exports of \$1.45 billion, to the U.S. economy (up from less than \$1 billion in 2002) and employs more than 45,000 full time employees (up from 6,000 in 2002).²In 2011, the U.S. electronics recycling industry processed more than 4.4 million tons of used and end-of-life electronics equipment.³ More than 70 percent of the collected equipment is manufactured into specification grade commodities—including scrap steel, aluminum, copper, lead, circuit boards, plastics, and glass. These valuable commodities are then sold to basic materials manufacturers in the United States and globally as raw material feedstock for new products, such as steel, copper, aluminum, plastic, and glass.

Electronics recyclers also repair, refurbish, and resell (recyclers) functioning electronics equipment as used products into domestic and international markets. Recyclers also provide a number of logistical services, like collection, storage, and transportation, as well as scrubbing hard drives of sensitive personal and commercial data. While only 20-30% of the overall volume of devices received by recyclers is sent for reuse, repair, and remanufacturing, the majority of revenue stems from such use. According to a U.S. International Trade Commission report,⁴ in 2011, the total domestic market was valued at \$19.2 billion with reused technological devices, such as wireless cellphones and tablets, accounting for \$14.9 billion.

The industry is driven not only by cell phones and other devices originally purchased by individuals, but also by equipment collected from businesses and commercial interests, comprising up to 75 percent of the market on a volume basis. The electronics recycling industry is poised to meet the anticipated increased demand for more used products and specification grade commodities.

¹ Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, Notice of Proposed Rulemaking, 82 Fed. Reg. 49,550 (Oct. 26, 2017) (hereinafter 2017 NPRM).

² See *The Scrap Recycling Industry: Electronics*, ISRI, <http://www.isri.org/docs/default-source/commodities/fact-sheet--electronics.pdf?sfvrsn=6> (last visited Dec 13, 2017).

³ *Id.*

⁴ Used Electronics Products: An Examination of U.S. Exports, Inv. No. 332-528, USITC Pub. 4,379 (February 2013) (Final).

ISRI advocates on behalf of its members on a variety of important issues directly and indirectly impacting the recycling industry in Washington, DC, state capitals across the U.S., and internationally.

Petitioner may be contacted through the above-identified counsel.

II. Proposed Class Addressed

Proposed Class 5: Computer Programs – Unlocking

III. Overview of Proposed Exemption

Petitioner seeks extensions of the current exemption to the DMCA’s prohibition against circumvention of technological measures that control access to computer programs that enable wireless devices to connect to wireless communications networks—a process commonly referred to as “unlocking.” The current exemption permits circumvention for a narrow subset of all wireless devices: used wireless telephone handsets, tablets, mobile connectivity devices and wearable wireless devices.⁵ ISRI supported that exemption in the 2015 rulemaking.⁶ ISRI now seeks to expand the exemption to all wireless devices or, if such a broad extension is not allowed, at a minimum to *new as well as used* wireless telephone handsets, tablets, mobile connectivity devices and wearable wireless devices.

In the current 2017 rulemaking, ISRI previously sought renewal of the exemption for unlocking used wireless telephone handsets, tablets, mobile connectivity devices and wearable wireless devices. In October, 2017, the Copyright Office published its determination that the petition for renewal was sufficient, that the Office did not find any meaningful opposition to renewal, that the conditions that led to adoption of the exemption are likely to continue during the next triennial period, and that the Register intends to recommend readoption of the existing exemption in its current form.⁷

In two separate Petitions for New Exemptions submitted on September 14, 2017, ISRI requested the expansion of the renewed unlocking exemption to cover (1) new (in addition to used) telephone handsets, tablets, mobile connectivity devices and wearable wireless devices, and (2) any wireless devices that connect to a wireless telecommunications network, without limitation of the four existing enumerated categories. In the 2017 NPRM, the Copyright Office grouped both of these requested exemptions into a single class, Class 5. ISRI believes the broader exemption for *all* wireless devices is necessary and justified and requests that it be granted. For purposes of this comment, however, Petitioner will separate its arguments into two separate sections, addressing, in the alternative (1) the need and justifications for an extension to *new* telephone handsets, tablets, mobile connectivity devices and wearable wireless devices, and (2) the need and justifications for an extension to *all* wireless devices. In both cases, the copyrighted work sought to be accessed,

⁵ See Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, Final Rule, 80 Fed. Reg. 65,944 (Oct. 28, 2015) (hereinafter 2015 Final Rule), at 65950-01.

⁶ Comments on Behalf of Petitioner Institute of Scrap Recycling Industries, Inc., Proposed Class 11: Unlocking—Wireless Telephone Handsets, Docket No. 2014-07 (hereinafter “ISRI 2015 Comments”).

⁷ See 2017 NPRM at 49553.

“computer programs, in the form of firmware or software, that enable wireless mobile devices to connect to a wireless telecommunications network,” is, like other computer programs, a “literary work” under 17 U.S.C. § 102.

IV. Extension of the Existing Unlocking Exemption to Cover *New* Wireless Handsets, Tablets, Mobile Connectivity Devices, and Wearable Wireless Devices

[Alternative] Proposed Class: *Computer programs that enable the following types of wireless devices to connect to a wireless telecommunications network, when circumvention, including individual and bulk circumvention, is undertaken by the owner of any such device, by another person at the direction of the owner, or by a provider of a commercial mobile radio service or a commercial mobile data service at the direction of such owner or other person, solely in order to connect to a wireless telecommunications network and such connection is authorized by the operator of such network:*

- (A) Wireless telephone handsets (i.e., cellphones);*
- (B) All-purpose tablet computers;*
- (C) Portable mobile connectivity devices, such as mobile hotspots, removable wireless broadband modems, and similar devices; and*
- (D) Wearable wireless devices designed to be worn on the body, such as smartwatches or fitness devices.*

ISRI's 2015 exemption request sought an exemption only for used devices, based on the then-current industry conditions and business practices that ISRI members were encountering.⁸ Since that time, however, those conditions and practices have changed. ISRI members now report that they increasingly obtain and need to recycle and/or resell new devices, particularly wireless handsets, as explained in the Adverse Impact section below. Thus, ISRI now seeks to expand the existing exemption to permit similar unlocking of new devices, including bulk unlocking, to connect to the wireless carrier of the owner's choice, by removing the requirement that devices be "used," i.e., that they have previously been activated on a wireless carrier.

A. The Non-Infringing Uses and Statutory Factors that Justify the Exemption for Used Devices Apply Equally to the Unlocking of New Devices

The same pro-consumer and procompetitive benefits that justify allowing unlocking of used devices and that warranted the 2015 exemption and 2017 renewal recommendation also justify unlocking of new wireless devices. Unlocking of new devices for use on another carrier's network, in precisely the same way as unlocking used devices, (i) involves identical TPM and methods of circumvention; (ii) involves identical noninfringing uses, and (iii) does not infringe the copyright in any copyrightable work at all. In short, just as with used devices, permitting users to switch carriers for their devices does not, as the NTIA, Register and Librarian have previously recognized, implicate any copyright interests. Because the justifications are identical, ISRI will not repeat a detailed explanation of those factors here but instead incorporates by reference the detailed arguments in its 2015 comments.

⁸ ISRI's comment noted, though, that it would not oppose an exemption that also covered new devices. ISRI 2015 Comments at 14.

B. Adverse Impact of Excluding New Devices

At the time of ISRI's 2015 comment, it was relatively unusual for ISRI members to acquire new cell phones or other devices of the type listed in the exemption. That has changed over the intervening almost-three years. ISRI members now periodically obtain and need to recycle and/or resell new devices, particularly wireless handsets. This may happen in a variety of settings. For example, corporations or other organizations often purchase a significant quantity of new phones in order to equip numerous employees and/or to maintain a stock of spares, and then end up reselling to recyclers or resellers a number of extra devices that have gone unused by employees (and are thus still "new" under the definition in the 2015 exemption), because the purchase was larger than needed or because of an intervening company-wide upgrade or switch to other devices. In such cases, the recycler or reseller will acquire a quantity of the phones and need to unlock them for resale, just as they do with used phones.

Without an expansion of the 1201 exemption to cover such new devices, recycler owners are substantially adversely affected in their ability to make a variety of noninfringing uses of those devices and the software they contain. They are unable to engage in noninfringing unlocking of devices for the benefit of consumers who are buying or selling used devices; consumers are denied the ability to acquire high-quality devices from resellers and use them on the network of their choice; and competition between new and formerly owned devices and between networks is reduced. These adverse impacts are the same as those recognized as legitimate in the existing exemption for used devices; their status as new/unused changes none of these considerations.

C. Cell Phone Trafficking

Because ISRI members did not commonly acquire and recycle new devices at time of the 2015 comments, ISRI was willing to propose an exemption that applied only to used devices. The lack of adverse impact of not being able to unlock new phones at that point also led ISRI to be willing to craft an exemption focused on used devices in part as a way to avoid concerns from Tracfone that unlocking new devices might contribute to "trafficking" of prepaid cell phones.⁹ To be clear, however, while ISRI absolutely does not condone illegal trafficking, any concerns about possible trafficking are concerns about protecting a particular business model, not about protecting the integrity or preventing the copying of the underlying software on the phone. As ISRI detailed in its 2015 Reply comments, these concerns do not raise *copyright* interests and do not provide any basis for objecting to or denying an exemption for unlocking new phones and other devices.¹⁰ As ISRI also detailed in its Reply, and as remains true today, Tracfone has been successful in bringing numerous suits against alleged traffickers on claims other than DMCA 1201 and, as the NTIA comments reiterated,¹¹ even during the periods when earlier unlocking exemptions were in place. Thus, any concerns about possible trafficking are not relevant to the 1201 copyright issue of expanding the wireless device exemption to new devices.

⁹ See ISRI 2015 Comment at 15.

¹⁰ ISRI 2015 Reply Comment at 2-3, 16.

¹¹ Sixth Triennial Section 1201 Rulemaking: Recommendations of the National Telecommunications and Information Administration to the Register of Copyrights (Sept. 18, 2015) (hereinafter "NTIA 2015 Recommendation") at 41.

V. Extension of Existing Unlocking Exemption to Cover *All* Wireless Devices

Proposed Class: *Computer programs that enable wireless devices to connect to a wireless telecommunications network, when circumvention, including individual and bulk circumvention, is undertaken by the owner of any such device, by another person at the direction of the owner, or by a provider of a commercial mobile radio service or a commercial mobile data service at the direction of such owner or other person, solely in order to connect to a wireless telecommunications network and such connection is authorized by the operator of such network.*

A. Overview

The primary expansion ISRI seeks under Proposed Class 5 is to allow the unlocking of *any* wireless devices that connect to a wireless telecommunications network, by eliminating the current enumerated categories.

The Internet of Things (IoT), which includes the Industrial IoT, refers to a set of connected devices of all types, sizes and applications. Many devices that are part of the IoT will connect with networks and other devices via wifi or Bluetooth connections. But many others, particularly in locations and applications that involve greater distances between devices or between devices and networks, will connect via wireless telecommunications networks in the same manner as mobile phones, tablets, and similar cellular-type devices. The IoT is emerging and expanding at a breakneck pace. As it does, so are the categories and types of devices that rely on mobile communications networks for connectivity. Since the Copyright Office last considered a request for unlocking of all wireless enabled devices in 2015,¹² a vast array of devices have begun to appear on the market that include wireless connectivity. The number and variety of and applications for such devices is certain to increase exponentially over the next three years and beyond.

Today, all manner of consumer products, including home security systems, home automation devices, appliances, toys, e-readers, laptops, cars, and many more are increasingly able to connect directly to the internet through mobile telecommunications networks. Likewise, the Industrial IoT encompasses a large range of different types of devices used in a similarly large range of industries, including manufacturing machinery and field devices, environmental sensors, process sensors, smart meters, and real-time location devices, among many others. One industry analyst forecast projects that 8.4 billion "things" will be connected by the end of 2017 and over 20 billion will be connected by 2020. Many of these use or will use wireless communications networks for internet connectivity.

Virtually all of these products and categories are excluded by the current, category specific unlocking exemption. Yet it is as important that consumers, businesses, and other owners of these IoT devices be able to choose the wireless carrier's network to which they connect their device as it is for the owners of wireless phones or tablets to be able to do so. Allowing user-owners, or recyclers or resellers of such devices, to unlock software locks for the purpose of connecting these various devices to another carrier's network is procompetitive and pro-consumer in the same way as is allowing unlocking of the devices enumerated in the current exemption. Internet of Things device owners and users in particular need to be able to take advantage of a variety of specialized carriers

¹² 2015 Final Rule at 65951-52.

and/or coverage plans that provide the sort of multi-device, low-cost, data-only services that such devices need.¹³ Yet software that restrict the ability to unlock IoT device to use alternative, competing wireless networks will thwart these needs.

In the 2015 rulemaking, NTIA's recommendation aptly captured the logic of permitting unlocking of all mobile devices rather than trying to draw artificial lines among types of devices:

NTIA continues to believe that 'the line that distinguishes a mobile phone from other wireless devices is increasingly disappearing.' In fact, there are more reports in the record in this proceeding of a large range of wireless devices that may be locked to carrier networks, including mobile phones, tablets, and wearables. Therefore, NTIA reiterates our 2012 position that *this exemption should be extended to all wireless devices that connect to a wireless network offering telecommunications and/or information services*. In addition to the substantial record in support of exemptions for a number of devices, the Copyright Office has long taken the view that 'a 'particular class of copyrighted works' must relate primarily to attributes of the copyrighted works themselves and not to factors that are external to the works, e.g., the material objects on which they are fixed or the particular technology employed on the works,' as this document notes above. While exemptions may be further refined based on the record, it is clear that exemptions should be based on the works at issue, and not the screen size or form factor of the devices on which they are contained. Due to the broad record in this proceeding, as well as the rapid pace of innovation in this space, NTIA urges adoption of an exemption that covers the full range of wireless devices.¹⁴

NTIA concluded by "urg[ing] against enumerating a list of covered devices that will inevitably prove ambiguous or obsolete within the next three years."¹⁵ Indeed, given the pace of development and deployment of wireless devices, predicting even a few years into the future is difficult if not impossible. The ultimate wireless device, the iPhone, is itself barely ten years old.

B. Types of Devices That Need Unlocking

With this pace and uncertainty, it is unrealistic and, ISRI submits, unnecessary to attempt any sort of cataloging of the wireless devices that owners may need to unlock. But the current reality of connected wireless devices is demonstrated by a handful of examples:¹⁶

- Child monitor/trackers. These devices are often sold in the form of a watch or amulet. They may or may not be able to place calls but may allow voice monitoring and/or have a "panic button." They report real-time location to parents' phones, usually via an app.¹⁷

¹³ New carriers such as Ting offer a variety of these sorts of less-expensive, data-only plans suitable for IoT devices. See <https://ting.com/>.

¹⁴ NTIA 2015 Recommendation at 39 (citations omitted) (emphasis added).

¹⁵ *Id.* at 42.

¹⁶ These examples also address in part the 2015 Final Rule's skepticism that a range of wireless devices beyond those enumerated in the exemption "actually exist." Final Rule at 65951.

¹⁷ See, e.g., <https://www.safewise.com/blog/10-wearable-safety-gps-devices-kids/>.

- Automobiles are increasingly being delivered with built-in wireless modems, such as OnStar,¹⁸ that connect a variety of functions and monitoring/telematics to wireless networks.¹⁹
- Trucks²⁰ and trains also rely heavily on tracking networks that use built in cellular modems, as do some tractors and other mobile farm equipment (which also transmit seed or crop data).
- Agricultural crop/seed/soil monitors increasingly rely on cellular or LTE connections to transmit data to networks.²¹
- Livestock/pet trackers utilize wireless modems built into collars to track or geofence animals.²²
- Field equipment for data collection uses wireless connections. These may take the form of remote weather monitoring stations and seismic monitors that contain wireless connectivity, or numerous types of other field data gathering.
- Consumer and small entrepreneur focused companies like Sierra Wireless offer modules that enable products that embed wireless connectivity in a range of IoT type devices.²³

C. 1201 Factors

The relevant elements for unlocking devices for the purpose of changing to the owner's choice of wireless carrier are essentially the same whether the device is a cell phone, a wearable health device, a wireless hot spot, a remote environmental sensor, a livestock tracker, or any one of a thousand other types of devices that include wireless capability and are locked to a particular wireless carrier. In each case, the essential components of the type of TPM employed to lock the device and prevent carrier switching; the basic means of circumvention; the noninfringing use of the software in the device to switch carriers (as noninfringing fair use under 17 U.S.C. § 107 and noninfringing under 17 U.S.C. § 117 where the owner owns the device), and the fundamental lack of any legitimate copyright interest in preventing circumvention, are all the same. Thus, this comment will not undertake a detailed analysis of those factors. Rather, the comment incorporates the arguments, equally relevant here, from ISRI's 2015 exemption request and the conclusions of the Register's 2015 Recommendation²⁴ and the 2015 Final Rule.²⁵

¹⁸ <https://www.onstar.com/us/en/home.html>.

¹⁹ See, e.g., <https://arstechnica.com/cars/2017/09/qualcomm-covers-all-the-bases-with-a-cellular-vehicle-to-everything-chipset/> (“It will shortly be almost impossible to buy a new car without a cellular modem built in . . .”); <https://www.qualcomm.com/solutions/automotive>.

²⁰ See, e.g., <https://www.verizonwireless.com/biz/monitoring-and-tracking/>.

²¹ See, e.g., <http://www.verizonenterprise.com/industry/agriculture/>.

²² See, e.g., https://www.sierrawireless.com/iot-blog/iot-blog/2017/10/tracking_devices_for_livestock_increase_farm-profits/.

²³ See <https://www.sierrawireless.com/products-and-solutions/embedded-solutions/>.

²⁴ Register's 2015 recommendation at 159-164.

²⁵ 2015 Final Rule at 65951-52.

D. Adverse Impact

As the range of wireless devices available in the market and in use continues to grow, so will the adverse effects stemming from owners' – whether they be consumers or recyclers -- inability to choose the mobile wireless communications provider for the device that they own and use or seek to recycle/resell. For commercial and industrial products in particular, the ability of recyclers to unlock those devices and resell them for use on any carrier will be critical to the efficient and economical reuse and redistribution of these devices. These impacts are beginning to be felt now, but there is no reason that they will be different in scope or character from the impact of being unable to choose the wireless carrier for wireless phone, tablet or wearable device that is locked to one carrier. In each case, the single characteristic of the device at issue is the choice of carrier to which it connects. Being denied that choice by the lack of a circumvention exemption harms resellers, consumers and businesses.

The NTIA's 2015 conclusion, in the context of wireless phones, tablets, hot spots and wearables, is equally relevant here:

The use of technology to deter wireless device owners from moving among wireless carriers—and claiming that the technology is an access control under the DMCA—is one of the earliest and most enduring examples of Section 1201 being used to further interests that are unrelated to copyright protection. [T]he practice of locking wireless devices has ‘forced consumers to acquire new devices when they switch operators, unnecessarily increasing the cost of the new service,’ which ‘not only harms consumers, but also creates an artificial barrier within the market that limits device portability, hindering competition among providers.’²⁶

E. All Relevant Statutory Factors Weigh in Favor of Granting an Exemption for Bulk Unlocking

17 U.S.C. § 1201(a)(1)(C) directs the Copyright Office to evaluate the following factors when considering an exemption:

- (i) the availability for use of copyrighted works;
- (ii) the availability for use of works for nonprofit, archival, preservation, and educational purposes;
- (iii) the impact that the prohibition on the circumvention of technological measures applied to copyrighted works has on criticism, comment, news reporting, teaching, scholarship, or research;
- (iv) the effect of circumvention of technological measures on the market for or value of copyrighted works; and
- (v) such other factors as the Librarian considers appropriate.

²⁶ NTIA 2015 Recommendation at 36 (citations omitted).

Again, these factors are effectively the same for unlocking wireless handsets and tablets as they are for unlocking any other wireless device. In both cases, the factors weigh strongly in favor of granting the proposed exemption.

1. (i) The Availability for Use of Copyrighted Works

The exemption would not make copyrighted works—in particular, software on any wireless device—less available. Mobile phone manufacturers did not stop or slow manufacturing phones embedded with carrier lock software as a result of past unlocking exemptions, and they and similar device makers have no reason to do so in response to an expanded unlocking exemption. On the other hand, consumers will have access to more devices, and the proposed exemption may increase lawful access to copyrighted works, since unlocking increases the number of wireless devices and their software available to a broader range of purchasers. Some of these purchasers might not have bought a new device or been able to afford to keep using their existing device with the original carrier to which it was locked.

2. (ii) The Availability for Use of Works for Nonprofit Archival, Preservation, and Educational Purposes

The lack on the proposed exemption does not directly bear on the listed activities in factor (ii), but the proposed exemption will not decrease availability of the underlying mobile software for nonprofit archival, preservation, or educational purposes. As discussed in factors (i) and (iv), the proposed exemption may actually increase lawful access to the underlying software for all purposes, including those listed in factor (ii).

3. (iii) The Impact That the Prohibition on the Circumvention of Technological Measures Applied to Copyrighted Works Has on Criticism, Comment, News Reporting, Teaching, Scholarship, or Research

The prohibition on the proposed exemption does not directly bear on the listed activities in factor (iii), except to the extent that broader device and software availability will result in more engagement in the listed activities.

4. (iv) The Effect of Circumvention of Technological Measures on the Market for or Value of Copyrighted Works

The proposed exemption will not have negative effects on any market for mobile software in devices that are covered by the exemption. There is no reason to think that device manufacturers would slow or halt production of mobile software or devices simply because owners are able to unlock those devices and switch carriers. Rather, the proposed exemption is more likely to increase the value and market for the underlying software because the accompanying devices, which otherwise may be locked to certain carriers, will have longer lifetimes because of the flexibility for their owners to switch to their preferred carrier, or greater value as owners and resellers can resell the used devices for higher prices.

5. (v) Such Other Factors as the Librarian Considers Appropriate

Unlocking mobile devices is about consumer choice, not copyright. The Register has recognized this distinction in past rulemakings,²⁷ as has Congress and the White House in the Unlocking Act.²⁸ Promotion of consumer choice, facilitated by the requested exemption, is a factor that the Librarian should consider appropriate.

VI. Conclusion

Petitioner ISRI's members and other recyclers provide important public and economic benefits by efficiently buying, refurbishing, reselling, and recycling devices that they lawfully acquired individually from consumers and in bulk from organizations. The 2015 Final Rule, like the 2014 Unlocking Act²⁹ and several previous triennial exemptions, recognize the legal justifications and the benefits of unlocking certain wireless devices to switch carriers. Those justifications and benefits are equally important for and applicable to the growing number and type of wireless devices outside the narrow categories of used devices in the 2015 exemption. Granting the unlocking extension proposed here is warranted by current and near-future market conditions. The extended exemption will promote competition in the wireless device and carrier marketplaces, increase the choices available to consumers, and enable recyclers to continue to efficiently and economically enable those choices for a range of devices, all without negatively impacting legitimate copyright interests.

²⁷ See, e.g., 2012 Recommendation at 93, *citing* 2010 Recommendation at 137.

²⁸ *Answering the Public's Call*, THE WHITE HOUSE BLOG (Aug. 1, 2014 12:28 PM EST), <http://www.whitehouse.gov/blog/2014/08/01/answering-publics-call>.

²⁹ 5 Pub. L. 113–144, sec. 2(b)–(c), 128 Stat. 1751, 1751–52 (2014).