



## The Danger of Downloadable Guns

The Trump administration has finalized a regulatory change that would enable anyone to have online access to computer code for the 3-D printing of untraceable, undetectable guns—downloadable guns—a reckless mistake and a grave public safety hazard. Downloadable guns are a type of “ghost gun” because there is no background check for the parts needed for this make-it-yourself firearm and the 3-D printed firearm is unserialized and untraceable. Easy access to computer code for 3-D printing guns would benefit people who pose the most serious danger to the public—including terrorists, felons, and domestic abusers—and undermine federal and state gun safety laws. This change contradicts prior State Department efforts to keep downloadable guns off the internet due to the national security risk and would enable 3-D printing of plastic firearms that can pass through metal detectors. With 3-D printers relatively cheap and widely available, the regulatory change clears the path for anyone to easily download, print and assemble a firearm.

- ❑ **Downloadable guns are profoundly dangerous, and online access to the computer code allows anyone to build untraceable, undetectable firearms on demand and with no background check.**
  - With the computer code in hand, a person can print their own firearm or core building blocks for the firearm with a commercially available 3-D printer. No criminal background check is required to acquire the computer code, printer, or materials, and the entire process remains completely outside the federal firearms licensee system.<sup>1</sup>
  - Unlike a crime gun with a serial number, law enforcement won’t have the benefit of information on who made, sold and bought the recovered firearm.<sup>2</sup>
  - 3-D printers can print plastic guns that are undetectable by metal detectors, enabling the gun to be snuck onto an airplane or into a government building or school.<sup>3</sup> Indeed, journalists in Israel were able to print a downloadable gun and get within arm’s reach of the country’s prime minister at the government capitol.<sup>4</sup>
  - In February 2019, a Texas man was sentenced to 8 years in prison after officers caught him with a partially 3-D printed AR-15 rifle (pictured below) and a list of lawmakers’ addresses in his backpack, despite being prohibited from owning a firearm due to a violent altercation with a live-in girlfriend.<sup>5</sup>



- ❑ **Without any justification, the Trump administration announced it is moving jurisdiction over downloadable guns from the State Department to the Commerce Department, which contradicts prior State Department warnings about public safety risk.**
  - In 2012, a company posted downloadable guns online and the State Department took immediate action to remove them. Since then, the State Department has blocked anyone from publishing Computer Aided Design (“CAD”) files that could be used to 3-D print a firearm.<sup>6</sup>
    - The State Department has maintained these files are “technical data” on the United States Munitions List (“USML”), governed by the International Traffic in Arms Regulations—and that they could not be published without State Department authorization.<sup>7</sup> The State Department did not grant authorization and the company sued the State Department alleging that prohibiting the posting of the files was a violation of the company’s First Amendment rights.<sup>8</sup>



- In April 2018, the government filed a motion in federal court reiterating that serious national security concerns would be implicated by the posting of the files for downloadable guns. At the time, the State Department said it was “particularly concerned that [the] proposed export of undetectable firearms technology could be used in an assassination, for the manufacture of spare parts by embargoed nations, terrorists groups, or to compromise aviation security overseas in a manner specifically directed at U.S. persons.”<sup>9</sup>
- However, in May 2018, the Trump administration reversed this position and begun the process to remove downloadable guns from the USML<sup>10</sup> and to move jurisdiction to the Commerce Department, which has weaker oversight of exports, including virtually no regulation of technical data and less robust controls for national security and public safety concerns. The final rule was filed in the Federal Register on January 17, 2020.<sup>11</sup>
- ❑ **The Trump administration’s prior attempt to allow a single company to post downloadable gun files was met with overwhelming opposition and was invalidated by a federal court.**
  - In a settlement agreement announced in July 2018, the Trump administration agreed to exempt Defense Distributed’s library of 3-D gun printing designs from the USML, allowing “any United States person...to access, discuss, use, reproduce, or otherwise benefit” from the designs because of the forthcoming rule change.<sup>12</sup>
    - Defense Distributed is run by a registered sex offender<sup>13</sup> and self-described anarchist whose stated goal is to undermine and defeat gun laws by enabling anyone to 3-D print firearms.<sup>14</sup>
  - The settlement announcement was met with an outpouring of opposition from state attorneys general, elected officials, and Americans across the country.
    - Law enforcement officials and military veterans urged the State Department to protect public safety by continuing to block the posting of the files for downloadable guns.<sup>15</sup>
    - Everytown’s supporters made 24,851 calls and sent 164,436 messages to the State Department opposing the proposal.
    - Washington Attorney General Bob Ferguson and the attorneys general of eighteen other states and the District of Columbia filed a lawsuit in federal court to stop the Trump administration from lifting its prohibition on the company from distributing computer code for downloadable guns.<sup>16</sup>
  - On November 12, 2019, a federal court agreed with the attorneys general and found that the State Department failed to give thirty days’ notice to the Congressional foreign relations committees as required by law.<sup>17</sup> The court also found that the agency action was “arbitrary and capricious” for two reasons:
    - “The agency failed to consider aspects of the problem which Congress deemed important before issuing the temporary modification and letter on July 27, 2018,” and
    - The State Department had previously determined that downloadable guns would be “a threat to world peace and the national security interests of the United States and would cause serious and long-lasting harm to its foreign policy,” and the court found that the Trump administration “failed to identify substantial evidence in the administrative record explaining a change of position that necessarily contradicts its prior determinations and findings regarding the threats posed by [downloadable guns] and the need to regulate [them].”<sup>18</sup>
- ❑ **Downloadable guns are generally printed using a fused deposition modeling (FDM) printer and the market for 3-D printers has grown substantially over the past two years and is expected to continue to grow rapidly.**
  - Nearly 600,000 consumer 3-D printers were sold in 2018 alone.<sup>19</sup> And the Congressional Research Service estimates that the average cost of a basic 3-D printer that uses plastic filament (the material generally used to 3-D print guns) is less than \$150.<sup>20</sup>
  - Acrylonitrile butadiene styrene (ABS) filament is one of the more common types of filament used, and is the same material used to make Legos. One-kilogram spools of ABS filament generally cost around \$20, and a single spool is more than enough to print the parts for a functioning firearm.<sup>21</sup>
  - 3-D printers are becoming more widely available for public use. For example, the executive director of the Massachusetts Association of School Superintendents (MASS) has stated that most districts have 3-D printers available in schools across the state.<sup>22</sup> In 2015, it was reported that about 250 public libraries across the country



make 3-D printers available for use,<sup>23</sup> and in 2017, General Electric announced it would begin providing hundreds of 3-D printers to primary and secondary schools across the globe each year.<sup>24</sup>

❑ **Little expertise is needed to print an object once the digital design file is downloaded.**

- 3-D printing generally involves two types of files: a computer assisted design (CAD) file and a stereolithography (.stl) file. The CAD file contains information on the design of the object and must be converted to an .stl file, which tells the 3-D printer how to move along its three axes to print an object.<sup>25</sup>
- According to Dr. Shwetak Patel, professor of computer science and engineering at the University of Washington, once the .stl file is either created or downloaded, loading this file into the printer is the only action that must be taken to print out the building blocks for a firearm.<sup>26</sup>

❑ **Recent testing proved that the previously available files on Defense Distributed’s website were functional and capable of instantly printing a downloadable gun.**<sup>27</sup>

- On July 30, 2018, Dr. Patel reviewed and tested the Liberator files previously available from Defense Distributed. It was confirmed that all fifteen .stl files were functional and he was able to print all parts using an Ultimaker 2+ 3-D printer, a type of FDM printer.
- Dr. Patel also indicated that the downloaded files included a text file, which contained instructions for attaching a metal part to the final product. This would make the finished firearm in compliance with the Undetectable Firearms Act. Based on Dr. Patel’s review, however, the Liberator can function without this metal part.
- Additionally, Dr. Patel confirmed that the files for some weapons, such as the AR rifle, only contained the CAD design files and not the .stl files needed to print the firearm. However, these CAD design files could easily be converted to the correct .stl files type for 3-D printing using free software.

**Schematics for dangerous downloadable guns should not be permitted to be posted online under any circumstances.**

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<sup>1</sup> While it is legal under federal law and in most states to build your own gun for personal use, it is illegal to do so if you are prohibited from having a gun, and it is illegal for anyone to sell a DIY gun. Of course, the law allowing DIY gun-making long predates technology that enables anyone other than an expert manufacturer to do so.

<sup>2</sup> While it is illegal under federal law to destroy a manufacturer’s serial number, 18 USC § 922(k), it is legal to make and possess an unserialized DIY gun. Here again, technological advances that allow for widespread DIY gun making undermine the system that law enforcement relies on to trace crime guns.

<sup>3</sup> Some designs account for the inclusion of a 6-oz piece of metal in the printable guns—to comply with the federal law, 18 USC § 922(p), that prohibits “undetectable” firearms. However, this metal content is included and/or removed at the operator’s option, and the firearm remains operable.

<sup>4</sup> Berman L. Journalists Print Gun, Point It at Netanyahu. *Times of Israel*. July 13, 2013 available at <https://bit.ly/2mD6A0J>.

<sup>5</sup> Smith L. Gunman arrest in Texas woods with 3-D-printed AR-15, ‘hit list’ of lawmakers gets 8 years in prison. *The Dallas Morning News*. Feb 13 2019, available at <https://www.dallasnews.com/news/courts/2019/02/14/gunman-arrested-in-texas-woods-with-3-d-printed-ar-15-hit-list-of-lawmakers-gets-8-years-in-prison/>

<sup>6</sup> See Order Invalidating July 27, 2018 Temporary Modification and Letter, ECF No. 192, *State of Washington v. U.S. Department of State*, Case No. 2:18-cv-01115 (W.D. Wash. filed Nov. 12, 2019).

<sup>7</sup> See Defendants’ Opposition to Plaintiffs’ Motion for a Preliminary Injunction, ECF No. 32, *Defense Distributed v. U.S. Department of State*, Case No. 15-cv-00372 (W.D. Tex. filed June 10, 2015).

<sup>8</sup> See Order Invalidating July 27, 2018 Temporary Modification and Letter, ECF No. 192, *State of Washington v. U.S. Department of State*, Case No. 2:18-cv-01115 (W.D. Wash. filed Nov. 12, 2019).

<sup>9</sup> See Defendants’ Motion to Dismiss Second Amended Complaint, ECF No. 92, *Defense Distributed v. U.S. Department of State*, Case No. 15-cv-00372 (W.D. Tex. filed Apr. 6, 2018).

<sup>10</sup> Schematics for firearms covered under the National Firearms Act, including automatic firearms, and firearms over .50 caliber remain on the USML.

<sup>11</sup> Federal Register, International Traffic in Arms Regulations: U.S. Munitions List Categories I, II, and III. An unpublished rule by the State Department filed on Jan. 17, 2020, to be published on Jan. 23, 2020, available at <https://www.federalregister.gov/documents/2020/01/23/2020-00574/international-traffic-in-arms-regulations-us-munitions-list-categories-i-ii-and-iii>

<sup>12</sup> See Settlement Agreement, *Defense Distributed v. U.S. Dept. of State*, Case No. 15-CV-00372 (W.D. Tex.), available at <https://www.exportlawblog.com/docs/Defense%20Distributed%20Settlement%20Agreement.pdf>

<sup>13</sup> Fernandez S. 3D-printed gun designer Cody Wilson gets probation in child sexual assault case. *Texas Tribune*. Sept. 12, 2019, available at <https://www.texastribune.org/2019/09/12/3d-printed-gun-designer-cody-wilson-sentenced-sexual-assault-girl/>; see also Texas Public Sex Offender Website, available at <https://records.txdps.state.tx.us/SexOffenderRegistry/Search/Rapsheet?Sid=17876973>

<sup>14</sup> The group’s leader, Cody Wilson, has said he would “call a militia out” and mount a violent defense of his downloadable guns, if necessary. Greenberg A. A Landmark Legal Shift Opens Pandora’s Box for DIY Guns. *Wired*. July 10, 2018, available at <https://bit.ly/2uaCA0i>. See also Owen T. Get Ready for the New Era of 3D-Printed Guns Starting August 1. *Vice News*. July 18, 2018, available at <https://bit.ly/2JPyMHP>.

<sup>15</sup> Penzone P. I’m a sheriff. Don’t flood the country with 3D-printed guns. *Washington Post*. July 26, 2018, available at <https://www.washingtonpost.com/opinions/im-a-sheriff-dont-flood-this-country-with-3d-printed-guns/2018/07/26/38d9a9b8-9052-11e8-b769->



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[e3fff17f0689\\_story.html](#); Wentling N. Veterans gun reform group urges government to continue ban on 3-D printed guns. *Stars and Stripes*. July 31, 2018, available at <https://www.stripes.com/news/veterans-gun-reform-group-urges-government-to-continue-ban-on-3-d-printed-guns-1.540346>

<sup>16</sup> The 19 states that sued are: Washington, Connecticut, Maryland, New Jersey, New York, Oregon, California, Colorado, Delaware, Hawaii, Illinois, Iowa, Minnesota, North Carolina, Rhode Island, Vermont, Virginia, Massachusetts, and Pennsylvania. See Bellisle M. More states sue to stop online plans for 3D-printed guns. *Associated Press*. Aug. 3, 2018, available at <https://apnews.com/ce7cef39af9e49a7a0076b6516472328/More-states-sue-to-stop-online-plans-for-3D-printed-guns>

<sup>17</sup> 22 U.S.C. § 2778(f)(1)

<sup>18</sup> See Order Invalidating July 27, 2018 Temporary Modification and Letter, ECF No. 192, *State of Washington v. U.S. Department of State*, Case No. 2:18-cv-01115 (W.D. Wash. filed Nov. 12, 2019).

<sup>19</sup> Terry Wohlers, Ian Campbell, and Olaf Diegel, et al., *Wohlers Report 2019* (Fort Collins, CO: Wohlers Associates, Inc., 2019), pp. 173, 175.

<sup>20</sup> Congressional Research Service. 3D Printing: Overview, Impacts, and the Federal Role. Aug. 2, 2019, available at <https://fas.org/sgp/crs/misc/R45852.pdf>

<sup>21</sup> Decl. of Shwetak Patel, Ph.D ¶¶ 8-9, 18, *State of Washington et al. v. U.S. Dep't of State et al.*, No. 2:18-cv-0115-RSL (W.D. Wash. Aug. 9, 2018).

<sup>22</sup> Decl. of Thomas Scott ¶¶ 4-5, *State of Washington et al. v. U.S. Dep't of State et al.*, No. 2:18-cv-0115-RSL (W.D. Wash. Aug. 9, 2018).

<sup>23</sup> Wapner C. Progress in the Making 3D Printing Policy Considerations through the Library Lens. Jan. 2015, available at [http://www.ala.org/aboutala/sites/ala.org/aboutala/files/content/3D\\_Library\\_Policy-ALA\\_OITP\\_Perspectives-2015Jan06.pdf](http://www.ala.org/aboutala/sites/ala.org/aboutala/files/content/3D_Library_Policy-ALA_OITP_Perspectives-2015Jan06.pdf)

<sup>24</sup> General Electric. GE selects more than 400 schools to receive 3D printers. June 1, 2017, available at <https://www.ge.com/additive/press-releases/ge-selects-more-400-schools-receive-3d-printers>

<sup>25</sup> Decl. of Shwetak Patel, Ph.D ¶¶ 10-11, *State of Washington et al. v. U.S. Dep't of State et al.*, No. 2:18-cv-0115-RSL (W.D. Wash. Aug. 9, 2018).

<sup>26</sup> *Id.* ¶ 11.

<sup>27</sup> *Id.* ¶¶ 14-20.