
SENATE COMMITTEE ON PUBLIC SAFETY

Senator Jesse Arreguín, Chair
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Author: Bauer-Kahan
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Subject: *Firearms: 3-dimensional printing blocking technology*

HISTORY

Source: Everytown for Gun Safety Action Fund; Moms Demand Action for Gun Sense in America; Students Demand Action for Gun Sense in America

Prior Legislation: AB 1127 (Gabriel) Ch. 572, Stats. of 2025
AB 1263 (Gipson), Ch. 636, Stats. of 2025
AB 97 (Rodriguez), Ch. 233, Stats. of 2023
AB 1089 (Gipson), Ch. 243, Stats. of 2023
AB 1420 (Berman), Ch. 245, Stats. of 2023
AB 1594 (Ting), Ch. 98, Stats. of 2022
AB 857 (Cooper), Ch. 60, Stats. of 2016

Support: Asian American Christian Collaborative; Beverly Hills High School Students Demand Action; California Chapter of the American College of Emergency Physicians; California Moms Demand Action; California Police Chiefs Association; CFT – A Union of Educators & Classified Professionals, AFT, AFL-CIO; Chapman University Students Demand Action; Former City Attorney Mike Feuer, City of Los Angeles; GLMA: Health Professionals Advancing LGBTQ Equality; Indivisible Mid-Peninsula; Newtown Action Alliance; Prosecutors Alliance Action; San Diegans for Gun Violence Prevention; San Diego County School Board Association; Students Demand Action at U.C. Davis; UCLA Students Demand Action; Youth Alive!

Opposition: 3d Printing Nerd; ACLU California Action; California Rifle and Pistol Association; Californians United for a Responsible Budget; Citizens Privacy Coalition of Santa Clara County; Community Manufacturing Initiative; Democratic Socialists of America, San Diego; Electronic Frontier Foundation; ESAero, INC; . Fight for the Future; Free Software Foundation; FULU Foundation; Gray Area; Gun Owners of California; iFixit; Initiate Justice; Inspired Flight Technologies; Invisible Pack; Leafeye; Mantis Composites; Matterhackers; National Rifle Association-Institute for Legislative Action; Noisebridge Hackerspace; Oakland Privacy; Privacy Rights Clearinghouse; Repair.org; Root Access Hackerspace; Secure Resilient Future Foundation; Software Freedom Conservancy; Streamline Aerospace; Sudo Room Hackerspace; Trust Automation; West3d; Zone 5 Technologies

PURPOSE

The purpose of this bill is to require the Department of Justice (DOJ) to publish written guidance on performance standards for firearm blueprint detection algorithms for use by 3Dimensional (3D) printer manufacturers; to require, on or before March 1, 2029, any business that produces or manufactures 3D printers to submit to the DOJ an attestation for each make and model they intend to sell or transfer in California, and retain a list of such manufacturers; to make it a crime to knowingly disable, deactivate, uninstall, or otherwise circumvent any firearm blocking technology installed in a 3D printer with the intent to manufacture firearms or to knowingly transfer a modified 3D printer, as specified with the intent to facilitate the unlawful manufacture of firearms.

Existing law establishes the “Firearm Industry Responsibility Act” (hereinafter, “FIRA”) which allows for civil actions to be brought against firearm industry members who deal in abnormally dangerous firearm-related products. (Civ. Code, §§ 3273.50 et seq.)

Existing law provides that a firearm industry member must comply with the firearm industry standard of conduct; and makes it a violation of the firearm industry standard of conduct for a firearm industry member to fail to comply with any requirement below:

- A firearm industry member shall do both of the following:
 - Establish, implement, and enforce reasonable controls.
 - Take reasonable precautions to ensure that the firearm industry member does not sell, distribute, or provide a firearm-related product to a downstream distributor or retailer of firearm-related products who fails to establish, implement, and enforce reasonable controls.
- A firearm industry member shall not manufacture, market, import, offer for wholesale, or offer for retail sale a firearm-related product that is likely to create an unreasonable risk of harm to public health and safety, as provided.
- A firearm industry member shall not engage in any conduct related to the sale or marketing of firearm-related products, as specified. (Civ. Code, § 3273.51, subds. (a)-(d).)

Existing law provides that prior to completing the sale or delivery in California or to a California resident of a firearm accessory or a firearm manufacturing machine, as defined, or of a firearm barrel unattached to a firearm, a firearm industry member shall comply with specified notice and age-verification requirements. (Civ. Code, § 3273.51, subd. (e)(1).)

Existing law provides that a civil action may be brought against a person who knowingly does either of the following:

- Distributes or causes to be distributed, by any means including the internet, any digital firearm manufacturing code to any other person in this state who is not a federally licensed firearms manufacturer, member of the Armed Forces of the United States or the National Guard, while on duty and acting within the scope and course of employment, or any law enforcement agency or forensic laboratory.
- Commits an act that violates prohibitions related to manufacturing firearms using a computer numerical control (CNC) milling machine or 3D printer, regardless of whether the act results in a conviction. (Civ. Code, § 3273.61, subd. (a).)

Existing law provides that it is unlawful to knowingly, willfully, or recklessly cause another person to engage in the unlawful manufacture of firearms, or to knowingly, willfully, or recklessly aid, abet, promote, or facilitate the unlawful manufacture of firearms, punishable civilly, and that the Attorney General, county counsel, city attorney, or a person who has suffered harm as a result of a violation may bring an action against the violating party. (Civ. Code, § 3273.625, subd. (a), (c).)

Existing law provides that, except as provided, any person who, with knowledge of any change, alteration, removal or obliteration of a specified identifying mark on a firearm, buys, receives, disposes of, sells, offers for sale, or has in possession any pistol, revolver, or other firearm that has had the name of the maker or model, or the manufacturer's number or other mark of identification, including any distinguishing number or mark assigned by the DOJ, changed, altered, removed, or obliterated (hereinafter, an "unserialized firearm") is guilty of a misdemeanor. (Pen. Code, § 23920, subd. (a).)

Existing law defines "firearm precursor part" as any forging, casting, printing, extrusion, machined body or similar article that has reached a stage in manufacture where it may readily be completed, assembled or converted to be used as the frame or receiver of a functional firearm, or that is marketed or sold to the public to become or be used as the frame or receiver of a functional firearm once completed, assembled or converted. (Pen. Code, § 16531.)

Existing law defines a "pistol converter" as any device or instrument that when installed in or attached to the rear of the slide of a semiautomatic pistol, replaces the backplate, and interferes with the trigger mechanism and thereby enables the pistol to shoot automatically more than one shot by a single function of the trigger, and includes a device manufactured using a 3D printer. (Pen. Code, § 17015.)

Existing law sets forth a process for the licensing of firearms manufacturers by the DOJ. (Pen. Code, §§ 29050, et. seq.)

Existing law prohibits the manufacture of more than 3 firearms within the state in a calendar year unless the person is licensed to manufacture firearms pursuant to California law. (Pen. Code, § 29010.)

Existing law provides that no person, other than a state-licensed firearms manufacturer, shall use a CNC machine or 3D printer to manufacture a firearm, and that it is unlawful to sell, offer to sell, transfer, possess, purchase, or receive a CNC milling machine or 3D printer that has the sole or primary function of manufacturing firearms, as specified. (Pen. Code, § 29185, subds. (a)-(c).)

Existing law defines "3D printer" as a computer-aided manufacturing device capable of producing a 3D object from a 3D digital model through an additive manufacturing process that involves the layering of two-dimensional cross sections formed of a resin or similar material that are fused together to form a 3D object. (Pen. Code, § 29185, subd. (g).)

Existing law provides that it is unlawful to knowingly or willfully cause another person to engage in the unlawful manufacture of firearms, or to knowingly or willfully aid, abet, promote, or facilitate the unlawful manufacture of firearms, punishable as a misdemeanor. (Pen. Code, § 29186, subds. (a), (c).)

Existing law specifies that the “the unlawful manufacture of firearms” includes any of the following:

- The manufacture of a firearm by a minor, or by a person who is prohibited from owning or possessing firearms under California law.
- The manufacture of four or more firearms within the state in the same calendar year by an individual who is not licensed to manufacture firearms pursuant to California law.
- The manufacture of any firearm using a 3D printer or CNC milling machine by an individual who is not licensed to manufacture firearms pursuant to California law.
- The manufacture of a firearm by a person who is not a federally licensed firearms manufacturer, for the purpose of selling or transferring ownership of that firearm to another person who is not a federally licensed firearms manufacturer.
- The manufacture of a firearm for the purpose of selling, loaning, or transferring the firearm to another person, with the intent to complete the sale, loan, or transfer without a required background check on the transferee initiated by a licensed firearms dealer.
- The manufacture of specified prohibited firearms. (Pen. Code, § 29186, subd. (b).)

This bill defines the following terms as follows:

- “Firearm blocking technology” means hardware, firmware, or other integrated technological measures capable of ensuring a 3D printer will not proceed to any print job unless the underlying 3D printing file has been evaluated by a firearms blueprints detection algorithm and determined not to be a printing file that would produce a firearm or illegal firearm parts.
- “Firearm blueprint detection algorithm” means a software service that evaluates 3D printing files, whether in the form of stereolithography (STL) files or other computer-aided design files or geometric code, to determine if the files can be used to program a 3D printer to produce a firearm or illegal firearm parts, and flag any such files to prevent their use to manufacture a firearm or illegal firearm parts.
- “Firmware design” means integration of a firearms blueprint detection algorithm directly into a 3D printer’s firmware, such that any geometric code received by the printer must be evaluated by the algorithm before the printer will proceed to print, and such that the printer will reject print jobs identified by the algorithm because they would direct the printer to print firearms or illegal firearm parts.
- “Illegal firearm parts” means a firearm precursor part and any part designed and intended for use in converting a semiautomatic weapon into a machine gun, including, but not limited to, a pistol convertor.
- “Integrated pre-print software design” means a limitation of a 3D printer’s operation to accept geometric code for printing exclusively from a single slicer or other preprint software, which may be the manufacturer’s proprietary software, and integration of a firearms blueprint detection algorithm into that preprint software, such that any STL file or other computer-aided design file must be evaluated by the algorithm before the software will proceed to produce geometric code, and such that the software will not produce geometric code for files that are identified by the algorithm because they would direct the printer to print firearms or illegal firearm parts.
- “Software controls process” means a system designed to stop a 3D printer from initiating any print job unless the underlying 3D printing file has been evaluated by a firearms blueprints detection algorithm and determined not to be a printing file that would produce a firearm or illegal firearm parts.

This bill requires the DOJ, on or before September 1, 2028, to publish written guidance on performance standards for firearm blueprint detection algorithms for 3D printer manufacturer use in complying with other provisions of this bill, as specified, and provides that the DOJ may seek input from relevant stakeholders and technical experts in this task.

This bill specifies that the performance standards must require that firearm blueprint detection algorithms have the capacity, with a high degree of accuracy, to complete specified tasks.

This bill provides that the performance standards shall require that, at a minimum, firearm blueprint detection algorithms have the capacity to utilize information from an inventory of disallowed firearm blueprint files that have been commonly shared on internet forums to detect those files and modified versions of those files, as specified.

This bill provides that the performance standards shall require that the firearm blueprint detection algorithm have the capacity to implement regular updates to the set of disallowed firearm files it has the capacity to detect, to an extent and with a frequency that reasonably considers the rate of innovation for the design and availability of new firearm blueprint files, consistent with evolving threat landscapes, technology maturity, and operational feasibility.

This bill requires the DOJ, on or before September 1, 2028, to publish written guidance on performance standards for software controls processes for 3D printer manufacturer use in complying with other sections of this bill, subject to requirements similar to those for firearm blueprint detection algorithms.

This bill provides that the performance standards shall require that software controls processes have the capacity, to a high degree of reliability, to substantially reduce the likelihood of foreseeable circumvention attempts intended to evade a firearms blueprint detection algorithm, and shall include minimum standards on developer testing to confirm an acceptably low level of evasion with identified design files for firearms and illegal firearm parts, as specified.

This bill provides that the performance standards shall set out options for design forms that may be used for a software controls process integration into a 3D printer, as specified.

This bill provides that on or before March 1, 2029, any business that produces or manufactures 3D printers for sale or transfer in California shall submit to the DOJ an attestation form for each make and model of printer they intend to make available for sale or transfer in California, which must include specified information.

This bill provides that if the self-attestation form is incomplete or contains information indicating the make and model of printer identified may not be effectively equipped with firearm blocking technology, the Attorney General has authority to investigate and inspect the submission, as specified.

This bill provides that on or before June 1, 2029, the DOJ shall publish a list (hereinafter “the list”) of all the makes and models of 3D printers whose manufacturers have submitted complete self-attestations and any makes and models of 3D printers that have an incomplete attestation on file.

This bill provides that the list shall be updated no less frequently than on a quarterly basis and be made accessible on the DOJ website.

This bill requires, commencing December 1, 2029, any business that produces or manufactures 3D printers for sale in California to take both of the following steps:

- Before any 3D printer is offered, sold, transferred, or distributed to any person or business in California, the manufacturer shall equip the 3D printer with firearm blocking technology, as provided.
- Before any 3D printer is offered, sold, transferred, or distributed to any person or business in California, the manufacturer shall submit a self-attestation of installation of firearm blocking technology to the DOJ.

This bill provides that any business that sells, offers to sell, distributes, or transfers for consideration a 3D printer in California shall consult the list published by the DOJ.

This bill provides that it shall be unlawful to sell or transfer for consideration a 3D printer in California that is not equipped with firearm blocking technology and on the list published by DOJ.

This bill provides that the above requirements shall not apply to the following printers:

- Printers manufactured for and sold exclusively to a state-licensed firearms manufacturer, as defined.
- Printers manufactured for and sold exclusively to the State of California or law enforcement agencies of the United States for the manufacturing of firearms for law enforcement or military purposes.
- Printers manufactured for and sold exclusively to aerospace, biomedical, automotive, or chemical or mechanical engineering companies or government contractors that are not also sold on the consumer retail market.
- Printers manufactured for and sold exclusively to entertainment industry stagecraft and propmaking studios.
- Printers sold or transferred in private transactions that were originally purchased before the publication of the list.

This bill provides that a civil action may be brought against a person who either sells or offers to sell a 3D printer in California that is not equipped with firearm blocking technology or knowingly files an attestation containing false information, and that such action may be brought by a private individual who has suffered harm as the result of a violation, or by the Attorney General, county counsel, or city attorney, as specified.

This bill makes it a crime, punishable as a misdemeanor, to knowingly disable, deactivate, uninstall, or otherwise circumvent any firearm blocking technology installed in a three-dimensional printer with intent to manufacture firearms or to knowingly distribute, sell, or transfer for consideration in California one or more modified versions of a three-dimensional printer identified on the Department of Justice's list of three-dimensional printers eligible for sale in California, as provided, with the intent to facilitate the unlawful manufacture of firearms.

This bill includes a severability clause.

COMMENTS

1. Need for This Bill

According to the author:

California has set a standard for the country in creating commonsense gun regulations and gun violence prevention work. AB 2047 continues this work by requiring that all three-dimensional printers sold in California are equipped with firearm blocking features to prohibit the printing of dangerous gun parts. Specifically, it requires that they have a firearm detection algorithm and software controls that identifies files that would produce guns and illegal gun parts and block such printing requests.

There is alarming data showing that 3D-printed firearms have become an escalating public safety threat. A report from Everytown for Gun Safety shows that recoveries of 3D-printed guns increased by 1,000 percent between 2020 and 2024. Just last month, Santa Rosa police seized three 3D printers along with 167 firearms- including 150 guns with obliterated serial numbers in an illegal ghost gun manufacturing operation that left weapons easily accessible to a young child. As technology evolves, it's important that consumer protections change with it to ensure the safety of our communities.

2. 3D Printed Firearms and the Ghost Gun Crisis

In the United States, traditional firearms are generally produced by licensed manufacturers and sold through licensed gun dealers. Federal law requires all guns manufactured in the United States and imported from abroad to have serial numbers, typically displayed on the back of the frame.¹ By contrast, “ghost guns” are manufactured in parts – designated “firearm precursor parts” under California law – which can be acquired without a background check and can easily be assembled by an unlicensed buyer.² Ghost guns are designed to avoid regulation by being sold in DIY kits containing their component parts, which, individually, are unregulated, but when assembled form a fully functional firearm. Ghost guns are also unserialized, meaning they do not possess any identifying marks that allow them to be traced by law enforcement.

Advances in technology have led to an increasing number of ghost guns being produced via consumer-level computer operated machines such as 3D printers and CNC milling machines. CNC milling machines are machines capable of automatically processing raw materials such as metal, plastic, wood or composite into digitally modeled shapes based solely on programmed instructions, without the need for a human operator. CNC milling machines use subtractive manufacturing: essentially breaking down a raw material until the desired product is created. 3D printers, by contrast, use an additive manufacturing process which lays down consecutive layers of material to generate various products. 3D printers have grown significantly in popularity in recent years - the first 3D-printed gun, the “Liberator,” was produced in 2013, and since then its

¹ See 27 CFR § 479.102

² Under Pen. Code, § 16532, “firearm precursor part” means “any forging, casting, printing, extrusion, machined body or similar article that has reached a stage in manufacture where it may readily be completed, assembled or converted to be used as the frame or receiver of a functional firearm, or that is marketed or sold to the public to become or be used as the frame or receiver of a functional firearm once completed, assembled or converted.”

design has become widely available online.³ Since 2013, however, the quality and design of 3D printed firearms have improved significantly, and the process has become more widespread. For instance, a company known as “Ghost Gunner” is currently marketing its latest CNC milling machine, the Ghost Gunner 3-S, which costs only \$3,250 and comes programmed to complete several fully functional assault-style weapons.⁴

In recent years, advocates for the 3-D printing of firearms have coalesced into the 3d-printed gun rights movement, also known as 3D2A (referring to the Second Amendment), which generally believes in unfettered freedom to print firearms and has flourished in online communities.⁵ 3D2A generally uses online platforms, such as “the Gatalog” and “DEFCAD,” to host and distribute digital firearm blueprints, which can often be downloaded and integrated into the software for 3D printers.⁶ Some 3D2A designers have even gone as far as to mock gun reform advocacy groups – including one of this bill’s co-sponsors – with the names and logos associated with their designs. In 2021, Everytown for Gun Safety sued DEFCAD and the Gatalog after one designer named a firearm magazine “the Everytown Mag” and another designer used the Everytown logo on a firearm. The lawsuit eventually settled, with the defendants agreeing to remove the infringing files from both platforms, but the lawsuit revealed several details about the figures involved, collaboration within the movement, and tensions between different camps of 3D2A.⁷

In October 2024, the DOJ’s Office of Gun Violence Prevention released a report examining the impact of ghost guns in California, including statistics on ghost guns recovered by law enforcement agencies. Notably, from 2013 to 2021, the number of ghost guns recovered by law enforcement from suspected criminal activity increased dramatically every year, from just three in 2013 (.01% of all reported crime guns) to nearly 11,000 in 2021 (18.5% of reported crime guns).⁸ Between 2019 and 2021 in particular, amid gun violence spikes nationwide, law enforcement agencies reported a 30% increase in the total number of recovered crime guns, with a staggering 592% increase in unserialized ghost guns.⁹ Since the number of recovered ghost guns peaked in late 2021 into early 2022, however, the state has seen a consistent decline in that statistic – from 2021 to 2023, law enforcement agencies reported a 23% overall decrease in the number of recovered ghost guns, and the fourth quarter of 2023 (the most recent year analyzed by the report) saw the lowest number of recovered ghost guns since early 2020.¹⁰

Nevertheless, the author cites several recent incidents involving seizures of ghost guns, including 3D printed firearms, highlighting the need for additional reform. These incidents include the

³ “The Liberator – the world’s first 3d printed handgun.” <https://www.vam.ac.uk/articles/the-liberator-the-worlds-first-3d-printed-handgun>

⁴ <https://ghostgunner.net>

⁵ “Radical gun rights movement “3D2A” and 3D printers spark rapid rise in ghost guns, NYPD say.” *CBS News*. 9 December 2025. <https://www.cbsnews.com/news/3d2a-group-3d-printers-spark-rapid-rise-in-ghost-guns-nypd-says/>

⁶ DEFCAD boasts the “world’s largest open source repo for 3D2A files and small arms technical data, established by Defense Distributed in 2012.” <https://defcad.com> ; “Lawsuits, Rivalries, and Trolls: Examining the Behaviour of the 3D-Printed Gun Movement.” *Global Network on Extremism and Technology*. 10 September 2024. <https://gnet-research.org/2024/09/10/lawsuits-rivalries-and-trolls-examining-the-behaviour-of-the-3d-printed-gun-movement/>

⁷ *Ibid*. “Gun-control group Everytown settles with ‘ghost gun’ sites over logo.” *Reuters*. 3 March 2023.

<https://www.reuters.com/legal/litigation/gun-control-group-everytown-settles-with-ghost-gun-sites-over-logo-2023-03-03/>

⁸ “California’s Fight Against The Ghost Gun Crisis: Progress and New Challenges.” *California Department of Justice Office of Gun Violence Prevention*. October 2024, at p. 4. <https://oag.ca.gov/system/files/media/ogvp-report-ghost-guns.pdf> A “crime gun” is a firearm that was recovered by a law enforcement agency after it was (1) used in a crime, (2) suspected to have been used in a crime, or (3) illegally possessed.

⁹ *Ibid*.

¹⁰ *Ibid*, at pp. 5-6.

seizure of over 165 guns and 3D printing equipment from a single manufacturer in Santa Rosa, a previously convicted gun trafficker caught with a 3D printed assault rifle, ghost gun parts and a firearm printing guide in San Bernardino County, and the arrest of a San Jose teenager with two 3D weapon printers and 27 finished or near-finished 3D printed guns in his bedroom¹¹

3. Relevant Federal and State Law Regarding Ghost Guns and Firearm Manufacturing

Existing federal law requires all federally licensed firearms dealers (FFLs) to conduct background checks on prospective firearm purchasers.¹² In order to process those background checks, the Federal Bureau of Investigation (FBI) created the National Instant Criminal Background Check System (NICS), a digital catalog of records integrating three separate national databases which FFLs can query when processing the purchase of a firearm.¹³ Existing federal law also requires FFLs to “identify by means of a serial number engraved or cast on the receiver or frame of the weapon” each firearm manufactured in, or imported into, the United States.¹⁴

These requirements, part of the Gun Control Act of 1968 (GCA), apply exclusively to “firearms,” a term defined broadly under federal law to include “(A) any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive; (B) the frame or receiver of any such weapon; (C) any firearm muffler or firearm silencer; or (D) any destructive device.”¹⁵ However, the definitions and regulations set forth in the GCA have not kept pace with advances in gun manufacturing technology, rendering many privately manufactured firearms (PMFs) not subject to these serialization and background check requirements. Consequently, in April 2022 the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) adopted Final Rule 2021R-05F, which, among other provisions, revised the definition of “firearm” under the GCA to include parts kits that can be readily converted into a fully assembled firearm, and expanded the definition of “frame or receiver” to include a partially complete, disassembled, or nonfunctional frame or receiver – including a frame or receiver parts kit – that is designed to or may readily be turned into a functioning frame or receiver. The rule also required FFLs that have, or take into inventory, any PMFs (including kit-built firearms and 3D printed firearms), to serialize the firearms.¹⁶ However, it should be noted that the rule does not restrict a person’s ability to make a PMF if they are otherwise eligible to purchase and possess firearms, and does not prevent an unlicensed person from selling a PMF without a background check.¹⁷ Critically, Final Rule 2021R-05F was recently upheld as consistent with the GCA by the United States Supreme Court in *Bondi v. VanDerStok* (2025) 604 U.S. 458.

¹¹ “Santa Rosa police seize over 165 firearms, arrest suspected ghost gun manufacturer.” *CBS News*. 11 February 2026. <https://www.cbsnews.com/sanfrancisco/news/santa-rosa-167-guns-seized-cloverdale-suspected-ghost-gun-manufacturer-arrested/> ; “3D-Printed Firearm Recovered After Man with a Gun Call in Lucerne Valley, Two Men Arrested.” *Victor Valley News Group*. 17 February 2026. <https://www.vvng.com/3d-printed-firearm-recovered-after-man-with-a-gun-call-in-lucerne-valley-two-men-arrested/> ; “DA task force seizes ghost gun arsenal from San Jose teen.” *Santa Clara County District Attorneys Office*. 26 February 2026. <https://da.santaclaracounty.gov/da-task-force-seizes-ghost-gun-arsenal-san-jose-teen>

¹² 18 U.S.C. § 922, subd. (t).

¹³ For more information on NICS, see: <https://www.fbi.gov/how-we-can-help-you/more-fbi-services-and-information/nics>

¹⁴ 18 U.S.C. §923, subd. (i).

¹⁵ 18 U.S.C. § 921, subd. (a)(3).

¹⁶ The rule is codified at 27 CFR, Parts 447, 478, and 479.

¹⁷ “Ghost Guns.” Giffords Law Center to Prevent Gun Violence. https://giffords.org/lawcenter/gun-laws/policy-areas/hardware-ammunition/ghost-guns/#footnote_23_565; Though not critical to the analysis of this bill, it should

In order to address California's ghost gun epidemic, the Legislature passed AB 1621 (Gipson) Chapter 76, Statutes of 2022, which enacted a host of reforms related to the regulation of firearm "precursor parts," which, as mentioned above, are components that may be readily convertible into usable firearms, as well as to the manufacture and assembly of firearms. Generally, AB 1621 rendered the sale, transfer and manufacture of both completed and unfinished frames and receivers subject to the same rules as fully assembled firearms, meaning that they generally must be sold by or through a licensed firearm dealer.¹⁸ AB 1621 also enacted a prohibition against the knowing possession of any firearm that does not have a valid state or federal serial number or mark of identification.¹⁹ Further, AB 1621 prohibited the sale or transfer of manufactured or assembled firearms by entities that are not federally licensed and prohibited any person or entity from knowingly manufacturing or assembly, or aiding and abetting the manufacture or assembly of a firearm that is not properly serialized.²⁰ The measure also established several provisions of law limiting the acquisition, possession, purchase and use of CNC milling machines that have the sole or primary function of manufacturing firearms by any entity except for a state licensed firearms manufacturer or importer.²¹ In 2023, AB 1089 (Gipson), Chapter 243, Statutes of 2023, extended the manufacturing and assembly limitations enacted by AB 1621 to three-dimensional printers.²²

Last year, the Legislature passed AB 1263 (Gipson), Chapter 636, Statutes of 2025, which, among other things, made it unlawful to knowingly or willfully cause another person to engage in the unlawful manufacture of firearms, and to knowingly or willfully aid, abet, promote or facilitate the unlawful manufacture of firearms. To effectuate this prohibition, the bill specified various conduct prohibited under existing law that constitutes the definition of the "unlawful manufacture of firearms," such as the manufacture of firearms by a minor, the manufacture of four or more firearms by an unlicensed party, the manufacture of any firearm using a 3D printer or CNC milling machine, and the manufacture of any number of prohibited weapons and firearm devices.²³

4. Effect of This Bill

This bill seeks to address the sharp rise in 3D-printed ghost guns by establishing a rigorous regulatory framework applying to all 3D printers sold or leased in California which would require all such 3D printers to come factory-equipped with software that automatically detects and prevents the printing of firearms and illegal firearm components such as firearm precursor parts and machinegun conversion devices.²⁴ The bill achieves this via provisions that generally fall into two categories: 1) the development and publication by DOJ of "performance standards" for both 3D printer firearm blueprint detection algorithms and software controls processes, and 2) the creation of a list by DOJ of all makes and models of 3D printers whose manufacturers

be noted that Final Rule 2021R-05F was recently upheld by the Supreme Court in *Bondi v. VanDerStok* (2025) 604 U.S. ___, a ruling handed down just last month.

¹⁸ Pen. Code, § 30400.

¹⁹ Pen. Code, § 23920(b). A similar prohibition is operative in existing law in PC § 23920(a).

²⁰ Pen. Code, § 29180(d), (f).

²¹ Pen. Code, § 29185.

²² *Ibid.*

²³ Pen. Code, § 29186.

²⁴ Pursuant to Pen. Code, § 17015, a "pistol converter" is any device or instrument that when installed in or attached to the rear of the slide of a semiautomatic pistol, replaces the backplate, and interferes with the trigger mechanism and thereby enables the pistol to shoot automatically more than one shot by a single function of the trigger, and includes a device manufactured using a 3D printer.

have submitted documentation to DOJ attesting that they have installed so-called “firearm blocking technology,” as required by the bill.²⁵ The bill prohibits the sale or transfer of any 3D printer in California that does not have such technology installed *and* does not appear on the DOJ’s list of approved printers (both requirements must be satisfied), a violation of which can be enforced civilly by a person who has suffered harm as a result of a violation or the Attorney General, a county counsel or city attorney. However, the bill includes exemptions for printers sold to a state-licensed firearm manufacturer, to law enforcement agencies, to aerospace, biomedical, engineering and other industries for commercial uses, for certain entertainment and propmaking uses, and for those purchased prior to the effective date of the prohibition. Of particular relevance to this Committee, the bill includes a misdemeanor criminal penalty for disabling firearm blocking technology or transferring a 3D printer that has been modified, which will be discussed in greater detail below.

This is a complex measure that includes a multitude of highly technical requirements, most of which must be met by DOJ on a very aggressive timeline. Many of the bill’s provisions raise questions that the author and Committee may wish to consider. Chiefly, 3D-printing advocates argue that this bill threatens innovation in the field of 3D printing, as well as the free expression and privacy rights of users, by criminalizing “open-source” technology and burdening consumer choice with a burdensome bureaucratic process.²⁶ Committee staff were unable to identify any examples of so-called “performance standards” for firearm blueprint detection algorithms or software controls processes, but as with any new technology, despite the granularity and accuracy with which such software is able to discern prohibited vs. permissible print jobs, the Committee should be cognizant that there will likely be some number of both false positives (i.e. preventing a job that is not intended to produce a firearm or firearm parts) and false negatives (allowing a job that produces a firearm or firearm part).

Additionally, regarding the performance standards required to be published by DOJ, the bill permits DOJ to adopt any set of performance standards created by a non-governmental entity, including ASTM International.²⁷ DOJ must publish these standards by September 1, 2028, roughly 1 year after the bill is signed by the Governor, should it be. However, it is unclear whether DOJ possesses the technical capacity to develop and publish such standards internally, or even determine whether those developed by ASTM International, for instance, comply with the requirements of the bill. Moreover, information provided to Committee staff indicates that ASTM International will not publish the relevant standards until a few months prior to the September 2028 deadline, leaving DOJ even less time to make this determination. Accordingly, the author and Committee may wish to extend this implementation timeline to ensure that DOJ has adequate time to publish thorough and accurate performance standards.

As mentioned previously, the bill includes misdemeanor penalties for what appear to be two distinct crimes. The conduct described is set forth in a single provision, but the author and

²⁵ The bill defines “firearm blocking technology,” as hardware, firmware, or other integrated technological measures capable of ensuring a three-dimensional printer will not proceed to any print job unless the underlying three-dimensional printing file has been evaluated by a firearms blueprints detection algorithm and determined not to be a printing file that would produce a firearm or illegal firearm parts.

²⁶ “The Dangers of California’s Legislation to Censor 3D Printing.” *Electronic Frontier Foundation*. 13 April 2026. <https://www.eff.org/deeplinks/2026/04/dangers-californias-legislation-censor-3d-printing>.

²⁷ ASTM International is a standards organization that develops and publishes consensus technical international standards for a wide range of materials, products, systems and services, and additionally operates several global initiatives advancing additive manufacturing. See <https://www.astm.org/about>

Committee may wish to amend the bill to separate it into different provisions that each apply to one course of conduct (per the *italicized* and **bolded** text below):

It is unlawful to knowingly disable, deactivate, uninstall, or otherwise circumvent any firearm blocking technology installed in a three-dimensional printer with intent to manufacture firearms or to **knowingly distribute, sell, or transfer for consideration in California one or more modified versions of a three-dimensional printer identified on the Department of Justice's list of three-dimensional printers eligible for sale in California [...]** with the intent to **facilitate the unlawful manufacture of firearms [...]**

This criminal provision also raises certain questions that the Committee should consider, such as what conduct is intended to be included in the term “circumvent” in the provision above. Would any modification of a 3D printer qualify as “circumvention” of firearm blocking technology? Given, it is unlikely that this provision could inadvertently sweep up hobbyists, innovators and other non-criminal users given the requirement of a specific intent to manufacture firearms. Additionally, the latter portion of this penalty appears to apply to *any* modified 3D printer, not just printers that have had their firearm blocking technology circumvented, though again, given the intent requirement, the breadth of such application is unlikely to sweep up users who modify a printer for non-criminal purposes.

5. Double Referral

This bill passed out of the Senate Judiciary Committee on June 23rd. For a more in-depth discussion of the bill's provisions not within the jurisdiction of this Committee, see the analysis prepared by the Senate Judiciary Committee.

6. Argument in Support

According to the California Police Chiefs Association:

AB 2047 addresses one of the fastest-growing threats to California's firearm regulatory framework: the increasing availability of three-dimensional printed firearms and firearm components that can be manufactured outside traditional regulatory channels. Advances in consumer-grade three-dimensional printing technology have made it easier than ever for individuals to manufacture unserialized firearms and firearm parts, often referred to as "ghost guns," that are difficult to trace and frequently fall outside existing safeguards designed to prevent prohibited persons from obtaining weapons.

Law enforcement agencies throughout California continue to encounter illegally manufactured firearms in criminal investigations, gang activity, prohibited possessor cases, and violent crime incidents. The rapid evolution of three-dimensional printing technology has created new challenges for public safety, allowing individuals to produce firearm components using commercially available equipment that was not originally designed with these risks in mind. As technology evolves, California's public safety laws must evolve as well. AB 2047 takes a proactive approach by requiring manufacturers of three-dimensional printers sold in California to equip those printers with certified firearm blueprint detection and blocking technology designed to prevent the manufacture of

firearms and illegal firearm parts. The bill directs the Department of Justice to establish performance standards, certify qualifying detection technologies, and create a compliance framework for manufacturers. By addressing the issue at the point of manufacture, the bill seeks to prevent unlawful firearm production before it occurs rather than relying solely on criminal enforcement after a weapon has already been produced and potentially used in a crime.

Importantly, AB 2047 does not prohibit lawful ownership or use of three-dimensional printers. Nor does it restrict the many legitimate educational, commercial, industrial, and creative applications of additive manufacturing technology. Instead, the bill establishes reasonable safeguards intended to reduce the ability of individuals to utilize these devices to manufacture firearms and firearm components unlawfully. The measure recognizes both the tremendous benefits of emerging technology and the need to address foreseeable public safety risks associated with its misuse. The bill also strengthens accountability by prohibiting the intentional circumvention, disabling, or modification of required firearm blocking technology when done for the purpose of manufacturing firearms. These provisions help ensure that the technological safeguards established by the bill remain effective and cannot be easily defeated by those seeking to evade California law. As California continues to confront the growing challenge posed by unserialized firearms and emerging methods of firearm manufacturing, AB 2047 represents a thoughtful and forward looking response. By leveraging existing technology to prevent unlawful firearm production, the bill will help protect communities, support law enforcement investigations, and strengthen California's existing efforts to combat ghost guns and illegal firearm trafficking.

7. Argument in Opposition

According to a coalition of technology and civil rights groups:

This approach is not only ineffective and easily bypassed, but it also has several harmful impacts on consumer choice, privacy, and free expression. Before speaking on our objections, we note that unlicensed firearm production and sale, including the production of “ghost guns,” is already illegal in California, as well as many other states. Therefore, the harms this bill wishes to address are already covered by existing law.

AB 2047 would require 3D printers to have a pre-approved algorithm that can “print block” a supposed firearm-related print job by comparing it to a pre-approved list of banned print jobs. While this may appear sound in theory, in practice it will be ineffective because the algorithms will be over- and underinclusive. They will be *over-inclusive* because these algorithms may mistake simple geometric shapes or innocuous film props and toys as firearm parts, thereby harming everyday creators. They will also be *under-inclusive* by the very nature of most 3D printers, which can be thought of as hot glue guns on a motion platform that follow basic instructions to build a model layer by layer. It takes very little skill for someone to tweak a model or the instructions so that they deviate enough from an existing model to evade detection by any print-blocking algorithms. Even if prints assumed to represent firearm parts are

blocked, there are still a number of ways to use conventional means to physically reshape or combine printed pieces into firearm parts after printing. It would likewise take little skill to widely disseminate these new print designs, instructions, or methodologies. The same applies to bypassing the algorithms all together through device modifications or building DIY printers with commonly available components. In practice, then, this bill sets up a cat-and-mouse game for detection that defeats its very purpose.

On the other hand, what AB 2047 will demonstrably do is create a system in which every 3D print job is scanned to determine if it is acceptable, implicating the privacy of all 3D printer users while also laying the groundwork for future censorship. Due to the hardware limitations of 3D printers, this algorithmic scanning cannot be handled locally on-device. The only feasible way to compare a print job to an updated database of prohibited files would be to give manufacturers access to prints through cloud-based or cloud enabled first party software. That means that AB 2047 mandates the creation of a system in which every print job an individual runs, whether that be for a medical device or protest equipment, becomes susceptible to surveillance by the vendor of their 3D printer.

This mass surveillance is worrying on its own, but the harms don't end there: Once the print-blocking infrastructure is in place, it can be broadened and abused. By expanding the use of this proprietary code, (and because altering this code is criminalized), vendors can lock consumers into predatory practices similar to what is seen with Digital Rights Management (DRM) technologies—which attempt to control what you can and can't do with the media and hardware you've purchased, and bar consumers from ever truly owning their devices. This framework allows governments and corporations alike to exercise granular control over 3D printing—potentially censoring socially or politically sensitive 3D-printed designs, or enabling abusive enforcement of patents and copyrights that does not account for defenses and legal safeguards like fair use.

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