

*POLICY BRIEF*

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# GHOST GUNS

*A Haunting New Reality*

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SUNY  
Institute of Government

Regional  
Gun Violence  
Research  
Consortium

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## THIS ANALYSIS DEFINES “GHOST GUNS” AS:

Ghost guns are untraceable firearms that do not have the unique serial numbers mandated by the Gun Control Act of 1968 for all domestic and imported firearms. Without a serial number, law enforcement agencies are typically unable to identify the manufacturer, retailer, or owner of the firearm if it is recovered. Thus, the elusive moniker of “ghost guns.” There are several different types of ghost guns, but the two most frequently discussed are 3D-printed guns and guns made from “80 percent lowers.”

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### DISCLAIMER

This report does not include the names or websites of those selling ghost gun kits or components.

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### ABOUT THE AUTHOR

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# GHOST GUNS

## *A Haunting New Reality*

On April 7, 2021, President Biden announced multiple executive actions on gun violence with several specifically targeted at addressing the nation's ghost gun problem.<sup>1</sup> But what exactly are ghost guns, what challenges do they pose, and how would these actions help find a solution? Ghost guns are homemade firearms that cannot be traced by law enforcement. They are an emerging problem across the United States, being used in crimes and recovered by law enforcement at a rate that continues to climb with each passing year. In 2020, law enforcement in New York State recovered 220 ghost guns compared to 72 in 2019 and only 38 in 2018, a 479 percent increase statewide over the 3 year period, according to data from the New York State Intelligence Center.<sup>2</sup> Similarly, the Baltimore Police Department reported a 400 percent increase in ghost gun recoveries from 2019 to 2020.<sup>3</sup> In Washington, DC, the number of ghost gun recoveries jumped from just 3 in 2017 to 282 in 2020.<sup>4</sup> While these numbers may represent a relatively low percentage of total gun recoveries, ghost guns pose a unique and rapidly growing challenge. Law enforcement agencies are unable to trace and therefore prohibit the flow of ghost guns. While the federal government considers regulations, state and local lawmakers are exploring and enacting laws and policies designed to monitor and prevent ghost guns from falling into the hands of people who are prohibited from purchasing or possessing firearms.

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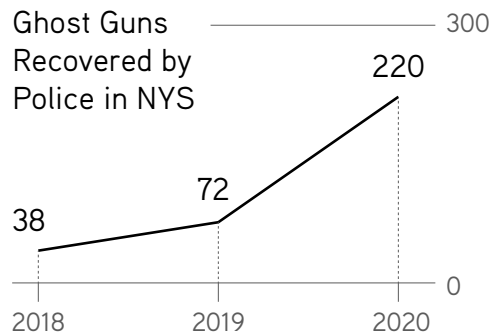
# GHOST GUNS

Ghost guns are homemade firearms that do not have a serial number and cannot be traced by law enforcement. There are several different types of ghost guns, but the two most frequently discussed are 3D-printed guns and guns made from “80 percent lowers.”

## 80 PERCENT LOWERS

## 3D-PRINTED GUNS

80% lowers are the unfinished lower halves of firearms, often bought as part of a kit, which can be modified and assembled into a fully-functioning gun by a purchaser. In most states, **background checks are not required for purchase.**



3D-printed guns are made using commercially available 3D-printers with building instructions and computer code found online.

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# of 3D-printed ghost guns recovered in 2020 in New York State.

In early April 2021, President Biden called upon the Department of Justice to **issue a proposed rule** within 30 days to stop the spread of ghost guns.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) could **issue a new classification letter** to manufacturers of 80 percent lowers, defining the products as firearms.

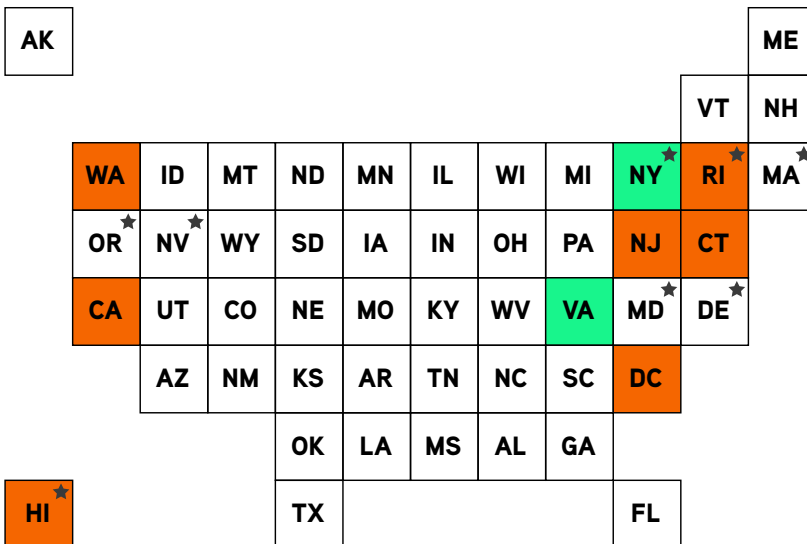
Previous attempts at **federal legislation on ghost guns have not gained much traction.** Three bills introduced in the 116th Congress (2019-20) failed to make it out of committee.

## POLICY RESPONSES

FEDERAL

What is and can be done at the federal and state level to address this emerging issue?

STATE

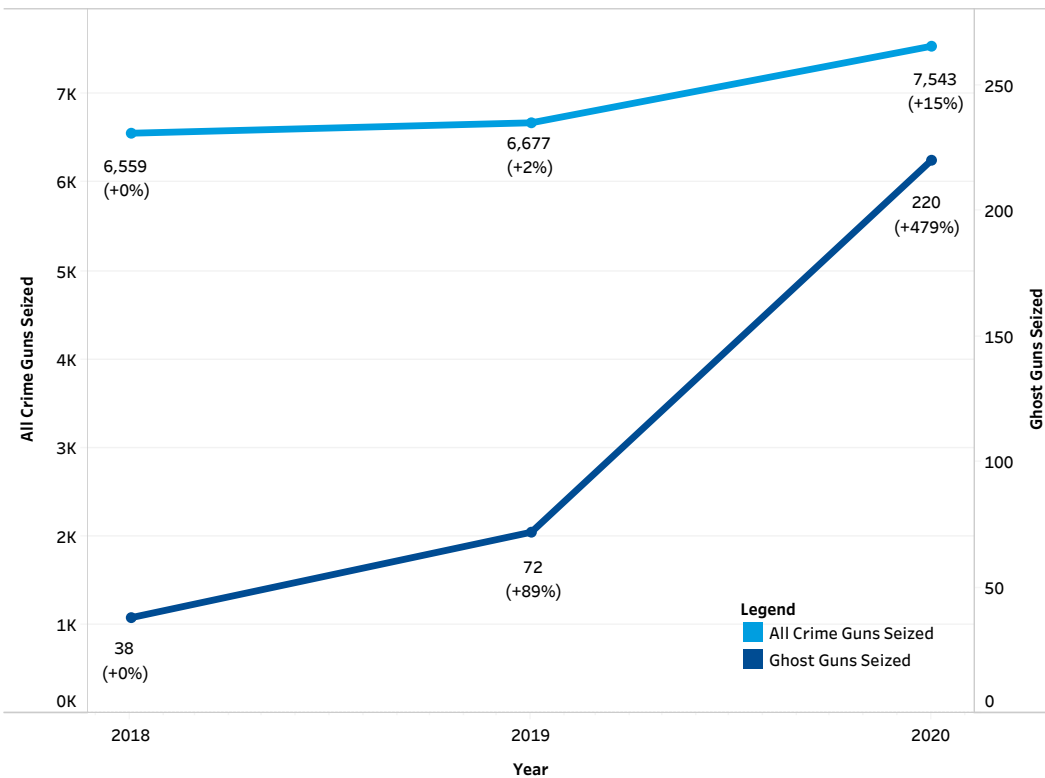


As it stands, eight states and the District of Columbia have **enacted laws** regulating ghost guns to varying degrees.

In 2021, eight state legislatures have **introduced ghost guns legislation.**

- REGULATE 3D-PRINTED GUNS
- REGULATE 3D-PRINTED GUNS & 80% LOWERS
- ★ GHOST GUN BILL INTRODUCED IN 2021

FIGURE 1. All Crime Guns Seized v. Ghost Guns Seized in New York



SOURCE: New York State Intelligence Center supplied internal administrative data.

## What Are Ghost Guns?

The Gun Control Act of 1968 (GCA) requires that all domestic and imported firearms be engraved with a unique serial number.<sup>5</sup> Serial numbers allow law enforcement to track the specific firearm’s movement throughout the different stages of purchase, transfer, and possession. When a firearm is recovered in a crime, law enforcement will run a “trace” on the gun’s unique serial number to find out what company made the gun, which vendor sold the gun, who first bought the gun, and if the gun was subsequently transferred.<sup>6</sup> Ghost guns, however, are untraceable as they do not have serial numbers. Without a serial number, law enforcement agencies are typically unable to identify the manufacturer, retailer, or owner of the firearm if it is recovered. Thus, the elusive moniker of “ghost guns.”

There are several different types of ghost guns, but the two most frequently discussed are 3D-printed guns and guns made from “80 percent lowers.” To differentiate, 3D-printed guns are firearms made using commercially available 3D printers with building instructions and computer code found online.<sup>7</sup> 80 percent lowers, components used to make another subset of homemade firearms, become almost identical to firearms sold through federally-licensed gun dealers.<sup>8</sup> To build their own nonserialized firearms, consumers may purchase unfinished lower halves of a firearm, either the unfinished frame of a handgun or the unfinished receiver of a long gun. These parts,

called 80 percent lowers, are not considered a firearm by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF)—the federal law enforcement agency in charge of enforcing the GCA and the regulatory authority on federal firearm statutes. Therefore, these components are not required to be marked with a unique serial number. However, with the remaining firearm pieces, some directions, and a few power tools—the purchaser can build a fully functioning gun in their home.

Whereas standard firearms are produced by licensed manufacturers and sold through licensed gun dealers, guns made from 80 percent lowers can be produced in the home by an unlicensed individual using parts bought legally. In a day's work, an 80 percent lower for an AR-15 that was previously not considered a firearm has become an untraceable, military-style rifle available to any individual despite this person's ability to pass a background check or the fact the weapon is banned in several states.<sup>9</sup> The process is similar for someone assembling an 80 percent lower for a handgun, a weapon that is cheaper to make, easier to conceal, and used more frequently than rifles.<sup>10</sup> According to the New York State Intelligence Center, among all crime guns seized by law enforcement in New York since 2001, 68 percent were handguns.

Commonly, 3D-printed guns are grouped with guns made from 80 percent lowers when referring to ghost guns because both are untraceable, novel, and can be made in the home. However, what distinguishes 80 percent lowers is the frequency with which they are used in crimes and the integrity of the firearm itself. When using currently available technology, 3D-printed guns are generally flimsy and unreliable. They often break after just a few rounds are fired.<sup>11</sup> That is not to say these guns aren't deadly and that their design will not improve, as the technology develops. However, at present 80 percent lowers made of metal and polymers are much sturdier and mimic standard firearms more closely. As such, they appear to be the preferred option in criminal activity.<sup>12</sup> The New York State Intelligence Center found that zero of 220 recovered ghost guns in 2020 were 3D-printed guns. Consequently, given their predominance, this report will specifically focus on firearms made from 80 percent lowers.



Images from the ATF website of some 80 percent lowers that can be transformed into fully-functioning firearms without serial numbers, <https://www.atf.gov/firearms/ga/are-%E2%80%9C80%E2%80%9D-or-%E2%80%9Cunfinished%E2%80%9D-receivers-illegal>.

## What Do We Know About the Ghost Gun Marketplace?

Currently, there are roughly 80 dealers in the US online market selling 80 percent lowers.<sup>13</sup> Most of these websites are very straightforward and make purchasing the pieces quick and easy. In the past year, ghost gun purchases have grown drastically in popularity with over a dozen distributors reporting shipping delays since March 2020 because of overwhelming demand. The growth coincided with the beginning of pandemic lockdowns in the US,<sup>14</sup> as well as a jump in firearm sales writ large.<sup>15</sup>

Online retailers walk the user through the legal landscape of ghost guns, detailing current regulations and some state laws. They also describe how simple the process of building these firearms are, as well as how cost effective it is compared with buying a firearm from a dealer.<sup>16</sup> The pricing on some of these kits is roughly half as expensive as an assembled firearm at retail price. To this point, some convicted of related felonies have bragged that they make a 300 percent profit selling ghost guns to others after assembling the guns themselves.<sup>17</sup>

Because they are not considered firearms, there is no background check required when purchasing the parts used to make ghost guns, another feature that online sellers tout in their marketing. Even someone with a history of gun crimes can legally obtain these parts. In addition, there are no sales records for use in tracking down past buyers, records that federally-licensed gun dealers are required to keep for 20 years.<sup>18</sup> Ghost guns leave no trail for police to follow when used in a crime or an act of violence. At this point, it is hard to determine whether the lack of background checks, the comparatively lower cost, or another reason is the main selling point for ghost guns.

## How Many Ghost Guns Are Being Used?

Traditional serialized firearms are tracked from the moment of manufacture. This means that regulators and law enforcement agencies know how many guns are in circulation. Currently the only way to identify the existence of a ghost gun is when it is recovered by law enforcement agents in the investigation of a crime. However, with no tracking mechanism, the ATF and other law enforcement agencies do not have complete or timely information on the growing prevalence of ghost guns.

In 2019, it was reported that 30 percent of guns recovered by the ATF in California crimes were ghost guns.<sup>19</sup> Ghost guns have been used in fatal shootings in Washington, DC,<sup>20</sup> Stockton, CA,<sup>21</sup> and Santa Clarita, CA,<sup>22</sup> to name a few. A raid in Arizona found a man with 22 homemade firearms and 22,000 rounds of ammunition.<sup>23</sup> There is limited data available about ghost guns and their usage, but New York can offer a more detailed picture of the problem on the ground.

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In New York, the share of ghost guns recovered in crime has dramatically increased in the past three years. Based on combined data from the Criminal Gun Clearinghouse<sup>24</sup> and the New York City Police Department (NYPD), compiled by the New York State Intelligence Center, the total number of seized crime guns, both legal and illegal, has increased from 6,559 in 2018 to 7,543 in 2020, or 15 percent. During that time, ghost gun recoveries increased by 479 percent. In 2020, ghost guns represented 2.9 percent of guns seized in New York. This is a significant jump compared to 2018, when they accounted for 0.6 percent. It is important to note, as previously stated, that New York's statewide data included zero reports of 3D-printed guns recovered in crimes; all the guns recovered were made using 80 percent lowers.

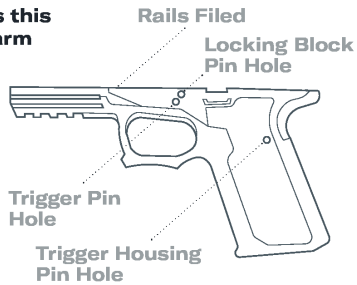
Interestingly, the percentage of total ghost gun recoveries that occurred outside of New York City has increased each year, showing that this is a statewide issue. In 2019, 67 percent of the state's ghost gun recoveries (48 of 72) occurred in New York City, compared to 51 percent of recoveries in 2020 (112 of 220). Upstate metro areas like Syracuse have recovered several dozen ghost guns in crimes over the past few years,<sup>25</sup> with as many as 32 in the broader Onondaga County area in 2020. While this data is compelling, there is no way to truly quantify the prevalence of ghost guns and there is plenty about their usage that remains unknown to practitioners and researchers.<sup>26</sup>

## **How Are Ghost Guns Currently Regulated?**

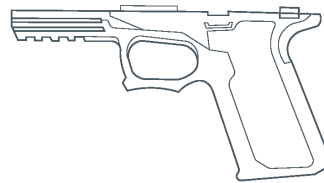
To date, the ATF has determined that 80 percent lowers are not firearms and, therefore, are not subject to regulation under the GCA. The GCA defines a firearm as "any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive" as well as "the frame or receiver of any such weapon."<sup>27</sup> The latter part of the definition is what has drawn criticism. The ATF does not deem 80 percent lowers as firearms because they are unfinished frames and receivers. These components are missing a few holes that can be made using commercially available tools in the home. The ATF has long held that these 80 percent lowers have not reached the "stage of manufacture" necessary to be classified under the GCA as firearms.<sup>28</sup> Were these ghost guns to be defined as firearms, they would need to be serialized and sold through licensed dealers making their tracing much easier.



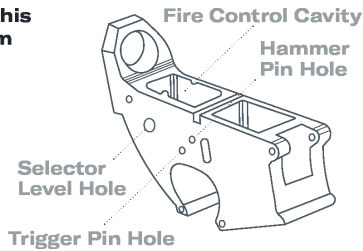
**ATF says this is a firearm**



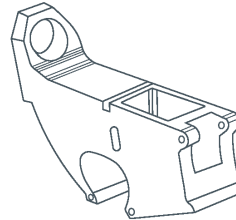
**ATF says this is not a firearm**



**ATF says this is a firearm**



**ATF says this is not a firearm**



*This infographic from Everytown for Gun Safety demonstrates the minimal work needed to transform an unfinished frame or receiver into one that is ready for use. It also shows why the ATF's interpretation of the Gun Control Act has drawn the ire of advocates; the differences between the two frames are almost unnoticeable, <https://www.everytown.org/wp-content/uploads/2020/06/Ghost-Guns-1-Page-Web-graphics-032020A-03-2.png>.*

The GCA, and more specifically the provisions that the ATF uses to interpret 80 percent lowers, is the only federal law currently on the books that could limit the purchase, transfer, and possession of ghost guns.

As it stands, eight states and the District of Columbia enacted laws regulating ghost guns to varying degrees. The laws in California,<sup>29</sup> Connecticut,<sup>30</sup> DC,<sup>31</sup> Hawaii,<sup>32</sup> New Jersey,<sup>33</sup> Rhode Island,<sup>34</sup> and Washington<sup>35</sup> are broad and address both firearms made with 80 percent lowers and 3D-printed guns. New York<sup>36</sup> and Virginia<sup>37</sup> have passed laws that exclusively regulate “undetected” firearms like 3D-printed guns that pass unseen through metal-detecting security equipment, excluding 80 percent lowers.

TABLE 1. Existing Ghost Gun Laws by State

Location	Year Enacted	Description	Do 80 Percent Lowers Require Serialization?	Must Buyers or Assemblers Pass a Background Check?	Are There Restrictions on Who Can Sell 80 Percent Lowers?	Is It Illegal to Aid and Abet a Prohibited Person from Assembling an 80 Percent Lower?	Does the Law Regulate 3D-Printed Guns?
California	2016 & 2019	California passed initial legislation in 2016 regulating the possession of ghost guns followed by the 2019 law regulating their sale.	Yes	Yes	Yes	Yes	Yes
Connecticut	2019	Connecticut's law regulates the sale, possession, and transfer of 80 percent lowers and 3D-printed guns.	Yes	Yes	Yes	Yes	Yes
District of Columbia	2020	The District of Columbia's law expressly prohibits the possession, sale, and transfer of ghost guns, with few exceptions for surrendering firearms.	N/A	N/A	N/A	N/A	Yes
Hawaii	2020	The law in Hawaii regulates both 80 percent lowers and 3D-printed guns, placing extensive requirements on dealers.	Yes	Yes	Yes	No	Yes
New Jersey	2018 & 2019	New Jersey's first law, enacted in 2018, prohibited the purchase of any unserialized frames or receivers. Their 2019 law extended those regulations to possession and transfer.	Yes	Yes	Yes	No	Yes
New York	2019	New York's law makes it illegal for any person to possess, manufacture, sell, or transport undetectable firearms, like 3D-printed guns.	No	No	No	No	Yes
Rhode Island	2020	In 2020, Rhode Island enacted a law which bans the manufacture, sale, transfer, purchase, and possession of ghost guns and undetectable firearms.	N/A	N/A	N/A	N/A	Yes
Virginia	2004	Virginia's law exclusively regulates plastic firearms.	No	No	No	No	Yes
Washington	2019	Washington bans the manufacture an untraceable weapon with intent to sell.	N/A	N/A	N/A	Yes	Yes

NOTE: The District of Columbia, Rhode Island, and Washington completely prohibit ghost guns, so some of the questions do not apply. California and New Jersey both passed multiple laws on ghost guns.

Laws in California, Connecticut, the District of Columbia, Hawaii, New Jersey, and Washington explicitly define ghost guns and 80 percent lowers as firearms, allowing for penalties on an unlicensed person who purchases, possesses, or sells them. Most of the laws also require serialization of 80 percent lowers and other firearm components used in making homemade weapons, in addition to allowing solely licensed dealers to sell these components. The introduction of licensed dealers into the transaction would ensure that all sales are recorded and that all buyers must pass a background check. These laws can serve as models for other states hoping to expand on existing law or pass new legislation.

## **What Can Be Done About the Spread of Ghost Guns at the Federal Level?**

The passage of new federal legislation to regulate ghost guns is unlikely to receive 60 votes in the US Senate. Pressure from advocates and legislators alike is mounting for the ATF to issue a new interpretation of the GCA to help control the purchase and possession of ghost guns, as this could be the easiest path to regulation.<sup>38</sup> In March 2021, 18 attorneys general wrote a letter to US Attorney General Merrick Garland urging him to close the regulatory loophole in the ATF's interpretation of the GCA.<sup>39</sup> This letter came just weeks after 12 US Senators wrote to President Biden imploring him to prioritize the appointment of a permanent Director to the ATF, citing the ATF's position on ghost guns as the first action item needed.<sup>40</sup> The position of director had been a political appointment until 2006 when the National Rifle Association successfully lobbied legislators to require a Senate confirmation for the post. The ATF has been without a permanent director since 2015.<sup>41</sup>

On April 7, 2021, President Biden announced several executive actions aimed at addressing gun violence. Most crucially, the president called upon his Department of Justice (DOJ),<sup>42</sup> and by extension the ATF as an agency within the DOJ, to issue a proposed rule within 30 days to stop the spread of ghost guns.<sup>43</sup> This rule would include changing the definition of a firearm to include unfinished frames and receivers. The new rule would thus require that the components be serialized and that buyers pass a background check. He also announced his nomination of David Chipman as ATF director, a long time special agent serving 25 years with the agency.<sup>44</sup> However, his Senate confirmation could be difficult considering his position as senior advisor for Giffords, a gun control advocacy group. For context, only one director has been confirmed in the last 15 years. In addition, ATF will publish an updated study of criminal gun trafficking in the country to include firearms like ghost guns and 3D-printed guns, a long overdue step as the last federal report of this nature was published over 20 years ago. These actions signal strong steps forward in addressing the nation's ghost gun problem.

In addition to the administration's announcement of formal rulemaking on ghost guns,<sup>45</sup> the ATF could concurrently follow another path by issuing a new classification letter to manufacturers of 80 percent lowers, defining the products as firearms.<sup>46</sup> Though not required by law, manufacturers usually seek ATF classification of their product

before they begin selling it. According to an ATF handbook, these classification letters “may generally be relied upon by their recipients as the agency’s official position concerning the status of the firearms under Federal firearms laws.”<sup>47</sup> In the past, the ATF had declared that 80 percent lowers were indeed firearms, a move found in a 1983 classification letter<sup>48</sup> on long guns and a 2004 classification letter on handguns.<sup>49</sup> However, in 2006, the ATF altered course and stopped classifying 80 percent lowers as firearms, citing mechanical specifications instead of how quickly they could be assembled, which was the rationale used previously to categorize them as firearms. In other words, the ATF has changed its position over time and could easily do so again. Senate Majority Leader Chuck Schumer (D-NY) recently called the definitional fix “ridiculously easy.”<sup>50</sup>

Advocacy organizations, like Giffords<sup>51</sup> and Everytown for Gun Safety,<sup>52</sup> have been very active in this space, calling for federal legislation on ghost guns,<sup>53</sup> urging the ATF to reconsider their interpretation of the GCA,<sup>54</sup> as well as filing suit against the ATF and Justice Department<sup>55</sup> following the Santa Clarita shooting in which a ghost gun was used.<sup>56</sup> Similarly, the cities of Syracuse, NY; San Jose, CA; Chicago, IL; and Columbia, SC have sued the ATF and Justice Department for their interpretation of the GCA, though these cases have not yet concluded.<sup>57</sup>

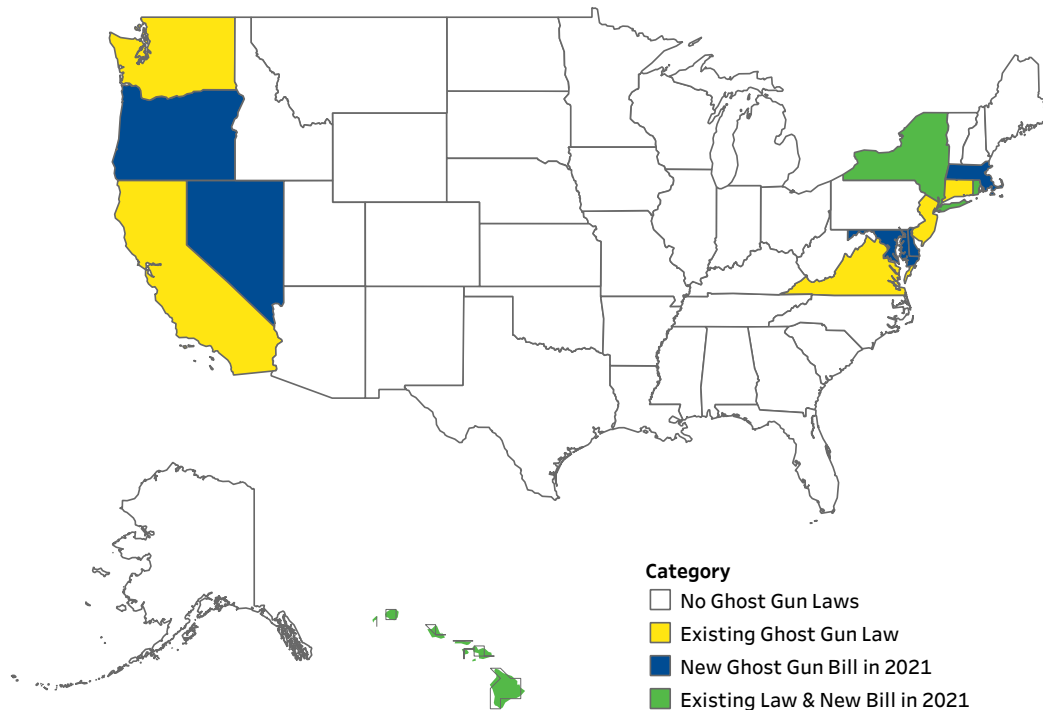
In the past, federal legislation on ghost guns has not gained much traction. Three such bills were introduced in the 116th Congress (2019-20) but did not make it out of committee and were never voted on. Congressman Adriano Espaillat (D-NY) introduced the Ghost Guns Are Guns Act,<sup>58</sup> which would redefine firearms in the GCA to include a provision reading, “any combination of parts designed or intended for use in converting any device into a firearm and from which a firearm may be readily assembled.” Congressman David Cicilline (D-RI) introduced the Untraceable Firearms Act of 2019,<sup>59</sup> going a bit further in expressly prohibiting and penalizing the manufacture, sale, transfer, purchase, or receipt of a ghost gun. Thirdly, Congressman Mike Quigley (D-IL) introduced the Trafficking Reduction And Criminal Enforcement (TRACE) Act,<sup>60</sup> a bill requiring a second serial number to be imprinted on firearms and unfinished frames and receivers only to be read by an infrared light. As of April 2021, no new ghost guns bills have been introduced, nor have the aforementioned bills been reintroduced, in the current federal legislative session, the 117th Congress.

## **What Can Be Done About the Spread of Ghost Guns at the State Level?**

Pending the text and details of the proposed rule from the Department of Justice, federal action would more completely address the issue as these untraceable guns can be trafficked between states with and without laws in place to prevent it. If the rule does not fully address the problem, states must take on the challenge to regulate this issue. Already in 2021, eight state legislatures have introduced ghost guns legislation, including New York. Two different ghost gun bills have passed the New York State Senate and sit in the Codes Committee of the State Assembly. The Scott J. Biegel Unfinished Receiver Act sponsored by Senator Anna Kaplan and Assemblymember

Charles Lavine,<sup>61</sup> and the Jose Webster Untraceable Firearms Act sponsored by Senator Brad Hoylman and Assemblymember Linda Rosenthal.<sup>62</sup> Both passed the full Senate in February of 2021, just as they did in the previous year’s session, while remaining in the Assembly Codes Committee where they did not receive a committee vote.

FIGURE 2. Existing Ghost Gun Laws and New Ghost Gun Bills in the United States



These bills include some similar provisions. Both bills define ghost guns to include 80 percent lowers and criminalize the possession and sale of ghost guns by anyone who is not a licensed gunsmith. Hoylman’s bill extends the definition of a licensed “gunsmith” from people and companies that manufacture and assemble firearms to include essentially anyone who assembles firearm components at home.<sup>63</sup> Gunsmiths in New York must be licensed pursuant to New York State Penal Law Section 400.00, thus expanding the definition of licensed gunsmiths would ensure those assembling ghost guns are licensed.<sup>64</sup> Hoylman’s bill also requires both the serialization of 80 percent lowers and their registration with the Division of the State Police. If passed, these bills could meaningfully reduce the number of ghost guns in New York and subsequently their frequent use in crime.

In a different approach, Pennsylvania Attorney General Josh Shapiro recently reached an agreement with the state's largest gun show promoter, Eagle Arms Productions, to halt the sale of 80 percent lowers at their gun shows.<sup>65</sup> This came as a result of surveillance operations that tracked the sale of 80 percent lowers at one of the gun shows to 10 fully- or partially-functioning firearms recovered in Philadelphia. In addition, Shapiro issued a legal opinion clarifying existing state law to classify 80 percent lowers as firearms.<sup>66</sup> Pennsylvania is not one of the nine states to have introduced state legislation on ghost guns this year but these alternative courses of action could have a large impact on the purchase, transfer, and possession of ghost guns in the state.

## **How Will Governments Deal With Ghost Guns Going Forward?**

Ghost guns are a growing threat. Whether through federal regulation, legislation, or other avenues, action is needed to address this area of concern. Federal action on ghost guns is not nearly as complicated as other firearm issues that require passing bipartisan legislation. The ATF and DOJ can take swift action and amend the definition of "firearm" to include ghost guns, which President Biden has asserted will be in the impending proposed rule.

With doubt as to when Congress will pass other gun violence measures like universal background checks and assault weapon bans, it appears executive action will offer the quickest remedy for the rising problem of ghost guns. At its core, "moving the dial" on ghost guns means treating them as firearms, as President Biden has suggested, and having the DOJ and ATF reinterpret their definitions would be the quickest, easiest path toward preventing these guns from falling into the wrong hands and being used in criminal activity. To supplement the proposed federal action, there are models for state legislation that could fill in the gaps.

The frequency with which ghost guns are used in crime will likely continue to increase given current trends and in the absence of new policies. However, even with new policies, questions will remain. Will these policy solutions be matched by law enforcement efforts? Will 3D-printed guns gain broader use if 80 percent lowers are regulated and improvements in printing technologies? Ghost guns are a product of technology and gaps in regulation. While governments can move to strengthen policy and prevent ghost guns from becoming tools of crime, new technologies are likely to continue presenting new challenges to the existing statutory and regulatory framework for the manufacture, purchase, and possession of firearms. Federal and state governments will have to be ready, willing, and able to respond.

# ENDNOTES

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