

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF ILLINOIS**

CALEB BARNETT, *et al.*,
Plaintiffs,
vs.
KWAME RAOUL, *et al.*,
Defendants.

Case No. 3:23-cv-209-SPM
** designated Lead Case

DANE HARREL, *et al.*,
Plaintiffs,
vs.
KWAME RAOUL, *et al.*,
Defendants.

Case No. 3:23-cv-141-SPM

JEREMY W. LANGLEY, *et al.*,
Plaintiffs,
vs.
BRENDAN KELLY, *et al.*,
Defendants.

Case No. 3:23-cv-192-SPM

FEDERAL FIREARMS
LICENSEES OF ILLINOIS, *et al.*,
Plaintiffs,
vs.
JAY ROBERT "JB" PRITZKER, *et al.*,
Defendants.

Case No. 3:23-cv-215-SPM

STATE DEFENDANTS' PROPOSED FINDINGS OF FACT

TABLE OF CONTENTS

I.	Illinois enacted the Protect Illinois Communities Act after a shooter massacred spectators at a July 4th parade in Highland Park, Illinois.	1
A.	On July 4, 2022, a shooter used an AR-15 rifle and 30-round magazines to kill 7 people and wound 48 others at a parade in Highland Park, Illinois.....	1
B.	Following the massacre at Highland Park’s July 4th parade, Illinois enacted the Protect Illinois Communities Act.	3
II.	Plaintiffs sued seeking an immediate injunction, but the Seventh Circuit has allowed the Act to remain in effect while this litigation proceeds.....	5
III.	The firearms, accessories, and ammunition the Act restricts are predominantly useful in military service and unusually dangerous.....	10
A.	The rifles the Act defines as assault weapons are semiautomatic versions of firearms specifically designed for and employed by the military.....	10
1.	AR- and AK-type rifles originated as firearms designed for military use.....	10
a.	The German army deployed the first “assault rifle” during the final years of World War II.....	11
b.	Following World War II, the Soviet Union adopted the AK-47—“the quintessential assault rifle.”	13
c.	The AR-15 was originally designed for use by the U.S. military and ultimately adopted as the M16 and, later, the M4.....	16
i.	The U.S. Army’s initial replacement of the World War II-era M1 Garand, the M14, was a “minor improvement.”	17
ii.	Advocates within the U.S. military of a smaller caliber, high velocity rifle encouraged the development of an alternative to the M14: the AR-15.....	19
iii.	Combat field tests of the AR-15 in Vietnam spurred its widespread adoption by the U.S. military.	23
iv.	The AR-15, redesignated by the U.S. Army as the M16, served as the primary service weapon for U.S. troops for decades.	27
d.	Firearm manufacturers have promoted the military origin and capabilities of AR-platform rifles since their introduction to the civilian market.	29
e.	The military characteristics of AR- and AK-platform rifles drew regulatory scrutiny after a gunman used a semiautomatic AK-47 in a school shooting in Stockton, California, in 1989.	30

- f. Congress enacted a federal ban on “assault weapons” and magazines larger than 10 rounds in 1994, but the ban expired in 2004..... 33
- g. After the federal assault weapons ban expired in 2004, and amid the ongoing wars in Afghanistan and Iraq, firearms manufactures introduced more “combat-proven” AR-15 rifle variants into the civilian market. 37
- h. James Ronkainen’s career at Remington reflects the firearms industry’s post-2004 shift toward semiautomatic versions of the M16 and M4..... 45
- 2. The semiautomatic AR-platform rifles the Act restricts are functionally identical to the M16 and M4 rifles used by the U.S. military except for the absence of a burst- or automatic-fire setting..... 46
 - a. M16 and M4 rifles fire the same caliber ammunition at the same velocity as a typical semiautomatic AR-platform rifle. 47
 - b. The wounding capability of a bullet fired from an M16 or M4 rifle is the same as a bullet fired from a typical, semiautomatic AR-platform rifle. 50
 - c. A typical semiautomatic AR-platform rifle has the same range and penetration capability as an M16 or M4 rifle..... 53
 - d. A typical semiautomatic AR-platform rifle functions identically to an M4 or M16 on the semiautomatic setting..... 57
 - e. M16 and M4 rifles use the same design features to manage recoil and maintain accuracy during rapid fire as a typical semiautomatic AR-platform rifle. 61
 - f. When U.S. troops train for and engage in combat with M16 and M4 rifles, they fire almost exclusively in semiautomatic..... 64
 - g. The U.S. military’s recent acquisition of select-fire rifles with an automatic mode instead of burst has not altered the predominant mode of use: semiautomatic. ... 70
 - h. Plaintiffs’ emphasis on the U.S. Army’s recent selection of a new rifle—the XM7—in a new caliber—6.8mm—ignores the availability of a civilian equivalent—the MCX-Spear. 73
 - i. The new infantry rifle for U.S. Marines, the M27, continues to use 5.56mm NATO ammunition—and is also available as a semiautomatic variant for civilians. 77
 - j. The existence of a tiny minority of AR-platform rifles in calibers smaller or less powerful than .223 or 5.56mm NATO is irrelevant..... 78
 - k. Whether a semiautomatic AR-15 from the civilian market could meet each and every military specification for an M16 or M4 is irrelevant..... 80

- 1. Semiautomatic AR-platform rifles can be easily modified to simulate automatic fire..... 81
- 3. The semiautomatic AK-47 rifles the Act restricts are functionally identical to the AK-47 rifles used by militaries around the world except for the absence of an automatic fire setting. 84
- 4. Other rifles restricted by the Act are semiautomatic versions of submachineguns designed for military and law enforcement use..... 87
 - a. Multiple militaries developed submachineguns before and during World War II that influenced postwar designs..... 88
 - b. The Act regulates semiautomatic versions of Heckler & Koch’s MP5 submachinegun—“the world’s pre-eminent submachine gun among military and law enforcement users.”..... 90
 - c. Semiautomatic versions of submachineguns, like the Uzi, have been considered “assault weapons” for decades..... 92
- B. The .50 caliber rifles and ammunition the Act restricts were designed for and are employed by the military..... 92
- C. Many of the pistols the Act restricts are either AR- or AK-platform firearms or semiautomatic versions of submachineguns. 96
 - 1. AR- and AK-type pistols are uncommon in the overall handgun market. 97
 - 2. AR- and AK-type pistols share common features with AR- and AK-type rifles. 99
 - 3. Semiautomatic pistols adapted from submachineguns, such as Heckler & Koch’s SP5 models, have large magazine capacities enabling rapid fire with fewer pauses for reloading. 100
 - 4. For nearly all of the semiautomatic pistol models currently sold in the U.S. by top handgun manufacturers, there are magazines available with capacities of 15 rounds or less. 100
 - 5. Semiautomatic pistols with threaded barrels are also available in versions without threaded barrels..... 102
- D. The shotguns the Act restricts are a narrow sub-category of large capacity, semiautomatic shotguns..... 102
 - 1. Many shotguns are not semiautomatic. 103
 - 2. Many semiautomatic shotguns have none of the features listed in the Act’s definition of “assault weapon.” 103
 - 3. Semiautomatic shotguns with detachable magazines incorporate AR- and AK-style features..... 104

- IV. The firearms and large capacity ammunition feeding devices the Act restricts are not commonly used for lawful self-defense..... 105
 - A. Empirical analysis indicates that it is extremely rare for a person, when using a firearm in self-defense, to fire more than 10 rounds. 105
 - B. Rifles of any kind are rarely used in self-defense. 106
 - C. The firearms and large capacity ammunition feeding devices the Act regulates are not well-suited for self-defense. 109
 - 1. The firearms the Act restricts pose substantial risk of over-penetration in the home because of their muzzle velocity, range, and penetration capability. 110
 - 2. The firearms and large capacity ammunition feeding devices the Act restricts are not suitable for lawful concealed carry. 112
 - D. Plaintiffs lack reliable, empirical evidence that the firearms and magazines restricted by the Act are used in self-defense..... 114
 - E. The firearms and magazines regulated by the Act are not well-suited for hunting..... 117
- V. The firearms and large capacity ammunition feeding devices the Act restricts pose unprecedented threats to public safety..... 119
 - A. Mass shootings are a recent and increasingly frequent phenomenon in American history..... 119
 - B. The use of assault weapons and large capacity magazines are major factors in the rise of mass shooting violence..... 121
 - 1. Mass shootings with assault weapons and/or large capacity magazines are more lethal. 121
 - 2. Mass shootings with an assault weapon or a large capacity magazine involve more shots fired on average. 122
 - 3. Mass shootings with assault weapons, large capacity magazines, or both, are increasing in frequency..... 123
 - 4. High-fatality mass shootings with assault weapons and/or large capacity magazines are increasingly frequent and on average more lethal. 123
 - C. Large capacity magazines are driving up the shooting lethality rate in Chicago and other large cities..... 125
- VI. There is a historical tradition in this nation of regulating firearms that are dangerous or unusual..... 127
 - A. Early American legislatures regulated particular weapon types that threatened public safety. 130

- 1. When Bowie knives threatened public safety, legislatures regulated them..... 132
- 2. When percussion cap pistols threatened public safety, legislatures regulated them. 134
- B. When revolvers—the first reliable repeating firearms—proliferated in the latter half of the 19th century and contributed to increasing violence, legislatures regulated them... 135
 - 1. There were no reliable repeating firearms prior to the mid-19th century..... 135
 - 2. Repeating arms became a practical reality in the mid-19th century with the emergence of revolvers..... 138
 - 3. Revolvers became the target of regulation when they contributed to increasing violence in American society..... 139
 - 4. Repeating arms capable of firing more than 10 rounds emerged in the latter half of the 19th century, but they remained slow to reload..... 141
- C. When firearms that could both fire repeatedly and reload rapidly—automatic and semiautomatic firearms with detachable magazines—proliferated in the early 20th century, they were regulated..... 142
- VII. There is a historical tradition of reserving some dangerous weapons for the military and law enforcement. 145
- INDEX OF CITED EXHIBITS 150

PROPOSED FINDINGS OF FACT¹

Pursuant to Federal Rule of Civil Procedure 52 and the Court’s order (ECF 238), Defendants Governor JB Pritzker, Attorney General Kwame Raoul, and Illinois State Police Director Brendan F. Kelly submit the following proposed findings of fact in support of their request for judgment in their favor on all plaintiffs’ claims in these consolidated actions:

I. Illinois enacted the Protect Illinois Communities Act after a shooter massacred spectators at a July 4th parade in Highland Park, Illinois.

A. On July 4, 2022, a shooter used an AR-15 rifle and 30-round magazines to kill 7 people and wound 48 others at a parade in Highland Park, Illinois.

1. On the morning of July 4, 2022, the community of Highland Park, Illinois gathered for what was supposed to be an Independence Day parade—the first since before the pandemic. (ECF 37-2, Morgan ¶ 4.)

2. Shortly after 10:00 a.m., as the parade was getting under way, gunshots rang out. (*Id.* ¶¶ 5–6.) Hundreds of spectators began running away from the parade route, while police cars rushed toward it. (*Id.* ¶ 6.)

3. Concealed on a rooftop overlooking the parade route, a shooter with an AR-15-style rifle was unloading 30-round magazines into the crowd stretched out below. (ECF 37-1, Ex. 1-J, Ellen Durston et al., “Before Shooting, Highland Park Was Considered Chicago’s ‘Mayberry,’” *N.Y. Times* (July 6, 2022); ECF 37-2, Morgan ¶¶ 16, 20.) In less than 60 seconds,

¹ As indicated in prior filings by the State Defendants (*see* ECF 223), and as discussed on the record at the September 9, 2024 final pretrial conference (ECF 227), resolution of these cases is likely to require consideration of “legislative facts” in addition to “adjudicative facts.” *See* Fed. R. Evid. 201 (Advisory Committee Notes); *Moore v. Madigan*, 702 F.3d 933, 942 (7th Cir. 2012) (discussing “legislative” versus “adjudicative” facts in Second Amendment challenge to Illinois legislation). As counsel for the State Defendants stated at the final pretrial conference, the parties’ views as to whether particular facts in this litigation are “legislative” or “adjudicative” in nature may differ. In submitting these Proposed Findings of Fact, the State Defendants are not intending to take a position on whether any or all of the facts included in this filing are “legislative facts” or “adjudicative facts,” or involve mixed questions of fact and law in addition to findings of fact, and the State Defendants expressly reserve all arguments and objections regarding these issues.

the shooter fired approximately 83 shots into the families and community members gathered to celebrate the nation's birthday. (ECF 37-2, Morgan ¶¶ 19–20.) Seven people died, and an additional 48 people were wounded. (*Id.* ¶ 19.)

4. The shooter left the scene of the massacre, evading capture by law enforcement. (ECF 37-2, Morgan ¶ 21.) A massive manhunt ensued, drawing in officers and resources from dozens of local, state, and federal law enforcement agencies. (ECF 37-1, Ex. 1-D, Frank Main, “After Highland Park Fourth of July parade shootings, hundreds of cops from other agencies rushed to help,” *Chi. Sun-Times* (Oct. 7, 2022).) Meanwhile, hospital emergency rooms were flooded with victims of the shooting ranging from 8 to 88 years old. (ECF 37-1, Ex. 1-E, Lisa Schencker, “Highland Park Hospital doesn’t see many victims of gun violence. Then July Fourth happened,” *Chi. Tribune* (Aug 14, 2022).)

5. As the shooter remained on the loose for approximately 8 hours that day, other July 4th parades and celebrations were canceled, beaches were closed, and what was supposed to be a day of celebration became a day gripped with widespread fear. (ECF 37-2, Morgan ¶¶ 13, 21.) Later that evening, law enforcement apprehended the shooter. (*Id.* ¶ 13.)

6. The weapon chosen by the shooter that day was a Smith & Wesson M&P 15—an AR-15-style rifle. (*Id.* ¶ 16.) AR-15-style rifles trace their origins to the ArmaLite AR-15—a weapon developed for use by the U.S. military in the late 1950s, adopted as the standard-issue infantry weapon for U.S. troops in the mid-1960s, and designated by the military as the M16. (*Id.* ¶ 16.) The shooter’s chosen version of the AR-15, the Smith & Wesson M&P 15, evoked the rifle’s military origin—“M&P” stands for “Military & Police.” (*Id.* ¶ 18.)

7. After the shooter was apprehended, law enforcement also recovered another firearm from his vehicle: a Kel-Tec Sub 2000. (ECF 37-2, Morgan ¶ 21.) Capable of folding in half, the

Kel-Tec Sub 2000 is a light, easily concealed rifle capable of fitting into a medium-size backpack. (Ex. 95, *Gun Digest*, 71st ed., 2017 (excerpt) at 213.)

8. Both of the shooter’s weapons—the Smith & Wesson M&P 15 and the Kel-Tec Sub 2000—had been legally purchased in Illinois. (ECF 37-2, Morgan ¶ 22.)

B. Following the massacre at Highland Park’s July 4th parade, Illinois enacted the Protect Illinois Communities Act.

9. Bob Morgan witnessed the shooting at Highland Park’s July 4th parade firsthand. (ECF 37-2, Morgan ¶¶ 2, 4–13.) As a member of the Illinois House of Representatives, Morgan represents Highland Park and other nearby communities. (*Id.* ¶ 2.) Morgan was lining up to walk in the parade with his family when the shooter opened fire. (*Id.* ¶¶ 5–6.)

10. After witnessing the bloodshed, carnage, and chaos that day, Morgan became a chief co-sponsor of proposed legislation in the Illinois House of Representatives to prohibit the purchase and sale of “assault weapons”—like the AR-15-style rifle chosen by the Highland Park shooter—and the large capacity magazines that magnify their lethality. (ECF 37-2, Morgan ¶¶ 12, 19–20, 30–33.) Over the course of three public hearings in December 2022, an Illinois House committee considering the proposed legislation heard approximately 15 hours of live public testimony regarding assault weapons, large capacity magazines, and the toll of gun violence in Illinois. (*Id.* ¶ 32.) During those hearings, survivors of the Highland Park massacre and family members of the deceased gave gut-wrenching testimony to their elected lawmakers. (*Id.* ¶ 31.)

11. Within a few weeks of the hearings, the final version of what became Illinois Public Act 102-1116, the Protect Illinois Communities Act (the “Act”), passed both houses of the Illinois General Assembly. (*Id.* ¶ 33.) On January 10, 2023, the Governor of Illinois signed the Act into law. (Ex. 191, Illinois Public Act 102-1116; Illinois General Assembly, Bill Status of HB5471,

available online at <https://www.ilga.gov/legislation/billstatus.asp?DocNum=5471&GAID=16&GA=102&DocTypeID=HB&LegID=139995&SessionID=110> (last visited Oct. 11, 2024).)

12. The Act amends various parts of Illinois criminal and civil statutes with a host of measures to promote public safety. (Ex. 191, Illinois Public Act 102-1116.)

13. As relevant here, the Act amends the Illinois criminal code to restrict the sale, purchase, manufacture, delivery, importation, and possession of “assault weapon[s]” and “large capacity ammunition feeding devices,” as well as .50 caliber rifles and .50 caliber ammunition. (720 ILCS 5/24-1, 1.9 (new), 1.10 (new).)

14. The Act defines an “assault weapon” to include all “AR type” and “AK type” rifles, as well as other semiautomatic, magazine-fed rifles that also have one or more additional features: a pistol grip or thumbhole stock; a protruding grip for the non-trigger hand; a folding, telescoping, thumbhole, or detachable stock; a flash suppressor; a grenade launcher; or a barrel shroud. (720 ILCS 5/24-1.9(a)(1)(A) & (J)(i)-(ii).)

15. The Act’s definition of “assault weapon” also includes “AR type” and “AK type” pistols, as well as other semiautomatic, magazine-fed pistols that also have one or more additional features: a threaded barrel; a second pistol grip or other protruding grip for the non-trigger hand; a barrel shroud; a flash suppressor; the capacity to accept a detachable magazine outside the pistol grip; or a buffer tube, arm brace, or other device designed to allow shoulder-firing. (720 ILCS 5/24-1.9(a)(1)(C) & (K)(i)-(ii).)

16. The Act’s definition of “assault weapon” also includes semiautomatic shotguns that also have one or more additional features: a pistol grip or thumbhole stock; a protruding grip for the non-trigger hand; a folding or thumbhole stock; a grenade launcher; a fixed magazine with a capacity above 5 rounds; or the capacity to accept a detachable magazine. (720 ILCS 5/24-1.9(F).)

17. The Act’s definition of a “large capacity ammunition feeding device” includes “a magazine, belt, drum, feed strip, or similar device” that can accept “more than 10 rounds of ammunition for long guns and more than 15 rounds of ammunition for handguns[.]” (720 ILCS 5/24-1.10(a).)

18. The Act permits individuals who lawfully possessed “assault weapons” and “large capacity ammunition feeding devices” as of January 10, 2023 to continue possessing them. (720 ILCS 5/24-1.9(d), 1.10(d).) By January 1, 2024, a person who lawfully possessed an “assault weapon” on or before January 10, 2023 had to register that weapon with the Illinois State Police (“ISP”) through an “endorsement affidavit” in order to continue lawful possession. (*Id.*)

19. As required by the Act, the Illinois State Police (“ISP”) has published a guide with photographs to assist the public in the identification of “assault weapons” subject to the Act’s restrictions. *See* Illinois State Police, Assault Weapons Identification Guide, available online at <https://isp.illinois.gov/StaticFiles/docs/Home/AssaultWeapons/PICA%20Identification%20Guide.pdf> (last visited Oct. 11, 2024). ISP has also issued rules governing how current owners could file affidavits to register “assault weapons” (20 Ill. Admin. Code § 1230.10, 1230.15, 1230.65, App’x A & B), and ISP accepted these affidavits electronically through its online portal for obtaining, renewing, and updating a Firearm Owner’s Identification Card (“FOID”) or a Concealed Carry License (“CCL”). (ISP, Press Release, Protect Illinois Communities Act Endorsement Affidavit Now Available (Oct. 1, 2023), available at <https://isp.illinois.gov/Media/CompletePressRelease/855> (last visited Oct. 11, 2024).)

II. Plaintiffs sued seeking an immediate injunction, but the Seventh Circuit has allowed the Act to remain in effect while this litigation proceeds.

20. Shortly after the Act became law, four plaintiff groups (collectively, “Plaintiffs”) separately sued to challenge the Act’s restrictions on assault weapons and large capacity

magazines. (ECF 1; *FFL* ECF 1; *Harrel* ECF 1; *Langley* ECF 1-1.) Plaintiffs include individuals, retailers, firearms advocacy organizations, and a firearms industry trade association. Plaintiffs named the Governor of Illinois, the Attorney General, and the Director of the Illinois State Police as defendants (collectively, “State Defendants”), as well as State’s Attorneys and law enforcement officials from multiple Illinois counties (collectively, “County Defendants”). This Court consolidated the four cases brought by Plaintiffs, designating *Barnett v. Raoul*, 23-cv-209-SPM, as the lead case. (ECF 32.)

21. Soon after filing suit, Plaintiffs requested a preliminary injunction regarding the Act’s weapons restrictions based on the Second Amendment, and, on April 28, 2023, this Court granted an injunction against the entirety of the Act. (ECF 99.) On May 4, 2023, the Seventh Circuit stayed that injunction pending appeal. (ECF 108.)

22. Meanwhile, other plaintiffs had sued in the Northern District of Illinois to challenge the Act’s assault weapons restrictions, and the judges in those two cases denied preliminary injunctive relief. (*Bevis v. Naperville*, No. 22-cv-4775, Dkt. 63 (N.D. Ill.); *Herrera v. Raoul*, No. 23-cv-532, Dkt. 75 (N.D. Ill.).)

23. All three preliminary injunction decisions were appealed on an interlocutory basis, and the underlying cases were consolidated on appeal. After briefing and argument, the Seventh Circuit held that none of the plaintiffs were entitled to a preliminary injunction. (ECF 145 (hereinafter *Bevis v. City of Naperville*, 85 F.4th 1175 (7th Cir. 2023).) The Seventh Circuit found that none of the plaintiffs had shown a likelihood of success on the merits of their Second Amendment claims and remanded. *Id.* On January 3, 2024, the Seventh Circuit issued its mandate regarding the interlocutory appeal, returning jurisdiction to this Court over Plaintiffs’ Second Amendment claims for injunctive relief. (ECF 145.)

24. Following remand, this Court promptly notified the parties of its “intention to expeditiously move toward a final hearing on the merits[.]” (ECF 146.) Fact discovery commenced on February 29, 2024 and concluded on July 15, 2024. (ECF 169, 195.) Concurrent with fact discovery, the parties served initial Rule 26(a)(2)(B) expert disclosures on May 10, 2024 (ECF 185), and rebuttal expert disclosures on June 10, 2024 (ECF 195, 222). Expert discovery concluded on August 15, 2024. (ECF 195.)

25. The parties exchanged initial and rebuttal expert reports from a total of 24 experts. (ECF 185, 222, 232.) In order to streamline the proceedings and in response to the Court’s intention “for this matter to be resolved on an expedited basis,” the parties reached a Joint Stipulation Regarding Expert Witnesses and Trial Procedure, which the Court adopted (“Joint Stipulation”). (ECF 189, 195, 211.) Through the Joint Stipulation, the parties agreed to limit live expert testimony at the bench trial scheduled to begin September 16, 2024 to no more than three expert witnesses per side, and to allow the parties to submit additional expert testimony by declarations and depositions filed with the Court. (ECF 211.)

26. The State Defendants have submitted thirteen declarations from the following experts for the Court’s consideration:

- a. James E. Yurgealitis, a former agent of the U.S. Bureau of Alcohol, Tobacco, Firearms, and Explosives (“ATF”), and an expert in firearms (ECF 185-1, Report and Declaration of James Yurgealitis (“Yurgealitis”));
- b. Phil Andrew, a former agent of the Federal Bureau of Investigation (“FBI”), and a public safety expert (ECF 185-2, Report and Declaration of Phil Andrew (“Andrew”));

- c. Stephen W. Hargarten, a licensed and board-certified physician specializing in emergency medicine (ECF 185-3, Report and Declaration of Stephen W. Hargarten, MD, MPH (“Hargarten”));
- d. Brian Delay, a Professor of History and the Preston Hotchkis Chair in the History of the United States at the University of California, Berkeley (ECF 190-2, Amended Report and Declaration of Brian Delay (“Delay”));
- e. Robert J. Spitzer, a Distinguished Service Professor of Political Science (emeritus) at the State University of New York at Cortland (ECF 185-5, Report and Declaration of Robert J. Spitzer (“Spitzer”));
- f. Randolph Roth, an Arts and Sciences Distinguished Professor of History and Sociology at the Ohio State University (ECF 185-6, Report and Declaration of Randolph Roth (“Roth”));
- g. Louis Klarevas, a security policy analyst, political scientist, and Research Professor at the Teachers College of Columbia University (ECF 190-1, Amended Report of Louis Klarevas (“Klarevas”));
- h. Lucy P. Allen, an economist and Senior Managing Director of NERA Economic Consulting (ECF 185-8, Report and Declaration of Lucy P. Allen (“Allen”));
- i. Jens Ludwig, the Edwin A. and Betty L. Bergan Distinguished Professor at the University of Chicago, the Pritzker Director of the University of Chicago’s Crime Laboratory, co-director of the University of Chicago’s Education Laboratory, and the co-director of the National Bureau of Economic Research’s working group on the economics of crime (ECF 185-9, Report and Declaration of Jens Ludwig (“Ludwig”));

- j. Dennis Baron, Professor Emeritus and Research Professor at the University of Illinois in the fields of English and Linguistics (ECF 185-10, Report and Declaration of Dennis Baron (“Baron”));
- k. Craig Tucker, a retired Colonel and infantry officer in the U.S. Marine Corps (ECF 222-2, Declaration and Report of Colonel (Ret.) Craig Tucker (“Tucker”)); and
- l. Jason Dempsey, a retired Lieutenant Colonel and infantry officer in the U.S. Army (ECF 222-3, Declaration and Report of Jason Dempsey (“Dempsey”)).

27. From September 16 through September 19, 2024, the Court conducted a bench trial in accordance with the parties’ Joint Stipulation. (ECF 211, 233, 235, 236, 237.)

28. At the bench trial, Plaintiffs called four witnesses: Scott Pulaski, the owner of Piasa Armory, LLC, a gun store and plaintiff in these consolidated actions; Jeffrey Eby, a retired Gunner in the U.S. Marine Corps; James Ronkainen, a mechanical engineer and former Director of Product Development at Remington Arms and other affiliated firearms manufacturers; and Steven Randy Watt, a former Chief of Police in Ogden, Utah, a veteran of the Utah National Guard, and the owner of and instructor at SRW, Inc., doing business as Warrior Creed, a Utah-based self-defense training company. (Trial Tr. (Pulaski), 21:16–22:18; (Eby) 89:01–91:23; (Ronkainen), 214:14–21, 222:20–223:10, 237:07–14; (Watt) 371:10–21, 376:02–12, 408:03–24.)

29. The State Defendants called two witnesses to testify live during the bench trial: Col. Tucker and Lt. Col. Dempsey. (Trial Tr. (Tucker) 511:05–549:08; (Dempsey) 556:20–658:21.)

30. At the conclusion of the bench trial, the Court allowed the parties up to and including October 21, 2024, to submit proposed findings of fact and conclusions of law. (Trial Tr. 678:11–12.)

31. The State Defendants have also filed three pending motions: a motion for partial summary judgment on the *Langley* plaintiffs’ vagueness claims under the Fourteenth Amendment (ECF 220); a motion to preclude consideration of certain survey evidence from William English and the National Shooting Sports Foundation (“NSSF”) (ECF 223 (“English/NSSF Motion”)); and a motion to bar certain opinions of Plaintiffs’ experts under Federal Rules of Civil Procedure 26 and 37 and Federal Rule of Evidence 702 (ECF 229 (“*Daubert* Motion”)).²

III. The firearms, accessories, and ammunition the Act restricts are predominantly useful in military service and unusually dangerous.

A. The rifles the Act defines as assault weapons are semiautomatic versions of firearms specifically designed for and employed by the military.

1. AR- and AK-type rifles originated as firearms designed for military use.

32. In recent years, there has been an increase in the popularity and availability of semiautomatic rifles with features initially designed (or patterned after those designed) for a military purpose. (ECF 185-1, Yurgealitis ¶ 100.) AR-type rifles are a prime example of this trend. (*Id.*)

33. AR-type rifles are patterned on the AR-15 design developed by Eugene Stoner in 1957 and subsequently adopted by the U.S. military as the M16 and, later, the M4. (ECF 185-1, Yurgealitis ¶ 100; Trial Tr. (Ronkainen) 286:10–16, 337:7–16.) The development of the AR-15 was part of a broader trend of militaries in multiple countries adopting “assault rifles” during and after World War II. (ECF 185-1, Yurgealitis ¶¶ 5, 14–25.)

² For purposes of the present filing, the State Defendants include citations to reports, declarations, deposition transcripts, and other evidentiary materials that are the subject of the English/NSSF Motion and the *Daubert* Motion in the event those motions are denied. By citing to these items herein, the State Defendants do not waive the arguments and requests for relief raised in the English/NSSF Motion (ECF 223) and the *Daubert* Motion (ECF 229).

a. The German army deployed the first “assault rifle” during the final years of World War II.

34. According to many firearms experts, “assault rifles” were initially developed during World War II to provide a lighter infantry weapon that could fire more rounds, more rapidly, and more easily. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 4.)

35. During the final years of World War II, the German military began equipping some of its forces with a firearm that is generally regarded as the first “assault rifle”: the Sturmgewehr Model 1944 (“StG 44”). (ECF 185-1, Yurgealitis ¶¶ 10, 12; Ex. 265, Peter Suci, “Sturmgewehr – the First Assault Rifle,” *Recoil* (June 19, 2016). “Sturmgewehr” means “Storm Rifle” or “Assault Rifle.” (ECF 185-1, Yurgealitis ¶ 10.)

36. *Gun Digest*, a widely relied upon publication in the firearms industry, has described the impact of the StG 44 as follows:

[T]he impact of the Sturmgewehr 44, the world’s first widely produced and issued assault rifle, was far-reaching. Since the mid-20th century, the ubiquitous assault rifle—as evidenced by the proliferation of the Soviet-made AK-47 and the American M-16—has come to symbolize modern warfare on land . . . Today, whatever its origin or country of manufacture . . . the assault rifle traces its lineage to the German Sturmgewehr 44.

(Ex. 228, *Gun Digest*, 77th ed., 2023 (excerpt) at 225.)

37. The StG 44 is pictured here:



Sturmgewehr (“Storm Rifle”) Model 1944 – StG 44

(ECF 185-1, Yurgealitis ¶ 11.)

38. The StG 44 had several features that were subsequently incorporated in military rifles from multiple countries following World War II. (*Id.* ¶¶ 13–14, 19–21.) These features included: a gas operating system (*id.* ¶ 13a); the ability to fire in both semi-automatic and automatic modes, which enabled a higher rate of fire than bolt-action rifles (*id.* ¶ 13a); use of detachable magazines allowing more rapid reloading than bolt-action rifles or rifles with internal magazines (*id.* 13c); a pistol grip that was separate from the butt stock (*Id.* ¶ 13d); and a barrel shroud (*id.* ¶ 13e). The StG 44 also incorporated steel stampings instead of parts machined from solid steel casings or forgings, which made the weapon lighter, more mobile, and easier to manufacture. (ECF 185-1, Yurgealitis ¶ 13b.)

39. The caliber³ of ammunition used by the StG 44 was smaller than other standard-issue rifles used in World War II, but the cartridge was heavier than those used in pistols and submachine guns. (ECF 185-1, Yurgealitis ¶ 15; Ex. 228 *Gun Digest*, 77th ed., 2023 (excerpt) at 226–27; Ex. 265, Suci, “Sturmgewehr – the First Assault Rifle,” at 2.) The smaller caliber of the StG 44 made it possible for a soldier to carry more ammunition compared to other rifles. (ECF 185-1, Yurgealitis ¶ 16.)

³ Caliber refers to the diameter of the bullet. (ECF 230-17, Fatohi Dep. 11:17–12:9.)

40. The StG 44 incorporated a detachable “box” magazine that could hold 30 rounds. (Ex. 228 *Gun Digest*, 77th ed., 2023 (excerpt) at 226–27; Ex. 265, Suci, “Sturmgewehr – the First Assault Rifle,” at 8) A magazine is a receptacle that holds cartridges or shells for feeding into the chamber of a firearm; it can be fixed or removable and may take the form of a box, a drum, a tube, or a rotary. (ECF 230-24, NSSF, *The Writer’s Guide to Firearms & Ammunition* (2015), at 13 (“Magazine”).) A box magazine is a metal or plastic container with a spring inside that causes ammunition to be fed into a firearm. (Trial Tr. (Pulaski) 54:12–16.) The StG 44’s box magazine had a slight curve—“a feature that has come to signify what are typically referred to today as ‘assault rifles.’” (Ex. 265 at 2.)

41. The StG 44’s rate of fire was 550 to 600 rounds per minute. (*Id.* at 4.) However, ammunition shortages in the German army meant that demand for StG 44 rounds far exceeded the supply, so much so that the German army’s leadership ordered soldiers armed with the StG 44 to keep it in semiautomatic mode as much as possible to conserve ammunition. (Ex. 228 *Gun Digest*, 77th ed., 2023 (excerpt) at 233.)

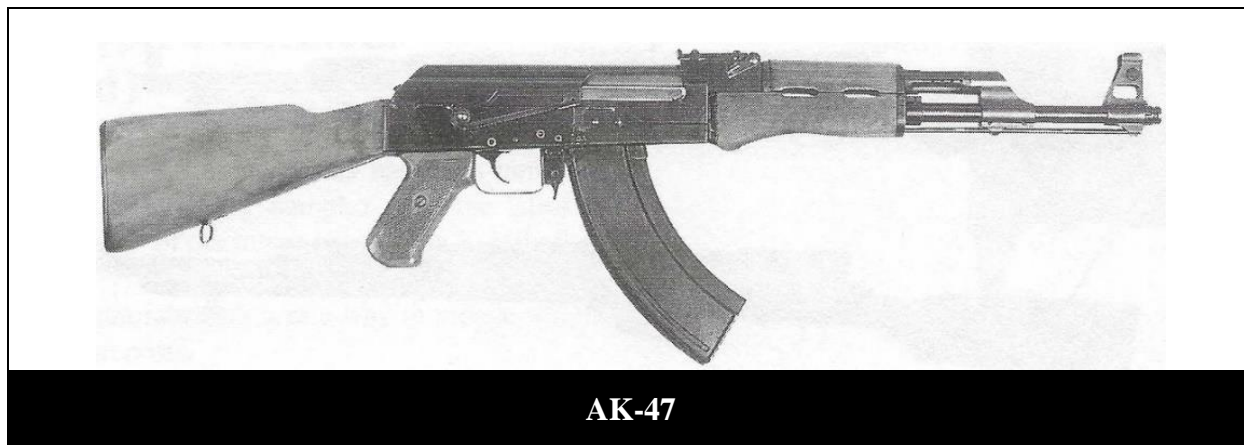
42. Following Germany’s defeat in World War II, captured StG 44s were analyzed by militaries from the formerly allied countries, including the Soviet Union. (ECF 185-1, Yurgealitis ¶ 14.) The development of the StG 44 would “influence[] future arms designers including Mikhail Kalashnikov, designer of the AK-47.” (Ex. 265, Suci, “Sturmgewehr – the First Assault Rifle,” at 1.)

b. Following World War II, the Soviet Union adopted the AK-47—“the quintessential assault rifle.”

43. Following World War II, the Soviet Union’s military was quicker to show interest in developing its own assault rifle than the U.S. military. (ECF 185-1, Yurgealitis ¶ 14.) In 1947, the Soviet Union developed “the quintessential assault rifle”—the AK-47. (*Id.* ¶ 18.)

44. The original AK-47 was designed by a member of the Russian military, Mikhail Kalashnikov, for use by the Russian military. (Trial Tr. (Ronkainen) 337:17–19; ECF 185-1, Yurgealitis ¶ 120; ECF 124-2, 10/3/23 Pulaski Dep. 85:8–19.) The “AK” in AK-47 means “Avtomat Kalashnikov” or “Automatic Kalashnikov”—a reference to the firearm’s designer. (ECF 124-2, 10/3/23 Pulaski Dep. 85:8–19; ECF 230-17, Fatohi Dep. 34:20–35:23, 178:2–9.) After its adoption by the Soviet military and aligned military forces in the Soviet Bloc, the AK-47 would go on to become one of the most famous weapons in the world. (ECF 185-1, Yurgealitis ¶ 21; Ex. 235, *Report of the M16 Rifle Review Panel*, U.S. Army (June 1, 1968) (hereafter, “M16 Rifle Review Panel Report”) at B-8; ECF 124-2, 10/3/23 Pulaski Dep. 87:10-16.) There is an entire family of firearms based on the AK-47 design. (ECF 124-2, 10/3/23 Pulaski Dep. 87:6–9.)

45. An AK-47 is pictured here:



(ECF 185-1, Yurgealitis ¶ 18.)

46. The design of the AK-47 carried forward a number of the features from the German StG 44, including: a gas-powered operating system; a detachable magazine; a separate pistol grip; a separate shoulder stock; a barrel shroud or foregrip; and use of steel stampings in its construction. (*Id.* ¶¶ 19–20.) Some early AK-47 variants also featured a muzzle compensator that deflected gas

upward and to the right to compensate for the rifle's tendency to kick up and to the right with every shot. (*Id.* ¶ 20.)

47. The AK-47 has traditionally used a 7.62x39mm caliber cartridge. (ECF 185-1, Yurgealitis ¶ 120; ECF 230-17, Fatohi Dep. 35:18–36:06.) Many of the semi-automatic versions of the AK-47 and its subsequent variants on the civilian market also use this caliber. (ECF 185-1, Yurgealitis ¶ 121; ECF 230-17, Fatohi Dep. 14:8–18.)

48. As in the Soviet Union, other countries also developed and adopted new rifle designs following World War II that incorporated features derived directly from the German StG 44. (ECF 185-5, Yurgealitis ¶¶ 21, 24.) A number of firearms manufacturers outside the Soviet sphere of influence developed military rifles that carried forward these same features to one extent or another. (*Id.* ¶ 21.)

49. For example, Fabrique Nationale of Belgium developed the Fusil Automatique Leger—the FN-FAL. (*Id.* ¶¶ 21–24.) Heckler & Koch of Germany developed the G3. (*Id.*) Both the FN-FAL and G3 featured some parts made from metal stampings as opposed to heavier and more expensive machined steel pieces. (*Id.* ¶ 24.) Both the FN-FAL and G3 followed the basic design of the StG 44: a separate pistol grip, shoulder stock, detachable magazine, and barrel shroud. (*Id.*)

50. The FN-FAL and G3 are pictured below:



FN Fusil Automatique Leger (FN-FAL)



(ECF 185-1, Yurgealitis ¶ 23.)

51. As with the Soviet Union's AK-47, the FN-FAL and G3 were widely exported. (*Id.* ¶ 25.) Both the FN-FAL and G3 were licensed for production by numerous countries in South America, Africa, and the Middle East. (*Id.*)

c. The AR-15 was originally designed for use by the U.S. military and ultimately adopted as the M16 and, later, the M4.

52. Following World War II, the U.S. military took longer to move away from the standard-issue rifle and ammunition that had been used successfully by American soldiers in that conflict: the M1 Garand chambered in .30-06 caliber. (ECF 185-1, Yurgealitis ¶¶ 26–27.)

53. The M1 Garand is pictured here:



(*Id.* ¶ 15.)

54. The prevailing wisdom in the United States immediately after World War II was to stay away from lighter, smaller rifles and rifle caliber cartridges. (*Id.* ¶ 26.) During and after the Korean War, however, there were a number of military officials who supported moving to a smaller caliber, high velocity cartridge and a lighter rifle with which to fight future wars. (*Id.*) This dispute between the “big bore” and “small bore[,] high velocity schools of thought” persisted throughout the 1950s as the U.S. military considered a new rifle design that emerged during that time: the AR-15. (Ex. 235, M16 Rifle Review Panel Report at C-4.)

i. The U.S. Army’s initial replacement of the World War II-era M1 Garand, the M14, was a “minor improvement.”

55. In 1952, the U.S. Army’s Operations Research Office (“ORO”) published the results of a study that sought to “determine[e] the desirable operational characteristics of a general purpose infantry hand weapon.” (Ex. 234, *Operational Requirements for an Infantry Hand Weapon*, U.S. Army, Operations Research Office, ORO-T-160 (June 19, 1952) (hereafter, “1952 ORO Study”) at 1.)

56. Based on analysis of combat records and field investigations, the study emphasized that it was desirable “to increase in both number and rate the hits which may be inflicted on the enemy by aimed small arms,” and “to increase the mortality from wounds caused by these hits.” (*Id.* at 6–7.)

57. After concluding that most rifle use in battle occurred within a 300-yard range, and that “the marksmanship of even expert riflemen” in battle was only “satisfactory” up to 100 yards, the ORO Study made various recommendations about what characteristics a new combat rifle should have to be effective in those ranges. (*Id.* at 1–3.)

58. In particular, the ORO Study recommended adoption of a smaller caliber, higher velocity round than the .30 caliber round then in use: “Wound ballistic data offer convincing

evidence that small caliber, high velocity missiles may be used profitably at such ranges, without loss in wounding effects and with significant logistical gains.” (*Id.* at 2–3.)

59. The ORO Study further noted that “small caliber, lightweight” weapons represented a “promising approach” in part because the “[l]ow recoil of a small caliber weapon facilitates dispersion control.” (*Id.* at 3.)

60. But in selecting the replacement for the M1 Garand, the M14, the U.S. military opted to continue using a .30 caliber rifle, at least initially. (ECF 185-1, Yurgealitis ¶ 29; Ex. 235, M16 Rifle Review Panel Report at B-6, B-7.) Unlike the semiautomatic M1 Garand, the M14 was a select-fire rifle that could provide either semiautomatic or fully automatic fire. (ECF 185-1, Yurgealitis ¶ 29.) The M14 also utilized a detachable 20-round magazine, unlike the 8-round internal magazine of the M1 Garand. (ECF 185-1, Yurgealitis ¶¶ 29, 107; Ex. 235 at B-7.) The M14 retained a traditional wood stock like the M1 Garand. (ECF 185-1, Yurgealitis ¶ 29.)

61. An image of the M14 appears below:



(*Id.*)

62. A subsequent report by the U.S. Army characterized the M14 as “a minor improvement over the M1 which it replaced.” (Ex. 235, M16 Rifle Review Panel Report at B-7.) The report noted that the M14 “did not weigh less [than the M1 Garand], nor was it really acceptable in the fully automatic role when fired from the shoulder.” (*Id.*)

63. The Soviet Union’s AK-47 was also shorter and lighter than the M14. (*Id.* at B-8.)

ii. Advocates within the U.S. military of a smaller caliber, high velocity rifle encouraged the development of an alternative to the M14: the AR-15.

64. Even as the U.S. Army selected the M14 to replace the M1 Garand in 1957, a faction in the U.S. military continued to press for a lighter rifle that fired smaller caliber, high velocity rifle cartridges. (ECF 185-1, Yurgealitis ¶ 30.) The debate within the U.S. military over smaller caliber, high velocity rifles was already decades old at that point. (Ex. 235, M16 Rifle Review Panel Report at B-4–5, C-4.)

65. Even before World War II, testing by the U.S. War Department comparing .30 caliber rounds to smaller calibers in 1928 had concluded that “small caliber, high velocity bullets were more lethal within the normal effectiveness range of a rifle.” (*Id.* at B-4, B-5.) After World War II, the 1952 ORO study had reached a similar conclusion based on analysis of wound ballistic data. (Ex. 234, 1952 ORO Study at 2–3.)

66. Changes in velocity are more significant for wounding capability than changes in mass. (ECF 185-3, Hargarten ¶ 16.) Bullets cause damage to human bodies by transferring kinetic energy from the bullet to the body. (*Id.* ¶ 15.) The amount of energy a bullet transfers into a target is primarily a function of the bullet’s velocity and mass. (*Id.*) The relationship of energy (“E”) to mass (“m) and velocity (“v”) is expressed by the equation:

$$E = \frac{1}{2}m \times v^2$$

(*Id.*)

67. As this equation indicates, the energy available to deliver to the target increases incrementally with increases in mass of the projectile, but exponentially with increases in the projectile’s velocity. (*Id.* ¶ 16.) Or, as the 1952 ORO Study concluded: “[T]he effect of increasing the velocity of a small caliber missile more than compensates for the reduced mass.” (Ex. 234, 1952 ORO Study at 23.)

68. The original designer of the AR-15, Eugene Stoner, also noted the following in testimony to Congress regarding the “advantage” of a smaller bullet over a heavier bullet in wound ballistics:

There is the advantage that a small or light bullet has over a heavy one when it comes to wound ballistics, even for the same velocity . . . [B]ullets are stabilized to fly through the air, and not through water, or a body, which is approximately the same density as the water. And they are stable as long as they are in the air. When they hit something, they immediately go unstable . . . If you are talking about .30-caliber, this might mean stable through a human body. . . . While a little bullet, being it has a low mass, it senses an instability situation faster and reacts much faster. . . . [T]his is what makes a little bullet pay off so much in wound ballistics. . . . [T]here is a definite payoff on small high-velocity bullets.

(ECF 185-3, Hargarten ¶ 36 n.13 (quoting Ex. 276, Eugene Stoner, Congressional testimony before the “House of Representatives, Committee on Armed Services, Special Sub-Committee on the M-16 Rifle Program,” in *Hearings, Reports and Prints of the House Committee on Armed Services, Issues 15-25*, p. 4563–64 (June 21, 1967)).)

69. A medical journal describes the relationship between bullet instability and wounding as follows:

In general, bullets do not tumble when the skin is pierced, but high-energy rounds may begin to tumble as energy is dissipated upon travel through deeper tissue. The natural tendency is that the high-energy bullets will become unstable as they decelerate. These bullets may pitch and yaw, and the back end of the bullet may become the leading edge. During this distance, the energy of the projectile is absorbed by the surrounding tissue, causing stretching and tearing of tissue.

(Ex. 241, P. Rhee et al., *Gunshot wounds: A review of ballistics, bullets, weapons, and myths*, *Journal of Trauma and Acute Care Surgery* (March 16, 2016) at 863.)

70. A smaller caliber round also provides “significant logistical gains.” (Ex. 234, 1952 ORO Study at 2.) Smaller caliber bullets allow troops to carry more of them, to shoot for a longer duration, and to get more hits. (Trial Tr. (Eby) 131:18–20.) For example, magazines filled with 400 rounds of 5.56mm (.223 caliber) ammunition weigh about half as much as magazines with

400 rounds of 7.62mm (.308 caliber) ammunition. (ECF 185-1, Yurgealitis ¶ 37.) As an Army study comparing these calibers would later conclude: “[T]here are no tactically significant differences between 5.56mm and 7.62mm ammunition per round of ammunition; however, 5.56mm ammunition is significantly superior to 7.62mm ammunition in lethality per pound of ammunition or per basic load carried by the soldier.” (Ex. 3, Small Arms Weapon Systems (SAWS), U.S. Army Combat Developments Command (May 1966), at 9-3.)

71. In the latter half of the 1950s, General Willard C. Wyman was a leading proponent of developing a smaller caliber, high velocity rifle for the U.S. military. (ECF 185-1, Yurgealitis ¶ 32; Ex. 235, M16 Rifle Review Panel Report at C-1–2.) During 1957, General Wyman made a verbal request to multiple gun manufacturers for a new lightweight infantry rifle chambered for high velocity, .22 caliber rounds. (Ex. 235 at C-1–2.) One of the recipients of General Wyman’s request was Eugene Stoner, a gun designer with the Armalite Corporation. (ECF 185-1, Yurgealitis ¶¶ 32, 100; Ex. 235 at C-1.)

72. Stoner had recently developed a lightweight assault rifle called the AR-10 (“AR” being short for “Armalite Rifle”) chambered in .308 caliber (also referred to as 7.62x51mm NATO caliber). (ECF 185-1, Yurgealitis ¶¶ 29–31; Trial Tr. (Ronkainen) 277:11–15; ECF 230-17, Fatohi Dep. 32:14–22.) The AR-10’s design closely followed what was emerging as the standard assault rifle design: lightweight materials, a separate pistol grip and shoulder stock, a barrel shroud, a detachable magazine, and numerous flash hider or muzzle brake variations. (ECF 185-1, Yurgealitis ¶ 31.) In response to General Wyman’s request for a smaller caliber, higher velocity weapon, Stoner developed a scaled down version of the AR-10 rifle: the AR-15. (*Id.* ¶¶ 32, 100; Ex. 235, M16 Rifle Review Panel Report at C-1–2.)

73. The U.S. Army first tested the AR-15 in 1958. (ECF 185-1, Yurgealitis ¶ 34; Ex. 235 at C-2; Trial Tr. (Ronkainen) 286:10–16.) As a subsequent report by the Army describing the AR-15’s development noted:

The results of the test indicated that the AR15 should be considered as a potential replacement for the M14. [. . .] Since the M14 had only been standardized in 1957 and was then being produced in small quantities by [the Army’s] Springfield Armory, the AR15’s performance and the results of the tests were quite disturbing to the advocates of big bore weapons which generally constituted the military establishment.

(Ex. 235, M16 Rifle Review Panel Report at C-2–3.)

74. Despite the strong testing performance of the AR-15, “big bore” advocates within the Army initially succeeded in convincing Army leadership to retain the .30 caliber round used by the M14. (*Id.* at C-3–4.) Since 1953, the U.S. military had been part of an agreement with its allies in the North Atlantic Treaty Organization (“NATO”) to standardize use of 7.62mm caliber ammunition—equivalent to the .30 caliber round used in the M14. (*Id.* at B-6, C-3-4.) The NATO standardization agreement contributed to Army leadership’s decision in 1959 to temporarily stop “developmental work on the small caliber, high velocity concept as far as the Army was concerned.” (*Id.*)

75. That same year, 1959, Colt Industries, Inc. (“Colt”), acquired the proprietary rights for the AR-15 from Armalite’s parent company. (*Id.* at D-5, D-15.) By 1960, these proprietary rights included U.S. Patent No. 2,951,424, for a “Gas Operated Bolt and Carrier System” for use in automatic rifles. (Ex. 277, U.S. Patent No. 2,951,424 (Sept. 6, 1960).) The listed inventor was Eugene Stoner. (*Id.*) Stoner had initially applied for the patent in August 1956. (*Id.*)

76. The patented operating system “utilize[d] the energy of the expanding gas developed by the firing of the weapon” to “actuat[e] the automatic rifle mechanism directly by use of a metered amount of gas from the barrel.” (*Id.* at 1:44–48.) In other words, as a bullet travels

down the barrel, a portion of the gas propelling the bullet is bled into a gas port to be used to cycle another round into the chamber. (Trial Tr. (Ronkainen) 247:2–11.) The operation of the action takes place automatically and is part of the gun’s operating system—in contrast to a bolt-action rifle where the shooter has to manually cycle the bolt with a handle to make the firearm ready to fire again. (*Id.* 246:55–20.) The original AR-15 incorporated Stoner’s patented “direct gas impingement system” and it continues to be a defining characteristic of AR-style firearms. (*Id.* 246:15–20; ECF 124-2, 10/3/23 Pulaski Dep. 47:8–48:10.)

77. Colt’s acquisition of the AR-15’s patented design coincided with renewed interest in the AR-15 from a different branch of the U.S. military: the Air Force. (Ex. 235, M16 Rifle Review Panel Report at C-4.) After multiple phases of testing, “the Air Force selected the AR15 rifle as the weapon that best satisfied its requirements” and requested funds to procure thousands of new rifles in its 1962 budget. (*Id.* at C-7–8.)

78. Air Force leadership initially struggled to gain approval for the budget request because “of the problem of justifying . . . to Congress a proposal to procure another new weapon in view of the Army’s rifle program.” (*Id.*) The Air Force ultimately gained approval to obtain the requested AR-15 rifles in significant numbers after combat field tests in an emerging conflict in Vietnam, where the U.S. was supplying weapons to the South Vietnamese Army. (*Id.* at C-11–15.)

iii. Combat field tests of the AR-15 in Vietnam spurred its widespread adoption by the U.S. military.

79. In December 1961, the Advanced Research Project Agency (“ARPA”) of the U.S. Department of Defense procured 1,000 AR-15 rifles from Colt. (ECF 185-1, Yurgealitis ¶ 39; Ex. 235, M16 Rifle Review Panel Report at C-12.) ARPA subjected the AR-15 rifles “to a comprehensive field evaluation under combat conditions in Vietnam,” the results of which were summarized in an August 1962 report. (Ex. 233, Advanced Research Projects Agency, *Field Test*,

AR-15 Armalite Rifle (Aug. 20, 1962) (hereafter, “1962 ARPA Field Test Report”) at OAG003126; ECF 185-1, Yurgealitis ¶ 39; ECF 185-2, Andrew ¶ 26.)

80. The 1962 ARPA Field Test Report described the AR-15 rifle as a “lightweight, gas-operated rifle equipped with a 20-round, detachable magazine” and chambered in .223 caliber. (Ex. 233, 1962 ARPA Field Test Report at OAG003131.) “When fired in the rifle,” the .223 caliber round “gives the 55 grain bullet a muzzle velocity of 3200 feet per second.” (*Id.*) The rifle “has a plastic stock with a rubber butt, assembled in line with the bore,” which “in conjunction with its high line of sight and separate hand grip, is designed to minimize rotation about the shoulder during firing.” (*Id.*) The rifle’s “two piece upper hand guard” was designed for “easy disassembly and rapid dissipation of heat.” (*Id.*) “A three-pronged muzzle attachment, threaded to the barrel, serves as a flash suppressor, grenade launcher, and a front support for a bayonet.” (*Id.*) “A lever above the grip on the left side of the receiver provides a selector for the trigger safety, semi-automatic[,] and automatic fire.” (*Id.*)

81. Based on surveys of units deploying the AR-15 in combat in Vietnam, including of U.S. Army advisors supporting the South Vietnamese Army, ARPA “reported the AR15 rifle to be an outstanding weapon with phenomenal lethality.” (*Id.*; Ex. 235, M16 Rifle Review Panel Report at C-14; ECF 185-1, Yurgealitis ¶ 39; ECF 185-2, Andrew ¶ 27.) ARPA’s 1962 Field Test Report of the AR-15 included verbatim comments directly from unit commanders and advisors regarding the AR-15’s performance in combat. (Ex. 233, 1962 ARPA Field Test Report at OAG003143–47.)

82. The first such comments in ARPA’s 1962 Field Test Report described a Ranger platoon encountering three Viet Cong soldiers in heavily forested jungle and deploying an AR-15:

At a distance of approximately 15 meters, one Ranger fired an AR-15 full automatic hitting one [Viet Cong soldier] with the first burst. One round in the head—took it

completely off. Another in the right arm, took it completely off, too. One round hit him the right side, causing a hole about five inches in diameter. It cannot be determined which round killed the [Viet Cong soldier] but it can be assumed that any one of the three would have caused death. The other 2 [Viet Cong soldiers] ran[.]

(*Id.* at OAG003144; ECF 185-2, Andrew ¶ 29.)

83. Other comments from a different Ranger platoon described the killing of five Viet Cong soldiers in an ambush with five AR-15 rifles: one suffered a “[b]ack wound, which caused the thoracic cavity to explode”; another suffered a “[s]tomach wound, which caused the abdominal cavity to explode”; the third suffered a “buttock wound, which destroyed all tissue of both buttocks”; the fourth suffered a “[c]hest wound from right to left,” which “destroyed the thoracic cavity”: and the fifth suffered a “[h]eel wound” in which “the projectile entered the bottom of the right foot causing the leg to split from the foot to the hip.” (Ex. 233, 1962 ARPA Field Test Report at OAG003144; ECF 185-2, Andrew ¶ 28 (quoting same).) All five “deaths were inflicted by the AR-15 and all were instantaneous except the buttock wound. He lived approximately five minutes.” (Ex. 233 at OAG003144; ECF 185-2, Andrew ¶ 28 (quoting same).)

84. Additional comments from an infantry company equipped with AR-15 rifles included the following description of an encounter with Viet Cong soldiers: “Five [Viet Cong soldiers] were hit, all five with body wounds, and all five killed. Four were probably killing wounds with any weapon listed, but the fifth was essentially a flesh wound. The AR-15 made it a fatal wound.” (Ex. 233, 1962 ARPA Field Test Report at OAG003146; ECF 185-2, Andrew ¶ 30 (quoting same).)

85. Other comments included in the 1962 ARPA Field Test Report described a Special Forces raid in which two Viet Cong soldiers were killed with AR-15 fire at a range of 50 meters: “One man was hit in the head; it looked like it exploded. A second man was hit in the chest; his

back was one big hole.” (Ex. 233, 1962 ARPA Field Test Report at OAG003146; ECF 185-2, Andrew ¶ 31 (quoting same).)

86. Following completion of the 1962 ARPA Field Test Report in August 1962, the Air Force received approval of its budget request for fiscal year 1963 to begin procuring 80,000 AR-15 rifles. (Ex. 235, M16 Rifle Review Panel Report at C-14–15.) And in October 1962, the Secretary of Defense asked the Secretary of the Army to provide “the Army’s view of the relative effectiveness of the M14, AR15, and the Soviet AK47 rifle; the Army’s rationale in support of that view; and the action which should be taken if either the Soviet or the AR15 rifle appeared to be superior to the M14.” (*Id.* at C-17.)

87. In January 1963, the Army Chief of Staff provided the requested assessment, which included a recommendation for the Army to procure between 50,000 and 100,000 AR-15 rifles and “use them to equip Air Assault units, Special Forces units, and Airborne units.” (*Id.* at C-19.) The Army subsequently procured 85,000 AR-15 rifles in its budget for fiscal year 1964. (*Id.* at D-1, D-3.)

88. By December 1963, the Army had given the AR-15 its official military designation: the M16. (*Id.* at C-15; Trial Tr. (Ronkainen) 286:10–16.)

89. An “urgent requirement for the rifle in Vietnam” led to a much larger procurement in fiscal year 1966, when the Army requested 327,405 M16/AR-15 rifles as part of an overall request across all military branches to procure 482,770 AR-15 rifles. (Ex. 235, M16 Rifle Review Panel Report at D-2, D-4.) As of the adoption of the U.S. military budget for fiscal year 1968, the total number of M16/AR-15 rifles procured by all U.S. military branches had reached an aggregated total of 1,102,923 across all fiscal years up to that point. (*Id.* at D-4.) By the end of 1968, the M16 had become the standard small-arm of all U.S. forces. (Ex. 274, Thomas L.

McNaugher, *Marksmanship, McNamara and the M16 Rifle: Organizations, Analysis and Weapons* (Rand Corp. 1979) at 44; Trial Tr. (Eby) 120:7–13.)

90. With the accelerated deployment of the M16/AR-15 in Vietnam, however, reports of “reliability problems” with the rifle initially aroused concerns in the military and Congress. (Ex. 235, M16 Rifle Review Panel Report at D-64, D-77.) In particular, the M16/AR-15 was prone to jamming. (ECF 185-1, Yurgealitis ¶ 41.)

91. A subsequent review by an Army panel concluded in part that “[t]he lack of cleaning materials and the lack of proper training contributed heavily to the high M16A1 malfunction rates experienced in Vietnam in late 1966 and early 1967.” (Ex. 235, M16 Rifle Review Panel Report at E-8; ECF 185-1, Yurgealitis ¶ 41.) Changes to the propellant used in the 5.56mm caliber ammunition had also caused “an increase in the cyclic rate of fire and the overall malfunction rate.” (Ex. 235 at D-49, E-3; ECF 185-1, Yurgealitis ¶ 41.)

92. Subsequent design modifications, however, had resulted in decreased malfunction rates by the publication of the Army panel’s report on the development of the M16/AR-15 in June 1968. (Ex. 235, M16 Rifle Review Panel Report at D-54–60; ECF 185-1, Yurgealitis ¶ 41.) Once these problems were addressed and rectified, the M16/AR-15 proved to be as reliable and accurate as the AK-type rifles deployed by the North Vietnamese and Viet Cong. (ECF 185-1, Yurgealitis ¶ 41.)

iv. The AR-15, redesignated by the U.S. Army as the M16, served as the primary service weapon for U.S. troops for decades.

93. After its adoption in the 1960s, the M16/AR-15 platform provided a highly effective combat weapon for the U.S. military for decades. (ECF 185-1, Yurgealitis ¶ 45.) Since the adoption of the original M16 and its initial variant, the M16A1, during the Vietnam War, the U.S. military has used additional M16 variants: the M16A2, the M16A3, and the M16A4. (Ex.

264, U.S. Army, *Rifle and Carbine*, TC 3-22.9 (May 2016), at 2-4 (Table 2-1); ECF 232-3, Eby Dep. 156:12–157:10.)

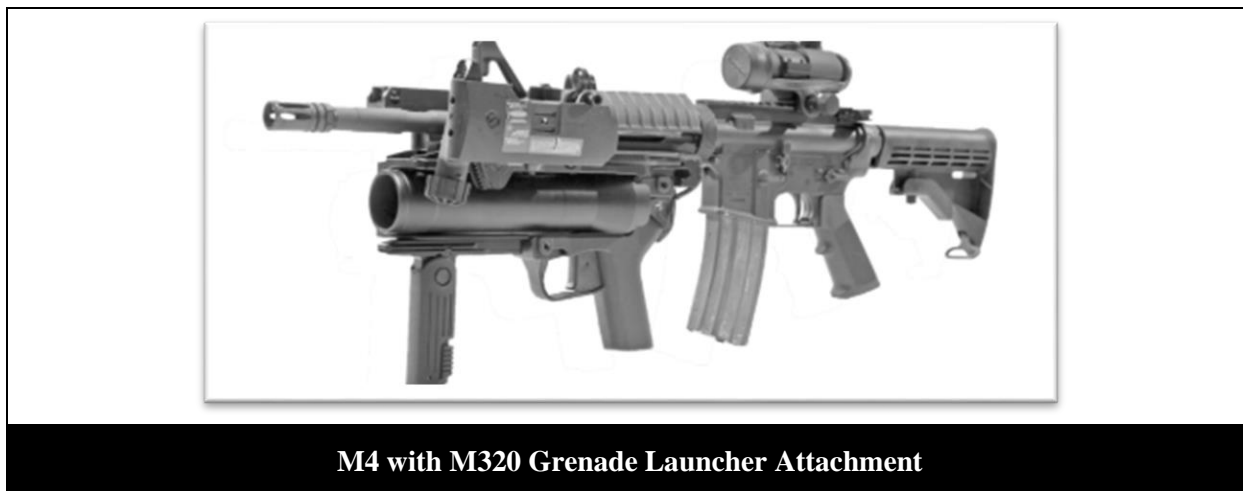
94. An image of an M16A1 is shown below:



(ECF 185-1, Yurgealitis ¶ 40.)

95. In addition, in the 1990s, the U.S. military began issuing a carbine version of the M16, called the M4, to U.S. service members. (*Id.* ¶ 45.) A carbine is a short, compact rifle. (Trial Tr. (Watt) 402:18–21.) The M4 incorporated a 14.5-inch rifle barrel compared to the 20-inch rifle barrel on the M16. (Trial Tr. (Eby) 107:2–7.) The M4 and M16 are functionally identical except for the M4’s slightly shorter barrel, which makes it more convenient to carry. (Trial Tr. (Dempsey) 570:19–571:1.) The M4 uses a direct gas impingement system. (Trial Tr. (Ronkainen) 225:15–17.)

96. An example of an M4 series carbine equipped with an M320 grenade launcher attachment is shown below:



(ECF 185-1, Yurgealitis ¶ 53.)

97. The M16 and M4 were the primary service weapons for American troops in the U.S. wars in Afghanistan and Iraq. (*Id.* ¶ 46.) The majority of the U.S. Army’s infantry members currently carry the M4. (Trial Tr. (Eby) 121:12–14.)

d. Firearm manufacturers have promoted the military origin and capabilities of AR-platform rifles since their introduction to the civilian market.

98. The AR-platform firearms created by Eugene Stoner at Armalite in the 1950s were originally designed as military firearms. (Trial Tr. (Ronkainen) 337:7–16.) But in 1964, shortly after the AR-15 received its military designation as the M16, Colt introduced a semiautomatic version of the AR-15 for the civilian firearms market. (Ex. 235, M16 Rifle Review Panel Report at C-15; ECF 185-1, Yurgealitis ¶¶ 59–60; Ex. 245, Alex Horton et al., “Decades of marketing reinvented the AR-15 into a top-selling firearm,” *Washington Post* (March 27, 2023).)

99. Called the Colt AR-15 Sporter, Colt’s advertising emphasized the rifle’s military origin in its 1964 factory catalog, describing it as “Colt’s answer to the demand for a semi-automatic version of the AR-15 automatic fire rifle purchased by the United States Armed Forces.” (ECF 185-1 Yurgealitis ¶ 60; Ex. 266, Colt, 1964 Dealer Catalog: Rifles and Carbines (excerpt) at 2.)

100. Colt would continue to hold exclusive rights to the patented operating system utilized by both the M16 and the Colt AR-15 Sporter until the patent’s expiration in 1977. (ECF 185-1, Yurgealitis ¶ 57; Ex. 285, Todd Frankel et al., “How the AR-15 became a powerful political, cultural symbol in America,” *Washington Post* (March 27, 2023) at 5.)

101. When the U.S. military adopted a new M16 variant in the 1980s, the M16A2, Colt followed suit in 1987 with the introduction of the AR-15 A2 Government Model Rifle and Carbine for the civilian market. (ECF 232-3, Eby Dep. 183:21–184:20; ECF 185-1, Yurgealitis ¶ 64; Ex. 267, Colt, “Colt Introduces The AR-15 A2 Gov’t. Model Rifle and Carbine” (1987).) In announcing the rifle’s release, Colt noted that “[a]ll of the guns in the AR-15A2 series have features consistent with the M16A2: Time tested gas operated mechanism . . . Handguard, buttstock and pistol grip are made from new, impact resistant materials . . . Handguard is round, has improved heat deflector and is ribbed for greater grip control.” (ECF 185-1, Yurgealitis ¶ 64; Ex. 267.)

e. The military characteristics of AR- and AK-platform rifles drew regulatory scrutiny after a gunman used a semiautomatic AK-47 in a school shooting in Stockton, California, in 1989.

102. Although estimated to comprise less than 1% of the total civilian gun stock, semiautomatic AR- and AK-platform rifles had begun to draw regulatory scrutiny by the end of the 1980s. (ECF 185-1, Yurgealitis ¶¶ 79–82; Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 10.)

103. In January 1989, a gunman killed five children and wounded 30 others with a semiautomatic version of an AK-47 at a school in Stockton, California. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 6; ECF 185-5, Spitzer ¶ 10.) Weeks later, on March 14, 1989, President George H.W. Bush’s administration halted the

importation of several makes of “assault-type rifles,” that “generally” had a “military appearance,” “large magazine capacity,” and were “semiautomatic version[s] of a machinegun.” (Ex. 273 at 8; Ex. 268, Bureau of Alcohol, Tobacco, and Firearms (“ATF”), “Report and Recommendation on the Importability of Certain Semiautomatic Rifles,” (July 6, 1989) (“1989 ATF Working Group Report”) at 2.)

104. A subsequent working group from the federal Bureau of Alcohol, Tobacco, and Firearms (“ATF”) identified specific “physical features and characteristics designed for military applications” that differentiated “modern military assault rifle[s]” subject to the import ban from “traditional sporting rifles” that were not. (ECF 185-2, Yurgealitis ¶ 80; Ex. 268, 1989 ATF Working Group Report at 6.)

105. The ATF working group’s July 1989 report described “semiautomatic assault rifles” as follows:

They represent a distinctive type of rifle distinguished by certain general characteristics which are common to the modern military assault rifle. The modern military assault rifle, such as the U.S. M16, German G3, Belgian FN/FAL, and Soviet AK47, is a weapon designed for killing or disabling the enemy and, as described below, has characteristics designed to accomplish this purpose. We found that the modern military assault rifle contains a variety of physical features and characteristics designed for military applications which distinguishes it from traditional sporting rifles. These military features and characteristics (other than selective fire) are carried over to the semiautomatic versions of the original military rifle.

(ECF 185-1, Yurgealitis ¶ 80; Ex. 268, 1989 ATF Working Group Report at 6.)

106. The first feature identified by the ATF working group was a firearm’s “ability to accept a detachable magazine.” (Ex. 268, 1989 ATF Working Group Report at 6.) The ATF working group’s July 1989 report stated the following about detachable magazines:

Virtually all modern military firearms are designed to accept large, detachable magazines. This provides the soldier with a fairly large ammunition supply and the ability to rapidly reload. Thus, large capacity magazines are indicative of military firearms. While detachable magazines are not limited to military firearms, most

traditional semiautomatic sporting firearms, designed to accommodate a detachable magazine, have a relatively small magazine capacity. In addition, some States have a limit on the magazine capacity allowed for hunting, usually 8 rounds or less. That a firearm is designed and sold with a large capacity magazine, e.g., 20-30 rounds, is a factor to be considered in determining whether a firearm is a semiautomatic assault rifle.

(ECF 185-1, Yurgealitis ¶ 81a; Ex. 268 at 6.)

107. “Folding/telescoping stocks” were another feature identified by the ATF working group, which were described in the July 1989 report as follows:

Many military firearms incorporate folding or telescoping stocks. The main advantage of this item is portability, especially for airborne troops. These stocks allow the firearm to be fired from the folded position, yet it cannot be fired nearly as accurately as with an open stock. With respect to possible sporting uses of this feature, the folding stock makes it easier to carry the firearm when hiking or backpacking. However, its predominant advantage is for military purposes, and it is normally not found on the traditional sporting rifle.

(ECF 185-1, Yurgealitis ¶ 81b; Ex. 268, 1989 ATF Working Group Report at 6.)

108. “Pistol grips” were also identified by the ATF working group and described in its July 1989 report as follows:

The vast majority of military firearms employ a well-defined pistol grip that protrudes conspicuously beneath the action of the weapon. In most cases, the ‘straight line design’ of the military weapon dictates a grip of this type so that the shooter can hold and fire the weapon. Further, a pistol grip can be an aid in one-handed firing of the weapon in a combat situation. Further, such grips were designed to assist in controlling machineguns during automatic fire. On the other hand, the vast majority of sporting firearms employ a more traditional pistol grip built into the wrist of the stock of the firearm since one-handed shooting is not usually employed in hunting or competitive target competitions.

(ECF 185-1, Yurgealitis ¶ 81c; Ex. 268, 1989 ATF Working Group Report at 6.)

109. The ATF working group also identified a “flash suppressor” as a feature common to “semiautomatic assault rifles”:

A flash suppressor generally serves one or two functions. First, in military firearms it disperses the muzzle flash when the firearm is fired to help conceal the shooter’s position, especially at night. A second purpose of some flash suppressors is to assist in controlling the ‘muzzle climb’ of the rifle, particularly when fired fully

automatic. From the standpoint of a traditional sporting firearm, there is no particular benefit in suppressing muzzle flash. Those flash suppressors which also serve to dampen ‘muzzle climb’ have a limited benefit in sporting uses by allowing the shooter to reacquire the target for a second shot. However, the barrel of a sporting rifle can be modified by ‘magna-porting’ to achieve the same result. There are also muzzle attachments for sporting firearms to assist in the reduction of muzzle climb. In the case of military-style weapons that have flash suppressors incorporated in their design, the mere removal of the flash suppressor may have an adverse impact on the accuracy of the firearm.

(ECF 185-1, Yurgealitis ¶ 81e; Ex. 268, 1989 ATF Working Group Report at 7.)

110. Additional features identified by the 1989 ATF working group included: “bipods” used to stabilize a weapon being fired from the prone position, “especially when fired fully automatic”; “grenade launchers,” which facilitate the launching of explosive grenades; “the ability to accept a bayonet”; and “night sights.” (ECF 185-1, Yurgealitis ¶ 81d, f–h; Ex. 268, 1989 ATF Working Group Report at 6–7.)

f. Congress enacted a federal ban on “assault weapons” and magazines larger than 10 rounds in 1994, but the ban expired in 2004.

111. When drafting what became the 1994 federal assault weapons ban, Congress incorporated the technical work of the 1989 ATF working group. (ECF 185-1, Yurgealitis ¶ 83.) For example, the definition of “assault weapon” in the federal assault weapons ban included semiautomatic rifles able to accept detachable magazines that also had two or more of the following: a folding or telescoping stock; a pistol grip; a bayonet mount; a flash suppressor or threaded barrel designed to accommodate one; or a grenade launcher. (*Id.*; Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 7; Ex. 268, 1989 ATF Working Group Report at 6–7.)

112. In addition to defining “assault weapons” based on features like those identified by the 1989 ATF working group, the 1994 federal assault weapons ban also enumerated specific firearms included within the definition of prohibited “assault weapons”. (ECF 185-1, Yurgealitis

¶ 83; Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 6–7.) The semiautomatic rifles prohibited by make and model included the Colt AR-15 and “all models” of “Avtomat Kalashnikovs” made by three specific manufacturers (Norinco, Mitchell, and Poly Technologies). (Ex. 273 at 6–7.) In addition to banning “assault weapons,” the federal assault weapons ban also prohibited “large capacity ammunition feeding devices,” such as magazines, with capacities greater than 10 rounds. (*Id.* at 1.)

113. As enacted in 1994, the federal assault weapons ban included a 10-year sunset provision that expired on September 13, 2004. (*Id.* at OAG006016.)

114. A December 2004 report by the Congressional Research Service (“CRS”) regarding the federal assault weapons ban noted that “[f]ollowing the ban’s enactment, many firearm manufacturers in the United States and abroad modified the design of firearms to, depending on one’s point of view, either to evade the ban or to comply with the ban’s requirements.” (*Id.* at 8.)

The 2004 CRS report continued:

It was not uncommon following the ban to hear references to ‘pre-ban’ ‘post-ban’ assault weapons, meaning firearms produced after the ban, which were similar to banned firearms, but modified and, hence, not subject to the ban. ‘Post-ban assault weapons’ were also referred to as ‘sporterized,’ ‘legal substitutes,’ or ‘copycats.’

(*Id.*)

115. The following image produced by some of the plaintiffs in this case shows examples of AR-15 rifles—a Colt AR-15 and a Bushmaster XM15 Carbine—from before and during the federal assault weapons ban:



(ECF 185-1, Yurgealitis ¶ 87.)

116. Following the passage of the federal assault weapons ban in 1994, firearms with “thumbhole” stocks emerged as a way to circumvent the “features” listed in the statute, such as the AK-47 variant pictured here in a 1998 U.S. Treasury Department/ATF analysis:



(ECF 185-1, Yurgealitis ¶ 91; Ex. 240, U.S. Treasury Dept., *Study on the Sporting Suitability of Modified Semiautomatic Rifles* (April 1998) at OAG002698–99.)

117. The 2004 CRS report noted that “[t]here is a general lack of definitive data on ‘assault weapons’ and the wider population of firearms that constitute the civilian gun stock. Consequently, the number of SAWs [semiautomatic assault weapons] available to civilians for

possession or transfer is only estimated, as is the frequency with which [semiautomatic assault weapons] are used in crimes.” (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 10.)

118. Prior to the enactment of the federal assault weapons ban, production of AR-15-type rifles had grown during the early 1990s, reaching a peak in 1994. (Ex. 243, Christopher S. Koper, *An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994–2003*, Rpt. to the Nat’l Institute of Justice, U.S. Dep’t of Justice (June 2004) at 35.) Even so, the 2004 CRS report noted that “SAWs [semiautomatic assault weapons] constituted less than 1% of the civilian gun stock” at the time the federal assault weapons ban took effect in 1994. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 10.)

119. By 1996 and 1997, production of legalized AR-type rifles had fallen by 51%, despite production of other rifles continuing to increase. (Ex. 243, Koper, *An Updated Assessment of the Federal Assault Weapons Ban* at 35.) AR production trends reversed again during the late 1990s, however, rising over 150%. (*Id.*)

120. When the federal assault weapons ban expired in 2004, there were 4,516,660 firearms of all types manufactured or imported for the U.S. domestic market that year according to data collected by the ATF and the U.S. International Trade Commission (“ITC”) from firearms manufacturers. (ECF 190-1, Klarevas at 14; ECF 230-17 Fatohi Dep. 100:5–20, 112:23–113:13; ECF 230-19, NSSF, *Firearm Production in the United States* (2023 ed.) at 16.)

121. Neither the ATF nor the U.S. ITC maintain data specific to “modern sporting rifles”—NSSF’s term for AR- and AK-platform rifles.⁴ (ECF 190-1, Klarevas at 13; ECF 230-17,

⁴ NSSF states in its interrogatory responses that the term “modern sporting rifle” refers to “an AR- or AK-platform rifle, and variants thereof, and has the same general design features of these rifles,” Ex. 123 at 12,

Fatohi Dep. 73:21–74:12; Trial Tr. (Ronkainen) 331:11–16.) Nor are all semiautomatic rifles considered “modern sporting rifles”. (Trial Tr. (Ronkainen) 336:11–12.) But based on undisclosed “industry estimates” collected by NSSF,⁵ NSSF has estimated that there were approximately 314,000 “modern sporting rifles”—AR- and AK-platform rifles—produced for the U.S. domestic market in 2004. (ECF 190-1, Klarevas at 14, Table 1; ECF 230-17, Fatohi Dep. 209:7–210:16; ECF 230-19, ECF 230-19, NSSF, *Firearm Production in the United States* (2023 ed.) at 7) In other words, in 2004, when the federal assault weapons ban expired, AR- and AK-platform rifles comprised approximately 7% of all firearms produced for the U.S. domestic market that year according to NSSF’s estimation. (ECF 190-1, Klarevas at 14, Table 1.)

122. As James Ronkainen, an engineer who led product development for “modern sporting rifles” at Remington, testified at trial, the market for “modern sporting rifles” was slow-moving prior to 2004. (Trial Tr. (Ronkainen) 335:17–336:01.) The lapse of the federal assault weapons ban in 2004, however, initiated a period of growth in the market for “modern sporting rifles.” (*Id.*)

g. After the federal assault weapons ban expired in 2004, and amid the ongoing wars in Afghanistan and Iraq, firearms manufactures introduced more “combat-proven” AR-15 rifle variants into the civilian market.

123. Although Colt first introduced a semiautomatic AR-15 for the civilian market in 1964, NSSF’s estimates indicate that nearly 90% of all AR- and AK-platform rifles produced for the U.S. civilian market have been produced after 2004—after the expiration of the federal assault

and former NSSF Director of Research and Market Development Jim Curcuruto testified the term did not include pistols or shotguns. (ECF 230-7, Curcuruto Dep. at 16:2–5; 36:9–18.) However, NSSF’s corporate representative testified that the modern sporting rifle category can include pistols and shotguns. (ECF 230-17, Fatohi Dep. 45:11–21; 50:19–24.)

⁵ Undisclosed data is just one of the bases on which State Defendant seek to preclude consideration of certain NSSF data as unreliable, including with respect to modern sporting rifle production. (ECF 223 at 12–13.)

weapons ban. (ECF 190-1, Klarevas at 13–14, Table 1; ECF 185-1, Yurgealitis ¶ 60; Ex. 245, Alex Horton et al., “Decades of marketing reinvented the AR-15 into a top-selling firearm,” *Washington Post* (March 27, 2023).)

124. As *Gun Digest* observed: “AR-style rifles weren’t immediately accepted by the industry as a whole. For many years, the assault rifle stereotypes lingered—possibly because the gun is still used by so many branches of military, and a large portion of the general public viewed the entire AR-line as synonymous with the M16/M4.” (Ex. 223, *Gun Digest*, 64th ed., 2010 (excerpt) at 184.) But within five years of the 2004 expiration of the assault weapons ban, *Gun Digest* would observe: “Perhaps now, though, these perceptions are finally changing. Today, the AR is embraced in almost every corner of the shooting industry.” (*Id.*)

125. At the same time as the federal assault weapons ban was expiring in 2004, the U.S. military was engaged in wars in both Afghanistan and Iraq. (Trial Tr. (Eby) 157:25–158:7.) In April and November 2004, for example, U.S. troops were using M4 and M16 rifles in intense fighting in battles like the two battles of Fallujah. (ECF 222-2, Tucker ¶¶ 1, 11; ECF 232-3, Eby Dep. 35:22–36:5.)

126. A former president of NSSF, Doug Painter, told the *Washington Post*: “There has never been a better accidental advertising campaign in history.” (Ex. 285, Todd Frankel et al., “How the AR-15 became a powerful political, cultural symbol in America,” *Washington Post* (March 27, 2023) at 5.)

127. According to ATF and U.S. ITC data, the total number of firearms of all kinds manufactured or imported for the U.S. domestic market in 2004 had declined 53% from an annual peak in 1994—from 6,932,329 total firearms in 1994 to 4,516,660 total firearms in 2004. (ECF

190-1, Klarevas at 14; ECF 230-19, ECF 230-19, NSSF, *Firearm Production in the United States* (2023 ed.) at 16.)

128. Amid this long-term decline in overall firearms production and with the federal assault weapons ban having expired, major firearms manufacturers, such as Smith & Wesson, began offering new “tactical rifles” that were “specifically engineered to meet the needs of global military and police personnel, as well as sporting shooters.” (Ex. 236, Smith & Wesson, “Company Expands Military & Police Series With Rifles Designed for Law Enforcement, Military, and Sporting Shooters,” (Jan. 18, 2006); Ex. 245, Alex Horton et al., “Decades of marketing reinvented the AR-15 into a top-selling firearm,” *Washington Post* (March 27, 2023).)

129. In January 2006, Smith & Wesson announced it would begin shipping its new “M&P15 Rifle”—an addition to the company’s “Military & Police (M&P)” series of firearms. (Ex. 236, Smith & Wesson, “Company Expands Military & Police Series With Rifles Designed for Law Enforcement, Military, and Sporting Shooters,” (Jan. 18, 2006).) According to Smith & Wesson’s press announcement, the M&P15 Rifle incorporated a “traditional AR-15 design” that was “combat-proven”. (*Id.*)

130. Chambered in 5.56mm NATO ammunition—the same caliber used in the U.S. military’s M16 and M4 rifles—the M&P15 Rifle incorporated “a full set of standard features currently unmatched in other AR-15-type tactical rifles.” (*Id.*) In announcing the M&P15 Rifle, Smith & Wesson’s CEO at the time stated:

We believe the features of these tactical rifles make them strong contenders in the military and law enforcement markets. We also believe that our M&P rifle series fills a tremendous gap in the marketplace by delivering high-quality, feature-rich tactical rifles that will be readily available in commercial channels.

(*Id.*)

131. Later that year, *Gun Digest* would point to a “resurgence” at Smith & Wesson coinciding with the company’s release of “several variations of an AR-style rifle, the M&P15.” (Ex. 222, *Gun Digest*, 61st ed., 2007 (excerpt) at 4.)

132. According to ATF and U.S. ITC data, the total number of firearms of all kinds manufactured or imported for the U.S. domestic market increased 16.4% from 2005 to 2006—from 4,753,393 to 5,531,699. (ECF 190-1, Klarevas at 14, Table 1.) That 2006 figure remained, however, 25% below the 1994 peak. (*Id.*) Plaintiff NSSF has estimated that production of AR- and AK-platform rifles increased year-over-year by 28% from 2005 to 2006, the year Smith & Wesson introduced the M&P15 Rifle. (*Id.*)

133. NSSF estimates that the upward trend in production of AR-platform rifles like the Smith & Wesson M&P15 continued in 2007, 2008, and 2009—despite the onset of a recession in the overall U.S. economy. (*Id.*) NSSF estimates that production of AR- and AK-platform rifles for the U.S. domestic market reached new annual peaks in each of those years. (*Id.*) NSSF’s estimate of the same figure for 2009 is 1,006,000—a 59% year-over-year increase from NSSF’s estimate for 2008 and a 349% higher figure than NSSF’s estimates for any year prior to the enactment of the 1994 federal assault weapons ban. (*Id.*)

134. Data from ATF and U.S. ITC indicates that in 2009 total production of all firearms for the U.S. domestic market surpassed the prior 1994 peak, reaching a total of 8,376,936 firearms of all types—a 21% increase over the prior 1994 peak of 6,932,329 firearms. (ECF 190-1, Klarevas at 14, Table 1.)

135. The year 2009 marked the inauguration of the first Democrat to hold the presidency since the 2004 expiration of the federal assault weapons ban. (ECF 230-18, Fatohi Dep. 143:6–21.) *Gun Digest* would later describe the impact of the presidential election as “spur[ing] the first

example of what amounted to mostly panic buying” driven by fears of potential firearms legislation. (Ex. 94, *Gun Digest*, 70th ed., 2016 (excerpt) at 40.)

136. In remarking on the election’s impact on the 2009 edition of the firearm industry’s annual trade show—the SHOT Show sponsored by NSSF—*Gun Digest* thanked “the Obama Gun Sales Team” for increased interest in “tactical guns” and further observed:

The big news was, of course the torrid pace of black gun sales. To spend too much time talking about wholesale and retail rates of the AR-15s and their clones would be to overstate the obvious. Suffice to say that everything with detachable magazine [*sic*], pistol grip and bayonet lug was in high demand.

(Ex. 88, *Gun Digest*, 64th ed., 2010 (excerpt) at 198.)

137. *Gun Digest* attributed the increased interest in 2009 in AR-style firearms not to any new technological innovation but to “fear of upcoming legislation”:

But the truth is a black rifle is a black rifle. One AR clone works pretty much like another and the proliferation of black gun makers didn’t really have anything new. A couple different variations of the gas-piston AR upper are now on the market, but they really didn’t offer anything new and radical. All the hoopla and buying frenzy was based more on fear [*sic*] upcoming legislation than on anything new in the design area . . . And more buyers of black rifles mean [*sic*] more voters when the issue finally comes to the fore.

(*Id.*)

138. At his deposition, Salam Fatohi, NSSF’s designated Rule 30(b)(6) witness, indicated that “panic buying” is a term used in the firearms industry to refer to “a rush of retail activity to go and legally purchase firearms that . . . consumers could possibly not get at a later date.” (ECF 230-18, Fatohi Dep. 112:8–22.) Fatohi further testified:

[A]nytime there is a shift in political appetite to, say, ban things, further regulate, there is usually a drive by consumers to go and purchase those things that would be banned under that possible legislation. Or even—not even if there’s a legislation provided. If someone gets in office that makes their campaign to ban firearms, that largely, just by observing trends, that will motivate consumers to then go and buy those things because they largely want them. And they may not have planned to buy it then, but if it’s going to be gone, they want to get their hands on it.

(*Id.* 110:14–111:03.)

139. As sales of AR- and AK-platform rifles climbed, NSSF also came up with a new term to refer to them: “modern sporting rifles.” (ECF 230-7, Curcuruto Dep. 37:14–38:4, 92:18–93:8.) In subsequent years, NSSF would produce videos explaining “what a modern sporting rifle was” to its members, because “that term was probably not very familiar with a lot of AR [and] AK owners” even as late as 2010 or 2011. (*Id.* 129:4–21, 130:9–23.)

140. By 2009, in addition to Smith & Wesson, other large firearm manufacturers like Remington had introduced AR-platform rifles. (Ex. 223, *Gun Digest*, 64th ed., 2010 (excerpt) at 184.) In the late 1990s and early 2000s, Remington had grown to become one of the largest, if not the largest, firearms manufacturers in the world—even though it did not produce any “modern sporting rifles” until 2007. (Trial Tr. (Ronkainen) 221:9–23, 334:14–16, 358:5–20.) But by 2008, Remington had become a corporate affiliate of Bushmaster, an early manufacturer of “modern sporting rifles,” and by 2011, both Remington and Bushmaster were part of the same corporate family as DPMS (Defense Procurement Manufacturing Services)—one of the largest manufacturers of “modern sporting rifles” in the U.S. at that time. (*Id.* 226: 4–16, 232:1–25.)

141. Smaller manufacturers had also become active in the market for “modern sporting rifles”. (*Id.* 328:14–25.) When *Gun Digest* released its 2010 edition, there were more than 60 manufacturers of AR-style rifles and parts. (Ex. 223, *Gun Digest*, 64th ed., 2010 (excerpt) at 184.)

142. The year 2012—a presidential election year—marked another peak in total firearm production for the U.S. domestic market according to ATF and U.S. ITC data. (ECF 190-1, Klarveas at 14, Table 1; ECF 230-17, Fatohi Dep. 143:16–21) *Gun Digest* noted the following in the 2012 edition: “Firearm sales set a brisk pace the last few years due mainly to fears of gun control from the current administration in Washington.” (Ex. 90, *Gun Digest*, 66th ed., 2012 (excerpt) at 210.)

143. Subsequent presidential election years—2016 and 2020—would likewise see even higher peaks. (ECF 190-1, Klarevas at 14, Table 1; ECF 230-17, Fatohi Dep. 118:6–12; 119:4–9.) In 2021—when a Democratic president again succeeded a Republican president—total firearm production for the U.S. domestic market reached a peak that was 29% higher than even the previous annual peak—recorded just one year prior, in 2020. (ECF 190-1, Klarevas at 14, Table 1; ECF 230-17, Fatohi Dep. 119:4–120:12.)

144. NSSF estimates of “modern sporting rifle” production indicate that from 2005 to 2021, production of “modern sporting rifles” as a share of total annual firearm production for the U.S. domestic market rose from 7% in 2005 to 18% by 2021. (ECF 190-1, Klarevas at 14, Table 1, and 16, Figures 4–5.) An aggregate comparison of NSSF’s estimates of “modern sporting rifle” production to ATF and U.S. ITC data from 1990 to 2021 indicates that if NSSF’s estimates are accurate, then AR- and AK-platform rifles accounted for 11% of the domestic stock of firearms in the U.S. as of 2021. (*Id.* at 15.) According to NSSF’s estimates, nearly 9 out of every 10 of the rifles in that aggregate stock of “modern sporting rifles” has been produced since the federal assault weapons ban expired. (*Id.* at 14, Table 1.)

145. How many of these weapons are personally owned by Americans is unknown, because available data sources are problematic. (*Id.* at 4.) Annual data collected by ATF from firearms manufacturers, known as the Annual Firearms Manufacturing and Exporting Report (“AFMER”), is limited to production numbers, not ownership numbers. (Trial Tr. (Ronkainen) 332:11–333:07.) ATF’s AFMER data also does not distinguish between “modern sporting rifles” and other rifles, and it includes rifles that are ultimately acquired by law enforcement. (*Id.* 331:11–332:10.)

146. Ownership of “modern sporting rifles” is likely concentrated. (ECF 190-1, Klarevas at 18.) According to a 2022 survey by NSSF of people who own “modern sporting rifles,” the average number of “modern sporting rifles” owned per respondent was 3.8 in 2022. (*Id.*) Plaintiffs’ trial witnesses corroborate this trend: Eby has “approximately” 22 AR-style rifles, and Watt has “several.” (ECF 232-3, Eby Dep. 17:8–14; Trial Tr. (Watt) 456:7–11.) Plaintiff Brian Normal similarly declared that he owns three AR-15 rifles. (ECF 200 ¶ 4.) According to data collected in another survey, 59% of AR-15-style rifles have been owned by just 4.3% of AR-15-style rifle owners. (ECF 190-1, Klarevas at 11.) If these survey results are accurate, they indicate that AR-15-style rifles are largely concentrated in the hands of a fraction of all AR-15-style rifle owners, let alone all gun owners. (*Id.*)

147. One manufacturer of “modern sporting rifles,” Palmetto State Armory, tells its customers that “[p]utting guns into ‘common use’ is an important legal defense established by the Supreme Court that safeguards the rights of the people against tyranny by prohibiting restrictions on firearms found to be ‘in common use.’ Putting any gun into ‘common use’ protects against any attempt by the government to further infringe on the Second Amendment right of all Americans.” (Palmetto State Armory, “About Palmetto State Armory,” <https://palmettostatearmory.com/about-psa.html> (last visited Oct. 9, 2024).) Claiming its “mission” is to “maximize freedom, not profits,” Palmetto State Armory notes on its website: “We want to sell as many AR-15 and AK-47 rifles as we can and put them into common use in America today.” (*Id.*)

148. The first year Palmetto State Armory reported manufacturing rifles to the ATF was 2010, when the company reported 1,363 rifles produced that year. (Ex. 67, ATF AFMER Report (2010) at 29.) Nine years later, in 2019, Palmetto State Armory reported manufacturing 26,692 rifles. (Ex. 76, ATF AFMER Report (2019) at 86.)

h. James Ronkainen’s career at Remington reflects the firearms industry’s post-2004 shift toward semiautomatic versions of the M16 and M4.

149. Plaintiffs’ trial witness, James Ronkainen, worked at Remington from 1990 until 2016. (ECF 232-22, Ronkainen C.V.) During much of Ronkainen’s tenure at Remington, the company did not produce so-called “modern sporting rifles.” (Trial Tr. (Ronkainen) 221:9–23, 334:14–16, 358:5–20.) In 1990, when Ronkainen started at Remington, he had “limited exposure” to “modern sporting rifles” at that point, and he personally worked on bolt-action rifles and pump-action shotguns throughout the 1990s and into the 2000s. (ECF 232-12, Ronkainen Dep. 100: 9–101:15; ECF 232-22, Ronkainen C.V. at 2.)

150. In 2008, Ronkainen became Director of Department of Defense/Military Products Development at Remington, which around that time had begun competing for military contracts for developing and producing a rifle to potentially replace the M4. (Trial Tr. (Ronkainen) 224:13–215:5, 238:12–20.) Then, in 2013, in addition to overseeing military product development at Remington, Ronkainen assumed responsibility for another product development line: “modern sporting rifles.” (*Id.* 237:7–25.)

151. By 2013, Remington had not only begun producing Remington-branded AR-style rifles, it had also become corporate affiliates with Bushmaster and DPMS—two of the largest and most well-known brands for “modern sporting rifles” in the U.S. at that time. (*Id.* 237:15–25.) Because of the similarities between these two assignments—developing rifles for the military and developing “modern sporting rifles” for the commercial market—Ronkainen assumed responsibility for overseeing the product development for both product lines. (*Id.* 350:1–23.) Ronkainen’s responsibilities did not include, however, product development for semiautomatic rifles that were not “modern sporting rifles”—those were under somebody else’s purview at Remington. (*Id.* 350:24–351:3.)

152. Production and testing of Remington’s military rifles took place at Remington’s factory in Ilion, New York—the same location as Remington’s “modern sporting rifles.” (*Id.* 253:16–19, 254:17–255:3, 323:20–324:01, 344:9–24.) Parts for Remington’s military rifles were manufactured on equipment shared with commercial production. (*Id.* 343:10–22.) Although Remington maintained a separate assembly area for military rifles within the Ilion factory, the primary reason for this separation was because the military rifles, unlike “modern sporting rifles,” were classified as machineguns under the National Firearms Act. (*Id.* 253:16–254:16, 343:23–344:5, 344:25–345:4.)

153. In multiple instances during his trial testimony, Ronkainen used “MSR”—meaning “modern sporting rifle”—to refer to Remington’s military rifles. (*Id.* 227:23–228:3, 245:16–20, 251:17–21, 349:13–19.)

2. The semiautomatic AR-platform rifles the Act restricts are functionally identical to the M16 and M4 rifles used by the U.S. military except for the absence of a burst- or automatic-fire setting.⁶

154. The magazine-fed, semiautomatic AR-type rifles available for purchase by the public are identical copies of military firearms except for the lack of select-fire capability. (ECF

⁶ The following individual plaintiffs have alleged or otherwise declared their desire to acquire or possess AR-platform rifles: in *Barnett*—Caleb Barnett (Sig Sauer M400) (ECF 198), Brian Norman (Yankee Hill AR-15 Specters, Rock River AR-15 Varmint A4) (ECF 200); and in *FFL-IL*—Jasmine Young (“AR-style rifle”) (ECF 208); Chris Moore (Bravo Company Mid 16 Mod 0 “or similar AR-15 style rifle”) (ECF 207). In addition, Todd Vandermyde has declared that he is a member of Gun Owners of America, an *FFL-IL* organizational plaintiff, that he owned a “semiautomatic AR-platform rifle” when the Act took effect, and that he would acquire new parts, including “AR or AK receivers . . . in order to build new or modify already-owned rifles.” (ECF 209.) None of the individual plaintiffs in the *Langley* matter identified a firearm they wish to acquire when asked in written discovery to “[i]dentify all firearms, ammunition feeding devices, and/or firearm attachments you owned or possessed in Illinois as of January 10, 2023”, stating only they “would obtain over 15 round magazines for a variety of rifles, pistols, and shotguns.” See Attachment A (Responses of Jeremy W. Langley and Timony B. Jones to Interrogatories of Brendan Kelly) at Interrogatory Response 5; Attachment B (Responses of Matthew Wilson to Interrogatories of Brendan Kelly) at Interrogatory Response 12.

185-1, Yurgealitis ¶ 115.) They retain the identical performance capabilities and characteristics as initially intended for use in combat, except for full-automatic capability. (*Id.* ¶¶ 45, 52, 118.)

a. M16 and M4 rifles fire the same caliber ammunition at the same velocity as a typical semiautomatic AR-platform rifle.

155. The typical caliber of an AR-platform rifle is .223 or 5.56mm NATO. (ECF 230-17, Fatohi Dep. 33:24–34:19.) The “NATO” in 5.56mm NATO caliber refers to the North Atlantic Treaty Organization, because it is one of the standardized calibers used by countries in the NATO military alliance. (ECF 185-1, Yurgealitis ¶ 102.) The 5.56mm NATO caliber is very similar to .223 caliber, and many AR-type rifles sold in the civilian market use one or both. (ECF 185-1, Yurgealitis ¶ 102; ECF 230-17, Fatohi Dep. 33:24–34:19; Trial Tr. (Pulaski) 43:13–21.)

156. The table below shows examples of AR-type rifles offered by top U.S. rifle manufacturers, all of which are chambered in 5.56mm NATO and/or .223 caliber:





Smith & Wesson M&P 15 Sport III (5.56mm NATO)



Diamondback DB15 (5.56mm NATO)



Sig Sauer M400 TREAD (5.56mm NATO)



Daniel Defense MK12 (5.56mm NATO)



(ECF 185-1, Yurgealitis ¶ 102.)

157. The M16 and M4 series rifles issued by the U.S. military also use 5.56mm NATO caliber ammunition. (Ex. 261, U.S. Army, FM 3-22.9, “Rifle Marksmanship M16-/M4-Series Weapons” (2008) at 2-35, 2-36; Trial Tr. (Eby) 164:14–165:3.)

158. Variations of 5.56mm NATO caliber ammunition used by the U.S. military have included: the M193, a 55 grain⁷ bullet that was the primary bullet in use from the Vietnam War until its replacement in the 1980s; the M855, a 62 grain bullet designed with a steel penetrator to be used against body armor in the 1980s and subsequently used in the U.S. wars in Iraq and Afghanistan; and the M855A1 Enhanced Performance Round, which is now the primary bullet for U.S. forces in combat. (ECF 232-17, Eby/Musselman at 8; Ex. 261, U.S. Army, FM 3-22.9 at 2-35, 2-36.)

159. The M855 cartridge used in the M16A2, M16A3, M16A4, and M4-series rifles during the wars in Iraq and Afghanistan is readily available for purchase by civilians for use in semiautomatic AR-15 rifles. (Trial Tr. (Eby) 175: 9–11; ECF 185-1, Yurgealitis ¶ 183; Ex. 261, U.S. Army, FM 3-22.9 at 2-35.)

160. Muzzle velocity is a measurement of the speed of a projectile (bullet) in feet per second when leaving the barrel of a firearm. (ECF 185-1, Yurgealitis ¶ 28b.) The muzzle velocity

⁷ Bullet weight is measured in “grains”. (ECF 185-1, Yurgealitis ¶ 121.)

of M16-series rifles ranges from 3,100 feet per second (M16A2/A3/A4) to 3,250 feet per second (M16A1). (*Id.* ¶ 47; Ex. 261, U.S. Army, FM 3-22.9 at 2-1.)

161. The muzzle velocity of M4 series rifles is 2,970 feet per second. (*Id.*) The lower muzzle velocity of the M4 can be attributed to its shorter barrel length. (ECF 185-1, Yurgealitis ¶ 47; Trial Tr. (Eby) 173:3–14.)

162. Civilian AR-15 rifles chambered in .223/5.56mm caliber have the same performance in terms of muzzle velocity as the military’s M16 and M4 rifles. (ECF 185-1, Yurgealitis ¶ 191.) The typical muzzle velocity of a .223 caliber bullet is 3,200 feet per second. (*Id.* ¶ 180; ECF 194-1, Schreiber ¶ 21.) The listed muzzle velocity of 5.56mm NATO ammunition currently available on the civilian market is 3,130 feet per second. (ECF 185-1, Yurgealitis ¶ 121; Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 604.)

b. The wounding capability of a bullet fired from an M16 or M4 rifle is the same as a bullet fired from a typical, semiautomatic AR-platform rifle.

163. The 5.56mm NATO rounds used by M16, M4, and AR-15 rifles “have a relatively low mass as compared to other bullets; however, the speed of these bullets is relatively fast,” which produces “a larger amount of kinetic energy[.]” (Ex. 241, P. Rhee et al., *Gunshot wounds: A review of ballistics, bullets, weapons, and myths*, *Journal of Trauma & Acute Care Surgery* (March 16, 2016) at 856.) Bullets cause damage to human bodies by transferring kinetic energy from the bullet to the body. (ECF 185-3, Hargarten ¶ 15.) An AR-style firearm has a bullet with three times the speed of a pistol so that it destroys human tissue. (Trial Tr. (Eby) 200:16–21.)

164. The kinetic energy of a bullet as it leaves the muzzle of a firearm is called muzzle energy. (ECF 185-1, Yurgealitis ¶ 28c.) The muzzle energy of a weapon is calculated using the bullet’s muzzle velocity. (Ex. 241, Rhee, *Gunshot Wounds* at 856.) Muzzle energy equates to wounding potential. (*Id.*)

165. A projectile must hit the target to transfer energy to that target. (ECF 185-3, Hargarten ¶ 20.) A bullet striking the body transfers kinetic energy that ripples and tears through tissue and organs. (*Id.* ¶ 13.) When a bullet hits its target, the physical manifestations of the energy transfer are temporary and permanent cavities created by the bullet. (*Id.* ¶ 20.)

166. As the bullet passes through the tissue, initially crushing then lacerating, the space left by the tissue forms a permanent cavity. (Ex. 241, Rhee, *Gunshot Wounds* at 863.)

167. Higher-velocity bullets create a pressure wave that forces the tissues away, creating not only a permanent cavity the size of the caliber of the bullet but also a temporary cavity or secondary cavity, which is often many times larger than the bullet itself. (*Id.*) The term for this is cavitation injury. (*Id.* at 863–64.)

168. Holding all else equal, the larger the cavity, the more severe the injury. (ECF 194-1, Schreiber ¶ 23.) High velocity rounds are much more likely to have significant cavitation injury. (Ex. 241, Rhee, *Gunshot Wounds* at 864.)

169. Wounds inflicted by 5.56mm NATO rounds fired from M16 rifles in combat are identical to wounds inflicted on civilians by bullets shot from AR-15 rifles. (ECF 194-1, Schreiber ¶ 36.) The large kinetic energy and force produced from an AR-15-style weapon means that a round fired by such a weapon typically creates a relatively large temporary cavity in a human body, with devastating effects to tissue and surrounding organs. (*Id.* ¶ 24.)

170. Projectile fragmentation can amplify the effects of the temporary cavity, increasing the severity of a wound. (ECF 185-1, Yurgealitis ¶ 44 (quoting DiMaio, *Gunshot Wounds*, 2d ed. (CRC Press LLC 1999), p. 54.) The fragmentation of 5.56mm NATO rounds contributes to their effectiveness. (*Id.*) Lighter bullets tend to break up sooner when they are striking objects. (Trial Tr. (Watt) 463:18–21.)

171. If a bullet fragments inside the body, it transfers and distributes more energy and potentially causes greater injury to adjacent tissue and organs. (ECF 185-3, Hargarten ¶ 18.) When a bullet pitches and yaws, the energy of the projectile is absorbed by the surrounding tissue during this distance, causing stretching and tearing of tissue. (Ex. 241, Rhee, *Gunshot Wounds* at 863.)

172. Laboratory testing confirms the wounding potential of 5.56mm NATO rounds fired from AR-15-style rifles. (See generally ECF 185-3, Hargarten ¶¶ 21–40.) A study using gelatin blocks to simulate soft human tissue found that the energy release per 5.56mm NATO caliber bullet fired from an AR-15 is approximately three times greater than for a Thompson machinegun firing in .45 ACP caliber, approximately four to nineteen times greater than handguns firing in typical handgun calibers (.25 caliber, .32 caliber, .40 caliber), and approximately ten times greater than a model musket ball. (ECF 185-3, Hargarten ¶ 36.)

173. The same study found that the temporary cavity caused by the 5.56mm NATO bullet in the gelatin tests was significantly larger than the cavity sizes caused by the handguns, Thompson machine gun, and musket tested. (*Id.* ¶ 38.)

174. The energy release and greater temporary cavities associated with AR-15-style bullets are even more likely to cause serious damage to children as compared to teenagers or adults. (*Id.* ¶ 48.) Children have smaller torsos, relatively more compressed or adjacent vital organs, and smaller blood reserves. (*Id.*)

175. In the 2012 shooting at Sandy Hook Elementary School in Newtown, Connecticut, where the shooter used an AR-15 rifle with 5.56mm caliber ammunition, not a single child wounded by a bullet survived. (*Id.*; Ex. 288, Rpt. of the State’s Attorney for the Judicial District of Danbury on the Shootings at Sandy Hook Elementary School & 36 Yogananda Street (Nov. 25, 2023) at 10.) In the 2022 shooting at Robb Elementary School in Uvalde, Texas, approximately

80% of children hit by bullets fired by the AR-15 rifle used in that shooting died. (ECF 185-3, Hargarten ¶ 48; ECF 185-2, Andrew ¶ 43.)

176. According to one of its designers, the AR-15 was engineered to create “maximum wound effect.” (ECF 182-2, Andrew ¶ 35.) Travelling at nearly three times the speed of sound, an AR-15 bullet striking the body delivers a payload of kinetic energy that rips open a cavity inside the flesh, which collapses back on itself, destroying inelastic tissue, including nerves, blood vessels, and vital organs. (*Id.*)

177. As a leading trauma surgeon and retired Navy Captain with 24 years of active-duty service described the AR-15: “It’s a perfect killing machine.” (*Id.*)

c. A typical semiautomatic AR-platform rifle has the same range and penetration capability as an M16 or M4 rifle.

178. AR-15-type rifles available to civilians and chambered in .223 or 5.56mm NATO calibers have the same range as the U.S. military’s M16 and M4 rifles. (ECF 185-1, Yurgealitis ¶¶ 104, 191.)

179. Marksmanship training publications by the U.S. Army list the “maximum effective range” for M16 and M4 series rifles. (Ex. 261, U.S. Army, FM 3-22.9 at 2-1.) “Maximum effective range” is defined as: “The greatest distance at which a soldier may be expected to deliver a target hit.” (*Id.* at Glossary-7.)

180. The maximum effective range for a point target is the maximum distance at which the weapon can hit a target about the size of the upper body and still injure, incapacitate, or kill. (ECF 185-1, Yurgealitis ¶ 48.) According to the U.S. Army’s 2008 edition of FM 3-22.9, “Rifle Marksmanship M16-/M4-Series Weapons,” the maximum effective ranges for M16 and M4 series rifles for point targets are: 460 meters for the M16A1; 500 meters for the M4; and 550 meters for

the M16A2, M16A3, and M16A4. (ECF 185-1, Yurgealitis ¶ 46; Ex. 261, U.S. Army, FM 3-22.9 at 2-1.)

181. The maximum effective range is different than the “maximum range,” which the U.S. Army defines as: “The longest distance a projectile will travel when fired from a weapon held at the optimum angle.” (Ex. 261, U.S. Army, FM 3-22.9 at Glossary-7). The maximum ranges for M16 and M4 series rifles for area targets are: 2,653 meters for the M16A1; and 3,600 meters for the M4, the M16A2, the M16A3, and the M16A4. (*Id.* at 2-1.)

182. *Gun Digest* is a publication that is widely relied upon by both firearms retailers and customers to understand what firearm models are currently being sold in the U.S. (ECF 185-1, Yurgealitis ¶ 135; Trial Tr. (Ronkainen) 310:10–22.) *Gun Digest* publishes ballistics information about centerfire rifle cartridges available in the civilian market, including the 5.56mm NATO cartridges used in many AR-15 rifles. (ECF 185-1, Yurgealitis ¶ 121.)

183. The 2024 edition of *Gun Digest* (“*Gun Digest 2024*”) includes ballistics information, such as velocity (in feet per second) and energy (in foot-pounds), for centerfire rifle cartridges at five ranges: at the muzzle, 100 yards, 200 yards, 300 yards, and 400 yards. (ECF 185-1, Yurgealitis ¶ 121; Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 604–22.)

184. The following chart lists the ballistics information for 5.56mm NATO ammunition, the caliber used in many AR-15 rifles, available in the civilian market as published in *Gun Digest 2024*:

Cartridge	Bullet Weight (grains)	Velocity (FPS – feet/sec.)					Energy (foot-pounds)				
		Muzzle	100 yds.	200 yds.	300 yds.	400 yds.	Muzzle	100 yds.	200 yds.	300 yds.	400 yds.
5.56mm NATO	55	3130	2740	2362	2051	1750	1196	917	693	514	372

(ECF 185-1, Yurgealitis ¶ 121; Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 604.)

185. A 9mm handgun is generally considered to have a maximum effective range of between 0 to 50 yards. (ECF 185-1, Yurgealitis ¶ 28e.) *Gun Digest 2024* includes ballistics information, such as velocity (in feet per second) and energy (in foot-pounds), for centerfire handgun cartridges at three ranges: at the muzzle, 50 yards, and 100 yards. (Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 604–22.)

186. *Gun Digest 2024* lists the following ballistics information for 9mm Luger cartridges with a 115 grain bullet:

Cartridge	Bullet Weight (grains)	Velocity (FPS – feet/sec.)			Energy (foot-pounds)		
		Muzzle	50 yds.	100 yds.	Muzzle	50 yds.	100 yds.
9mm Luger	115	1155	1054	970	340	280	240

(*Id.* at 615)

187. At a range of 100 yards, a 5.56mm NATO round, the caliber used in many AR-15 rifles, is 282% faster than a 9mm Luger round, a typical handgun caliber (2,740 feet per second compared to 970 feet per second). (*Id.* at 604, 615.) At the same range, a 5.56 mm NATO round has an average kinetic energy that is 382% higher than a 9mm Luger round (917 foot-pounds compared to 240 foot-pounds). (*Id.*)

188. A 5.56mm NATO round is 151% faster at a range of 400 yards than a 9mm Luger round is at the muzzle (1,750 feet per second compared to 1,155 feet per second). (*Id.*) A 5.56mm NATO round has greater kinetic energy at a range of 400 yards than a 9mm Luger round has at the muzzle (372 foot-pounds compared to 340 foot-pounds). (*Id.*)

189. The velocity and energy of a 5.56mm NATO round fired from an M16, M4, or semiautomatic AR-15 rifle enable impressive penetration capabilities. (ECF 185-1, Yurgealitis ¶¶ 180, 183, 193.) According to the U.S. military, the M855 bullet, the 5.56mm caliber round used

by the U.S. military in Iraq and Afghanistan and readily available for civilian purchase for use in AR-15 rifles, is capable of penetrating a 3/8-inch-thick mild steel plate at a range of 160 meters. (*Id.* ¶ 183; Ex. 9, Jeffrey K. Woods, “M855A1 Enhanced Performance Round,” slide 4; Trial Tr. (Eby) 170:2–4, 172:2–4, 175:9–11.) The U.S. military initially selected the M855 after testing demonstrated it would penetrate a steel helmet at 600 meters. (Trial Tr. (Eby) 174:2–6.)

190. The current 5.56mm caliber ammunition used by the U.S. Army, the M855A1 Enhanced Performance Round, has greater penetration capability than the M855 round it replaced. (Trial Tr. (Eby) 174:02–20; ECF 185-1, Yurgealitis ¶ 183; Ex. 9.) The M855A1 was deliberately designed to penetrate obstacles in the path of the target—to shoot through walls, car doors, and body armor—and stay together through the barrier. (Trial Tr. (Eby) 174:2–174:25, (Watt) 463:23–464:15.) According to Plaintiffs’ expert Jeffrey Eby, M855A1 rounds are available for purchase online and can be used in civilian, semiautomatic AR-type rifles. (Trial Tr. (Eby) 170:8–14, 171:21–172:4, 175:9–17.)

191. According to the U.S. military, the M855A1 fired from an M4 can penetrate 3/8-inch-thick mild steel at 350 meters. (Ex. 9, Jeffrey K. Woods, “M855A1 Enhanced Performance Round,” slide 6.) The M855A1 is also capable of penetrating concrete masonry. (*Id.*, slide 10.)

192. Both the M855 and the M855A1 can penetrate soft body armor consisting of 24-layer Kevlar. (*Id.*, slide 6; Trial Tr. (Watt) 463:23–464:15.) Most standard-issue ballistic vests provided to uniformed law enforcement officers are not rifle-rated and do not protect the body against 5.56mm NATO caliber bullets. (ECF 185-2, Andrew ¶ 51; ECF 185-1, Yurgealitis ¶ 193; Trial Tr. (Eby) 178:7–9.) Although soft body armor can withstand most handgun bullets, it cannot withstand rifle caliber rounds, like the 5.56mm NATO ammunition used by AR-15 rifles. (ECF 185-1, Yurgealitis ¶ 193; Trial Tr. (Eby) 178:2–9.)

193. During the school shooting at Robb Elementary School in Uvalde, Texas, local police waited for appropriate armor and tactical units to confront the shooter armed with an AR-15 rifle. (ECF 185-2, Andrew ¶ 51.) A critical incident review by the U.S. Department of Justice following the shooting noted that “[t]hroughout the incident response, officers in the hallway often referenced a need for shields, even at one point saying they were waiting for shields. Others noted the inadequacy of the non-rifle rated shields in addressing the threat.” (Ex. 286, U.S. Dep’t of Justice, *Critical Incident Review: Active Shooter at Robb Elementary School* (2024) (excerpt) at 106.)

d. A typical semiautomatic AR-platform rifle functions identically to an M4 or M16 on the semiautomatic setting.

194. The AR-15’s ability to provide a high volume of accurate fire has been noted since early prototype testing by the U.S. Army. (Ex. 235, M16 Rifle Review Panel Report at C-3–4.) A 1959 test report by the U.S. Army comparing the AR-15 to the M14 concluded that “the lightweight rifles were much more effective than the M14 in terms of volume of fire and number of targets hit,” and that “a 5- to 7-man squad armed with the AR15 would be as effective as a 10-man squad armed with the M14.” (*Id.*)

195. After the AR-15’s adoption by the U.S. military and redesignation as the M16, a 1968 U.S. Army report regarding the M16 listed the weapon’s “[m]aximum rate of fire” as follows: 45 to 65 rounds per minute in semiautomatic; 150 to 200 rounds per minute in automatic; and 12 to 15 rounds per minute in sustained. (*Id.* at OAG003950.)

196. The 2008 edition of the U.S. Army’s marksmanship training publication, FM 3-22.9, lists the “maximum effective rate of fire” for the M16A1 rifle as: 45 to 65 rounds per minute in semiautomatic; 150 to 200 rounds per minute in automatic; and 12 to 15 rounds per minute in sustained. (Ex. 261, U.S. Army, FM 3-22.9 at 2-1.)

197. The 2008 edition of the U.S. Army’s FM 3-22.9 defines the “maximum effective rate of fire” as “[t]he highest rates of fire that can be maintained and still achieve target hits.” (*Id.* at Glossary-7.)

198. The “sustained rate of fire” is the “[r]ate of fire that a weapon can continue to deliver for an indefinite period without overheating.” (*Id.* at Glossary-10.)

199. Multiple versions of the M16 and M4 rifle series adopted by the U.S. military, including the M16A2, M16A4, and M4, have not had the ability to fire in fully automatic. (*Id.* at 7-12; ECF 230-1, Eby Dep. 159:6–160:21.) These rifles, the M16A2, the M16A4, and the M4, have instead had a “burst” setting in which the weapon fires three-round bursts with each separate trigger pull as long as ammunition is in the magazine. (Ex. 261, U.S. Army, FM 3-22.9 at 4-12, 7-12; Trial Tr. (Eby) 93:14–17, (Ronkainen) 231:10–14, (Dempsey) 560:17–19.)

200. The Army’s 2008 edition of FM 3-22.9 lists the “maximum effective rate of fire” for the M16A2, the M16A4, and the M4 as: 45 rounds per minute in semiautomatic; 90 rounds per minute in 3-round burst; and 12 to 15 rounds per minute in sustained. (Ex. 261, U.S. Army, FM 3-22.9 at 2-1.)

201. In addition to the M16A1, the M16A3 and the M4A1 have a setting for fully automatic fire. (*Id.*) The Army’s 2008 edition of FM 3-22.9 lists the “maximum effective rate of fire” for the M16A3 and the M4A1 as: 45 rounds per minute in semiautomatic; 150 to 200 rounds per minute in automatic; and 12 to 15 rounds per minute in sustained. (*Id.*)

202. The following table from the 2016 edition of the U.S. Army’s *Rifle and Carbine* training publication, TC 3-22.9, summarizes the select-fire settings for the different model versions of the M16 and M4 series rifles used by the U.S. military:

Table 2-1. Model Version Firing Methods Comparison

Weapon	Selector Switch Position			Buttstock	Barrel Length
M16A2	SAFE	SEMI	BURST	Full	20 inches
M16A3	SAFE	SEMI	AUTO	Full	20 inches
M16A4	SAFE	SEMI	BURST	Full	20 inches
M4	SAFE	SEMI	BURST	Collapsible	14.5 inches
M4A1	SAFE	SEMI	AUTO	Collapsible	14.5 inches
Legend: SEMI: semi-automatic firing selection AUTO: fully automatic firing selection BURST: three-round burst firing selection					

(Ex. 264, U.S. Army, *Rifle and Carbine*, TC 3-22.9 (May 2016), at Table 2-1 (p. 2-4).)

203. The removal of select-fire—enabling both semiautomatic fire and either full automatic (M16A1, M16A3, M4A1) or burst fire (M16A2, M16A4, M4)—is the only functional difference between the military and civilian versions of the AR-15. (*Id.*; ECF 185-1, Yurgealitis ¶ 57.) The semiautomatic AR-platform rifle functions identically to an M4 or M16 on the semiautomatic setting. (ECF 222-2, Tucker ¶ 15; ECF 222-3, Dempsey ¶ 34.)

204. A semiautomatic AR-15 fires one shot for each pull of the trigger until the ammunition supply is exhausted. (ECF 185-1, Yurgealitis ¶ 13a, n.2.) Many AR-15 models from major manufacturers are currently sold with 30-round magazines. (*Id.* ¶ 106.) Although manufacturers sometimes call this capacity “standard” for AR-15 rifles, that has not always been the case. (*Id.*)

205. The AR-15 prototypes field-tested in Vietnam in 1962 had 20-round magazines. (Ex. 233, 1962 ARPA Field Test Report at OAG003131.) In 1968, the U.S. Army recommended that magazines for the M16 have a 30-round capacity. (Ex. 235, Report of the M16 Rifle Review Panel Report at D-13.) Now, virtually all box magazines for M16 and M4 rifles in the U.S. military are 30-round magazines. (ECF 232-4, Eby-Musselman at 7.)

206. When Colt first introduced a semiautomatic AR-15 into the civilian market in 1964, the Colt AR-15 Sporter, that rifle came with a 5-round magazine. (ECF 185-1, Yurgealitis ¶ 60.) Colt continued to include 5-round magazines with its semiautomatic AR-15 rifles as late as 1987. (*Id.* ¶ 110.)

207. Now, the magazine capacity and time required to reload are the same between an M16 and an AR-15. (ECF 232-18, Boone ¶ 75.) The use of 30-round magazines allows shooters to shoot uninterrupted for longer periods and to get more shots off with fewer reloads. (ECF 185-2, Andrew ¶ 52.)

208. How fast the shooter can manipulate the trigger and manage recoil affect the actual firing capacity of a semiautomatic AR-15 in real-life circumstances. (ECF 232-18, Boone ¶¶ 75–76.) Some commercial AR-platform rifles have a lighter trigger pull weight than military rifles, which means that less force has to be applied to the trigger to initiate the firing sequence. (Trial Tr. (Ronkainen) 339:23–340:22.)

209. The trigger pull weight for military rifles is between 5.5 and 8.5 pounds. (*Id.* 340:3–18.) The military specifications for trigger pull weight are intentionally high to prevent inadvertent or accidental discharges. (*Id.* 242:1–5.) A heavier trigger pull weight makes a firearm more difficult to fire and also affects accuracy, because the extra exertion required to pull the trigger can minutely affect the position of the gun. (*Id.* 341:3–10.) Some semiautomatic AR-15 rifles have trigger pull weights as low as 2.5 pounds. (*Id.* 340:9–18.)

210. According to plaintiffs' expert J. Buford Boone III, professional shooter Jerry Miculek can fire a shot from a semiautomatic AR-15 rifle every 0.13 seconds on average, whereas an M16 firing in fully automatic fires a shot every 0.07 seconds. (ECF 232-18, Boone ¶ 77.) Although Boone references but does not include citations to specific videos of Miculek, the

YouTube account “Jerry Miculek – Pro Shooter” includes videos of Miculek using a semiautomatic AR-15 to fire five rounds into a torso-sized target in under one second (https://www.youtube.com/watch?v=v3gf_5MR4tE (last visited Oct. 18, 2024)), and 40 rounds from a semiautomatic IWI Tavor rifle into a torso-sized target in 6.48 seconds (<https://www.youtube.com/watch?v=cjx4KSKHIC4> (last visited Oct. 18, 2024)). (See also 720 ILCS 5/24-1.9(a)(1)(J)(xiv) (listing the IWI Tavor in the definition of “assault weapon”).) In other words, a semiautomatic AR-15 rifle can fire as many as five rounds in a single second.

e. M16 and M4 rifles use the same design features to manage recoil and maintain accuracy during rapid fire as a typical semiautomatic AR-platform rifle.

211. The ease of managing recoil is relevant to how effective a particular weapon is for combat. (ECF 230-1, Eby Dep. 217:16–218:6.) Recoil is the rearward impulse generated by firing the weapon that causes the weapon to move backwards against the shooter and rise. (Trial Tr. (Watt) 451:4–17.) Recoil management is critical to follow-on shots. (ECF 230-1, Eby Dep. 72:2–3.) The need to manage recoil during rapid fire contributed to the AR-15’s development and ultimate replacement of the M14. (Ex. 235, M16 Rifle Review Panel Report at B-7–8; ECF 232-4, Eby/Musselman at 5.)

212. Prior to the adoption of the AR-15 as the M16, shooting fully automatic was made more difficult by the much higher recoil of the heavier bullets used by weapons like the M14. (ECF 232-4, Eby-Musselman at 5.) The M14 was not “really acceptable in the fully automatic role when fired from the shoulder,” particularly when compared to the AK-47, which, because of its lighter ammunition cartridge, could “be fired more effectively from the shoulder in the automatic mode than [could] the M14.” (Ex. 235, M16 Rifle Review Panel Report at B-7–8.) As early as 1952, the U.S. Army’s ORO Study had concluded that the “[l]ow recoil of a small caliber weapon facilitates

dispersion control.”⁸ (Ex. 234, 1952 ORO Study at 3.) The AR-15’s use of what became the 5.56mm NATO cartridge helped mitigate recoil. (ECF 232-4, Eby-Musselman at 5.)

213. In addition to utilizing smaller caliber, high velocity ammunition with less recoil, AR-15 rifles also incorporated additional design features that kept the rifle stable during repeat fire. (Ex. 233, 1962 ARPA Field Test Report at OAG003131; ECF 230-17, Fatohi Dep. 65:3–15.) A pistol grip, flash suppressor, and forward grip are each features that assist a shooter in managing recoil. (Trial Tr. (Watt) 451:8–24.) All of these features are typical of AR-pattern rifles. (Trial Tr. (Ronkainen) 261:9–262:7.)

214. Descriptions from ARPA’s 1962 field test report note the incorporation of these features in early iterations of AR-15 rifles. As ARPA’s 1962 report noted, the AR-15’s “plastic stock with a rubber butt[] assembled in line with the bore” were designed “in conjunction with its high line of sight and separate hand grip” to “minimize rotation about the shoulder during firing.” (Ex. 233 at OAG003131.) In other words, the pistol grip allows for the firing of rapid shots by managing recoil. (Trial Tr. (Watt) 481:21–482:2.)

215. The AR-15 rifles field tested in 1962 also incorporated a flash suppressor. (Ex. 233 at OAG003131.) In addition to helping to conceal the shooter’s position, especially at night, a flash suppressor also assists in controlling “muzzle rise” or “muzzle climb”. (ECF 185-1, Yurgealitis ¶ 81e (quoting Ex. 268, Bureau of Alcohol, Tobacco, and Firearms, *Report and Recommendation on the Importability of Certain Semiautomatic Rifles* (July 6, 1989) at 7; see also Trial Tr. (Watt) 450:7–9, 451:4–7.) A flash suppressor is shaped to help direct the gas from the muzzle blast in certain paths to assist with managing recoil. (Trial Tr. (Watt) 449:25–450:11, 451:4–17.)

⁸ “Dispersion” is the displacement of bullets on a target. (Ex. 261, U.S. Army, FM 3-22.9 at Glossary-6, Glossary-11.)

216. The AR-15 rifles field tested by ARPA in Vietnam in 1962 incorporated a “two piece upper hand guard” designed to allow “rapid dissipation of heat” from the barrel. (Ex. 233, 1962 ARPA Field Test Report at OAG003131.) This additional grip space also allowed shooters to steady and control the rifle during rapid, repeat firing without being burned by a hot barrel. (ECF 185-1, Yurgealitis ¶ 96; Trial Tr. (Watt) 452:5–20.)

217. Since the initial testing of the AR-15 and its subsequent adoption as the M16, the U.S. military has incorporated additional features to manage recoil and maintain accuracy during rapid fire. (ECF 185-1, Yurgealitis ¶¶ 92, 96.) In 1997, the U.S. military began incorporating rail adapter systems into rifles like the M4. (*Id.*) Rail adapter systems enable the use of attachments like a protruding or vertical foregrip. (*Id.* ¶ 92.) Protruding foregrips allow a shooter to better control recoil and muzzle climb, thus increasing the hit probability of successive shots. (*Id.*; Trial Tr. (Watt) 449:8–19.)

218. The U.S. Army’s current marksmanship training publication, TC 3-22.9, notes that “[v]ertical foregrips (VFGs) assist in transitioning from target to target in close quarter combat.” (Ex. 264, U.S. Army, *Rifle and Carbine*, TC 3-22.9 (May 2016), at 4-6.) An image of a vertical foregrip from that publication appears below:

VERTICAL FOREGRIP

4-18. Vertical foregrips (VFGs) assist in transitioning from target to target in close quarter combat. (See figure 4-5.)

4-19. The further out the Soldier mounts the VFG, the smoother and quicker his transitions between multiple targets will be, however he should not mount it so far forward that using the VFG is uncomfortable.



Figure 4-5. Vertical foregrip example

(*Id.*)

219. A pistol grip, a barrel shroud, a flash suppressor, and a vertical foregrip all serve the same purpose on a military M4 or M16 as on a civilian AR-15. (ECF 230-1, Eby Dep. 300:6–303:3.) Each feature assists the shooter in managing recoil. (Trial Tr. (Watt) 451:8–24, 452:5–23.)

f. When U.S. troops train for and engage in combat with M16 and M4 rifles, they fire almost exclusively in semiautomatic.

220. Even with multiple features for mitigating recoil, experienced shooters will have a hard time keeping the sights and rifle bore aligned on what they want to hit when firing in automatic. (Trial Tr. (Watt) 451:8–24, 504:5–12; ECF 232-3, Eby Dep. 106:5–107:15.) Because semiautomatic fire is more accurate, less likely to result in weapon damage or jamming, and more logistically sustainable, the U.S. military trains infantry riflemen equipped with an M4 or M16 that semiautomatic fire is the widely preferred method of fire. (ECF 222-2, Tucker ¶¶ 10–13; ECF 222-3, Dempsey ¶¶ 17–22.)

221. All four military veterans who testified at trial—including two witnesses called by Plaintiffs, Watt and Eby—affirmed that M16 and M4 rifles are most often used in both training and combat in semiautomatic mode by U.S. troops. (Trial Tr. (Eby) 146:7–9, 152:19–23; (Watt) 386:4–7, 465:7–19, 504:9–19; (Tucker) 518:13–519:1, 525:13–18, 526:12–527:1, 532:21–24; (Dempsey) 560:23–25, 561:5–9, 561:19–25, 604:25–605:13, 606:12–17, 608:14–18, 611:11–612:7.)

222. First, Eby, who spent 15 months in combat in Iraq as a Gunner with the U.S. Marine Corps, testified that he always fired his M4 rifle in semiautomatic in combat. (Trial Tr. (Eby) 145:16–146:9; ECF 232-3, Eby Dep. 40:13–15.) Eby also acknowledged that in the last several decades of conflicts in Vietnam, Iraq, and Afghanistan, U.S. troops have mostly been using their M16 and M4 rifles in semiautomatic. (Trial Tr. (Eby) 152:19–23.)

223. Next, Watt, who served in the Army National Guard for 34 years and was deployed in both Afghanistan and Iraq, testified that although he had fired more than a couple hundred thousand rounds through the M4 and M16 rifles he used in the military, “not very many” were fired in automatic because “that application is not very common.” (Trial Tr. (Watt) 376:2–5, 383:17–19, 386:8–10, 465:7–19.)

224. During his time in combat in Afghanistan, Watt said there were not many times when he witnessed U.S. forces using their M4 rifles in automatic, stating there were “maybe a handful of times.” (*Id.* 386:4–7.) Watt personally fired his M4 in automatic in Afghanistan to mark targets for air support but not for any other purpose. (*Id.* 384:12–20.)

225. During his deployment in Iraq, despite being engaged in combat, Watt never discharged his M4 in automatic and did not witness any other U.S. forces firing their M4s in automatic. (*Id.* 387:16–388:12.)

226. The State Defendants' trial witnesses—retired Marine Colonel Craig Tucker and retired Army Lieutenant Colonel Jason Dempsey—likewise affirmed that the U.S. military trains and expects troops equipped with M4 and M16 rifles to use them on semiautomatic in combat. (Trial Tr. (Tucker) 518:13–519:1, 520:15–18, 525:13–18; 526:12–527:1; (Dempsey) 560:23–25, 561:5–9, 561:19–25, 604:25–605:13, 606:12–17, 608:14–18, 611:11–612:7.)

227. Tucker served as an infantry officer in the U.S. Marine Corps for 25 years, commanding infantry units from platoon to regiment. (ECF 222-2, Tucker ¶ 1.) Tucker's service included 15 months of intense infantry combat in Iraq, where he commanded 22 different U.S. Marine, U.S. Army, and Iraqi Army battalions and exercised tactical control over Naval Special Warfare and U.S. Special Forces and supported National Tier 1 assets. (*Id.*)

228. Tucker was a regimental commander in both battles of Fallujah and numerous smaller battles. (*Id.*) He was the target of multiple assassination attempts and was wounded in one such attempt in Husaybah, Iraq. (*Id.*) Upon returning from Iraq, Tucker was assigned to the U.S. Marine Corps National Training Center and was responsible for training and certifying units for combat in Iraq and Afghanistan. (*Id.*)

229. Dempsey served 22 years as an infantry officer in the U.S. Army after graduating from the U.S. Military Academy at West Point. (ECF 222-3, Dempsey ¶¶ 1, 14.) Dempsey's service included multiple combat deployments in Afghanistan. (*Id.* ¶¶ 9–11.) Serving in all ranks from second lieutenant to lieutenant colonel, Dempsey directly trained or supervised the training of thousands of infantry rifleman for combat. (*Id.* ¶¶ 1, 18.)

230. Automatic fire is inherently less accurate than semiautomatic fire. (Trial Tr. (Eby) 150:17–19.) The U.S. Army's current marksmanship training publication for the M4 and M16 explains that “[a]utomatic or burst fires drastically decrease the probability of hit due to the rapid

succession of recoil impulses and the inability of the Soldier to maintain proper sight alignment and sight picture on the target.” (Ex. 264, U.S. Army, *Rifle and Carbine*, TC 3-22.9 (May 2016), at 8-6.) The Army’s prior marksmanship training publication likewise stated: “The first fully automatic shot fired may be on target, but recoil and a high cyclic rate of fire often combine to place subsequent rounds far from the desired point of impact.” (Ex. 261, U.S. Army, FM 3-22.9, “Rifle Marksmanship M16-/M4-Series Weapons” (2008) at 7-12.)

231. As Dempsey explained, if an infantry rifleman fires on 3-round burst with an M4 or M16 service rifle, the first bullet may hit its intended target, but the recoil of the weapon is likely to send the next two rounds above the initial point of aim. (Trial Tr. (Dempsey) 606:15–607:1; ECF 222-3, Dempsey ¶ 19.) In other words, a soldier firing on burst might get one round close to the enemy, but the other two are just noise. (Trial Tr. (Dempsey) 648:23–649:10.) This difference in accuracy is only exacerbated when the M4 or M16 rifle is fired on the fully automatic setting. (ECF 222-3, Dempsey ¶ 19.)

232. Semiautomatic fire from an M4 or M16 rifle is more accurate. (Trial Tr. (Dempsey) 606:15–607:1; ECF 222-3, Dempsey ¶ 19.) Infantry riflemen use their M4 and M16 rifles in semiautomatic in combat to kill the enemy. (Trial Tr. (Dempsey) 606:12–14.) U.S. Army doctrine provides that “the most important fire technique during fast-moving, modern combat is rapid semiautomatic fire. It is the most accurate technique of placing a large volume of fire on poorly defined targets or target areas, such as short exposure, multiple or moving targets.” (ECF 222-3, Dempsey ¶ 22 (quoting Ex. 261, U.S. Army, FM 3-22.9 (2008) at 7–12.))

233. A shooter using the 3-round burst setting will have to spend more time between each engagement bringing the weapon back on target, whereas the shooter on semiautomatic can

more quickly deliver accurate fire. (*Id.* ¶ 19.) The same three rounds fired semiautomatically will all hit their target with nearly comparable speed. (*Id.*)

234. In addition to being less accurate, automatic fire increases the likelihood of the weapon jamming. (*Id.* ¶ 24; Trial Tr. (Dempsey) 632:20–633:6.) Firing in burst dramatically increases jamming in the M4 and M16. (Trial Tr. (Dempsey) 606:18–607:1.) A jammed weapon renders a soldier combat ineffective. (*Id.* 632:20–633:6.)

235. Firing an M4 or M16 on automatic can also warp the barrel and increase the number of misfires and weapon malfunctions. (Trial Tr. (Tucker) 540:10–541:1.) M16 and M4 rifles are not designed to fire on automatic for extended periods of time. (ECF 222-3, Tucker ¶ 13.) The rifle overheats, requiring constant cooling. (*Id.*) The heat can misshape the barrel or melt the gun. (*Id.*; ECF 232-3, Eby Dep. 146:1–147:8.)

236. Automatic fire from an M16 or M4 rifle also uses too much ammunition and is logistically unsustainable. (Trial Tr. (Tucker) 540:10–541:1, 543:13–22, 544:18–25.) A rifleman with a combat load of 210 rounds will get through that amount of ammunition quickly by firing on burst or automatic. (*Id.* 541:14–23.)

237. During Tucker’s 25-year career as a Marine Corps infantry officer from 1981 to 2006, there was no standardized training where Marines had to qualify on automatic with an M16 or M4. (Trial Tr. (Tucker) 518:19–519:1.) During annual marksmanship training, which is the foundation of Marine infantry combat training, Marines use the semiautomatic setting on their M16 and M4 rifles. (*Id.* 519:6–520:14.) During collective training, in which units train together, the primary method of use for M16 and M4 rifles is semiautomatic aimed fire. (*Id.* 520:15–18.) And when he was responsible for certifying units for combat in Iraq and Afghanistan, Tucker

instructed the troops in those units that if they are a rifleman, they are on semiautomatic. (*Id.* 526:12–527:1.)

238. When Dempsey was a cadet at West Point, he was never tested on his proficiency using either automatic or burst fire on the M16, and cadets used only the semiautomatic setting on the M16 during training exercises. (Trial Tr. (Dempsey) 560:23–25; 561:5–9.) Later, when Dempsey was managing and supervising the training of incoming cadets at West Point, cadets only practiced in semiautomatic mode on their M16s. (*Id.* 561:19–25.)

239. When Dempsey served in the 75th Ranger Regiment, which focuses on high-risk raids, airfield seizures, and helicopter insertions in heavily-contested environments, the regiment always used their M4 rifles in semiautomatic mode in training. (*Id.* 575:9–576:16.) Likewise, when Dempsey commanded a mechanized infantry company, the soldiers under his command trained with their M4 rifles exclusively on semiautomatic fire. (*Id.* 580:1–20.)

240. As a brigade-level operations officer in Afghanistan in 2009, Dempsey reviewed and supervised the planning of elevated and high-risk operations for six battalions. (*Id.* 592:6–24.) During the time Dempsey served as a brigade-level operations officer in Afghanistan in 2009, the brigade averaged more than 200 “significant activities” per month, which included direct fire engagements, improvised explosive device (“IED”) strikes, and rocket or mortar attacks. (*Id.* 593:18–594:9.) The soldiers under Dempsey’s command as a brigade-level operations officer in Afghanistan in 2009 were either firing, receiving fire, or being hit by an IED approximately six times per day. (*Id.* 594:23–595:9.)

241. Dempsey testified that for the thousands of soldiers under his leadership in multiple deployments in Afghanistan, Iraq, and Kuwait, he always expected them to fire their M4 and M16 rifles in semiautomatic mode. (*Id.* 611:20–23.) For the thousands of cadets and infantry rifleman

he trained throughout his career in the military, Dempsey always and only trained them on semiautomatic fire from their service rifles. (*Id.* 611:15–19.)

242. Dempsey further testified that in all of his military training throughout his 22-year career in the U.S. Army, he was never trained on a tactical scenario in which he should use an M4 or M16 in burst or automatic fire mode. (*Id.* 611:11–14.) During his military service, Dempsey did not encounter a tactical scenario that required him to use his M4 or M16 in burst or automatic firing mode. (*Id.* 611:24–612:2.) Nor did Dempsey recall any tactical scenario that arose for the thousands of soldiers under his leadership that called for the M4 or M16 to be fired in the burst or automatic firing modes. (*Id.* 612:3–7.)

g. The U.S. military’s recent acquisition of select-fire rifles with an automatic mode instead of burst has not altered the predominant mode of use: semiautomatic.

243. As Plaintiffs’ expert Jeffrey Eby acknowledged, U.S. troops have mostly been using their M16 and M4 rifles in semiautomatic in the last several decades of conflicts in Vietnam, Iraq, and Afghanistan. (Trial Tr. (Eby) 152:19–23.) Eby and the co-author of his initial expert report, Michael Musselman, assert that the “only reason” U.S. forces have used semiautomatic rifle fire for the last 60 years is “due to our fighting non-peer enemies over this duration,” and that “[a]gainst a peer threat, which all U.S. forces prepare for every day, fully automatic fire is critical.” (ECF 232-17, Eby/Musselman at 6.)

244. Eby and Musselman note that the U.S. Army “has just authorized a product improvement to the M4 series rifle to revert back to fully automatic in lieu of burst fire,” and that the U.S. Army will issue the XM7 rifle with a fully automatic setting “to those front-line units that will not receive the M4 PIP (product improvement program).” (*Id.*) Eby also testified that as of May 2024, the Marine Corps has issued a new rifle, the M27, to all infantrymen, so that a Marine infantry rifleman is now getting an M27 instead of an M4. (Trial Tr. (Eby) 162:20–163:1.) The

M27 has three settings: safe, semiautomatic, and fully automatic. (*Id.* 163:5–7.) Eby and Musselman’s report claims, without citation, that these changes “are a recognition of the value of fully-automatic fire in preparation for future peer-level conflicts.” (ECF 232-17, Eby/Musselman at 6; Trial. Tr. (Eby) 163:8–12.)

245. At trial, however, Eby acknowledged that he cannot identify any publication that states that the only reason U.S. forces have employed semiautomatic rifle fire during the last 60 years of combat is due to our fighting non-peer enemies over this duration. (Trial Tr. (Eby) 153:19–153:24.) Eby was not aware of any publication by either the U.S. Army or the U.S. Marine Corps making that assertion. (*Id.* 153:25–154:5.)

246. Eby also acknowledged that his belief about automatic fire being critical against a peer threat is based on what he thinks might be needed in a hypothetical future war against China, Russia, North Korea, or Iran. (*Id.* 153:2–9.) All of Eby’s combat experience in Iraq was against a non-peer threat, so he has no personal experience using or observing automatic fire against a peer threat. (*Id.* 153:10–18.)

247. Eby also acknowledged that during the initial years of his service in the U.S. military in the mid-1980s, the Soviet Union was a peer threat to the U.S. military. (*Id.* 149:23–150:4.) When Eby joined the Marine Corps in 1982, he initially carried an M16A1 that had a fully automatic setting, but that rifle was replaced with an M16A2 within a year or two of his joining the Marines. (*Id.* 146:17–147:1.) The M16A2 was modified to have burst fire instead of fully automatic to save ammunition, increase hits on target, and prevent the weapon from overheating from the use of automatic fire. (*Id.* 147:19–148:6.)

248. When Eby was trained on his M16A2 in the mid-1980s, he was trained to potentially fight a war against the Soviet Union. (*Id.* 149:23–150:4.) As Eby acknowledged, he

would have been expected to use his M16A2, which had no automatic fire capability, in potential combat with the Soviet Union. (*Id.* 150:2–16.)

249. The U.S. Army’s selection of the XM7 occurred in 2022—12 years and seven years, respectively, after Eby and Musselman retired from a different branch of the military, the U.S. Marine Corps. (Ex. 259, Sig Sauer Press Release, “U.S. Army Selects Sig Sauer Next Generation Squad Weapon System” (April 20, 2022); ECF 232-17, Eby/Musselman at 1.) The adoption of the M27 also occurred after Eby left the U.S. Marine Corps. (Trial Tr. (Eby) 163:13–15.)

250. As Dempsey testified, it will probably be at least a decade or more before most U.S. Army units see the XM7 rifle. (Trial Tr. (Dempsey) 621:25–622:10.) Dempsey noted that the Army has issued automatic rifles before and decided not to use them, and that there are good odds it will happen again. (Trial Tr. (Dempsey) 638:2–7.)

251. In conjunction with the selection of the XM7, the Army has also selected a new squad automatic weapon—the XM250—to replace the M249 Squad Automatic Weapon. (Ex. 28, Jared Keller, “The Army Has Finally Fielded its Next Generation Squad Weapons,” *Military.com* (Mar. 29, 2024) at 2.) Dempsey indicated that under basic infantry principles, there is no need for an infantry rifleman to provide duplicative and wasteful automatic fire when the squad automatic weapon can meet that need. (Trial Tr. (Dempsey) 646:22–647:1.)

252. Tucker, who, like Eby, trained for potential combat against the Soviet Union in the 1980s, testified that the peer competitor concept has zero impact on the relative importance of semiautomatic versus automatic fire from an M16 or M4 rifle, because the challenges of using automatic fire will remain. (Trial Tr. (Tucker) 542:3–543:22.)

253. Dempsey also testified that the firing mode for an M4 or an M16 does not depend on whether the U.S. military is fighting a peer threat, and that the optimal use of the M4 and M16 rifle is semiautomatic, regardless of the opponent. (Trial Tr. (Dempsey) 607:15–17; ECF 222-3, Dempsey ¶ 32.) For the soldier on the ground who is facing an enemy force, it is irrelevant whether there is an army of a hundred thousand or a gang of twenty behind that force; he or she is going to use the most effective mode of fire to stay alive and kill the enemy. (Trial Tr. (Dempsey) 607:20–608:1.) In Dempsey’s 22 years of experience as an Army infantry officer, rifles in semiautomatic mode were the most useful and most accurate. (*Id.* 654:15–17.)

h. Plaintiffs’ emphasis on the U.S. Army’s recent selection of a new rifle—the XM7—in a new caliber—6.8mm—ignores the availability of a civilian equivalent—the MCX-Spear.

254. Another of Plaintiffs’ experts, J. Buford Boone III, asserts that it is “telling” that the U.S. Army “recently made the decision to move from 5.56mm to 6.8mm ammunition,” with the latter caliber being used in the XM7. (ECF 232-18, Boone ¶ 57.) Boone finds “discussions centering on the .223 Remington/5.56mm NATO” to be “curious,” because he asserts “that is at the lower end of the centerfire rifle options available.” (*Id.* ¶ 56.) Boone quotes a U.S. Army media briefing discussing the XM7 and its 6.8mm caliber ammunition in which Brigadier General William Boruff stated that “the current 5.56 cartridge has been maxed out from the performance perspective,” and “[t]he new weapon, with its increased operating pressure and size allows the Army to significantly increase the performance capability of the ammunition.” (*Id.* ¶ 57 (quoting Ex. 282, U.S. Army Public Affairs, “Army Officials Brief the Media on the Next Generation Squad Weapon (Apr. 21, 2022) at 4–5).)

255. In the same press briefing Boone quotes, another Brigadier General, Larry Burris, was asked about the 6.8mm caliber and NATO standardization and stated that “this is not intended to . . . replace 7.62 or 5.56 as a NATO ammunition capability. We will continue to retain M4s and

M249s and M240 Bravos outside of the close[] combat force.” (Ex. 282 at 10.) Brigadier General William Burris, whom Boone quoted, further stated: “From the ammunition piece . . . we will continue to produce 5.56 and 7.62 at the current rates we’re at now.” (*Id.* at 11.)

256. In any event, in addition to producing the select-fire XM7 for the U.S. Army, Sig Sauer produces and sells a semiautomatic version of the XM7 for the civilian market: the MCX-Spear. (Ex. 275, Sig Sauer, “The Next Generation Has Arrived” (Jan. 19, 2022).) Advertised by Sig Sauer as “[t]he civilian version of the U.S. Army’s new XM7 rifle,” the MCX-Spear “was developed with direct input from U.S. warfighters to provide more power, distance, and accuracy to replace the current M4 rifle platform.” (Ex. 256, Sig Sauer, “MCX-Spear,” <http://sigsauer.com/spear.html> (accessed July 13, 2024); Ex. 275 at 1.)

257. Images of the XM7 and the MCX-Spear appear below:



(Ex. 260, Soldier Systems, “U.S. Army Begins Fielding Next Generation Squad Weapons” at 2; Ex. 275, Sig Sauer, “The Next Generation Has Arrived” at 2.)

258. In 2022, Sig Sauer announced it would begin offering the MCX-Spear chambered in .277 SIG FURY—“the commercial variant of the U.S. Army’s 6.8x51mm hybrid ammunition.” (Ex. 275, Sig Sauer, “The Next Generation Has Arrived” (Jan. 19, 2022) at 4.) According to *Gun Digest*, the muzzle velocity of a 140 grain .277 SIG FURY round is 3,000 feet per second. (Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 607.) In other words, a .277 SIG FURY round is 255% heavier and 96% as fast as typical 55-grain 5.56mm NATO ammunition available on the commercial market. (*Id.* at 604, 607.) Unlike the 30-round magazines typically offered with AR-15-style rifles chambered in 5.56mm NATO, the MCX-Spear comes with 20-round magazines. (Ex. 275 at 2.)

259. In addition to being offered in .277 SIG FURY, the MCX-Spear is also available in 6.5 Creedmoor and 7.62mm NATO calibers. (Ex. 275, Sig Sauer, “The Next Generation Has Arrived” (Jan. 19, 2022) at 2.) The original AR-10 rifle designed in the 1950s was chambered in 7.62mm NATO caliber. (ECF 185-1, Yurgealitis ¶ 31 n.10; Trial Tr. (Ronkainen) 277:11-15.) Multiple semiautomatic versions of the AR-10 chambered in 7.62mm NATO caliber are currently available on the civilian market in the U.S., such as the Armalite AR-10 A-Series SuperSASS Gen II, the Delton Alpha .308 M-LOK rifle, the Sig Sauer Sig716 Tactical Patrol, the Springfield Armory Saint Victor AR-10 Rifle, and multiple AR-10 models from Stag Arms. (Ex. 229, *Gun Digest*, 78th ed., 2024 (excerpt) at 424, 426, 435, 437; Trial Tr. (Ronkainen) 277:11–15.)

260. Numerous semiautomatic AR-type rifles chambered in 6.5mm Creedmoor are currently available on the civilian market in the U.S., such as the Diamondback DB10 series, the Sig Sauer Sig716 Tactical Patrol rifle, multiple AR-10-style models from Stag Arms, and multiple

AR-10-style models from Wilson Combat. (Ex. 229, *Gun Digest*, 78th ed., 2024 (excerpt) at 426, 435, 437.)

261. The following chart lists ballistics information for 6.5mm Creedmoor and .308 Winchester (equivalent to 7.62mm NATO) ammunition, calibers often used in AR-10-style rifles as well as the Sig Sauer MCX-Spear, as published in *Gun Digest*:

Cartridge	Bullet Weight (grains)	Velocity (FPS – feet/sec.)					Energy (foot-pounds)				
		Muzzle	100 yds.	200 yds.	300 yds.	400 yds.	Muzzle	100 yds.	200 yds.	300 yds.	400 yds.
6.5mm Creedmoor	140	2820	2654	2494	2339	2190	2472	2179	1915	1879	1467
.308 Winchester	150	2820	2533	2263	2009	1774	2648	2137	1705	1344	1048

(Ex. 231, *Gun Digest* 78th ed., 2024 (excerpt) at 606, 609; ECF 185-1, Yurgealitis ¶ 31 n.10.)

262. Although Plaintiffs’ expert J. Buford Boone III claims it is “telling that the U.S. military is in the process of moving away from the 5.56 in favor of a larger caliber,” a design requirement in the competition resulting in the selection of the XM7 was that the ammunition be less than 7.62mm caliber. (Ex. 282, U.S. Army Public Affairs, “Army Officials Brief the Media on the Next Generation Squad Weapon (Apr. 21, 2022) at 18, 28.) In announcing the selection of the XM7 chambered in 6.8mm, Brigadier General Boruff referred to 6.8mm as “hybrid ammunition.” (*Id.* at 11, 18.)

263. Despite the 6.8mm round’s smaller caliber compared to 7.62mm NATO, the U.S. Army has stated (in a publication cited by Plaintiffs’ experts, Jeffrey Eby and Michael Musselman) that “the 6.8mm projectile will outperform even the most modern 5.56mm and 7.62mm ammunition.” (ECF 232-17, Eby/Musselman at 1 n.1 (citing Ex. 283, U.S. Army Weapons Systems Handbook, 2020-2021).) The weapons systems chambered in this caliber, such as the

XM7, “will give Soldiers significant capability improvements in accuracy, range, signature management, and lethality.” (Ex. 283 at 300.)

264. As Sig Sauer said in a press release announcing the selection of the XM7, the XM7 was “purpose-built to harness the energy of the Sig Fury 6.8 Common Cartridge Ammunition enabling greater range and increased lethality while reducing the soldier’s load on the battlefield.” (Ex. 259, Sig Sauer, “U.S. Army Selects SIG SAUER Next Generation Weapons System” (Apr. 20, 2022) at 2.) With Sig Sauer’s introduction of the MCX-Spear chambered in .277 SIG FURY, that same “significant” improvement in “lethality” is now available to civilians. (Ex. 283, U.S. Army Weapons System Handbook (excerpt), “Next Generation Squad Weapons” at 300; Ex 275, Sig Sauer, “The Next Generation Has Arrived” at 2.)

265. The lethality of MCX-style rifles has also already been demonstrated on civilians in the U.S. On June 12, 2016, at the Pulse nightclub in Orlando, Florida, a shooter armed with an MCX rifle killed 49 people and wounded 53 more in what was, at the time, the deadliest mass shooting in U.S. history. (Ex. 284, Jim Zarolli, “The Orlando Killer’s Weapon of Choice was ‘the Ultimate Hunting Rifle,’” NPR (June 13, 2016) at 2; ECF 190-1, Klarevas at 36.)

i. The new infantry rifle for U.S. Marines, the M27, continues to use 5.56mm NATO ammunition—and is also available as a semiautomatic variant for civilians.

266. In contrast to the U.S. Army, the U.S. Marine Corps has chosen to stick with a rifle chambered for 5.56mm NATO caliber ammunition in selecting the M27 as a replacement for the M4. (Trial Tr. (Eby) 119:18–23, 162:20–163:1, 164:14–165:3.)

267. And, just as Sig Sauer has introduced a civilian equivalent of the Army’s XM7, the manufacturer of the M27, Heckler & Koch, has introduced “a semiautomatic variant,” the MR556A1, that is “commercially available in most U.S. states.” (Trial Tr. (Eby) 168:10–169:7; Ex. 269, Heckler & Koch, “M27 Infantry Automatic Rifle” at 2.)

268. The difference between Heckler & Koch’s MR556A1 and the M27 produced for the U.S. Marine Corps is the absence of an automatic fire setting. (Trial Tr. (Eby) 169:8–11.) The MR556A1 is capable of achieving the same rate of fire in semiautomatic of 45 rounds per minute as an M27 firing in semiautomatic. (*Id.* 169:12–16.) The MR556A1 is likewise able to achieve a similar muzzle velocity as an M27—listed by the manufacturer as 2,900 feet per second with M855 ammunition. (*Id.* 169:20–170:4.)

j. The existence of a tiny minority of AR-platform rifles in calibers smaller or less powerful than .223 or 5.56mm NATO is irrelevant.

269. Several of Plaintiffs’ experts note the existence of AR-15-type weapons chambered for rimfire ammunition, such as .22LR. (ECF 232-18, Boone ¶¶ 48–49; ECF 232-18, Boone Rebuttal at 5–6; ECF 232-17, Eby/Musselman at 3; ECF 232-19, Leitner-Wise at 3.) Boone notes that the Smith & Wesson M&P 15-22 is chambered in .22LR rimfire ammunition, which he says is “significantly lighter and lower velocity than typical .22 caliber centerfire ammunition.” (ECF 232-18, Boone Rebuttal at 5–6.) Eby and Musselman assert that “[r]imfire ammunition generally comes nowhere near the power desired of ammunition used in combat.” (ECF 232-17, Eby/Musselman at 3.) Firearms firing .22 LR ammunition are potentially lethal, however. (Trial Tr. (Watt) 503:14–18.)

270. In any event, none of the individual plaintiffs has indicated a desire to purchase a Smith & Wesson M&P 15-22 chambered in .22LR rimfire ammunition. None of the individual plaintiffs has indicated that they own or wish to possess a Smith & Wesson M&P 15-22 chambered in .22LR. None of the individual plaintiffs has indicated a desire to purchase, own, or possess any AR-15-type rifle chambered in .22LR rimfire ammunition. *See generally* ECF 198-210, 215, 221.

271. When asked at his deposition whether centerfire 5.56mm and .223-caliber AR-platform rifles are more prevalent than .22 rimfire AR-platform rifles, NSSF’s designated witness,

Salam Fatohi, testified that that “the vast majority of ARs out there come in .223.” (ECF 232-14, Fatohi Dep. 43:18–44:1.)

272. Likewise, Eby described the 5.56x45mm caliber as “absolutely more common” in the AR-15 platform than .22 rimfire. (ECF 232-3, Eby Dep. 289:10–23.) Eby doubted that “the .22 rimfire sub-caliber device is sold that well . . . because you lose distance.” (*Id.*) According to Eby, .22 rimfire has “very, very limited use and only in training.” (*Id.*) Eby would not recommend a .22 for a “self-defense bullet by any means,” and “a .22 would never come into this conversation . . . the conversation of self-defense. It would be a poor choice and a high risk to do that.” (*Id.* 291:2–292:14.)

273. In the section of *Gun Digest* titled “Centerfire Rifles ARs,” out of the 100-plus listings of AR-platform rifles, three entries reference .22LR caliber chamberings: the JP Enterprises JP-15; the JP Enterprises ASF-20 Ambidextrous Rifle; and the CMMG Resolute Rifle. (Ex. 229, *Gun Digest*, 78th ed., 2024 (excerpt) at 425, 430.) All three listings list additional, larger-caliber chamberings for those rifles, including the .223 caliber for both JP Enterprises rifles and the 5.56mm NATO caliber for the CMMG Resolute rifle. (*Id.*)

274. The Smith & Wesson M&P 15-22 rifle Boone references appears in a separate section of *Gun Digest*, “Rimfire Rifles Autoloaders,” where it is the only rifle described as an “AR-derived” model. (*Id.* at 460.)

275. Boone asserts that the Act “does not address firearm caliber or chambering” in defining an “assault weapon.” (ECF 232-18, Boone Rebuttal at 5.) NSSF also does not include caliber in the definition of “modern sporting rifle”—the term it uses to refer to AR- or AK-platform rifles. (ECF 232-14, Fatohi Dep. 31:23–32:9, 43:1–6.) Nonetheless, as NSSF’s designated witness,

Salam Fatohi, explained, the typical caliber of an AR-platform rifle is “going to be .223 Remington/5.56 NATO.” (*Id.* 33:24–34:3.)

k. Whether a semiautomatic AR-15 from the civilian market could meet each and every military specification for an M16 or M4 is irrelevant.

276. At trial, Ronkainen and Eby both testified regarding the list of specifications the military requires for M4 rifles—referred to as “military specifications” or “MIL-SPEC.” (Trial Tr. (Eby) 172:17–22; (Ronkainen) 240:12–241:4.) These military specifications include durability requirements, environmental operating requirements for extreme temperatures ranging from 40 degrees below zero up to 140 degrees, and barrel life requirements of, for example, 7,000 rounds or more. (*Id.* (Eby) 172:17–22; (Ronkainen) 240:12–241:4, 291:10–291:10, 346:6–21.)

277. Eby acknowledged, however, that he used semiautomatic-only AR-15 rifles that were not “MIL-SPEC” to perform testing with military-grade ammunition to help develop optics for military rifles. (Trial Tr. (Eby) 170:2–171:20, 172:2–173:2.) Specifically, Eby conducted testing for Trijicon, an optics manufacturer for which he is a technical consultant, to compare the velocities and trajectories of two rounds used by the U.S. military in M4 and M16 rifles: the M855 used in Iraq and Afghanistan, and the M855A1 that has subsequently been adopted. (*Id.* 170:2–171:20.) But even though Eby was using his “civilian” guns that were not MIL-SPEC, he still felt comfortable using those guns to conduct this testing. (*Id.* 172:23–173:2.)

278. In conducting this testing with semiautomatic-only AR-15 rifles firing military-grade ammunition—M855 and M855A1 rounds—Eby was able to replicate the velocities for those bullets as stated by the U.S. military. (*Id.* 173:15–22.) Eby tested the M855 and M855A1 rounds out to a range of 600 meters. (*Id.* 173:23–174:1.)

279. Ronkainen also acknowledged that civilian “modern sporting rifles” can also be more accurate than a military rifle when first purchased, and that civilian “modern sporting rifles”

can have lighter trigger-pull weights that make them easier to fire than rifles built to military specifications. (Trial Tr. (Ronkainen) 339:12–341:10.)

280. Dempsey also testified that a commemorative, semiautomatic Sig Sauer 516 that he purchased with members of his unit from Afghanistan was “functionally equivalent” to the M4 he carried in Afghanistan—and “actually probably a little bit better given that it has a piston.” (Trial Tr. (Dempsey) 638:23–639:15, 651:22–652:8.)

1. Semiautomatic AR-platform rifles can be easily modified to simulate automatic fire.

281. Even without select-fire settings for automatic or burst, AR-platform rifles available to the public are functionally equivalent to the M4 and M16. In any event, several devices are readily available that enable increased rates of fire that approach full automatic fire. (ECF 185-1, Yurgealitis ¶¶ 115–16.)

282. The U.S. Army has listed the “cyclic rate of fire” for the M4 and M16 as ranging from 700 to 900 rounds per minute, depending on the variant. (ECF 185-1, Yurgealitis ¶ 49; Ex. 261, U.S. Army, FM 3-22.9, “Rifle Marksmanship M16-/M4-Series Weapons” (2008) at 2-1.) The “cyclic rate” is the theoretical mechanical rate at which a firearm is capable of being fired. (ECF 185-1, Yurgealitis ¶ 49; ECF 323-18, Boone ¶ 67.) According to Plaintiffs’ expert J. Buford Boone III, “[a] firearm’s cyclic rate is theoretically the same in semiautomatic as it is in fully automatic.” (ECF 323-18, Boone ¶ 68.) The cyclic rate assumes a constant flow of ammunition through the weapon without pausing, such as for a magazine change. (ECF 185-1, Yurgealitis ¶ 49; Trial Tr. (Eby) 165:20–22.)

283. The U.S. Army differentiates between the “cyclic rate” and the “maximum effective rate of fire” for M4 and M16 rifles. (ECF 185-1, Yurgealitis ¶ 49; Ex. 261 at 2-1.) The maximum

effective rate of fire on automatic for M4 and M16 variants with automatic fire capability ranges from 150 to 200 rounds per minute. (ECF 185-1, Yurgealitis ¶ 49; Ex. 261 at 2-1.)

284. A binary trigger is a device that, when fitted to a semiautomatic AR-type rifle, enables a shooter to attain an effective rate of fire of between 120 to 250-plus rounds per minute. (ECF 185-1, Yurgealitis ¶ 116a.) A binary trigger installed on a semiautomatic rifle allows the operator to fire one shot when pulling the trigger towards the rear and a second shot upon releasing the trigger. (*Id.*) Binary triggers are available for sale on the internet. (*Id.*; Ex. 279, Franklin Armory, BFSIII AR-C1.)

285. A trigger crank is a device that can be attached to the trigger guard of a semiautomatic rifle to simulate fully automatic fire. (ECF 185-1, Yurgealitis ¶ 116b.) One of the better-known examples of a trigger crank is the “Gat Crank,” marketed by Two Z Precision. (*Id.*) Depending on the skill and comfort level of the operator, a trigger crank can allow a shooter to attain a cyclic rate nearly equivalent to a fully automatic machinegun. (*Id.*)

286. Another device that can be added to an AR-15 uses a cam that is housed within the grip that allows a crank to pull and release the trigger without the user’s finger. (Trial Tr. (Ronkainen) 290:13–21.)

287. Another device that simulates fully automatic fire in semiautomatic rifles is a bump stock. (ECF 185-1, Yurgealitis ¶ 116c.) A bump stock replaces a standard rifle stock with a combination buttstock and pistol grip that uses the recoil from a discharged round to bring a shooter’s trigger finger rapidly and repeatedly in contact with the trigger. (*Id.*; Trial Tr. (Ronkainen) 290:13–21.) Use of a bump stock on a semiautomatic rifle can result in cyclic rates equal to those in fully automatic machineguns. (ECF 185-1, Yurgealitis ¶ 116c.)

288. Bump stocks attached to AR-type rifles equipped with large capacity magazines were used in the deadliest shooting in U.S. history, the October 2017 Las Vegas mass shooting. (*Id.* ¶ 117; Ex. 271, Larry Buchanan et al., “Nine Rounds a Second: How the Las Vegas Gunman Outfitted a Rifle to Fire Faster,” *N.Y. Times* (Oct. 5, 2017) at 7.) An analysis of acoustic evidence from that shooting estimates that the shooter fired 90 rounds in a single 10-second timeframe. (ECF 185-1, Yurgealitis ¶ 117; Ex. 271, Larry Buchanan et al., “Nine Rounds a Second: How the Las Vegas Gunman Outfitted a Rifle to Fire Faster,” *N.Y. Times* (Oct. 5, 2017) at 7.) Cumulatively, the gunman used 14 AR-15 and AR-10 rifles to fire over 1,000 rounds in 11 minutes. (Ex. 244, Silvia Foster-Frau, “The AR-15’s destructive force: A rare look at the weapon’s impact,” *Washington Post* (Nov. 16, 2023) at 9.) In total, the gunman killed 60 people and wounded over 400 more. (ECF 185-1, Yurgealitis ¶ 192; ECF 190-1, Klarevas at 38.)

289. On June 14, 2024, the U.S. Supreme Court stated the following in *Garland v. Cargill*, 602 U.S. 406, 411 (2024):

Shooters have devised techniques for firing semiautomatic firearms at rates approaching those of some machineguns. One technique is called bump firing. A shooter who bump fires a rifle uses the firearm’s recoil to help rapidly manipulate the trigger. The shooter allows the recoil from one shot to push the whole firearm backward. As the rifle slides back and away from the shooter’s stationary finger, the trigger is released and reset for the next shot. Simultaneously, the shooter uses his nontrigger hand to maintain forward pressure on the rifle’s front grip. The forward pressure counteracts the recoil and causes the firearm (and thus the trigger) to move forward and ‘bump’ into the shooter’s trigger finger. This bump reengages the trigger and causes another shot to fire, and so on.

290. Whether using “a bump-stock equipped rifle” or “an *unmodified* semiautomatic rifle using the manual bump-firing technique,” a shooter “can achieve a rate of fire that rivals traditional machineguns.” *Cargill*, 602 U.S. at 428.

3. The semiautomatic AK-47 rifles the Act restricts are functionally identical to the AK-47 rifles used by militaries around the world except for the absence of an automatic fire setting.⁹

291. The 2012 edition of *Gun Digest* described semiautomatic AK-47 rifles as follows:

Originally designed as a Russian peasant-proof weapon, the new breed of semi-auto only AK-47s are fast proving the new all-around American rifle. Cheaper than other assault rifles, they boast power comparable to that of the vaunted .30-.30 Winchester in a gun with 30 shots as fast as you can pull the trigger in a drastic reduction in recoil from the manually operated gun.

(Ex. 225, *Gun Digest*, 66th ed., 2012 (excerpt) at 359.)

292. The recent increase in the popularity and availability of semiautomatic rifles with features initially designed (or patterned after those designed) for a military purpose has also resulted in more semiautomatic versions of the AK-47 and its later variant, the AK-74, becoming available. (ECF 185-1, Yurgealitis ¶ 119.) Like the AR-15 and M16, the only difference between semiautomatic AK-47s and AK-74s and the AK-47s and AK-74s used by militaries around the world is select-fire capability. (*Id.*)

293. Unlike the 5.56mm NATO cartridge used by the M16, the AK-47 has traditionally used a 7.62x39mm cartridge. (*Id.* ¶ 120.) Many of the semi-automatic versions of the AK-47 and its subsequent variants on the civilian market use this caliber. (*Id.*)

294. The 7.62x39mm cartridge used by a typical AK-47 is a larger caliber than the 5.56mm NATO and closer to the .30-06 caliber cartridge used in the M1 Garand, the standard-issue U.S. infantry rifle in World War II. (*Id.* ¶ 120–21.) The 7.62x39mm bullet is heavier than the 5.56mm NATO bullet. (*Id.* ¶ 121.)

⁹ Of the individual Plaintiffs, only Caleb Barnett has alleged or otherwise declared a desire to acquire or possess AK-platform rifles (AKM-47 with 30-round magazine). (ECF 198.) In addition, Todd Vandermyde has declared that he is a member of Gun Owners of America, an *FFL-IL* organizational plaintiff, that he wishes to acquire “several types of AK pattern firearms,” and that he would acquire new parts, including “AR or AK receivers . . . in order to build new or modify already-owned rifles.” (ECF 209.)

295. In many configurations, the increased weight of the 7.62x39mm bullet translates to lower muzzle velocity, but higher muzzle energy, than the 5.56mm NATO. (ECF 185-1, Yurgealitis ¶ 121.) The following chart compares the ballistics of 7.62x39mm ammunition and 5.56mm NATO ammunition available in the civilian market as published in the 2024 edition of *Gun Digest*:

Cartridge	Bullet Weight (grains)	Velocity (FPS – feet/sec.)					Energy (foot-pounds)				
		Muzzle	100 yds.	200 yds.	300 yds.	400 yds.	Muzzle	100 yds.	200 yds.	300 yds.	400 yds.
5.56mm NATO	55	3130	2740	2362	2051	1750	1196	917	693	514	372
7.62x39mm	123	2360	2049	1764	1511	1296	1521	1147	850	823	459

(*Id.*; Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 604, 608.)

296. The semiautomatic versions of the AK-47 have the exact same firepower as their military counterparts, but without select-fire capability. (ECF 185-1, Yurgealitis ¶ 123.) Like the AR-15, manufacturers of semiautomatic AK-47s also tend to offer them with 30-round magazines—allowing, as *Gun Digest* put it, “30 shots as fast as you can pull the trigger[.]” (*Id.*; Ex. 225, *Gun Digest*, 66th ed., 2012 (excerpt) at 359.)

297. Examples of semi-automatic AK-type rifles currently available in the U.S. market appear below (both chambered in 7.62x39mm with 30-round magazines):



(ECF 185-1, Yurgealitis ¶ 123.)

298. The AK-type semiautomatic rifles shown above are direct developmental descendants of the full-automatic AK-47/74 and similar military weapons designed for use in combat. (*Id.* ¶ 124.) They retain the identical performance capabilities and characteristics (except full-automatic capability) as initially intended for use in combat. (*Id.*)

299. As with AR-type semiautomatic rifles, AK-type semiautomatic rifles can be modified with devices like binary triggers, trigger cranks, and bump stocks to simulate full-automatic fire. (*Id.*)

300. Semiautomatic AK-47 rifles have been used in multiple mass shootings in the U.S. As a 2004 report by the Congressional Research Service noted, the 1994 federal assault weapons ban “was the culmination of several years of congressional hearings and debate that followed the January 1989 shootings in Stockton, California, when Patrick Purdy killed five children and wounded 30 others with a semiautomatic version of an AK-47.” (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 6.)

301. The January 1989 shooting in Stockton was followed by another mass shooting months later, when, on September 14, 1989, a gunman armed with an AK-47 rifle and multiple other firearms killed 7 people and wounded 15 others at his former workplace in Louisville, Kentucky. (Ex. 243, Christopher S. Koper, “Updated Assessment on the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence” (2004) at 14.)

302. Following the 2004 expiration of the federal assault weapons ban, a gunman armed with a semiautomatic AK-47 rifle equipped with large capacity magazines killed 23 people in El Paso, Texas on August 3, 2019. (ECF 190-1, Klarevas at 43.)

4. Other rifles restricted by the Act are semiautomatic versions of submachineguns designed for military and law enforcement use.

303. A number of the firearms regulated by the Act are direct evolutionary descendants of submachineguns initially designed and produced for military use. (ECF 185-1, Yurgealitis ¶ 68.) Submachineguns are machineguns that fire “sub caliber”—i.e., pistol caliber—ammunition like 9mm. (*Id.*)

304. Some submachineguns that have become popular with militaries and law enforcement agencies around the world, such as Heckler & Koch’s MP5, have also been produced in semiautomatic versions. (*Id.* ¶¶ 74–75.) Some of these firearms have been produced in both rifle (i.e., shoulder-fired) and pistol variants. (*Id.* ¶ 75; ECF 230-17, Fatohi Dep. 40:12–42:9; ECF 230-

18, ATF Form 5300.11, Annual Firearms Manufacturing & Exportation Report (Ex. 4 to Fatohi Dep.) at 3 (defining “rifle” and “pistol” under ATF regulations).)

a. Multiple militaries developed submachineguns before and during World War II that influenced postwar designs.

305. Multiple submachinegun designs emerged from the battlefields of World War I. (ECF 185-5, Spitzer ¶ 14; Ex. 228, *Gun Digest*, 77th ed., 2023 (excerpt) at 226 (discussing the German MP-18)). As one study by the Rand corporation described: “Submachineguns and machine pistols often replaced the marksman’s rifle in this war in which, as one American observer put it, ‘every type of fast-firing gun’ was employed to ‘shower lead on the enemy.’” (Ex. 274, Thomas L. McNaugher, *Marksmanship, McNamara and the M16 Rifle: Organizations, Analysis and Weapons*, Rand Corp. (1979) at 12.)

306. The Thompson submachinegun was developed for use by the U.S. military in World War I as a practical, lighter-weight, reliable, hand-held, fully automatic weapon. (ECF 185-5, Spitzer ¶ 14.) Although the development of the Thompson submachine gun came too late in World War I to have much effect, the major powers continued their development of submachineguns during the interwar years. (*Id.*; Ex. 228 at 226.)

307. Patented in 1920 by its inventor, John Thompson, the Thompson submachinegun was a .45 caliber gun with options for 20- to 30-round stick magazines or a 100-round drum magazine. (ECF 185-5, Spitzer ¶ 14.)

308. The U.S. entered World War II with a military variant of the Thompson submachinegun in .45 caliber. (ECF 185-1, Yurgealitis ¶ 70.) An image of a World War II-era Thompson submachinegun from *Gun Digest* appears below:



(Ex. 226, *Gun Digest*, 69th ed., 2015 (excerpt) at 87.)

309. During World War II, approximately 824,000 Thompson submachineguns were manufactured. (*Id.* at 88.)

310. Nazi Germany entered World War II with a newer, lighter, and easier to manufacture submachinegun—the innovative Maschinenpistole 38 (“MP38”). (ECF 185-1, Yurgealitis ¶¶ 69–70.) Chambered in 9mm, the MP38 was later redesignated the MP40 following a number of engineering changes. (*Id.* ¶ 69.)

311. The MP40 had multiple design features commonly found in later assault weapons, including a folding stock, separate pistol grip, a detachable 30-round magazine, and the use of steel stampings in its construction. (*Id.* ¶¶ 69–70.) An image of an MP40 appears below:



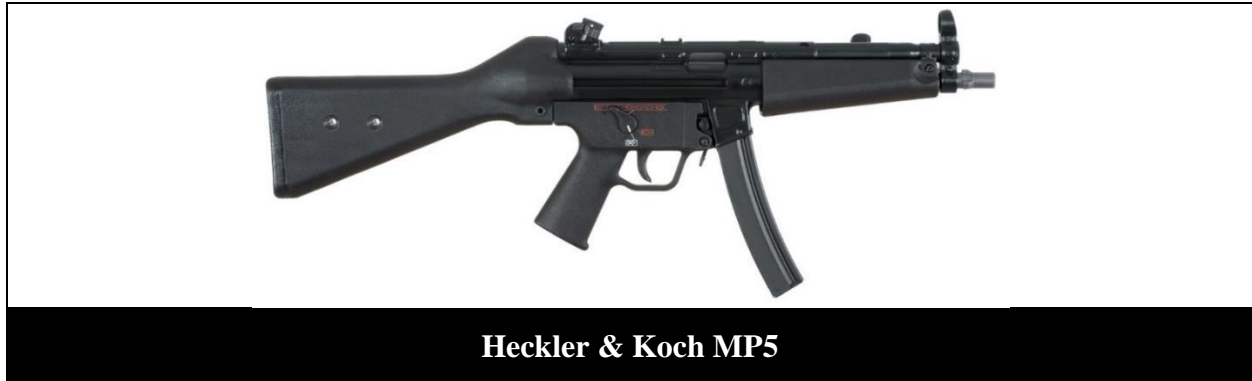
(*Id.* ¶ 69.)

312. *Gun Digest* has described the MP40 as a “mainstay of the Nazi war machine,” with “well over a million” being produced during World War II. (Ex. 226, *Gun Digest*, 69th ed., 2015 (excerpt) at 86.)

313. During and after World War II, a number of other nations developed submachineguns that followed the same design and construction philosophy as the MP40. (ECF 185-1, Yurgealitis ¶¶ 71–72.)

b. The Act regulates semiautomatic versions of Heckler & Koch’s MP5 submachinegun—“the world’s pre-eminent submachine gun among military and law enforcement users.”

314. In the 1960s, Heckler & Koch introduced the MP5, a 9mm submachinegun. (*Id.* ¶ 74; Trial Tr. (Watt) 391:17–392:8.) By the 1980s, and into the 1990s, the MP5 had become a popular choice for military and law enforcement agencies worldwide. (ECF 185-1, Yurgealitis ¶ 74; Trial Tr. (Watt) 391:17–392:8.) An image of an MP5 appears below:



(ECF 185-1, Yurgealitis ¶ 74.)

315. Heckler & Koch’s most recent product catalog describes the MP5 as follows:

Developed by Heckler & Koch in the mid-1960s, the 9mm MP5 submachine gun uses the same delayed blowback operating system found on the famous HK G3 automatic rifle . . . Continual product improvements over nearly 50 years of production have kept the MP5 up-to-date and technologically current; it is firmly established as the world’s pre-eminent submachine gun among military and law enforcement users. Over 120 MP5 variants are available to address the widest range of tactical requirements. A selection of optional trigger groups allow for single fire only, full automatic, 2-round, and 3-round burst options. The weapon’s unique modular design and a variety of buttstocks, forearms, sight mounts, and other accessories gives the MP5 extraordinary flexibility to meet almost any mission requirement.

(Ex. 237, Heckler & Koch Product Catalog, Military/Law Enforcement, MP5, at 20.)

316. The Heckler & Koch MP5 has been produced in multiple iterations, including a semiautomatic pistol variant without a shoulder stock, the SP-89. (ECF 185-1, Yurgealitis ¶ 75.)

The Act lists the SP-89 by name in the definition of “assault weapon.” (720 ILCS 5/24-1.9(a)(1)(K)(vi).)

317. Heckler & Koch sells semiautomatic-only versions of the MP5, such as the MP5SF, with a 30-round magazine.¹⁰ (Ex. 237, Heckler & Koch Product Catalog, Military/Law Enforcement, MP5, at 20.)

¹⁰A member of Gun Owners of America, Todd Vandermyde, has stated in a declaration that he wishes “to lawfully acquire and possess in Illinois . . . an HK MP5 type firearm[.]” (ECF 209 ¶ 6.)

c. Semiautomatic versions of submachineguns, like the Uzi, have been considered “assault weapons” for decades.

318. When *Gun Digest* published the *Gun Digest Book of Assault Weapons* in 1986, the cover photo was of an Uzi. (ECF 185-1, Yurgealitis ¶ 66.) Israel Military Industries successfully marketed its Uzi submachinegun for export in both select-fire and semiautomatic-only variants. (*Id.* ¶ 68.) Carbine versions of the Uzi, chambered in 9mm, were first imported into the U.S. in the 1980s. (Ex. 227, *Gun Digest*, 75th ed., 2021 (excerpt) at 161.)

319. On July 18, 1984, a gunman armed with an Uzi carbine rifle and two other firearms killed 21 people and wounded 19 others at a McDonald’s in San Ysidro, California. (Ex. 243, Christopher S. Koper, “Updated Assessment on the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence” (2004) at 14.)

320. Congress specifically listed the Uzi as an “assault weapon” in the federal assault weapons ban in 1994. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 6.)

321. Similarly, the Act identifies multiple Uzi rifle and pistol variants by name in its definition of “assault weapon.” (720 ILCS 5/24-1.9(a)(1)(J)(xx), (xxii), (xiv) & (K)(xiv).)

B. The .50 caliber rifles and ammunition the Act restricts were designed for and are employed by the military.

322. In addition to restricting semiautomatic rifles meeting the statutory definition of “assault weapon,” the Act also restricts “.50 caliber rifles” and “.50 caliber cartridges.” (720 ILCS 5/24-1.9(a)(5)-(6), (b), (c).) The Act defines a “.50 caliber rifle” as a centerfire rifle capable of firing “.50 BMG caliber” ammunition, and specifically excludes antiques, muzzle-loaders using black powder, and shotguns. (*Id.* § 1.9(a)(5).) The Act defines a “.50 caliber cartridge” as a .50 BMG caliber cartridge. (*Id.* § 1.9(a)(6).)

323. The “BMG” in “.50 BMG caliber” ammunition refers to the M2 “Browning Machine Gun” that has been used by the military since World War II. (ECF 185-1, Yurgealitis ¶ 127.) The .50 BMG bullet is much larger than the 5.56mm NATO caliber ammunition typical of AR-platform rifles, the 7.62x39mm caliber ammunition typical of AK-platform rifles, and the 9mm caliber ammunition typical of many pistols. (*Id.* ¶¶ 102, 120, 128; ECF 230-17, Fatohi Dep. 76:6–77:7.)

324. The following chart compares ballistics information from *Gun Digest* regarding .50 BMG, 9mm Luger, 5.56mm NATO, and 7.62x39mm caliber ammunition available in the civilian market:

Cartridge	Bullet Weight (grains)	Velocity (FPS – feet/sec.)					Energy (foot-pounds)				
		Muzzle	100 yds.	200 yds.	300 yds.	400 yds.	Muzzle	100 yds.	200 yds.	300 yds.	400 yds.
9mm Luger	115	1155	970	[N/A]	[N/A]	[N/A]	340	240	[N/A]	[N/A]	[N/A]
5.56mm NATO	55	3130	2740	2362	2051	1750	1196	917	693	514	372
7.62x39mm	123	2360	2049	1764	1511	1296	1521	1147	850	823	459
.50 BMG	624	2952	2820	2691	2566	2444	12,077	11,028	10,036	9125	8281

(ECF 185-1, Yurgealitis ¶ 129; Ex. 231, *Gun Digest*, 78th ed., 2024 (excerpt) at 604, 608, 613, 615.)

325. The bullet weight of the .50 BMG caliber bullet is more than 11 times heavier than a 5.56mm NATO bullet and more than five times heavier than either a 9mm or 7.62x39mm bullet. (ECF 185-1, Yurgealitis ¶ 128; Ex. 231 at 604, 608, 613, 615.)

326. The amount of energy a .50 BMG bullet has at 400 yards is more than five times the maximum energy of either the 5.56mm NATO bullet or the 7.62mm bullet leaving the muzzle.

(ECF 185-1, Yurgealitis ¶ 130.) The amount of energy a .50 BMG bullet has leaving the muzzle is over 35 times greater than a 9mm bullet. (Ex. 231 at 613, 615.)

327. Rifles chambered in .50 BMG caliber ammunition were initially developed for military use against vehicles, lightly armored targets, and long-range sniping against enemy combatants. (ECF 185-1, Yurgealitis ¶ 125; ECF 232-3, Eby Dep. 42:21–43:23.) For example, the Barrett M107, which fires .50 BMG caliber ammunition, is an anti-materiel weapon designed to shoot out engine blocks on vehicles. (Trial Tr. (Eby) 175:22–176:4.) This exact same semiautomatic .50 caliber sniper rifle used by the U.S. military is also available on the civilian market outside of Illinois. (Trial Tr. (Eby) 176:22–177:1; ECF 232-3, Eby Dep. 42:21–43:8.) The Barrett M107 is pictured below:



(ECF 185-1, Yurgealitis ¶ 125.)

328. With a 20-inch barrel, the Barrett M107 is 48 inches long and weighs over 27 pounds. (Ex. 287, Barrett, 2024 Firearms Catalog at OAG008486.) A bullet fired by a Barrett M107 can travel about 4.5 miles in the right conditions. (Trial Tr. (Eby) 176:16–18.)

329. Plaintiffs' expert Jeffrey Eby testified that the Barrett M107 .50 caliber rifle would be his last choice for self-defense in a home setting. (Trial Tr. (Eby) 175:18–21.)

330. The Barrett M107 is heavy, cumbersome, not very portable, not maneuverable, and has harsh recoil. (ECF 232-3, Eby Dep. 44:17–46:18.) Use of a Barrett M107 in a home setting would result in a significant amount of overpenetration. (Trial Tr. (Eby) 176:19–21.)

331. Like the Barrett M107, the Barrett M82 is a .50 caliber rifle initially developed as a military sniper rifle to shoot at vehicles.¹¹ (ECF 185-1, Yurgealitis ¶ 125; Trial Tr. (Eby) 111:7–13.) With a 20-inch barrel, the Barrett M82 is 48 inches long and weighs over 30 pounds. (Ex. 287 at OAG008488.)

332. The Barrett M82 is pictured below:



(ECF 185-1, Yurgealitis ¶ 125.)

333. Barrett describes the M82A1 in its most recent product catalog as follows: “Engineered as the first of its kind, the Model M82A1 has proven itself in combat across diverse environments, from snow-covered mountains to desolate deserts.” (Ex. 287 at OAG008487.)

334. Plaintiffs’ self-defense expert Randy Watt does not train anyone to use .50 caliber firearms in self-defense. (Trial Tr. (Watt) 500:6–9.) As the owner of Piasa Armory, Scott Pulaski has never been asked for and has never recommended a .50 caliber BMG rifle for self-defense

¹¹ A member of plaintiff Gun Owners of America, Todd Vandermyde, has stated in a declaration that he wishes “to lawfully acquire and possess in Illinois . . . a Barrett M82[.]” (ECF 209 ¶ 6.)

purposes. (Trial Tr. (Pulaski) 80:17–23.) Piasa Armory sells approximately one .50 caliber BMG rifle every other year and about one box of .50 caliber BMG ammunition every six to eight months. (Trial Tr. (Pulaski) 65:25–66:5.)

335. Since 2021, Illinois has not allowed the Illinois State Police to request, receive, purchase, or otherwise utilize certain military equipment surplus including firearms and ammunition of .50 caliber or higher and grenade launchers. (20 ILCS 2610/17c(b).)

C. Many of the pistols the Act restricts are either AR- or AK-platform firearms or semiautomatic versions of submachineguns.

336. The Act’s definition of “assault weapon” includes semiautomatic, magazine-fed pistols that have one or more of the following features: a threaded barrel, a second pistol grip, a barrel shroud, a flash suppressor, a buffer tube or arm brace, or the ability to accept a magazine outside of the pistol grip. (720 ILCS 5/24-1.9(a)(1)(C).)

337. Many of the semiautomatic pistols that have features listed in the Act’s “assault weapon” definition have been adapted from AR- and AK-type rifle platforms.¹² (ECF 185-1, Yurgealitis ¶ 152.) As Plaintiffs’ expert Randy Watt testified at trial, the Act’s features-based definition for semiautomatic pistols describes an AR pistol—essentially, a shorter barrel carbine without a stock that meets the ATF’s classification for a pistol. (Trial Tr. (Watt) 426:7–11, 438:5–439:15.)

338. AR pistols are distinct from traditional semiautomatic pistols, which, unlike AR pistols, are handguns. (Trial Tr. (Watt) 425:15–426:15.) Indeed, Watt does not allow participants in his defensive pistol courses to bring AR pistols to those courses, because those courses are dedicated to handguns and AR pistols are “in the carbine category.” (Trial Tr. (Watt) 426:7–23.)

¹² A member of Gun Owners of America, Todd Vandermyde, has stated in a declaration that before the Act’s effective date, he owned and lawfully possessed within Illinois “an AR-style Pistol.” (ECF 209 ¶ 5.)

339. The Act is not unique in identifying specific features that differentiate the regulated firearms from traditional semiautomatic pistols. The federal assault weapons ban in effect from 1994 to 2004 applied to semiautomatic, magazine-fed pistols with two or more of the following features: a threaded barrel, a barrel shroud, a manufactured weight of 50 ounces or more when unloaded, the ability to accept a magazine outside the pistol grip, or a semiautomatic version of an automatic firearm. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 7.)

340. The vast majority of semiautomatic pistols available to consumers are available without a threaded barrel, a second pistol grip, a barrel shroud, a flash suppressor, a buffer tube or arm brace, or the ability to accept a magazine outside the pistol grip. (ECF 185-1, Yurgealitis ¶¶ 135–44 & App’x A.)

1. AR- and AK-type pistols are uncommon in the overall handgun market.

341. AR- and AK-type pistols are uncommon within the overall handgun market. (*Id.* ¶ 162.)

342. James Curcuruto worked at NSSF from 2009 to January 2021, where his responsibilities included overseeing the creation of NSSF reports estimating the number of “modern sporting rifles” produced for the U.S. market. (ECF 230-7, Cucuruto Dep. 35:22–24; 37:14–17, 39:8–41:12.)

343. Curcuruto testified at his deposition that ten years ago, AR-15 pistols were not prevalent at all. (*Id.* 131:8–15.) When Curcuruto joined NSSF in 2009, NSSF’s definition of “modern sporting rifle” did not include any pistols. (*Id.* 35:22–36:12, 37:14–17, 39:8–41:12.)

344. During Curcuruto’s tenure at NSSF, from 2009 to January 2021, AR-style pistols was not really a category that NSSF tracked and was “nothing that we looked at specifically in

detail.” (*Id.* 112:5–13.) Curcuruto did not count pistols of any kind within the category of “modern sporting rifle.” (*Id.* 36:9–12.)

345. Following Curcuruto’s departure, Salam Fatohi has supervised the creation of the NSSF report that includes NSSF’s annual estimate of “modern sporting rifle” production. (ECF 230-17, Fatohi Dep. 86:9–97:6.) Unlike Curcuruto, Fatohi testified that the category “modern sporting rifle” can include pistols, such as AR- and AK-type pistols, as well as Heckler & Koch’s MP5 and SP5 firearms. (*Id.* 45:11–21; 145: 9–147:24.) NSSF’s most recent estimate of “modern sporting rifles,” which was released in 2023, includes estimates of “modern sporting rifle” pistols produced from 2019 through 2021. (*Id.* 190:3–192:4.)

346. NSSF’s estimate of the number of “modern sporting rifle” pistols produced in 2019 is 20,370. (*Id.* 191:16–21.) According to ATF data, there were 3,046,009 pistols of all kinds produced in the U.S. in 2019. (Ex. 303, NSSF, *Firearm Production in the United States* (2023 ed.) at 2.) If NSSF’s estimate of “modern sporting rifle” pistols produced in 2019 is accurate, then “modern sporting rifle” pistols constituted 0.7% of all pistols produced in the U.S. in 2019. (ECF 230-17, Fatohi Dep. 191:16–21; Ex. 303 at 2.)

347. NSSF’s estimate of the number of “modern sporting rifle” pistols produced in 2020 is 54,010. (ECF 230-17, Fatohi Dep. 191:22–24.) According to ATF data, there were 5,509,183 pistols of all kinds produced in the U.S. in 2020. (Ex. 303 at 2.) If NSSF’s estimate of “modern sporting rifle” pistols produced in 2020 is accurate, then “modern sporting rifle” pistols constituted 1% of all pistols produced in the U.S. in 2020. (*Id.*; ECF 230-17, Fatohi Dep. 191:22–24.)

348. NSSF’s estimate of the number of “modern sporting rifle” pistols produced in 2021 is 63,221. (ECF 230-17, Fatohi Dep. 192:1–4.) According to ATF data, there were 6,751,906 pistols of all kinds produced in the U.S. in 2021. (Ex. 303 at 2.) If NSSF’s estimate of “modern

sporting rifle” pistols produced in 2021 is accurate, then “modern sporting rifle” pistols constituted 0.9% of all pistols produced in the U.S. in 2021. (*Id.*; ECF 230-17, Fatohi Dep. 192:1–4.)

2. AR- and AK-type pistols share common features with AR- and AK-type rifles.

349. Many AR- and AK-type pistols are chambered in rifle calibers, including the 5.56mm NATO caliber typical of AR-platform rifles and the 7.62x39mm caliber typical of AK-platform rifles. (ECF 181-5, Yurgealitis ¶ 156 & App’x B; Trial Tr. (Pulaski) 43:13–18, 48:25–49:1.)

350. Rifle caliber ammunition generally has higher muzzle velocity and muzzle energy than common pistol caliber ammunition. (ECF 181-5, Yurgealitis ¶ 156; Trial Tr. (Eby) 200:16–21.) A 55 grain projectile—a typical 5.56mm NATO caliber bullet weight—launched at 3,000 feet per second possesses 1,099 foot-pounds of energy when fired from a handgun just as it does from a rifle. (ECF 232-18, Boone Rept. ¶ 61; Trial Tr. (Watt) 462:23–463:9.)

351. Because of the greater energy generated by rifle caliber ammunition, rifle caliber rounds tend to generate more recoil. (ECF 181-5, Yurgealitis ¶ 156.) To account for the recoil generated by rifle caliber ammunition, many AR- and AK-type pistols incorporate an arm brace or buffer tube. (*Id.* ¶ 158.)

352. The recoil generated by firing rifle caliber ammunition from a pistol also creates greater potential for muzzle rise. (*Id.* ¶ 159.) To counteract muzzle rise, many AR- and AK-platform pistols incorporate a barrel shroud or a magazine that attaches outside the pistol grip. (*Id.* ¶ 159.) A second pistol grip attached to the front of the pistol can serve a similar function. (*Id.*)

353. Many AR- and AK-type pistols have magazines with 20- or 30-round capacities. (*Id.* ¶ 160 & App’x B.) These magazine capacities mean that a shooter can fire more rapidly with fewer pauses for reloading. (*Id.* ¶ 160.)

3. Semiautomatic pistols adapted from submachineguns, such as Heckler & Koch’s SP5 models, have large magazine capacities enabling rapid fire with fewer pauses for reloading.

354. Some of the semiautomatic pistol models that have features included in the Act’s “assault weapon” weapon definition have been adapted from submachineguns used by military and police professionals around the world. (*Id.* ¶ 152.)

355. For example, Heckler & Koch describes its SP5 “as a semiautomatic, civilian sporting pistol that matches the look and feel of the legendary MP5 submachine gun.” (*Id.* ¶ 76.)

356. Like the MP5 submachinegun, the SP5 has a 30-round magazine that attaches outside the pistol grip that enables rapid fire and fewer pauses for reloading, and a foregrip for maintaining accuracy. (*Id.* ¶¶ 76, 160 & App’x B; Ex. 237, Heckler & Koch Product Catalog at 20.)

4. For nearly all of the semiautomatic pistol models currently sold in the U.S. by top handgun manufacturers, there are magazines available with capacities of 15 rounds or less.

357. Magazine capacity does not affect the operability of a firearm. (ECF 185-1, Yurgealitis ¶ 111.) Firearms that accept detachable magazines can typically accept magazines with different capacities. (*Id.*; ECF 230-17, Fatohi Dep. 265:5–10.) A firearm that can accept a detachable magazine can generally accept a detachable magazine that has a larger or smaller capacity than the original magazine included in the box by the manufacturer of the firearm. (ECF 185-1, Yurgealitis ¶ 111; ECF 230-17, Fatohi Dep. 265:11–19.)

358. Many manufacturers of semiautomatic pistols offer different capacity magazines that can be used in the same pistol model. (ECF 185-1, Yurgealitis ¶ 146 & App’x A.) Many manufacturers offer a 10-round magazine option for a semiautomatic pistol model even when the “standard” magazine (as determined by the manufacturer) for that model may have a higher capacity (15 or 17 rounds, for example). (*Id.* ¶ 149 & App’x A.) Manufacturers often call these

models with 10-round magazines “compliant” or “state compliant”—a reference to a version of a firearm or magazine that complies with state-specific regulations, like the 10-round magazine capacity limit that applies in some states. (*Id.* ¶ 149; ECF 230-17, Fatohi Dep. 266:11–22.) The federal assault weapons ban in effect from 1994 to 2004 also prohibited the possession or transfer of magazines with capacities of more than 10 rounds. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 10.)

359. The Act’s 15-round magazine capacity limit for handguns allows Illinois residents a greater range of options than residents in other states with a 10-round limit. (ECF 185-1, Yurgealitis ¶ 149.) For nearly all of the semiautomatic pistol models currently sold in the U.S. by top handgun manufacturers, there are magazines available with capacities of 15 rounds or less. (*Id.* ¶ 151.)

360. For example, Plaintiff Caleb Barnett has stated he owns a Heckler & Koch VP9 Tactical pistol with a 17-round magazine. (ECF 198 ¶ 4.) Plaintiff Brian Norman has also stated he owns a Heckler & Koch VP9 pistol, but does not state the magazine capacity for that pistol. (ECF 200 ¶ 4.) Heckler & Koch’s product catalog lists magazine capacity options of either 15 or 10 rounds for both the VP9 and the VP9 Tactical handgun models. (Ex. 237, Heckler & Koch Product Catalog at 40.)

361. Even for semiautomatic pistol models where a factory-issued magazine option of 15-rounds or less may not be available, the firearms themselves would be able to accept a magazine with a capacity of 15 rounds or less, or a magazine that had been modified (such as with a limiter) to accept no more than 15 rounds, and still function. (ECF 185-1, Yurgealitis ¶ 150.)

5. Semiautomatic pistols with threaded barrels are also available in versions without threaded barrels.

362. Plaintiff Caleb Barnett has stated he owns a Heckler & Koch VP9 Tactical pistol with a threaded barrel. (ECF 198 ¶ 4.) Plaintiffs Jasmine Young and Chris Moore have stated they each wish to lawfully acquire and possess in Illinois a semiautomatic pistol with a detachable magazine and a threaded barrel, but neither identifies a particular pistol model. (ECF 208 ¶ 5(b); ECF 207 ¶ 6(b).)

363. A threaded barrel allows for the attachment of a suppressor, also called a silencer. (ECF 185-1, Yurgealitis ¶ 139; Trial Tr. (Watt) 429:1-6.)

364. A separate Illinois statutory provision predating the Act prohibits the possession of silencers in Illinois. (720 ILCS 5/24-1(a)(6).)

365. Heckler & Koch VP9 Tactical pistols owned by Plaintiff Caleb Barnett that have threaded barrels are “identical to standard VP series pistols” from Heckler & Koch “[e]xcept for their threaded barrels[.]” (Ex. 237, Heckler & Koch Product Catalog at 3.)

366. Multiple semiautomatic pistol listings in *Gun Digest* for the same pistol models include options with or without threaded barrels. (ECF 185-1, Yurgealitis ¶ 138.)

D. The shotguns the Act restricts are a narrow sub-category of large capacity, semiautomatic shotguns.

367. The Act’s definition of “assault weapon” includes semiautomatic shotguns that have one or more of the following features: a pistol grip or thumbhole stock; a protruding grip for the non-trigger hand; a folding or thumbhole stock; a grenade launcher; a fixed magazine capacity of greater than 5 rounds; or the ability to accept a detachable magazine. (720 ILCS 5/24-1.9(a)(1)(F).)

368. The federal assault weapons ban in effect from 1994 to 2004 applied to semiautomatic shotguns with two or more of the following features: a pistol grip, a folding or

telescoping stock, a fixed magazine capacity of greater than 5 rounds, or the ability to accept a detachable magazine. (Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 7.)

369. Many shotgun models on the market today do not have the features listed in the Act’s definition of “assault weapon.” (ECF 185-1, Yurgealitis ¶¶ 163–66, 177.) In other words, shotgun models restricted by the Act are very much the exception, not the rule, and many shotgun models continue to be available for purchase by Illinois residents. (*Id.* ¶¶ 163, 165–66, 177.)

1. Many shotguns are not semiautomatic.

370. There are several different types of shotguns that are not semiautomatic: pump-action shotguns, where the shooter uses the pump action to cycle a new shell into the chamber; over/under shotguns, where two barrels, each loaded with a shell, are stacked on top of one another; side-by-side shotguns, where two barrels, each loaded with a shell, are arranged horizontally; bolt-action shotguns, where a new shell is cycled into the chamber by operating the bolt; lever-action shotguns, where a new shell is cycled into the chamber by pulling a lever; and single-shot shotguns. (*Id.* ¶ 165.)

371. In total across these categories, *Gun Digest* includes 168 listings of shotgun models that are not the type of shotguns regulated by the Act. (*Id.* ¶ 166.) Many of these shotgun models continue to be widely popular, such as pump-action, side-by-side, and over/under shotguns. (*Id.* ¶ 177.)

2. Many semiautomatic shotguns have none of the features listed in the Act’s definition of “assault weapon.”

372. A semiautomatic shotgun fires a single shell each time the shooter pulls the trigger. (*Id.* ¶ 167.) Unlike with a pump-, lever-, or bolt-action shotgun, the shooter does not have to do

anything other than pull the trigger once to fire a shell, eject the empty hull, and load another shell. (*Id.*)

373. A substantial majority of the semiautomatic shotgun models listed in *Gun Digest* (2024) are available without any of the features from the Act’s definition of “assault weapon.” (*Id.* ¶ 168.) Out of the 64 listings in the semiautomatic shotgun section in *Gun Digest* (2024), four are shown with a pistol grip.¹³ (*Id.*) But even for these models, the manufacturers offer versions without pistol grips. (*Id.*) Out of the 64 listings in the semiautomatic shotgun section of *Gun Digest* (2024), there are only six models listed as having a capacity greater than five shells. (*Id.* ¶ 169.) Even for these shotgun models, the manufacturers may offer versions with capacities of five shells or less. (*Id.*)

3. Semiautomatic shotguns with detachable magazines incorporate AR- and AK-style features.

374. Examples of shotguns that meet the Act’s “assault weapon” definition include models like the Standard Manufacturing SKO-12, the Standard Manufacturing SKO Shorty, and the Kalashnikov Komp12. (*Id.* ¶¶ 170–73.) Each model is offered with a detachable magazine with a capacity of 10 shells or more. (*Id.* ¶¶ 169, 173; Ex. 272, Kalashnikov Komp12 webpage at 6–7.)

375. The *Gun Digest* listings for the SKO-12 and SKO Shorty describe them as having an “AR-style mag and bolt release.” (ECF 185-1, Yurgealitis ¶ 171.) Shotguns with AR-style features like these are unusual compared to most shotguns on the market. (*Id.*) Standard Manufacturing, the maker of the SKO-12 and SKO Shorty, reported producing 9,435 shotguns in 2021 to the ATF—representing 1.4% of total U.S. shotgun production that year. (*Id.* ¶ 172.)

¹³ Plaintiff Jasmine Young has stated she wishes to acquire a semiautomatic shotgun with a pistol grip. (ECF 208 ¶ 5(c).) A member of Gun Owners of America, Todd Vandermyde, has stated that prior to the Act’s effective date, he lawfully owned and possessed in Illinois a semiautomatic shotgun that has a pistol grip. (ECF 209 ¶ 5.)

376. The Kalashnikov Komp12 is based on the Russian Saiga series shotguns, which are fully automatic shotguns patterned after AK-type rifles. (*Id.* ¶ 173.) The company that sells the Kalashnikov Komp12 describes it on its website as follows: “As the name says, this is a shotgun for the battlefield.” (*Id.* ¶ 174; Ex. 272 at 6.)

IV. The firearms and large capacity ammunition feeding devices the Act restricts are not commonly used for lawful self-defense.

A. Empirical analysis indicates that it is extremely rare for a person, when using a firearm in self-defense, to fire more than 10 rounds.

377. Home defense and self-defense situations are rarely, if ever, lengthy shootouts at long ranges with extensive exchanges of gunfire. (ECF 185-1, Yurgealitis ¶ 180.) Based on an empirical analysis of almost 1,000 real-life incidents of self-defense with a firearm, it is extremely rare for a person, when using a firearm in self-defense, to fire more than 10 rounds. (ECF 185-8, Allen ¶¶ 5, 8.)

378. Economist Lucy Allen performed an analysis of 736 incidents from the National Rifle Association’s (“NRA”) Armed Citizen database, which contains stories describing private citizens who have successfully defended themselves or others using a firearm. (*Id.* ¶ 9.) For each incident, the number of shots fired was tabulated. (*Id.* ¶ 10.) In 18% of the 736 incidents analyzed, the defender did not fire any shots; in 2% of incidents the defender fired 6 to 10 shots; and in 0.3% of incidents (2 incidents out of the 736 analyzed) the defender fired more than 10 shots. (*Id.* ¶ 11.)

379. Across all 736 incidents analyzed, defenders fired 2.2 shots on average. (*Id.*) If one calculates the average excluding incidents of self-defense where no shots were fired, the average is 2.6 shots for incidents where at least one shot is fired. (*Id.*) Of the 20 incidents analyzed that occurred in Illinois, there were no incidents where the defender was reported to have fired more than 10 shots, 19 where the defender fired 1 to 5 shots, and 1 where the defender did not fire any shots. (*Id.* ¶ 13.)

380. Allen conducted an additional analysis of 200 news stories randomly selected from approximately 4,800 news stories from January 2011 to May 2017 on incidents of self-defense with a firearm in the home. (*Id.* ¶ 16.) Based on this analysis, Allen found that the average number of shots fired per incident covered is 2.34. (*Id.* ¶ 19.)

381. Allen’s study of a random selection of news reports on self-defense with a firearm in the home yielded the following findings: in 11.6% of incidents the defender did not fire any shots, and simply threatened the offender with a gun; in 97.3% of incidents the defender fired 5 or fewer shots; and there were no incidents where the defender was reported to have fired more than 10 bullets. (*Id.* ¶ 20.)

382. Allen conducted further analysis of publicly available data from the Portland Police Bureau on shooting incidents and crime covering a four-year period from 2019 to 2022 in Portland, Oregon. (*Id.* ¶ 22.) Allen’s analysis of police data on almost 4,000 shooting incidents in Portland yielded no incidents of self-defense with a firearm where the defender fired more than 10 rounds. (*Id.* ¶ 25.)

383. Overall, Allen’s analysis of incidents in the NRA Armed Citizen database, her study of a random sample from approximately 4,800 news stories describing incidents of self-defense with a firearm in the home, and a systematic analysis of shootings in Portland using police data, indicates that it is extremely rare for a person, when using a firearm in self-defense, to fire more than 10 rounds. (*Id.* ¶ 30.)

B. Rifles of any kind are rarely used in self-defense.

384. An analysis of a database of defensive gun uses (“DGUs”) compiled by the Heritage Foundation indicates that it is rare for any kind of rifle to be used in self-defense. (*Id.* ¶ 31.)

385. Since April 2020, the Heritage Foundation has been publishing and periodically updating a database of news stories describing incidents in the U.S. in which individuals

purportedly defended themselves using firearms (“Heritage DGU database”). (*Id.* ¶ 34.) Allen analyzed 2,714 incidents in the Heritage DGU database from January 1, 2019 through October 6, 2022. (*Id.*)

386. Out of the 2,714 incidents in the Heritage DGU database that Allen analyzed, there were 51 incidents indicating a rifle was involved. (*Id.* ¶ 35.) The 51 incidents involving a rifle that Allen identified represented 2% of all 2,714 incidents she reviewed, and 4% of all 1,241 incidents with a known gun type. (*Id.*) Out of the 1,241 incidents with a known gun type that Allen reviewed, 1,113 incidents—90%—involved a handgun. (*Id.*)

387. Plaintiffs have repeatedly cited a non-peer-reviewed survey conducted by William English regarding firearm ownership and defensive gun uses.¹⁴ (ECF 223-1, William English, *2021 National Firearms Survey* (2022) (the “English survey”); *see also, e.g.*, ECF 1 ¶ 31; ECF 231 at 3.)

388. The English survey found that out of more than 15,000 total respondents who identified themselves as gun owners and completed the relevant survey questions regarding defensive gun uses, 31.1% had engaged in at least one defensive gun use. (ECF 223-1, English survey at 11.) The survey also found that in most incidents of defensive gun use, no shots were fired at all. (*Id.* at 13.) Only 18% of the defensive gun use incidents in the survey involved actually firing a gun; 51% involved brandishing a gun; and 31% involved neither. (*Id.*)

389. The English survey also found that handguns were the most commonly used firearm for self-defense: 66% of defensive gun uses involved a handgun, 21% involved a shotgun, and 13% involved a rifle. (*Id.* at 15.) Because the survey does not delineate the features of rifles used

¹⁴ For the reasons identified in the State Defendants’ separately filed motion, the Court should disregard the English survey in its entirety because it is unreliable. (ECF 223.)

in these incidents, it does not provide any data about what proportion of the defensive rifle uses involved assault weapons. (*See id.* at 14–15.)

390. Plaintiffs have also cited a small consumer survey conducted by NSSF. (ECF 230-25 & 230-26, NSSF, *Modern Sporting Rifle: Consumer Comprehensive Report* (“Consumer Report”) (July 14, 2022).) The Consumer Report includes a disclaimer that its results may be inaccurate. (ECF 230-25 at 2.)

391. The Consumer Report did not survey the overall consumer market for firearms because it counted responses only from a “narrow scope” of individuals who reported that they already owned at least one AR- or AK-platform rifle. (ECF 230-17, Fatohi Dep. 326:2–22; *see also* ECF 230-7, Curcurruto Dep. 134:12–135:22, 157:11–158:5 (describing the same methodology used for NSSF’s prior Consumer Report.)) As a result, the Consumer Report does not include data from gun owners who chose not purchase an AR- or AK-platform rifle, such as gun owners who have not acquired AR- or AK-platform rifles because they believe such rifles are not effective for self-defense. (ECF 230-7, Curcurruto Dep. 135:23–137:11; 157:11–158:5.)

392. By promoting the survey through its “partner email distribution list,” NSSF obtained survey responses from 2,421 people, of whom more than 90% (2,185) reported owning an AR- or AK-platform rifle. (ECF 230-25, Consumer Report (excerpt) at 10.) NSSF informed these survey respondents that the data being collected would “be used to help educate those influencing public policy in the effort to preserve our constitutional rights.” (ECF 230-7, Curcurruto Dep. 163:18–164:24; ECF 230-16, Consumer Report Survey Questionnaire at 1.)

393. Among survey respondents who stated that they owned an AR- or AK-platform rifle, “home/self-defense” ranked as the tenth most important reason given for purchasing that type of firearm. (ECF 230-17, Fatohi Dep. 328:6–17; ECF 230-25, Consumer Report (excerpt) at 26.)

According to NSSF's market segmentation analysis, 11% of AK- and AR-platform rifles are owned by a cluster of consumers who possess them primarily for home defense; the remainder belong to consumers who primarily use them for hunting, competition shooting, or professional or job-related reasons. (ECF 230-26, Consumer Report (excerpt) at 64.)

C. The firearms and large capacity ammunition feeding devices the Act regulates are not well-suited for self-defense.

394. AR-15s, AK-47-platform rifles, .50 caliber rifles, and other assault weapons are a poor choice for self-defense. (ECF 185-1, Yurgealitis ¶¶ 130, 178; Trial Tr. (Eby) 175:18–21.)

395. AR- and AK-platform rifles were initially designed for military use, and their characteristics and capabilities reflect their origin as military combat weapons. (ECF 185-1, Yurgealitis ¶ 5.) Rifles serve a different purpose in the military than pistols. (Trial Tr. (Eby) 177:12–16.) Rifles perform tactical tasks in the military that pistols do not and cannot perform. (*Id.*) The tactical purpose of an infantry rifleman is to provide well-aimed effective fire with his or her rifle to kill the enemy. (Trial Tr. (Dempsey) 604:25–605:10, 606:12–17.) U.S. infantry equipped with military rifles are trained to locate, close with, and destroy the enemy through fire and maneuver. (Trial Tr. (Tucker) 516:11–16.)

396. By contrast, in both the military and civilian life, pistols serve the same purpose: self-defense. (Trial Tr. (Eby) 177:4–16.) Traditional semiautomatic pistols do not include the type of AR pistols classified as “assault weapons” under the Act. (Trial Tr. (Watt) 426:7–11, 480:6–14; ECF 185-1, Yurgealitis ¶¶ 135–44 & App'x A.) AR pistols are like the AR rifles from which they are derived, just with a shorter barrel. (Trial Tr. (Watt) 426:7–11, 438:5–439:24, 480:6–14; ECF 185-1, Yurgealitis ¶ 152.)

397. The weapons classified as “assault weapons” by the Act pose substantial risks to innocent bystanders when used in a home setting and are unsuitable for lawful concealed carry. (ECF 185-1, Yurgealitis ¶¶ 180–86, 190–91.)

1. The firearms the Act restricts pose substantial risk of over-penetration in the home because of their muzzle velocity, range, and penetration capability.

398. Many of the firearms classified as “assault weapons” under the Act were designed to be effective at battlefield ranges of up to 500 yards. (*Id.* ¶ 180.) Civilian self-defense encounters occur within five to seven yards on average. (Trial Tr. (Eby) 178:20–22.)

399. A civilian homeowner would want a bullet that does not over-penetrate, and should be concerned about a bullet over-penetrating and striking their neighbor. (*Id.* 175:1–6.) Potential over-penetration in a confined environment is problematic in terms of risk to bystanders or family members outside the target location. (ECF 185-1, Yurgealitis ¶ 183.)

400. The typical muzzle velocity of a .223 caliber bullet—a typical caliber for AR-platform firearms—is 3,200 feet per second. (*Id.* ¶ 180; ECF 230-17, Fatohi Dep. 33:24–34:3.) Projectiles travelling at velocities found in the firearms the Act restricts pose a serious risk of over-penetration in most home construction materials such as gypsum board, sheet rock, and typical 2x4 lumber. (ECF 185-1, Yurgealitis ¶ 180.)

401. The U.S. military does not choose bullets with self-defense in mind. (Trial Tr. (Eby) 174:10–12.) When the .223 caliber cartridge was engineered for the AR-15/M16, it was intended to kill or incapacitate enemy combatants at distances of hundreds of yards, not dozens of feet. (ECF 185-1, Yurgealitis ¶ 180.)

402. Plaintiffs’ expert Jeffrey Eby testified that he would not choose the military’s current 5.56mm round, the M855A1 enhanced performance round, for civilian self-defense, but

he acknowledged that such rounds were able to be purchased online and used in his semiautomatic-only AR-15 rifle. (Trial Tr. (Eby) 170:8–14, 171:21–172:4, 175:12–17.)

403. Eby testified that the M855, the bullet used by the U.S. military in Afghanistan and Iraq, is the last bullet he would choose as a civilian. (Trial Tr. (Eby) 175:7–11.) As a civilian, Eby would prefer a bullet that did not over-penetrate, and that the M855 poses a risk of over-penetration in a home setting. (Trial Tr. (Eby) 175:4–6; ECF 232-3, Eby Dep. 80:3–81:20.) The penetration capability of the M855 poses substantial risks to individuals in adjoining rooms, neighboring apartments, or other attached dwelling units. (ECF 185-1, Yurgealitis ¶ 183.)

404. Nonetheless, the M855 rounds available for purchase in the civilian market achieve the same velocity as in the military when fired from “civilian” semiautomatic AR-15s. (Trial Tr. (Eby) 173:15–22, 175:7–17.)

405. In August 2014, the National Rifle Association’s *American Rifleman* magazine published an article by Stanton Wormley titled, “The AR-15 for Home Defense: Penetration Tests.” (ECF 185-1, Yurgealitis ¶ 181; Ex. 281, Stanton Wormley, “The AR-15 for Home Defense: Penetration Tests,” *American Rifleman* (Aug. 5, 2014).) Wormley conducted penetration tests of nine different types of .223/5.56mm ammunition by firing them through simulated wall sections constructed of gypsum board/sheet rock and wooden 2x4 studs. (ECF 185-1, Yurgealitis ¶ 181.)

406. When fired at a 90-degree angle to the walls, all nine (including “frangible” rounds designed to disintegrate when hitting a hard surface) easily penetrated the wall section as well as water jugs placed three feet behind. (*Id.*) The body is approximately the same density as water. (ECF 185-3, Hargarten ¶ 36 n.13 (quoting Ex. 276, Eugene Stoner, “House of Representatives, Committee on Armed Services, Special Sub-Committee on the M-16 Rifle Program,” in *Hearings, Reports and Prints of the House Committee on Armed Services*, Issues 15-25, p. 4563 (June 21,

1967)).) The tests Wormley conducted also included firing longitudinally through the wall sections, resulting in the penetration of three successive 2-inch-thick 2x4 studs by a number of the projectiles. (ECF 185-1, Yurgealitis ¶ 182.)

407. Plaintiffs' self-defense expert Randy Watt shows students in his self-defense courses penetration videos of walls being shot through. (Trial Tr. (Watt) 484:17–485:22.) Watt does so because one of the things he commonly hears in the firearms training world is that any law enforcement or military round is fine for self-defense. (*Id.*) As Watt said at trial: “No, it’s not.” (*Id.*)

2. The firearms and large capacity ammunition feeding devices the Act restricts are not suitable for lawful concealed carry.

408. Concealed carry license holders in Illinois are not allowed to carry a concealed rifle or shotgun. (430 ILCS 66/5 & 10(c); ECF 124-2, 10/3/23 Pulaski Dep. 46:3–12.) A concealed carry license holder in Illinois is authorized to carry a concealed “handgun,” which is a firearm “designed to be held and fired by the use of a single hand.” (430 ILCS 66/5 & 10(c); ECF 124-2, 10/3/23 Pulaski Dep. 46:3–6.)

409. When Eby engages in concealed carry, he carries a 9mm handgun, such as a Glock G43X. (Trial Tr. (Eby) 179:9–16.) The stock magazine for a Glock G43X is ten rounds. (*Id.* 179:13-16.) Eby uses a 15-round magazine from another manufacturer, Shield Arms, in his Glock G43X that works flawlessly. (*Id.* 179:17–180:2.)

410. Concealability is a very strong factor in deciding which size magazine to carry. (*Id.* 188:19–21.) Eby would not carry a magazine larger than 15 rounds for concealed carry because he has trouble concealing even a 15-round magazine in certain firearms, like a Glock 19. (*Id.* 188:11–21.) Eby has 21-round magazines that he uses on the range but he cannot conceal them. (*Id.* 188:22–189:1.) In the summer, Eby has carried a Glock G42, which has a standard magazine

of six rounds plus one in the chamber, although a separate manufacturer, Shield Arms, offers a nine-round magazine that works in the Glock G42. (*Id.* 180:3–13.)

411. Eby used to carry two spare magazines when carrying his Glock G42 to make up for the reduced ammunition capacity, but he will now often call the nine-plus-one enough and not carry the spare magazine. (*Id.* 180:11–19.) Eby stopped carrying two spare magazines after he learned of research that showed that the majority of civilian gun fights never get past 12 rounds, which “shook” his “stance” a bit about whether he needed all of that ammunition. (*Id.* 180:20–181:11.) Based on that research, Eby now believes that a 15-round magazine is probably sufficient. (Trial Tr. (Eby) 180:20–181:14.) Eby relies on that research when he decides what he will carry when he engages in concealed carry. (*Id.* 181:6–21.)

412. Pulaski typically recommends a Glock handgun for concealed carry. (Trial Tr. (Pulaski) 79:7–9.) Pulaski personally carries a Glock 19, which comes standard with a 15-round magazine. (Trial Tr. (Pulaski) 79:10–22.)

413. The State Defendants’ expert James Yurgealitis stated in his declaration that “[i]n terms of a carry handgun, [he] values concealability over ammunition capacity.” (ECF 185-1, Yurgealitis ¶ 190.)

414. A number of the semiautomatic pistols the Act regulates accept magazines outside of the pistol grip. (*Id.* ¶ 141.) Pistols that accept magazines outside of the pistol grip are often adapted from rifle designs. (*Id.* ¶ 140.) Pistols that accept magazines outside of the pistol grip are much less suitable for concealed carry to the extent that effective concealment is possible at all. (*Id.* ¶ 142.)

D. Plaintiffs lack reliable, empirical evidence that the firearms and magazines restricted by the Act are used in self-defense.

415. At trial, Plaintiffs elicited testimony from their witnesses about the alleged popularity of AR-style firearms for self-defense, but these witnesses acknowledged relying on anecdotal experiences, personal observations, and feedback allegedly gathered at gun industry trade shows. (Trial Tr. (Pulaski) 66:21–23; (Ronkainen) 274:9–275:6; (Watt) 420:1–423:24, 473:6–474:4.)

416. Plaintiffs' first trial witness, Scott Pulaski, testified regarding information purportedly included in forms he collects from customers at his gun store, Piasa Armory. (Trial Tr. (Pulaski) 50:12–51:12.) According to Pulaski, these forms include information from customers about their stated reason for making a particular firearm purchase. (*Id.*) Pulaski acknowledged that he did not compile these records to provide them to his attorneys for production in this litigation, nor did he individually review all of these records in preparation for his testimony. (*Id.* 64:5–65:10.) When asked how often purchasers of an AR-type rifle indicated self-defense was the reason for their purchase on the forms that Piasa Armory collects, Pulaski testified that “[w]ithout review of . . . those forms,” he “couldn’t speculate,” but added “we typically receive responses such as personal protection or collection, sport shooting, hunting, competition.” (*Id.* 54:2–11.) Pulaski acknowledged that there is not a way to independently confirm the information a customer provides regarding the reason for which they want to purchase a firearm. (*Id.* 65:2–7.)

417. Pulaski, who is not an expert on statistics or any other survey methodologies, has never conducted any surveys or studies of the Illinois firearms market. (*Id.* 67:7–12.) Pulaski acknowledged that his observations about what is popular are based on his personal observations and anecdotal experiences. (*Id.* 66:17–23.)

418. Plaintiffs also elicited testimony from James Ronkainen, a former engineer at Remington, that at Remington “one expectation” for “the uses” that an AR-style firearm “could have” would be “home defense, self-defense[.]” (Trial Tr. (Ronkainen) 295:3–6.) But Ronkainen also acknowledged that many of Remington’s customers wanted to use AR-style firearms for target shooting, varmint hunting, and competition shooting. (*Id.* 271:10–19, 275:7–9, 277:22–278:15.)

419. Ronkainen acknowledged that marketing was not his job at Remington, and that he relied on customer interactions at firearms industry trade shows, like the SHOT Show sponsored by NSSF, a plaintiff in this case, to determine what people were looking for. (Trial Tr. (Ronkainen) 274:9–18, 351:15–18; (Watt) 421:20–422:5.)

420. Ronkainen asserted that Remington knew who its customer was. (Trial Tr. (Ronkainen) 271:8–9.) For most of Ronkainen’s career at Remington—from 1990 through 2006—Remington did not manufacture AR-platform rifles. (*Id.* 215:22–25, 334:8–16.) Since its founding in 1816, Remington had grown to become one of the largest, if not the largest, firearms manufacturers in the world by the late 1990s and early 2000s. (*Id.* 216:9–18, 221:9–23, 358:5–20.) But since Remington introduced its first AR-platform rifles in 2007, Remington has twice declared bankruptcy. (*Id.* 334:8–16, 358:19–359:1.)

421. Plaintiffs also elicited testimony from Randy Watt that he believes that the firearms restricted by the Act are “the most popular firearms used in the firearms training and self-defense industry.” (Trial Tr. (Watt) 436:16–437:2.) Watt based his opinion “particularly” on his time “in this industry conducting training, attending shows, researching.” (*Id.* 437:3–10.)

422. Through his business, Warrior Creed, Watt offers a defensive carbine course that is built around using a carbine for self-defense in the home and workplace. (Trial Tr. (Watt) 408:3–16, 410:17–22.) The defensive carbine course offered by Warrior Creed teaches participants to

utilize the carbine in a self-defense situation and is unique in the training industry in its use of AR-style platforms. (*Id.* 411:5-13, 411:25-412:7.) Watt markets these courses with images of himself holding an AR-15 and dressed in “tactical-style clothing” and a tactical helmet. (*Id.* 475:9–478:5; Ex. 249, “Training with Randy” marketing video screenshot; Ex. 254, WarriorCreed.us website homepage.) Watt believes that there is “a very large market” for the types of self-defense courses he offers because he attends NSSF’s SHOT Show periodically, where he meets people like himself who run their own training companies that teach “carbines and shotguns and pistols and tactics.” (Trial Tr. (Watt) 420:11–422:13.)

423. Watt admitted, however, that he cannot put numbers on his opinions regarding firearm popularity. (*Id.* 473:6–8.) Watt further admitted that his opinions about firearm popularity are not based on a formalized survey, and he has no experience in statistics. (*Id.* 473:9–15.) And in developing the opinions he is offering in this litigation, Watt did not take any steps to ensure that the information he collected was a representative sample. (*Id.* 478:10–13.)

424. In developing his opinions in this litigation, Watt conducted no analysis to determine how many rounds are fired in a typical self-defense scenario. (*Id.* 481:8–11.) Rather, Watt believes in the adage that “you never know how much ammunition you’re going to need so you want to have as much as possible.” (*Id.* 459:3–9.)

425. Watt also acknowledged that he teaches defensive pistol courses where the majority of participants bring pistols that have none of the features regulated by the Act. (*Id.* 480:6–19.) In fact, Watt prohibits AR pistols, which are regulated by the Act, in his defensive pistol courses. (*Id.* 425:15–427:18.)

426. Watt also teaches revolver courses. (*Id.* 427:19-21.) Revolvers that are handguns are excluded from the Act’s definition of “assault weapon.” (720 ILCS 5/24-1.9(a)(1)(E).)

According to ATF data, handgun manufacturers in the U.S. manufactured 1,159,908 revolvers in 2021. (ECF 185-1, Yurgealitis ¶ 132.) Revolvers do not require manipulation of complicated safety mechanisms in a high stress situation and can be easier and less complicated to learn to operate. (*Id.* ¶ 189.)

427. Watt also testified that he offers defensive shotgun courses, and that participants frequently bring pump-action shotguns to those courses. (Trial Tr. (Watt) 479:5–12.) Until the last eight to ten years, pump-action defensive shotguns were more common in his courses than semiautomatic shotguns, and Watt estimates that about 40% of the shotguns in his courses now are pump-action shotguns. (*Id.* 432:22–433:9.) Watt also acknowledged that a pump-action shotgun can come with an adjustable stock. (*Id.* 479:13–18.) According to Watt, the shotgun defense courses he teaches work. (*Id.* 479:5–12.)

E. The firearms and magazines regulated by the Act are not well-suited for hunting.

428. Many rifles and shotguns used for hunting are not the types of firearms classified as “assault weapons” under the Act. (ECF 185-1, Yurgealitis ¶¶ 113–14, 163, 165–66.) Many popular bolt-action rifles, pump-action shotguns, and semiautomatic rifles well-suited for hunting remain available to Illinois residents. (*Id.* ¶¶ 113–14, 163, 165–66.)

429. As Plaintiffs’ expert James Ronkainen testified at trial, ethical hunting means shooting and killing in the most humane way possible so that an animal dies quickly, if not instantly—ideally, firing one shot that kills the animal. (Trial Tr. (Ronkainen) 357:11–16.) Additional shots may also damage the meat if a hunter plans to eat the animal. (*Id.* 357:17–538:1.)

430. Most hunting uses for a rifle prioritize getting a single shot on target at long range. (ECF 185-1, Yurgealitis ¶ 114.) Experienced hunters typically have no need for the rapid fire allowed by a semiautomatic, magazine-fed rifle with a 30-round magazine. (*Id.*)

431. In fact, in many states, hunting regulations limit magazine capacity. (*Id.*; Ex. 268, ATF, *Report & Recommendation of the ATF Working Group on the Importability of Certain Semiautomatic Rifles* (1989) at 6.) Generally speaking, modern semiautomatic rifles that are designed, manufactured, and marketed as hunting rifles traditionally have an internal magazine of less than 10 rounds, depending on caliber. (*Id.* ¶ 113) The Act’s definition of “assault weapon” does not include semiautomatic rifles with an internal magazine of 10 rounds or less. (720 ILCS 5/24-1.9(a)(1)(B).)

432. Many popular hunting rifles are bolt-action. (ECF 185-1, Yurgealitis ¶ 114.) A bolt-action rifle is generally considered to be more accurate than a semiautomatic rifle. (*Id.*) *Gun Digest* includes a section specifically dedicated to bolt-action rifles, which in the 2024 edition included more than 100 listings. (Ex. 229, *Gun Digest*, 78th ed., 2024 (excerpt) at 443–54.) There are also bolt-action rifles that are manufactured specifically for left-handed shooters. (Trial Tr. (Ronkainen) 283:14–18.) The Act specifically excludes bolt-action firearms from the definition of “assault weapon.” (720 ILCS 5/24-1.9(a)(2)(C).)

433. Watt also testified at trial that a “tactical shotgun”—which has features like a pistol grip or adjustable stock—is “not a field shotgun for pheasant hunting or for trap shooting.” (Trial Tr. (Watt) 432:3–19.) Watt testified that the semiautomatic shotguns he owns with pistol grips tend to have tube magazines of seven rounds. (*Id.* 457:22–458:19.)

434. According to Ronkainen, it is very common to have to use a magazine plug or “duck plug”—a wad that is inserted into a shotgun’s magazine tube to limit the capacity—to comply with state hunting laws that restrict the number of rounds used for particular game. (Trial Tr. (Ronkainen) 308:13–25.)

435. Shotguns designed to hunt specific game are also sold with lower magazine capacities than “tactical” versions with higher magazine capacity. (*See, e.g.*, Ex. 119, Remington 2012 Firearms, Ammunition & Accessories Catalog at 122–23.) For example, Ronkainen specifically testified about the Versa Max semiautomatic shotgun Remington introduced in 2010. (Trial Tr. (Ronkainen) 308:4–309:4; Ex. 119 at 22.) Remington has manufactured multiple versions of the Versa Max shotgun with magazine capacities of no more than three rounds—including the Versa Max “Waterfowl” version. (Trial Tr. (Ronkainen) 309:10–19; Ex. 119 at 11, 122.) However, the Vera Max “Tactical” version has a magazine capacity of 8 shells plus another in the chamber. (Ex. 119 at 51, 62–63, 122.)

436. By the time Remington was introducing the Versa Max, another Remington shotgun—the pump-action Remington 870—had been sold more than 10 million times across 60 years on the market. (Ex. 90, *Gun Digest*, 66th ed., 2012 (excerpt) at 216.) The Remington 870 pump-action shotgun remains a legal option for hunters in Illinois. (720 ILCS 5/24-1.9(a)(2)(C) (excluding pump-action firearms from the definition of “assault weapon”).)

V. The firearms and large capacity ammunition feeding devices the Act restricts pose unprecedented threats to public safety.

A. Mass shootings are a recent and increasingly frequent phenomenon in American history.

437. Mass shootings resulting in double-digit fatalities are relatively modern phenomena in American history, related to the use of assault weapons and large capacity magazines. (ECF 190-1, Klarevas at 34.)

438. There is no known occurrence of a mass shooting resulting in double-digit fatalities at any point in time during the 173-year period between the nation’s founding in 1776 and 1948. (*Id.*) In other words, for 70% of its 247-year existence as a nation, the U.S. did not experience a mass shooting resulting in double-digit fatalities, making them relatively modern phenomena. (*Id.*)

439. The first known occurrence of a mass shooting resulting in 10 or more deaths occurred in 1949. (*Id.* at 34, 36 & Table 4.) Seventeen years passed until another mass shooting resulting in 10 or more deaths occurred in 1966. (*Id.*) The third mass shooting resulting in 10 or more deaths occurred nine years later in 1975. (*Id.*)

440. The distribution of double-digit-fatality mass shootings changed in the early 1980s, when 5 such events took place in a span of just five years. (*Id.* at 35–37, Table 4, Fig. 9.) This timeframe also reflects the first time that assault weapons were used to perpetrate mass shootings resulting in 10 or more deaths: the 1982 Wilkes-Barre, Pennsylvania massacre, which involved an AR-15 rifle and resulted in 13 deaths; and the 1984 San Ysidro, California massacre, which involved an Uzi and resulted in 21 deaths. (*Id.* at 35.)

441. This cluster of incidents was followed by a more than 20-year period—from September 1986 through March 2007—in which only two double-digit-fatality mass shootings occurred. (*Id.*)

442. It is well-documented in the academic literature that after the federal assault weapons ban expired in 2004, mass shooting violence increased substantially. (*Id.*) In the 56 years from 1949 through 2004, there were a total of 10 mass shootings resulting in double-digit fatalities—a frequency rate of one incident every 5.6 years. (*Id.*) In the 18 years since 2004, there have been 20 double-digit-fatality mass shootings—a frequency rate of one incident every 0.9 years. (*Id.*) In other words, the frequency rate of double-digit-fatality mass shootings has increased more than six-fold since the federal assault weapons ban expired in 2004. (*Id.*)

443. Between the 1990s and the 2010s, the average population of the United States increased approximately 20%; however, when the number of people killed in high-fatality mass shootings in the 1990s is compared to the number killed in such incidents in the 2010s, it reflects

an increase of 260%. (*Id.* at 37.) In other words, the rise in mass shooting violence has outpaced the rise in national population by a factor of 13. (*Id.*)

B. The use of assault weapons and large capacity magazines are major factors in the rise of mass shooting violence.

444. Multiple empirical analyses indicate that mass shootings involving the type of weapons the Act classifies as “assault weapons”—namely, AR- and AK-platform firearms—have been increasing. (ECF 185-8, Allen ¶ 52; ECF 190-1, Klarevas at 39.) The same trend applies to mass shootings involving magazines with capacities above 10 rounds (“large capacity magazines”)—they have been increasing. (*Id.*)

445. Whether a “mass shooting” is defined as an incident involving 4 or more fatalities (“mass shooting”) or 6 or more fatalities (“high-fatality mass shooting”), the number of mass shootings involving assault weapons, large capacity magazines, or both is increasing. (ECF 185-8, Allen ¶¶ 38 (defining “mass shooting”), 52; ECF 190-1, Klarevas at 34 n.86 (defining “high-fatality mass shooting”), 39.)

1. Mass shootings with assault weapons and/or large capacity magazines are more lethal.

446. According to analysis conducted by economist Lucy Allen, out of the 153 mass shootings since 1982 where gun type could be determined (85% of 179 total mass shootings), 36 (or 24%) involved assault weapons. (ECF 185-8, Allen ¶ 42.) Out of the 115 mass shootings since 1982 with known magazine capacity, 73 (or 63%) involved large capacity magazines. (*Id.* ¶ 43.)

447. Casualties were higher in the mass shootings that involved assault weapons than in other mass shootings: the average number of fatalities or injuries per mass shooting with an assault weapon was 36, compared to 10 without; and the average number of fatalities (excluding non-fatal injuries) per mass shooting with an assault weapon was 12, compared to 6 for those without. (*Id.* ¶ 44.)

448. Casualties were higher in the mass shootings that involved weapons with large capacity magazines than in other mass shootings: the average number of fatalities or injuries per mass shooting with a large capacity magazine was 25, versus 9 for mass shootings where a large capacity magazine was not used; and the average number of fatalities (excluding non-fatal injuries) per mass shooting with a large capacity magazine was 10, versus 6 for those without. (*Id.* ¶ 45.)

449. Casualties were higher in the mass shootings that involved both assault weapons and large capacity magazines: the average number of fatalities or injuries per mass shooting with both an assault weapon and a large capacity magazine was 40, compared to 8 for those without either; and the average number of fatalities (excluding non-fatal injuries) per mass shooting with both an assault weapon and a large capacity magazine was 13, compared to 6 for those without either. (*Id.* ¶ 46.)

2. Mass shootings with an assault weapon or a large capacity magazine involve more shots fired on average.

450. According to analysis by economist Lucy Allen, there were 24 mass shootings involving assault weapons through October 2022 in which the number of shots fired is known—and in all of them the shooter fired more than 10 shots. (ECF 185-8, Allen ¶ 48.) For the 24 mass shootings involving assault weapons through October 2022 in which the number of shots fired is known, the average number of shots fired was 149—compared to an average of 38 shots fired in mass shootings without an assault weapon. (*Id.*)

451. There were 73 mass shootings through October 2022 involving a large capacity magazine in which the number of shots fired is known—and in 94% of those incidents the shooter fired more than 10 shots (46 out of 49 incidents). (*Id.* ¶ 49.) For the 73 mass shootings through October 2022 involving a large capacity magazine in which the number of shots fired is known,

the average number of shots fired was 99—compared to an average of 16 shots fired in mass shootings without a large capacity magazine. (*Id.*)

3. Mass shootings with assault weapons, large capacity magazines, or both, are increasing in frequency.

452. According to data from 1982 through 2021, the number of public mass shootings per year has been increasing. (*Id.* ¶ 51.)

453. During this period, the number of public mass shootings involving assault weapons increased (*id.* ¶ 52), as did the number of public mass shootings involving large capacity magazines (*id.* ¶ 53).

4. High-fatality mass shootings with assault weapons and/or large capacity magazines are increasingly frequent and on average more lethal.

454. During the last four years, over half of all incidents of mass shootings resulting in 6 or more deaths—high-fatality mass shootings—have involved assault weapons. (ECF 190-1, Klarevas at 39–40 & Fig. 12.) During the last four years, all incidents of high-fatality mass shootings have involved magazines with capacities greater than 10 rounds. (*Id.* at 39–40 & Fig. 13.) During the last four years, four out of five high-fatality mass shootings have involved magazines above the Act’s 10- and 15-round limits for long guns and pistols, respectively (“Illinois-restricted magazines”). (*Id.* at 39–41 & Figs. 13–14.)

455. Across all incidents of high-fatality mass shootings from the last four years, 62% of deaths resulted from incidents involving assault weapons, 100% of deaths resulted from incidents involving magazines with capacities greater than 10 rounds, and 82% of deaths resulted from incidents involving magazines with capacities above the Act’s limits. (*Id.* at 39.)

456. In the past 32 years, assault weapons have been used in 34% of all high-fatality mass shootings; large capacity magazines were used in 75% of such shootings; and Illinois-restricted magazines were used in 56% of all such shootings. (*Id.* at 43.)

457. Assault weapons were used in 75% of all mass shootings resulting in more than 20 deaths. (*Id.*)

458. Large capacity magazines were used in 100% of mass shootings resulting in more than 20 deaths, and Illinois-restricted magazines were used in 88% of all such mass shootings. (*Id.*)

459. Of the 91 high-fatality mass shootings since January 1, 1991 in which the type of firearm used is known, 31 involved assault weapons, resulting in 425 deaths—an average death toll of 13.7 fatalities per shooting. (*Id.* at 45.)

460. The average number of fatalities per shooting was 8.2 for the 60 incidents of high-fatality mass shootings since January 1, 1991 that did not involve assault weapons. (*Id.* at 45, 47 & Table 7.)

461. Of the 79 high-fatality mass shootings since January 1, 1991, large capacity magazines were used in 61 of those shootings, resulting in 704 deaths—an average death toll of 11.5 fatalities per shooting. (*Id.* at 45, 47 & Table 8.)

462. The average death toll for the remaining 18 high-fatality shootings perpetrated without a large capacity magazine was 8.1 fatalities per shooting. (*Id.* at 45, 47 & Table 8.)

463. Over three-quarters of the mass shootings resulting in 10 or more deaths involved assault weapons and/or large capacity magazines. (*Id.* at 35–36 & Table 4.)

464. Across all high-fatality mass shootings from 1991 through 2022, the average death toll was 67% higher for shootings with an assault weapon than those without—13.7 deaths per incident compared to 8.2 deaths per incident. (*Id.* at 46–47 & Table 7.)

465. Across all high-fatality mass shootings from 1991 through 2022, the average death toll was 58% higher for shootings with a large capacity magazine than those without. (*Id.* at 45–47 & Table 8.)

466. Across all high-fatality mass shootings from 1991 through 2022, the average death toll was 56% higher for shootings with an Illinois-restricted magazine than those without. (*Id.* at 45–47 & Table 8.)

467. Across all high-fatality mass shootings from 1991 through 2022, the average death toll was 92% higher for shootings with an assault weapon and a large capacity magazine than for shootings without either. (*Id.* at 46–47 & Table 9.)

468. Across all high-fatality mass shootings from 1991 through 2022, the average death toll was 73% higher for shootings with an assault weapon and an Illinois-restricted magazine than for shootings without either. (*Id.* at 46, 48 & Table 10.)

469. High-fatality mass shootings that have involved assault weapons, large capacity magazines, or both have resulted in a substantially larger loss of life than similar incidents that did not involve assault weapons and/or large capacity magazines. (*Id.* at 34.)

C. Large capacity magazines are driving up the shooting lethality rate in Chicago and other large cities.

470. Based on an analysis of data collected by the Chicago Police Department (“CPD”), criminologist Jens Ludwig, Director of the University of Chicago’s Crime Lab, has concluded that the shooting lethality rate in Chicago is rising because shooters have access to large capacity

magazines, enabling them to fire more shots—and thereby cause more fatalities—than would otherwise be the case. (ECF 185-9, Ludwig ¶ 35.)

471. The “shooting lethality rate” represents the odds that a shooting will result in a fatality. (*Id.* ¶ 7.) Chicago’s shooting lethality rate has risen markedly in recent years—from 12.65% in 2010 to 18.89% in 2023. (*Id.* ¶ 8.) Similar increases in the lethality of shootings have been observed in Los Angeles and Philadelphia. (*Id.* ¶ 9.)

472. According to analysis by Ludwig, the use of large capacity magazines has caused shooting incidents to become more lethal. (*Id.* ¶ 7.)

473. The number of high capacity (15–29 rounds) and extremely high-capacity (30 rounds or more) magazines recovered at shootings by CPD is rising rapidly. (*Id.* ¶ 34.) Between 2010 and 2023, there was a 559% increase in the number of magazines recovered with a capacity of 15 or more rounds, and a 555% increase in the number of magazines recovered with a capacity of 30 or more rounds. (*Id.*)

474. During the same time frame—2010 to 2023—the number of shell casings CPD recovered at shooting incidents per year increased more than seven-fold—from 9,153 shell casings recovered in 2010 to 65,313 in 2023. (*Id.* ¶ 30.) The average number of shell casings CPD recovered per shooting victim also doubled from 2010 to 2023—rising from 4.65 casings per victim in 2010 to 11.04 casings per victim in 2023 (following a single-year high of 11.52 in 2022). (*Id.* ¶ 31.)

475. For non-fatal shootings, CPD recovered an average of 4.5 shell casings per incident in 2010—a figure that had risen to 11.2 shell casings per incident in 2023. (*Id.* ¶ 32.) For fatal shootings, CPD recovered an average of 5.4 shell casings per incident in 2010—a figure that had risen to 12 shell casings per incident in 2023. (*Id.*)

476. Both the number and the share of shooting incidents where more than 20 shell casings were recovered has skyrocketed: rising from 31 incidents in 2010 (1.68% of total incidents) to 1,033 incidents in 2021 (12.69% of total incidents. (*Id.* ¶ 33.) That represents a 33-fold increase in the number of such incidents, and a 7-fold increase in the rate. (*Id.*)

477. There is also evidence that the problems caused by large capacity magazines are exacerbated by access to “Glock switches”—an illegal after-market device that allows a user to modify certain semiautomatic firearms so that they fire automatically. (*Id.* ¶ 36.) The number of firearms modified in this way has increased exponentially: CPD recovered only 9 semiautomatic firearms modified to fire automatically in 2010 but recovered 465 such firearms in 2023. (*Id.* ¶ 37.)

478. Large capacity magazines—which allow a shooter to fire a high number of rounds without reloading—are necessary to take advantage of the high rate of fire that a modified firearm offers. (*Id.* ¶ 38.) Other factors—the rate of domestic shootings, the relative frequency of outdoor shootings, the average number of shooting suspects, larger caliber bullets—do not account for the increase in Chicago’s lethality rate. (*Id.* ¶¶ 20–28.) The best available data suggest that large capacity magazines are driving up the shooting lethality rate in Chicago. (*Id.* ¶ 39.)

VI. There is a historical tradition in this nation of regulating firearms that are dangerous or unusual.

479. The Supreme Court has recognized our nation’s “historical tradition of prohibiting the carrying of ‘dangerous and unusual weapons’”—a tradition derived from English law pre-dating the Founding and subsequently incorporated into American law. *District of Columbia v. Heller*, 554 U.S. 570, 627 (2008) (quoting 4 W. Blackstone, *Commentaries on the Laws of England* 148–49 (1769)); *New York State Rifle & Pistol Ass’n, Inc. v. Bruen*, 597 U.S. 1, 47 (2022). Throughout American history, whenever firearms and other dangerous weapons have proliferated

in society and resulted in violence, harm, or contributed to criminality, those weapons have been subject to regulation. (ECF 185-5, Spitzer ¶ 9.)

480. During the lifetimes of Jefferson, Adams, Marshall, and Madison, the Founding Generation passed laws in a number of states that restricted the use or ownership of certain types of weapons, including particular fighting knives and percussion cap pistols. (ECF 185-6, Roth ¶ 27.) Lawmakers acted after it became obvious that those weapons were being used in crime by people who carried them concealed on their persons and were contributing to rising crime rates. (*Id.*)

481. During the mid-19th century, revolvers emerged as the first reliable repeating firearms to proliferate in American society. (ECF 190-2, Delay ¶ 5.) A repeating firearm is a firearm capable shooting multiple rounds without reloading. (*Id.* ¶ 8.) These firearms too became the subject of widespread regulation after contributing to increasing violence and homicide. (*Id.* ¶ 5; ECF 185-6, Roth ¶¶ 28, 30, 33–40; ECF 185-5, Spitzer ¶¶ 45–47.)

482. As the nation entered the early 20th century, the firing capacity of repeating arms leapt forward with the proliferation of automatic and semiautomatic firearms paired with readily changeable magazines. (ECF 190-2, Delay ¶¶ 6–7, 73–78; ECF 185-6, Roth ¶¶ 44–47; ECF 185-5, Spitzer ¶¶ 14–15.) In the 1920s, weapons that emerged from the battlefields of World War I began appearing in American society. (ECF 190-2, Delay ¶ 75; ECF 185-5, Spitzer ¶ 14.) Use of firearms like the Thompson submachinegun in high-profile shootings prompted widespread and stringent regulation, including possession bans, that reflected the greater danger posed by these new weapons. (ECF 190-2, Delay, ¶¶ 73-78; ECF 185-6, Roth ¶¶ 44–47; ECF 185-5, Spitzer ¶¶ 14–31.) In keeping with their military origin, as well with American traditions of firearms

regulation, only the military and law enforcement could lawfully possess these weapons in most states. (ECF 190-2, Delay ¶¶ 94–96.)

483. The “assault rifles” that emerged in the first decades of the Cold War—the Soviet Union’s AK-47 and the United States’s AR-15—drew specific regulatory attention when a semiautomatic version of an AK-47 was used to kill five school children and wound thirty-three others in Stockton, California in 1989. (ECF 185-5, Spitzer ¶ 10; Ex. 273, Congressional Research Service, *Semiautomatic Assault Weapons Ban* (Dec. 16, 2004) at 6.) California enacted the first “assault weapons” ban in the country later that year, and a 10-year federal ban followed suit in 1994. (ECF 185-5, Spitzer ¶ 10.)

484. And, in 2023, Illinois enacted its own restrictions on “assault weapons” and large capacity magazines after a shooter used an AR-15 rifle and 30-round magazines to kill 7 people and wound 48 others at a July 4th parade in Highland Park, Illinois. (ECF 37-2, Morgan ¶¶ 4–34.) That mass shooting was just one of many others like it to be perpetrated in the last two decades with large capacity assault weapons—since the federal prohibition on these weapons expired. (ECF 190-1, Klarevas at 35–36.)

485. Illinois’s Act, like the numerous historical regulations before it, continues a historical tradition of regulating dangerous and unusual weapons in the interest of public safety that has existed throughout American history. (*See* ECF 190-2, Delay ¶ 79; ECF 185-5, Spitzer ¶ 89.) Illinois is not alone in regulating these weapons: thirteen other states, plus Washington D.C., regulate assault weapons, large capacity magazines, or both.¹⁵

¹⁵ *See* California (Cal. Penal Code §§ 16350, 16790, 16890, 30500-31115); Colorado (Colo. Rev. Stat. § 18-12-302; Connecticut (Conn. Gen. Stat. §§ 53-202a – 53-202o); Delaware (Del. Code tit. 11, § 1466(a); District of Columbia (DC Code Ann. §§ 7-2501.01(3A), 7-2502.02(a)(6), 7-2505.01, 7-2505.02(a), (c)); Hawaii (Haw. Rev. Stat. Ann. §§ 134-1, 134-4, 134-8); Maryland (Md. Code Ann., Crim. Law §§ 4-301 – 4-306; Md. Code Ann., Pub. Safety § 5-101(r)); Massachusetts (Mass. Gen. Laws ch. 140, §§ 121, 122, 123, 131M); New Jersey (N.J. Stat. Ann. §§ 2C:39-1w, 2C:39-5, 2C:58-5, 2C:58-12, 2C:58-13); New York

A. Early American legislatures regulated particular weapon types that threatened public safety.

486. Historical regulations show that since the Founding there has been an unbroken tradition of regulating weapons when technological advances generate unprecedented social consequences. (*See* ECF 185-5, Spitzer ¶¶ 63–89; ECF 190-2, DeLay ¶¶ 51, 64–65, 77–78; ECF 185-6, Roth ¶ 47; *see also* *Bevis v. Naperville*, 85 F.4th 1175, 1200 (7th Cir. 2023).)

487. Colonies and, later, states passed laws regulating the carrying and brandishing of particular weapons, forbidding discharge in sensitive times and places, and imposing sentence enhancements for crimes committed with arms. (ECF 190-2, DeLay ¶ 32; *see also* Appendix Table 1.)

488. Categorical restrictions on specific dangerous or unusual weapons appeared in the American colonies as early as the 17th century. A 1686 New Jersey law restricted concealed carrying of “any pocket pistol, skeines, stilettoes, daggers or dirks, or other unusual or unlawful weapons” because they induced “great fear and quarrels.” (ECF 185-5, Spitzer ¶ 84; *see also* Appendix Table 1, No. 1.)

489. State legislatures in the first decades of independence also adopted “affray” laws similar to a 14th century English statute, the Statute of Northampton, that prohibited going armed with “dangerous or unusual weapons” to the terror of the public. 4 William Blackstone, *Commentaries on the Laws of England*, 148–49 (1769) (“The offense of riding or going armed, with dangerous or unusual weapons, is a crime against the public peace, by terrifying the good people of the land; and is particularly prohibited by the statute of Northampton, 2 Edw. III. c. 3.

(N.Y. Penal Law §§ 265.00(22), 265.02(7), 265.10, 400.00(16-a)); Oregon (2022 Oregon Ballot Measure 114, SEC. 11); Rhode Island (R.I. Gen. Laws. §§ 11-47.1-2, 11-47.1-3); Vermont (13 V.S.A. § 4021(a)); Washington (Rev. Code Wash. (ARCW) Chp. 9.41 as amended by 2023 HB 1240).

upon pain of forfeiture of the arms, and imprisonment during the king's pleasure: in like manner as, by the laws of Solon, every Athenian was finable who walked about the city in armor.”).

490. For example, a 1786 Virginia statute said that “no man” should “go nor ride armed by night nor by day, in fairs or markets, or in other places, in terror of the county,” and imposed prison on anyone who violated it. (Appendix Table 1, No. 6.) In 1795, Massachusetts enacted a similar statute authorizing the arrest of all who “shall ride or go armed offensively, to the fear or terror of the good citizens of this Commonwealth”—a reenactment of a similar Colonial-era law from 1692. (*See* Appendix Table 1, No. 10.)

491. State legislatures also regulated gunpowder in the first decades following independence. In 1784, New York enacted a statute “to Prevent the Danger Arising from the Pernicious Practice of Lodging Gun Powder in Dwelling Houses, Stores, or Other Places within Certain Parts of the City of New Work,” which generally prohibited “any . . . persons whatsoever” from “hav[ing] or keep[ing] any quantity of gun powder exceeding twenty-eight pounds weight, in any one place[.]” (Appendix Table 1, No. 3.) At least six other states would adopt similar regulations in the first decades of the Republic. (*See* Act of Dec. 6, 1783, chap. 1059, 11 Pa. Stat. 209; 1786 N.H. Laws 383–84; An Act Relative to the Keeping Gun-Powder in the Town of Providence, 1798–1813 R.I. Pub. Laws 85, § 2; 1801 Mass. Acts 507; 1806 Ky. Acts 122 § 3; 1811 N.J. Laws 300, § 1; *see also* Appendix Table 1.)

492. Early America had a diverse and extensive tradition of regulating firearms in the name of public safety. (ECF 190-2, Delay ¶ 42.) But in the era of the American Revolution, homicide rates among colonists were low, and homicide by firearm was rarer still. (ECF 185-6, Roth ¶ 20.) The predominant firearms owned by Americans—muskets and fowling pieces—were infrequently associated with criminal violence in this period. (*Id.* ¶ 15.) These single-shot, muzzle-

loaded firearms were liable to misfire, slow to reload, and infrequently stored ready to fire (because of the risk of corrosion), reducing the likelihood of impulsive use. (*Id.* ¶ 16.) Likely for these reasons, only 10% to 15% of family, intimate, and partner homicides in the Colonial and Founding Eras were committed with guns. (*Id.* ¶ 15.) Guns were not the weapon of choice in homicides that grew out of the tensions of daily life. (*Id.* ¶ 17.)

493. That began to change in the first half of the 19th century, especially in southern slave states and frontier regions. (*Id.* ¶ 13.) Homicide rates in southern and frontier states soared in the antebellum period, driven in large part by the increased ownership of new and dangerous concealable weapons, such as Bowie knives and percussion cap pistols. (*Id.* ¶¶ 13, 23–24.) When these new threats to public safety emerged, legislatures responded with regulation. (*Id.*)

1. When Bowie knives threatened public safety, legislatures regulated them.

494. Bowie knives, named for adventurer Jim Bowie, were invented in the 1820s and gained notoriety in the 1830s. (ECF 185-5, Spitzer ¶¶ 64–65.) The Bowie knife was typically a large, single-edged knife with a cross guard and a blade with a clipped point. (*Id.* ¶ 65.) These characteristics made Bowie knives particularly effective “fighting knives,” and they were widely used in fights and duels, especially at a time when single-shot pistols were unreliable and often inaccurate. (*Id.*; ECF 185-6, Roth ¶¶ 24–25, 30.)

495. Bowie knives and similar fighting knives could also be carried concealed. (ECF 185-6, Roth ¶ 24.) Their concealability contributed to their criminal misuse: they were used to ambush, bully, and intimidate law-abiding citizens, and to seize the advantage in fist fights. (*Id.*)

496. A grand jury in Jasper County, Georgia in 1834 pleaded for the state legislature to address the problem, lamenting:

The practice which is common amongst us with the young the middle aged and the aged to arm themselves with Pistols, dirks knives sticks & spears under the specious pretence of protecting themselves against insult, when in fact being so armed they

frequently insult others with impunity, or if resistance is made the pistol dirk or club is immediately resorted to, hence we so often hear of the stabbing shooting & murdering so many of our citizens.

(*Id.*; ECF 185-5, Spitzer ¶ 65.)

497. Legislatures in the 19th century responded to this burgeoning violence with categorical restrictions on the Bowie knife and other fighting knives. (ECF 185-5, Spitzer ¶¶ 66–74.) In the 1830s, at least seven states enacted laws barring the carrying of Bowie knives, either by name or by description. (*See* Appendix Table 2.) Throughout the remainder of the 19th century and into the early 20th century, every state plus the District of Columbia restricted Bowie knives, with either state-wide restrictions or local legislation. (*Id.*)

498. Legislatures did not all adopt the same regulatory approach. Some addressed the danger of fighting knives through prohibitive taxation; for example, an 1837 Alabama law required a seller of a Bowie knife to “pay a tax of one hundred dollars, to be paid into the county Treasury.” (*See* Appendix Table 2, No. 3.)

499. Other legislatures restricted the sale of the dangerous weapon outright. An 1837 Tennessee law stated that “if any merchant, . . . shall sell, or offer to sell . . . any Bowie knife or knives, or Arkansas tooth picks . . . such merchant shall be guilty of a misdemeanor.” (*See* Appendix Table 2, No. 5.)

500. Georgia also barred the sale of Bowie knives in 1837, Appendix Table 1, No. 4, which remained in force even after the Georgia Supreme Court struck down other portions of the law. *See Nunn v. State*, 1 Ga. 243, 251 (1846). In addition to taxing and barring sales, jurisdictions responded to Bowie knife violence through restrictions on both open and concealed carry; taxing ownership; and punishments on brandishing. (ECF 185-5, Spitzer ¶ 72 and Ex. E.)

501. Multiple 19th century court decisions rejected constitutional challenges to the restrictions legislatures placed on Bowie knives. In *Aymette v. State*, 21 Tenn. 154, 159 (Tenn.

1840), the Supreme Court of Tennessee sustained the conviction of a man who illegally concealed a Bowie knife under his clothes, concluding that “[t]he Legislature . . . ha[s] a right to prohibit the wearing or keeping [of] weapons dangerous to the peace and safety of the citizens.” Acknowledging that “[t]he right to keep and bear arms for the common defence is a great political right,” the *Aymette* court nonetheless continued:

To hold that the Legislature could pass no law upon this subject by which to preserve the public peace, and protect our citizens from the terror which a wanton and unusual exhibition of arms might produce, or their lives from being endangered by desperadoes with concealed arms, would be to pervert a great political right to the worst of purposes, and to make it a social evil of infinitely greater extent to society than would result from abandoning the right itself.

Id. at 159.

502. Four years later, in 1844, the Supreme Court of Tennessee would again affirm the legislature’s prerogative to “prohibit the wearing of bowie-knives, and other of a similar description, which the experience of the country had proven to be extremely dangerous and destructive to human life; the carrying of which by truculent and evil-disposed persons but too often ended in assassination.” *Haynes v. State*, 24 Tenn. 120, 122 (Tenn. 1844).

2. When percussion cap pistols threatened public safety, legislatures regulated them.

503. Legislatures in the 19th century responded in a similar way to another technological innovation of the early national period: concealable, percussion cap pistols. (ECF 185-6, Roth ¶¶ 25, 27; ECF 190-2, DeLay ¶ 51; ECF 185-5, Spitzer ¶ 84.) The 1810s saw the development of pistols that could be discharged with percussion caps, which used fulminate for ignition instead of loose powder in a priming pan. (ECF 190-2, DeLay ¶ 48.) Because these new pistols did not require hygroscopic black powder in the priming pans, they were less prone to corrosion. (ECF 185-6, Roth ¶ 25.)

504. With less risk of corrosion, percussion cap pistols could be carried loaded for longer periods. (*Id.*) Percussion caps were inexpensive to mass produce, and far more reliable than flints as a source of ignition. (ECF 190-2, DeLay ¶ 48.) Percussion cap pistols had entirely replaced flint-lock pistols in the domestic market by the mid-1820s. (ECF 185-6, Roth ¶ 25.)

505. The proliferation of percussion cap pistols helped propel the upward trend in gun homicides and homicides generally in the early American republic. (*Id.* ¶ 13.) Guns were involved in a much higher percentage of homicides in the first half of the 19th century than they had been before, increasing from about 10 to 15% in the colonial period to a third or two-fifths. (ECF 185-6, Roth ¶¶ 15, 23–25.)

506. In response, 19th century legislatures passed laws regulating pistols. Between 1813 and 1838, at least six states—Kentucky, Louisiana, Indiana, Arkansas, Georgia, and Virginia—enacted prohibitions on carrying certain concealable weapons, including pistols. (ECF 185-6, Roth ¶ 26; ECF 185-5 Spitzer, Exhibit C (also including the Territory of Florida); *see also* Appendix Table 3.)

507. Regulations restricting the concealed carry of pistols, along with other weapons, proliferated throughout the remainder of the 19th century. (*See* Appendix Table 3.)

B. When revolvers—the first reliable repeating firearms—proliferated in the latter half of the 19th century and contributed to increasing violence, legislatures regulated them.

1. There were no reliable repeating firearms prior to the mid-19th century.

508. Approximately 50% to 60% of households in the Colonial and Founding Eras owned a working firearm, usually a musket or a fowling piece. (ECF 185-6, Roth ¶ 15.) Both types of weapons were muzzle-loading. (*Id.*) Muskets were heavy, single-shot firearms used for militia service. (*Id.*) Fowling pieces, which were made to hunt birds and control vermin, were lighter and

used shot as ammunition instead of a ball. (*Id.*) Neither muskets nor fowling pieces could fire multiple shots without reloading. (ECF 185-6, Roth ¶ 16.)

509. It took at least half a minute to load a muzzle-loaded weapon if the weapon was clean and if powder, wadding, and shot or ball were at hand. (*Id.*) The user had to pour powder down the barrel, hold it in place with wadding, and drop or ram the shot or ball onto the charge, or else pack in a pre-made paper cartridge loaded with powder and ball. (*Id.*; ECF 190-2, DeLay ¶ 33.) The firing mechanism also had to be readied, often with a fresh flint. (ECF 185-6, Roth ¶ 16.) Most owners stored guns empty because the black powder necessary to operate a musket or fowling piece absorbed moisture and could corrode the barrel or firing mechanism or make the gun vulnerable to misfire. (*Id.*)

510. Detachable magazines did not exist at the time of the Founding. (ECF 190-2, Delay ¶ 73; *see also Oregon Firearms Fed'n v. Kotek*, 682 F. Supp. 3d 874, 901 (D. Or. 2023).) In fact, at the time of the ratification of the Bill of Rights, the term “arms” did not include ammunition containers of any kind. (ECF 185-10, Baron ¶ 11.) The frequently used phrase “arms and accoutrements” demonstrates the distinction between weapons, on the one hand, and items like cartridge cases, boxes, scabbards, and flints on the other. (*Id.* ¶¶ 11–12.) Indeed, in the 18th and 19th centuries, the word “magazine” referred to a storage facility or depot, usually for storing gunpowder. (ECF 185-10, Baron ¶ 26; *Kotek*, 682 F. Supp. 3d at 901.) Ammunition containers were referred to as “cartridge boxes,” “cartridge cases,” or “cartouch boxes.” (ECF 185-10, Baron ¶¶ 12, 78.)

511. At the time of the Founding of the United States, repeating firearms were flawed, experimental, exceedingly rare curiosities. (ECF 190-2, DeLay ¶¶ 5, 8.) They were both dangerous (to the shooter, as well as to the target) and highly unusual. (*Id.* ¶ 8.)

512. Despite several centuries of experimentation in Europe, most of these weapons never advanced beyond proof of concept. (*Id.* ¶¶ 9–19.) Only a small minority of repeating firearm inventions ever moved past the design or prototype stage, and none achieved commercial significance or military relevance prior to 1791. (*Id.* ¶ 8.) Moreover, few of these rare firearms ever left Europe. (*Id.* ¶ 20.)

513. Very occasionally, repeating firearms appear in the documentary record of early America. (*Id.* ¶ 20.) In 1777, Philadelphia inventor Joseph Belton wrote to the Continental Congress proposing a sale of a firearm he had invented that used a superposed load design (multiple rounds loaded into a single barrel). (*Id.* ¶ 12, 21.) Congress placed an order for 100 of these “new improved” guns but cancelled the order a few days later and refused to ever reconsider. (*Id.* ¶ 21.) Congress refused to pay Belton’s price: £1000 from each state, which Belton cut to £500 when Congress refused. (*Id.* ¶¶ 21–22.)

514. Congress undoubtedly had the funds at this time to purchase Belton’s gun if they had thought it would deliver a meaningful military advantage. (*Id.* ¶ 22.) That they did not indicates that the guns on offer were not worth the expenditure. (*Id.*)

515. Another example of a repeating weapon (though not a true firearm) that appears in the record of early America is the Girardoni Air Rifle. (ECF 190-2, DeLay ¶¶ 24–28.) Multi-shot air-rifles of Girardoni’s design saw limited service in the Austrian military between the 1790s and 1810s. (*Id.* ¶ 24.) But no more than 1500 of these air guns were ever made, and they were so rare in 18th-century America that owners charged people to see them. (*Id.* ¶ 26; ECF 185-5, Spitzer ¶ 42.) On his famous expedition across the continent with William Clark, Meriwether Lewis brought a Girardoni Air Rifle as a showpiece precisely because it was so uncommon. (ECF 190-2, DeLay ¶ 27.) The weapon was pulled from military service by 1815. (ECF 185-5, Spitzer ¶ 42.)

516. In short, repeating firearms remained militarily and commercially irrelevant throughout the 18th and early 19th centuries. (ECF 190-2, DeLay ¶¶ 14, 30.) Instead, single-shot, muzzle-loading smoothbore muskets, rifles, and pistols were the only handheld firearms that the vast majority of people ever owned, used, or encountered in the late-18th and early-19th centuries. (*Id.* ¶ 31.)

2. Repeating arms became a practical reality in the mid-19th century with the emergence of revolvers.

517. The invention in the early 19th century of the percussion cap—a small, sealed cap, usually made of copper and filled with fulminate—opened the way for the invention of repeating firearms. (ECF 190-2, DeLay ¶ 48.) Percussion caps were far more reliable than flints as a source of ignition and inexpensive to mass produce. (*Id.*) As a result, militaries around the world began to convert their stockpiles of firearms from flintlock to percussion lock. (*Id.*)

518. The first practical firearm that could shoot more than one bullet without reloading was a handgun designed by Samuel Colt in the 1830s with a single barrel and a multi-chambered, rotating breech—a “revolver”. (ECF 190-2, DeLay ¶ 50; ECF 185-5, Spitzer ¶ 47.) Percussion caps were affixed to the rear of each chamber, and the chamber rotated mechanically so that the cap of each successive chamber could be struck and ignite the powder inside the chamber. (ECF 190-2, DeLay ¶ 50.)

519. Another repeating firearm, the pepperbox, emerged alongside Colt’s revolver. (*Id.*) Most associated with Ethan Allen, the pepperbox featured three or more barrels that rotated around an axis, the charge for each barrel ignited by a separate percussion cap. (*Id.*) The pepperbox was rapidly eclipsed by the Colt revolver, however, because it was heavy, impractical, and was prone to discharge all of its barrels at once. (ECF 185-5, Spitzer ¶ 45.)

520. The Colt revolver was slow loading. (ECF 190-2, DeLay ¶ 53.) To load a cap-and-ball revolver, the shooter had to first fill each chamber with the appropriate measure of gunpowder; second, insert a ball; third, compact the ball into the powder charge with a ramming rod; fourth, cap the chamber with grease to avoid chain-fire (optional but recommended); and fifth, individually attach percussion caps to each nipple at the back of the chamber. (*Id.*) In all, loading a six-shot cap-and-ball revolver required 30 separate actions. (*Id.*) Paper cartridges containing powder and ball could be used to expedite the process slightly, but reloading could still take a minute to a minute and a half. (*Id.*)

521. Colt struggled to find a market for his revolver, either from the government or the public. (ECF 185-5, Spitzer ¶ 47.) The U.S. government repeatedly rejected the weapon after tests in 1836, 1837, 1840, and 1850, driving Colt to bankruptcy at one point. (*Id.*) Despite Colt's innovations, the official sidearm of the U.S. Army in the Civil War remained a single-shot pistol. (*Id.*) Single-shot, muzzle-loading firearms also remained the standard infantry weapon up to and including the Civil War. (*Id.* ¶ 46.)

522. It was only after the Civil War that the Colt-type revolver began to broadly proliferate in American society. (ECF 185-5, Spitzer ¶ 47; *see also Caetano v. Massachusetts*, 577 U.S. 411, 416 (“Revolvers were virtually unknown well into the 19th century, and semiautomatic pistols were not invented until near the end of that century.”) (Alito, J., concurring).)

3. Revolvers became the target of regulation when they contributed to increasing violence in American society.

523. Murder rates began to escalate again in the 1840s and 1850s, climbing even higher during the Civil War and Reconstruction. (ECF 185-6, Roth ¶ 28.) In the post-bellum period, the diffusion into society of another new firearms technology—multi-shot handguns—further contributed to escalating interpersonal violence. (*Id.* ¶ 34.) Revolvers replaced black powder

handguns and knives as the primary weapons in interpersonal assaults. (*Id.*) Easily concealed, they became the weapon of choice for men who stalked and ambushed estranged spouses or romantic partners, for suspects who killed sheriffs, constables, or police officers, and for self-styled toughs who engaged in shootouts in bars, streets, and even churchyards. (*Id.*) Legislatures responded again by restricting carriage of firearms and explicitly including revolvers in these restrictions. (ECF 185-5, Spitzer ¶ 50 & Exs. B and E; *see also* Appendix Table 4.)

524. Cities were among the first to enact such laws. (*See* Appendix Table 4, Nos. 43–63.) In 1862, the city of Leavenworth, Kansas made it a misdemeanor to carry a concealed revolver. (*Id.*, No. 43.) States followed suit: New Mexico’s deadly weapons act of 1869 defined deadly weapons to include revolvers. (*Id.*, No. 1.) In 1872, Wisconsin made it unlawful for “any person” to “go armed with a concealed dirk, dagger, sword, pistol, or pistols, revolver, slungshot, brass knuckles, or other offensive and dangerous weapon[.]” (*Id.*, No. 5.)

525. By the turn of the century, at least 12 states and territories had enacted laws including revolvers on the list of weapons subject to restricted carry prohibitions; at least another five had followed suit by 1917. (*See* Appendix Table 4.) Even where states did not specifically add the term “revolver” to their statutes, revolvers were nonetheless prohibited under catch all terms, as in Minnesota’s 1889 law restricting carriage and possession of a “pistol or other firearm, or any dangerous weapon.” (Appendix Table 7, No. 38.)

526. While many legislatures, but not all, expressly regulated revolvers, there was near unanimity among the states by the turn of the century in prohibiting or severely restricting concealable firearms and other weapons. (*See* ECF 185-5, Spitzer ¶ 50 and Ex. B.)

4. Repeating arms capable of firing more than 10 rounds emerged in the latter half of the 19th century, but they remained slow to reload.

527. The vast majority of revolvers produced in the nineteenth century held seven or fewer rounds. (ECF 190-2, DeLay ¶ 52.) Reloading a revolver required the cylinder to be unlocked from the gun frame and swung out so the user can remove expended casings and insert unfired rounds. (*Id.* ¶ 53; ECF 37-9, Yurgealitis ¶ 9.)

528. But in 1860, Benjamin Henry patented a rifle that could, through the use of a lever action, fire a greater number of rounds without reloading. (ECF 185-5, Spitzer ¶ 48; ECF 190-2, DeLay ¶ 57.) The Winchester Arms Company built on this design to introduce a repeating rifle in 1866 that could fire up to 16 rounds (1 in the chamber plus 15 in an attached, tubular magazine) without reloading. (*Id.*; ECF 185-5, Spitzer ¶ 48.) Practically speaking, these were the only firearms in circulation at the time the Fourteenth Amendment was ratified in 1868 that could fire more than 10 rounds without reloading. (ECF 190-2, DeLay ¶ 58.)

529. The well-known Winchester 1873 gained legendary status that greatly outdistanced its actual production and impact. (ECF 185-5, Spitzer ¶ 48.) Between 1861 and 1871—the decade spanning the Civil War and the ratification of the Fourteenth Amendment—only 74,000 repeating rifles were produced in the aggregate by Winchester Arms Company (which manufactured both the Henry and the Winchester). (*Id.*; ECF 190-2, DeLay ¶ 59.) Barely 9,000 of these remained in the United States—the vast majority were sold to foreign militaries. (ECF 190-2, DeLay ¶ 59.) Of the rifles that did remain in the U.S., 8,500 Henrys were purchased by or issued to soldiers during the Civil War. (*Id.*)

530. In other words, large capacity firearms made up a tiny fraction of all firearms in the United States during Reconstruction. (*Id.* ¶ 60; ECF 185-5, Spitzer ¶ 46.) By conservative estimate, fewer than one in a thousand firearms in the United States would have been large capacity in the

early 1870s. (ECF 190-2, DeLay ¶ 61.) Moreover, the lever-action still required the shooter to manipulate the lever in a forward-and-back-motion between each shot. (ECF 185-5, Spitzer ¶ 48.) Reloading a lever-action Winchester rifle was also significantly slower than changing the magazine on a modern firearm; the user had to manually reload the rifle one round at a time.¹⁶ (ECF 190-2, DeLay ¶ 63.)

C. When firearms that could both fire repeatedly and reload rapidly—automatic and semiautomatic firearms with detachable magazines—proliferated in the early 20th century, they were regulated.

531. As a result of three technological innovations—self-loading mechanisms (initially, the use of recoil to chamber a round), smokeless powder, and detachable magazines—semiautomatic and automatic weapons began to come onto the civilian market in the 1890s. (ECF 190-2, DeLay ¶¶ 70–74.)

532. The most notorious automatic weapon of the era—the Thompson submachine gun—emerged from World War I and entered the market in the 1920s. (*Id.* ¶ 75; ECF 185-5, Spitzer ¶¶ 13–14.) These new technologies gave individuals or small groups the ability to kill large numbers of people in a short time. (ECF 185-6, Roth ¶ 44; ECF 190-2, DeLay ¶ 76.)

533. The proliferation of the Thompson submachine gun (the “Thompson”) and the Browning Automatic Rifle (or “BAR”)—both built for the battlefield—triggered a widespread regulatory response when they started being used to perpetrate high-profile crimes. (ECF 185-5, Spitzer ¶¶ 14, 16, 22.)

534. The Thompson in particular became an object of public concern in part because it was used in the infamous St. Valentine’s Day Massacre of 1929—in Chicago, Illinois. (*Id.* ¶ 16.) News reports detailed lurid accounts of Prohibition-era gangsters using the Thompson to inflict

¹⁶ By contrast, a trained shooter can change the magazine on a modern firearm in 1.5 seconds. (ECF 230-1, Eby Dep. at 150:16-18.)

criminal violence. (*Id.* ¶¶ 20–22.) The BAR was a favorite weapon of the outlaws Bonnie and Clyde. (*Id.* ¶ 17 n.23.)

535. As these new weapons began to be used to perpetrate criminal violence, legislatures responded to the novel threat as they had before: by passing categorial weapons regulations. (ECF 190-2, DeLay ¶ 76; ECF 185-5, Spitzer ¶ 23–31; ECF 185-6, Roth ¶¶ 46–47; *see also* Appendix Table 5.) Commensurate with the increasing danger these new weapons posed, the regulations moved beyond carry-related restrictions to outright possession bans with limited exceptions. (ECF 185-5, Spitzer ¶¶ 23–26 & Exhibit E.)

536. Between 1925 and 1935, at least 36 states enacted anti-machine gun laws. (*Id.* ¶ 23 (citing Exs. B, D); ECF 190-2, DeLay ¶ 76; *see also* Appendix Table 5.)

537. At least nine states passed laws restricting possession of semiautomatic weapons, with at least four additional states passing laws that left ambiguity as to whether they applied solely to automatic firearms. (ECF 190-2, DeLay ¶ 78; *see also* Appendix Table 5.)

538. In 1932, Congress banned machine guns for the District of Columbia, and defined a machine gun as “any firearm which shoots automatically or semiautomatically more than twelve shots without reloading.” (Appendix Table 5, No. 18.)

539. The District of Columbia ban exemplifies a significant feature of many of these regulations: restrictions on automatic and semiautomatic weapons—even in their earliest incarnations—were tied to firing capacity or access to ammunition. (ECF 185-5, Spitzer ¶ 32.) This linkage showed up in three ways. (ECF 185-5, Spitzer ¶ 33.)

540. First, thirteen states plus the District of Columbia regulated semi-automatic and fully automatic weapons defining the restricted weapons by reference to firing capacity, *i.e.* prohibiting weapons that fired more than a certain number of rounds without reloading. (*Id.*)

Different states set different limits: for Ohio the limit was eighteen, while in South Dakota it was five. (ECF 190-2, DeLay ¶ 78.)

541. Second, twelve states regulated fully automatic weapons only but defined the restricted weapons by either number of rounds that could be fired without reloading or the ability to accept an ammunition feeding device. (ECF 185-5, Spitzer ¶ 33.)

542. Third, four states restricted all guns that could receive any type of ammunition feeding device and fire rounds continuously in a fully automatic manner. (*Id.*)

543. Congress also responded to the dangers posed by both automatic weapons, like the Thompson, and other firearms associated with criminal violence, like concealable short-barreled shotguns and rifles, by passing the National Firearms Act of 1934. (ECF 185-5, Spitzer ¶¶ 25–28; National Firearms Act of 1934, ch. 757, Sec. (a)-(b), 48 Stat. 1236, Pub. L. 73-474 (1934).)

544. Federal restrictions on dangerous weapons expanded in 1968, when the sale and delivery of machineguns and destructive devices (defined as an “explosive, incendiary, or poison gas bomb, grenade, mine, rocket, missile, or similar device”) were severely restricted. (Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, § 921(a) (4), § 922(b), 82 Stat. 197, 227, 230 (1968); *see also Bevis*, 85 F.4th at 1202.)

545. The Firearm Owners’ Protection Act of 1986 banned civilian possession of machine guns nationwide with limited exceptions for the military, law enforcement, and existing owners. (*See* Pub. L. No. 99-308, § 102(9), 100 Stat. 449, 453 (1986); *see also Bevis*, 85 F.4th at 1202.) Since then, civilian ownership has been capped at pre-1986 levels. *Id.*

VII. There is a historical tradition of reserving some dangerous weapons for the military and law enforcement.

546. In addition to the tradition of regulating dangerous weapons, both the states and the federal government have long contemplated that the military and law enforcement may have access to especially dangerous weapons, while civilian ownership of those weapons may be restricted. (ECF 190-2, DeLay ¶¶ 88–96.)

547. As early as 1746, Boston outlawed the discharging of any cannon, gun, or pistol within city limits, but still allowed soldiers to discharge weaponry on training days. (*See* Appendix Table 6, No. 1; *Bevis*, 85 F. 4th at 1201.)

548. In the 19th century, when necessary, legislators inscribed into law meaningful and rigid distinctions between civilians on the one hand, and military and police on the other. For example, Georgia’s 1837 “Act to guard and protect the citizens of this state against the unwarrantable and too prevalent use of deadly weapons” outlawed the sale, keeping, or carrying, of bowie knives, pistols, dirks, sword canes, and other weapons. (ECF 190-2, DeLay ¶ 88.) The Act stipulated that its provision “shall not extend to Sheriffs, Deputy Sheriffs, Marshals, Constables, Overseers or Patrols, in actual discharge of their respective duties, but not otherwise.” (*Id.*). When this law was challenged, the Georgia Supreme Court criticized the way the law had worded the law-enforcement exception, complaining that its vague language meant “that it might be insisted, and with much plausibility, that even sheriffs, and other officers therein enumerated, might be convicted for keeping, as well as carrying, any of the forbidden weapons, while not in the actual discharge of their duties,” and found the notion absurd. (ECF 190-2, DeLay ¶ 90.)

549. Municipal authorities incorporated similar exemptions into law. In 1856, New Orleans forbade dangerous weapons (concealed or otherwise) in “any theater, public hall, tavern, pic-nic ground, place for shows or exhibitions, house or other place of public entertainment or

amusement.” (*Id.* ¶ 89.) Military personnel were explicitly exempt. (*Id.*) In 1857, Washington, D.C. prohibited the carry of various dangerous weapons, including pistols and Colt revolvers, but exempted “police officer, the members of the auxiliary guard, and the military” from its provisions. (*Id.*)

550. A number of 19th century restrictions on carrying handheld firearms included exceptions for military firearms. (Appendix Table 6, Nos. 3, 4, 6, 7, 17, 18, 23, 33) Tennessee’s 1879 law prohibited the carrying of “any dirk, razor concealed about his person, sword cane, loaded cane, slung-shot or brass knucks, Spanish stiletto, belt or pocket pistol, revolver, or any kind of pistol,” but made an exception for “the army or navy pistol used in warfare, which shall be carried openly in hand.” (Appendix Table 4, No, 7.) In addition, the District of Columbia’s 1871 dangerous weapons statute exempted “the officers, non-commissioned officers, and privates of the United States army, navy, and marine corps, police officers, and members of any regularly organized militia company or regiment, when on duty,” from any penalty. (Appendix Table 6, No. 18.)

551. Memphis, Tennessee, Georgetown (now in the District of Columbia), and St. Louis, Missouri all passed similar ordinances restricting carry, with similar exemptions. (*Id.*; Appendix Table 6, Nos. 5–7.)

552. Throughout the 19th century, other cities, such as Cleveland, Ohio, implemented ordinances similar to Boston’s 1746 law, again exempting military companies during drills. (Appendix Table 6, No. 26; *Bevis*, 85 F.4th at 1201.)

553. Several laws regulating Bowie knives contained exceptions for the military. In 1870, Texas passed a law making it a misdemeanor to go to any public assembly with “a bowie knife, dirk, or butcher knife, or fire-arms whether known as six shooter, gun, or pistol or any kind,”

but exempted “any person or persons whose duty it is to bear arms on such occasions in discharge of duties imposed by law.” (*Id.*; Appendix Table 6, No. 15.)

554. Explicit distinctions in law between civilians and law enforcement or the military became more common in state and territorial law after the Civil War massively increased the prevalence of firearms in American life. (ECF 190-2, DeLay ¶ 91.)

555. In 1873, Iowa passed a law prohibiting concealed weapons but exempting “police officers and other persons whose duty it is to execute process or warrants, or make arrests.” (ECF 190-2, DeLay ¶ 91; Appendix Table 6, No. 20.) Washington State’s 1881 concealed carry prohibition used nearly identical language. (ECF 190-2, DeLay ¶ 91; Appendix Table 6, No. 30.)

556. Similarly, in 1884 “Arkansas outlawed the sale of all dirks, Bowie knives, cane-swords, metal knuckles, and pistols, except as for use in the army or navy of the United States.” (Appendix Table 6; *Bevis*, 85 F. 4th at 1201, No. 33.)

557. Between 1864 and 1892, at least eighteen states and three territories incorporated explicit exemptions for law enforcement and/or military personnel into laws regulating firearms. (ECF 190-2, DeLay ¶ 92 nn.127, 128; Appendix Table 6.) Georgia’s and Missouri’s laws concerned sensitive places, and all the other laws concerned concealed carry. (ECF 190-2, DeLay ¶ 92 n.127.) Idaho’s law concerned brandishing. (*Id.* ¶ 92 n.128.) New Mexico and Arizona’s law regulated the carry of weapons (concealed or open). (*Id.*)

558. Several city ordinances in the in the second half of the 19th century followed suit, restricting the carry of a wide array of dangerous and concealable weapons (slingshots, metal knuckles, Bowie knives, daggers, pistols, and clubs), but exempting “peace officers” and “conservator[s] of the peace.” (*See* ECF 190-2, Delay ¶ 93; Appendix Table 6.) Municipalities adopting these types of ordinances included: Memphis, Tennessee (1869); Jersey City, New Jersey

(1868); Washington, D.C. (1871); Omaha, Nebraska (1872); Fayetteville, Tennessee (1876); Mexico, Missouri (1877); Provo City, Utah (1877); Kansas City, Missouri (1880); Albany, New York (1887); and Milwaukee, Wisconsin (1888). (*Id.*)

559. The tradition of inscribing the distinction between civilian and military into firearms laws became even more pronounced in the early twentieth century, when the dramatic technological change of automatic and semiautomatic weapons brought about unprecedented societal concerns. (ECF 190-2, DeLay ¶ 94.) When states passed laws regulating automatic and semiautomatic firearms during the 1920s and 1930s, every law exempted the U.S. military. (*Id.*; Appendix Table 5.)

560. Federal regulation of firearms also follows this tradition. The National Firearms Act of 1934 created both a registration requirement and a tax on all guns, but it exempted guns sold to the U.S. government, states, territories, political subdivisions, and peace officers. (Pub. L. No. 73-474, §§ 1-13, 48 Stat. 1236-40 (1934); *see also* ECF 190-2, DeLay ¶ 95.)

561. In 1968, when the federal government tightened restrictions on the sale and delivery of destructive devices (defined as an “explosive, incendiary, or poison gas bomb, grenade, mine, rocket, missile, or similar device”) and machineguns, the new restrictions did not apply to items purchased by the United States or any state. (*See* Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, §§ 921(a) (4), 922(b), 925(a), 82 Stat. 197, 227, 230 (1968).)

562. Under the federal Firearm Owners’ Protection Act of 1986, the prohibition on machine gun possession does not apply to the military or law enforcement. (Pub. L. No. 99-308, § 102(9), 100 Stat. 449, 453 (1986).)

Dated: October 21, 2024

Respectfully submitted,
KWAME RAOUL
Attorney General of Illinois

/s/ Christopher G. Wells
Christopher G. Wells, No. 6304265
Kathryn Hunt Muse, No. 6302614
Gretchen Helfrich, No. 630004
John T. Hazinski, No. 6329791
Michael M. Tresnowski, No. 6324767
Office of the Illinois Attorney General
115 S. LaSalle St.
Chicago, IL 60603
(312) 814-3000
Christopher.Wells@ilag.gov

*Counsel to Defendants Governor Pritzker,
Director Kelly, and Attorney General Raoul*

INDEX OF CITED EXHIBITS

Exhibit No.	Description
Appendix	Appendix of Historical Regulations
3	Small Arms Weapon Systems (SAWS), U.S. Army Combat Developments Command (May 1966)
9	Jeffrey K. Woods, “M855A1 Enhanced Performance Round”
28	Jared Keller, “The Army Has Finally Fielded its Next Generation Squad Weapons,” Military.com (Mar. 29, 2024)
67	ATF AFMER Report (2010)
76	ATF AFMER Report (2019)
88	<i>Gun Digest</i> , 64th ed., 2010 (excerpt)
90	<i>Gun Digest</i> , 66th ed., 2012 (excerpt)
94	<i>Gun Digest</i> , 70th ed., 2016 (excerpt)
95	<i>Gun Digest</i> , 71st ed., 2017 (excerpt)
119	Remington 2012 Firearms, Ammunition & Accessories Catalog
123	National Shooting Sports Foundation, Inc.’s Answer and Objections to Defendants’ First Set of Interrogatories (April 3, 2024)
191	Illinois Public Act 102-1116
222	<i>Gun Digest</i> , 61st ed., 2007 (excerpt)
223	<i>Gun Digest</i> , 64th ed., 2010 (excerpt)
225	<i>Gun Digest</i> , 66th ed., 2012 (excerpt)
226	<i>Gun Digest</i> , 69th ed., 2015 (excerpt)
227	<i>Gun Digest</i> , 75th ed., 2021 (excerpt)
228	<i>Gun Digest</i> , 77th ed., 2023 (excerpt)
229	<i>Gun Digest</i> , 78th ed., 2024 (excerpt)
231	<i>Gun Digest</i> , 78th ed., 2024 (excerpt)
233	Advanced Research Projects Agency, <i>Field Test, AR-15 Armalite Rifle</i> (Aug. 20, 1962)
234	<i>Operational Requirements for an Infantry Hand Weapon</i> , U.S. Army, Operations Research Office, ORO-T-160 (June 19, 1952)

Exhibit No.	Description
235	<i>Report of the M16 Rifle Review Panel</i> , U.S. Army (June 1, 1968)
236	Smith & Wesson, “Company Expands Military & Police Series With Rifles Designed for Law Enforcement, Military, and Sporting Shooters,” (Jan. 18, 2006)
237	Heckler & Koch Product Catalog, Military/Law Enforcement, MP5
240	U.S. Treasury Dept., <i>Study on the Sporting Suitability of Modified Semiautomatic Rifles</i> (April 1998)
241	P. Rhee et al., <i>Gunshot wounds: A review of ballistics, bullets, weapons, and myths</i> , <i>Journal of Trauma and Acute Care Surgery</i> (March 16, 2016)
243	Christopher S. Koper, <i>An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994–2003</i> , Rpt. to the Nat’l Institute of Justice, U.S. Dep’t of Justice (June 2004)
244	Silvia Foster-Frau, “The AR-15’s destructive force: A rare look at the weapon’s impact,” <i>Washington Post</i> (Nov. 16, 2023)
245	Alex Horton et al., “Decades of marketing reinvented the AR-15 into a top-selling firearm,” <i>Washington Post</i> (March 27, 2023)
249	“Training with Randy” marketing video screenshot
254	WarriorCreed.us website homepage
256	Sig Sauer, “MCX-Spear,” http://sigsauer.com/spear.html
259	Sig Sauer Press Release, “U.S. Army Selects Sig Sauer Next Generation Squad Weapon System” (April 20, 2022)
260	Soldier Systems, “U.S. Army Begins Fielding Next Generation Squad Weapons”
261	U.S. Army, FM 3-22.9, “Rifle Marksmanship M16-/M4-Series Weapons” (2008)
264	U.S. Army, <i>Rifle and Carbine</i> , TC 3-22.9 (May 2016)
265	Peter Suci, “Sturmgewehr – the First Assault Rifle,” <i>Recoil</i> (June 19, 2016)
266	Colt, 1964 Dealer Catalog: Rifles and Carbines (excerpt)
267	Colt, “Colt Introduces The AR-15 A2 Gov’t. Model Rifle and Carbine” (1987)

Exhibit No.	Description
268	Bureau of Alcohol, Tobacco, and Firearms (“ATF”), “Report and Recommendation on the Importability of Certain Semiautomatic Rifles,” (July 6, 1989)
269	Heckler & Koch, “M27 Infantry Automatic Rifle”
271	Larry Buchanan et al., “Nine Rounds a Second: How the Las Vegas Gunman Outfitted a Rifle to Fire Faster,” N.Y. Times (Oct. 5, 2017)
272	Kalashnikov Komp12 webpage
273	Congressional Research Service, <i>Semiautomatic Assault Weapons Ban</i> (Dec. 16, 2004)
274	Thomas L. McNaugher, <i>Marksmanship, McNamara and the M16 Rifle: Organizations, Analysis and Weapons</i> (Rand Corp. 1979)
275	Sig Sauer, “The Next Generation Has Arrived” (Jan. 19, 2022)
276	Eugene Stoner, Congressional testimony before the “House of Representatives, Committee on Armed Services, Special Sub-Committee on the M-16 Rifle Program,” in <i>Hearings, Reports and Prints of the House Committee on Armed Services</i> , Issues 15-25, p. 4563–64 (June 21, 1967)
277	U.S. Patent No. 2,951,424 (Sept. 6, 1960)
279	Franklin Armory, BFSIII AR-C1
281	Stanton Wormley, “The AR-15 for Home Defense: Penetration Tests,” <i>American Rifleman</i> (Aug. 5, 2014)
282	U.S. Army Public Affairs, “Army Officials Brief the Media on the Next Generation Squad Weapon (Apr. 21, 2022)
283	U.S. Army Weapons Systems Handbook, 2020-2021
284	Jim Zarolli, “The Orlando Killer’s Weapon of Choice was ‘the Ultimate Hunting Rifle,’” NPR (June 13, 2016)
285	Todd Frankel et al., “How the AR-15 became a powerful political, cultural symbol in America,” <i>Washington Post</i> (March 27, 2023)
286	U.S. Dep’t of Justice, <i>Critical Incident Review: Active Shooter at Robb Elementary School</i> (2024) (excerpt)
287	Barrett, 2024 Firearms Catalog

Exhibit No.	Description
288	Rpt. of the State's Attorney for the Judicial District of Danbury on the Shootings at Sandy Hook Elementary School & 36 Yogananda Street (Nov. 25, 2023)
303	NSSF, <i>Firearm Production in the United States</i> (2023 ed.)
Attachment A	Responses of Jeremy W. Langley and Timony B. Jones to Interrogatories of Brendan Kelly
Attachment B	Responses of Matthew Wilson to Interrogatories of Brendan Kelly