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House Committee on Civil Rights & Judiciary  
Washington State Legislature  
P.O. Box 40600  
Olympia, WA 98504-0600

**RE: Opposition to House Bill 2321 (Requiring 3D Printers Be Equipped with Blocking Technologies)**

Dear Chair and Members of the Committee:

I am writing to express my strong opposition to House Bill 2321, which proposes to require all 3D printers sold in Washington State to be equipped with "blocking features" that detect and prevent the printing of firearms or firearm parts. While I understand the Legislature's concern about public safety, this bill is technically unworkable, economically harmful to legitimate businesses, and ineffective at achieving its stated goals. It represents a fundamental misunderstanding of how 3D printing technology operates and would impose devastating consequences on an entire industry to address a problem that can be solved through far simpler means.

I speak from direct experience. I own and operate Bartallama3D, a manufacturing business based in Washington State. I run a small but growing print farm (including Prusa MK4, Prusa Core One, Prusa XL, Voron Trident, and RatRig machines) that I built and maintain myself. I sell products across Amazon, Etsy, and eBay. This bill would make it effectively impossible for me to continue operating in this state, not because I manufacture firearms, but because the technology this bill mandates does not exist and cannot exist in any practical form.

**I. The Required Detection Technology Is Technically Infeasible**

***The Fundamental Problem: Geometry Has No Intent.*** The bill requires a "firearms blueprint detection algorithm" that can screen STL files, CAD files, and G-code to determine whether they would produce a firearm or firearm part. This requirement reveals a fundamental misunderstanding of what these file formats contain.

An STL file is simply a collection of triangles that define a 3D shape. G-code is a series of movement instructions telling a printer where to deposit material. Neither format contains metadata about what the object is or what it will be used for. The files contain only geometry: coordinates and vectors. A cylinder is a cylinder whether it becomes a pen holder, a flashlight body, or something else entirely.

Consider this challenge: How would an algorithm distinguish between a 3D-printed pistol grip and a cordless drill handle? Between a receiver and a complex mounting bracket? Between a trigger guard and a carabiner clip? These objects can have nearly identical geometries. The

algorithm would need to somehow divine the intent behind a shape, which is not possible through geometric analysis alone.

***The "Modified Versions" Requirement Is Impossible.*** Section 7(2) of the bill requires that detection algorithms "actively seek to detect modified versions" of known firearm files. This is computationally impossible to achieve with reliability. A user could scale a model by 1%, rotate it, add a small decorative feature, or split it into multiple parts. Any of these changes would alter the geometric signature while producing an identical functional result. The space of possible modifications is infinite. No algorithm can reliably detect all variations of a shape while avoiding false positives on legitimate objects.

***The Bill's Own Standard Defeats Itself.*** The bill requires that blocking features "cannot be overridden or otherwise defeated by a user with significant technical skill." This standard is unachievable. Most hobbyist-grade 3D printers run open-source firmware like Marlin or Klipper. Even if manufacturers added detection to firmware, users could simply flash alternative firmware. For the requirement to work, printers would need cryptographically locked bootloaders and proprietary firmware, transforming an open ecosystem into a closed, controlled platform. This leads directly to my next concern.

## **II. The Bill Will Create Prop 65-Style Compliance Theater**

The Attorney General's database of "disallowed files" (Section 8) and the requirement for manufacturers to attest compliance create a system ripe for the same dysfunction we have seen with California's Proposition 65.

Prop 65 was intended to warn Californians about dangerous chemicals. In practice, it has become meaningless. Businesses plaster warnings on everything (coffee shops, apartment buildings, theme parks, grocery stores) not because these places are dangerous, but because over-warning is cheaper than the legal risk of under-warning. The warnings no longer inform anyone of actual risk; they are just legal boilerplate that consumers ignore entirely.

HB 2321's detection system would follow the same trajectory. To avoid liability, manufacturers would implement overly aggressive detection that blocks any vaguely cylindrical or mechanical-looking object. Legitimate users would face constant false positives. Meanwhile, those with actual malicious intent would simply use older printers, modified firmware, or machines purchased out of state. The compliant user is burdened; the criminal is unaffected.

The database of "commonly downloaded" firearm files would become an ever-growing list that detection systems must match against, regardless of whether the match makes sense. Just as Prop 65 warnings now appear on products with trace amounts of substances that pose no realistic health risk, HB 2321's blocking would eventually flag innocuous objects that share geometric features with something in the database.

### **III. Economic Harm: Market Withdrawal and Closed Ecosystems**

***Manufacturers Will Exit the Washington Market.*** The bill requires printer manufacturers to attest "under penalty of perjury" that their machines meet blocking requirements. Given that compliant detection technology does not exist, and given that violations carry Class C felony penalties (up to five years in prison and \$15,000 in fines), the rational business decision for most manufacturers is simple: stop selling in Washington State.

This is not speculation. We have seen this pattern with other state-specific regulations. Many manufacturers choose market withdrawal over the cost and liability of compliance with technically infeasible or economically burdensome requirements. Washington's 3D printing community (hobbyists, educators, small manufacturers, and prototyping shops) would lose access to the printers they need.

***The Alternative Is Worse: Closed, Proprietary Systems.*** Manufacturers who do attempt compliance have only one viable path: locking down their entire ecosystem. This means proprietary firmware that users cannot modify, slicers that only work with that manufacturer's printers, and mandatory cloud connectivity to check files against the Attorney General's database before printing.

This would devastate the open-source ecosystem that has driven innovation in 3D printing. Popular open-source slicers like PrusaSlicer, Cura, and OrcaSlicer would become unusable in Washington. Users would be forced into expensive, closed platforms that limit functionality and eliminate the ability to customize, repair, or improve their own machines.

***Critical Security and Compliance Conflicts.*** The bill's implicit requirement for cloud-based file verification creates serious problems for manufacturers and businesses operating under security constraints. Companies doing defense-related prototyping or manufacturing must comply with International Traffic in Arms Regulations (ITAR), which often requires air-gapped systems with no internet connectivity. Aerospace, defense contractors, and other sensitive industries cannot send their design files to a government database for pre-approval. Doing so could violate federal export control laws or compromise proprietary designs.

Similarly, any business with legitimate trade secrets, proprietary product designs, or confidential client work faces an untenable choice: either expose their intellectual property to government servers, or be unable to use 3D printing in Washington State. The cybersecurity implications are significant. Creating a centralized database of design files, and requiring printers to phone home before every print job, creates an attack surface that did not previously exist. This system would be a target for both industrial espionage and malicious actors seeking to understand what is being manufactured and where.

### **IV. This Bill Solves a Problem That Can Be Addressed More Simply**

The Legislature's goal of preventing criminals from manufacturing untraceable firearms is legitimate. But HB 2321 takes the most convoluted and harmful possible approach. It attempts to regulate the tool rather than the act, imposing massive burdens on an entire technology ecosystem to address the behavior of a small number of bad actors.

A far simpler and more effective approach would be to directly prohibit the manufacturing of firearms or regulated firearm components using 3D printers (or any other method) without appropriate licensing. Washington has already done this. Under RCW 9.41.326, it is unlawful to manufacture, assemble, sell, or possess untraceable firearms, and since March 2023, knowing possession of such firearms is also prohibited. RCW 9.41.325 similarly addresses undetectable firearms. These laws target the illegal act itself rather than hobbling a general-purpose manufacturing technology used overwhelmingly for legitimate purposes.

**The penalty structure of HB 2321 reveals just how backwards this bill is.** Under existing law (RCW 9.41.326), actually possessing an untraceable firearm carries a \$500 civil infraction for a first offense, another \$500 for a second offense, and only rises to a gross misdemeanor on the third offense. But under HB 2321, a business that sells a 3D printer without the mandated detection software faces a Class C felony on the first offense: up to five years in prison and a \$15,000 fine. In other words, this bill would punish the sale of a general-purpose manufacturing tool more harshly than the possession of the very weapon it claims to prevent. If the Legislature believes untraceable firearms are a serious threat, the logical response is to increase enforcement and penalties for the illegal firearms themselves, not to create felony liability for selling equipment used primarily for legitimate purposes.

This is how we regulate other dual-use technologies. We do not require cars to have speed limiters that prevent them from exceeding 70 mph; we enforce speed limits through traffic laws. We do not require kitchen knives to be dull; we prosecute people who commit assault. The burden should be on the individual who commits the crime, not on every user of a common tool.

## **V. Impact on My Business and Others Like It**

As written, HB 2321 would effectively end my ability to operate Bartallama3D in Washington State.

My business depends on the flexibility of open-source 3D printing. I use multiple slicer programs depending on the job. I modify printer firmware to optimize for specific materials and geometries. I design custom parts for customers across diverse industries. The closed, locked-down ecosystem that compliance would require is incompatible with how small-scale custom manufacturing actually works.

If this bill passes, I face three options: (1) attempt to operate with crippled equipment that constantly blocks legitimate jobs with false positives, (2) relocate my business to a neighboring state, or (3) shut down entirely. None of these outcomes serves Washington's interests.

I am not alone. Washington has a growing community of makers, small manufacturers, educators, and prototyping shops who rely on 3D printing. This bill tells all of them that they are not welcome here, that the Legislature would rather chase an unachievable technological mandate than craft sensible policy targeting actual criminal behavior.

## **Conclusion**

HB 2321 is built on magical thinking about technology. It assumes that software can reliably determine intent from geometry, that open-source systems can be locked down without destroying their utility, and that criminals will comply with restrictions that law-abiding citizens cannot practically work around.

The result will not be a reduction in illegally manufactured firearms. It will be the withdrawal of 3D printer manufacturers from Washington, the destruction of a thriving local maker economy, and the imposition of compliance theater that burdens everyone except the bad actors it supposedly targets.

I urge the Committee to reject this bill and instead focus on enforcement mechanisms that target the illegal manufacture of firearms directly, without collateral damage to the thousands of Washingtonians who use 3D printing for entirely legitimate purposes.

If the Legislature is serious about addressing 3D-printed firearms, I would welcome the opportunity to participate in a working group that includes people who actually understand this technology. Good policy requires good information, and this bill demonstrates that its drafters did not consult with the community it would most affect.

Thank you for your consideration of these comments.

Respectfully submitted,  
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Washington State Resident and Manufacturer