CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1421

[CPSC Docket No. CPSC–2021–0014]

Safety Standard for Debris Penetration Hazards

AGENCY: Consumer Product Safety Commission

ACTION: Notice of proposed rulemaking; notice of opportunity for oral presentation of comments.

SUMMARY: The U.S. Consumer Product Safety Commission (Commission or CPSC) has determined preliminarily that there is an unreasonable risk of injury and death associated with debris penetration in off-highway vehicles (OHVs), including recreational off-highway vehicles (ROVs) and utility task/terrain vehicles (UTVs). To address these risks, the Commission proposes a rule to prevent debris penetration into the occupant area of an ROV/UTV. The Commission is providing an opportunity for interested parties to present written and oral comments on this notice of proposed rulemaking (NPR). Like written comments, any oral comments will be part of the rulemaking record.

DATES:

Deadline for Written Comments: Written comments must be received by September 19, 2022.

Deadline for Request to Present Oral Comments: Any person interested in making an oral presentation must send an electronic mail (email) indicating this intent to the Division of the Secretariat at *cpsc-os@cpsc.gov* by August 22, 2022.

ADDRESSES:

Written Comments: You may submit written comments in response to the proposed rule, identified by Docket No. CPSC–2021–0014, by any of the following methods:

Electronic Submissions: Submit electronic comments to the Federal eRulemaking Portal at: *https://www.regulations.gov.* Follow the instructions for submitting comments. CPSC typically does not accept comments submitted by email, except as described below. CPSC encourages you to submit electronic comments by using the Federal eRulemaking Portal, as described above.

Mail/Hand Delivery/Courier Written Submissions: Submit comments by mail/hand delivery/courier to: Division of the Secretariat, Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone: (301) 504–7479. If you wish to submit confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public, you may submit such comments by mail, hand delivery, or courier, or you may email them to: *cpsc-os@cpsc.gov*.

Instructions: All submissions must include the agency name and docket number. CPSC may post all comments without change, including any personal identifiers, contact information, or other personal information provided, to: *https://www.regulations.gov.* Do not submit through this website: confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If you wish to submit such information, please submit it according to the instructions for mail/hand delivery/courier/confidential written submissions.

Docket for NPR: For access to the docket to read background documents or comments received, go to: *https://www.regulations.gov,* and insert the docket number, CPSC–2021–0014, into the ''Search'' box, and follow the prompts.

FOR FURTHER INFORMATION CONTACT: Han Lim, Directorate for Engineering Sciences, Office of Hazard Identification and Reduction, Consumer Product Safety Commission, National Product Testing and Evaluation Center, 5 Research Place, Rockville, MD 20850; telephone: 301–987–2327; *hlim@cpsc.gov.*

SUPPLEMENTARY INFORMATION:

I. Background and Statutory Authority

On May 11, 2021, the Commission published an advance notice of proposed rulemaking (ANPR) to develop a rule to address the risk of injury associated with fire and debris penetration hazards in off-highway vehicles (OHVs) (86 FR 25817).[1] The vehicles comprising OHVs in the ANPR were all-terrain vehicles (ATVs), recreational off-highway vehicles (ROVs), and utility terrain or utility task vehicles (UTVs). The Commission received 10 comments. The Commission is issuing this notice of proposed rulemaking that focuses solely on debris penetration hazards, which are specific to ROVs and UTVs.[2] Debris penetration through the floorboard or wheel well of an ROV or UTV can impale the occupants of the vehicles, and incidents associated with debris penetration have caused severe injuries and deaths. The information discussed in this preamble is derived from CPSC staff's briefing package for the NPR, which is available on CPSC's website at: *https://www.cpsc.gov/s3fs-public/NPR-Safety-Standard-for-Recreational-Off-Highway-Vehicle-and-Utility-Task-Terrain-Vehicle-Debris-Penetration-Hazards-Updated-5-24-22.pdf?VersionId=WsZvCXh1daVDICnjLnOzyalVPE4uTL4t.*

This rulemaking addressing the debris penetration hazards associated with ROVs and UTVs falls under the authority of the CPSA. 15 U.S.C. 2051–2084. Section 7(a) of the CPSA authorizes the Commission to promulgate a mandatory consumer product safety standard that sets forth performance or labeling requirements for a consumer product, if such requirements are reasonably necessary to prevent or reduce an unreasonable risk of injury. 15 U.S.C. 2056(a). Section 9 of the CPSA specifies the procedure that the Commission must follow to issue a consumer product safety standard under section 7 of the CPSA. In accordance with section 9, the Commission commenced this rulemaking by issuing an ANPR.

According to section 9(f)(1) of the CPSA, before promulgating a consumer product safety rule, the Commission must consider, and make appropriate findings to be included in the rule, on the following issues:

- The degree and nature of the risk of injury that the rule is designed to eliminate or reduce;
- The approximate number of consumer products subject to the rule;
- The need of the public for the products subject to the rule and the probable effect the rule will have on utility, cost, or availability of such products; and

[1] At the ANPR stage, the Commission noted that although at that time the rulemaking involved three vehicle types and two different hazard patterns, it was possible that the Commission would divide the proceeding into separate rulemakings at the NPR stage. This proposed rule will address the debris penetration hazard associated with ROVs and UTVs. The Commission intends to address fire hazards associated with ATVs, ROVs, and UTVs in a separate rulemaking.

[2] The Commission voted 4–0 to approve this notice, as amended: *https://www.cpsc.gov/s3fs-public/Comm-Mtg-Min-NPR-Safety-Standard-for-Recreational-Off-Highway-Vehicle-and-Utility-Task-Terrain-Vehicle-Debris-Penetration-Hazards.pdf?VersionId=Jrg4w.CQSRMWfpsnNernXSSJcF5vZtFL.*

• The means to achieve the objective of the rule while minimizing adverse effects on competition, manufacturing, and commercial practices.

Id. 2058(f)(1).

Under section 9(f)(3) of the CPSA, to issue a final rule, the Commission must find that the rule is ''reasonably necessary to eliminate or reduce an unreasonable risk of injury associated with such product'' and that issuing the rule is in the public interest. *Id.* 2058(f)(3)(A)&(B). Additionally, if a voluntary standard addressing the risk of injury has been adopted and implemented, the Commission must find that:

• The voluntary standard is not likely to eliminate or adequately reduce the risk of injury, *or*

• Substantial compliance with the voluntary standard is unlikely.

Id. 2058(f)(3)(D). The Commission also must find that expected benefits of the rule bear a reasonable relationship to its costs and that the rule imposes the least burdensome requirements that would adequately reduce the risk of injury. *Id.* 2058(f)(3)(E)&(F).

II. The Products

A. ROV

An ROV is a motorized vehicle designed for off-highway use, with these features: four or more wheels with tires designed for off-highway use; non-straddle seating for one or more occupants; a steering wheel for steering controls; foot controls for throttle and braking; and a maximum vehicle speed greater than 30 miles per hour (mph). ROVs are typically equipped with Rollover Protective Structures (ROPS), seat belts, and other restraints, such as doors, nets, and shoulder bolsters for the protection of occupants.

There are two distinct ROV varieties: utility-type ROVs and recreational-type ROVs. Models emphasizing utility have larger cargo beds, greater cargo capacities, and lower top speeds. Models emphasizing recreation have smaller cargo beds, lower cargo capacities, and higher top speeds. Both types of ROVs are included in the scope of the proposed rule.

B. UTVs

UTVs have physical characteristics like ROVs. However, UTVs generally have maximum speeds between 25 and 30 mph. UTVs are included in the scope of the proposed rule. Figure 1 shows a picture of typical Utility-Type ROV, a Recreational-Type ROV, and a UTV.

Figure 1. Left to Right: Typical Utility-Type ROV, Typical Recreational-Type ROV, and Typical UTV

III. Risk of Injury

A. Description of Hazard

ROVs and UTVs are intended to be driven off-highway and have all-terrain capabilities; typical uses include farm work, hunting, recreation, trail riding, and competitive racing. These vehicles are often driven in wooded areas or trails, where the vehicles can be expected regularly to be driven over tree branches and sticks.

Debris penetration involves debris (usually a tree branch or stick) cracking or penetrating the occupant area of an ROV or UTV. Debris penetration hazards are a comparatively greater concern for ROVs and UTVs because the wheel-well areas on these vehicles are generally larger and more open, compared to those of ATVs. In incidents, the debris usually cracks or penetrates through the floorboard of the underside of the ROV or UTV. When such penetration occurs, there is a potential for the branch or other debris to penetrate far enough into vehicle to harm occupants of the vehicle. As described in Section III.B of this preamble, debris penetration can occur even when the vehicle is being driven at low speeds.

B. Incident Data

1. Debris Penetration Recalls

There have been three debris penetration recalls, all associated with ROVs. CPSC recall data include the number of affected vehicles, number of incidents, and injuries associated with the recalls. ROV manufacturers generated the recall data; although there may be some overlap in the incidents, the ROV manufacturer data is separate and distinct from the data associated with CPSC Epidemiology staff's injury and death analyses in Section III.B of this preamble, and the data associated with the Engineering Sciences assessment, in Section IV.A of this preamble.

Collectively, over the period from 2014 through 2016, these three recalls consisted of approximately 55,000 recalled vehicles, 630 incidents of debris cracking or breaking through the floorboards, and 10 injuries. There were no deaths associated with ROV debris penetration hazards among these recalls.

2. National Electronic Injury Surveillance System (NEISS) and CPSC's Consumer Product Safety Risk Management System (CPSRMS) Data

CPSC Epidemiology staff reviewed NEISS injury cases and CPSRMS injury cases that occurred in the period from 2009 to 2021. Staff searched for debris penetration incidents involving ATVs, ROVs, and UTVs.

None of the debris penetration incidents involved an ATV (other than an ROV mischaracterized as an ATV). Given that ATVs do not have floorboards, the lack of debris penetration incidents involving ATVs was not unexpected. Because of this, ATVs are not included within the scope of the proposed rule.

Between 2009 and 2021, there were a total of 107 incidents found in CPSC databases involving debris penetration hazards; 104 of these incidents were found in CPSRMS, and 3 injury cases were found in NEISS. A previous search conducted for the ANPR, completed in spring 2021, returned 105 total incidents involving debris penetration hazards, consisting of 103 CPSRMS incidents and 2 NEISS injury cases.

Due to the small sample size of NEISS injury data, staff cannot estimate injuries.[2] Instead, for the debris penetration hazard scenario, staff counted the three injuries from NEISS with the other reported injuries from CPSRMS. Table 1 shows the yearly breakout of debris penetration hazards by data sources and severity of incidents.

TABLE 1—REPORTED INCIDENTS OF OHV DEBRIS PENETRATION HAZARDS BY YEAR

[CPSRMS: 2009–2021, NEISS: 2009–2020]

Year	Total incidents reviewed	Fatal reported incidents	Injury reported incidents	Non-injury incidents
Total	107	6	22	79
2009	1	0	1	0
2010	4	1	1	2
2011	3	0	1	2
2012	7	0	0	7
2013	8	0	2	6
2014	11	1	1	9
2015	8	1	3	4
2016	30	0	5	25
2017	27	2	2	23
2018	5	0	4	1
2019*	2	1	1	0
2020*	0	0	0	0
2021*	1	0	1	0

Sources: CPSRMS and NEISS.
* Data collection is ongoing.

Many of the 104 debris penetration incidents found in CPSRMS include multiple people riding in the OHV. However, for reports involving nonfatal injuries, only the age and/or gender of one or two of the victims is recorded. In reports received from manufacturers and retailers, which largely consist of non-injury incidents, basic victim demographic information is frequently not included at all.

Table 2 presents a broad overview of the distribution of the 107 debris penetration incidents by primary victims' age and gender. Forty-four of the 47 incidents with victim age missing are non-injury incidents; all 36 incidents with both victim age and gender missing are non-injury incidents as well.

TABLE 2—REPORTED INCIDENTS OF DEBRIS PENETRATION HAZARDS BY AGE AND GENDER

	Female	Male	Gender missing	Total
0–17 years	2	6	0	8
18–34 years	4	11	0	15
35–54 years	9	17	0	26
55+ years	0	11	0	11
Age Missing	1	10	36	47
Total	16	55	36	107

Sources: CPSRMS and NEISS.

CPSC field staff conducted in-depth investigations on the six fatal incidents. In all six fatal incidents, only one victim per incident died, as opposed to multiple fatalities per incident. Two incidents involved the death of a passenger, while the other four involved the death of the driver. Four involved a tree branch, one a large stick, and one a 2- to 3-inch piece of wood. At least three involved penetration of an occupant's chest.

The severity of the 22 nonfatal injury incidents due to debris penetration is presented in Table 3. The injuries ranged from mostly minor cuts, bruises and/or abrasions, to more severe injuries, like broken bones or debris impalement in the body. Most of the nonfatal injuries occurred in the lower area of the body (*e.g.,* ankles, legs, foot) or abdomen.

TABLE 3—REPORTED INCIDENTS OF DEBRIS PENETRATION HAZARDS BY INJURY SEVERITY

[2009–2020 NEISS, 2009–2021 CPSRMS]

Injury severity	Incidents
Treated and Released, or Released without Treatment	2
Hospital Admission	4
Emergency Department Treatment Received	3
First Aid Received by Non-Medical Professional	1
No First Aid or Medical Attention Received	2

TABLE 3—REPORTED INCIDENTS OF DEBRIS PENETRATION HAZARDS BY INJURY SEVERITY—Continued

[2009–2020 NEISS, 2009–2021 CPSRMS]

Injury severity	Incidents
Level of care not known	10
Total Injury Incidents	22

Source: CPSRMS and NEISS.

IV. Relevant Existing Standards

There are two voluntary standards associated with ROVs and UTVs: ANSI/ROHVA 1, *American National Standard for Recreational Off-Highway Vehicles,* and ANSI/OPEI B71.9, *American National Standard for Multipurpose Off-Highway Utility Vehicles.* A description of each standard follows.

A. ANSI/ROHVA 1 American National Standard for Recreational Off-Highway Vehicles

The Recreational Off-Highway Vehicle Association (ROHVA) developed ANSI/ROHVA–1 American National Standard for Recreational Off-Highway Vehicles, which sets mechanical and performance requirements for ROVs. The most recent version of ANSI/ROHVA–1 was published in 2016. The ANSI/ROHVA–1–2016 standard defines an ''ROV'' as a motorized off-highway vehicle designed to travel on four or more tires, intended by the manufacturer for recreational use by one or more persons and having the following characteristics:

- A steering wheel for steering control;
- Foot controls for throttle and service brake;
- Non-straddle seating;
- Maximum speed capability greater than 30 MPH;
- Gross Vehicle Weight Rating (GVWR) no greater than 1,700 kg (3,750 lbs);
- Less than 2,030 mm (80 in) in overall width;
- Engine displacement equal to or less than 1,000 cc for gasoline fueled engines;
- Identification by means of a 17-character PIN or VIN.

The standard addresses design, configuration, and performance aspects of ROVs, including requirements for accelerator and brake controls; service and parking brake/parking mechanism performance; lateral and pitch stability; lighting; tires; handholds; occupant protection; labels; and owner's manuals. The latest version of the standard adds vehicle handling requirements and enhanced seat belt reminder requirements to address rollover and occupant ejection hazards associated with ROVs. ANSI/ROHVA 1–2016 does not have requirements to address debris penetration into the occupant area of the vehicle.

ROHVA member companies include Textron (formerly known as Arctic Cat), Bombardier Recreational Products (BRP), Honda, John Deere, Kawasaki, Polaris, and Yamaha. Work on ANSI/ROHVA–1 started in 2008; work was completed with publication of ANSI/ROHVA 1–2010. The standard was immediately opened for revision, and a revised standard, ANSI/ROHVA 1–2011, published in July 2011. The most recent version was published in 2016.

B. ANSI/OPEI B71.9 American National Standard for Multipurpose Off-Highway Utility Vehicles

Some ROV manufacturers that emphasize the utility applications of their vehicles worked with the Outdoor Power Equipment Institute (OPEI) to develop ANSI/OPEI B71.9 American National Standard for Multipurpose Off-Highway Utility Vehicles. The most recent edition of the OPEI standard was published in 2016. ANSI/OPEI B71.9 defines a ''multipurpose off-highway utility vehicle'' (MOHUV) as a vehicle having features specifically intended for utility use and having these characteristics:

- Intended for transport of one or more persons and/or cargo, with a top speed in excess of more than of 25 mph;
- Overall width of 2,030 mm (80 in) or less;
- Designed to travel on four or more wheels, two or four tracks, or combinations of four or more wheels and tracks;
- Use of a steering wheel for steering control;
- Equipped with a non-straddle seat;
- Gross Vehicle Weight Rating of no more than 1,814 kg (4,000 lbs.); and
- Minimum cargo capacity of 159 kg (350 lbs.).

The Commission considers MOHUVs with maximum speed capabilities between 25 and 30 mph to be ''UTVs.'' The Commission considers MOHUVs with maximum speed capabilities greater than 30 mph to be ROVs. The OPEI standard includes requirements for accelerator and brake controls; service and parking brake/parking mechanism performance; lateral and pitch stability; lighting; tires; handholds; occupant protection; labels; and owner's manuals. The latest version of the OPEI standard added vehicle handling requirements and enhanced seat belt reminder requirements (that are identical to the requirements in ANSI/ROHVA 1–2016) for vehicles with maximum speeds greater than 30 mph to address rollover and occupant ejection hazards associated with ROVs. ANSI/OPEI B71.9–2016 does not have requirements to address debris penetration into the occupant area of the vehicle.

OPEI member companies include Honda, John Deere, Kawasaki, and Yamaha. Work on ANSI/OPEI B71.9 was started in 2008, and it was completed with the publication of ANSI/OPEI B71.9–2012 in March 2012. The most recent version was published in 2016.

C. CPSC Staff Voluntary Standard Activity

In a September 2018 meeting with ROHVA and OPEI, CPSC staff discussed the largest of the ROV debris penetration recalls involving 628 manufacturer reports of debris cracking or penetrating through the floorboards and 8 injuries. Staff recommended that OPEI and ROVHA form task groups to study the ROV debris penetration issue. In subsequent meetings, CPSC staff discussed the debris penetration hazard recalls and redacted debris penetration in-depth investigation (IDI) reports with ROHVA and OPEI. At the most recent meeting on April 1, 2022, OPEI and ROHVA members shared exploratory work on test methods to evaluate debris penetration hazards and expressed an interest in collaborating with CPSC staff on the issue. The voluntary standard activity is ongoing; however, there are currently no ballots that address the debris penetration hazard or timetable from either organization.

V. CPSC and SEA Technical Analysis

A. CPSC Staff Analysis of IDIs

Engineering Sciences staff examined 53 IDIs,[3] which included the 8 IDIs examined in detail in the ANPR and 45 IDIs examined post ANPR. Many IDIs contained information for the estimated vehicle speed at the time of the accident and the estimated stick diameter.[4]

Fifty-one IDIs involved tree branches penetrating the floorboards, whereas two of the IDIs involved rocks breaking through the floorboards. All the IDIs involved ROVs, except one, which involved a UTV. Debris penetrations occurred two or more times for a single

[3] Out of the 107 incidents, 53 incidents had corresponding in-depth-investigations IDIs.

[4] ''Table 1—Debris Penetration IDI Summaries,'' in section II.B of the memorandum from the Division of Mechanical and Combustion Engineering, ''Proposed Requirements for Mitigating the Debris Penetration Hazards Associated with Recreational Off-Highway Vehicles (ROVs) and Utility Task/Terrain Vehicles (UTVs),'' summarizes details from the 53 IDIs.

vehicle for some consumers, as described in seven of the IDIs.

Thirty-three IDIs had information regarding stick diameter. For those IDIs that had information regarding stick diameter, death or injury occurred from a stick with a diameter between 1 to 3 inches. Forty-one IDIs had information regarding the estimated vehicle speed at time of impact. For those incidents involving debris penetration from wood, the estimated vehicle speed ranged from 2 mph to 25 mph.

IDI interviewees in their responses sometimes gave ranges to estimate stick diameters and vehicle speeds. For example, an interviewee believed a stick that penetrated the floorboard was approximately 1 to 1.5 inches. The average stick diameter for the low range was 2.1 inches and 2.5 inches for the high range.

For estimated vehicle speeds, the average speed for the low range was 10.2 mph and 12.1 mph for the high range. Most of the interviewees, 66 percent (27 out of 41 IDIs), reported debris penetrations occurring at 10 mph or less.

In two IDIs where the estimated speed was 5 mph, two consumers experienced injury to their shin and foot. Only one incident included estimated vehicle speeds greater than 25 mph.

Given that ROVs/UTVs are used in forested trails, it is reasonable to expect that the floorboards should protect consumers when ROVs/UTVs are operating at speeds of 10 mph or less in these environments.

Staff measured the floorboards of several model ROVs and determined that the average thickness of the plastic floorboards was between 0.1 and 0.2 inches. In addition, staff's analysis of incident photos indicates brittle failure (*i.e.,* where the material does not stretch) of the plastic floorboard when penetration occurred, because the floorboard was not able to absorb the high kinetic energy of the floorboard-stick collision. Edges of the holes or cracks are usually clean (*i.e.,* no material stretch indications).

B. Debris Penetration Testing

The Commission contracted with SEA Ltd. (SEA), to conduct debris penetration testing with a remotely operated robotic ROV and a ROV mock-up sled that can move on a linear track. The purpose of SEA's testing was to quantify the speed and energy necessary for debris, *e.g.,* a stick or a branch, to penetrate a ROV floorboard. SEA conducted debris penetration testing with a remotely operated robotic ROV and also conducted controlled laboratory tests with mock-up ROVs on SEA's sled facility. Although SEA's study was conducted on ROV models, because the floorboard and UTV front architectures are similar, and in some cases, the same as ROV models, the concepts, observations, and discussions related to ROVs are equally applicable to UTV models.

As part of SEA's analysis, SEA reviewed debris penetration IDIs provided by CPSC staff. SEA determined that a common pattern in most of the severe injury accidents was that a branch or stick, generally, 1 to 2 inches in diameter, penetrated through the vehicle floor, particularly in the foot rest/wheel well areas. Typically, the stick was longitudinal to the vehicle, and positioned at an upward angle. The end of the stick closest to the vehicle was high enough to get above or between the front suspension components of the vehicle. The end of the stick farther from the vehicle was either attached to a larger piece of wood or embedded in the ground. SEA observed that sticks penetrating the vehicle's occupant space were generally straight, and could have diameters as high as 5 inches, or as small as 1¼ inches. Occupants experienced chest/abdomen impalements or impalements/lacerations to lower extremities.

SEA's initial testing consisted of a remotely operated robotic ROV that was driven into a stationary dowel [5] at 10 mph, as shown in Figure 3. SEA conducted two tests with a remotely operated robotic ROV to examine the specifics of a debris penetration event. SEA determined that a dowel could contact the metal frame members that can influence the trajectory of the dowel and the way the dowel penetrates the floorboard. Contact in this manner would allow the dowel to experience both compressive and bending forces. The bending forces caused the dowel to snap after impact when the robotic ROV was traveling at 10 mph, as shown in Figure 2.

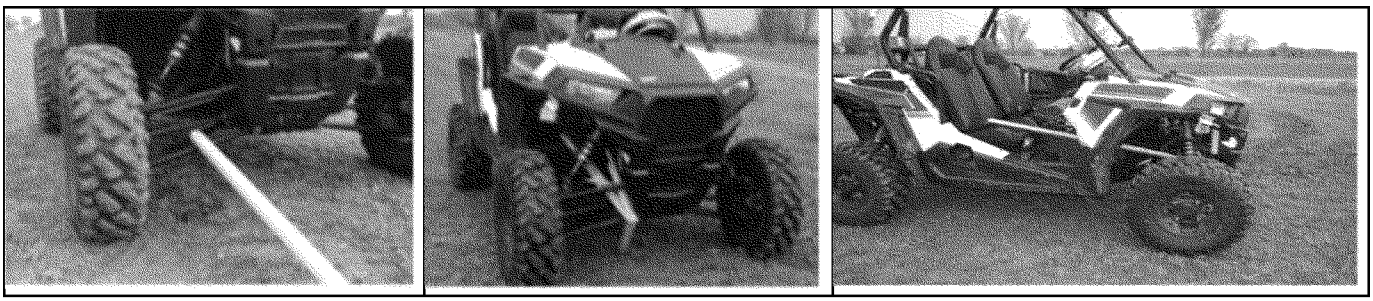

Figure 2 – Multiple Views of the Robotic ROV involving Collision at 10 mph; Left – Alignment of the Test Dowel with Test Target on the ROV Floorboard; Middle – Front View of Broken Dowel; Right – Side View of Test Dowel that Entered the ROV Passenger Occupant Area

[5] SEA used a 2-inch diameter oak dowel between 39 inches to 65 inches long for the sled testing. Oak is a hardwood with a relatively high modulus of rupture and modulus of elasticity material properties. A 2-inch diameter oak dowel is a mass-produced item that is readily available. Use of a consistent test component will minimize test-to-test variability.

The second series of testing consisted of a ROV mock-up sled, fitted with OEM floorboards and aftermarket floorboard guards, as shown in Figure 3.

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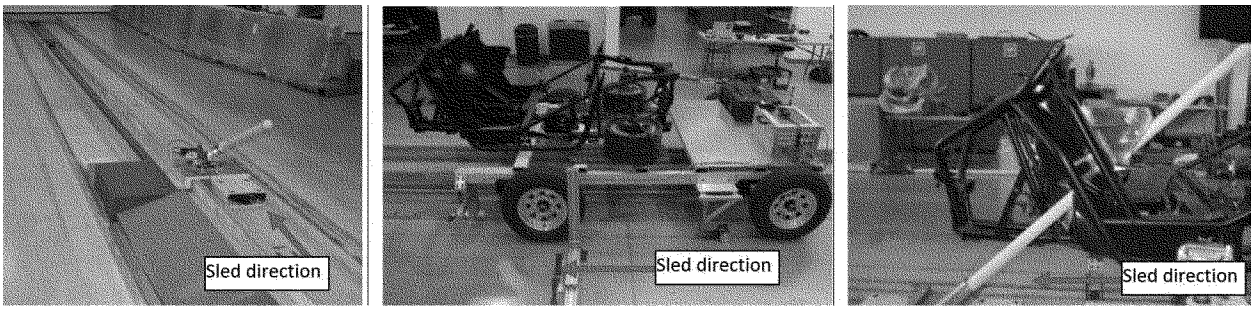

Figure 3 – Multiple Views of the Simulated Vehicle Test Sled; Left – Test Dowel in Relation to the Direction of the Test Sled; Middle – Side View of an Example of a Fully Loaded Test Sled; Right – Side View of a Sled Test Where the Test Dowel Penetrated the ROV Floorboard

Both test methods allowed the robotic ROV or the ROV sled to collide with a stationary dowel. The full-scale robotic ROV test showed similar penetration location and puncture characteristics for the sled test (see Figure 4). Both test methods resulted in a dowel penetration through the seam area between the floorboard and firewall [6] sections. By performing these engineering tests, SEA quantified the speeds and energies required to puncture the floorboards and floorboard guards.

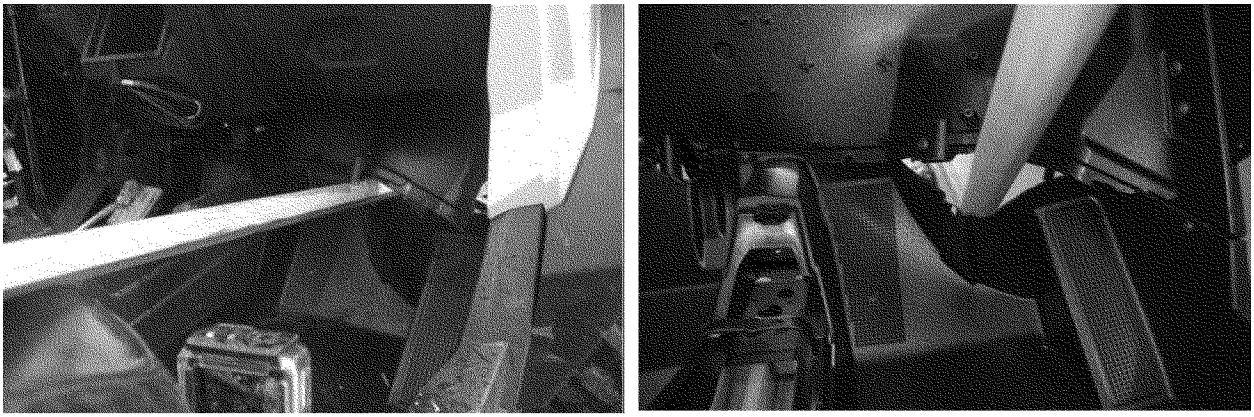

Figure 4 – Comparison of Full-Scale Robotic ROV Test and Sled Test; Left – Robotic ROV Test Where Dowel Penetrated the Seam that Joins the Floorboard and Firewall Panels; Right – Sled Test Where the Dowel Penetrated the Seam that Joins the Floorboard and Firewall Panels

Floorboards and aftermarket floorboard guards from five ROV manufacturers were tested using the sled method. SEA conducted a total of 21 test trials. SEA used sled speeds of 2.5, 5, and 10 mph.

The sled tests showed that the stock floorboards for two ROV manufacturers experienced debris penetrations at 2.5 mph. The stock floorboards for all five ROV brands experienced debris penetration at 5 mph. Figure 5 illustrates a stock floorboard that experience debris penetration at 2.5 mph.

[6] On many ROVs/UTVs, there are two plastic floor panels. The main floorboard panel covers the floor and footwell areas in front of the feet. A second, semi-vertical plastic panel that is joined to the main floorboard is often known as the firewall, which is located higher up, at the knee level and above.

Figure 5 – Interior View, Driver's Side Floorboard Where Debris Penetration Occurred at 2.5 mph

SEA tested various branded aftermarket metal and plastic floorboard guards to gauge their material strength properties to resist debris penetration. Among the 21 test trials, a metal guard for one brand of ROV did not have debris penetration at 10 mph. Two test trials at 5 mph with metal guards and one test trial with a plastic guard at 5 mph did not have debris penetration. All other test trials with plastic or metal guards failed at 10 or 5 mph.

For tests that did not experience debris penetration, the test dowel was redirected, or the dowel slid off to the side or upwards. In such cases, the bending forces caused the dowel to snap off. In some instances, the sled yawed and pitched before the sled came to a complete stop. These actions accomplished the guards' goal of protecting the occupants from the debris penetration hazard. Figure 6 illustrates an aluminum floorboard guard with a black powder coated paint surface that prevented debris penetration at 5 mph. The test sled pitched and yawed, while the tip of the dowel slightly dented, then scraped the floorboard guard's surface and slid to the right before the test sled came to complete stop.

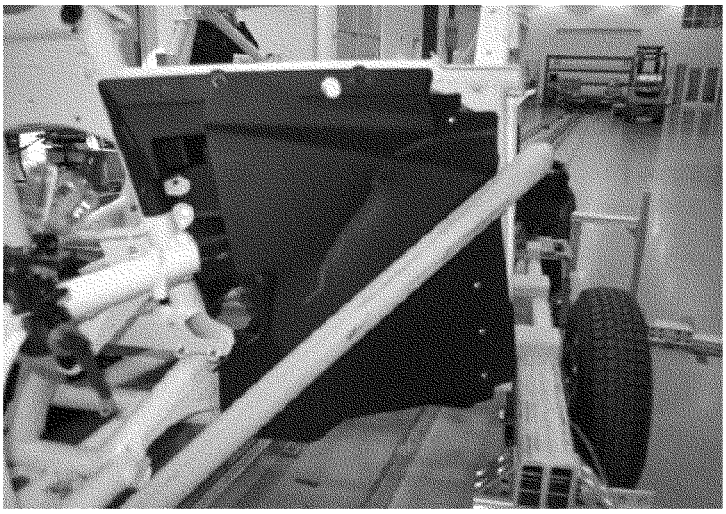

Figure 6 – Illustration of an Aluminum Floorboard Guard that Redirected the Test Dowel and Prevented Debris Penetration (at 5 mph)

SEA staff procured the aftermarket guards from multiple online vendors. The existence of a market for these guard products suggests there is a need for enhanced protection against debris penetration. CPSC is aware of products in the marketplace that can resist debris penetration, and these retrofit products offer additional protection when compared to stock floorboards that can experience debris penetration at speeds as low as 2.5 mph.

From its testing, SEA concluded:

- If better guards are to be designed, it is likely that they will not work by absorbing energy, but rather, by redirecting the dowel, or breaking it off.

• Guards that worked well in the sled testing tended to work well because they pushed the dowel up and/or to the side. Ideally, the guards would push the stick all the way to the side of the vehicle and outside the zone of the occupant compartment.

• Testing showed that a successful design for an aftermarket guard or OEM floorboard could involve deflecting the dowel, rather than taking on the force directly. Several of the aftermarket guards were successful at doing this at 5 mph, and one of the guards tested was successful at 10 mph.

The test dowel did not break in testing that involved a metal floorboard guard that was sturdy enough to prevent debris penetration at 5 mph. The test dowel deformed the floorboard guard in a scraping manner without puncturing the floorboard guard, and the test sled pitched and yawed before coming to a full rest. However, the test dowel did break at 10 mph for this same metal floorboard guard, due to the bending forces being greater when the test sled speed was doubled. If a floorboard or floorboard guard is sturdy enough, there will be a greater tendency for the floorboard or floorboard guard to deflect the dowel and increase the dowel's bending forces when the test sled speed is at 10 mph or higher. Thus, a floorboard or floorboard guard that can prevent debris penetration at 10 mph will likely prevent debris penetration at speeds above 10 mph.

The requirements and test procedure of the proposed rule are in Section VI of this preamble.

VI. Proposed Requirement, Test Procedure, and Prohibited Stockpiling

A. Proposed Requirement

ROVs and UTVs equipped with current ROV/UTV floorboards offer minimal to no protection to the occupants in debris penetration events. Stick/branch penetration of floorboards poses impalement and/or laceration hazards and the risk of serious injury or death. SEA's sled testing showed that dowel penetration can occur at speeds as low as 2.5 mph on ROVs equipped with standard OEM floorboards. Multiple full-scale tests re-created stick/branch penetration in the occupant area, a hazard reported in at least 107 incidents, 6 resulting in fatalities.

To reduce deaths and injuries associated with the debris penetration hazards, the Commission is proposing a performance requirement and a test procedure that propels a test vehicle or simulated vehicle sled at a minimum speed of 10 mph towards a stationary 2-inch diameter oak dowel, positioned at an angle between 12° and 25°, to strike the front wheel suspension area of the vehicle. The performance requirement specifies that the dowel cannot penetrate the occupant area when tested to the proposed impact test procedure.

For the majority of the IDIs that had vehicle speed information, 66 percent (27 out of 41 IDIs), of the debris penetration events occurred at 10 mph or less. A test vehicle or simulated vehicle sled colliding with a stationary 2-inch diameter oak dowel at 10 mph represents a realistic debris penetration scenario. The requirement will reduce the likelihood of impalement and/or lacerations from debris penetration, by preventing penetration into the occupant area of these vehicles. The SEA testing showed that an aftermarket floorboard guard can prevent debris penetration at 10 mph. Instead of energy absorption, the aftermarket guard redirected the dowel, allowing the bending forces to snap the dowel. It is likely that floorboards or the wheel-well area of ROVs/UTVs can be designed to resist debris penetration by redirecting the dowel to the side or upwards to avoid injuring the occupants. This type of mitigation design would also be effective at higher vehicle speeds.

B. Test Procedure

1. Load Condition

The test protocol requires a load condition of 430 lbs for a two-seat ROV or UTV model. The 430 lbs represents a driver and a front seat passenger, each equivalent to a 95th percentile male (215 pounds). For a four-seat model, the load condition requirement is 860 pounds, representing the driver and three passengers. For a six-seat model, the load condition is 1290 lbs, representing the driver and five passengers. Models containing these minimum load weights are described below as ''fully loaded.''

2. Test Vehicle or Simulated Vehicle Sled Conditions

The fully loaded test vehicle is to be fitted with the test floorboard and/or floorboard guard(s), as offered for sale. If a simulated vehicle sled is used, such that a ROV/UTV front metal frame is fitted with the test floorboard and/or floorboard guard(s), the simulated vehicle sled must be able to translate on a linear track that can propel the simulated vehicle sled to at least 10 mph.

3. Test Speed

The test vehicle or simulated vehicle sled speed, in miles per hour (mph), must be at least 10 mph at the moment of impact.

4. Test Location

The test dowel is to be positioned at an angle between 12° and 25° such that it will strike the upper wheel well area of the vehicle. The target of the test dowel must be either the floorboard or floorboard guard surface of the vehicle, and it must be the point on the floorboard or floorboard guard most likely to produce the most adverse results, such as a seam, crease, catch point, or bend.

5. Test Equipment

The test procedures prescribe the diameter (2-inches) and length of the dowel (between 39 to 65 inches) and the angle in which the dowel is to be installed in the dowel holder (between 12° to 25°). A range of angles and a range of dowel lengths are necessary, due to the various shapes, depths, contours, suspension component arrangements, and control arm dimensions of all the ROV/UTV wheel-well configurations. See Figure 7.

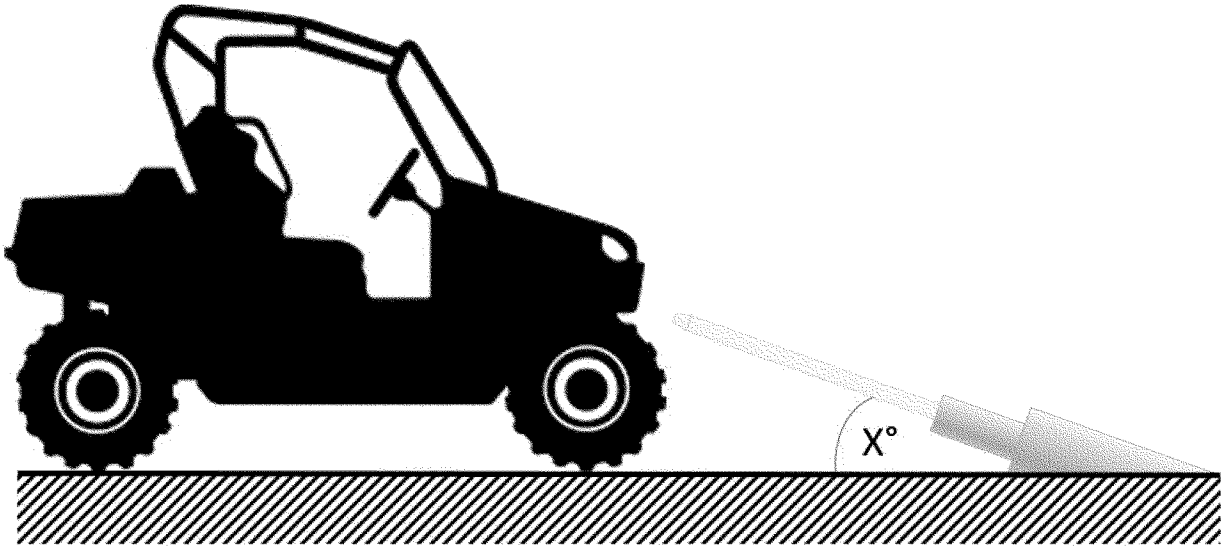

Figure 7-– Illustration of Debris Penetrator Test Dowel Orientation

The test procedure also requires that the tip of the dowel be tapered, such that the tip surface diameter is 1 inch, and the tip cone length is 1 inch. See Figure 8.

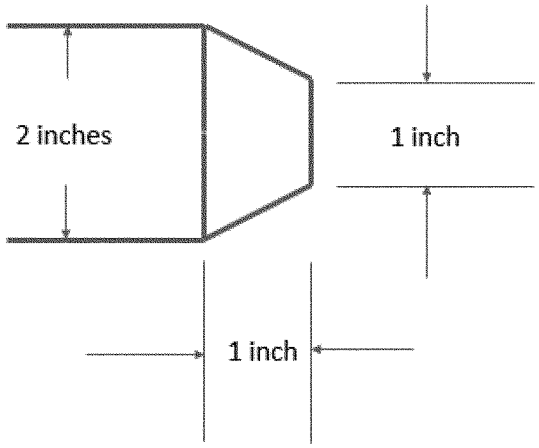

Figure 8 – Illustration of Debris Penetrator Test Dowel Tip Taper

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The dowel holder must be constructed of a rigid material, such that the dowel holder will not fracture during the course of the impact test.

A vehicle or simulated vehicle sled braking system and/or energy absorption foam blocks located two feet past the debris penetration dowel holder are recommended to minimize damage to test equipment. If a braking system is used, it is only permitted to activate after the vehicle or simulated vehicle sled collides completely with the debris penetrator dowel.

6. Test Conditions

If a test vehicle is used, the test surface must be dry asphalt or dry concrete that is free of contaminants. There must be sufficient track length available to allow the test vehicle or simulated vehicle sled to reach 10 mph. The test surface must be flat and have a grade slope of 1.7 percent (1°) or less. The ambient temperature shall be greater than 0 °C (32 °F).

7. Test Procedure

In the test procedure, a fully loaded, fully instrumented test vehicle or simulated vehicle sled is propelled in a straight-line path to collide with the test dowel, where the test vehicle or

simulated vehicle sled speed is at least 10 mph at the moment of impact. A minimum of two test trials of one chosen test method must be conducted for each vehicle model.

8. Rationale—Test Conditions

The required ambient temperature of 0 °C (32 °F) or greater, maximum allowable flat course slope grade of 1.7% (1°) or less, the maximum allowable wind speed of 11.2 mph (18 km/h), flat dry asphalt or dry concrete conditions, and the 95th percentile male weight are consistent with the lateral stability requirements of ANSI/OPEI B71.9–2016 and ANSI/ROHVA–1–2016, simulate real use, and allow for repeatable test results.

C. Prohibited Stockpiling

The proposed rule includes an anti-stockpiling provision that would prohibit manufacturers and importers from stockpiling products that will be subject to the mandatory rule. The Commission's authority to issue an anti-stockpiling provision is in section 9(g)(2) of the CPSA. 15 U.S.C. 2058(g)(2). The anti-stockpiling provision would prohibit ROV and UTV manufacturers and importers from manufacturing or importing ROVs or UTVs that do not comply with the requirements of the proposed rule between the date of the final rule publishing in the **Federal Register** and the effective date of the rule, at a rate greater than 105 percent of the rate at which they manufactured or imported ROVs or UTVs during the *base period* for the manufacturer.

The *base period* is described in the proposed rule as the calendar month with the median manufacturing or import volume within the last 13 months immediately preceding the month of promulgation of the final rule. ''Promulgation'' means the date the rule is published in the **Federal Register**.

VII. Response to Comments

The Commission published the Off-Highway Vehicle (OHV) Fire and Debris Penetration Hazards Advance Notice of Proposed Rulemaking (ANPR) in the **Federal Register** on May 11, 2021. The public comment period ended on July 12, 2021. CPSC received 10 comments from the public, which can be found under docket number CPSC–2021–0014, at: *www.regulations.gov.* Four of the comments support the rulemaking; six of the comments do not support the rulemaking. We respond to the comments pertaining to debris penetration hazards here.

Comment: Four comments express support for the rulemaking. Three of these comments (American Academy of Pediatrics, Kids in Danger, and Public Citizen) state that voluntary standards for ROVs and UTVs fail to adequately protect consumers, given the injuries, deaths and incidents that have occurred related to debris penetration. In addition, these three comments note that the voluntary standards do not include any requirements to protect against debris penetration. Kids in Danger further asserts that research shows a correlation between mandatory standards on products and a reduction of regulated product-specific deaths.

Response: Staff concurs with these comments, because the current voluntary standards, ANSI/ROHVA–1–2016 and ANSI/OPEI B71.9–2016, do not have resistance to debris penetration performance requirements that adequately protect consumers, given the injuries, deaths, and incidents that have occurred related to debris penetration.

Comment: The American Academy of Pediatrics suggests that the rulemaking should account for the unique hazards of OHVs used by children, especially for ''youth model'' products marketed toward younger drivers.

Response: At least one ROV manufacturer offers youth-oriented ROVs that are smaller versions of the full-size ROVs. These vehicles will be treated in the same manner as other OHVs. If they meet the definition of ROV or UTV, then they are within the scope of the proposed rule.

Comment: ROHVA and two individuals, Mark Strauch, and Steve Tavara, state that it is not clear whether the debris penetration hazard incidents identified in the ANPR were caused by lack of clear sight, user error, or whether the driver and/or passenger were impaired in some fashion. Mark Strauch also states it is unclear whether ROVs are becoming dangerous due to ''improper installation, inspection, operation, and/or maintenance.''

Response: Staff examined incident data that showed that debris penetrations occur at speeds as low as 2 mph. For 44 percent of the IDIs that had information regarding vehicle speed at the time of debris penetration, the vehicle speeds during collisions with tree branches were 5 mph or less. These data suggest that consumers were generally not reckless, and the ROV/UTV floorboard debris penetrations are occurring under non-severe conditions. Consequently, staff concluded that there was an issue with the vehicle itself rather than the operator's behavior or maintenance of the vehicle. By their nature, ROVs and UTVs are intended to be driven on off-highway environments. It is foreseeable that in an off-highway environment, a vehicle might encounter sticks or branches. Penetration of a stick/branch into the vehicle's cabin area, even at such low speeds, is indicative of insufficient debris resistance of the vehicle. Staff assesses that a vehicle intended to be driven in off-highway environments should not be susceptible to debris penetration at such low-speeds, regardless of maintenance or inspection of the vehicle.

Comment: Commenters ROHVA, OPEI, SVIA, and Polaris, Inc. (''Polaris''), advocate addressing debris penetration hazards through the voluntary standards process instead of through rulemaking.

Response: Although CPSC staff has engaged with the standards development organizations (''SDOs'') on this topic for years, no substantial progress has been made regarding debris penetration hazards. Since 2018, the three SDOs and CPSC staff met multiple times to discuss debris penetration hazards, but no substantial progress has been made, and discussions remain in the preliminary idea phase. CPSC staff will continue to engage with these SDOs, to review any proposals they may present, and consider those proposals as CPSC continues with its rulemaking activities.

Comment: ROHVA, Polaris, and Mark Strauch assert that the Commission should withdraw its ANPR because it lacks sufficient information to determine that there is an ''unreasonable risk of injury'' associated with debris penetration hazards. ROHVA asserts that debris penetration incidents are rare and involve ''highly dissimilar factors,'' making them unsuitable for consideration for mandatory rulemaking.

Response: Staff disagrees that debris penetration incidents are rare. CPSC staff has determined that 6 deaths and 22 injuries resulted from ROV debris penetration. There were 107 debris penetration incidents involving ROVs or UTVs in CPSC databases. Manufacturers reported 632 debris penetration incidents related to three different recalls.[7]

Staff also disagrees with the notion that debris penetration incidents involve ''highly dissimilar factors,'' such that a mandatory rule would be ineffective. The incidents show that a consistent factor in debris penetration incidents is the penetration of debris into the floorboard of the vehicles when they are being driven, as marketed and intended, in off-road environments,

[7] The manufacturer-reported data is separate and distinct from the data from CPSC databases; there may be some overlap between the two.

even at low-speeds. The proposed test requirement would address the inadequacy of the floorboards to protect occupants in the vehicle. CPSC contractor SEA procured aftermarket floorboard guards from seven different vendors for their test program. The fact that there is already a robust market for aftermarket floorguards suggests that, contrary to being rare, debris penetrations are occurring often enough that there is substantial consumer interest in products to potentially remedy the risk of debris penetrations.

Comment: ROHVA comments that it is inaccurate to characterize the 630 manufacturer reports associated with the three debris penetration recalls as ''debris penetration incidents,'' because not all of the incidents involved debris penetration *through* the floorboard. ROHVA notes that the press release for the largest of the three recalls states that there were ''628 incident reports of debris cracking or breaking through the floor boards.''

Response: The manufacturer reports consisted of floorboards either cracking or breaking during normal operation due to impact with, or penetration by, debris from outside the vehicle. Whether or not the debris penetrated through the floorboard, staff considers the cracking or breaking of the floorboards by objects during normal operation of the vehicle to be indicative of a penetration hazard.

VIII. Preliminary Regulatory Analysis

A. Introduction

Pursuant to section 9(c) of the Consumer Product Safety Act, publication of a proposed rule must include a preliminary regulatory analysis containing:

- A preliminary description of the potential benefits and potential costs of the proposed rule, including any benefits or costs that cannot be quantified in monetary terms, and an identification of those likely to receive the benefits and bear the costs.
- A discussion of the reasons why a standard submitted to the Commission in response to the ANPR was not published as the proposed rule.
- A discussion of why a relevant voluntary safety standard would not eliminate or adequately reduce the risk of injury addressed by the proposed rule.
- A description of any reasonable alternatives to the proposed rule, together with a summary description of their potential costs and benefits and why such alternatives should not be published as a proposed rule.

The primary focus of this preliminary regulatory analysis is the Commission's preliminary assessment of potential benefits and costs from the proposed rule. CPSC staff estimates benefits by subtracting the expected societal costs (*i.e.,* deaths and injuries from floorboard debris penetration), assuming the rule has been implemented, from the expected societal costs in the absence of the rule (or baseline scenario). Estimated costs include costs to industry from implementing a ROV/UTV fix that addresses the debris penetration hazard, the costs associated with government oversight and compliance monitoring, and the deadweight losses that are the measured impacts to consumers and producers displaced from the ROV/UTV market because of a potential price increase. CPSC staff estimated benefits and costs over a 30-year period starting in 2024, which is the year that the rule would go into effect. A 30-year period allows for several cycles of useful life for ROVs and UTVs and ensures the assessment accounts for the long-term effects of the proposed rule. Staff presents all estimates in 2021 dollars. To account for the time value of money, staff applied an annual 3 percent discount rate to forecasted benefits and costs. The preliminary regulatory analysis also explains why voluntary safety standards would not eliminate or adequately reduce the risk of injury addressed by the proposed rule. It describes alternatives to the proposed rule and their potential costs and benefits, and it explains why these alternatives should not be published as a proposed rule. In addition, although the ANPR invited commenters to submit standards for publication as the proposed rule, or part of the proposed rule, no standard was submitted during the ANPR comment period, and thus, no standard was available for the Commission to consider.

B. Market Information

1. Retail Prices

In 2019, ROV and UTV manufacturers' suggested retail prices (MSRP) ranged from a minimum of $4,599 to a maximum of $53,700. When weighted by sales volume, the mean MSRP is $13,182 for ROVs and UTVs,[8] which, in 2021 dollars, equates to $14,302. As shown in Figure 8, before 2013, the average ROV and UTV MSRP showed a downward trend. However, beginning in 2013, the average ROV and UTV MSRPs have increased steadily. This trend appears to be driven by increasing sales of more expensive models with higher maximum MSRPs. Figure 9 displays MSRPs for ROVs and UTVs from 2004 through 2019, in constant 2021 dollars.

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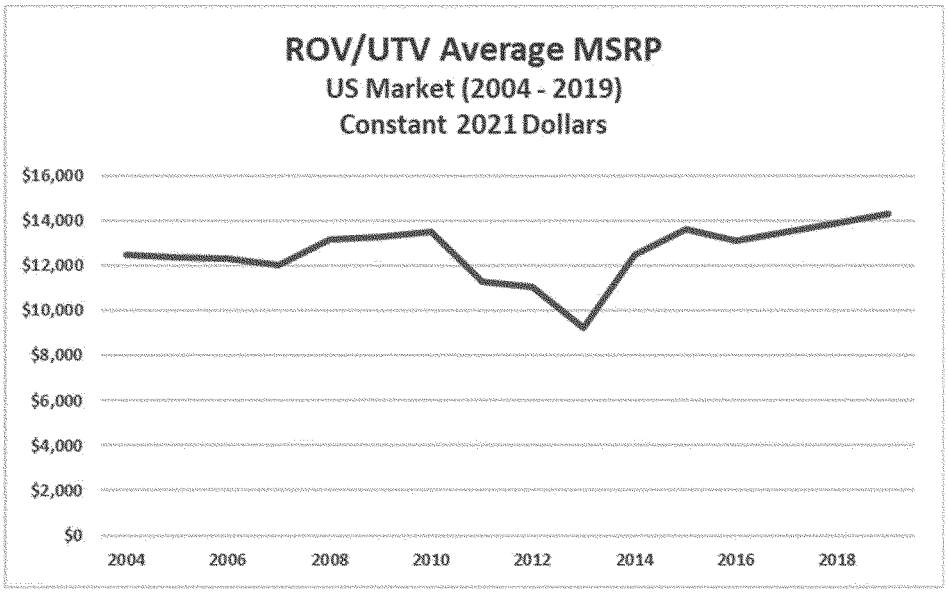
[8] Unless otherwise noted, the ROV/UTV product and market information is based on CPSC staff analysis of 1998–2019 sales data provided by Power Products Marketing, Eden Prairie, MN (2020).

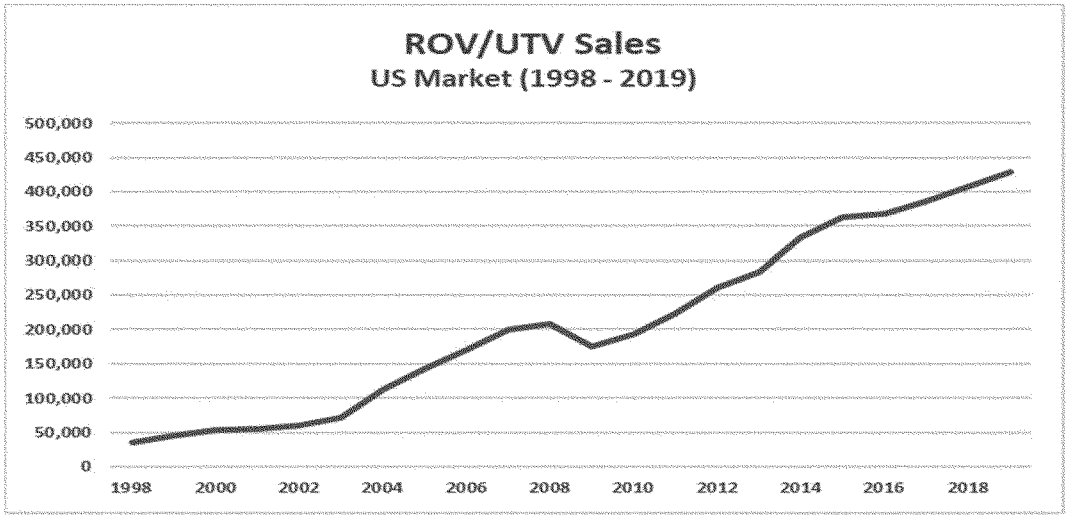
Figure 9: ROV & UTV Average MSRP



1. Annual Sales and Shipments

Except for 2009, annual sales of ROVs and UTVs in the United States have increased steadily, from an estimated 35,041 units in 1998, to an estimated 429,135 units in 2019. Figure 10 illustrates combined ROV and UTV unit sales from 1998 through 2018.

Figure 10: Unit Sales of ROV/UTVs from 1998 to 2018



Staff identified 35 manufacturers known to have supplied ROVs and UTVs to the U.S. market in 2019: 17 from the United States, 14 from China (including Taiwan), and one each from Canada, Mexico, South Korea, and Spain. Additionally, there are 48 distributers/brands. Staff estimated U.S. manufacturers accounted for approximately 83 percent of U.S. ROV and UTV sales in 2019, and that current members of ROHVA and/or OPEI accounted for approximately 95 percent of U.S. ROV and UTV sales in 2019.

Staff identified 461 different ROV and UTV model variants and configurations sold in the United States in 2019. Excluding variants and configurations that appear to be based on a common base model, staff estimated that there may be as few as 107 unique models introduced in 2019, and they estimated a total of 672 models in use by consumers.

2. Estimated ROV and UTV Units in Use

Staff estimates there were 2.34 million ROVs and UTVs in use in the United States in 2019. The Commission developed this estimate based on the number of sales of ROV and UTV in prior years, and then designated a product life (in years) to each unit sold. The distribution of product life years for ROVs and UTVs informs the analysis of what proportion of units will last above or below its average product life. For example, the average product life for an

ROV/UTV is 6 years. Therefore, a plurality of ROVs/UTVs will be in use for 6 years, but some ROVs/UTVs will be in use less than the expected 6 years, while others will be in use longer than 6 years. The distribution of product life informs this analysis of what proportion of sold units will fall into each amount (in years) of product life. This process helps assess how many ROVs/UTVs are still in use, given any number of years after they are sold.

C. Preliminary Regulatory Analysis: Benefits Assessment

This section presents the potential benefits associated with implementing the performance requirement from the proposed rule for mitigating debris penetration hazards associated with ROVs and UTVs.

1. Benefits Assessment Methodology

The Commission conducted the preliminary regulatory analysis from a societal perspective that considers significant costs and health outcomes. The Commission captured expected reduction in societal costs by estimating the number of deaths and injuries from debris penetration that would be prevented by the proposed rule. The Directorate for Epidemiology (EP) retrieved casualties reported through NEISS, a national probability sample of U.S. hospital emergency departments (ED), and the CPSRMS database of consumer incident reports. Staff then forecasted the number of expected reported deaths and injuries for a 30-year study period and converted the value of prevented deaths and injuries into monetary terms using the Value of Statistical Life (VSL) for deaths and CPSC's Injury Cost Model (ICM) for injuries.

Staff used a 30-year study period to assess the benefits of the proposed rule. Staff assumed, for the purpose of this analysis, that the rule will go into effect at the beginning of 2024; this results in a study period of 2024 through 2053. A 30-year period allows for several cycles of useful life for ROVs and UTVs and ensures the benefits assessment accounts for all long-term effects from the proposed rule. Staff then converted the aggregate benefits over the 30-year study period into annualized and ''per-product'' outputs. An annualized output converts the aggregate benefits over 30 years into a consistent annual amount while considering the time value of money. This metric is helpful when comparing the benefits among different rules or policy alternatives that may have different timelines; or those that have similar timelines, but benefits for one are front-loaded, while the other's benefits have a latent effect. A per-product metric expresses the benefits from the rule in one unit of product. This metric is helpful when assessing the impact in marginal terms; for example, comparing benefits to an increase in retail price or marginal increase in cost of production per-unit.

2. Deaths and Injuries Over the 30-Year Study Period

CPSC staff identified six deaths and 22 nonfatal injuries that occurred from 2009 through 2021, related to debris penetration incidents involving occupants. Of the 22 nonfatal injuries, four required hospital admission, three resulted in ED treatment, two were treated and released, or released without treatment, one received first aid by a non-medical professional, and two received no treatment. The level of care provided for the remaining 10 incidents is not known. CPSC staff gathered these casualties from NEISS (three nonfatal incidents) and CPSRMS (the remaining incidents) and confirmed there was no overlap.

Next, staff used the incident data on debris penetration from NEISS and CPSRMS to forecast the number of injuries from debris penetration treated in EDs and other settings throughout the 30-year study period. Typically, the Commission would use reported injuries from NEISS, which only records injuries from a sample of U.S. hospitals, and then the Commission would extrapolate the data into a national estimate. However, the number of recorded incidents of debris penetration from the sample hospitals was lower than the publication criteria established in NEISS. Therefore, staff could not develop a national estimate and had to estimate the benefits using a forecast of reported injuries from the sample hospitals only. There are likely many more unreported incidents outside of the sample hospitals not accounted for in this analysis, and thus, staff's estimated benefits are likely an underestimate.

To forecast future deaths and injuries from debris penetration, staff used death and injury rates per million ROVs/UTVs with its forecast of ''ROVs/UTVs in use'' throughout the 30-year study period. Staff assumed deaths and injuries would stay the same as the average rates observed between 2010 to 2019 [9] in the NEISS and CPSRMS databases: 0.36 deaths, 0.24 hospital admissions, 0.24 ED admissions, and 0.72 doctor/clinic visits per million ROVs/UTVs in use.

Staff forecasted ROVs/UTVs in use using exponential smoothing. Staff then multiplied the number of ROVs/UTVs in use in each year of the study period by the rates of deaths and injuries, to estimate the total number of deaths and injuries for each year of the 30-year study period. Figure 11 displays the estimated number of incidents for each death and injury category from 2010 through 2053 in the baseline scenario, which assumes the proposed rule does not go into effect.

[9] The Commission based its estimated injury rates on the incident data from the window 2010–2019. This window represents a typical 10-year time frame for data analysis, and was the most robust, most recent data that was continuous. Because of ongoing reporting, data from the latest years, 2020 and 2021, are incomplete, and were thus not used in the analysis.

Figure 11 Number of Injuries and Deaths from ROV/UTV Debris Penetration

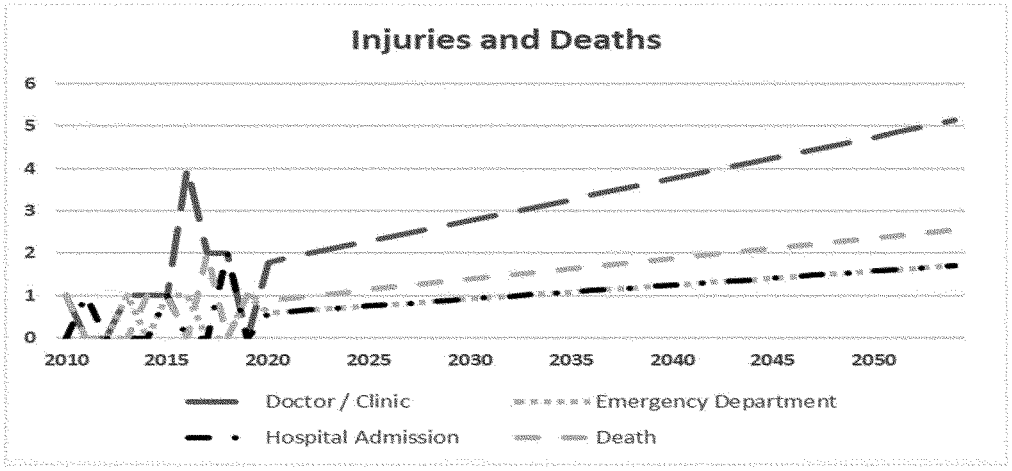


Figure 11 illustrates that most injuries are treated in a doctor's office/clinic. In the year 2053, estimated injuries treated at a doctor's office/clinic reach 5 per year; injuries treated at the ED and those admitted to the hospital largely overlap over the analysis period and reach 1.7 in both cases in 2053; and the estimated number of deaths reaches 2.5 in 2053. In the same year, staff estimated the number of ROVs and UTVs in use to reach 6.98 million, or about three times the number in use in 2019.

3. Societal Costs of Deaths and Injuries Over the 30-Year Study Period

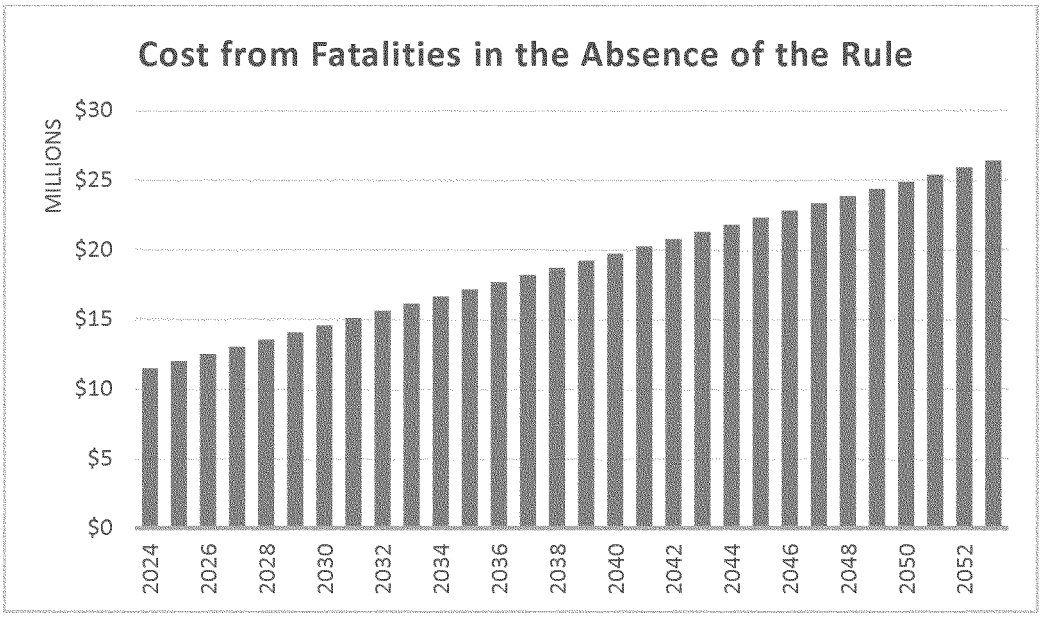
This section presents the methodology to monetize the costs from deaths and injuries from debris penetration in the absence of the rule and determines how much those societal costs would be avoided if CPSC promulgated the proposed rule.

(a) Societal Cost From Deaths

To estimate the societal costs of debris penetration-related deaths, staff applied the VSL. VSL is an estimate used in benefit-cost analysis to place a value on reductions in the likelihood of premature deaths. The VSL does not place a value on individual lives, but rather, it represents an extrapolated estimate based on the rate at which individuals trade money for small changes in mortality risk. This is a ''willingness to pay'' methodology that attempts to measure how much individuals are willing to pay for a small reduction in their own mortality risks, or how much additional compensation they would require to accept slightly higher mortality risks. For this analysis, staff applied a VSL developed by the U.S. Environmental Protection Agency (EPA). The EPA VSL, when adjusted for inflation, is $10.5 million [10] in 2021 dollars. Staff multiplied the VSL by the number of forecasted deaths throughout the study period to calculate societal cost of deaths from debris penetration in the absence of the proposed rule. Figure 12 displays these costs throughout the study period.

[10] In 2008, the EPA estimated the value of a statistical life at $7.9 million. CPSC adjusted this estimate for inflation to the end of 2021, using the Consumer Price Index for All Urban Consumers (CPI–U), estimated the Bureau of Labor Statistics and rounded it to the nearest hundred thousand. The adjustment is as follows: $7.9M × (278.802/210.228) = $10.477M, which is then rounded to $10.5M.

Figure 12: Annual Cost from Fatalities



According to Figure 12, in the first year of the study period (2024), costs from deaths are $11.47 million and grow to $26.42 million in 2053. Over 30 years, estimated societal costs from deaths due to debris penetration aggregate to $568.3 million, according to CPSC staff estimates.

(b) Societal Cost From Injuries

CPSC staff estimated the societal costs of nonfatal injuries from debris penetration using the ICM. The ICM provides estimates of the societal costs of medically treated injuries. The societal cost components provided by the ICM include medical costs, work losses, and the intangible costs associated with pain and suffering.

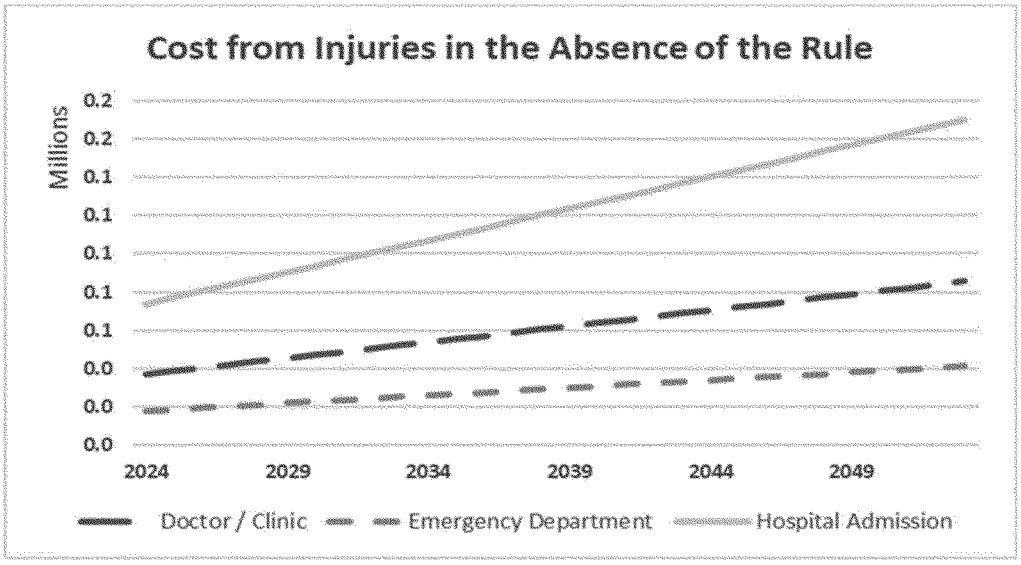
Medical costs include three categories of expenditures: (1) medical and hospital costs associated with treating the injured victim during the initial recovery period and in the long run, including the costs associated with corrective surgery, the treatment of chronic injuries, and rehabilitation services; (2) ancillary costs, such as costs for prescriptions, medical equipment, and ambulance transport; and (3) costs of health insurance claims processing. The ICM derives cost estimates for these expenditure categories from several national and state databases, including the Medical Expenditure Panel Survey (MEPS), the Nationwide Inpatient Sample of the Healthcare Cost and Utilization Project (HCUP–NIS), the Nationwide Emergency Department Sample (NEDS), the National Nursing Home Survey (NNHS), MarketScan® claims data, and a variety of other federal, state, and private databases.

Work loss estimates include: (1) the forgone earnings of the victim, including lost wage work and household work; (2) the forgone earnings of parents and visitors, including lost wage work and household work; (3) imputed long-term work losses of the victim that would be associated with permanent impairment; and (4) employer productivity losses, such as the costs incurred when employers spend time rearranging schedules or training replacement workers. The ICM bases these estimates on information from the MEPS, the Detailed Claim Information (a workers' compensation database) maintained by the National Council on Compensation Insurance, the National Health Interview Survey, the U.S. Bureau of Labor Statistics, and other sources.

The intangible costs of injury reflect the physical and emotional trauma of injury, as well as the mental anguish of victims and caregivers. Intangible costs are difficult to quantify because they do not represent products or resources traded in the marketplace. Nevertheless, they typically represent the largest component of injury cost and need to be accounted for in any benefit-cost analysis involving health outcomes. The ICM develops monetary estimates of these intangible costs from jury awards for pain and suffering. Although these awards can vary widely on a case-by-case basis, studies have shown that these awards are systematically related to several factors, including economic losses, the type and severity of injury, and the age of the victim. The ICM derives these estimates from a regression analysis of jury awards compiled by Jury Verdicts Research, Inc., in nonfatal product liability cases involving consumer products.

The ICM estimated that the costs (in 2021 dollars) associated with nonfatal debris penetration injuries are: $17,013 for injuries treated at the doctor's office/clinic, $24,694 for injuries treated at the emergency department, and $101,433 for injuries that result in hospital admission. The Commission multiplied these estimates by the number of forecasted incidents in Figure 11 to estimate societal costs from injuries through 2053. Figure 13 shows the forecasted societal costs from injuries in the absence of the rule through 2053.

Figure 13: Cost of Injuries



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As reflected in the chart, society would incur a cost in the first year of the study period (2024) of $0.04 million for injuries treated at a doctor's office/clinics, $0.02 million for those treated at EDs, and $0.07 million for injuries resulting in hospital admissions. These costs grow to $0.09 million for doctor's office/clinic, $0.04 million for ED, and $0.17 million for hospital admissions in 2053. Over 30 years, staff estimated the societal costs from injuries due to debris penetration aggregate to $1.85 million for doctor's office/clinic, $0.89 million for ED, and $3.66 million for hospital admissions. The total cost for all injuries reaches $6.39 million over the 30-year study period.

(c) Benefits From the Proposed Rule

The total estimated societal cost of deaths and injuries in the absence of the proposed rule would be $574.69 million over the study period (2024–2053). However, the proposed requirements in the proposed rule are not expected to mitigate all the deaths and injuries from debris penetration. Based on laboratory tests, CPSC staff estimates that approximately 95 percent of all incidents would be avoided because of the implementation of the proposed rule.[11] The Commission assesses that implementing the performance requirement would prevent all debris penetration incidents that occur when the vehicle is travelling 10 mph or below, and most incidents travelling above 10 mph.

Additionally, in the initial years after the implementation of the proposed rule, some noncompliant ROVs and UTVs will still be in use. To account for this, staff estimated the percentage of noncompliant ROVs/UTVs in each year during the 30-year study period. For instance, in the first year of the study period (2024), staff estimated that only 17.6 percent of ROVs/UTVs in use would be compliant, and only 16.7 percent (17.6 percent product compliant rate × 95 percent rule effective rate) of the $11.6 million in societal costs would be avoided because of the proposed rule, which equates to $1.94 million ($11.6 million × 16.7 percent). Staff estimates the compliance rate of ROVs/UTVs in use increases to 84.4 percent by 2029 (*i.e.,* 6 years from the implementation of the rule), and it approaches 100 percent by 2035. After this adjustment, staff estimated that from 2024 through 2053, an aggregate $537.29 million in societal costs would be avoided if the CPSC promulgated the proposed rule.

4. Annualized and Per-Vehicle, In-Use Benefits of the Proposed Rule

Staff converted the aggregate benefits over the 30-year period of study into annualized and ''per-product'' metrics.

The undiscounted average annual benefits are $17.02 million. To calculate present value, staff discounted the annual benefits in each year of the 30-year period using a compounding three 3 percent discount rate. The annualized benefits, at a 3 percent discount rate, are $15.47 million. To estimate the benefit per product, staff divided the annualized benefits (undiscounted and discounted) by the average number of compliant vehicles. Using this methodology, staff estimated the benefits from the proposed rule per ROV or UTV in use to be $20.32 per vehicle undiscounted and $12.07 per vehicle discounted at three 3 percent.

Table 4 presents the findings from this benefits assessment from both the annualized and per-product perspectives.

TABLE 4—TOTAL AND PER-PRODUCT BENEFITS, UNDISCOUNTED AND DISCOUNTED AT 3%

Benefits	Undiscounted	Present value (discounted at 3%)
Annualized ($M)	$17.02	$15.47
Per Vehicle ($)	20.32	12.07

[11] Staff supplements its assessment of a 95 percent effective efficacy rate with a sensitivity analysis that reduces the effective efficacy rate to 60 percent in section VIII.E.1 of this preamble, Uncertainty and Sensitivity Analysis. Sixty percent represents an approximation of the share of debris penetration incidents that occurred when vehicles were traveling 10 mph or below.

D. Preliminary Regulatory Analysis: Cost Analysis

This section discusses the costs this proposed rule would impose on society. There are three sets of societal costs discussed under this cost section: the cost of implementing an ROV/UTV fix that addresses the debris penetration hazard; the costs associated with government oversight and compliance monitoring (considered negligible); and the deadweight losses or market impacts derived from the implementation of an ROV/UTV fix.

Like the benefits estimation, the time span of the cost analysis covers a 30-year period that starts in 2024, which is the expected year of implementation of the rule. This cost analysis presents all cost estimates in 2021 dollars, including cost estimates before 2021, using price index adjustments. This cost analysis also discounts costs in the future, using a 3 percent discount rate to estimate their present value.[12]

In this regulatory assessment, staff considers two solutions to the debris penetration hazards under the proposed rule, each with a separate set of costs. Both scenarios are effective in preventing debris penetration at 10 mph and below, and mitigating debris penetration above 10 mph. Both scenarios require manufacturers to redesign existing models to allow proper installation of the floorboard solution of choice.

1. *Redesigned Floorboards:* Manufacturers fully redesign floorboards where most of the material in the original floorboard is redistributed into a new shape and thickness that is required to address the debris penetration hazard. Manufacturers then redesign ROV/UTV models to enable the installation of the redesigned floorboards and meet the requirements of the new ROV/UTV proposed mandatory standards.

2. *Floorboard Guards:* Manufacturers redesign existing floorboards to add a 2′ × 2′ × 0.19″ aluminum piece that acts as a floorboard guard and prevents debris penetration. This new aluminum piece's design blocks debris from hitting hazardous sections of the floorboard. Manufacturers then redesign ROV/UTV models to enable the installation of floorboards with floorboard guards that meet the requirements of the new ROV/UTV proposed mandatory standards.

This analysis assessed these two solutions as separate scenarios to produce a range of potential costs of compliance with the proposed rule. Some of the unit cost estimates in this analysis are based on SEA Ltd.'s testing and analysis. Under each scenario, staff assumed that 100 percent of manufacturers decide to adopt the solution being assessed. Therefore, staff estimated in each scenario the full cost of deploying that solution for all firms. In practice, however, manufacturers may choose a combination of the two solutions, or a different solution that proves more cost effective. Staff welcomes public comments on the likelihood of manufacturers adopting either solution or a solution not considered in this analysis.

• Cost of Implementing an ROV/UTV Fix to Debris Penetration

Manufacturers directly incur costs to redesign existing models and produce new designs that solve the debris penetration hazard, as well as the cost of producing and installing either a redesigned floorboard or floorboard guard on each new ROV/UTV manufactured after the implementation of this proposed rule is implemented. The increased cost is then passed indirectly on to wholesalers.

The subcategories of costs for implementing an ROV/UTV fix to debris penetration are:

▪ Cost of Redesigning Existing ROV/UTV Models and of New Designs

Manufacturers incur design costs that include redesigning existing ROV/UTV models, as well as designing future ROV/UTV models, which enable the installation of a floorboard solution to the debris penetration hazard.

Manufacturers would have to redesign existing ROV/UTV models with a floorboard solution if they wish to continue selling these models to consumers. Manufacturers, therefore, would have to allocate funds to produce a floorboard solution design and adapt existing ROV/UTV models to enable the installation of a floorboard solution. Manufacturers would likely incur expenditures in design labor, design production, design validation, and compliance testing. Each of these subcategories of costs are discussed below.

○ Cost of Design Labor

The cost to compensate model designers employed by the manufacturer (or a third-party design shop) for the time it takes to produce a blueprint of the redesigned ROV/UTV model.

○ Cost of Design Production

The cost of materials and labor required to fabricate prototypes of the ROV/UTV model.

○ Cost of Design Validation

The cost of conducting validation testing of prototypes to ensure proper functioning of the redesigned ROV/UTV model and conformance with preset requirements established by the manufacturer. This is customarily conducted through in-house, indoor sled testing.

○ Cost of Compliance Testing

The cost of conducting formal third party compliance testing to verify compliance with the requirements of the new ROV/UTV mandatory standards. Compliance testing is customarily conducted through third party testing.

Manufacturers would also be required to upgrade all new designs with the floorboard solution. A large-scale ROV/UTV manufacturer[13] conveyed to staff that once existing models have been redesigned with a working floorboard solution, new models can adapt such a solution at a minimal cost. Therefore, the additional cost of implementing a debris penetration solution onto future designs is considered negligible, and it is not addressed further in this analysis.

▪ Cost of Manufacturing and Installing a Floorboard Solution

Manufacturers directly incur costs to produce the floorboard solution of their choice[14] and install it in every new vehicle manufactured after the implementation of the proposed rule. Manufacturers would likely incur expenditures to purchase the required materials to fabricate the floorboard and produce and install the selected floorboard solution. These subcategories of costs are discussed below.

○ Cost of Materials and Production of the Floorboard Solution

Staff assumed that the production cost of the floorboard solution closely matches the production cost of the original floorboard. Therefore, the incremental production cost is negligible, and the estimates in this subcategory focus exclusively on the incremental cost of the materials required to produce the floorboard solution.

[12] Discounting future estimates to the present allows staff not only to consider the time value of money, but also the opportunity cost of the investment, that is, the value of the best alternative use of funds.

[13] CPSC staff conducted a virtual meeting on February 7, 2022, with a large manufacturer's representative to discuss the cost of implementing an ROV/UTV fix to the debris penetration hazard.

[14] The floorboard solution can be fabricated in-house by the manufacturer or by a third party contractor hired by the manufacturer.

○ Cost of Installation of the Floorboard Solution

Staff assumed that the installation cost of the floorboard solution closely matches the installation cost of the original floorboard. Therefore, the incremental installation cost is negligible.

• Cost of Government Oversight and Compliance Monitoring

Staff does not expect the implementation of the proposed rule to require significant resources or additional oversight and compliance monitoring by CPSC. CPSC can reasonably provide oversight and monitoring of the new ROV/UTV floorboard requirements with existing resources. Therefore, staff assumed the additional cost incurred by the government to provide additional oversight and compliance monitoring to be of an insignificant magnitude, and thus, it is not addressed further in this analysis.

• Deadweight Loss

The requirements for ROVs/UTVs in the proposed rule increase the marginal cost of production for manufacturers. Manufacturers can transfer some, or all, of the increased production cost to consumers through price increases.[15] [16]

At the margins, some producers of a product may exit the market as a result of production cost increases where their increased marginal costs come to exceed the market price. At the same time, a fraction of consumers of that product are excluded from the market because the increased market price now exceeds their personal price threshold for purchasing. Deadweight loss[17] is the measure of the losses faced by these marginal producers and consumers, who are forced out of the market due to the new requirements of the proposed rule. For this analysis, staff estimated deadweight loss for each year the proposed rule is expected to have an impact on marginal cost and market price. The estimate assumes that producers based their production decisions on the long-term impacts of the rule on their cost of production.

The following two subsections present the cost estimates for each of the two scenarios for compliance with the proposed rule.

1. First Compliance Scenario: The Cost of Redesigned Floorboards

This subsection presents cost estimates for the scenario that assumes all manufacturers install a fully redesigned floorboard on each new ROV/UTV to comply with the proposed rule. Manufacturers would also redesign all existing and future ROV/UTV models to allow proper installation of the redesigned floorboards.

(a) Cost of Redesigning ROV/UTV Models

Staff estimated the cost of redesigning all existing ROV/UTV models by multiplying the unit cost of redesigning each existing model by the number of ROV/UTV models to be redesigned. These factors are discussed in more detail below. As discussed earlier, the additional design cost to enable the installation of the redesigned floorboards on new ROV/UTV model designs is considered negligible; therefore, this section only presents cost estimates for the redesign of existing ROV/UTV models.

i. Unit Cost of Redesigning ROV/UTV Models

Staff estimated the unit cost of redesigning existing ROV/UTV models in two steps. First, staff estimated the unit cost of redesigning a single or ''first'' model, before achieving any cost improvements.[18] Second, staff developed a cost improvement curve to account for economies of scale in the redesign of a large number of models, and the efficiency gains from specialization and learning.

Staff estimated the unit cost of the ''first'' model using information from multiple sources, including laboratory tests performed to measure speeds and energy levels at which debris penetrate ROV/UTV floorboards.[19] CPSC staff produced estimates of the cost of redesigning a ROV/UTV at each stage of the design process:

○ Cost of Design Labor

Staff estimated it would require a team of two designers 1 month to produce a final blueprint of an ROV/UTV model design that complies with the requirements of the proposed rule, or approximately a total of 347 hours.[20] The average compensation rate of a designer is $63.96 per hour[21] for a total cost of $22,536 per redesigned model in 2021 dollars.

○ Cost of Design Production

Staff estimated the cost of fabrication of each floorboard at $2,000 per floorboard prototype. Staff estimated an average of three floorboard prototypes would be required per model redesign for a total production cost of $6,000 per model.

○ Cost of Design Validation

Staff estimated 2 days of validation testing would be required per each redesigned ROV/UTV model for a total of $59,372 per model.[22]

○ Cost of Compliance Testing

Staff estimated that, on average, two ROV/UTV models would be tested per

[15] An increase in the marginal cost of production in a competitive market normally is followed by an increase in the prices at which products are traded. The portion of the increased production costs that are paid for by consumers through higher market prices depends on the price responsiveness of demand and supply of the product. The price responsiveness of demand and supply are measured by the price elasticity of demand and supply, respectively. Price elasticity is a measure of how responsive the volume of product demanded or supplied in the market is to a change in the price of such product. *See* footnote 15 in the staff briefing package for formula to estimate price elasticity. For most products, the elasticity of demand is a negative number that indicates price increases lead consumers to demand less of the product; while the elasticity of supply is a positive number that indicates an increased willingness to offer products in the market as the price of the product increases.

[16] *See* footnote 16 in the staff briefing package for the formula to estimate the change in the market price of equilibrium that follows an increase in production costs in a competitive market. In a market with a completely inelastic demand, producers can transfer the entire change in the cost of production to consumers through price increases. The highest the elasticity of demand, the lowest the portion of the increased production costs that can be transferred to consumers through price increases.

[17] *See* footnote 17 in Tab B of the staff briefing package for the calculation used to estimate deadweight loss.

[18] The design costs per ROV/UTV model are expected to decrease as the number of redesigned ROV/UTV models increases (*i.e.,* fixed costs spread over additional models, increased level of experience redesigning ROV/UTV models).

[19] CPSC Study of Debris Penetration of Recreational Off-Highway Vehicle Floorboards conducted under contract by SEA Ltd., in 2020/2021.

[20] CPSC staff estimated it would take up to two-person months to modify an existing ROV/UTV model that does not comply with the requirements of the proposed rule, with a maximum of 4 months and a minimum of 1 month. Source: Notice of Proposed Rulemaking to Establish a Safety Standard for Recreational Off-Highway Vehicles. September 2014. This is 346.67 hours, the average number of hours per month of 173.33 (40 hours a week × 52 weeks a year/12 months) times 2 (two-person months).

[21] As of September 2021, the average total hourly compensation for management, professional, and related workers was estimated at $63.96 (Bureau of Labor Statistics, Table 2—Employer Costs for Employee Compensation for Civilian Workers by Occupational and Industry Group, *https://www.bls.gov/news.release/ecec.t02.htm*). The total cost for two-person months as of September 2021 is $22,172.8 (346.67 hours times $63.96). Adjusted by the CPI price index, this estimate increases to $22,535.89 ($22,172.8 × 278.802/274.31) as of December 2021 (Bureau of Labor Statistics—Consumer Price Index for All Urban Consumers, Series ID CUUR0000SA0, 1982–84 base period, *https://data.bls.gov/cgi-bin/surveymost?cu*).

[22] As part of the CPSC study on debris penetration, SEA Ltd., conducted a total of 5 days of validation testing for a total cost of $138,570, or $27,714 per day as of September 2020. The cost of 2 days of testing brought forward to the end of 2021, using the CPI price index for all urban consumers, is $59,732.36 ($27,714 per day × 2 days × 278.802/260.28).

day of sled testing or $14,843 per redesigned model.[23]

Based on the unit costs, the total ''first'' model cost per redesigned ROV/UTV model is $102,751.[24] This estimate is before the consideration of cost improvements from economies of scale and learning in model design.[25] To account for cost improvements, as the number of ROV/UTV models that are redesigned increases, staff used a cost improvement curve. The improvement curve assumes that every time the number of units produced doubles, there is a 5.4 percent reduction in the average redesign cost per ROV/UTV model.[26]

Figure 14 shows the cost improvement trends for each of the design cost components discussed earlier:

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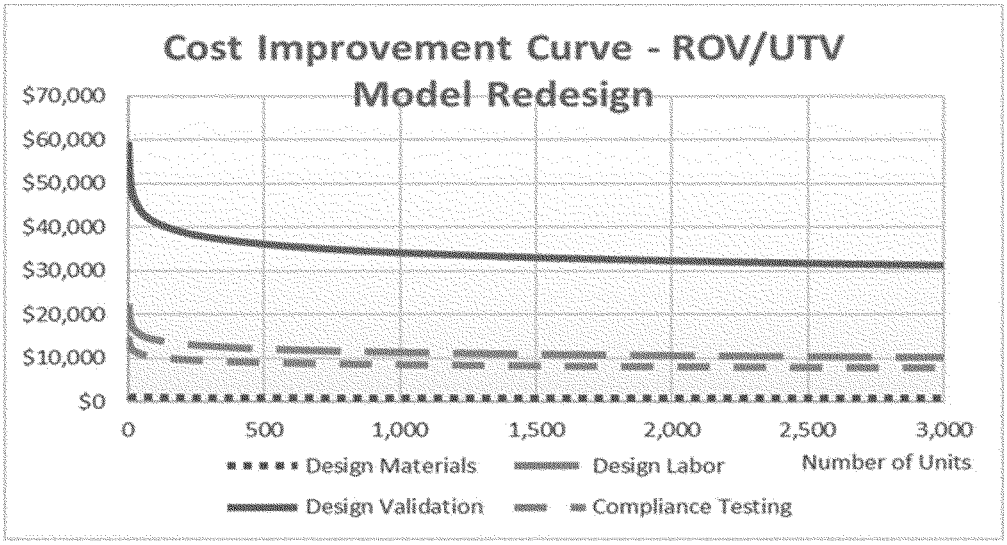
Figure 14: Redesign Cost Improvement Curve – Scenario I (Redesign Floorboards)



The trends in the chart show that when manufacturers redesign 3,000 ROV/UTV models in a particular year, the average redesign cost per model in that year would reach almost half the redesign cost of the ''first'' model (overall a cost of around $52,000 per model).

Since the redesign cost of models varies with the number of models redesigned each year, it is pertinent to discuss—before the discussion of unit cost per model—the forecasted the number of models.

ii. Number of Redesigned ROV/UTV Models

Figure 15 shows the number of new models sold during the period 1991 through 2019, as well as an estimate of the total number of ROV/UTV models in use by consumers during the same period.[27] For instance, in 2019, a total of 107 new models were introduced; the same year, an estimated 672 models were in use by ROV/UTV owners/users.

[23] The cost of validation testing from the CPSC contract with SEA Ltd., is $27,714 per day as of September 2020. CPSC staff estimates a total of three validation tests can be performed per day of third-party validation testing; however, the logistics involved in validation testing may reduce it to an average of two tests per day. The cost per model in dollars as of the end of 2021 is then $14,843 ($27,714 per day/2 models per day × 278.802/260.28).

[24] $102,751.34 = $22,535.89 (labor cost) + $6,000 (floorboard fabrication) + $59,372.36 (validation testing) + $14,843.09 (compliance testing).

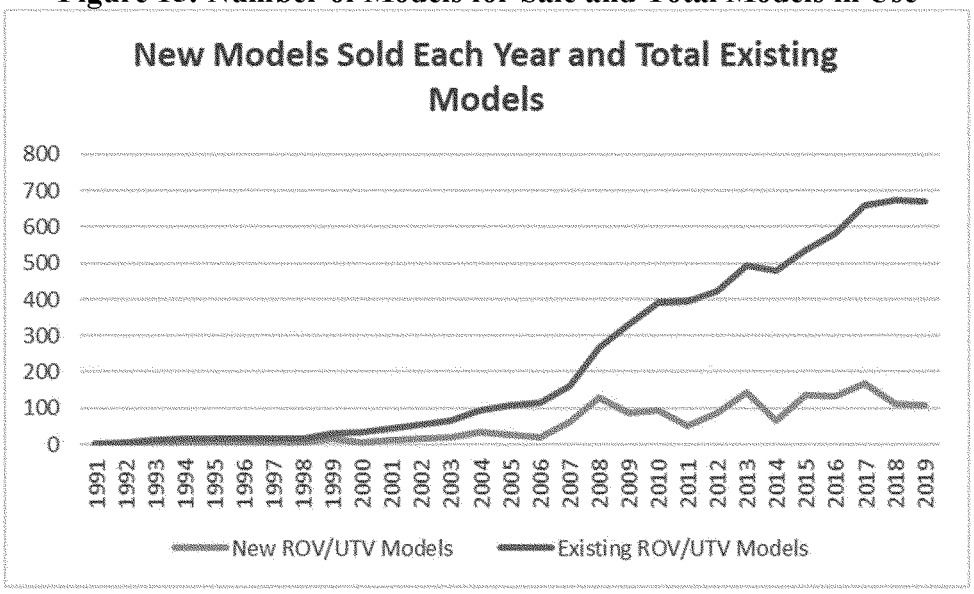
[25] The traditional definition of ''learning curves''—or more properly in this case, ''cost improvement curves''—is centered on the observation that the cost per unit is reduced by a certain percentage every time the number of units produced doubles. The most cited models are derived from T.P. Wright (1936—cumulative average unit cost) and J.R. Crawford (1944—specific unit cost). *See* footnote 26 in Tab B of the staff briefing package for the functional form in both of these models.

[26] For simplicity, staff assumed each of the redesign cost categories discussed here follows the same cost improvement trend. *See* footnote 27 in Tab B of the staff briefing package for the functional form of the cost improvement curve—or learning curve—used by staff.

Cost improvement curves are usually estimated econometrically using available cost/manufacturing data; however, in the absence of such information, CPSC selected the cost improvement percentage based on cost improvement curves from similar activities and derived the parameters.

[27] The number of models sold in each year of this period was estimated using the North American Utility Vehicle Sales from 1991 to 2019. It excludes ROV/UTV models designed for the use of children (*i.e.,* ''Minis'').

Figure 15: Number of Models for Sale and Total Models in Use



Staff forecasted the number of new models every year in the 30-year study period by applying exponential smoothing forecasting techniques [28] to the number of new models produced.[29] Then, staff used the forecast of the number of models to estimate how many models would be in use in every year in the 30-year study period by applying a statistical distribution of model life rates [30] based on the average number of years a model is offered for sale in the market for new ROVs/UTVs.

Figure 16: Forecast of Models for Sale and Total Models in Use

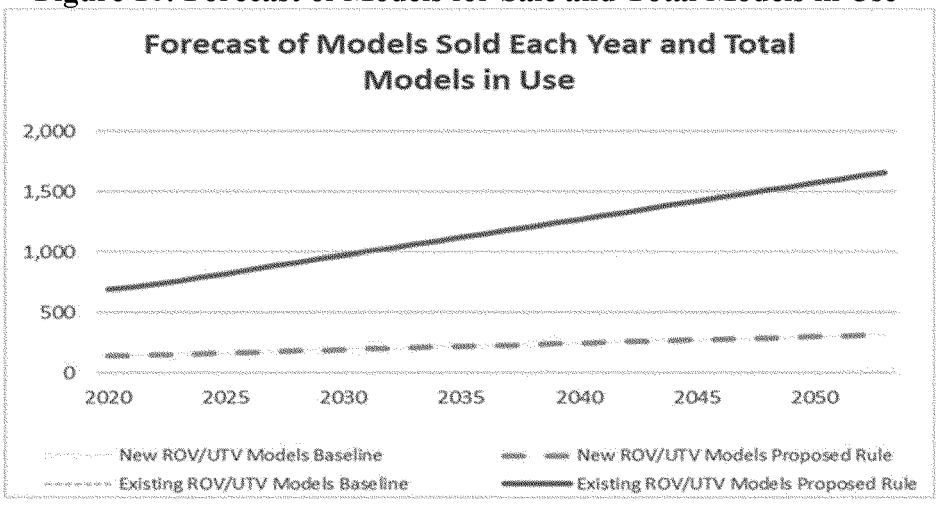


Figure 16 shows the number of new models sold and the number of models in use during each year within the 30-year study period. In 2023, a year before the assumed implementation of the proposed rule, the number of ROV/UTV models in use is 762. This is the number of existing models that manufacturers would be required to redesign.[31] Staff assumed for purposes of this analysis that redesign of all existing models would occur over 2 years, from 2024 to

[28] Exponential smoothing is a time series forecasting technique that produces projections that are weighted averages of past observations, with weights that decay exponentially as the observations get older. More recent observations are, therefore, assigned heavier weights and carry more importance in the forecast.

[29] CPSC staff developed two sets of forecasts, the first set (or baseline forecast) assumes no impacts from the proposed rule, while the second set considers a small reduction in the number of models as a result of the market impacts of introducing the proposed rule. Because the cost impacts of the proposed rule are relatively small, the difference between the two sets of forecasts are small and not noticeable in the chart below.

[30] A two-parameter gamma distribution was used to forecast model survival rates with *a* shape parameter of 5 and scale parameter of 1. These distribution parameters are consistent with a mean model duration of 5 years, which was estimated subtracting the year of model introduction from the year the model was discontinued from the North American Utility Vehicle Sales database. The distribution of model life rates mentioned above is the converse of the distribution of model survival rates.

[31] Starting on the year of implementation of the rule (expected in 2024), all existing and new models will have to include a floorboard solution that complies with the requirements of the new standard to be sold to new/prospective ROV/UTV customers. Given the incremental cost of designing new models is negligible, the redesign cost is only estimated for existing models requiring new blueprints that enable the installation of the redesigned floorboards.

2025, at 381 models per year. Although the proposed effective date for the draft rule is 180 days after promulgation, staff assumed manufacturers would prioritize redesigning the most popular models before the effective date. Staff welcomes public comment on the redesign process of ROV and UTV models and the rapidity with which this is able to occur.

Due to cost improvements associated with redesigning a relatively large number of ROV/UTV models, (381) in each of the first 2 years, staff estimated the initial cost per model redesign to drop from $102,751 to an average of $53,877 each year. Therefore, the industry incurs a redesign cost of $20.51 million in 2024 and 2025, respectively. The total redesign costs over the 30-year study period are $41.02 million. The total redesign costs are equivalent to a present value of $39.24 million at a 3 percent discount rate. Table 5 summarizes the ROV/UTV redesign cost under the redesigned floorboard scenario:

TABLE 5—REDESIGN COSTS IN SCENARIO I

[Redesign floorboards]

Redesigned floorboard scenario	Cost per redesign model ($M)	Number of ROV/UTV models	ROV/UTV redesign cost ($M)
2024	$0.054	381	$20.51
2025	0.054	381	20.51
Overall	0.054	762	41.02
Present Value	.....	.....	39.24

(b) Cost of Manufacturing a ROV/UTV Floorboard Solution

Staff estimated the cost of producing and installing [32] redesigned ROV/UTV floorboards on all new ROVs/UTVs manufactured after the implementation of the proposed rule, by multiplying the unit cost of each floorboard by the number of floorboards to be installed. These components are discussed in more detail below.

i. Unit Cost of Redesigning Floorboards

Staff estimated the unit cost of the redesigned ROV/UTV floorboard in two steps. First, staff used unit costs informed by laboratory tests performed to measure floorboard resistance at different speeds, for the additional cost of production and materials as the cost of the ''first'' redesigned floorboard in the cost improvement curve.[33] Second, staff produced an estimate of the average additional cost per floorboard once manufacturers started producing compliant floorboards in large quantities; the cost-improvement curve to render estimates in line with the subject matter experts in CPSC's Directorate for Engineering assessed would be the cost after economies of scale take effect.

Staff estimated the incremental cost of the ''first'' ROV/UTV floorboard using information from laboratory tests performed to measure debris penetration resistance of ROV/UTV floorboards. Staff estimated the cost of a floorboard resistant to debris penetration at 10 mph to be $264.[34] Staff then produced an estimate of the cost of the redesigned floorboard considering cost improvements from economies of scale, as well as other considerations, like the reuse of most of the material contained in existing floorboards. The average incremental cost per floorboard under these conditions is not expected to exceed $10 per floorboard.

Staff calibrated a cost improvement curve that assumes each time the number of floorboards produced doubles, there is a 15.9 percent reduction in the average floorboard cost.[35] Figure 17 shows the cost improvement curve at different scales of floorboard production:

[32] As discussed, the additional cost of installing redesigned floorboards on new ROVs/UTVs is considered negligible; therefore, this section only presents cost estimates for the additional production costs (more specifically the additional materials) of the redesigned floorboards.

[33] The traditional definition of ''learning curves''—or more properly in this case ''cost improvement curves''—is centered on the observation that the cost per unit is reduced by a certain percentage every time the number of units produced doubles. The most cited models are derived from T.P. Wright (1936—cumulative average unit cost) and J.R. Crawford (1944—specific unit cost). *See* footnote 34 in Tab B of the staff briefing package for the functional form in both of these models.

[34] CPSC Study of Debris Penetration of Recreational Off-Highway Vehicle Floorboards conducted under contract by SEA Ltd., in 2020/2021. SEA tested multiple floorboards, a floorboard that successfully resisted debris penetration at 10 mph was purchased for $259 in August 2021. This estimate was brought forward to the end of 2021, using the Consumer Price Index for all Urban Consumers ($263.96 = $259 × 278.802/273.567).

[35] *See* footnote 36 in Tab B of the staff briefing package for an explanation of the calculation.

Figure 17: Prod/Materials Cost Improvement Curve - Scenario I (Redesigned Floorboards)

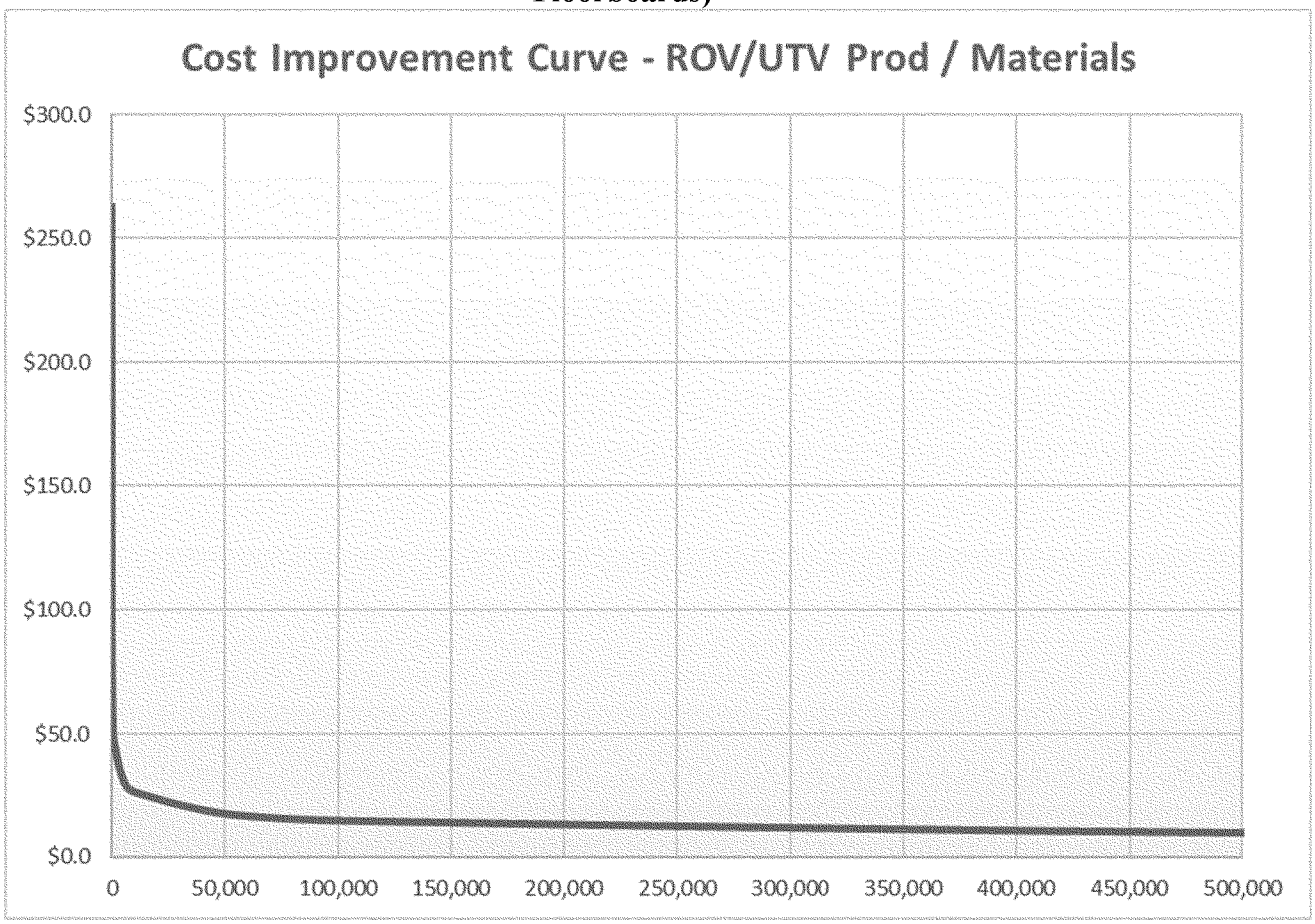


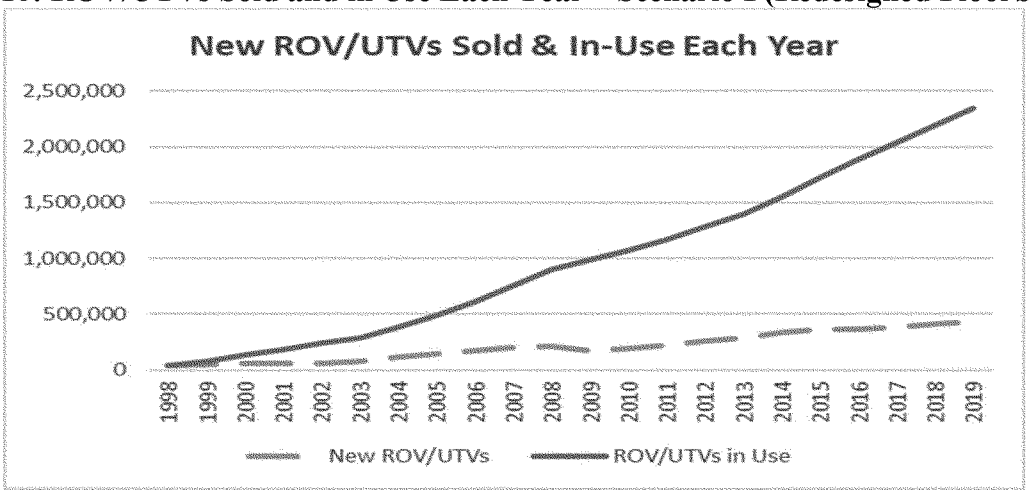
Figure 17 shows that with 100,000 floorboards produced, the average cost drops to less than $15 per redesigned floorboard. In most years, sales of new ROV/UTVs are above 500,000 units, which the cost improvement curve correlates to an average additional cost of less than $10 per redesigned floorboard. The average floorboard cost is, as shown in the chart, dependent on the number of sales per year, which is discussed below.

ii. Number of ROVs/UTVs Sold

Figure 18 shows the number of new ROVs/UTVs sold during the period 1998 through 2019, as well as an estimate of the total number of ROVs/UTVs in use during the same period.[36] During 2019, firms sold 429,135 new ROVs/UTVs to consumers, and the number of ROVs/UTVs in use during the same year averaged 2.34 million.

[36] Staff estimated the number of ROVs/UTVs sold each year during the period 1998 to 2019, using the North American Utility Vehicle Sales database. For the purpose of the analysis, the number of vehicles excludes ROVs/UTVs sold for the use of children (*e.g.,* ROV/UTV ''Minis'').

Figure 18: ROV/UTVs Sold and in Use Each Year – Scenario I (Redesigned Floorboards)



Staff used exponential smoothing techniques to forecast the number of new ROV/UTV sales within the 30-year study period.[37] Staff also forecasted the number of ROVs/UTVs in use by applying a statistical distribution of product life rates [38] to the fleet.

Figure 19: Forecast of ROV/UTVs Sales and ROV/UTVs in Use – Scenario I (Redesigned Floorboards)

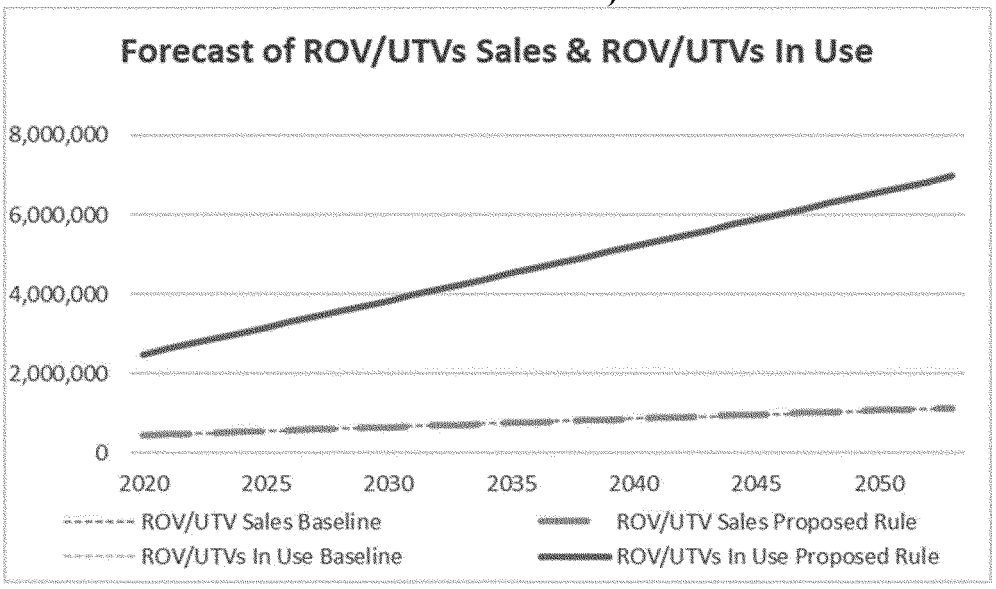
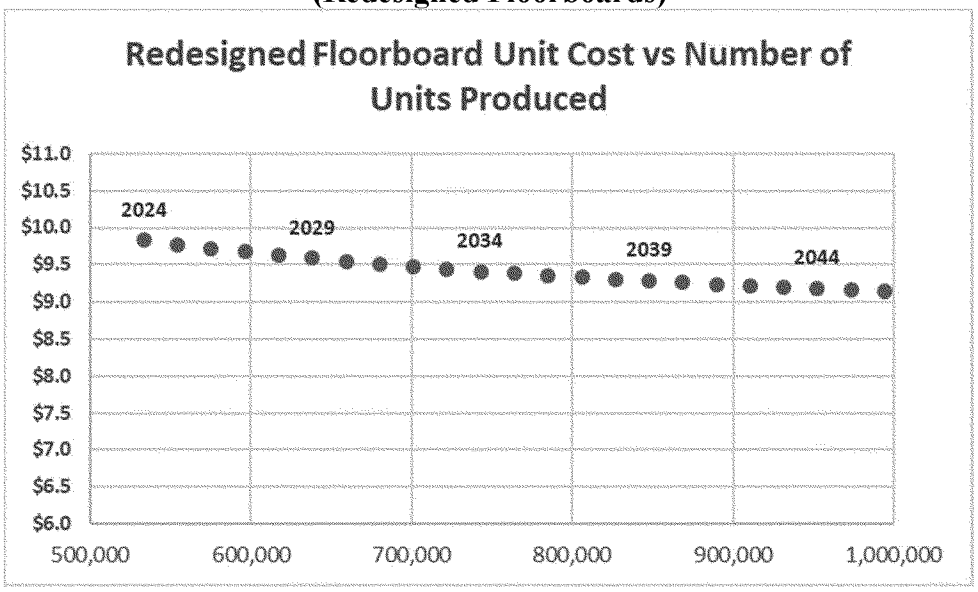


Figure 19 shows ROVs/UTVs sales and the number of ROVs/UTVs in use during the 30-year study period. Since each new ROV/UTV sold requires a redesigned floorboard, the number of floorboards to be fabricated is equivalent to the number of units sold during the period 2024 to 2053. Figure 20 shows the number of floorboards produced over time and the corresponding (undiscounted) cost per unit.

[37] CPSC staff developed two sets of ROV/UTV forecasts, the first set (or baseline forecast) assumes no impacts from the proposed rule, while the second set considers a small reduction in the number of ROVs/UTVs from the market impacts of the proposed rule. Because the cost impacts of the proposed rule are relatively small, the difference between the two sets of forecasts is small and not noticeable.

[38] A two-parameter gamma distribution was used to forecast ROV/UTV survival rates with shape parameter of 6 and scale parameter of 1 corresponding to a mean ROV/UTV duration of 6 years. The distribution of product life rates mentioned in the paragraph above is the reciprocal of the distribution of survival rates.

Figure 20: Redesigned Floorboard Unit Cost by Production Volume – Scenario I (Redesigned Floorboards)



The total cost of producing and installing redesigned floorboards in every new ROV/UTV is $227.09 million over the 30-year study period. The equivalent present value at a 3 percent discount rate is $142.15 million. Table 6 summarizes these costs:

TABLE 6—ADDITIONAL COST OF FLOORBOARDS ON ROV/UTVS—SCENARIO I

[Redesigned floorboards]

Redesigned floorboard scenario	Average cost per redesigned floorboard ($)	Millions of new ROVs/UTVs with redesigned floorboards	Cost of redesigned floorboards on ROVs/UTVs ($M)
2024–2053	$9.04	25.12	$227.09
Present Value			142.15

The total cost of implementing the redesigned floorboard fix for debris penetration is summarized in Table 7:

TABLE 7—REDESIGN AND PRODUCTION COST—SCENARIO I

[Redesigned floorboards]

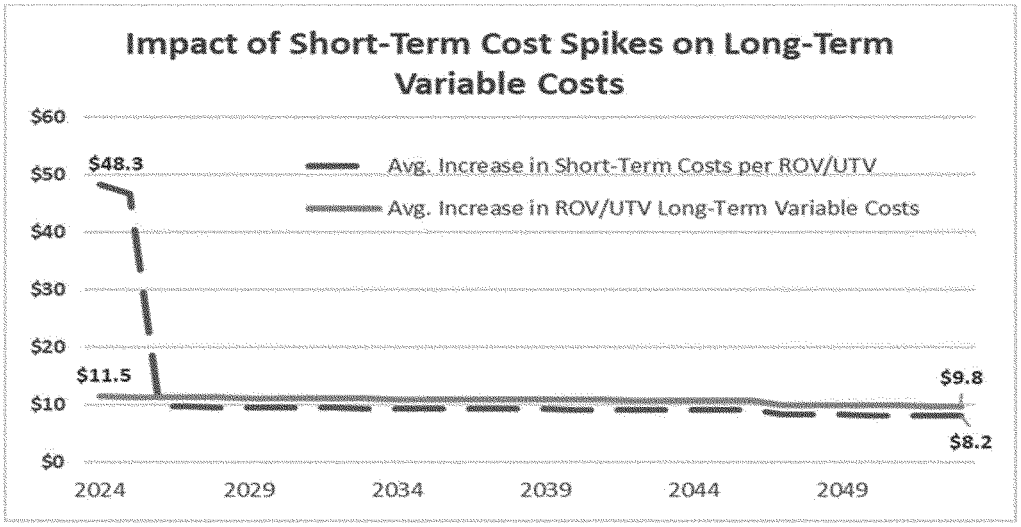
Cost of redesigned floorboard fix	Average cost per ROV/UTV ($)	Millions of new ROVs/UTVs	Cost of redesigned floorboards ($M)	Present value ($M)
Cost of Redesigning Existing Models	$1.63	25.12	$41.02	$39.24
Cost of Producing Redesigned Floorboards	9.04	25.12	227.09	142.15
Cost of Redesigning Floorboard Fix	10.67	25.12	268.11	181.39

(c) Deadweight Loss

To produce an estimate of the market-related losses to producers and consumers, staff estimated the annual average increased cost of production, the resulting increase in average prices, and reduction in volumes traded in the ROV/UTV market. Staff then used those estimates to calculate the deadweight loss for each year in the 30-year study period.

Staff assumed that manufacturers would increase prices in response to changes in the average long-term variable costs of producing ROVs/UTVs. Staff calculated the expected changes in long-term variable costs by spreading the spikes in short-term costs from complying with the proposed rule, as shown in Figure 21:

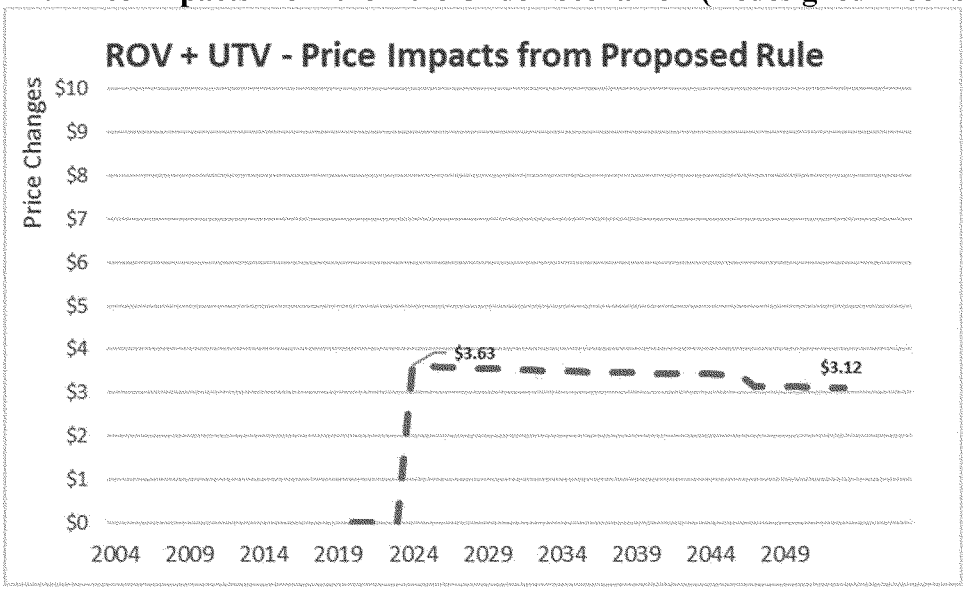
Figure 21: Long-Term Impact of Short-Term Cost Spikes – Scenario I (Redesigned Floorboards)



Staff augmented the average long-term cost per ROV/UTV redesigned floorboard shown in Figure 19 by a 38 percent [39] wholesaler distribution markup. This simulates the market impact that the proposed rule has on the ROV/UTV supply curve.

Staff adjusted the average annual prices from the period 2004 to 2019,[40] to constant 2021 dollars,[41] and then forecasted prices for the 30-year study period using exponential smoothing. The charts in Figure 22 show the prices in baseline conditions (assuming no proposed rule in effect) forecasted through 2053, as well as the price impacts of the proposed implementation of the rule.

Figure 22: Price Impacts from the Rule Under Scenario I (Redesigned Floorboards)



The impact of the rule on the ROV/UTV price is very small, accounting for less than 0.03 percent of the average market price.[42] Consequently, the change in market volume is also very small. The small price and quantity

[39] The effective market impact is likely to include a markup to cover the wholesalers' distribution costs. The 38 percent markup comes from Goldberg 1995.

[40] Average annual prices were estimated using the North American Utility Vehicle Sales database. Prices of ROV/UTV designed for the use of children were excluded from the weighted price average.

[41] Prices were brought forward using the Consumer Price Index for All Urban Consumers from the Bureau of Labor Statistics.

[42] *See* footnote 43 in Tab B of the staff briefing package for formula used to estimate the price impact.

impacts result in deadweight losses under $6,000 per year, and aggregate to approximately $160,000 over the 30-year study period. In the context of this proposed rule, deadweight loss is not a significant cost and is likely to be masked by other economic factors.

(d) Total Cost Under First Compliance Scenario: Redesigned Floorboard

Table 8 summarizes the cost of the first compliance scenario: the design and production of redesigned floorboards.

TABLE 8—TOTAL COST OF ROV/UTV FIX—SCENARIO I

[Redesigned floorboards]

Cost of redesigned floorboard fix ($M)	Total cost	Present value
Cost of Redesigning Existing Models	$41.02	$39.24
Cost of Production of Redesigned Floorboards	227.09	142.15
Deadweight Loss	0.16	0.10
Cost of First Compliance Scenario	268.26	181.49

2. Second Compliance Scenario: The Cost of a Floorboard Guard

This subsection presents cost estimates for the scenario that all manufacturers produce and install a floorboard guard under the floorboard to comply with the proposed rule. Manufacturers would redesign floorboards to add a 2′ x 2′ x 0.19″ aluminum piece that can prevent debris penetration. Manufacturers would also have to redesign all existing and future ROV/UTV models to allow proper installation of the floorboard guard.

(a) Cost of Redesigning ROV/UTV Models

Staff estimated the cost of redesigning all existing ROV/UTV models to allow for the installation of floorboard guards by multiplying the unit cost of redesigning each existing model [43] by the number of ROV/UTV models to be redesigned. These two cost elements are discussed in more detail below.

i. Unit Cost of Redesigning ROV/UTV Models

Like the estimation method used with the first compliance scenario, staff estimated the unit cost of redesigning existing ROV/UTV models in two steps. First, staff estimated the unit cost of redesigning a single or ''first'' model before cost improvements. Second, staff developed a cost improvement curve to account for the diminishing cost of redesigning through economies of scale.[44]

Staff developed the unit cost of the ''first'' ROV/UTV model redesign from related studies and reports, including a set of laboratory tests performed to measure floorboard resistance at different speeds.[45] Staff produced unit cost estimates for four stages in the design process:

○ Cost of Design Labor

Staff estimated it would take two designers 1 month to produce final blueprints, or approximately 347 hours.[46] The average compensation rate for a designer is $63.96 per hour for a total cost of $22,536 per redesigned ROV/UTV model in 2021 dollars.[47]

○ Cost of Design Production

Staff used information from its study on debris penetration [48] to produce an estimate of the cost per floorboard prototype at $500. Assuming an average of three floorboard prototypes per ROV/UTV model redesign, staff estimated a total production cost of $1,500 per redesigned model.

○ Cost of Design Validation

Staff estimated 2 days of validation testing per each redesigned ROV/UTV model for a total of $59,372.[49]

○ Cost of Compliance Testing

Staff estimated that, on average, two ROV/UTV models would be tested using the test sled method at $14,843 per model.[50]

Based on these inputs, staff estimated the total cost per ''first'' redesigned model is $98,251.[51] This is before considering the cost improvement from scale, specialization, and learning. Staff then used a cost improvement curve that calculates a 5.4 percent reduction in per-unit cost every time the number of units redesigned doubles.[52]

Figure 23 shows the cost improvement trends for each of the design cost components discussed earlier:

[43] The additional design cost to enable the installation of the floorboard guards on new ROV/UTV model designs is considered negligible. This section focuses only in the costs of redesigning existing ROV/UTV models.

[44] Costs improvements are expected as fixed costs spread over additional model redesigns, and the level of experience and specialization redesigning ROV/UTV models for floorboard debris penetration increases.

[45] CPSC Study of Debris Penetration of Recreational Off-Highway Vehicle Floorboards conducted under contract by SEA Limited in 2020/2021.

[46] CPSC staff estimated each redesign would take up to two-person months, with a maximum of four months and a minimum of one month (Notice of Proposed Rulemaking to Establish a Safety Standard for Recreational Off-Highway Vehicles. September 2014). Two-person months are equivalent to 346.67 hours: the average number of hours per month of 173.33 (40 hours a week × 52 weeks a year/12 months) times 2.

[47] The average total hourly compensation for management, professional, and related workers was estimated as of September 2021 at $63.96 (BLS, *https://www.bls.gov/news.release/ecec.t02.htm*). The total cost for two-person months as of September 2021 is then $22,172.8 (346.67 hours times $63.96). Adjusted by the CPI price index, this estimate increases to $22,535.89 ($22,172.8 x 278.802/274.31) as of December 2021 (CPI–U, ID: CUUR0000SA0, *https://data.bls.gov/cgi-bin/surveymost?cu*).

[48] Conducted by SEA Limited under contract with CPSC (Debris Penetration of ROVs Floorboards).

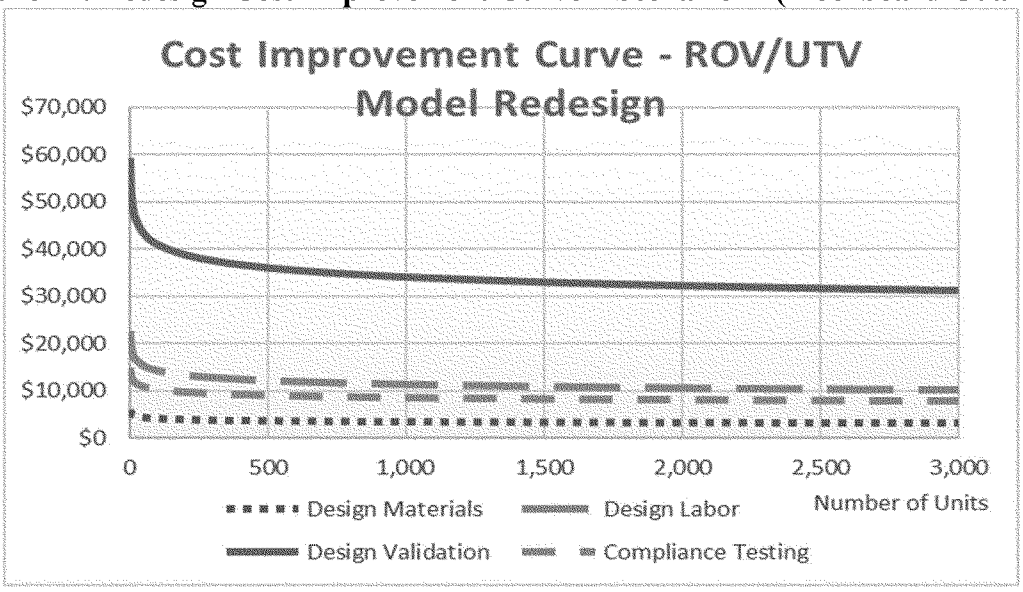
[49] Ibid. SEA Ltd., conducted 5 days of validation testing for a total cost of $138,570, or $27,714 per day as of September 2020. The cost of 2 days of testing brought forward to the end of 2021, using the CPI price index for all urban consumers, is $59,732.36 ($27,714 per day × 2 days × 278.802/260.28).

[50] The cost per day of sled testing, as provided by SEA Ltd., was $27,714 as of September 2020. CPSC staff estimates that, on average, two models would be tested per day. The cost per model as of the end of 2021 is then $14,843 ($27,714 per day/2 models per day × 278.802/260.28).

[51] $98,251.34 = $22,535.89 (labor cost) + $1,500 (floorboard fabrication) + $59,372.36 (validation testing) + $14,843.09 (compliance testing).

[52] CPSC staff assume the same cost trends for each design cost category. *See* footnote 53 in Tab B of the staff briefing package for the formula used to estimate the slope of the cost improvement curve.

Figure 23: Redesign Cost Improvement Curve – Scenario II (Floorboard Guards)



The average redesign cost per model is dependent on the number of models redesigned each year, which is discussed in the following section.

ii. Number of Redesigned ROV/UTV Models

Staff used the same forecast of the number of new models introduced each year and number of models in use by consumers for this compliance scenario as in the redesigned floorboard scenario.[53] The baseline data in 2019 reveals 107 new ROV/UTV models introduced and 672 existing ROV/UTV models used by consumers.

Staff used the baseline forecast of the number of new models to produce an estimate of new models that would need to be redesigned under the proposed rule.[54] Then, staff used the forecasted number of new models to estimate the number of redesigned models in use every year throughout the 30-year study period by applying a statistical distribution of model life rates.[55]

The forecast matches almost exactly the chart shown in Figure 16 with 762 ROV/UTV models in use in 2023. This value is the number of existing models that manufacturers would be required to redesign.[56] Staff assumed that manufacturers would spread the redesign activities over a period of 2 years, at 381 ROV/UTV models per year. The improvement over the cost of the ''first'' redesigned model would bring down the average cost per model from $98,251 to an average of $51,042 each year. Consequently, the ROV/UTV industry would incur redesign costs of $19.43 million in 2024 and 2025, respectively, as shown in Table 9:

TABLE 9—REDESIGN COSTS IN SCENARIO II

[Floorboard guards]

Floorboard guard scenario	Cost per redesigned model ($M)	Number of ROV/UTV models	ROV/UTV industry cost ($M)
2024	$0.051	381	$19.43
2025	0.051	381	19.43
Overall	0.051	762	38.87
Present Value	.....	.....	37.19

(b) Cost of Manufacturing ROV/UTV Floorboard Guards

Staff estimated the cost of producing and installing [57] floorboards with floorboard guards on all new ROVs/UTVs by multiplying the additional cost per floorboard guards by the number of new ROVs/UTVs that would have a floorboard guard installed.

[53] The same baseline number of models is used for both compliance scenarios (see baseline data and forecast in the corresponding section of the first compliance scenario -''redesign floorboards''- for additional context). The number of models sold in each year of this period was estimated using the North American Utility Vehicle Sales from 1991 to 2019, excluding models design for children.

[54] CPSC staff developed a second set of forecasts from the baseline forecast by considering the market impacts of the proposed rule. Due to the relatively small cost impacts of the proposed rule, the difference between the two sets of forecasts is not noticeable in the chart.

[55] As discussed, a two-parameter gamma distribution was used to forecast model survival rates with shape parameter of 5 and scale parameter of 1, consistent with an estimated mean model duration of 5 years. The model life rates distribution is the converse of the model survival rates distribution.

[56] All existing and new models will have to include a floorboard solution—a floorboard guard in this case that complies with the requirements of the new standard—in order to be sold to new/prospective ROV/UTV customers. However, the additional cost of redesigning new models is considered negligible based on discussions with manufacturers, so the focus of the estimate is on redesigned existing models only.

[57] Like the first compliance scenario, the additional cost of installing floorboard guards in new ROVs/UTVs is considered negligible. The focus of the section is on the additional production costs of floorboard guards (more specifically the additional materials).

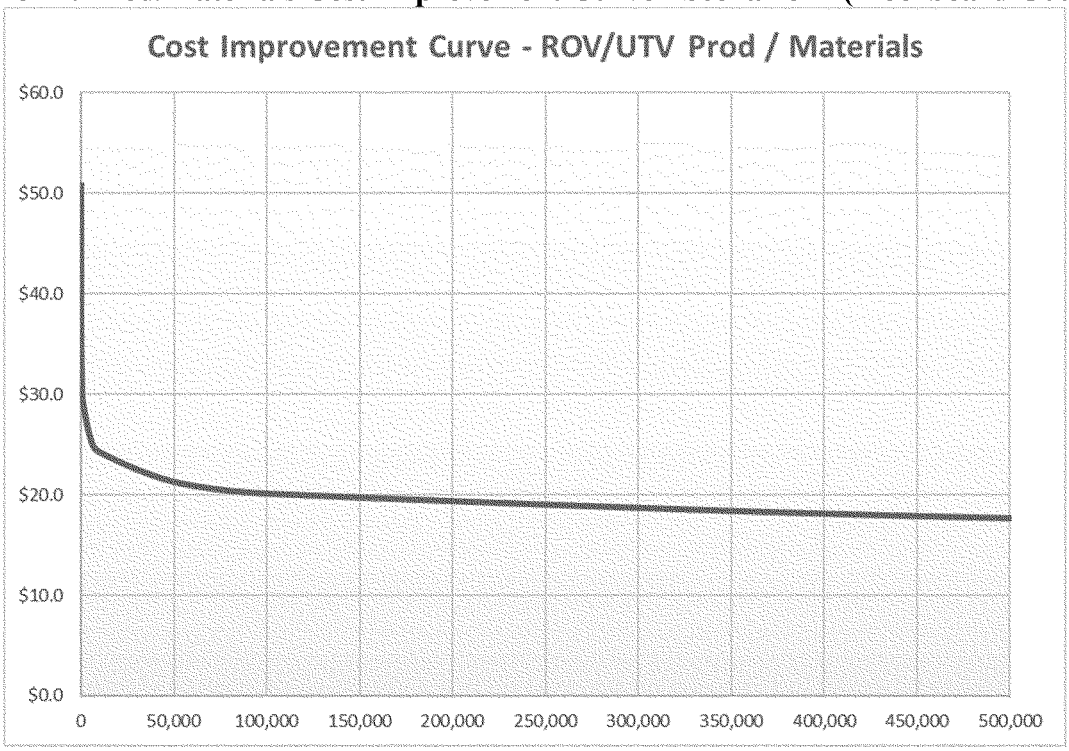
i. Unit Cost of Adding a Floorboard Guard

Staff estimated the unit cost of adding floorboard guards to floorboards in two steps. First, staff estimated the additional cost of the ''first'' floorboard with a floorboard guard in it, before any cost improvements.[58] Second, staff developed an estimate of the average cost of a floorboard using a floorboard guard considering the efficiencies from economies of scale, by calibrating and applying a cost improvement curve.

Staff estimated the incremental cost of the ''first'' floorboard with a floorboard guard to be $51.09, based on the cost of the materials considering a 2′ x 2′ x 0.19′ aluminum sheet.[59] Staff then applied the cost curve, which calculates a 5.5 percent reduction in average cost every time the number of ROVs/UTVs with a floorboard guard doubles.[60]

Figure 24 shows the cost improvement curve at different scales of production:

Figure 24: Prod/Materials Cost Improvement Curve - Scenario II (Floorboard Guards)



This chart shows that with 100,000 floorboards produced, the cost drops to an average of about $20. In most years, the sales of new ROV/UTVs are greater than 500,000 units, which reduces the average cost to slightly above $17 per new ROV/UTV.

ii. Number of ROVs/UTVs Sold

The baseline forecasts of sale volumes of new ROVs/UTVs and the number of ROVs/UTVs in use by consumers in section VIII.D.1.(a)(ii), Number of Redesigned ROV/UTV Models, are also applicable to this compliance scenario.[61] The baseline data in 2019 show 429,135 new ROVs/UTVs sold and 2.3 million ROVs/UTVs in use by consumers.

Staff used the baseline forecast of the number of new ROVs/UTVs to produce an estimate of new ROVs/UTVs under the proposed rule.[62] Staff also forecasted the number of ROVs/UTVs in use by applying a statistical distribution of product life rates [63] to the total fleet. The forecasted volumes match, almost exactly, the volumes shown in Figure 16. Additionally, Figure 25 shows the number of floorboards produced over time and the corresponding cost per unit.

[58] Cost improvements are expected due to process improvements and reuse of designs, additional learning and experience in the production process, and economies of scale in the acquisition of materials.

[59] CPSC staff estimate this cost applying a 50% manufacturer discount to the Grainger retail price for an aluminum sheet of these characteristics, price at $102.17 as of the end of 2021.

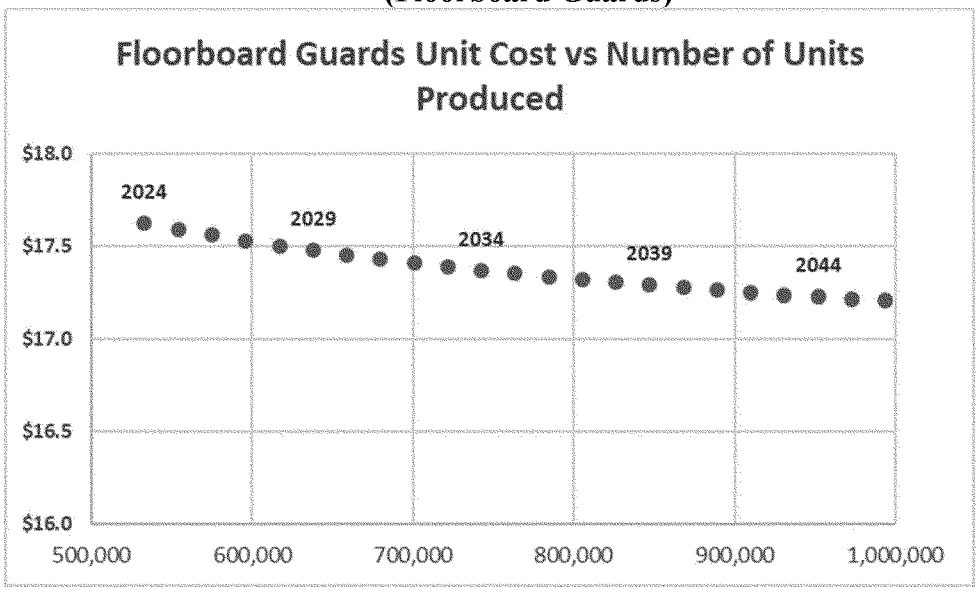
[60] *See* footnote 61 in Tab B of the staff briefing package for the formula used to estimate the cost improvement curve.

[61] The number of ROVs/UTVs sold each year from 1998 to 2019, was estimated using the North American Utility Vehicle Sales database; it excludes ROVs/UTVs sold for the use of children (*e.g.,* the ''Mini''). The baseline data and forecasts applied to both compliance scenarios.

[62] CPSC staff developed a second set of forecasts subtracting from the baseline forecast of sales the volume impacts of the proposed rule. Due to the relatively small price, and hence, volume impacts of the proposed rule, the difference between the two sets of forecasts is barely noticeable.

[63] A two-parameter gamma distribution was used to forecast ROV/UTV survival rates with a shape parameter of 6 and a scale parameter of 1, corresponding to a mean ROV/UTV duration of 6 years. The distribution of product life rates is the converse of the distribution of survival rates.

Figure 25: Additional Floorboard Unit Cost by Production Volume – Scenario II (Floorboard Guards)



To calculate the total incremental cost of producing and installing floorboard guards in every new ROV/UTV over the 30-year study period, staff multiplied the average cost of a floorboard guard by the number of ROVs/UTVs produced. Staff calculated this cost to be $430.33 million. The equivalent present value at a 3 percent discount rate is $266.94 million. Table 10 summarizes the cost of producing ROV/UTV floorboards with floorboard guards: [64]

TABLE 10—ADDITIONAL COST OF FLOORBOARDS ON ROV/UTVS—SCENARIO II

[Floorboard guards]

Floorboard guard scenario	Average cost per floorboard guard	Millions of new ROVs/UTVs with floorboard guard	Cost of floorboard guard ($M)
2024–2053	$17.14	25.10	$430.33
Present Value	.....	.....	266.94

Table 11 summarizes the total cost of implementing the floorboard guards fix to debris penetration over the 30-year study period:

TABLE 11—REDESIGN AND PRODUCTION COST—SCENARIO II

[Floorboard guards]

Cost of floorboard guard scenario	Average cost per ROV/UTV	Millions of new ROVs/ UTVs	Cost of floorboard guard ($M)	Present value ($M)
Cost of Redesigning Existing Models	$1.55	25.10	$38.87	$37.19
Cost of Producing Redesigned Floorboards	17.14	25.10	430.33	266.94
Cost of Redesigning Floorboard Fix	18.69	25.10	469.20	304.13

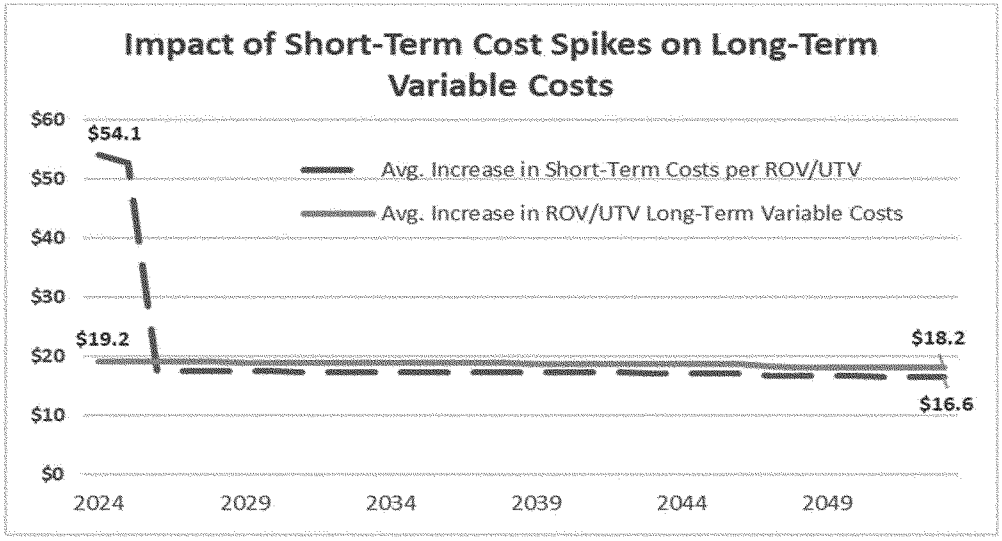
(c) Deadweight Loss

Like the first compliance scenario, staff estimated the annual average increased cost of production associated with the new standard, the resulting increase in average prices, and reduction in volumes traded in the ROV/UTV market. Then, staff used those estimates to calculate the deadweight loss for each year of the analysis.

Staff calculated the expected changes in long-term variable costs by spreading out the spikes in short-term costs, as shown in Figure 26:

[64] Note that the number of ROVs/UTVs equipped with floorboards containing deflectors shields is slightly below the number of ROVs/UTVs under the first alternative with ''redesigned floorboards.'' The reason for this slight difference is that the implementation of the floorboard guard solution is slightly more expensive, causing a slimly steeper increase in prices, and hence, a slightly reduced sales volume.

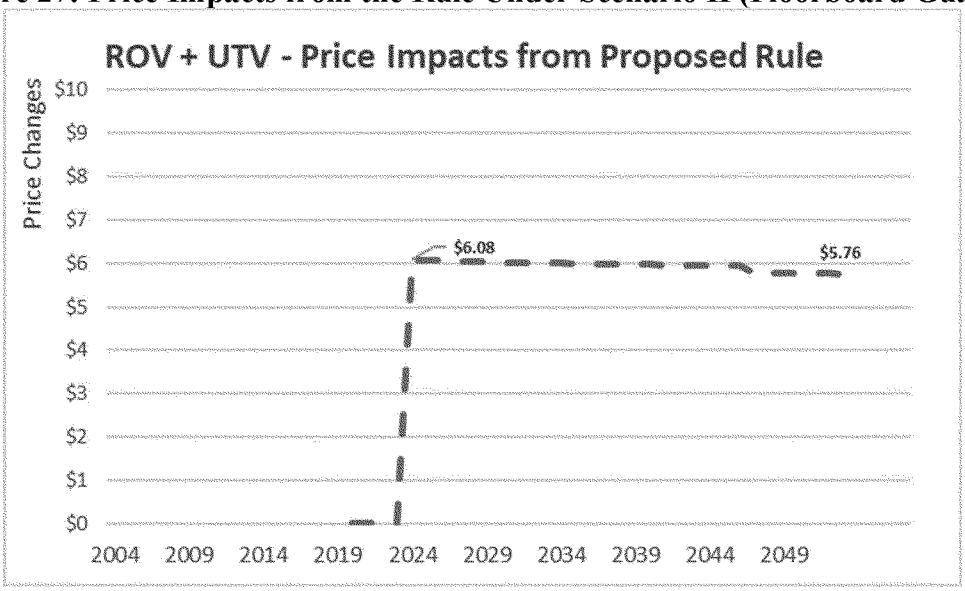
Figure 26: Long-Term Impact of Short-Term Cost Spikes – Scenario II (Floorboard Guards)



Then, staff augmented the estimated long-term cost presented in Figure 22 by a 38 percent [65] wholesaler distribution markup to simulate the market impact of the proposed rule on the ROV/UTV supply curve.

Staff used the same forecasted baseline prices used in the first scenario–along with price sensitivities of demand and supply–to estimate price impacts of the proposed rule in this scenario.

Figure 27: Price Impacts from the Rule Under Scenario II (Floorboard Guards)



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As Figure 27 shows, the impact of the proposed rule on the ROV/UTV price is slightly higher than in the first compliance scenario, but it is still very small, accounting for less than 0.045 percent of the average market price.[66] Consequently, the change in market volume would also be very small. The small price and quantity impacts result in deadweight losses per year under $20,000, and aggregates to approximately $470,000 over the 30-year study period. In the context of this proposed rule, the impact of deadweight loss is not significant.

(d) Total Cost Under Second Compliance Scenario: Floorboard Guards

Table 12 summarizes the total cost of the second compliance scenario over the 30-year study period.

[65] Goldberg 1995.

[66] *See* footnote 67 in Tab B of the staff briefing package for the formula used to estimate the price impact.

TABLE 12—TOTAL COST OF ROV/UTV FIX—SCENARIO II

[Floorboard Guards]

Cost of floorboard guard fix ($M)	Total cost	Present value at 3%
Cost of Redesigning Existing Models	$38.87	$37.19
Cost of Production of Floorboard Guards	430.33	266.94
Deadweight Loss	0.47	0.30
Cost of Second Compliance Scenario	469.67	304.43

3. Annualized and Per Vehicle, in Use Cost of the Proposed Rule

In this regulatory assessment, staff considered two types of solutions to the debris penetration hazard under the proposed rule: (i) fully redesigned floorboards that utilize most of the material in original floorboards, and (ii) floorboards with floorboard guards. Both scenarios require manufacturers to redesign existing models to allow for proper installation of the floorboard solution of choice. Staff estimated in each scenario the cost of all firms fully deploying that solution solely. Table 13 below summarizes the aggregate costs of each scenario over the 30-year study period, and their respective present value using a 3 percent discount rate.

TABLE 13—TOTAL 30-YEAR COST OF IMPLEMENTING THE DRAFT PROPOSED RULE

Cost of debris penetration fix ($M)	Cost of redesigned floorboard scenario	Present value of redesigned floorboards scenario	Cost of floorboard guards scenario	Present value of floorboard guards scenario
Cost of Redesigning Existing Models	$41.02	$39.24	$38.87	$37.19
Cost of Production of Redesigned Floorboards	227.09	142.15	430.33	266.94
Deadweight Loss	0.16	0.10	0.47	0.30
Cost of Compliance	268.26	181.49	469.67	304.43

The total 30-year cost estimates of the ROV/UTV debris penetration compliance are $268.3 million and $469.7 million, for redesigned floorboards or the floorboard guards, respectively. In practice, manufacturers may choose to implement either solution, or a different solution that proves more cost-effective. The corresponding present values for the 30-year cost range is between $181.5 to $304.4 million.

Using the cost estimates from each scenario, staff calculated the annualized cost[67] and the cost per-product. The average annual cost[68] is $8.94 million for the redesigned floorboards scenario and $15.66 million for the floorboard guard scenario. The annualized costs (annual costs using a discount rate for the time value of money) is $9.26 million at a 3 percent discount rate for the redesigned floorboards scenario and $15.53 million for the floorboard guard scenario.

Staff estimated per-unit cost by dividing the total cost of the scenario (undiscounted and discounted) by the number of ROVs and UTVs in each compliance scenario over the 30-year period. The total number of ROVs & UTVs with the debris penetration fix is 25.12 million in the redesigned floorboard scenario and 25.10 in the floorboard guard[69] scenario. In the redesigned floorboard scenario, the cost per unit is $10.68 undiscounted and $7.23 discounted at 3 percent. In the floorboard guard scenario, the cost per unit is $18.71 undiscounted and $12.13 discounted at 3 percent.

Table 14 presents the findings from the cost assessment of this proposed rule for both the annualized and per-product perspectives.

TABLE 14—AVERAGE ANNUAL COST OF DRAFT PROPOSED RULE UNDER EACH SCENARIO

Cost of compliance with proposed rule	Average annual cost—undiscounted ($M)	Annualized cost at 3%($M)	Cost per ROV/UTV—undiscounted ($)	Cost per ROV/UTV—discounted at 3% ($)
Scenario 1: Redesigning Floorboards	$8.94	$9.26	$10.68	$7.23
Scenario 2: Floorboard Guard	15.66	15.53	18.71	12.13

E. Benefits and Costs Analysis

Staff compared estimated benefits and costs to assess the relation between benefits and costs of the proposed rule. Table 15 below displays metrics for both the benefits and costs of the proposed rule. It takes the difference and ratio of benefits and costs to assess the cost-benefit relationship.

[67] CPSC staff converted the aggregate 30-year costs into present values—an amount in today's dollars that is equivalent to the 30-year stream of costs-by discounting all future amounts at a 3 percent discount rate (a rate that accounts for the time value of money and the opportunity costs). Then, CPSC staff converted these present values into constant annual equivalents, or fixed amounts of cost per year over the 30-year period that represent the constant cost in today's dollars of implementing of the proposed rule.

[68] This is the undiscounted total costs of each compliance alternative divided by 30, the number of years in the period of analysis.

[69] The total number of ROVs & UTVs is slightly different due to a small difference in the market price impacts of each scenario.

TABLE 15—NET BENEFITS OF DRAFT PROPOSED RULE UNDER EACH SCENARIO

Net benefits of proposed rule—($M)	Annualized cost—redesigned floorboards	Present value—redesigned floorboards	Annualized cost—floorboard guards	Present value—floorboard guards
Benefits	$15.47	$303.13	$15.47	$303.15
Costs	9.26	181.49	15.53	304.43
Net Benefits (Benefits − Cost)	6.21	121.64	−0.06	−1.28
B/C Ratio (Benefits ÷ Cost)	1.67	1.67	1.00	1.00

Finally, Table 16 compares the benefits and costs of each compliance scenario on a per-vehicle basis to add a marginal value perspective.

TABLE 16—PER-VEHICLE NET BENEFITS OF DRAFT PROPOSED RULE UNDER EACH SCENARIO

Net benefits of proposed rule—$ per vehicle	Average undiscounted—redesigned floorboards	Annualized costs at 3%—redesigned floorboards	Average undiscounted—floorboard guards	Annualized costs at 3%—floorboard guards
Benefits	$20.32	$12.07	$20.34	$12.08
Costs	10.68	7.23	18.71	12.13
Net Benefits (Benefits − Cost)	9.64	4.84	1.63	−0.05
B/C Ratio (Benefits ÷ Cost)	1.90	1.67	1.09	1.0

1. Uncertainty and Sensitivity Analysis

Uncertainty is inherent in any estimate or forecast of future events. This preliminary regulatory analysis estimated future benefits and costs associated with promulgating the proposed rule using the best readily available information and data. However, multiple sources of uncertainty may have an impact on the accuracy of the estimates developed for this regulatory assessment:

- A first source of uncertainty is the use of historical data to extrapolate future trends, since it is clearly not certain that the future will follow historical patterns; the farther into the future, the more uncertain is the estimate. Staff applied statistical methods to mitigate this uncertainty to the extent possible.
- A second source of uncertainty is the use of assumptions to overcome the issue of data availability. Staff carefully developed these assumptions based on subject matter expert inputs and literature review; however, they may not perfectly reflect the central trends, nor the full spectrum of possible occurrences in the real world. Staff developed a sensitivity analysis on a few key inputs to mitigate this uncertainty.
- A third source of estimate uncertainty is the omission of certain benefits and costs. For instance, CPSC did not extrapolate the number of incidents to the national level due to the number of recorded incidents of debris penetration being lower than the publication criteria established in NEISS. This may result in a significant underestimation of the benefits of the rule. Likewise, CPSC may have overlooked certain costs of implementing the proposed rule. The Commission requests comment regarding benefits and costs not addressed in this analysis.

The rest of this section describes the results of a sensitivity analysis on two assumptions used in this preliminary regulatory analysis: (1) the efficacy of the proposed rule as a percent of reduction in the number of debris penetration incidents, and (2) the time horizon of the study period. In the preliminary regulatory analysis, staff assumed the proposed rule assumed 100 percent efficacy in preventing debris penetration from compliant vehicles and used a 30-year time horizon for its study period.

Table 17 presents estimates of benefits and costs at two different levels of efficacy of the proposed rule in reducing the number of incidents. Table 17 shows that for the redesign floorboard scenario, the benefits exceed the costs, even at a 60 percent efficacy. In the case of the floorboard guard scenario, the benefits essentially match the cost at a 95 percent efficacy but are lower than the costs when the efficacy of the proposed rule is at 60 percent.

TABLE 17—NET BENEFIT SENSITIVITY TO THE EFFICACY OF THE PROPOSED RULE UNDER EACH SCENARIO [70]

Net benefits ($M)	Redesigned floorboards		Floorboard guards	
	95%	60%	95%	60%
Benefits	$303.13	$191.64	$303.15	$191.64
Costs	($181.49)	($181.49)	($304.43)	($304.43)
Net Benefits	$121.64	$10.14	($1.28)	($112.79)
B/C Ratio	1.67	1.06	1.00	0.63

[70] The small difference in benefits between the redesigned-floorboards and floorboard-guards scenarios is the result of a small but different market price impact in each case. The floorboard-guard scenario is costlier and, therefore, produces a larger price increase that leads to a smaller number of vehicles under the proposed rule, and larger benefits with respect to the baseline situation without the rule.

Table 18 presents estimates of benefits and costs, and sensitivity of the net benefits to the length of the study period. It compares the 30-year study period used in this regulatory assessment with a 20-year sensitivity test (2024–2043). Table 18 shows that under the redesigned floorboard scenario, the benefits exceed the cost at both lengths of time. In the case of the floorboard guard scenario, the costs exceed the benefits if the period of analysis is reduced to 20 years.

TABLE 18—NET BENEFIT SENSITIVITY TO THE PERIOD OF ANALYSIS OF THE PROPOSED RULE UNDER EACH SCENARIO [71]

Net benefits ($M)	Redesigned floorboards		Floorboard guards	
	30-Year period	20-Year period	30-Year period	20-Year period
Benefits	$303.13	$194.37	$303.15	$194.37
Costs	($181.49)	($139.49)	($304.43)	($221.58)
Net Benefits	$121.64	$54.88	($1.28)	($27.21)
B/C Ratio	1.67	1.39	1.00	0.88

F. Staff Evaluation of the Voluntary Standards

In developing the proposed rule, staff considered whether the Commission could rely on the current voluntary standards. The current voluntary standards for ROVs/UTVs are:

- ANSI/ROHVA 1–2016 Recreational Off-Highway Vehicles; and
- ANSI/OPEI B71.9–2016—American National Standard for Multipurpose Off-Highway Utility Vehicles.

1. ANSI/ROHVA–1

In 2016, ROHVA published the latest version of the standard—ANSI/ROHVA–1—2016, *American National Standard for Recreational Off-Highway Vehicles.* The first version of the standard was published in 2010. ROHVA member companies include Can-AM/BRP, Honda, Deere and Co., Kawasaki, Mahindra, Polaris, Textron Specialized Vehicles (formerly Artic Cat) and Yamaha. Work on ANSI/ROHVA 1 started in 2008, and work completed with publication of ANSI/ROHVA 1–2010. The standard was immediately opened for revision, and a revised standard, ANSI/ROHVA 1–2011, was published in July 2011.

The ANSI/ROHVA–1–2016 standard defines an ''ROV'' as an off-highway vehicle with a minimum top speed of 30 mph, no limit on maximum speed, a maximum engine displacement of 1000 cc, and a maximum Gross Vehicle Weight Rating (GVWR) of 3,750 lbs. The standard specifies requirements for service brakes, parking brakes, and controls specifications for engine, drive train, and steering. Lighting equipment, spark arresters, and warning labels are also covered by the standard.

The ANSI/ROHVA–1–2016 standard has requirements for rollover protective structures (ROPS), lateral stability, vehicle handling, and occupant retention systems that include seat belts and passive restraints.

The ANSI/ROHVA–1–2016 standard does not have requirements for resistance to debris penetration. The vehicles defined by the ANSI/ROHVA 1–2016 standard are included in the definition of ''ROVs'' in the proposed rule and subject to the requirements of the proposed rule.

2. ANSI/OPEI B71.9

In March 2012, OPEI published the ANSI/OPEI B71.9–2012, *American National Standard for Multipurpose Off-Highway Utility Vehicles,* which is a voluntary standard applicable to ROVs and UTVs. OPEI member companies include Club Car, Deere and Co., Excel Industries, Honda, Intimidator, Jacobsen, Kawasaki, Kioti, Kubota, Mahindra, MTD, Polaris, Toro, Yanmar, and Yamaha. Work on ANSI/OPEI B71.9 was started in 2008 and completed with the publication of ANSI/OPEI B71.9–2012 in March 2012.

The most recent edition of the OPEI standard was published in 2016; it provides a definition of ''multipurpose off-highway utility vehicles (MOHUVs),'' which is very similar to the ROHVA definition of ''ROVs.'' The OPEI definition of ''MOHUV'' requires a minimum top speed in excess of 25 mph. The OPEI definition of ''MOHUV'' requires a minimum cargo load of 350 lbs. and limits GVWR to 4,000 lbs. The standard specifies requirements for service brakes, parking brakes or mechanisms, and vehicle controls. Lighting equipment, spark arresters, and warning labels are also covered by the standard. MOHUVs can be ROVs (those vehicles with top speeds greater than 30 mph) or UTVs (those vehicles with top speeds of less than 30 mph).

The ANSI/OPEI B71.9–2016 standard does not have requirements to guard against the debris penetration risks. The vehicles defined by the ANSI/OPEI B71.9–2016 standard are included in the definition of ''ROVs'' and ''UTVs'' in the proposed rule and subject to the requirements of the proposed rule.

G. Alternatives to the Proposed Rule

The Commission considered four alternatives to the proposed rule: (1) conduct marketing campaigns and recalls instead of promulgating a final rule; (2) rely on voluntary standards development; (3) limit ROV and UTV speed to a maximum of 10 miles per hour, and (4) implement a small batch exemption. The Commission is not adopting these alternatives, for the following reasons:

1. Conduct Marketing Campaigns and Recalls Instead of Promulgating a Final Rule

The Commission could issue news releases or utilize other information and marketing techniques to warn consumers about debris penetration hazards associated with ROVs and UTVs instead of issuing a mandatory rule. With this alternative, most vehicles would comply with one of the two voluntary ROV standards, and ROV and UTV manufacturers would incur no costs to modify or test their vehicles to comply with the proposed rule. However, neither voluntary standard includes a performance standard requirement to prevent debris penetration into the occupant area.

Information and marketing campaigns are unlikely to reduce the number of injuries and societal costs associated with ROV/UTV debris penetration hazard. ROV/UTV users, aware of the debris penetration hazard, may modify their behavior, drive more alertly, reduce driving speed, and avoid debris, when possible. However, given that encountering debris in an off-highway environment is largely unavoidable, and

[71] The small difference in benefits between the redesigned-floorboards and floorboard-guards scenarios is the result of a small but different market price impact in each case. The floorboard-guard scenario is costlier, and therefore, produces a larger price increase that leads to a smaller number of vehicles under the proposed rule, and larger benefits regarding the baseline situation without the rule.

that debris penetration is possible at speeds as low as 2 mph, information and marketing campaigns are unlikely to substantially reduce risk of injury.

Recalls only apply to an individual manufacturer and product, do not extend to similar products, and occur only after consumers have purchased and used such products and have been exposed to and potentially injured or killed by the hazard. Additionally, recalls can only address products that are already on the market and cannot prevent unsafe products from entering the market.

Therefore, much of the estimated $18.02 million annualized societal costs would continue to be incurred by consumers in the form of deaths and injuries. In addition, this alternative would require either additional funding from Congress out of the Federal Treasury, or reallocation of CPSC's appropriations, such that other safety-related activities that benefit the public are not undertaken. Both options entail additional costs to society. For this reason, the Commission is not adopting this alternative.

2. Rely on Voluntary Standards Development

The Commission could direct staff to work with voluntary standards development organizations to address the hazard. This alternative would allow ROHVA and OPEI member firms to determine collectively the degree, manner, and timing of debris penetration hazard mitigation, which could delay or reduce costs incurred by these firms to address the hazard. ROHVA and OPEI member firms supplied approximately 95 percent of the ROVs and UTVs sold in the United States in 2019. Non-member firms may choose not to comply with ROHVA and OPEI voluntary standards, and therefore, incur no associated costs. However, staff has been discussing debris penetration hazards with ROHVA and OPEI since 2018, without them making progress on standard development to adequately address this hazard pattern. Staff will continue to work with ROHVA and OPEI on voluntary standards, but do not know if, or when, a standard will be developed to adequately address this hazard. Until such voluntary standards are developed, staff expects the number and societal costs of injuries and fatalities associated with debris penetration hazards to remain at or near current levels on a per-vehicle basis. Therefore, the Commission is not adopting this alternative.

3. Limiting ROV and UTV Speed to a Maximum of 10 Miles per Hour

In making their recommendation regarding this alternative, CPSC staff weighed both quantifiable factors and unquantifiable factors. If the Commission promulgated a rule limiting ROV and UTV speed to a maximum of 10 miles per hour, staff expects benefits, in the form of reduced societal costs, to be substantially less than that of the proposed rule, as testing conducted by SEA, Ltd., indicated many ROVs and UTVs are subject to debris penetration into the occupant area at speeds less than 10 mile per hour. Therefore, although staff would expect costs to manufacturers to be less, quantifiable net benefits would be less, as well. In addition, setting the maximum speed at 10 mph could have a negative impact on consumer acceptance of the requirement and result in costs, including time, inconvenience, and reduced consumer satisfaction, leading to substantial lost consumer surplus and utility of the product. Considering both the quantifiable and unquantifiable costs and benefits, staff determined that the net benefit of this alternative is less than that of the proposed rule. Therefore, the Commission is not adopting this alternative.

4. Small Batch Exemption

The Commission could exclude firms that produce or import small numbers of ROVs and/or UTVs from the proposed rule's performance requirements. In this case, most small businesses would not suffer adverse economic impacts. Small manufacturers supplied approximately 1.3 percent of ROVs and UTVs sold in the United States in 2019. Small distributers of foreign-manufactured ROVs and UTVs accounted for 2.4 percent of U.S. sales in 2019. Combined, small businesses comprised approximately 3.7 percent of the 2019 U.S. ROV and UTV market. The Commission is not aware of any fatal or nonfatal debris penetration-related injuries associated with ROVs and UTVs manufactured or imported by small firms. At the same time, however, the Commission is unaware of any engineering differences between vehicles manufactured by small manufacturers versus large ones, and there are no data to suggest that the risk of injury posed by vehicles manufactured or supplied by small businesses is any different than the risk posed by vehicles manufactured or supplied by large firms. Based on this, the Commission is not adopting a small batch exemption.

IX. Initial Regulatory Flexibility Analysis

Whenever an agency publishes an NPR, Section 603 of the Regulatory Flexibility Act (RFA), 5 U.S.C. 601–612, requires agencies to prepare an initial regulatory flexibility analysis (IRFA), unless the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. The IRFA, or a summary of it, must be published in the **Federal Register** with the proposed rule. Under Section 603(b) of the RFA, each IRFA must address:

(1) a description of why action by the agency is being considered;

(2) a succinct statement of the objectives of, and legal basis for, the proposed rule;

(3) a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;

(4) a description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and

(5) an identification to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule.

The IRFA must also describe any significant alternatives to the proposed rule that would accomplish the stated objectives and that minimize any significant economic impact on small entities.

A. Reason for Agency Action

As described above, the intent of this rulemaking is to reduce deaths and injuries resulting from the debris penetration into the occupant area of ROVs and UTVs.

B. Objectives of and Legal Basis for the Rule

The Commission proposes this rule to reduce the risk of death and injury associated with debris penetration into the occupant area of ROVs and UTVs. The rule is promulgated under the authority of the Consumer Product Safety Act (CPSA).

C. Small Entities to Which the Rule Will Apply

The proposed rule would apply to all manufacturers and importers of ROVs and UTVs. ROV and UTV manufacturers may be classified in the North American Industrial Classification (NAICS) category 336999 (All Other Transportation Equipment

Manufacturing), or possibly, 336112 (Light Truck and Utility Vehicle Manufacturing). The Small Business Administration (SBA) size standard for these NAICS classifications are 1,000 employees and 1,500 employees, respectively. Of the 35 identified ROV and UTV manufacturers, the Commission identified seven U.S. ROV and UTV manufacturers (20 percent of manufacturers) with fewer than 1,500 employees, which, therefore, meet the SBA threshold for small business.

Importers of ROVs and UTVs could be wholesale or retail distributers. ROV and UTV wholesalers may be classified in NAICS categories 423110 (Automobile and Other Motor Vehicle Merchant Wholesalers) or 441228 (Motorcycle, ATV, and All Other Motor Vehicle Dealers). The SBA size standard for NAICS classification 423110 is 250 employees. The SBA size standard for NAICS classification 441228 is $35 million. Of the 48 identified distributers/brands, of which 26 might be foreign importers, the Commission identified 19 firms (39.6 percent of distributer/brands) distributing foreign-manufactured (primarily Chinese) ROVs and UTVs in 2019, that could be considered small businesses.[72]

D. Compliance, Reporting, and Record-Keeping Requirements of Proposed Rule

The proposed rule would establish a performance requirement for ROVs and UTVs and a test procedure that suppliers would have to meet to sell in the United States.

In 2021, the Commission contracted SEA to conduct testing related to the ROV and UTV debris penetration hazard. SEA tested a small, non-representative sample of ROV and UTV models with, and without, after-market guards. None of the models met the performance requirements of the proposed rule when operating without aftermarket guards. Therefore, the Commission expects most small (and large) ROV and UTV manufacturers would incur costs associated with bringing their vehicles into compliance with the proposed rule, as well as costs related to testing and issuing a general certificate of conformity (GCC).

In accordance with Section 14 of the CPSA, manufacturers would have to issue a GCC for each ROV and UTV model, certifying that the model complies with the proposed rule. According to Section 14 of CPSA, GCCs must be based on a test of each product or a reasonable testing program; and GCCs must be provided to all distributors or retailers of the product. The manufacturer would have to comply with 16 CFR part 1110 concerning the content of the GCC, retention of the associated records, and any other applicable requirement.

E. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rule

At the time of this document's publication, no other federal rules duplicate, overlap, or conflict with the proposed rule.

F. Potential Impact on Small Entities

One purpose of the IRFA is to evaluate the impact of a regulatory action on small entities and to determine whether that impact is economically significant. Although the SBA allows considerable flexibility in determining ''economically significant,'' CPSC typically uses 1 percent of gross revenue as the threshold for determining ''economically significant.'' When CPSC staff cannot demonstrate that the impact is lower than 1 percent of gross revenue, staff prepares an initial regulatory flexibility analysis.[73]

1. Impact on Small Manufacturers

The preliminary regulatory analysis in Section VIII of this preamble discusses costs more fully. Based on that analysis, to achieve compliance with the proposed rule's performance requirements, ROV and UTV suppliers would incur costs from redesigning, retooling, and testing. Staff estimated this cost to be $51,050 per model in the first year.[74] This figure includes $9,361 in testing costs per model. Staff estimated the additional production cost for labor and material to be $29.23 per vehicle produced in the first year. Staff does not anticipate new reporting or recordkeeping requirements from this rule.

Staff identified seven ROV and UTV manufacturers that meet SBA size standards for small businesses. Staff applied both the per-model and per-vehicle costs to each manufacturer's number of models and unit sales in 2019. Staff found the initial cost to comply with the proposed rule exceeds 1 percent of reported annual revenue for five of the seven manufacturers identified as small businesses. For these five ROV and UTV manufacturers, the economic impact of the proposed rule is expected to be significant.

2. Impact on Small Importers

Staff identified 14 possible importers of ROVs and UTVs from foreign suppliers that would be considered small businesses based on SBA size standards. Staff identified an additional five importers for which a size determination could not be made, but that are likely small based on the number of models and units sold. A small importer would be impacted adversely by the proposed rule if its foreign supplier withdrew from the U.S. market, rather than incur the cost of compliance. Importers would also be impacted adversely if a foreign manufacturer failed to provide a GCC and had to perform its own testing for compliance. If sales of ROVs and UTVs are a substantial source of the importer's business, and the importer cannot find an alternative supplier of ROVs and UTVs, the economic impact on these firms might be significant. However, the U.S. ROV and UTV market has grown at an annual rate of 13.5 percent since 1998; accordingly, it is unlikely that foreign manufacturers would exit such a fast-growing market. ROV and UTV importers also import other products, such as scooters, motorcycles, and other powersport equipment. For these firms, any decline in ROV and UTV sales and revenue may be partially or fully offset by increasing sales and revenues derived from these other products.

Small importers would be responsible for issuing a GCC certifying that their ROVs and UTVs comply with the rule's requirements. However, importers may issue GCCs based upon certifications provided by or testing performed by their suppliers. The impact on small importers whose suppliers provide GCCs should not be significant. If a small importer's supplier does not provide the GCC or testing reports, then the importer would have to certify each model for conformity based on a reasonable testing program. Importers would likely contract with an engineering consulting or testing firm to conduct the certification tests. As discussed in the regulatory analysis, staff estimated certification testing to be $9,361 per model. This would exceed 1 percent of the revenue for 13 of the estimated 19 identified small importers, assuming these firms continue to import the same mix of products as in the pre-regulatory environment.

[72] Staff made these determinations using information from Dun & Bradstreet and ReferenceUSAGov.

[73] The 1 percent of gross revenue threshold is cited as example criteria by the SBA and is commonly used by agencies in determining economic significance (see U.S. Small Business Administration, Office of Advocacy. *A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act and Implementing the President's Small Business Agenda and Executive Order 13272.* May 2012, pp 18–20. *http://www.sba.gov/sites/default/files/rfaguide_0512_0.pdf*).

[74] Testing may be performed by the manufacturer by third party engineering consulting or testing firms.

G. Alternatives for Reducing the Adverse Impact on Small Businesses

The Commission considered several alternatives to the proposed rule. These include: (1) conducting marketing campaigns and recalls instead of promulgating a final rule; (2) relying on voluntary standards development; (3) limiting ROV and UTV speed to a maximum of 10 miles per hour, and (4) implementing a small batch exemption. The Commission is not adopting these alternatives for the reasons stated above.

H. Conclusion

The Commission identified seven manufacturers that meet the SBA criteria to be considered small firms. For five of these firms, the estimated cost from the proposed rule exceeds 1 per percent of annual revenue. The Commission assesses that the proposed rule could have a significant economic impact on these five firms.

The Commission estimated that there are 19 importers of foreign manufactured ROVs and UTVs that meet the SBA criteria to be considered small. A small importer whose supplier exits the market, or does not provide the importer a GCC, could experience a significant adverse economic impact. However, given the fast-growing market, the Commission does not anticipate foreign manufacturers will exit the U.S. market, and further, the Commission assumes that foreign manufacturers would provide certifications that small importers could rely on, so that these foreign manufacturers could preserve their sales. Given that assumption, the Commission assesses no significant economic impact on the importers of ROVs and UTVs.

In summary, the proposed rule could have a significant adverse economic impact on five of the seven identified small manufacturers, but it is unlikely to have a significant direct impact on the 19 small importers of ROVs and UTVs.

The Commission welcomes public comments on this IRFA. Small businesses that believe they would be affected by the proposed rule are encouraged to submit comments. The comments should be specific and describe the potential impact, magnitude, and alternatives that could reduce the impact of the proposed rule on small businesses.

X. Environmental Considerations

Generally, the Commission's regulations are considered to have little or no potential for affecting the human environment, and environmental assessments and impact statements are not usually required. See 16 CFR 1021.5(a). The proposed rule is not expected to have an adverse impact on the environment and is considered to fall within the ''categorical exclusion'' for the purposes of the National Environmental Policy Act. 16 CFR 1021.5(c).

XI. Preemption

Executive Order (E.O.) 12988, Civil Justice Reform (Feb. 5, 1996), directs agencies to specify the preemptive effect of a rule in the regulation. 61 FR 4729 (Feb. 7, 1996). The proposed regulation for ROVs and UTVs is issued under authority of the CPSA. 15 U.S.C. 2051–2089. Section 26 of the CPSA provides that ''whenever a consumer product safety standard under this Act is in effect and applies to a risk of injury associated with a consumer product, no State or political subdivision of a State shall have any authority either to establish or to continue in effect any provision of a safety standard or regulation which prescribes any requirements as to the performance, composition, contents, design, finish, construction, packaging or labeling of such product which are designed to deal with the same risk of injury associated with such consumer product, unless such requirements are identical to the requirements of the Federal Standard.'' 15 U.S.C. 2075(a).

States or political subdivisions of a state may apply for an exemption from preemption regarding a consumer product safety standard, and the Commission may issue a rule granting the exemption if it finds that the state or local standard: (1) provides a significantly higher degree of protection from the risk of injury or illness than the CPSA standard, and (2) does not unduly burden interstate commerce. Id. 2075(c).

Thus, the proposed rule for ROVs and UTVs, if finalized, would preempt non-identical state or local requirements for ROVs and UTVs designed to protect against the same risk of injury, *i.e.,* debris penetration, from ROVs and UTVs.

XII. Certification

Section 14(a) of the CPSA requires that products subject to a consumer product safety rule under the CPSA, or to a similar rule, ban, standard or regulation under any other act enforced by the Commission, must be certified as complying with all applicable CPSC-enforced requirements. 15 U.S.C. 2063(a). A final rule on ROV and UTV debris penetration would subject ROVs and UTVs to this requirement.

XIII. Effective Date

The Administrative Procedure Act (APA) generally requires that the effective date of a rule be at least 30 days after publication of a final rule. 5 U.S.C. 553(d). Section 9(g)(1) of the CPSA states that a consumer product safety rule shall specify the date such rule is to take effect, and that the effective date must be at least 30 days after promulgation but cannot exceed 180 days from the date a rule is promulgated, unless the Commission finds, for good cause shown, that a later effective date is in the public interest and publishes its reasons for such finding.

If finalized, the Commission proposes an effective date of 120 days after publication of the final rule. The Commission concludes that ROV/UTV models that do not comply with the resistance to debris penetration requirements can be modified, with design changes to the floorboards and/or augmentation of floorboard guards, in less than 4 person-months (at the most) and concludes that these ROV/UTV models can be tested for compliance in 1 day. Therefore, the Commission concludes that 120 days is a reasonable period for manufacturers to modify vehicles, if necessary; conduct required tests; and analyze test results to ensure compliance with the recommended resistance to debris penetration requirements.

XIV. Proposed Findings

The CPSA requires the Commission to make certain findings when issuing a consumer product safety standard. 15 U.S.C. 2058(f). This section discusses preliminary support for those findings.

A. Degree and Nature of the Risk of Injury

The risk of injury involves debris penetration through the floorboards of ROVs and UTVs. Debris, usually a tree branch, can puncture through the floorboard and enter the occupant area of the vehicle, posing a risk of laceration or impalement to the driver and/or passengers, which can cause severe injury or death.

Between 2009 and 2021, there were a total of 107 incidents found in CPSC databases involving debris penetration associated with ROVs and UTVs. There were 6 reported fatalities and 22 reported injuries related to the known debris penetration incidents. Additionally, there were approximately 630 reports of debris cracking and/or breaking through floorboards and 10 injuries associated with 3 ROV debris penetration recalls.

B. Number of Consumer Products Subject to the Rule

Except for the year 2009, the annual sales of ROVs and UTVs to the United States have increased steadily from an estimated 35,041 units in 1998 to 429,135 units in 2019. In 2019, there were an estimated 2.34 million ROVs and UTVs in use in the United States.

C. Need of the Public for the Products and Probable Effect of Utility, Cost, and Availability of the Product

The effect of the rule will be limited to redesigning the floorboards of the vehicles; thus, the rule is unlikely to have an effect on the utility of ROVs and UTVs.

The effect of the rule on cost and availability of ROVs and UTVs is expected to be minimal. In 2019, the average manufacturer's suggested retail prices (MSRP) of ROVs and UTVs ranged from about $4,599 to $53,700. When weighted by sales volume, the mean MSRP is $13,182 for ROVs and UTVs, which equates to $14,302 in 2021 dollars. The preliminary regulatory analysis estimates a per-unit cost to ROVs and UTVs of the rule to be $10.68 (undiscounted per unit costs of redesigning floorboard for ROVs and UTVs) to $18.71 (undiscounted per unit cost of floorboard guard fix for ROVs and UTVs.) Because this per-unit cost resulting from the rule is a very small percentage of the overall retail price of a ROV or UTV, the rule would have only a minimal effect on the cost or availability of ROVs or UTVs.

D. Other Means To Achieve the Objective of the Proposed Rule, While Minimizing Adverse Effects on Competition and Manufacturing

The proposed requirement of the rule achieves the objective of reducing debris penetration hazards associated with ROVs and UTVs while minimizing the effect on competition and manufacturing. Because the proposed rule implements a performance requirement, manufacturers may choose how best to comply with it. This facilitates, through innovation and competition, the rollout of consumer-driven, cost-effective designs, and helps minimize potential adverse effects on consumer choice, and on manufacturing and commercial practices. Manufacturers may develop ways to comply with the performance requirement that are either less costly than what the preliminary regulatory analysis estimated, or bring more value to the consumer, or both.

In addition, as described in Section XIV.C of this preamble, the per-unit cost resulting from the rule is a very small percentage of the overall retail price of an ROV or UTV. With such a relatively low impact, it is unlikely that ROV or UTV companies would withdraw from the market or that the number of ROV or UTV models will be affected. The Commission preliminarily finds that the proposed rule minimizes impact on competition, marketing, and commercial practices.

E. Unreasonable Risk

The Commission is aware of 107 debris penetration incidents from its NEISS and CPSRMS databases. There were 6 fatalities, 3 of which involved debris penetration into the chest. There were 22 injuries caused by floorboard debris penetration, some of the injuries sustained were severe.

There were 3 Commission recalls of ROVs due to debris penetration hazards, which collectively involved approximately 55,000 vehicles. There were approximately 630 manufacturer-reported incidents of debris cracking or breaking through floorboards and 10 injuries associated with these recalls.

ROVs have maximum speed capabilities greater than 30 mph, and UTVs have maximum speed capabilities between 25 and 30 mph. These vehicles are intended to be driven off-road, including wooded areas or trails, where tree branches and sticks are commonplace. CPSC incident data shows that debris penetration is occurring at speeds less than 10 mph. CPSC testing shows that debris penetration can occur at speeds as low as 2.5 mph on standard OEM ROV and UTV floorboards. In addition, these incidents often occur rapidly and without notice, so that there is little time for the user to react.

Given the potentially severe and unexpected nature of this hazard when using the vehicle as intended, the Commission preliminarily finds that this rule is necessary to prevent an unreasonable risk of injury.

F. Public Interest

The proposed rule is intended to address an unreasonable risk of injury from debris penetration into ROVs and UTVs. As explained in this preamble, adherence to the requirements of the proposed rule would reduce deaths and injuries from ROV and UTV debris penetration incidents in the future; thus, the rule is in the public interest.

G. Voluntary Standards

There are two voluntary standards for ROVs and UTVs:

- ANSI/ROHVA 1–2016 Recreational Off-Highway Vehicles;
- ANSI/OPEI B71.9–2016—American National Standard for Multipurpose Off-Highway Utility Vehicles.

Neither standard has requirements to address debris penetration. For this reason, the Commission preliminarily concludes that the voluntary standards will not adequately address the unreasonable risk of injury associated with debris penetration in ROVs and UTVs.

H. Relationship of Benefits to Costs

The benefits expected from the proposed rule bear a reasonable relationship to its cost. The proposed rule is intended to reduce the impalement and laceration risks of a tree branch penetrating the ROV/UTV floor, and thereby, reduce the societal costs of the resulting injuries and deaths. This reduction in societal costs amounts to $15.47 million per year in projected benefits. The quantifiable benefits of the proposed rule are estimated at $12.08 per ROV/UTV. The costs associated with the proposed requirements to prevent debris penetration are expected to be between $9.26 and $15.53 million per year. On a per-unit basis, the Commission estimates the total costs of the proposed rule to be between $7.23 to $12.13 per ROV/UTV in current dollars.

I. Least-Burdensome Requirement That Would Adequately Reduce the Risk of Injury

As described in Section IX.G of this preamble, the Commission considered less burdensome alternatives to the proposed rule addressing debris penetration in ROVs and UTVs and concluded preliminarily that none of these alternatives would adequately reduce the risk of injury.

XV. Promulgation of a Final Rule

Section 9(d)(1) of the CPSA requires the Commission to promulgate a final consumer product safety rule within 60 days of publishing a proposed rule. 15 U.S.C. 2058(d)(1). Otherwise, the Commission must withdraw the proposed rule if it determines that the rule is not reasonably necessary to eliminate or reduce an unreasonable risk of injury associated with the product or is not in the public interest. Id. However, the Commission can extend the 60-day period, for good cause shown, if it publishes the reasons for doing so in the **Federal Register**. *Id.*

The Commission finds that there is good cause to extend the 60-day period for this rulemaking. Under both the Administrative Procedure Act and the CPSA, the Commission must provide an opportunity for interested parties to

submit written comments on a proposed rule. 5 U.S.C. 553; 15 U.S.C. 2058(d)(2). The Commission is providing 60 days for interested parties to submit written comments. A shorter comment period may limit the quality and utility of information CPSC receives in comments, particularly for areas where it seeks data and other detailed information that may take time for commenters to compile. Additionally, the CPSA requires the Commission to provide interested parties with an opportunity to make oral presentations of data, views, or arguments. 15 U.S.C. 2058. This requires time for the Commission to arrange a public meeting for this purpose, and provide notice to interested parties in advance of that meeting. After receiving written and oral comments, CPSC staff must have time to review and evaluate those comments.

These factors make it impractical for the Commission to issue a final rule within 60 days of this proposed rule. Moreover, issuing a final rule within 60 days of the NPR may limit commenters' ability to provide useful input on the rule, and CPSC's ability to evaluate and take that information into consideration in developing a final rule. Accordingly, the Commission finds that there is good cause to extend the 60-day period for promulgating the final rule after publication of the proposed rule.

XVI. Request for Comments

We invite all interested persons to submit comments on any aspect of the proposed rule. Specifically, the Commission seeks comments on the following:

- Information regarding any analysis and/or tests done on penetration of the occupant area of ROVs/UTVs;
- Information regarding any analysis on the shape, composition, material properties, etc., of objects that have penetrated occupant area of ROVs/UTVs;
- Information on the speed of the vehicle and the energy associated with penetration of the occupant area of ROVs/UTVs;
- The preliminary regulatory analysis assumes manufacturers would choose between two compliance options ''redesigned floorboards'' or ''floorboard guards;'' but in practice, manufacturers may choose either of these two solutions or may choose a different solution that proves more cost-effective. We request information on the plausibility and likelihood of the options considered, and other solutions not included in the preliminary regulatory analysis.
- Information regarding any potential costs or benefits that were not included the preliminary regulatory analysis;
- Detailed information regarding cost estimates for either of the compliance options in the proposed rule.
- Information regarding the number of small businesses impacted by the proposed rule and the magnitude of the impacts of the proposed rule.
- Comments on the definitions in § 1421.2 of the proposed rule.
- Comments on the testing procedures and protocol of the proposed rule, and potential alternatives.
- Comments regarding the appropriateness of the 120-day effective date, and a quantification of how a 120-day effective date would affect the benefits and costs of the proposed rule.
- Comments regarding the appropriateness of a 30-day effective date, and a quantification of how a 30-day effective date would affect the benefits and costs of the proposed rule.
- Comments regarding the appropriateness of any other period commenters may alternatively recommend, and a quantification of how such effective date(s) would affect the benefits and costs of the proposed rule.
- In estimating the number of debris penetration incidents, injuries, and deaths, how should CPSC incorporate the number of known debris penetration incidents from OHV recall data that differ from the debris penetration incidents available in NEISS and CPSRMS data?
- Are there other sources of data that could allow CPSC to generate a more robust national estimate of incidents, injuries, or deaths associated with OHV debris penetration?
- Given the data cited in the analysis above and any other relevant sources, is it possible to make reliable estimates of the number of incidents, injuries, and deaths associated with OHV debris penetration on a national scale? If not, what are plausible assumptions concerning these figures? What is a reasonable quantification of the benefits tied to avoiding those incidents?
- Are there benefits to the proposed rule arising from the avoidance of damage to OHVs, and elimination of associated repair costs? If so, what is a reasonable quantification of those benefits?

XVII. Notice of Opportunity for Oral Presentation

Section 9 of the CPSA requires the Commission to provide interested parties ''an opportunity for oral presentation of data, views, or arguments.'' 15 U.S.C. 2058(d)(2). The Commission must keep a transcript of such oral presentations. *Id.* Any person interested in making an oral presentation must contact the Commission, as described under the **DATES** and **ADDRESSES** section of this notice.

List of Subjects in 16 CFR Part 1421

Consumer protection, Imports, Administrative practice and procedure, Recreation and recreation areas, Safety.

For the reasons discussed in the preamble, the Commission proposes to amend Title 16 of the Code of Federal Regulations as follows:

■ 1. Add part 1421 to read as follows:

PART 1421—SAFETY STANDARD FOR ROV AND UTV DEBRIS PENETRATION HAZARDS

Sec.

Authority: 15 U.S.C. 2056, 15 U.S.C. 2058, and 5 U.S.C. 553.

§ 1421.1 Scope, purpose and effective date.

(a) This part 1421, a consumer product safety standard, establishes requirements for recreational off-highway vehicles (ROVs) and utility terrain or utility task vehicles (UTVs), as defined in § 1421.2, to address debris penetration hazards.

(b) Any ROV or UTV manufactured or imported after [date that is 120 days after publication of a final rule] shall comply with the requirements stated in § 1421.3.

§ 1421.2 Definitions.

In addition to the definitions in section 3 of the Consumer Product Safety Act (15 U.S.C. 2051), the following definitions apply for purposes of this part 1421.

(a) *Recreational off-highway vehicle (ROV)* means a motorized vehicle designed or intended for off-highway use with the following features: four or more wheels with tires designed for off-highway use, non-straddle-seating for one or more occupants, a steering wheel for steering controls, foot controls for throttle and braking, and a maximum vehicle speed greater than 30 miles per hour (mph).

(b) *Utility terrain or utility task vehicle (UTV)* means a motorized vehicle designed or intended for off-highway use with the following features: four or more wheels with tires designed for off-highway use, non-straddle seating for one or more

occupants, a steering wheel for steering controls, foot controls for throttle and braking, and a maximum vehicle speed typically between 25 and 30 mph.

§ 1421.3 Requirements.

Upon testing to the test procedure described in § 1421.4, the test ROV/UTV floorboard and/or floorboard guard shall not allow any breach of the test dowel into the occupant area, although deformations and/or deflections of the floorboard and/or floorboard guard are allowable. Examples of breach include cracks, holes, tears, seam gaps, or any other openings that allow any part of the test dowel to enter the occupant area.

§ 1421.4 Test procedures.

(a) *Load Condition.*

(1) *Weight.* The required load condition for a two-seat model is 430 lbs, representing a driver and a front seat passenger, each equivalent to a 95th percentile male (215 lbs). For four-seat models, the load condition shall be 860 lbs, representing the driver and three passengers. For six-seat models, the load condition shall be 1290 lbs, representing the driver and five passengers.

Note 1 to paragraph (a)(1). Typical gross vehicle weights of fully loaded test vehicles or simulated vehicle sleds exceed 2000 lbs.

(2) [Reserved].

(b) *Test Vehicle or Simulated Vehicle Sled Conditions.*

(1) The fully loaded test vehicle shall be fitted with the test floorboard and/or floorboard guard(s), as offered for sale.

(2) If a simulated vehicle sled will be used, where a ROV/UTV front metal frame is fitted with the test floorboard and/or floorboard guard(s), the simulated vehicle sled must be able to translate on a linear track that can propel the simulated vehicle sled to at least 10 mph.

(c) *Test Speed.*

(1) Test Vehicle or simulated vehicle sled speed, in miles per hour (mph) shall be measured at the moment of impact.

(2) The vehicle speed or simulated vehicle sled speed at the moment of impact shall be at least 10 mph.

(d) *Test Location.* The test dowel shall be positioned in such a way that the test dowel will strike the wheel-well area. The target of the test dowel cannot be any component other than the floorboard or floorboard guard surface. The target shall be at the point on the floorboard or floorboard guard most likely to produce the most adverse results, such as a seam, crease, catch point, or bend.

(e) *Test Equipment.* (1) A 2-inch diameter oak dowel positioned at angle between 12° to 25° from horizontal (indicated as X° in Figure 1) shall be installed on a dowel holder that can pivot about its transverse axis. The length of the dowel shall be between 39 inches to 65 inches.

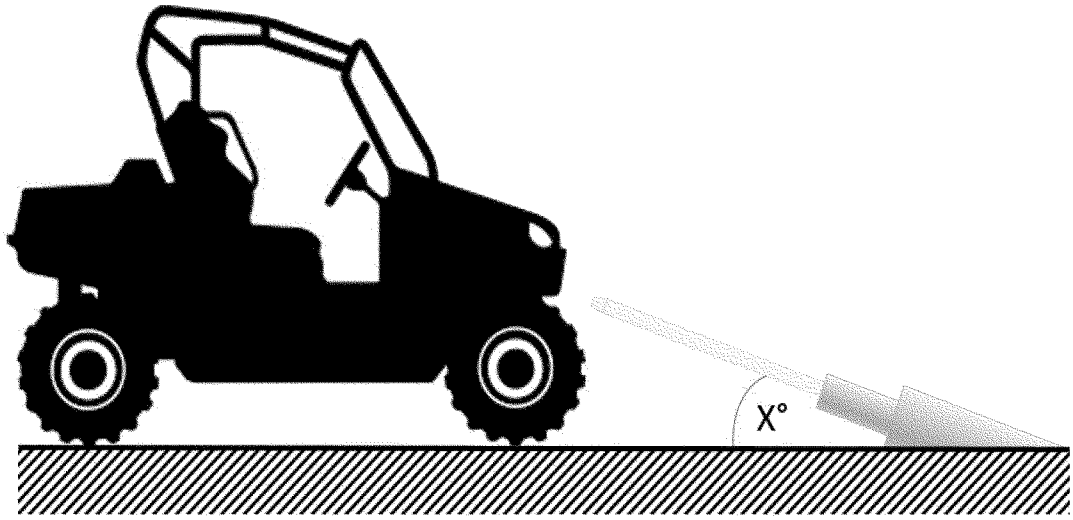

Figure 1 – Illustration of Debris Penetrator Test Dowel Orientation

(2) The tip of dowel shall be tapered, such that the tip surface diameter is 1 inch, and the tip cone length is 1 inch. See Figure 2.

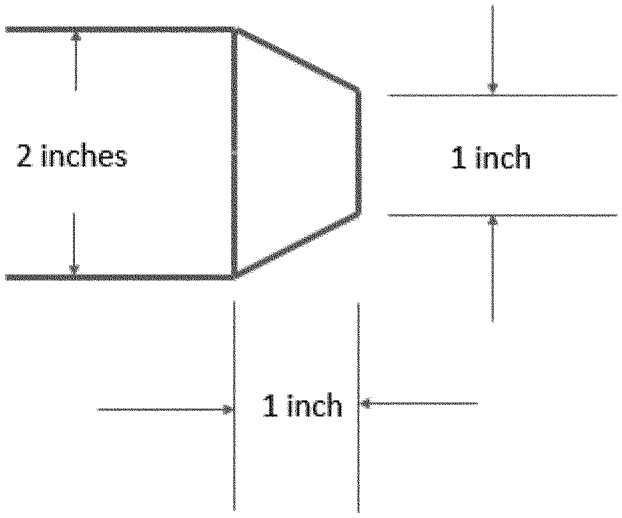

Figure 2 – Illustration of Debris Penetrator Test Dowel Tip Taper

(3) The dowel holder shall be constructed of a rigid material, such that the dowel holder does not fracture during the impact test.

Note to section (e)(3). To minimize damage to test equipment, a vehicle or simulated vehicle sled braking system and/or energy absorption foam blocks located 2 feet past the debris penetrator dowel holder is recommended.

(4) The braking system shall only activate after the vehicle or simulated vehicle sled collides completely with the debris penetrator dowel.

(f) *Test Conditions.* If a test vehicle is used, the test surface must be dry asphalt or dry concrete that is free of contaminants. Sufficient track length shall be available to allow the test vehicle or simulated vehicle sled to reach 10 mph. The test surface must be flat and have a grade slope of 1.7% (1°) or less. Ambient temperature shall be greater than 0°C (32 °F).

(g) *Test Procedure.* The debris penetrator test dowel shall be aligned with the target site of the floorboard or floorboard guard. A fully loaded, fully instrumented test vehicle or simulated vehicle sled shall be propelled in a straight-line path to collide with the debris penetrator test dowel, where the test vehicle or simulated vehicle sled speed shall be at least 10 mph at the moment of impact. For each vehicle model, a minimum of two test trials of one chosen test method shall be conducted.

Note 2 to paragraph (g): Rationale for Test Conditions. The required ambient temperature of 0°C (32 °F) or greater, maximum allowable flat course slope grade of 1.7% (1°) or less, flat dry asphalt or dry concrete conditions, and the 95th percentile male weight are consistent with the lateral stability requirements of ANSI/OPEI B71.9–2016 and ANSI/ROHVA–1–2016. They simulate real use and allow for repeatable test results.

§ 1421.5 Prohibited stockpiling.

(a) *Base period.* The base period for ROVs and UTVs is the calendar month with the median manufacturing or import volume within the last 13 months immediately preceding the month of promulgation of the final rule.

(b) *Prohibited acts.* Manufacturers and importers of ROVs and UTVs shall not manufacture or import ROVs or UTVs that do not comply with the requirements of this part between [date of promulgation of the rule] and [effective date of the rule] at a monthly rate that is greater than 105 percent of the monthly rate at which they manufactured or imported ROVs and UTVs during the base period.

§ 1421.6 Findings.

(a) *General.* To issue a consumer product safety standard under the Consumer Product Safety Act, the Commission must make certain findings and include them in the rule. 15 U.S.C. 2058(f)(3). These findings are presented in this section.

(b) *Degree and nature of the risk of injury.* (1) The risk of injury involves debris penetration through the floorboards of ROVs and UTVs. Debris, usually a fallen tree branch, can puncture through the floorboard and enter the occupant area of the vehicle, posing a risk of laceration or impalement to the driver and/or passengers, creating a risk of severe injury or death.

(2) Between 2009 and 2021, there were a total of 107 incidents found in CPSC databases involving debris penetration associated with ROVs and UTVs. There were six reported fatalities and 22 reported injuries related to the known debris penetration incidents. Additionally, there were approximately 630 manufacturer reports of debris cracking or breaking through floorboards and 10 injuries associated with three ROV debris penetration recalls.

(c) *Number of consumer products subject to the rule.* Except for the year 2009, the annual sales of ROVs and UTVs to the United States have increased steadily from an estimated 35,041 units in 1998 to 429,135 units in 2019. In 2019, there were an estimated 2.34 million ROVs and UTVs in use in the United States.

(d) *The need of the public for the product and the effects of the rule on the utility, cost and availability.* The effect of the rule will be limited to redesigning the floorboards of the vehicles, so it is unlikely to have an effect on the utility of ROVs and UTVs. The effect of the rule on cost and availability of ROVs and UTVs is expected to be minimal. In 2019, the average manufacturer's suggested retail prices (MSRP) of ROVs and UTVs ranged from about $4,599 to $53,700. When weighted by sales volume, the mean MSRP is $13,182 for ROVs and UTVs, which equates to $14,302 in 2021 dollars. The preliminary regulatory analysis estimates a per-unit cost to ROVs and UTVs of the rule to be $10.68

(undiscounted per unit costs of redesigning floorboard for ROVs and UTVs) to $18.71 (undiscounted per unit cost of floorboard guard fix for ROVs and UTVs.) Because this per-unit cost resulting from the rule is a very small percentage of the overall retail price of a ROV or UTV, the rule would have only a minimal effect on the cost or availability of ROVs or UTVs.

(e) *Other means to achieve the objective of the rule, while minimizing the impact on competition and manufacturing.* The rule achieves the objective of reducing debris penetration hazards associated with ROVs and UTVs while minimizing the effect on competition and manufacturing. Because the proposed rule implements a performance requirement, manufacturers may choose how best to comply with it. This facilitates innovation, competition, consumer choice, and the possibility of cost-effective options, and helps minimize adverse effects on competition, manufacturing, and commercial practices. In addition, as described in paragraph (d) of this section, the per-unit cost resulting from the rule is a very small percentage of the overall retail price of an ROV or UTV. With such a relatively low impact, it is unlikely that ROV or UTV companies would withdraw from the market or that the number of ROV or UTV models will be affected. The Commission preliminarily finds that the proposed rule minimizes impact on competition, marketing, and commercial practices.

(f) *Unreasonable risk.* (1) Debris penetration involves debris (usually a tree branch or stick) penetrating an ROV or UTV, usually the floorboard of the underside of an ROV or UTV. When such penetration occurs, the branch or debris can penetrate far enough into the vehicle to strike the occupant or passengers. The Commission is aware of 107 debris penetration incidents from its NEISS and CPSRMS databases. There were six fatalities, three of which involved debris penetration into the chest. There were 22 injuries caused by floorboard debris penetration, some of them severe.

(2) There were three Commission recalls of ROVs due to debris penetration hazards, which collectively involved approximately 55,000 vehicles. There were approximately 630 manufacturer-reported incidents involving debris cracking or breaking through the floorboards and 10 injuries associated with these recalls.

(3) ROVs have maximum speed capabilities greater than 30 mph, and UTVs typically have maximum speed capabilities between 25 and 30 mph. These vehicles are intended to be driven off-road, including wooded areas or trails, where tree branches and sticks are commonplace. CPSC incident data shows that debris penetration is occurring at speeds less than 10 mph. CPSC testing shows that debris penetration can occur at speeds as low as 2.5 mph on standard OEM ROV and UTV floorboards. In addition, these incidents often occur rapidly and without notice, so that there is little time for the user to react.

Voluntary standards for ROVs and UTVs do not contain requirements intended to address floorboard debris penetration in the vehicles.

(4) Given the potentially severe and unexpected nature of this hazard when using the vehicle as intended, the Commission finds that this rule is reasonably necessary to eliminate or reduce an unreasonable risk of injury.

(g) *Public interest.* The proposed rule is intended to address an unreasonable risk of injury from debris penetration into ROVs and UTVs. Adherence to the requirements of the proposed rule would reduce deaths and injuries from ROV and UTV debris penetration incidents in the future; thus, the rule is in the public interest.

(h) *Voluntary standards.* There are two voluntary standards for ROVs and UTVs: ANSI/ROHVA 1–2016, American National Standard for Recreational Off-Highway Vehicles, and ANSI/OPEI B71.9–2016, American National Standard for Multipurpose Off-Highway Utility Vehicles. Neither standard has requirements to address debris penetration. For this reason, the Commission concludes that the voluntary standards will not adequately address the unreasonable risk of injury associated with debris penetration in ROVs and UTVs.

(i) *Relationship of benefits to costs.* This rule is intended to reduce the impalement and laceration risks of a tree branch penetrating the ROV/UTV floor, and therefore, provide projected benefits of $15.47 million per year by reducing the societal costs of debris penetration injuries and deaths. The costs associated with the proposed requirements to prevent debris penetration are expected to be between $9.26 and $15.53 million per year. The Commission finds that the benefits expected from the rule bear a reasonable relationship to its costs.

(j) *Least burdensome requirement that would adequately reduce the risk of injury.* The Commission considered several alternatives to the proposed rule. However, the Commission finds that these alternatives would not adequately address the unreasonable risk of injury associated with debris penetration in ROVs and UTVs.

(1) *Conduct Marketing Campaigns Instead of Promulgating a Final Rule.* The Commission considered conducting marketing campaigns and recalls instead of promulgating a rule to address the debris penetration hazard associated with ROVs and UTVs. However, even though an information and marketing campaign may make ROV and UTV users more aware of the debris penetration hazard, a simple modification of consumer behavior would be unlikely to address the risk of injury. Encountering debris in an off-highway environment, where these vehicles are intended to be driven, is largely unavoidable, and debris penetration is possible at speeds as low as 2 mph.

(2) *Recalls.* The Commission considered recalls to address the risk of debris penetration associated with ROVs and UTVs. Recalls, however, only apply to an individual manufacturer and product, do not extend to similar products, and occur only after consumers have purchased and used such products and have been exposed to and potentially injured or killed by the hazard. Additionally, recalls can only address products that are already on the market and cannot prevent unsafe products from entering the market. With either a marketing campaign or use of recalls, much of the estimated $18.02 million annualized societal costs would continue to be incurred by consumers in the form of deaths and injuries. Therefore, the Commission concludes that marketing campaigns and recalls, without a mandatory rule, are unlikely to reduce the risk of injury associated with debris penetration.

(3) *Rely on Voluntary Standards Development.* The Commission considered directing staff to work with voluntary standards development organizations to address the hazard. However, staff has been discussing debris penetration hazards with ROHVA and OPEI since 2018, and there has been inadequate progress on standard development to address the risk. Although staff will continue to work with ROHVA and OPEI on the voluntary standards, it is not clear if or when a standard will be developed to adequately address the risk of injury. Until a voluntary standard is developed, the number and societal costs of injuries and fatalities associated with debris penetration are likely to remain at or near current levels. Therefore, the Commission concludes that rulemaking is necessary.

(4) *Limit ROV and UTV Speeds to Maximum of 10 Miles per Hour.* The

Commission considered limiting the maximum speed of ROVs and UTVs to 10 miles per hour. Although costs to manufacturers would be expected to be less under this approach, the quantifiable net benefits would be less as well. In addition, setting the maximum speed at 10 mph could have an adverse impact on the utility of the vehicles and on consumer acceptance of the requirement. Therefore, the Commission is not adopting this approach.

Alberta E. Mills,

Secretary, Consumer Product Safety Commission.

[FR Doc. 2022–15355 Filed 7–20–22; 8:45 am]

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