REPORT TO THE LEGISLATURE PURSUANT TO ACT 43 SECTION 29

Vermont Low Volume Vehicle Registration Report

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Prepared for

The Vermont House and Senate Committees on Transportation

Vermont Agency of Transportation
Policy, Planning, and Intermodal
Development Division

VERMONT
AGENCY OF TRANSPORTATION

REPORT PREPARATION

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AUTHORIZING LEGISLATION

Sec. 29 Ultra-Low Volume Vehicle Manufacturing; Kit-Cars; Homebuilt Motor Vehicles; Vehicle Identification Number; Report

(a)

(1) The Commissioner of Motor Vehicles, in consultation with the Secretary of Natural Resources and representatives of the ultra-low volume vehicle manufacturing industry in Vermont, shall examine processes for issuing vehicle identification numbers to ultra-low volume motor vehicles, kit-cars, and homebuilt motor vehicles and opportunities to facilitate the registration of such vehicles.

(2) As used in this section

(A) "Homebuilt motor vehicle" means a motor vehicle that is constructed or assembled by an individual from new or used parts, or both, and is not a kit-car.

(B) "Kit-car" means a motor vehicle that is constructed by an individual from a manufactured kit that includes some or all parts and components necessary to construct the motor vehicle.

(C) "Ultra-low volume motor vehicle" means a vehicle that is manufactured for sale by a manufacturer whose annual worldwide production is not more than 325 motor vehicles.

(b) In preparing the report the Commissioner shall:

(1) examine how other states address motor vehicle emissions requirements for ultra-low volume motor vehicles, kit-cars, and homebuilt motor vehicles;

(2) identify a cost-effective process for certifying the safety of ultra-low volume motor vehicles, kit-cars, and homebuilt motor vehicles; and

(3) develop a streamlined process to provide State Vehicle Identification Numbers to ultra-low volume motor vehicles, kit-cars, and homebuilt motor vehicles.

(c) On or before January 15, 2026, the Commissioner shall submit a written report to the House and Senate Committees on Transportation regarding the Commissioner's findings and identifying any legislative action necessary to enable the issuance of vehicle identification numbers to and registration of ultra-low volume motor vehicles, kit-cars, and homebuilt motor vehicles.

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EXECUTIVE SUMMARY

Purpose

In June 2025, the Vermont General Assembly enacted Act 43 relating to the Transportation Program and adopting the Agency of Transportation's FY 2026 Transportation Program. In section 29, the Legislature directed the Agency of Transportation (AOT) to complete a report concerning the state's regulations around kit cars, homebuilt vehicles, and "ultra-low volume" manufacturing, existing barriers to their registration and the assignment of vehicle identification numbers (VINs), and potential pathways to the assignment of state VINs and registration of these vehicles. AOT is directed to examine how other states address emissions requirements for these vehicles, identify a cost-effective process for certifying their safety, and develop a process to provide state VINs. This report fulfills the requirement and explores potential strategies and their implications.

What are these vehicles?

While definitions may differ somewhat between jurisdictions and some definitions of these vehicles already exist in Vermont, the enabling legislation for this report has provided the following definitions which were used as the basis for how we understood these vehicles:

- A "homebuilt motor vehicle" is defined as "a motor vehicle that is constructed or assembled by an individual from new or used parts, or both, and is not a kit-car."
- A "kit car" is defined as "a motor vehicle that is constructed by an individual from a manufactured kit that includes some or all parts and components necessary to construct the motor vehicle."
- And finally, an "ultra-low volume motor vehicle" is defined as "a vehicle that is manufactured for sale by a manufacturer whose annual worldwide production is not more than 325 motor vehicles."

Summary of Issues and Considerations

The following summarizes some of the issues that exist at present that may prevent a vehicle from getting on the road.

Definitions

While definitions were provided in the report's enabling legislation and served as the foundation of the framework through which these topics were considered, the existing use of terms and definitions was found to be lacking. A definition for a "homebuilt vehicle" was not found outside the legislation in either state or federal law; a definition of kit car distinct from that provided in the legislation is already used in the state's Periodic Inspection Manual, and while not defined, an additional understanding of this category by the EPA is available in regulatory guidance; and finally, ultra-low volume motor vehicles are defined only at the state level. Additionally, other existing terms may overlap with some of these categories conceptually, such as Vermont's

current “street rod” and “street rod replica” categories and the federally defined “replica vehicle” category. As they investigate how and whether to design programs to increase the ease of the registration process, policymakers may want to consider refining definitions to be clearer and consistent across state bodies and with definitions provided by the federal government or peer jurisdictions, use terminology consistently across documents, and combining or clearly differentiating overlapping categories.

Vehicle Identification Numbers (VINs)

Vermont already has a process for assigning VINs that covers a variety of situations, but importantly for this report, does include some specially constructed vehicles. The existing process explicitly allows for the assignment of VINs by the state to what it terms in its application “homemade” vehicles and vehicles “rebuilt from component” parts, including street rods and street rod replicas; these categories overlap with the “homebuilt vehicle” category set forth in the report’s enabling legislation and at least some “kit cars.” To obtain a VIN for vehicles in these categories, bills of sale for all components and photographs of the fully assembled vehicle must be submitted for review, and vehicles hoping to qualify as street rods and street rod replicas must be inspected at designated inspection locations to verify they qualify. Given the fact that this process already exists and does allow for some vehicles included in this report to obtain a VIN, it can serve as a foundation for an expanded process, especially if paired with refined definitions: a new form could include explicit options for homebuilt vehicles and kit cars and include definitions for additional clarity for owners looking to determine what category they fall under. If this process is to be expanded and allow for additional categories, policymakers may want to consider whether it is necessary to designate additional inspection locations for verification, how this process might ensure consistency in allowing additional designations, and how such locations are distributed across the state.

Safety

All new vehicles sold in the United States – and thus in Vermont – are required to be in compliance with Federal Motor Vehicle Safety Standards, or FMVSS, codified by the National Highway Traffic Safety Administration (NHTSA). Compliance with these standards is self-certified by the manufacturer. Regulatory interpretations consider homebuilt and kit cars containing used components to be used and thus does not require compliance with these standards; federal law additionally allows for waivers of safety standards for a limited number of manufactured vehicles produced by low-volume manufacturers each year. Beyond these standards and waivers thereof, Vermont maintains a program of annual safety inspections for all vehicles, including those identified for this report, intended to ensure that vehicles are properly equipped for safe operation and are in safe condition. Guidelines are provided for various categories of what the state terms “special motor vehicles,” providing procedures specific to “special motor vehicles” for homebuilt vehicles, among others, and treating kit cars as standard “pleasure cars and light trucks.” Safety requirements were not identified as a significant obstacle, but future safety guidance could leverage refined definitions for clarity.

Emissions

Emissions were identified as a more significant barrier to registration and is governed by a complex set of overlapping federal and state laws and regulations. The Environmental Protection Agency (EPA) is the agency charged with regulating motor vehicle emissions and has set minimum national standards for allowable emissions of a range of pollutants; it has also interpreted provisions of federal emissions legislation to prohibit “engine switching,” when an engine from one vehicle is installed in another and does not match the original configuration that was certified exactly. As per EPA, “a ‘certified configuration’ is an engine or engine chassis design which has been ‘certified’ (approved) by EPA prior to the production of vehicles with that design.”[i] Typically, for each engine or vehicle proposed, the manufacturer submits an application for certification of the designs, including design requirements for all emission related parts, engine calibrations, and other design parameters for each different type of engine (in heavy-duty vehicles), or engine chassis combination (in light-duty vehicles). EPA then "certifies" each acceptable design for use in vehicles of the upcoming model year.[ii]

Through the federal Clean Air Act, California was given the unique authority of being able to set its own emissions standards and thus to certify vehicles and engines to be in compliance with emissions standards. Vermont has adopted California’s standards as its own, requiring new vehicles sold since 2000 to be certified as compliant with California standards, and inspects vehicles to ensure continuing function and ongoing compliance of emissions control systems, including at minimum catalytic converters and gas caps and requiring electronic checks of onboard diagnostic systems for vehicles 16 years and newer. The state, however, does not have the ability to certify vehicles as compliant on its own; this power is reserved only for the federal government and the State of California. Vehicle manufacturers can use independent, third-party laboratories for emissions certification testing with EPA and the California Air Resources Board (CARB) providing oversight, auditing and confirmation testing as needed.

While only affecting vehicles undergoing registration within its borders, California has established a program to ease the process of registration and VIN assignment for what it defines as “specially constructed vehicles,” broadly including what this report would consider homebuilt vehicles and kit cars, by offering waivers of emissions requirements for qualifying vehicles. Up to 500 vehicles can receive waivers each year, with the only emissions requirements applied being based on the owner’s choice of a) the model year of the vehicle the vehicle undergoing registration most substantially resembles or b) the engine year of the engine the engine in the vehicle undergoing registration most significantly resembles, or a default of 1960 when a match cannot be determined. Such a program could serve as a model for Vermont as it looks to ease the registering some vehicles included in this report, but policymakers may want to consider how many vehicles to waive per year – as a similar number in relative terms would be small, the balance between emissions and ease of registration they are willing to accept, and how any legislation adopted interacts with federal engine switching and tampering prohibitions.

1.0 INTRODUCTION

Authorizing Legislation

The Vermont General Assembly passed Act 43 in June 2025. Section 29 directs the Agency of Transportation (AOT) to conduct a report on current regulations surrounding a variety of vehicle types – kit cars, homebuilt vehicles, and ultra-low volume vehicles – as well as existing barriers to their registration and potential pathways to enable their registration in the state. The AOT was further directed to consider how other states might handle issues surrounding emissions requirements for these vehicles and develop or identify processes to certify their safety and assign state VINs to them. This report focuses on vehicles weighing less than 10,000 pounds and intended for passenger use as opposed to freight or commercial use.

Issue Background

More than 600,000 private and commercial vehicles are registered in the state of Vermont.[iii] Most of these vehicles originate from an array of large and small manufacturers, operating under a well-developed framework of federal and state regulations, delivered with all components necessary for operation, and sold to individual and business consumers directly or through a network of dealerships. In addition to these more “standard” private and commercial vehicles however, there exists a range of what have been in various contexts been described as “low volume,” “specially constructed,” or “special” vehicles. These vehicles are manufactured, delivered, and sometimes registered and driven through a process somewhat separate from most commercially available vehicles, following many of the same steps but with some waivers from usual standards and with additional steps of verification at others to ensure roadworthiness.

As much as these vehicles differ from standard commercially available vehicles, they also differ substantially internally as well; some are built from scratch by individuals from a mix of various new and/or used components, some are purchased as kits from established businesses and assembled by their new owners, some might be purchased in part or in whole from these businesses with potentially only some final modification by drivers, and some further within these categories might be based off of previously manufactured vehicles. The enabling legislation directing this report defined the specific classes, including homebuilt motor vehicles, kit-cars, and ultra-low volume motor vehicles.

Due to the unique nature of these vehicles and the contexts in which they are produced, the process of getting them registered and on the road may vary from jurisdiction to jurisdiction and has not been fully explored or settled. With a range of these vehicles under consideration, varying regulations, and paying attention to the specific context of Vermont’s transportation systems, this report aims to better understand the regulatory landscape for these vehicles at present and to investigate how processes for registration of them may be streamlined in the future.

2.0 SUMMARY OF LITERATURE REVIEW

2.1 REGULATORY OVERVIEW AND HISTORY

Per the federal-level U.S. Code, Title 49 Section 30102, a "motor vehicle" is defined as "*a vehicle driven or drawn by mechanical power and manufactured primarily for use on public streets, roads, and highways, but does not include a vehicle operated only on a rail line.*"[iv] The 1966 National Traffic and Motor Vehicle Safety Act and subsequent bills and amendments to U.S. Code established National Highway Traffic Safety Administration (NHTSA) by way of a number of predecessor agencies, giving them the authority to issue and enforce standards relating to motor vehicles at the federal level.[v] This legislation was enacted with the aim of reducing traffic crashes and the number of deaths and injuries resulting from these crashes. Earlier reports by the National Safety Council estimated that millions were injured or killed in automobile accidents yearly, contributing to significant negative economic impact, and the publication of Ralph Nader's "Unsafe at Any Speed" in 1965 "fueled popular calls for congressional action," with 1966's legislation intended to establish uniform sets of safety standards for domestically produced and imported vehicles and a system by which manufacturers could notify relevant parties of defects and remedy them.[vi]

NHTSA is charged with the responsibility of implementing and enforcing a set of minimum performance requirements that are practicable, meet the needs for motor vehicle safety, and stated in objective terms, now codified in the Federal Motor Vehicle Safety Standards, or FMVSS,[vii] with additional requirements around issues like theft prevention, bumpers, and fuel economy later being added to its purview.[viii] Important in our consideration of specially constructed vehicles, "incomplete vehicles" – defined as consisting of "chassis (including the frame) structure, powertrain, steering system, suspension system, and braking system" but requiring further manufacturing to be complete – must meet somewhat different requirements than completed vehicles (including record of their delivery as "incomplete),[ix] and NHTSA's FMVSS also apply to a range of equipment intended to be included in the manufacture of a vehicle or included as later modifications.[x] When defects are found in vehicles and equipment, manufacturers must provide information around these and must remedy defects through recalls.[xi]

While NHTSA has the authority to regulate fuel economy standards, the Environmental Protection Agency (EPA), established later in 1970, was given the broad responsibility of regulating pollution coming from motor vehicle emissions. The federal Clean Air Act (CAA) regulates motor vehicle pollution by setting tailpipe emission standards for pollutants like hydrocarbons, carbon monoxide (CO), nitrogen oxide (NOx), and other pollutants released into the air by motor vehicles; controls fuel composition; and sets requirements for state motor vehicle inspection programs.[xii] New vehicles and their engines are certified by the EPA to be in compliance with their regulations, with this certification required before being sold.[xiii]

Recognizing the unique context of specially constructed vehicles and how they relate to federal standards, Congress passed the Low Volume Motor Vehicle (LVMV) Manufacturers Act of 2015,

a part of the same year's federal surface transportation bill, commonly known as the "FAST" Act. The LVMV Manufacturers Act was intended to allow for the production of such vehicles and directed NHTSA to establish a program allowing manufacturers to produce a limited number of vehicles annually, developing a regulatory system that addresses the specific safety and financial issues associated with limited production. This act defined low volume motor vehicle manufacturers as those manufacturers whose "annual worldwide production amounted to less than 5,000, excluding any organizations/individuals registered as importers under U.S. Code Title 49." Notably, this bill also more specifically dealt with "replica vehicles," defined as "vehicles produced by low volume manufacturers intended to resemble the body of another motor vehicle (which must be at least 25 years older than the current year) and manufactured under license from the original manufacturer." In many cases, these replica vehicles would fall under the category of "kit car" identified as an area of interest in this report. However, eventually as noted, there are important differences between replica vehicles for manufacture vs replica or kit cars for personal use.

The LVMV Act also directed NHTSA and the EPA to exempt replica vehicles from certain safety and emissions standards, with some restrictions, namely that 1) manufacturers must affix labels to their vehicles identifying from which standards they are exempt, deliver written notice thereof to dealers and the first purchaser of the vehicles, and annually submit documentation of the exempted vehicles; and 2) engines installed in these vehicles must be from already compliant vehicles per EPA requirements, with the vehicles containing these engines being required to follow the emissions requirements applicable to the year of the engine's original vehicle.'[xiv]

Vermont State Regulations

Through its Department of Motor Vehicles (DMV) and Department of Environmental Conservation (DEC), the State of Vermont also requires ongoing compliance of motor vehicles with certain safety and emissions standards, certifying them as such under a periodic inspection program. Regarding safety, these inspections are intended to "determine whether motor vehicles are properly equipped and in good mechanical condition,"[xv] with guidance provided specific to various classifications of vehicles (e.g., pleasure cars and light trucks, special vehicles, etc.). Importantly for this report, "kit cars" are defined as vehicles that "have a commercially manufactured body and/or body and frame that may resemble a regularly manufactured vehicle or are vehicles whose body may be of a unique design but is manufactured to fit on a commercially manufactured frame," and are to be treated as pleasure cars and light trucks for purposes of inspections. Homebuilt vehicles are considered "special vehicles."

The legislation seeks to evaluate how replica vehicles operate in the existing regulatory environment. A replica motor vehicle inherently refers to a manufactured vehicle that—

> (1) Is produced by a manufacturer meeting the definition of replica motor vehicle manufacturer under part 586 [of Title 49 of the Code of Federal Regulations] that has not manufactured 325 replica motor vehicles in the current calendar year;

(2) Is intended to resemble the body of another motor vehicle that was manufactured for consumer sale not less than 25 years before the manufacture of the replica motor vehicle;

(3) Is manufactured in a single stage; and

(4) Is either:

(i) Manufactured under a license for all of the intellectual property rights of the motor vehicle that is intended to be replicated, including, but not limited to, product configuration, trade dress, trademark, and patent, from the original manufacturer, or its successors or assignees; or,

(ii) Manufactured by a current owner of such intellectual property, including, but not limited to, product configuration trade dress, trademark, and patent rights.

No specific definition of low-volume motor vehicles is offered and no explanation offered regarding how they might interact with existing inspection guidelines in cases where they may not be able to be classed as kit cars. For kit cars and other more standard pleasure cars and light trucks, inspection standards include sets of broadly applicable standards but in many cases defer to manufacturer specifications, which may need to be developed if low-volume motor vehicles are to be classified as such; in contrast, standards for homebuilt and other classes of special vehicles may need to be developed.

Vermont also performs regular inspections of emissions control systems, covering vehicles' catalytic converters, gas caps, and onboard diagnostic (OBD) systems for vehicles 16 model years and newer at the time of inspection. Such checks are intended to ensure these systems function properly in limiting air pollution and greenhouse gas emissions originating from vehicles, one of the foremost sources of both in the state.[xvi] Testing the diagnostics system via the OBD port provides a richer set of emissions data than a simple 'tailpipe' measurement because of the variations in operating settings. The OBD system also provides indications when emissions control technologies may be malfunctioning. Vermont law also requires manufacturers to warranty these systems for a number of years (or corresponding number of miles, whichever comes first), with longer warranties for certain components, aligning with California regulations around emissions standards and warranties;[xvii] since 2000, Vermont has required most cars to be certified as following California emissions standards, and thus, standards for warranties.[xviii]

State and federal regulations also require that vehicles be fitted with unique identification numbers. NHTSA regulations require that vehicles be fitted with a 17-character VIN, following a specific format and not matching any VIN previously assigned to a vehicle less than 60 years before it was produced.[xix] In addition to federal standards, Vermont's periodic inspections also confirm that a VIN is affixed to the vehicle in a properly visible location, as well as that it matches the VIN listed on the vehicle's registration.[xx] Importantly for manufacturers of some of the vehicles considered in this memorandum, a federal VIN shall contain identifying markers for a) whether a vehicle is produced by a low volume manufacturer and b) the specific

manufacturer that produced the car through the World Manufacturer Index (WMI), which can be obtained from the Society of Automotive Engineers.[xxi]

2.2 EMISSIONS

As discussed previously, while NHTSA holds some purview over fuel economy, the EPA is the agency primarily responsible for the regulation of pollutants emitted by vehicles in their operation. The EPA has developed a policy specific to kit cars; introduced in 1994, it replaced and clarified previous guidance on the topic. This policy states that when fully assembled, these vehicles are to be equally considered as “motor vehicles” and must similarly follow regulations and certify their compliance with them. If substantially or exclusively used and rebuilt drivetrain components are installed, however, the vehicle can be considered “rebuilt” and is thus treated as covered by the engine’s original EPA compliance certificate.[xxii] A vehicle "will be considered to be a rebuilt vehicle of a previously certified configuration and will be considered to be covered by that configuration's original EPA certification of conformity" if the engine and all emission-related components and settings conform to those of the previously certified configuration, and if the weight of the completed kit vehicle is not more than 500 pounds greater than that of the originally certified configuration.[xxiii]

The later-enacted LVMV Act of 2015 contains similar provisions, allowing replica vehicles to be installed with already compliant engines. The Act allows a vehicle to use an existing certified engine, including all engine emissions controls, in the replica vehicle for the year the replica vehicle is assembled (not the year the vehicle is emulating). The replica is then exempt from certification testing and subsequent emissions inspection requirements. For example, a replica of a 1965 vehicle assembled in 2025 needs to use an engine system that is certified by CARB for use in 2025.[xxiv]

The LVMV and EPAs guidance around emissions is important to put into context that for the purposes of using a certified configuration there are two main levels of emissions reviews in the country – EPA and California. The EPA is the common federal benchmark. The California low emission vehicle (LEV) standards are tailpipe and evaporative emission standards that are more stringent than the federal standards and are followed by 18 states, including Vermont.[xxv]

Under the federal Clean Air Act, only California and the federal government (through the EPA) are permitted to set such emissions standards, with other states required to follow federal guidelines or adopt California’s as their own. As such, the EPA and California are also the only bodies that can certify vehicles and engines as in compliance with emissions requirements. These regulations are used to establish the certified emissions control technology required for certain vehicles and the allowable emissions for engine years.[xxvi]

Vermont’s periodic inspection program ensures vehicles’ compliance with relevant state and federal emissions standards by verifying that emissions control systems installed in the vehicle – such as catalytic converters and OBD systems – are functioning properly. To inspect the vehicle’s OBD system, the vehicle must first be “ready”, which can be accomplished by driving the vehicle in various circumstances (e.g., highway driving, low-speed driving, etc.).[xxvii] Vermont’s statutes surrounding OBD inspections, however, do not explicitly refer to replica

vehicles or kit cars,[xxviii] potentially contributing to a mismatch between federal and state guidance and policy as to the model year assigned to a newer *vehicle* vs the compliance requirements associated with a used or rebuilt engine – and thus, the emissions system requirements applicable to it, per federal law. Per regulations adopted in 1996, Vermont also requires new passenger vehicles, 2000 model year and newer, sold within the state to be certified in compliance with California's motor vehicle emissions regulations.[xxix]

Like the federal LVMV Manufacturers Act of 2015, California in 2001 enacted Senate Bill 100 (SB 100), which created an exemptions program for what it terms "specially constructed vehicles," defined as a "vehicle that is built for private use, not for resale, and is not constructed by a licensed manufacturer or remanufacturer," a definition that would broadly include kit cars and homebuilt vehicles per Vermont definitions. Under this program, up to 500 vehicles annually (out of around 1,800,000 new vehicles registered per year or around 0.03%) are exempted from certain emissions and smog requirements by allowing only those requirements applicable to the model year or engine year (up to the owner's choice) of the vehicle in question, or what it matches most significantly, with a default of 1960 if no significant match is found.[xxx] It is important to note that SB 100 makes an important distinction between the vehicle model year of assembly or manufacture and the engine year.

2.3 SAFETY

NHTSA and its predecessor agencies – the National Traffic Safety Agency[xxxi] and National Highway Safety Agency[xxxii] – were given the authority to regulate the safety of vehicles and associated equipment at their creation through the 1966 National Traffic and Motor Vehicle Safety Act. To be sold, new vehicles and equipment must be self-certified by their manufacturers as fulfilling federal regulations surrounding motor vehicle safety, with these requirements codified into the Federal Motor Vehicle Safety Standards (or FMVSS). These standards have been developed to cover a wide range of potential incidents as well as covering a range of sub-components and systems.[xxxiii] Importantly, standards are not the same for all vehicles; more standards apply, for example, to small pleasure vehicles with a gross weight of less than 4,536 kilograms (or 10,000 pounds) than to larger pleasure vehicles.[xxxiv]

Under the LVMV Act of 2015, some federal safety standards, may be waived in an effort to recognize the special circumstances under which low volume vehicle manufacturers operate.[xxxv] This act directs NHTSA to apply to replica vehicles only the standards in effect when the vehicle it intends to re-create was manufactured, with some exceptions: among other things, seatbelts must still be installed and equipment like lighting and glazing which is installed on the car must still fulfill current requirements (as the act does not give NHTSA the ability to exempt equipment).[xxxvi] When producing vehicles under these exemptions, however, manufacturers are required to affix labels identifying to purchasers and dealers the standards from which the vehicle was exempt.[xxxvii]

Vermont requires comprehensive inspections of vehicles to ensure that vehicles operating in the state are in "safe condition and properly equipped." Under this program, licensed inspectors perform comprehensive check of the vehicle and its systems – e.g., brakes, windshields,

lighting, etc. – to ensure that all components are operating within pre-defined standards. If found to be unsafe, unfit for operation, or improperly equipped, any issues must be remedied before receiving certification of inspection.[xxxviii] The manual describing these guidelines and procedures does specifically consider how to best handle the inspection of what it calls "special vehicles" including antique cars, kit cars, and replicas (noted that the Vermont definition of replica is slightly different than the federal definitions of replica vehicles) are to be treated as standard pleasure cars and light trucks. Other special vehicles including street rods, neighborhood electric vehicles, homebuilt vehicles, and exhibition vehicles must be inspected according to alternative procedures. However, the procedure notes that homebuilt vehicles registered as a pleasure car or truck must meet all the requirements of the inspection manual, including OBDII.[xxxix] The set of guidelines for the inspection of pleasure cars and light trucks, on one hand, often refers to manufacturer guidelines and requires adherence to those within a certain tolerance,[xl] while guidelines for special vehicles, on the other hand, are somewhat less comprehensive and broadly list the equipment with which a vehicle must be equipped and the correct manner of installation of equipment to ensure safe condition and operation.[xli]

As one interesting case study from another jurisdiction, the country of New Zealand has developed a comprehensive set of standards of and program for the inspection and registration of low volume vehicles like kit cars and homebuilt vehicles. With changes to the country's vehicle regulations impending in the 1990s, interest groups working with these vehicles were spurred to push for a regulatory framework for these vehicles to ensure they could still be registered and used.[xlii] With origins in two of the interest groups initially brought in by the New Zealand government to develop this framework, the Low Volume Vehicle Technical Association, or LVVTA has developed a comprehensive set of standards for vehicle components and systems,[xliii] construction of vehicles,[xliv] and the development of a broader inspection system separate from that working with standard passenger vehicles.[xlv] This system of inspections and standards ensures all modified and scratch-built vehicles have been designed and constructed in a way that makes them: a) safe to be driven and b) compliant as closely as possible with high volume vehicle regulations.[xlvi]

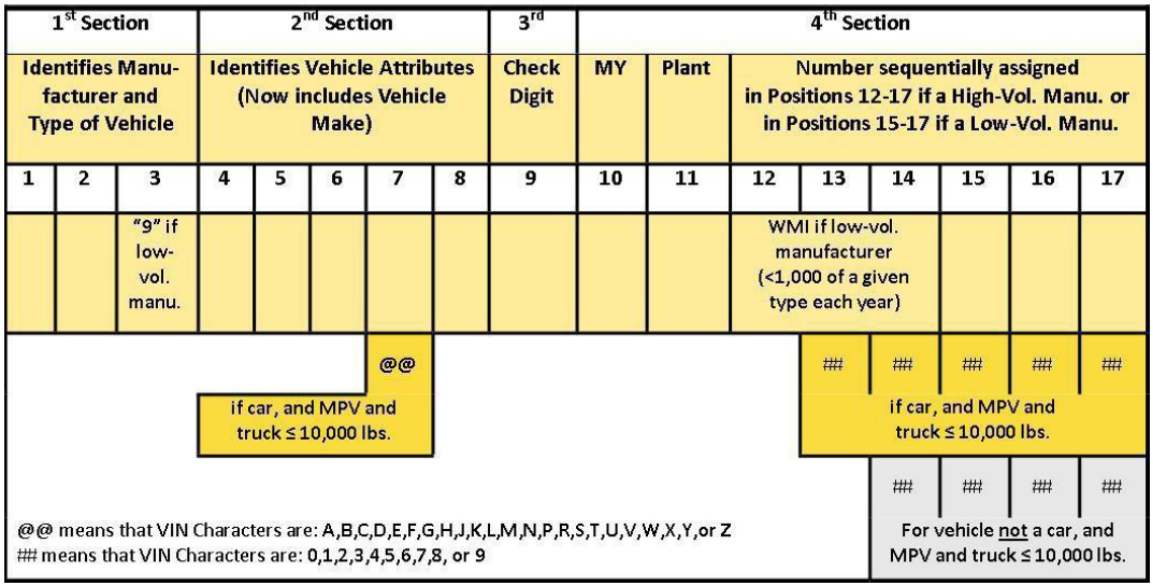
While the separate inspection system developed by the LVVTA at the country scale (although New Zealand is a country with around 5 million people but about 1/3 less dense Vermont), may not be suited to this context, pathways certainly exist to ensure the safety of vehicles like those under study.

2.4 VIN ASSIGNMENT

In order to be sold, operated, and registered with the state in which they are kept, NHTSA requires manufacturers to assign each vehicle that they produce a 17-character VIN. Per federal regulations, these identifying numbers are only allowed to contain certain letters (notably excluding certain easily mistakable characters) and cannot be shared between two vehicles produced within 60 model years of each other. Importantly for this memorandum, however, the VIN must follow a specific format: among other items, a VIN will include information about a vehicles model year and type, as well as a unique identifier for the manufacturer (their WMI

number), a marker for low-volume motor vehicles, and a character in the ninth position determined by a manufacturer-specific formula that must be shared with the NHTSA, used to aid in ensuring validity of the VIN.[xlvii] In order to assign VINs to their vehicles, manufacturers must first obtain their WMI number from the Society of Automotive Engineers, followed by registration in the NHTSA's vPIC platform and sharing of information like the formula used to assign the ninth digit. For replica vehicles specifically, additional information such as information sufficient to prove they are not an importer, proof of license to replicate the vehicle theirs is based off of, and all other information necessary to prove they are a motor vehicle manufacturer will need to be provided in this platform before VINs can be assigned.[xlviii]

FIGURE 1: GENERAL VIN FORMAT (NHTSA MANUFACTURES HANDBOOK)



Source: NHTSA

Under its SB100 exemption program, California also provides pathways for the state to assign VINs to vehicles titled and registered or undergoing those processes in the state. Alongside standard documents like an application for title, those wishing to assign a VIN to their kit car homebuilt vehicle will have to have the vehicle verified by a DMV employee alongside the submission of a suite of documentation which includes a comprehensive collection of bills of sale or receipts for all components; a form detailing the construction of the vehicle, individuals involved therein, and the parts used in its construction; and an electronic certification of safety from a licensed inspection station.[xlix]

Vermont also has an existing system for state VIN assignment; while intended primarily for vehicles whose VIN has been destroyed or removed due to circumstances outside the owner's control, it does allow for some other vehicles to obtain VINs, specifically homebuilt vehicles and vehicles rebuilt from component parts, a category that could include kit cars which excludes new fully manufactured vehicles. To assign a VIN this way, an application must be submitted alongside all bills of sales and titles for components, photographs of the final product for homebuilt or rebuilt vehicles, and verification of qualification as a street rod if applying for this

designation. The specialty vehicle type “Street rods” or “street rod replicas” undergoing this additional process are directed to specified automotive shops for a more thorough verification and physical inspection. These specific shops have been authorized by the DMV and noted on the form to request a VIN for these vehicle types. In all of these cases, VINs assigned this way will be attached by a licensed inspector.[l]

Importantly, while VINs assigned by states like California and Vermont serve a similar purpose for state agencies regulating and registering motor vehicles by providing a unique identifier for individual vehicles and are allowed by NHTSA,[li] these VINs are not necessarily equivalent to the usual VINs applied by manufacturers and governed by federal law and may not be recognized outside the state they were issued in.[lii] To move into production with a federally recognized VIN, vehicles will also need to be certified to be in compliance with EPA emissions requirements and self-certified to be in compliance with federal safety standards.

2.5 NATIONAL SCAN: VIN AND REGISTRATION

This section summarizes the non-exhaustive scan of national rules and regulations pertaining to the creation of VINs and registering vehicles of interest to this report: *ultra-low volume motor vehicles, kit-cars, and homebuilt motor vehicles.*

This research is not exhaustive and does not address all the complexity involving as to determine the legality and compliance that each state has with federal laws. The review did not find any specific allowances for ultra-low manufacturers to register their vehicles using any other means that differ from federal laws. Most states appear to have provisions to register a specialty vehicle such as a homebuilt or kit car.

California

As discussed previously, California enacted a program for the assignment of VINs to and registration of “specially constructed vehicles” through 2002’s Senate Bill 100 (or “SB 100”). This program broadly covers the kit car and homebuilt categories considered in this report, with “specially constructed vehicles” defined as “built for private use, not for resale, and not constructed by a licensed manufacturer or remanufacturer” and may contain new components, used components, or a mix of two, including sets of components coming from a kit. The program provides waivers to emissions requirements for up to 500 vehicles a year by applying to the vehicle only those requirements applicable to the owner’s choice of a) the model year of the original vehicle the vehicle in question most significantly resembles or b) the engine year of the original engine the engine in question most significantly resembles.[liii] To be registered under this program, beyond usual documentation such as a title application, owners must bring the vehicle to be verified by an employee of the state’s Department of Motor Vehicles, submit a statement of construction alongside bills of sale for components and documentation (e.g., Manufacturer’s Certificate of Origin, receipt, or invoice) identifying the kit of assembled from such a package, and finally undergo an inspection of safety systems by a licensed technician.[liv]

Florida

The state of Florida has implemented a suite of regulations and statutes intended to deal with replica vehicles and kit cars in a more consistent manner. In both cases, the vehicles designation in these categories is required to be stamped in a conspicuous place and is included on the title. For replica vehicles, a process for titling and registration has been developed with clear steps requiring Manufacturer Certificates of Origin, applications for title, and payment applicable sales taxes much as any other vehicle,[lv] but an affidavit must be completed to the effect that the vehicle will *not be used for general daily transportation but primarily for exhibitory activities and occasional transportation*. Kit cars, like in Texas, are assigned the year they were assembled as their model year, with the states VIN assignment process resembling Vermont's, requiring bills of sale for component parts and an initial inspection of the vehicle.[lvi] Florida's limitation on using specialty vehicles (including replica vehicles, homebuilt vehicles, and kit cars) not for general daily transportation use appears unique.

Texas

Texas allows for the registration of what it calls "assembled vehicles," a category broadly includes what would be described in this report as kit cars and homebuilt vehicles, alongside some other categories not under consideration (e.g., trailers and motorcycles assembled in similar manners).[lvii] Regarding emissions standards, no standards are waived, and contrary to some jurisdictions, the year for which emissions standards must be met is considered the year the vehicle was assembled and not the year of the engine, and all vehicles must demonstrate that they are certified to be in compliance with EPA regulations and pass any relevant emissions tests,[lviii] determined by the area in which the car is being registered.[lix] To be registered, all vehicles must undergo inspection by a subset of master technicians to ensure safety and, if a VIN needs to be assigned by the state, undergo inspections to ensure that no stolen components are present.[lx]

Utah

Utah allows for the assignment of VINs to and registration of kit cars and homebuilt vehicles, but again without explicit state provision for ultra-low or low volume motor vehicles. Unique to Utah, the state divides kit cars into two classes: "Type One" kit cars are vehicles comprised of "a frame purchased from one individual and the rest of the components purchased from someone else or all the components may be purchased from the same individual" and are assembled to resemble a pre-existing model of vehicle, while "Type Two" kit cars are vehicles whose "components are purchased in a kit similar to a model car (including the frame)." Requirements for the registration of these two classes differ somewhat. "Type One" kit cars match most closely with Vermont's understanding of these vehicles, and require similar documentation, including a title for the frame of the vehicle, a manufacturer's statement of origin (MSO), documentation of

the parts used and construction process, photographs of the completed vehicle, an application for title, an application for a state VIN, and, notably, an emissions certificate. “Type Two” kit cars are assumed to already have a standard 17-digit VIN assigned and only require the MSO, documentation of parts and construction, application for title, an emissions certificate, and a set of photographs of the completed vehicle or visual inspection conducted by the state’s Motor Vehicle Division. Besides the requirement of an emissions certificate – something that is only checked *after* registration in Vermont – such required documentation aligns broadly with Vermont’s existing process for kit cars.[lxi]

Homebuilt vehicles, categorized as “specially constructed vehicles” in Utah, require a more comprehensive suite of documentation to receive a registration. This includes much of the same documentation as for kit cars – application for VIN, application for title, photographs, and an emissions certificate – with the addition of an “ownership statement” describing the acquisition of parts, bills of sale for parts, and a safety inspection. In certain cases, when a vehicle is considered a “restored-modified” vehicle, or vehicle “that has been restored and modified with modern parts and technology, including emission control technology and an on-board diagnostic system,” an additional document describing all modifications to emissions control systems is required as well, but it is unclear how this might interact with federal anti-tampering provisions.[lxii]

New York

New York works to register both homebuilt vehicles and kit cars under a single consolidated category, for which a detailed set of instructions is provided. In addition to obtaining an application and actually constructing the vehicle, the state’s Department of Motor Vehicles advises those undertaking the construction of such vehicles to plan their project, identifying the type of vehicle they will be building and keeping all original receipts and other proofs of ownership. Once a vehicle is complete, those hoping to register their vehicles must: obtain a certificate listing the exact weight of the vehicle, compile photographs of the completed vehicle from all four sides, and forward suites of documentation to the DMV’s Vehicle Safety Technical Services division (an equipment certification form alongside the photographs, proofs of ownership, and weight certificate discussed previously) and the DMV’s Division of Field Investigation (a VIN assignment application and proofs of ownership). Following review of these documents, the Division of Field Investigation will set a date and time for an inspection of the vehicle to ensure no parts are stolen and all components are accounted for, after which the vehicle can receive a state VIN. After receiving its VIN, the vehicle in question can finally be towed or otherwise transported to an authorized station for a safety inspection,[lxiii] after which it undergoes the standard registration process,[lxiv] with no explicit allowances noted for emissions exemptions.

Massachusetts

Another New England state, Massachusetts, has explicitly addressed the issue of registration of vehicles like those included in this reported in its own state legislation, passing “An Act Relative to the Registration and Inspection of Street Rods and Custom Vehicles” in 2010. This act provides specific definitions for street rods; specially-constructed vehicles, defined as not resembling any previously existing vehicle; replica vehicles, which can be constructed from new and/or used parts and resemble a previously existing vehicle; and custom vehicles, defined as “a motor vehicle for which the year of manufacture is after 1948, for which the model year is at least 25 years old and that has been altered from the manufacturer’s original design or has a body constructed, in whole or in part, from non-original materials.” While the definitions for vehicle categories besides that applied to street rods do not cleanly match the categories identified for study in this report and cannot be directly compared, the act does notably direct the state’s Registry of Motor Vehicles to issue registrations and number plates to these vehicles and include in the title both the year of manufacturer of the vehicle in question and the make, model, and year of the vehicle it intends to replicate, if applicable. To enable registration, the state has addressed concerns around both VINs and emissions, allowing the RMV to require inspections to confirm no stolen parts are included in the vehicle’s construction after which a VIN can be assigned and either a) offering waivers from emissions requirements for vehicles registered before April 30, 2012 or b) assigning only those requirements applicable for the year of manufacture of the engine included in the vehicle in questions (including an OBD system for some years). Per staff of the Massachusetts Vehicle Check division of the state’s Department of Environmental Protection, all new or new to Massachusetts kit cars are required to undergo a visual inspection at a Motorist Assistance Center (MAC) regardless of age of the vehicle. During the inspection, the MAC staff will work with the motorist to identify the powertrain installed in the vehicle and to identify what if any emissions requirement is installed. The MAC staff will assign the emissions model year to the VIN once they are satisfied that the vehicle is compliant with Massachusetts regulations. Generally, the idea is to have a complete certified configuration from a donor vehicle in the kit car with all emissions equipment intact.

Apart from definitions, which regardless differ significantly from state to state and between states and the federal government, the process set up in Massachusetts broadly aligns with many of the provisions of California’s SB 100 in that the model year of the powertrain installed in the kit car becomes the emissions model year for testing purposes. Unique to Massachusetts though, no limit on the number of vehicles allowed to be registered under this scheme is made explicit in legislation, with the state instead enabled to limit the number of miles – no specific figure is noted, but this maximum annual mileage cannot be set below minimum 3,000 miles – that vehicles registered after April 30, 2012, may drive per year.[lxv]

New Jersey

New Jersey, another state which follows California’s motor vehicle emission standards, only allows limited pathways for registration of specially constructed vehicles like those explored in

this report. Like Vermont, it maintains a registration process for street rods, included under the umbrella of “historic vehicles;” to qualify as a street rod, the vehicle must be manufactured before 1949 and the owner must be registered as a member of a street rod club, while historic vehicles include vehicles older than 25 model years. To register these vehicles, an application specific to historic vehicles must be submitted alongside title documents and photographs and any applicable street rod club documentation (e.g., a membership card).[lxvi]

The state has also defined an additional category for “collector vehicles,” defined as less than 25 years old, of limited production, and not registered as a street rod or historic vehicle. In applying to register these vehicles, owners must complete an application specific to collector vehicles, include a letter from a registered car club or the manufacture attesting its limited production status, proof of limited-use insurance, and photographs of the front, rear and sides of the vehicle. While providing a potential pathway for some of the vehicles under study, collector vehicles are restricted to being driven 3,000 miles per year, not unlike other states’ restrictions to just exhibition use.[lxvii]

Both collector vehicles, provided they do not have an elevated chassis, and historic vehicles (including street rods) are exempted from both safety and emissions inspections.[lxviii]

Pennsylvania

Similar to California, Pennsylvania has defined certain vehicles – namely those assembled from a kit and those assembled from parts of vehicles of various makes/model years, corresponding to kit cars and homebuilt vehicles – as “specially constructed vehicles” and has designed a titling and registration process specific to these vehicles. When titling and registering these vehicles, they are marked as “specially constructed” instead of any specific make or model and do not have a model year assigned, ensuring potential future owners are aware of these vehicles’ status as such. Before completing any other part of this process, vehicles must complete a safety inspection that extends beyond what is inspected in the state’s periodic safety inspections. Once an inspection is passed, a specific registration application, proof of ownership (including title, manufacturer statement of origin, or bills of sale), a detailed description of the construction of the vehicle, proof of insurance, and a slip indicating unladen weight must be provided, as well as a door jamb label filled out by an end stage/second stage manufacturer certified by NHTSA in some cases.[lxix] While emissions testing is only required in certain regions,[lxx] for those where it does occur, specially constructed vehicles, among others, are exempted from emissions inspections.[lxxi]

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3.0 ISSUES, STRATEGIES, AND CONSIDERATIONS

This chapter aims to summarize research and stakeholder feedback by answering a set of questions. This format can help frame specific aspects of interest when considering specific policy and regulatory responses.

Q1: Improve the definitions and understanding of the type of vehicle to be registered and inspected.

Perhaps the most central finding of our review of literature – and something that was expected given our preliminary discussions with interested parties – is that the definitions that currently existed to describe various classes of specially constructed vehicles can often be vague, overlapping, inconsistent between internal and inter-state/federal uses, or in some cases even non-existent in relevant legislation. In addition to all additional pathways to be explored in subsequent sections, one fundamental step that may need to be taken is to clarify and better align existing definitions with definitions at the federal level and among peer states and codify new definitions where these may not exist already. Some examples of varying definitions and propose schema for new definitions are included below.

Homebuilt Vehicles

While potentially the most conceptually straightforward of the classes, this term is the most ill-defined. Some existing state documentation, namely the state's Periodic Inspection Manual and Application for Assignment of VIN/HIN, refer to these vehicles and the procedures they must follow, but no actual definition is offered, nor is one in legislation pre-existing this report. The only documentation defining this term was the enabling legislation for the report itself, which describes a homebuilt vehicle as a "motor vehicle that is constructed or assembled by an individual from new or used parts, or both, and is not a kit-car."[lxxii] While a helpful foundation, its definition in opposition to another classification and thus dependent on that additional definition.

No definition of homebuilt vehicles is offered at the federal level, nor does California.

The following characteristics could be considered in developing a standard definition for homebuilt vehicles in Vermont:

- Homebuilt vehicles can be built from new parts, used parts, a combination of new and used parts, or from a vehicle reported as dismantled.
- Homebuilt vehicles are not built by a licensed manufacturer but are built in whole by an individual.
- Homebuilt vehicles are not intended for resale to others.
- Being built by an individual and not a licensed manufacturer, homebuilt vehicles do not have a manufacturer's certificate of origin (MCO) or statement of origin (MSO).

Kit Cars

Kit cars are defined in the enabling legislation for this report as a "motor vehicle that is constructed by an individual from a manufactured kit that includes some or all parts and components necessary to construct the motor vehicle."[lxxiii] While forming the basis for this report, this does conflict with a pre-existing definition offered by the state in its Periodic Inspection Manual, namely that kit cars "have a commercially manufactured body and/or body and frame that may resemble a regularly manufactured vehicle or are vehicles whose body may be of a unique design but is manufactured to fit on a commercially manufactured frame,"[lxxiv] which diverges significantly from the definition present in Act 43, notably in its lack of consideration of the party constructing the final vehicle.

On the federal level, NHTSA considers that if the kit car is comprised of parts both previously used and unused, NHTSA's examination of the list of components in each category will enable it to advise whether the kit car must comply with the FMVSS that apply to new vehicles.[lxxv] The EPA does characterize kit cars somewhat in their guidance regarding the emissions standards applicable to kit cars. In this policy guidance, the agency notes that kit cars typically involve new bodies, used drivetrains, and either new or used chassis; when fully assembled, they are considered "motor vehicles" as much as any standard motor vehicle and as such are subject to motor vehicle regulations. When using a used or rebuilt engine, these vehicles would be covered by that configurations original EPA certificate of conformity, treating them as the *year of the engine* regardless of when the vehicle itself was constructed.[lxxvi] This is similar to the provisions in California's SB 100.

Importantly, EPA's Kit Car Policy states, "an individual or firm that assembles kits for hire or resale, that produces assembled kit cars for resale or that produces complete kit car packages for resale will be considered to be a manufacturer of new motor vehicles under the Clean Air Act. Such manufacturers and their vehicles are subject to all applicable regulations under the Act including civil penalties of up to $25,000 per vehicle for each new motor vehicle distributed in commerce, sold, offered for sale, or introduced, or delivered for introduction, into commerce, unless such vehicle is covered by a certificate of conformity issued by EPA."[lxxvii]

Given the presence of two very disparate definitions at the state level and a somewhat different understanding – if not necessarily a definition – at the federal level, it may be important to develop one single standard that incorporates elements of the above to offer clarity to vehicle owners determining the correct process by which to register their vehicle. While no federal *definition* exists to which state definitions can be aligned, the understanding offered by the EPA can still serve as a useful tool, especially if the issue of kit car production and registration becomes more prominent nationally. The following characteristics could form the basis of a standard definition for kit cars:

- Although kit cars could be assembled or produced as complete packages of parts, from discussions with stakeholders the intent of Vermont's definition is that an individual participates in the physical construction and installation of key additional parts, namely an engine. Vermont has an opportunity to confirm whether a kit car can be sold and registered to someone other than the individual building the vehicle, and what limitations

may be prudent regarding the sale of kit cars. Additional consideration to include similar California provisions, such as “built for private use, not for resale, and not constructed by a licensed manufacturer or remanufacturer” may help to ensure alignment and avoid unintended challenges.

- Kit cars are constructed in whole or in substantial part from a set of commercially manufactured components.
- These commercially manufactured components are sold as a package and are newly manufactured.
- Kit cars can contain some used components – for example, drivetrains, engines, and other components – in addition to new components. Kit cars shall use engines and associated emissions control technologies from a previously compliant vehicle.
- Kit cars are not eligible for a federal VIN, unless the number of new parts require compliance with the FMVSS for new vehicles and manufactured by a licensed entity.

Replica Vehicles, Street Rods, and Street Rod Replicas

Replica vehicles, street rods, and street rod replicas denote a range of related categories that can overlap with others, like manufactured vehicles or kit cars, and to someone unfamiliar with them all might look like an old model of car. Replica vehicles were the focus of 2015’s Low Volume Motor Vehicle Manufacturers Act and are defined in the act as vehicles produced by a manufacturer with a worldwide annual production of less than 5,000, intended to replicate the body of another vehicle at least 25 years older – 1990 at the latest at the time the act was passed, and manufactured under license from the original manufacturer.[lxxviii] This class of vehicle is itself not defined in Vermont, but a conceptually similar definition is used to describe other vehicles.

Street rods and street rod replicas are conversely only defined by the State of Vermont and not at the federal level. A common characteristic between the two is their shared appearance as being manufactured before 1949. Street rods themselves contain a body and frame manufactured prior to this year and are modified – meaning substantial or material alterations to the body or key systems of the vehicle; street rod replicas are “replicas” of pre-1949 bodies and frames that have been similarly modified, with “replica” in this context defined as “a body and/or frame commercially manufactured which resembles that of the original vehicle and which retains the basic style and dimensions as originally manufactured and whose major components such as grill shell, hood, doors, etc. are readily interchangeable with the original pre-1949 component.”[lxxix]

Given the substantial overlap between these classifications themselves and with kit cars and home builds, it may make sense to consolidate some categories or define these terms explicitly as categories of such categories. A consolidated definition of street rods and replicas could consider the following characteristics:

- A consolidated definition could include a range of dates as its cutoff; 1949 serves as the current threshold for street rods and street rod replicas, but this could be expanded to be

inclusive of more vehicles. Additionally, a single category could be constructed under which one subset (“replicas”) contains vehicles, including “street rod replicas” replicating any vehicle at least 25 years older than the current year and another subset (“street rods”) contains only those vehicles containing some proportion of original components.

- A consolidated category would not include these vehicles as originally manufactured but would require some degree of new parts or modification to key systems.
- A consolidated category would be intended to resemble a vehicle of a given range of model years and could include some number of components from the original vehicle.

Improving the definitions to specifically clarify when the vehicle is manufactured (with appropriate licenses) with the intent that the vehicle is offered for sale, as opposed to the vehicle replicating an older vehicle and built by an unlicensed (e.g., no World Manufacturer ID) individual.

(Ultra-) Low Volume Vehicle Manufacturer

Low volume and ultra-low volume motor vehicles and manufacturers are two closely related terms at differing levels of government both hinging on the number of vehicles produced worldwide by a manufacturer annually. Low volume manufacturers were defined in the similarly named LVMV Manufacturers Act of 2015 as “a motor vehicle manufacturer, other than a person who is registered as an importer under section 30141 of this title, whose annual worldwide production is not more than 5,000 motor vehicles.”[lxxx] This term (LVMV manufacturer) is not defined in Vermont, but the “ultra-low volume motor vehicle” category identified for report in this report’s enabling legislation is defined as “a vehicle that is manufactured for sale by a manufacturer whose annual worldwide production is not more than 325 motor vehicles.”[lxxxi] While this category does not exist as its own defined category in federal law, this number matches the number of vehicles allowed to be exempted each year by the LVMV Manufacturers Act. Given the existing alignment between these two categories, these could easily be used in any definitions established going forward.

Defining a manufacturer; although it appears that NHTSA will consider a "manufacturer" as any person importing kits or kit cars for resale, as well as the actual fabricator or assembler of a kit,[lxxxii] it appears widely accepted practice across the country to allow for an individual to create a vehicle for personal use and not be considered a manufacturer. For the homebuilt and kit car vehicle types identified in the statute, these are going to limit their application to apply only to individuals and not be considered eligible or be considered as manufactured.

Strategies and Considerations

If the State of Vermont is to consider the implementation of programs targeting the registration and production of vehicles like the above in the state, refining definitions and establishing them consistently – ensuring that different definitions are not used in different sources – will be

important for clarity as owners and producers determine in which categories their vehicles fit. Proposed schema for the definition of kit cars, homebuilt vehicles, and a consolidated replica or street rod category are detailed above. If such definitions are established, the state may need to consider how these changes will affect vehicles already registered under existing definitions, if at all, and whether separate definitions are required for low volume motor vehicle manufacturers delivering their products as kits or as complete products. Additionally, while the establishment of such definitions and application thereof can provide improved clarity for vehicle owners, this change on its own is limited and may need to be accompanied by other changes for any substantial impact to the ease of production and registration to occur.

Q2: What are the steps necessary to obtain a VIN in Vermont for each of the vehicle types?

While standard “federal” VINs are not assigned by the Vermont Department of Motor Vehicles, NHTSA has allowed state agencies to assign identification numbers in certain cases in which an original VIN number affixed by a manufacturer is unavailable.[lxxxiii] Vermont requires the submission of an “Application for Assignment of VIN/HIN” to obtain a state-assigned VIN and identifies four eligible categories of vehicle: vehicles whose number has been destroyed or removed (requiring explanation), salvaged vehicles (requiring explanation), homemade vehicles, and vehicles which have been rebuilt from component parts, alongside an “other” category for additional unforeseen cases.[lxxxiv]

For homemade vehicles and vehicles rebuilt from component parts – which align at least in part with a) homebuilt vehicles and b) kit cars, replica vehicles, and street rods, respectively – additional materials are required to be submitted alongside the application. These materials include bills of sale and (if applicable) titles for all components as well as a photograph of the completed build. If the vehicle in question is a street rod or replica of a street rod, it must additionally complete a “Certificate of Verification for Street Rod” (form VN-186) in addition to the VIN application (VT-003-VIN),[lxxxv] in which these vehicles are directed to a designated set of five mechanics in the state to verify that a vehicle qualifies to be registered as a street rod or street rod replica.[lxxxvi]

This existing process appears to allow for the application of state VINs for many vehicles considered in this report.

- Homemade vehicle: would seems to align with the homebuilt category from the enabling legislation and kit cars might be able to follow the pathways for homemade vehicles,
- Vehicles rebuilt from component parts, or street rods and street rod replicas. The vehicles in this legislation are not considered in this category.
- Other: This may be the existing pathway for the assignment of VINs to fully assembled ultra-low volume vehicles in the state. However, the use of the “other” category for manufactured vehicles for sale appears to be outside of the intent of this category. The intent should be further clarified by DMV.

Vermont's VIN system is not unique – in that it provides a pathway to assign a state ID to all of the applicable vehicle types. However, as noted later in this report, a VIN is only one step toward full legal road use of the vehicle; registration and inspections follow.

Vermont's VIN system – allowing for limited application of state VINs to vehicles like those considered in this report – is not unique to the state. NHTSA allows, to an extent, for states to administer such processes, and California, a state whose emissions regulations form the basis of much of Vermont's own regulations, has developed its own SB 100 program to provide an easier pathway by which to register "specially constructed vehicles," which includes kit cars and homebuilt vehicles, by offering waivers to emissions systems, as a supplement to its VIN and registration processes for these vehicles. Explicit use of the existing state VIN program for homebuilt vehicles and kit cars would closely follow its existing use –with slightly differently named categories – and precedent set by states like California. While stakeholders reported that some low volume vehicle manufacturers have used California's process to obtain VINs and get their vehicles registered (such as by selling the complete vehicle without the engine), this seems to be an exploitation of a loophole and against the spirit of the law, and Vermont should be careful in ensuring that such a loophole does not exist and is not used by such organizations.

Finding

- Obtaining a VIN does not confer or acknowledge that the vehicle can be registered or can pass inspection for use in Vermont but is a *prerequisite* to registration.
- Having a valid VIN is required for a vehicle to be registered and then inspected for use on Vermont's roads.
- Existing Vermont law can be improved by clarifying definitions and updating the VIN forms to improve clarity on the intent and types of vehicles allowed.
- Existing Vermont VIN forms and process appear to allow for homebuilt and kit car vehicles to receive a Vermont VIN. If using the existing process, "other" would seem to be the only current route by which a manufactured vehicle such as a replica could be assigned a state-assigned VIN. However, this can also be clarified to explicitly define "other."

Q3: What are the steps necessary to register a vehicle in Vermont for each of the vehicle types?

To register a vehicle in Vermont, their owner (and any co-owners, if applicable) must submit a complete registration application to the Vermont Department of Motor Vehicles. This form will include contact and other information for any owners, identifying information for the vehicle itself (e.g., year, make, model, mileage, and VIN), information concerning the party from which the vehicle was purchased and any lienholders, registration type, and any information necessary to determine the correct amount of tax to be paid for purchase and registration. To be able to fill out this form, however, certain steps must have already been completed; a vehicle must have a VIN number by which it can be identified (either assigned by the manufacturer or by the state in

certain cases) to undergo registration and the owner of the vehicle may need to ensure that they hold title over the vehicle.[lxxxvii]

Safety and emissions inspection must be fulfilled within 15 days of registration. All vehicles are required to undergo safety inspections and emissions checks – which include visual inspection of catalytic converters and gas caps for all vehicles and electronic testing of the onboard diagnostics (OBD) system for vehicles that are 16 model years old or newer – at a licensed inspection station annually.[lxxxviii] The details of these checks will be discussed in later sections.

Finding

- Applicants must have a VIN and clean title and be inspected within 15 days of registration.
- Vehicles must undergo safety checks to pass inspection. See Question 3a.
- Vehicles must undergo emission checks to pass inspection. See Question 3b.

Q3a: What are the requirements pertaining to safety regarding a vehicle inspection for each of the vehicle types?

To be sold in the United States – and thus in Vermont – all vehicles must fulfill federal safety standards. These standards describe the minimum performance requirements of vehicles and their sub-systems and components and all certification of compliance with this array of requirements is self-applied by manufacturers. Importantly, these standards apply to “newly manufactured” vehicles.[lxxxix] Federal law, through the Low Volume Motor Vehicle Manufacturers Act, allows up to 325 vehicles produced by low-volume manufacturers who comply with certain guidelines – including registering themselves with NHTSA – to be exempted from these safety standards yearly. Any such exemptions must be noted on a label permanently affixed to the car and such information must be furnished to individuals purchasing the vehicle.[xc]

Per NHTSA regulatory guidance, this does apply to homebuilt vehicles and kit cars alongside vehicles assembled by a licensed manufacturer, but only in the case that they are built entirely from new components; if used components are employed in the construction of the vehicle, it can be considered used and thus does not need to follow standards that apply to vehicles and will only need to follow certain equipment safety standards when applicable. Per NHTSA regulations, newly manufactured ultra-low volume vehicles and kit cars or homebuilt vehicles assembled entirely (or near entirely) from new components will not be able to be sold to consumers and registered if they cannot certify themselves to be in compliance with all current federal safety standards. Homebuilt vehicles and kit cars employing used components are not similarly restricted and can be sold and registered without such certification of compliance.[xci]

Additionally, all vehicles are required to undergo comprehensive safety inspections within 15 days of registration and periodically from that point forward, the process of which will be discussed in greater detail in a later section. These inspections intend to ensure all vehicles on the road are “in safe condition and properly equipped.” Such inspections include visual inspection of various components, on-road testing of systems like brakes, and ensuring that

various components operate within tolerances established by their manufacturer. Ultra-low volume vehicles and kit cars, as defined in Act 43, are treated as standard “pleasure cars and light trucks” and should undergo full inspection accordingly. Homebuilt vehicles are treated as “special motor vehicles” and undergo an inspection following procedures that are, in many cases, more generally defined and ensure the presence of necessary components and some elements of correct installation and placement.[xcii]

Findings

- NHTSA safety regulations reinforce the Vermont definitions of kit car and homebuilt cars that they are not made or intended to be considered, “manufactured” and not intended to be produced by one entity and sold to another.
- Vermont safety inspection standards treat kit cars and homebuilt cars differently. This difference should be reconsidered in updated policy and regulatory guidance.
- Vehicles undergoing VIN assignment and registration as “street rods” must pass a preliminary inspection to verify they qualify under this category in addition to the periodic annual inspections.
- Safety inspection of replicas and other manufactured vehicles is a bit nuanced. Per NHTSA regulations, newly manufactured ultra-low volume vehicles, replicas, kit cars or homebuilt vehicles assembled entirely (or near entirely) from new components will not be able to be sold to consumers and registered if they cannot certify themselves to be in compliance with all current federal safety standards. Manufacturers producing fewer than 325 vehicles per year are exempt from some of those standards. Vermont’s safety inspection process would not emulate the federal safety standard process and instead continue to focus on the safe operations of the vehicle, the presence of the required components with up to date performance specs (i.e., safety glass, seatbelts), and the physical components expected per the year the vehicle is replicating (i.e., configuration of brake lights).

Q3b: What are the requirements pertaining to emissions regarding vehicle inspection for each of the vehicle types?

Since its establishment in the 1970s, the EPA has been charged with implementing the federal Clean Air Act and regulating motor vehicle emissions necessary to reduce emissions of various pollutants. The agency has established a set of standards limiting the amounts of such pollutants, including hydrocarbons, carbon monoxide, nitrous oxide, sulfur, and others, as well as mandating inspections of emissions systems in regions with historically high pollution and the installation of catalytic converters. This regulation has set a nationally applicable minimum standard for motor vehicle emissions.[xciii]

Vermont has adopted emissions requirements extending beyond federal minimums by requiring new vehicles sold and registered in Vermont since the enactment of regulations in 2000 to be certified to more stringent emissions standards enacted by California through its California Air Resources Board (CARB).[xciv] Under the federal Clean Air Act, only California and the federal

government (through the EPA) are permitted to set such emissions standards, with other states required to follow federal guidelines or adopt California's as their own. As such, the EPA and California are also the only bodies that can certify vehicles and engines as in compliance with emissions requirements. Bodies within the EPA and California's state government perform testing of engine configurations to determine whether they are in compliance with their jurisdiction's emissions standards, a process which includes not just emissions of carbon dioxide and other greenhouse gases through the tailpipe, but also emissions of a range of other pollutants originating from the entirety of the internal-combustion engine process.[xcv] With the ability to set such emissions standards limited to the federal government and the state of California, the state of Vermont is importantly *not* permitted under federal law and regulations to certify vehicles and their engines as emissions compliant on their own, even if the infrastructure to do so existed. Vehicle manufacturers can use independent, third-party laboratories for emissions certification testing with EPA and CARB providing oversight, auditing and confirmation testing as needed. Under such guidelines, all new vehicles that are 2000 or subsequent model year vehicle, including ultra-low volume motor vehicles, are required to be California certified to be sold and registered in Vermont.[xcvi]

The EPA and the State of California have each enacted guidance and programs focusing on categories of specially constructed vehicles. EPA policy guidance notes that fully assembled kit cars (and kit car packages that include all components, including engines) are understood to be motor vehicles and as such are required to be in compliance with emissions standards contemporary to its manufacture or "assembly" date. When the drivetrain used in the kit car, however, is exclusively or substantially used and/or rebuilt, regardless of the mix of used and new components in the rest of the vehicle's construction, and is in a substantially similar configuration as the original vehicle, it can be considered to be a "rebuilt" vehicle which is covered by the original vehicle and engines certificate of compliance.[xcvii]

In addition to following EPA's guidance described above, while only covering vehicles within its borders, California's SB 100 program also allows for easier compliance for up to 500 specially constructed vehicles annually – broadly including kit cars and homebuilt vehicles – with its own emissions requirements; it does this by waiving current standards and applying only the standards applicable to a) the model year of the original vehicle the vehicle in question most significantly resembles or b) the engine year of the original engine the engine in question most significantly resembled, with the owner of the vehicle choosing which of the two to assign and with a default of 1960 where a match is unable to be found.[xcviii] Importantly, a) this program is not intended to cover manufactured vehicles and b) this program does not certify a vehicle as compliant but simply allow vehicles that are compliant with applicable earlier standards to receive a VIN to be registered in the state.

Under the federal Clean Air Act (42 U.S.C. §§ 7511a, 7511c) and EPA's regulations (40 C.F.R. § 51.351), Vermont's inspection program must require light-duty cars and trucks to undergo an emissions inspection and subsequent repair of any emissions components that trigger a failure of the emissions test. Under current guidelines, as contained in the Vermont Periodic Inspection Manual, all vehicles, irrelevant of their certification status (EPA or CARB), 16 model years and newer are required to undergo an OBD system inspection, with the limited exception of

homebuilt vehicles considered “exhibition” vehicles, which are intended for only limited use in a variety of *non-transportation* activities.[xcix] All vehicles must also undergo visual inspection of gas caps and catalytic converters, with vehicles older than 16 years (based on year of manufacture or assembly) only undergoing this visual inspection. The visual inspection is understood to review only whether the catalytic converter is present and properly installed if the vehicle was originally equipped. The visual inspection does not review whether the catalytic converter is operating properly, or if the engine and all emissions controls are installed per the originally manufactured compliant configuration and operational. Kit cars and homebuilt cars (unless registered as ’exhibition’ vehicles) have the same requirements as “pleasure cars” also undergo the electronic inspection of the OBD system for those 16 years and newer (from year of assembly).[c]

Finding

- Ultra-low volume vehicles (including replica vehicles), kit cars, and homebuilt vehicles registered for “exhibition” use are exempt from OBD testing.
- Homebuilt vehicles and kit car vehicles, with used or rebuilt parts that are not for exhibition use must be inspected using the emissions standards contemporary to the vehicle’s manufacture date or date of assembly. Vermont currently does not distinguish between engine or motor date (often referred to as engine model year or emissions year) and the date that the vehicle was produced (often referred to as vehicle model year). It appears that homebuilt and kit cars using used or rebuilt engines have been inspected in Vermont, using potentially compliant designs based on the age of the engine rather than the age of the vehicle. However, for vehicles not subject to the OBD inspection, Vermont’s inspection program does not confirm whether the engines are compliant and include all engine emissions controls in their original certified configuration.
- Ultra-low volume vehicles, kit cars, and homebuilt vehicles that include a certified engine and emissions controls can obtain a VIN, become registered, and be inspected, though clarity may be needed in the future regarding the model year to be used in determining emissions inspection requirements.
- Ultra-low volume vehicles, kit cars, and homebuilt vehicles that (1) do not include a certified engine or (2) have a certified engine and emissions control system that has been tampered with do not have a legal pathway to pass inspections, Even if some vehicles may end up on the road through other means, especially with inspections only occurring after registration has been obtained. The registrar of the vehicle is liable for complying with all other applicable laws including federal tampering laws. See Q7 below.

Q4: What are the requirements for a vehicle inspection for each of the vehicle types?

Under the federal Clean Air Act (42 U.S.C. §§ 7511a, 7511c) and EPA's regulations (40 C.F.R. § 51.351), Vermont's inspection program must require light-duty cars and trucks to undergo an emissions inspection and subsequent repair of any emissions components that trigger a failure of the emissions test.

The Vermont requirements for vehicle inspection in the state are detailed in the Vermont Air Pollution Control Regulations Section 5-703 and the "Periodic Inspection Manual," which explains inspection licensing and the procedures to follow in inspecting vehicles for registration and renewal thereof. These inspections are intended to ensure that vehicles operating in the state are in "safe condition and properly equipped." The periodic inspection manual includes sections outlining specific procedures and standards for a range of vehicle types, broken down into pleasure cars and light trucks (what one could consider "standard" passenger vehicles like sedans, hatchbacks, and SUVs), motorcycles and related vehicles, heavy trucks and buses, trailers, school buses, and "special vehicles".

This "special vehicles" section identifies seven different classes of vehicles and provides guidance regarding which guidelines should be followed in performing periodic inspections. Per these guidelines, kit cars, alongside replicas and antique vehicles, must be inspected in accordance with the standard pleasure car and light truck standards; homebuilt vehicles, alongside street rods, neighborhood electric vehicles, and exhibition vehicles must follow special vehicle standards.[ci]

Pleasure car and light truck guidelines cover a range of vehicle systems and components – e.g., brakes windshields, lighting, body, etc. – and alongside some specific items like ensuring proper placement of lighting and that a vehicle can safely brake from 20 miles per hour within 20 ft often refers to manufacturer guidelines and a certain allowance from that standard.[cii]

Guidelines for special vehicles, however, are somewhat less well defined and more generally list the equipment with which a vehicle must be equipped, the correct manner of installation of equipment (e.g., "fuel lines must be positioned to avoid contact with high-temperature surfaces or moving components"), and some other features required for safe operation, such as field of vision through the windshield stability while turning sharply.[ciii] No specific guidelines are noted for fully-manufactured ultra-low volume vehicles.

As noted previously, vehicles undergoing registration as street rods must undergo an initial inspection at one of five authorized inspection shops (listed on the VIN form) to verify that it qualifies as a street rod. This process, only is required for the initial registration of the vehicle and not required for the periodic safety inspection.[civ]

Findings

- Street rods are specialty vehicles requiring a unique level of review for initial registration.
- Other vehicle types in the authorizing legislation (homebuilt, kit car) along with other "special vehicles" (replica and antique vehicles) shall be inspected using the standard

pleasure car and light truck standards following registration. However, homebuilt vehicles registered as “exhibition vehicles” (i.e., vehicles used in exhibitions, club activities, parades, and other functions of public interest and which is not used for general daily transportation of passengers or property on any highway) are exempt from OBD testing.

Q5: What expectations and requirements exist for Ultra Low Volume Manufacturers based in Vermont?

As enterprises manufacturing motor vehicles for sale to consumers, ultra-low volume manufacturers based in the state are expected or required to fulfill various responsibilities regarding safety, emissions, and other topics under both federal and state law. Some of these are discussed below in relevant sections.

Safety

All motor vehicle manufacturers selling vehicles in the United States are required to abide by minimum performance requirements set forth by NHTSA through the FMVSS and certify compliance with such standards, as well as follow other regulations set by the agency such as those regarding theft prevention and performance of bumper which are not themselves codified in the FMVSS.[cv] While vehicles qualifying as replicas themselves are exempted from FMVSS applying to motor vehicles themselves, and not equipment standards, through the Low Volume Motor Vehicle Manufacturers Act if qualifying as a replica vehicle, certain components must still comply with standards relevant to equipment (e.g., glazing and lighting).[cvi]

Under these federal standards, manufacturers are additionally required to inform NHTSA, dealers, and consumers of safety defects and any noncompliance with standards and remedy such issues through recalls of affected products.[cvii]

Emissions

Under Vermont’s regulation and statutes, new vehicles manufactured beginning in model year 2000 and subsequent model years and sold in the state must be certified to conform with California’s emissions standards. Vermont cannot certify vehicles and engines (and associated emissions control technologies) on its own, as this responsibility lies solely with the federal government and the State of California. Manufacturers selling vehicles in Vermont are required to follow California’s standards regarding tailpipe emissions, evaporative emissions, function of catalytic converters,[cviii] and recall provisions, as well as standards around warranties on these systems, under which manufacturers must repair or replace systems if issues occur under a certain time or mileage threshold.[cix]

Other Issues

In stakeholder discussions, representatives of the Vermont Department of Motor Vehicles additionally voiced that manufacturers selling cars in the state would also need to ensure compliance with applicable consumer protection laws (e.g., warranties, recalls, in-state

dealerships and repair opportunities). While this topic has not been covered in the scope of this project, manufacturers expected to operate in the state and sell to Vermonters will need to ensure that they are aware of all relevant responsibilities under such laws and are equipped to take any necessary actions to be in compliance.

Q6: Is a Kit Car, Replica, Street Rod, or other specialty vehicle in violation of Vermont's Low Emission Vehicle and Zero Emission Vehicle Rules?

Simply by the nature of being classified as kit cars, replicas, street rods, homebuilt, or any other specialty vehicle category, such vehicles do not themselves fall in violation of Vermont's emissions guidelines, but those manufacturing, purchasing, performing final assembly of, and trying to register these vehicles will need to pay attention to the engines and associated components that are installed. All *new* vehicles sold, leased and purchased in the state must be certified to California emissions standards and offer warranty coverage aligning with that state's requirements. Installation of engines not certified to these standards may violate Vermont's Low Emission Vehicle and Zero Emission Vehicle Rules. Vermont's compliance with these rules commenced with model year 2000 vehicles.[cx]

The interpretation of the rules around kit cars, homebuilt, and other specialty vehicle categories is less clear when it comes to whether a kit car, homebuilt, or other specialty vehicle is "used" or "new." Under Vermont's Low Emission Vehicle and Zero Emission Vehicle Rules, a "New Vehicle" means any vehicle with 7,500 miles or fewer on its odometer.[cxi] Vermont can improve clarity on how to define whether the emissions and safety inspections distinguish between the production date, the engine date, and the vehicle date (year which a vehicle may replicate physical aspects of).

An important nuance is the difficulty in determining if the specialty vehicle conforms to the previously compliant design. VT DMV is the entity confirming that the registered specialty vehicle complies with Vermont's emissions rules. Both VT DMV and Department of Environmental Conservation are responsible for implementing and enforcing Vermont emissions rules. Further, the vehicle might need additional documentation to guide the annual inspection process – as to whether it is a visual inspection or the emissions expectations using the OBD.

Q7: Is a Kit Car, Replica, Street Rod, or other specialty vehicle in violation of engine controls and tampering laws (Clean Air Act Section 206(a)(5)(c))?

Similarly, simply by the nature of falling in one of these categories; kit cars, replicas, street rods, and other specialty vehicles, do not fall afoul of provisions of the Clean Air Act relating to tampering and engine switching. It is the installation of the engine and emissions components that may trigger these provisions. This report notes that the laws involving vehicle tampering were not the focus of this effort. These federal laws were noted in stakeholder meetings as something that may warrant additional clarification as to how approvals for specialty vehicles (homebuilt, kit car) with used engines comply.

The Clean Air Act prohibits removing or rendering inoperative any devices or components affecting emissions control; any engines installed without including all emissions control components present when certified would thus violate requirements of the Clean Air Act. The Clean Air Act in most cases and for practical reasons, prohibits the installation of engines from one vehicle in another; in order to remain compliant, the engine configuration (including emissions components, engine design, and engine calibration) would need to match exactly to the certified configuration, which is in most cases not practical due to differences in vehicle chassis design.[cxii]

The CAA appears to limit homebuilt and kit cars to those that are more protective of public health and air quality. While not applying to such vehicles as a class, this means that many kit cars, homebuilt vehicles, and others using new or used engines may fall afoul of such provisions if careful attention is not paid to ensuring exactly matching the engine configuration's installation.

4.0 OPPORTUNITIES TO ADDRESS THE ACT 43 STATUE

This section identifies a number of specific opportunities to address the issues raised in Vermont's transportation program legislation and provide pathways for the assignment of state VINs to and registration of kit cars, homebuilt vehicles, and ultra-low volume vehicles.

4.1 REFINE DEFINITIONS

The report's enabling legislation does not define all situations identified in this report. In addition, conflicting definitions between various state and federal sources, and overlapping of definitions between related categories has created a landscape where clarity is lacking for owners of vehicles considered in this report attempting to register them for use on Vermont's roads. To provide clarity for consumers and producers in the state and to potentially develop further pathways to ease the burden of registration of their vehicles and remain in legal compliance, the state should refine existing definitions and adopt new definitions where these do not currently exist.

The following characteristics could be considered in developing a standard definition for homebuilt vehicles in Vermont:

- Homebuilt vehicles can be built from new parts, used parts, a combination of new and used parts, or from a vehicle reported as dismantled.
- Homebuilt vehicles are not built by a licensed manufacturer but are built in whole by an individual.
- Homebuilt vehicles are not intended for resale to others.

- Being built by an individual and not a licensed manufacturer, homebuilt vehicles do not have a manufacturer's certificate of origin (MCO) or statement of origin (MSO).

The following characteristics could form the basis of a standard definition for kit cars:

- Kit cars are constructed in whole or in part by an individual. Vermont has an opportunity to confirm whether a kit car can be sold and registered to someone other than the individual building the vehicle, and what limitations may be prudent regarding the sale of kit cars.
- Kit cars are constructed in whole or in substantial part from a set of commercially manufactured components.
- These commercially manufactured components are sold as a package and are newly manufactured.
- Kit cars can contain some used components – for example, drivetrains, engines, and other components – in addition to new components. Kit cars shall use engines and associated emissions control technologies from a previously compliant vehicle. All emission-related components and settings must conform in all material respects to those of one previously certified configuration.
- Kit cars are not eligible for a federal VIN, unless the number of new parts require compliance with the FMVSS for new vehicles and manufactured by a licensed entity.

Given overlap between street rods, street rod replicas, and replica vehicles, the following characteristics may be considered to define and differentiate them:

- A consolidated definition could include a range of dates as its cutoff; 1949 serves as the current threshold for street rods and street rod replicas, but this could be expanded to be inclusive of more vehicles. Additionally, a single category could be constructed under which one subset ("replicas") contains vehicles, including "street rod replicas" replicating any vehicle at least 25 years older than the current year and another subset ("street rods") contains only those vehicles containing some proportion of original components.
- A consolidated definition may consider various types of engines: replica vehicles would usually contain a new engine, but street rods and street rod replicas can contain new or used components.
- A consolidated category would not include these vehicles as originally manufactured but would require some degree of new parts or modification to key systems.
- A consolidated category would be intended to resemble a vehicle of a given range of model years and could include some number of components from the original vehicle.

4.2 ADAPT EXISTING VIN ASSIGNMENT PROGRAM

Vermont already utilizes a process for assigning state-assigned VINs to vehicles falling under a small number of potential cases; currently this includes vehicles whose VIN has been destroyed or removed, salvaged vehicles, homemade vehicles, and vehicles "rebuilt from component

parts." Street rods and street rod replicas also undergo this process, presumably falling under the latter two categories. For homemade vehicles and those rebuilt from component parts, the categories most similar to the vehicles considered in this report, photographs of the completed build and a comprehensive set of bills of sale is required to be submitted alongside the application;[cxiii] street rods and street rod replicas must also undergo inspection at a licensed inspection shop to verify their qualification as these vehicle types.[cxiv]

This process and all applicable forms should be able to be easily adapted to ensure clear pathways for some of the vehicle categories under report, provided state bodies can ensure that such vehicles are intended for personal use only and are not for resale. As discussed in the previous section, the state may consider refining existing definitions and adopt new definitions to ensure that the vehicles included in this report are clearly and adequately defined across state agencies.

In adapting the VIN process, the "homemade" and "rebuilt from component parts" categories could be replaced with discrete categories for homebuilt vehicles, kit cars, replica vehicles, and street rods; regardless of the categories adopted for this process, terminology should remain consistent with other guidelines, like with the Periodic Inspection Manual, and definitions of the categories listed could be provided on the form (or accompanying documentation) to ensure clarity for parties applying for VIN assignment. Updating definitions or guidelines within the Periodic Inspection Manual may also be needed.

The existing verification program used to ensure street rods and street rod replicas qualify as such under state law could be expanded to cover homebuilt and kit car vehicles eligible for VIN assignment. If this is to be done, however, the state may need to consider additional adjustments. To ensure that the state can adequately handle a potential increase in VIN assignment inspections, it should consider additional designating additional authorized inspection shops for these purposes. Any process used to authorize further locations should also be clarified and encourage additional participation by inspection stations, with particular attention to the geographic distribution of authorized stations. Additionally, the verification program details should be shared with the Vermont Agency of Natural Resources to determine if additional elements related to emissions – for example, including a verification of installation of a compliant engine or other further guidance around inspections like those found in the Periodic Inspection Manual – should also be part of this or other inspection and verification processes. One stakeholder noted fact that standard periodic OBD system inspections may not be able to detect potential tampering mechanisms and differences in the configuration of emissions control systems, making verification of compliance before registration an important factor to consider.

From our understanding of applicable federal and state legislation, while the state may be able to provide an additional category in its VIN assignment process for new, fully manufactured vehicles, manufactured solely or significantly from new parts and sold by a low or ultra-low volume motor vehicle manufacturer, registration of these vehicles would require demonstrating compliance with appropriate safety and emissions requirements, specifically using engine and emissions controls from a previously compliant design and with an exactly matching configuration following the engine manufacturer's instructions. Given the challenge with

complying with emissions, it is more appropriate for new vehicle manufacturers to assign federal VINs through the usual NHTSA- and EPA-governed processes after certifying their compliance with these requirements.

4.3 PROVIDE FOR LIMITED EMISSIONS CERTIFICATION WAIVERS

Finally, in our engagement with stakeholders, we came to understand that compliance with contemporary emissions regulations – using a CARB or EPA compliant engine and associated emissions controls technologies or demonstrating that the specific vehicle meets applicable air quality regulations – is perhaps the **most significant barrier facing the vehicles considered in this report.** Federal legislation like the Low Volume Motor Vehicle Manufacturers Act has gone some way to attempt to remedy this, but such changes affect only a subset of vehicles, specifically "replica" vehicles manufactured by low-volume manufacturers. There are federally-certified and California-certified engines built specifically for use in these replica vehicles that are commercially available today, although a stakeholder expressed difficulty in utilizing these engines as is and was interested in modifying the engines, which would run afoul of the state and federal tampering prohibitions without certifying the new design.

In aiming to ease the burden of compliance with emissions and registration, the state may wish to look towards California's SB 100 program for the registration of what it terms "specially constructed vehicles." These vehicles are defined as "built for private use, not for resale, and not constructed by a licensed manufacturer or remanufacturer" and may contain new components, used components, or a mix of two, including sets of components coming from a kit. As designed in California, this covers what would be considered homebuilt vehicles and kit cars in this report, and this program is not intended as a pathway for manufacturers to circumvent CARB's certification process or emissions standards. For eligible vehicles, to a maximum of 500 per year, the owner of the vehicle can obtain a waiver by which the state only applies the emissions standards of the owners choice of a) the model year of the original vehicle the vehicle in question most significantly resembles or b) the engine year of the original engine the engine in question most significantly resembles.[cxv] As an example, if a kit car intended to resemble a Chevrolet Corvette from model year 1965 was assembled with any engine previously compliant, even if not from 1965 itself, the owner could decide to base his vehicles requirements off of the year 1965, which has no emissions requirements or emissions controls. For the purposes of registration for private use in the state, California waives vehicle compliance with current emissions and smog regulations if it fulfills the requirements of the selected year.

While such a program could provide a streamlined pathway to waiving emissions compliance and registration for some of the vehicles under report – namely kit cars and homebuilt vehicles – there are some important topics the state may need to consider before the implementation of any such program. Policymakers should also note that clear options do already exist for *manufacturers* of ultra-low and low volume motor vehicles, either to design any vehicle they hope to produce with an already compliant engine in mind and accounted for or to undergo

California emissions compliance certification testing if altering the configuration of the engine and emissions controls or developing a new engine. Additionally, policymakers should also note that an option already exists for individuals choosing to build kit cars: individuals choosing to build a kit car can follow EPA's Kit Car Policy and utilize a used or rebuilt engine including all emissions-related components and settings conforming to a previously certified configuration.

- **Would the state grant any allowances for the production of kit cars and homebuilt vehicles?** Given the presumption in the legislation to allow for individuals to build such vehicles and the precedent that such vehicles have been registered in the past and may already be operating on Vermont's roads, we presume that this is a yes. If yes, the legislature should consider the following:

  Even if specialty vehicles receive a VIN and are registered in Vermont, it is unclear whether these vehicles meet applicable emissions standards. Further, there may still be a legal issue with the federal and state vehicle tampering laws.

  Any allowance should consider a maximum number of vehicles, like in California's SB100 which only allows 500 vehicles per year. If a similar amount in relative terms were to be set as the limit in Vermont, at a proportion of 500 out of 1.8 million new vehicle sales in California, only 12 waivers would be allowed per year in Vermont, based on roughly 41,800 new vehicle sales.

- **Is there an equity issue which would warrant that an individual who was unable to afford a new mass manufactured vehicle be able to produce a custom homebuilt vehicle to provide daily transportation needs?** In most cases, the state might need to consider the opposite concern. Emissions exemptions and special considerations are typically provided to address affordability and equity concerns. However, these specialty vehicles are generally high-cost hobbyist projects rather than options intended to improve transportation access for low-income individuals. While it is possible for someone to build a vehicle from the ground up in their garage, this is extremely rare due to the level of expertise, skill, and time required. Individuals undertaking such projects are not typically doing so because they are facing challenges with affordable transportation. Given the high cost often required to purchase and/or complete a kit car or homebuilt vehicle, allowing for the application of less stringent emissions standards than applied to standard passenger vehicles could be seen to privileging those with the means to take on such a project

- **Is there a pathway to approving homebuilt and kit car vehicles for use on Vermont's roads?** Various states have distinguished between engine year and vehicle model year. Some states have stipulated that the vehicle shall be built for private use, not for resale, not be used for daily transportation and instead be reserved for more modest and infrequent use. Presuming safety has been adequately addressed in the inspection process given the classification of "used" parts (as opposed to a newly manufactured vehicle), it is emissions that is the unaddressed primary issue. California provides an example which allows an individual to select the engine year or model year for stating compliance with required emissions control technologies, if any emissions

standards and controls are applicable. If a model year is selected for which there are no required emissions standards or controls, there are potentially significant air pollution impacts. California has allowed for up to 500 waivers total every year but has a population (and thus number of cars registered) much larger than that of Vermont. If a similar amount in relative terms were to be set as the limit in Vermont, at a proportion of 500 out of 1.8 million new vehicle sales in California, only up to 12 waivers would be allowed per year, based on roughly 41,800 new vehicle sales. At any number of vehicles, but especially if a larger number of waivers were to be allowed, policymakers will need to consider the balance between emissions reductions and ease of compliance and registration that they are willing to accept. A process like California's providing specific guidance on the emissions regulations to be followed and limiting the number of potential waivers allows for greater clarity for the individuals pursuing these vehicles as well as to the state in regard to the magnitude of impact on statewide transportation emissions. Given that homebuilt and kit cars are operating today in Vermont, a pathway is available, although the emissions compliance status of these vehicles is unclear in regard to federal and state anti-tampering prohibitions.

- **Is Vermont running afoul of Clean Air rules by registering homebuilt and kit cars?** There are federal prohibitions against engine switching and tampering that are strictly the realm of enforcement and regulation of the EPA. Given the difficulty of ensuring engines are installed in the exact same configuration between different vehicles, especially without significant automotive background, it is unclear how many already registered kit cars, homebuilt vehicles, and other specially constructed vehicles – including those registered in California under its SB100 program – may potentially fall afoul not only of state laws but of provisions of the federal Clean Air Act and whether programs like California's may contradict such provisions. Before designing and implementing any emissions waiver program, policymakers will need to pay careful attention to sections of the Clean Air Act focusing on engine switching and tampering so as to ensure compliance. This answer depends on a vehicle-by-vehicle basis.
- **Is there a pathway for an ultra-low volume manufactured vehicle to be approved for daily transportation use (registered and inspected) in Vermont?** This appears to be the one area with the most difficultly. A state VIN could be applied for, given all new parts and manufacturer statements of origins for all parts. Vermont is not legally allowed to certify a new manufactured vehicle's emissions and confirm it complies with California's emissions standards; only EPA and California certify vehicles.

  Low volume manufacturers currently have access to an exemption from the new motor vehicle certification testing requirements of Section 206(a) of the Clean Air Act. The Low Volume Motor Vehicle (LVMV) Manufacturers Act of 2015, a part of the same year's federal surface transportation bill, commonly known as the "FAST" Act and subsequent EPA guidance establishes a process for low-volume manufacturers seeking to rely on the specially produced motor vehicle exemption in the "FAST Act (Pub. L. No. 114-94). There are several conditions of this exemption that need to be met, including the

requirement to use an engine and all its emissions controls from a vehicle with California certification.

Regardless of whether federal exemptions are obtained or new state exemptions added, there are existing pathways for the registration of these vehicles that do comply with federal law. Ultra-low volume vehicle manufacturers must either ensure that the engine installed in their car is an already compliant engine installed per manufacturer instructions and matching in configuration of the engine and all emissions control systems or undergo the CARB emissions testing and certification process.

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