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Light-Duty Specially Constructed Vehicles/Kit Car Workshop

Air Resources Board

Byron Sher Auditorium
Sacramento, California
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Agenda

- Purpose
- Background
- Preliminary proposal
- Next Steps



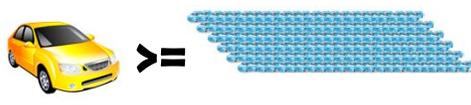
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Purpose

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Kit Cars Can Be High-Emitters

- Many use uncontrolled crate engines
- An uncontrolled gas engine can emit 60-200 times the smog-forming emissions of a vehicle meeting modern standards



*NOx

1 Uncontrolled Vehicle 60-200 Modern Vehicles

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Current Limitations on Using Clean Engines in Kit Cars

- ARB Certification is based on whole vehicle, not engine
- SB100 and DMV's Certificate of Sequence program allows 500 specially constructed vehicles per year to be registered
 - Intended for hobbyists
 - No legal way for shops to build and sell whole kit cars
- Want to give people the ability to choose cleaner engines

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Purpose for Rulemaking

- Provide a less-polluting alternative for kit car hobbyists
- Allow shops that would like to build and sell kit cars a less-polluting, legal option
 - Turn-key kit car certification
- Allow for legal registration of kit cars in years the SB100 certificates of sequence are used up
- Create a certification path for clean, light-duty engines, intended for use in kit cars

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Background

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Current Definition

California Vehicle Code 580

Specially Constructed Vehicles:

- a vehicle built for private use, not for resale, and not constructed by a licensed manufacturer or remanufacturer.
- may be built from:
 - (1) a kit;
 - (2) new or used, or a combination of parts; or
 - (3) a vehicle reported for dismantling*, which, when reconstructed, does not resemble the original vehicle

*as required by CA Vehicle Code Section 5500 or 11520

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Certificate of Sequence (SB 100) Process

CA Health and Safety Code Section 44017.4

- Up to 500 new specially constructed vehicles per year allowed to be registered in CA
- Referee station performs visual inspection
- To determine model year, vehicle owner may choose engine model year or vehicle model year, or, if unrecognizable, default to 1960 designation
- Every year since its creation in 2001, all 500 certificates have been handed out (greater demand than supply)

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Turn Key Kit Cars

- SB 100 intended for hobbyists rather than turn-key vehicles
- Turn-key assemblers building new turn-key kit cars for resale, often with new uncontrolled crate engines
 - Currently, no ARB certification process for these vehicles
- Creating a path for turn key builders could create loop holes for small manufacturers, like Morgan

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Question: Turn Key Vehicles

- What role would turn key builders like to play in building/selling kit cars?
- How should we define “turn key kit car builders”?
 - Annual production limit?
 - Cumulative production limit?
 - Other ideas?
- How many kit cars would one builder make in a year?
- Would builders have multiple locations?
- What separates a turn key builder from a small manufacturer?

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Preliminary Proposal

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Preliminary Proposal Overview

- Creates viable path for engine manufacturers to certify clean, modern engines
 - To LEV II LEV standards now
 - Stricter standard in future
- New option for hobbyists and turn key kit car builders to use a certified engine package
 - ARB working with other State agencies to enable registration of vehicles with these packages
 - BAR, DMV, etc.

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Engine Certification Proposal

- Engine manufacturer chooses worst case vehicle
 - Based on highest test weight and N/V ratio
- Exhaust Testing: FTP, SFTP, HWY NOx, 50F, and 20F
 - Must meet current standard (LEV II LEV now)
- Evaporative Testing: Diurnal, hot soak, running loss, and ORVR
 - Must meet current evap standard

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Question: Worst Case Vehicles

- Is highest weight, engine speed to vehicle speed (N/V) ratio sufficient for defining worse case vehicle?
- Should transmission type also be taken into account?
- Is there a "common" transmission used by hobbyists for their kit cars?

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Engine Package Requirements

- **Package Must Include:**
 - Engine and Controller with software and calibration
 - OBD II System, with back off points
 - No evap leak check monitoring, no transmission component monitoring,
 - Relaxed misfire monitoring, cylinder air-fuel imbalance monitoring, cold start monitoring
 - Exhaust emission control system including intake and exhaust manifolds, sensors, MAF housing
 - Canister, purge valve, purge control logic and flow diagnostic

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Additional Package Requirements

- Vehicle parameters (max weight, etc.)
- Notice explaining ARB's authority
- Engine owner's manual and Installation Guidance
 - Evaporative controls, fuel tank size and materials, hoses and connectors, fuel neck and ORVR compatability, catalyst and O2 sensor locations, air intake/mass air flow location restrictions, gas cap
- Warranty on engine package and controls

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Question: Warranty

- What would be a reasonable manufacturer warranty on these engine packages?
- How should recall work?

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Additional Package Requirements

cont'd

- Label affixed to engine when sold, detailing max curb weight, N/V, frontal area, fuel tank capacity, and that engine is intended for a specially constructed vehicle

Example Label

VEHICLE EMISSION CONTROL INFORMATION			NO ADJUSTMENTS NEEDED
CONFORMS TO REGULATIONS: 2011 MY INCOMPLETE TWC / HC25 / SF1			
U.S. EPA: MOV	OID: CA 11	FUEL: GASOLINE	S, 7 L GROUP: B0K005.78M0
CALIFORNIA: LEV 11 MOV	OID: CA 11	FUEL: GASOLINE	EVAP: B0K0F0218T00
Completed Vehicle Maximums: GVW: 12,500# max. CurbW: 7,500# max. Frontal Area: 80.0 sq/ft max. Weight limits refer to emission certification only. Do not exceed vehicle GVW. (see owner's manual)			68080 113AA

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Vehicle Built by Hobbyists

- Installs ARB certified engine package according to manufacturer's instructions
- Visual Referee inspection:
 - Ensures vehicle is low-pressure evap test capable
 - Functional Check Engine Light
 - Car built to manufacturer's specifications
- Biennial Referee Station smog check and low-pressure evap test

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Question: Timing

- How long from when the engine is purchased does it take most hobbyists to assemble and register their vehicles?

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Vehicle Built by Turn-Key Assembler

Assembler:

- Installs ARB certified engine package according to manufacturer's instructions
- Reports VINs to the engine manufacturer
- Notifies ARB within 10 days of assembling first vehicle
- Maintains written and photographic records

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Vehicle Built by Turn-Key Assembler Cont'd

Engine Manufacturer:

- Provides builder with manufacturer's statement of origin (MSO) for vehicles built according to instructions
- Notifies ARB of all MSOs issued

Purchaser:

- Biennial Referee Station smog check and low-pressure evap test

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Question

- How many turn key kit cars could be sold each year? How big is this market?

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Next Steps

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Next Steps

- Please provide comments to ARB by mid-June on preliminary proposal
- Meetings with stakeholders to discuss proposal details
- ARB staff continue work with other affected agencies (DMV, BAR, etc.)
- July Workshop:
 - El Monte, California
 - Will discuss proposal details
- October Staff Report
- December 7 or 8, 2011 Board Hearing

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