2025 IIHS TOP SAFETY PICK

BODY STRUCTURE EFFICIENCY ON D-SEGMENT CROSSOVER ARCHITECTURE

2025 CHEVROLET TRAVERSE, GMC ACADIA, AND BUICK ENCLAVE

Presenter: Senior Body Engineer, Jinhui Wang

General Motors

2025 IIHS TOP SAFETY PICK

FULLY REDESIGNED
TRAVERSE, ACADIA, AND ENCLAVE
GM LANSING DELTA ASSEMBLY, MICHIGAN

Agenda

Vehicle Overview

Body Structure Efficiency Strategies

- Common Body Structures across Traverse/Acadia/Enclave
- Examples on Body Structures Efficiency

Material Utilization

Noise & Vibration Control

- Design Features to enable 2.5L turbo-charged Engine

Safety Strategies

- Design Features to achieve IIHS 2.0 Side Impact Requirements

2025 IIHS TOP SAFETY PICK

- 10.6 " longer, 4.2" wider, & 3.2 " taller
- Up to eight people with second row bench seat
- Denali offers 22" wheels with frequency-based dampers

2025 GMC ACADIA

- Luxury
- Technology

Super Cruise

MOTORTREND BEST TECH 2025

- Safety & Reliability

2025 BUICK ENCLAVE

- Z71 offers enhanced off-road capability with
  - Terrain mode, twin clutch AWD, & suspension lift
- High Country trim level offers standard 22" wheels & Super Cruise

2025 CHEVY TRAVERSE

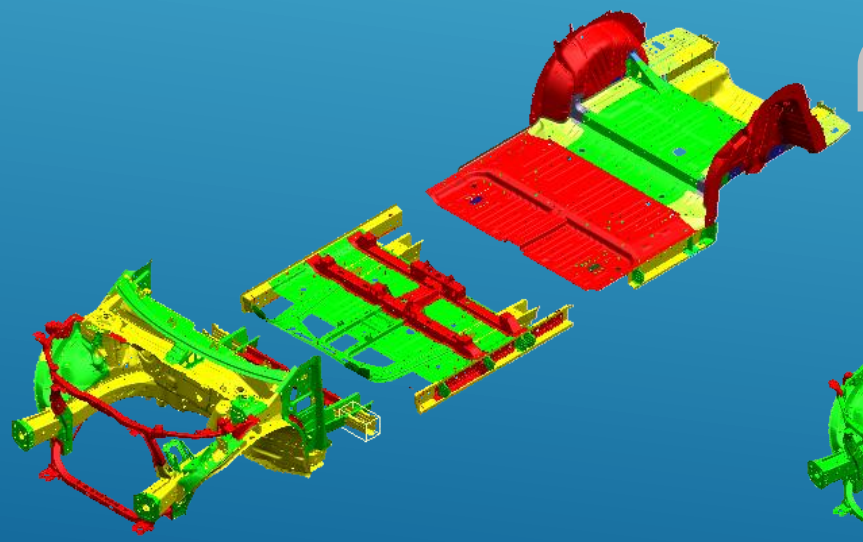
23% increase in cargo capacity

Available Panoramic Sunroof

Body Lower Structures Vis-BOM

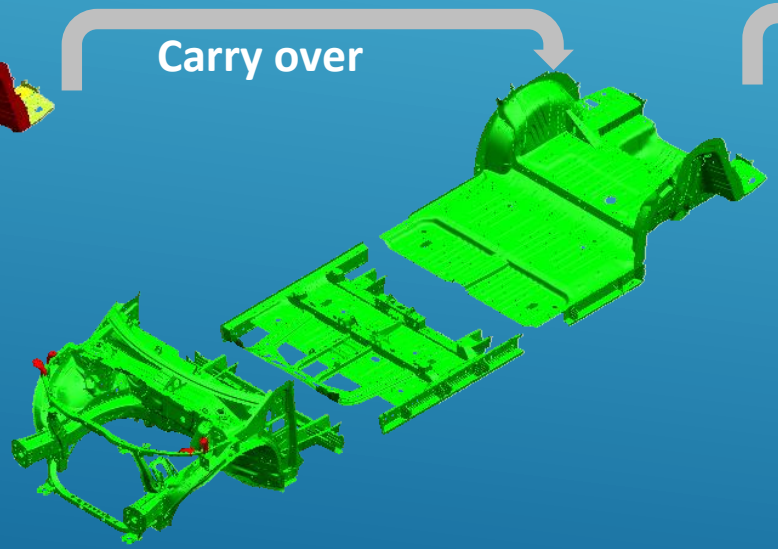
- Updated Rear wheelhouse design for 22” wheels
- Revised front & rear floor assemblies for turbo engine
- Same lower structures on Traverse/Acadia/Enclave except for front fender brackets & rear hood bumper brackets

New
Carryover
Modified



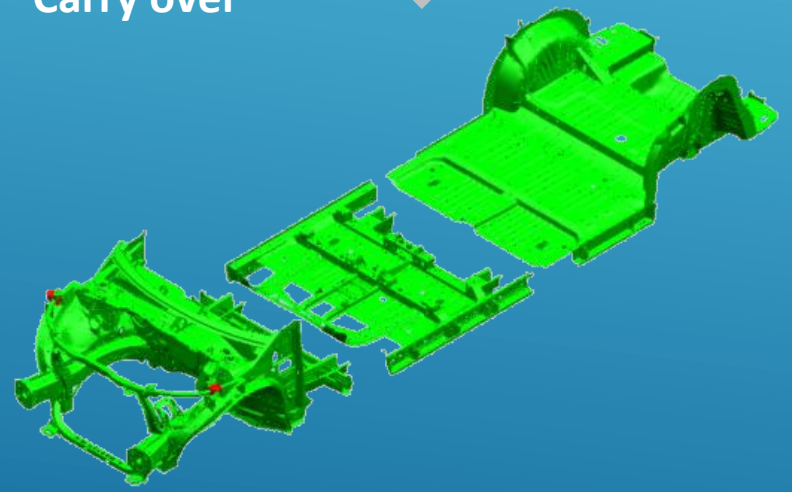
Traverse

Carry over



Acadia

Carry over

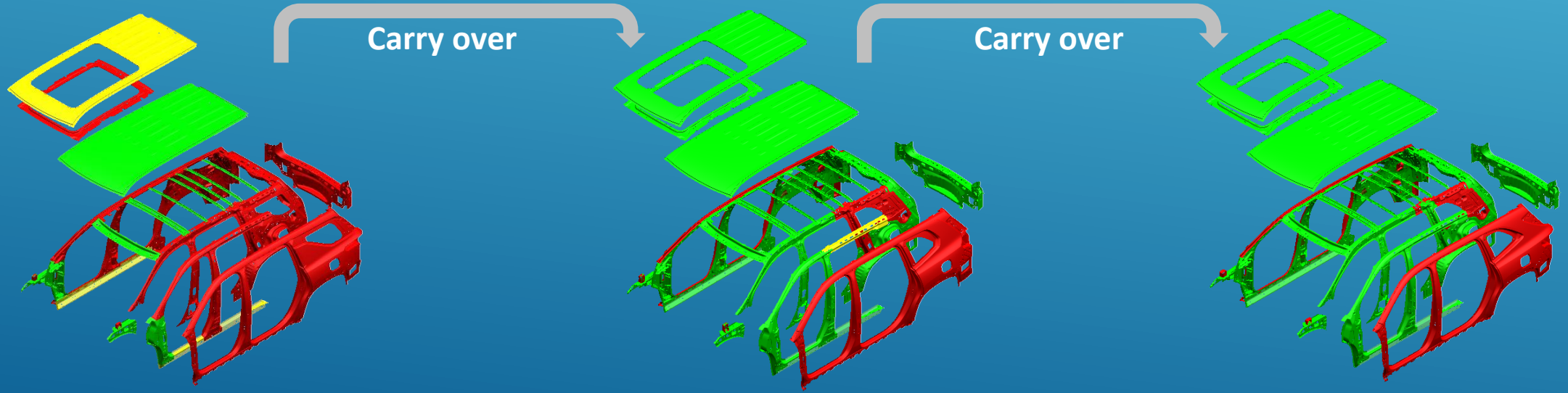


Enclave

Body Upper Structures Vis-BOM

- Redesigned inner and outer framing for styling and IIHS 2.0 side impact requirements
- New sunroof reinforcement for panoramic sunroof
- Upper structures shared across Traverse/Acadia/Enclave except for styling parts

New
Carryover
Modified



Body Structures Efficiency

❑ : Chevy Traverse
❑ : GMC Acadia
❑ : Buick Enclave

COMMON QUARTER INNER, FUEL FILLER, & CLASS A SURFACE AROUND FUEL POCKET

Reduced part counts and simplified inner structure design	• Enhancing manufacturing efficiency
Uniform gap between inner & outer framing parts	• Improve sealing and operational efficiency
Cost reduction in body shop tooling	• Driving cost efficiency and optimizing resource utilization

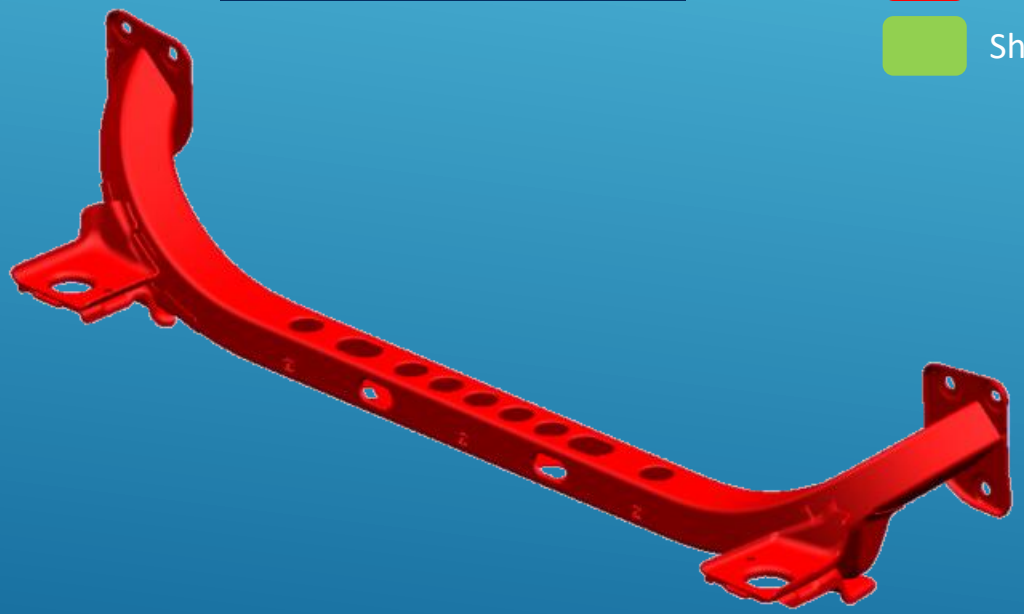
Body Structures Efficiency- Assembly Plant Process Simplification

Three Lower Tie Bar designs vs One Lower Tie Bar design

New Generation

Different content

Shared content



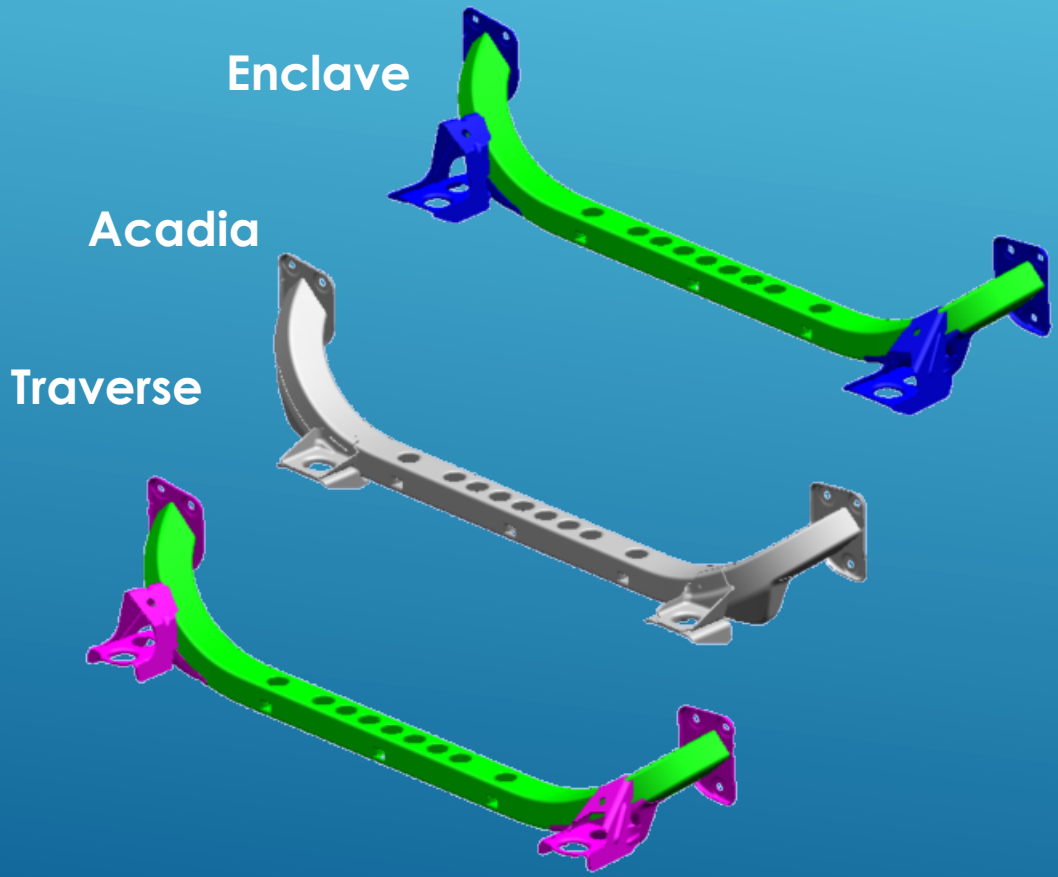
Traverse/Acadia/Enclave

Previous Generation

Enclave

Acadia

Traverse



Body Structures Efficiency- Supplier Process Simplification

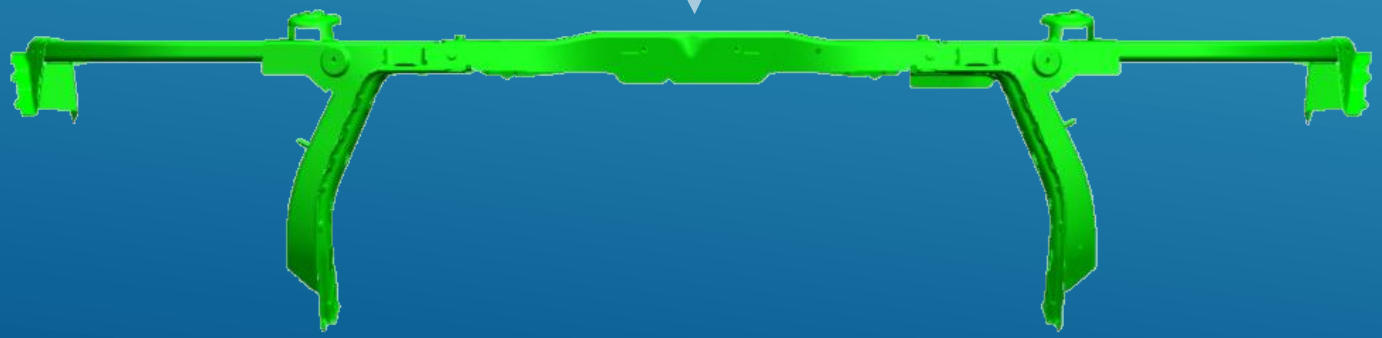
Three Upper Tie Bar designs vs One Upper Tie Bar design

New Generation

Enclave

Acadia

Traverse



Different content

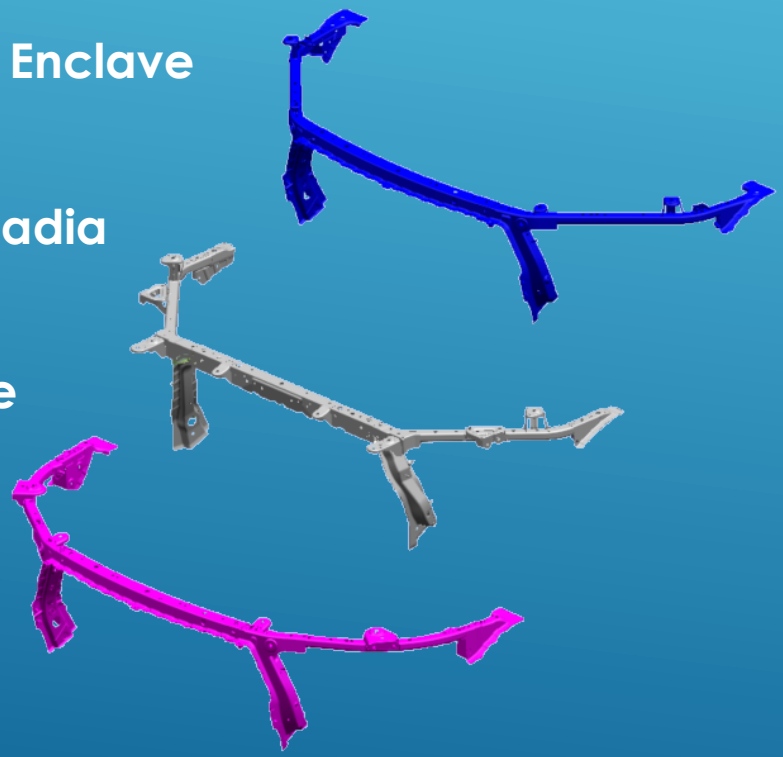
Shared content

Previous Generation

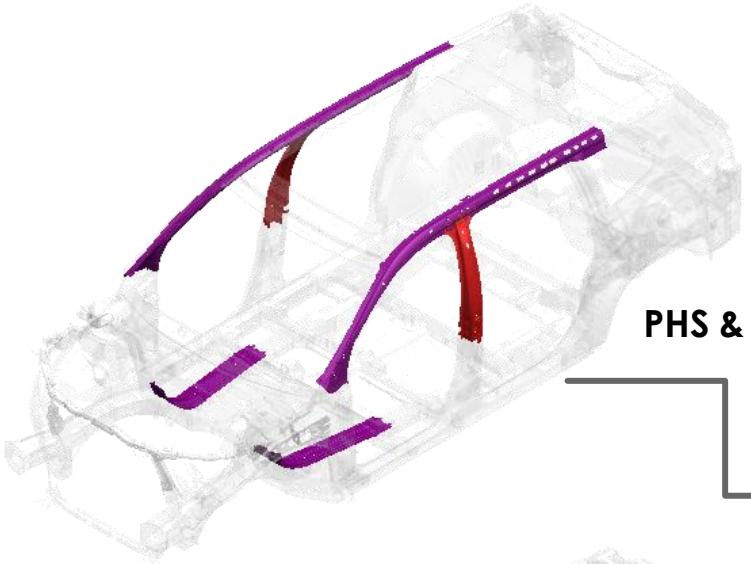
Enclave

Acadia

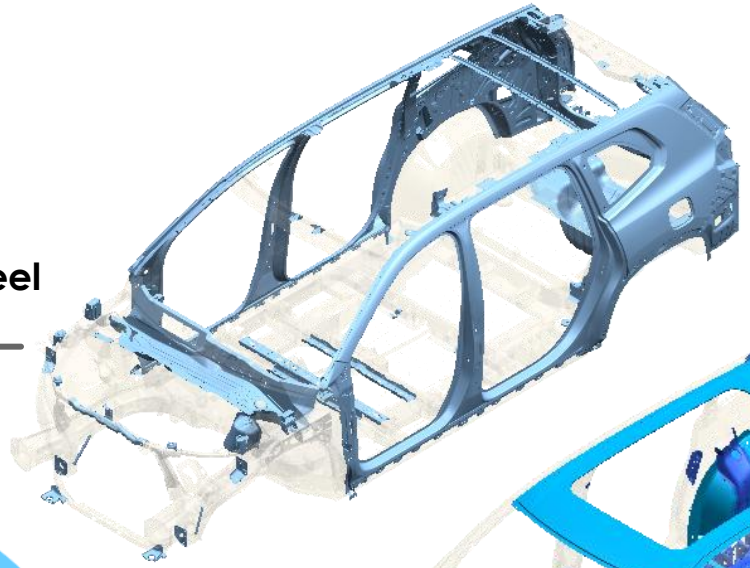
Traverse



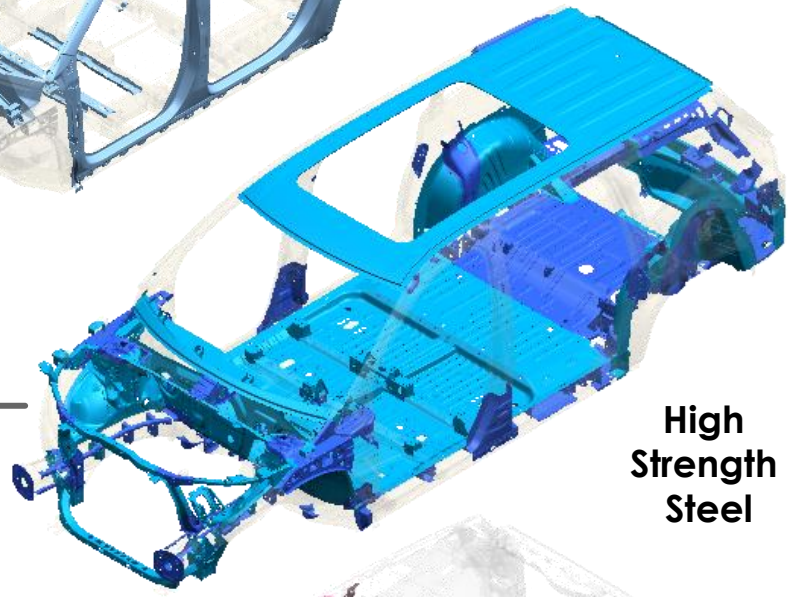
BIW Structures Materials



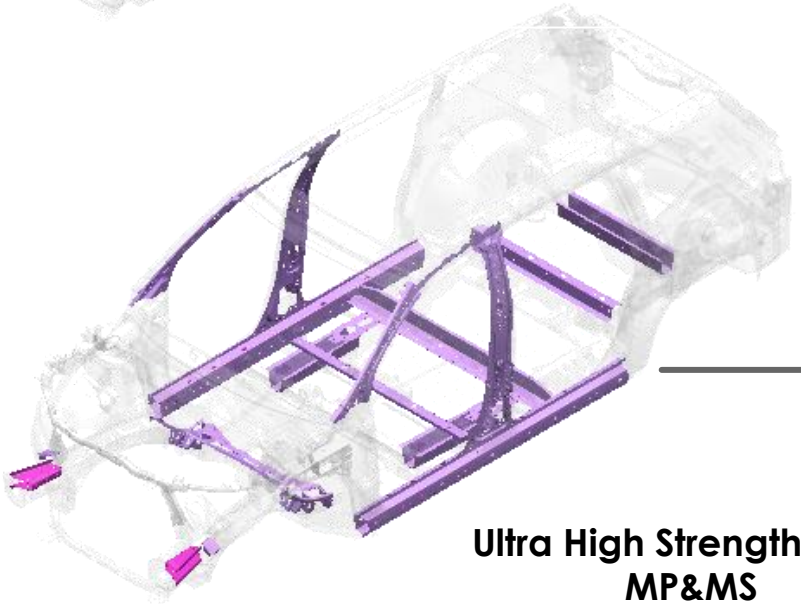
PHS & Gen3



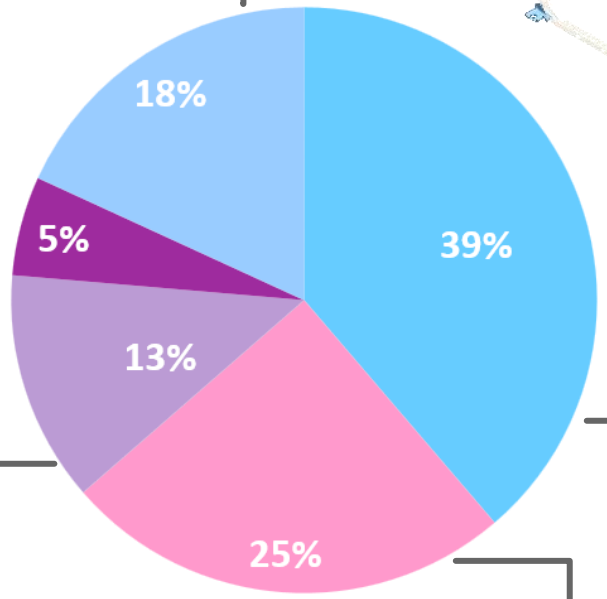
Mild Steel

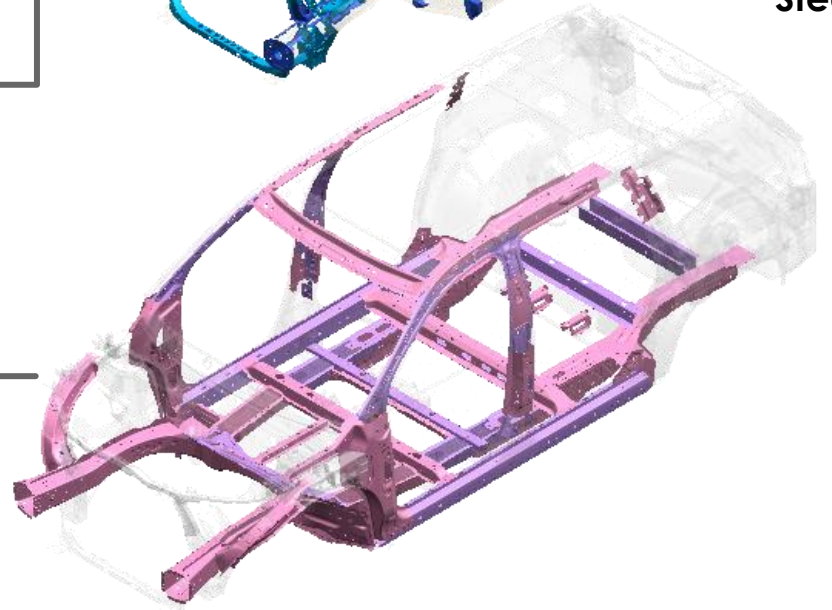


High Strength Steel



Ultra High Strength Steel MP&MS



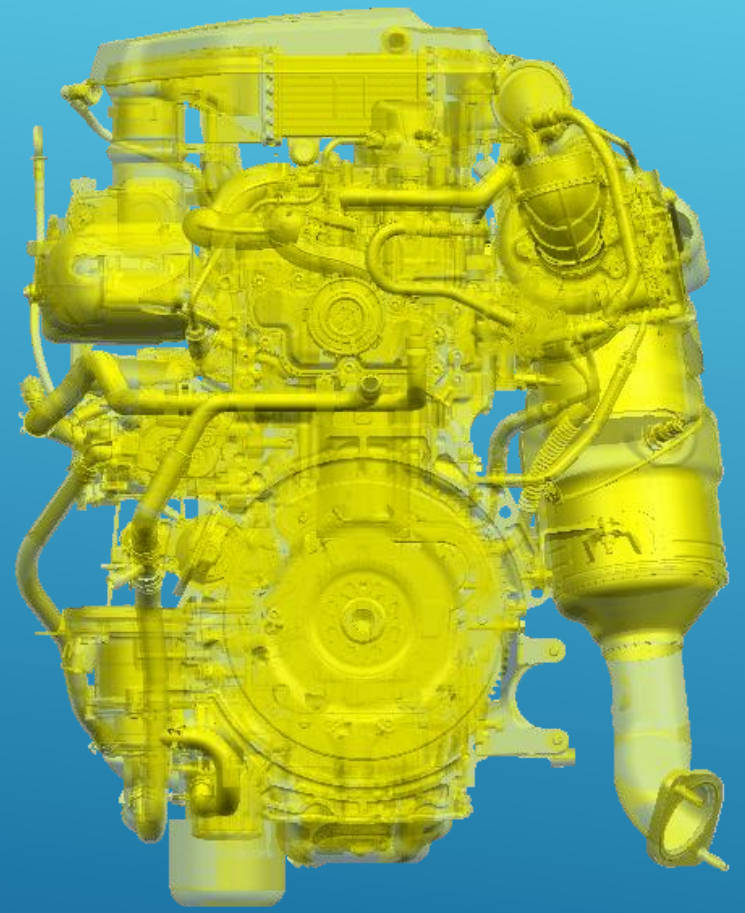


Advanced High Strength Steel

All New 2.5L 4-Cylinder Turbo Engine

A perfect balance of Power and Fuel Efficiency

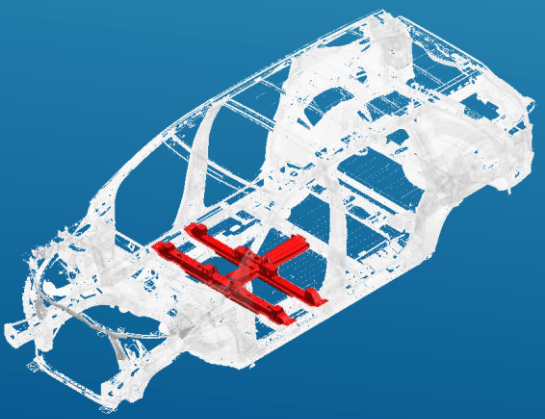
Horsepower: 328 hp	**Torque: 326 lb-ft**	**23/21 mpg FWD/AWD combined**
18 increase from V6	**55 increase from V6**	**21/20 mpg FWD/AWD combined, V6**

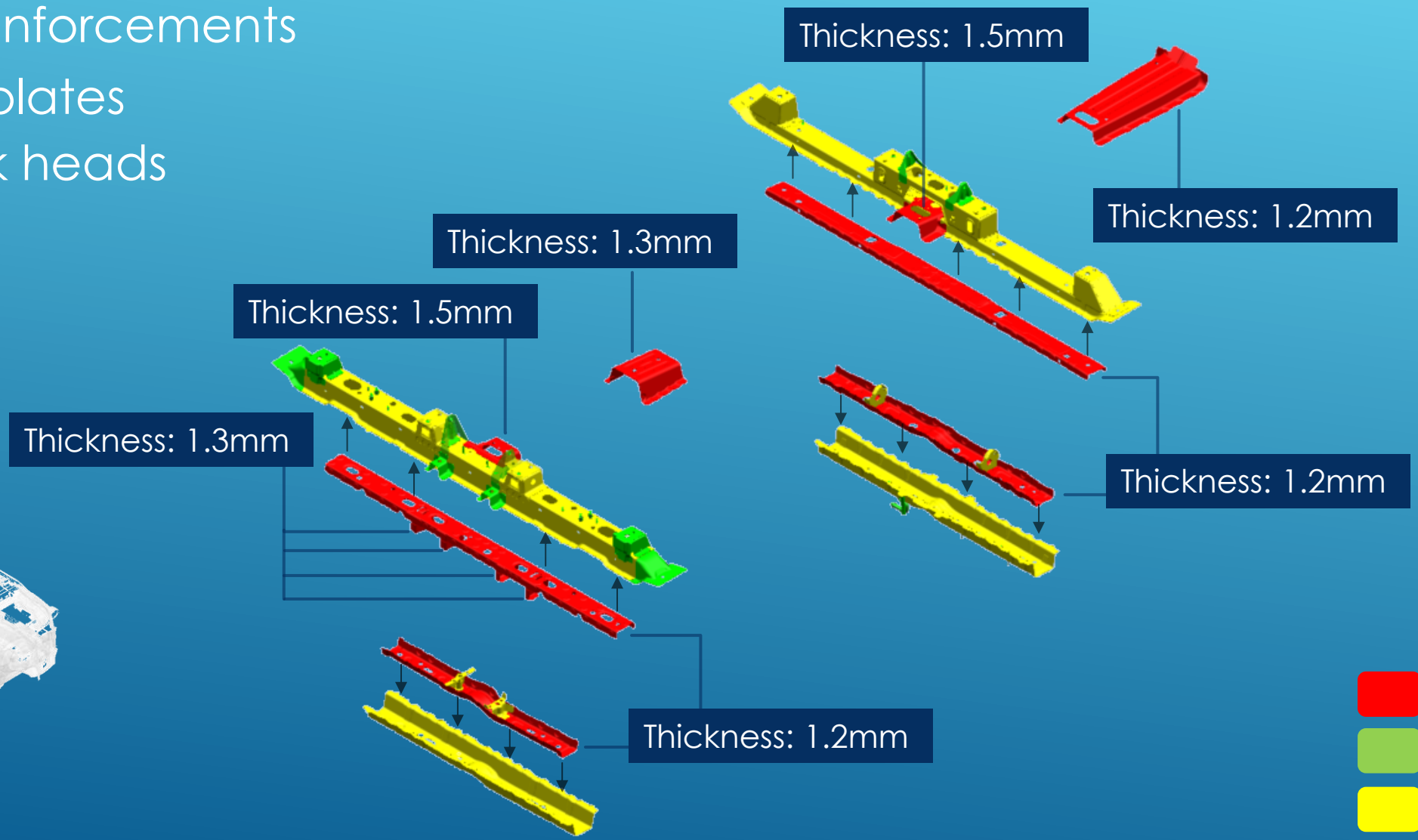


Turbo Engine Package

Added design features to control noise & vibration

- ❑ Tunnel reinforcements
- ❑ Doubler plates
- ❑ Extra bulk heads

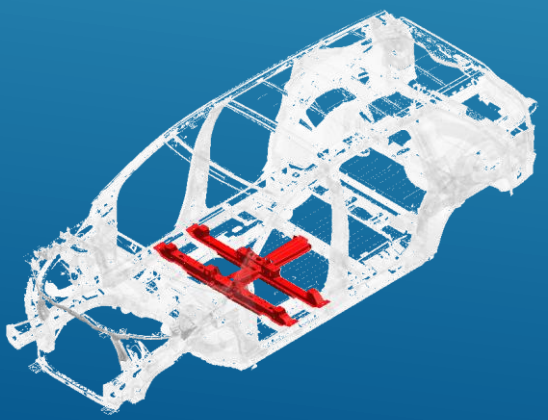


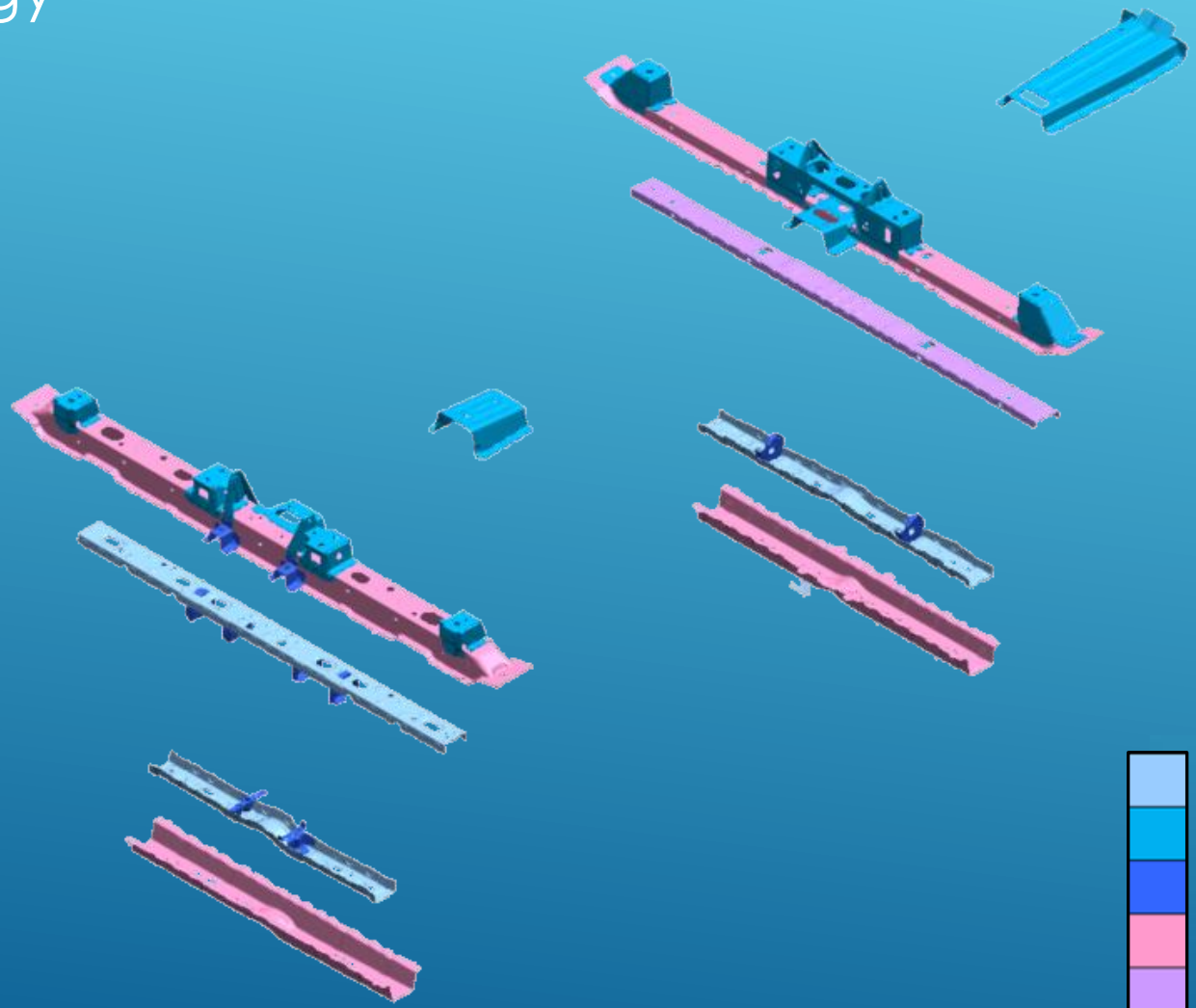


Turbo Engine Package

Added design features to control noise & vibration

- Material Strategy

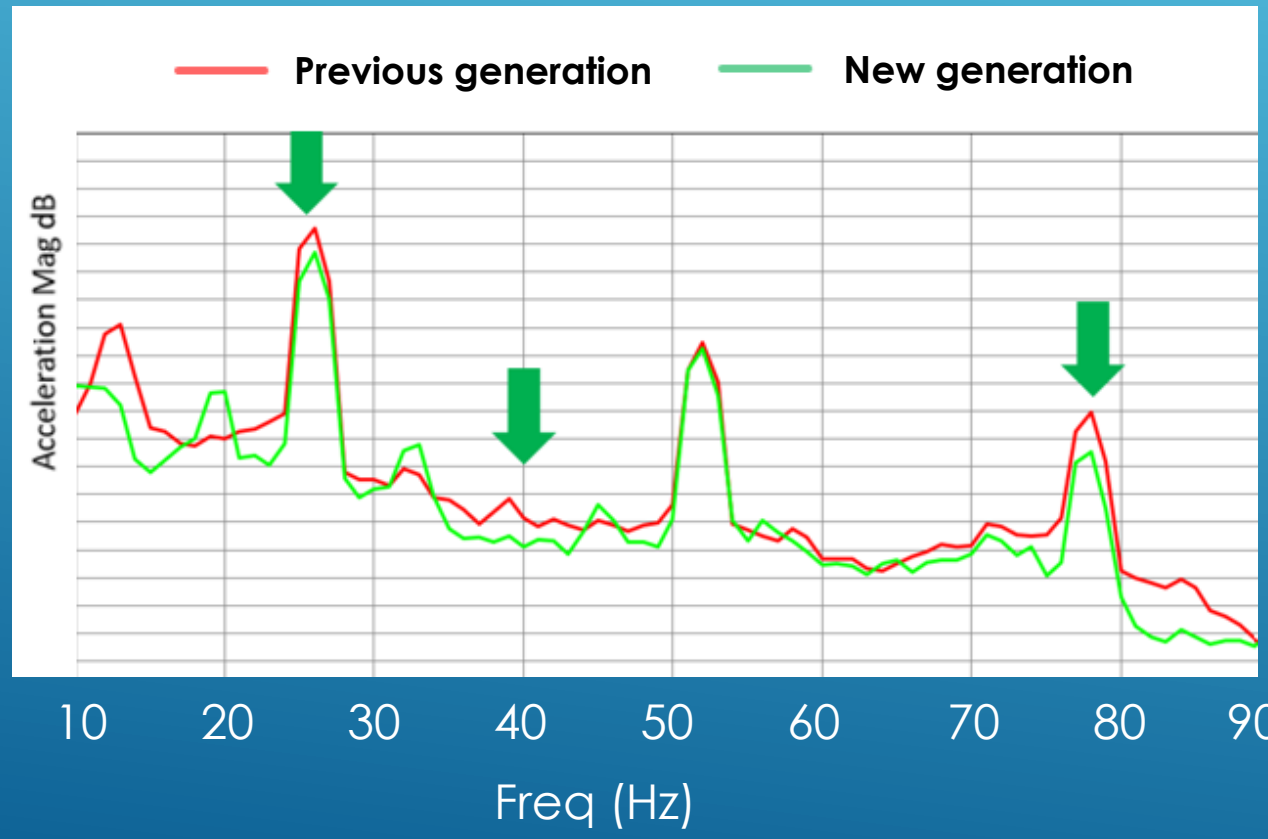




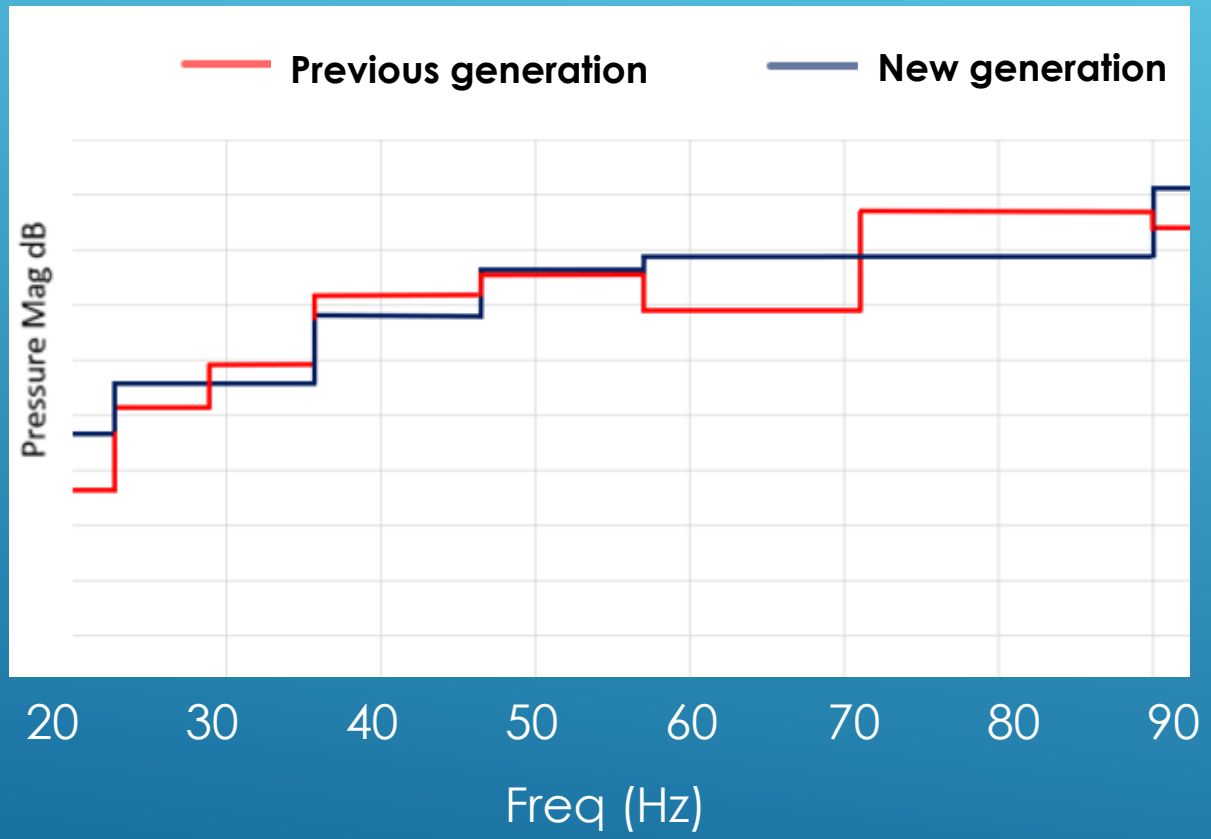
- Low Strength Steel (Mild Steel)
- High Strength Steel (HSS): BH
- High Strength Steel (HSS): HSLA
- Advanced High Strength Steel (AHSS): DP
- Advanced High Strength Steel (AHSS): LCE
- Ultra High Strength Steel (UHSS): MS

Reducing customer facing coarse road and powertrain N&V

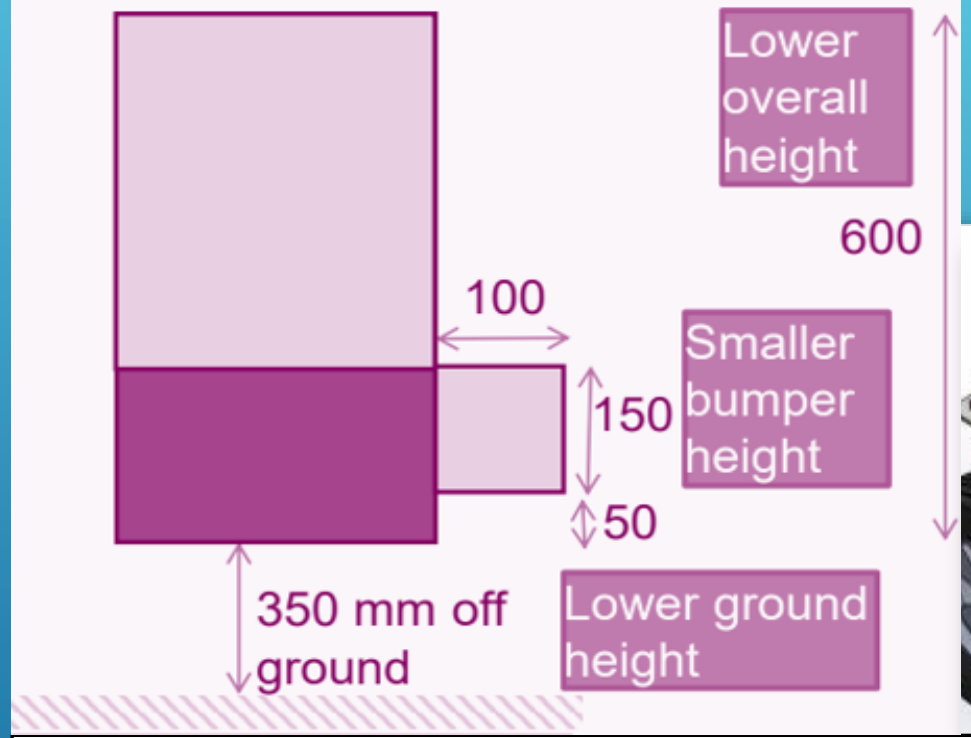
Powertrain Idle Vibrations



Coarse Road Noise



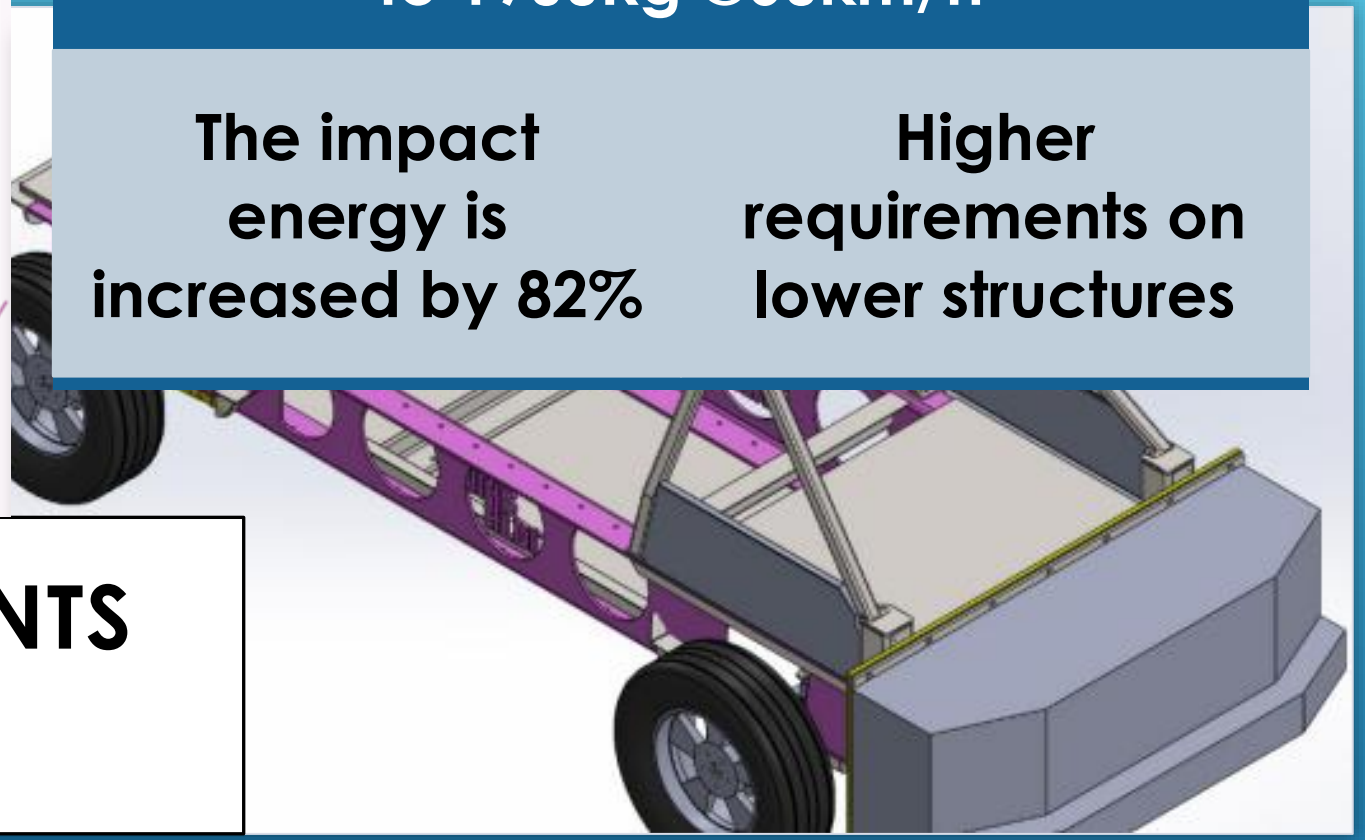
IIHS side impact barrier 2.0



Test parameters changed
from 1500Kg @50km/h
to 1900Kg @60km/h

The impact energy is increased by 82%

Higher requirements on lower structures

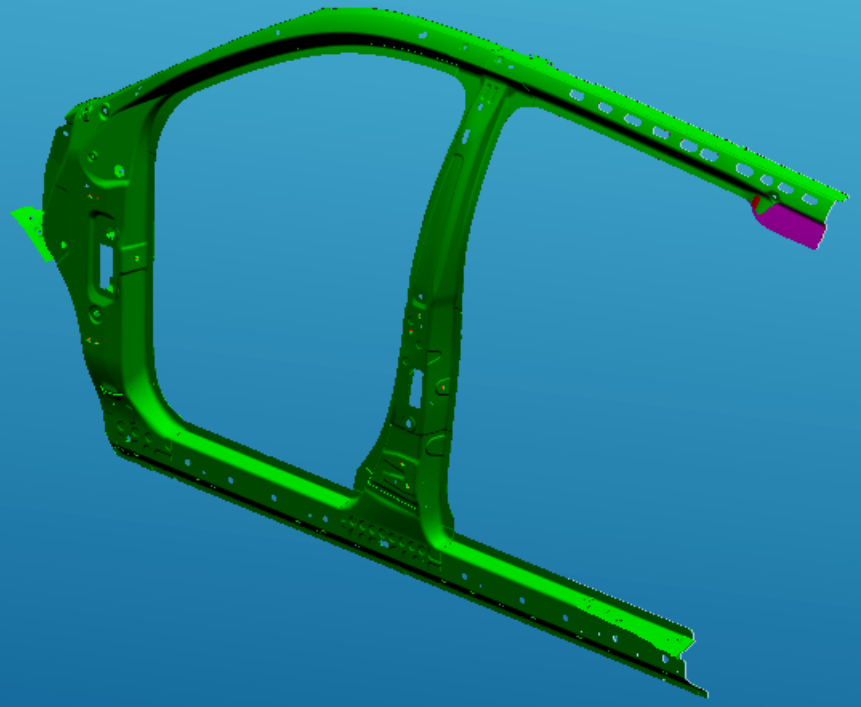


ALL NEW REQUIREMENTS IIHS 2.0 SIDE IMPACT

Body Structures Efficiency

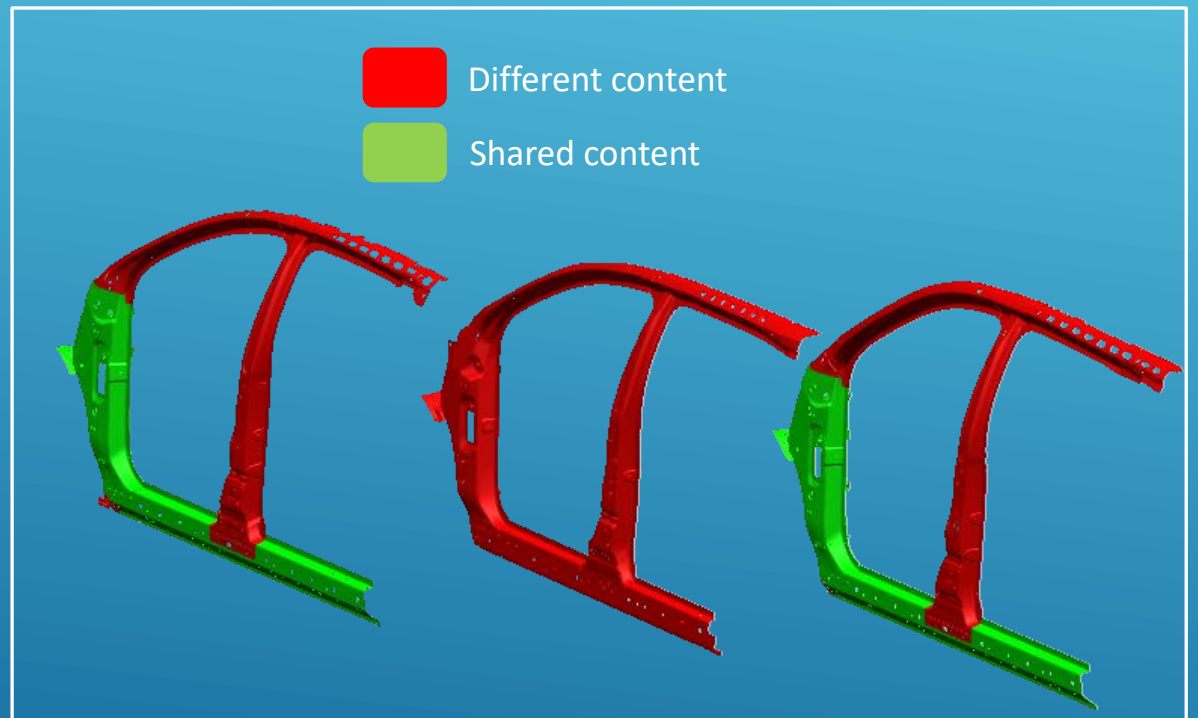
Three crash rings vs One crash ring

New Generation



Traverse/ Acadia/ Enclave

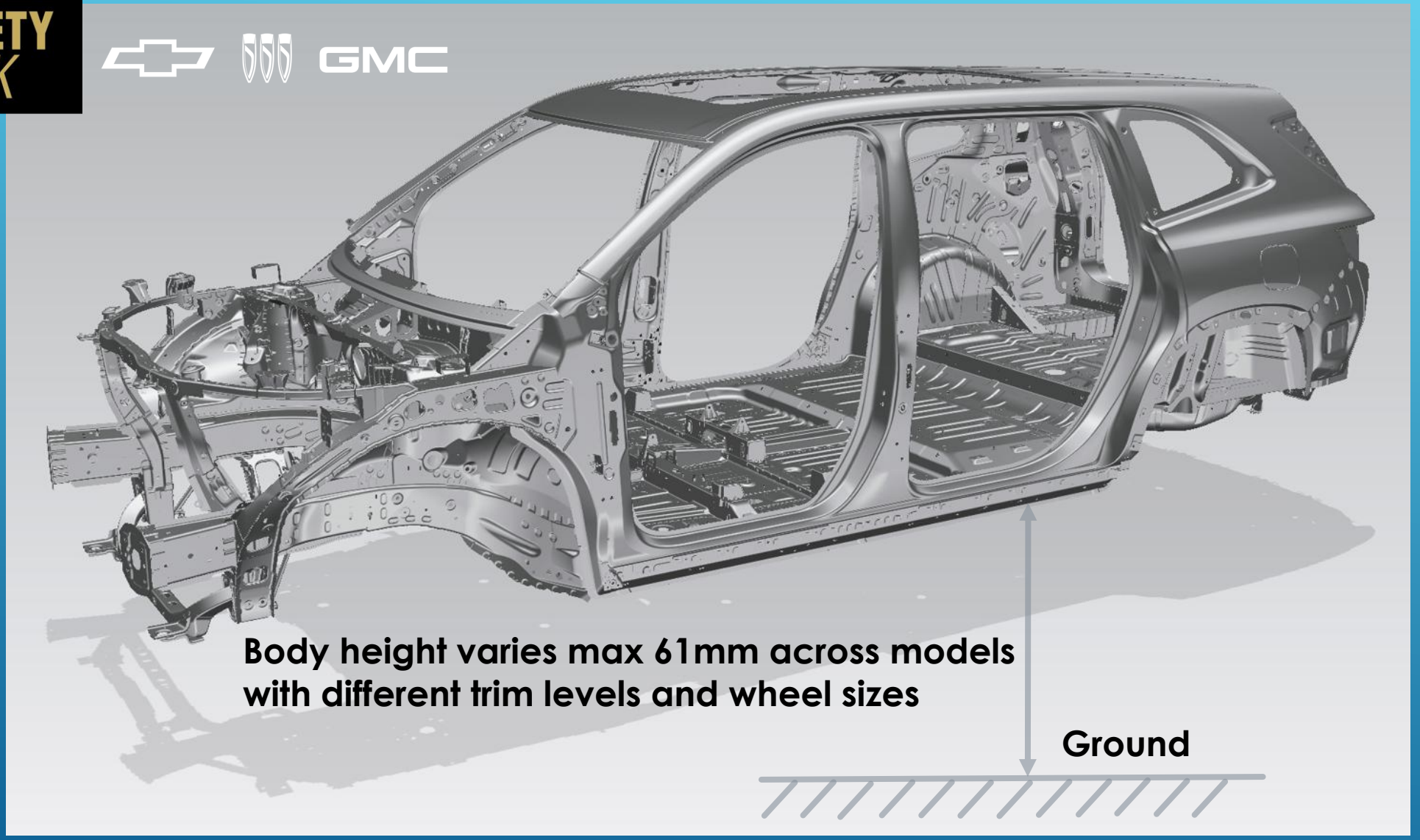
Previous Generation



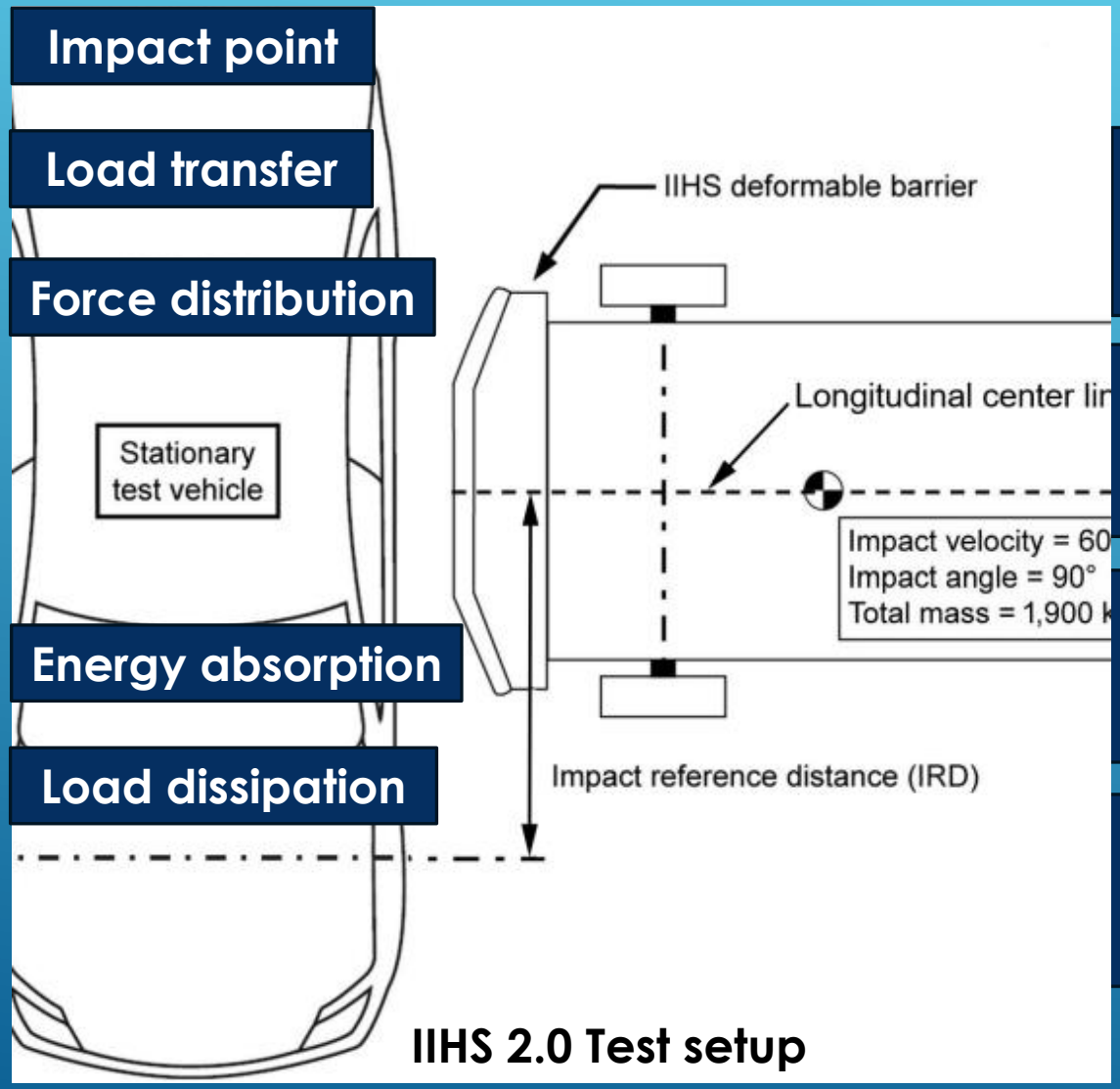
Enclave **Acadia** **Traverse**

Different Body Heights: One Crash ring

2025 IIHS TOP SAFETY PICK



IIHS 2.0 SIDE IMPACT: LOAD MANAGEMENT



IIHS 2.0 Test setup

Key considerations

Material Selection	Balancing strength and ductility for intrusion resistance, energy absorption, & load carrying
Controlled Deformation	Allowing certain parts of the vehicle to deform to absorb energy and prevent intrusion
Load Sharing	Distributing the load across multiple structural elements to reduce stress on any single component
Structural Continuity	Ensuring energy moves predictably through designated load paths and promotes uniform deformation

IIHS 2.0 Side Impact Package: B Pillar Changes

New Generation

- Low Strength Steel (Mild Steel)
- High Strength Steel (HSS): HSLA
- Advanced High Strength Steel (AHSS): DP
- Advanced High Strength Steel (AHSS): LCE
- Ultra High Strength Steel (UHSS): MP
- Press Hardened Steel: PHS
- Retained Austenite: Gen 3

Thickness 1.2mm

Thickness 1.2mm

Added reinforcements

Thickness 1.8mm

Thickness 1.8mm

Thickness 1.4mm

Redesigned B pillar lower

Thickness 1.4mm

Previous Generation

IIHS 2.0 Side Impact Package: Lower Structures Changes

New Generation

Add two bulk heads

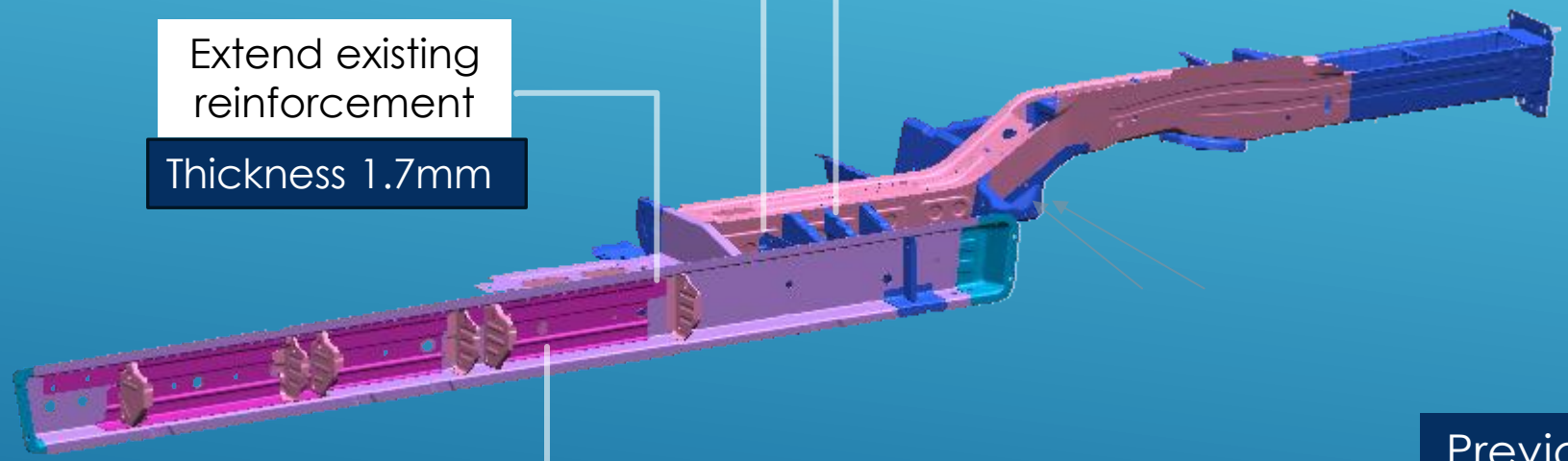
Thickness 1.3mm

Extend existing reinforcement

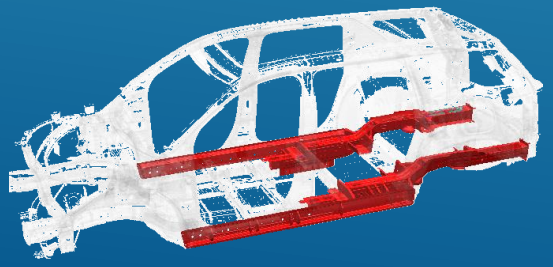
Thickness 1.7mm

Add reinforcement

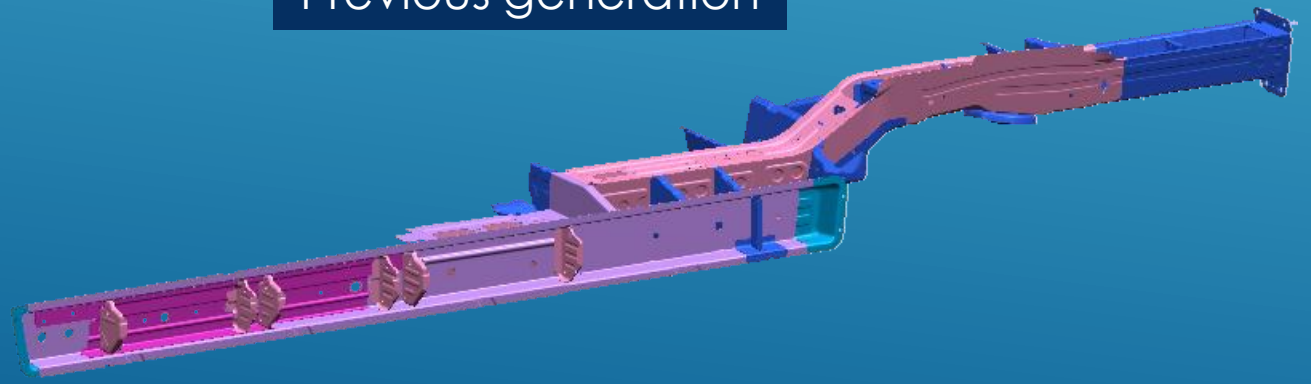
Thickness 1.7mm



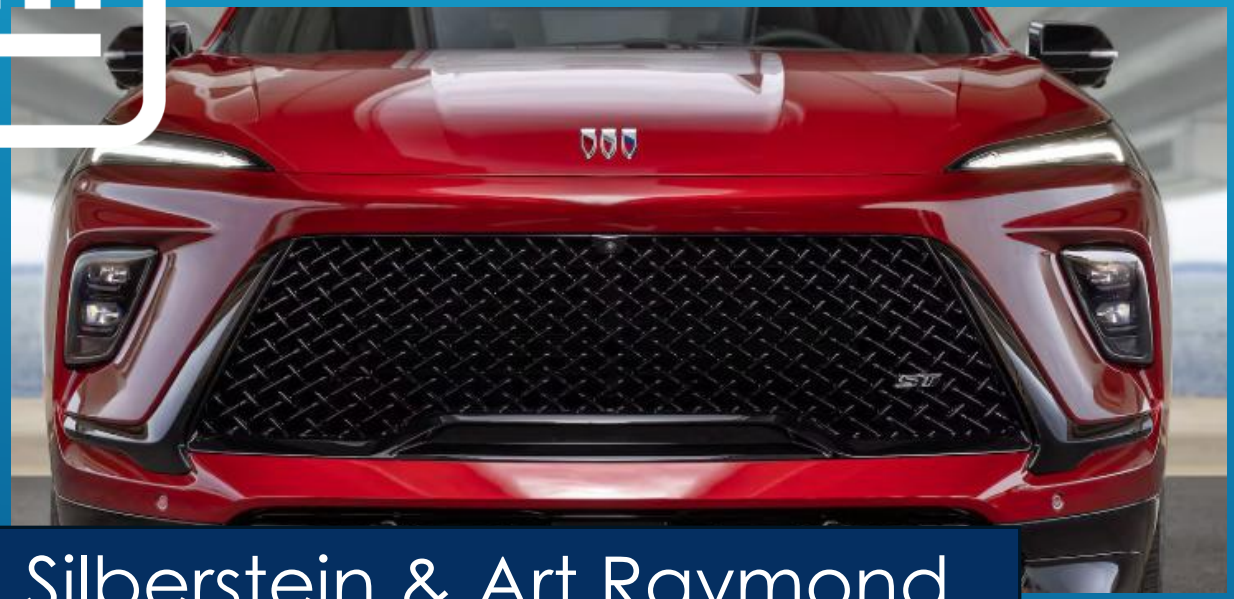
- Low Strength Steel (Mild Steel)
- High Strength Steel (HSS): BH
- High Strength Steel (HSS): HSLA
- Advanced High Strength Steel (AHSS): DP
- Advanced High Strength Steel (AHSS): LCE
- Ultra High Strength Steel (UHSS): MS



Previous generation



2025 IIHS TOP SAFETY PICK



Special thanks go to: Josh Silberstein & Art Raymond