

Great Designs in

STEEL 2015!!

The Roadmap to Steel Solutions

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U. S. Steel



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Steel Matters  Demand Nothing Less
www.autosteel.org

Auto/Steel Partnership Members and Vision



The A/SP will deliver to the automotive industry future steel innovations and solutions that meet society's needs for sustainable vehicles

Auto/Steel Partnership Mission

- To achieve sustainable automotive solutions, Auto/Steel Partnership will appropriately leverage the:
 - Intellectual and technical resources of the automotive, steel and related industries / organizations;
 - Inherent high-performance characteristics of steel; and
 - Innovations in design optimization and manufacturing technologies.

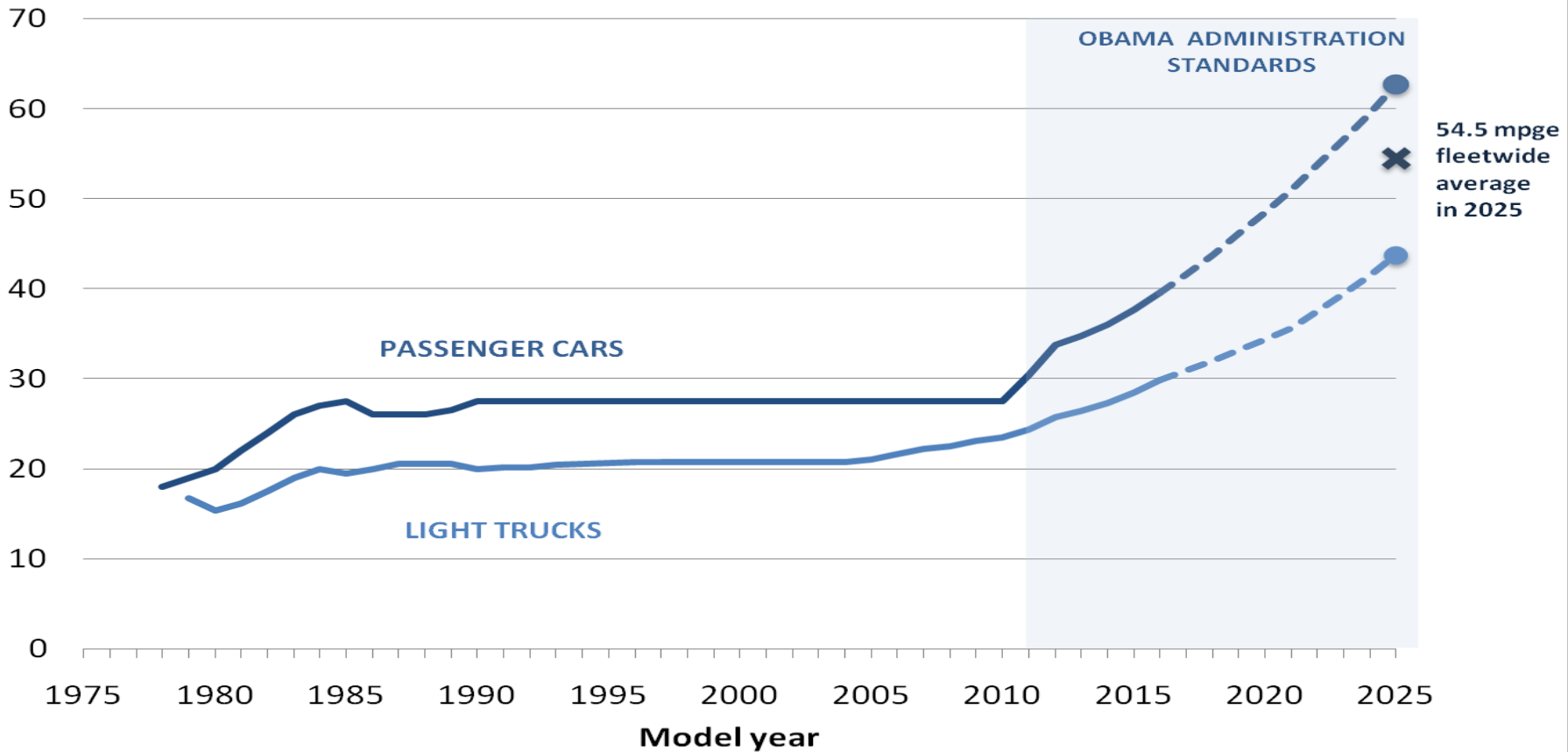
In the Beginning ...

- Chartered in September of 1987.
- During a time of significant materials challenges:
 - New steel grades: stronger, tougher, more weldable
 - Lightweighting demands for improved fuel economy
 - New regulations: safety, fuel economy
 - Global competition: steel and auto
 - Manufacturing quality issues: steelmaking and finishing, stamping, assembly



2011-2025 Proposed CAFE Standards

miles per gallon equivalent



54.5 mpge
fleetwide
average
in 2025

MY1978-2011 figures are NHTSA Corporate Average Fuel Economy (CAFE) standards in miles per gallon. Standards for MY2012-2025 are EPA greenhouse gas emission standards in miles per gallon equivalent, incorporating air conditioning improvements. Dashed lines denote that standards for MY2017-2025 reflect percentage increases in Notice of Intent.

Need for Collaboration

- Given the unprecedented increase in fuel economy standards, there is a greater need for collaboration today than any time in the history of the Auto/Steel Partnership
- Collaborative efforts to date have enabled:
 - Low cost lightweighting
 - Increased safety performance
 - Increased vehicle performance
 - Fuel economy improvements
- These accomplishments were during a period of stable fuel economy standards. Our efforts today must be laser focused on lightweighting through the effective use of AHSS.
- Charting our course for the future requires a strategic roadmap that serves to align our resources both internal and to identify external leveraging opportunities.

Auto/Steel Partnership Drivers

Reduced Mass / Improved Fuel Economy

Performance Requirements (Safety, Durability, NVH, Quality)

Cost Reduction / Avoidance

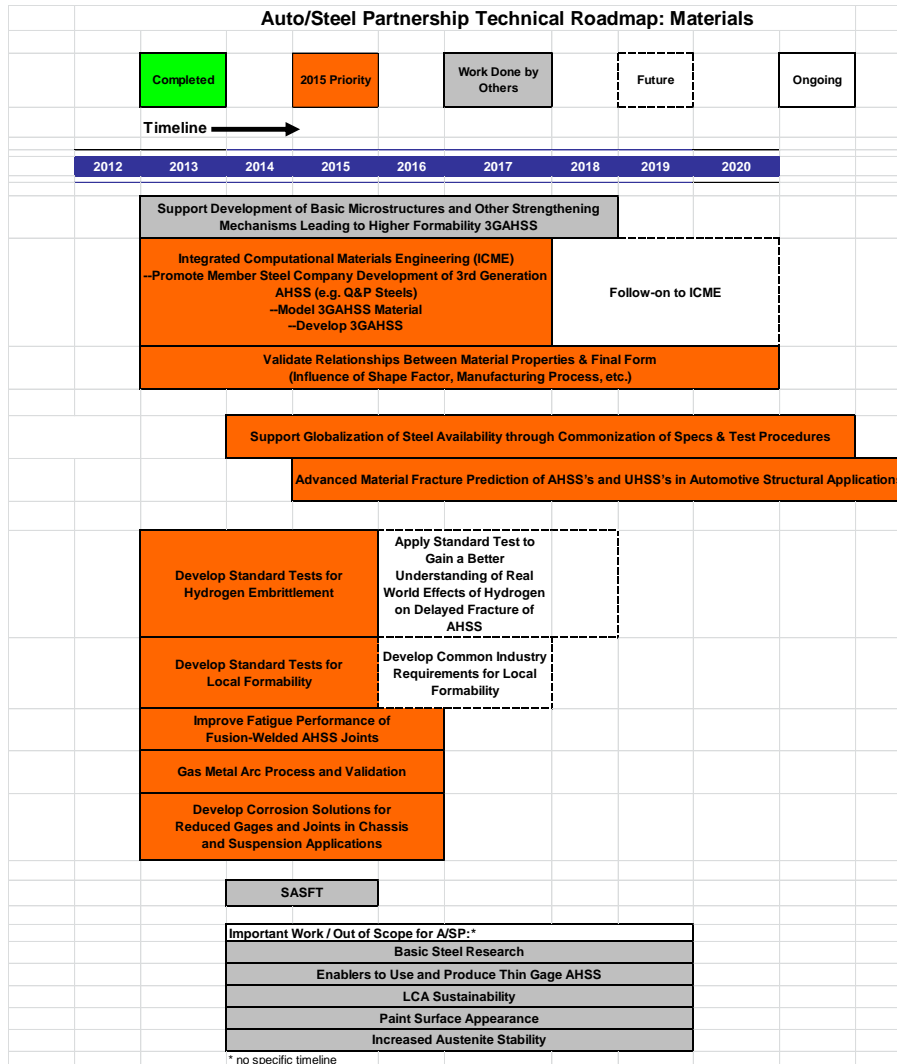
Environmental

Globalization

Competitive Material Assessment

Faster Concept to Production

Auto/Steel Partnership Technology Roadmap



Microsoft Excel
17-2003 Workshee

2015 Auto/Steel Partnership Projects

Enabling Body Projects

Stamping Tooling Optimization

Non-linear Strain Paths

Advanced High-Strength
Steel Stamping

Joining High Carbon
Equivalent AHSS

Hemming of Thin Gauge AHSS

Delayed Cracking of AHSS

Fracture Prediction

Enabling Chassis Projects

Gas Metal Arc Welding of AHSS

Corrosion of AHSS in Chassis
Applications

Improved Fatigue in Fusion
Welded AHSS Joints

CAE Modeling of Welds in AHSS Mass
Optimized Structures

Ongoing

Steel Testing
Harmonization Team

Technology Transfer

Grade Readiness

DOE Funded Projects

Integrated Computational
Materials Engineering of 3GAHSS

Conclusion

- Steel has remained resilient enabling automakers a high performance, lightweighting option with great environmental performance.
- With the unprecedented increase in fuel economy requirements we need a proportional response to develop steel solutions that primarily address lightweighting at the lowest cost.
- Our technology roadmap is a key tool that helps us chart our path to future success.