



**BLUEGREEN  
ALLIANCE**

# DRIVING INVESTMENT

## How Fuel Efficiency Is Rebuilding American Manufacturing

### OVERVIEW

Over the past decade, the U.S. automotive industry demonstrated that we can bring back American jobs and manufacturing and enhance industry competitiveness and profitability. American workers are building world-leading popular vehicles that save consumers billions at the pump, enhance energy security, and cut pollution.

Commonsense clean car and fuel economy standards, coupled with actions to rebuild U.S. manufacturing, have been integral to this success. They remain critical to a continued automotive recovery, to strong innovation and job growth, and to strengthening the manufacturing sector as a whole.

A successful domestic automotive industry is crucial for preserving U.S. jobs and creating new ones. Since the 2008–2009 recession, the auto industry has recovered, adding over 700,000 retail and manufacturing jobs while simultaneously meeting steadily tightening emissions and fuel economy standards and capturing the market benefits of new leadership in innovation.<sup>1</sup>

Nearly 1 million Americans work in motor vehicle and components manufacturing—the single largest segment of American manufacturing. In turn, these manufacturing jobs indirectly support millions of additional jobs throughout the economy.<sup>2</sup>

Over the same period, the industry has seen a dramatic return to profitability and record sales, the auto industry has also successfully implemented national fuel economy and greenhouse gas (GHG) standards across all types and sizes of vehicles—saving consumers money and transforming what Americans and people around the world drive. Rapid automotive innovation under the standards also aided in the

industry recovery itself, boosting the growth of a robust supply chain and enhancing job gains across the industry.<sup>3</sup>

This transformation reflects a decade of robust industry investment, not just in replacing capacity, but also in meeting world-leading fuel economy and GHG standards and rebuilding global technology leadership and competitiveness. *Driving Investment: How Fuel Efficiency Is Rebuilding American Manufacturing* quantifies a key portion of that investment in factories, people, and new technology. It shows clearly that these “costs” have helped drive a resurgent industry, rebuild manufacturing, and secure and create jobs across the country.

### INVESTMENTS DRIVING JOBS AND COMPETITIVENESS

Commonsense, long-term targets have provided automakers and suppliers with the certainty and the competitive level playing field needed to invest in developing and manufacturing new clean and efficient technologies, while continuing to improve performance, safety, connectivity, and other vehicle attributes important to consumers.

Numerous studies and the experience of the past decade have shown that this added investment has boosted manufacturing and job growth.<sup>4</sup> Under strong standards, automakers and suppliers speed product and manufacturing innovation and factory retooling, enhance and add vehicle content, and add labor hours to manufacture and integrate this technology into a new generation of vehicles. Our 2017 report with NRDC, *Supplying Ingenuity II: U.S. Suppliers of Key Clean Fuel-Efficient Vehicle Technology*, tracked the breadth of

*Photo by Sam VarnHagen, courtesy of Ford Motor Company.*

innovative component manufacturing by automotive suppliers. *Driving Investment: How Fuel Efficiency Is Rebuilding American Manufacturing* provides a glimpse of this transformation at the automaker assembly facilities that anchor this manufacturing ecosystem.

The BlueGreen Alliance researched these automaker investments—plant-by-plant—and found:

**Since 2008, U.S. automakers have invested \$63.8 billion in U.S. facilities—completing 258 separate investments at 100 factories. In addition, 42 promised investments totaling \$12.4 billion are in process or have been announced at 37 facilities through 2020.**

**While some of this \$76 billion investment at 107 facilities represents business as usual automaker product and factory upgrades, much is driven by enhanced investment to meet globally leading fuel economy and greenhouse gas standards.**

These investments include, for example:

- Five sequential investments by Ford totaling over \$1 billion in two Ohio engine plants, as the company introduced and rolled out the innovative, efficient, and popular down-sized turbocharged EcoBoost engine across its vehicle fleet.
- Large investments at assembly facilities making pickup trucks and SUVs as assemblers moved to innovative, lightweight mixed material bodies and frames. Investment at these plants included major changes to manufacturing processes and robotics aimed at facilitating the handling, forming, and joining of lighter, stronger materials and spurred significant joint innovation with suppliers.<sup>5</sup>
- Repeated investment at transmission plants as the industry moved from investments in 6-speed transmissions in 2010-12 to 8- 9- and ultimately 10- speed transmissions by 2015 and beyond.
- Major new investments in electric vehicles and propulsion systems, both in dedicated facilities and as lines are added in plants, which are also upgrading to manufacture more efficient gasoline vehicles.
- These investments increased and remained high as automakers prepared for and complied with new standards effective starting in 2011/2012 and in 2017.

It is important to note that this study only reviewed

investments made by automakers themselves, for example General Motors, Honda, et al., in the United States. It includes investments made at their vehicle assembly facilities, for example Fiat Chrysler's Jefferson North Assembly Plant, and at major automaker-owned engine and transmission plants (for instance the Ford Cleveland Engine Plant #1).

This study does not include the additional billions in investments at hundreds of supplier facilities that manufacture the rapidly improved components and materials that go into these vehicles and powertrains, as well as the tooling and robotics that go into the upgraded manufacturing lines themselves. In our 2017 report, *Supplying Ingenuity II*, we found over 1,200 U.S. factories and engineering facilities in 48 states—and 288,000 American workers—building technologies that reduce pollution and improve fuel economy for today's innovative vehicles, and we saw clear evidence of speeded innovation and investment in this sector as well.<sup>6</sup>

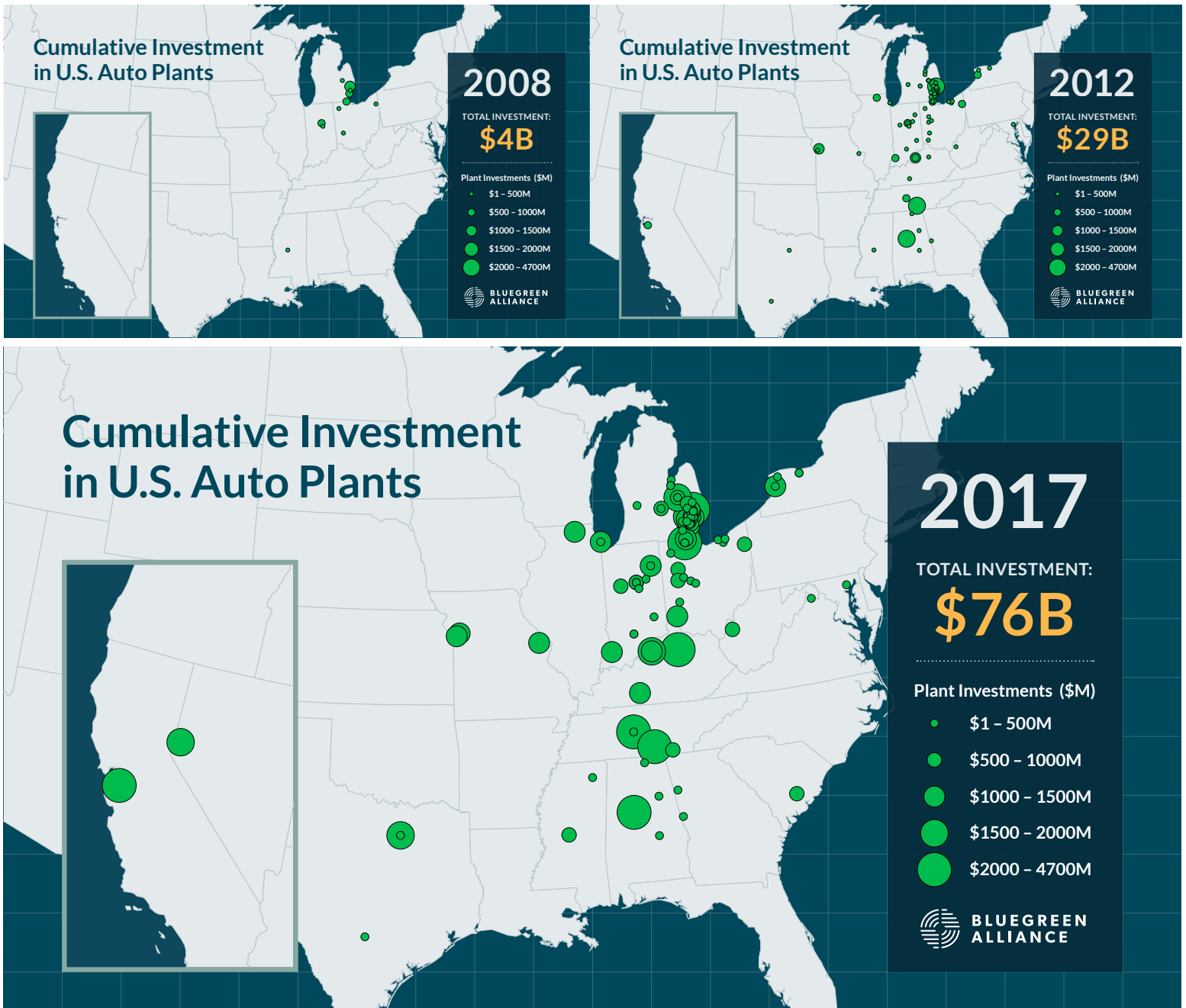
While the research into investment in the decades before the recession is ongoing, it strongly suggests the intensity and nature of these investments is greater and qualitatively different from previous periods of business as usual auto production.<sup>7</sup> In qualitative discussions, industry veterans also describe a far more dynamic, innovative, and exciting manufacturing environment.

## **REGULATORY “COSTS” REPRESENT CRITICAL REINVESTMENT IN U.S. MANUFACTURING PLANTS, JOBS & TECHNOLOGY**

In current debates on regulation, there has been extensive focus on regulatory costs, often to the exclusion of benefits. Looking just at the expense side of the ledger, vehicle fuel economy and greenhouse gas standards indeed appear costly—with automakers' costs of compliance estimated at approximately \$200 billion over the 13 years from 2012-2025. On the benefits side however, the standards result in direct consumer fuel savings valued at over \$1 trillion dollars, providing a multi-billion dollar net savings to vehicle owners, and even larger benefits to the public, once pollution reduction, enhanced energy security, and re-spending of gas savings are taken into account.

But even if we set aside the large and critical benefits of the standards, this study provides an illustration of the importance of the costs themselves. These costs are made up of added spending on product and manufacturing innovation, additional investments in factories and technology, and purchases of

FIGURE A: Cumulative investments in U.S. auto plants by year.



Full-sized maps available at [www.bluegreenalliance.org/drivinginvestment](http://www.bluegreenalliance.org/drivinginvestment)

additional and upgraded components from suppliers. They represent a major added investment in the revitalization of domestic manufacturing and the jobs and communities all across the country that depend on it.

Our analysis shows these costs roll out—town by town, year by year—as steady, much-needed reinvestment in manufacturing communities across the United States.

At the same time, this study underscores the risk found in our review of the supplier sector. If the nation steps back from standards that spur industry-leading innovation across cars, trucks, and a wide range of

technology, we put an engine of growth in American manufacturing and jobs at risk. The fuel economy and greenhouse gas standards have created the market certainty necessary to make these deep, often long-term investments worthwhile to auto manufacturers. At the same time, these forward looking investments help ensure that U.S. vehicles, and the plants that have been built or modernized to make them, remain competitive in a global marketplace—securing jobs for U.S. workers for the long term.

### CONTINUING THESE GAINS

*Driving Investment* reinforces the conclusions of *Supplying Ingenuity II*: continued strong, certain, and

long-term standards remain critical to maintaining technology leadership and sustaining more robust levels of ongoing investment. Today, the U.S. auto industry boasts a dynamic network of assemblers and suppliers, attracting and carrying out world-leading key clean and efficient technology manufacturing. Retaining that edge in cars and trucks, and in advanced conventional and emerging technologies, is critical to retaining manufacturing and jobs.

Our review of plant investments since 2008 also shows the importance of sound manufacturing and labor policies to enabling and reinforcing the advanced technology manufacturing and jobs gains we need. A core foundation for today's progress was provided in the bipartisan 2007 Energy Independence and Security Act and the auto recovery loans of 2008/2009. The Advanced Technology Vehicles Manufacturing (ATVM) loans from the U.S. Department of Energy provided critical financing to spur investment in manufacturing new vehicle and technology platforms in the United States. Meanwhile, United Auto Workers agreements with Ford, General Motors, and Fiat-Chrysler in 2011 and 2015 (and similar agreements by the Steelworkers and other unions with suppliers and materials manufacturers) provided a shared commitment to a long-term pipeline of investments and negotiated an ongoing technology transition that helped secure and improve jobs and advanced manufacturing in the United States.

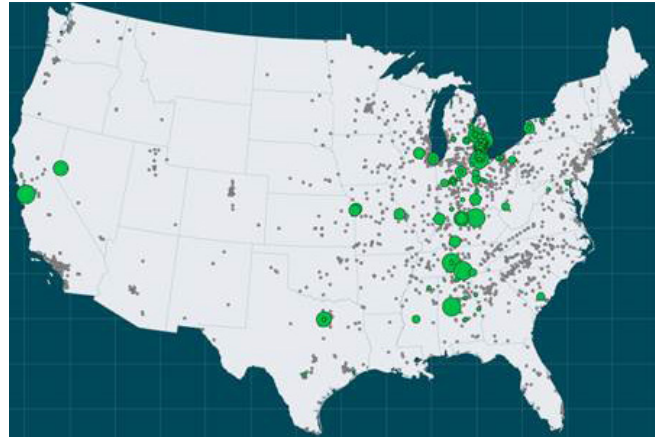
In a rapidly changing industry, American technology leadership and—especially in critical clean and efficient vehicle and powertrain technologies—will be key to future manufacturing and economic success. We need to learn from success, and use all the tools in toolbox to keep progress going.

## CONCLUSION

Today's strong, long-term fuel economy and greenhouse gas standards benefit consumers by saving them billions at the pump, significantly cutting pollution, and playing a critical role in bringing back American manufacturing jobs. They also help drive the deep automaker investment detailed in this report—

at least \$76 billion in 107 factories since 2008. These “costs” represent critical investments in the innovative factories, vehicles, and technologies that are helping to rebuild American manufacturing and jobs and communities across the nation. Lets keep moving.

## Location of Auto Plant Investments and Suppliers of Fuel-Efficient Technology



## ENDNOTES

1. BlueGreen Alliance, “Backgrounder: Sound Vehicle Standards & Policies Drive Strong Job Growth,” August 2016. Available: <https://www.bluegreenalliance.org/resources/sound-vehicle-standards-policies-drive-strong-job-growth/>. Underlying data from U.S. Bureau of Labor Statistics (BLS) and updated in December 2017. Available: <https://www.bls.gov/iag/tgs/iagauto.htm>. Analysis by BlueGreen Alliance.
2. Baum, Alan, and Luria, Daniel, *Driving Growth: How Clean Cars and Climate Policy Can Create Jobs*, Natural Resources Defense Council (NRDC), Center for American Progress, and United Auto Workers (UAW), March 2010. Available: <https://www.nrdc.org/sites/default/files/drivinggrowth.pdf>.
3. NRDC, National Wildlife Federation (NWF), and Michigan League of Conservation Voters Education Fund, “How Fuel Efficiency Is Driving Job Growth in the U.S. Auto Industry,” October 2012, [http://drivinggrowth.org/wp-content/uploads/2012/10/How\\_Fuel\\_is\\_Driving\\_Growth\\_October\\_revise.pdf](http://drivinggrowth.org/wp-content/uploads/2012/10/How_Fuel_is_Driving_Growth_October_revise.pdf).
4. BlueGreen Alliance and NRDC, *Supplying Ingenuity II*. May 2017. Available: <https://www.bluegreenalliance.org/si2>
5. BlueGreen Alliance, “Backgrounder: Sound Vehicle Standards & Policies Drive Strong Job Growth,” August 2016. Available: <https://www.bluegreenalliance.org/resources/sound-vehicle-standards-policies-drive-strong-job-growth/>
6. BlueGreen Alliance, “Combating Climate Change 426,000 Pickup Trucks at a Time.” Available: <https://www.bluegreenalliance.org/resources/combating-climate-change-426000-pickup-trucks-at-a-time/>
7. For example, both data collected by BlueGreen Alliance, and by the Center for Automotive research, which publishes similar aggregate data, shows much lower levels of OEM investment for the pre-recession early 2000's. More work remains to be done, however identify and collect comparable data for a suitable period. Siegel, Ethan, “Repealing Fuel Economy Standards To Cost American Households Nearly \$1000 Per Year”, *Forbes*, December 7, 2017. Available at <https://www.forbes.com/sites/startswithabang/2017/12/07/repealing-fuel-economy-standards-to-cost-american-households-nearly-1000-per-year/#2580c7b77f7e>



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