ALLIANCE FOR AUTOMOTIVE INNOVATION

**MEMO**

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| TO: | Interested Parties |
| FROM: | Alliance for Automotive Innovation |
| DATE: | March 15, 2024 |
| RE: | Here come EPA's final EV rules: what to look for |

The Biden administration and EPA are set to announce final greenhouse gas and criteria pollutant rules for light-duty vehicles (model years 2027-2032) shortly.

What we're looking for…

- ***Did EPA adjust and return to the EV goals in President Biden's 2021 executive order?***
- ***Is there a better balance on the rules related to gas-powered vehicles?***
- ***Are the administration's final EV targets ultimately achievable?***

EPA's original proposal estimated about 37 percent *battery* EV sales by 2027; 60 percent by 2030; and 67 percent by 2032.

EPA outlined four alternatives to achieve the new emissions rules. We favored 'Alternative 3' from the proposal: the most linear of the EV adoption scenarios through 2032 (and a rule closer to a 50 percent EV sales target by 2030).

**If that's where EPA ends up, that would be a 10-point downward revision in 2030 – in line with President Biden's 2021 executive order and the administration's 2023 National Blueprint for Transportation Decarbonization.**

Where we are (or aren't) in 2032 is unclear at this point. But moderating the pace of EV adoption in 2027, 2028, 2029 and 2030 would be the right call because it prioritizes more reasonable and achievable electrification targets in the next few (very critical) years.

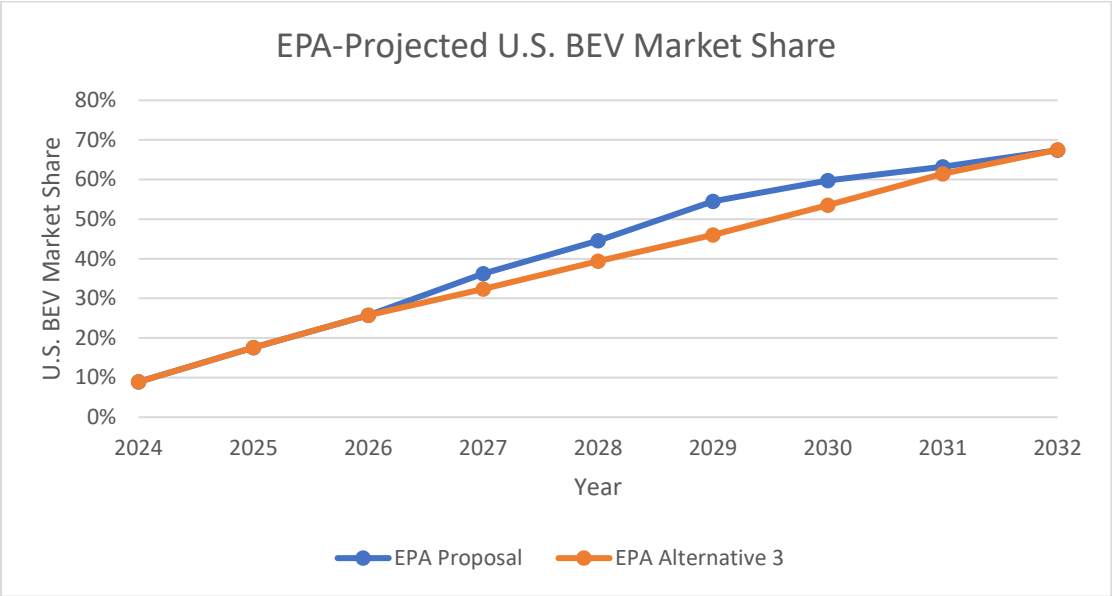
Think of the upcoming rule like a six-year curve with higher electrification targets every year. Pay close attention to the administration's EV adjustments in the earlier years. *That's the story*.

What about the timeline for new rules on internal combustion engines – timelines for things like new gasoline particulate filter technology and prohibitions on enrichment (that basically protects engine components)?

Do the final rules preserve the ability of self-funding automakers to invest in the EV transition?

Or does the administration end up siphoning an automaker's limited capital obligations that are pledged to the EV transition toward internal combustion technology (that will eventually phase out)?

That would be backwards. And counterproductive.




*Source: EPA*

- ***Customer choice: Are plug-in hybrids included?***

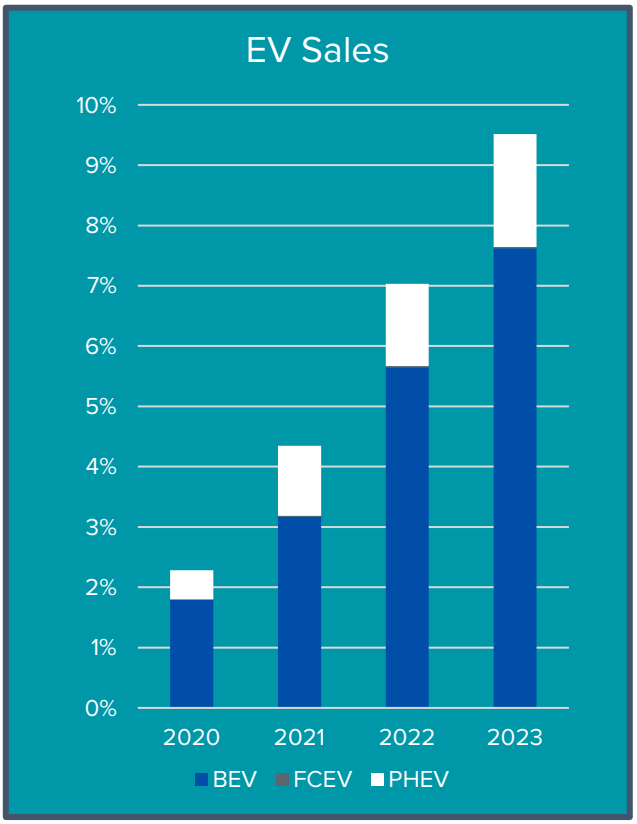
EPA's original proposal only projected *battery* electric vehicles in the electrification targets.

We said *plug-in hybrids* (aka PHEVs) – vehicles with both an electric motor and a combustion engine – have a role to play in the EV transition and should be included in the agency's model.

(Actually, we thought taking this popular and transitional powertrain off the field was not a good idea.)

Plug-in hybrids are an excellent product and great bridge technology that can help increase overall transportation electrification. California says PHEVs count towards its aggressive EV sales goals.

**Customers increasingly like PHEVs. Does EPA now count them?**




*Source: [Get Connected Electric Vehicle Report] Q4 2023 (coming soon)*

- ***What about the other pending tailpipe rules?***
- ***The Energy Department's petroleum equivalency factor?***
- ***The Transportation Department's Corporate Average Fuel Economy standards?***

A vehicle tailpipe is regulated by three federal agencies (*plus* the California Air Resources Board) via four sets of regulations. Think about that, one vehicle overseen by competing, overlapping, conflicting rules.

It looks like we'll soon have clarity on EPA's greenhouse gas and criteria pollutant rules (2027-2032).

What about the less well-known petroleum equivalency factor rule and the Corporate Average Fuel Economy (CAFE) rule?

Highly unlikely we'll have the full picture for *all three* federal agency tailpipe regulations this month.

We've urged government-wide coordination to sync up these rules. The regulations only work… if they work together. For example, lowering greenhouse gas emissions improves fuel economy (and vice versa).

**Quick explainer on PEF and how this all works together:**

PEF is how the 'fuel economy' of an EV is determined for purposes of the CAFE rule.

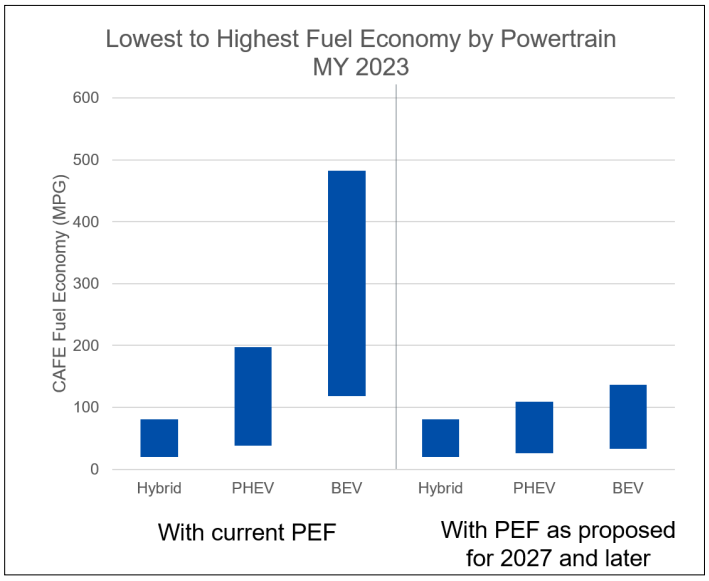
Today the PEF formula equates a pure battery electric vehicle with a gas-powered car that gets about 300 miles per gallon – that's really high fuel economy. But an EV doesn't use gas, so that makes sense.

The Energy Department proposed changing the PEF formula and slashing the equivalent fuel economy rating of a battery electric vehicle by 72 percent.

For the purposes of a CAFE rating – that would have effectively said a battery electric vehicle is not much more fuel efficient than the most efficient internal combustion engine vehicle. (Even though the former doesn't use gas).

In that context, changing PEF (we said) disincentivizes the production of battery electric vehicles and further misaligns the greenhouse gas and CAFE rules. If that were to happen, manufacturers might be forced to pay billions of dollars in CAFE civil penalties – even if they meet EPA's stricter emissions standards.

That's a problem we've been focused on and hope will be addressed by the Energy and Transportation Departments.




*Source: Alliance for Automotive Innovation (based on data from S&P Global)*

**Previous commentary (excerpts):**

**EPA's EV Rules are Out of Whack: Five Ways to Fix Them**
**By John Bozzella**
**June 28, 2023**

1. **Don't write off plug-in hybrids and fuel cell EVs**
2. **Don't siphon finite resources from EVs to gas-powered vehicles**
3. **Sync up EPA's rules with yet-to-be-released CAFE standards**
4. **While you're at it… sync up the rules and eliminate conflict with state standards too**
5. **Keep score (and keep track) of conditions outside the vehicle**

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**EPA's EV Rules: What it Means for China and the U.S. Auto Market**
**By John Bozzella**
**June 12, 2023**

What happens if EPA gets its way and requires a five-fold increase in *battery* electric vehicle sales in four years and a 10-fold increase in six years? The minerals have to come from somewhere, right? Enter China and Chinese-backed mining companies in Chile, The Democratic Republic of the Congo and Indonesia.

They'll supply the minerals and processing needed to produce the batteries… needed to build the vehicles… needed to comply with EPA's regulation. Got that?

*If* the U.S. moves too slow on electrification, we've got a China risk too. Failure to scale up and move with sufficient urgency gives China the running room to lock up global EV supply chains and expand into other global auto markets.

This is our Goldilocks problem. Too fast: advantage China. Too slow: advantage China.

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**How to Think About EPA's New Greenhouse Gas Rules…**
**By John Bozzella**
**April 12, 2023**

It's also true that EPA's proposed emissions plan is aggressive by any measure. By that I mean it sets automotive electrification goals in the next few years that are… very high.

In fact, the proposal exceeds the administration's *own 50 percent electrification target* (see executive order 14037) announced in August 2021 – with auto industry support – by

requiring more than one EV for every new gas vehicle sold by 2030 and potentially two EVs for every gas vehicle just two years later.

And it goes beyond the National Blueprint for Transportation Decarbonization – a government-wide plan rolled out recently by four cabinet agencies that doubled down on the 50 percent target from 2021.

To be clear, 50 percent was always a stretch goal and predicated on several conditions. Those included supportive policies like the manufacturing incentives in the Inflation Reduction Act (that have only just begun to be implemented) and tax credits to support EV purchases and affordability.

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**Alliance for Automotive Innovation**
**Memo: Auto perspective on coming EPA emissions rules**
**April 6, 2023**

America's electric transformation is well underway. The vehicles are in production and automakers are committed to the shift.

The question isn't whether it can be done, it's how fact can it be one… and how fast will depend almost exclusively on having the right policies and market conditions in place to achieve the share goad of a net zero carbon automotive future.

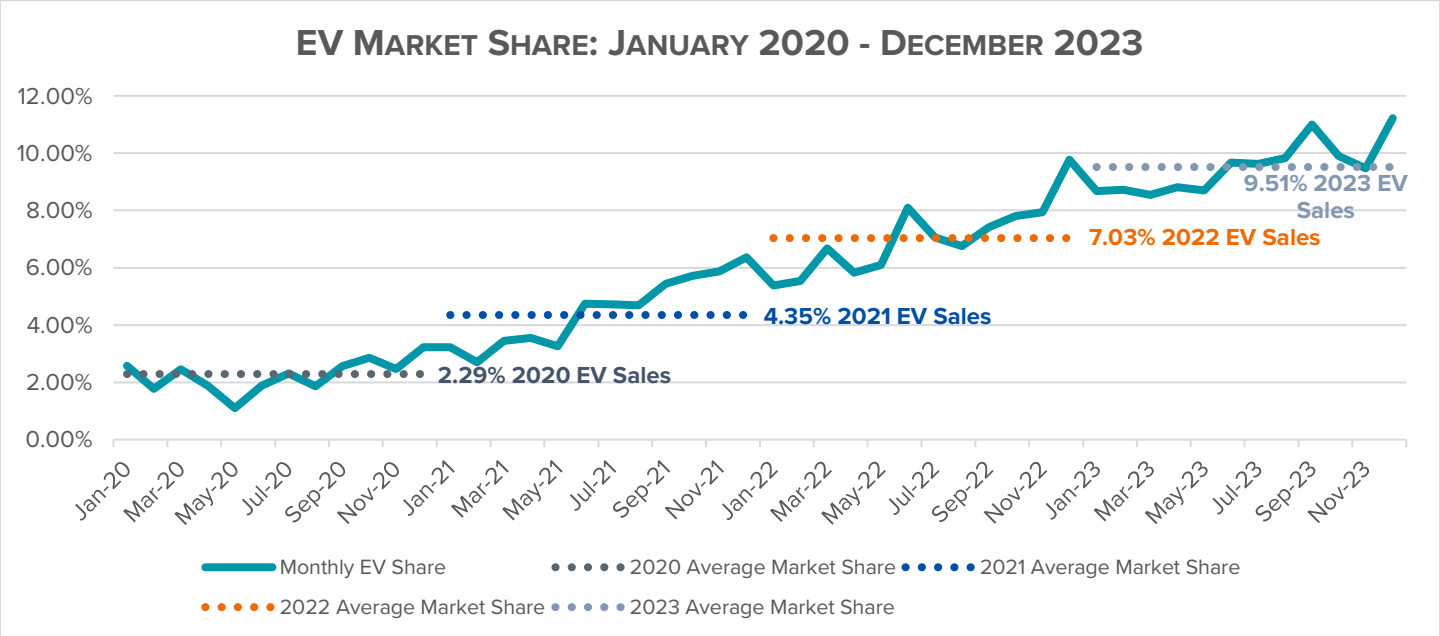
**U.S. EV market: at a glance**

**Inflation Reduction Act's consumer tax credit (30D):**

- **Only 21 models qualify for the 30D EV tax credit**
  - **12 models get $3750**
  - **9 models get $7500**

**Get Connected: Q3 2023 Electric Vehicle Quarterly Report:**

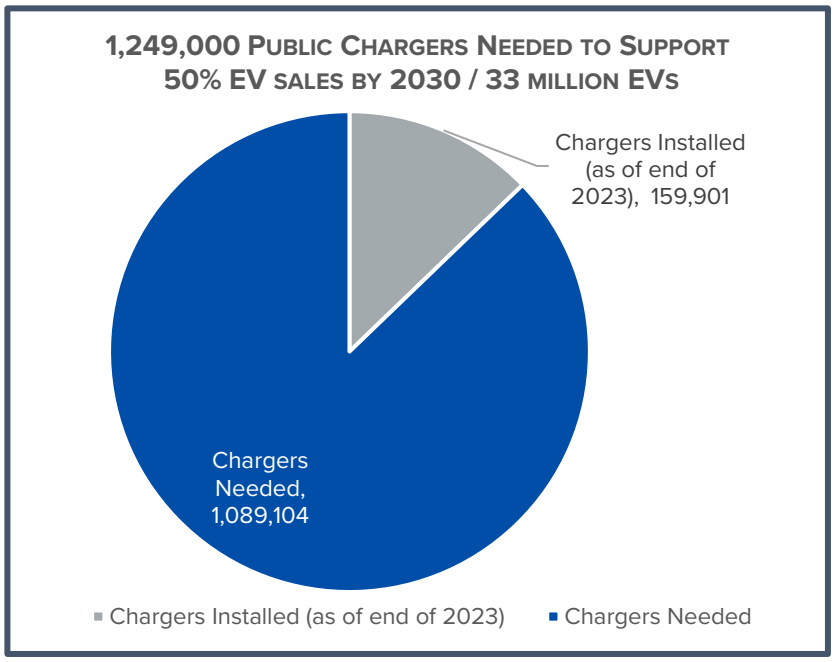
- 111 electric cars, utility vehicles, pickup trucks and van models available for sale in the U.S. (Q3 2023);
- EVs represent 10.1 percent of new light-duty vehicle sales, up from 9.1 percent in Q2 2023 and 7.1 percent in Q3 2022;
- More than 378,000 EVs sold in U.S., a 63 percent increase over Q3 2022.




*Source: Get Connected Electric Vehicle Report Q4 2023 (coming soon)*

**Public EV charging still lags:**

- Installation of U.S. public chargers is not keeping up with current and projected EV sales;
- In the first three quarters of 2023, the number of publicly available EV chargers increased 26 percent year-over-year – while EV sales increased 59 percent;
- Nationwide, 378,097 EVs were registered in Q3 2023 but only 7,800 new public chargers added – a ratio of 48 EVs for every new public port;
- Nearly 1.1 million more public chargers (950,000 Level 2; 147,000 DC Fast) are required to meet the National Renewable Energy Laboratory's necessary infrastructure estimate for 2030.




*Source: Get Connected Electric Vehicle Report Q4 2023 (coming soon)*

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ALLIANCE
FOR AUTOMOTIVE
INNOVATION

# THE *NEW* AMERICAN AUTO INDUSTRY

## ELECTRIC VEHICLE TRANSITION

**$125 BILLION**
EV INVESTMENTS
BATTERY FACTORIES & ASSEMBLY PLANTS

**114 EV MODELS**
FOR SALE IN U.S.

**10%**
U.S. VEHICLE SALES IN 2023

## ECONOMY

**5% GDP**

**$1 TRILLION**
TO U.S. ECONOMY

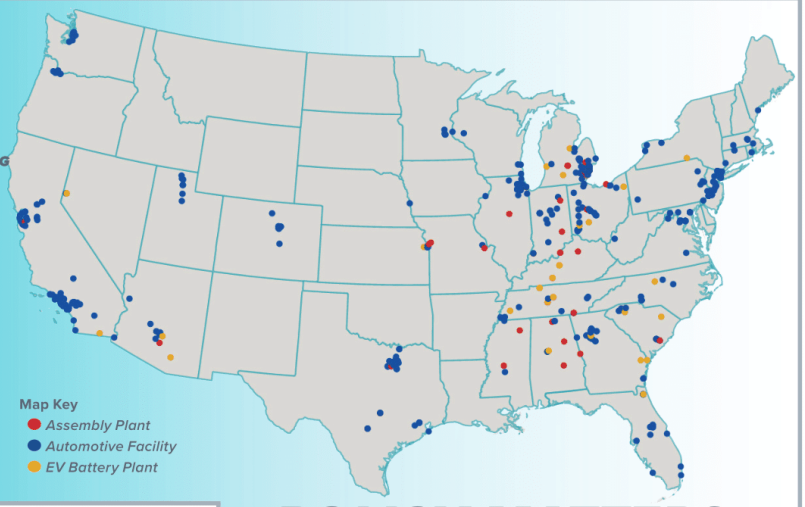
**10 MILLION JOBS**
COAST - TO - COAST

## MANUFACTURING

**$322 BILLION**
INVESTED BY AUTOMAKERS AND SUPPLIERS TO STRENGHTEN AMERICAN AUTO MANUFACTURING

*Every direct job in vehicle manufacturing creates another **10.5 American jobs.***

*Every **$1** added to the economy by vehicle manufacturing creates an additional **$3.45** in economic value.*




## SALES

**15 MILLION**
NEW VEHICLES SOLD IN 2023

## WATCH THE VIDEO:


## EXPORTS

**$105 BILLION**
EXPORT POWERHOUSE

*Motor vehicles and parts: second largest U.S. export*

## POLICY MATTERS

- CONSUMER CHOICE
- PUBLIC EV CHARGING
- SUPPLY CHAINS
- MINING & PERMITTING REFORM
- GRID MODERNIZATION
- MANUFACTURING & CONSUMER INCENTIVES

LEARN MORE: WWW.AUTOSINNOVATE.ORG

MARCH 2024

## 50-state automotive data:

| State | Auto Jobs* | | Automotive Economic Impact* | | | 2023 Powertrain Sales** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | %Sate Total | % State GDP | % State Exports | New Vehicles Sold 2023** | ICE | Hybrid | PHEV | BEV | FCEV | ZEV Total |
| AK | 12,455 | 2.9% | 1.8% | 0% | 24,662 | 88.2% | 8.2% | 0.8% | 2.8% | 0.0% | 3.6% |
| AL | 134,774 | 5.1% | 5.8% | 31.4% | 192,270 | 88.9% | 8.5% | 0.6% | 2.0% | 0.0% | 2.6% |
| AR | 53,514 | 3.3% | 3.1% | 3% | 110,264 | 90.3% | 7.4% | 0.5% | 1.7% | 0.0% | 2.3% |
| AZ | 171,152 | 4.3% | 3.7% | 3% | 352,667 | 81.1% | 9.5% | 1.2% | 8.2% | 0.0% | 9.4% |
| CA | 772,112 | 3.3% | 2.6% | 9% | 1,721,223 | 60.4% | 13.8% | 3.5% | 22.1% | 0.2% | 25.7% |
| CO | 120,735 | 3.1% | 2.6% | 1% | 268,324 | 74.7% | 10.1% | 4.2% | 10.9% | 0.0% | 15.1% |
| CT | 65,911 | 3.0% | 2.5% | 1% | 144,927 | 77.4% | 12.4% | 3.4% | 6.7% | 0.0% | 10.2% |
| DC | 1,454 | 0.2% | 0.1% | 1% | 16,847 | 64.9% | 15.4% | 4.0% | 15.6% | 0.0% | 19.6% |
| DE | 18,777 | 3.2% | 3.4% | 1% | 47,195 | 80.0% | 11.2% | 2.2% | 6.6% | 0.0% | 8.8% |
| FL | 489,663 | 3.9% | 3.5% | 6% | 1,308,738 | 82.9% | 9.7% | 0.9% | 6.5% | 0.0% | 7.4% |
| GA | 257,586 | 4.1% | 3.9% | 10.7% | 450,362 | 83.8% | 8.8% | 0.8% | 6.5% | 0.0% | 7.4% |
| HI | 22,812 | 2.7% | 3.0% | 9.5% | 71,138 | 82.0% | 7.0% | 1.3% | 9.8% | 0.0% | 11.0% |
| IA | 64,913 | 3.2% | 2.5% | 6% | 120,983 | 88.2% | 8.7% | 0.9% | 2.3% | 0.0% | 3.2% |
| ID | 40,129 | 3.7% | 3.4% | 1% | 68,219 | 84.3% | 11.0% | 1.4% | 3.4% | 0.0% | 4.7% |
| IL | 256,778 | 3.4% | 3.0% | 3% | 518,575 | 81.7% | 10.5% | 1.3% | 6.5% | 0.0% | 7.8% |
| IN | 200,348 | 5.2% | 6.1% | 10.2% | 239,187 | 85.7% | 10.2% | 1.0% | 3.2% | 0.0% | 4.1% |
| KS | 63,619 | 3.4% | 3.8% | 2% | 93,869 | 86.2% | 9.1% | 1.0% | 3.8% | 0.0% | 4.8% |
| KY | 141,589 | 5.7% | 7.2% | 9% | 138,947 | 87.5% | 9.2% | 0.8% | 2.6% | 0.0% | 3.3% |
| LA | 79,759 | 3.1% | 2.5% | 1% | 192,187 | 90.9% | 7.1% | 0.5% | 1.4% | 0.0% | 2.0% |
| MA | 109,477 | 2.3% | 1.6% | 1% | 307,590 | 75.2% | 12.8% | 4.0% | 8.1% | 0.0% | 12.0% |
| MD | 104,727 | 2.9% | 2.5% | 24.2% | 272,204 | 76.2% | 12.1% | 2.9% | 8.8% | 0.0% | 11.7% |
| ME | 32,096 | 3.9% | 4.0% | 1% | 64,201 | 84.1% | 9.8% | 2.8% | 3.2% | 0.0% | 6.0% |
| MI | 392,193 | 7.2% | 9.3% | 50.8% | 479,866 | 88.7% | 7.3% | 1.0% | 3.0% | 0.0% | 4.0% |
| MN | 107,188 | 2.9% | 2.4% | 3% | 228,949 | 84.0% | 9.6% | 1.4% | 5.0% | 0.0% | 6.4% |
| MO | 168,454 | 4.6% | 5.3% | 10.6% | 284,658 | 86.3% | 7.7% | 2.4% | 3.5% | 0.0% | 5.9% |
| MS | 67,782 | 4.3% | 5.1% | 6% | 101,935 | 90.9% | 7.5% | 0.5% | 1.0% | 0.0% | 1.5% |
| MT | 27,360 | 4.0% | 3.1% | 1% | 58,276 | 86.6% | 10.0% | 1.2% | 2.2% | 0.0% | 3.4% |
| NC | 221,071 | 3.6% | 2.8% | 3% | 422,990 | 82.1% | 10.8% | 1.1% | 5.9% | 0.0% | 7.0% |
| ND | 17,781 | 1.4% | 2.6% | 3% | 37,914 | 92.5% | 6.2% | 0.5% | 0.8% | 0.0% | 1.3% |
| NE | 44,878 | 3.4% | 2.5% | 4% | 81,465 | 88.1% | 8.2% | 1.2% | 2.5% | 0.0% | 3.7% |
| NH | 34,094 | 3.9% | 3.5% | 1% | 87,297 | 85.0% | 10.0% | 1.7% | 3.2% | 0.0% | 4.9% |
| NJ | 146,997 | 2.8% | 2.2% | 5% | 492,075 | 75.7% | 10.7% | 2.7% | 10.9% | 0.0% | 13.6% |
| NM | 32,833 | 3.0% | 2.6% | 2% | 76,764 | 85.3% | 9.8% | 1.2% | 3.7% | 0.0% | 4.9% |
| NV | 57,203 | 3.2% | 3.1% | 1% | 133,103 | 76.5% | 10.2% | 1.7% | 11.6% | 0.0% | 13.2% |
| NY | 239,384 | 2.0% | 1.3% | 1% | 839,538 | 80.0% | 11.0% | 3.5% | 5.6% | 0.0% | 9.1% |
| OH | 305,340 | 4.5% | 4.4% | 13.3% | 509,566 | 86.4% | 9.4% | 1.1% | 3.1% | 0.0% | 4.2% |
| OK | 80,160 | 3.6% | 3.0% | 2% | 488,934 | 90.9% | 4.4% | 3.0% | 1.7% | 0.0% | 4.7% |
| OR | 80,763 | 3.2% | 2.7% | 8% | 151,929 | 70.8% | 13.7% | 3.7% | 11.8% | 0.0% | 15.4% |
| PA | 235,623 | 3.2% | 2.4% | 4% | 541,989 | 82.6% | 11.0% | 2.1% | 4.2% | 0.0% | 6.3% |
| RI | 17,422 | 2.8% | 2.2% | 30.6% | 47,468 | 81.9% | 10.4% | 3.4% | 4.4% | 0.0% | 7.8% |
| SC | 131,581 | 4.7% | 5.2% | 24.8% | 211,948 | 86.4% | 9.7% | 0.8% | 3.1% | 0.0% | 3.9% |
| SD | 21,801 | 3.6% | 3.1% | 3% | 37,684 | 90.9% | 7.0% | 0.9% | 1.3% | 0.0% | 2.1% |
| TN | 214,130 | 5.2% | 6.4% | 14.1% | 266,032 | 86.5% | 8.6% | 0.6% | 4.2% | 0.0% | 4.9% |
| TX | 685,089 | 3.9% | 3.9% | 8% | 1,462,554 | 85.8% | 8.0% | 0.7% | 5.5% | 0.0% | 6.2% |
| UT | 75,385 | 3.5% | 3.1% | 4% | 146,441 | 80.5% | 10.8% | 1.6% | 7.1% | 0.0% | 8.7% |
| VA | 160,474 | 3.1% | 2.4% | 5% | 334,908 | 78.3% | 11.9% | 1.4% | 8.3% | 0.0% | 9.7% |
| VT | 14,986 | 3.6% | 3.2% | 1% | 39,210 | 79.1% | 10.6% | 3.6% | 6.7% | 0.0% | 10.3% |
| WA | 113,800 | 2.6% | 1.9% | 5% | 276,907 | 65.8% | 15.4% | 3.0% | 15.8% | 0.0% | 18.8% |
| WI | 127,419 | 3.5% | 3.0% | 3% | 220,530 | 86.0% | 9.7% | 0.9% | 3.3% | 0.0% | 4.3% |
| WV | 27,186 | 3.2% | 2.8% | 12.3% | 72,184 | 89.7% | 8.5% | 0.6% | 1.1% | 0.0% | 1.8% |
| WY | 11,627 | 3.0% | 2.3% | 0% | 22,615 | 89.6% | 8.3% | 0.8% | 1.3% | 0.0% | 2.1% |
| **U.S.** | **9,668,915** | **4.94%** | **4.9%** | **9%** | **14,880,308** | **80.4%** | **10.1%** | **1.9%** | **7.6%** | **0.0%** | **9.5%** |

*Multi-industry contribution analysis of the economic impact of automotive manufacturing, selling, repairing, renting, and additional manitenance model using IMPLAN economic analysis data software, 2021 data year;
** Figures compiled by alliance for autotmoive innovation with new registration retail and fleet data provided by S&P Global Mobility covering january 1, 2023 - December 31, 2023