

SFA Research Corner

Driving Towards Decarbonization: Connecting Auto ABS to Climate Change

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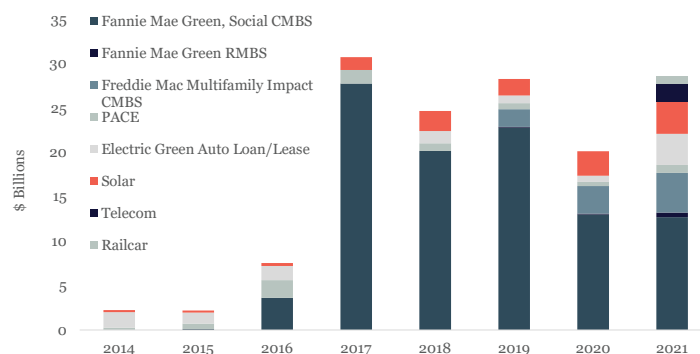
WHAT WE'RE WATCHING

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Green auto ABS deals represented \$3.5 billion of the \$29 billion issuer-designated ESG securitizations offered in 2021. Proceeds from these auto ABS deals financed the purchase of green vehicles at [Tesla](#) and [Toyota](#), the inaugural issuers of green auto ABS deals thus far. These green bonds financed either all-electric, zero-emissions vehicles (Tesla) or hybrid, low-emissions vehicles (Toyota)—vehicles that eliminate or reduce greenhouse gas (GHG) emissions. Below, we look at GHG emissions as an environmental consideration in the ESG analysis of auto ABS.

Issuer-Designated Green, Social or Sustainable ESG Securizations Led By Multifamily Agency CMBS

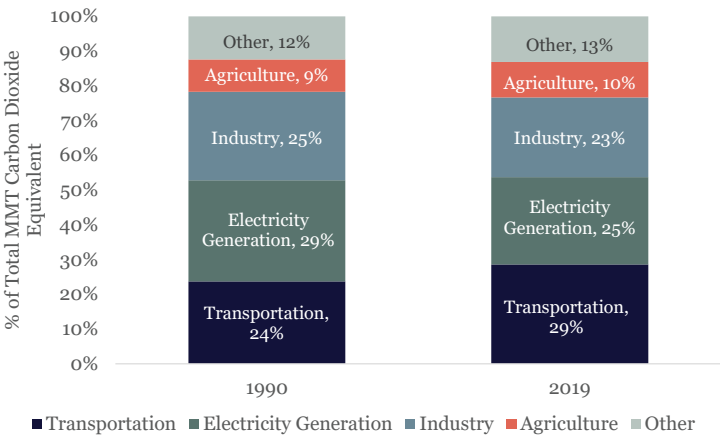


Source: SFA Market Compilation

GHGs include methane and nitrous oxide (mostly from agriculture), fluorinated gases (refrigeration and air conditioning systems) and carbon dioxide (burning fossil fuels). They are the products of human activities that are warming the planet, impacting precipitation patterns, storm severity, sea level rise, and “[substantially contributing](#)” to the effects which are collectively known as climate change. Among these GHG’s, carbon dioxide has both the greatest volume and impact representing [80%](#) of all U.S. GHG emissions in 2019 with methane, nitrous oxide and fluorinated gases accounting for the other 20%. The tailpipe emissions from passenger cars, SUVs and light duty trucks, which together make up the class of [light duty vehicles](#), are comprised of [99%](#) carbon dioxide.

The Environmental Protection Agency’s (EPA) annual GHG [inventory](#) tracks these GHG emissions and breaks them down by 5 economic sectors. The transportation sector is the largest source of GHGs in the U.S., contributing [29%](#) of all emissions. Within the transportation sector, light duty vehicles represent [58%](#) of emissions from the sector. Put another way, more than half of GHG’s in the largest emitting sector come from our personal vehicles. Unlike some sectors that have seen emissions decrease over time, transportation GHG emissions have been increasing and are now 24% higher than in 1990 despite significant improvements in fuel efficiency and emissions in response to a steady tightening of standards in this class of vehicles.

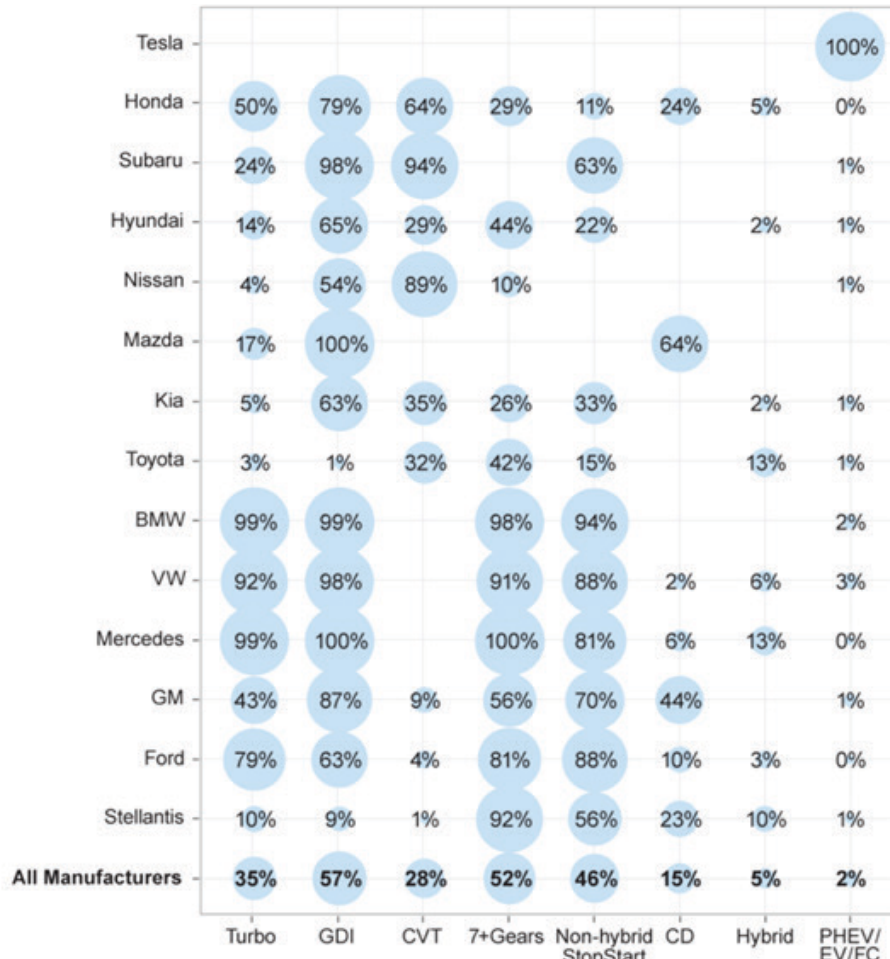
Transportation Sector Responsible for Most of Today’s GHG Emissions in the U.S. (1990 Versus 2019)



Source: [U.S. EPA’s Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2019](#)

For example, miles per gallon (mpg) standards have more than tripled (from 13.75mpg to the current 43.3mpg) since 1975 when the first federal Corporate Average Fuel Economy ([CAFE](#)) standards were established. On emissions, the EPA’s [2021 Automotive Trends Report](#) shows that 8 of the 12 largest manufacturers have decreased their vehicles’ emissions using innovative engine technologies to achieve emissions, fuel economy and performance targets as the chart below shows. Tesla remains the only large manufacturer with an all-electric fleet, and contributes zero tailpipe emissions. Tesla is followed by Honda, Subaru, and Hyundai in low-emissions cars sold as a percent of their total cars sold. Toyota, according to the EPA, achieved the largest reduction in carbon dioxide emissions between model years 2015 and 2020. Toyota was followed by Kia and GM in reductions.

Technology Share for Large Manufacturers, Model Year 2020



Turbo= turbocharged engines. GDI= gasoline direct injection. CVT = continuously variable transmissions.
 7+Gears = Transmission with seven or more discrete speeds. CD = Cylinder deactivation. PHEV/EV/FC = Plugin hybrid, electric vehicles and fuel cell vehicles.
 Source: [EPA.gov](https://www.epa.gov)

Outpacing these efficiencies has been a sharp [increase](#) in the total vehicle miles traveled, before the COVID lockdowns, and the steady shift of consumer preference toward less efficient SUVs and away from sedans which now hold only 31% of the new vehicle market in this class, down from 50% in 2013 and 80% in 1975. These consumer behaviors have expanded overall GHG emissions, pushing them higher each year. The EPA hopes to reverse this trend. On December 30, 2021, the EPA [finalized](#) federal GHG emissions standards for passenger cars and light trucks for Model Years 2023 through 2026. These standards are, according to the EPA, the “[strongest](#) vehicle emissions standards ever established for the light-duty vehicle sector,” and will result in avoiding more than 3 billion tons of GHG emissions through 2050.

Rating agencies have been including GHG components in their credit analysis of auto ABS pools. One such element is the impact that the shift to alternate fuel vehicles will have on vehicle valuations and thus the credit performance of auto ABS. Specifically, vehicle valuation is critical in analyzing auto ABS as valuation affects default, recovery, and loss performance which in turn inform rating agency and investor analysis of a transaction. We provide some examples below:

Moody's discussed in a November report how rapidly evolving EV technology would expose ABS to collateral risk. According to the [rating agency](#), "[residual value] risk will be particularly high for technologically obsolete EV and internal combustion engine (ICE) vehicle models. Concurrent manufacturer distress would amplify this potential RV weakness because of EVs' reliance on technology updates." Moody's notes, however, that structural mitigants such as "collateral value test triggers and pool diversification will mitigate risk." These comments were made following The Hertz Corporation's [announcement](#) to order 100,000 new Tesla vehicles for its rental fleet. Moody's dedicated ESG webpage may be found [here](#).

S&P Global Ratings recently published a [request for comment](#) on its global auto ABS criteria where it proposes additional residual value stresses for transactions where the share of battery electric vehicles (BEV) and plug-in hybrid vehicles (PHEV) in the collateral pool exceeds a benchmark concentration limit. As noted in its [ESG Industry Report Card: Auto Asset-Backed Securities](#), "electric vehicles, while generally viewed as environmentally friendly relative to vehicles with ICE [internal combustion] engines, may have more uncertainty of future secondhand values given limited historical data, reliance on fiscal incentives, linkage with the manufacturer, and technological obsolescence". The rating agency highlighted in a recent [commentary](#), "based on the limited data that is available, BEVs have typically exhibited greater price depreciation than traditional ICE vehicles. At an aggregate level, without differentiating by vehicle segment or brand, most major markets have recently seen BEV residual values at least 10 percentage points lower than those for ICE vehicles." S&P's dedicated ESG webpage may be found [here](#).

[Fitch](#) considers "GHG Emissions and Air Quality" under Environmental General Issues when assigning its ESG Relevance Scores. The GHG sector-specific issues considered for the auto ABS sector are "regulatory risks, or compliance costs related to emissions, energy consumption and/or related reporting standards." Fitch has not seen an impact to traditional Auto ABS transactions due to GHG given their limited concentration of EVs in Fitch-rated transactions. However, industry developments including availability of relevant data continue to be monitored and incorporated into Fitch's analysis respectively. Fitch notes certain factors, such as battery costs, life and obsolescence that could impact EV performance in its [special report on battery EVs in Auto ABS](#). Fitch's dedicated ESG webpage may be found [here](#).

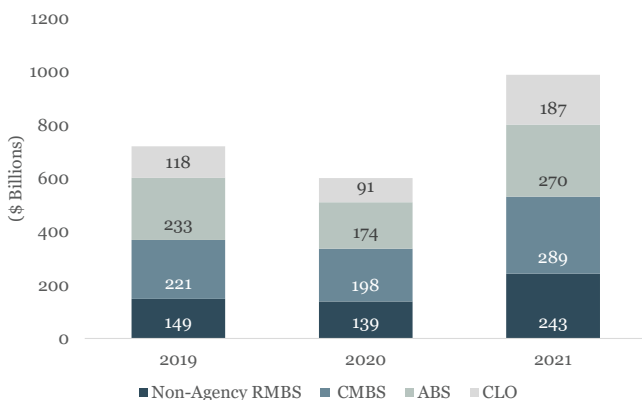
DBRS Morningstar's, [ESG Factors in Auto ABS](#), notes that "carbon and the GHG factor" may lead to "more volatile used vehicle values, resulting in higher levels of terminations caused by changes in equity positions along with volatile recoveries in the event of default." Additionally, the rating agency notes that "[r]egulatory changes implemented by governments that affect the supply and demand balance for particular vehicle types could result in higher default risk and lower recoveries in the short term to medium term alongside residual value uncertainty at contract maturity." DBRS Morningstar's ESG dedicated website may be found [here](#).

[KBRA](#) mapped 14 million vehicles across 214 securitizations from 22 issuers to a corresponding [GHG rating](#) calculated by the EPA. The rating, which ranges from 1 to 10 with 10 reflecting the lowest level of emissions, indicates the amount of carbon dioxide emitted from tailpipes. Once GHG ratings are identified on the asset-level, KBRA can roll-up an average GHG score for the ABS on the pool level, thereby providing a useful metric to compare the environmental impact of a specific auto ABS to other auto ABS transactions. Brian Ford, Senior Director of Structured Finance Research at KBRA has commented that, “The analysis has helped inform some investors’ decisions about whether specific auto-loan bonds meet their internal ESG standards.” KBRA’s dedicated ESG webpage may be found [here](#).

MARKET SUMMARY

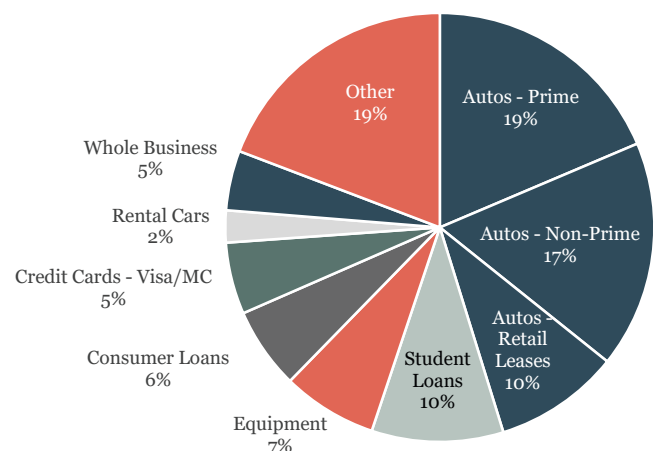
Issuance across Non-Agency RMBS, CMBS, ABS and CLO in 2021 reached and estimated \$985 billion, easily clearing 2019’s post-financial crisis record level. Compared to 2019, the most growth came from non-agency RMBS, up 64%, and CLOs, up 58%. The ABS and CMBS sectors were up, 16% and 31% respectively. Robust demand handily absorbed the deluge of supply across sectors as prices and secondary market spread levels closed the year near the levels recorded at the beginning of 2021.

**Issuance for Non-Agency RMBS, CMBS, ABS, and CLO
2021 (\$985 Billion) Versus 2019, 2020**

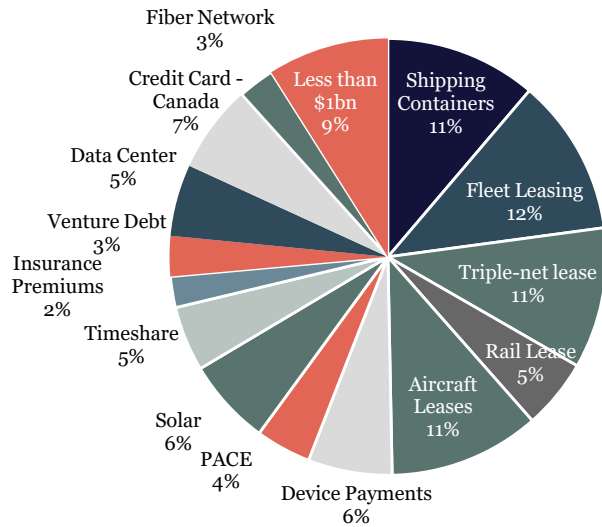


Source: Deutsche Bank, Market Compilation

**ABS Only
2021 YTD: \$270 Billion**

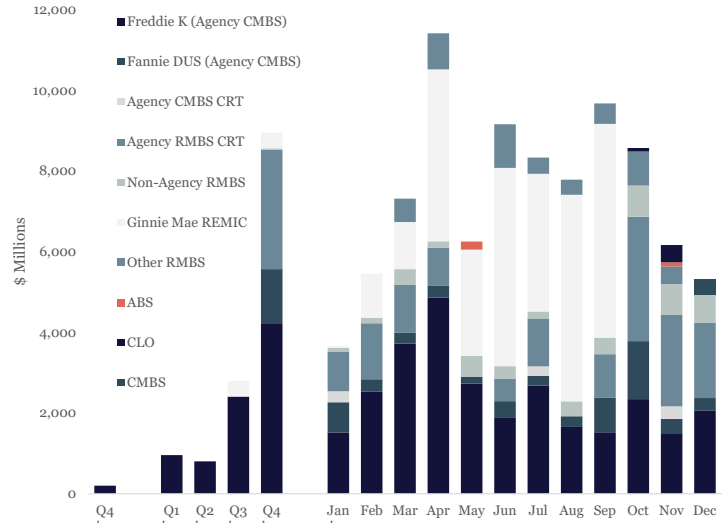


Source: Deutsche Bank, Market Compilation

**Other ABS Only
2021 YTD: \$50 Billion**


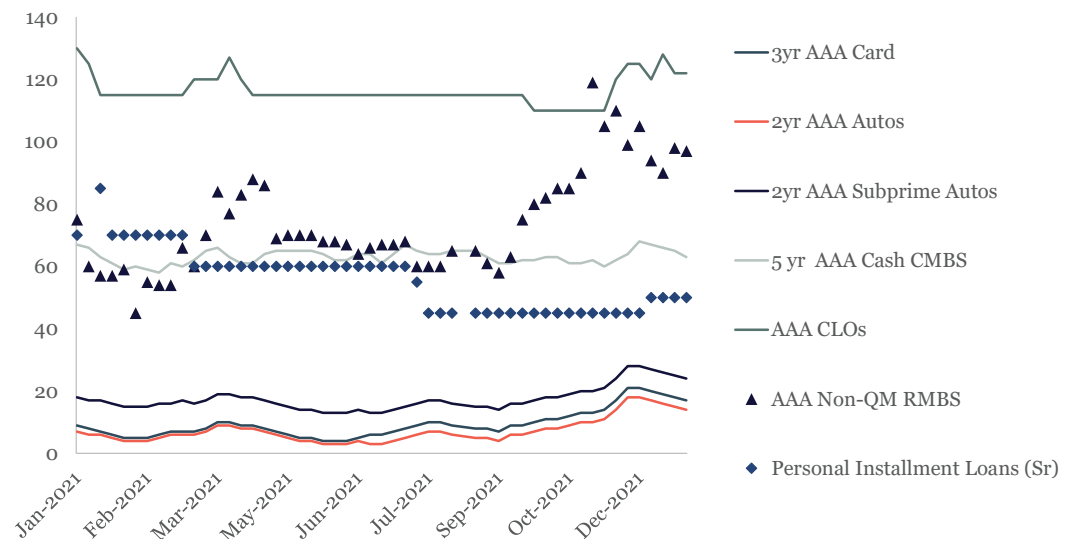
ABS with YTD volume less than \$1 bn YTD include ABS backed by venture debt, data centers loans, auto dealer floorplan loans, small business loans, tax liens, commercial loans, secured fund fee, oil contracts, UK credit cards, litigation funding, retail credit cards, and rate reduction bonds.

Source: Deutsche Bank, Market Compilation

**SOFR (30 Day Average) Securitizations
2019 to 2021: \$103 Billion***


Other RMBS includes mortgage insurance-linked securities.

Data begins Q3 2019. *Ginnie Mae data as of September 2021. Source: Market Compilation

Secondary Market Bid-Ask Spreads (BP)


Source: Market Compilation

Secondary Market Bid-Ask Spreads		
(bps)	1-Jan	31-Dec
3yr AAA Card	9	17
2yr AAA Prime Autos	7	14
2yr AAA Subprime Autos	18	24
5yr AAA Cash CMBS	67	63
AAA CLOs	130	122

Source: Market Compilation