

# Trends and developments in new transportation and energy technologies

A conversation with James Chen, pioneer in electric transportation and sustainable energy

The transportation industry is in “the midst of a revolution,” changing the paradigm of how we transport people and goods on the nation’s public roads, said James Chen. Chen, who heads the Transportation Technology and Energy practice at the law firm Babst Calland, speaks about trends and developments in new transportation and energy technologies.

“For the first time in 100 years, we’re shifting that technology completely to a whole new powertrain structure that uses stored energy in the form of electricity and motors to power vehicles,” Chen said.

Evolving from the dominant technology of internal combustion engines – gas and diesel-powered vehicles – the industry has seen incremental improvement, moving from leaded to unleaded gas, the use of catalytic converters and on-board diagnostic systems.

Now, the concept of a robust battery pack of stored energy that moves electric vehicles through harsh changes in weather, vibration and more is serving as a platform for new methods for stable, stationary environments outside the transportation realm, as in connectivity, data and data sharing.

The electric vehicle is also providing a platform in the area of autonomy – vehicles that almost drive themselves, recognizing lines on the road, pedestrians, other vehicles and roads signs.

“What you’re basically talking about is machine learning,” he said. “And machine learning, at the end of the day, is artificial intelligence.”

These new technologies are also relevant, Chen adds, because battery stored energy can help with demand across energy sectors as the focus moves from primarily fossil fuel burning to additional types of energy generation like wind, solar, hydro-power and nuclear. All are necessary to satisfy increasing demands for energy in the United States and abroad.

Established companies and start-ups alike in the transportation sector are investing in developing and advancing these new technologies, Chen said.

Market leader Tesla upended the electric vehicle concept in 2008 with its proof-of-concept Roadster that could be charged at home and have a 250-mile range.

“They also installed the supercharger network which allowed....you to get about 80 percent charged in about 40 minutes,” Chen said.

And there are other companies, like:

- Irvine, California-based Rivian, with its all-electric



**James Chen**  
 Shareholder, Babst Calland

pickup trucks and sports utility vehicles.

- Lucid Motors, out of Newark, California, with a “high-end sedan” that goes up to 500 miles in a single charge.
- Lion Electric, from Canada, that is producing all-electric school buses.
- Scout Motors, of Tysons, Virginia, which is backed by a several billion-dollar investment from Volkswagen.

Established transportation companies, including BMW, Volkswagen and Hyundai are also investing in new technologies. Hyundai is currently building a new electric vehicle plant in Georgia, Chen said.

Technology start-ups, including EVGo, ChargePoint and Electrify America, are also entering other transportation related realms, especially in the area of electric vehicle charging stations.

Additionally, in the area of autonomous driving, there is another group of start-ups that includes Aurora, Waymo – a division of Google – and Amazon acquired Zoox. Established companies, including the artificial intelligence chipmaker, Nvidia and Texas Instruments, are providing new technologies as well.

And energy companies – like ExxonMobil and British Petroleum – are also pursuing alternatives to petroleum-dependent energy systems.

Among the challenges that all of these companies face is working toward an infrastructure that supports and promotes their new technology platform. The starting point, Chen said, is through policy, “the precursor to laws and regulations.”

“The current laws and regulations were originally

drafted with the incumbent technology in mind, with gasoline powered vehicles and gasoline powered technology in mind,” he said. “This is where the new players really have to start paying attention to what happens; how do we improve that?”

The answer is to inform policy makers of the current roadblocks companies face in terms of safety, emissions and efficiency improvements.

“For companies that are new in the space, it’s sometimes really easy to say, ‘we’ll worry about the policy later, we’ll worry about talking to policy makers and legislators and regulators later; let’s get the product out there,’” Chen said.

But, prior to approaching policy makers, administrative officials and legislators, companies need to pitch their new products along the way by:

- Keeping policy makers aware of their developments and why they are good.
- Providing the reasons for efficiently improving energy.
- Letting them know how improvements are creating a better and safer consumer experience.

The perfect example of how changes to policy, legislation and laws can directly affect the consumer is by incentivizing, from a policy perspective, new building codes to have electric vehicle charging access, Chen said. For many, the issue of local commutes is solved with an overnight 250- to 300-mile charge at home. For others, a convenient access to a power source can be geographically challenging – think homes with a plug that is from a parking spot or multi-dwelling condominium units.

“How do we find and build out that infrastructure so where electric vehicles seem to be most popular, urban and suburban areas, we’re providing that charging option,” he said. “That’s something companies need to play into.”

*James Chen is chair of the Transportation Technology and Energy practice at the law firm Babst Calland. Chen joined Babst Calland in its Washington, D.C. office after more than a decade as an executive at several successful start-up electric vehicle manufacturers, notably as Vice President of Regulatory Affairs at Tesla, Inc. and as Vice President of Public Policy and Chief Regulatory Counsel at Rivian Automotive, LLC. During that time period, he also served as General Counsel and Corporate Secretary at two other start-up manufacturers.*

*To view the full video interview with James Chen, visit [bizjournals.com/pittsburgh/news/babstcalland](https://bizjournals.com/pittsburgh/news/babstcalland). For more information on Babst Calland and other legal and regulatory perspectives, visit [babstcalland.com](https://babstcalland.com).*