

Written Testimony of
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For the hearing titled
Building a Workforce to Navigate the Electric Vehicle Future
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Representative Stevens and distinguished members of the committee, thank you for the invitation to join the hearing today. My name is Ben Cruz, and I am the director of the NSF Center for Advanced Automotive Technology (CAAT) at Macomb Community College in Warren, Michigan. I am honored to join the committee to talk about building a workforce to support the future of electrical vehicles.

From my perspective in my role at Macomb's CAAT, I believe that Detroit is taking a new leadership role in EV engineering and EV manufacturing. Recent news from the OEMs including Ford, GM, Chrysler, Nissan and Toyota, as well as companies such as Rivian, Lucid Motors, Spartan Motors and Bollinger Motors document that they are fast-forwarding investment in EV advanced vehicle technology, vehicle development and EV-related manufacturing

Equally significant is the number of Tier One EV system and component suppliers to the OEMs that have a strong presence in metro Detroit. Companies like MAGNA, BorgWarner, Jabil, Bosch, American Axle, Contemporary Amperex Technologies, Continental, Roush Industries, among others, have local

engineering centers and manufacturing facilities. While this is good for the Southeast Michigan, our region is not alone in working to attract electric vehicle and related industries., Several states are putting a great deal of effort into becoming significant players in the EV industry ecosystem.

Fostering and maintaining a robust skilled workforce will be a key component to attracting and retaining these industry members. Currently, we have a shortage locally in EV technical skilled workers that needs attention. Representatives from several of the companies I've named have come to Macomb Community College to look for potential employees. In most cases, they are also looking for training programs to upskill their incumbent workers.

Developing courses and training programs in emerging technologies requires input from industry experts. CAAT at Macomb Community College works hard to keep current with trending automotive advancements, developing and cultivating partnerships with industry. Working collaboratively with industry is the foundation from which we develop courses and programs, whether they are degree programs or non-credit workforce training. This ensures we are providing our students with the most relevant training to support them in gaining the higher technical skills sets needed to work at area companies involved in the electric vehicle industry.

Macomb Community College offers associate degrees in automotive technology, engineering technology -- including a vehicle engineering technician associate degree -- and automotive manufacturing. Additionally, Macomb/CAAT also has several courses on EV power electronics and electrical drive systems, as well as several industry-related workforce development programs.

Macomb's Vehicle Engineering Technician program was developed with input from Continental, Bosch, and GM. The unique program blends aspects of automotive systems, mechanical, electronic, instrumentation and software skills. It prepares students with the expertise necessary to work in an engineering laboratory and in test development departments. Those who complete this program have the technical skills required to assist engineers in the development of electro-mechanical systems for the next generation of safe, efficient, electrified and intelligent vehicles.

Macomb's Automotive Manufacturing program was developed with input from FCA (now Stellantis), providing the opportunity to develop automotive manufacturing, manufacturing automation and leadership skills while earning an associate degree. The students participate in a paid co-op program, working at least one day per week at a Stellantis manufacturing facility while attending classes at Macomb the remainder of the week. Candidates are recruited for the program by both Macomb/CAAT and Stellantis, primarily through information sessions.

Macomb/CAAT also works to connect students to the next level of education in automotive mobility-related programs. Building on their initial education at Macomb, students can pursue a bachelor's degree in automotive and EV engineering technology or a bachelor of science degree in engineering through Wayne State University, located nearby in Detroit.

We also recognize the importance of introducing to youth the possibilities and opportunities of careers in emerging automotive technologies. We have STEM outreach programs that span the fifth through twelfth grades, with hands-on building projects and demonstrations of the performance of wind-power, electric solar cells, battery electric power cars, embedded programming and autonomous vehicles. With seventh- and eighth-grade students, we work with electrified and automated smart robot cars, engaging the students in constructing and programming the car's microcontrollers, and then showcasing the vehicle's autonomous performance. Additionally, for high school age students, Macomb/CAAT supports First Robotics, teaching teams fabrication skills and embedded microcontroller programming.

In conclusion, there is still much work to be done. Significant effort must be placed in training the new workforce, upskilling incumbent workers, training underrepresented populations and conducting effective outreach to students in K -12 to engage and expand youth's interest in the skilled trades, technology and the engineering fields.