

# Reference - CAR Energy Storage Labs - Impact Statement

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Updated on 2025-08-21 by @KemingHe

## Educational Impact

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The CAR Energy Storage Labs serve as a critical training ground for the next generation of battery engineers and researchers, supporting:

- **Graduate Students:** 10+ MS/PhD students conducting cutting-edge battery research under faculty with 500+ combined publications
- **Undergraduate Teams:** 7 student-led motorsports teams including Formula Buckeyes (two first-place finishes), EcoCAR EV Challenge (first-place finish), and Buckeye Bullet (holder of all current electric vehicle land speed records)
- **Academic Excellence:** Battery Workforce Challenge team (Ohio State-Columbus State Community College) achieved second-place finish in inaugural competition
- **Industry Training:** Certificate programs and flexible distance education programs targeted to industry professionals
- **Curriculum Innovation:** Unique ME6194 course combining 70% lecture with 30% hands-on laboratory experiments in moistureless glove box environments

## STEM Outreach & Diversity

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CAR is committed to broadening participation in STEM through targeted initiatives:

- **PREM Partnership:** \$4.2M NSF grant with California State University Long Beach (Hispanic-serving institution) to create pathways for underrepresented students in materials research
- **Battery Workforce Challenge:** Mentoring Ohio State-Columbus State Community College team (second-place finish in inaugural competition)
- **Faculty Recognition:** Recent awards including Stanley Harrison Faculty Award for Excellence in Engineering Education (Jung Hyun Kim, 2024)
- **Professional Development:** IEEE Senior Member elevation (Matilde D'Arpino, 2024), Life Fellow status (Giorgio Rizzoni, 2024)
- **K-12 Engagement:** Laboratory tours and demonstrations for local schools

## Economic & Societal Impact

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### Transportation Electrification

- Advancing battery technology to enable widespread EV adoption
- Reducing transportation emissions through improved energy storage
- Supporting Ohio's transformation into a "battery belt" manufacturing hub

### Workforce Development

- Training engineers for the growing EV and battery industries
- Creating high-tech jobs through technology transfer and startups
- Building expertise critical for U.S. energy independence

### Research Translation

- Direct collaboration with automotive manufacturers to accelerate innovation
- Technology licensing and commercialization through 11+ startups

- Real-world testing and validation for industry partners
- Research enterprise growth: CAR expanded from \$1M to \$14M+ annually in research expenditures
- Strategic funding diversification: NSF, DOE, ARPA-E, and major automotive companies (Ford, GM, Stellantis)
- **Federal Partnership:** \$5M ARPA-E funding for Dynamic Skip Fire cylinder deactivation optimization
- **Aerospace Impact:** \$10M NASA ULI electric aircraft propulsion project leadership
- **Infrastructure Investment:** \$1M investment in new battery testing labs (2019) to accommodate growing research demand

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