



The STEM Experience Roadshow

Hands-On Sustainability & Resilience for Today's World and Tomorrow's Futures

A mobile, medicine-show–style STEM learning experience for schools and communities (primarily North Carolina and surrounding areas).

1. Executive Summary

The STEM Experience Roadshow is a traveling, hands-on sustainability and resilience education program designed for students ages 6 through adults. Delivered directly to community organizations, festivals, schools, and public spaces, the Roadshow blends entertainment, storytelling, engineering, and real-world problem solving to make sustainability tangible, exciting, and achievable.

Led by Sustainable Jack (Dr. John H. Martin) and a rotating team of expert collaborators, the Roadshow brings together sustainable transportation, light electric vehicles, clean energy innovation, and circular-economy practices into an engaging, interactive learning experience. It is an expansion of the Home Power Hour radio show from WCOM-103.5, Carrboro-Chapel Hill, a project of Chris Carter and Dr. Martin since 2005. Rather than focusing on fear or scarcity, the Roadshow highlights what is already possible today—and what is coming next.

The project is designed to be modular, scalable, and financially sustainable, serving as both an educational program and a source of inspiration for communities across North Carolina and beyond.

2. Vision & Purpose

Vision

A future in which communities—especially young people—understand how sustainability, transportation, and energy innovation directly shape resilience, opportunity, and quality of life.

Purpose

To demystify sustainability and clean technology by putting tools, materials, and ideas directly into people's hands, transforming abstract concepts into lived experience.

The Roadshow intentionally draws on the spirit of a traditional traveling “medicine show”: engaging, practical, hopeful, and rooted in real solutions.

3. Why This Project Matters Now

- Fossil fuels remain one of the largest contributors to greenhouse gas emissions.
- Sustainability education is often theoretical, with limited hands-on application.
- Communities need accessible, local examples of climate and resilience solutions.
- Clean mobility and energy innovation are advancing rapidly, while public understanding lags.

The STEM Experience Roadshow bridges the gap between innovation and everyday understanding.

4. Core Program Components

A. Sustainable Transportation: Present and Future



Participants explore how people and goods move today and how transportation systems are evolving over the next 5–20 years. Topics include:

- Solar-assisted & Other Electric mobility: bikes, trikes, microcars, boats, and aircraft
- Challenges such as electric racing platforms (SunBike, Electrathon)
- Freight, logistics, and future transit systems

Emphasis is placed on efficiency, design choices, equity, and resilience.

B. Build-Your-Own Light Electric Vehicle Experiences

Age-appropriate build stations allow participants to:

- Assemble or modify light electric vehicle components;
- Learn fundamentals of aerodynamics, materials, batteries, motors, gearing, and tires;
- Explore safety, performance, and real-world applications.

These activities are inspired by student racing programs, engineering challenges, and hands-on STEM learning models.



C. Circular Economy & Responsible Materials

Hands-on stations address the full lifecycle, discard, and disposal of materials, including:



- Rethink: design choices that reduce waste
- Reuse: repair, upcycling, and repurposing
- Composting basics
- Recycling realities (what works and what does not)
- Proper disposal of batteries and electronics

Participants connect sustainability to everyday decisions, not just advanced technology.



D. Storytelling, Demonstration & Inspiration

The Roadshow offers workshops on solar, hydro, wind, and light electric vehicles; and integrates:

- Short, engaging talks and demonstrations
- Working vehicles, prototypes, and models
- Stories from innovation history and clean-energy competitions
- Conversations about STEM careers, skilled trades, and sustainability pathways

5. Partners & Inspiration Sources

The Roadshow draws inspiration and collaboration from sustainability experts such as:

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|---|--------------------------------------|
| • Sustainable Jack | • Outrider USA |
| • Handy Village Institute | • TS Designs |
| • Triad Electric Vehicle Association (TEVA) | • Dudley Motorsports |
| • MAD (Math Arts Designs) | • Light Electric Vehicle Association |
| • Organic Transit | • Electrathon America |
| • Sol-Mobil | • STEMcycle Competitions |

Partners may participate through co-hosting, equipment sharing, guest presentations, or local build teams.

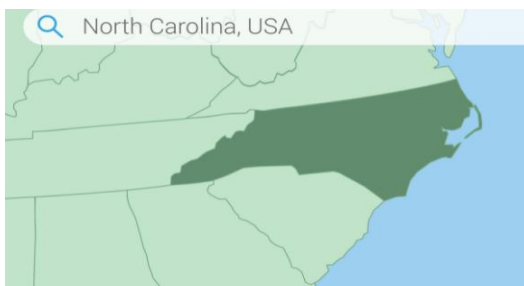
6. Target Audiences



- Community colleges and universities
- Libraries and community organizations
- Youth programs and after-school initiatives
- Adults interested in sustainability and transportation
- Elementary, middle, and high school students
- Workforce development and retraining programs

Programs are modular and adaptable by age group, venue, and time.

7. Geographic Focus



Primary focus: North Carolina (urban, rural, and coastal communities)

Secondary expansion:

- Southeastern United States
- Festivals, conferences, and regional tours

8. Program Format & Logistics

- Mobile roadshow using trailers, vans, or pop-up stations
- Indoor and outdoor configurations
- Half-day, full-day, or multi-day engagements
- Turnkey delivery with minimal host burden

The aesthetic blends traveling science shows, invention fairs, and modern maker culture.

9. Outcomes & Impact



Educational Outcomes

- Enhance innovation and integration
- Increased STEM curiosity and confidence
- Systems thinking across energy, transportation, and materials
- Awareness of accessible sustainability pathways

Community Outcomes

- Exposure to clean mobility options
- Repair-and-reuse mindset
- Career inspiration in STEM and skilled trades

Long-Term Impact

- A generation that views sustainability as practical and empowering
- Increased community resilience through knowledge and skills

10. Sustainability & Funding Model

Potential revenue and support sources include:

- School and district bookings
- Grants (STEM education, climate, workforce development)
- Sponsorships from utilities and manufacturers
- Foundation support
- Festival and public event fees
- In-kind equipment and partner contributions

11. Why Sustainable Jack



Sustainable Jack brings decades of sustainability leadership, hands-on engineering experience, award-winning innovation, and a rare ability to connect technical insight with compelling storytelling.

The STEM Experience Roadshow represents a natural culmination of this work—and a forward-looking gift to future generations.

See: <https://sustainablejack.com/> especially [this media page](#).

12. Next Steps (Draft)

1. Finalize Roadshow modules and build kits
2. Secure initial funding and sponsorships including an electric vehicle and trailer
3. Pilot programs in select North Carolina communities
4. Document impact and refine curriculum
5. Expand regionally through partnerships

This document is a working draft intended for discussion, refinement, and collaborative editing.