

Designing a Circular Battery Economy for Puerto Rico

Launching the Yellow Zone of Appropriate Technologies for Community Energy Storage

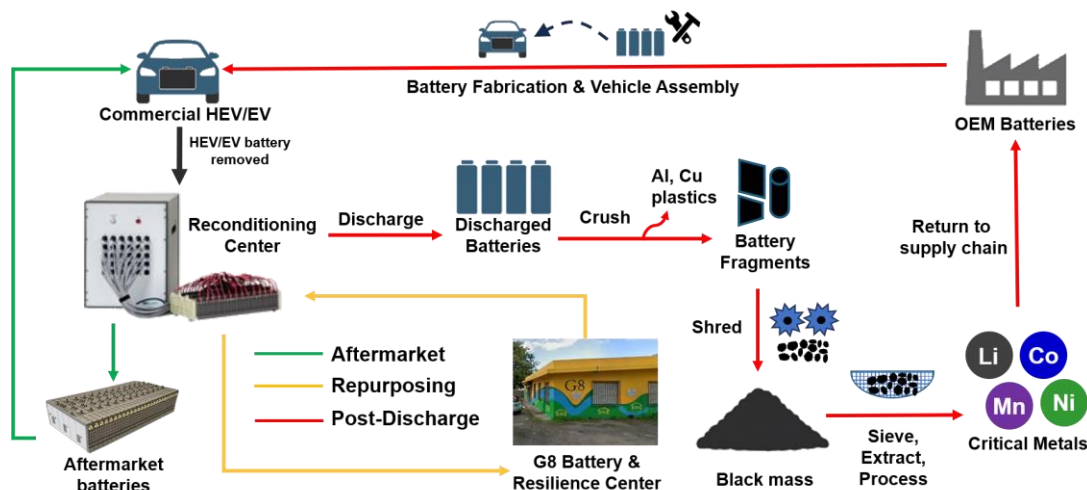
November 16, 17 or 18, 2026 (Exact Date TBD)

Off-Site Livestream

Translation Headsets Available

Abstract

Puerto Rico's fragile electric grid and limited infrastructure for community-scale energy storage present an opportunity to rethink how energy technologies are deployed, reused, and integrated into local communities. This symposium explores how a circular battery economy could be developed in Puerto Rico by creating pathways for traction batteries that no longer meet automotive performance requirements but still retain useful electrochemical capacity.



A central focus of the meeting is the “**yellow zone**” of the battery life cycle: the stage between automotive retirement and final recycling. In this interval, battery modules removed from hybrid and electric vehicles may be redeployed for lower-power stationary applications such as community backup power, microgrid support, and distributed energy storage. By extending the useful life of these systems, the yellow zone represents a practical opportunity to improve energy resilience while reducing waste and delaying entry into the recycling stream.

Equally important is the social dimension of this model. Rather than treating underserved communities solely as recipients of energy assistance, the circular framework invites them to become **active participants in the battery life cycle** through local reconditioning, maintenance, and deployment of second-life systems. This approach links energy resilience with workforce development and community participation in the emerging circular economy.

The symposium will examine how **appropriate technology choices** can support economically accessible and maintainable energy systems in Puerto Rican communities. Discussions will include second-life lithium-ion batteries from electric vehicles, nickel-metal hydride batteries from hybrid vehicles, and durable nickel-iron (“Edison”) battery systems, each of which may play complementary roles in community-scale energy infrastructure.

Symposium Draft Agenda

8:00 – 8:30 AM

Registration and Coffee

8:30 – 8:40 AM

Opening Remarks

Eugene S. Smotkin – Northeastern University / TECRE

8:40 – 9:45 AM

Session I: Puerto Rico Energy Context

Government perspectives on grid resilience, energy policy, and community energy systems.

9:45 – 9:55 AM

Introduction of the Distinguished Keynote Speaker (TBD)

Eugene S. Smotkin

9:55 – 10:45 AM

Distinguished Keynote Address

10:45 – 11:15 AM

Discussion and Audience Questions

11:15 – 12:15 PM

Networking Lunch

12:15 – 1:30 PM

Session II: Technologies for the Yellow Zone

Second-life lithium-ion batteries, hybrid vehicle NiMH batteries, and Edison nickel-iron systems.

1:30 – 2:30 PM

Session III: Appropriateness of Technology for Community Energy Systems

Matching battery technologies to local economic conditions, maintenance capacity, and resilience needs.

2:30 – 3:00 PM

Networking & Coffee Break

3:00 – 4:00 PM

Panel Discussion: Building the Yellow Zone Economy in Puerto Rico

Government, industry, and community leaders.

4:00 – 4:30 PM

Next Steps for a Puerto Rico Circular Battery Initiative

Discussion of pilot projects, partnerships, workforce development, and future collaborations.

Suggested Speakers and/or Panelists: TBD

About the Organizer

Eugene S. Smotkin is Professor of Chemistry and Chemical Biology at Northeastern University and founder of the Technology and Education Center for Renewable Energy (TECRE). He founded NuVant Systems Inc., developer of fuel cell and battery research instrumentation later acquired by A3 Global. He has authored more than 100 scientific publications and is the inventor or co-inventor on 14 patents. In 2024 he was elected a Fellow of the American Association for the Advancement of Science.

Organizing Committee:

TBD

Expected Outcomes

The symposium aims to catalyze development of a circular battery economy in Puerto Rico, including the launching of a pilot battery repurposing center (yellow zone) and partnerships among universities, industry, and communities.

For More Information

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