LITHIUM-ION BATTERY RECYCLING PRIZE

Team Name:	Tartan Battery Network
Primary Submitter Name:	Wei Wu, Jay Whitacre
City and State:	Pittsburgh, PA
Member Names (including partners and affiliates):	Wei Wu, Jay Whitacre, Carnegie Mellon Scott Energy Institute, Titan Energy AES, Somerville MA
Submission Title:	Intelligent Battery Recycling Platform
Submission Track:	Collection

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Optional Image

Concept

- Develop a distributed collection network with a modular rapid battery cell assessment stand that can quickly determine the state of health and cell contents.
- Data from these distributed modular units is aggregate in a cloud-based platform with an AI-powered optimization engine. The cloud-based data set is used as a B2B/B2C bidding platform for users of second-use battery cells as well as battery materials recyclers to communicate and exchange used battery cells.
- Cells headed for second-use are re-packaged into new modules and not classified as hazardous waste for transportation purpose.

Approach

- Develop and implement a modular and non-destructive SOH evaluation testing method based on combining acoustic sensing with rabid electrochemical testing combined with an adaptive learning algorithm to accurately determine SOH, provide valuations of used batteries and suitable recycling location recommendations.
- Curate a comprehensive database of existing cell types and compositions such that incoming articles are properly cataloged and real time economical evaluations are provided with AI powered engine.
- Create a cloud-based platform where many cell testing modules can upload and aggregate data to provide accurate evaluations and the collection information can be used for recyclers to bid for recycling projects.

Potential Impact

- Effectively increase the collection rate for used lithium-ion batteries by providing economic incentives for consumers to turn in their used lithium-ion batteries in distributed collection sites where shipping and storage of cell/modules/packs are easiest.
- Will match the supply and demand of used lithium-ion cells, will provide recyclers a predictable stream of used batteries with information regarding SOH and compositions. Reduce uncertainty of economics for recycling from recyclers' perspective.
- Will provide a platform for competitive bidding for battery cell lots and provide services to help facilitate logistics services providers/recyclers to complete transactions.