



**FUTURE  
BATTERY  
INDUSTRIES** CRC

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## Update and outlook

Tim Shanahan

Chair





# **Powering Australia's future battery industries**

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**FBI CRC is an independent centre where industry, government and researchers can come together to create the tools, technologies and skills to grow the role of battery storage in Australia's electricity grids, and make Australia a larger player in global battery value chains.**

## **RESEARCH PROJECTS**

**An initial invitation for expressions of interest received 53 submissions from our 60 industry and research partners. The first projects will be launched early in 2020.**

# A brief history

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- January 2018 – Consortium steering committee formed
- July – October – Stage 1 CRC bid submitted and shortlisted
- November – Stage 2 CRC bid submitted
- February 2019 – Final CRC selection interview
- April – Commonwealth funding of \$25M announced
- May – Initial workshops with participants
- June – Inaugural Board meeting  
– Invitation for research ‘expressions of interest’
- August – Board invites first full project proposals

# Participants



# FBICRC Overview

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- \$135 million Cooperative Research Centre
- 6 Year Commonwealth funded period
- 60 Participants across battery value chain
- Public company limited by guarantee
- Support research, development and education towards high technological readiness, high impact research
- The CRC is hosted by and at Curtin University
- Three research programs across the battery industries value chain
- Provide leadership in environmental management.



Export Growth

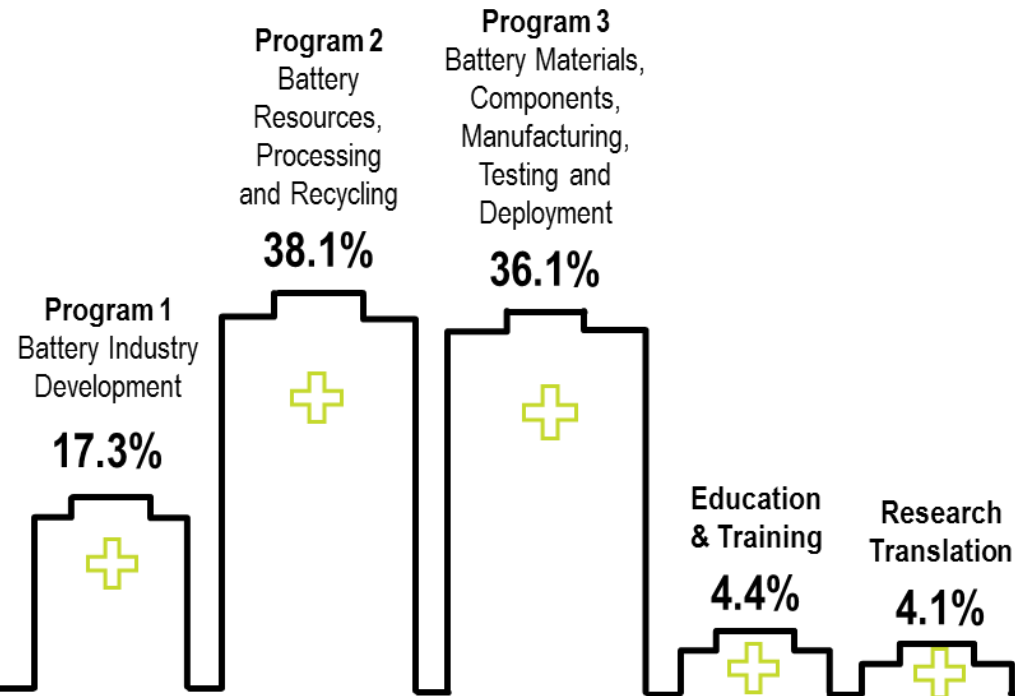
Industry Development



**A circular economy for batteries**

Jobs & Employment Growth

# Targeted R&D and pathway to impact



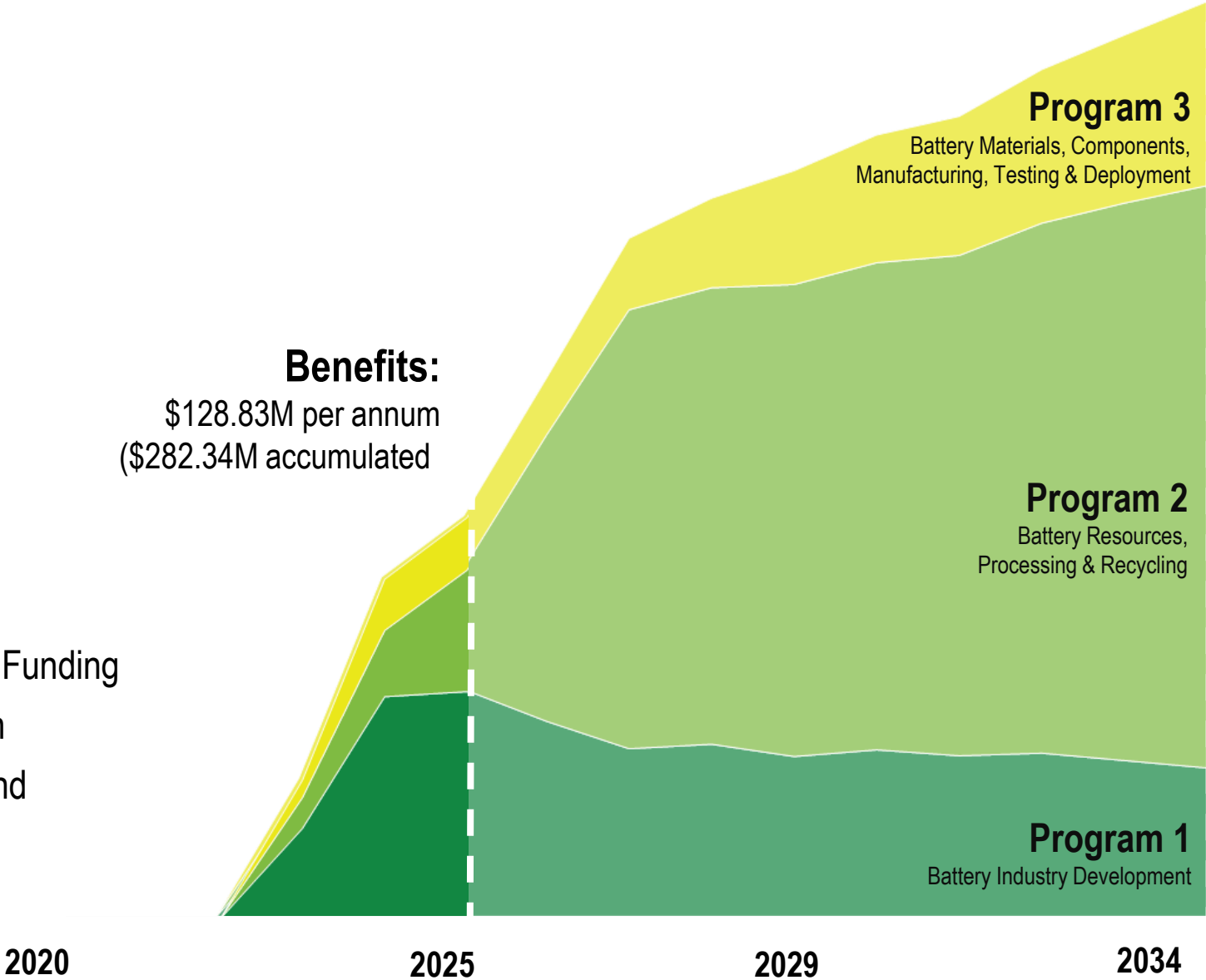
Distribution of cash allocation amongst main programmes

# Projected Impacts

## Investment

- \$25M** Commonwealth Funding
- \$28M** Participant Cash
- \$82M** Participant In-kind

**Benefits:**  
\$128.83M per annum  
(\$282.34M accumulated)



**Program 3**

Battery Materials, Components,  
Manufacturing, Testing & Deployment

**Program 2**

Battery Resources,  
Processing & Recycling

**Program 1**

Battery Industry Development

2020

2025

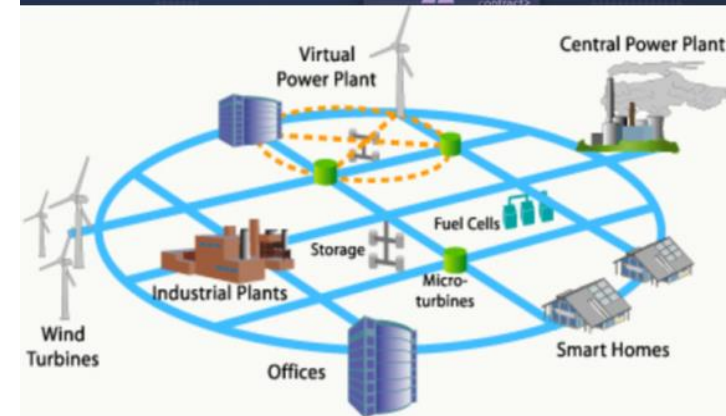
2029

2034



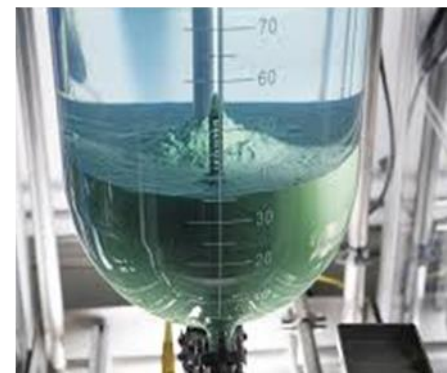
# Battery Industry Development

- Battery market & value chain development
- Battery supply chain integrity: provenance, traceability, environmental footprint
- Energy grid optimisation & harmonisation
- Transitional impact on society & economy
- Battery industry ecosystems & hubs



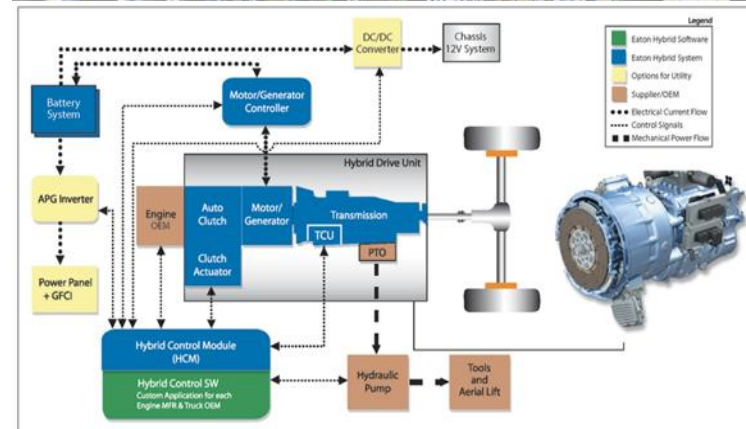
# Processing Resources to Precursors

- Environmental & waste management strategies.
- Cost-competitive processing of battery minerals.
- Premium quality battery grade materials.
- Battery recycling, repurposing and reuse.
- Develop battery component precursor production



# Battery Design, Testing, Manufacture and Deployment

- Cell manufacturing & testing
- Battery energy storage systems and testing
- Specialised batteries for niche deployment
- Smart battery management systems
- Battery safety and security



# Initial work program – project proposals invited

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- A pilot plant facility for the production of mixed hydroxide cathode precursor powders and subsequently lithiated cathode active material
- A national battery testing facility for the testing of lithium ion and vanadium redox flow battery energy storage systems
- A prototype battery with associated battery and energy management systems for a rough terrain autonomous vehicles and drones
- A new environmentally friendly direct leach process to extract nickel and cobalt from sulfide mineral resources and produce battery grade sulfate salts
- New processes to enhance lithium extraction recovery, reduce energy needs and lower the environmental footprint of lithium processing and refining
- Novel processes for mine and refinery waste reuse, repurposing and recycling for battery metals

# Capitalising on the opportunity

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- FBICRC six year research program will help participants work together to become more successful players in the world's battery supply chain
- It brings together 60 partners and significant investment by the Commonwealth and Western Australian Government
- A commitment of cash and in kind of \$130M represents the biggest R&D battery industry collaboration in Australia's history.
- Participation in the CRC remains open to new entrants – we invite you to join us on this nation building journey.