

Centre for Railway Engineering (Est. 1995) Centre for Hydrogen and Renewable Energy (2022)

CQUniversity

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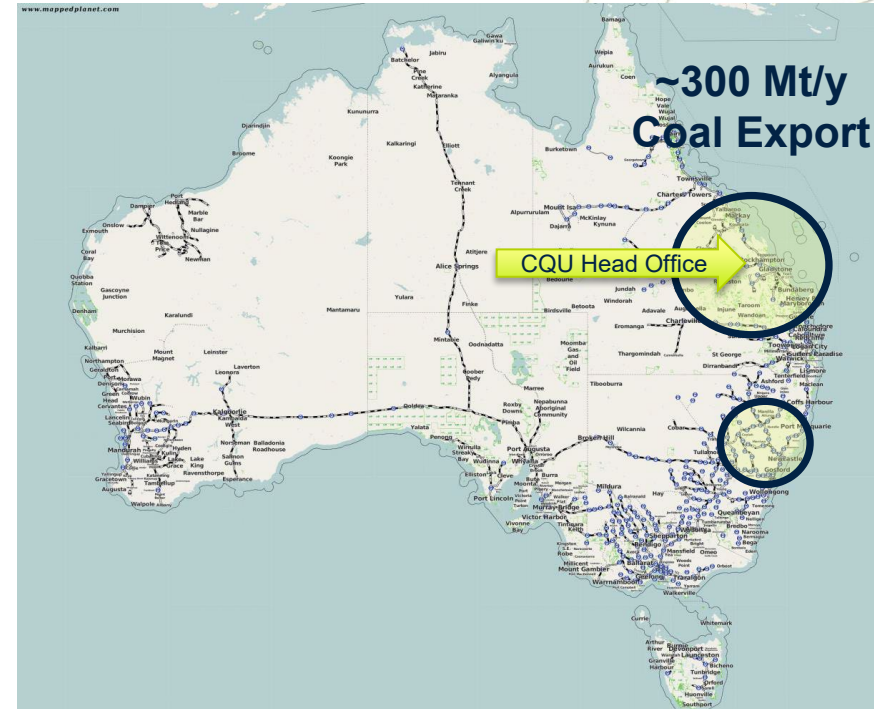
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Introduction – Local Context – Energy Transition

CARBON INTENSIVE

- 50 of Australia's Largest carbon emitters
- 3 Coal power stations
- Coal mining
- Liquefied Natural Gas Exports
- Aluminium, Chemicals, Agriculture



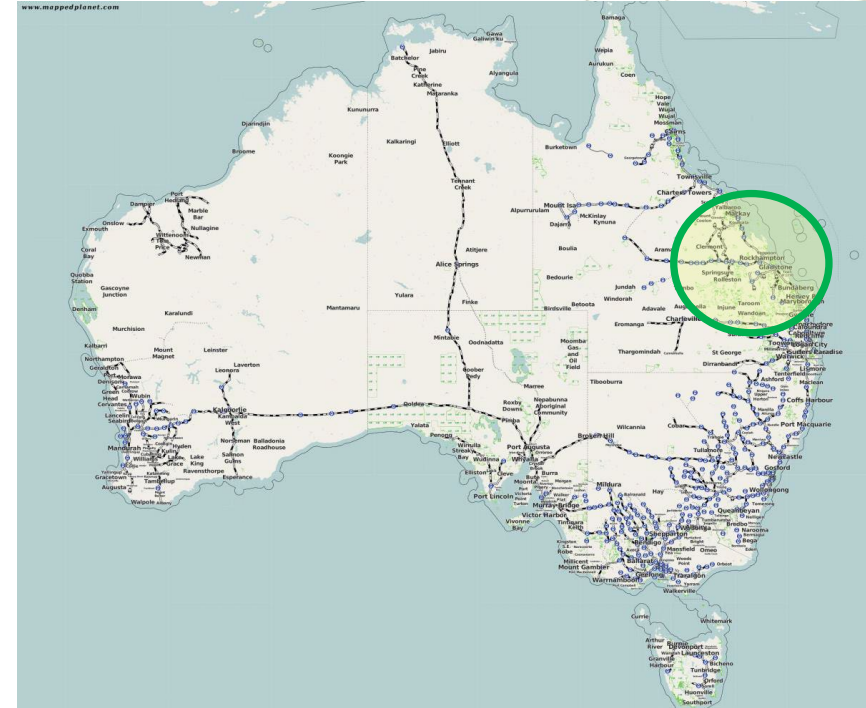
Introduction – Energy Transition Projects

Gladstone

- 9 GigaWatt - Solar & Hydrogen
- Manufacturing Hydrogen Electrolysers
- Hydro and Wind Power Stations
- Solar Farms and Rooftop Solar
- Green Chemicals

Strong Government Support

- Qld Energy and Jobs Plan
- CQ-H2 Consortia



Approach to Research

- These are “Industry Focused Centre’s” for problem solving and Applied Research.
- Research spans from “Theoretical” to “Industry ready” First-of-a-Kind solutions and Consulting.
- International Engagement via
 - Shared interests and Joint Publishing in High Quality Journals
 - Co-tutelle Research Student Programs
 - Focus on a select number of countries where needs and interest match
 - Benchmarking research in peak International Conferences and Associations
 - IHHA, IAVSD, WCRR etc



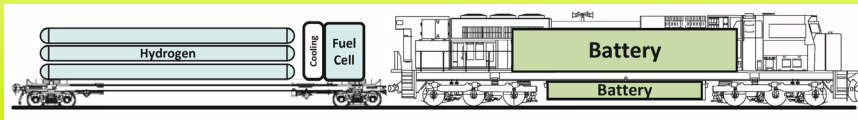
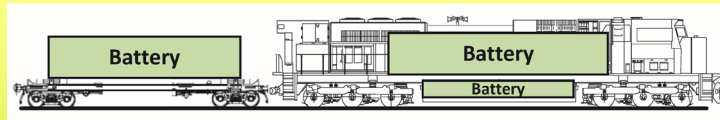
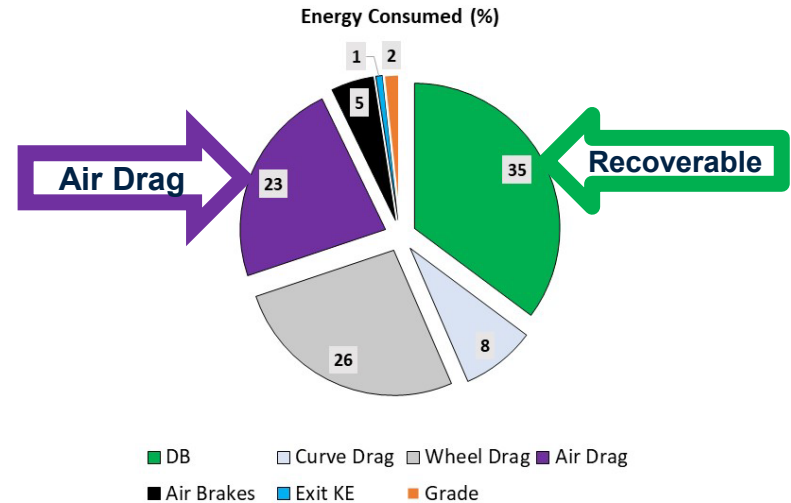
What we look like in 2024 - Hydrogen and Renewables

- Green Hydrogen production
- Green Chemicals
- Freight Mobility



Example Projects in Energy Transitions - RAIL

- Energy Solutions for Large Railway Freight Operations
 - Simulation of Energy usage, recovery and storage
 - De-Risking Industry of Transition Solutions
- Similar Applications in Road



Research Opportunities Going Forward

- Energy Analysis
- Reducing Energy Consumption
- Biofuel Projects
- Battery and Hydrogen Conversions
- Storage and Charging/Refueling Systems
- Safety System Developments in each new Application
- Green Chemicals
- Ammonia applications
- New Mobility Decarbonisation Technologies

Current Projects

- ☆
- ☆
- ☆
- ☆
- ☆
- ☆



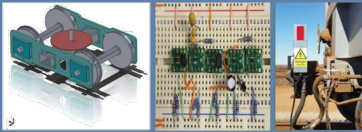
Smart Condition Monitoring



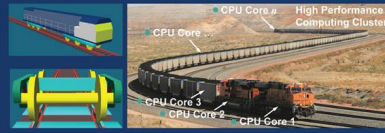
Automation and Optimal Energy Drive Assistance System



Virtual Prototyping Product Design Smart Devices



Simulation Parallel Computing Digital Twins



Field and Laboratory Testing



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Thanks

Comments, questions & discussions

Presenter:

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