

Program 1: Integrated Building Systems

An aerial photograph of a modern building complex. The central focus is a large, multi-story building with a flat roof covered in rows of blue solar panels. The building has a distinctive facade with vertical white slats. In the background, a dense urban area with various buildings and greenery is visible under a clear sky.

Research activities

Integrated solar technologies for buildings

Low carbon materials

Integrated design, showcase, ratings and standards

Commonwealth Agreement Milestones (FY1)

Integrated solar technologies for buildings

First generation designs for prototypes completed. Milestone report on design, construction, testing and performance of building integrated solar thermal and PV prototypes.

Low carbon materials

Identification of barriers to innovative low carbon products and solutions. Milestone report on design, construction, testings and performance of products for Australian industry and climatic conditions.

Integrated design, showcase, ratings and standards

Report on modelling studies of low carbon designs for a wide range of climatic zones, for new construction and retrofitting. Longitudinal study of High Performance Buildings researching correlation with productivity.



Project Development

LCL CRC : our aim is to deliver on carbon reductions.
Ultimately that will be the measure of success

Initial projects in Program 1 – driven by industry needs or scoping studies driven by CRC board strategic direction.

Basic philosophy of the LCL CRC: projects developed by CRC partners (industry, government, research organisation) – end user driven.

Research Project \Rightarrow Activities \Rightarrow Outputs (CRC 7 years)

CRC partners utilise research Outputs \Rightarrow Impacts (15 years)



Integrated solar technologies for buildings

- Concentrated solar thermal systems and absorption HVAC systems
- Air handling solutions, integration approaches and building design considerations for PV-T roofing.
- Status report and directions on Integrating PV with building products.



Low carbon materials

- Performance based Criteria for Concretes: Creating Pathways for Low Carbon Concrete Manufacture with Existing Standards
(Ash Development Association of Australia,
UNSW - Prof. S. Foster, Swinburne Uni. – Prof. J. Sanjayan)



Integrated design, showcase, ratings and standards

- Viable integrated systems for zero carbon housing
- Intelligent automated monitoring of commercial photovoltaic (PV) systems.



<http://w3.unisa.edu.au/news/2011/251111.asp>



<http://www.pv.unsw.edu.au/node/689>



Next round of projects under discussion P1

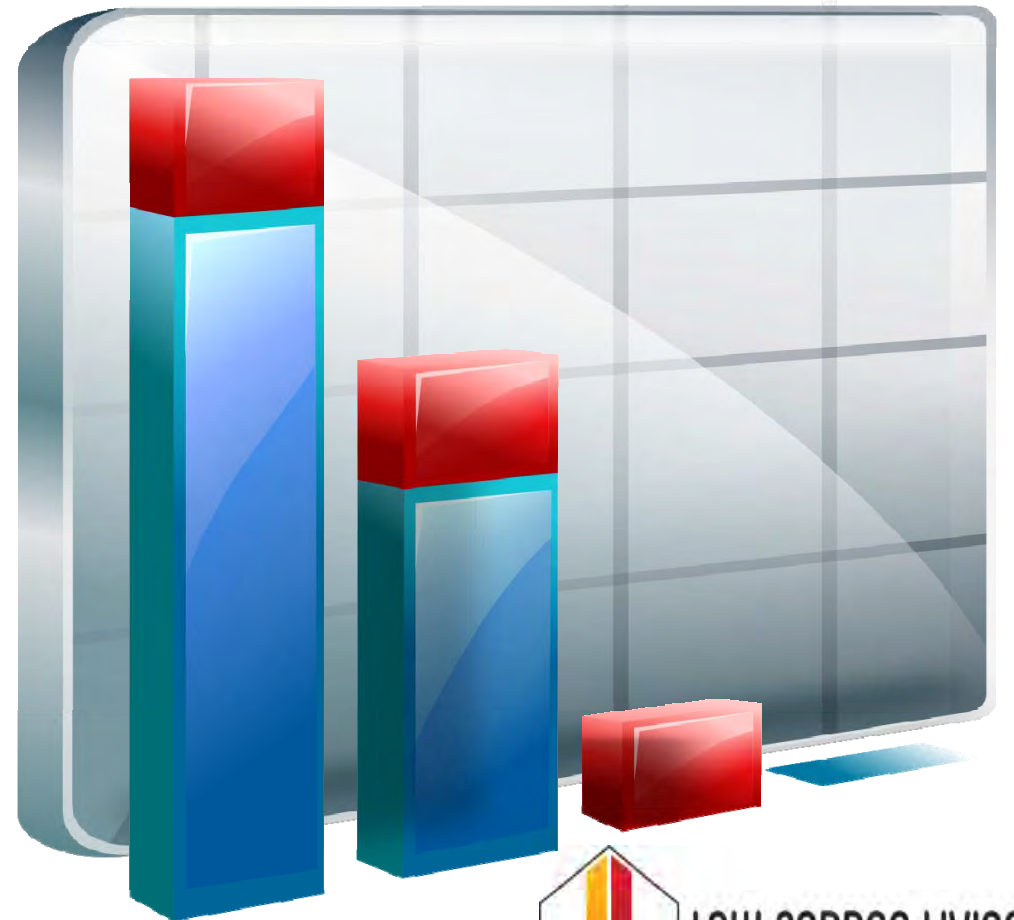
- Sustainable and Affordable Living through Modular, Net Zero Energy, Transportable, and Self-Reliant Homes and Communities
- Industry support mechanisms for renewable heating and cooling
- Closing the Loop on Evidence-based Low Carbon Design of non-residential buildings
- Monitoring and modelling the CSR Low Energy



The Way Forward: Program 1

AREAS FOR DISCUSSION FOR NEW PROJECTS:

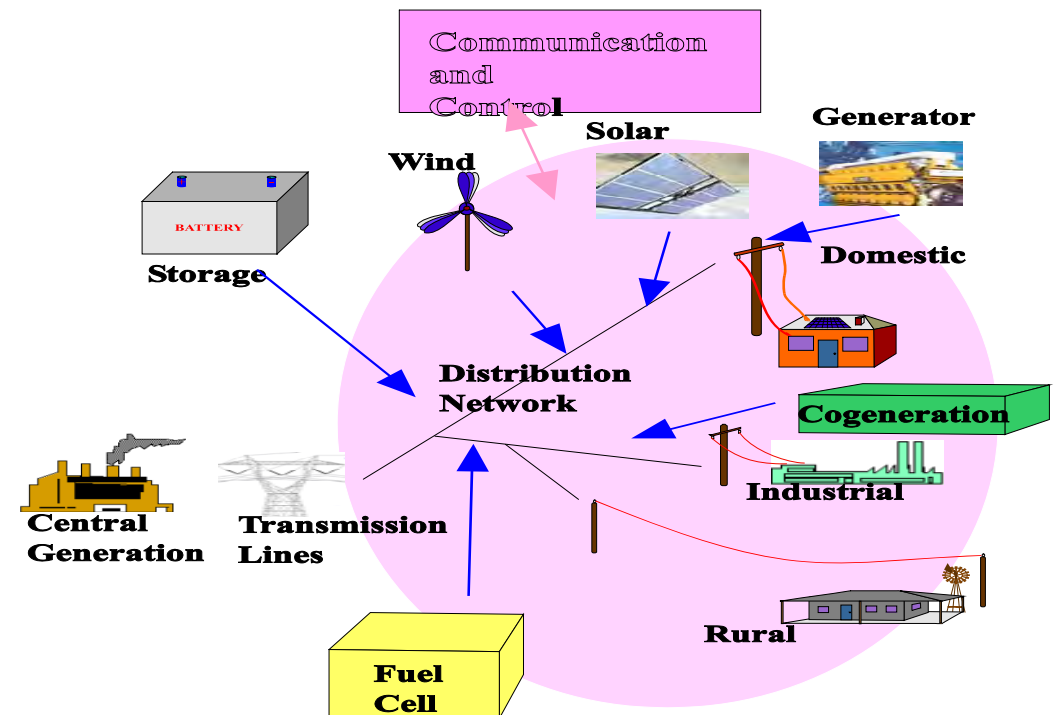
1. Technology integration
2. Life Cycle Assessment
3. Existing buildings
4. Non residential buildings
5. Low Carbon Living Laboratories
6. Other?



LOW CARBON LIVING
CRC

Technology integration

- Wind
- Biogas – cogeneration/trigeneration
- Daylighting
- Water/energy nexus
- Waste
- Energy storage
- Peak demand
- Passive features
- Grid integration
- Other?



Life Cycle Assessment

- Building fabric
- Appliances
- Renewable energy systems
- Inclusions in regulatory tools
- Carbon vs energy vs cost
- Life cycle vs operational zero carbon buildings
- Other?



Existing buildings

Residential and non residential

- PV vs energy efficiency
- Timing and motivation for sustainable upgrades
- Tools for evaluation of sustainable upgrades
- Economics vs other factors influencing decision making
- Technology integration for existing buildings
- Other?



Non residential buildings

- Building typology (commercial high rise, low rise, schools, shopping centres)
- Buildings for small and medium enterprises
- Rating tools for commercial/other non residential buildings
- Data collection for evidence base of “Green buildings”
- Green walls/roofs
- Technology integration
- Other?



Low Carbon Living Laboratories

- Choice of buildings/locations
- Data to monitor
- Desired outcomes
- Communication of others
- Other?



Outcomes

- **THREE** Potential topics for projects
 - Title
 - Research question(s)
 - Collaborating organisations (industry/government/research)

THANK YOU

