Australian Solar Institute funding programs

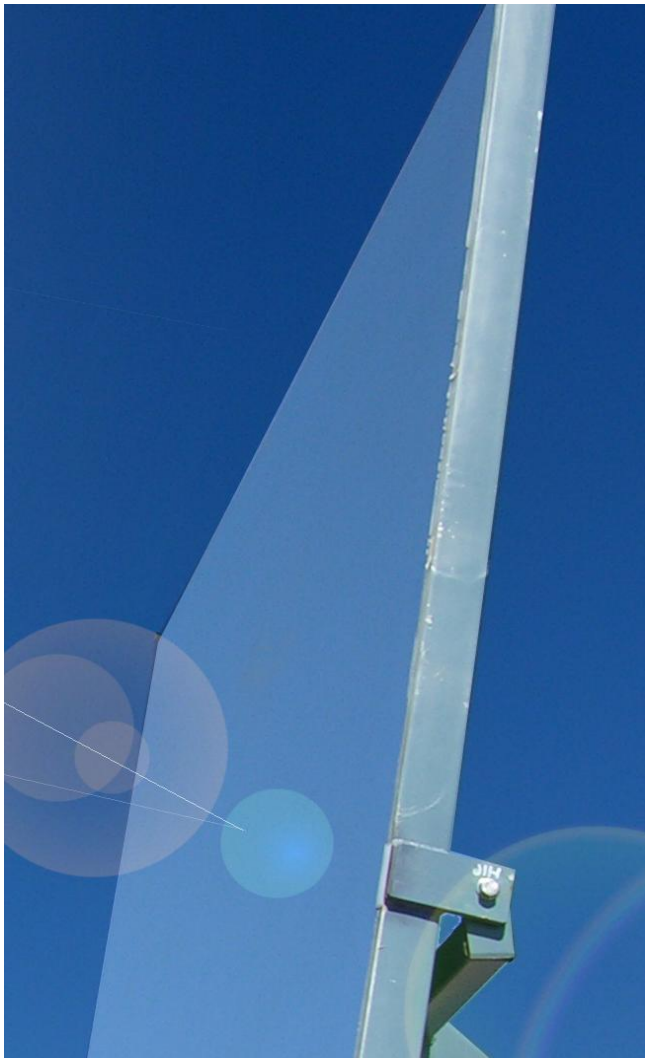
Office of Clean Energy Information seminar on Government services and funding programs for clean energy businesses in Queensland

31 January 2012, Brisbane

Olivia Coldrey, Investment Director

Outline

- About the Australian Solar Institute
- Our portfolio of solar R&D activity
- Our funding programs
- 2012 priorities



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About ASI

- Australian Government initiative for R&D into solar PV and CSP technologies. Newcastle, Australia HQ
- ASI-funded solar R&D projects in research institutions and companies around Australia and internationally, supporting 100+ Australian researchers
- c$220m portfolio of solar R&D projects leveraged by c$75m of Australian Government funding at ratio of 2:1+
- Australian Government's $1.5b Solar Flagships Program – sharing learnings
- International engagement – USASEC; Fraunhofer Institute MoU; DLR MoU; strategic engagement with Asia
- ARENA by 1 Jan 2013
  - ARENA will be able to provide long-term financial assistance for solar technology development along the full innovation spectrum.

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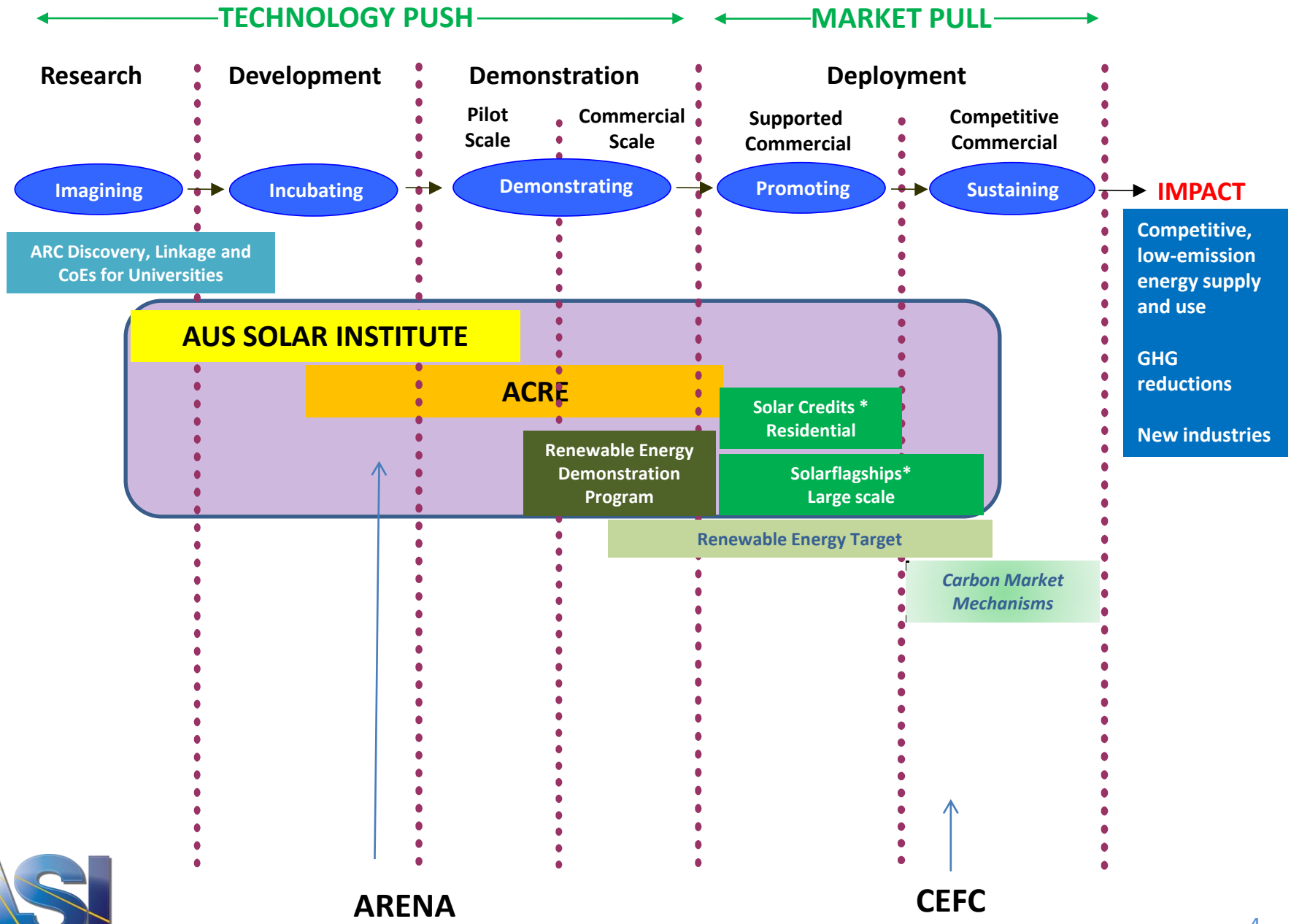
Government support across the innovation chain



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PV R&D Portfolio Mapping

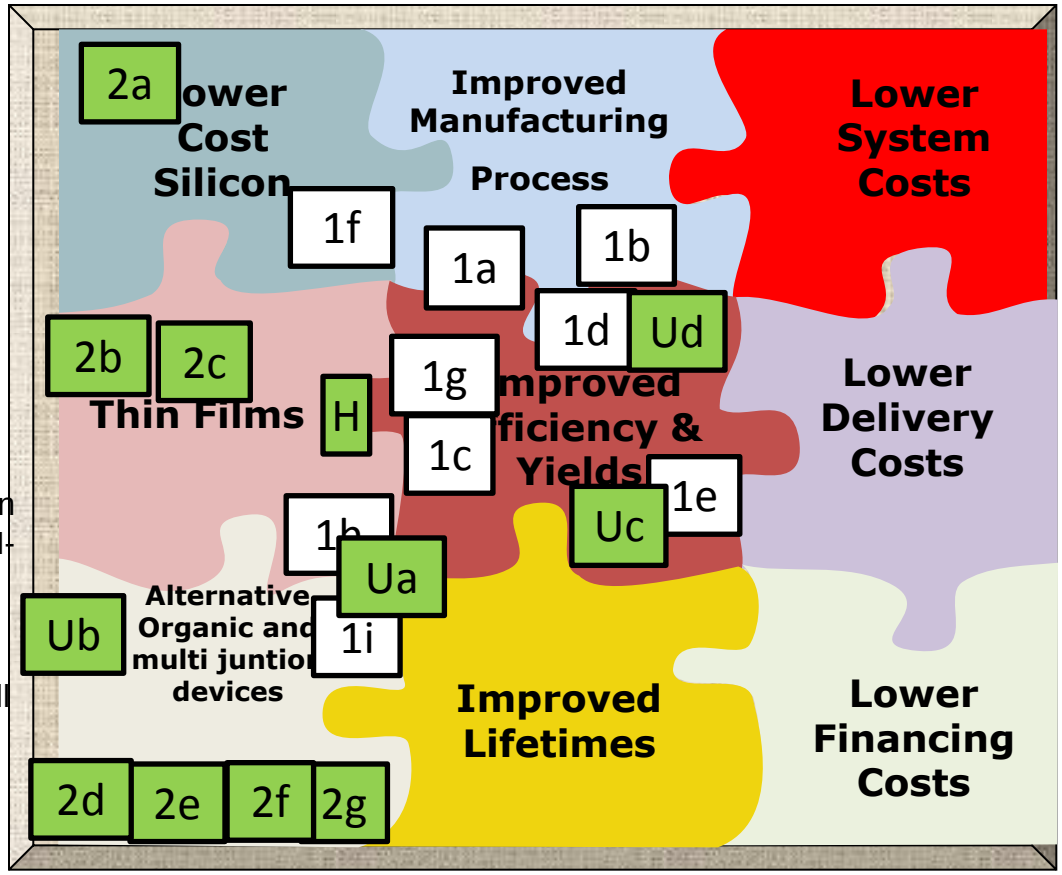
ASI cA$47m leveraging cA$159m

Round 1

1a. ANU Solar labs
1b. UNSW SIRF
1c. ANU Plasmonics
1d. UNSW Core
1e. UNSW Suntech
1f. ANU SLIVER
1g. BT Imaging Inline Inspection Tools
1h. Sapphicon
1i. UQ OPV

Round 2

2a. UNSW Low-cost silicon
2b. ANU Industry Ready N-Type Si Solar Cells
2c. CSG Next Gen Si on Glass
2d. UNSW Hot Carrier Cell
2e. UNSW 40% Efficient PV Power Tower Receiver
2f.UniMelb OPV
2g. UNSW Quantum Dots
2h. USyd Upconversion



USASEC Foundation projects

Ua. UNSW: Cost-effective GaAsP top solar cell
Ub. UNSW: Multi-Junction c-Si Solar Cells
Uc. UNSW: Hot Carrier
Ud. CSIRO: predicting energy yield

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Case study: UQ

- Almost $1 million in ASI funding to help UQ develop new materials and designs for organic solar cells
- Long range project – defining the second generation of OPV. Reduce $/watt cost by reaching maximum cell efficiency (SQ limit) with a low manufacturing overhead
- Recent activity has focused on creating and characterising materials for improving multiple and structured junction cell performance

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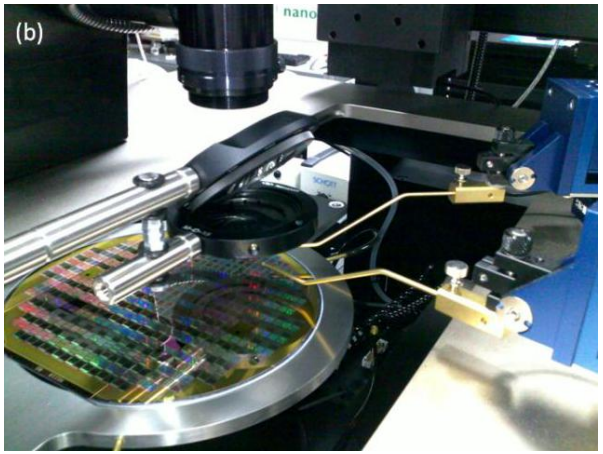
Case study: Silanna

- Leader in silicon-on-sapphire manufacturing processes across a range of applications
- With ASI funding of $2.3million they applied their expertise to solar PV in partnership with ANU/ Macquarie University
- Phase one – 'proof of concept'
- Resulted in thin film cells fabricated on SOI wafers, with 22% conversion efficiency



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CST & Enabling R&D Portfolio Mapping

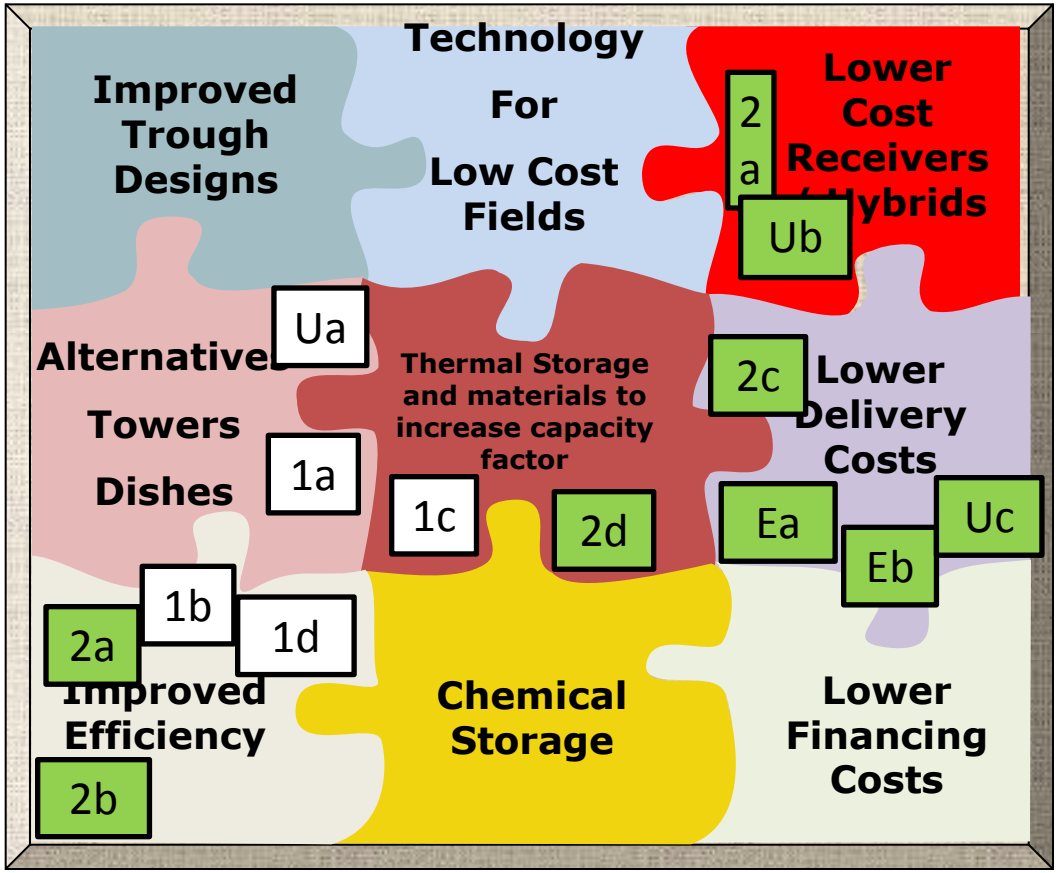
ASI cA$28m leveraging cA$60m

Round 1

1a. CSIRO ANU Foundation
1b. CSIRO / ANU Core Steam
1c. CSIRO/ANU Core Storage
1d. Uni Newcastle Thermionic Devices

Round 2

2a. CSIRO Air Turbines
2b. CSIRO Thermodynamic Topping Cycles
2c. ANU Roof Mounted Hybrid CST
2d. Graphite Energy Storage



Enabling

Ea. CSIRO – Intermittency
Eb. UNSW – Forecasting

USASEC Foundation projects

Ua. CSIRO: supercritical CO2 Brayton Cycle
Ub. ANU: High temp receivers
Uc. CSIRO: Integrated Solar Radiation Data Sources

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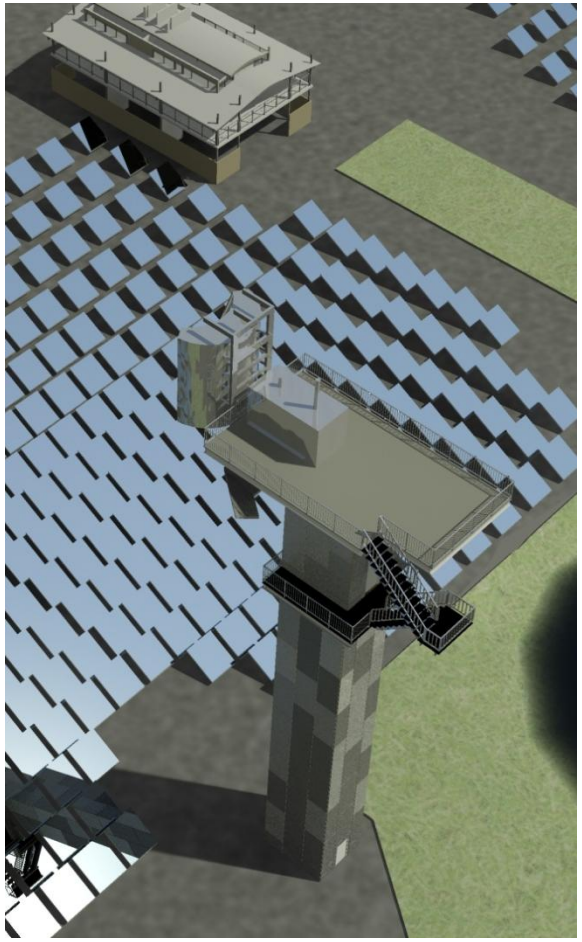
ASI also investing in Concentrated Solar Power – CSIRO Solar Thermal Research Hub

- Largest-of-its-kind tubular receiver solar air turbine system, which doesn't require any cooling water
- Aiming to prove that a target of 10-14 cents/kWh is achievable in commercial CST deployments- required to compete with wind generation
- Systems approach focused on increasing the efficiency of CST systems options (higher temperatures at the receiver) and proving storage while at the same time reducing capital and operating costs



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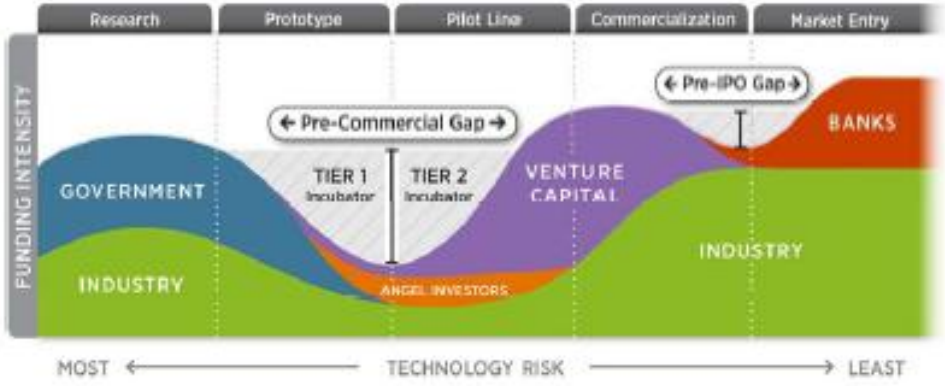
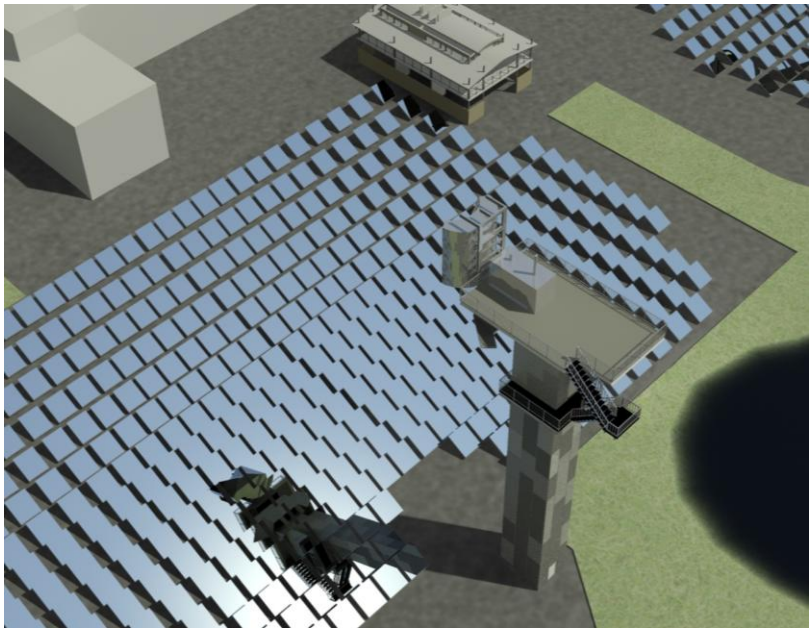
Case Study 3 : New technology requires demonstration to gain “bankable” capital market support – e.g CSP Tower

- R&D Pilot Phase
  c$5m 400kW prove basic operation
- Phase 1 Demonstration
  1MW $10m - prove yield
- Phase 2 Pre Commercial Demonstration
  4-5MW $30m – prove reliability & revenue
- Phase 3 Early Commercial Operation - 50MW $200m prove financial return

Capital Finance Key Barrier



Source : US DoE 2011



Prize – Competitive Solar Electricity with hybrid / storage integration to provide firm supply

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Programs currently open

- United States-Australia Solar Energy Collaboration
  - Open Funding Round
    - funding for excellent solar R&D projects to be undertaken in collaboration with U.S. research institutions and industry
    - Proposals may be led by research institution or industry proponents
    - 8 March 2012 deadline for Expressions of Interest

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Programs currently open cont.

- Australia –Germany Collaborative Solar R&D Program
  - Funding for excellent solar R&D projects to be undertaken in collaboration with German research institutions
  - Australian solar researchers and businesses working with researchers at Fraunhofer Institute, DLR & academic institutions in Germany encouraged to apply
  - Applications accepted on ongoing basis with assessment at bi-monthly intervals (29 Feb, 25 April, 27 June, 29 August)

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Programs currently open cont.

- Skills Development Program (applications accepted on ongoing basis with assessment at bimonthly intervals (29 Feb, 25 April, 27 June, 29 August)
  - International Research Exchange:
    - high calibre Australian candidates from research institutions and industry to participate in International Research Exchange activity, whose research in collaboration with an international research facility or industry will lead to the advancement of innovation in Australian solar research, development and industry
    - Up to 12 months at international research institution; shorter programs for industry participants

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2012 priorities...

- Continue to invest in excellent solar R&D projects and programs
- Build capacity through support for people, seminars, and strategic roadmaps
- Continue to establish international partnerships
- Develop and promote knowledge-sharing portal relating to ASI's portfolio, Solar Flagships Program
- ASI to form part of the Australian Renewable Energy Agency (ARENA) by 1 January 2013

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Clean Energy Future Package

- ARENA
  - $3.2 billion investment to promote R&D, demonstration, commercialisation and deployment of renewable energy projects
- CEFC
  - $10 billion for investment in commercialisation and deployment of ***renewable energy***, energy efficiency and low-pollution technologies, and ***manufacturing businesses providing input into these sectors***
  - Debt and equity financing

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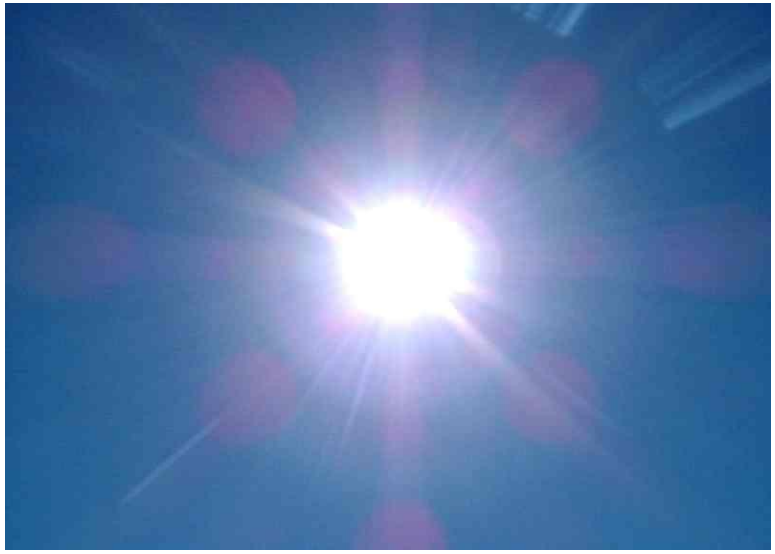
Contact



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