



ClearVue^{PV}

AGM PRESENTATION 2018
CLEARVUE TECHNOLOGIES LIMITED

Presented by: Victor Rosenberg, Executive Chairman – 30 November 2018

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Introduction



At ClearVue, we offer a powerful renewable energy solution that incorporates solar energy generation into transparent glass. ClearVue Technologies Limited (ASX: CPV) operates in the Building Integrated Photovoltaic (BIPV) sector which involves the integration of solar technology into building materials, specifically glass and building surfaces to produce localised renewable energy.

ClearVue's glass technology represents an untapped opportunity to use one of the worlds most used building materials for energy generation – clear GLASS

Our Mission & Motivation

- ❑ Our mission is to capture the energy that surrounds us through the use of innovative building materials. We believe that the future of energy is localised generation – energy generated where it is needed
- ❑ We are driven by green building goals and believe that our technology can assist building owners and developers achieve their own green and sustainability goals - including Net Zero buildings and even carbon negative buildings in some cases.



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ClearVue Highlights



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- ❑ Advanced building technology that uses ultra clear glass to convert sunlight into energy
- ❑ Global market opportunity
- ❑ Patented technology – 34 granted patents and 39 patent applications throughout the World
- ❑ Australian Government support – \$1.6m grant from the Australian Federal Government to build a grid-independent greenhouse in early 2019

Key Targets:	Key Specifications:
❑ Agriculture and Horticulture	❑ Ultra clear - up to 70% transparency (VLT/AVT)
❑ Commercial and Residential	❑ Power generating - 30 W/m ² peak power (anticipated ≈ 50 W/m ² possible through ongoing R&D)
❑ Public Amenities	❑ Insulating - U-factor 1.26 W/(m ² °K)

Corporate Snapshot



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- ❑ ClearVue secured \$5m through IPO and listed on the ASX on 25 May 2018
- ❑ High % of company shares are escrowed for 24 months – 39,026,956 million in total
- ❑ Tight free float with top 20 holding 60.5%

ASX Code: CPV	
Ordinary Shares	97,380,300
Options	54,598,024
Performance Shares	13,000,000
Market Capitalisation (Share price \$0.35 as at 16 November 2018)	\$34 million
GICS Classification	Capital goods

Board and Management



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Victor Rosenberg	Jamie Lyford	Kim Harmer	Brett Tucker	Sean Rosenberg	Stuart Carmichael	Ivan Wu
Executive Chairman	General Counsel & Corporate Officer / Director	Chief Technology Officer	Company Secretary	Non-Executive Director	Non-Executive Director	Non-Executive Director
Serial Entrepreneur. Globally recognised for his contributions to glass industry. Extensive business experience in senior management and sales.	IP and licensing lawyer with over 20 years experience. Previously worked in BHP, IT company ATOS and ran Western Australian Government Innovation Centre	Technology commercialization, research and development, production and innovation leadership. Over 20 years working in Schneider Electric in EMEA and Asia Pacific Currently on Advisory Board for IoTStream	Company Secretary to a number of ASX listed and private companies and has been involved in numerous public corporate transactions and acquisitions. A Chartered Accountant with a strong corporate and compliance background.	Member of the Institute of Chartered Accountants with over 10 years professional experience in finance, auditing and accounting of listed corporations	Member of the Institute of Chartered Accountants with over 20 years accounting and corporate finance experience. Currently Non-Executive Chairman of Schrole Limited (ASX:SCL) and Serpentine Limited (ASX:S3R) and Non-executive Director of De.mem Limited (ASX:DEM)	Corporate adviser to various private & ASX listed companies with over 20 years of corporate and commercial experience in the IT, resource and gas industries

ClearVue's Research Partners



Edith Cowan University

ClearVue has partnered with Edith Cowan University (ECU) in Perth Western Australia since 2011 to develop the core IP that can convert a pane of glass into energy

ClearVue has entered into an exclusive agreement for contracted R&D for the development of ClearVue's core technologies.

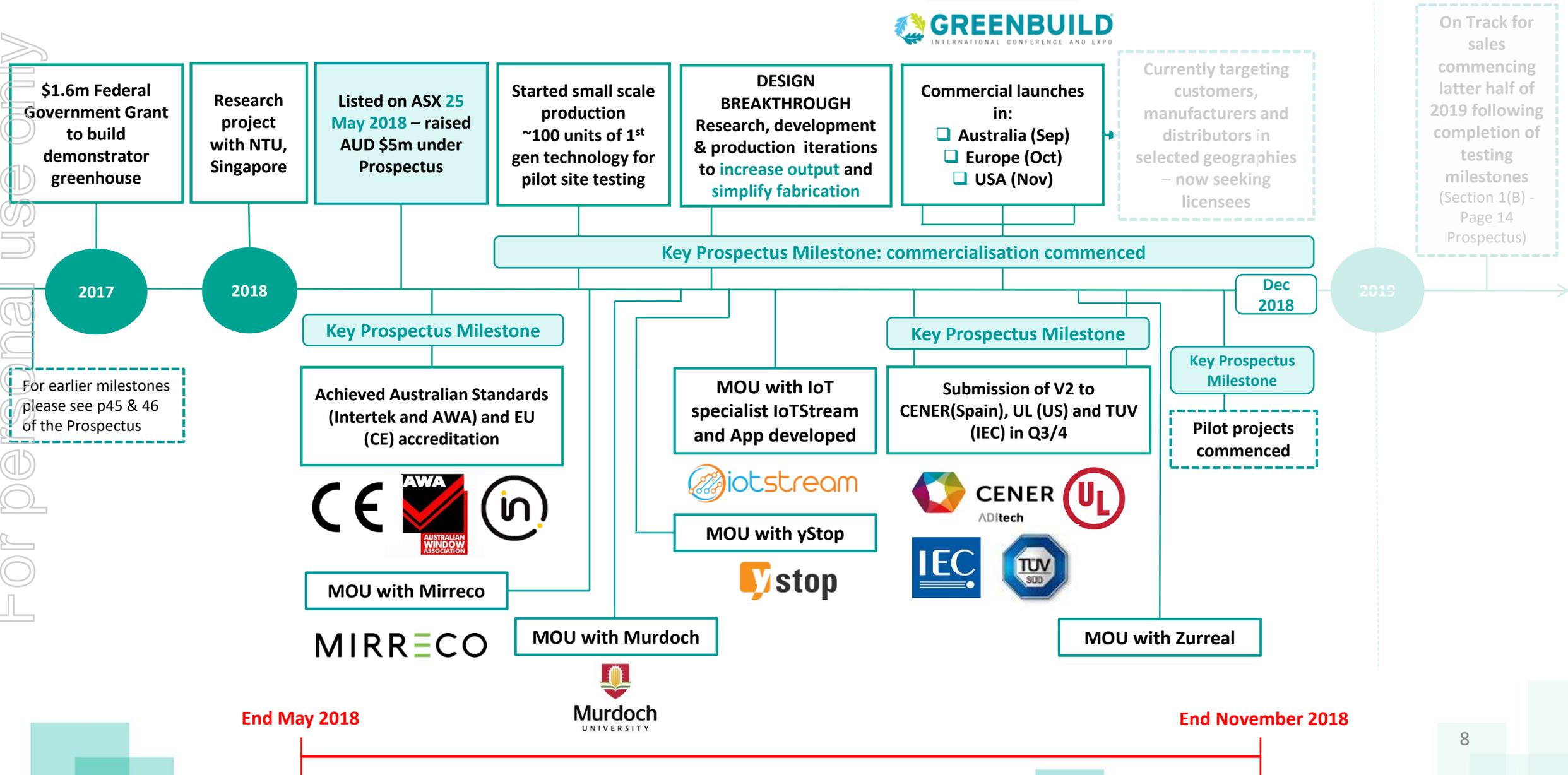


Nanyang Technological University

ClearVue has signed a collaboration agreement for with Nanyang Technology University (NTU) (Singapore) and Singapore HUI Alliance for Research and Enterprise Ltd research to explore printing of solar PV amongst other things.



Company Milestones



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Product Launches

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Glasstec – Oct 2018
Dusseldorf



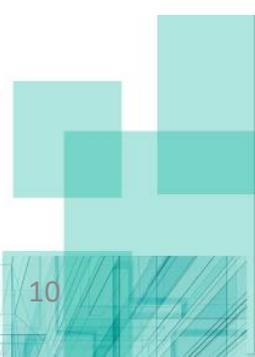
Fenestration - Sept 2018
Port Douglas



Greenbuild - Nov 2018
Chicago

Video: Aust Product Launch – Fenestration Sep 2018 –Pt Douglas

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Video: European Product Launch – Glasstec Oct 2018 - Dusseldorf

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UL Testing for US Market commenced Q4



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Company Milestones



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\$1.6m Federal Government Grant to build demonstrator greenhouse

Research project with NTU, Singapore

Listed on ASX 25
May 2018 – raised AUD \$5m under Prospectus

Started small scale production ~100 units of 1st gen technology for pilot site testing

DESIGN BREAKTHROUGH
Research, development & production iterations to **increase output** and **simplify fabrication**

Commercial launches in:
 Australia (Sep)
 Europe (Oct)
 USA (Nov)

Currently targeting customers, manufacturers and distributors in selected geographies – now seeking licensees

On Track for sales commencing latter half of 2019 following completion of testing milestones (Section 1(B) - Page 14 Prospectus)

Key Prospectus Milestone: commercialisation commenced

2017

2018

2019

Key Prospectus Milestone

Achieved Australian Standards (Intertek and AWA) and EU (CE) accreditation



MOU with Mirreco



MOU with Murdoch



MOU with IoT specialist IoTStream and App developed



MOU with yStop



Key Prospectus Milestone

Submission of V2 to CENER(Spain), UL (US) and TUV (IEC) in Q3/4



MOU with Zurreal

Key Prospectus Milestone

Pilot projects commenced

Dec 2018

End May 2018

End November 2018

Upcoming Milestones

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On Track for sales commencing latter half of 2019 following completion of testing milestones (Section 1(B) - Page 14 Prospectus)

2019

- ❑ Complete the various demonstration/pilot projects the company has commenced
- ❑ Incorporate ClearVue's technology into a larger commercial building in Australia for the first time
- ❑ Complete and achieve **IEC** and **UL** accreditations by end Q2 2019
- ❑ Continue and complete commercialisation steps during 2019
- ❑ Continue discussions throughout 2019 with potential licensees for manufacture and assembly/distribution worldwide and seek to sign various licensees worldwide flowing from such discussions
- ❑ Continue R&D and product development work to ensure the company is well positioned as a global leader in building integrated photovoltaics and smart building materials



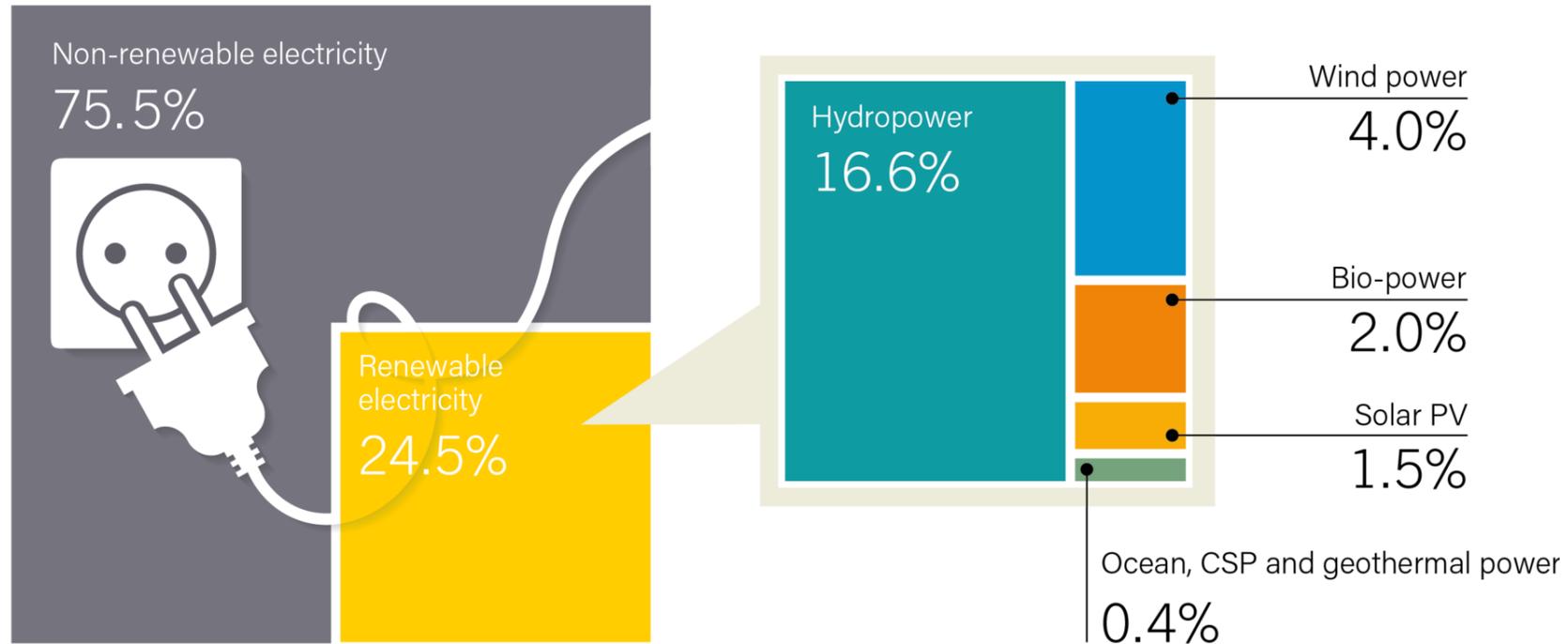
Worldwide Energy Generation

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The sun's potential for power generation far exceeds that of all other renewable energy sources. However, solar power barely registers in the world's renewable energy portfolio with only 23,322 terawatt-hours (TWh) of a potential **≈750,000 TWh** available from solar*.

Presently solar generation accounts for only a fraction of a percent of total electrical output – much less than hydropower or wind energy, which until recently have been cheaper to produce.

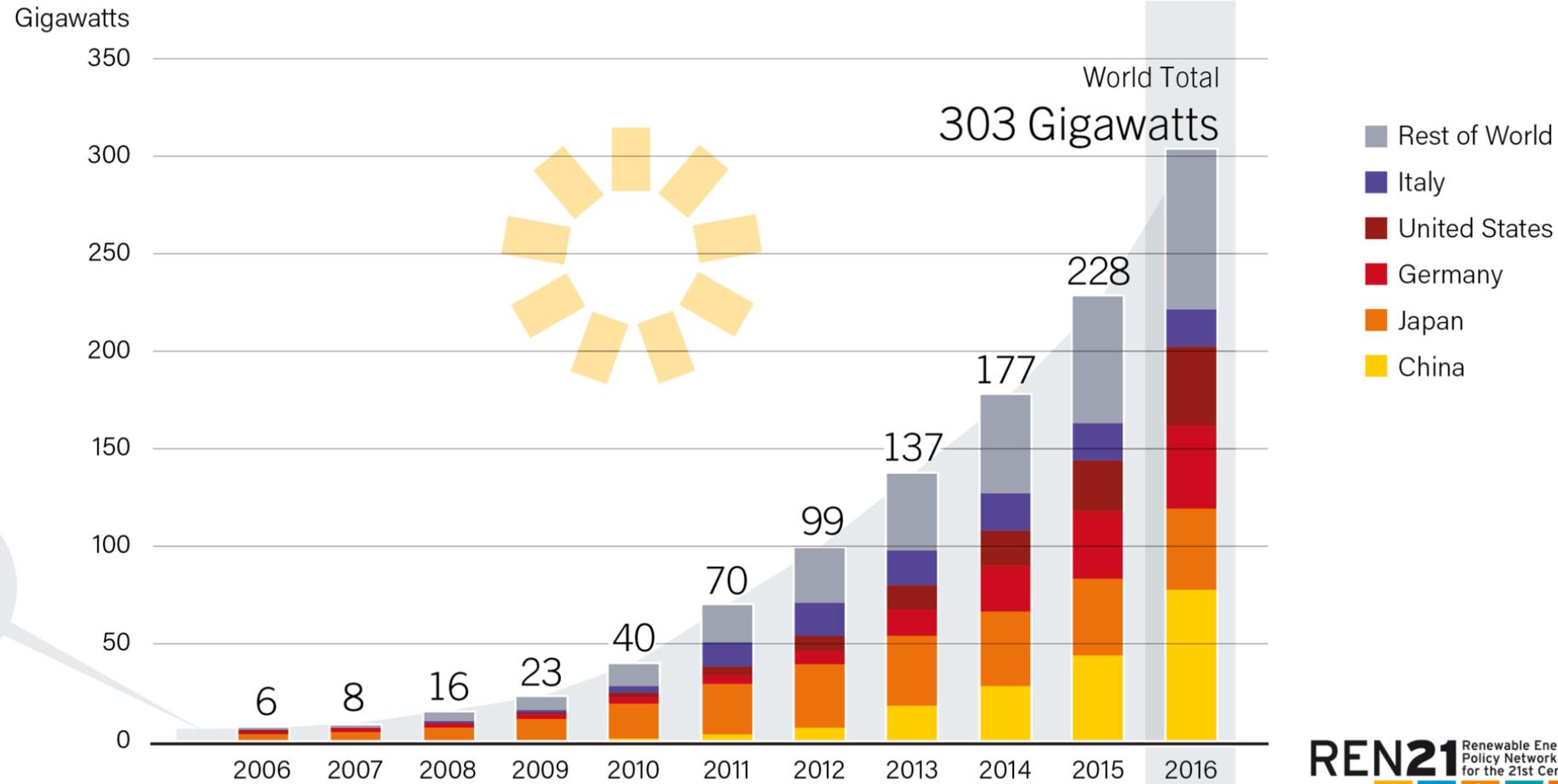
Estimated Renewable Energy Share of Global Electricity Production, End of 2016#



* As at 2008 see: https://en.wikipedia.org/wiki/Electricity_generation#Production_by_country
See: REN21 Renewables 2017 Global Status Report

Solar PV Global Capacity*

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Total global capacity

*by country and region 2006 – 2016 –see: REN21 *Renewables 2017 Global Status Report*

Market Opportunity

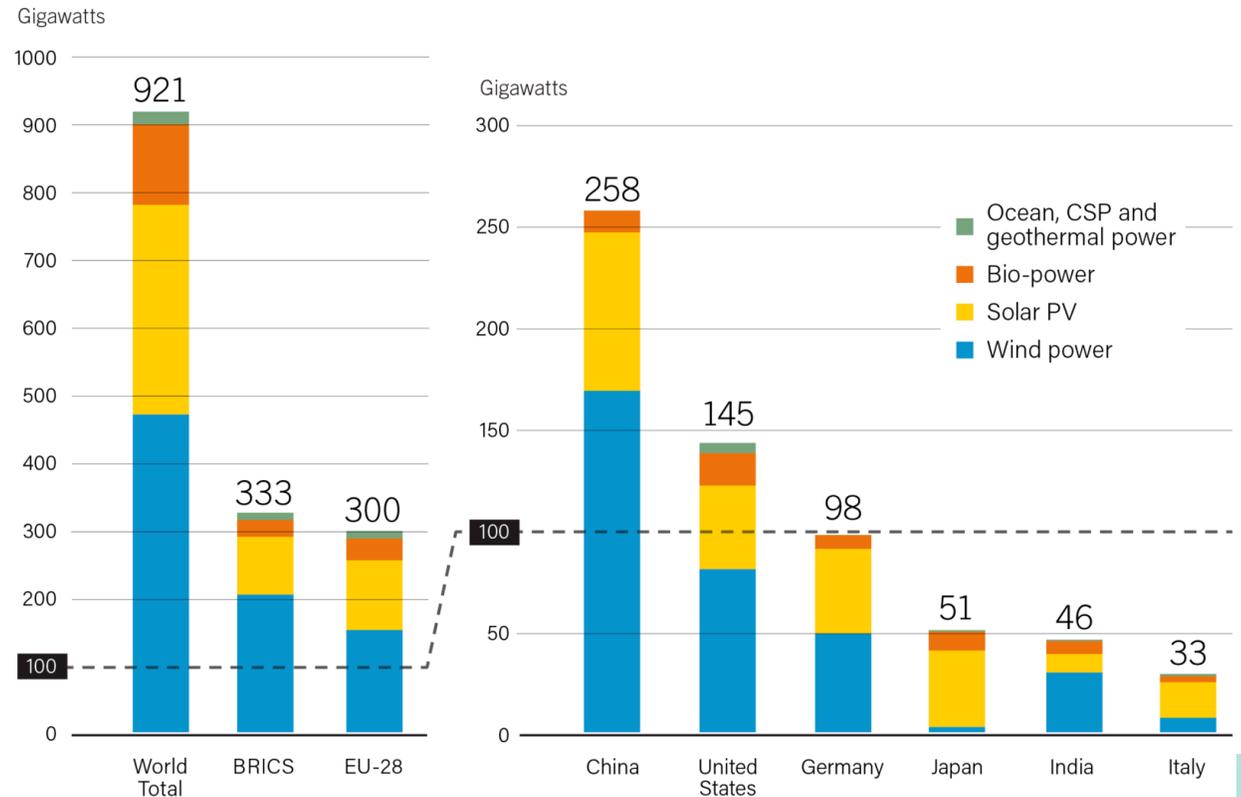
Traditional Roof Solar and PV Array Opportunity

- Worldwide growth of traditional photovoltaics has averaged 40% per year from 2000 to 2013
- Total installed PV capacity reached **303 GW at the end of 2016** with China having the most cumulative installations (78 GW)
- According to the latest “Global Solar Demand Monitor” from GTM Research, installations in 2018 will reach 82.5 gigawatts#. After that, annual installations are predicted to exceed 100 gigawatts each year until at least 2022.

All of these figures (and the stats on earlier slides) largely ignore the impact of BIPV!

#(originally forecast at 104 gigawatts but downgraded due to reduced activity in China)
* BRICS – the emerging national economies of Brazil, Russia, India, China and South Africa.

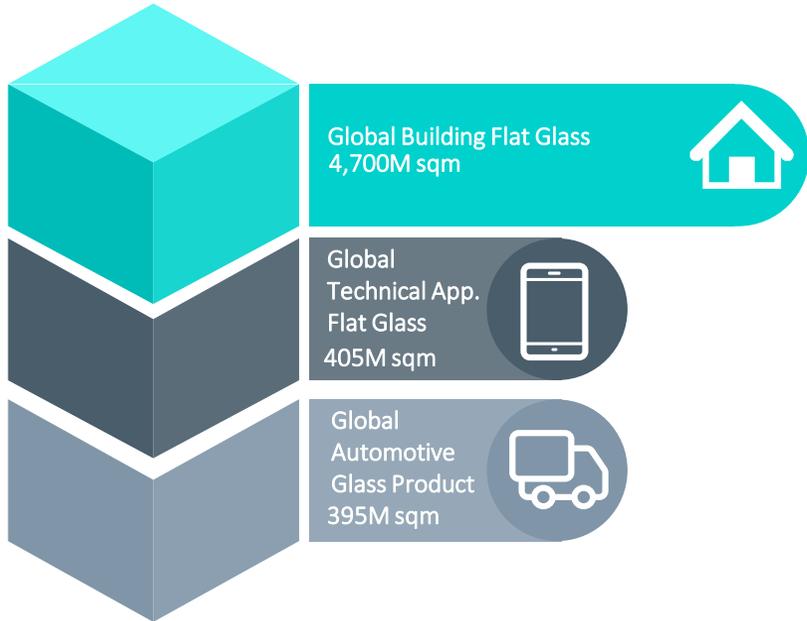
Renewable Power Capacities in World, BRICS*, EU-28 and Top 6 Countries - 2016



Market Opportunity

Global Glass Market

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Global Glass Market Suppliers



- ❑ Total Glass Market Size 5,500 sqm pa in 2011 (NSG Group and the Flat Glass Industry Report 2011).
- ❑ The construction glass industry is predicted to reach **USD \$111 Billion** by 2020 (Technavio)
- ❑ Global green building expected to double by 2018 (World Green Building Council)

ClearVue's Opportunity

Market Drivers

US\$310 Billion

investment into clean energy in 2014+ 16%



5,500 million
square metres of glass
produced each year

€ \$23 Billion

Value of the flat
glass market



37%
increase in global
energy demand

Sources:

United Nations, Climate Spectator, NanoMarkets

Forbes - china-leads-the-world-in-renewable-energy-investment report July 2012

<http://www.climatespectator.com.au/news/uk-track-hit-2020-green-energy-targets-decc>

http://www.rechargenews.com/business_area/politics/article323311.ece

The Building Integrated Photovoltaics Opportunity

- ❑ Global market for building-integrated photovoltaic (**BIPV**) technologies was USD **\$2.4 billion** in **2016**
- ❑ Market to grow to USD **\$4.3 billion** by **2021** (with a compound annual growth rate (CAGR) of 12.2% for the period 2016 to 2021).

Source:

<https://www.bccresearch.com/market-research/energy-and-resources/building-integrated-photovoltaics-markets-report-egy072C.html>

ClearVue's Business Model



ClearVue will derive revenues from:

- ❑ **Direct sales** (initially) – by sale and supply of the Company's assembled products direct to distributors and licensed channel partners worldwide. The company will also continue to sell technology/product components to its licensees;
- ❑ **Licences** - the Company intends to charge a fee to manufacturers and distributors for the right to manufacture or distribute and sell the ClearVue product; and
- ❑ **Royalty payments** - the Company intends to charge a flat royalty fee per sqm of ClearVue glass/technology sold by a manufacturer or distributor business, with the rate to be determined.

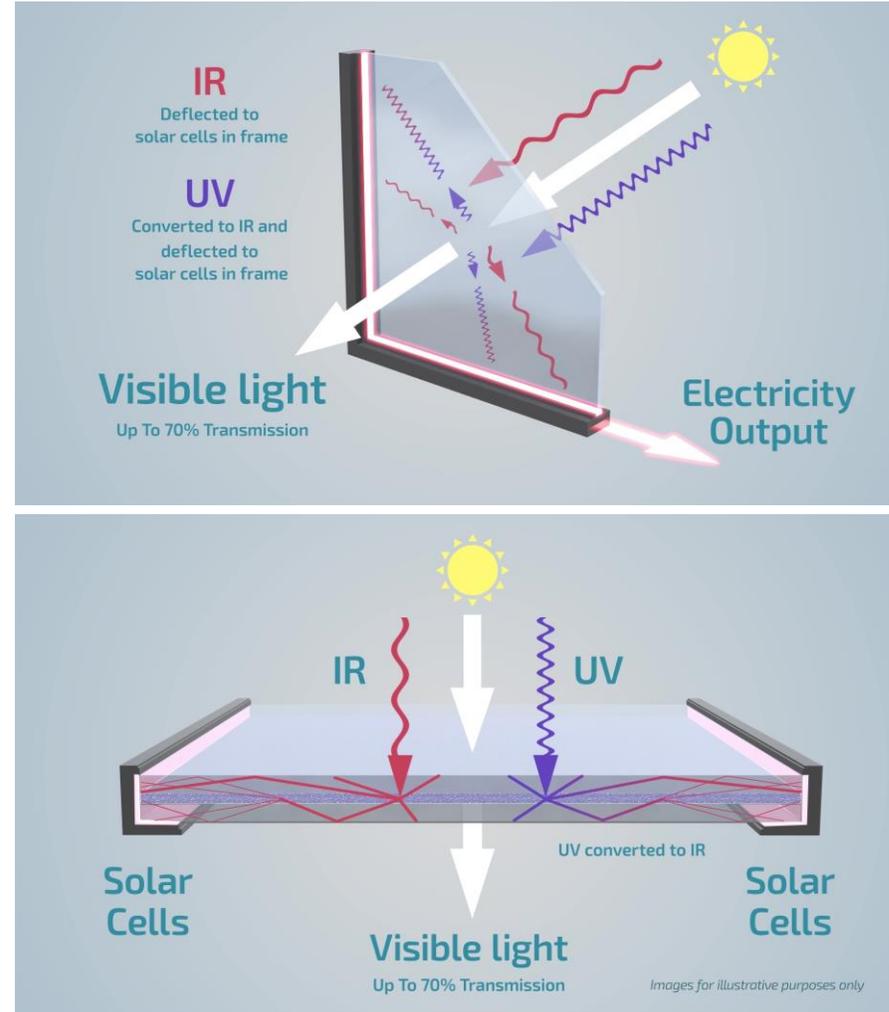
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ClearVue's Technology

An overview of ClearVue's technology

- ❑ Visible light (VIS) passes through the glass
- ❑ Micro & nano particles interact with Ultra Violet (UV) radiation which is down-converted to longer wavelengths and scattered along with Infrared (IR) light to the edges of glass
- ❑ IR is collected by PhotoVoltaic (PV) cells - Produces electricity
- ❑ Reduces heat and blocks damaging UV and IR radiation
- ❑ Insulation properties reduce heating and cooling costs
- ❑ ClearVue has extensive IP protection on its technology and products



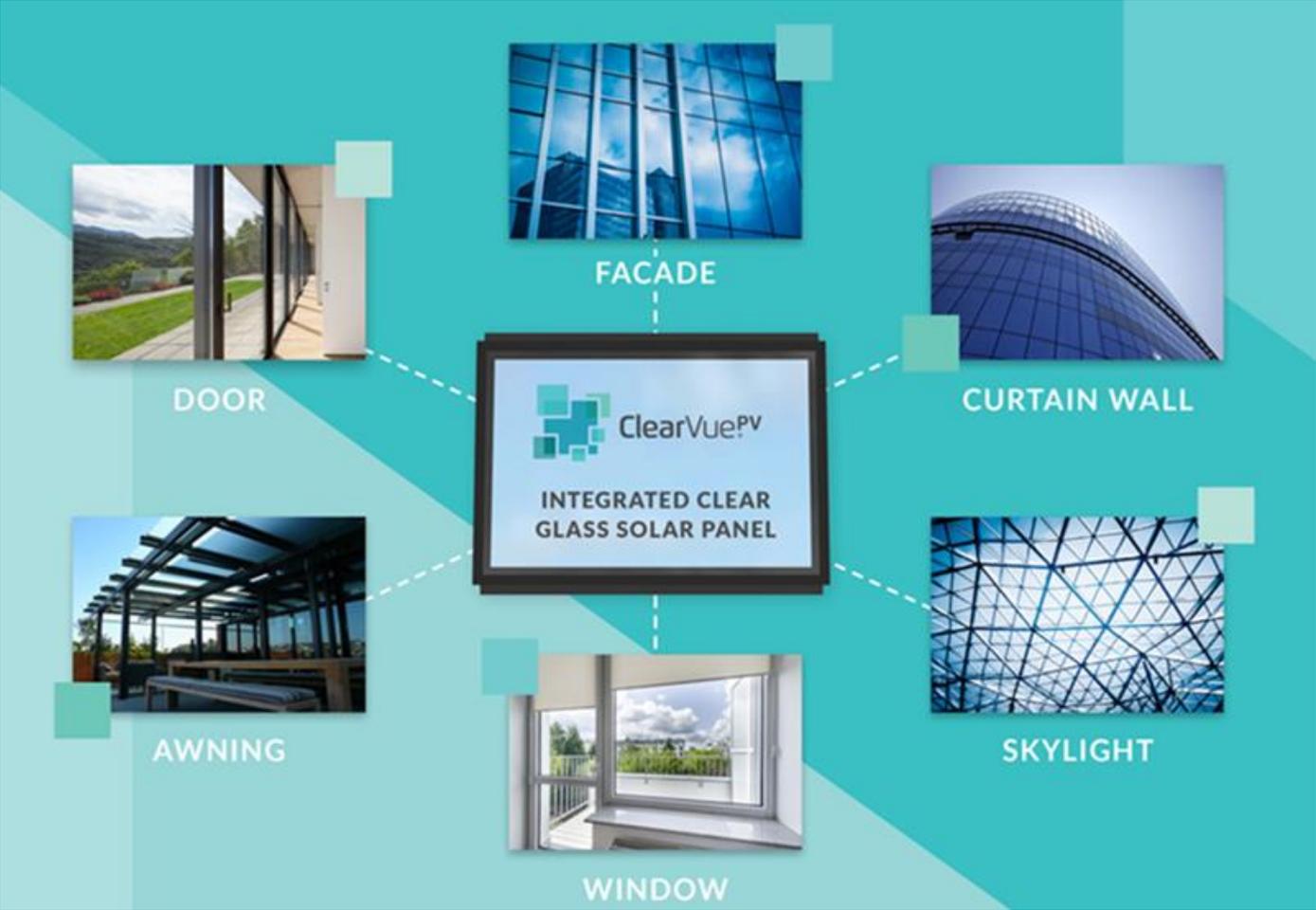
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Click on blank screen on left to play video.

OR play from:

<http://www.clearvuepv.com/products-solutions/technology/>

Product Opportunities



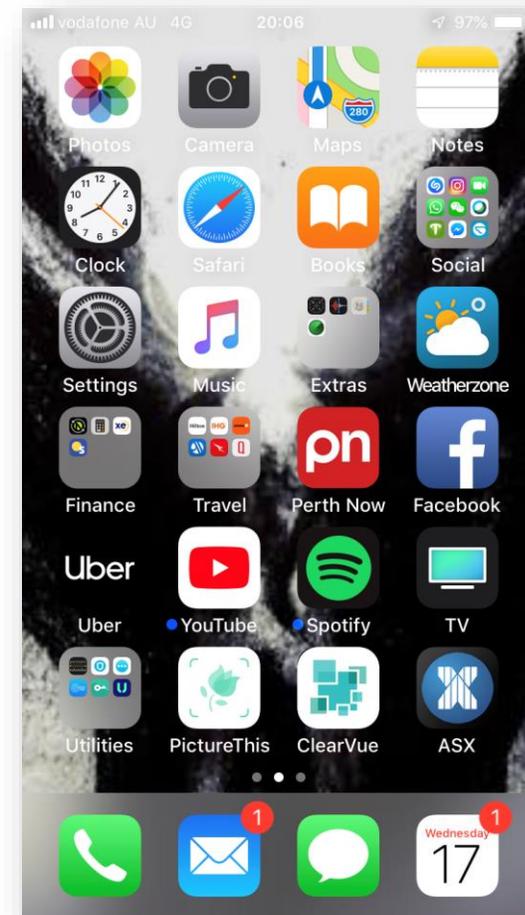
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Smart Window Solutions

(Monitoring, sensors and IoT integrations)



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Commercial & Residential Applications



large market opportunity – at the moment demand for BIPV solutions is limited by product characteristics - no high energy performing and architecturally accepted transparent colourless products except from ClearVue

- ❑ By 2025 there will be more than 29 mega cities with 10 million plus people*
- ❑ Buildings can be a significant source of their own energy needs
- ❑ Insulation properties reduce heating and cooling costs
- ❑ Building owners obtain a faster payback from energy generating structures
- ❑ Skylights are the fastest new window market globally

* Source: UN Report on World Urbanisation & World Energy Outlook Report 2014

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Public Amenities & Agriculture



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- Free energy in public places, e.g. libraries, or charge your mobile phone at a bus stop
- Provide energy in developing countries in public buildings such as schools without large plots of adjacent land needed for solar arrays
- Awnings, Atriums, Skylights, Road barriers
- Waste management services and water purification
- Powering IoT sensors and building electronics
- Food and food security is a global multi billion dollar industry. Key markets are China, Europe and USA.
- Technology presents opportunity for self powering greenhouses



Summary



In the **six (6) months** since listing on the ASX on 25 May 2018 the Company has achieved the following:

- ❑ Australian standards (Intertek) certification testing completed and EU certification (CE) on ClearVue window
- ❑ Design breakthrough to simplify product manufacture and increase market opportunities
- ❑ Product certification commenced for US market (UL) and for EU (IEC)
- ❑ Production commenced on glass units for use in pilot projects and for trade shows
- ❑ MOUs signed with:
 - ❑ Mirreco for supply of glass for use with their hemp-based building system and hemp-based eco mini homes. Demonstration eco mini home progressing;
 - ❑ Murdoch University as a site for the CRC-P funded greenhouse and for working with MU plant science researchers to demonstrate CV greenhouse performance;
 - ❑ yStop for using ClearVue in bus shelters and outdoor advertising opportunities in WA;
 - ❑ IoTStream for integration of IoT solutions with ClearVue's glass – whitelabel app prepared for use with ClearVue product installations; and
 - ❑ Zurreal for integration of ClearVue glass with Zurreal's art glass for niche architectural and advertising applications.
- ❑ Major product launches at trade shows in Australia (Fenestration 2018 – Pt Douglas - Sept), Europe (Glasstec 2018 – Dusseldorf - Oct) and North America (Greenbuild 2018 – Chicago - Nov)
- ❑ Pilot projects commenced
- ❑ Licensing discussions commenced (Worldwide) flowing from the trade shows

Questions?

Thank you for your attention – any questions?



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