ASX RELEASE | CLEARVUE TECHNOLOGIES LIMITED
(ASX:CPV | OTC:CVUEF)

Archetype 'ClearZero' building demonstrates CPV products as key driver in the Race to Zero

HIGHLIGHTS

- **ClearVue has completed design of an Archetype model building of 15,000 m² to demonstrate how ClearVue product can achieve a Net Zero or Near Zero energy-use building**
- **Modelling was completed on a design in Toronto, Canada, benchmarked against the Toronto Green Standard (TGS) from 2030 - one of the world's highest standards of building performance**
- **The Archetype was shown to achieve the highest level of performance under the TGS from 2030 (V6 Tier 1) and an ENERGY STAR score in the top 1% of Canadian office buildings for energy performance**
- **The Archetype – a computer simulation and detailed thermal model – will support ClearVue's sales teams when engaging with architects and engineers seeking to design Net Zero buildings**

12 January 2022: Smart building materials company ClearVue Technologies Limited (ASX:CPV) (***ClearVue*** or the ***Company***) is pleased to announce the outcome of recent modelling work undertaken in the context of the global 'Race to Zero' in construction decarbonisation.

During the second half of calendar year 2021, ClearVue commissioned energy efficiency and sustainability specialists, Footprint[1] to develop an energy efficient archetype model office building named 'ClearZero' (the ***Archetype***) to demonstrate how ClearVue's world-leading window integrated photovoltaic products can be used to assist in the design of highly energy efficient, energy neutral buildings.

The objective for development of the ClearZero Archetype was to explore the energy performance of selected energy and design strategies to achieve a net zero energy building design using ClearVue product.

The Toronto Green Standard (***TGS***) is one of the toughest building standards in the world with building code requirements in relation to energy use and building thermal envelope stepping up in stages until 2030. The TGS for construction from 2030 onwards (V6 Tier 1) was used as the benchmark to assess the performance of the Archetype.

The ClearZero Archetype was shown to achieve the highest level of performance under that standard. Footprint confirmed that the modelled building would achieve an ENERGY STAR score of 99 out of 100,

[1] See 'About Footprint' on page 4.

Suite 7 / 567 Newcastle Street, West Perth, Western Australia 6005
P: +61 8 9220 9020 F: +61 8 9220 9029 E: hello@clearvuepv.com W: www.clearvuepv.com

putting it in the top 1% of Canadian office buildings for energy performance if built to the Archetype design.

ClearVue's patented solar glazing technology cuts heating and cooling costs, and improves building energy efficiency, by preventing unwanted solar radiation from entering a window and converting it into electricity using photovoltaic cells.

Integral to the Archetype design was the use of ClearVue's advanced technology-based building integrated photovoltaic glazing solution across the total building design, and as the primary façade material for the Archetype, including the use of higher glazing to wall ratios on the facades with higher solar exposure.

Artists impression of ClearZero Archetype (front view).

The Archetype model is a 15,000m² six storey office building situated in Toronto, Ontario, Canada. The building is slightly elongated along the east-west axis for improved solar exposure in its Northern hemisphere location. The building is envisioned with low carbon construction assemblies including mass timber and reduced concrete use. Opaque envelope components included a high thermal performance roof and good wall thermal resistance including thermal bridging. The glazing was modelled in accordance with ClearVue's photovoltaic tripled glazed IGU (or TGU) specifications with the triple glazing giving excellent fenestration thermal performance in the modelling.

The Archetype demonstrates the energy performance of a low-carbon energy-efficient design along with the renewable energy generation of the on-site photovoltaic arrays in the form of ClearVue's PV glazing across all glazed surfaces – and 50% of the roof area of the building covered with a typical roof mounted PV array – together delivering approximately 40% of the energy needs for the building during its in-use phase.

Net Zero energy use was also shown to be easily achieved by covering only 37% of the mandated car parking spaces for a building of the Archetype's size and scale with additional roof-based PV.

Historically, windows and other fenestration are the weak link in a building's thermal performance. Typically, current low carbon building designs have reduced window to wall ratios to comply with energy

use and carbon emission targets.

ClearVue has achieved the 2030 TGS benchmarks all while maintaining window to wall ratios on the building elevations of 90% on the South, 70% East, 70% West and 40% North.

These high fenestration ratios mean more natural light is available to end users of the building – a key factor in the movement towards 'building wellness' design – all without compromising on the carbon footprint of the building.

Artists impression of ClearZero Archetype (rear view).

The current Archetype modelling is restricted to the 'in-use' phase of the building (operational phase). Work on the life cycle assessment of the ClearVue PV IGU product is currently underway which will be used to produce an Environmental Product Declaration or EPD for the ClearVue products. This information will then be fed back into the modelling for the Archetype to have a complete understanding of the carbon footprint and carbon payback for the whole building (construction phase).

The Company looks forward to updating the market once this further work has been completed. Further information on the Archetype is provided in the Annexure.

Victor Rosenberg, Executive Chairman of ClearVue, commenting on the Archetype modelling said:

> *"Architects and façade engineers the world over are now coming up against ever harder code requirements for energy efficient building design in response to the Climate Crisis. The Archetype will be used by ClearVue as a key sales tool and educational resource when dealing with these architects, engineers, as well as developers and builders. The developed Archetype model clearly shows how the ClearVue PV product can play a significant role in the design of Net Zero and Near Zero Energy Buildings of the very near future. The ClearVue PV glazing through its energy efficiency and energy generation offers a solution for these architects, engineers and developers struggling with how to design buildings to meet these new codes while maintaining expansive views and*

maximising building daylighting.

The Archetype we have developed sets out a very clear and compelling template for how a building can be designed that already meets the most stringent standards for 2030 building energy use targets now, and importantly it shows how 2050 Net Zero energy targets can also very easily be met using ClearVue's products in conjunction with other readily available construction materials."

Authorised by the Board of ClearVue Technologies Limited.

FOR FURTHER INFORMATION, PLEASE CONTACT:

ClearVue Technologies Limited
Mr Victor Rosenberg
Executive Chairman
hello@clearvuepv.com
+61 8 9220 9020

Citadel-MAGNUS
Michael Weir / Russell Quinn
0402 347 032 / 0403 322 097

ABOUT CLEARVUE TECHNOLOGIES LIMITED

ClearVue Technologies Limited (ASX: CPV) is an Australian technology company that operates in the Building Integrated Photovoltaic (BPIV) sector which involves the integration of solar technology into building surfaces, specifically glass and building façades, to provide renewable energy. ClearVue has developed advanced glass technology that aims to preserve glass transparency to maintain building aesthetics whilst generating electricity.

ClearVue's electricity generating glazing technology is strategically positioned to compliment and make more compelling, the increased use of energy-efficient windows now being regulated in response to global climate change and energy efficiency goals.

Solar PV cells are incorporated around the edges of an Insulated Glass Unit (IGU) used in windows and the lamination interlayer between the glass in the IGU incorporates ClearVue's patented proprietary nano and micro particles, as well as its spectrally selective coating on the rear external surface of the IGU.

ClearVue's window technology has application for use in the building and construction and agricultural industries (amongst others).

ClearVue has worked closely with leading experts from the Electron Science Research Institute, Edith Cowan University (ECU) in Perth, Western Australia to develop the technology.

To learn more please visit: www.clearvuepv.com

ABOUT FOOTPRINT

Footprint are leading sustainability specialists across a broad range of sustainability related disciplines. At Footprint, our goal is simple: how do we get to less? Less costs…less stress…less waste…these are achievements that truly make a difference for our clients, our colleagues, and, ultimately, the world.

Taking a more integrated approach to sustainability services, we work side-by-side with project teams, providing an informed perspective of sustainable opportunities and considerations for design and construction decisions.

Our goal is to act as a catalyst for balance – to ask the right questions and provide possible solutions that point in the right direction. How do we know what the right direction is? It's always the direction that points toward less energy, less time, less impact, and more sustainable developments.

Our services include: Energy Modelling & Strategy, Performance Verification, Existing Building Optimization, Climate Change & Resilience, Sustainability Consulting & Certification, Commissioning and Building Wellness.

To learn more visit: http://sa-footprint.com/

FORWARD LOOKING STATEMENTS

Statements contained in this release, particularly those regarding possible or assumed future performance, revenue, costs, dividends, production levels or rates, prices or potential growth of ClearVue Technologies Limited, are, or may be, forward looking statements. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. Actual results and developments may differ materially from those expressed or implied by these forward-looking statements depending on a variety of factors.

Annexure

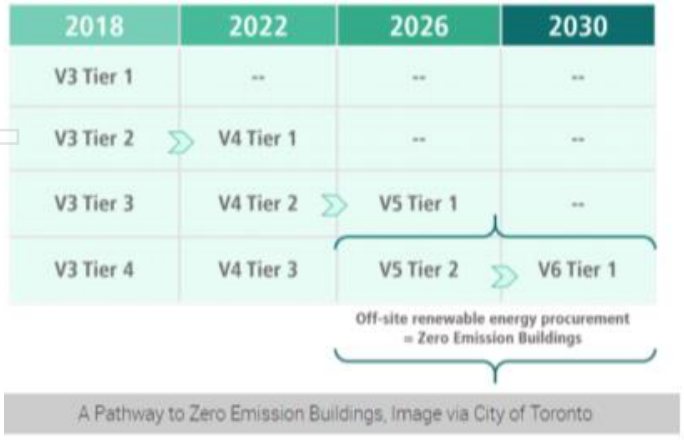
Archetype Building Key Points

Building Size	15,000 m2	
Storeys	6	
Construction	wood and low concrete (Lightweight Construction as defined in Canada)	
Energy	40% of the building energy use is produced by CPV and traditional PV all within the building footprint.	
Net Zero	Canadian Code requires 400 car parks for this structure. Net Zero can be achieved by applying traditional solar panels to 37% of the car park area.	
Location Climate	Location climate model is set as Toronto Canada. The performance of the Archetype in more temperate climates such as those in Australia will lead to better performance than modelled.	
Fenestration Rate	South Elevation	90%
	East and West Elevations	70%
	North Elevation	40%

Toronto Green Standard

The Archetype was measured in line with the Toronto Green Standard. The Toronto Green Standard (***TGS***) has building code requirements that are tiered in nature with performance requirements increasing progressively in the period to 2030. The Standard contains 3 key requirements

1. Total Energy Use Intensity (***TEUI***) which measures the buildings total energy use.
2. Thermal Energy Demand Intensity (***TEDI***) which measures the energy used for heating and cooling the structure and is a measure of a building's thermal envelope energy efficiency. Only benchmarked in Canada.
3. Greenhouse Gas Emissions Intensity (***GHGI***) which measures the carbon emitted by the building.



A Pathway to Zero Emission Buildings, Image via City of Toronto

The Toronto Green Standard tiers are planned to step up such that version 3 Tier 4 requirements will become Tier 1 requirements by 2030.

Toronto Green Standard (TGS) Compliance

Model	TEUI (ekWh/m²)	TEDI (kWh/m²)	GHGI (kg eCO2/m²)	Complies
CPV Archetype	62.7	14.4	3.1	TGS v3 Tier 4
CPV Archetype +Roof PV	39.8	14.4	2.0	TGS v3 Tier 4
CPV Archetype +Roof+Car Park PV	0.0	14.4	0.0	TGS v3 Tier 4 and Net Zero Energy

TGS v3 Tier 4 Requirement	65.0	15.0	4.0	2030
TGS v3 Tier 3 Requirement	100.0	22.0	8.0	2026 2030
TGS v3 Tier 2 Requirement	130.0	30.0	15.0	2022 2026
TGS v3 Tier 1 Requirement	175.0	70.0	20.0	2018 2022

The Archetype complies to the Toronto (Tier 4) standard for buildings constructed *from* 2030.

Archetype Performance compared to Current Average Energy use and Carbon Production

Total Energy Use Intensity (TEUI)	CPV TEUI	Canadian Median TEUI	% Reduction from Current Canadian Median
	(ekWh/m2)	(ekWh/m2)	
CPV Windows Only	62.7	228	**-72.5%**
CPV Windows + Rooftop PV	39.8	228	**-82.5%**
CPV + Rooftop + Carpark to Net Zero	0	228	**-100.0%**

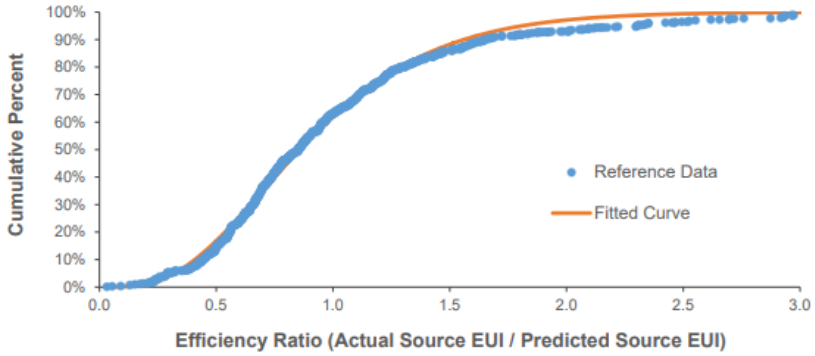
Greenhouse Gas Emissions Intensity (GHGI)	CPV GHGI	Canadian Median GHGI	% Reduction from Current Canadian Median
	(Kg eCO2/m2)	(Kg eCO2/m2)	
CPV Windows Only	3.2	74.2	**-95.7%**
CPV Windows + Rooftop PV	2	74.2	**-97.3%**
CPV + Rooftop + Carpark to Net Zero	0	74.2	**-100.0%**

Comparison to Other Global Green Building Standards

USA / CANADA

Energy Star

The Energy Star matrix is a measure of building performance relative to current energy efficiency of existing buildings in USA and Canada. This is a percentile measure with the CPV Archetype achieving a score of 99 out of 100. This means the Archetype would be in the top 1% of the buildings in these countries in relation to energy performance and low carbon emissions.



The final gamma shape and scale parameters are used to calculate the efficiency ratio at each percentile (1 to 100) along the curve. For example, the ratio on the gamma curve at 1% corresponds to a score of 99; only 1% of the population has a ratio this small or smaller. The ratio on the gamma curve at the value of 25% will correspond to the ratio for a score of 75; only 25% of the population has ratios this small or smaller. The complete score lookup table is presented in ***Figure 6***.

SINGAPORE AND SOUTHEAST ASIA

BCA Green Mark

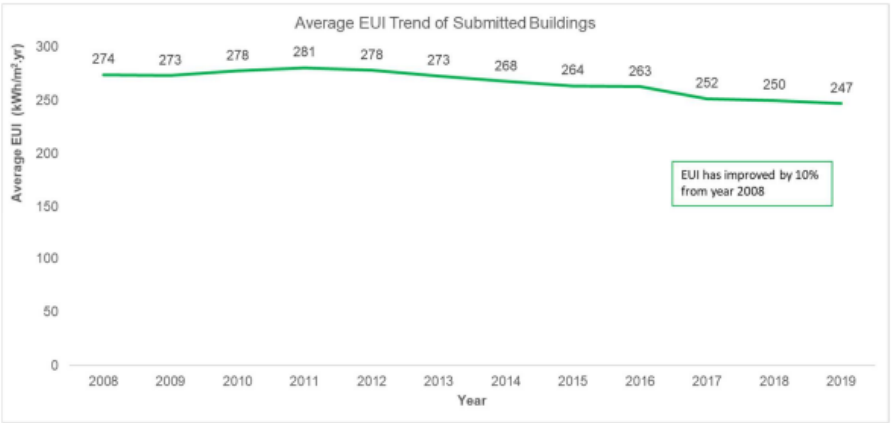
This Standard originated in Singapore and is used in several SE Asian nations for the rating of buildings. The standard addresses

1.	Energy Efficiency	116 Points
2.	Water Efficiency	17 Points
3.	Environmental Protection	42 Points
4.	Indoor Environment	6 Points
5.	Other Green Features	7 Points

Benchmarks

Certified	50 – 74 Points
Gold	75 – 84 Points
Gold Plus	85 – 90 Points
Platinum	90 Plus Points

Chart 4: Average EUI Trend of Submitted Buildings



Total Energy Use Intensity (TEUI)	CPV TEUI	2019 BCA Mark Average	% Reduction from BCA Greenmark Avg	BCA Mark
	(ekWh/m2)	(ekWh/m2)		
CPV Windows Only	62.7	247	**-74.6%**	
CPV Windows + Rooftop PV	39.8	247	**-83.9%**	Platinium
CPV + Rooftop + Carpark to Net Zero	0	247	**-100.0%**	

Greenhouse Gas Emissions Intensity (GHGI)	CPV GHGI	2020 Singapore CO2 per kWh generated	% Reduction from BCA Greenmark Avg	BCA Mark
	(Kg eCO2/m2)	(Kg eCO2/m2)		
CPV Windows Only	3.2	100.8	**-96.8%**	
CPV Windows + Rooftop PV	2	100.8	**-98.0%**	Platinum
CPV + Rooftop + Carpark to Net Zero	0	100.8	**-100.0%**	

Based on Energy use parameters the Archetype is expected to qualify for Platinum level BCA Green Mark.

AUSTRALIA / NEW ZEALAND

National Australian Built Environment Rating System (NABERS)

NABERS Energy for office ratings are based on consumption data for the building (electricity and gas bills) analysed by accredited assessors considering building size, hours of occupation, location climate and occupation density. This data is then input into the NABERS calculator delivering a score between Zero Star (very poor) and Six Star (Market Leading) by comparing the buildings performance to the building's peers.

Total Energy Use Intensity (TEUI)	CPV TEUI	NABERS 6 Star Benchmark	% of NABERS Benchmark	Nabers Rating
	(ekWh/m2)	(ekWh/m2)		
CPV Windows Only	62.7	41.1	**52.6%**	
CPV Windows + Rooftop PV	39.8	41.1	**-3.2%**	**6 Star**
CPV + Rooftop + Carpark to Net Zero	0	41.1	**-100.0%**	

Greenhouse Gas Emissions Intensity (GHGI)	CPV GHGI	NABERS 6 Star Benchmark	% of NABERS Benchmark	Nabers Rating
	(Kg eCO2/m2)	(Kg eCO2/m2)		
CPV Windows Only	3.2	40.0	**-92.0%**	
CPV Windows + Rooftop PV	2	40.0	**-95.0%**	**6 Star**
CPV + Rooftop + Carpark to Net Zero	0	40.0	**-100.0%**	

The Archetype is expected to qualify for a 6 Star NABERS rating with the inclusion of both ClearVue PV glazing and rooftop PV.

NOTES

Comparatives of archetype data (in the above Annexure) are made and supplied for context purposes. Actual Archetype performance, if built, will vary depending on building site location(s) including local climate, local grid greenhouse gas intensity, building azimuth and other factors.