#### CONFIDENTIAL





## An Impact Investment for Socially Responsible Investors...

https://www.youtube.com/watch? v=TPzWOlkFKgo

Offering of 100,000 shares at US\$ 1.00 per share www.city-windmills.com

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## **Overview of the Group**

A "Clean Energy" holding company incorporated in UK, with a 100%-owned United Kingdom production subsidiary - City Windmills Ltd. and a 100%-owned USA production subsidiary – City Windmills, Inc.

Formerly Main Quote Listed on GXG Exchange in London (May 2013-August 2015) and fully compliant with accounting, corporate governance and media reporting systems established. - ISIN # GB00BH4GWT50

- UK Enterprise Investment Scheme approved
- Group Market valuation is £ 7,000,000 (approx.)
- Production prototype developed in USA and Dubai, now ready for commercialisation
- Production tie-up UK Ministry of Justice HM Prison Berwyn, with Interserve UK
   Teaming agreement with US Federal Prison Industries
- Member, World Wind Energy Association
- · Institutional investor base in Switzerland, US and Europe



**CityWindmills** SMALL WIND TURBINES FOR URBAN USE

## **Overview of the Company**

#### In Europe

- · City Windmills Holdings PLC. & City Windmills Ltd. registered in UK, 2013 & 2010
  - respectively. Audited by Hays Macintyre in UK since 2010.
- Experienced management UK/US nationals, with vast global experience.
- Product development support previously received from Canton of Vaud Economic Development
   (www.dev.ch), prototype built in USA and China and tested in US Govt. Facilities.
- Proposed for production and distribution in UK working with Ministry of Justice and Interserve, through HM Prison Berwyn. Emphasis on rehabilitation of prisoners into the workplace. Production scheduled for early 2018, workshops currently being designed & fitted out.
- WindLighting name Trademarked



## In the USA

- City Windmills Inc., registered in Delaware, head office in Connecticut, sales office in New York
- University Research tie-up University of Connecticut Centre for Clean Energy Engineering (C2E2), for prototype building, testing, and Baylor University in Texas, for Wind-Lighting product design and development.
- Sales team in conjunction with Orange Power & Light ("OPAL") of New York, and experienced solar/wind sales & installation operation
- Experienced US management CEO based in USA for 14 years, working with/supplying US Govt.
- 4,355,800 shares issued, US\$ 0.10 nominal capital, 100% held by Group.
- · Member Connecticut Technology Council
- Best Wind Turbine Design & Engineering Company USA & Industrial Roof-Top Installation of the Year - 2016 Architecture Awards
- WindLighting<sup>™</sup> first installation in January 2018 in Connecticut, USA

# **Business Objectives & Strategy**

## **Objectives**

With an experienced management team and advisory board, City Windmills seeks to :

Build a solid, international market share in the global small wind turbine industry

Expand suite of commercial and domestic small wind turbine products

Benefit from lower cost production, through Production Agreement with Interserve in the UK and a Teaming Agreement with UNICOR (Federal Prison Industries) in USA

Possible NASDAQ North Exchange as pre-cursor to US listing

Design Patents and trademarks worldwide – Japan & Asia next registration

Roll out manufacturing and sales in USA & Europe - 1H2018

Register Product Trademark worldwide for Wind Turbines



## **Business Objectives & Strategy**

## **Product Strategy**

- Align with professional design and research teams in USA and Europe for development of a suite of wind-turbine products.
- Roll-out production first in Dubai & UK with "low-hanging" fruit product sold through Solar and Hybrid systems distributors
- Expand production and sales in USA, Central America & Caribbean, and introduce further products
- Tap UK/North American investor market for capital to finance Global expansion
- Following UK, establish business units in Europe for production and sales
- Establish local research/academic tie-up at universities
- Use licensed manufacturers/distributors for Asia and Africa already discussing with experienced Japan prospect

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# **Our Products**

#### CW500 – Small Wind Turbine

- Designed for domestic rooftop installation
- Power output to run lighting, internet/phones, furnace burner, water pump, most household uses (non A/C.)
- Battery storage for power outages/savings

#### <u>CW1000 – Small Commercial Wind Turbine</u>

Designed for commercial/industrial rooftop installation

#### <u>CW2000 – Large Commercial Wind Turbine</u>

Designed for large building rooftop installation

All turbines are silent Similar electrical wiring to solar panel systems Battery storage optional Shroud to protect returning turbine blades from wind Advertising possible on shroud

#### <u>WindLightingTM – Remote Street /Area Lighting</u>

- Power output to run LED lighting systems, for remote/off-grid areas
- Major applications in 3rd. World countries, World Bank Millennium Challenge
- With a white gel battery storage, can provide night-time lighting continuously
   Can be re-charged whenever the wind blows, night & day



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# **Management Team & Biographies**

#### **Management of City Windmills Group**

#### David Mapley (USA/UK - Chief Executive & Director)

Primary responsibility is the execution of the operating strategy worldwide for the group. David has worked in the financial markets worldwide, In London, Tokyo, Hong Kong/Singapore, Sydney, Toronto and New York. In recent years he was engaged in angel investing in award winning start-up technology companies on the East Coast USA. David now runs an investment advisory company in Switzerland, as well as being an active technology investor.

B.Sc.(Econ.) - Finance, M.Sc. - Op. Research from London School of Economics, M.B.A from Univ. of Chicago

#### Yvonne Hu (USA – China Business Development)

Ms. Hu is founder of Anchor Commercial Real Estate Development in USA, and has over 15 years experience in developing large real estate projects. Yvonne Hu is also founder and president of Anchor International Investment, a company working with China state-owned infrastructure corporations for worldwide projects, especially in energy, rail road and affordable government housing developments. She is also familiar with world finance structure syndicates with PPA sovereign guarantees or PPP, OBT, BT etc. Yvonne is a strong advocate of green energy, and advises New Jersey Institution Technology University. She has an electrical engineering degree from Drexel university and an MBA from Wharton Business School. She is fluent in Chinese (Mandarin and Cantonese).

#### Paul Passarelli (USA – Product Engineering)

Paul Passarelli's responsibility is the development of CW's products for the US market, seen as a key market for City Windmills. A multidisciplinary Engineer with nearly 40 years experience, Paul has consulted on projects in aerospace, geothermal, electrification, medical, shipboard, chemical, satellite, lasers, hvac, communications, manufacturing, design, and, software. Paul's designs have won patents, grant funding, as well as proven profits. Mr Passarelli, sat or sits on several boards of directors: ZZ Data, Mensa, VMRCA, LPCT, Hartford Armory, and S&T. A practicing environmentalist, Paul is currently developing a project to clean the great ocean garbage patches, these unseen blights contain millions of tons of floating plastic waste. Paul is based in Connecticut.

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# Management Team & Biographies (contd.)

#### **Tony Hoskinson (Company Secretary)**

Tony is UK based and manages the share register and company secretarial duties for BWH. He is an experienced company secretary for UK public aand private companies.

## **Advisory Board of City Windmills Group**

#### **Tessa Jucaite (USA – Environmental Engineering)**

Ms. Jucaite has over 12 years of experience in civil and environmental engineering in the states of Connecticut and New York She has been a project manager and a design engineer for many civil and environmental engineering projects, as well as providing construction management and inspections associated with Electrical, Mechanical and Civil aspects. Tessa has an M.Sc. in Environmental Engineering from the University of New Haven, CT; and a B.Sc. and M.Sc. in Civil Engineering with concentration in Water Management.

#### Jonathan Morley-Kirk (Jersey – Finance)

Mr. Morley-Kirk has many years of experience in all areas of corporate governance, management, complex financial and legal issues, and has served as a non-executive director of a number of public and private companies and investment funds. Mr. Morley-Kirk currently serves as CFO/Finance Director of Longreach Oil & Gas Ltd., having previously served as Chairman/CFO of Fox-Davies Capital, a regulated corporate finance boutique and stockbroker, in the UK. He is a Fellow of the Institute of Chartered Accountants in England & Wales, and a Fellow of the Chartered Institute of Securities & Investments.

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# SMALL WIND TURBINES FOR URBAN USE

## The Opportunity in for Small Wind Turbines

- By end 2016, the total global installed wind capacity reached 483 GW, accounting for 4.5% of the total generation capacity in the world
- Small scale wind has now been applied in fields such as city road lighting, mobile communication bases, offshore aquaculture and sea water desalination
- Small wind turbines represent a total of 830 MW of generating capacity throughout the world as at end 2014, according to the <u>World Wind Energy Association</u>
  - rising electricity prices

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- > greater public awareness of available wind technologies
- > projected 10% increase in installations per year
- > greater public awareness of climate change, COP21, COP22 and UN initiatives
- According to the World Wind Energy Association, it is difficult to assess the total number or capacity of small-scaled wind turbines, but in China alone, there are roughly 689,000 small-scale wind turbines generating electricity



# The Opportunity for Small Wind Turbines



Source: Small Wind World Report, 2014

SMALL WIND TURBINES FOR URBAN USE ō ົ

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# The Demand for Electricity and its Price



- <sup>></sup> Global electricity consumption expected to grow 120% from 2011 to 2050, with prices doubling by 2030
- Europe is forecast\* to have 1,005 GW operational in 2025; before that it needs to:
  - Add 437 GW to 609 GW to replace aging/defunct capacity with 45% expected from all forms of renewables;
  - Invest €730bn to €1 trillion for new capacity

\* Source: KPMG – Power Sector Development in Europe – Lenders' Perspectives 2011

## **Total Cumulative Installed Units by Country**



Source: Small Wind World Report, 2016

SMALL WIND TURBINES FOR URBAN USE

CityWindmills

# The Opportunity for Small Wind Turbines

## A typical home in USA would reduce energy costs and have emergency back-up!

- An average home consumes 958 kwh per month, at a cost of US\$ 111-200 monthly
- endures an average wind speed of 5 m/s or 11 mph
- CW 500 will generate 441 kwh per month at 5 m/s (payback < 5 years)

NB, In November 2011, Hurricane Sandy deprived eight million homes along the East Coast USA of electricity for several weeks. Outages are very common in the USA, with utility cables carried above ground and subject to tree falls. October 2011, another snowstorm on the East Coast of the USA caused over two million power outages...



# Why Invest?

## Why invest in City Windmills, Inc.?

### Well, simply put...

The company valuation, at start-up production, at US\$ 4.36 m., is undervalued relative to peers.

The company replaced former management with professional, experienced personnel with global reach. A design has been finalised and tested, satisfactorily, ahead of production.

City Windmills is working with professional design teams to create a suite of commercial products.

City Windmills has a production agreement with UK Ministry of Justice/Interserve, and a teaming agreement with UNICOR, a low-cost US Federal Government manufacturer.

The market for small wind turbines and wind-powered remote/street lighting, worldwide, is huge, and grows yearly with greater acceptance and awareness of global climate change.

Green initiative talks and actions currently at the forefront of most countries and governments.

The company share price upside and profit potential is immense, as production now starts ....

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## Summary

Structure : A private company incorporated in the United Kingdom , with a 100% subsidiaries Registered in London (UK), and Delaware (USA) Managed from UK and USA

**Business Objectives** 

- & Strategy: Build a solid, international market share in the global small wind turbine industry Develop a suite of commercial and domestic small wind turbine products Benefit from lower cost production, through agreements with MOJ in UK and UNICOR (Federal Prison Industries) in USA Mass Production roll-out in late 2018
- Share Capital :CYW in USA 4,355,800Ordinary Shares at US\$ 0.10 nominal value,<br/>Current offering price US\$ 1.00 , Mkt. Cap. £ 4,4 million pre-money<br/>Planned Reg D then SED registration for OTC BB and Nasdaq Capital Market
- Strategic tie-ups : Federal Prison Industry tie-up for US manufacturing, Minstry of Justice / Interserve in the UK C2E2 Research tie-up at University of Connecticut/Baylor University Texas for Wind-Lighting KMB Design for product design, Dart Manufacturing for production prototype build Orange Power & Light, New York for sales and distribution Member, World Wind Energy Association

## **Contact Details**

<u>City Windmills Holdings PLC.</u> Suite 39, 35 Buckingham Gate, London SW1E 6PA, United Kingdom Registration number 08789548

37 Bayne Street, Norwalk, CT 06851 USA

www.city-windmills.com	
info@city-windmills.com	
+41-22-575-4160	
+1(203) 224-8388	



CityWindmills SMALL WIND TURBINES FOR URBAN USE

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## Annexe

# How Wind Turbines Generate Energy

### Horizontal-axis versus vertical-axis

- Horizontal axis turbines, e.g. propellers, are very inefficient as so much wind passes through the blades, with only
  a small surface hit by wind. This is to prevent a propeller from blowing over or snapping in strong winds –
  however, vertical axis turbines like City Windmills are far more efficient at converting wind into power.
- Wind compresses on the pitched or sloping roof of a building, or at the edge of a flat-roofed building; this is known as the "Rooftop Effect", and represents great potential for roof-top wind turbines. As wind strikes a roof and building, it is forced over the ridge, compressing with wind above and below it, and the accumulated effect of this compressed air is acceleration. This "Rooftop Effect" results in wind at the ridge of a roof increasing at up to 3 times the speed of nearby unobstructed wind.
- The "rooftop effect" results in a fast travelling, compressed wind current maximized at the ridge or peak of a roof, and is more pronounced the higher the roof and the larger the surface area below the ridge. A further factor, referred to as "wind gradient", determines that wind is stronger/faster as altitude increases, giving rise to the placement of horizontal axis propeller turbines at the top of towers or local high-points.
- For vertical axis small wind turbines, the optimal placement is on the ridge of the roof, which additionally benefits from capturing omni-directional wind available from 360 degrees. For this reason, the City Windmill wind turbines are designed to benefit from and to maximize their performance from the "rooftop effect" and "wind gradient".

## The Science and Formula and Quick Case Study

Power generation from wind is governed by a simple equation :

Power =  $\frac{1}{2}$  x Area x Velocity^3 x Rho x Betz's constant

where Rho is Air density (approx. 1.25) & Betz's constant (approx 0.6)

- If surface area of turbine doubles, power generated doubles
- If wind speed doubles, power generated increases eight-fold

Hence placement and positioning of the wind turbine is vital, to capture the benefits of the "Rooftop Effect" which can significantly increase power output.

Table of wind speed versus power generation Client's location avg. wind speed is 18.14mph

Note : wind gusts produce a cubic increase in power, so energy produced at a given average is always higher than this calculation

Wind Speed	Kwh	Kwh
mph	per month	per month
	rooftop 2x	rooftop 3x
11	1,620	5,468
16	4,445	15,003
AVG	6,786	22,903
20	9,448	31,886
25	17,250	58,218
29	28,473	96,097
34	43,740	147,623

# **Wind Power Adoption**

- Over the past decade, world wind power capacity grew more than 20 percent a year, its increase driven by its many attractive features, by public policies supporting its expansion, and by falling costs.
- By the end of 2014, global wind generating capacity totaled 369,000 megawatts, enough to power more than 90 million U.S. homes. Wind currently has a big lead on solar PV, which has enough worldwide capacity to power roughly 30 million U.S. homes.
- China is now generating more electricity from wind farms than from nuclear plants, and should have little trouble meeting its
  official 2020 wind power goal of 200,000 megawatts. For perspective, that would be enough to satisfy the annual electricity needs
  of Brazil.
- In nine U.S. states, wind provides at least 12 percent of electricity. Iowa and South Dakota are each generating more than one quarter of their electricity from wind.
- In the mid-western United States, contracts for wind power are being signed at a price of 2.5¢ per kilowatt-hour (kWh), which compares with the nationwide average grid price of 10–12¢ per kWh.
- Although a wind farm can cover many square miles, turbines occupy little land. Coupled with access roads and other permanent features, a wind farm's footprint typically comes to just over 1 percent of the total land area covered by the project.
- Wind energy yield per acre is off the charts. For example, a farmer in northern Iowa could plant an acre in corn that would yield enough grain to produce roughly \$1,000 worth of fuel-grade ethanol per year, or the farmer could put on that same acre a turbine that generates \$300,000 worth of electricity per year. Farmers typically receive \$3,000 to \$10,000 per turbine each year in royalties. As wind farms spread across the U.S. Great Plains, wind royalties for many ranchers will exceed their earnings from cattle sales.

Source – Earth Policy Institute