

Sustainable Energy from Wastewater



Presented by: Lynn Mueller
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A high-angle, top-down view of a large number of US dollar bills, primarily \$100 bills, arranged in a dense, swirling pattern that creates a deep, tunnel-like vortex. The bills are green and feature the portrait of Benjamin Franklin. The text "ONE HUNDRED DOLLARS" and "THE UNITED STATES OF AMERICA" is visible on the bills. The center of the vortex is dark and deep, drawing the eye inward. The overall effect is one of intense value and a sense of being pulled into a whirlpool of money.

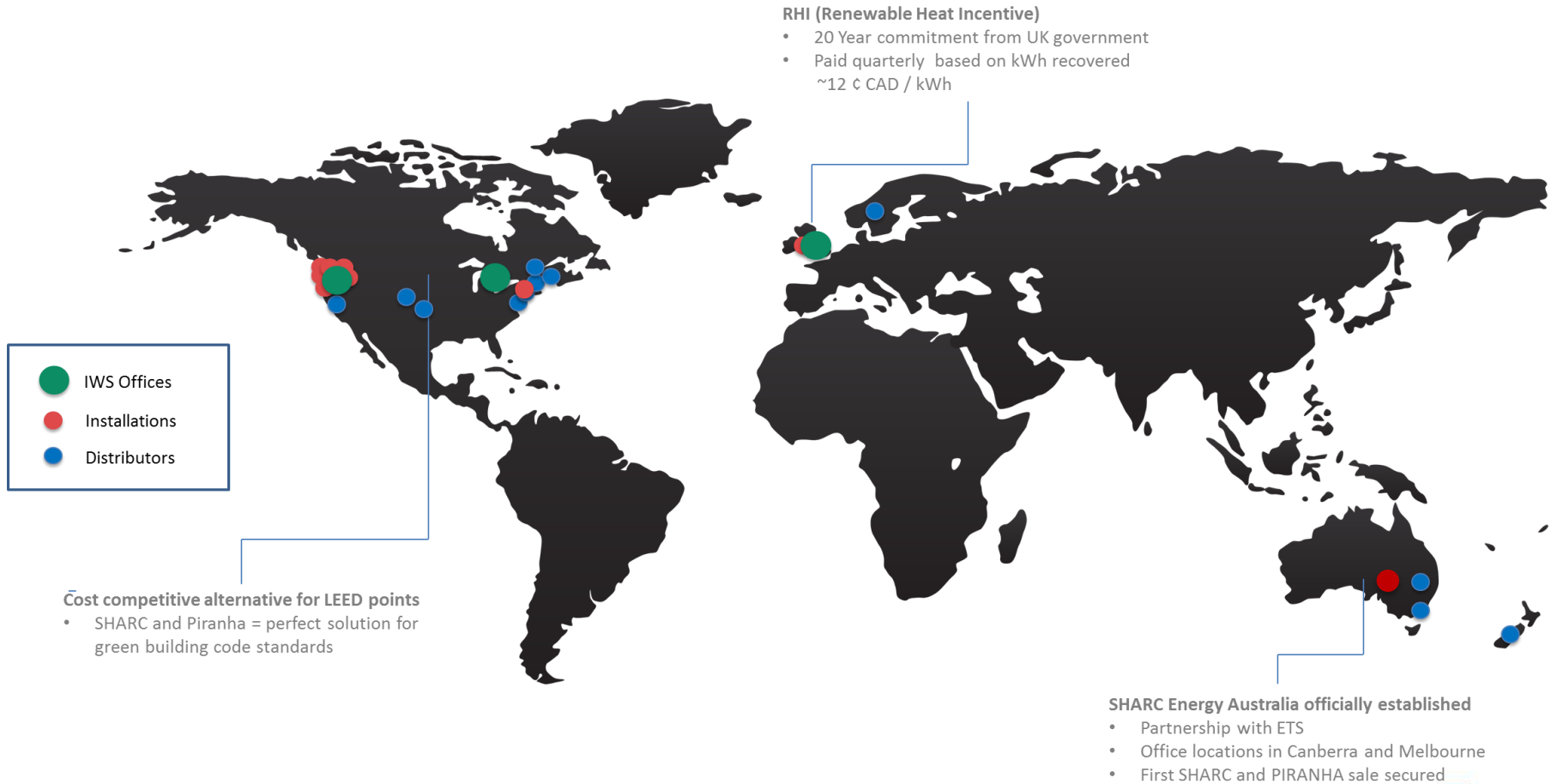
What is the value of wastewater?

Company Overview:

- Based in Vancouver, BC
- Founded in 2010 by a team of engineering professionals with HVAC & geo-exchange experience
- Range of "SHARC" and "PIRANHA" units for different size applications
- SHARC Energy Systems is the UK division of IWS – Established in 2014 & a wholly owned subsidiary
- IWS is publically traded in **Canada** (CSE:IWS) **USA** (OTC:INTWF) **Germany** (Frankfurt: IWI)



IWS SHARC Global Presence:



Where we have installed :



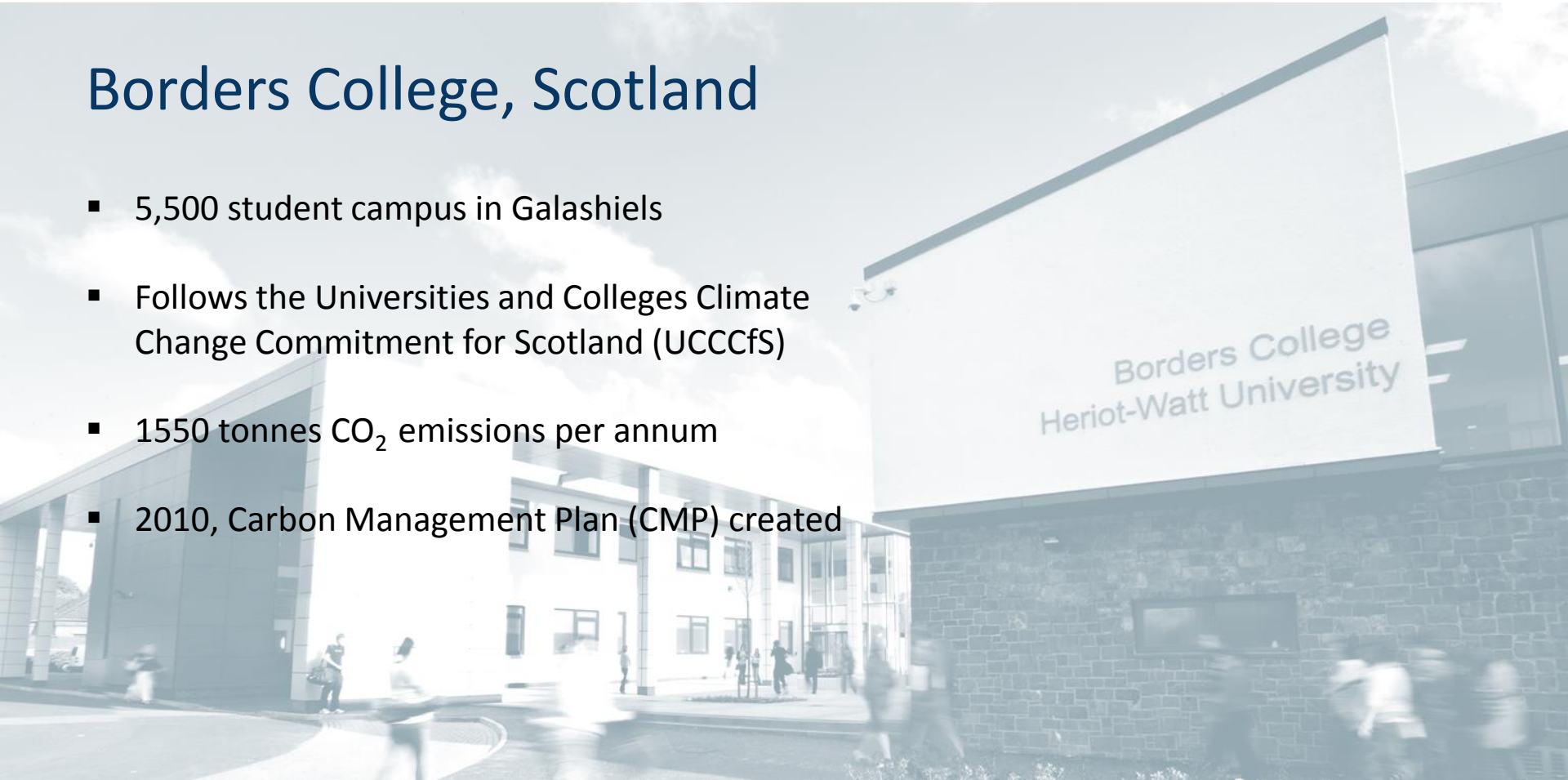
- Canada, US , UK, Australia:
 - Metro Vancouver Residential Buildings
 - Richmond City Lift Station
 - Sechelt Sewage Treatment Plant
 - New Jersey Sewage Treatment Plant
 - Australia Wool Test Facility
 - **Borders College, Scotland**

- Broader international interest developing:
 - Australia
 - New Zealand
 - Korea
 - Sweden



Borders College, Scotland

- 5,500 student campus in Galashiels
- Follows the Universities and Colleges Climate Change Commitment for Scotland (UCCCCs)
- 1550 tonnes CO₂ emissions per annum
- 2010, Carbon Management Plan (CMP) created



Goals of the CMP

- Reduce in CO₂ emissions by at least 25%
- Replace existing heating system
- Follow a sustainable business model



The SHARC

- For New Construction & Retrofits
- COP 3.5-4
- DHW, Space Heating, Air Conditioning, Sewer Cooling
- Range of models for different flow requirements



The Borders Project

- One SHARC 660 (500GPM) Unit
- Retrofit over existing buildings
- Tie in with nearby town sewer



Results

- Green Investment Bank funded capital outlay
- CO₂ emissions reduced by 150-170 tons
- SHARC provides 95% of campus heating



Upcoming Projects in Scotland

- £9.8 million grant for Low-Carbon Infrastructure Transition Programme
- Leisure centres, libraries, commercial spaces
- Completion by Sept. 2018

Conclusion

- UK's first sewage heat recovery system
- Significant energy savings compared with gas with 20 year HPA
- New procurement model for educational institutions

Thanks For Your Time

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