GoGreen: Decentralizing Electrical Energy in St. James Town

INTRODUCTION

St. James Town's vulnerable residents face steep electricity rates of $0.25/kWh and frequent, weather-driven power blackouts, all while traditional energy generation worsens climate change. To solve this, our project proposes installing spherical, omnidirectional wind turbines on the face of high-rises. Designed specifically for unpredictable urban wind patterns, these innovative turbines feature unique vents that catch wind from any direction to generate power. The clean electricity is then synchronized through an inverter and safely injected directly into the residents' electrical panels, reducing energy bills, providing a reliable power source, and contributing to a greener, decarbonized future for the community.

OUR MISSION: POWER TO THE PEOPLE



WE DON'T HAVE TO CHOOSE BETWEEN OUR POCKETS AND OUR PLANET.

The wind belongs to everyone. We are taking an overlooked shared resource and turning it into security for our homes. By acting locally, we are creating a global blueprint for a future that works for the many, not few.

WE HEARD YOU. WE BUILT THIS.

Your concerns guided the design. The wind provides the rest.

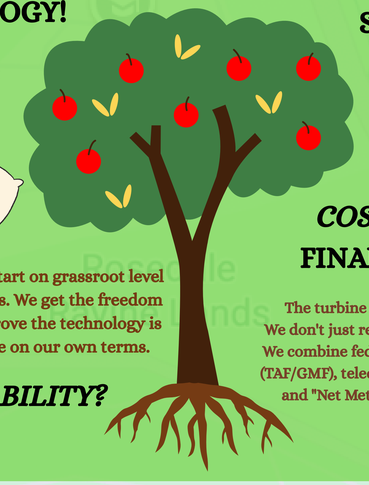
LOUD?
SILENT TECHNOLOGY!

These are spherical "Urban Trees." Designed to spin without vibration or noise, they are quieter than the traffic on the street below.



WHAT DO I GET?
SECURITY!

Wind > Table.
That's $753 back in your pocket every year. We don't just save energy; we pay for your groceries.





We start on grassroot level pilots. We get the freedom to prove the technology is safe on our own terms.

COSTLY?
FINANCED!

The turbine pays for itself!
We don't just rely on one source.
We combine federal green grants (TAF/GMF), telecom lease income, and "Net Metering" credits.





STRATEGY? RELIABILITY?
PILOT!

Triangular Vents

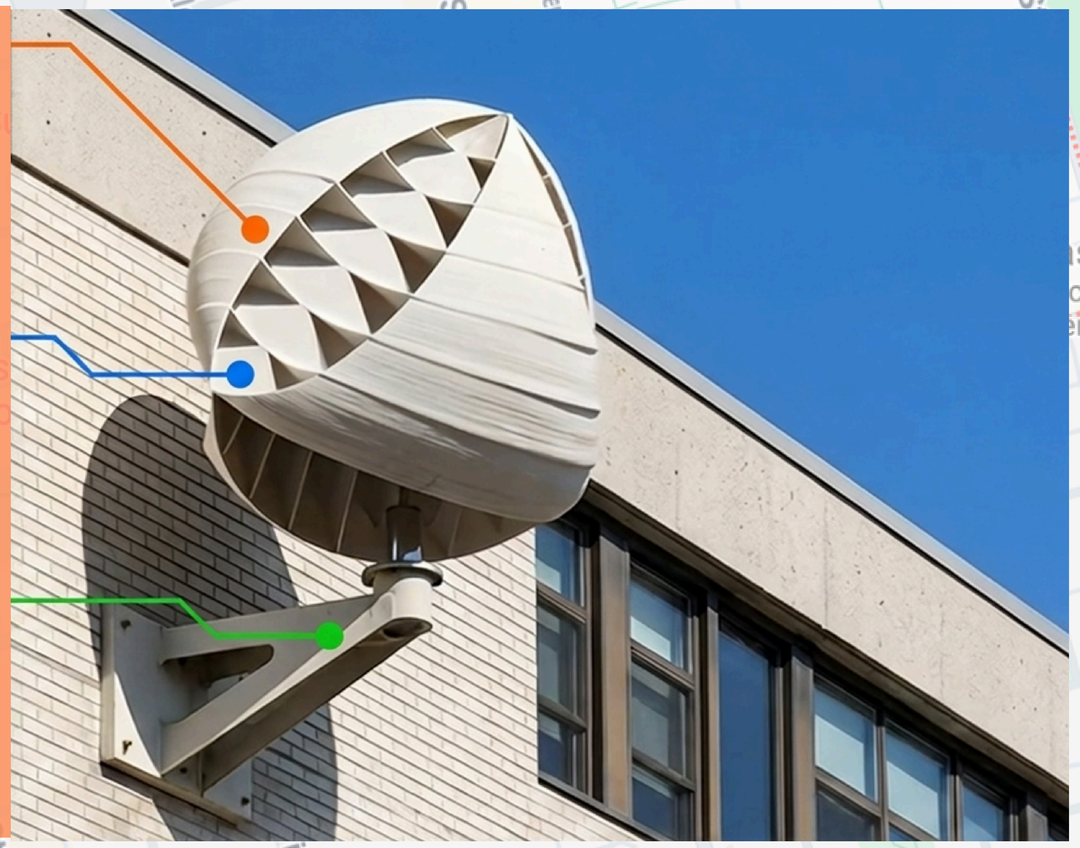
Captures multi-directional wind (horizontal and vertical) utilizing the Venturi effect to handle unpredictable urban wind patterns.

Spherical Blade

The blade has a spherical shape that spins thanks to the torque generated from the air entering the vents.

Wall-Mounting Bracket

A triangular structural support specifically engineered for high-rise building facades, intentionally bypassing rooftop placement to maximize spatial efficiency.



FINANCIAL FEASIBILITY

Initial Capital Expenditure

Gross CapEx
$1,862,000
Total Upfront Cost

50%

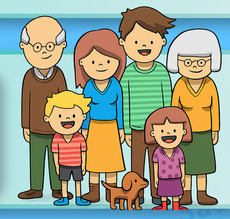
Net CapEx
$931,000
Actual Cost After Funding

Annual Energy Output

380
Wind Turbines

1,140,000 kWh
Clean Electricity Generated

Household Impact:
$ 753/Year
Average Annual Savings



Annual Electrivity Savings
$ 228,000
Gross Value of Energy Offset From The Grid

PROJECT LIFELINE

4.8 Years
BREAK-EVEN
Project Paid for Itself

15 Years

Total Turbine Lifetime Benefit
$1.9 Million
Cumulative Net Value in 15 Year Lifespan

7 AFFORDABLE AND CLEAN ENERGY · 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE · 11 SUSTAINABLE CITIES AND COMMUNITIES · 13 CLIMATE ACTION

Team C19: Rajendra Brahmbhatt (Software ENG) - Steven Chen (Computer ENG) - Aahana Dube (Psychology Hons.) - Nicolas Madronero (IT Hons.) - Nisha Panai (Psychology Hons.) - Christine Wang (Business)

eC4 Cross Campus Capstone Classroom