

Smart Solar for Smart Cities

The Changing Landscape in Municipalities

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Smart Cities

The world's **smart Infrastructure** is driving a major build out of infrastructure – it's all wireless, except for that last cable – the power cable.



Examples of Smart Off-Grid Systems



Street, park, roadway lighting

Security/CCTV cameras, other security devices

Mobile phone charging stations

Smart traffic management, congestion relief

Air quality/pollution and chemical monitoring

Smart parking systems

WiFi hotspots

Telecom communications infrastructure

THEN, NOW & THE SOLUTION

TELECOM IN THE 1970S



- Massive & Costly
- Wired Infrastructure

AFTER THE WIRELESS REVOLUTION



- Centrally Managed
- Low Cost
- Wireless Infrastructure

POWER TODAY



- Massive, Costly
- Inflexible
- Wired Infrastructure

AFTER THE NEXT POWER REVOLUTION



- Centrally Managed
- Low Cost
- Wireless Power Anywhere
- Off-Grid

Smart Off-Grid



Smart Off-Grid Benefits

- Lower costs and smart economics
 - Lower upfront onetime cost
 - Lower ongoing maintenance costs
 - Longer system life
- Highest reliability
- Optimized energy usage
- Sustainability - Reduces pollution and enhances the environment
- Can be installed anywhere – in any jungle
 - In the Amazon jungle at the top of a mountain where grid power just isn't possible
 - In the urban concrete jungle of Bloor Street where grid power is 15' away but would cost \$35,000 to cut through concrete, walls, across locates

How We Fill the Gap

CLEAR BLUE'S BRAND PROMISE

Brand Promises



Maximum uptime



Longest Life



Easy to install
and maintain

Differentiators



Energy forecasting
and management



Troubleshooting
and remediation

Industry competitors make some promises, however, the risks of performance still sit with the customer.

Clear Blue Technologies is standing behind our technology and service. We are putting our money where our mouth is. We are the first in the industry to offer Energy-As-A-Service.

The Gap:

Customer Business Models

When municipalities use the electricity grid to power their infrastructure, they turn over the ongoing power delivery responsibility to the local power company.

When municipalities use off-grid power, they must become power operators themselves and don't necessarily have the skill, resources, and budget to staff this new responsibility.

With Clear Blue's EaaS service, we are taking the next step in delivery of full power service for Off-Grid systems.

Introducing: Clear Blue's Energy-as-a-Service

- The Energy-as-a-Service model delivers resilience, environmental sustainability, and predictable costs.
- Energy experts deliver power for reliability, load management, and optimization, shifting the burden from municipalities and businesses.
- Clear Blue stands behind its brand promise with contractually guaranteed promise of service and TCO.



Energy-as-a-Service is a Growing Market

According to Navigant Research, the annual global market for commercial and industrial Energy-as-a-Service is estimated to reach \$221.1 billion by 2026.



Source: Technavio

How Energy as a Service Works

- It follows the same model as a grid project.
- One time construction of street light is done by the municipality and/or developer
- Once commissioned, the ongoing delivery of the power is Clear Blue's responsibility, risk and cost
 - Energy components – solar, batteries, electronics are all the responsibility, risk, and cost to Clear Blue
 - Failure of components, battery replacement, all responsibility of Clear Blue
- Customer pays the same amount up front as before. First three years of the service is included in the upfront price. Starting in year 4, customer pays an annual fee, flat rate

LOGIC & SOLUTION EXAMPLES

Solar Off-Grid Light without EaaS

- “Expected Life” of Batteries – 5-7 years
- “Expected Life” of Electronics – 10 years
- “Expected Life” of Solar Panel – 25 years

Warranties – manufacturer factory defect protection only

- Solar Panel – 10/25 years, difficult to enforce
- Electronics – 5 years, Clear Blue stands behind it
- Batteries – 1-7 years, declining value against “List price”, only if not stressed in field, factory defect only, difficult to enforce

Early end of life – risk to customer TCO is entirely with the Customer

Solar Off-Grid Light with EaaS

- Guaranteed Battery Life – 6 years
- Guaranteed Electronics Life – 10 years
- Guaranteed Solar Panel Life – 25 years

Enforcing warranties is Clear Blue problem not Customers

Customer gets guaranteed TCO, pays an annual fee starting in year 4 (Year 1 -3 is included in one time)

Clear Blue is responsible to deliver the energy/power to the system. All battery, electronics, and solar panel issues/replacements/failures/life expectancy are responsibility of Clear Blue*



Smart Off-Grid Lighting



Brand Promises

-  Maximum uptime
-  Longest Life
-  Easy to install and maintain

Differentiators

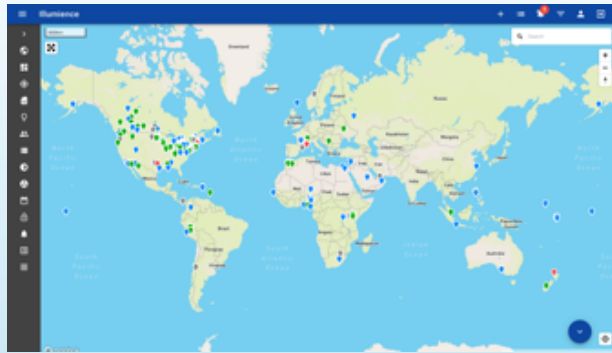
-  Energy forecasting and management
-  Troubleshooting and remediation

Why Does Smart Off-Grid Matter?



Most Cost Effective & Reliable System in the Market

Smart Off-Grid Technology



Brand Promises



Maximum uptime



Longest Life



Easy to install and maintain

Differentiators



Energy forecasting and management



Troubleshooting and remediation

Battery Life
Patents &
Innovation

Predictive
Energy
Forecasting

Troubleshooting
& Remediation

Potential
Energy

Smart
Management & Control

Big Data
Analytics

Lighting System Options

- Beautiful metal or spun concrete poles
- Pathway, parking lot, roadway or street light heights
- Use any luminaire - supports both A/C and D/C lights
- Variety of battery technologies
- Single, dual solar or solar/wind hybrid configurations
- Motion detection option
- Smart City / Internet of Things device support - WiFi, security cameras, pedestrian counters, sensors and more

Solar Lighting Example Customers: North America

Govt Agencies

Municipalities

Businesses / Orgs.

Schools



SAINT JOHN



UNIVERSITY OF
TORONTO



BROOKS SCHOOL





City of Algonac
Michigan





Hamilton





Town of Oyster Bay, New York



Park and
gazebo lighting





VILLAGE OF
New Maryland

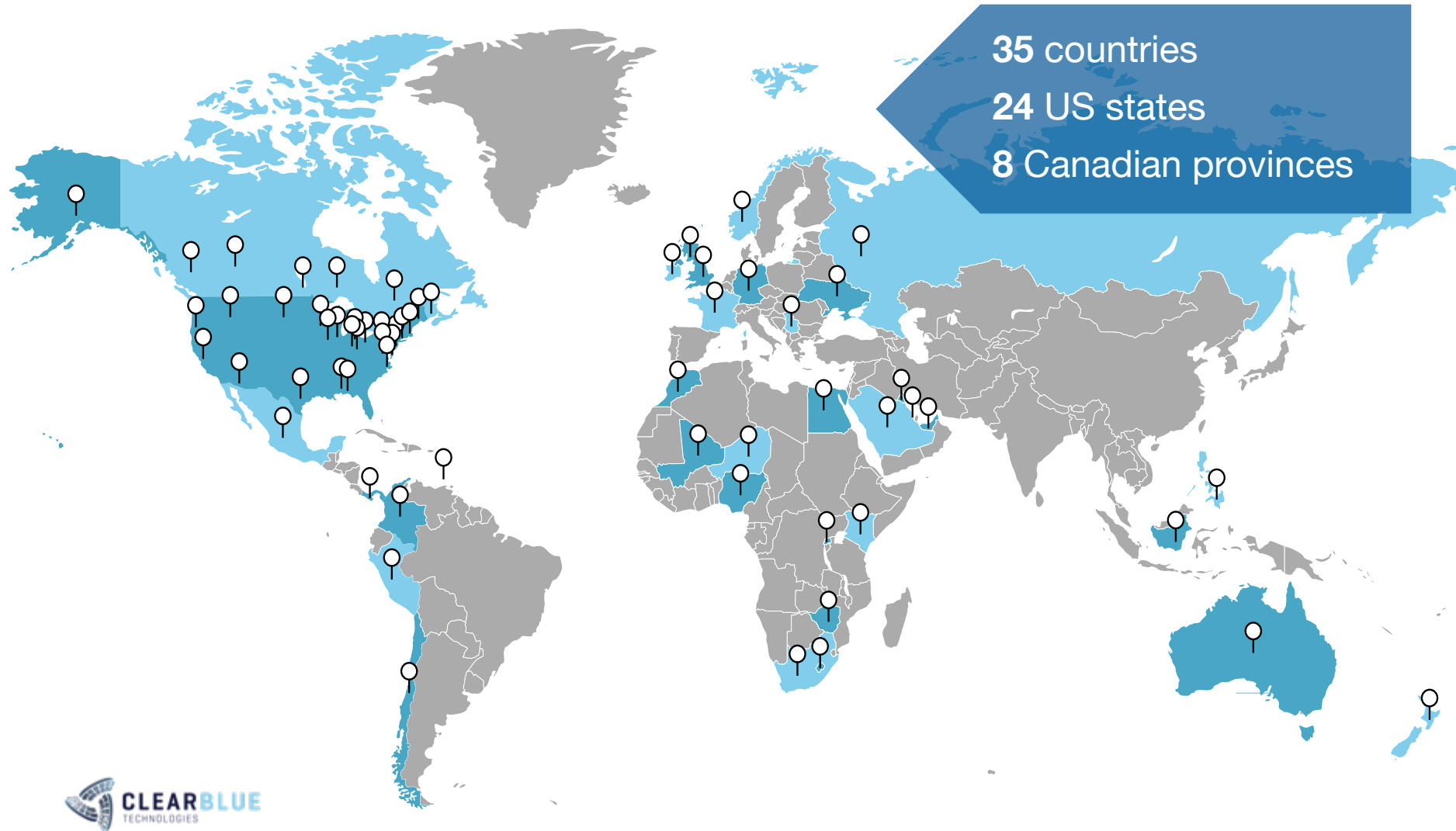
40 poles Bloor West Village, Toronto

"We are excited to collaborate with Clear Blue for this project, marking another step forward for our BIA which will celebrate its 50th anniversary next year. Clear Blue's Smart Off-Grid lighting systems are far superior to the standard solar lighting that was in place beforehand, and are a highly reliable, cost-effective solution for our community. In addition to their technical excellence, we found the team at Clear Blue to be highly collaborative and supportive throughout the process and we are pleased with the end result."

David Howitt, chairman of the Bloor West Village BIA



Where in the World Is Clear Blue?



THANK YOU