



AlphaStruxure

A Carlyle Group and Schneider Electric Company

Energy as a Service for decarbonization goals

**Greater Philadelphia Association for
Engineers – Lunch Meeting
February 2022**

The trusted partner in energy transformation.

The energy transition is creating challenges and opportunities

Organizations must navigate a complex and rapidly evolving energy landscape



Costs

65%

Increase in U.S. utility transmission and distribution costs in the past decade



Sustainability

100% by 2035

- **Federal:** 100% clean power by 2035
- **State:** Renewable Portfolio Standards for 30+ States
- **Corporate:** Scope 1 and 2 reduction targets



Resilience

\$600B

Economic damage in the U.S. from large-scale climate and weather disasters between 2016-2020



Reliability

212

Major “electric disturbance events” that took place in from January to June of 2021.

Challenges are interrelated and create feedback loops

Key questions around decarbonization

What's the first thing you think about?

A need to decarbonize

- What are my sustainability goals?
- What will this cost?
- Do I use my precious capital for energy infrastructure or my core business?

But here's what gets missed...

Drivers for successful decarbonization

- Which technologies and energy sources are ready today?
- How important is resilience and reliability to my operation?
- Could EaaS reduce my risk and expedite my transition?
- Can I benefit from outside capital and maintain flexibility?

Challenge and opportunity

Challenge



How can we decarbonize an organization's operations without compromising reliability, resilience, and cost-stability?

Opportunity



Energy as a Service is an opportunity to decarbonize in a way that guarantees emissions reductions, reliability, resilience, and cost-stability at no capital cost

Case Study: Montgomery County, MD

Brookville smart energy bus depot



Challenge:

- Maximize onsite renewable energy
- Ensure normal bus operations under any power circumstances
- Comprehensive and collaborative partnership
- Avoid utility tariffs and demand charges

Solution:

- Microgrid with onsite generation & multiple energy sources
- Energy as a Service
- Solar canopies and BESS

Results:

- **62% carbon emissions** reduction
- Lifetime greenhouse gas benefit of over **155,000 tons**
- **Uninterrupted service** in the event of extreme weather events or power outages
- **Long-term partner** to design, build, own, and operate fleet
- **Avoids utility tariffs and demand charges** for ultimate dispatch flexibility

Energy as a Service fleet electrification solution

Brookville smart energy bus depot visualization



Solar photovoltaic canopy provides cost-effective and predictable clean energy to achieve sustainability goals and enable bus fleet to “drive on sunshine”



1

Solar Canopy

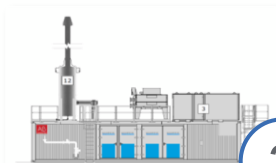
Battery energy storage optimizes energy utilization, maximizing on-site renewable energy usage



2

Battery Storage

Distributed generation provides low-carbon baseload energy while ensuring resilience, reliability, and guaranteed uptime



3

Distributed generation



4

EV Chargers

Pantograph and multi-dispenser chargers provides comprehensive charging solution for eBus fleet



5

Energy Control Center

Schneider ECC combines electrical distribution equipment and industrial controls into an intelligent Power Management System (PMS) to deliver autonomous microgrid solutions managing multiple energy sources and prioritized loads



6

Remote Control

AlphaStruxure network operations center (NOC) provides digital optimization and management of the end-to-end system

Energy Services Agreement (ESA) – no customer capital

Delivering benefits of on-site energy infrastructure through a simple, unified OpEx contracting approach



- Delivers long term energy performance outcomes on resilience, reliability, greenhouse gas reduction, and cost stability.
- Includes heating, cooling, and EV charging infrastructure.

Customer benefit – risk transfer

Benefits of Energy as a Service

Traditional routes for decarbonization brings complexity and risk

- Constrained capital budget and balance sheet limitations
- Trade-offs between sustainability and cost
- Inability to implement cost-effective maintenance strategies
- Increasing utility costs and demand charges
- Headaches tied to interoperability of multiple systems

EaaS can deliver a simplified and de-risked approach

- Third-party capital investment which expands scope and accelerates timeline
- Guaranteed outcomes in sustainability and resilience/reliability
- Long-term partnership includes optimized O&M for the asset's lifetime
- Cost-predictable energy lowering total cost of ownership (TCO)
- Future-proof deployment strategy and interoperability

Questions?



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