Long-Duration Energy Storage Delivers Carbon Reductions

March 2024

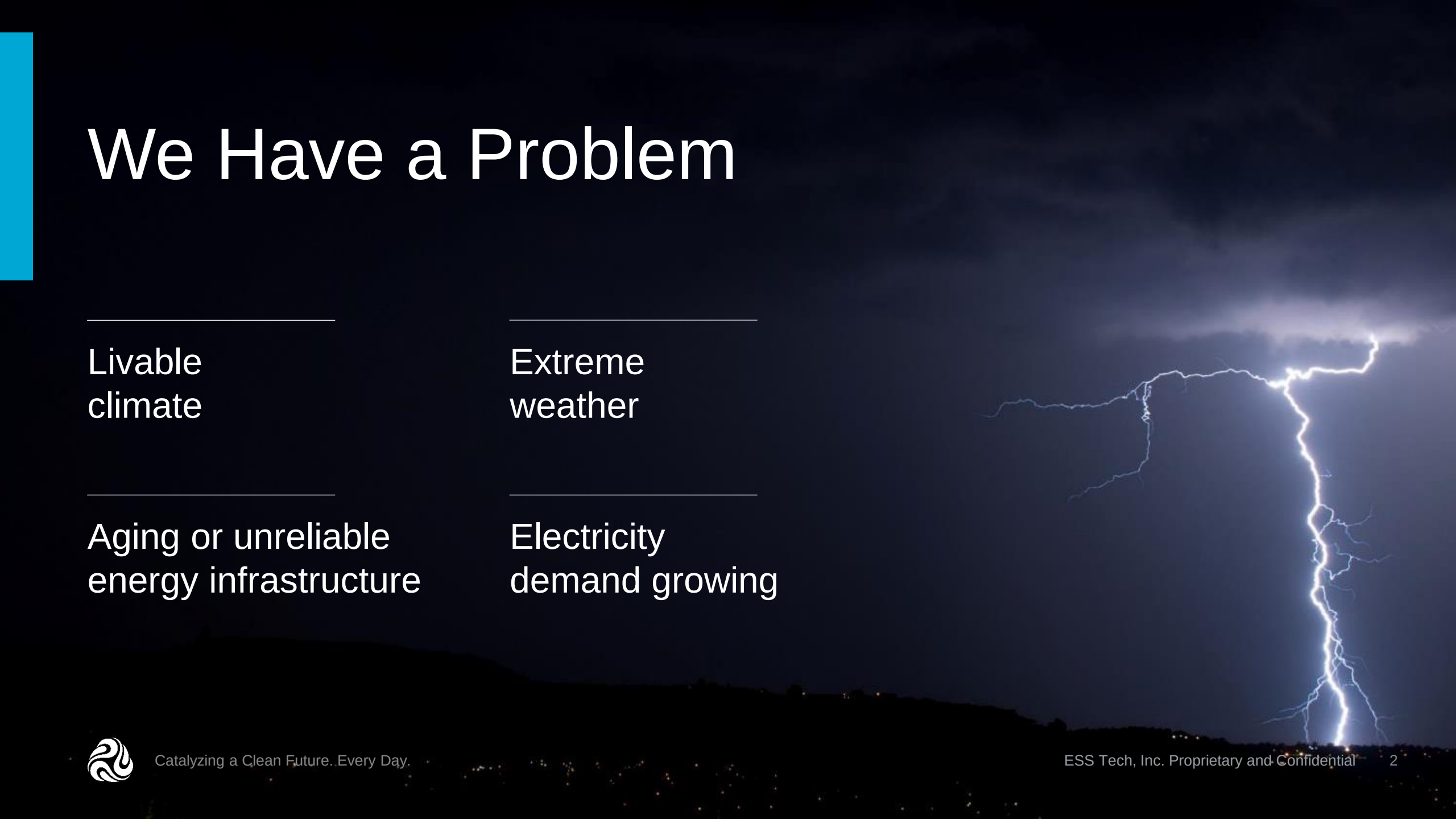
We Have a Problem

Livable climate

Extreme weather

Aging or unreliable energy infrastructure

Electricity demand growing



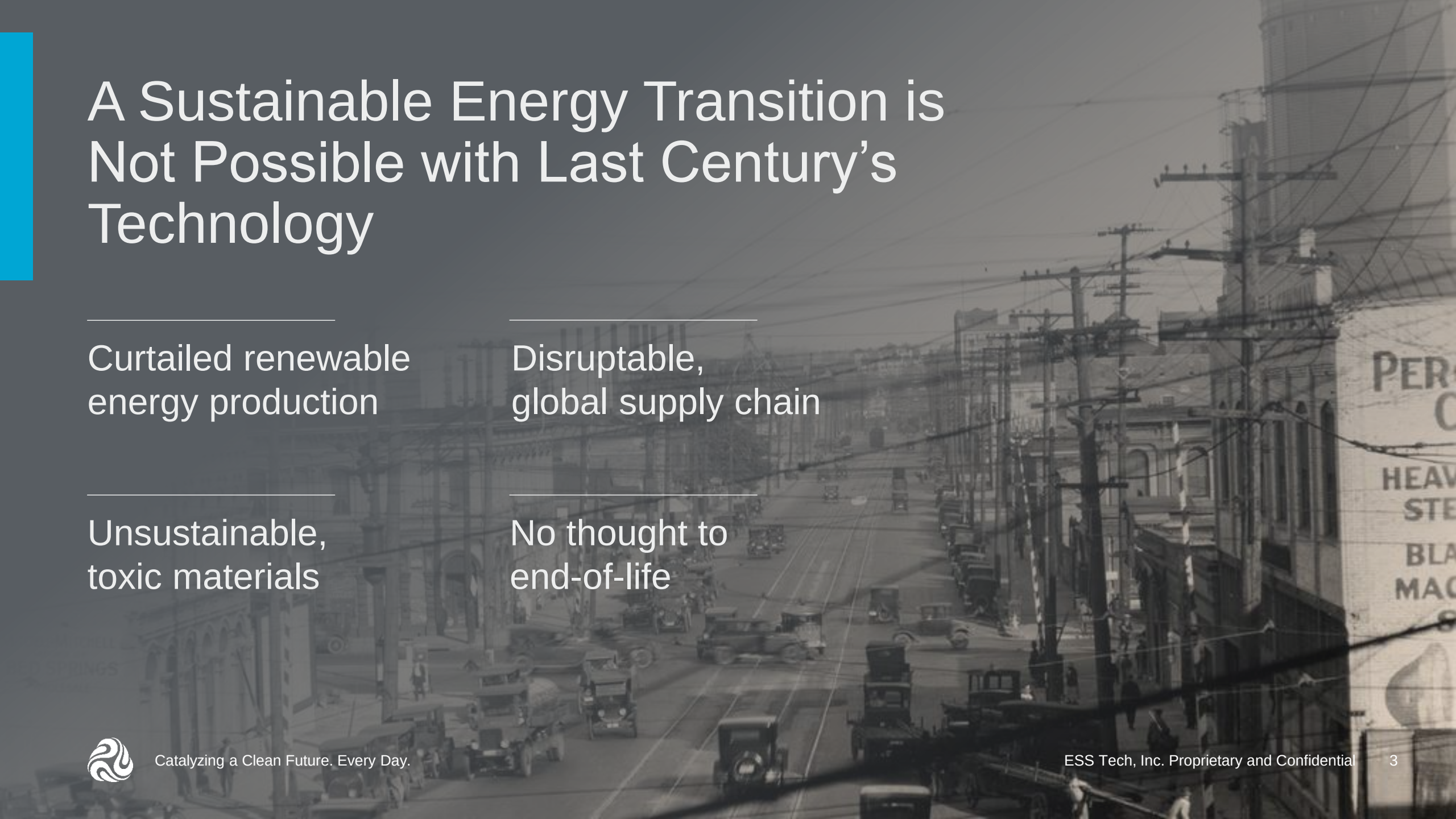
A Sustainable Energy Transition is Not Possible with Last Century's Technology

Curtailed renewable energy production

Disruptable, global supply chain

Unsustainable, toxic materials

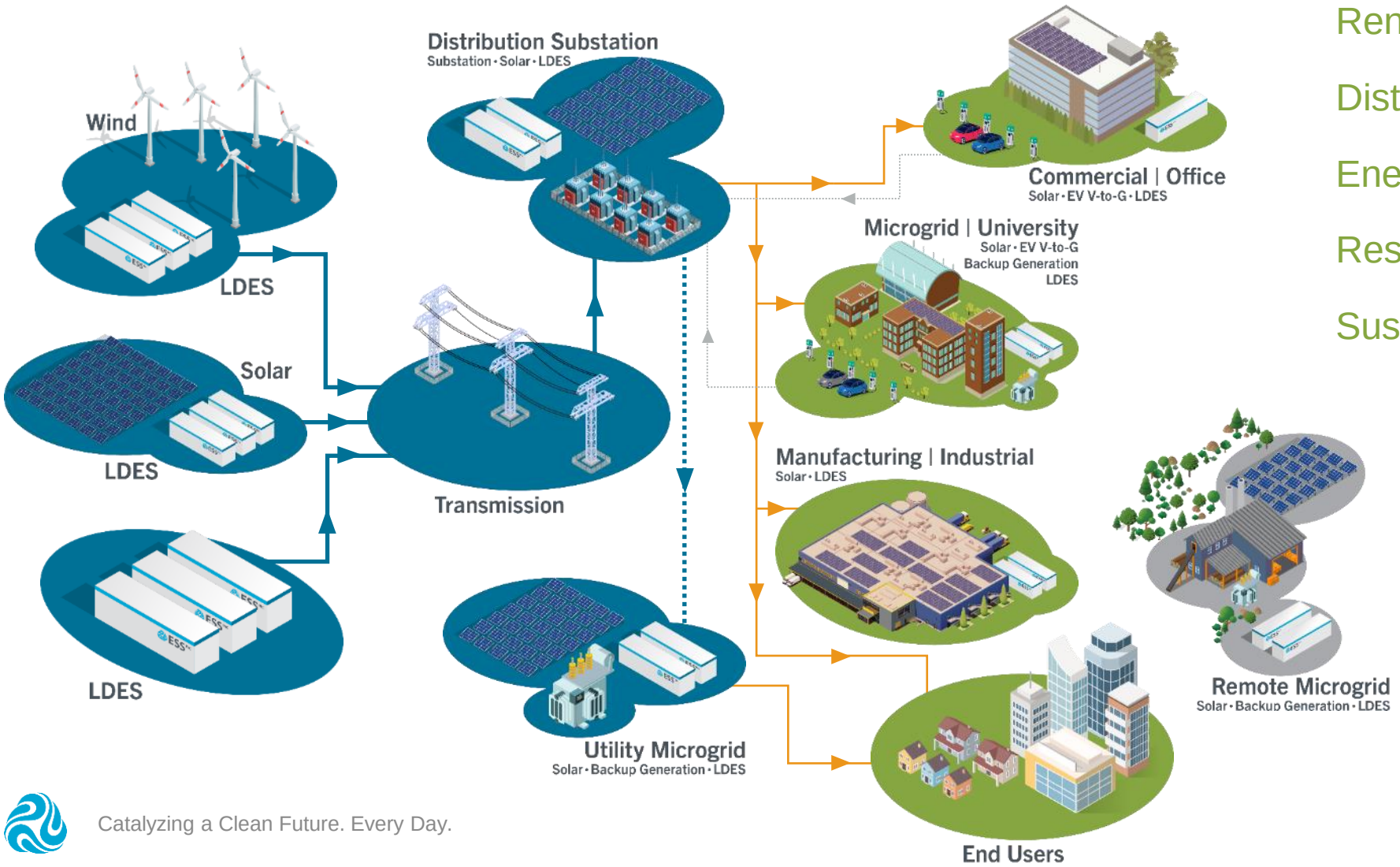
No thought to end-of-life



Resiliency and reliability

are harder with intermittent resources.

Where Long-Duration Energy Storage Fits in our Energy System



- Renewable energy smoothing
- Distributed energy resources
- Energy cost savings
- Resiliency and reliability
- Sustainability goals

ESS Technology Serves a Wide Range of Use Cases

Green Baseload Energy

Use case

- Replaces coal or fossil baseload generation with renewables
- Scalable support for critical infrastructure

Project benefits

- Enables retirement of fossil/coal power stations and deep grid decarbonization
- Eliminates CO2
- Creates and supports local employment

Airside Operations

Use case

- Electrification of airside ground operations
- EW will store energy for a fleet of E-GPU's, replacing planeside diesel generators

Project benefits

- Safely supports passenger aircraft ground operations
- Reduced carbon emissions and improved ground-level air quality
- Supports Schiphol Group's ambitious 2030 carbon goals

Utility-Scale DER

Use case

- Standalone LDES storage for large-scale renewable integration
- DER for community resiliency and environmental justice

Project benefits

- Equipment supply surety that aligns with strategic infrastructure needs
- Local economic development
- Enables deep decarbonization

Distributed Generation

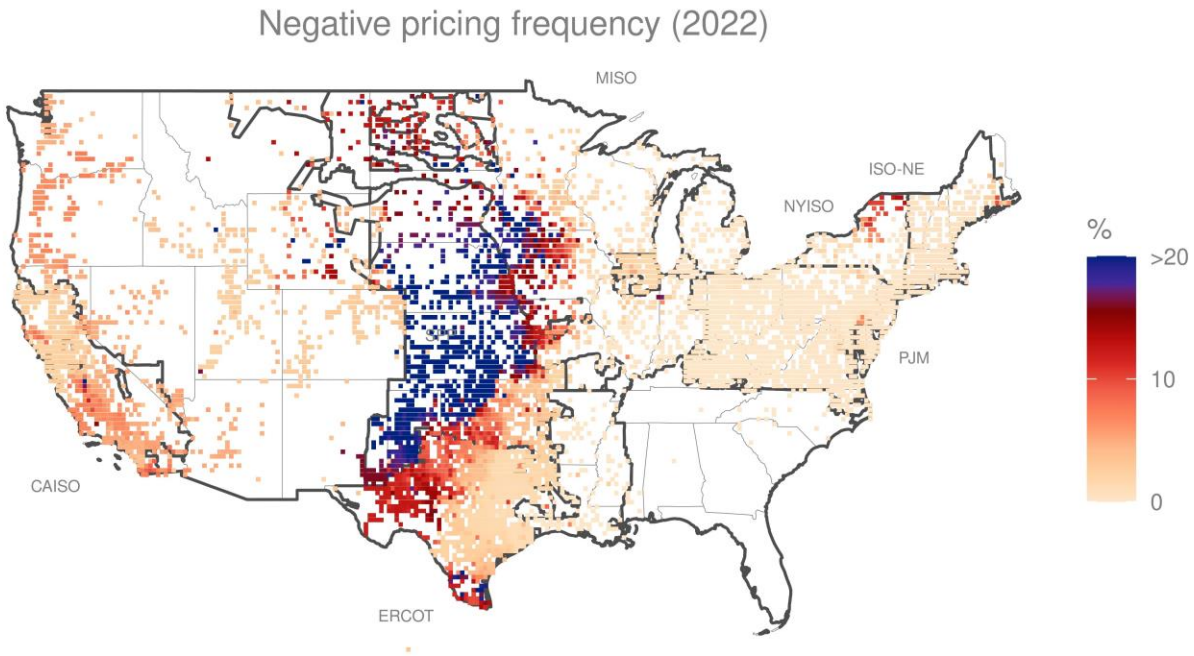
Use case

- Behind the meter microgrid
- Energy shifting, load management
- Resiliency

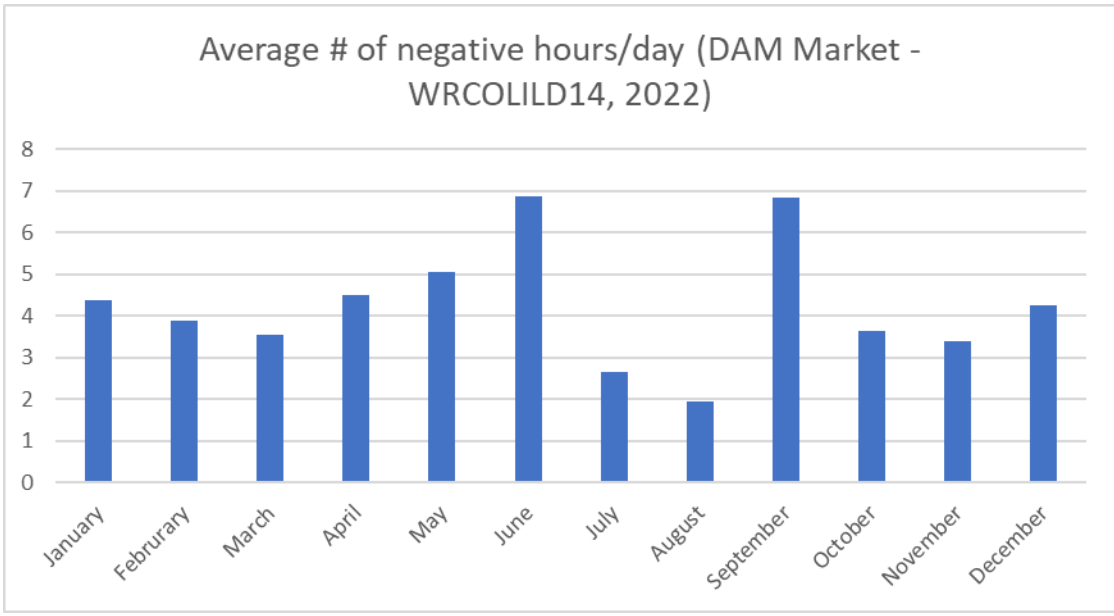
Project benefits

- < 5 yr. payback on energy cost savings
- >$800K in resiliency benefits

LDES for Grid Congestion = Reduced Carbon Emissions



Negative Pricing in SPP Presents Opportunity for LDES to Economically Reduce Carbon Emissions



Storing 4-8 hours of clean energy at select nodes can reduce price pressure and improve utilization of existing renewable assets.

Making this clean energy available for use when wind/solar generation declines will reduce the need for natural gas and peaking generation.

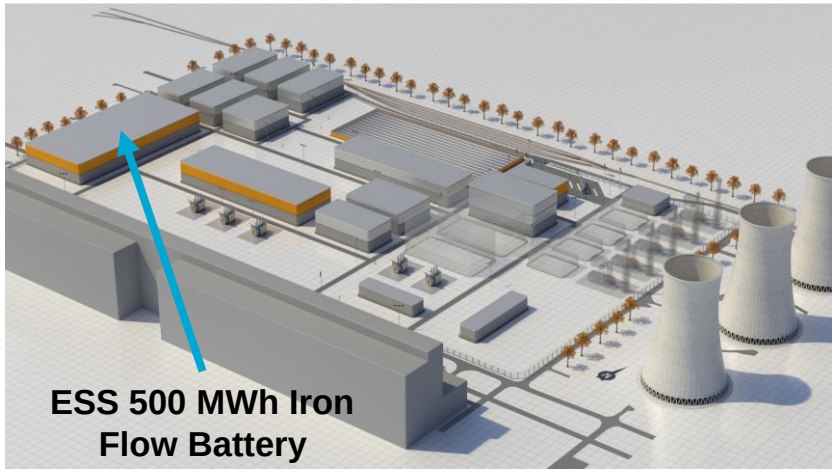
LDES as Green Baseload – Converting Coal Stations

Stanwell Power Station (Australia)

1 MW / 10 MWh pilot project at coal-fired power station to demonstrate role of IFB technology in clean energy transition.

IFB systems to be assembled in country, demonstrating flexible supply chain and delivering economic benefits.

LEAG (Germany)



IFB technology to enable largest clean energy hub in Europe on site of current coal mining and generation.

Project to deliver “Green Baseload Power” with:

7-14 GW of RE 2-3 GWh LDES Hydrogen

Local manufacturing enables long-term sustainable development.

How LDES Can Transform the Grid

What Customers Demand	ESS INC	Grid Benefits
Longer duration	• Up to 12 hours • No degradation or augmentation required	• Can replace coal and gas with solar and wind • Designed for utility-scale applications
Low cost	• Lower LCOS than other technologies • No augmentation required	• The first truly low-cost flow battery • In commercial production today
Power on demand	• Unlimited cycling • Flexibility allows multiple revenue streams	• Improved grid resiliency and flexibility • Enables multiple use cases
Safety, reliability, and bankability	• Certified UL 9540a • Wide operating temperature range • Munich Re insures technology risk	• Can deploy in a wide range of geographies • No HVAC needed
Sustainability	• Safe and sustainable • Easily sourced materials; recyclable components • “Plug and play” with 25-year design life	• Environmentally sustainable • Accelerates clean energy transition

Thank You

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