Powering the New Electric Economy
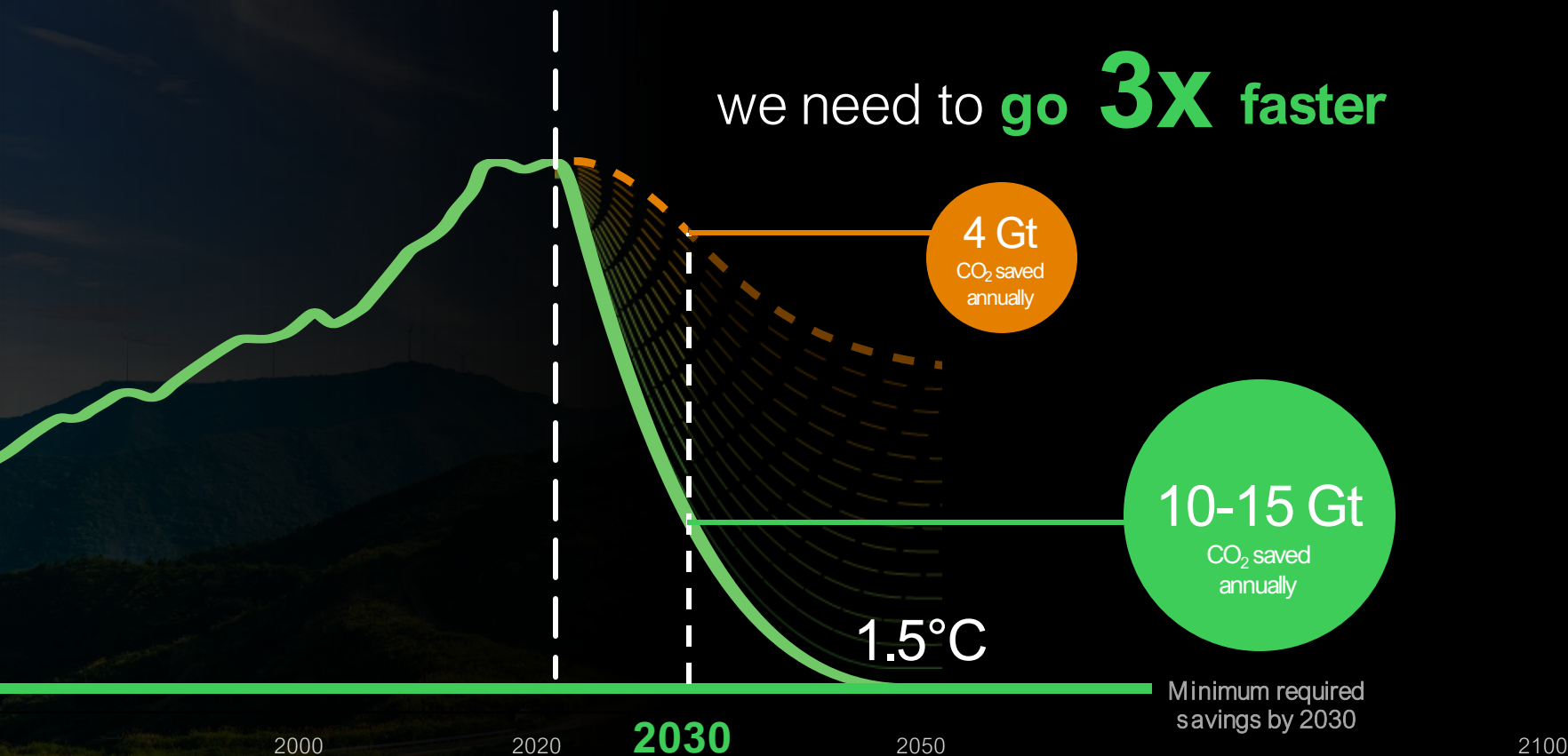
Zheng YIN
Executive Vice President, China & East Asia Operations
Schneider Electric

Our mission is to be
your digital partner
for sustainability and efficiency

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we need to **go** **3x** **faster**

4 Gt
CO_2 saved
annually

10-15 Gt
CO_2 saved
annually

1.5°C

Minimum required
savings by 2030

2000   2020   **2030**   2050   2100

Global Carbon Budget (2019); IPCC (2020), ETC, Making clean electrification possible (2021), Schneider Electric Research Institute
View includes industry process emissions, changes in land uses, such as deforestation

Despite challenges, 1.5°C is within reach using technology that exists today

We can get on track for net zero by 2050

Replace	45%
Electrify	30%
Reduce	25%

CCUS

Green Hydrogen

t →

Impact TODAY

Deployment TOMORROW

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Innovating for a more **sustainable** Thailand

Digital

- Digital Intelligence for resilient operations
- Opportunities to tap into the future
- End-to-end software lifecycle

Electric

- Electrify to decarbonize
- Future ready innovations
- Efficient and sustainable

Sustainable

- Green innovation
- Circular certified
- Technology in action

Efficient

- Ease of use to increase connectivity
- End to end integrations
- Sustainability in practice

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Digital

- Digital intelligence for resilient operations
- Opportunities to tap into the future
- End-to-end software lifecycle

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Digital makes the invisible visible, eliminating waste and driving efficiency

Share of Global Energy Use

36%	32%	26%	6%
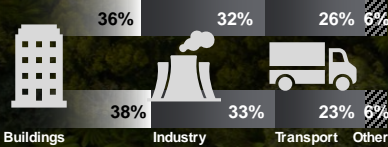
Share of Global CO_2 Emissions

38%	33%	23%	6%

Buildings   **Industry**   **Transport**   **Other**

20-30%
Carbon Abatement

20-35%
Energy Savings

5 Years

Paybacks are generally well below 8 years; **hospital & retail sectors** offer most attractive paybacks, at well below **5 years**

Buildings[1] use more energy and produce more CO_2 than any other sector

Digital technologies save energy and carbon across the entire existing building stock

Paybacks for incorporating digital technologies into buildings are generally relatively short

Source(s): Schneider Electric Sustainability Research Institute
1 Buildings sector includes residential, non-residential, and building construction

Public

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Electric

We drive efficiency & sustainability through life cycle digitalization

Design

Build

Operate & Maintain

IGE+XAO GROUP | ALPI | etap

RIB running together

PLANON AIM FOR THE OPTIMUM

EcoStruxure **Advisors**
Power · Building · Asset · Microgrid · Resource · Plant · Machine

AVEVA™ Process Simulation	**AVEVA™** E3D Design
AVEVA™ Asset Information Management	
AVEVA™ 3D Asset Visualization	

AVEVA™ Enterprise Asset Management

AVEVA™ Unified Supply Chain

AVEVA™ System Platform
formerly Wonderware

AVEVA™ Plant SCADA

AVEVA™ Manufacturing Execution System
formerly Wonderware

AVEVA™ Production Management

AVEVA™ Predictive Analytics

AVEVA

OSIsoft

PI System – agnostic platform for data collection, historization and analysis

EcoStruxure Innovation At Every Level — Edge Control

EcoStruxure Innovation At Every Level — Connected Products

AVEVA and the AVEVA logo are a trademark or registered trademark of AVEVA Group plc in the U.S. and other countries

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Public

Centralized & cloud-based

energy & sustainability data management platforms to monitor Swire global portfolio over **600** locations and **13,000** AuM (Assets under Management)

EcoStruxure™
Innovation At Every Level

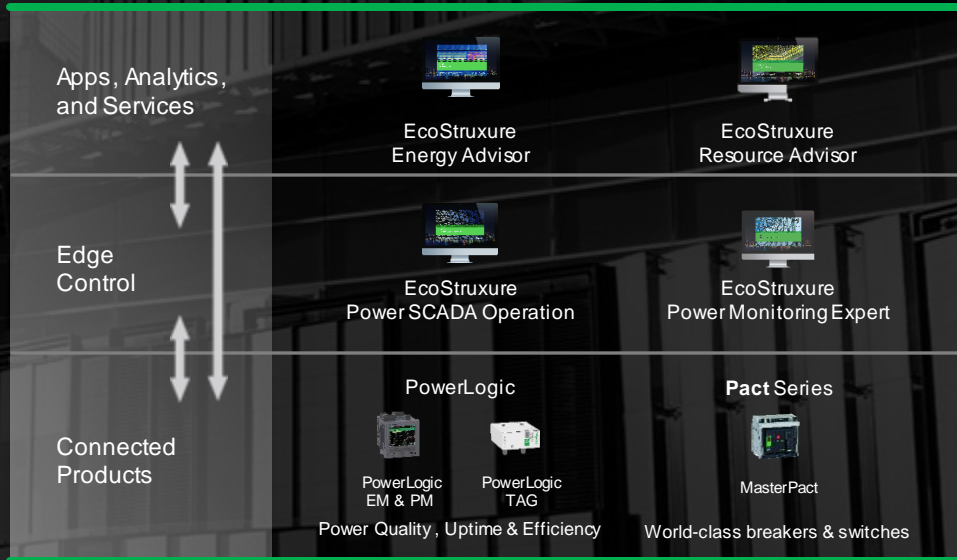|		
Apps, Analytics, and Services	EcoStruxure Energy Advisor	EcoStruxure Resource Advisor
Edge Control	EcoStruxure Power SCADA Operation	EcoStruxure Power Monitoring Expert
Connected Products	PowerLogic	**Pact** Series

PowerLogic EM & PM   PowerLogic TAG

MasterPact

Power Quality, Uptime & Efficiency

World-class breakers & switches

Acting on decarbonization insights arising from digitize solutions and achieve over **10%** energy savings accordingly

SWIRE

SWIRE PROPERTIES 太古地產

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

GRESB

MSCI ESG RATINGS — AAA
CCC | B | BB | BBB | A | AA | AAA

Dow Jones Sustainability Indices

Hang Seng Corporate Sustainability Index

CDP

1ˢᵗ HK & China
developer to have 1.5°C-aligned SBTi approved

Global Sector Leader
in mixed used development category

AAA
5 years in a row

1ˢᵗ in Asia and **7ᵗʰ** globally

1ˢᵗ 5 years in a row with **AAA** rating

A- in 2022 reporting

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Electric

- Electrify to decarbonize
- Future ready innovations
- Efficient and sustainable

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Electricity makes energy green

Efficiency of energy forms end-to-end
(based on data extracted from World Energy Outlook 2019, in TWh)
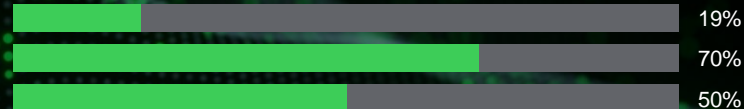
■ : Fossil Fuels   □ : Other Energy Forms   ■ : Renewables (Wind, Solar, Other Renewables)

Direct fossil fuel uses incur ~2/3 of efficiency losses from primary to useful energy

FOSSIL FUEL (DIRECT USE)	Primary Energy	Final Energy	Useful Energy	ROUND-TRIP EFFICIENCY	
Oil	1	0.94	0.19		19%
Natural Gas	1	0.82	0.70		70%
Coal	1	0.72	0.50		50%

Once generated, electricity incurs only ~5% of losses in transmission & distribution

ELECTRICITY	Primary Energy	Final Energy	Useful Energy	ROUND-TRIP EFFICIENCY	
Natural Gas	1	0.33	0.31		31%
Coal	1	0.33	0.31		31%
Bioenergy	1	0.33	0.31		31%
Nuclear	1	0.33	0.31		31%
Hydro	1	1	0.95		95%
Solar, wind, other renewables	1	1	0.95		95%

Electricity generated with renewables are almost **100% efficient** end-to-end

	Primary Energy	Final Energy	Useful Energy	ROUND-TRIP EFFICIENCY	
All energy forms	1	0.70	0.40		40%

Public

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Electrify our energy usage

EVlink Pro DC – Highly reliable and smart charging station for increased efficiency and sustainability

Multiple Applications

For home, work, destinations, and fleets

Connected

Enables remote monitoring and smart charging

Sustainable

Green Premium certification

Public

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Sustainable

- Green innovation
- Circular certified
- Technology in action

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Sustainability made easier

RM AirSet
SF6-free switchgear
and recovery services

Green Premium Products
75% of our products with superior
environmental performance

Circular Certified Products
Make the most of your materials by
using circular ready products

Green Premium™ — Sustainable performance, by design

Circular Certified

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Enabling our own **buildings of the future** – Kallang Pulse, Schneider Electric's East Asia HQ

Building Age
26 Years

Total Gross Floor Area
18,583 m^2

Achievements

- **100%** renewable energy
- **47%** energy reduction (2021)
- **3,700m^3** H$_2$O saved/year
- **BCA Green Mark** Platinum
- SGBC-BCA **Leadership** in Sustainability & Performance
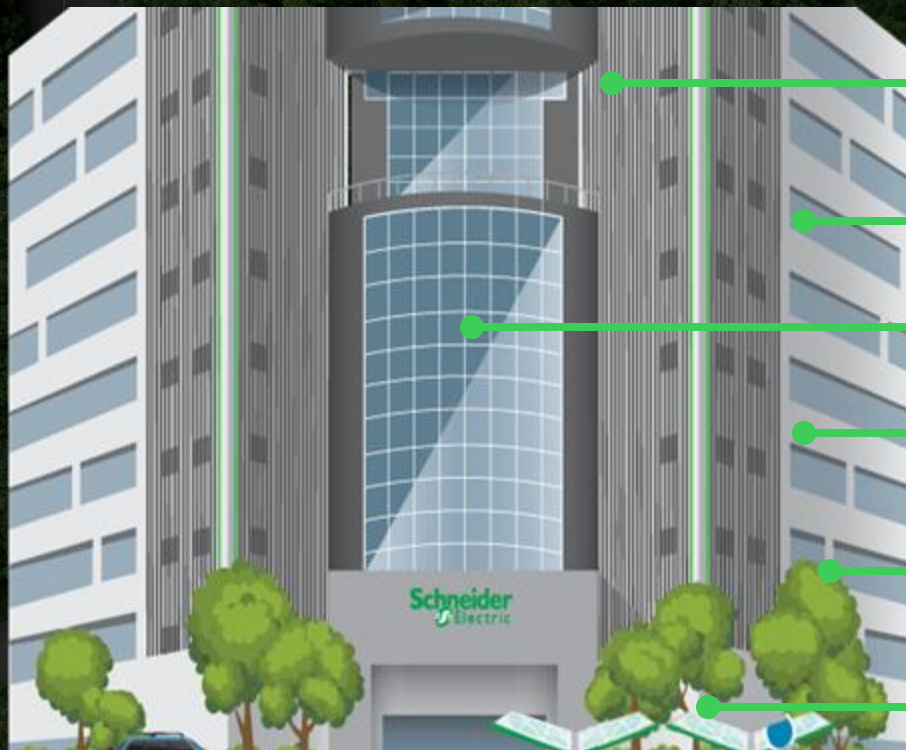
- 80 Rooftop Solar Panels
- Energy Efficient Windows
- EcoStruxure™
- Occupant App
- Magnetic Bearing Chiller With VSD
- EV Chargers & Electric Service Fleet

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Efficient

- Ease of use to increase connectivity
- End to end integrations
- Sustainability in practice

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Five Integrations disrupting efficiency

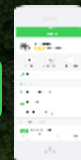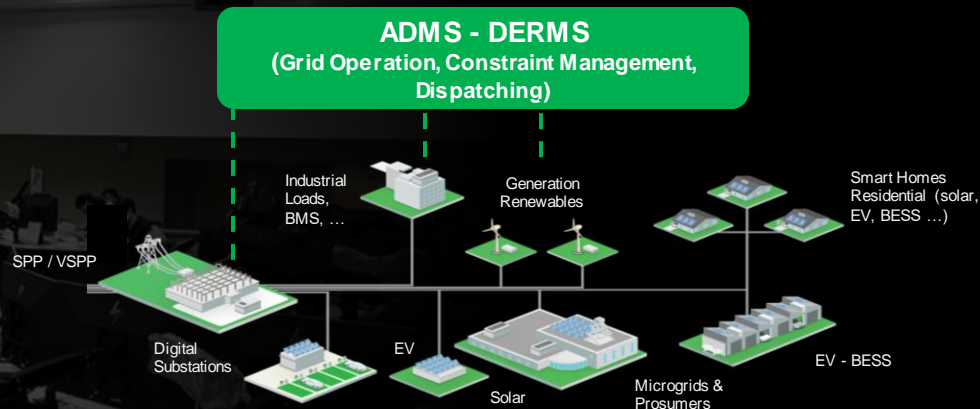| Energy | + | Automation | **Full efficiency** Energy and Process |
End Point	>	Cloud	**Full transparency** From every Endpoint on the shopfloor to the Cloud
Design & Build	>	Operate & Maintain	**One Digital Twin** Across the lifecycle
Site-by-Site	>	Unified Operation Center	**One Data** + One Enterprise Metaverse
Opportunistic Supply	>	Sustainable & Integrated Supply	**Cleanest and cheapest energy**

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Provincial Electricity Authority (PEA)

Providing effective and sustainable electricity service

Satisfying diverse electricity demands

EcoStruxure™ Grid
Innovation At Every Level

PEA is moving towards digital utilities with integrated network management solutions using **EcoStruxure Grid** by Schneider Electric

ADMS - DERMS
(Grid Operation, Constraint Management, Dispatching)

Industrial Loads, BMS, …

Generation Renewables

Smart Homes Residential (solar, EV, BESS …)

SPP / VSPP

Digital Substations

EV

Solar

Microgrids & Prosumers

EV - BESS

Functionalities & Benefits

30% Reduction
on SAIDI (Duration) & SAIFI (Frequency) interruption

20% Reduction
in network losses

~20 million meters
Real-time monitoring

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Industry Estate leading company in Thailand

Unified Operation Center (UOC)

UOC system covers 10 subsystems, allowing all-time monitoring of all valuable assets throughout 10+ Industrial Estates

Energy Optimization

Reduce operating costs and workload of employees

75t CO2e

Reduction per year of direct GHG (Scope 1) from reduction of travel

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10 Actions to Accelerate Energy Efficiency 10X faster

IEA International Energy Agency

1. Measure & Diagnose
Digitize consumption, connect and report in app for outcome-based performance

2. Awareness & Knowledge
Share practical applications, one-stop-shop advisories, and lighthouse examples

3. Skills
Upskill, reskill and increase resources to enable the transition, support Energy Service Company creation

4. Total Cost of Ownership
Total cost of ownership (TCO) for designers/architects and decision making on projects

5. Financing Gap
Bridge the gap between green capital expenditures (CapEx) to save brown operating expenditures (OpEx)

6. Government as a role model
Government buildings, infrastructure to lead by example

7. Regulation
Privilege incentive to stick, outcome-based incentives. If leveraging coercive technique, allow a predictable and long enough horizon

8. Reinforce the Grid
Need transmission lines faster to access renewables, especially in industrial applications

9. Big Items, Existing Tech
Start with the biggest-stake items, deploying what we have with the cheapest solutions

10. Build New Net Zero
Leverage existing, available technology for net-zero new builds

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Build a more **sustainable Thailand** with us

Digital

Electric

Sustainable

Efficient

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