IPBN

March 2022

KelTech IoT
Connecting & Powering a Sustainable World

The Challenges of our Generation

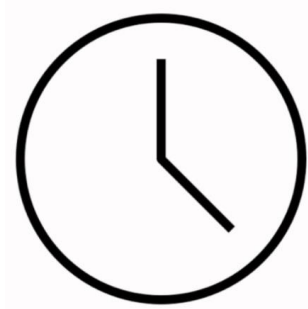**Worldwide drivers of change**

Climate Change

Connectivity Demands

Traditional communication & energy network deployments

Costly

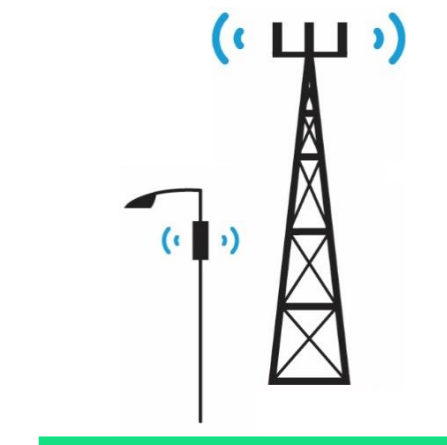Time-consuming

Not Sustainable

Unreliable

2

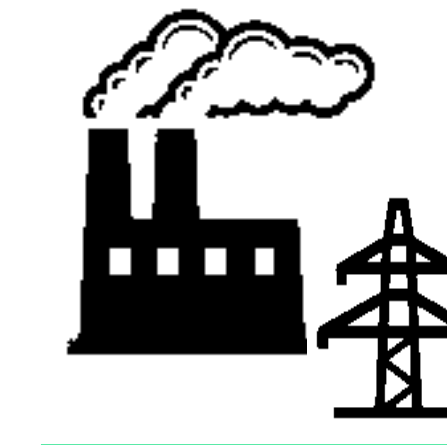Paradoxo da sustentabilidade / Sustainability Paradox

New Renewable Energy Technologies + IoT & 5G but an Old Grid!

Telecommunications

Energy

Construction

Shifting Energy and Data Requirements to the Edge of the Network

Power requirements

Edge power requirements aligned with the physical size of edge locations, with

48%

having power requirements between 2 and 20 kilowatts (kW);

28%

between 21 and 200 kW;

6%

between 201 and 400 kW;

8%

over 400 kW.
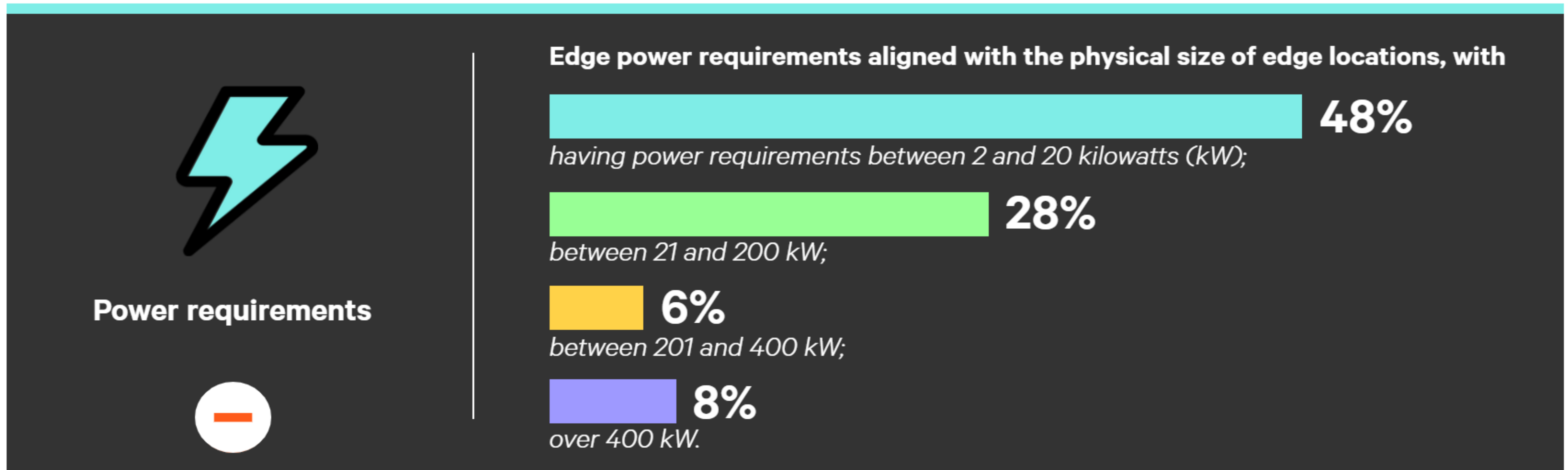
Small Cell/5G A Great Example

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Sustainability Paradox

Sustainability, Net Zero & the P&L…€140 per tonne!

REUTERS®

Europe's carbon price nears the 100 euro milestone

By Nina Chestney, Kate Abnett and Susanna Twidale

- Price of CO2 permits ends week at record high
- Analysts see 100 euro milestone within reach
- Carbon market EU's core policy to meet climate goals

LONDON/BRUSSELS, Feb 4 (Reuters) - The price of permits in the European Union's carbon market closed at a record high above 96 euros on Friday, with analysts expecting the symbolic 100 euro level could soon be breached

Carbon Pulse

News and intelligence on carbon markets, greenhouse gas pricing, and climate policy

| HOME | EMEA | CHINA | AMERICAS | ASIA PACIFIC | INTERNATIONAL | CARBON TAXES | CONVERSATI |

EMEA > Carbon prices to hit €140 by 2030, analysts forecast in newly-launched EU ETS coverage

Carbon prices to hit €140 by 2030, analysts forecast in newly-launched EU ETS coverage

Published 20:40 on December 20, 2021 / Last updated at 03:14 on December 21, 2021 / EMEA, EU ETS / No Comments

EU carbon prices will reach €140 by 2030, said a team of analysts that has launched coverage of the ETS, with their forecast representing the most bullish outlook to date.

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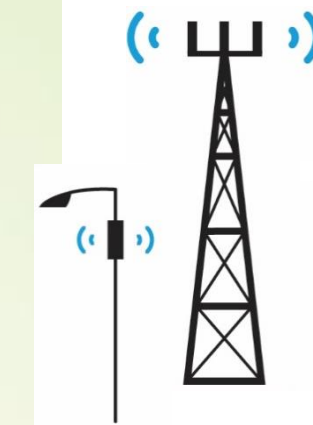# A Symbiotic Convergence of Power and Data in One System

Transform economics

Sustainable

Resilient

Telecommunications
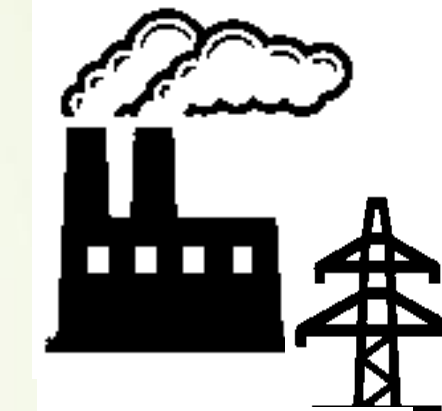
Energy

Construction

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A Solution that is

Award Winning

Free Electrons 2021 Winner

CONGRATULATIONS
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2021 EDITION WINNER
FREE ELECTRONS

TechCentral.ie
TechLife | TechPro | TechRadio | TechBeat | ICS

Irish start-up KelTech IoT wins at Free Electrons 2021

Will receive $200,000 prize money as well as the opportunity to work with leading global utilities

SMALL CELL AWARDS
SCF
2021
Finalist

siliconrepublic   TECHNOLOGY   SCIENCE   CAREERS   MORE   LOG

We're thrilled

The Irish star
property tech
communicat

START-UPS

Irish company crowned world's best energy start-up at Free Electrons

by Vish Gain

INNOVATION SHOWCASE 2022
Telecom Council Innovation Showcase 2022
Where Telecom Meets Innovation

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Dual Distributed Network (DDN) Solution

Combine last KM communication and energy network deployments

- Delivery power and data up to 2km from a central distribution point in a single cable system (fibre & copper)

Fibre

Input power

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DDN Headend

19" rack in comms room /
street cabinet

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Cable

Hybrid Cable
Up to 2kW & 2km/1.2miles

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DDN Enclosure

IP68 underground
enclosure

LTE/5G Cell

CCTV

Fibre

Output power

Wi-Fi

KelTech HDF &
Energy Head End

Hybrid Cable

KelTech
Enclosure
+ IoT
Sensing
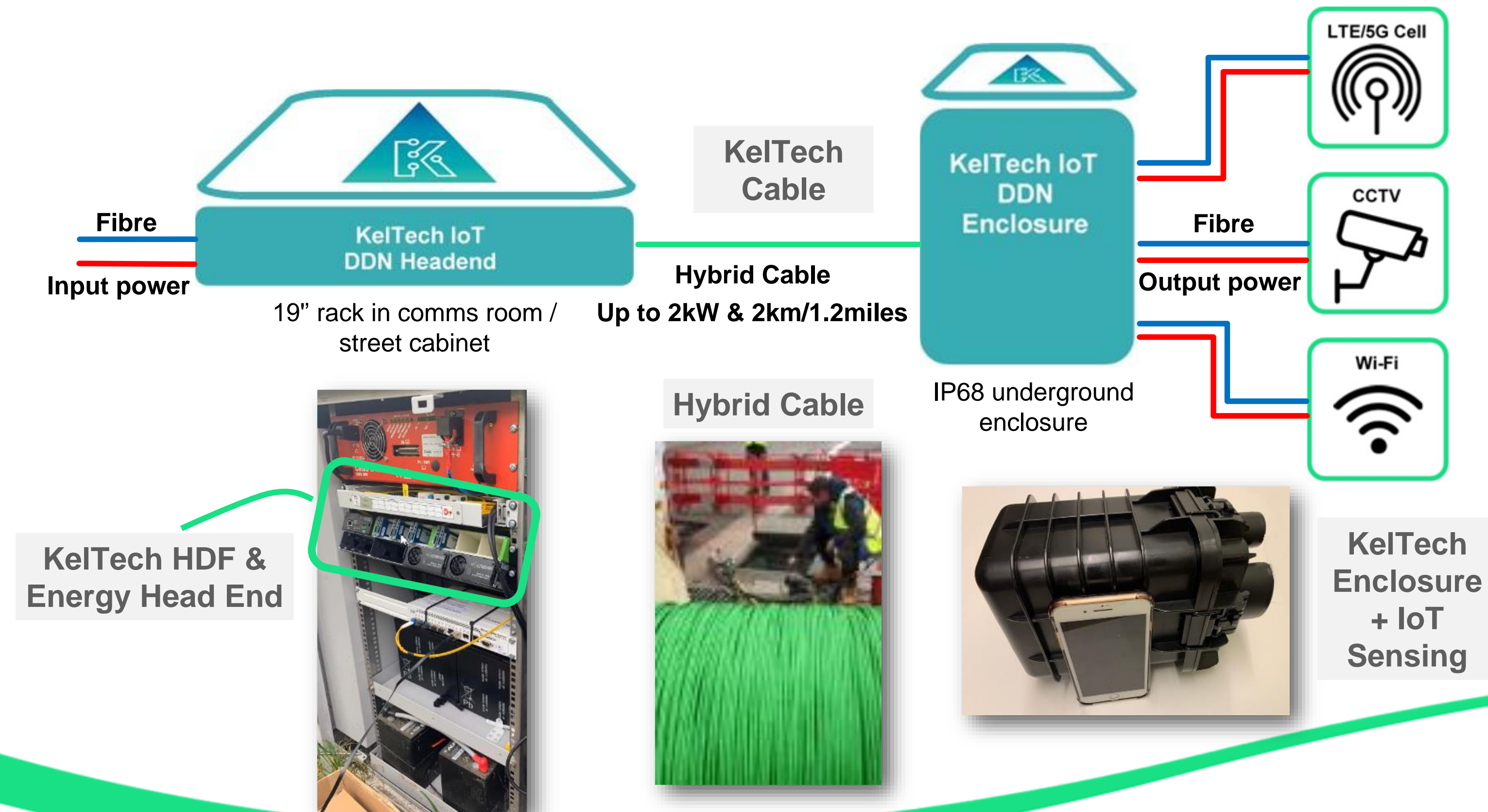
- Delivers Capex savings of 40%+

- Measurable ongoing energy savings of 15%+

- Operational Ease of Deployment

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5G Neutral Host & Street Lighting

Hybrid cable ———
Power ———
Fibre ———

Headend combines power & fibre in a hybrid cable

DC Street Light

5G Radio

5G Radio

5G Radio

Telco provides + fibre to Headend

Utility or Local Microgrid provides AC power input

Enclosure provides power & fibre to 5G Radio

KelTech IoT DDN Headend

KelTech IoT DDN Enclosure

KelTech IoT DDN Enclosure

KelTech IoT DDN Enclosure

Hybrid Cable fed through Utility duct to Enclosure

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Point-to-Multipoint Scalable Solution

1x Headend provides coverage of up to 12.5 km² / 5 mi²

Up to 2kW & 2km / 1.2miles radius from Headend
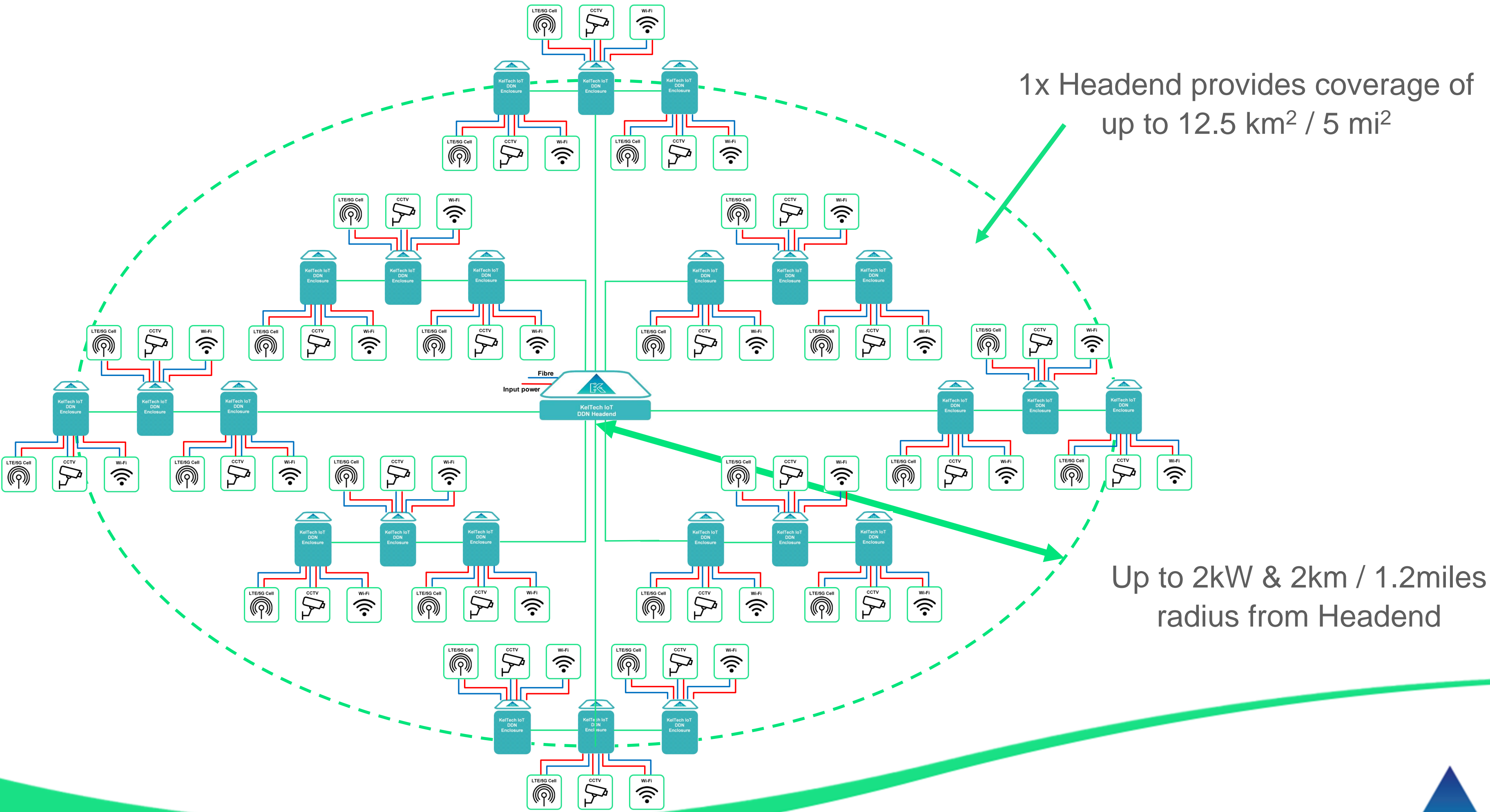
5G Deployment - Dublin City – 400 to 10!

- 25 km^2 topography constrained city
- Requirements
  - Design 5G radio (250m small cell radius) deployment
  - Provide power and data to all street furniture endpoints
  - Ensure UPS to all endpoints
- Implementation
  - 400 small cells (100W per cell)
  - 10 headends / 140 enclosures
  - 50 km of hybrid cable
- Future enabled deployment
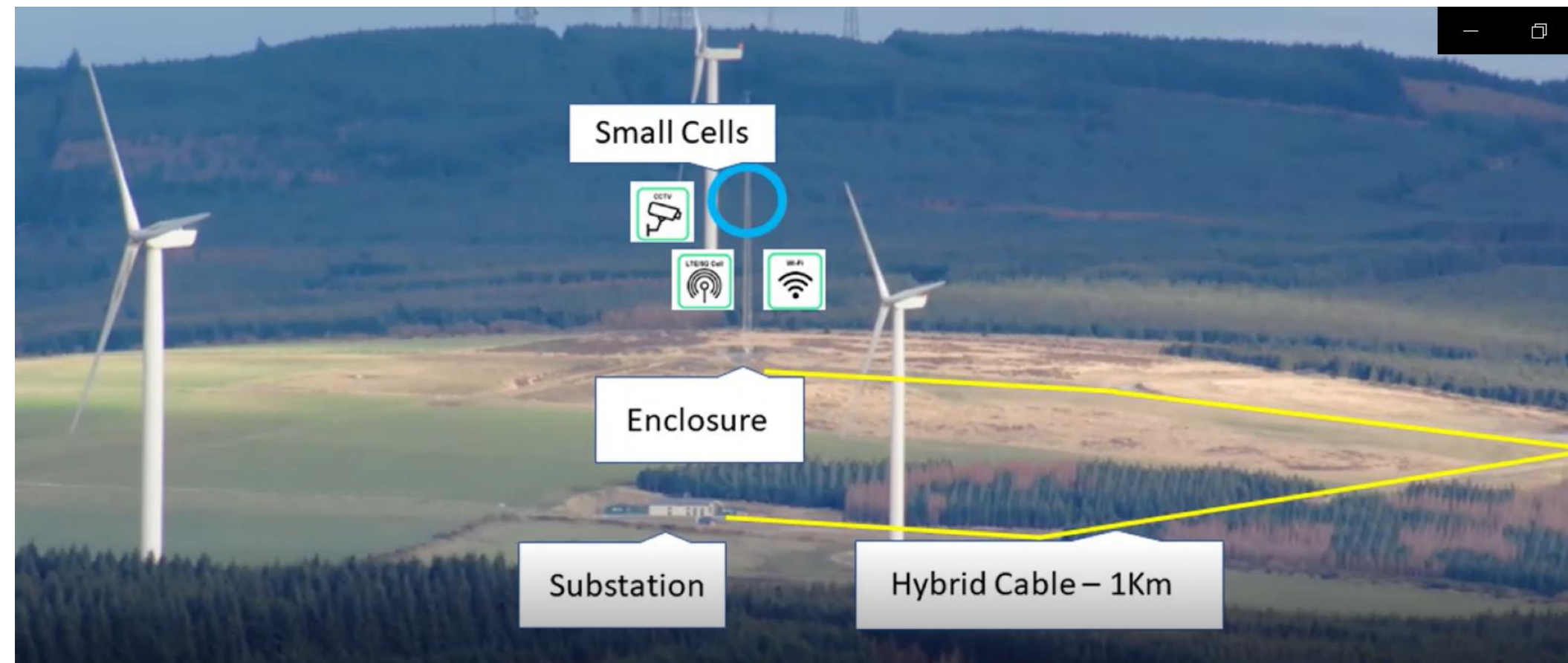 - Design provides additional capacity for increased density &/or wider reach beyond 25km^2

DDN Applications
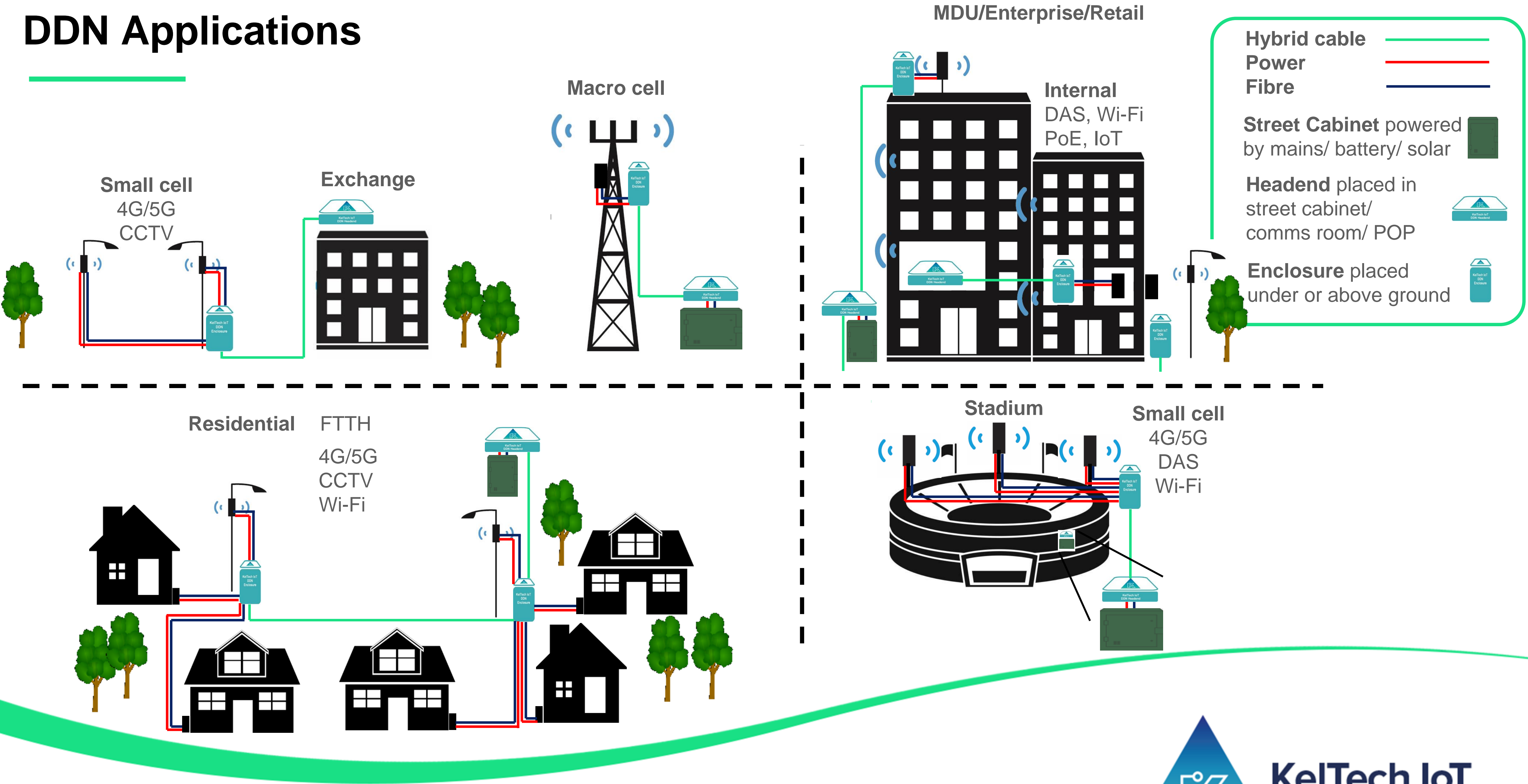
Pilot Project – ESB (Irish Utility)

Amazon Wind Farm – Small Cell/Security Model Opportunity = 400 Wind Farms

Insanity- Commercial Offices (Traditional AC model- Computers)

Cable tray with sub mains SWA cables 400 VAC, 3Φ

Sub Distribution Board 400VAC, 3Φ

Cable tray under floor with SWA cables for final circuits 230 VAC, 1Φ

Underfloor power track with plug in points for floor boxes for desks or direct to desk modules

Low Volt DC

AC to DC Adapters

Energy Supplier metering point

Main Distribution Board 400VAC, 3Φ

Electrical Room

Grid

ESB Step Down Transformer 400VAC, 3Φ

One 13A circuit per 4-6 workstations

60 workstations MCB rating of 130A / **30kVA**

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DDN Applications - Commercial Offices 80% Reduction In Energy Loading Needed!

Main grid / Microgrid
Solar
Battery
Generator

Main
Distribution
Board
400VAC, 3Φ

400VAC, 3Φ

Com.
Riser

Hybrid
Cable

DDN
Enclosure

DDN Headends
(Basement)

OE LVDC
Module

DC workstations load 100W

60 stations that requires only **6kVA**
i.e. **80% reduction in loading**

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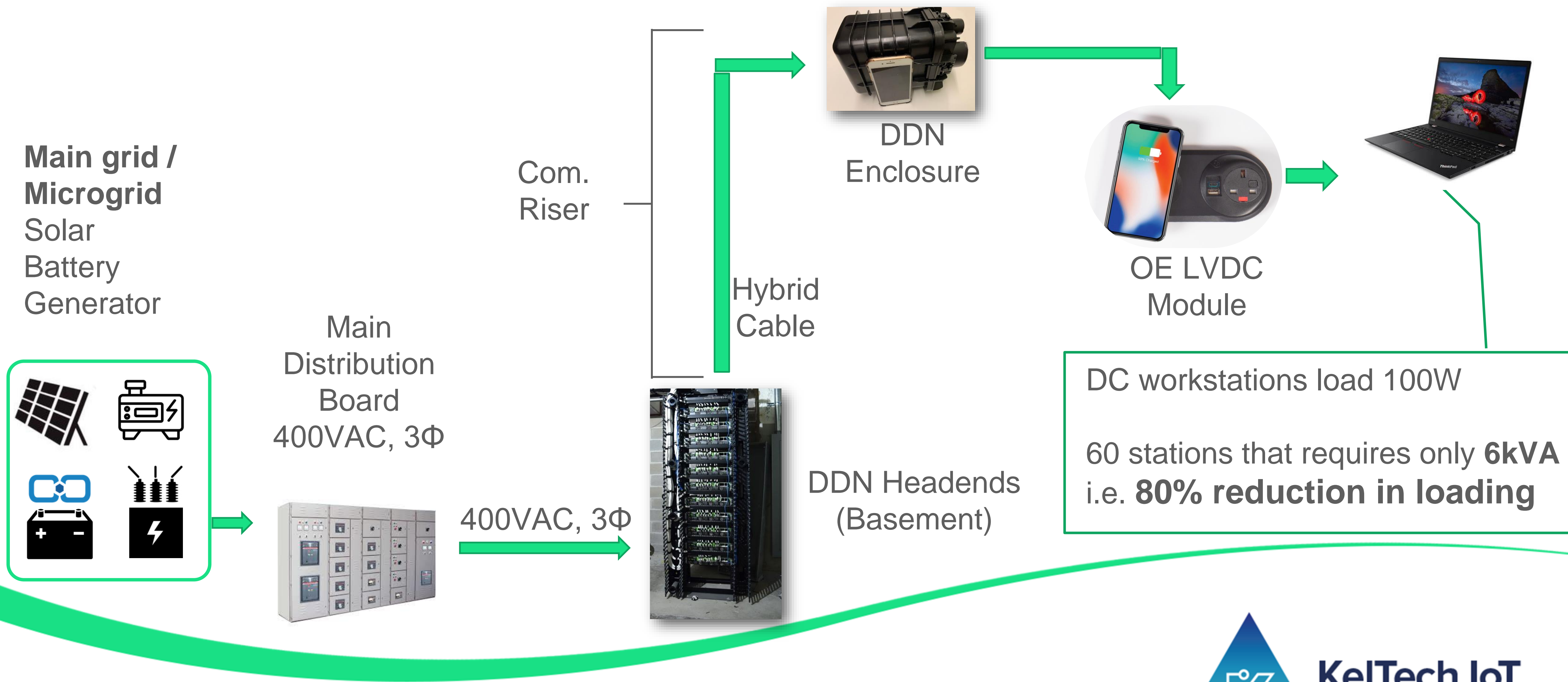
DDN Applications – LED Lighting Scam!

Low Volt DC at LED

Cable tray with sub mains SWA cables 400 VAC, 3Φ

Sub Distribution Board 400VAC, 3Φ

Cable trunking in ceiling with single LSF cables for final circuits 230 VAC, 1Φ

Klik boxes (8-10 points) with plug in points for each LED driver

AC to DC LED driver

Energy Supplier metering point

Main Distribution Board 400VAC, 3Φ

Electrical Room

Grid

ESB Step Down Transformer 400VAC, 3Φ

One 10A circuit per 10 lights

100 lights MCB rating of 100A / **23kVA**

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DDN Applications - Commercial Offices – LED Lighting As It Should Be!

Main grid / Microgrid
Solar
Battery
Generator

Main Distribution Board
400VAC, 3Φ

Com. Riser

Hybrid Cable

DDN Enclosure

Direct to LED DC connections

400VAC, 3Φ

DDN Headends (Basement)

DC LED load 32W

100 lights that requires only
3.2kVA
i.e. **86% reduction in loading**

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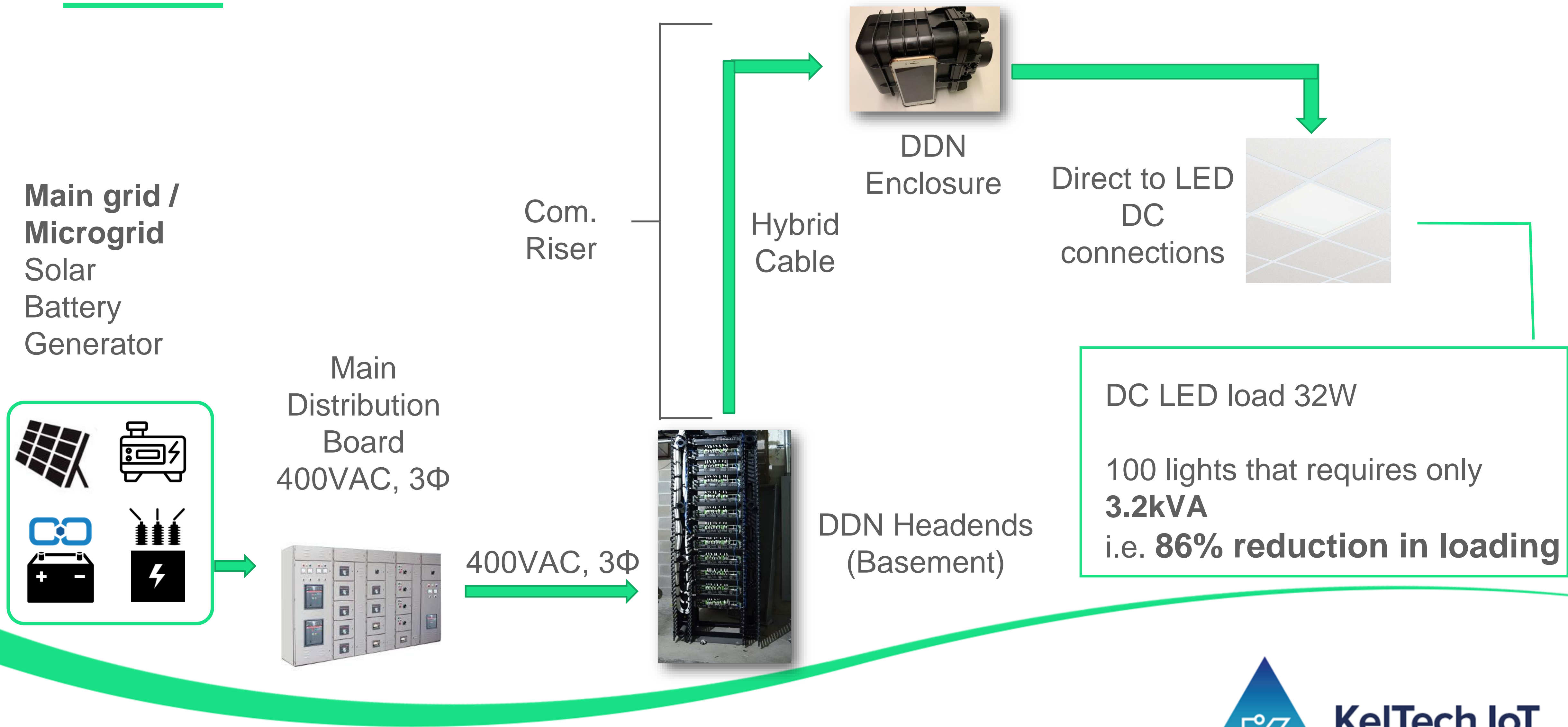
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Thank You

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