

IEC International Standardization in Low Voltage Direct Current (LVDC) for Electric Highways



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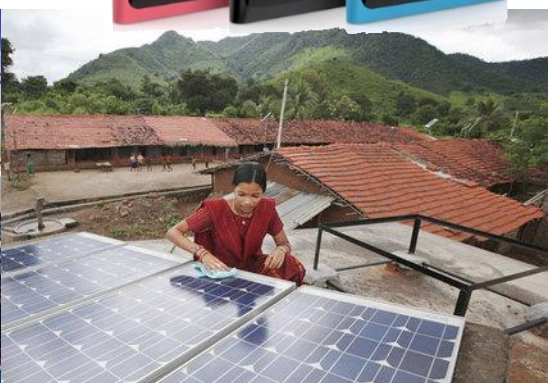


**INTERNATIONAL
ELECTROTECHNICAL
COMMISSION**

All the things we and run on LVDC



We already live in a DC World!

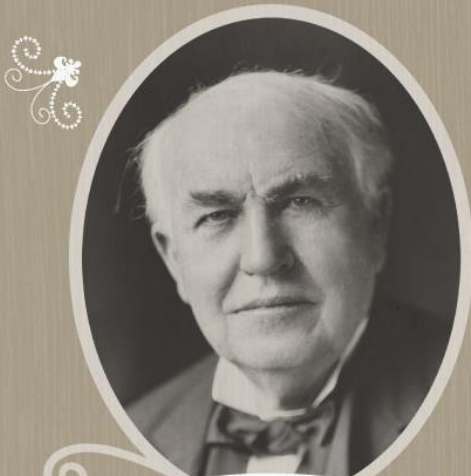


**1 in 5 has no access
to electricity**



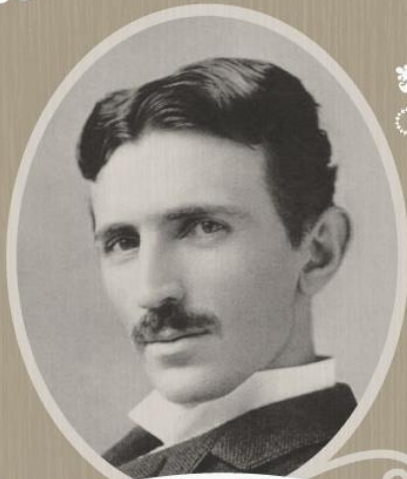
THE CURRENT WAR

THE TALE OF AN EARLY TECH RIVALRY

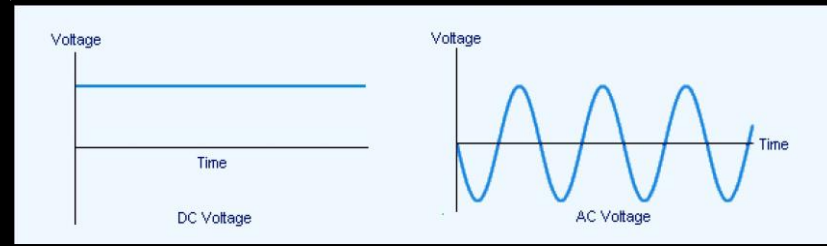


THOMAS EDISON

VS.



NIKOLA TESLA



LVDC Tech

Up To 1500V



Why LVDC, and why now?

AC and DC Coexist

AC Dominates

AC Challenged

Small power plants

Large power plants

Small Local power plants

Localized Power Generation

Centralized Power Generation

Decentralized Power

Coal, Oil, Wood fuel

Coal, Oil, Nuclear fuel

Coal, Oil, **Solar**

1900s

1960s

2010s

Novelty, Elitist

Mainstream, important

Essential Necessity

Environment or Energy Efficiency; Non-issues

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Huge impact: **Environment and Energy Efficiency**

Tech drivers: AC, DC innovation, Replacing smokey lighting

Tech drivers: AC Systems, high power loads, GLS Lighting

Tech drivers: **Electronics, Low power loads, Solar PV, LED Lighting, Batteries**

LVDC



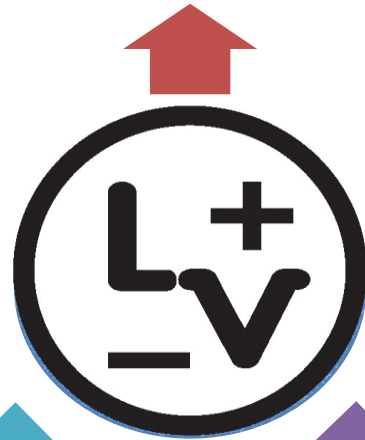
Internet of Things



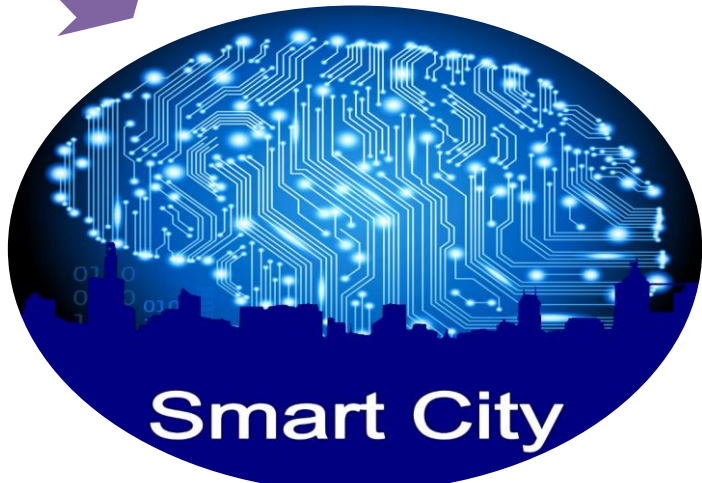
Smart Homes



Electricity Access



Active Assisted Living





Measuring energy access: the multi-tiers



Improving attributes of energy supply leads to higher tiers of access.

http://www.worldbank.org/content/dam/Worldbank/Topics/Energy%20and%20Extract/Beyond_Connections_Energy_Access_Redefined_Exec_ESMAP_2015.pdf

https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/measuring-energy-accessFinal_PPT_Optimized.pdf



LVDC Standards by IEC

- **Systems Evaluation Group (SEG) established**
 - 125 experts, 26 countries, India leading development
 - Addressing voltage, design, equipment and rules of installation
 - Promoting World Bank's Multi-Tier Framework



- **LVDC Standards work has commenced**
- **Please join and contribute; IEC has the experts, it needs your ground-level experience (www.iec.ch/seg4)**



Thank you