

Deep Dive Workshop

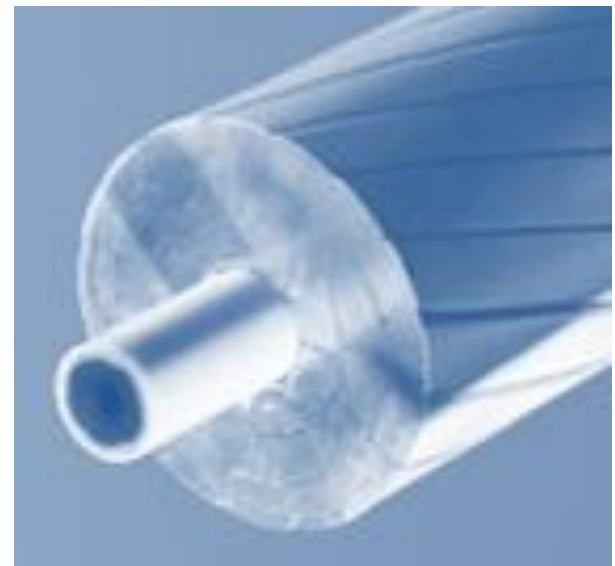
Opportunities for Grid Efficiency Improvements with High-Temperature Low-Sag Conductors

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High-Temperature Low-Sag Conductors

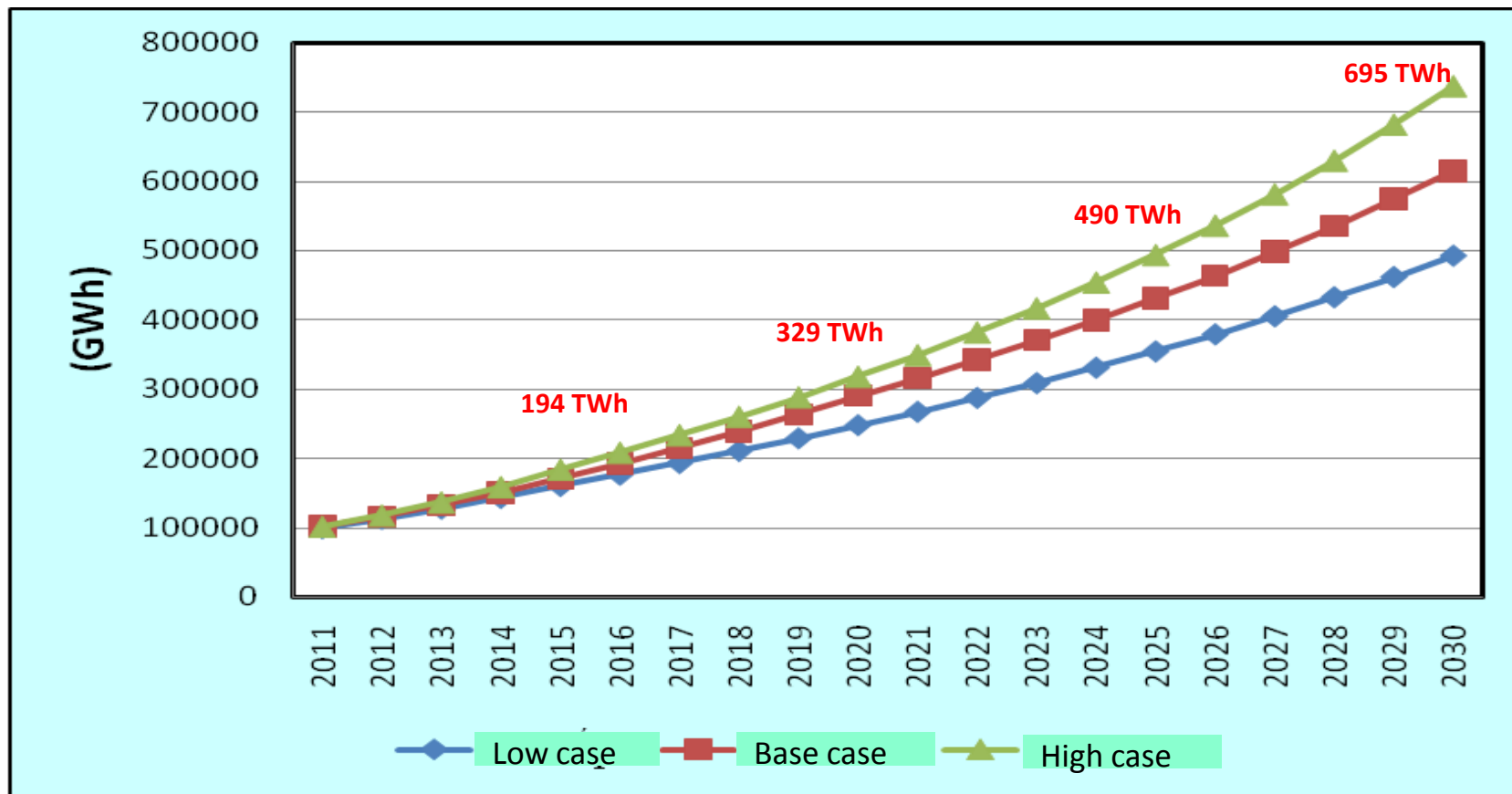
- ▶ **Double the capacity**
- ▶ **Reduce losses**
- ▶ **Same/similar diameter**



Power Sector Challenges in T&D

▶ Rapid electricity demand growth

▶ Case of Viet Nam (source Power Development Master Plan VII)



Power Sector Challenges in T&D (cont'd)

▶ Need for new T&D; increased capacity

▶ Case of Viet Nam (source Power Development Master Plan VII)

	2011-2015	2016-2020	2021-2025	2026-2030
500kV Substations (MVA)	17,100	26,750	24,400	20,400
220kV Substations (MVA)	35,863	39,063	42,775	53,250
500kV Trans. lines (Km)	3,833	4,539	2,234	2,724
220kV Trans. lines (Km)	10,637	5,305	5,552	5,020

▶ \$2 billion/year in transmission system investment

Power Sector Challenges in T&D (cont'd)

- ▶ Difficult to obtain ROW
- ▶ Dilapidated T&D systems need rehab
- ▶ Need to enhance reliability, redundancy
- ▶ Reduce T&D losses
- ▶ Reduce GHG emissions

Solutions?

- ▶ Typical solutions:
 - ▶ Renewable energy
 - ▶ Distributed energy sources and storage
 - ▶ Smart grid...

- ▶ **HTLS conductors are straight-forward technologies that can effectively contribute to addressing power sector challenges**

High-Temperature Low-Sag Conductors

- ▶ **Lower resistance**
 - ▶ Lower loss
 - ▶ Lower GHG emissions
- ▶ **Higher loading**
 - ▶ Increased capacity
 - ▶ Higher redundancy and reliability
- ▶ **No or minimum change to tower load**
 - ▶ Low-cost
 - ▶ Simple re-stringing
 - ▶ No ROW issue

Opportunities

- ▶ Tens of thousands of T&D to be developed and rehabilitated
- ▶ ADB's indicative lending pipeline in T&D in Viet Nam

Year	Project Title	\$ million
2015	Power Transmission Investment Program Loan 3	250
2016	Power Transmission Investment Program Loan 4	300
2017	Distribution System Efficiency Improvement Project Loan 1	500
	Rural Electrification Loan 1	350
2018	Vietnam Power Transmission Grid Reinforcement-1	400
	Distribution System Efficiency Improvement Project Loan 2	500
2019	Rural Electrification Loan 2	500
	Smart Grid Development	100
2020	Distribution System Efficiency Improvement Project Loan 2	700
	Vietnam Power Transmission Grid Reinforcement-2	500



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