



9th Annual Dii Desert Energy Leadership Summit



“Enabling Clean Energy Transition in the GCC and Beyond”

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CEO- GCC Interconnection Authority

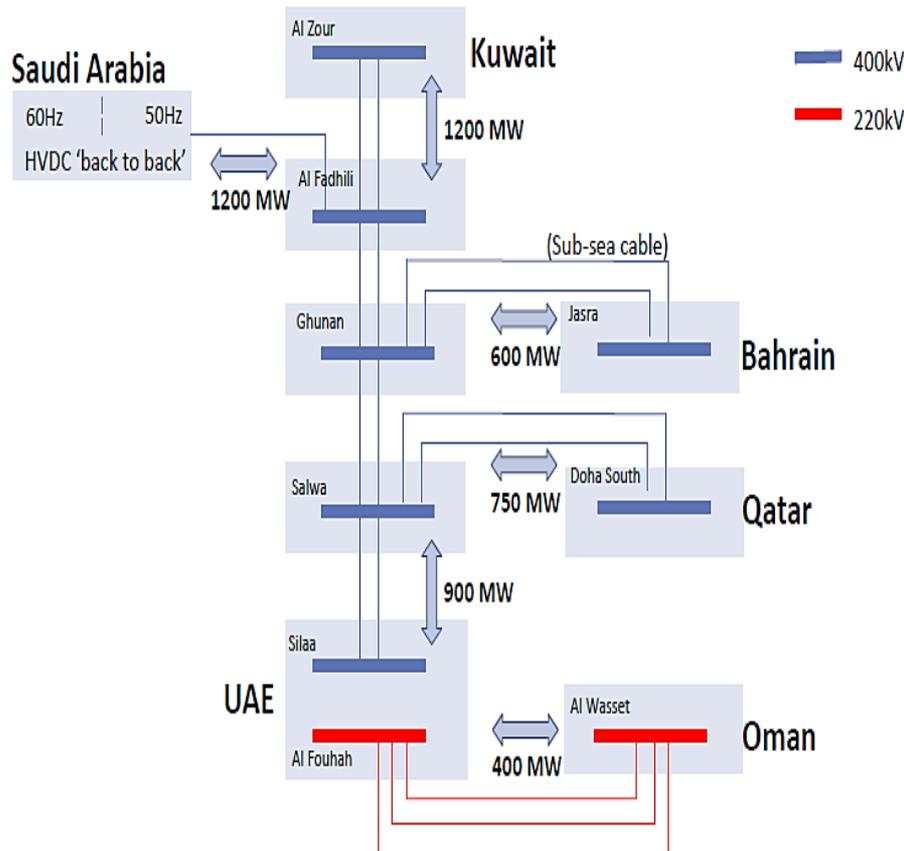
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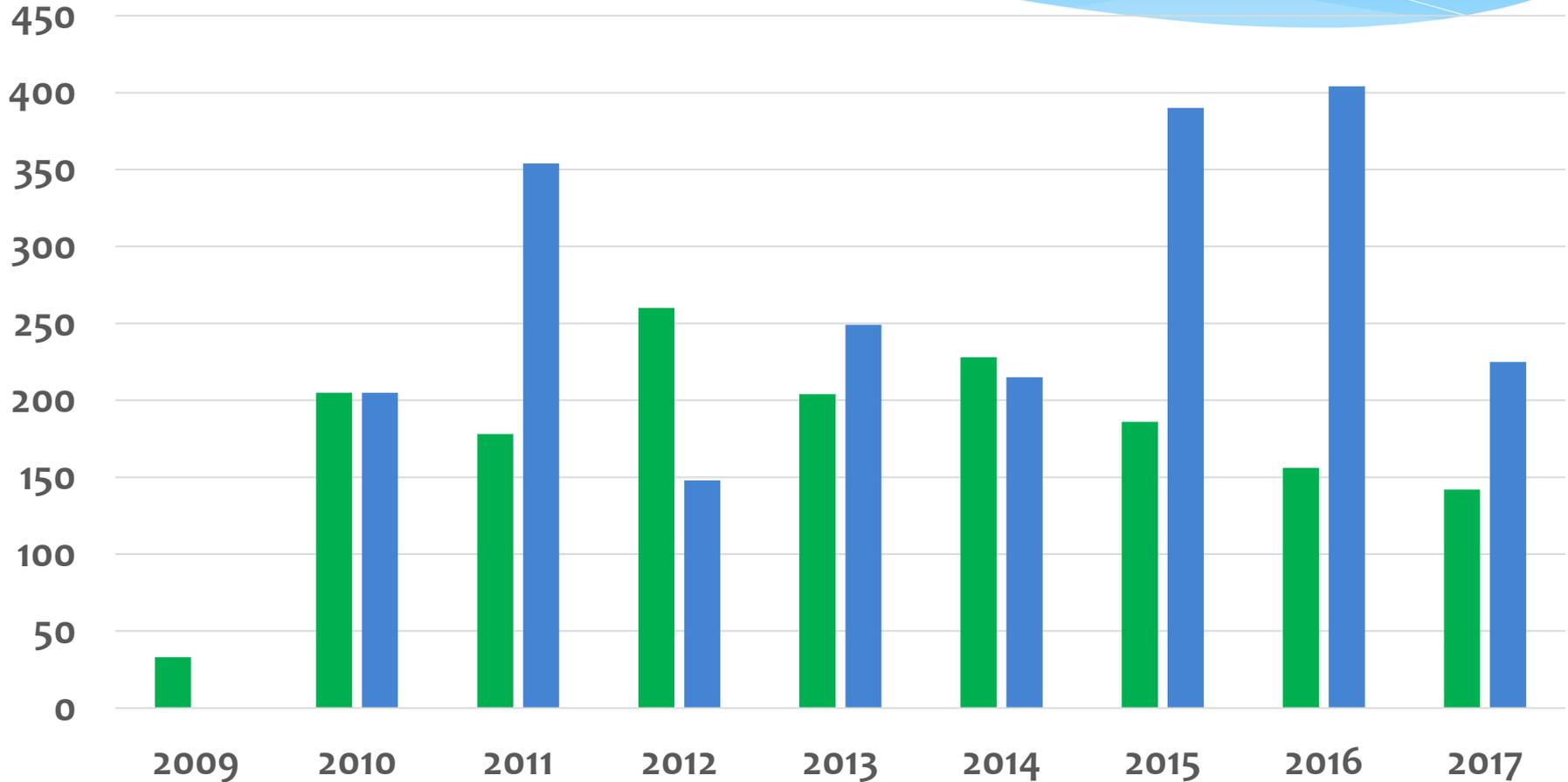
The GCC Interconnector – A Unique Structure

- A Regional Backbone Structure
- Coordinated Operation - sets Operational Rules and targets
- Coordinated Planning – sets Generation and Interconnector expansion targets





Benefits of the GCC Interconnection 2009-2017



■ Number of Emergency Support Cases

■ Economic Savings to GCC countries due to the Interconnections (Mil US\$)



Required GCC investment from 2017-2021 in US\$ Bn.

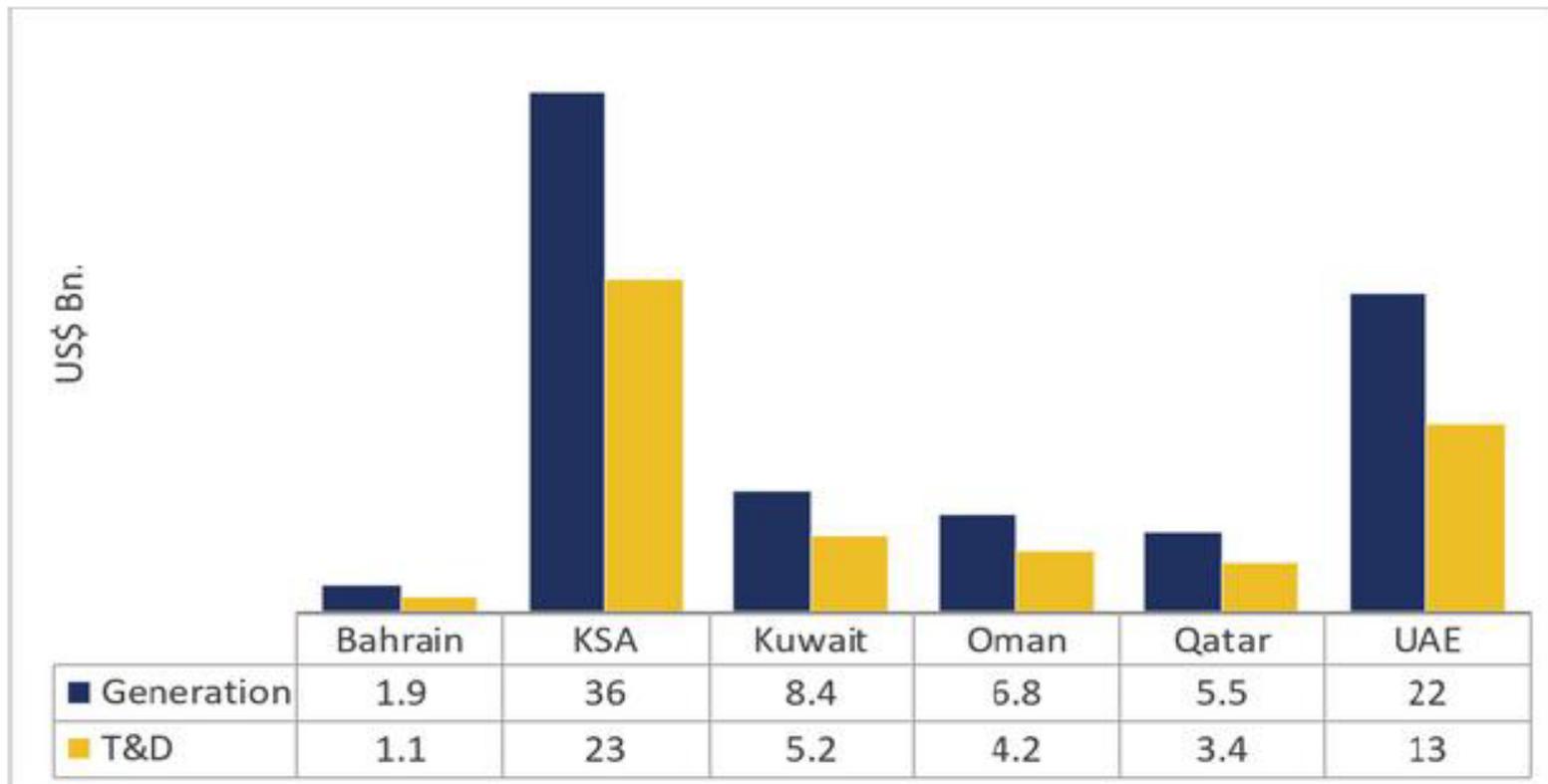


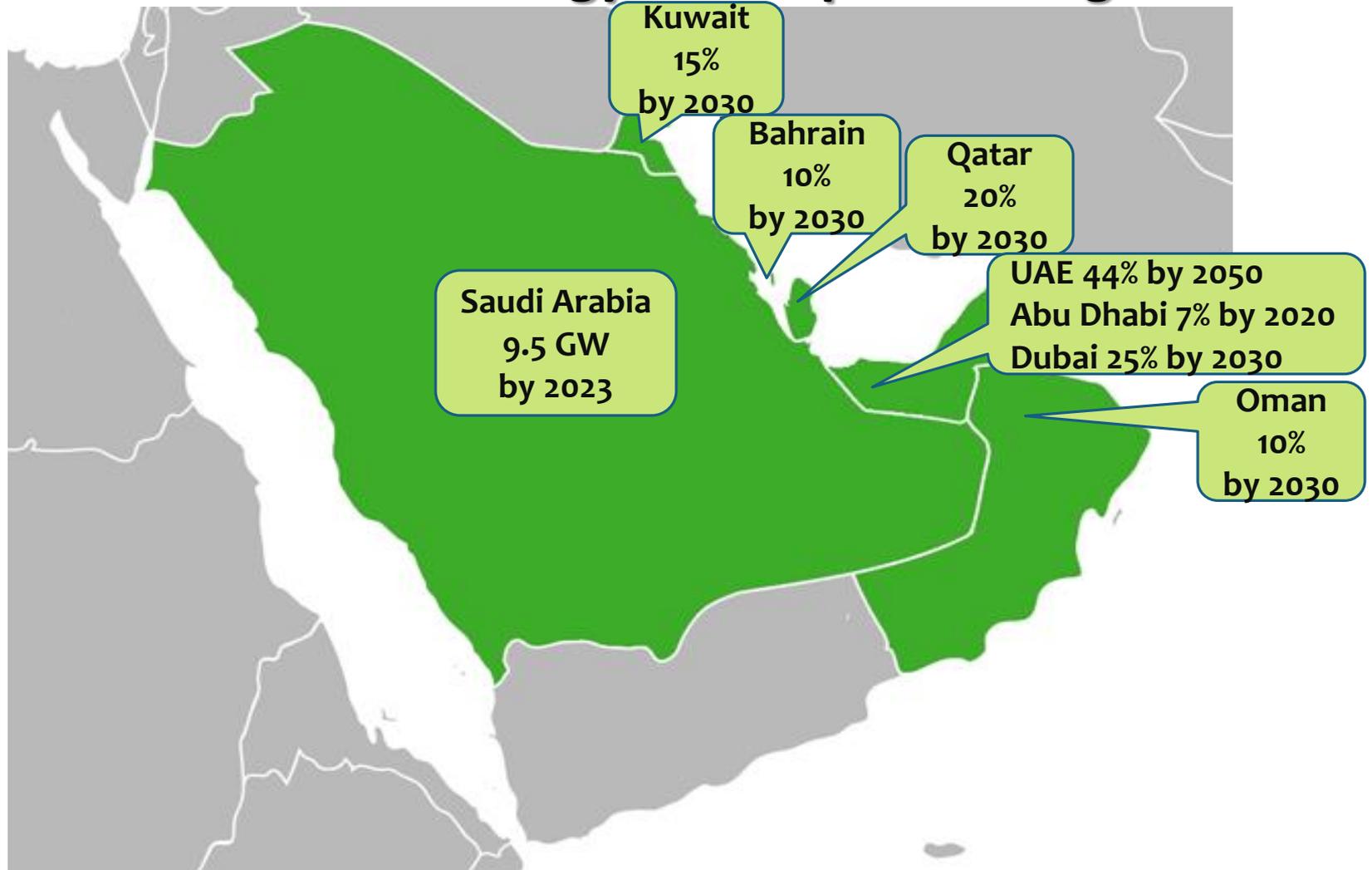
Figure 1. Note: T&D-Transmission and Distribution. Source: APICORP Research

Courtesy: MIDDLE EAST ELECTRICITY 2018

GCC POWER MARKET REPORT NOVEMBER 2017 - BY VENTURES ONSITE



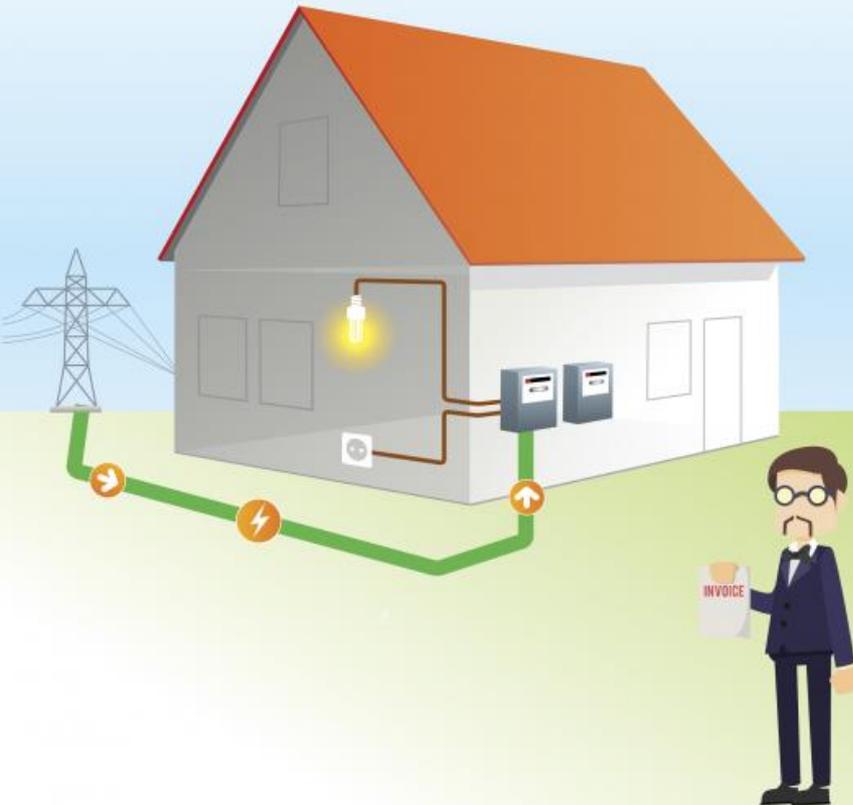
GCC Renewable Energy Development Targets



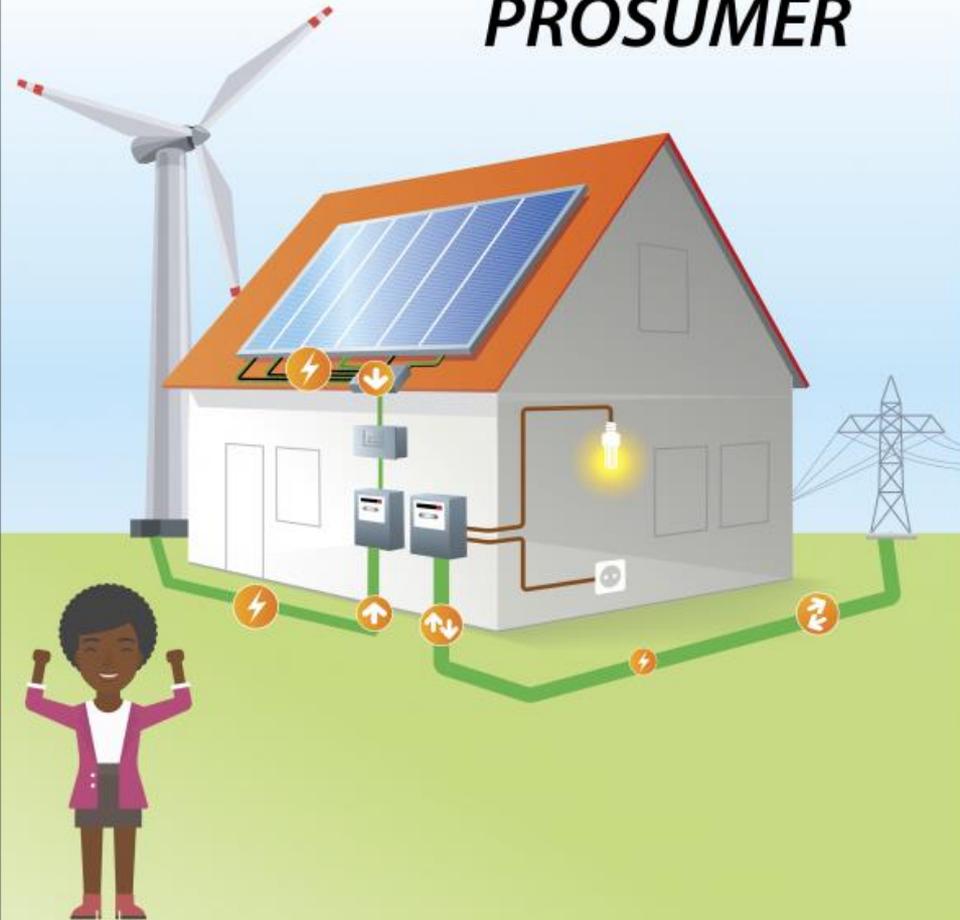


The Shift from CONsumers to PROsumers

CONSUMER



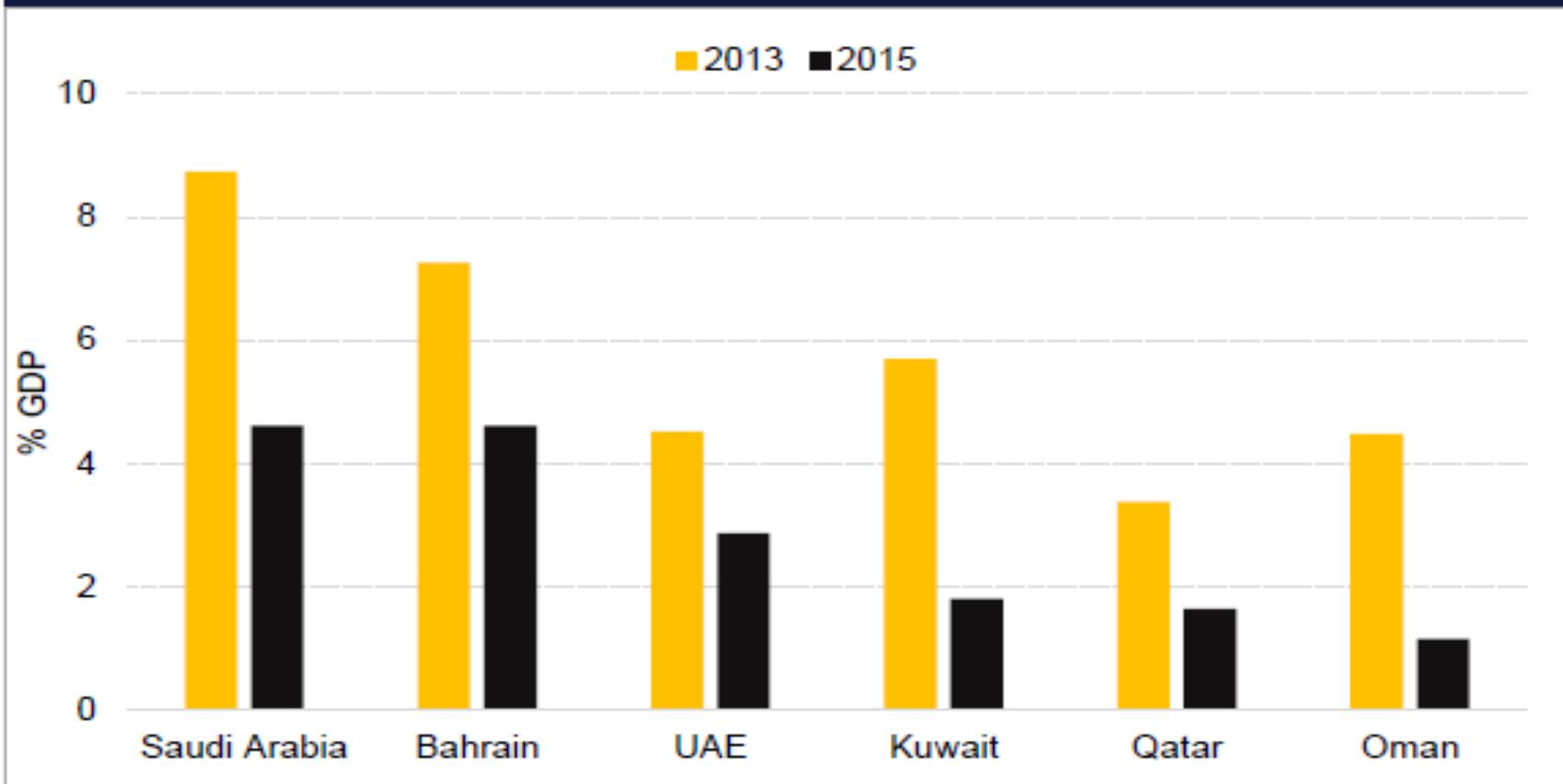
PROSUMER





Energy Subsidies Reforms in GCC

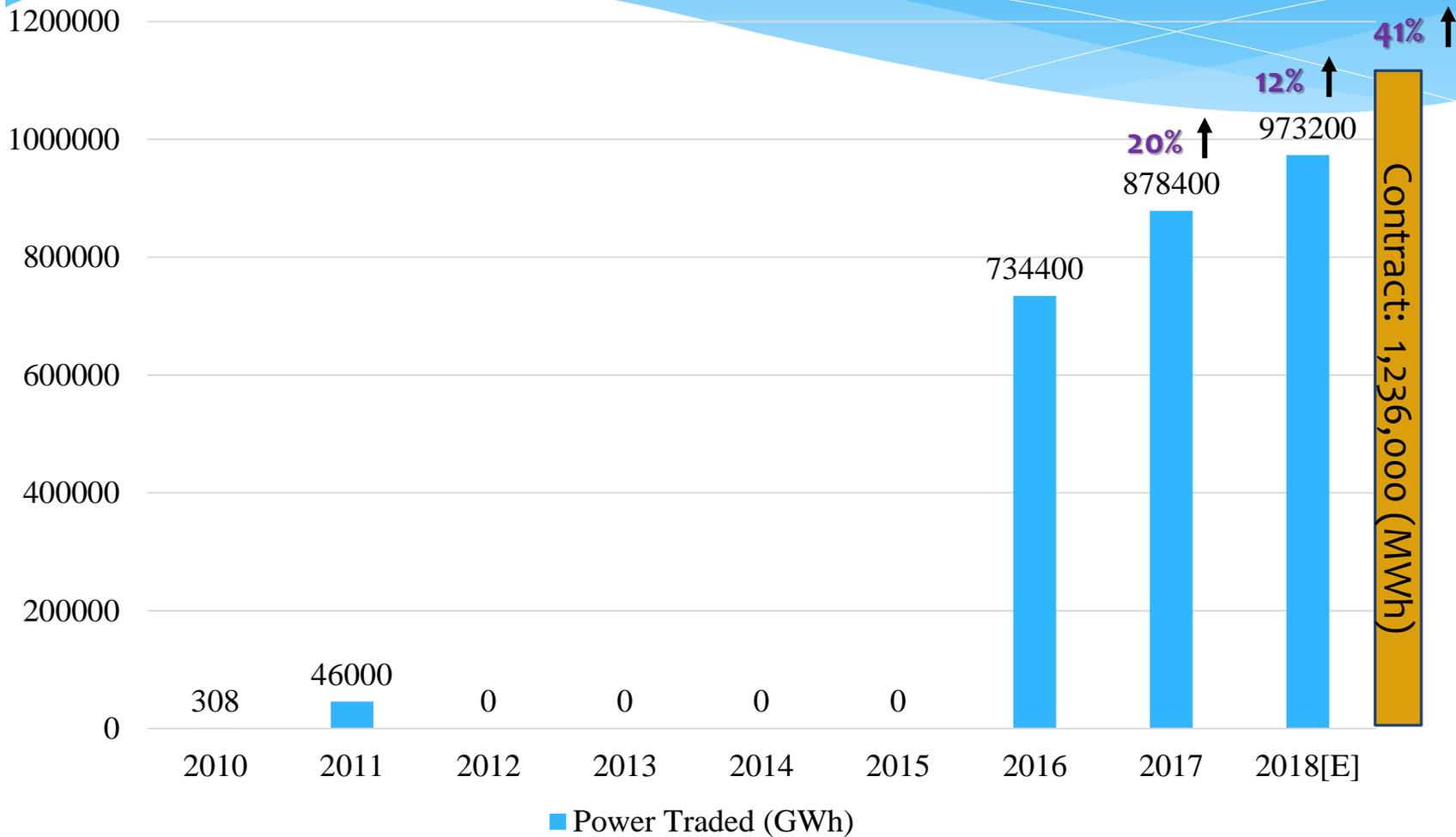
Amount spent on energy subsidies (% GDP)



Source: IMF, Emirates NBD Research



Volume of Power Traded on the GCC Interconnection 2010 – 2018





GCCIA Expansion Study: External Expansion: looking for interconnection to Promising corridors

Corridors towards Europe / Turkey

- Complementary seasonal diversity between Europe / Turkey and GCC .. Excess renewable (solar) energy in GCC
- Jordan being a hub for interconnecting to neighbouring system : Iraq, Syria, Egypt, Turkey
- Egypt : Interconnect with Europe thru Euro-Africa 2000 MW Interconnection
- Iraq : HVDC backbone towards Turkey

Corridors towards Africa : Ethiopia

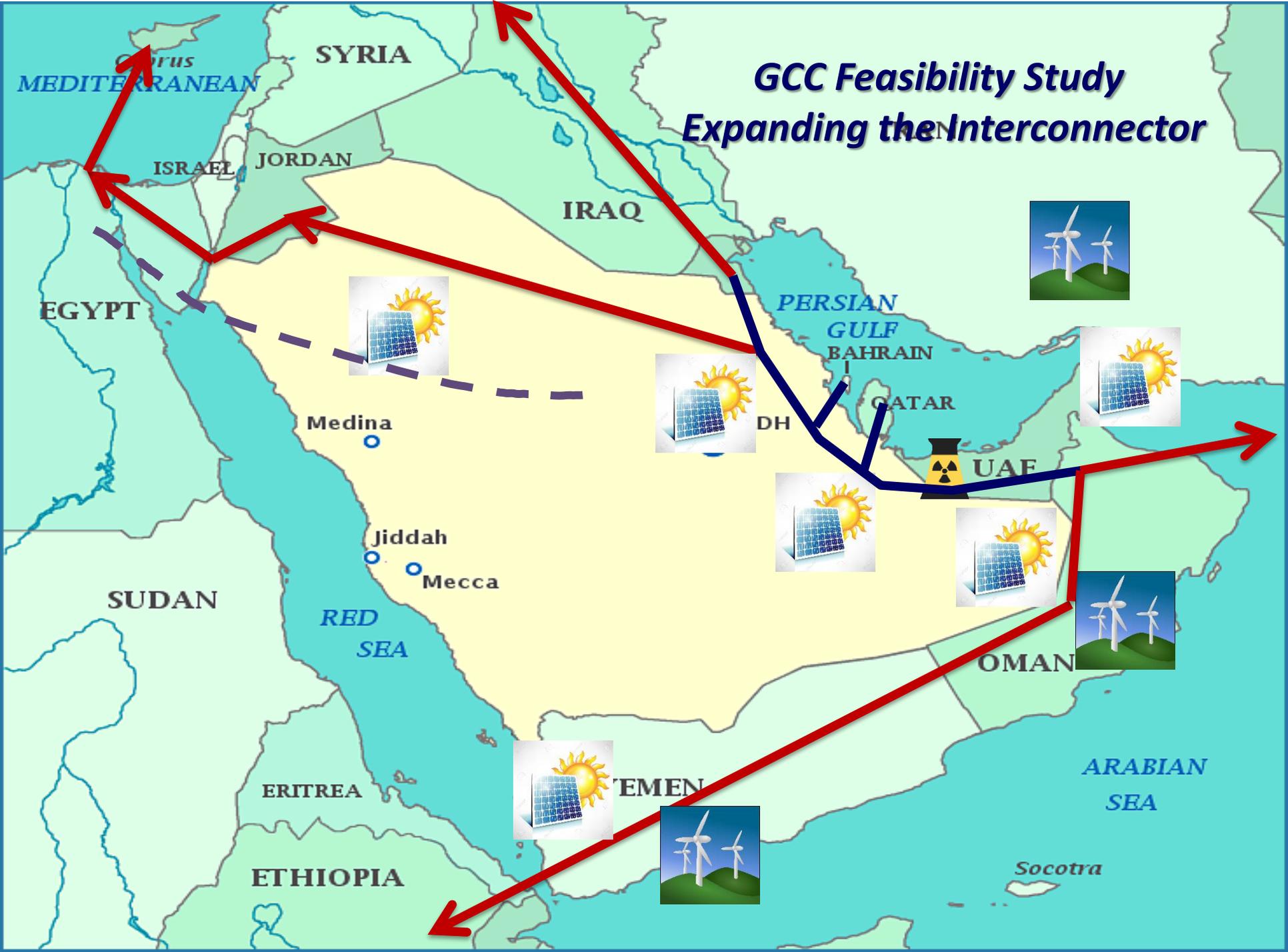
- Complementary Solar Energy (Saudi Arabia) / Hydro (Ethiopia) with storage capabilities

Corridors towards Asia : India , Pakistan

- Complementary seasonal time diversity between south-east Asia and GCC .. Excess renewable (solar) energy in GCC

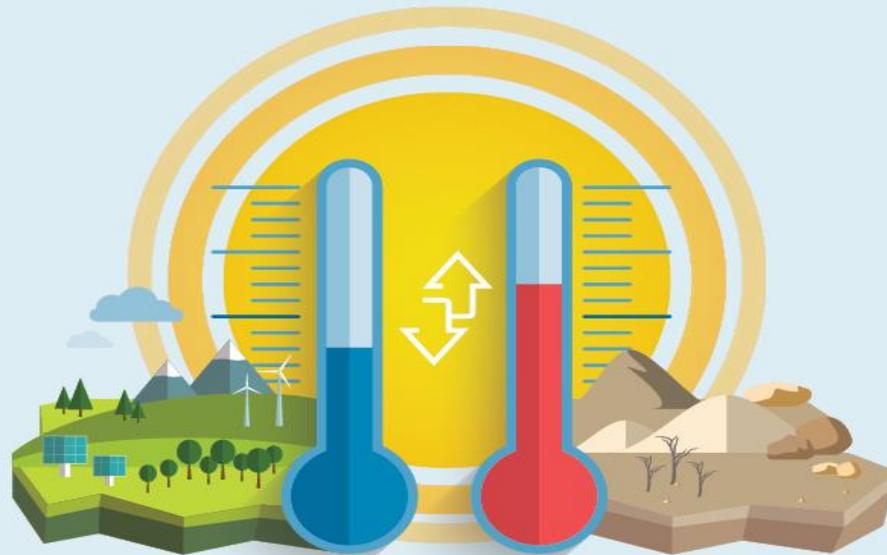


GCC Feasibility Study Expanding the Interconnector





COP21 – Historical Agreement



In Paris, the world agreed to keep temperature rise below 2°C and if possible 1.5°C. Renewable energy and energy efficiency can get us there.

GO15 Strategic Working Group Pathways to a Low Emission Power System



国家电网
STATE GRID





Pathways to a Low Emission Power System

PRIORITY TOPICS

- **Topic 1: Market design for essential reliability services**
- **Topic 2: Distributed Energy Resources (DER) market participation**
- **Topic 3: Wholesale/retail pricing alignment**
- **Topic 4: New business models and TSO/DSO coordination**

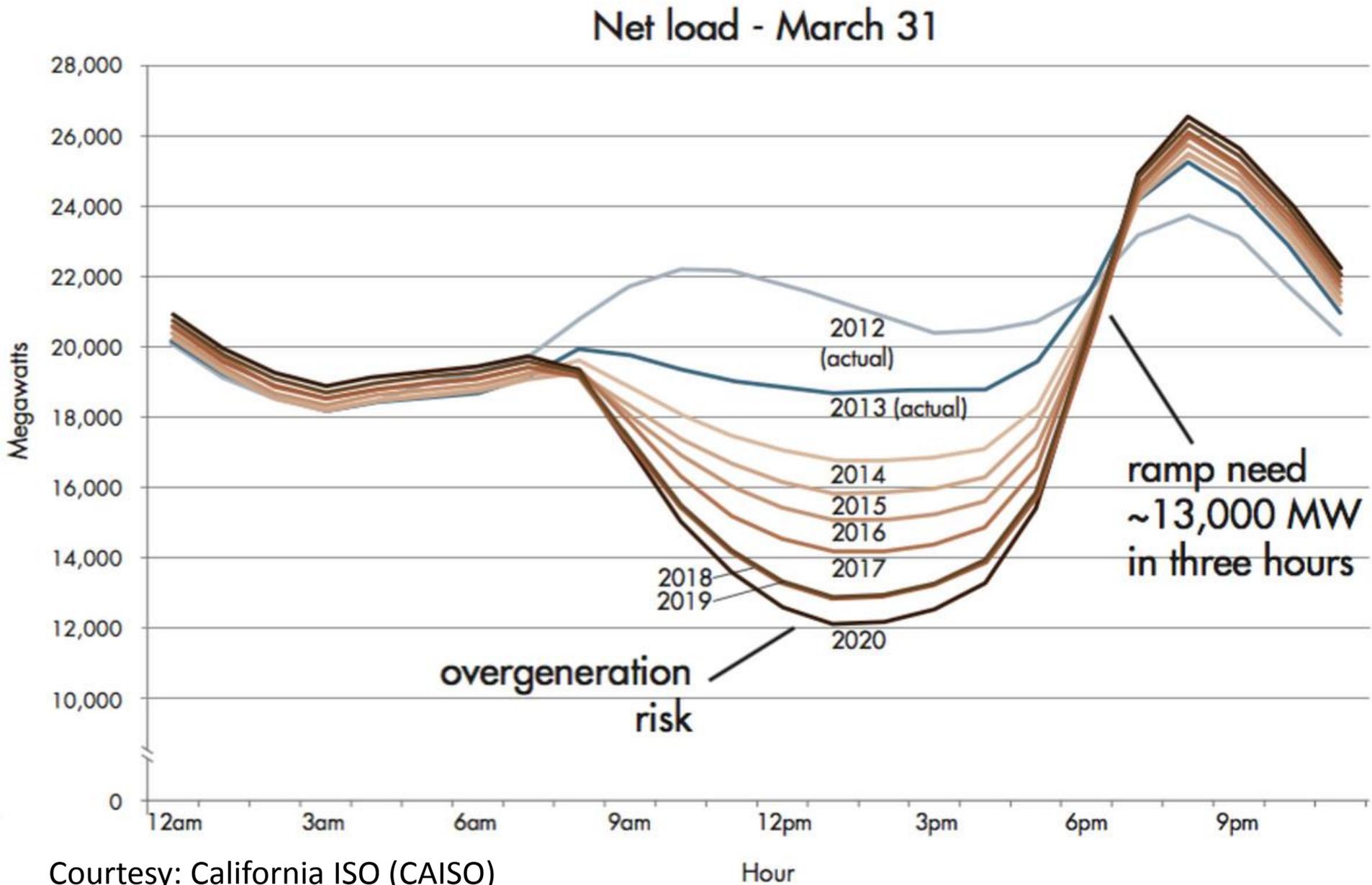


Pathways to a Low Emission Power System

PRIORITY TOPICS

- **Topic 5: Forecasting & grid visualization**
- **Topic 6: Long-term planning**
- **Topic 7: Visibility & control of distributed resources**
- **Topic 8: Assessing essential reliability services operational time**

Figure 2: The duck curve shows steep ramping needs and overgeneration risk



Courtesy: California ISO (CAISO)



هيئة الربط الكهربائي لدول مجلس التعاون لدول الخليج العربية
Gulf Cooperation Council Interconnection Authority

GCC Interconnection as an Enabler for Energy Transition Towards Renewable and Clean Energy in the GCC and MENA

Coordinated and optimized grid operations at
real time and planning domains

An enabler and facilitator
of REN integration in the
GCC

Expanding the grid
beyond GCC and reaching
opportunities in other
regions

Development of the Power Market in
GCC and beyond



ENERGY TRANSITION SUMMIT

WORLD ENERGY COUNCIL

World Energy Week
Milan, 10th Oct. 2018

UPDATE

#WEW2018 @ WECouncil

TRENDS

REGULATORY Framework CONSUMERS

Research of INNOVATION

Long Term STRATEGY

DIGITALIZATION to IMPROVE EFFICIENCY

CAS

RENEWABLE

QUALITY of AIR

DIGITALIZATION of CUSTOMERS

AS PUBLIC ACTORS WE HAVE RESPONSIBILITY

INNOVATIONS

HYDROGEN AMMONIA
PIPELINE is moving
2020 COMMERCE in JAPAN
2024 on MARKET

INTEGRATION of IT into OT

we have ALL the SKILLS needed

PROSUMER PRODUCER + CONSUMER
Need MARKET NOW

Burden & honor

MARKET

Attract MORE INVESTORS

SUBSTITUTES

el niño OPPORTUNITY

DATA will be CENTRAL

DIGITALIZATION is the ONLY one which DOES MATTER to us for REAL EFFICIENCY

in RUSSIA TRANSITION is HAPPENING but slower for ECO-POLICY situation

CITY Dynamic

Electric Vehicle they exist, but... CHARGE?

STORAGE
"it is all about HOW to MAKE things HAPPEN"
INFRA-STRUCTURE

WHO is GOING to PAY?

LET'S THINK SYSTEMIC

How to INVEST and BE SCALABLE

ENERGY CONNECTS WITH LIFE

POLICIES HAVE TO SUPPORT US