

GULF COOPERATION COUNCIL INTERCONNECTION AUTHORITY



INTERCONNECTION PROJECT PHASE – I

STATUS & DEVELOPMENTS

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Introduction

- Established in July 2001 by a Royal Decree No. M/21.
- Owned by the six GCC Countries the authorized share capital is (\$US 1,100,000,000) divided into (1,100,00) shares of (\$US 1,000) each share.
- The Authority is managed by a (twelve member) Board of Directors; each member country is represented by two members. The Chairmanship is rotated among the member states every three years.
- The official domicile of the Authority is Dammam, with the Control Center to be located in Ghunan, Saudi Arabia.
- The primary objective of the Authority is to:
 - Link up the Power Grids of the six GCC Countries
 - Operate and Maintain the Interconnection Grid
 - Become a major player in the Regional Electricity Trading Market



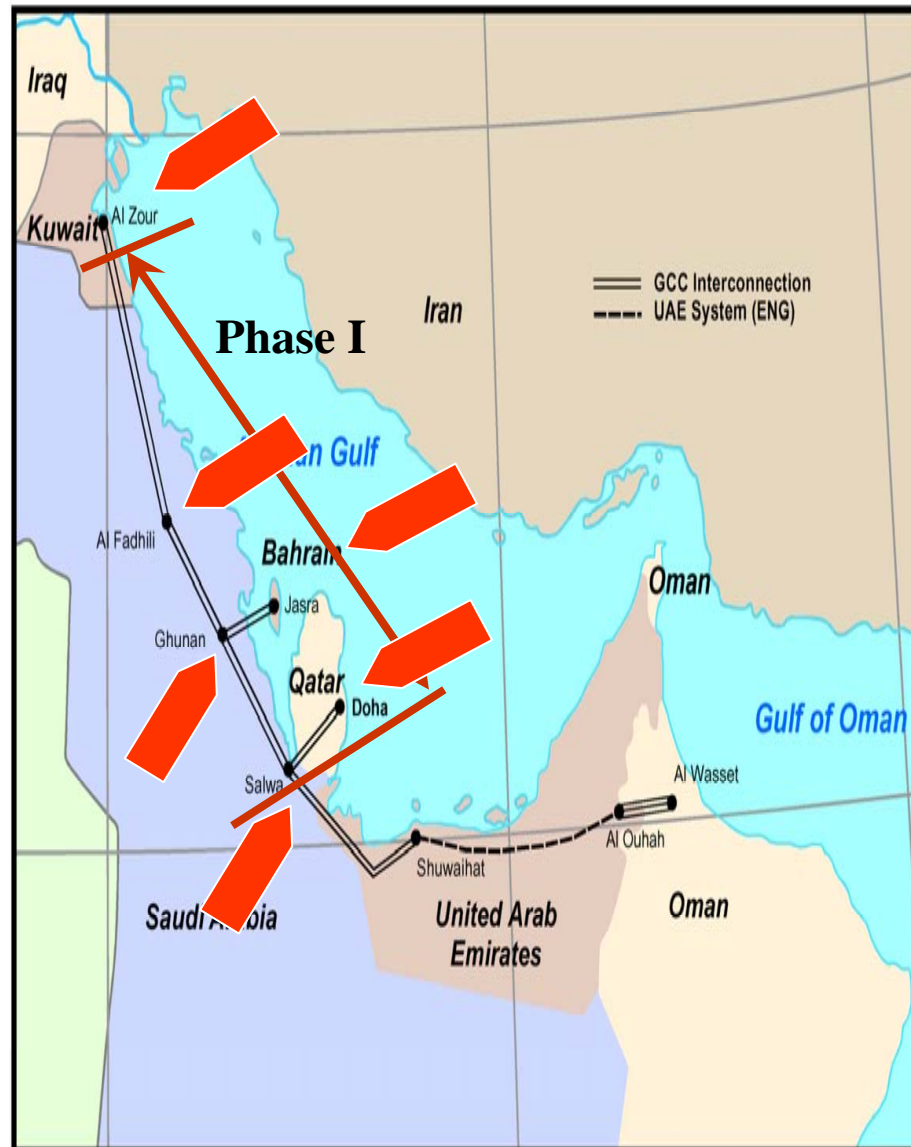
Interconnection Share Capital

Founders	No. of Shares	Nominal Value	Percent
United Arab Emirates	169 ,400	\$169 ,400 ,000	15 .40 %
Kingdom of Bahrain	99 ,000	99 ,000 ,000	9 .00 %
Kingdom of Saudi Arabia	347 ,600	347 ,600 ,000	31 .60 %
Sultanate of Oman	61 ,600	61 ,600 ,000	5 .60 %
State of Qatar	128 ,700	128 ,700 ,000	11 .70 %
State of Kuwait	293 ,700	293 ,700 ,000	26 .70 %
Total	1,100 ,000	\$1,100 ,000 ,000	100 .00 %

Based on the 1990 Project Study it was determined that the share of the cost of the interconnection will be the present worth of the capacity savings.



Interconnection Scheme



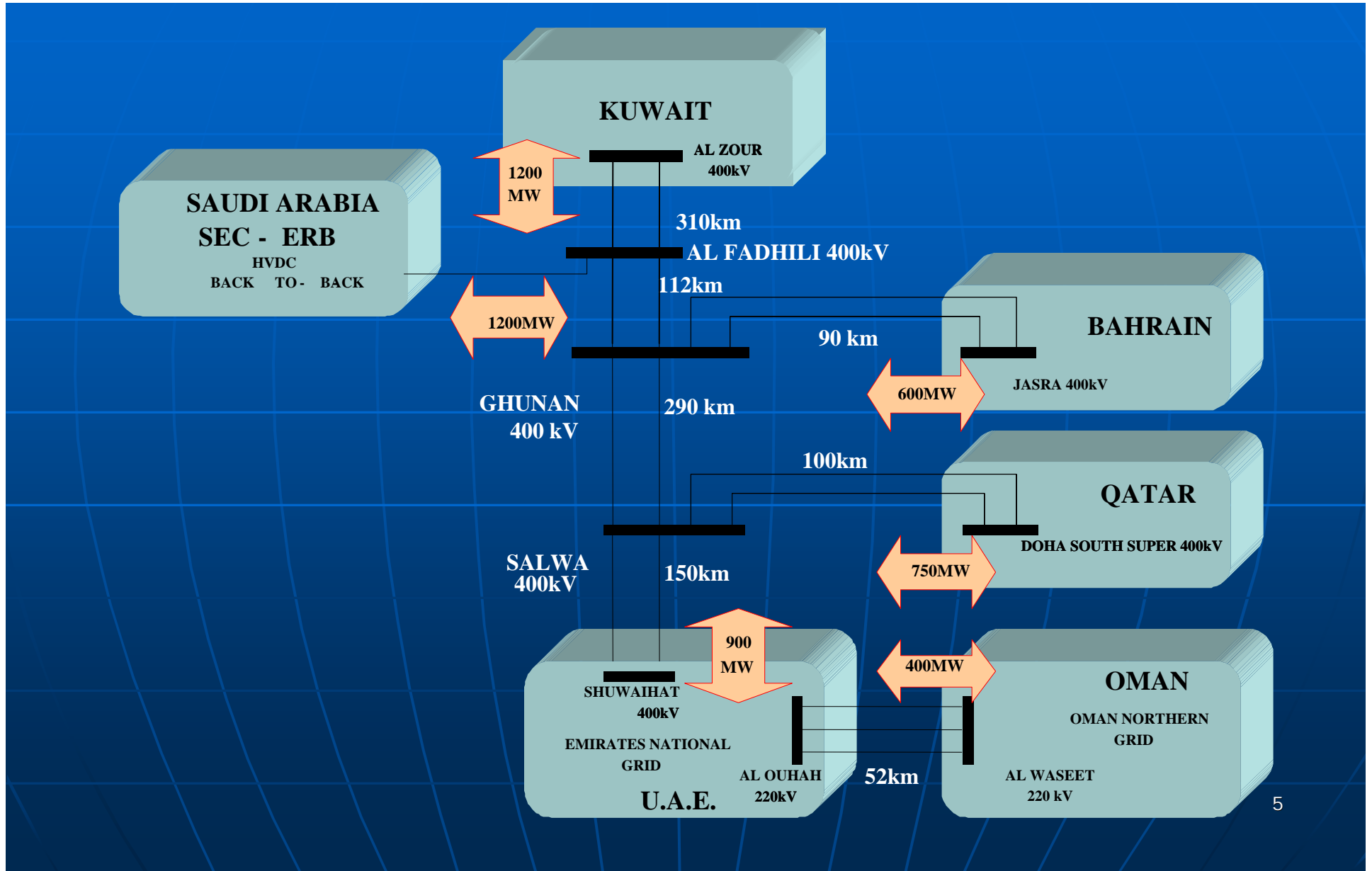
- Phase I will interconnect the Power Grids of the Kingdom of Bahrain, Kingdom of Saudi Arabia, State of Qatar and the State of Kuwait.

- The interconnection will comprise of:

- 400 kV GIS substation in Al-Zour Kuwait.
- 400 kV Switching station in Al-Fadhili S.A
- HVDC Bk-Bk Converter station
- 400 kV Switching station in Ghunan S.A.
- 400 kV Switching station in Salwa, S.A
- 400 kV GIS substation in Al-Jasra, Bahrain.
- 400 kV GIS substation in Doha, Qatar.
- The stations will be connected with a 400 kV double circuit Overhead Line.
- 400 kV Land & Submarine cable between Ghunan and Al-Jasra Bahrain.
- Control Center to be situated in Ghunan, Saudi Arabia.



Single-Line Block Diagram





Capacity of Interconnection to GCC

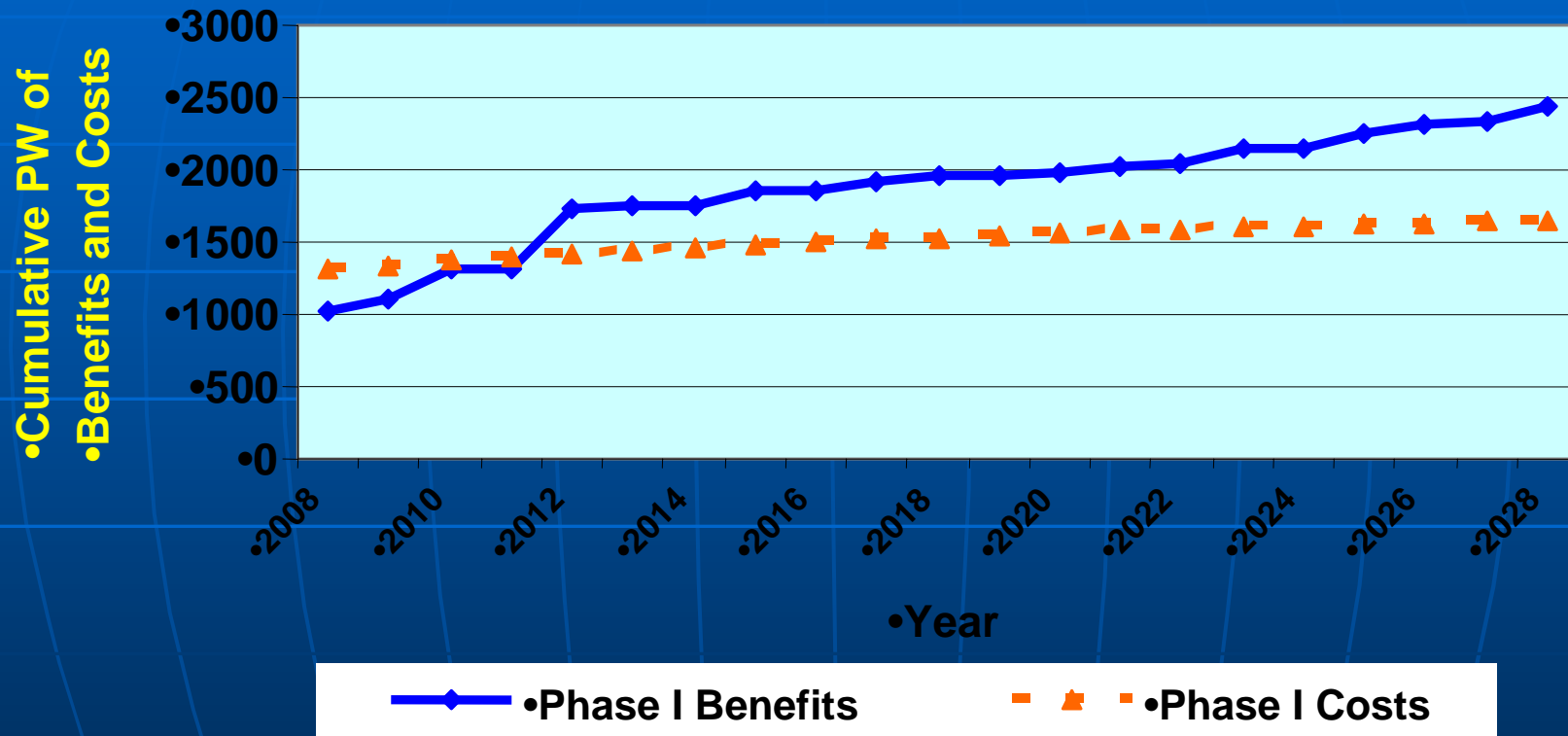
- The interconnection allows the reduction of the capacity reserve up to 50% that of the isolated grid.
- The interconnection size was dimensioned in such a manner that each system can import up to 50% the capacity of its largest plant.
- The interconnection size is summarized as follows:

Country		Capacity (MW)
UAE	→	900
Bahrain	→	600
Saudi Arabia	→	1200
Oman	→	400
Qatar	→	750
Kuwait	→	1200



Benefits & Costs

• PHASE I • CUMULATIVE PW OF BENEFITS AND COSTS IN
• \$ MILLION • (Jan. 2008 @ 6%)



The total cost rate of return will be recovered 4 years upon the completion of Phase-I.



Project Economics

- The GCC Grid is expected to reduce the amount of new generation capacity required by the GCC member states by sharing the reserve capacity that needs to be maintained by each system to ensure reliability and provide protection against outages. The capacity benefits to Year 2028 are shown below:

Isolated System

Load (MW)	Total Installed Capacity	Reserve (MW)
93 781	105 781 MW	12 085

Interconnected System

Load (MW)	Total Installed Capacity	Reserve (MW)
93 781	100 726 MW	6 945



Benefits of the Interconnection

- **Reduce generation reserves;**
- **Provide power exchange and strengthens supply reliability;**
- **Strengthens and Improves the operational and economic efficiency of the electricity power systems;**
- **Promoting utilities to construct larger generation units to share extra generated power;**
- **Provide opportunities for industrial customers and utilities to shop around for more attractive supply of power;**
- **Adopt technological development and use the best modern technologies;**
- **Providing long-term environmental advantages by reducing waste emissions from increasing generation plants.**



Tendering Process

- **A Competitive Tendering process was launched in February 2005.**
- **The tender submission was based on two envelopes system namely: Technical and Commercial.**
- **Tender submission and opening of the technical envelopes was conducted in June 2005.**
- **Commercial envelopes were opened in August 2005 for the technically viable offers.**
- **The commercially lowest (3) tenders were then taken for evaluation.**
- **Pre-Award meetings were held with the short-listed companies for award.**
- **Six companies were awarded the 13 EPC contracts and 1 company for the Consultancy & Supervision contract.**
- **The contracts were signed during the Contract Award Ceremony which was held in November 17, 2005.**



Contract Value

The value of the awarded fourteen (14) contracts are as follows:

Lots	Tenderer	Contract Value
Substations	ABB *	\$221,983,888
HVDC	Areva-Cogelex	\$205,896,785
OHL	NCC & MEEDCO	\$280,400,717
Cable	Prysmian-Nexans	\$343,122,125
Control	Areva-Cogelex	\$27,637,220
Supervision	SNC-Lavalin	\$16,283,146
Total		\$1,095,323,881

* Includes ABB Contracting Co. of Saudi Arabia.



Construction Timeframe

All contracts should be completed by month 37 and the entire project should be energized by month 38.

The timeframe schedule for the fourteen (14) contracts are:

Lots	Timeframe
Substations	37 months
HVDC	37 months
OHL	32 months
Cable *	37 months
Control	37 months
Supervision	50 months
Entire Project	38 months

*** One circuit will be completed by month 37 and the second circuit will be completed by month 50.**



Other Developments

Utilization of the Power Grid

- Realizing the advantage of the vast territory the interconnection will cover it has become obvious for the Authority to utilize the facilities in providing additional use for commercial purposes.
- By increasing the capacity of the current Fiber Optic cable (OPGW) will provide opportunities to companies in the telecommunications industry to take advantage by connecting to the interconnection transmission line.
- By providing such facilities the Authority will have embarked on enhancing the Power Systems of the GCC Countries, and providing other commercially viable services to other industries in the region.



Other Developments

Management Consultancy Services

- Realizing the importance of operating a vital facility such as the interconnection the Authority has embarked on hiring a reputable management consulting firm to develop GCCIA into an organization to meet future growth and change.
- The vision of the Authority preceding the construction of the Phase-I project is to be able to fully Operate and Maintain the Interconnection.
- To develop the Authority to become a major player in Regional Energy Trading.





Conclusion

- **The technical and economical feasibility for the GCC Interconnection has been proven.**
- **The GCC Interconnection will enhance the Power Systems of the GCC Countries.**
- **The Power Grid is a fundamental step leading to the liberalization of regional power market.**
- **The GCC grid will be a significant part of the Pan-Arab Grid.**
- **The GCC Interconnection will be the main gateway towards a Regional and Pan-Arab Power Pools.**



Epilogue

For further information you can
access our website at:

www.gccia.com.sa

THANK YOU