

POWER SECTOR SELECTED PROJECTS

1.0 Introduction

The selection criteria for projects required in the short term for the power sector aim mainly at the following:

1. Finalization of major infrastructure requirements to insure reception of natural gas at the major power plants
2. Addition and/or expansion of local power plants in order to meet future demand reliably
3. Addition of primary high voltage substations and links as necessary
4. Addition of secondary substations and 20 kV lines as necessary

2.0 Gas Infrastructure

Irrespective whether Lebanon will receive its natural gas supplies in dry form from Egypt through Syria, or in liquid form through tankers that would discharge at a still unavailable LNG plant, the local gas infrastructure should be constructed to reach the main power plants in Lebanon, which include Deir Ammar, Zahrani, and the future plant, likely to be situated in Selaata, where EDL already possesses a site.

The smaller and lower efficiency open cycle plants in Sour and Baalbeck may continue to run on the higher cost diesel, but their role as peak rather than base plants would be restored, and therefore fewer running hours and less associated production cost would be encountered.

Assuming that gas is received from Egypt through the Egypt-Jordan-Syria system, the following scenarios exist for the northern plants and the short term:

1. Deir Ammar: Infrastructure already completed, and no additional works are necessary.
2. Selaata: Infrastructure should be constructed up to Deir Ammar, to allow Selaata to be supplied through the North.

And, for the longer term:

3. Jieh: Infrastructure should be constructed, with the following alternatives:

- a. Up to Selaata, to allow Jieh to be supplied through the North
- b. Up to Zahrani, to allow Jieh to be supplied through the East

4. Zahrani: Infrastructure should be constructed, with the following alternatives:

- a. Up to Jieh, to allow Zahrani to be supplied through the North
- b. Up to Damascus, to allow Zahrani to be supplied through the East

The above analysis suggests that the links that should be constructed regardless whether the upstream source is the North or the East are the Selaata – Deir Ammar and Jieh – Zahrani ones. And construction of the former should be initiated in the short term.

For the medium and long term, Alternative 3a has preference over 4b mainly because it allows for the interconnection of the whole nation with a centralized grid, thereby allowing convenient future addition of an LNG plant once the need arises.

The construction of an LNG plant, proposed in the immediate vicinity of the Selaata power plant, would be considered if LNG international prices become competitive and/or if receipt of dry gas were further delayed.

3.0 Addition and/or Expansion of Local Power Plants

Noting that approximately 1,000 MW of additional power is required in the short term, these projects should include:

1. Construction of the first phase of a new combined cycle power plant, with Selaata being one candidate location
2. Addition of generator and substation equipment to Deir Ammar, thereby doubling its capacity
3. Performance of basic rehabilitation to the Jieh equipment in order to prolong their life

And, beyond 2010, the main projects should include

1. Complete replacement of Jieh
2. Doubling of the capacity of Zahrani

3. Implementation of the later phases of Selaata

4.0 Transmission Projects

The main projects related to the transmission sector are completed or under completion. What still needs to be done includes:

For the short term:

1. Construction of additional 220 kV substations, including Ashrafieh, Tripoli, and Baalbeck.
2. Addition of 66 kV substations and lines, as necessary (first phase).

And, for the medium and long terms:

3. Replacement of the 150 kV overhead and underground system by a 220 kV system.
4. Replacement of 150 kV equipment at Jamhour and Basta substations by 220 kV equipment.
5. Addition of 66 kV substations and lines, as necessary (later phases).

5.0 Distribution Projects

For the short term, the first phases of the following main projects related to the distribution sector should include:

6. Replacement of the 11 kV underground system in Beirut and the 15 kV overhead system in the Provinces by a 20 kV system (first phase).
7. Upgrades to loop systems wherever possible.
8. Addition of all lines and secondary substations, as required.
9. Removal of illegal connections.
10. General rehabilitation of the medium and low voltage systems, as necessary.

And, for the medium and long terms, continuation of the above projects should be pursued.

6.0 Consumer-Related Projects

No externally funded projects are required on the consumer end for the power sector. Gradual replacement of low voltage meters may take place, but that should be internally funded through EDL's Operation and Maintenance Budgets.