

FEATURES

FUJAIRAH 3 – LATEST TECH IPP

ARE GAS-FIRED IPPS A THING OF THE PAST, AS SOLAR PV REACHES LCOES OF AROUND US\$0.01/KWH, AND STORAGE COSTS ALSO REACH RECORD LOWS? CLEARLY NOT, AS MARUBENI AND EWEC HAVE DEMONSTRATED THROUGH THE CLOSING OF THE FUJAIRAH 3 IPP. BY **YUSUF MACUN**, MANAGING PARTNER, AND **RICHA PRASAD**, PARTNER, **CRANMORE PARTNERS**.

On October 16 2019, Emirates Water & Electricity Company (EWEC) received proposals for the Fujairah F3 IPP, a 2GW–2.4GW combined-cycle gas-fired power plant to be located at Qidfa in the Emirate of Fujairah, on the Gulf of Oman.

It will be the third of the three power/water installations at the Qidfa complex, with the F1 and F2 IWPPs – owned and operated by Emirates Sembcorp Water & Power Company and Fujairah Asia Power Company respectively – already operational.

The levelised electricity costs (LEC) of the bids were read out the same day in a bid opening organised by EWEC, with the results as follows: Engie Dh0.167005/kwh; Marubeni Dh0.168122; EDF/JERA Dh0.1710861; ACWA Power Dh0.1719712; Sumitomo Corp Dh0.18442; and Siemens Dh0.1851424.

Following EWEC’s compliance evaluation, Marubeni was declared first-ranked shortlisted bidder and was invited to finalise the PPA and start the process towards financial close.

The project signed its power purchase agreement (PPA) on February 16 2020 and reached financial close on June 16 2020 in one of the shortest periods from project award to financial close in the region over the last decade.

It was all the more remarkable that this was achieved amid the Covid-19 pandemic globally, with travel lockdowns being imposed across multiple jurisdictions, while working with a fairly large and complex financing group located in multiple geographies from Japan to the UK.

The project achieved financial close barely over a year from the issuance of the RFP in May 2019 and has continued to strengthen the strong track record of Abu Dhabi and Marubeni in demonstrating their ability to deliver on the planned aggressive schedules.

This underscores the continuing robustness of the EWEC procurement framework, particularly as this CCGT financing comes six years after the last greenfield CCGT project tendered by EWEC.

Project framework

Fujairah F3, in line with Abu Dhabi precedents, is being structured as a standalone IPP and developed by a special purpose company to be owned 60% by the F3 Local Holding Company and 40% by Marubeni, with the F3 Local Holding Company owned by AD Power and MDC Power Holding Company LLC (Mubadala), both 100% owned by the Government of Abu Dhabi.

DIAGRAM – CONTRACTUAL STRUCTURE

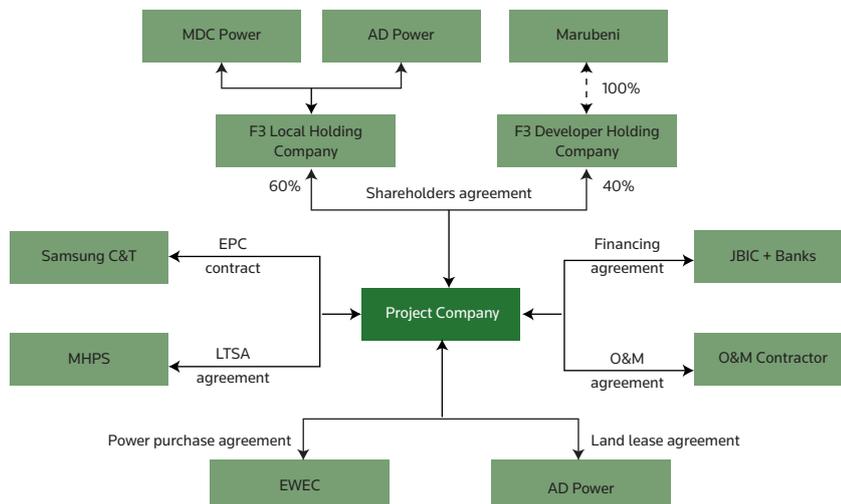


TABLE 1 - PROJECT DESCRIPTION

Features	Brief description
Type:	Greenfield independent power project ("IPP")
Location:	In Qidfa in the Emirate of Fujairah on the Gulf of Oman coast approximately 20km north of the city of Fujairah, and approximately 280 km north east of the city of Abu Dhabi
Scope:	Development, financing, design, engineering, procurement, construction, permitting, testing, commissioning, insurance, ownership, operation and maintenance of the power plant together with the ESF, ancillary equipment and facilities
Capacity:	2400MW
Technology:	Combined Cycle
Off-taker:	Emirates Water and Electricity Company
Concession term:	25 years post completion
Land:	Owned by AD Power and leased to the Project Company
Scheduled completion:	Phased introduction with early power by summer 2022 and scheduled COD for entire plant by summer 2023
Total project cost:	US\$1.2bn

As a first in Abu Dhabi, however, it is envisaged that some or all of the shares directly or indirectly held by AD Power may be offered in due course to local investors through an initial public offering or private placement.

EWEC acts as sole offtaker under the 25-year PPA, structured on an energy conversion basis, whereby it is also responsible for providing the natural gas as fuel to the project, with the plant operating on gas oil as back-up fuel.

The project benefits from a strong credit profile, with EWEC's obligations under the PPA guaranteed by the Government of Abu Dhabi. Construction and operation risks are managed by Samsung C&T Corporation, a leader in the gas-fired power sector, with an existing strong track record in the UAE as the sole EPC contractor.

The payment structure under the Fujairah F3 PPA follows the well-banked precedents in the UAE, with the capacity payment component covering capital cost recovery and fixed O&M costs, and the energy payment component compensating the project company for variable O&M costs and any fuel cost adjustments linked to fuel consumption during start-ups and normal operations.

As typical of availability-based projects in the region, the EPC contract and O&M contract are structured such that they are back-to-back with the PPA.

The F3 project will connect into the existing gas supply to the adjacent F1 and F2 plants. The gas supply is from the Taweelah to Fujairah leg of the Dolphin gas project pipeline with a total capacity of 1.6bn Scf/day, of which less than 20% would be required by F3 as per estimates, so that this would be within the maximum capacity of the existing gas infrastructure.

Samsung C&T Corporation of South Korea is the EPC contractor for the project

and its solution is based on MHPS M701JAC gas turbine technology, with each gas turbine feeding a dedicated HRSG with the steam output feeding condensing steam turbines.

These gas turbines are MHPS's latest high efficiency model, with a world-leading efficiency of 64% (LHV). The project company has also entered into a long-term service agreement with Mitsubishi Hitachi Power Systems Ltd. O&M will be undertaken by a special purpose vehicle formed by Marubeni.

The scheduled commercial operation date is summer 2023.

The electrical special facilities are to be built as part of the project and as per the technical specifications in the RFP supplied by EWEC and the ESFs will be transferred to Transco upon completion.

Long-term rationale

With intermittent solar power supply of 1,177MW and increasing, the phased introduction of 5,600MW of nuclear power by 2025, decoupling of the more traditional power and desalination combination in favour of standalone IWPs, there is an increased emphasis on the need for more efficient and flexible gas-fired power generation, which F3 is designed specifically to provide.

In this context, the F3 plant will provide the much needed high operational flexibility with many start-up and shutdown cycles and fast ramp-ups and ramp-downs.

As part of the effort to get the most competitive solution, the procurement rules used a gas price of US\$5.55/MMBTU for bid evaluation, which is much higher than gas prices on previous CCGTs in the UAE or the region.

This incentivised bidders to seek higher efficiency in their plants so as to minimise fuel consumption as well as maximise reliability,

TABLE 2 - DEAL TIMELINE

Milestones	Key dates
RFP issued:	20 May 2019
Bid submission:	16 October 2019
PPA signed:	16 February 2020
Financial close:	16 June 2020
Scheduled PCOD:	Summer 2023



These gas turbines are MHPS's latest high efficiency model with a world-leading efficiency of 64% (LHV)

given implied high penalties for missing the projected efficiencies.

Energy efficiency and design optimisation for the site were therefore key considerations in Marubeni and Samsung's design of the system, with Marubeni spending significant time on optimising the impact of fuel consumption under different possible plant operational conditions.

On the basis of this tariff and penalty structure, the choice of gas turbines became a key factor in the bid, with the lowest two bidders choosing MHPS J class machines, with the others bidding with other gas turbines.

Note that EWEC has chosen to evaluate the LEC of the bids over an evolving operating pattern through the asset life, from near-base load in initial years, to mid-merit over the medium to long term.

While this had the effect of increasing the LEC, it also had the merit of being a realistic reflection of the likely future operations of F3, as greater baseload capacity came on stream through nuclear, while intermittent low marginal cost solar PV became more prevalent. With multi-gigawatt renewables in the region, the F3 bid has demonstrated that there is still a need for reliable and very efficient gas-fired electricity.

Financing

EWEC's innovations have not been limited to the technical parameters and EWEC has consistently shown that it remains the most agile in observing global developments, seeking feedback from its partners and being ready to experiment with structures hitherto untouched in the region, whether it be the first soft mini-perm financing (Mirfa IWPP) or the first hard mini perm structure officially permitted by a procurer – Al Dhafra.

As a result, on every bid, and more so on recent bids such as F3, Al Dhafra, Sweihan or Mirfa, we have seen that UAE leads the charge in the region in embracing new financing structures supportive of its equity and debt partners' requirements while continuing to develop its own agenda of developing additional sources of long-term sustainable liquidity to finance its infrastructure requirements.

Financing for the US\$1.2bn project was provided by way of US\$900m of non-recourse senior debt, US\$200m of equity bridge loans (EBL) and a VAT facility. The sponsors were advised by Cranmore Partners, an Abu Dhabi-based advisory firm.

Non-recourse financing – constituting 80% of the total funding – was secured by way of a long-dated soft mini-perm structure provided by Japan Bank for International Cooperation (JBIC) and a small group of commercial banks. Pre-bid support was provided by project finance leaders BNP Paribas and Mizuho, with a letter of support from JBIC, while SMBC,



In addition to typical project costs, Fujairah F3 faced the need to finance the value added tax through construction

SMTB and Standard Chartered Bank joined the deal post-bid.

While soft mini-perms are now common among commercial banks, this deal nevertheless marked a first for JBIC in providing soft mini-perm financing. Along with the support of Marubeni's lead bankers, the sponsors were able to benefit from a very competitive financing proposal, which married their lead banks' views on refinancing with JBIC's support to Marubeni.

In addition to typical project costs, Fujairah F3 also faced the need to finance the value added tax through construction. Further to Federal Law No (7) on Tax Procedures and Federal Decree-Law No (8) of 2017 on Value Added Tax (UAE VAT Law), the UAE has imposed 5% VAT on various components of the total project costs incurred, to be paid by the project company.

The project company can then file for refunds of these amounts from the FTA, which aims to process them within a few months. This, however, presented a challenge as there were no clear precedents in the local banking market for the structure of the VAT facility.

The sponsors and Cranmore thus set about structuring the VAT facility in discussions with various local lenders, and the project company eventually procured a competitive UAE dirham-denominated facility from Standard Chartered Bank.

In summary

The deal was closed under extremely difficult conditions, with increasing cases of Covid-19 leading to multiple travel lockdowns globally, increasing liquidity costs and a difficult operating environment.

It continues to demonstrate the strong support that EWEC and Marubeni continue to command from the contracting and financing markets and faith that even a pandemic such as Covid-19 is just another surmountable challenge to work around.

In addition, the project sets a number of firsts and record milestones:

- It is the first project where JBIC has lent under a soft mini-perm structure
- It will be the first project utilising the MHPS M701JAC turbines in the Middle East
- It was the first IPP in the GCC to close during the peak of the Covid pandemic, setting a record four months between project document signing and financial close notwithstanding. ■