SAUDI ARABIA: THE FUTURE SOLAR LEADER

by Clint Steyn and Marc Norman, in Dubai

Saudi Arabia is poised to launch an ambitious renewable energy program that could see the procurement of 54,000 megawatts of renewable energy capacity over the next 20 years.

At a recent trade conference, the Saudi government revealed the first step in the procurement process by announcing plans to issue a draft request for proposals for an introductory procurement round of up to 600 megawatts of utility-scale solar projects in the second quarter of 2013.

This introductory round is expected to precede two full-scale rounds. These three procurement rounds are expected to lead to the procurement of approximately 5,000 megawatts of solar facilities. The capacity is expected to split equally between photovoltaic and solar thermal projects.

These first procurement rounds form part of a wider renewable energy program to be deployed by the Saudi government under the stewardship of the King Abdullah City for Atomic and Renewable Energy, or K.A.CARE. The main goal of the K.A.CARE renewables program is to limit domestic oil consumption in order to boost lucrative oil exports.

K.A.CARE's overall target is to generate a third of its electricity from renewable energy by 2030, which translates into approximately 54,000 megawatts of renewables facilities. Most of the target is expected to be reached through solar projects: 16,000 megawatts in photovoltaic projects and 25,000 megawatts in solar thermal projects.

The potential opportunities for solar power in Saudi Arabia abound. The Kingdom could rapidly become one of the world's most significant solar power markets as well as a "game changer" for beleaguered solar equipment manufacturers.

Economic Pressures

Less than a year ago, Saudi Arabia had no target for renewable energy. According to British Petroleum, less than 1% of Saudi energy came from renewable sources in 2011.

A ministerial committee was established in October 2009 to assess the Kingdom's electricity and water needs. The ministerial committee made recommendations to the cabinet less than a month later, and the Minister of Petroleum and Mineral Resources observed,

> The Kingdom is witnessing increasing growth with high rates of demand for electricity and desalinated water due to the growing population and the subsidized prices of water and electricity, and such increasing demand for electricity and water is coupled by an increasing demand for the non-renewable hydrocarbon resources to be used in generating power and desalinating water to which the need to provide will continue to increase; therefore, the use of alternative sustainable and reliable resources for generating power and producing desalinated water reduces dependency on hydrocarbon resources and thereby is considered an additional guarantee for producing water and generating power in the future and, at the same time, saves the hydrocarbon resources, which in turn extends the life of such resources and keeps them as a source of income for a longer period of time.

A Chatham House report in December 2011 echoes the Minister's observations in bolder terms: "In an economy dom-

inated by fossil fuels and dependent on the export of oil, current patterns of energy demand are not only wasting valuable resources and causing excessive pollution, but also rendering the country vulnerable to economic and social crises. Saudi Arabia's place in the world oil market is threatened by unrestrained domestic fuel consumption." Were Saudi Arabia to continue on its trajectory, Chatham House simulations suggest "[its] domestic energy consumption could limit its exports of oil within a decade." A widely circulated Citigroup report in September 2012 concluded that Saudi Arabia could cease to be an oil exporter by 2030. When considering that over 80% of Saudi Arabia's government spending is dependent on oil, a shift in Saudi energy policy was inevitable.

K.A.CARE was established by royal decree in April 2010 and charged with setting and implementing the Saudi atomic and renewable energy policy. The renewables procurement program was launched a year later.

Program Details

K.A.CARE launched one of the most ambitious renewable energy programs in May 2012. It set a target for the Kingdom to generate 54,000 megawatts of renewable energy by 2032. In September 2012, K.A.CARE revised the target upwards by bringing the target year forward to 2030.

Although the development of multiple sources of renewable energy is envisaged, solar power generation is the priority. K.A.CARE targets the development of 41,000 megawatts of solar power projects by 2030 made up of 16,000 megawatts of photovoltaic projects and 25,000 megawatts of solar thermal projects.

K.A.CARE says it will look to solar thermal projects to assist in meeting the Kingdom's base-load demand, while focusing on photovoltaic projects to reduce peak-load demand.

The solar program is expected to cost $109 billion, almost as much as the $136 billion invested worldwide in solar energy in 2011.

Solar developers (and other interested parties) may register on K.A.CARE's registry program by sending an e-mail to developer-registry@energy.gov.sa, including the following information: company name, company representative's name, technologies provided, address, phone, fax, website and e-mail.

No stakeholder engagement sessions have been held yet.

K.A.CARE said in September that a dedicated offtaker for the procurement of renewable energy projects would be established. It will be called the Sustainable Energy Procurement Company.

The dedicated offtaker is expected to serve as an internationally-recognized creditworthy counterparty for power purchase agreements and other related contracts. Although the Sustainable Energy Procurement Company is a Saudi government-backed entity, the plan is that it will operate as an independent entity.

There will not be any incentive scheme for renewables projects at the onset of the program. K.A.CARE plans to initiate the program via the deployment of a competitive procurement process.

There will be an "introductory" competitive procurement round, followed by the first two full-scale rounds.

The introductory round is expected to launch in early 2013, most likely in the second quarter. The launch of the first full-scale round is expected a year later. The introductory round and first full-scale round are expected to unfold under the timeline below.

There is currently no hard date indication of when the second full-scale round will be launched. The deployment of this round is dependent upon the execution of the introductory and first full-scale rounds.

K.A.CARE will decide whether to introduce a feed-in tariff upon completion of the second full-scale round.

Introductory Round

The introductory round is a means to increase comfort among key stakeholders, in particular the National Grid Company of Saudi Arabia.

The introductory round is expected to be as large as 800 megawatts. It will comprise a minimum of seven prepackaged sites that will be designated for particular technologies. There will be a separate process and internal engineering study for each site.

The procurement will be for the development of three photovoltaic projects and three solar thermal projects. Each of the six projects is therefore likely to have its own dedicated site. (The seventh site is likely to be dedicated to a 100 megawatt wind farm, which had not initially been envisaged for the purposes of the initial procurements.) The sites will be geographically diverse.

Resource quality monitoring is due to commence as soon as K.A.CARE takes control of the sites.

Site locations will be provided to transmission technical consultants for initial cost detailing using generic cost assumptions.

K.A.CARE will work with the responsible agencies to commence basic infrastructure for the site, including roads, water and telecommunications.

It will issue a white paper providing further details about the introductory round, presumably at the beginning of 2013. A simultaneous launch of a registration scheme is envisaged for developers to register preliminary interest (although it is not clear whether this differs from the generic developer registry program for the K.A.CARE program at large).

A month after the launch of the white paper, K.A.CARE plans to issue both a draft request for proposals and a draft power purchase agreement for developers to comment. Developer information sessions, or "technical bidder workshops," will be held after release of these documents.

Two months after issuance of the draft request for proposals and draft power purchase agreement, K.A.CARE will issue an expression of interest, statement of opportunities together with a request for qualification to developers.

The introductory round will be officially launched upon the issuance of the final request for proposals, which is scheduled for the second quarter of 2013.

First Two Procurement Rounds

The first full-scale procurement round is expected to be launched in 2014, potentially in the first half of the year. The timing depends on execution of the introductory round.

The size of the first full-scale round is expected to be approximately 3,000 megawatts, including 2,000 megawatts of solar projects.

The round is expected to procure between 11 and 55 photovoltaic projects, with a total capacity of approximately 1,100 megawatts, and between five and 25 solar thermal projects with a total capacity of around 900 megawatts.

The second full-scale round, when it comes, will be for approximately 4,000 megawatts, including 2,500 megawatts of solar.

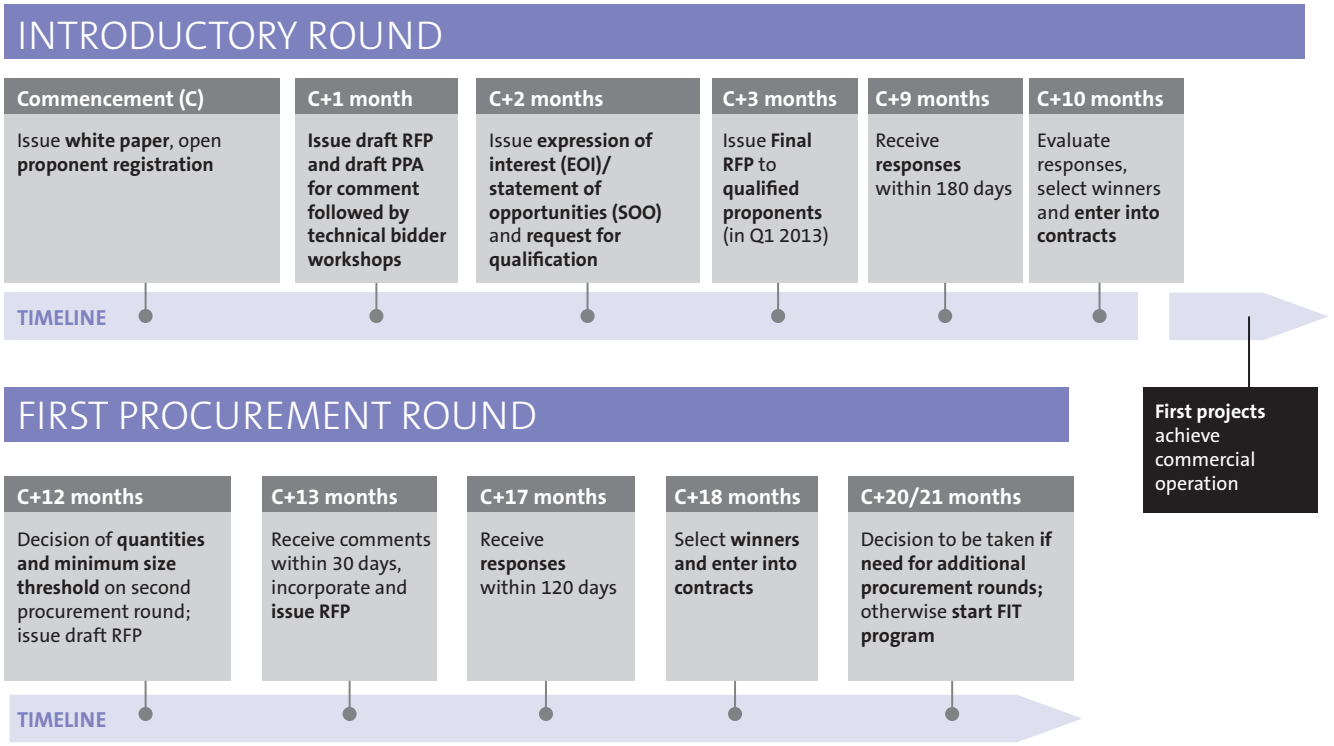
This round will procure between 15 and 65 photovoltaic projects with a total capacity of around 1,300 megawatts, and between seven and 30 solar thermal projects with a total capacity of 1,200 megawatts.

After the second full-scale round, K.A.CARE will decide whether to introduce a feed-in tariff. If it decides against a tariff, then further procurement rounds are expected.

Bid Evaluation

All projects bid into the procurement must have a minimum capacity of five megawatts. There is no upper limit on project size.

Winning bidders will be awarded a power purchase agreement with a term of 20 years.



K.A.CARE is considering adding a prequalification round, in line with Saudi precedent. Developer qualification may be limited based on criteria such as the developer's financial capability (based in riyals per megawatt), experience with relevant technology and development track record.

Bid evaluation is expected to be broken down into four phases.

Phase I is simply to check that all required forms and documents along with application fee and security have been submitted.

Phase II is the evaluation of mandatory criteria. This is basically a check that the bid complies with the request for proposals and all relevant laws, regulations and codes, the proposed project is technically viable, the developer has site control, resource assessments and interconnection requests have been initiated, environmental and local permit needs have been identified, the minimum financial capability requirements have been satisfied and, for the second full-scale round only, local-content requirements will be satisfied.

Phase III is the detailed evaluation and ranking on as many as four non-price factors. The four are financial capability, experience, development status and, for the second full-scale round only, local content.

Points will be assigned for each category and aggregated into an overall score. Each bidder must succeed in reaching a minimum score in phase III to remain eligible for the phase IV evaluation.

The local-content requirement is expected to apply only under the second full-scale round, but the existence of local content in either of the introductory or first full-scale round will boost the project ranking.

The last phase is to compare the proposals based on price. Proposals are grouped by technology and selected starting from lowest to highest evaluated proposal price until the cumulative capacity in each technology category meets or exceeds the given target. To the extent the target capacity is not realized for an individual technology category, the project with the next lowest evaluated proposal price is selected from the remaining technology categories. K.A.CARE may prioritize resource diversity over the use of the next lowest price.

Local Content

There is no local-content requirement for the introductory or the first full-scale procurement round, although developers who use local content will score better. The number of extra points awarded will depend on how much the "allowable local expenses" represent as a percentage of the total project cost.

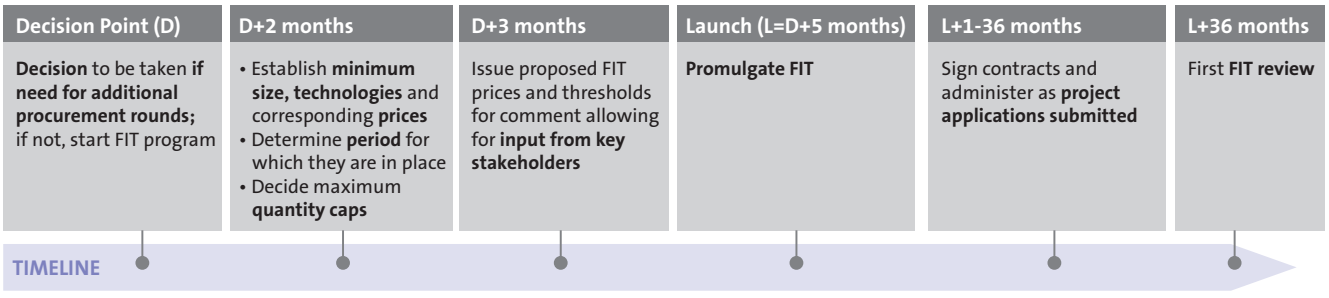
Upon the launch of the second full-scale procurement round, there will be a mandatory local-content requirement. In this round, the developer would have the option of either incurring "allowable local expenses" or devising an offset scheme.

Offset schemes are already in place, for instance, for procurements in the Saudi defense sector. Under these schemes, non-Saudi entities winning a defense contract must enter into an economic offset agreement whereby they commit to invest an amount equal to a defined portion of the contract value in "innovative industrial and service projects" in Saudi Arabia in collaboration with Saudi private sector companies.

The local-content requirement may not survive. A World Trade Organization panel appears poised to rule that the local-content requirements included in the feed-in tariff regime in Ontario, Canada violate international trade law.

According to the Geneva-based think tank that leaked an interim ruling, the WTO panel supports claims made by the European Union and Japan that the local-content requirement embedded in Ontario's feed-in tariff regime violates a non-discrimination principle enshrined in the General Agreement on Tariffs and Trade and the WTO Agreement on Trade-Related Investment Measures.

Although parties will have an opportunity to comment, it is rare that final rulings materially depart from the initial findings of a panel. A final ruling, which may be appealed, is



expected in late November 2012.

If the WTO rules that Ontario's feed-in tariff regime violates international trade law, then K.A.CARE's local-content provisions, and in particular the mandatory requirement that is set to be implemented in the second full-scale procurement round, would come under scrutiny.

Feed-In Tariff

A decision will be made after the second full-scale procurement round whether to introduce a feed-in tariff. If such a tariff is adopted, then it would be implemented under the timeline on the previous page.

The launch of a feed-in tariff would not necessarily spell the end of the competitive procurement process. Even if such a tariff is adopted, it would probably be used initially only with smaller-scale projects involving proven technologies.

Market Insights

Market participants from all sides of the table view the Saudi emphasis on local content and technology transfer as a key challenge in the procurements. It also creates opportunities.

According to Browning Rockwell, founder of the Saudi Arabian Solar Industry Association, "The Saudi Arabian solar power market will develop around local companies, because the underlying rationale of the K.A.CARE program is to create local jobs and in turn develop local expertise, so the first priority for international developers should be to develop strong relationships with local partners."

Vahid Fotuhi, president of the Emirates Solar Industry Association and Middle East director for Alion, a solar engineering, procurement and construction company, agrees: "Strong partnerships with local companies will be the key to success."

Although it is widely acknowledged that participants who succeed in developing strong relationships with local companies are likely to be at an advantage, such ties do not guarantee success. Neither will Saudi companies be given preferential treatment.

Soudki Atassi, manager of acquisitions and project finance at ACWA Power, a Saudi Arabian power developer that targets 3.8 gigawatts of renewable energy capacity by 2017, believes that cost, or rather the tendered tariff, will be the key determining factor: "If you look a recent Saudi precedent in the conventional independent power project sector, which the solar market will likely seek to replicate, it is clear that pricing is the ultimate consideration, above all else. Although, of course, it is clear that those who create jobs in Saudi are more likely to be successful."

Browning Rockwell agrees that job creation will be a key differentiating factor: "Companies that are able to demonstrate that their offerings will contribute toward the fostering of a center of excellence for solar power in Saudi, which in turn will create local jobs, are likely to generate the most interest." He does not believe that price considerations will necessarily be as decisive as in other, more established solar markets.

Rockwell, who acts as an agent for a number of solar power developers in the Middle East and beyond, posits that international solar developers will have to adapt their approaches, and arguably their business models, in order to be successful in the Saudi market: "The strength of certain developers in a number of mature markets has been to provide an effective turn-key solution backed by a competitive financing package. In Saudi, this kind of approach will not cut it. International developers will have to work in Saudi — with Saudis — and demonstrate a long-term commitment toward the Kingdom. It is not just going to be about pricing."

On the other hand, Amir Mokhtar, market development manager for solar power in the Middle East and North Africa at Hilti, a solar photovoltaic equipment supplier, doubts that Saudization, and the drive to tackle local unemployment, will be so fundamental. Mokhtar believes that the key considerations will be, in order of importance: financing, price, technology, warranties and operation and maintenance costs. "The whole package will be assessed. K.A.CARE will be sensitive about price, although it is fair to say that it may be a little less sensitive than procuring agencies in other markets, given the wider, long-term policy objectives of the Kingdom. Saudi Arabia's renewables strategy is driven by necessity, not a want of fame."

Fotuhi believes that the weight of Saudization will evolve over time: "Initially, it will not be mandatory, as the approach will first be to tap into the abundance of international expertise available today to reduce costs as much as possible. But down the line, it will become increasingly important."

Market participants believe that use of local content will remain important even if the WTO rules against local-content requirements in Ontario: "It will play a key role," says Atassi.

Mokhtar agrees, pointing out that "it will be a key differentiating factor."

Cristiano Spillati, a former K.A.CARE consultant turned regional manager for the Middle East region at CSSkyPower, a joint venture between Canadian Solar and SkyPower Global, believes that the key challenge for developers will be manag-

ing system component costs and, in turn, attainment of a low levelized cost of electricity: "In the photovoltaic space, for instance, you have to consider that panels currently represent less than 50% of the system cost. So, the management of costs associated with other components will be crucial. Construction costs will also be an important factor in the mix. These are likely to arise as key differentiating factors." Atassi agrees, noting that local content is likely to play a key role in the drive for competitiveness: "Our experience at ACWA Power has shown that in order to be able to submit a competitive tariff, one has to try to supply as much as possible from local manufacturers. So, the use of local content can be viewed as an opportunity."

There are a number of issues and peculiarities in Saudi Arabia that make certain market participants uneasy. The general lack of regulation and market standards is seen as issue that could initially cause uncertainty and, in turn, complications. Saudi Arabian Oil Company, or Saudi Aramco, a Saudi oil and gas company with interests in the solar power sector, is often cited as a model to follow in terms of market standards. "Saudi Aramco projects are very strict in terms of standards and specifications. Although this obviously has its challenges, it has the ultimate benefit of offering some form of security to investors," says Mokhtar. The current lack of regulation and market standards is due to this being a nascent market. Spillati expects international market standards and specifications to be implemented over time.

Lack of skills on the ground is also viewed as a potential challenge. Although local job creation is likely to be of particular importance, the required skills and experience may not be readily available locally, at least not initially. As Fotuhi points out, "Investors will have to factor in both the cost of sourcing skills and ultimately, training."

Another variable is the climate. Although Saudi Arabia has some of the highest irradiation levels in the world, the high temperatures during summer will cause solar facilities to degrade. As Atassi notes, "We don't yet have a clear view of the impact of high temperature on productivity. There are a few sites in the region that could provide such an indication. So, when it comes to agreeing on the base case production level with lenders, there is not really an established standard to go by." Then, there is also the dust factor, which cannot be overlooked in desert regions. "Removing the dust and cleaning relevant parts of facilities will increase productivity, but it will also have an impact on operation and maintenance costs," Atassi warns. "A healthy balance between enhanced productivity and cost efficiency will have to be determined by project operators, and this will only become possible on the basis of applied experience."

The capacity envisaged by Saudi Arabia is likely to change the nature of the global solar industry. As such, unique opportunities are likely to present themselves in Saudi Arabia, above all other markets. Rockwell, for instance, believes that the Saudi solar market will be a boon for innovative, technologically-advanced enterprises: "Saudi will be a good testing ground for new technologies. The government is keen to create a new generation of engineers and to counter any brain drain via the creation of a global center of excellence for solar power."

A senior representative from a prominent solar developer, who shared insights on condition of anonymity, singled out the strong emphasis on concentrated solar power technology as a unique opportunity: "The concentrated solar power market has suffered in the past few years, in the face of plummeting photovoltaic panel prices. The K.A.CARE program, with its strong emphasis on concentrated solar power, is a game changer for the global concentrated solar power market. Saudi is likely to lead the way as far as the development of this particular sector is concerned, and so unique and potentially very interesting opportunities are likely to materialize in the Kingdom."

The actual roll out of the K.A.CARE program depends on the financial empowerment of K.A.CARE. This, in turn, requires the approval of an implementing regulation by the Saudi Arabian Council of Ministers. The Council is likely to grant approval in approximately six months, although the process is subject to uncertainty.

The K.A.CARE program is still a work in progress. However, it appears unlikely that K.A.CARE will materially depart from the program it has unveiled to the market and subsequently fine-tuned over the course of the past year.

K.A.CARE plans to issue a white paper in December 2012. This paper will be the precursor to official launch of the much anticipated introductory round.

All eyes are on the future solar leader.

Saudi Arabia – Future Solar Power Leader?

Such is the desert Kingdom's ambition.

Saudi Arabia intends to procure 41,000 megawatts of solar power projects by 2030. It will soon launch its introductory procurement round for up to 600 megawatts.

- Chadbourne lawyers are currently representing governments, developers and a multitude of leading market participants on some of the most important solar power projects in the Middle East, including the first phase of the 1,000 megawatt Sheikh Mohammed bin Rashid Al-Maktoum Solar Park in Dubai.
- Chadbourne has an excellent track record of advising on power transactions in Saudi Arabia, including the 4,000 megawatt Qurayyah independent power project — the largest IPP in the world.
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