February 17, 2009

Re: Hearing Document - Regulation of Power Generation Facilities Using Photovoltaic Plants from 51 kW to 5 MW

1. Overview:

1.1. The Public Utility Authority - Electricity is considering using its authority to publish regulations for medium-sized power generation plants using photovoltaic technology to be connected to the national power grid.

1.2. The Government of Israel has set objectives for incorporation of renewable energy into the Israeli power market, most recently in its decision no. HK/176 dated January 12, 2009. In order to achieve these objectives, the Authority has specified, and continues to specify, a range of regulations for incorporation of renewable energy while minimizing cost.

1.3. This proposed regulation is pursuant to a decision by the Authority Plenum in its meeting no. 216, whereby it was decided that the Authority shall specify a regulation mechanism and tariffs for photovoltaic plants larger than 50 kW (installed) which are connected to the grid and which use an energy method as defined in the Electricity Market Regulations - Transactions with Essential Service Provider (2000).

1.4. Note that the Authority does not refer in this document to solar plants using solar thermal technology. Such facilities would be referred to as needed at a later date. A decision with regard to regulation of photovoltaic plants as set forth in this document shall also require updates to Authority decision no. 1 at its meeting no. 177 dated August 16, 2006 with regard to "Tariffs for solar facilities".

1.5. The Authority's professional team has reviewed the many issues underlying such regulation, And after discussions with parties involved with such technology in Israel and overseas, the team has compiled the document proposed here with.

1.6. Prior to making its decision, the Authority wishes to hear the views of the public and those of companies and organizations active in this field with regard to the proposed policy.

2. photovoltaic systems:

2.1. photovoltaic systems are the most commonly used systems around the world for electric power generation based on solar energy. Such systems convert sun light reaching the photovoltaic receptors into electric current transmitted to the power grid via converters which adapt the frequency, power and phase to the power grid.

2.2. There are several technologies for photovoltaic cells, including silicon cells and thin film. Current regulation does not favor any specific technology, but is limited to photovoltaic systems, and not to solar thermal systems - which generate power from the sun's heat.

2.3. Mid-range photovoltaic systems enjoy several advantages in power generation:

2.3.1. Generation of electric energy without requiring allocation of land used for other purposes. photovoltaic facilities may be constructed on roof tops, water reservoirs and on land which cannot be excavated.

2.3.2. photovoltaic systems of up to 5 MW are connected to the distribution grid, stabilize the grid frequency and improve power quality, in addition to savings on investment in power transmission infrastructure.

2.3.3. Distributed power generation system in close proximity to consumers, allowing a reduction in high-voltage transmission lines and saving on energy transmission from the generation site to the consumption location.

2.3.4. photovoltaic systems are constructed using environmentally-friendly technology and generate power without burning fossil fuels nor altering the terrain.

2.3.5. Reduction of dependency on imported fuels and diversification of energy sources.

2.3.6. Proven technology over several years. Through the compilation date of this document, photovoltaic cells providing over 10 GW have been installed around the world.

2.3.7. These systems provide "green" power and reduce emissions of carbon oxides, nitrogen oxides, particles and CO_2.

3. Development in this field:

3.1. This regulation is intended to provide a solution for developers seeking to construct photovoltaic plants to be connected directly to the low-voltage and high-voltage power grid, operating using an energy method as defined in the Electricity Market Regulations - Transactions with Essential Service Provider (2000).

3.2. Any developer in Israel may operate in this field and may promote construction of such facilities in compliance with regulations set forth below.

3.3. This regulation is intended for generators who intend to sell energy to an Essential Service Provider. Therefore, any developer seeking to construct a facility and sell energy to consumers shall not be subject to this regulation.

4. Licensing procedure vis-à-vis the Electricity Authority:

4.1. Any facility for power generation using photovoltaic technology which is in compliance with requirements of this regulation and with statutory requirements would need a power generation license and a tariff for selling energy to an ESSENTIAL SERVICE PROVIDER.

4.2. The licensing process required for any developer consists of three stages as follows:

4.2.1. Application for license in principle. The developer shall submit their application to the Electricity Authority in triplicate using the forms published from time to time on the Authority's website.

4.2.2. License in principle. After review of pre-conditions, the developer shall be granted a license in principle, including progress milestones for a term of up to 36 months.

4.2.3. After construction of the system, its synchronization with the power grid and testing by the ESSENTIAL SERVICE PROVIDER, the facility owner shall be granted a permanent generation license for a 20-year term, with an

optional 10-year extension. Note that the tariff for power generation by the plant would not be provided beyond the initial 20 years of operation.

5. Application for license in principle for construction of generation facility:

5.1. To apply for a license, use the forms provided by the Authority, which are available on its website at WWW.PUA.GOV.IL under the Licensing tab.

5.2. In its license application, the developer is required, inter alia, to meet certain pre-conditions. The application shall be submitted to the Authority and shall be reviewed by its professional team. Any application found to be appropriate shall be forwarded to the Authority Plenum for authorization of the license.

5.3. After approval by the Authority Plenum, the license would be submitted for approval by the Minister of National Infrastructure and would then become effective.

6. Pre-conditions for obtaining a license in principle:

6.1. Land affinity - the applicant should prove their affinity to land available for the project, whether privately owned, by tender or by decision of the Israel Land Administration. The Authority is aware that land with an area of dozens of acres is required for construction of photovoltaic plants with installed capacity of up to 5 MW. The Authority shall calculate the minimum land area required for the plant based on its power rating at a minimum of 2 acres per installed MW. The affinity requirement proves, at this stage, that the process of land allocation for the project has started, and is a significant component in proving the earnestness of the development. Note that this regulation does not require that facilities be constructed on land; it is possible, even desirable, that they be constructed at locations which do not require dedicated land allocation, such as on existing buildings, water reservoirs etc.

6.2. Proof of equity - the applicant is required to prove their capacity to provide equity equal to 20% of the normal project cost. The Electricity Authority determines that the normal cost of a 1 kW facility is as set forth

below in section 14.4. The Authority, based on this decision, shall update its decisions with regard to the normal cost per photovoltaic plant.

6.3. Experience in this field - in reviewing the application for a license in principle, the professional team, at its own discretion, would consider various parameters of the application which indicate the developer's experience in this field, including compliance of the technology with criteria for photovoltaic plants. The Authority does not intend to constrain technological advances, however the developer would be required to prove their experience in this field as indication of the seriousness of their application. The professional team would not disqualify any application without affording the developer a chance to state their position.

6.4. Connection to the grid - schedule and prices for connecting the project to an ESSENTIAL SERVICE PROVIDER grid. The applicant shall provide the Authority with a document from an ESSENTIAL SERVICE PROVIDER regarding connection to the grid at tariffs set by the Authority and in accordance with rules set forth in benchmarks for additional distance.

6.5. Bank guarantee - as a pre-condition for granting a license in principle and as a tool for supervising the license holder, the Authority shall specify a statutory guarantee mechanism to be included in the license granted to the developer, requiring the developer to provide a guarantee equal to 1% of the normal cost of the facility for the term of the license in principle, pending approval of the tariff. Should the developer not reach the tariff approval stage prior to financial closing, in accordance with the milestones set forth in the license, the guarantee would be refunded in full. Should the license holder reach the tariff approval stage prior to financial closing, they would increase the guarantee amount to 5% of the normal cost of the facility - expiration of the license shall lead to complete forfeiture of this guarantee.

Upon receiving all information in the application form, and after clarifications with the developer as needed, the professional team shall decide whether to submit for Plenum approval a tentative license in principal, which would become effective after approval of the Minister of National Infrastructure.

7. License in principle:

7.1. The license in principal is the document which accompanies the developer in the construction phase of the facility, and which constitutes the regulatory environment in which the developer operates - along side the statute, regulations and benchmarks. This license in principle contains milestones for project progress, and by complying with these milestones the license holder will eventually be granted a permanent license. Compliance with the milestones allows the developer to progress towards financial closing and eligibility for the tariff in conjunction with the total volume allocated for this regulation.

7.2. The following are the major milestones in the license in principle:

7.2.1. Plan approval by planning entities - this is an approval in principle by the planning entities (local committee) for construction of the facility.

7.2.2. Ordering a connection to the power grid and payment of a 10% advance.

7.2.3. Contingent tariff approval(1) - the contingent tariff approval is a commitment to the developer to receive said tariff as well as the right to be included in the volume allocated for this regulation.

The tariff approval would be linked in accordance with the linkage mechanism described below. During this period, the developer should conclude the financial closing. Should financial closing not be concluded within 90 days from grant of the tariff approval, the tariff approval shall expire.

7.2.4. Financial closing - written confirmation from the financing entity that all conditions for the financial closing as set forth in the license have been met. Failure to conclude the financial closing within the time frame of the contingent tariff approval would lead to expiration of the tariff approval and license and to forfeiture of the guarantee.

7.2.5. Facility construction - milestones for construction of the facility include: connection to the grid, construction of foundation, arrival of equipment on site and synchronization with the grid.

7.2.6. Testing of the facility by the ESSENTIAL SERVICE PROVIDER and its connection to the grid.

(1) In granting the contingent tariff approval, the professional team shall exercise due caution. As set forth below, this regulation is intended to incorporate a total volume of 300 MW of photovoltaic energy, gradually over time at decreasing tariffs. Therefore, a tariff commitment would be granted for a limited duration and only to developers who are facing financial closing as defined in the license. This tariff approval provides the developer with certainty concerning the tariff and commitment to grant a permanent license should they comply with all conditions set forth in the license in principle.

8. Permanent license:

8.1. The permanent license authorizes the facility owner to transmit electric energy into the grid for a 20-year term, subject to the tariff approval granted to them during construction of the facility, as set forth above.

8.2. The license holder shall act in accordance with terms and conditions of the license and subject to the statute, regulations and benchmarks.

8.3. A permanent license would be granted upon completion of facility construction and successful completion of acceptance testing of the facility by an ESSENTIAL SERVICE PROVIDER. At that time, the facility owner would be granted a permanent license and tariff approval, including the linkage formula, for a 20-year term.

9. Facility types:

9.1. The Authority shall allow, in conjunction with this regulation, promotion of photovoltaic technologies using all types of technology, including concentrating collectors, integrated systems with water heating, monitoring systems and all cell types in existence in a commercial array.

9.2. Tariff calculation for these facilities was based on a 5 MW photovoltaic system with no concentration or monitoring. The 5MW facility size was selected based on the fact that system cost is linear with its size, and there is no significant variance between large and small systems to justify normative review of multiple sizes.

9.3. Feasibility of the facility shall be reviewed for each application filed. The Authority reserves the right to test the technology, to consult with relevant market players and to refuse licensing of un-proven technologies.

10. Facility sizes:

10.1. This regulation is intended for photovoltaic facilities from 51 kW to 5 MW in size for plants connected to the distribution grid, provided that the facility is connected to the grid at a single connection point.

10.2. The facility size would be determined in the application for the license in principle and would be revised in accordance with license milestones.

10.3. The size of the grid connection would be determined during application to the ESSENTIAL SERVICE PROVIDER.

11. Facility location and installation:

11.1. The Authority, when considering granting the license, shall not take into consideration the facility location. The developer should review and determine the optimal location for them, based on information available to them - such as proximity to the grid, land availability and sun light.

11.2. This regulation shall allow for installation of facilities on roofs of existing buildings, on water reservoirs or on land - in accordance with approvals submitted to the Authority by the developer.

11.3. The facility would be located in accordance with construction permits and with manufacturer's instructions.

12. Connection of generation facility to the grid:

12.1. Facilities with an installed capacity of up to 5 MW would be connected to the distribution grid of the ESSENTIAL SERVICE PROVIDER. The connection voltage would be determined based on the maximum installed capacity of the facility, as set forth in connection benchmarks (Chapter III of the Benchmarking Book) and the design and execution of the grid connection would be conducted in accordance with the business process set forth in the aforementioned benchmark.

12.2. Ordering a connection from the regional distribution license holder requires payment of 10% of the connection cost. After this stage, the

location on the grid is reserved for the license holder. In case of termination or expiration of the license, the location on the grid is not reserved, and no refund is made to the license holder for the application and progress made on the connection.

12.3. Payment for connection to the grid would be based on benchmarks and tariffs published by the Authority from time to time.

12.4. In case any special cost is required, beyond the normal cost of connection to the grid, such cost would apply in accordance with the benchmark for special cases, and the applicant would bear such cost in full.

12.5. The ESSENTIAL SERVICE PROVIDER is required to connect any generator under this regulation.

13. **Volume and tariff:**

13.1. In the current regulation, the Authority has set a quota of 300 MW to be incorporated into the power market gradually at a reduced cost. The following considerations have been accounted for in setting the volume and tariff layout:

13.1.1. Creating certainty for developers in this field;

13.1.2. Preparation and implementation of this regulation in the first few years - the plant construction process requires many months. Therefore, it is likely that incorporation of the facilities into the power market would be gradual over a period of several years. However, as explained below, the current regulation allows for flexibility in incorporating the facilities into the power market over time.

13.1.3. Minimizing cost - according to all estimates, the installation cost of photovoltaic systems should gradually decrease over time, so as to allow their incorporation into the power market while minimizing cost.

13.1.4. The following are maximum volumes allowed for connection:

Year	Maximum annual volume	Cumulative volume
2009-2010	50 MW	50 MW
2011	65 MW	115 MW
2012	85 MW	200 MW
2013	100 MW	300 MW

13.1.5. Guidelines for volume and tariff outline:

13.1.5.1. Tariff approvals for the first 50 MW would be at NIS 1.58 per kW/h.

13.1.5.2. The tariff for new applicants would decrease by 5% annually from 2011 through 2017.

13.1.5.3. If tariff approvals are not granted for the cumulative volume in a given year, the remaining volume would be added to the subsequent year at the applicable tariff at that time.

13.1.5.4. If tariff approvals are granted, in a given year, up to the full quota, any applicants for tariff approval in excess of the quota would be granted tariff approval based on the reduced tariff of the following year.

13.1.5.5. Should the target not be achieved by 2013, the regulation would continue under the same tariff outline through 2017.

13.1.5.6. Should the target be achieved ahead of time, continuation of the policy would be considered.

14. Cost for mid-size photovoltaic system:

14.1. In order to determine the normal cost and parameters for a photovoltaic facility, the Authority's professional team has met with developers in Israel and overseas, and held discussions with regulators in the power domain in Europe. The team relied on professional publications as well as on knowledge and experience accumulated over the past two years, in which photovoltaic facilities providing thousands of MW have been installed around the world.

14.2. This regulation accounts for attributes and parameters specific to Israel's power market, and to the sun light hours measured in different regions

around the country in recent years. Determination of the normal cost and the tariffs based there upon is not based on any specific review of any specific project or photovoltaic technology. This approach is intended to allow integration of photovoltaic energy based on specified targets and at reduced cost.

14.3. The tariff is set based on normal cost reviewed by the professional team; the methodology used for calculation of the tariff is intended to allow the developer an appropriate return on investment over a 20-year term.

14.4. The following are the major construction cost elements accounted for in calculation of the tariff; the cost elements relate to a 5 MW facility:

14.4.1. Module cost - $3 per installed MW.

14.4.2. EPC cost - $2.40 per installed MW.

14.4.3. Licenses and construction permits, including re-zoning activity - $150 thousand.

14.4.4. Land development and leveling - $150 thousand.

14.4.5. Electric work consulting and legal consulting - $100 thousand.

14.4.6. Connection to power grid, normal cost - $100 thousand.

14.4.7. Perimeter security fence for control and security devices - $100 thousand.

14.4.8. Unplanned expenses - 1% of facility cost.

14.4.9. Financing origination cost (fees) - 0.5% of principal.

14.5. Annual operation cost elements for a photovoltaic facility are based on a 5 MW system:

14.5.1. Land leasing cost - $1,840 per acre, based on a 1 MW facility (installed) requiring 4 acres of land).

14.5.2. Insurance of equipment, staff, third party and cash flow - 1% of annual revenues.

14.5.3. Staff for facility security, maintenance, cleaning and accounting - NIS 400 thousand.

14.5.4. Regular equipment repair, including fence, panels, inverter - NIS 200 thousand.

14.5.5. Work equipment cost - vehicles, communications, computers - NIS 75 thousand.

14.5.6. General cost - CPA, legal expenses, engineering consulting - NIS 100 thousand.

14.6. Financing cost for construction of a 5 MW photovoltaic facility:

14.6.1. Leveraging at 80/20, minimum 20% equity required for financing of facility construction and operation.

14.6.2. Bank interest rate for an 18-year term - 7.1%. The facility owner would be granted a tariff for a 20-year term, accounting for an additional two years to secure the financing.

14.6.3. Gross return on equity - 14%.

14.6.4. Useful life of facility - 20 years.

14.6.5. Total financing cost - $16 million over entire project duration.

14.7. Based on the construction, operation and financing cost the following tariff and linkage mechanism has been determined:

14.7.1. Tariff for 2009 for a photovoltaic facility in accordance with the aforementioned regulations, at NIS 1.58 per kW/h.

14.7.2. Production capacity used for a stationary facility is 1,700 kW/h per installed KWP per year.

14.7.3. In order to anticipate the cost of technology in coming years, it has been determined that the tariff would be reduced annually by 5% from 2011 through 2017.

14.7.4. The tariff would be linked to the CPI (one third), to the USD (one third) and to the Euro (one third), thereby tracking change in equipment and EPC prices. This linkage would apply until the system is put into commercial use.

14.7.5. A tariff would be determined for facilities based on the year in which they are constructed and the tariff approval granted would be linked (70%) to the CPI from the start date of commercial use.

14.7.6. Linkage would not go below the base CPI as of the grant date of the tariff approval.

15. Safety mechanisms for developer with regard to ESSENTIAL SERVICE PROVIDER transactions, not selling energy to consumers in private transactions:

15.1. An ESSENTIAL SERVICE PROVIDER would be required to purchase all energy generated by the facility, regardless of different facilities, for a 20-year term in accordance with Authority tariffs.

15.2. Subsequent to the initial 20-year contracting period, the license holder would sell power in accordance with prevailing market rules, adjusted as required.

15.3. The major benchmarks regarding financing support for the project and with regard to Force Majeure, insurance and statutory changes shall apply to these facilities. Thus the license holder may finance the facility under the project financing track, in accordance with requirements of the financing entities.

16. Reporting and transparency vis-à-vis developers:

16.1. During the regulated term, the Authority would make public the names of holders of licenses in principle once every quarter.

16.2. During the regulated term, the Authority would make public the license holders who received a tariff approval and the total volume remaining under this regulation.

17. Revisions to Decision 177:

17.1. The Public Utility Authority - Electricity specified, in its decision no. 1 in its meeting no. 177, incentive tariffs for solar facilities sized from 100 kW to 20 MW, as well as a tariff for solar facilities larger than 20 MW. This decision would be revised as required by the current regulation.

17.2 Note that the Authority is reviewing the tariff determination for solar thermal facilities, and would publish its decision for hearing in 2009.