

Discussion Paper
Fuel Price Difference Item and
its Impact on Renewable Energy

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This paper has been prepared by
Edama Association on Renewable Energy



Applying Fuel Price-Difference Item on Electricity Bills

Current situation

- The Energy and Minerals Regulatory Commission (EMRC) has decided, as of the beginning of 2017, to apply the fuel price difference item on the monthly electricity bill in the event that the cost of electricity production was more than the cost of selling electricity to the consumer.
- According to the Energy and Minerals Regulatory Commission (EMRC), the fuel price difference item that is already being adopted includes the **consumed fuel basket cost** that is needed to **produce electricity on a monthly basis only**, estimated by calculating the mean (average of) crude oil cost over the last three months as issued by a Cabinet Decree.
- Based on the official definition by the Commission, it was planned for the fuel tariff-difference item to include the following costs:
 1. Monthly cost of consumed fuel basket.
 2. Cost of purchased capacity, maintenance and purchased energy from the electricity grid and renewable energy (RE).
 3. Monthly cost of management and operations.
 4. Monthly cost of electricity distribution.
- The fuel price difference item will be enacted (become valid) if the crude oil price exceeded the indicative (indicator) price of **55 US\$** per barrel.
- Adding the fuel price difference item aims to liberate electricity tariffs according to the global market, so as not to bear any resultant burden from fuel prices fluctuations, but rather reflect those directly on the end-consumer.
- The fuel price difference item has given exemptions to two segments of the consumers as follows:
 1. The household segment, where the difference is not applied in case the consumption was less than **300 kilowatt hour (kWh), monthly**.
 2. The mid-industrial segment, where a ceiling was set amounting to **10 Fils per kilowatt hour (kWh)**.



- In **June 2018**, the Energy and Minerals Regulatory Commission (EMRC) Board of Directors (BoD) decided to raise the fuel price difference item to **21 Fils per kilowatt hour (kWh)**. The EMRC BoD decided to treat the renewable energy (RE) systems owners in a privileged way as well, by applying the price of **11 Fils per kilowatt hour (kWh)**, i.e. approximately 50% of the price that had been (initially) decided on for the fuel price difference item.

How to calculate the Fuel Tariff Difference on the electricity bills for the renewable energy (RE) Systems?

There are two ways to connect renewable energy (RE) systems to the electricity grid, whereby the renewable energy (RE) and consumed energy are calculated as follows:

1. Net Metering System

This system is used in case of connecting the renewable energy (RE) system to the electricity grid at the same location of consumption; the electrical energy amount is observed on the Net Metering System invoice, as follows:

Exported electrical energy: represents the amount of electrical energy that is imported into the grid and produced from a renewable energy (RE) energy source after fulfilling the instantaneous enterprise load.

Imported electrical energy: represents the electrical energy amount that the load consumes directly from the electricity grid.

Billed electrical energy: is the difference between the exported and imported electrical energy.

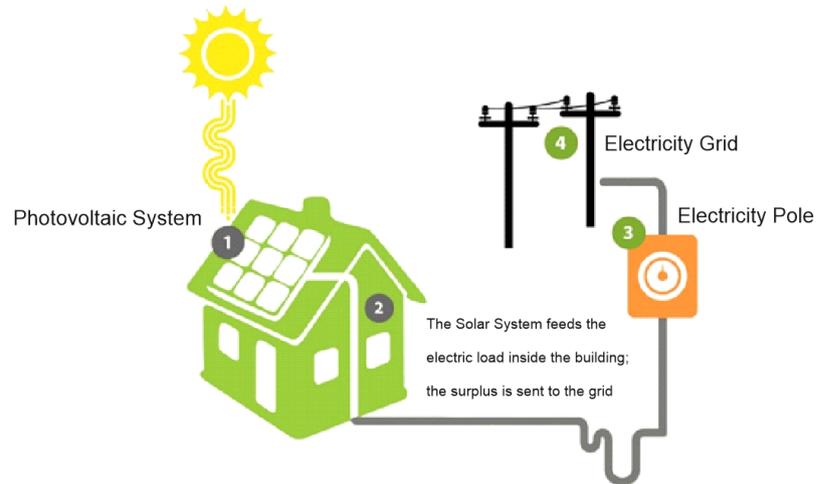
It is worthwhile noting that the bill does not reveal total renewable energy (RE) system production nor the monthly consumed load amount, therefore, the instantaneous produced and consumed energy is defined as follows:

Produced electrical energy: represents the produced energy amount from a renewable energy (RE) source; where a part or all of it can be consumed instantaneously at the enterprise itself; the surplus - if present, is exported to the electricity grid.

Instantaneously utilized electrical energy: represents the amount of consumed energy of the load at the enterprise, that had been generated from a renewable energy (RE) source; the



consumed electrical energy amount depends on the patterns and times of consumption. The following graph illustrates the nature of the Net Metering System.



Net Metering System Methodology



In this case, the fuel price difference item will apply on the imported energy **only**, which is the produced amount from non-renewable energy; **it will not** apply on the **instantaneously** consumed amount.

- Example: a consumer who owns a 21 kilowatt peak (kWp) capacity system at his/her home, will have a system performance summary in December, as follows:

The produced electricity from the photovoltaic renewable energy (RE) system = 1650 kilowatt hour (kWh)

The instantaneously consumed electricity power = 1242 kilowatt hour (kWh)

The exported electrical energy = 408 kilowatt hour (kWh)

Imported electrical energy = 4463 kilowatt hour (kWh)

Billed electricity power = imported energy - exported energy
= 4463 - 408 = 4055 kilowatt hour (kWh)

Fuel price difference = imported electrical energy x fuel price difference item per kilowatt hour (kWh) for December

= 4 x 4463 Fils per kilowatt hour (kWh) = 17.852 Jordanian Dinars (JD)

It is noticed that the fuel price difference item does not apply on the **billed electricity power only** because **it does not** necessarily **reflect** the imported electricity power amount from the grid and produced from fossil energy resources.

2. Wheeling system

This system is used in case of connecting the renewable energy (RE) system to the electricity grid away from the consumption location, in this case, the entire renewable energy (RE) system production will be exported to the grid, and the total consumption will be imported from the grid for lack of benefiting load from the instantaneously produced electricity power at the location; the electricity power amount is observed in the wheeling system bill as follows:

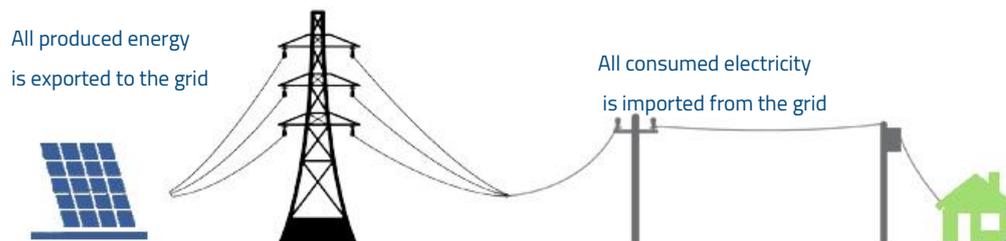
Exported electricity power: represents the energy amount produced by the renewable energy (RE) system; and exported to the electricity grid to which the system is connected at the location of production.

Imported electrical energy: this represents the amount of energy that the consumer needs directly from the electricity grid at the site of consumption.

Electricity loss: results from wheeling exported energy from the generation site to the consumption site.

Wheeling costs allowance: imposed fees on the exported electricity power amount per kilowatt hour (kWh) of the renewable energy (RE) system.

The following illustrates the wheeling system methodology.



Wheeling system methodology

In case the renewable energy (RE) system was connected to a wheeling system, then the fuel price difference item will be imposed on the total imported electricity power from the grid on site, even if it was equal to the produced electrical energy from the renewable energy (RE) system at the other site.



Notes

1. It is worthwhile mentioning that based on the limited electricity grid capacity, the ownership of renewable energy (RE) systems is restricted to a limited number of consumers, so that they get the chance to **fully or partially cover their consumption**. An owner of a renewable energy (RE) system will have the privilege of using the electricity grid as a means of storage for his\her electricity power surplus, by exporting it to the electricity grid, so as to use it when needed, at a time that is different from the time of production.
2. When applying the fuel price difference item on the owners of the renewable energy (RE) systems - and as per the Net Metering System the consumer must pay this item for the electricity he\she draws from the grid **only** and produced from fossil energy resources (he\she will **never** pay for the instantaneously consumed energy).
3. The application of the fuel price difference item on owners of renewable energy (RE) systems as per the wheeling system, is considered to be comptabile to what is being applied in the Net Metering System, but the actual **difference** is that in the case of wheeling, **all** the electricity power is imported and **all** the electricity power is exported, which means that the fuel price difference item will be applied on **all the consumption**.
4. The application of the fuel price difference item on the owners of the renewable energy (RE) systems is considered to be a new negative variable in the economic feasibility of those systems, which will decrease the investment profitability in general, specially in case of investing in wheeling systems.
5. Adding the fuel price difference item to the bills of the renewable energy (RE) systems owners is considered an indirect transition to a net billing system instead of a Net Metering System, where the value of the imported kilowatt hour (kWh) becomes different - practically speaking, from the value of the exported kilowatt hour (kWh) to the grid.



Recommendations

1. It is preferable to apply the fuel price difference item within previously set ceilings in case of the renewable energy (RE) systems owners, as in the case of mid-industries, instead of a specific percentage of the item value, to preserve the stability of the investment environment of the sector.
2. Give (privilege) to the subsidized and productive segments, similar to what has been applied on the mid-industrial and household segments, so that the application of the fuel price difference item is carried out according to the segment to which the consumer (owner of the renewable energy system) belongs to.
3. Since the renewable energy (RE) comprises 7% of the gross electricity power mixture, and it is planned for the percentage to reach 25% in 2025, then this positive contribution should be reflected on the fuel price difference item.

End of paper



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