

This document contains two packages:

A) Photovoltaic Solar Panel (page 2)

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Iran UNDP Country Office – Business Case

In pursuit of utilizing green energy in line with Smart UN Facilities and the Sustainable Development Goals (SDGs), the UNDP ITM Green Energy team and UNDP Iran presents these findings to the Country Office (CO) to make a well-informed decision regarding its future solar PV energy system. The key driving factors for the CO to implement this system is to reduce the overall environmental footprint of UNDP operations and to cover their critical load while reducing dependency from the grid.



Figure 1: Suggested Location of Solar PV Panels

Description	Result	Unit
Capital Investment	24,274	USD
Estimated Annual Monetary Savings ¹	932	USD
Solar PV Capacity	11.55	kWp
Renewable Fraction	32.3	%
Carbon (CO ₂) Emissions Saved	7.75	tonnes CO ₂ /year
Simple Payback Time ¹	>25	years

¹Estimated annual monetary savings and simple payback time are values sensitive to electricity and diesel costs

Table 1: Summary of Iran Country Office project

This Business Case is prepared using data gathered by the installed Power Consumption Measuring and Monitoring (PCMM) devices in the CO (LG AC, Samsung AC, Server room 1, Server room 2), coupled with information from local energy resources, site-survey data and project objectives following these [guidelines](#). The technical results of this study are summarized in *Table 1: Summary of Iran Country Office project*. The total yearly consumption of the CO has been estimated to be **46,504 kWh/year**. Accordingly, the proposed system is an **11.55 kWp solar PV system**, able to cover around **32.3%** of the CO's energy needs with renewable energy, producing a total of **19,288 kWh/year** (please see *Figure 2*).

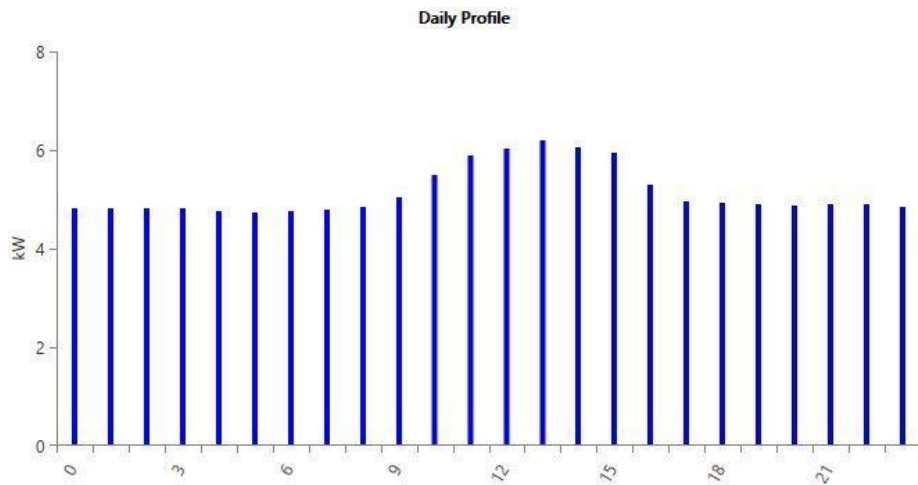


Figure 2: Iran Office Daily Load Profile from HOMER

The Green Energy Team estimates that an **initial investment of 24,274 USD** will enable the proposed solar solution, which can be earned back after 25 years. Furthermore, the solution can result to **932 USD of annual savings** and **7.75 tonnes of CO₂ emissions savings per year**, effectively reducing the carbon footprint. This green energy solution aligns with the UN's SDGs, while also inspiring local communities to adopt similar solutions.

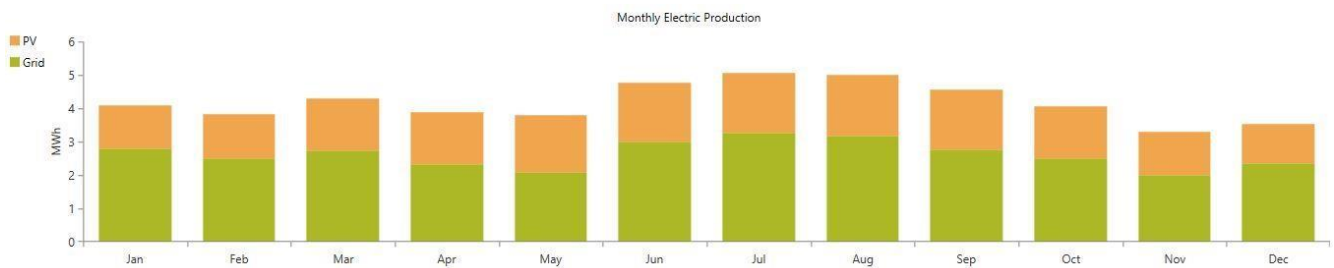


Figure 2: Monthly Consumption Distribution

Use of the United Nations Development Group recommended 7-Step process is being adopted for the project. The approach is a holistic end-to-end process with preliminary assessment of project practicability and the post installation operation & maintenance (please see *Figure 3*).

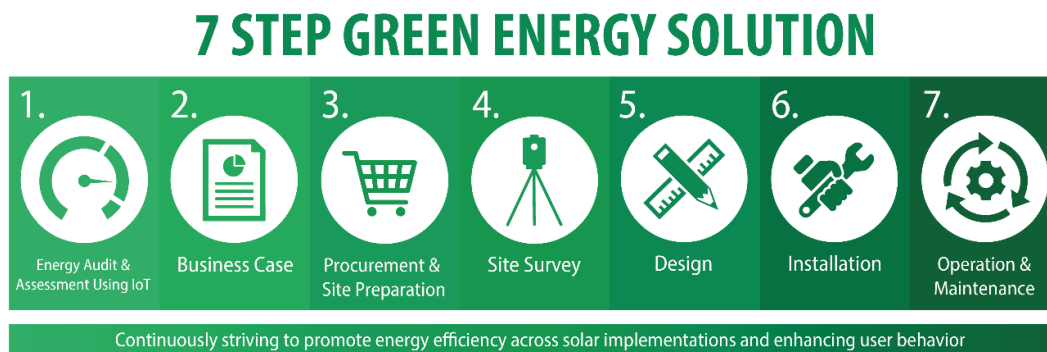


Figure 3: 7 Step Green Energy Solution

To conclude, the Green Energy Team looks forward to working in cooperation with the CO to contribute towards the achievement of the SDGs. These would be steps into building a more sustainable and smarter future, while setting an example at a national level.

B) Second Package: Implementation of Energy Efficiency Solutions

Row	EE Solution	Description	Annual Saved Energy (Electricity or Natural Gas)	CO2 emission reduction (Tone per year)	Required Investment (USD)	Saved Amount per year (USD)	Prices in FOB Persian Gulf (USD)	Payback Period (Year)
1	Retrofitting and insulation of central heating system	<ul style="list-style-type: none"> Retrofitting storage tanks Installation of piping and tanks 	2,417 m3 (Natural Gas)	2.9	411	8.9	962	NA
2	Smart control system for central heating	<ul style="list-style-type: none"> Feedback system from distribution Active ambient temperature sensor Smart temperature control system Programming 	9,668 m3 (Natural Gas)	11.5	1646	35.8	3835	NA
3	Lighting system	<ul style="list-style-type: none"> Total consumption for lighting is 7.8 Kwh working almost 12/7 including: <ul style="list-style-type: none"> 100 of 40w- Conventional lamps 100 of 20w- Conventional lamps 50 of 36w- FPL lamps All conventional lamps will be replaced by LED and SMD models Due to security concerns, 50% of above-mentioned items will be controlled with movement sensors based on zone definition 	9,251 Kwh	6.5	1028	95.17	1306	10.8

4	Cooling System (1)	<ul style="list-style-type: none"> Air circulation through implementation of open spaces (Removing 3 ACs totally 72,000 BTU/h) – working 3 hours per day maximum in summertime 	3,826 Kwh	2.7	1234	39.3	539	NA
5	Cooling System for Sever Room (a)	<ul style="list-style-type: none"> Server room replacement to shadow and insulated area 	5,304 Kwh	3.7	7407	54.5	747	NA
6	Cooling System (3)	<ul style="list-style-type: none"> Using efficient cooling system 	3,536 Kwh	2.5	617	36.3	500	17
7	Energy Audit and Implementation	<ul style="list-style-type: none"> Energy audit and M&V 	-	-	3,000	-	-	-
8	Coordination and Follow up	<ul style="list-style-type: none"> Moonshot Project support and coordination 	-	-	3,456	-	-	-
Total:			1,208 m3 (Natural gas) + 21,917 Kwh	29.8	18,799	269.97	7,889	NA

