Project of building of solar photovoltaic power station with capacity – 999 kW.

This project involves the construction and operation of a <u>solar power plant</u> (SPP) on photovoltaic panels in the Ternopil oblast with a total capacity of 999 kW. The given time of the site is documented for construction: the land plot lease agreement for 49 years (land with the corresponding purpose of destination: for placement, construction, operation and maintenance of buildings and structures of power generating enterprises, institutions and organizations), a contract on non-standard adherence to power networks of Oblenergo and technical conditions for accession to the overall power grid, urban planning conditions and limitation in the manufacturing process.

Feasibility study for solar power station is given in the table below:

| Name of indicator | | | | |
|--|-------|--|--|--|
| Electric capacity , kWh (Inverter) | 999 | | | |
| Electric capacity , kWh (PV Solar Panel) | 1 260 | | | |
| Annual electricity production, thousand kW per hour | 1 386 | | | |
| Electricity consumption for own needs (icluding costs for transportation and transformation), thousand kW per hour | 31 | | | |
| Annual electricity supply, thousand kW per hour | 1 355 | | | |
| The number of hours of peak power, hours per year (SolarGis) | 1 100 | | | |
| The cost of construction, thousand Euro/MWh | 530 | | | |

It is clear that the capacity of this power station depends on the amount of solar energy that falls on the battery, and this number depends on the season and time of day. If we consider given number of sunny hours by programs Meteonorm 7 - to Ivano-Frankivsk region in the area and capacity of power station, we would get the data about electricity production for calendar year:

| Month | Efficient production output modules, MW per hour | The volume of supply to the grid, MW per hour |
|-----------|--|---|
| January | 32,00 | 31,04 |
| February | 64,19 | 62,27 |
| March | 102,85 | 100,28 |
| April | 162,46 | 159,21 |
| May | 189,30 | 185,19 |
| June | 192,54 | 188,69 |
| July | 185,51 | 181,80 |
| August | 173,98 | 170,50 |
| September | 117,14 | 114,22 |
| October | 87,11 | 85,70 |
| November | 46,58 | 45,18 |
| December | 32,33 | 31,36 |
| Year | 1 386,00 | 1 355,43 |

| CashFlow | | | | | | | | | |
|----------|---|--------|--------|--------|--------|--------|--------|--|--|
| | Articles | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | | |
| | Proceeds | | | | | | | | |
| 1 | Availability of funds at the beginning of the year | - | 122,43 | 244,86 | 367,29 | 489,71 | 612,14 | | |
| 2 | Revenues from sales: | 183,07 | 183,07 | 183,07 | 183,07 | 183,07 | 183,07 | | |
| | Total revenues | 183,07 | 305,50 | 427,93 | 550,36 | 672,78 | 795,21 | | |
| | Charges (including VAT) | | | | | | | | |
| 3 | Salary | 16,50 | 16,50 | 16,50 | 16,50 | 16,50 | 16,50 | | |
| 4 | Interest on salary | 6,06 | 6,06 | 6,06 | 6,06 | 6,06 | 6,06 | | |
| 5 | Relatively fixed costs | 9,08 | 9,08 | 9,08 | 9,08 | 9,08 | 9,08 | | |
| 6 | Payment of VAT | 29,00 | 29,00 | 29,00 | 29,00 | 29,00 | 29,00 | | |
| 7 | Total expenditure EURO | 60,64 | 60,64 | 60,64 | 60,64 | 60,64 | 60,64 | | |
| 8 | Availability of funds at the end of the year | 122,43 | 244,86 | 367,29 | 489,71 | 612,14 | 734,57 | | |

Net profit: 122,430 Euro per year without VAT

Construction cost: 530,000 * 1,26 = EUR 667,800 without VAT

Cost of joining the grid: EUR 25,851 without VAT (at the NBU exchange rate as of July 28, 2020 - UAH 32.6049). Profitability: 17.65%

Payback project: 5 years 8 months

Rate: 2.09 UAH. * 0,5846 / 10,855460 = € 0,1126 / kWh without VAT:

- 2,09 UAH. - Green tariff factor (2020 year).

- 0.5846 UAH. / KW \cdot h - the value of retail tariff for consumers of voltage for January 2009 is.

- 10.855460 - euro exchange rate (NBU) as of 01.01.2009.



