



AFRICAN GATE ENERGY (PTY) LIMITED

RENEWABLE ENERGY DEVELOPER

September 2025

African Gate's concept based on various assumptions relates to photovoltaic developments

Question:

What is better, cutting cost with 5% or improve efficiency by 2%?

Assumption:

If we assume 1MW = \$1M:

Cutting cost with 5% saves \$50k per MW upfront. But improving efficiency by 2% means a 50MWp plant performs like a 51MWp.

That "extra 1 MW" keeps producing every year for 25 years \to equivalent to 25 MW of extra lifetime generation at zero additional cost.

So effectively, we get the same output as if the project were 75 MW but only paid for 50 MW.

This concept means the real cost per MW becomes about \$666k instead of \$1M.

This is why we always choose efficiency over short-term cost cutting unless we are on a tight budget.

The lifetime gains are simply too big to ignore.

The Cost-Saving Benefits of Solar Projects from African Gate point of view:

The provided image outlines two main strategies for increasing the profitability of a 50 MWp solar PV plant: cutting project cost by 5% and improving efficiency by 2%.

1. Cutting Project Cost by 5%

* A 50 MWp utility-scale solar plant typically costs around \$500–600 per kWp, making the total CAPEX (capital expenditure) roughly \$25–30 million.

* A 5% reduction in this cost would result in a one-time savings of \$1.25–1.5 million at the beginning of the project.

2. Improving Efficiency by 2%

* A 2% improvement in a plant's efficiency directly increases its annual energy yield by 2%.

- * A 50 MWp plant that produces about 85,000 MWh per year would see an increase of approximately 1,700 MWh per year.
- * With a common Power Purchase Agreement (PPA) rate of just \$0.05 per kWh, this translates to \$85,000 in extra revenue every year.
- * Over the plant's 25-year lifetime, this recurring and compounding benefit amounts to approximately \$2.1 million, not including potential increases in electricity prices or lower operation and maintenance (O&M) costs per unit.

Key Takeaway

The analysis suggests that while a one-time cost reduction is an immediate saving, improving efficiency offers a larger, more significant and long-term benefit due to the recurring and compounding nature of the increased annual revenue.

A 2% improvement in efficiency increases the annual energy yield by 2%.

A 50 MWp Plant's Output

If a 50 MWp plant produces about 85,000 MWh/year, then a 2% increase in efficiency equals 1,700 MWh/year extra.

Financial Benefit

At just \$0.05/kWh (a common PPA rate), that's \$85,000 of extra revenue every year. Over a 25-year lifetime, this amounts to approximately \$2.1 million extra, not even counting inflation, electricity price increases, or lower O&M costs per unit. This benefit is recurring and compounding.

Project Strategy

As a result, if the project is short-term or you plan to sell it quickly, cutting costs may look more attractive. However, if you're the long-term owner/operator, improving efficiency is a much better choice because?

- * It increases IRR (internal rate of return).**
- * It improves the Levelized Cost of Energy (LCOE).**
- * It strengthens long-term competitiveness as tariffs drop.**

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