

Benefits of hybrid

Solar power is now cheaper than diesel-generated electricity. The inclusion of solar within your mini-grid represents an opportunity to save money without impacting reliability.

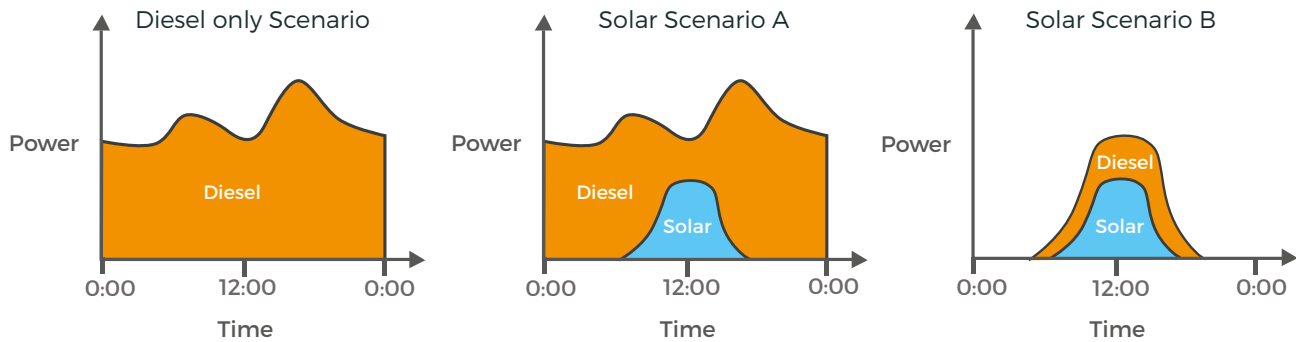
- Reduce diesel fuel consumption
- Reduce exposure to fuel price volatility
- Reduce frequency of fuel tank refills
- Reduce truck movements in remote locations
- Reduce fuel spillage risks and increase safety
- Reduce runtime of diesel generators
- Increase plant lifetime
- Reduce CO₂ emissions
- Create carbon credits
- Reduce noise levels
- Increase air quality
- Manage diesel generators to operate more efficiently

Solar's power penetration & energy contribution

Solar is an additional energy source that integrates with the new or existing diesel infrastructure.

There are two metrics for solar within a mini-grid. **Power penetration** is the maximum percentage of total power that comes from solar, typically occurring at midday. **Energy contribution** is the percentage of total energy that comes from solar, usually measured over a year to account for seasonal variation.

Without energy storage, the solar energy is exported straight to the mini-grid for immediate consumption and a power penetration of up to 60% may be achieved. Scenario A shows a load profile with a high night-time load, achieving a power penetration of 60% and energy contribution of 15%. Scenario B shows a load profile more aligned to solar generation, achieving a power penetration of 60% and energy contribution closer to 50%.



With energy storage, it is possible to achieve a solar power penetration upwards of 60% (Scenario C) and ultimately an energy contribution of 100% may be achieved if the battery and solar are large enough.

