



# Key Performance Indicator Technical Guide

for the Off-Grid Pay-As-You-Go Sector



Contributing Partner





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## ACKNOWLEDGEMENTS

The Technical Guide for the Off-Grid Sector is the second in a series of reports meant to improve the availability and quality of PAYG sector data and facilitate information flow between investors and companies in the industry.

This report was commissioned by the World Bank Group's Lighting Global Program and the Information and Communication Technologies (ICT) Global Practice. The report was developed by Driven Data, a consultancy firm that brings cutting-edge practices in data science and crowdsourcing. The report benefited from the contributions provided by Lighting Global, Angaza, GOGLA, and Village Power along with the many investors and companies in the sector that have provided critical feedback and comments throughout the development of Key Performance Indicators (KPIs) for the Off-Grid Solar Sector. The Team expects the development of the KPIs to be an iterative process.

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# Key Performance Indicators (KPIs) for the Off-Grid Pay-As-You-Go Solar Sector

KPI Technical Guide, V. 1.0

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This document is part of a sector-wide initiative to enhance data use and harmonization of metrics for financial performance measurement for off-grid energy companies. For more information, please go to [goo.gl/vxP25n](https://goo.gl/vxP25n) and [goo.gl/wp2oq9](https://goo.gl/wp2oq9)

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# How To Use This Technical Guide

## Background

The KPI framework in this Guide was originally developed through a collaboration among specialists of The World Bank, IFC, and the Impact Lab, together with the Global Off-Grid Lighting Association (GOGLA) Secretariat and a selection of its members.

The framework was informed by the following consultations:

1. Conducting research on current data practices and portfolio risk factors through interviews with GOGLA members. Findings were captured in the 'State of the Data' report, providing insight on how and what data is presently collected by companies, if they have sufficient human capacity to improve data management, and current definitions for several potential KPIs.
2. Elaborating an initial shortlist of KPIs that was vetted and complemented through several roundtables and workshops together with a large number of current and prospective market participants. Interviewing over a dozen Distributed Energy Services Companies (DESCOs) and nearly as many investors and potential funders resulted in a firm understanding of the data architecture and constraints in the industry, the data needs of sophisticated investors, and the primary risk factors faced by both companies and investors in the sector.
3. Data testing in partnership with a small group of 'data partners' - companies and investors, respectively - who were willing to share their data and/or their industry experience for the purpose of KPI testing and validation. This process included, for example, identifying which KPIs can be readily computed using the data collected by most companies. It is important to note that while the KPIs may provide important information about a company, they are not meant to be a scorecard of a company's operational performance – rather a combination of inputs to help understand and track results.

From this initial framework, specialists at The World Bank, IFC, GOGLA, and DrivenData have refined the KPIs by factoring in feedback from DESCOs and investors and addressing the biggest gap from the first phase of development: testing on real company data. We partnered with Angaza Design, a software provider for DESCOs and manufacturers, to better understand the practicality and usefulness of calculating KPIs from real world data across many providers. Based on conversations with Angaza's data team, several KPIs have been updated to reflect more practical reporting of available data inputs, a more nuanced perspective on timing for different offerings, and adjustments for different business models.



## Overview

The KPI framework seeks to improve availability and quality of PAYG solar sector data and facilitate information flow between investors and companies in the industry by establishing standardized definitions of operational data indicators and more formalized reporting standards. The KPIs are not designed to replace an appropriate appraisal process and an investment officer, however, they will allow for a more structured assessment of operations and offer comparable values across business models. In fact, given the highly variable and continuously changing business models of PAYG companies, the KPI framework is not meant to be a scorecard of a company's operational performance, but offer a more structured way to continuously assess the performance of different parts of the company and its customer base. To better account for variance in KPI metrics driven not by operational performance but by differing business models, the PAYG Taxonomy of different business models is a helpful complement to the KPIs. The Taxonomy can enable appropriate categorization when analyzing potential drivers for differences across sectors on certain KPI outcomes and will hopefully result in greater utility of the KPIs to companies, investors, and other stakeholders.

With a handful of exceptions, each of the KPIs is defined for a portfolio of PAYG solar assets, contained within a single country or region and for a cohort in time. Indicators are defined at a point in time, and measuring the KPIs on a periodic basis (monthly or quarterly) will help to monitor performance over time. It is also recommended that, if possible, distributions are provided or relevant high-priority KPIs (such as Average Revenue Per User (ARPU), Portfolio at Risk (PAR), and unit cost) to capture the variation across the portfolio in addition to the summary statistics like averages that are specified in the definitions.

Since digital technologies and sensors are intrinsically a part of PAYG business models, the industry naturally lends itself to the generation and use of large, heterogeneous, and fast-moving streams of information, otherwise known as "big data." Examples include customer consumption and payment data, customer credit histories, and web server logs, as well as cell phone records and satellite imagery from partners and third-party vendors. As discussed in a recent World Bank [publication](#), the tools for dealing with such data – from distributed computing to machine learning and data mining have evolved over the last decade to the point where they are readily usable in commercial settings. Potential uses in the PAYG industry include customer targeting and marketing, credit assessment, collections, and market research. The KPI framework, while it primarily makes use of more traditional structured data, complements this broader vision of increasing the sector's sophistication in data and analytics.

For consistency, all KPIs are defined on a product unit basis, as opposed to a customer basis. Customers may use multiple units, and units may be used by multiple people. A single customer may have one unit which is still actively being paid off, and another they already own. The return for investors, and the expected revenue and cost for companies, can be more consistently evaluated on the order of units regardless of whether the business model is upfront cash, flexible pay-as-you-go, asset finance, service, or some combination thereof (see "Adjustments by business model" below).

KPIs have also been grouped into high-priority, medium-priority, and optional segments based on feedback from stakeholders, ability to standardize across business models, and preliminary analysis of their observed predictive capacity, where available. The initial predictive value of indicators was assessed using historical data from a variety of PAYG solar companies and testing the relationship between the KPIs and the future performance of the portfolios (actual versus expected receivables). There is still much work to be done to evaluate and extend the predictive implications of the KPIs on company performance as more data becomes available.

# Indicators

Each KPI description includes the following information:



## DEFINITION

A concise explanation for what the KPI represents.



## CALCULATION

How to generate the KPI from data inputs (see Box 1 on page 8 below).



## WHY DOES IT MATTER?

Analytical insights of each KPI that make each indicator, as defined here for standardized reporting, useful for analysis by companies and investors.



## NOTES

Considerations for using each KPI, including commentary on what is included in the definition and calculation, as well as practical considerations for use with real data.



## ADJUSTMENTS BY BUSINESS MODEL

In the first phase of this work, the Impact Lab surveyed a cross-section of GOGLA members. The responses reflect a range of current operating models among PAYG solar companies, including variation in units (from single-purpose devices to whole home/multi-home devices), payment models (pay-per-use, rental, lease finance, upfront cash purchase, and combinations thereof), and payment mechanisms (most customers pay via mobile payments, though some use cash, and may pay remotely or through agents). In addition, flexible payments, sell-back options, skip payments, and other accommodations are common.

There are multiple versions of pay-as-you-go distribution models, as each company that delivers a pay-as-you-go solution will have customized certain business model elements to meet their and their customers' particular needs.



For the purposes of this Technical Guide the different operating business models for pay-as-you-go solar companies have been divided into two typical 'archetypes':

- **Flexible Pay-As-You-Go (Flexible PAYG)**

Customers pre-pay for energy access, which unlocks the ability to use devices based on the amount paid (usually for a set period of time). Often, but not always, a portion of customer payments count towards purchasing the device for ownership. In this model there are no "expected" obligatory payments per se, since customers who do not pay are not in violation of any agreement but rather lack access to use their devices. If there is not eventual ownership, this can be considered "fee-for-service".

- **Asset finance**

Customers purchase devices on loan, contributing an up-front downpayment with scheduled periodic payments for the loan duration (including principal and interest). Customers own the device once all principal payments equal its total cost. In this model customers have obligatory payments which result in scheduled, expected revenue for companies.

Some companies will provide a model that fits somewhere in between. For example, they may have a downpayment and scheduled payments, but offer options to the customer that enable some flexibility to payments. There are also other strategic business model choices that a PAYG company will make beyond payment flexibility (as articulated in the companion Taxonomy). However, as there are many shades of this type of model and many elements to a business model, this guide relies on the two archetypes as described for ease of presentation.

The Guide will include notes on how specific KPIs can be adapted for these business models, and additional considerations for other operational differences that can affect how KPIs are calculated and viewed.

**Illustration:** For many of the KPIs, we provide an illustration. The illustrations help to demonstrate either (1) how the KPI is calculated, or (2) how the KPI can be visualized to help understand a company's performance against that KPI.

### Box 1: Example on how to compute KPIs

With the exception of EBITDA Breakeven, all of the shortlisted KPIs can be computed from a simple ledger-style data extract, which includes all scheduled and completed transactions for each customer, plus a table of product characteristics. The ledger columns should include:

- Date
- Customer ID
- Receipt ID
- Amount
- Currency
- Expected/Completed (completed only for pay-per-use models)
- Type (deposit, return, monthly payment, repair, etc)
- Product type

For example, a new customer purchase of a financed product would result in a Completed deposit entry and N expected monthly payment entries. Each month (ideally), a new completed payment with the same Receipt ID would be entered into the ledger. This structure makes it easy to calculate the KPIs across a wide range of business models.

# HIGH-PRIORITY KPIS

This first subset of indicators was identified as high priority because they met one of the following criteria:



Identified by stakeholders as key for business predictions.



Showed a higher opportunity for standardization across business models.



Contained a high predictive value for future portfolio performance in preliminary analysis (measured as actual versus expected receivables).

## i. Average Monthly Revenue per User (ARPU)

### DEFINITION

Total payments received over the last 30 days divided by portfolio size.

### CALCULATION

(Total revenue over most recent 30 days [Local Currency]) / (Total # of active [Units]).

### WHY DOES IT MATTER?

Primary indicator of unit revenue standardized across the active customer portfolio. Useful for analysis of unit economics and comparing actual versus anticipated revenue. In initial analysis ARPU was the KPI most strongly correlated with future portfolio performance.

### NOTES

- This definition is inclusive of all revenue, including deposits, interest, and maintenance.
- Revenue is denominated in the relevant local currency; in the rare case, where a portfolio includes revenue denominated in multiple currencies, the dominant one should be used for reporting, with the other(s) converted using the present day exchange rate. For comparing many companies, convert all calculations to a single standard currency.
- In this calculation and in all that follow, active users are defined as those who have made at least some payment in the preceding 90 days. For offerings with shorter payback periods or more frequent payments, it may be useful to consider inactivity over shorter time periods as well.

### ADJUSTMENTS BY BUSINESS MODEL

This KPI applies equally to different business models.



## ii. Average Unit Cost

### DEFINITION

Mean cost of active units, inclusive of hardware plus transportation, import taxes, stock insurance, and installation, if any, but exclusive of customer acquisition and maintenance.

### CALCULATION

Sum of (Cost of hardware plus cost of transportation, import tax, stock insurance, and installation on active units [Local Currency]) / (# of active [Units]).

### WHY DOES IT MATTER?

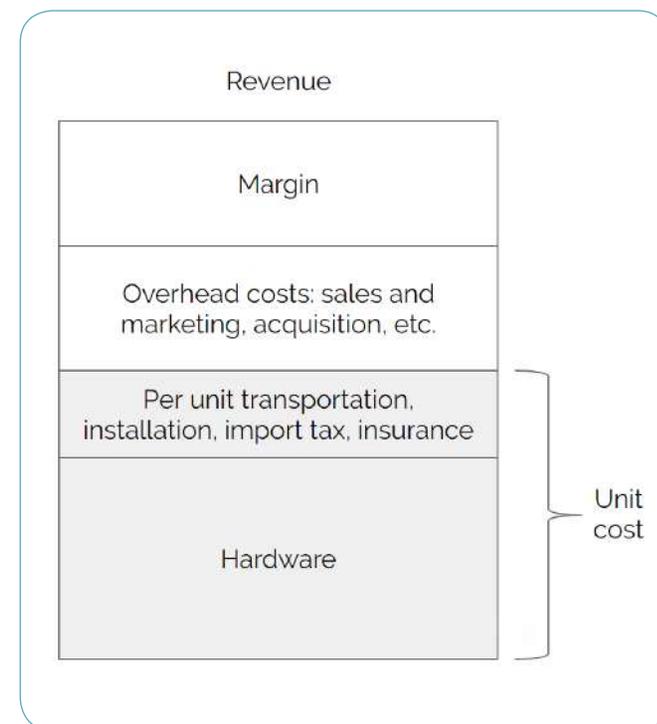
Primary indicator of unit cost standardized across the portfolio, inclusive of all relevant costs that tend to vary on a unit basis. Useful for analysis of unit economics and cost analysis across fixed, semi-variable, and variable costs.

### NOTES

- This indicator quantifies the average unit cost to the company, not to the consumer.
- Transportation costs include international transport to country as well as in-country transportation.
- Customer acquisition and maintenance costs were excluded from the KPI composition due to the wide variability in marketing and service arrangements among Distributed Energy Services Companies (DESCOs), which might lead to meaningful inconsistencies in accounting.
- All of the data for this calculation may not be collected at a unit level. In that case, companies can use wholesale cost per unit as a rough proxy, noting the difference when they report the KPI.

### ADJUSTMENTS BY BUSINESS MODEL

This KPI applies equally to different business models.



*Costs of supplying each unit, as incurred by the PAYG company, are tracked in Average Unit Cost.*

### iii. Average Credit Period

#### DEFINITION

Average nominal number of days between system acquisition and expected final payment.

#### CALCULATION

Sum over units of (Expected final payment date - system acquisition date [Days]) / (Total # of active [Units]).

#### WHY DOES IT MATTER?

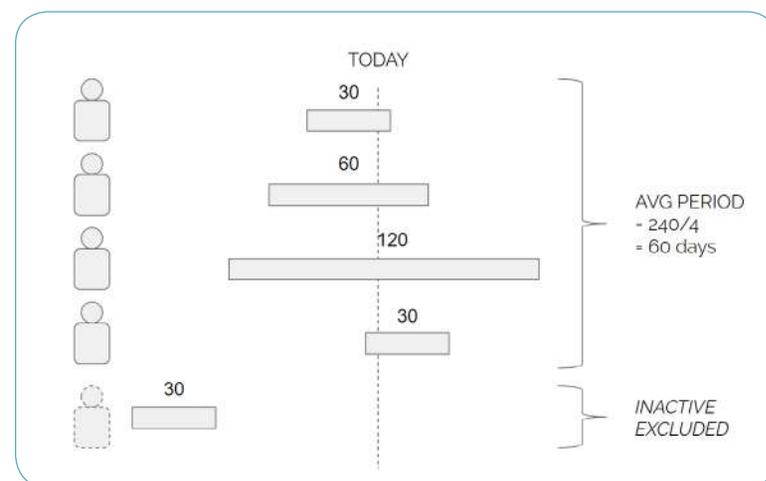
Measure of payback timing, primarily for cash flow analysis and risk analysis (shorter credit periods generally correlated with higher repayment rates).

#### NOTES

- Expected final payment is defined in the nominal sense, under the assumption that no payments are skipped or postponed – even if such flexibility is explicitly allowed in the contract. In other words, this is the average contracted credit or payback period across all offerings and customers, as opposed to the average period that actual customers take to pay off a system purchase.

#### ADJUSTMENTS BY BUSINESS MODEL

In the case of Flexible PAYG business models, where there are no “expected” obligatory payments per se, the contract end date should be used as the expected final payment date.



*Sample calculation for five units, showing average of the expected credit period across all active units. Inactive units are excluded (for definition see Portfolio Size).*

## iv. Average Customer Deposit as a Proportion of Unit Cost

### DEFINITION

Average customer deposit as a fraction of total unit cost.

### CALCULATION

Mean over active units of (Deposit received [Local Currency]) / (Cost of hardware plus cost of transportation, import taxes, stock insurance, and installation [Local Currency]).

### WHY DOES IT MATTER?

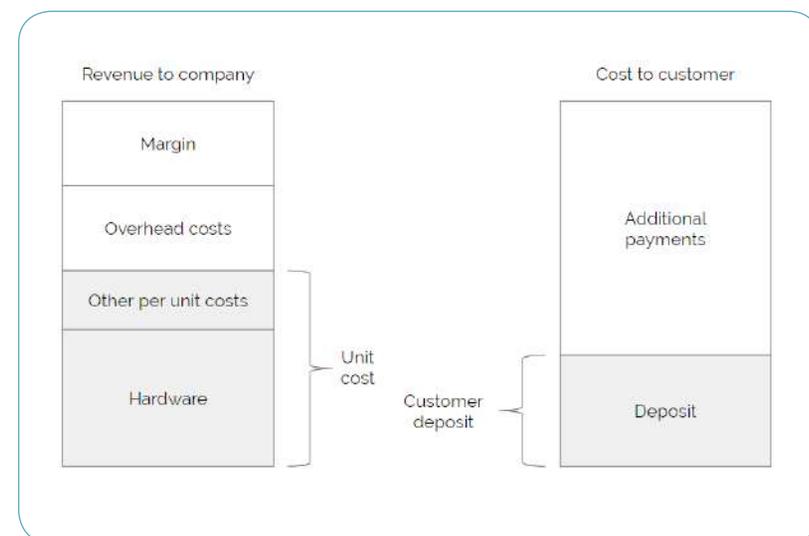
Measure of payback timing, primarily for cash flow analysis and risk analysis (higher deposit percentage generally correlated with higher repayment rates).

### NOTES

- Average Unit Cost (KPI II) is used as the denominator in this KPI. The same notes that apply to calculation of that KPI apply here.
- Deposit, or down payment, is defined as the total amount paid at time of unit acquisition, exclusive of payment per use.

### ADJUSTMENTS BY BUSINESS MODEL

This KPI applies equally to different business models. Note that a portion of the payment remitted at time of unit acquisition might be excluded from the definition of "deposit" if it includes, for example, a purchase of some number of days or a payment of the first regular billing cycle. This should be defined by the contract and reflected in the data accordingly.



*For each unit, divide the customer deposit (down payment) by the unit cost.*

## v. Portfolio at Risk (PAR)



### DEFINITION

Total amount owed on units with any balance billed in the last 90 days which is overdue by 30 or more days, divided by total amount owed by customers.



### CALCULATION

Sum of (Total amount owed by customers with any balance billed in the last 90 days which is overdue by 30 or more days)/ Sum of (Total amount owed on active units).



### WHY DOES IT MATTER?

Core measure of credit risk for anticipated payments over given time periods. Useful in modeling expected revenue and profit, both for overall company economics and for updating expectations for specific periods.



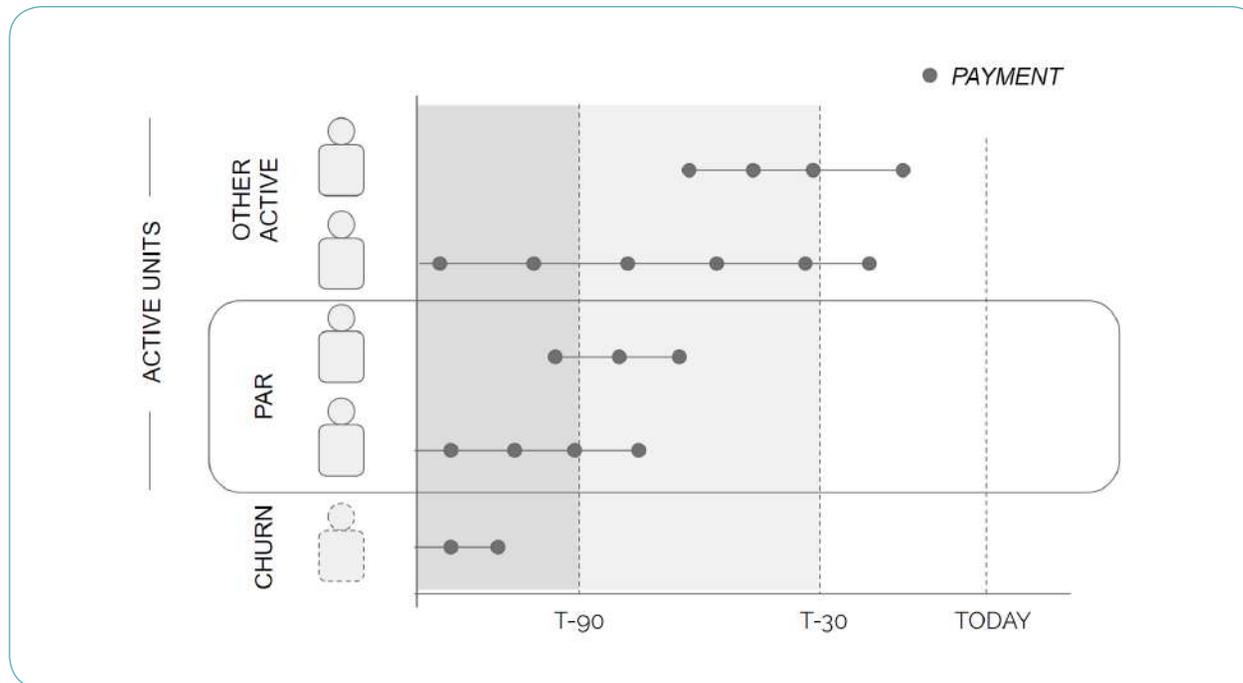
### NOTES

- This is a rolling definition of Portfolio At Risk, which is “forgiving” of missed payments. A stricter definition of PAR<sub>30+</sub>, in which any 30+-day overdue balance designates an asset as at-risk, would cause many portfolios to appear >50% at-risk due to occasional missed payments. This definition treats a customer who missed a payment six months ago but is now back on track (i.e. is paying for amounts owed in the most recent 90-day time period) as “not at risk,” which many industry actors regard as appropriate.
- “Total amount owed” reflects the total amount schedule to be billed to the customer, so it is inclusive of scheduled interest payment and exclusive of any potential late payments or other extra assumptions.
- Accounts with no payment activity for more than 90 days are considered “churned” (see Churn KPI) rather than “at risk” and are excluded from the PAR calculation.
- Companies may want to look at other PAR periods rather than just PAR<sub>30</sub> (e.g., PAR<sub>7</sub>, PAR<sub>14</sub>, PAR<sub>21</sub>) to provide additional insight. These other periods may be important for lower-cost devices that are paid off more quickly.
- In general, feedback from stakeholders indicated that this KPI can be among the most important indicators when used carefully. Nuances that are important to consider include payment period, terms, and other variations by business model. PAR is especially helpful when comparing performance over time or for similar business models, and when used in the context of other KPIs.



## ADJUSTMENTS BY BUSINESS MODEL

While a useful measure of portfolio performance, PAR poses special challenges when comparing across business models, particularly where payments are not fixed. As a strict definition, PAR does not directly apply to Flexible PAYG business models. An adjustment for these models could be to replace “overdue balances by 30+ days” with “30+ days without access to devices due to lack of payment.” In this way, expected revenue can be “at risk” whether units have past-due balances or extended periods of inactivity due to non-payment.



*Units can be either inactive (churned), at risk (PAR), or not at risk (other active). PAR measures the total amount owed on at-risk units, divided by the total owed on all active units.*

## vi. Portfolio Size



### DEFINITION

Total number of customers in portfolio.



### CALCULATION

# of active [Units].



### WHY DOES IT MATTER?

Useful for scaling unit-level measures across active units, defined in a consistent way based on what can meaningfully be considered 'active' customers for purposes of expected payments. Implications for analysis of expected revenue, write-offs, and risk (larger portfolios are expected to have more stable performance).



### NOTES

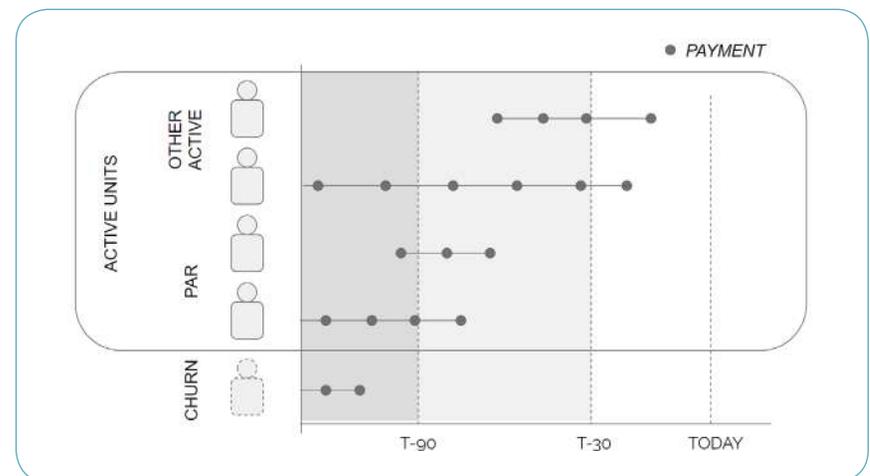
- Active units includes any customer who still owes some money on their unit and has not churned. As in the above definitions, customers who have made no payments in the preceding 90 days are deemed to be inactive (see Churn KPI) and are not included in the portfolio size.
- Some churned customers may start to make payments again, at which time they return back into the portfolio as active customers.



### ADJUSTMENTS BY BUSINESS MODEL

This KPI applies equally to different business models.

*The portfolio size reflects all active units, including those at risk, and by definition excludes churned units.*



### 3. MID-PRIORITY KPIS

These indicators were found to meet two of the three criteria below (valued by stakeholder, prone to meaningful standardization, and preliminary predictiveness of future performance) but not all three. They should be reported if applicable.



Identified by stakeholders as key for business predictions.



Showed a higher opportunity for standardization across business models



Contained a high predictive value for future portfolio performance in preliminary analysis (measured as actual versus expected receivables).

## vii. Churn



### DEFINITION

Fraction of units that have gone inactive over the previous 90 days.



### CALCULATION

Sum of (# of units on which no payment was made in the preceding 90 days) / (# of active [Units] as calculated 90 days ago).



### WHY DOES IT MATTER?

Related to portfolio size, this indicator reflects a standardized expectation for what can be considered an 'active' or 'inactive' unit for the purpose of writing off expected revenue. Churn can also be a limit to overall growth (when churn rates equal or exceed growth rates).



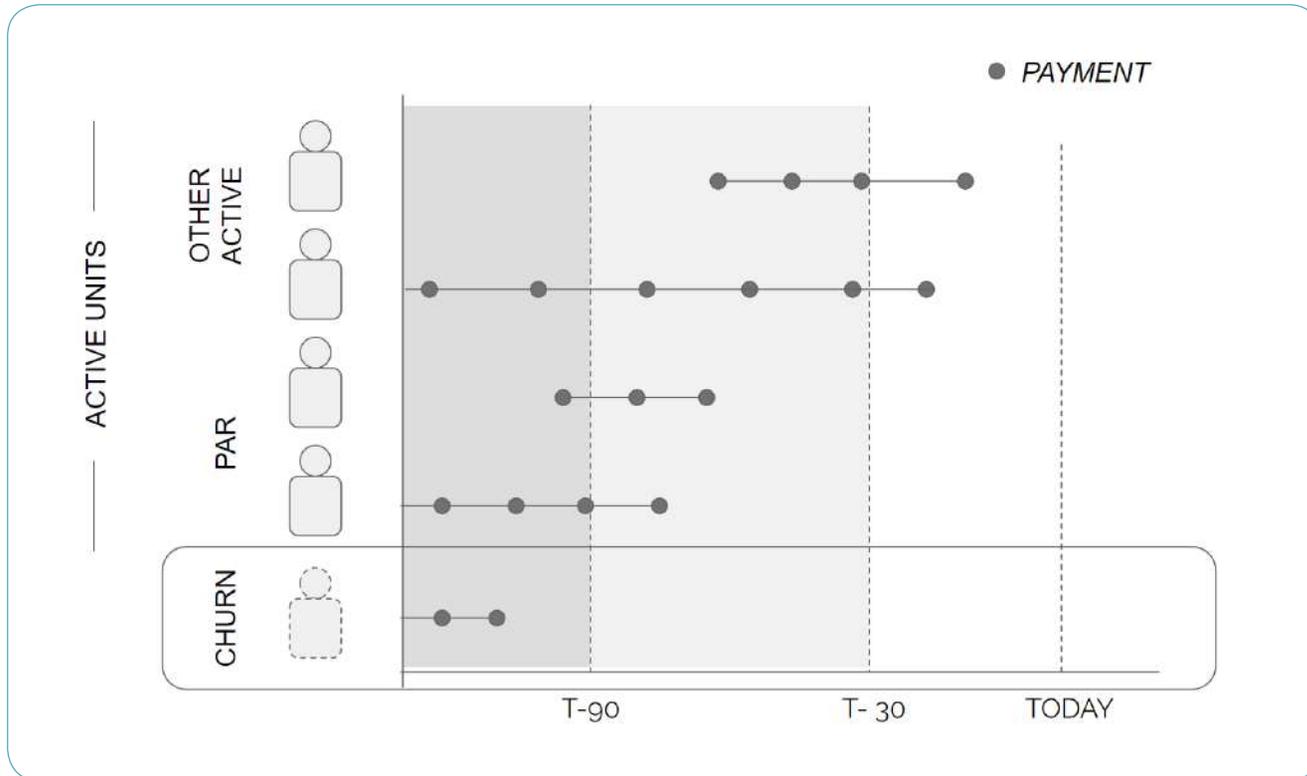
### NOTES

- "Churn" here is used to denote customers dropping out of the portfolio (see Portfolio size KPI), for instance if they are unable to continue to make payments or have abandoned their device.
- Any unit which has not had a payment made on it in 90 days is considered churned. While in principle a customer could have prepaid for the full 90 days in advance but not have paid off the device, accounts from companies suggest it is much more common that this period of inactivity is associated with units that are not meaningfully part of the portfolio anymore, for instance customers who have stopped using their device (even if not in arrears).
- Repossessed, defaulted, or written-off account labels are not considered for churn at present, given the considerable variability that currently exists in company practices. The aim is to have more standardized definitions that enable more consistent comparison, regardless of individual company assumptions. Once an account which is not fully paid off has not made a payment for 90 days, repossessed or otherwise, it is considered churned.
- For offerings with shorter payback periods or more frequent payments, it may be useful to consider inactivity over shorter time periods than 90 days as well.



## ADJUSTMENTS BY BUSINESS MODEL

With the above definition of inactivity, this KPI applies equally to different business models.



*After extended period without payment activity, units are no longer considered a part of the active portfolio.  
Churn reflects the fraction of active units 90 days ago that have since become inactive.*

## viii. Standard Deviation of Amount Ahead / Amount Behind on Payments

### DEFINITION

Total revenue received minus total amount expected up to present date, in local currency, divided by number of active units.

### CALCULATION

Mean and Standard Deviation over active units of (Total revenue received from unit acquisition to present, exclusive of unscheduled maintenance - Total revenue expected from unit acquisition to present [Local Currency]).

### WHY DOES IT MATTER?

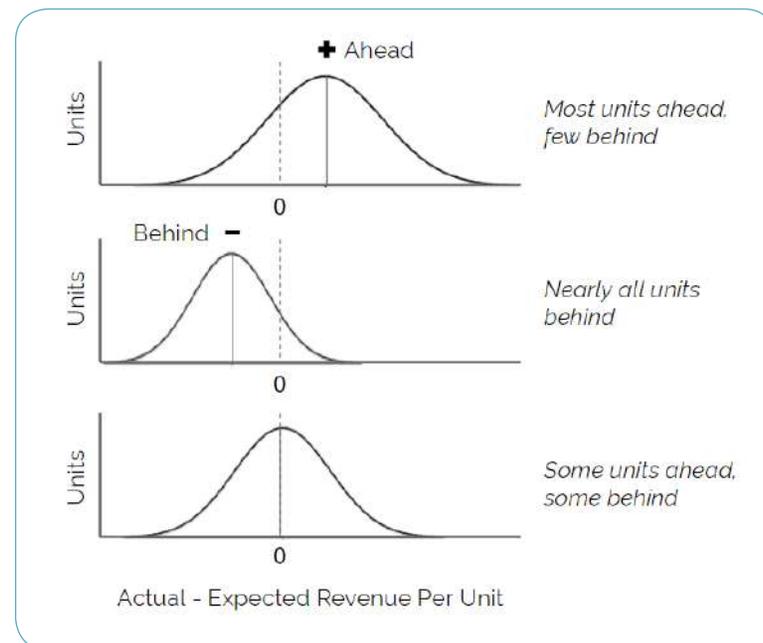
Useful for cash flow analysis and for comparing expected and actual revenue over time.

### NOTES

- Due to the important differences between hardware and business models, these KPI are primarily useful for monitoring a portfolio's performance over time or for cross-comparing the portfolios of two DESCOS with similar business models. They are extremely valuable for these purposes, but should be used carefully, if at all, for predicting or comparing performance across a wide range of portfolios.

### ADJUSTMENTS BY BUSINESS MODEL

For asset finance business models, a customer who has prepaid their regular payments would count as "ahead" and a customer who has missed or is late on a payment would count as "behind." For flexible PAYG business models, a customer who has paid for credits but not yet used them would count as "ahead," while, as with PAR, a customer who cannot access their device due to lack of payment would count as "behind." (A previous version considered "behind" customers those who have used days for which they have not paid. This was changed since many systems do not allow this, and to more directly compare with anticipated revenue.)



*Sample distributions for three portfolios. For each active unit, expected revenue to date is subtracted from actual revenue received. The graphs show the number of units at each revenue difference (amount ahead or behind).*

## ix. Average Total Expected Revenue

### DEFINITION

Mean total anticipated payments, including deposit but excluding unscheduled maintenance, in local currency.

### CALCULATION

Sum of (Total expected payments from active units, excluding any unscheduled maintenance [Local Currency]) / (# of active [Units]).

### WHY DOES IT MATTER?

This indicator can be useful for combining with Average Unit Cost and average completed revenue to bear on portfolio's anticipated profit margin. It is also useful with other risk assumptions for forecasting future portfolio economics.

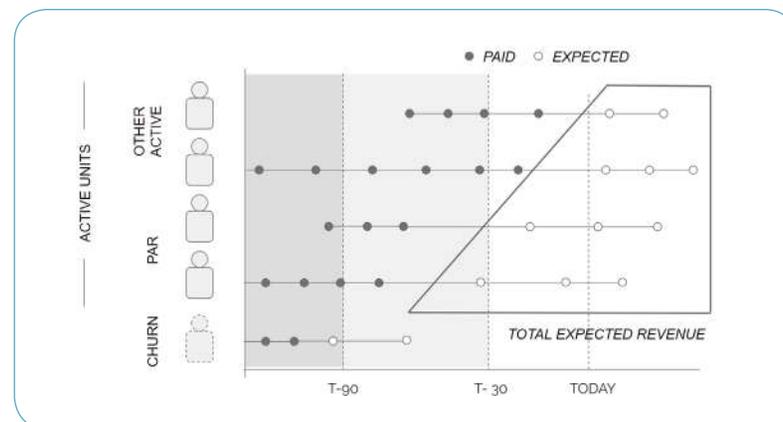
### NOTES

- Total anticipated payments is exclusive of any late fees (unless already owed or paid) as these would be overly subject to company assumptions. If late fees cannot be excluded based on the way data is stored, this should be noted when reporting this KPI. If unscheduled maintenance fees are charged to a customer this should be excluded. If these fees cannot be excluded based on the way the data is stored, this should be noted when reporting this KPI. This KPI applies to units included in the Portfolio Size KPI, and so excludes units that have churned.

### ADJUSTMENTS BY BUSINESS MODEL

This KPI does not apply to Flexible PAYG business models.

*This indicator reflects expected revenue from all active units through the end of their payment periods, including any scheduled payment that has not been completed.*



# OPTIONAL KPIs

These indicators were not tested for predictive capacity due to challenges in standardization and/or data availability. However, consultations resolved that these indicators collected important pieces of information and, therefore, their reporting should be encouraged.



Identified by stakeholders as key for business predictions.



Showed a higher opportunity for standardization across business models



Contained a high predictive value for future portfolio performance in preliminary analysis (measured as actual versus expected receivables).

## x. EBITDA Breakeven



### DEFINITION

Yes/no for whether EBITDA breakeven has been reached (positive EBITDA) for the company as a whole.



### WHY DOES IT MATTER?

Measure of relevant risk not captured elsewhere that a company is able to continue operating its PAYG business and maintaining operational and strategic investment.



### NOTES

- This KPI was highlighted as important for a variety of reasons. Among them is portfolio maintenance, due to the risk of unprofitable DESCOS eventually becoming unable to effectively service their equipment and/or collect their payments.



### ADJUSTMENTS BY BUSINESS MODEL

Explicitly, for companies providing services in addition to distributed solar generation, EBITDA breakeven is still evaluated for the company as a whole rather than for the distributed solar division.

*A company-level reflection of risk, this general indicator is "yes" if EBITDA is positive and "no" otherwise.*



## xi. Average Maintenance Cost

### DEFINITION

Total payments received in local currency for scheduled and unscheduled maintenance, over the last 30 days.

### CALCULATION

(Total maintenance payments received over most recent 30 days [Local Currency]) / (Total # of active [Units]).

### WHY DOES IT MATTER?

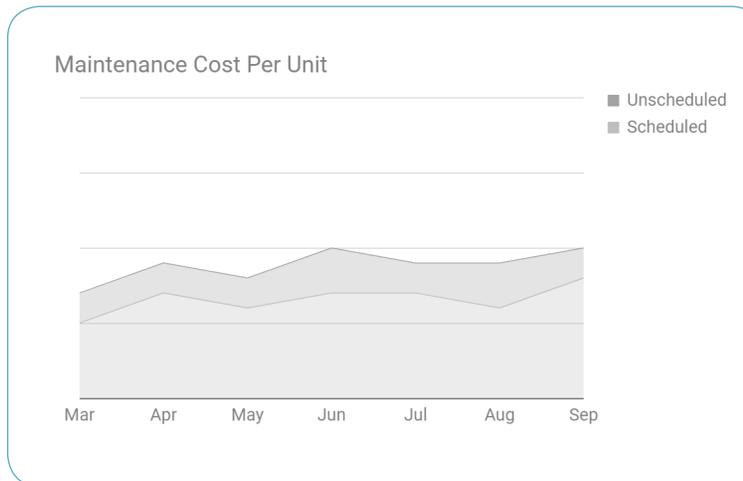
Indicator of risk not explicitly captured elsewhere, related to system reliability and technology disruption from unanticipated costs to customers.

### NOTES

- Maintenance includes both scheduled and unscheduled service, whether provided by the DESCO itself or by a contractor.
- This KPI is intended to indicate the maintenance cost to the customer. Again, this indicator was identified as an important proxy for system reliability and technology disruption risk.

### ADJUSTMENTS BY BUSINESS MODEL

Realistically the KPI can only capture the costs billed through the DESCO and its contractors, which is not already included in the contract. In many cases maintenance will be included in the contract or will not be captured through DESCOs. These are limitations in measuring this KPI accurately and consistently across companies and are part of the reason that this is a low priority KPI.



*This risk indicator reflects the costs that customers pay to maintain their units beyond their credit payments, measured as a monthly sum of scheduled and unscheduled maintenance.*

## xii. Standards Compliance



### DEFINITION

Percentage of systems complying with Lighting Global quality standards.



### CALCULATION

(Total # of active units complying with LG standards)/(Total # of active units)



### WHY DOES IT MATTER?

Standards are specified here: <https://www.lightingglobal.org/quality-assurance-program/our-standards/>



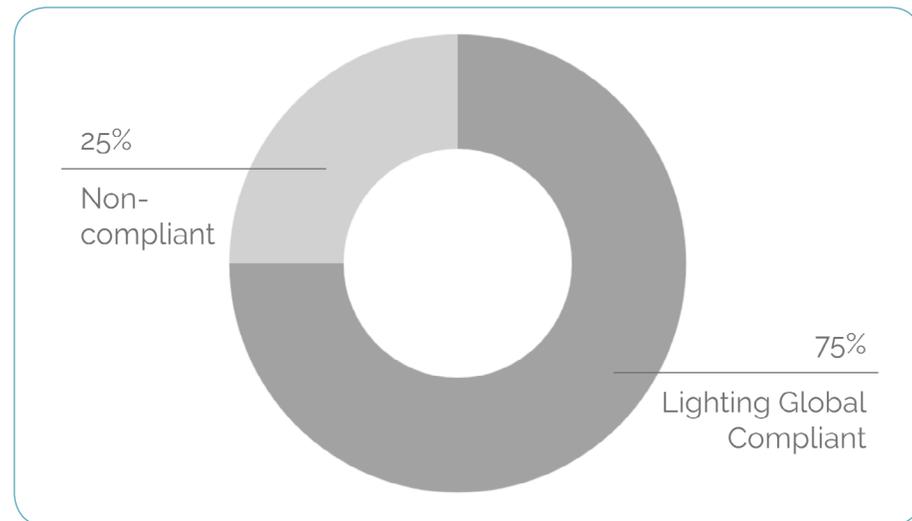
### NOTES

- Maintenance includes both scheduled and unscheduled service, whether provided by the DESCO itself or by a contractor.
- This KPI is intended to indicate the maintenance cost to the customer. Again, this indicator was identified as an important proxy for system reliability and technology disruption risk.



### ADJUSTMENTS BY BUSINESS MODEL

These standards will evolve over time. LG standards have been applied to larger solar home systems (SHSs) more recently than to lanterns or pico systems. In addition, there are costs associated with providing samples and support throughout the quality verification process. While these factors may make it less likely for smaller players to comply compared with larger players, this KPI is still important to reflect operator, technology, and regulatory risk relative to the standards that do exist.



*The percentage of all active units that comply with Lighting Global quality standards.*

## xiii. FX Exposure: Net Open Position as a Percentage of Equity

### DEFINITION

Net open position divided by equity, calculated on absolute value basis.

### CALCULATION

$[\text{Assets} - (\text{Liabilities} + \text{Equity})] / \text{Equity}$  in Local Currency

### WHY DOES IT MATTER?

Indicator of currency risk not captured elsewhere, particularly for investors managing exposure across assets.

### NOTES

- In the rare case where a portfolio includes assets paid in multiple local currencies, this KPI should be calculated separately for each currency. During consultations, stakeholders highlighted currency risks as an important factor to consider. This is the most widely-used metric for FX exposure in microfinance, and has also been highlighted by several IFIs as a critical indicator. The team behind 'The Currency Exchange Fund' has more insights on how to manage FX exposure.

### ADJUSTMENTS BY BUSINESS MODEL

This KPI applies equally to different business models.

*From the balance sheet, this risk indicator is a sum of the absolute Net Open Position (NOP) as a percent of equity across currencies. For more on managing exposure consult the Currency Exchange Fund team.*

	<u>CURRENCY 1</u>	<u>CURRENCY 2</u>	<u>TOTAL</u>
ASSETS	A1	A2	A
LIABILITIES	L1	L2	L
EQUITY	E1	E2	E
A - (L + E)	NOP1	NOP2	-
<b>FX Exposure (% of E)</b>	<b><u>NOP 1</u></b>	<b><u>NOP 2</u></b>	<b>-</b>
	<b>E1</b>	<b>E2</b>	

# ABOUT



The World Bank's engagement in the energy sector is designed to help client countries secure the affordable, reliable, and sustainable energy supply needed to end extreme poverty and promote shared prosperity. Its strategy mirrors the objectives of the Sustainable Energy for All Initiative and the Sustainable Development Goal (SDG) on energy, or SDG7: achieving universal access, accelerating improvements in energy efficiency, and doubling the global share of renewable energy by 2030.

Learn more at [worldbank.org/energy](http://worldbank.org/energy).



Lighting Global is the World Bank Group's platform to support sustainable growth of the international off-grid solar market as a means of rapidly increasing energy access to the 1.2 billion people without grid electricity. Through Lighting Global, the International Finance Corporation (IFC) and the World Bank work with the Global Off-Grid Lighting Association (GOGLA), manufacturers, distributors, and other development partners to develop the modern off-grid energy market.

Learn more at <https://www.lightingglobal.org/>



GOGLA is a neutral, independent, not-for-profit industry association which acts as a sector enabler and advocate. GOGLA supports the growth and strengthens the market for clean, quality off-grid lighting and electrical systems for households, SMEs and communities in developing countries. Learn more at [gogla.org](http://gogla.org).

## DRIVEN DATA

DrivenData brings the transformative power of data science to organizations tackling the world's biggest challenges. With more data being created and captured than ever before, and better tools and methods for making sense of it, organizations across industries are finding new ways to solve problems and serve the people they care about. DrivenData Labs helps mission-driven organizations harness data to work smarter, offer more impactful services, and use machine intelligence to its potential. DrivenData also runs online machine learning competitions where data scientists around the world build algorithms for social impact. Learn more at [drivendata.co](http://drivendata.co).

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