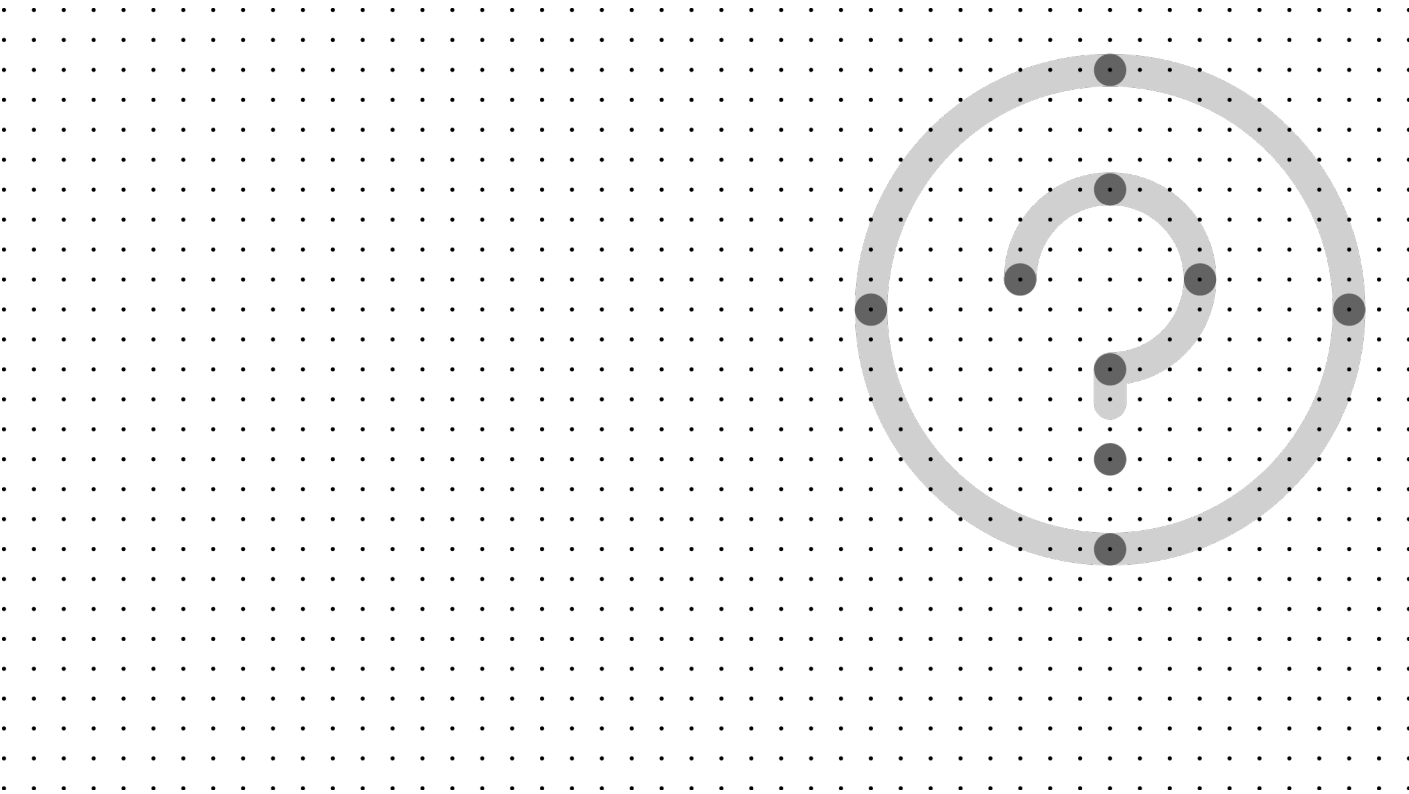


Solar PV Self-Consumption

.....
A method to determine the Electrical Self-Consumption of Domestic
Solar PV Installations with and without Storage



This document was prepared on behalf of the MCS Working Group 2: Solar PV Systems by:

Advance Further Energy Ltd
BRE National Solar Centre
University of Loughborough

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The MCS Service Company Ltd
Innovation Centre,
Sci-Tech Daresbury,
Keckwick Lane,
Cheshire WA4 4FS

www.mcscertified.com
hello@mcscertified.com
0333 103 8130

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ABOUT MCS

Giving you confidence in home-grown energy

With energy costs constantly rising and climate change affecting us all, low-carbon technology has a bigger and bigger role to play in the future of UK energy.

We're here to ensure it's a positive one.

Working with industry we define, maintain and improve quality – certifying products and installers so people can have confidence in the low-carbon technology they invest in. From solar and wind, to heat pumps, biomass and battery storage, we want to inspire a new generation of home-grown energy, fit for the needs of every UK home and community.

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The Microgeneration Certification Scheme Service Company Ltd (MCSSCo Ltd) trades as MCS and is wholly owned by the non-profit MCS Charitable Foundation. Since 2007, MCS has become the recognised Standard for UK products and their installation in the small-scale renewables sector.

We create and maintain standards that allow for the certification of products, installers and their installations. Associated with these standards is the certification scheme, run on behalf of MCS by Certification Bodies who hold UKAS accreditation to ISO 17065.

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Vision

To see MCS certified products and installations in every UK home and community.

Mission

To give people confidence in low-carbon energy technology by defining, maintaining and improving quality.

Values

1. We are expert – ensuring quality through robust technical knowledge
2. We are inspiring – helping to reshape energy in UK homes and communities
3. We are collaborative – working with industry and government to create positive change
4. We are principled – operating in a way that's clear, open and fair
5. We are determined – supporting the UK's drive towards a clean energy future

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1 INTRODUCTION & PURPOSE

This is a guidance document. It is neither a mandatory MCS requirement, nor does it contain mandatory requirements, unless expressly stated as such in an MCS installation standard (MIS) using the words “should” or “shall” in the reference to MGD 003 or its clauses.

The purpose of this guidance document is to provide a method to approximate the amount of electricity generated by a domestic solar PV system which might be self-consumed, both with and without electrical energy (battery) storage, over a year of operation.

In a domestic context, solar PV has a number of potential benefits such as reduced electricity bills, increased energy independence, carbon savings and (historically) a subsidy. The case for domestic energy storage relies in part on increasing the expected consumption of electricity generated by a solar PV microgeneration system. The amount of electrical energy and hence electricity bill saving depends on the “self-consumption”, which is a measure of the proportion of electricity generated by the PV system that is consumed in the domestic property.

$$\text{Self consumption (\%)} = \frac{\text{Solar PV electricity consumed within domestic property (kWh)}}{\text{Solar PV electricity generated (kWh)}}$$

The amount of self-consumption is related to the reduction in the electricity bill. The UK Government Feed-in-Tariff (FiT) subsidy comprised of a generation tariff (a payment for every unit (kWh) of electricity generated by the solar PV) and an export tariff (a payment for every unit of electricity exported from the solar PV system into the local distribution network). The export tariff was deemed as 50% of the PV electricity generated (for systems up to an installed capacity of 30kW) and so, by implication, it was assumed that a domestic property with PV installed would, on average, self-consume 50% of solar PV electricity generated.

In practice, self-consumption is dependent on a variety of factors including the solar PV generation, location of the solar PV array, the orientation, the number of solar PV modules, shading, the total electricity load and consumption of the property and the behaviour of the occupants.

The method described in this document is based upon:

- Research into domestic electricity consumption by Loughborough University combined with battery energy storage modelling developed with Advance Further Energy Ltd and validated by BRE National Solar Centre.
- Domestic electricity occupancy profiles which have been developed by Loughborough University with Advance Further Energy Ltd and BRE National Solar Centre.

2 DEFINITIONS

Solar PV self-consumption	<p>The amount of solar electricity generated by a domestic solar PV system which is subsequently consumed within the property and not exported to the distribution network. This includes solar PV directly consumed during the day and any solar PV generated electricity which is first stored in an electrical energy storage system and then discharged into domestic loads when the solar PV system is not generating enough electricity to meet the demand.</p> <p>The self-consumption can be quoted in kWh or as a percentage of the total PV generation. Self-consumption is different to the grid electricity independence.</p>
Grid electricity independence / Self-sufficiency	<p>The percentage of electricity consumed in the property over a year which is met by either behind the meter solar or electrical energy storage.</p> <p>Note that grid independence is distinct from the self-consumption.</p>
Electrical energy storage system (EESS)	<p>A system which converts electrical energy into a form of energy which can be stored, the storing of that energy, and the subsequent reconversion, in a controllable manner, of that energy back into electrical energy.</p> <p>For the purposes of this document, this is installed within the same domestic electrical system as the solar PV system and loads i.e. on the domestic side of the utility meter. The electrical energy storage is operated for provision of increasing self-consumption.</p> <p>The guidance in this document is not suitable for self-consumption of other microgeneration technologies via an electrical energy storage system.</p>
Usable Capacity (kWh)	The total capacity (kWh) of the EEES which is available for use for solar PV self-consumption.
First life EEES	An electrical energy storage system which is <u>installed as new</u> for the purpose of increasing the solar PV self-consumption in a domestic context.
Second life EEES	An electrical energy storage system which <u>has previously been used</u> for another application and which has been repurposed for the purpose of increasing the solar PV self-consumption in a domestic context.
Annual generation from solar PV (kWh)	The total amount of electricity generated (kWh) by a domestic solar PV system over a year. For the purposes of this document, the annual electricity generation from solar PV is calculated using the methodology described in MIS 3002: The PV Standard (installation), unless metered annual generation data is available.

Annual Electricity Consumption (kWh)	The total amount of electricity consumed (kWh) in the domestic property over the last year. In the absence of any microgeneration this will be the total grid electricity import at the site as evidenced by the most recent total annual utility meter readings or consumer bills.
Occupancy archetype	A behavioural parameter used to represent when a domestic property is occupied or unoccupied.

3 SCOPE

- 3.1 This guidance document describes a method to estimate the electrical self-consumption of solar photovoltaic (PV) installations with and without an EESS for domestic buildings.
- 3.2 The method is not applicable for non-domestic buildings.
- 3.3 Heat storage devices are not included.
- 3.4 Additional self-consumption arising from non-typical domestic loads such as electric space heating, swimming pools, heat pumps, electricity power diverters, electric water heating and electric vehicles is not accounted for in the method.
- 3.5 Lookup tables are provided to determine the average self-consumption of electricity from solar PV with and without an EESS for particular generation, demand and occupancy archetypes.
- 3.6 Guidance is also provided for how self-consumption should be communicated to customers although the requirements in MIS 3002 and MIS 3012 take precedence.
- 3.7 Inherent variability in user behaviour and solar PV generation means that there will be uncertainty in the self-consumption of solar PV with and without an EESS. Therefore, self-consumption calculated is not a performance prediction for an individual property but rather it is the average self-consumption for a sample of domestic properties with similar occupancies, electricity consumption and solar PV systems. The self-consumption value therefore should only be considered an estimate of the energy saving that might be expected.
- 3.8 The method given can also be used as a sense check for sizing decisions of EESS products, but has not been designed to be used as an EESS design or sizing tool.
- 3.9 The results do not reflect the change in consumer behaviour which often occur after installing microgeneration systems, such as energy savings consequent from greater energy awareness through the installation and use of monitoring equipment and smart meters, or utilisation of active energy management systems, such as diverters.
- 3.10 The method is equally suitable for when solar PV and EESS installed at the same time and when an EESS is retrofitted to a property with an existing solar PV installation.
- 3.11 The following additional assumptions apply:
- the method for determining the generation from solar PV systems is as described in MIS 3002: The Solar PV Standard (Installation).
 - The total annual domestic electricity consumption is between 1,500 kWh and 6,000 kWh per year.

- The total expected annual electricity generation from the solar PV system is less than 6,000 kWh per year.
- Any EESS:
 - Has a round-trip efficiency at 25°C (as defined by BS EN IEC 62933-2) greater than or equal to 80%.
 - Has a power rating sufficient for them to be fully charged and discharged within 6 hours at rated power.

- 3.12 Whilst it is also assumed that any EESS is primarily operated in a “self-consumption mode” with solar PV, it is permissible to use other operating modes which reduce the self-consumption benefit e.g. time of use charging, ancillary services or backup. In this case, the impact of this on reduced self-consumption should be calculated and clearly communicated.
- 3.13 Both the PV system and any EESS are connected in parallel with the distribution network. Systems not normally operating in parallel with the distribution network (“Off-Grid”) are not included due to differences in the electricity consumption patterns of off-grid properties.
- 3.14 The self-consumption estimate is valid for the first year of the EESS installation. It does not reflect the changing self-consumption as a result of degradation in solar PV output, battery degradation and changing behaviour.
- 3.15 The self-consumption value in subsequent years may still be estimated using the method provided that the usable capacity of an EESS, occupancy archetype and a post-degradation solar PV generation are representative for the year under consideration.

4 PROCEDURE

4.1 Self-consumption is determined using: the total annual expected AC electricity generation in kWh from the solar PV system, the annual electricity consumption of the property in kWh and the domestic occupancy archetype. In the case of electrical energy storage, any increase in annual self-consumption shall be estimated using the usable capacity of the energy storage device. These value of these parameters shall be determined as described below.

4.2 Occupancy Archetype

4.2.1 Self-consumption is estimated for different occupancy archetypes (see Table 4-1). These archetypes describe when the domestic property is occupied during the day and represents an important behavioural component in the efficacy of solar PV and EESS.

4.2.2 The appropriate occupancy archetype is to be selected by asking the occupier which archetype best represents their typical occupancy pattern. The closest approximation to the idealised archetypes should be used.

4.2.3 The number of occupants in a property is not directly considered as this is represented (as a proxy) by the annual electricity consumption.

Table 4-1: Description of Occupancy Archetypes

Occupancy Archetype	Description
Home all day	The domestic property is generally occupied by at least one occupant between 9:00am to 5:00pm on weekdays
In half the day	The domestic property is typically empty for half the day e.g. either all morning or all afternoon on weekdays.
Out all day	The domestic property is typically empty on weekdays
Occupancy unknown	If typical occupancy behaviour is unavailable, refer to the “in half the day” data table.

4.3 Establishing annual electricity consumption

4.3.1 The annual electricity consumption is the total amount of electricity consumed in the property in kilowatt-hours (kWh) in a full 12-month period. Depending on the circumstances, this should be derived in one of the following ways:

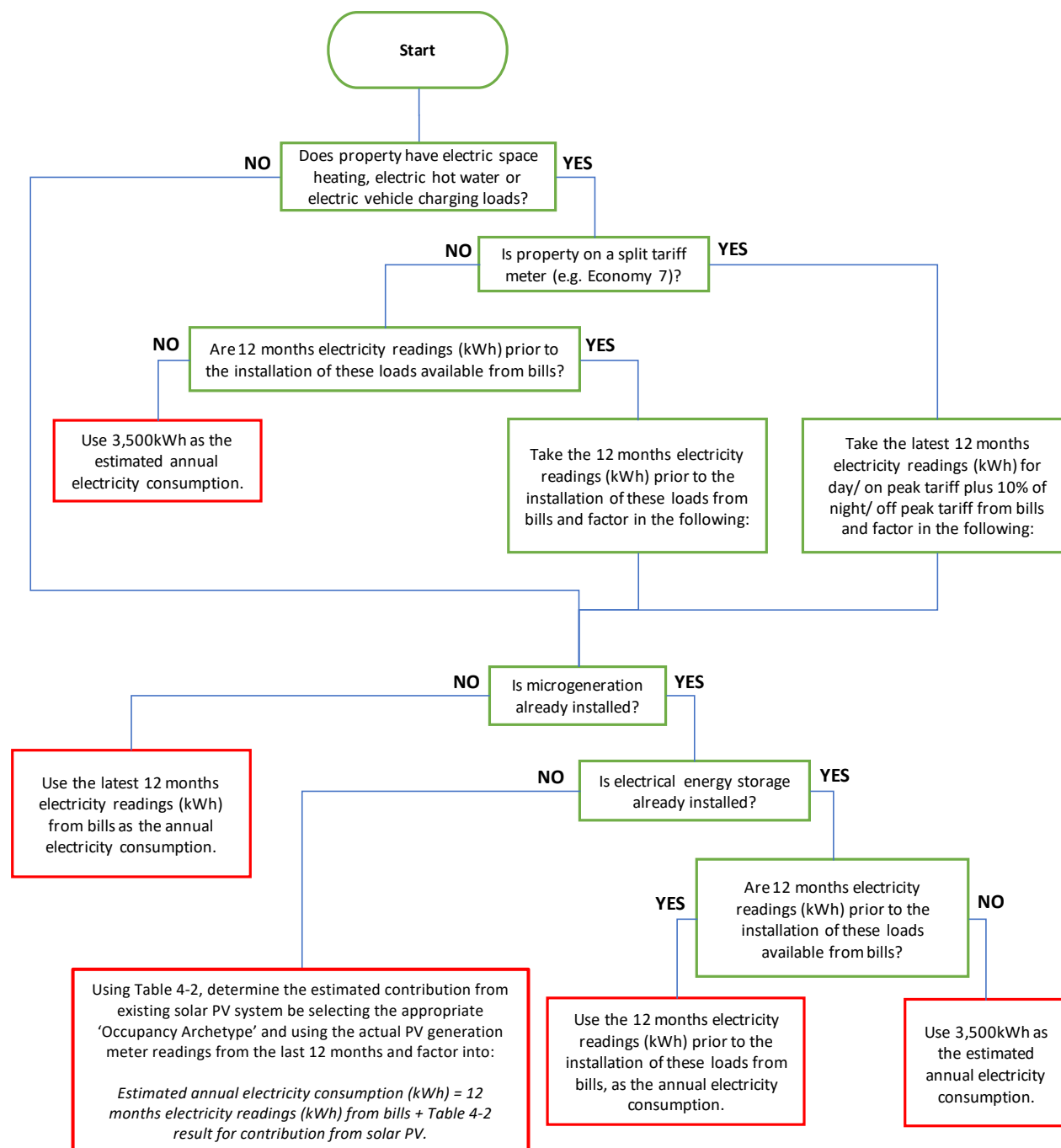


Figure 4-1: Flowchart showing how electricity consumption should be determined

4.3.2 In the absence of any microgeneration

If the property has no microgeneration, then the annual electricity consumption is taken from the latest available information, preferably electricity utility bills from a supplier based on actual meter readings.

4.3.3 Adjustments for the presence of an electric vehicle or electric space heating (in properties with or without domestic solar PV)

If possible, the electricity consumption used to determine self-consumption shall exclude electricity used to provide domestic space heating/ hot water or electric vehicle charging although this is not essential. To do so, an annual grid electricity reading before the installation of electric heating/ hot water or electric vehicle charging should be used if available.

4.3.4 In the presence of microgeneration in the form of domestic solar PV without an EESS

Where the property already has solar PV then electricity bills and meter readings will be net of the contribution from the PV. Therefore to establish the amount of electricity consumed it needs to be added back in:

Obtain the units (kWh) of grid electricity purchased from a supplier from the latest available information, preferably a recent electricity bill based on actual meter readings.

Lookup the estimated contribution from the solar PV using Table 4-2. The occupancy archetype shall be selected in accordance with the guidance in 4.2. The annual electricity generated by solar PV system in accordance with 4.4.

The annual electricity consumption is then calculated as the sum of the metered/purchased electricity and the contribution from the solar PV system.

4.3.5 In all other cases

If it is not possible to determine the annual electricity consumption or if none of the above circumstances apply, then the annual electricity consumption shall be taken as 3,500kWh per annum. This is the mean, non-population weighted British electricity consumption according to UK Government statistics¹.

Note: alternative methods, such as readings from in home electricity monitors, are not recommended as these do not always have MID approval and may have poor accuracy.

¹ Source: Department of Business, Energy and Industrial Strategy. SUB-NATIONAL ELECTRICITY AND GAS CONSUMPTION STATISTICS. January 2018. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/678653/Sub-national_electricity_and_gas_consumption_summary_report_2016.pdf

Table 4-2: Lookup table to determine the contribution of solar PV when already reducing metered/purchased electricity. Values are in kWh.

Annual electricity generated by solar PV system, kWh	Annual contribution of existing solar PV generation to domestic electricity supply		
	Occupancy Archetype: Home all day	Occupancy Archetype: In half day	Occupancy Archetype: Out all day
0 kWh to 299 kWh	143	127	98
300 kWh to 599 kWh	347	288	219
600 kWh to 899 kWh	499	427	327
900 kWh to 1,199 kWh	616	506	379
1200 kWh to 1,499 kWh	715	580	424
1500 kWh to 1,799 kWh	794	644	459
1800 kWh to 2,099 kWh	859	697	488
2100 kWh to 2,399 kWh	916	742	512
2400 kWh to 2,699 kWh	968	782	534
2700 kWh to 2,999 kWh	1,016	814	554
3000 kWh to 3,299 kWh	1,063	844	573
3300 kWh to 3,599 kWh	1,103	874	592
3600 kWh to 3,899 kWh	1,140	905	611
3900 kWh to 4,199 kWh	1,174	934	624
4200 kWh to 4,499 kWh	1,205	957	634
4500 kWh to 4,799 kWh	1,234	979	640
4800 kWh to 5,099 kWh	1,261	1,002	647
5100 kWh to 5,399 kWh	1,291	1,024	654
5400 kWh to 5,699 kWh	1,318	1,046	659
5700 kWh to 5,999 kWh	1,344	1,067	661

NOTE:

Values in Table 4-2 have been derived reflecting non-storage cases and annual electricity consumption of 3,500 kWh per annum (consistent with a reasonable UK domestic average electricity consumption).

4.4 Expected annual electricity generation from the solar PV system

- 4.4.1 An estimate of annual energy generation from the solar PV system shall be made using the methodology prescribed in MIS 3002; taking account of the actual orientation, pitch, location and shading conditions.
- 4.4.2 No adjustment for the age of the solar PV installation shall be made unless metered data is available for the particular installation to which electrical energy storage is being added.
- 4.4.3 Metered electrical generation data can be used for calculation as an alternative only where this has been measured by an MID approved meter. The most recently available data shall be used and this must represent a full 12-month period of generation from the solar PV system only.

4.5 Usable capacity of the EESS.

- 4.5.1 The usable capacity of the EESS is the energy within the storage device available to the customer for use of any domestic energy storage application, including solar PV self-consumption. It is measured in kWh.
- 4.5.2 If the EESS is used for multiple functions (such as backup supply to the home or ancillary services to the network or system operator) then the usable capacity is taken as the capacity within the battery that is used for solar PV self-consumption. For example, if 20% of the battery is permanently reserved for backup, then only 80% of the usable capacity is to be used in self-consumption calculations.
- 4.5.3 For first and second life batteries, the usable capacity shall be taken from the product datasheet. This shall reflect the usable capacity of the storage system when installed in the domestic property. If several values are given, then the capacity at or closest 1C rate shall be used.
- 4.5.4 Where the EESS usable capacity is not clearly stated on the datasheet as “usable capacity” then the nominal capacity shall be taken and multiplied by the maximum depth of discharge of the EESS, calculated as follows:

$$\text{Usable Capacity} = \text{Nominal Capacity} \times \text{Maximum Depth of Discharge}$$

- 4.5.5 Where the maximum depth of discharge is not clearly provided, it shall be reflective of that battery chemistry. For the avoidance of doubt, the depth of discharge must be 50% for lead acid batteries and 90% for all other electrical energy storage chemistries unless otherwise stated on the product datasheet.
- 4.5.6 Efficiency effects from the storage or power conversion equipment on the usable capacity do not need to be considered for the purposes of this document.

Note: Second-life batteries may have a lower usable storage capacity than their original specification. Consequently, the usable capacity of second-life batteries must be taken from the second-life product datasheet and users of this document must ensure that this reflects the capacity of the storage when it is being installed for domestic solar PV self-consumption.

4.6 Expected solar PV self-consumption

- 4.6.1 The expected self-consumption from the solar PV system with an EESS can be established once the expected solar PV generation, the annual electricity consumption, the occupancy archetype and the EESS usable capacity have been determined using the methods described above.
- 4.6.2 The solar PV self-consumption is tabulated in a series of lookup tables (see Section 7). Each lookup table is for a specific customer architecture and annual electricity consumption.
- 4.6.3 Navigate to the section which refers to the most appropriate occupancy archetype for the domestic property as determined in 4.2.
- 4.6.4 Navigate to the table which refers to the relevant total electricity consumption of the domestic property as determined in 4.3.
- 4.6.5 Each row of the table refers to an electricity generation figure from the solar PV. Identify which row corresponds to the projected electricity generation as determined in 4.4.
- 4.6.6 Each column refers to a total usable electrical energy storage capacity. For self-consumption without electrical energy storage, use the “PV Only” column. For self-consumption with electrical energy storage, identify which column refers to the usable capacity of the storage device as determined in 4.5.
- 4.6.7 The value in the identified row and column is the projected electrical self-consumption for that particular demand, generation, EESS usable capacity and occupancy archetype. This is expressed as a percentage of the total annual generation from the solar PV system.

Note: the values within the cells given in the lookup tables are rounded to whole integers for simplicity. Under certain conditions, this can give unexpected results. To avoid this the values in the excel spreadsheets also published by MCS can be used.

- 4.6.8 The quotable self-consumption of solar PV generation where there is NO ELECTRICAL ENERGY STORAGE is determined as follows:

$$\text{Solar PV generation directly consumed within domestic property over a year (kWh)} = \frac{\text{Self consumption from lookup table (\%)}_{\text{—PV only}}}{\text{Total solar PV generation per annum(kWh)}} \times \text{Total solar PV generation per annum(kWh)}$$

- 4.6.9 The quotable self-consumption of solar PV generation WITH ELECTRICAL ENERGY STORAGE is determined as follows:

$$\text{Solar PV generation consumed directly or via electrical energy storage within domestic property over a year (kWh)} = \frac{\text{Self consumption from lookup table (\%)}}{\text{Total solar PV generation per annum(kWh)}} \times \text{Total solar PV generation per annum(kWh)}$$

Note: the self-consumption cannot exceed 95% of the total annual generation.

4.7 Calculating the grid electricity independence / self-sufficiency

- 4.7.1 The grid electricity independence / self-sufficiency is the fraction of electricity consumed in the property which is met by self-consumed electricity as calculated above.
- 4.7.2 This distinguishes the expected reduction in grid electricity consumption from the self-consumption.
- 4.7.3 To prevent irregular results this is capped at 90% of the electricity consumed in the property.
- 4.7.4 This is calculated as follows, where the self-consumption with or without electrical energy storage is determined as described in 4.6 and the annual electricity demand is determined as described in 4.3.

$$\text{Grid electricity independence (\%)} = \min \left(90\%, \frac{\text{Solar PV electricity self – consumption (kWh)}}{\text{Annual electricity demand (kWh)}} \right)$$

5 COMMUNICATION OF SELF-CONSUMPTION

Where this document is being used by MCS Certified Contractors then the results of the calculations should be communicated to customers in the format prescribed in MIS 3002 and/or MIS 3012. Where this is not the case then the following means of communication is recommended.

Table 5-1: Parameters to be communicated

Parameter	Value
Assumed occupancy archetype	In accordance with 4.2
Assumed annual domestic electricity consumption, kWh	In accordance with 4.3 and communicated in kWh
Assumed annual electricity generation from solar PV system, kWh	In accordance with 4.4 and communicated in kWh
Assumed usable capacity of EESS which is used for self-consumption, kWh	In accordance with 4.5 and communicated in kWh
Expected solar PV self-consumption	To be communicated as a “percentage of solar electricity generation” and as an absolute kWh value in accordance with 4.6
Grid electricity independence / Self-sufficiency	To be communicated as a “percentage of annual electricity consumption” and as an absolute kWh value in accordance with 4.7

- 5.1 This document provides self-consumption values for domestic properties given specific occupancy archetype, solar PV electricity generation and electricity consumption.
- 5.1.1 The self-consumption figure for the solar PV installation shall be communicated in a written format and in such a way that it is clear whether this refers to a case with and without electrical energy storage.
- 5.1.2 It is permissible to communicate self-consumption for each of the occupancy archetypes on the same system. Both solar only and solar with storage values must be communicated. It must be clear which archetype it is assumed the customer corresponds to.
- 5.2 The advantages and disadvantages of other architectures and technologies can be qualitatively represented.
- 5.3 The self-consumption shall be communicated in both the estimated annual kWh and percentage of solar PV electricity consumed.

5.3.1 The annual domestic electricity consumption of the property used in the calculation in order to clearly demonstrate the grid electricity independence and solar self-consumption are distinct quantities.

5.4 The communications shall make reference to this document as follows:

“The solar PV self-consumption has been calculated in accordance with MGD 003: Solar PV Self-Consumption. The self-consumption is valid before the impact of power diverters, electric space and water heating and electric vehicle charging are considered.”

5.5 The following should be made clear to the customer:

5.5.1 The self-consumption value is an estimate of the average for the selected occupancy archetype, solar PV electricity generation and demand according to the modelling work undertaken for this document. As a result, the self-consumption value should not be treated as a performance prediction for that specific customer due to unique behavioural aspect for each dwelling and occupancy.

5.5.2 The resulting figures ascertained by this document should be used as a basis for impartially comparing offers from different installers and/ or different system sizes.

5.5.3 The self-consumption value can vary on an annual basis due to changes in irradiance, demand, occupancy and appliance choices.

6 WORKED EXAMPLES

Table 6-1 provides worked examples of how to use the document lookup tables to determine the self-consumption with and without electrical energy storage for different use cases.

Table 6-1: Example use cases of the document lookup tables

Use Case	1	2
Occupancy archetype	Home all day As per 4.2	In half the day As per 4.2
Total annual electricity consumption, kWh	3,879 kWh As per 4.3	5,783 kWh As per 4.3
Table used for electricity consumption	3,500 kWh to 3,999 kWh	5,500 kWh to 5,999 kWh
Total annual electricity generation from solar PV system, kWh	4,059 kWh As per 4.4	2,456 kWh As per 4.4
Row used for electricity generation	3,900 kWh to 4,199 kWh	2,400 kWh to 2,699 kWh
Usable capacity of EESS, kWh	7.5 kWh As per 4.5	5.1 kWh As per 4.5
Column used for self-consumption with electrical energy storage	$\geq 7.1, < 8.1$	$\geq 5.1, < 6.1$
Table used	Occupancy: Home all day. Annual electricity consumption: 3,500 kWh to 3,999 kWh Table 7-5	Occupancy: In half the day. Annual electricity consumption: 5,500 kWh to 5,999 kWh Table 7-18
Self-consumption without EESS, %	29%	39%
Self-consumption without EESS, kWh	1,177 kWh (29% x 4,059)	958 kWh (39% x 2,456)
Self-consumption with EESS, %	69%	88%
Self-consumption with EESS, kWh	2,801 kWh (69% x 4,059)	2,161 (88% x 2,456)
Grid electricity independence without EESS, %	30% (1,177 / 3,879) As per 4.7.4	17% (958 / 5,783) As per 4.7.4
Grid electricity independence with EESS, %	72% (2,801 / 3,879) As per 4.7.4	37% (2,161 / 5,783) As per 4.7.4

7 LOOKUP TABLES

Tables for Occupancy Archetype: Home all Day

Table 7-1		Occupancy: Home all day. Annual electricity consumption: 1,500 kWh to 1,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	70%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	52%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	46%	76%	88%	93%	94%	94%	94%	94%	94%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	38%	67%	80%	85%	88%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
	1200 kWh to 1,499 kWh	33%	60%	72%	78%	81%	83%	83%	83%	83%	83%	83%	83%	84%	84%	84%
	1500 kWh to 1,799 kWh	29%	53%	65%	71%	74%	76%	76%	76%	76%	76%	76%	77%	77%	78%	78%
	1800 kWh to 2,099 kWh	26%	48%	58%	64%	67%	69%	69%	69%	69%	70%	70%	70%	70%	71%	71%
	2100 kWh to 2,399 kWh	23%	43%	53%	58%	61%	62%	63%	63%	63%	63%	63%	64%	64%	64%	65%
	2400 kWh to 2,699 kWh	21%	39%	49%	53%	56%	57%	57%	58%	58%	58%	58%	58%	58%	58%	58%
	2700 kWh to 2,999 kWh	20%	36%	45%	49%	51%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
	3000 kWh to 3,299 kWh	18%	33%	41%	46%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	3300 kWh to 3,599 kWh	17%	31%	38%	42%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
	3600 kWh to 3,899 kWh	16%	29%	35%	39%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	3900 kWh to 4,199 kWh	15%	27%	33%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
	4200 kWh to 4,499 kWh	15%	25%	31%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
	4500 kWh to 4,799 kWh	14%	24%	29%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
	4800 kWh to 5,099 kWh	13%	23%	28%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
	5100 kWh to 5,399 kWh	13%	21%	26%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
	5400 kWh to 5,699 kWh	12%	20%	25%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
	5700 kWh to 5,999 kWh	12%	20%	24%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%

Table 7-2		Occupancy: Home all day. Annual electricity consumption: 2,000 kWh to 2,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	77%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	58%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	50%	76%	88%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	43%	70%	82%	88%	91%	92%	93%	93%	93%	93%	93%	93%	93%	93%	93%
	1200 kWh to 1,499 kWh	38%	64%	76%	83%	87%	88%	89%	89%	89%	89%	90%	90%	90%	90%	90%
	1500 kWh to 1,799 kWh	34%	58%	70%	77%	81%	83%	84%	84%	84%	85%	85%	85%	86%	86%	86%
	1800 kWh to 2,099 kWh	30%	53%	64%	71%	75%	77%	78%	78%	79%	79%	79%	80%	80%	80%	80%
	2100 kWh to 2,399 kWh	28%	48%	59%	66%	69%	71%	72%	72%	73%	73%	73%	73%	74%	74%	74%
	2400 kWh to 2,699 kWh	25%	44%	54%	60%	64%	66%	67%	67%	68%	68%	68%	68%	68%	68%	68%
	2700 kWh to 2,999 kWh	24%	41%	50%	56%	59%	61%	62%	63%	63%	63%	63%	63%	63%	63%	63%
	3000 kWh to 3,299 kWh	22%	38%	46%	52%	55%	57%	58%	59%	59%	59%	59%	59%	59%	59%	59%
	3300 kWh to 3,599 kWh	21%	35%	43%	49%	52%	53%	54%	55%	55%	55%	55%	55%	55%	55%	55%
	3600 kWh to 3,899 kWh	20%	33%	40%	45%	49%	50%	51%	51%	51%	51%	51%	51%	51%	51%	51%
	3900 kWh to 4,199 kWh	18%	31%	38%	42%	45%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	4200 kWh to 4,499 kWh	18%	29%	35%	40%	43%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%
	4500 kWh to 4,799 kWh	17%	27%	33%	38%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
	4800 kWh to 5,099 kWh	16%	26%	32%	36%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
	5100 kWh to 5,399 kWh	15%	25%	31%	34%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
	5400 kWh to 5,699 kWh	15%	24%	30%	33%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
	5700 kWh to 5,999 kWh	14%	23%	29%	32%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%

Table 7-3		Occupancy: Home all day. Annual electricity consumption: 2,500 kWh to 2,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	86%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	65%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	56%	82%	92%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	48%	75%	86%	91%	93%	94%	94%	94%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	43%	68%	81%	87%	90%	92%	92%	93%	93%	93%	93%	93%	93%	93%	93%
	1500 kWh to 1,799 kWh	38%	62%	75%	82%	86%	88%	89%	90%	90%	90%	90%	90%	90%	90%	91%
	1800 kWh to 2,099 kWh	34%	57%	69%	76%	81%	83%	85%	86%	86%	86%	86%	86%	87%	87%	87%
	2100 kWh to 2,399 kWh	32%	52%	63%	71%	75%	78%	80%	81%	81%	81%	82%	82%	82%	82%	82%
	2400 kWh to 2,699 kWh	29%	48%	59%	65%	70%	73%	74%	75%	76%	76%	77%	77%	77%	77%	77%
	2700 kWh to 2,999 kWh	27%	45%	55%	61%	65%	68%	69%	70%	71%	71%	71%	71%	72%	72%	72%
	3000 kWh to 3,299 kWh	25%	42%	51%	57%	61%	64%	65%	66%	67%	67%	67%	67%	67%	67%	67%
	3300 kWh to 3,599 kWh	24%	39%	48%	54%	58%	60%	61%	62%	63%	63%	63%	63%	63%	63%	63%
	3600 kWh to 3,899 kWh	23%	37%	45%	50%	54%	57%	58%	59%	60%	60%	60%	60%	60%	60%	60%
	3900 kWh to 4,199 kWh	22%	35%	42%	47%	51%	53%	55%	56%	56%	57%	57%	57%	57%	57%	57%
	4200 kWh to 4,499 kWh	21%	33%	40%	45%	48%	51%	52%	53%	53%	54%	54%	54%	54%	54%	54%
	4500 kWh to 4,799 kWh	20%	31%	38%	43%	46%	48%	49%	50%	50%	50%	50%	50%	50%	50%	50%
	4800 kWh to 5,099 kWh	19%	30%	36%	41%	44%	46%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	5100 kWh to 5,399 kWh	18%	29%	35%	39%	42%	44%	45%	45%	45%	45%	45%	45%	45%	45%	45%
	5400 kWh to 5,699 kWh	17%	27%	33%	37%	40%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%
	5700 kWh to 5,999 kWh	17%	26%	31%	35%	38%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%

Table 7-4		Occupancy: Home all day. Annual electricity consumption: 3,000 kWh to 3,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	72%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	62%	86%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	54%	79%	89%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	48%	73%	85%	90%	92%	93%	94%	94%	94%	94%	94%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	43%	68%	79%	86%	89%	91%	92%	92%	93%	93%	93%	93%	93%	93%	93%
	1800 kWh to 2,099 kWh	39%	63%	74%	81%	85%	87%	88%	89%	90%	91%	91%	91%	91%	91%	91%
	2100 kWh to 2,399 kWh	36%	58%	69%	76%	80%	83%	85%	86%	86%	87%	88%	88%	88%	88%	88%
	2400 kWh to 2,699 kWh	34%	54%	64%	71%	76%	79%	81%	82%	82%	83%	83%	84%	84%	84%	84%
	2700 kWh to 2,999 kWh	32%	50%	60%	67%	71%	74%	76%	77%	78%	78%	79%	79%	79%	79%	79%
	3000 kWh to 3,299 kWh	30%	47%	56%	63%	67%	71%	72%	73%	74%	74%	75%	75%	75%	75%	75%
	3300 kWh to 3,599 kWh	28%	44%	52%	59%	64%	67%	68%	69%	70%	70%	71%	71%	71%	71%	71%
	3600 kWh to 3,899 kWh	26%	41%	49%	55%	60%	63%	64%	65%	66%	66%	67%	67%	67%	67%	67%
	3900 kWh to 4,199 kWh	25%	38%	46%	52%	56%	59%	61%	62%	63%	63%	64%	64%	64%	64%	64%
	4200 kWh to 4,499 kWh	24%	36%	44%	49%	54%	56%	58%	59%	60%	60%	61%	61%	61%	61%	61%
	4500 kWh to 4,799 kWh	23%	35%	42%	47%	51%	54%	56%	57%	58%	58%	58%	58%	58%	58%	58%
	4800 kWh to 5,099 kWh	22%	33%	40%	45%	49%	52%	54%	55%	55%	55%	56%	56%	56%	56%	56%
	5100 kWh to 5,399 kWh	21%	31%	38%	43%	47%	50%	52%	53%	53%	53%	53%	53%	53%	53%	53%
	5400 kWh to 5,699 kWh	21%	30%	36%	41%	45%	48%	50%	50%	50%	50%	50%	50%	50%	50%	50%
	5700 kWh to 5,999 kWh	20%	30%	35%	40%	43%	46%	47%	47%	47%	47%	47%	47%	47%	47%	47%

Table 7-5		Occupancy: Home all day. Annual electricity consumption: 3,500 kWh to 3,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	77%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	67%	87%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	59%	82%	91%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	53%	77%	87%	92%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	48%	72%	83%	88%	91%	93%	94%	94%	94%	94%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	44%	67%	78%	84%	88%	91%	92%	93%	93%	93%	93%	93%	94%	94%	94%
	2100 kWh to 2,399 kWh	41%	62%	73%	80%	84%	87%	89%	90%	91%	91%	91%	91%	91%	92%	92%
	2400 kWh to 2,699 kWh	38%	58%	69%	76%	80%	84%	86%	87%	88%	88%	88%	88%	88%	89%	89%
	2700 kWh to 2,999 kWh	36%	55%	65%	71%	76%	80%	82%	83%	84%	84%	84%	85%	85%	85%	85%
	3000 kWh to 3,299 kWh	34%	51%	61%	68%	73%	76%	78%	79%	80%	80%	80%	81%	81%	82%	82%
	3300 kWh to 3,599 kWh	32%	48%	57%	64%	69%	72%	74%	76%	76%	76%	77%	77%	78%	78%	78%
	3600 kWh to 3,899 kWh	30%	45%	54%	61%	65%	69%	71%	72%	73%	73%	73%	73%	74%	74%	74%
	3900 kWh to 4,199 kWh	29%	43%	51%	57%	62%	66%	68%	69%	70%	70%	70%	70%	70%	70%	71%
	4200 kWh to 4,499 kWh	28%	40%	48%	54%	59%	63%	65%	66%	66%	67%	67%	67%	67%	67%	68%
	4500 kWh to 4,799 kWh	27%	39%	46%	52%	56%	60%	62%	63%	63%	64%	64%	64%	64%	64%	65%
	4800 kWh to 5,099 kWh	25%	37%	44%	50%	54%	57%	59%	60%	61%	61%	61%	62%	62%	62%	62%
	5100 kWh to 5,399 kWh	25%	36%	42%	47%	52%	55%	57%	58%	59%	59%	59%	60%	60%	60%	60%
	5400 kWh to 5,699 kWh	24%	35%	41%	46%	50%	53%	55%	56%	57%	57%	57%	57%	57%	57%	57%
	5700 kWh to 5,999 kWh	23%	34%	39%	44%	48%	51%	53%	54%	54%	54%	54%	54%	54%	54%	54%

Table 7-6		Occupancy: Home all day. Annual electricity consumption: 4,000 kWh to 4,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	82%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	71%	89%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	63%	84%	92%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	57%	80%	89%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	52%	75%	86%	91%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	48%	71%	82%	87%	91%	92%	93%	94%	94%	94%	95%	95%	95%	95%	95%
	2100 kWh to 2,399 kWh	45%	66%	78%	84%	88%	90%	91%	92%	93%	93%	93%	93%	93%	94%	94%
	2400 kWh to 2,699 kWh	42%	63%	73%	80%	85%	87%	89%	90%	91%	91%	92%	92%	92%	92%	92%
	2700 kWh to 2,999 kWh	40%	59%	69%	76%	81%	84%	86%	87%	88%	88%	89%	89%	90%	90%	90%
	3000 kWh to 3,299 kWh	37%	55%	65%	72%	76%	80%	82%	83%	84%	85%	86%	86%	87%	87%	87%
	3300 kWh to 3,599 kWh	35%	52%	61%	68%	72%	76%	78%	80%	80%	81%	82%	83%	83%	84%	84%
	3600 kWh to 3,899 kWh	34%	49%	58%	64%	69%	72%	75%	76%	77%	78%	78%	79%	80%	80%	80%
	3900 kWh to 4,199 kWh	32%	47%	55%	61%	66%	69%	72%	73%	74%	75%	75%	75%	76%	76%	77%
	4200 kWh to 4,499 kWh	31%	44%	52%	58%	63%	67%	69%	70%	71%	72%	72%	72%	73%	73%	73%
	4500 kWh to 4,799 kWh	30%	43%	50%	56%	60%	64%	66%	68%	69%	69%	70%	70%	70%	70%	71%
	4800 kWh to 5,099 kWh	29%	41%	48%	53%	58%	61%	64%	65%	66%	67%	67%	67%	68%	68%	68%
	5100 kWh to 5,399 kWh	28%	40%	46%	51%	56%	59%	62%	63%	64%	65%	65%	65%	65%	66%	66%
	5400 kWh to 5,699 kWh	27%	38%	45%	50%	54%	58%	60%	61%	62%	63%	63%	63%	63%	63%	63%
	5700 kWh to 5,999 kWh	26%	37%	43%	48%	53%	56%	59%	60%	61%	61%	62%	62%	62%	62%	62%

Table 7-7		Occupancy: Home all day. Annual electricity consumption: 4,500 kWh to 4,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	87%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	75%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	67%	87%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	61%	83%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	56%	78%	88%	92%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	52%	74%	84%	89%	92%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	2100 kWh to 2,399 kWh	49%	70%	80%	86%	90%	92%	93%	94%	94%	94%	95%	95%	95%	95%	95%
	2400 kWh to 2,699 kWh	46%	66%	76%	82%	87%	90%	91%	92%	93%	93%	93%	93%	93%	94%	94%
	2700 kWh to 2,999 kWh	43%	62%	72%	79%	83%	87%	89%	90%	91%	92%	92%	92%	92%	92%	92%
	3000 kWh to 3,299 kWh	41%	59%	69%	75%	80%	83%	86%	87%	88%	89%	89%	89%	89%	89%	90%
	3300 kWh to 3,599 kWh	39%	56%	65%	71%	76%	80%	82%	84%	85%	86%	86%	86%	87%	87%	88%
	3600 kWh to 3,899 kWh	37%	53%	62%	68%	73%	76%	79%	81%	82%	82%	83%	83%	84%	84%	84%
	3900 kWh to 4,199 kWh	35%	50%	59%	65%	69%	73%	75%	77%	78%	79%	80%	80%	81%	81%	81%
	4200 kWh to 4,499 kWh	34%	48%	56%	62%	66%	70%	72%	74%	75%	76%	77%	77%	78%	78%	78%
	4500 kWh to 4,799 kWh	33%	46%	54%	59%	64%	67%	70%	72%	73%	74%	74%	75%	75%	75%	75%
	4800 kWh to 5,099 kWh	32%	44%	52%	57%	62%	65%	68%	70%	71%	72%	72%	73%	73%	73%	73%
	5100 kWh to 5,399 kWh	31%	43%	50%	55%	60%	63%	66%	67%	69%	70%	70%	70%	71%	71%	71%
	5400 kWh to 5,699 kWh	30%	41%	47%	53%	58%	61%	64%	65%	67%	67%	68%	68%	68%	68%	69%
	5700 kWh to 5,999 kWh	28%	39%	45%	50%	55%	59%	62%	64%	64%	65%	65%	66%	66%	66%	67%

Table 7-8		Occupancy: Home all day. Annual electricity consumption: 5,000 kWh to 5,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	90%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	77%	92%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	70%	88%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	64%	84%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	60%	81%	90%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	55%	77%	87%	91%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	2100 kWh to 2,399 kWh	52%	73%	83%	88%	91%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	2400 kWh to 2,699 kWh	49%	69%	79%	85%	88%	91%	93%	94%	94%	95%	95%	95%	95%	95%	95%
	2700 kWh to 2,999 kWh	47%	66%	75%	81%	86%	89%	91%	92%	93%	93%	94%	94%	94%	94%	94%
	3000 kWh to 3,299 kWh	44%	62%	71%	78%	82%	86%	88%	90%	91%	91%	92%	92%	92%	92%	93%
	3300 kWh to 3,599 kWh	42%	59%	68%	75%	79%	83%	85%	87%	88%	89%	89%	90%	90%	90%	91%
	3600 kWh to 3,899 kWh	40%	56%	65%	71%	76%	80%	82%	84%	85%	86%	87%	87%	88%	88%	88%
	3900 kWh to 4,199 kWh	39%	54%	62%	68%	73%	77%	80%	81%	82%	83%	84%	85%	85%	85%	86%
	4200 kWh to 4,499 kWh	37%	51%	59%	65%	70%	74%	77%	78%	80%	81%	82%	82%	82%	83%	83%
	4500 kWh to 4,799 kWh	36%	49%	57%	63%	67%	71%	74%	76%	77%	78%	79%	79%	79%	80%	80%
	4800 kWh to 5,099 kWh	35%	48%	55%	61%	65%	69%	72%	74%	75%	76%	76%	77%	77%	77%	78%
	5100 kWh to 5,399 kWh	34%	46%	53%	59%	63%	67%	69%	71%	72%	73%	74%	74%	75%	75%	76%
	5400 kWh to 5,699 kWh	33%	44%	51%	57%	61%	65%	67%	69%	70%	71%	72%	72%	73%	73%	74%
	5700 kWh to 5,999 kWh	32%	43%	49%	54%	59%	62%	65%	67%	69%	69%	70%	70%	71%	71%	72%

Table 7-9		Occupancy: Home all day. Annual electricity consumption: 5,500 kWh to 5,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	92%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	79%	92%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	72%	89%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	67%	86%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	62%	83%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	58%	79%	89%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	2100 kWh to 2,399 kWh	55%	76%	85%	90%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	2400 kWh to 2,699 kWh	52%	72%	82%	87%	91%	93%	94%	94%	95%	95%	95%	95%	95%	95%	95%
	2700 kWh to 2,999 kWh	49%	68%	78%	84%	88%	90%	92%	93%	94%	94%	94%	94%	94%	95%	95%
	3000 kWh to 3,299 kWh	47%	65%	75%	81%	85%	88%	90%	91%	92%	93%	93%	93%	93%	94%	94%
	3300 kWh to 3,599 kWh	45%	62%	72%	78%	82%	85%	88%	89%	91%	91%	91%	91%	92%	92%	93%
	3600 kWh to 3,899 kWh	43%	59%	68%	74%	79%	82%	85%	87%	88%	89%	90%	90%	90%	91%	91%
	3900 kWh to 4,199 kWh	41%	57%	65%	71%	76%	80%	83%	85%	86%	87%	88%	88%	88%	88%	89%
	4200 kWh to 4,499 kWh	40%	54%	62%	68%	73%	77%	80%	82%	84%	85%	86%	86%	86%	86%	86%
	4500 kWh to 4,799 kWh	39%	52%	60%	66%	70%	74%	77%	79%	81%	82%	83%	83%	83%	83%	84%
	4800 kWh to 5,099 kWh	38%	51%	58%	64%	68%	72%	75%	77%	78%	79%	80%	81%	81%	81%	81%
	5100 kWh to 5,399 kWh	37%	49%	57%	62%	66%	70%	73%	75%	76%	77%	78%	79%	79%	79%	79%
	5400 kWh to 5,699 kWh	35%	48%	55%	60%	65%	68%	71%	73%	74%	75%	76%	77%	77%	77%	77%
	5700 kWh to 5,999 kWh	34%	46%	52%	58%	63%	67%	69%	71%	72%	73%	74%	75%	76%	76%	76%

Tables for Occupancy Archetype: In Half the Day

Table 7-10		Occupancy: In half the day. Annual electricity consumption: 1,500 kWh to 1,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	62%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	46%	90%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	41%	74%	87%	92%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	900 kWh to 1,199 kWh	34%	63%	77%	83%	86%	87%	88%	88%	88%	88%	88%	88%	88%	89%	89%
	1200 kWh to 1,499 kWh	29%	56%	69%	76%	80%	81%	82%	82%	82%	83%	83%	83%	83%	83%	83%
	1500 kWh to 1,799 kWh	26%	50%	62%	70%	73%	75%	75%	76%	76%	76%	76%	76%	76%	77%	77%
	1800 kWh to 2,099 kWh	23%	45%	56%	63%	67%	68%	69%	69%	69%	70%	70%	70%	70%	70%	71%
	2100 kWh to 2,399 kWh	21%	41%	51%	58%	61%	62%	63%	63%	63%	63%	63%	64%	64%	64%	64%
	2400 kWh to 2,699 kWh	19%	37%	47%	53%	56%	57%	57%	58%	58%	58%	58%	58%	58%	58%	58%
	2700 kWh to 2,999 kWh	17%	34%	43%	48%	51%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
	3000 kWh to 3,299 kWh	16%	31%	39%	44%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	3300 kWh to 3,599 kWh	15%	28%	36%	40%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
	3600 kWh to 3,899 kWh	14%	26%	33%	38%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	3900 kWh to 4,199 kWh	13%	25%	31%	35%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
	4200 kWh to 4,499 kWh	13%	23%	29%	33%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
	4500 kWh to 4,799 kWh	12%	22%	27%	31%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
	4800 kWh to 5,099 kWh	11%	21%	26%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
	5100 kWh to 5,399 kWh	11%	20%	25%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
	5400 kWh to 5,699 kWh	11%	19%	24%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
	5700 kWh to 5,999 kWh	10%	18%	23%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%

Table 7-11		Occupancy: In half the day. Annual electricity consumption: 2,000 kWh to 2,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	62%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	46%	90%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	45%	75%	88%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	38%	67%	81%	87%	90%	91%	92%	92%	92%	92%	92%	92%	92%	92%	92%
	1200 kWh to 1,499 kWh	33%	61%	74%	82%	86%	87%	88%	89%	89%	89%	89%	89%	89%	89%	89%
	1500 kWh to 1,799 kWh	29%	54%	67%	75%	80%	82%	83%	84%	84%	84%	84%	85%	85%	85%	85%
	1800 kWh to 2,099 kWh	26%	48%	60%	68%	73%	76%	77%	78%	79%	79%	79%	79%	79%	79%	79%
	2100 kWh to 2,399 kWh	24%	44%	55%	62%	67%	70%	72%	72%	73%	73%	73%	73%	73%	73%	74%
	2400 kWh to 2,699 kWh	22%	40%	50%	57%	62%	65%	66%	67%	68%	68%	68%	68%	68%	68%	68%
	2700 kWh to 2,999 kWh	20%	37%	46%	53%	58%	60%	62%	62%	63%	63%	63%	63%	63%	63%	63%
	3000 kWh to 3,299 kWh	19%	34%	43%	50%	54%	56%	57%	58%	58%	59%	59%	59%	59%	59%	59%
	3300 kWh to 3,599 kWh	17%	32%	40%	46%	50%	52%	53%	54%	55%	55%	55%	55%	55%	55%	55%
	3600 kWh to 3,899 kWh	16%	30%	37%	43%	47%	49%	50%	51%	51%	51%	51%	51%	51%	51%	51%
	3900 kWh to 4,199 kWh	15%	28%	35%	40%	44%	46%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	4200 kWh to 4,499 kWh	15%	26%	33%	38%	41%	43%	44%	44%	44%	44%	44%	44%	44%	44%	44%
	4500 kWh to 4,799 kWh	14%	25%	31%	36%	39%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
	4800 kWh to 5,099 kWh	13%	23%	29%	34%	37%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
	5100 kWh to 5,399 kWh	13%	22%	28%	32%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
	5400 kWh to 5,699 kWh	12%	21%	27%	31%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
	5700 kWh to 5,999 kWh	12%	20%	25%	30%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%

Table 7-12		Occupancy: In half the day. Annual electricity consumption: 2,500 kWh to 2,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	74%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	55%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	48%	78%	90%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	41%	70%	83%	89%	92%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	36%	63%	77%	84%	89%	91%	92%	92%	92%	92%	92%	92%	93%	93%	93%
	1500 kWh to 1,799 kWh	33%	57%	70%	79%	84%	87%	88%	89%	90%	90%	90%	90%	90%	90%	90%
	1800 kWh to 2,099 kWh	29%	52%	64%	73%	79%	82%	84%	85%	86%	86%	86%	86%	87%	87%	87%
	2100 kWh to 2,399 kWh	27%	47%	59%	67%	73%	77%	79%	80%	81%	81%	81%	82%	82%	82%	82%
	2400 kWh to 2,699 kWh	25%	43%	54%	62%	68%	72%	74%	75%	75%	76%	76%	77%	77%	77%	77%
	2700 kWh to 2,999 kWh	23%	39%	50%	58%	63%	67%	69%	70%	71%	71%	71%	71%	72%	72%	72%
	3000 kWh to 3,299 kWh	21%	36%	46%	53%	59%	63%	65%	66%	67%	67%	67%	67%	67%	67%	67%
	3300 kWh to 3,599 kWh	20%	34%	43%	50%	55%	59%	61%	62%	63%	63%	63%	63%	63%	63%	63%
	3600 kWh to 3,899 kWh	19%	32%	40%	47%	52%	55%	57%	58%	59%	59%	60%	60%	60%	60%	60%
	3900 kWh to 4,199 kWh	18%	30%	38%	44%	49%	52%	54%	55%	55%	56%	57%	57%	57%	57%	57%
	4200 kWh to 4,499 kWh	17%	29%	36%	42%	46%	49%	51%	52%	53%	53%	54%	54%	54%	54%	54%
	4500 kWh to 4,799 kWh	16%	27%	34%	39%	44%	47%	49%	50%	50%	50%	50%	50%	50%	50%	50%
	4800 kWh to 5,099 kWh	15%	26%	32%	37%	41%	45%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	5100 kWh to 5,399 kWh	15%	24%	30%	35%	39%	42%	45%	45%	45%	45%	45%	45%	45%	45%	45%
	5400 kWh to 5,699 kWh	14%	23%	29%	34%	38%	41%	42%	42%	42%	42%	42%	42%	42%	42%	42%
	5700 kWh to 5,999 kWh	14%	22%	28%	33%	37%	39%	40%	40%	40%	40%	40%	40%	40%	40%	40%

Table 7-13		Occupancy: In half the day. Annual electricity consumption: 3,000 kWh to 3,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	79%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	60%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	53%	81%	91%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	45%	73%	85%	91%	93%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	40%	67%	80%	87%	90%	92%	93%	93%	94%	94%	94%	94%	94%	94%	94%
	1500 kWh to 1,799 kWh	36%	61%	74%	82%	87%	89%	91%	92%	92%	93%	93%	93%	93%	93%	93%
	1800 kWh to 2,099 kWh	33%	56%	69%	77%	82%	86%	88%	89%	90%	90%	90%	90%	90%	90%	90%
	2100 kWh to 2,399 kWh	30%	51%	63%	72%	77%	81%	84%	85%	86%	87%	87%	87%	87%	87%	87%
	2400 kWh to 2,699 kWh	28%	47%	59%	67%	73%	77%	79%	81%	82%	82%	82%	83%	83%	83%	83%
	2700 kWh to 2,999 kWh	26%	43%	54%	62%	68%	72%	75%	76%	77%	77%	78%	78%	79%	79%	79%
	3000 kWh to 3,299 kWh	24%	40%	51%	58%	64%	68%	70%	72%	73%	73%	74%	74%	74%	75%	75%
	3300 kWh to 3,599 kWh	23%	37%	47%	55%	60%	64%	66%	68%	69%	69%	70%	70%	70%	70%	70%
	3600 kWh to 3,899 kWh	22%	35%	44%	51%	57%	60%	63%	64%	65%	66%	66%	66%	67%	67%	67%
	3900 kWh to 4,199 kWh	21%	33%	42%	48%	53%	57%	60%	61%	62%	62%	63%	63%	63%	64%	64%
	4200 kWh to 4,499 kWh	20%	31%	39%	45%	50%	54%	57%	58%	59%	59%	60%	60%	60%	61%	61%
	4500 kWh to 4,799 kWh	19%	30%	37%	43%	48%	51%	54%	56%	56%	57%	57%	58%	58%	58%	58%
	4800 kWh to 5,099 kWh	18%	28%	35%	41%	46%	49%	52%	53%	54%	55%	55%	55%	56%	56%	56%
	5100 kWh to 5,399 kWh	17%	27%	34%	39%	44%	47%	50%	52%	52%	53%	53%	53%	53%	53%	53%
	5400 kWh to 5,699 kWh	17%	26%	32%	37%	42%	45%	48%	50%	50%	50%	50%	50%	50%	50%	50%
	5700 kWh to 5,999 kWh	16%	25%	31%	36%	40%	44%	46%	47%	47%	47%	47%	47%	47%	47%	47%

Table 7-14		Occupancy: In half the day. Annual electricity consumption: 3,500 kWh to 3,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	84%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	64%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	57%	83%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	48%	76%	87%	92%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	43%	70%	83%	89%	92%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1500 kWh to 1,799 kWh	39%	65%	77%	84%	89%	91%	93%	93%	93%	94%	94%	94%	94%	94%	94%
	1800 kWh to 2,099 kWh	36%	59%	72%	79%	85%	88%	90%	91%	92%	92%	92%	93%	93%	93%	93%
	2100 kWh to 2,399 kWh	33%	55%	66%	74%	80%	85%	87%	89%	89%	90%	90%	91%	91%	91%	91%
	2400 kWh to 2,699 kWh	31%	50%	61%	70%	76%	81%	84%	85%	86%	87%	88%	88%	88%	89%	89%
	2700 kWh to 2,999 kWh	29%	46%	57%	65%	72%	76%	80%	81%	82%	83%	84%	84%	85%	85%	85%
	3000 kWh to 3,299 kWh	27%	43%	53%	61%	67%	72%	75%	77%	78%	79%	80%	80%	81%	81%	81%
	3300 kWh to 3,599 kWh	25%	40%	50%	57%	63%	68%	71%	73%	74%	75%	76%	76%	77%	77%	77%
	3600 kWh to 3,899 kWh	24%	38%	47%	54%	60%	64%	67%	69%	71%	72%	73%	73%	73%	73%	73%
	3900 kWh to 4,199 kWh	23%	36%	44%	51%	57%	61%	64%	66%	68%	69%	70%	70%	70%	70%	70%
	4200 kWh to 4,499 kWh	22%	34%	42%	48%	54%	58%	61%	63%	65%	66%	67%	67%	67%	67%	67%
	4500 kWh to 4,799 kWh	21%	32%	40%	46%	52%	56%	59%	61%	62%	63%	64%	64%	64%	64%	64%
	4800 kWh to 5,099 kWh	20%	31%	38%	44%	49%	53%	56%	58%	60%	61%	61%	62%	62%	62%	62%
	5100 kWh to 5,399 kWh	20%	30%	36%	42%	47%	51%	54%	56%	58%	59%	59%	60%	60%	60%	60%
	5400 kWh to 5,699 kWh	19%	29%	35%	40%	45%	49%	52%	54%	56%	57%	57%	57%	57%	57%	57%
	5700 kWh to 5,999 kWh	18%	28%	34%	39%	43%	47%	50%	53%	54%	54%	54%	54%	54%	54%	54%

Table 7-15		Occupancy: In half the day. Annual electricity consumption: 4,000 kWh to 4,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	89%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	68%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	61%	84%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	52%	77%	88%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	46%	72%	84%	90%	93%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	41%	67%	79%	86%	90%	92%	93%	94%	94%	94%	94%	94%	94%	94%	94%
	1800 kWh to 2,099 kWh	38%	62%	74%	82%	87%	90%	92%	93%	93%	93%	93%	94%	94%	94%	94%
	2100 kWh to 2,399 kWh	36%	58%	70%	78%	83%	87%	89%	91%	91%	92%	92%	92%	93%	93%	93%
	2400 kWh to 2,699 kWh	33%	54%	65%	73%	79%	84%	87%	88%	89%	90%	90%	91%	91%	91%	91%
	2700 kWh to 2,999 kWh	31%	50%	61%	69%	75%	80%	83%	85%	86%	87%	88%	88%	89%	89%	89%
	3000 kWh to 3,299 kWh	29%	46%	56%	64%	71%	75%	79%	82%	83%	84%	85%	85%	85%	85%	85%
	3300 kWh to 3,599 kWh	28%	43%	53%	60%	67%	71%	75%	78%	80%	81%	81%	82%	82%	82%	82%
	3600 kWh to 3,899 kWh	26%	41%	50%	57%	63%	68%	72%	74%	76%	77%	78%	78%	78%	78%	78%
	3900 kWh to 4,199 kWh	25%	39%	47%	54%	60%	64%	68%	71%	73%	73%	74%	74%	75%	75%	75%
	4200 kWh to 4,499 kWh	24%	37%	45%	51%	57%	62%	65%	68%	69%	70%	71%	71%	72%	72%	72%
	4500 kWh to 4,799 kWh	23%	36%	43%	49%	54%	59%	63%	65%	67%	68%	68%	69%	69%	69%	69%
	4800 kWh to 5,099 kWh	22%	34%	41%	47%	52%	56%	60%	63%	64%	65%	66%	66%	67%	67%	67%
	5100 kWh to 5,399 kWh	22%	32%	39%	44%	50%	54%	58%	60%	62%	63%	64%	64%	65%	65%	65%
	5400 kWh to 5,699 kWh	21%	31%	37%	43%	48%	52%	56%	58%	60%	61%	62%	63%	63%	63%	63%
	5700 kWh to 5,999 kWh	21%	30%	36%	42%	47%	51%	54%	56%	58%	59%	60%	61%	61%	61%	61%

Table 7-16		Occupancy: In half the day. Annual electricity consumption: 4,500 kWh to 4,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	90%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	69%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	62%	85%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	53%	79%	89%	93%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	48%	74%	85%	91%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	44%	69%	81%	88%	91%	93%	94%	94%	94%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	41%	65%	77%	84%	88%	91%	93%	93%	94%	94%	94%	94%	94%	94%	94%
	2100 kWh to 2,399 kWh	38%	60%	72%	80%	85%	89%	91%	92%	93%	93%	93%	93%	94%	94%	94%
	2400 kWh to 2,699 kWh	36%	56%	67%	75%	81%	85%	88%	90%	91%	92%	92%	92%	93%	93%	93%
	2700 kWh to 2,999 kWh	34%	52%	63%	71%	77%	82%	85%	87%	89%	90%	90%	91%	91%	91%	91%
	3000 kWh to 3,299 kWh	32%	49%	59%	67%	73%	78%	82%	84%	86%	87%	88%	88%	89%	89%	89%
	3300 kWh to 3,599 kWh	30%	46%	56%	63%	70%	74%	78%	81%	83%	84%	85%	86%	86%	87%	87%
	3600 kWh to 3,899 kWh	29%	44%	53%	60%	66%	71%	75%	78%	80%	81%	82%	83%	83%	84%	84%
	3900 kWh to 4,199 kWh	28%	41%	50%	57%	63%	68%	72%	74%	76%	78%	79%	80%	80%	81%	81%
	4200 kWh to 4,499 kWh	26%	40%	48%	54%	60%	65%	69%	71%	73%	75%	76%	76%	77%	78%	78%
	4500 kWh to 4,799 kWh	25%	38%	45%	51%	57%	62%	66%	68%	71%	72%	73%	74%	74%	75%	75%
	4800 kWh to 5,099 kWh	24%	36%	43%	49%	55%	59%	63%	66%	68%	70%	71%	71%	72%	72%	73%
	5100 kWh to 5,399 kWh	24%	34%	41%	47%	52%	57%	61%	64%	66%	68%	69%	69%	69%	70%	71%
	5400 kWh to 5,699 kWh	23%	33%	40%	45%	50%	55%	59%	61%	64%	66%	67%	67%	67%	68%	69%
	5700 kWh to 5,999 kWh	22%	32%	38%	44%	49%	53%	56%	59%	62%	64%	65%	65%	66%	66%	67%

Table 7-17		Occupancy: In half the day. Annual electricity consumption: 5,000 kWh to 5,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	92%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	71%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	62%	85%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	55%	79%	90%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	50%	75%	86%	92%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	46%	70%	82%	89%	92%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	43%	66%	78%	85%	89%	92%	93%	94%	94%	94%	94%	94%	94%	94%	94%
	2100 kWh to 2,399 kWh	40%	62%	74%	81%	86%	89%	92%	93%	94%	94%	94%	94%	94%	94%	94%
	2400 kWh to 2,699 kWh	37%	58%	69%	77%	83%	87%	89%	91%	92%	93%	93%	93%	93%	93%	93%
	2700 kWh to 2,999 kWh	35%	55%	66%	73%	79%	83%	86%	89%	90%	91%	92%	92%	92%	92%	92%
	3000 kWh to 3,299 kWh	34%	52%	62%	70%	76%	80%	83%	86%	88%	89%	90%	90%	91%	91%	91%
	3300 kWh to 3,599 kWh	32%	49%	59%	66%	72%	76%	80%	83%	85%	86%	87%	87%	88%	88%	89%
	3600 kWh to 3,899 kWh	30%	46%	55%	63%	68%	73%	77%	80%	82%	83%	84%	84%	85%	86%	87%
	3900 kWh to 4,199 kWh	29%	43%	52%	59%	65%	70%	73%	76%	79%	80%	81%	82%	82%	83%	84%
	4200 kWh to 4,499 kWh	28%	41%	50%	57%	62%	67%	70%	73%	76%	77%	78%	79%	80%	80%	81%
	4500 kWh to 4,799 kWh	27%	39%	47%	54%	60%	64%	68%	71%	73%	75%	76%	77%	78%	78%	79%
	4800 kWh to 5,099 kWh	26%	38%	45%	52%	57%	62%	66%	69%	71%	73%	74%	75%	76%	76%	76%
	5100 kWh to 5,399 kWh	25%	36%	43%	49%	55%	59%	64%	67%	69%	71%	72%	73%	74%	74%	74%
	5400 kWh to 5,699 kWh	25%	35%	42%	47%	53%	57%	61%	65%	67%	69%	70%	71%	72%	72%	72%
	5700 kWh to 5,999 kWh	24%	34%	40%	45%	50%	55%	59%	62%	65%	66%	68%	68%	69%	70%	70%

Table 7-18		Occupancy: In half the day. Annual electricity consumption: 5,500 kWh to 5,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	74%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	66%	88%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	57%	81%	91%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1200 kWh to 1,499 kWh	52%	76%	87%	92%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	1500 kWh to 1,799 kWh	47%	71%	83%	89%	92%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	1800 kWh to 2,099 kWh	44%	67%	79%	86%	90%	92%	93%	94%	94%	95%	95%	95%	95%	95%	95%
	2100 kWh to 2,399 kWh	41%	62%	74%	82%	87%	90%	92%	93%	94%	94%	94%	94%	94%	94%	94%
	2400 kWh to 2,699 kWh	39%	59%	70%	78%	84%	88%	90%	92%	93%	93%	94%	94%	94%	94%	94%
	2700 kWh to 2,999 kWh	37%	56%	67%	75%	80%	85%	88%	90%	91%	92%	93%	93%	94%	94%	94%
	3000 kWh to 3,299 kWh	35%	53%	64%	71%	77%	82%	85%	88%	90%	91%	91%	92%	92%	93%	93%
	3300 kWh to 3,599 kWh	33%	51%	60%	67%	73%	78%	82%	85%	87%	89%	90%	90%	91%	91%	91%
	3600 kWh to 3,899 kWh	32%	48%	57%	64%	70%	75%	79%	82%	84%	86%	87%	88%	88%	89%	89%
	3900 kWh to 4,199 kWh	31%	46%	54%	61%	67%	72%	76%	79%	81%	83%	85%	86%	86%	86%	87%
	4200 kWh to 4,499 kWh	30%	44%	52%	59%	64%	69%	73%	76%	78%	80%	82%	83%	84%	84%	85%
	4500 kWh to 4,799 kWh	29%	42%	50%	57%	62%	67%	71%	74%	76%	78%	80%	81%	82%	82%	82%
	4800 kWh to 5,099 kWh	28%	41%	48%	54%	60%	64%	68%	72%	74%	76%	78%	79%	80%	80%	80%
	5100 kWh to 5,399 kWh	27%	39%	47%	52%	57%	62%	66%	70%	72%	74%	76%	77%	78%	78%	78%
	5400 kWh to 5,699 kWh	26%	38%	45%	50%	56%	60%	64%	68%	70%	72%	74%	75%	76%	76%	76%
	5700 kWh to 5,999 kWh	26%	37%	43%	48%	54%	59%	63%	66%	69%	71%	72%	72%	73%	74%	75%

Tables for Occupancy Archetype: Out all Day

Table 7-19		Occupancy: Out during the day. Annual electricity consumption: 1,500 kWh to 1,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	55%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	40%	81%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	36%	70%	85%	91%	93%	93%	93%	93%	94%	94%	94%	94%	94%	94%	94%
	900 kWh to 1,199 kWh	29%	59%	74%	82%	86%	87%	88%	88%	88%	88%	88%	88%	88%	88%	88%
	1200 kWh to 1,499 kWh	25%	52%	66%	74%	79%	81%	82%	82%	82%	83%	83%	83%	83%	83%	83%
	1500 kWh to 1,799 kWh	22%	45%	59%	67%	72%	74%	75%	76%	76%	76%	76%	76%	76%	76%	76%
	1800 kWh to 2,099 kWh	19%	40%	52%	60%	65%	67%	68%	69%	69%	70%	70%	70%	70%	70%	70%
	2100 kWh to 2,399 kWh	17%	36%	47%	54%	59%	61%	62%	63%	63%	63%	63%	64%	64%	64%	64%
	2400 kWh to 2,699 kWh	15%	33%	43%	49%	53%	56%	57%	57%	58%	58%	58%	58%	58%	58%	58%
	2700 kWh to 2,999 kWh	14%	30%	39%	45%	49%	51%	52%	52%	52%	52%	52%	52%	52%	52%	52%
	3000 kWh to 3,299 kWh	13%	27%	36%	42%	45%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	3300 kWh to 3,599 kWh	12%	25%	33%	39%	42%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
	3600 kWh to 3,899 kWh	11%	23%	31%	36%	39%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	3900 kWh to 4,199 kWh	11%	22%	29%	34%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
	4200 kWh to 4,499 kWh	10%	20%	27%	32%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
	4500 kWh to 4,799 kWh	10%	19%	25%	30%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
	4800 kWh to 5,099 kWh	10%	18%	24%	28%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
	5100 kWh to 5,399 kWh	10%	17%	23%	27%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
	5400 kWh to 5,699 kWh	10%	17%	22%	26%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
	5700 kWh to 5,999 kWh	10%	16%	21%	24%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%

Table 7-20		Occupancy: Out during the day. Annual electricity consumption: 2,000 kWh to 2,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	58%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	43%	83%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	38%	71%	85%	91%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	900 kWh to 1,199 kWh	31%	61%	76%	84%	88%	90%	91%	92%	92%	92%	92%	92%	92%	92%	92%
	1200 kWh to 1,499 kWh	27%	54%	68%	77%	83%	86%	88%	88%	89%	89%	89%	89%	89%	89%	89%
	1500 kWh to 1,799 kWh	23%	47%	61%	71%	77%	81%	83%	84%	84%	84%	84%	85%	85%	85%	85%
	1800 kWh to 2,099 kWh	21%	42%	55%	64%	71%	75%	77%	78%	78%	78%	79%	79%	79%	79%	79%
	2100 kWh to 2,399 kWh	19%	38%	50%	59%	65%	69%	71%	72%	72%	73%	73%	73%	73%	73%	73%
	2400 kWh to 2,699 kWh	17%	35%	46%	54%	60%	64%	66%	67%	67%	67%	68%	68%	68%	68%	68%
	2700 kWh to 2,999 kWh	16%	32%	42%	49%	55%	59%	61%	62%	62%	63%	63%	63%	63%	63%	63%
	3000 kWh to 3,299 kWh	15%	29%	39%	46%	51%	54%	57%	58%	58%	59%	59%	59%	59%	59%	59%
	3300 kWh to 3,599 kWh	14%	27%	36%	42%	47%	51%	53%	54%	55%	55%	55%	55%	55%	55%	55%
	3600 kWh to 3,899 kWh	13%	25%	33%	39%	44%	48%	50%	51%	51%	51%	51%	51%	51%	51%	51%
	3900 kWh to 4,199 kWh	12%	24%	31%	37%	42%	45%	47%	47%	47%	47%	47%	47%	47%	47%	47%
	4200 kWh to 4,499 kWh	11%	22%	29%	35%	39%	42%	44%	44%	44%	44%	44%	44%	44%	44%	44%
	4500 kWh to 4,799 kWh	11%	21%	27%	33%	37%	40%	41%	41%	41%	41%	41%	41%	41%	41%	41%
	4800 kWh to 5,099 kWh	10%	20%	26%	31%	35%	38%	39%	39%	39%	39%	39%	39%	39%	39%	39%
	5100 kWh to 5,399 kWh	10%	19%	25%	30%	34%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
	5400 kWh to 5,699 kWh	10%	18%	23%	28%	32%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
	5700 kWh to 5,999 kWh	10%	17%	22%	27%	30%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%

Table 7-21		Occupancy: Out during the day. Annual electricity consumption: 2,500 kWh to 2,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	61%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	45%	83%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	40%	71%	85%	91%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	900 kWh to 1,199 kWh	33%	62%	77%	85%	90%	92%	93%	93%	93%	93%	93%	93%	93%	93%	93%
	1200 kWh to 1,499 kWh	29%	55%	70%	79%	85%	89%	90%	91%	91%	92%	92%	92%	92%	92%	92%
	1500 kWh to 1,799 kWh	25%	49%	63%	73%	80%	84%	87%	88%	88%	89%	89%	89%	89%	89%	89%
	1800 kWh to 2,099 kWh	22%	44%	57%	67%	74%	79%	82%	84%	84%	85%	85%	86%	86%	86%	86%
	2100 kWh to 2,399 kWh	20%	40%	52%	61%	69%	74%	77%	79%	80%	80%	81%	81%	81%	81%	81%
	2400 kWh to 2,699 kWh	19%	36%	48%	56%	64%	69%	72%	74%	75%	76%	76%	76%	77%	77%	77%
	2700 kWh to 2,999 kWh	17%	33%	43%	52%	59%	64%	67%	69%	70%	71%	71%	71%	72%	72%	72%
	3000 kWh to 3,299 kWh	16%	30%	40%	48%	55%	60%	63%	65%	66%	66%	67%	67%	67%	67%	67%
	3300 kWh to 3,599 kWh	15%	28%	37%	45%	51%	56%	59%	61%	62%	63%	63%	63%	63%	63%	63%
	3600 kWh to 3,899 kWh	14%	26%	35%	42%	48%	52%	55%	57%	58%	59%	60%	60%	60%	60%	60%
	3900 kWh to 4,199 kWh	13%	25%	33%	39%	45%	49%	52%	54%	55%	56%	57%	57%	57%	57%	57%
	4200 kWh to 4,499 kWh	13%	23%	31%	37%	43%	47%	49%	51%	52%	53%	54%	54%	54%	54%	54%
	4500 kWh to 4,799 kWh	12%	22%	29%	35%	40%	44%	47%	49%	50%	50%	50%	50%	50%	50%	50%
	4800 kWh to 5,099 kWh	11%	21%	28%	33%	38%	42%	45%	47%	47%	47%	47%	47%	47%	47%	47%
	5100 kWh to 5,399 kWh	11%	20%	26%	32%	36%	40%	43%	45%	45%	45%	45%	45%	45%	45%	45%
	5400 kWh to 5,699 kWh	10%	19%	25%	30%	35%	38%	41%	42%	42%	42%	42%	42%	42%	42%	42%
	5700 kWh to 5,999 kWh	10%	18%	24%	29%	33%	37%	39%	40%	40%	40%	40%	40%	40%	40%	40%

Table 7-22		Occupancy: Out during the day. Annual electricity consumption: 3,000 kWh to 3,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	64%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	47%	86%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	42%	74%	87%	92%	94%	94%	94%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	35%	64%	78%	86%	90%	92%	93%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	30%	57%	71%	81%	86%	90%	92%	92%	92%	93%	93%	93%	93%	93%	93%
	1500 kWh to 1,799 kWh	27%	51%	65%	75%	82%	86%	89%	90%	91%	91%	91%	91%	92%	92%	92%
	1800 kWh to 2,099 kWh	24%	46%	59%	69%	76%	81%	85%	87%	88%	88%	89%	89%	89%	89%	89%
	2100 kWh to 2,399 kWh	22%	41%	54%	63%	71%	76%	80%	83%	84%	85%	85%	86%	86%	86%	86%
	2400 kWh to 2,699 kWh	20%	38%	49%	58%	65%	71%	75%	78%	80%	81%	81%	82%	82%	82%	82%
	2700 kWh to 2,999 kWh	18%	35%	45%	54%	61%	66%	71%	74%	75%	77%	77%	78%	78%	78%	78%
	3000 kWh to 3,299 kWh	17%	32%	42%	50%	57%	62%	66%	69%	71%	73%	73%	74%	74%	74%	74%
	3300 kWh to 3,599 kWh	16%	30%	39%	47%	53%	59%	63%	66%	68%	69%	70%	70%	70%	70%	70%
	3600 kWh to 3,899 kWh	15%	28%	36%	44%	50%	55%	60%	62%	64%	65%	66%	66%	67%	67%	67%
	3900 kWh to 4,199 kWh	14%	26%	34%	41%	47%	52%	56%	59%	61%	62%	63%	63%	63%	63%	63%
	4200 kWh to 4,499 kWh	14%	24%	32%	38%	44%	50%	53%	56%	58%	59%	60%	60%	60%	60%	60%
	4500 kWh to 4,799 kWh	13%	23%	30%	36%	42%	47%	51%	54%	55%	57%	57%	58%	58%	58%	58%
	4800 kWh to 5,099 kWh	12%	22%	29%	35%	40%	45%	49%	51%	53%	54%	55%	55%	56%	56%	56%
	5100 kWh to 5,399 kWh	12%	21%	27%	33%	38%	43%	47%	49%	51%	52%	53%	53%	53%	53%	53%
	5400 kWh to 5,699 kWh	11%	20%	26%	31%	37%	41%	45%	47%	49%	50%	50%	50%	50%	50%	50%
	5700 kWh to 5,999 kWh	11%	19%	25%	30%	35%	39%	43%	45%	47%	47%	47%	47%	47%	47%	47%

Table 7-23		Occupancy: Out during the day. Annual electricity consumption: 3,500 kWh to 3,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	65%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	49%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	44%	75%	88%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	36%	65%	79%	87%	91%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	31%	58%	72%	81%	87%	90%	92%	93%	93%	93%	93%	93%	93%	93%	93%
	1500 kWh to 1,799 kWh	28%	52%	66%	75%	82%	87%	90%	91%	92%	92%	92%	92%	92%	92%	93%
	1800 kWh to 2,099 kWh	25%	47%	60%	69%	77%	83%	86%	89%	90%	91%	91%	91%	91%	91%	91%
	2100 kWh to 2,399 kWh	23%	42%	54%	64%	72%	78%	82%	85%	87%	88%	89%	89%	89%	89%	90%
	2400 kWh to 2,699 kWh	21%	38%	50%	59%	67%	73%	78%	81%	84%	85%	86%	86%	87%	87%	87%
	2700 kWh to 2,999 kWh	19%	35%	46%	55%	62%	69%	74%	77%	80%	81%	82%	83%	83%	83%	84%
	3000 kWh to 3,299 kWh	18%	33%	43%	51%	58%	64%	69%	73%	76%	77%	78%	79%	79%	79%	80%
	3300 kWh to 3,599 kWh	17%	31%	40%	48%	55%	61%	66%	69%	72%	73%	74%	75%	75%	75%	76%
	3600 kWh to 3,899 kWh	16%	29%	37%	45%	51%	57%	62%	66%	68%	70%	71%	71%	72%	72%	72%
	3900 kWh to 4,199 kWh	15%	27%	35%	42%	48%	54%	59%	63%	65%	66%	67%	68%	68%	68%	69%
	4200 kWh to 4,499 kWh	15%	26%	33%	40%	46%	51%	56%	60%	62%	63%	64%	65%	65%	66%	66%
	4500 kWh to 4,799 kWh	14%	24%	31%	37%	43%	49%	53%	57%	59%	60%	62%	62%	63%	63%	63%
	4800 kWh to 5,099 kWh	13%	23%	30%	36%	41%	47%	51%	54%	57%	58%	59%	60%	60%	61%	61%
	5100 kWh to 5,399 kWh	12%	22%	28%	34%	40%	45%	49%	52%	55%	56%	57%	58%	58%	59%	59%
	5400 kWh to 5,699 kWh	12%	21%	27%	32%	38%	43%	47%	50%	53%	54%	56%	56%	57%	57%	57%
	5700 kWh to 5,999 kWh	11%	20%	25%	31%	36%	41%	45%	48%	51%	53%	54%	54%	54%	54%	54%

Table 7-24		Occupancy: Out during the day. Annual electricity consumption: 4,000 kWh to 4,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	66%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	49%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	45%	76%	89%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	37%	66%	80%	87%	91%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	32%	59%	73%	82%	87%	91%	92%	93%	93%	93%	93%	93%	93%	93%	93%
	1500 kWh to 1,799 kWh	28%	53%	67%	76%	83%	87%	90%	92%	92%	92%	93%	93%	93%	93%	93%
	1800 kWh to 2,099 kWh	26%	48%	61%	70%	78%	83%	87%	89%	91%	91%	92%	92%	92%	92%	92%
	2100 kWh to 2,399 kWh	24%	43%	55%	65%	73%	79%	83%	86%	88%	90%	91%	91%	91%	91%	91%
	2400 kWh to 2,699 kWh	22%	39%	50%	59%	67%	74%	79%	83%	85%	87%	88%	89%	90%	90%	90%
	2700 kWh to 2,999 kWh	20%	36%	46%	55%	63%	70%	75%	79%	82%	84%	85%	86%	87%	87%	87%
	3000 kWh to 3,299 kWh	19%	34%	44%	52%	59%	66%	71%	75%	78%	81%	82%	83%	83%	84%	84%
	3300 kWh to 3,599 kWh	18%	32%	41%	49%	56%	62%	67%	72%	75%	77%	78%	80%	80%	80%	81%
	3600 kWh to 3,899 kWh	17%	30%	39%	46%	53%	59%	64%	68%	70%	73%	75%	76%	76%	77%	77%
	3900 kWh to 4,199 kWh	16%	28%	36%	43%	50%	55%	60%	64%	67%	69%	71%	72%	73%	74%	74%
	4200 kWh to 4,499 kWh	15%	26%	33%	40%	47%	52%	57%	61%	64%	66%	68%	69%	70%	71%	71%
	4500 kWh to 4,799 kWh	14%	25%	32%	38%	44%	50%	55%	58%	61%	64%	65%	67%	67%	68%	68%
	4800 kWh to 5,099 kWh	14%	23%	30%	36%	42%	48%	52%	56%	59%	62%	63%	64%	65%	65%	66%
	5100 kWh to 5,399 kWh	13%	22%	29%	34%	40%	45%	50%	54%	57%	60%	61%	62%	63%	63%	64%
	5400 kWh to 5,699 kWh	13%	21%	27%	33%	38%	43%	48%	52%	55%	58%	59%	60%	61%	61%	62%
	5700 kWh to 5,999 kWh	12%	20%	26%	31%	36%	41%	46%	50%	53%	56%	57%	58%	59%	60%	60%

Table 7-25		Occupancy: Out during the day. Annual electricity consumption: 4,500 kWh to 4,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	66%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	49%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	45%	76%	89%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	37%	66%	80%	87%	91%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	32%	59%	73%	82%	88%	91%	92%	93%	93%	93%	94%	94%	94%	94%	94%
	1500 kWh to 1,799 kWh	28%	53%	67%	76%	83%	88%	90%	92%	93%	93%	93%	93%	93%	93%	93%
	1800 kWh to 2,099 kWh	26%	48%	61%	70%	78%	84%	87%	90%	91%	92%	92%	92%	92%	92%	92%
	2100 kWh to 2,399 kWh	24%	43%	55%	65%	73%	79%	83%	86%	89%	90%	91%	91%	91%	91%	91%
	2400 kWh to 2,699 kWh	22%	39%	51%	60%	68%	74%	79%	83%	86%	88%	90%	90%	90%	90%	90%
	2700 kWh to 2,999 kWh	20%	36%	47%	56%	63%	70%	75%	79%	83%	86%	87%	88%	89%	89%	89%
	3000 kWh to 3,299 kWh	19%	34%	44%	52%	59%	66%	71%	76%	80%	83%	85%	86%	86%	87%	87%
	3300 kWh to 3,599 kWh	18%	32%	41%	49%	56%	62%	68%	73%	77%	79%	81%	82%	84%	84%	85%
	3600 kWh to 3,899 kWh	17%	30%	39%	46%	53%	59%	64%	69%	73%	76%	78%	79%	80%	81%	81%
	3900 kWh to 4,199 kWh	16%	28%	36%	43%	50%	56%	61%	66%	70%	73%	74%	76%	77%	78%	78%
	4200 kWh to 4,499 kWh	15%	26%	34%	41%	47%	53%	58%	63%	67%	70%	71%	73%	74%	75%	76%
	4500 kWh to 4,799 kWh	14%	25%	32%	39%	45%	51%	56%	60%	64%	67%	69%	70%	71%	72%	73%
	4800 kWh to 5,099 kWh	14%	24%	31%	37%	43%	49%	53%	58%	61%	64%	67%	68%	69%	70%	70%
	5100 kWh to 5,399 kWh	13%	23%	29%	35%	41%	46%	51%	56%	59%	62%	65%	66%	67%	68%	68%
	5400 kWh to 5,699 kWh	13%	22%	28%	33%	39%	44%	49%	53%	57%	60%	63%	64%	65%	66%	66%
	5700 kWh to 5,999 kWh	12%	21%	27%	32%	37%	42%	46%	51%	56%	59%	61%	63%	64%	65%	65%

Table 7-26		Occupancy: Out during the day. Annual electricity consumption: 5,000 kWh to 5,499 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	66%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	49%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	45%	76%	89%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	37%	66%	80%	87%	91%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	32%	59%	73%	82%	88%	91%	93%	93%	93%	94%	94%	94%	94%	94%	94%
	1500 kWh to 1,799 kWh	28%	53%	67%	76%	83%	88%	91%	92%	93%	93%	93%	93%	93%	93%	93%
	1800 kWh to 2,099 kWh	26%	48%	61%	71%	78%	84%	88%	90%	91%	92%	92%	93%	93%	93%	93%
	2100 kWh to 2,399 kWh	24%	43%	55%	65%	73%	79%	84%	87%	89%	91%	92%	92%	92%	92%	92%
	2400 kWh to 2,699 kWh	22%	39%	51%	60%	68%	75%	80%	84%	87%	89%	90%	91%	91%	92%	92%
	2700 kWh to 2,999 kWh	20%	36%	47%	56%	64%	71%	76%	81%	84%	86%	88%	89%	90%	90%	91%
	3000 kWh to 3,299 kWh	19%	35%	44%	53%	60%	66%	72%	77%	81%	83%	85%	87%	88%	88%	88%
	3300 kWh to 3,599 kWh	18%	33%	42%	49%	56%	62%	68%	73%	77%	80%	82%	84%	85%	86%	86%
	3600 kWh to 3,899 kWh	17%	31%	40%	46%	53%	59%	64%	69%	73%	76%	79%	81%	83%	83%	83%
	3900 kWh to 4,199 kWh	16%	29%	37%	43%	50%	56%	61%	66%	70%	73%	76%	78%	80%	80%	81%
	4200 kWh to 4,499 kWh	15%	27%	35%	41%	47%	53%	58%	63%	67%	70%	73%	75%	77%	77%	78%
	4500 kWh to 4,799 kWh	14%	26%	33%	39%	45%	51%	56%	60%	64%	68%	71%	73%	74%	75%	76%
	4800 kWh to 5,099 kWh	14%	24%	31%	37%	43%	49%	53%	58%	61%	66%	69%	71%	72%	73%	74%
	5100 kWh to 5,399 kWh	13%	23%	30%	36%	41%	46%	51%	56%	60%	64%	66%	68%	70%	72%	73%
	5400 kWh to 5,699 kWh	13%	22%	28%	34%	39%	44%	49%	54%	58%	62%	65%	67%	68%	70%	71%
	5700 kWh to 5,999 kWh	12%	21%	27%	32%	37%	42%	48%	53%	58%	61%	63%	65%	66%	68%	69%

Table 7-27		Occupancy: Out during the day. Annual electricity consumption: 5,500 kWh to 5,999 kWh														
		Battery Energy Storage Usable Capacity, kWh														
		PV Only	≥1.1 <2.1	≥2.1 <3.1	≥3.1 <4.1	≥4.1 <5.1	≥5.1 <6.1	≥6.1 <7.1	≥7.1 <8.1	≥8.1 <9.1	≥9.1 <10.1	≥10.1 <11.1	≥11.1 <12.1	≥12.1 <13.1	≥13.1 <14.1	≥14.1 <15.1
Annual generation from solar PV system, kWh	0 kWh to 299 kWh	66%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	300 kWh to 599 kWh	49%	91%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	600 kWh to 899 kWh	45%	76%	89%	93%	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	900 kWh to 1,199 kWh	37%	66%	80%	87%	91%	93%	94%	94%	94%	94%	94%	94%	94%	94%	94%
	1200 kWh to 1,499 kWh	32%	59%	73%	82%	88%	91%	93%	93%	93%	94%	94%	94%	94%	94%	94%
	1500 kWh to 1,799 kWh	28%	53%	67%	76%	83%	88%	91%	92%	93%	93%	93%	93%	93%	93%	93%
	1800 kWh to 2,099 kWh	26%	48%	61%	71%	78%	84%	88%	90%	91%	92%	92%	93%	93%	93%	93%
	2100 kWh to 2,399 kWh	24%	43%	55%	65%	73%	80%	84%	87%	89%	91%	92%	92%	92%	92%	92%
	2400 kWh to 2,699 kWh	22%	39%	51%	60%	68%	75%	80%	84%	87%	89%	90%	91%	91%	92%	92%
	2700 kWh to 2,999 kWh	20%	36%	47%	56%	64%	71%	76%	81%	84%	86%	88%	89%	90%	90%	91%
	3000 kWh to 3,299 kWh	19%	35%	45%	53%	60%	66%	72%	77%	81%	84%	86%	87%	88%	88%	90%
	3300 kWh to 3,599 kWh	18%	34%	43%	50%	56%	62%	68%	74%	78%	81%	84%	85%	86%	87%	88%
	3600 kWh to 3,899 kWh	17%	32%	41%	47%	53%	59%	65%	70%	75%	78%	81%	83%	84%	85%	85%
	3900 kWh to 4,199 kWh	16%	31%	38%	44%	50%	56%	62%	67%	72%	76%	79%	81%	82%	82%	83%
	4200 kWh to 4,499 kWh	15%	29%	36%	42%	48%	54%	59%	64%	69%	73%	76%	78%	80%	80%	81%
	4500 kWh to 4,799 kWh	15%	27%	34%	40%	46%	52%	57%	62%	66%	70%	73%	76%	77%	78%	79%
	4800 kWh to 5,099 kWh	14%	25%	32%	38%	44%	49%	54%	59%	63%	67%	70%	73%	76%	77%	78%
	5100 kWh to 5,399 kWh	13%	24%	30%	36%	42%	47%	52%	57%	61%	64%	68%	71%	74%	75%	76%
	5400 kWh to 5,699 kWh	13%	22%	29%	34%	39%	45%	49%	54%	58%	62%	65%	69%	71%	73%	74%
	5700 kWh to 5,999 kWh	12%	21%	27%	32%	37%	43%	48%	53%	58%	61%	63%	65%	68%	70%	72%

8 PUBLICATIONS FOR REFERENCE & FURTHER READING

- Further reading material is provided so MCS Contractors know which documents have been used as a basis for the development of this document so they are able to investigate further research topics if they need to do so.
- The following references provide details of the underlying model used to develop this guidance note for determining self-consumption from solar PV installations
- Leicester, P.A., Rowley, P.N. and Goodier, C.I., (2016). Probabilistic analysis of solar photovoltaic self-consumption using Bayesian network models. IET Renewable Power Generation, 10(4), pp.448-455. DOI: 10.1049/iet-rpg.2015.0360.
- Leicester, P., Goodier, C. and Rowley, P., 2015. Evaluating self-consumption for domestic solar PV: simulation using highly resolved generation and demand data for varying occupant archetypes. IN: Proceedings of 2015 11th Photovoltaic Science, Applications and Technology conference (PVSAT-11), Leeds, Great Britain, 15-17 April 2015, pp.89-92.
- McKenna, E., and Thomson, M. 2016. High-resolution stochastic integrated thermal-electrical domestic demand model. Applied Energy, 165:445
- LOUGHBOROUGH UNIVERSITY, CREST Demand Model. Available at: <http://www.lboro.ac.uk/research/crest/demand-model/>

The following documents provide information on MCS standards for solar PV installations (available from www.mcscertified.com)

- MCS, The Solar PV Standard (Installation), MIS 3002
- MCS, The Battery Storage Standard (Installation), MIS 3012
- MCS, MCS 001 - MCS - Contractors certification scheme document.

9 ISSUE RECORD & CREDITS

Issue No.	Amendment details	Date
Issue 1.0	First issue	August 2019
Issue 2.0	Minor amendments to correct errors in the methodology plus branding updates and other language improvements	April 2022

Contributing organisations

The following organisations have been directly involved in producing this document

- Advance Further Energy Ltd. (AFE)
- Building Research Establishment (BRE) National Solar Centre (NSC)
- Centre for Renewable Energy Systems Technology (CREST), Loughborough University
- Bombus Energy Solutions Ltd.

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- Durham Energy Institute (DEI), Durham University
- National Energy Foundation (NEF)

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- Oxford University
- Together Housing

Updating the Guidance Document

In order that the document remains relevant it will be updated commensurate with technological advances, such as more efficient appliances, increased battery round-trip efficiencies etc., which impact on the self-consumption estimates.

At the time of first publication, the modelling used to develop this document cannot credibly be used to assess scenarios outside the scope of this document.

It is anticipated that later versions of the document will be developed to address:

- Electric vehicles and electric heating
- Guidance on the impact of alternative solar PV configurations such as multiple orientation arrays on self-consumption. Please note that at present no adjustments can be made when using the document to consider different solar configurations other than calculation of the annual electrical generation.
- Expansion of the document to consider larger PV generation and electrical demand scenarios.
- Incorporation of further empirical data to support revisions to the values contained in this document.

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