



# **Solar PV sizing limitations: NRS 097-2-3 : 2023**



# Overview

Key Changes

Municipal Assessment

Commissioning checks

Existing approved SSEG systems



# Remember

## SIMPLIFIED UTILITY CONNECTION CRITERIA FOR LOW-VOLTAGE CONNECTED GENERATORS

Guide with simple rules to be applied when applications for LV connected embedded generators are being assessed.

Applications that do not meet these criteria will need to follow an alternative process, which may require detailed network studies.

*4.1.7 Utilities **may modify** the criteria, or **add additional criteria**, to meet their specific requirements considering their network characteristics.*



# High-Level Changes

# High-level Changes: Added

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## Acronyms:

ADMD: after diversity maximum demand

EG: embedded generator

LV: low voltage

MCC: maximum charging current

MEC: maximum export capacity

MV: medium voltage

NMD: notified maximum demand

NPR: nameplate power rating

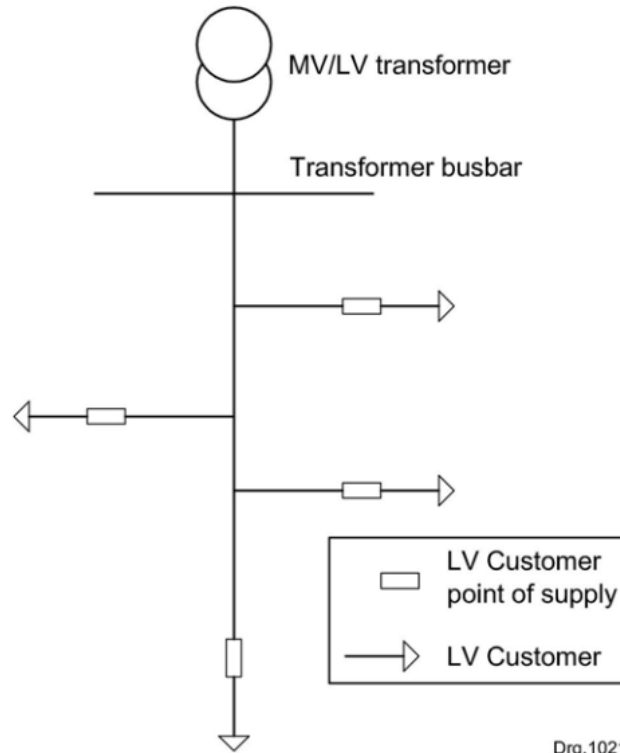
OLTC: on-load tap changing

RVC: rapid voltage change

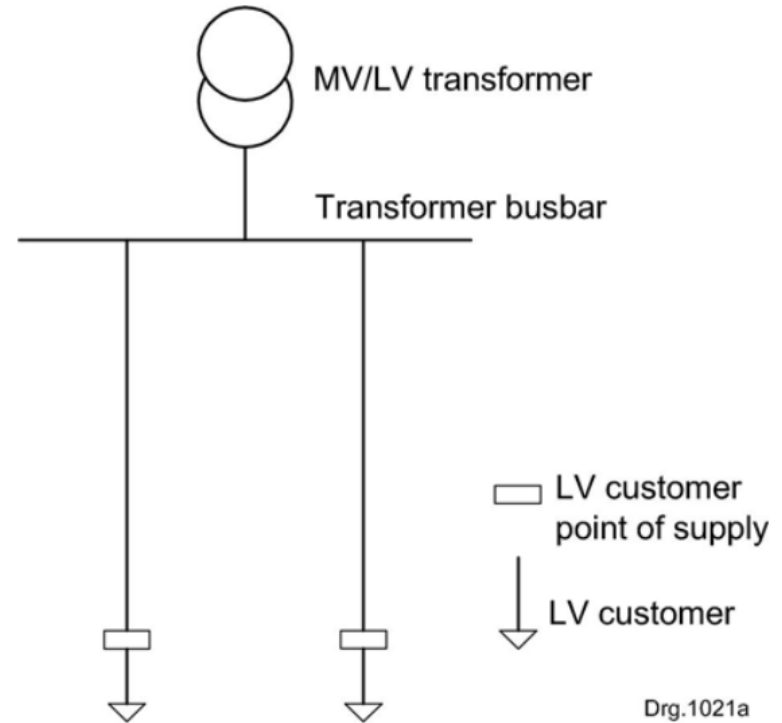
SSEG: small-scale embedded generator

UIC: utility installed capacity

# Shared vs Dedicated Feeder



**Figure 1 — Shared LV feeder**



**Figure 2 — Dedicated LV feeder**

# NRS 097-2-3 Overall Changes

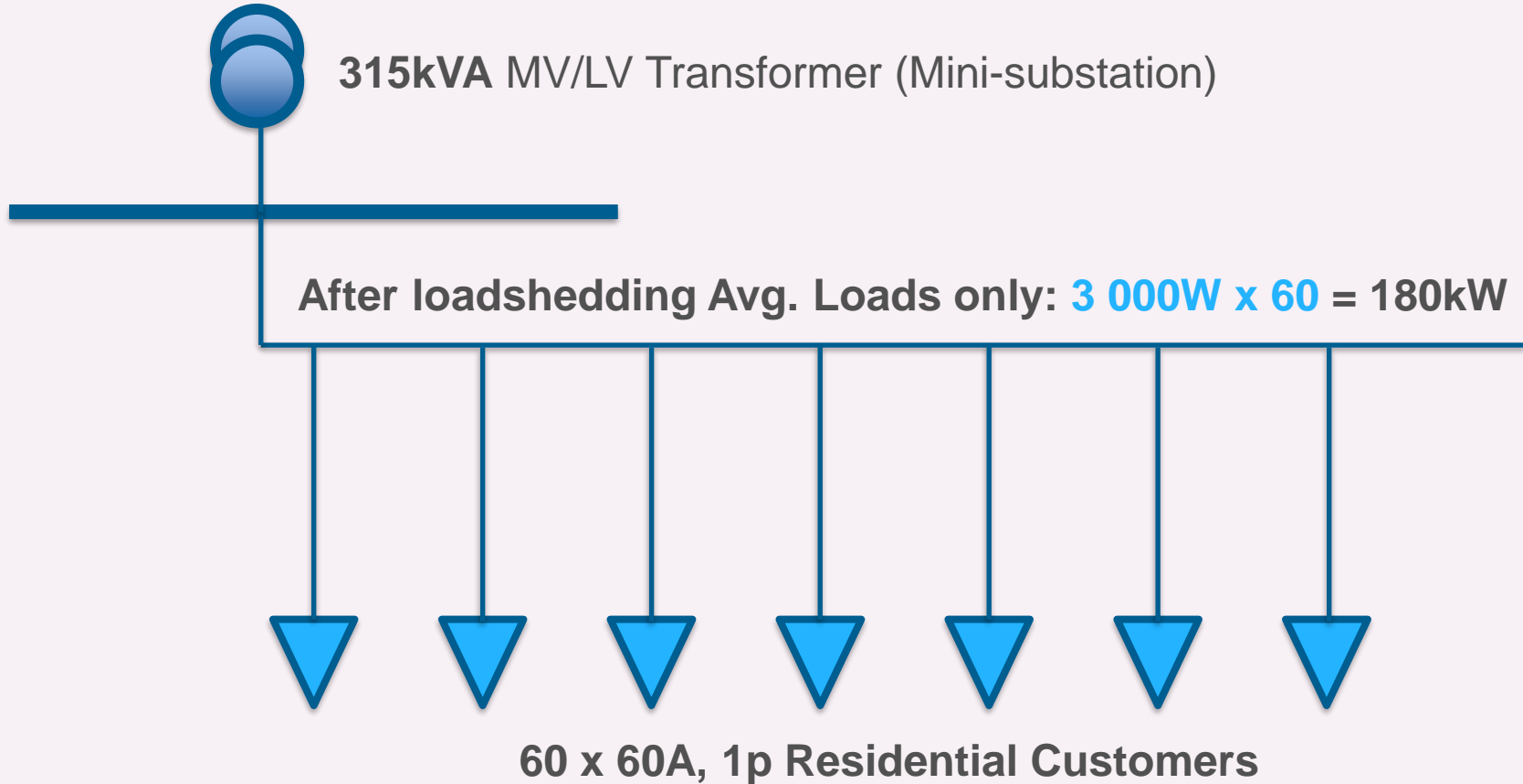
	2014	2023
Scope upper limit	350kVA	1 000kVA or 1MVA
Size	25% of NMD (Shared) 75% of NMD (Dedicated)	100% of UIC
Export (MEC) limit	-	25% of NMD/UIC (Shared) 75% of NMD/UIC (Dedicated)
Charging (MCC) limit	-	25% of UIC (Shared and Dedicated)

# NRS 097-2-3 Overall Changes

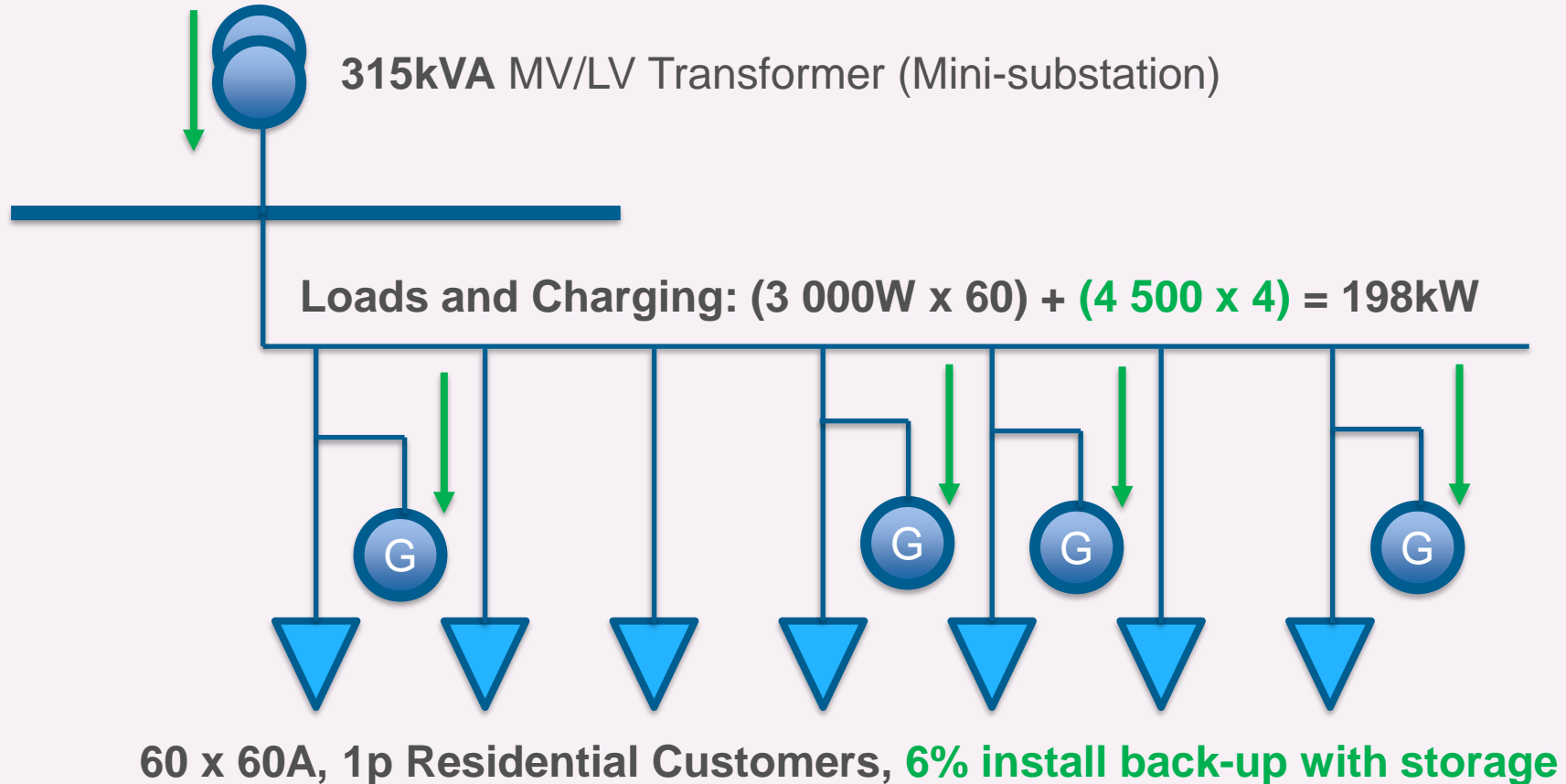
	2014	2023
Balancing required	If <b>EG size</b> > 4.6 kVA	If <b>MEC</b> > 4.6 kVA
Limitations based on Transformer rating	<b>Total EG Size</b> <= 75% of transformer rating	Total <b>MEC</b> <= 75% of transformer rating
Limitations on MV Feeder	<b>EG Size</b> <= 15% of feeder peak load	Total <b>MEC</b> <= 15% of feeder peak load



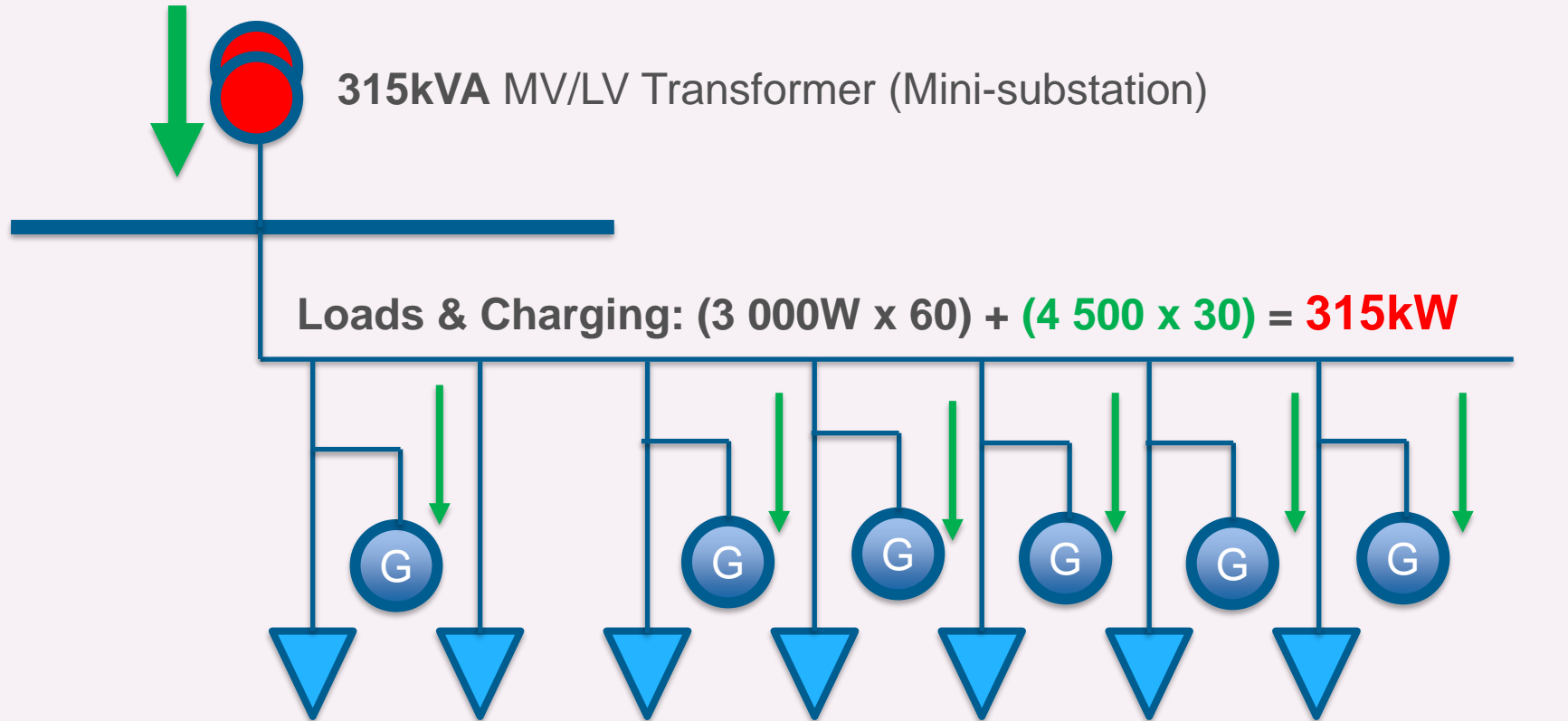
# Why the limitation on Charging?



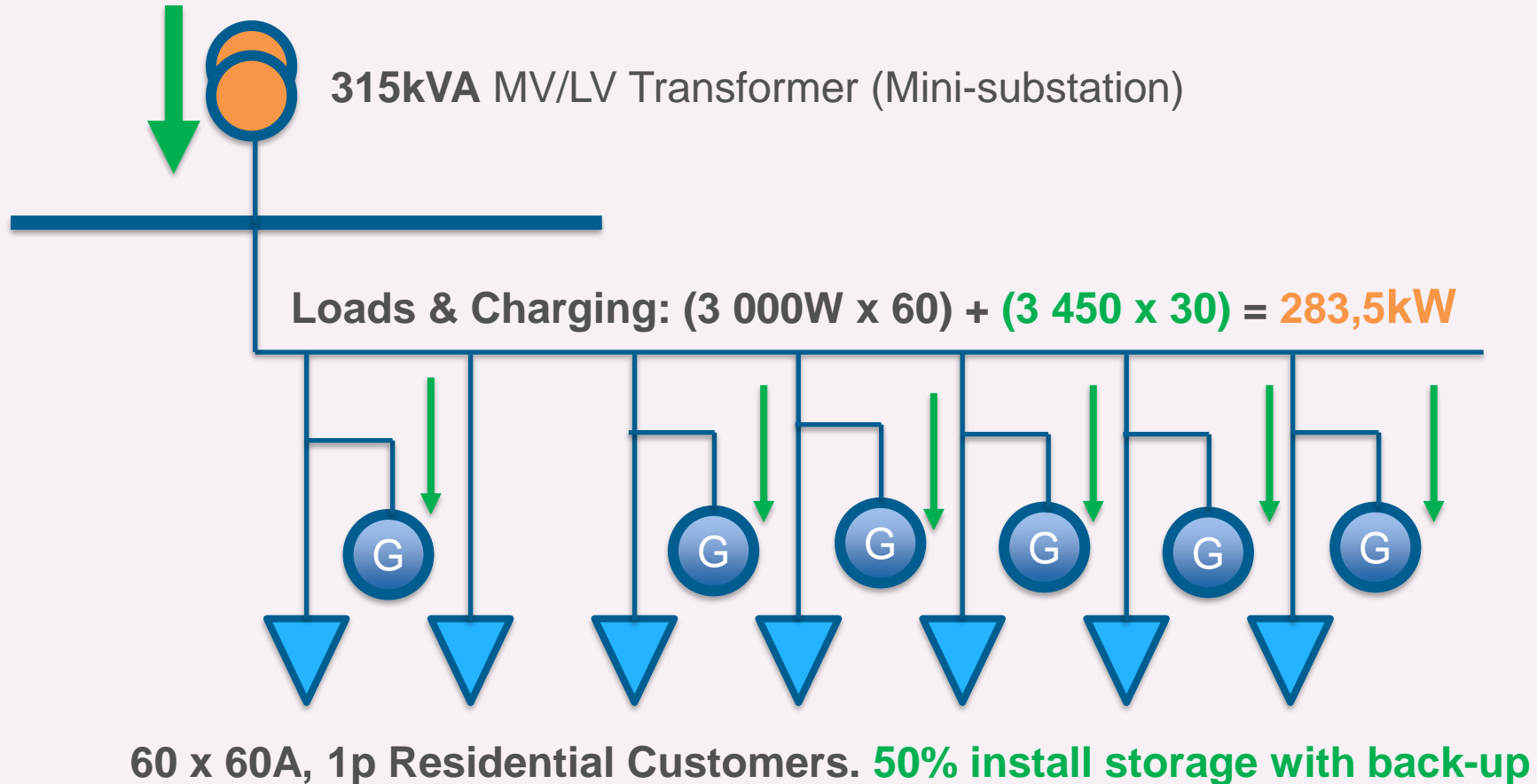
# Why the limitation on Charging?



# Without applying MCC limitation



# Applying 25% MCC limitation



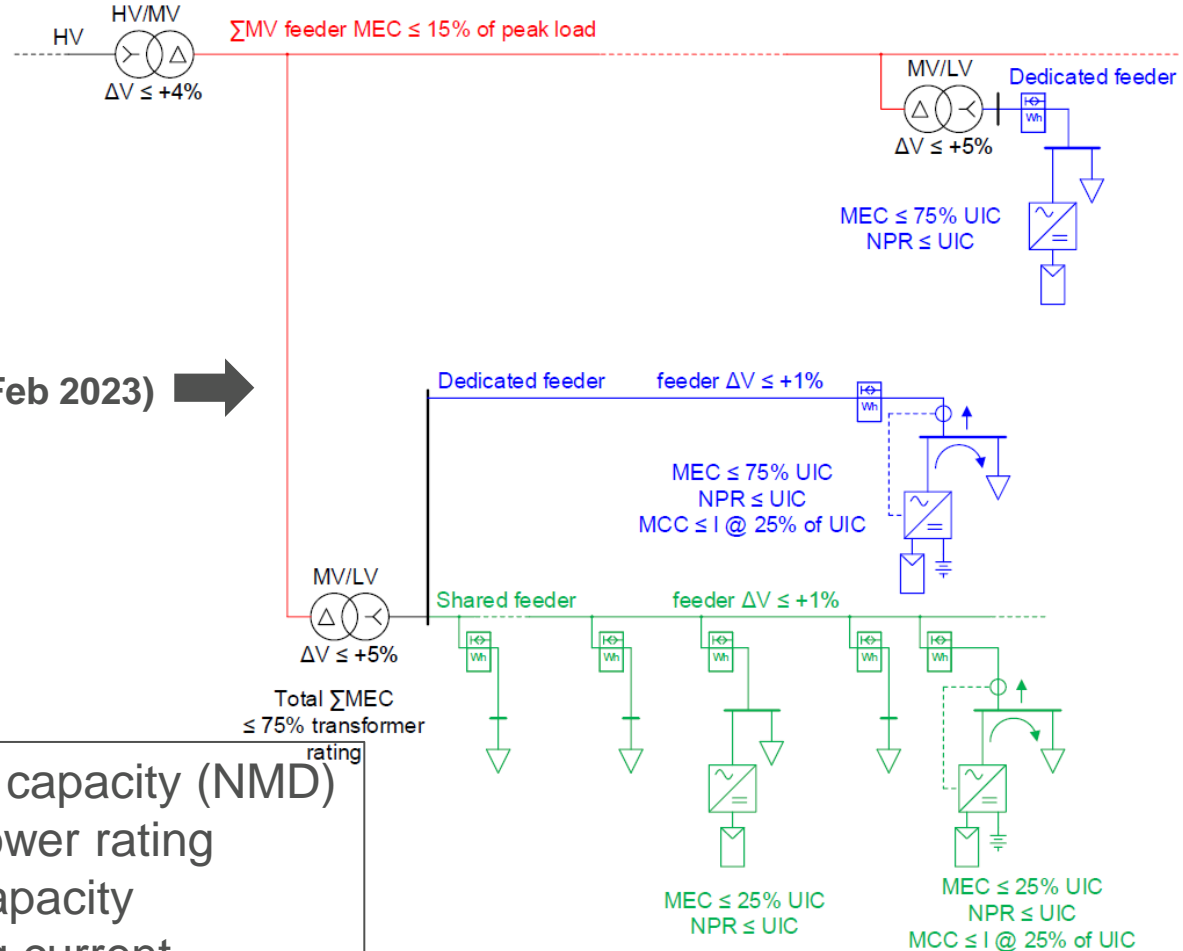


# Municipal Assessment



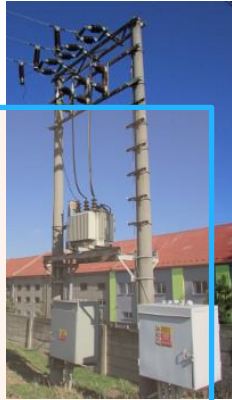
# **NRS097-2-3:** **CHECKS TO BE** **PERFORMED** **BEFORE** **ACCEPTING AN** **SSEG ONTO THE** **NETWORK**

Figure 1 from NRS097-2-3 (Feb 2023) ➡



UIC – utility installed capacity (NMD)  
 NPR – nameplate power rating  
 MEC - max export capacity  
 MCC – max charging current

## > SHARED FEEDER



MCC – max charging current

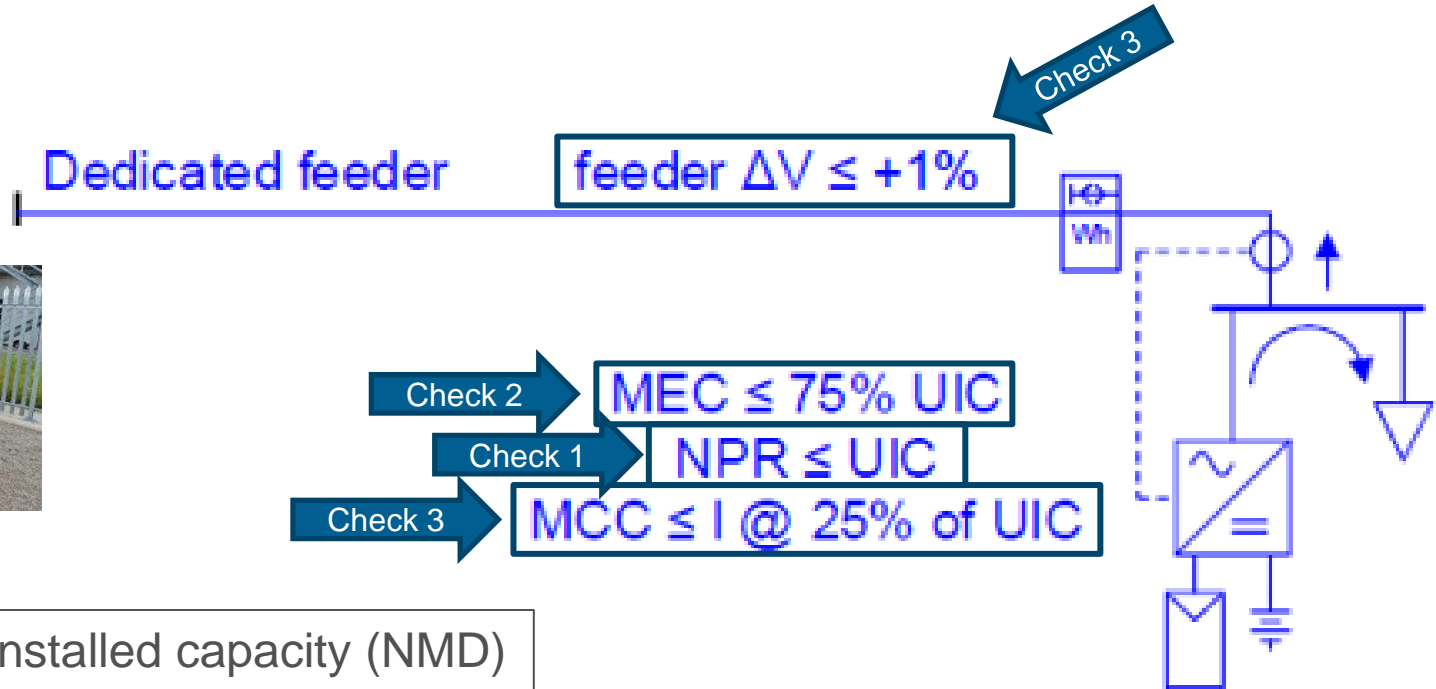
# EG Size, MEC & MCC limits (Shared Feeder)

Table 1 — Maximum individual installation limits in a shared LV (400 V/230 V) feeder

1	2	3	4	5
No. of Phases	Service CB [A]	MEC = 0.25 UIC [kVA]	NPR = UIC [kVA]	MCC @ 0.25 UIC (per phase) [A]
1	40	2.3	9.2	10
1	60	3.45	13.8	15
1	80	4.6	18.4	20
3	40	7	28	10
3	60	10	41	15
3	80	14	55	20
3	100	17	69	25
3	125	22	86	31
3	150	26	104	38
3	175	30	121	44
3	200	35	138	50
3	225	39	155	56
3	250	43	173	63
3	275	47	190	69
3	300	52	207	75

# BASIC CHECKS TO BE PERFORMED BEFORE ACCEPTING AN SSEG ONTO THE NETWORK

## >DEDICATED FEEDER



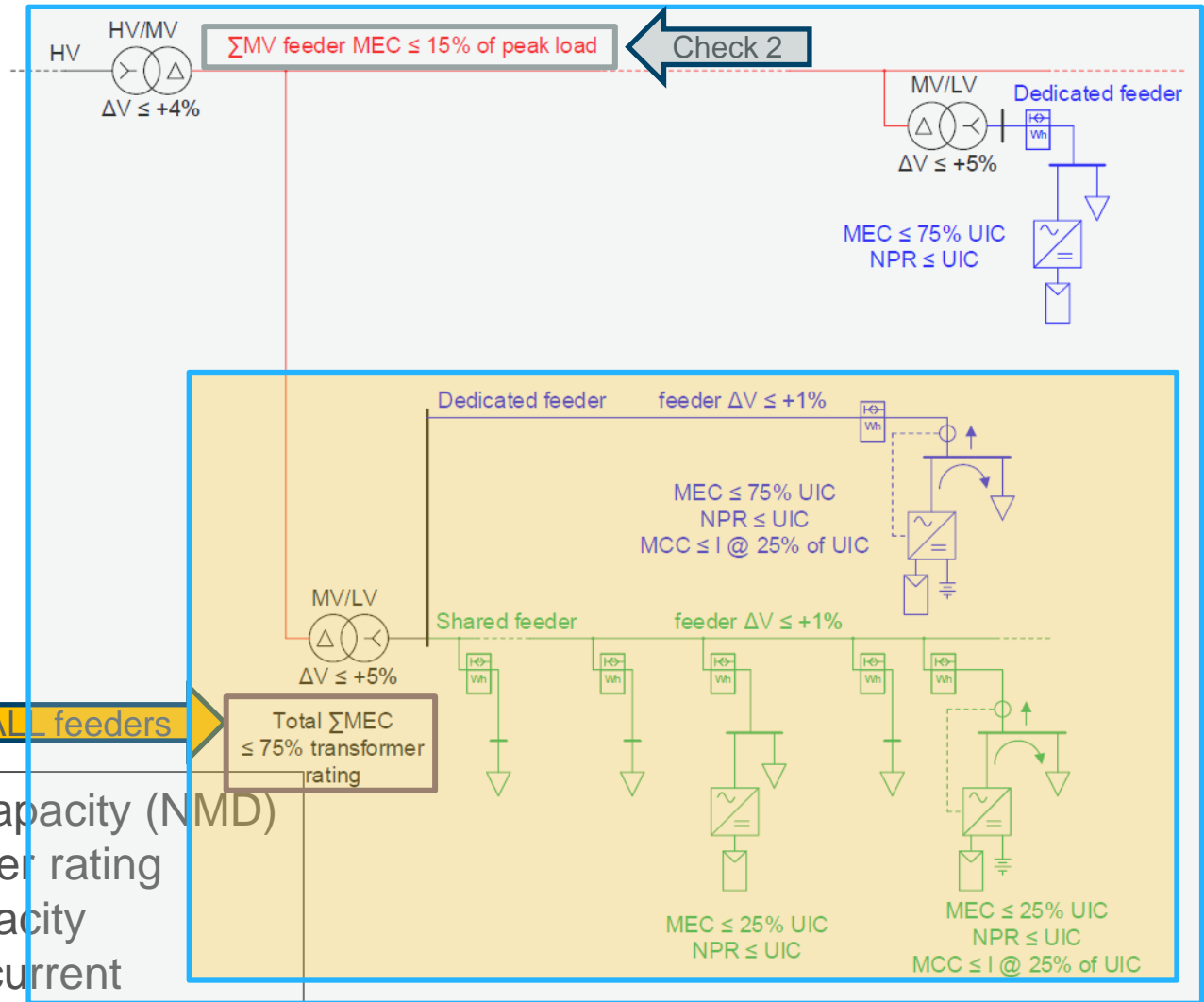
UIC – utility installed capacity (NMD)  
NPR – nameplate power rating  
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**NETWORK CHECKS  
TO BE PERFORMED  
BEFORE  
ACCEPTING AN  
SSEG ONTO THE  
NETWORK  
>SHARED and  
DEDICATED**



**Check 1 – ALL feeders**

UIC – utility installed capacity (NMD)  
NPR – nameplate power rating  
MEC - max export capacity  
MCC – max charging current

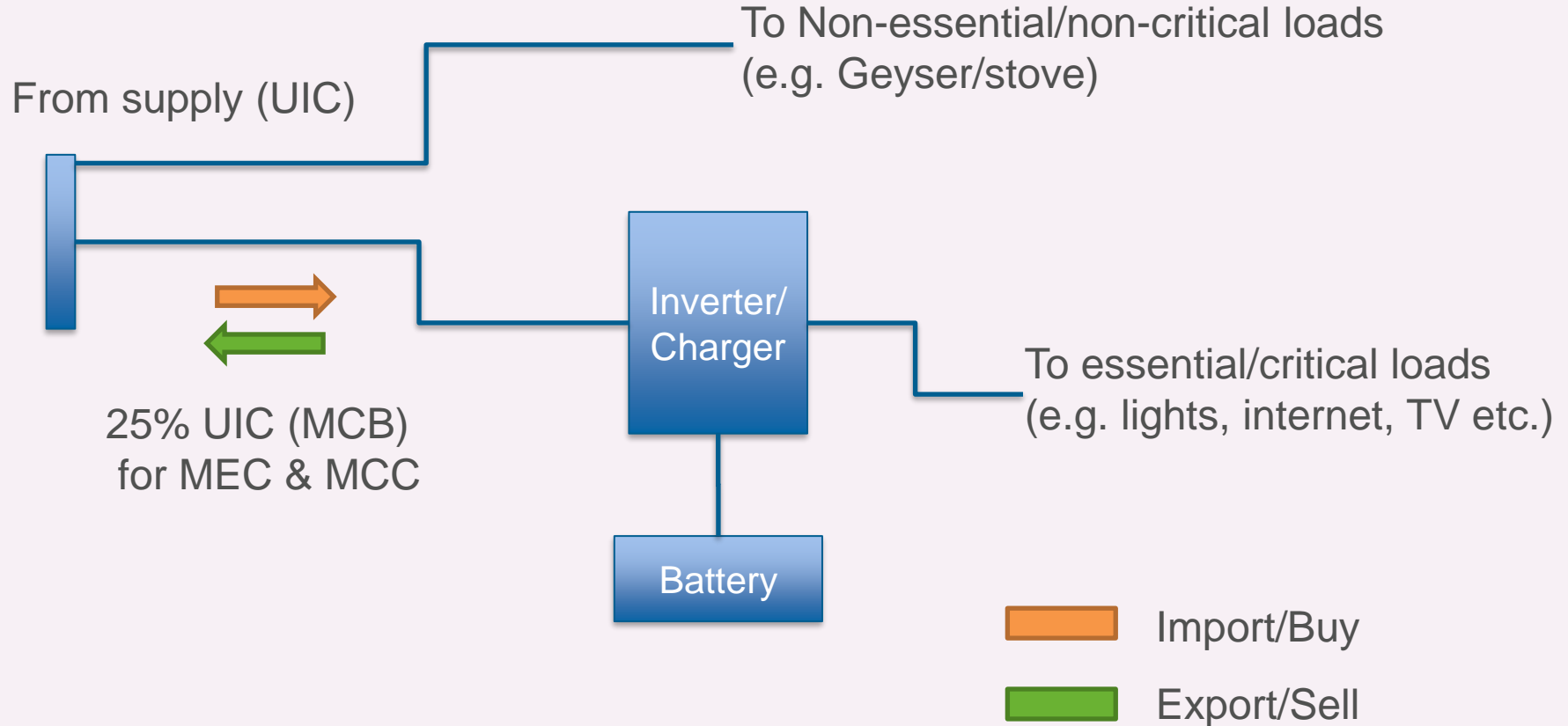




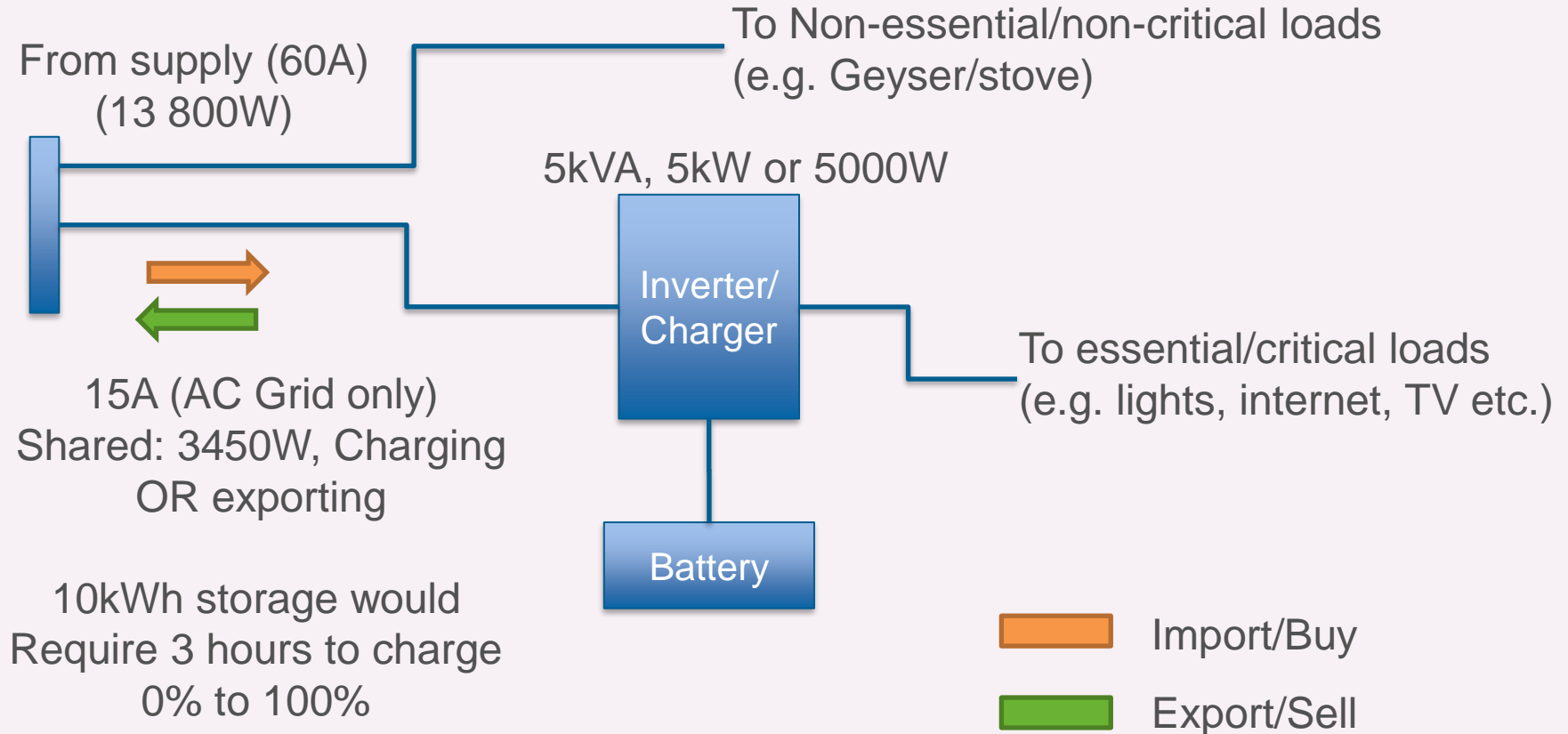


# Assessment Example

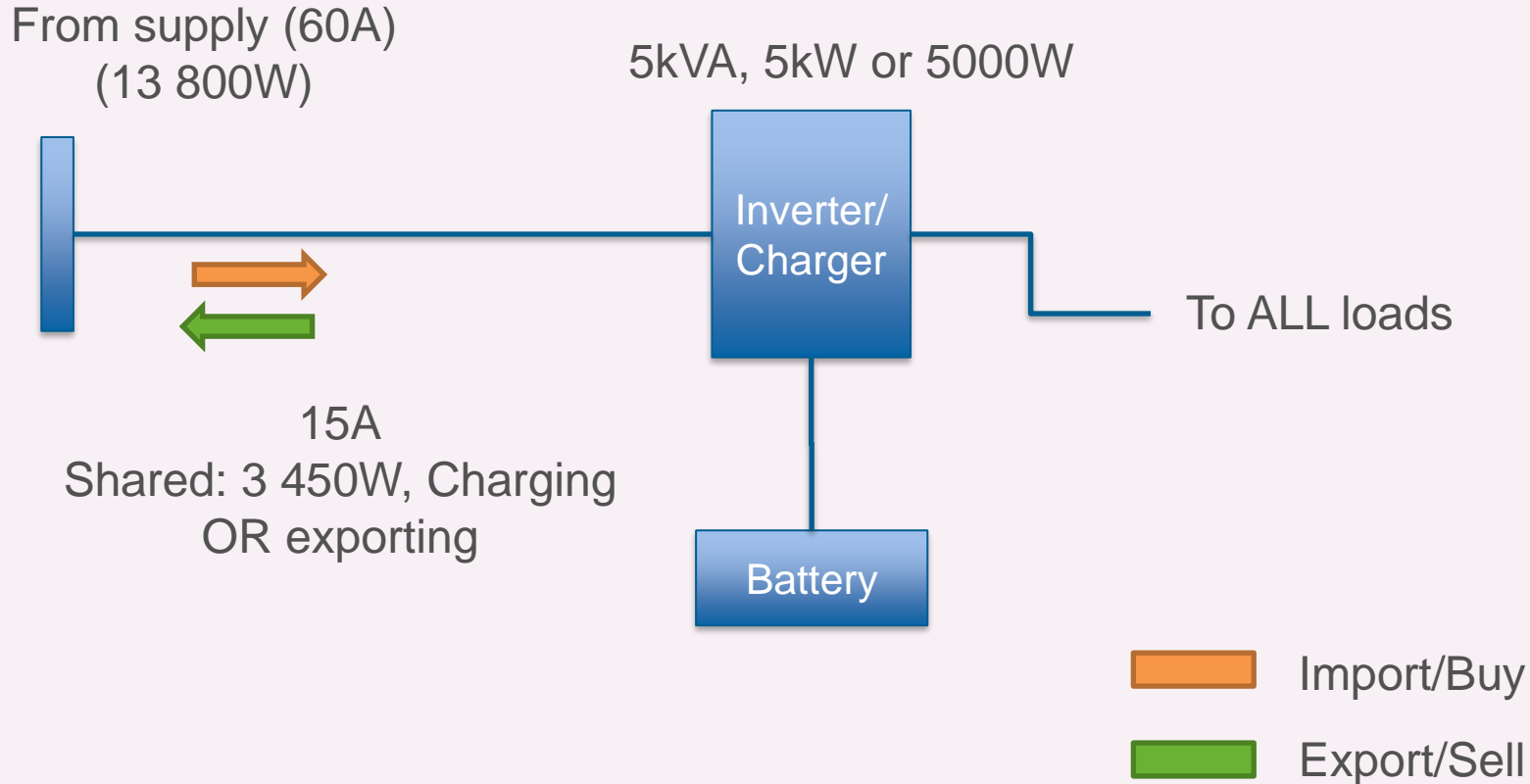
# Loads separated (Shared Feeder)



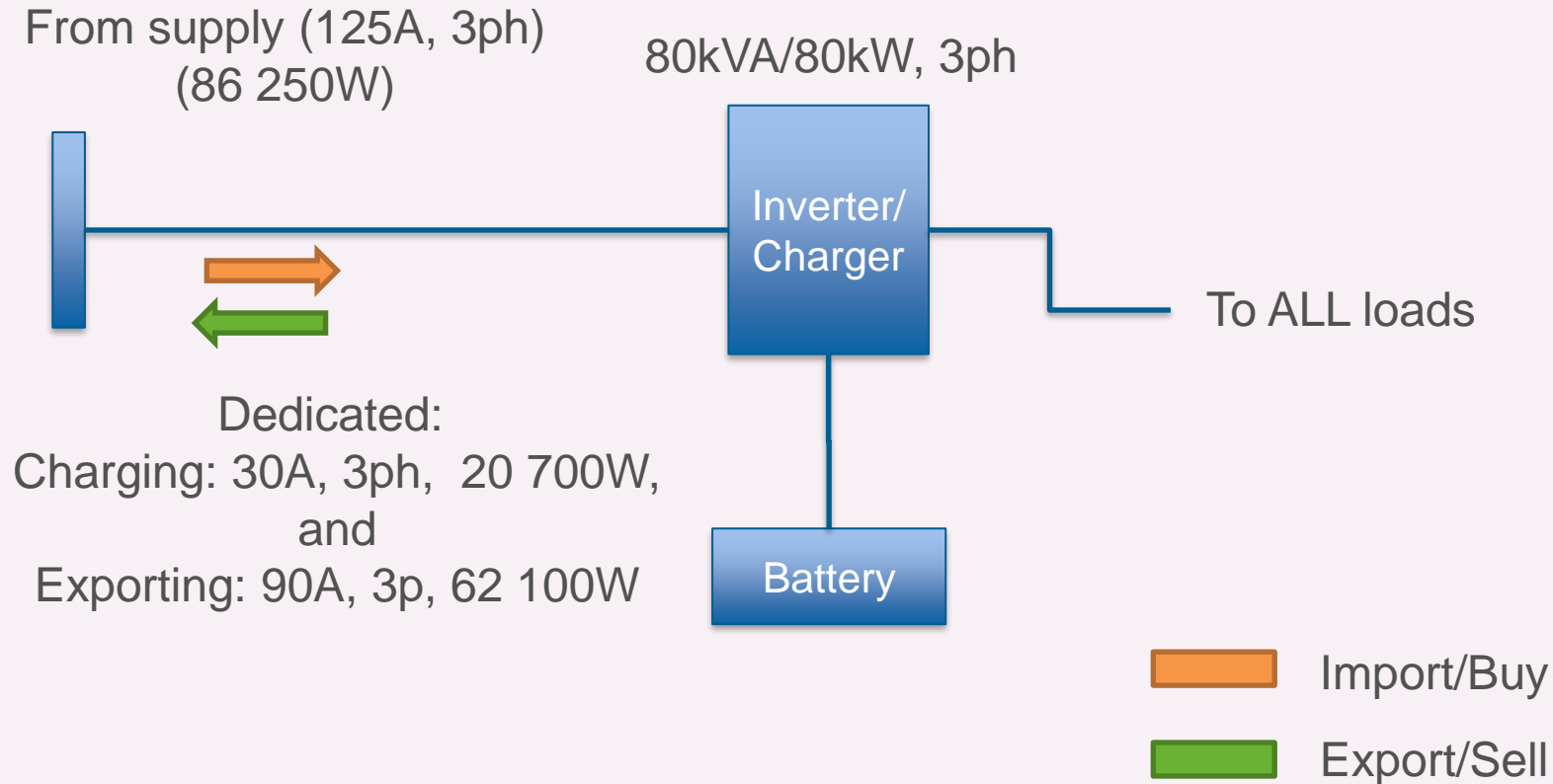
# Loads separated (Example)



# Loads combined (Shared Feeder Example)



# Loads combined (Dedicated Feeder Example)







# Commissioning Checks

# Commissioning Checks

What may be important?

- Monitor MEC (If allowed)



- Monitor MCC



# Existing approved SSEG systems

IF, SSEG approval received in past and MEC and MCC adjusted



# Solar Training Centre

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## Questions?



Scan for contact details:

