

CMP 460 - Improving Transmission Connection Asset Charging

Examples of Infrastructure Configurations

Option 2

Code Change Proposal – OPTION 2

Pass through, as connection charges, all reinforcement wholly or mainly triggered by embedded distribution connections

- CUSC code change required. Update the definition of connection asset to include assets triggered by Distribution users at infrastructure sites.
 - This would impact infrastructure sites where costs are not currently passed through to embedded customers.
- DCODE code change required (DCP461 in progress).

Benefits

- Same charging mechanism for ALL assets regardless of whether a GSP is an infrastructure site.
- DNOs in control of solution and could chose to deploy flex alternatives
- Incentive for embedded generators to locate under less constrained GSPs
- Reduced TNUOS burden, reduction in Transmission Residual Charge

Disadvantages

- Complex Legal Text Changes
- Additional cost burden on DNOs and their customers.

Ownership Boundaries

- All examples assume an Air Insulated Switchgear (AIS) design, except where explicitly stated.
- For Gas Insulated Switchgear the User 'bay' would typically be a connection asset rather than a User asset due to the typical ownership boundary used for GIS substations.

[User connection boundaries | National Grid](#)

Charging Boundaries

- The worked examples do not define which user is responsible for paying for each Connection Asset.
- The User who has triggered the need for the Connection Asset (first comer) will pay for the Connection Asset.
 - E.g. if User 2 connects later than User 1, then User 1 would pay for the 400kV busbar and assets required for their connection. User 2 would then pay for the 400kV busbar extension and any new assets required for their connection.
 - E.g. If a User requests to connect to the tertiary winding of an existing SGT, then the User would not be required to pay for the SGT, but would pay for the 13kV/33kV transformer and 33kV assets.
- A methodology to provide a reimbursement to a User who has previously paid for a Connection Asset may be required to be paid by the new User if they are using the capacity/ benefitting from an existing asset. I.e. a 2nd comer charge.

Glossary

Acronym	Definition
TO	Transmission Owner
DNO	Distribution Network Owner
HV	High voltage >132kV
LV	Low Voltage, $\leq 132\text{kV}$
GSP	Grid Supply Point
SGT 6	Super Grid Transformer
GIS	Gas Insulated Switchgear
AIS	Air Insulated Switchgear
User	A person who is a party to the CUSC Agreement, as defined by the table in in clause 1.2.4 of the CUSC . For CMP460 worked examples, each Bilateral Connection Agreement, i.e. Bilateral Connection Agreement, will be treated as a separate User of the Transmission Network.

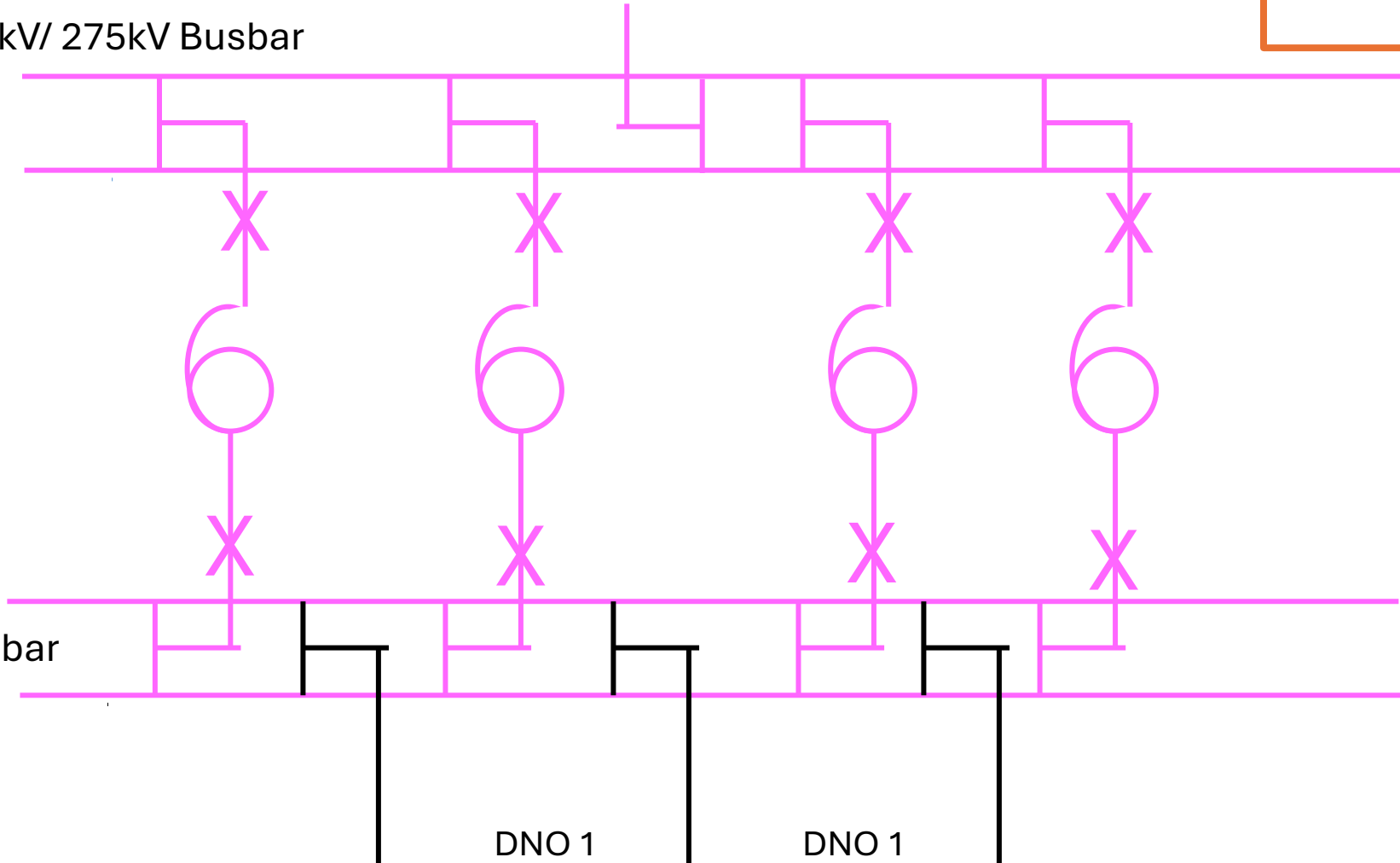
Contents

Worked Example	Title
1	Single DNO Customer at a GSP with TO owned LV busbars
2	Single DNO Customer at a GSP with DNO Owned LV busbars
3	Multiple DNOs with a Shared 132kV Substation
4	Multiple DNOs, separate 132kV Substations DNO Owned LV busbars
5	Single DNO and Tertiary Connection
6	Banked HV (>132kV) Connection, single DNO
7	Banked LV Connection, single DNO
8	Grid Park Full Capacity – Only One Customer Contracted
9	Grid Park Full Capacity – Only One Customer Connected
10	Grid Park Partially Full Capacity– Only One Customer Contracted so Far
11	Grid Park Partially Full Capacity – One Customer Connected
12	Multiple Grid Park Users
13	Single Directly Connected Final Demand User Common Location
14	Single Directly Connected Final Demand User Remote Location
15	Multiple Directly (Transmission) Connected Final Demand Users Common Location
16	DNO and Directly (Transmission) Connected Final Demand User with a Shared 132kV Substation
17	DNO and Directly (Transmission) Connected Final Demand User with separate 132kV Substations

Single DNO Customer at a GSP with TO Owned LV busbars



400kV/ 275kV Busbar



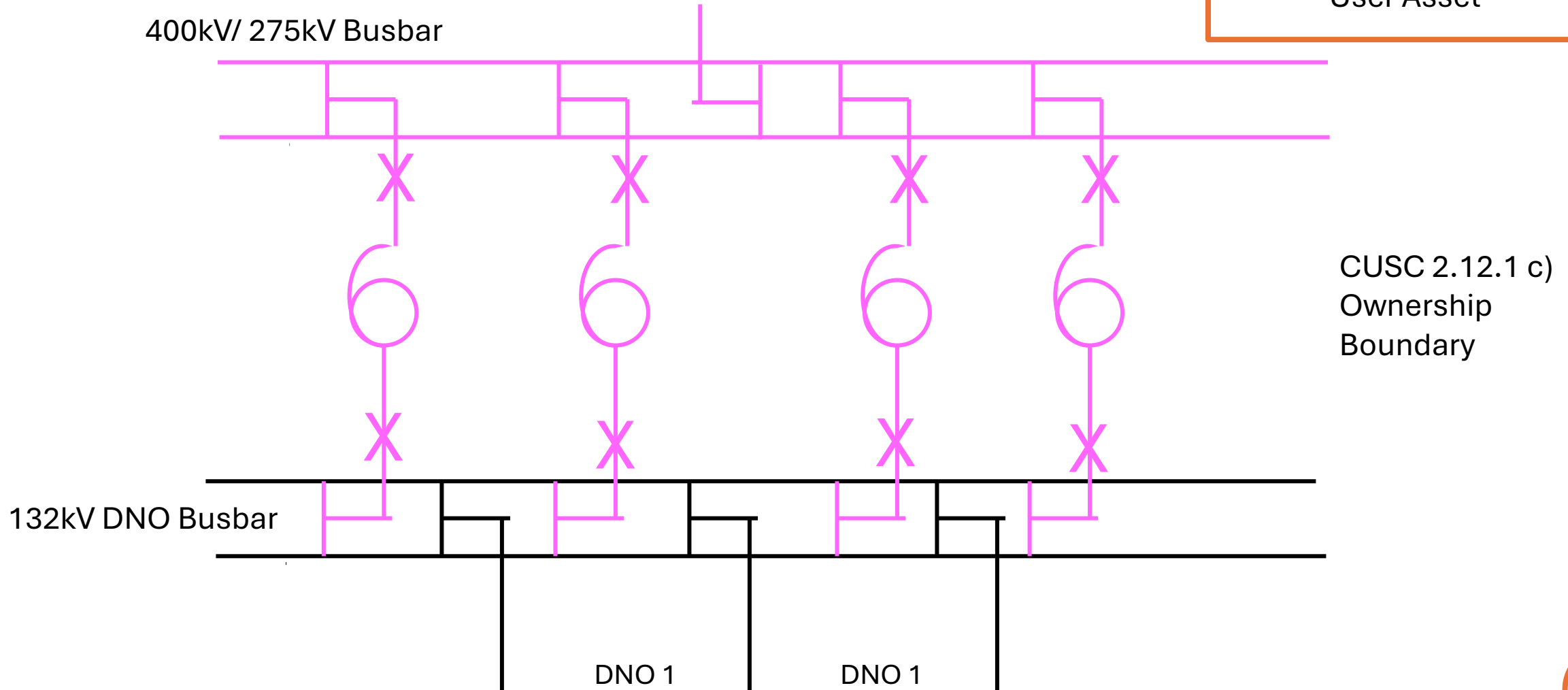
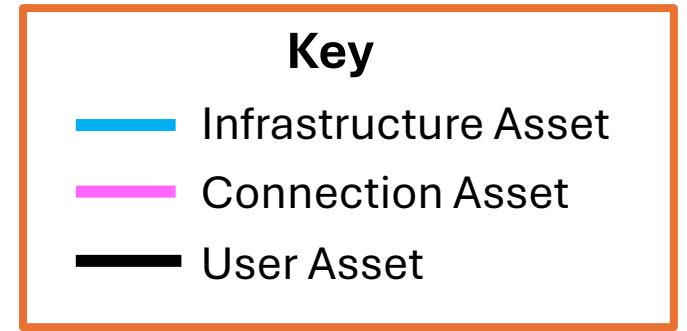
CUSC 2.12.1 b)
Ownership
Boundary

132kV TO Busbar

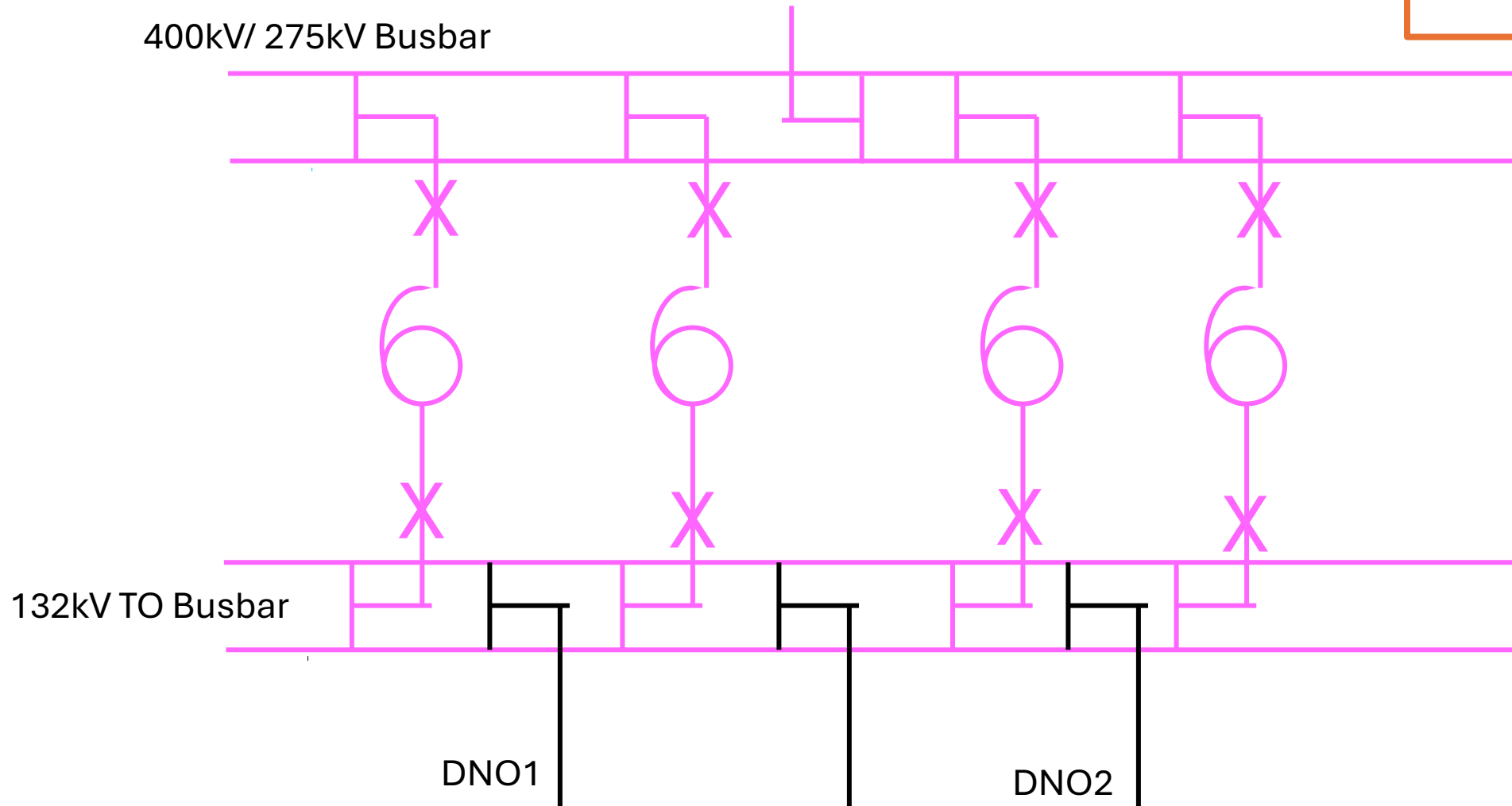
DNO 1

DNO 1

Single DNO Customer at a GSP with DNO Owned LV busbars



Multiple DNOs with a Shared 132kV Substation

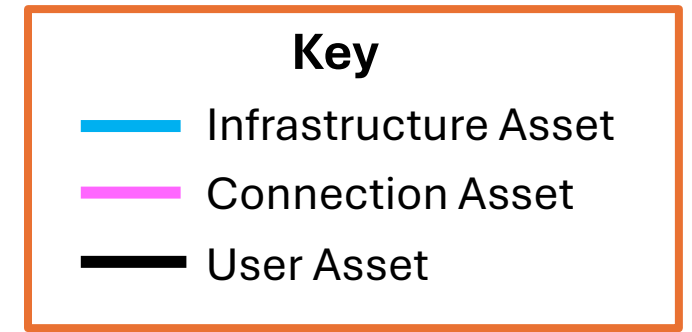


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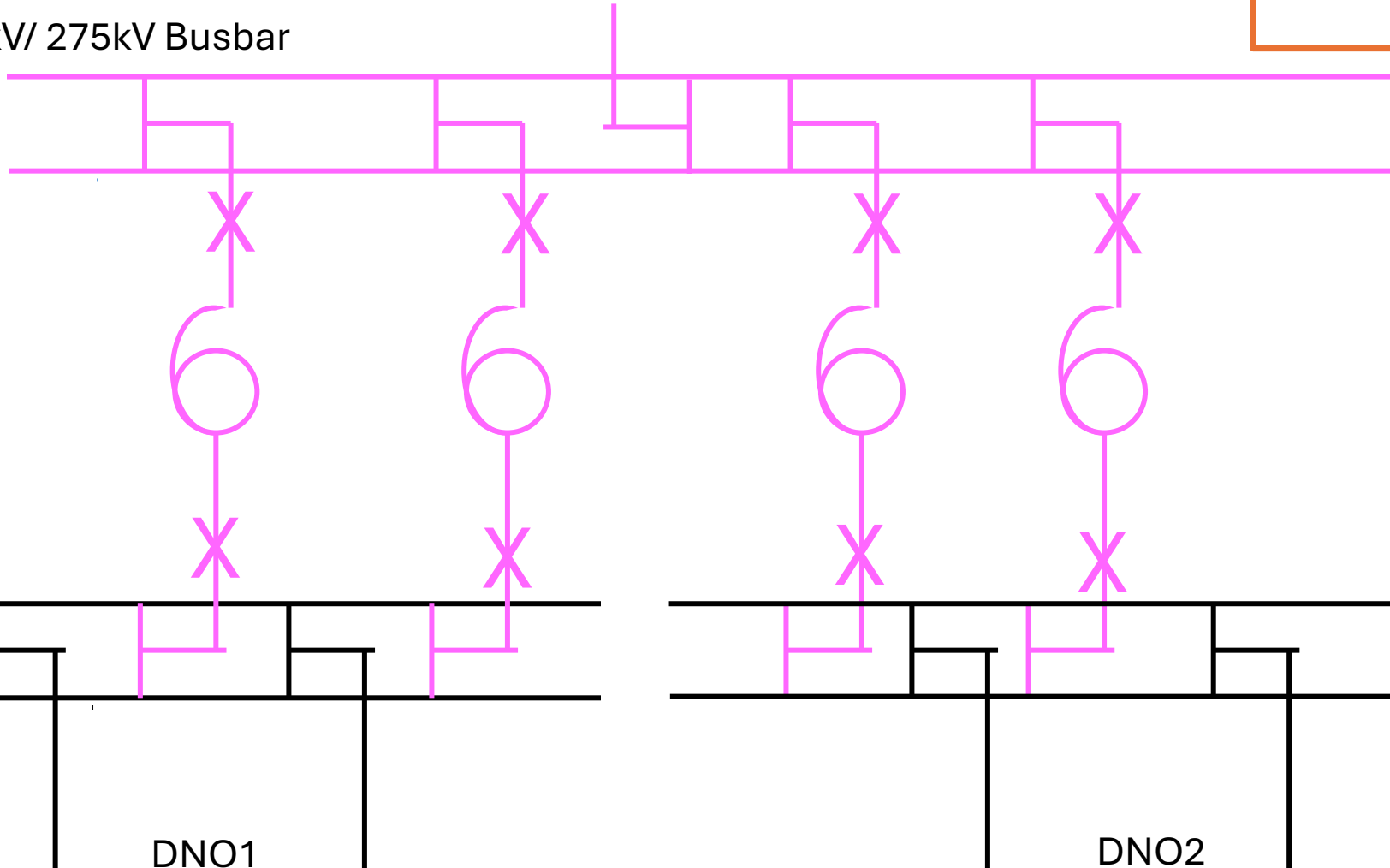
- Infrastructure Asset
- Connection Asset
- User Asset

Multiple DNOs, separate 132kV Substations

DNO Owned LV busbars



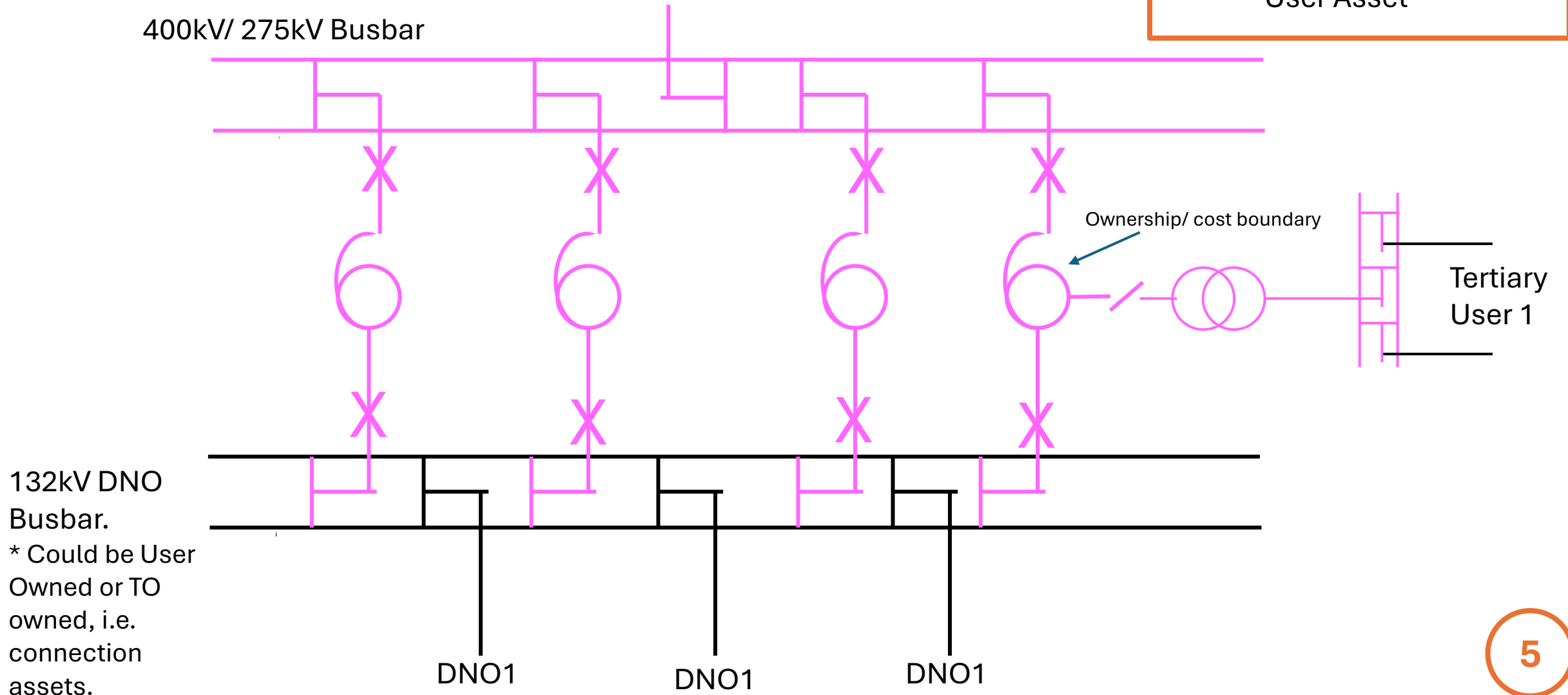
400kV/ 275kV Busbar



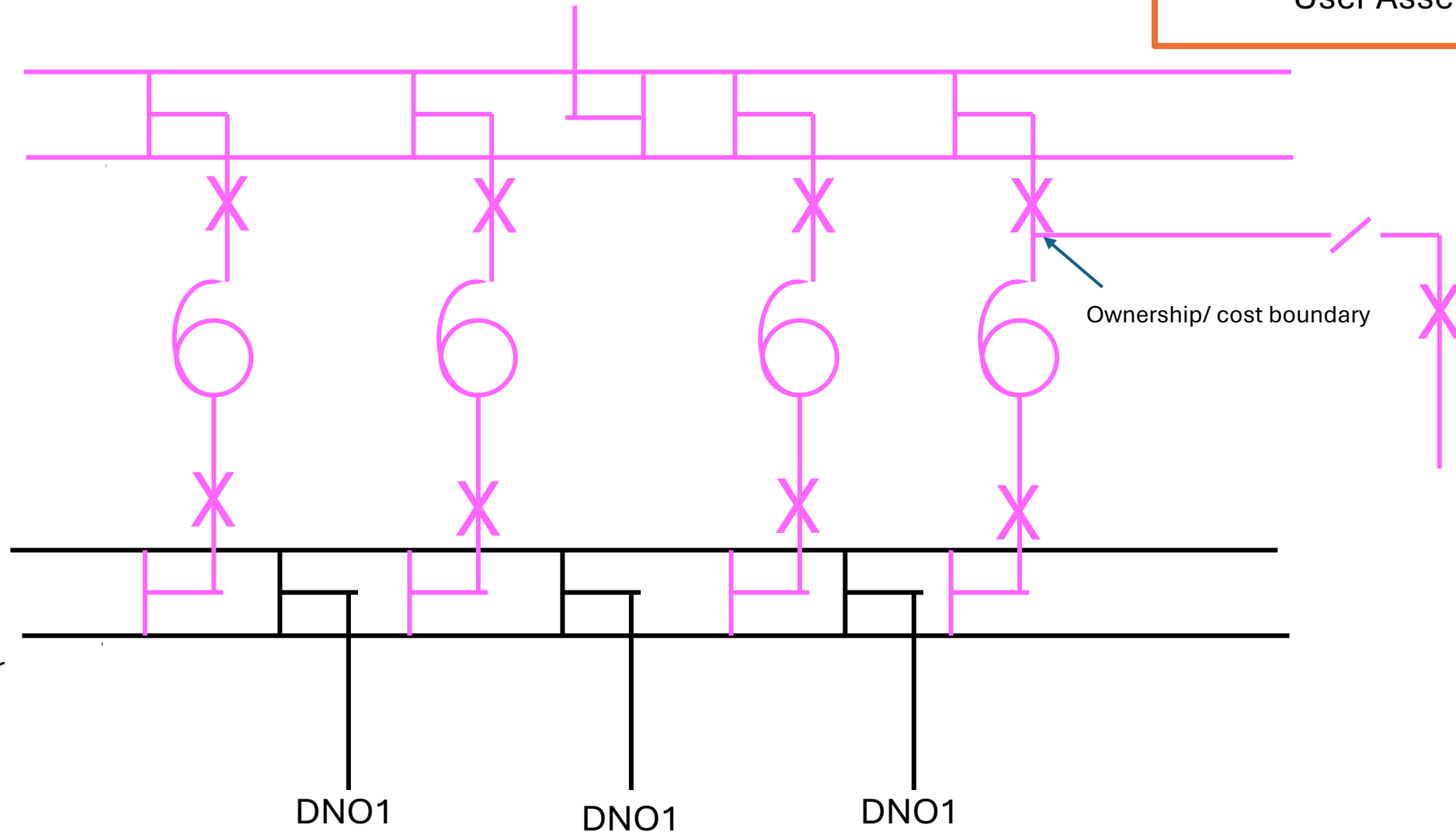
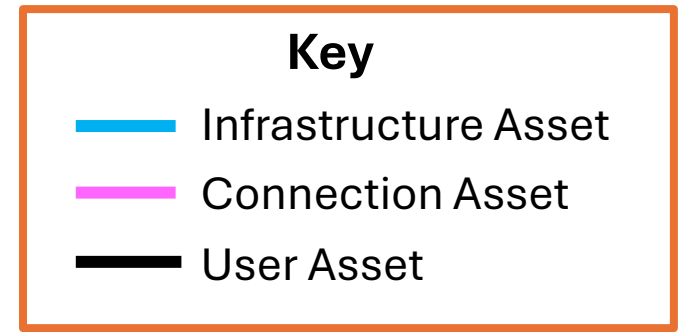
132kV DNO Busbar.

* Could be User Owned or TO owned, i.e. connection assets.

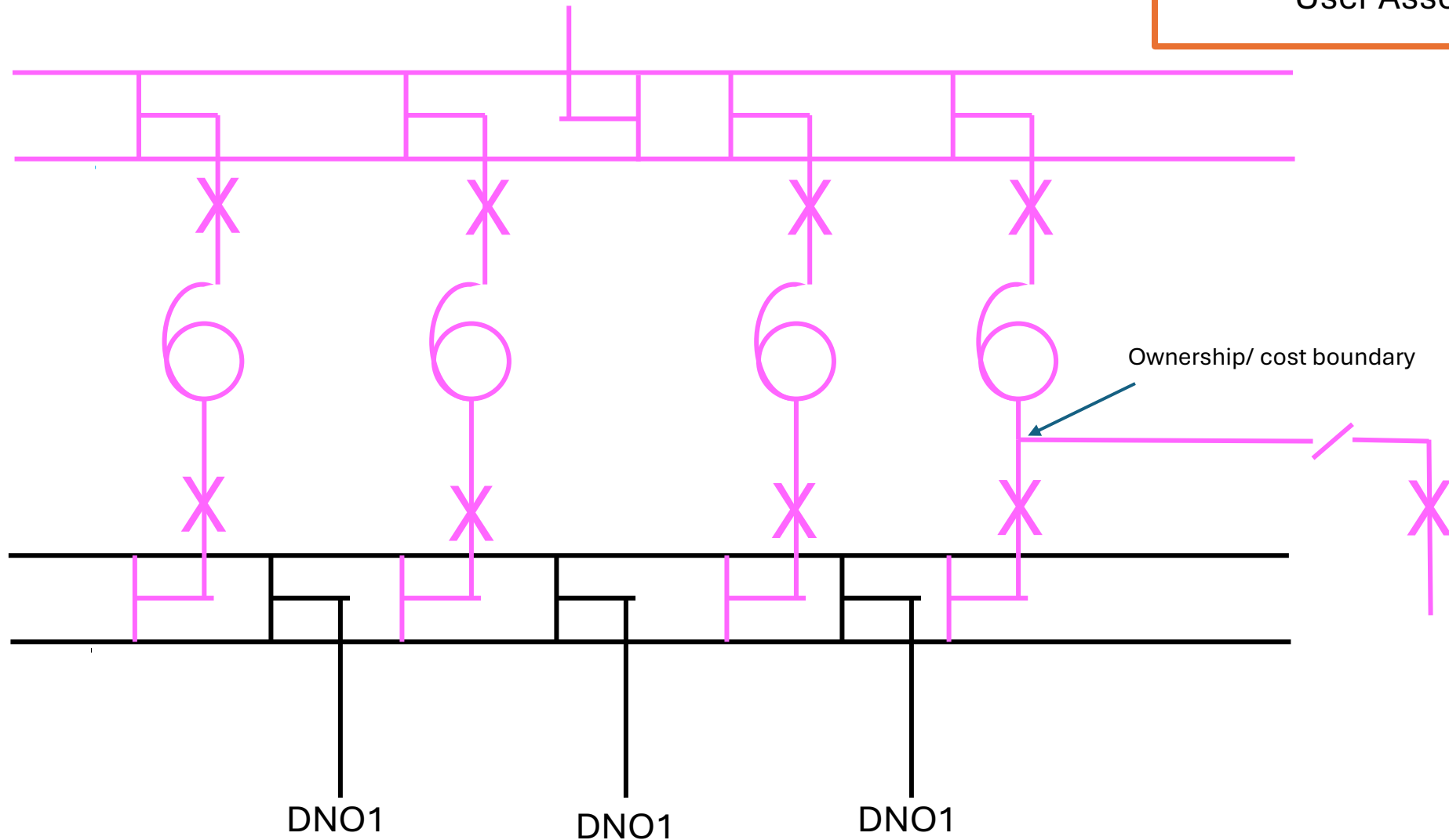
Single DNO and Tertiary Connection



Banked HV (>132kV) Connection, single DNO

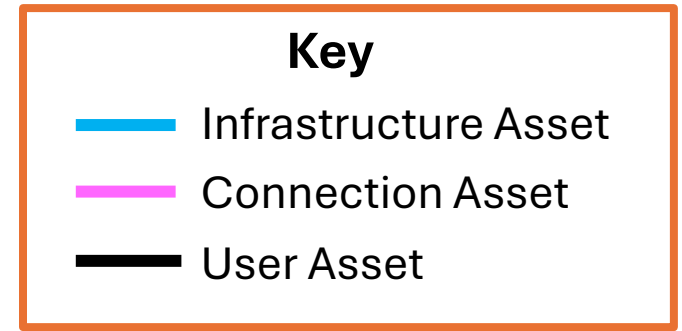


Banked LV Connection, single DNO



132kV DNO
Busbar.
* Could be User
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connection
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Grid Park Full Capacity – One Customer Contracted



400kV/ 275kV Busbar

The single
Grid Park
User is using
the full
capacity of
the Grid Park.

The DNO does
not contribute to
the cost of the
Grid Park

*GIS 33kV Substation. An
AIS would mean the 33kV
'bays' are classified as User
Assets.

33kV TO Busbar*

Grid Park User 1
(contracted, not
connected)

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(contracted, not
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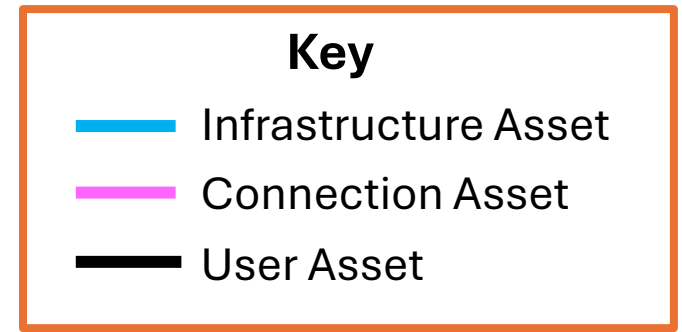
Grid Park User 1
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DNO 1

DNO 1

132kV Busbar

Grid Park Full Capacity – One Customer Connected



400kV/ 275kV Busbar

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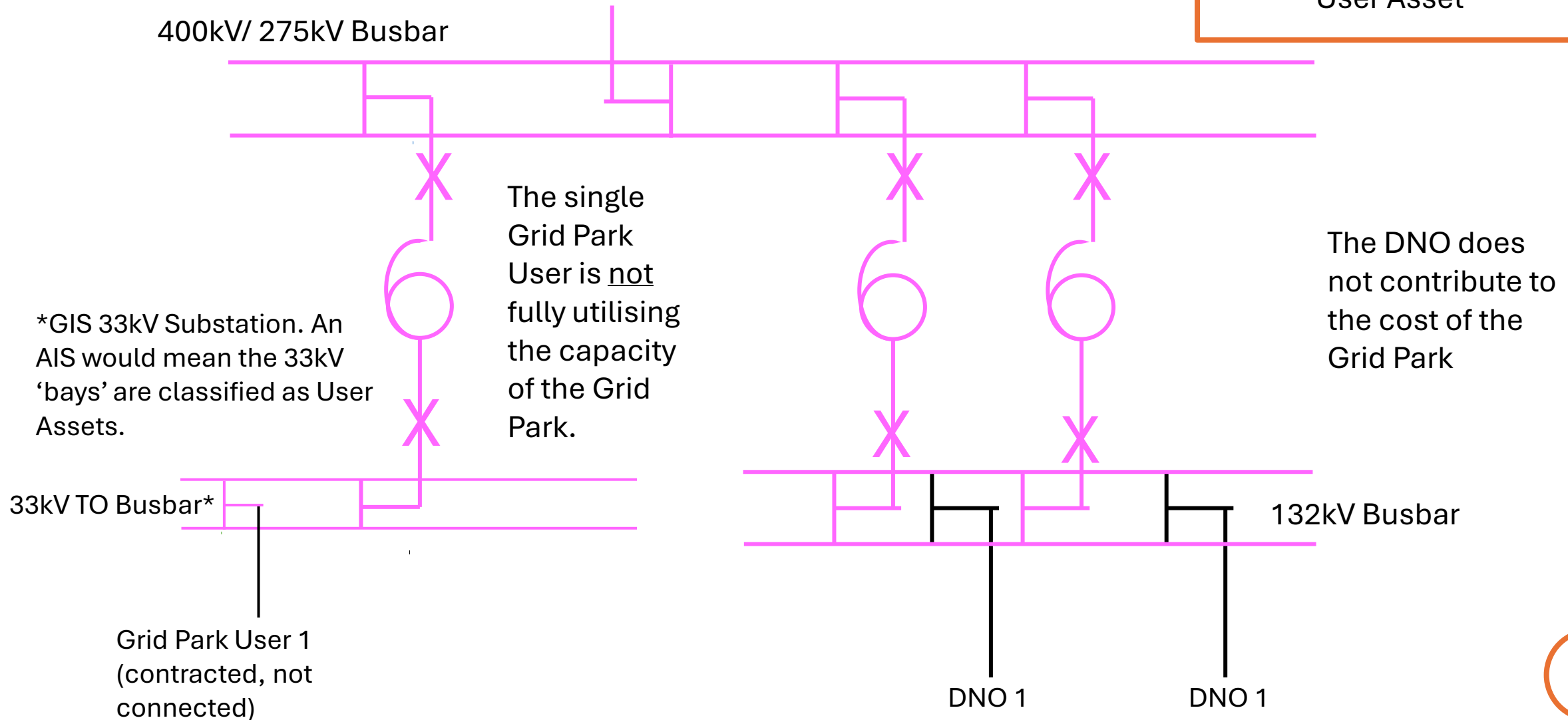
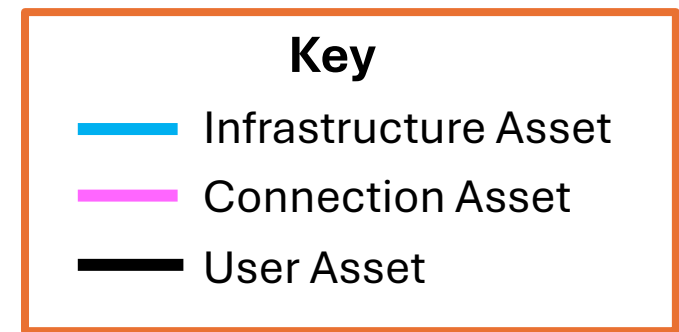
Grid Park User 1
(connected)

132kV Busbar

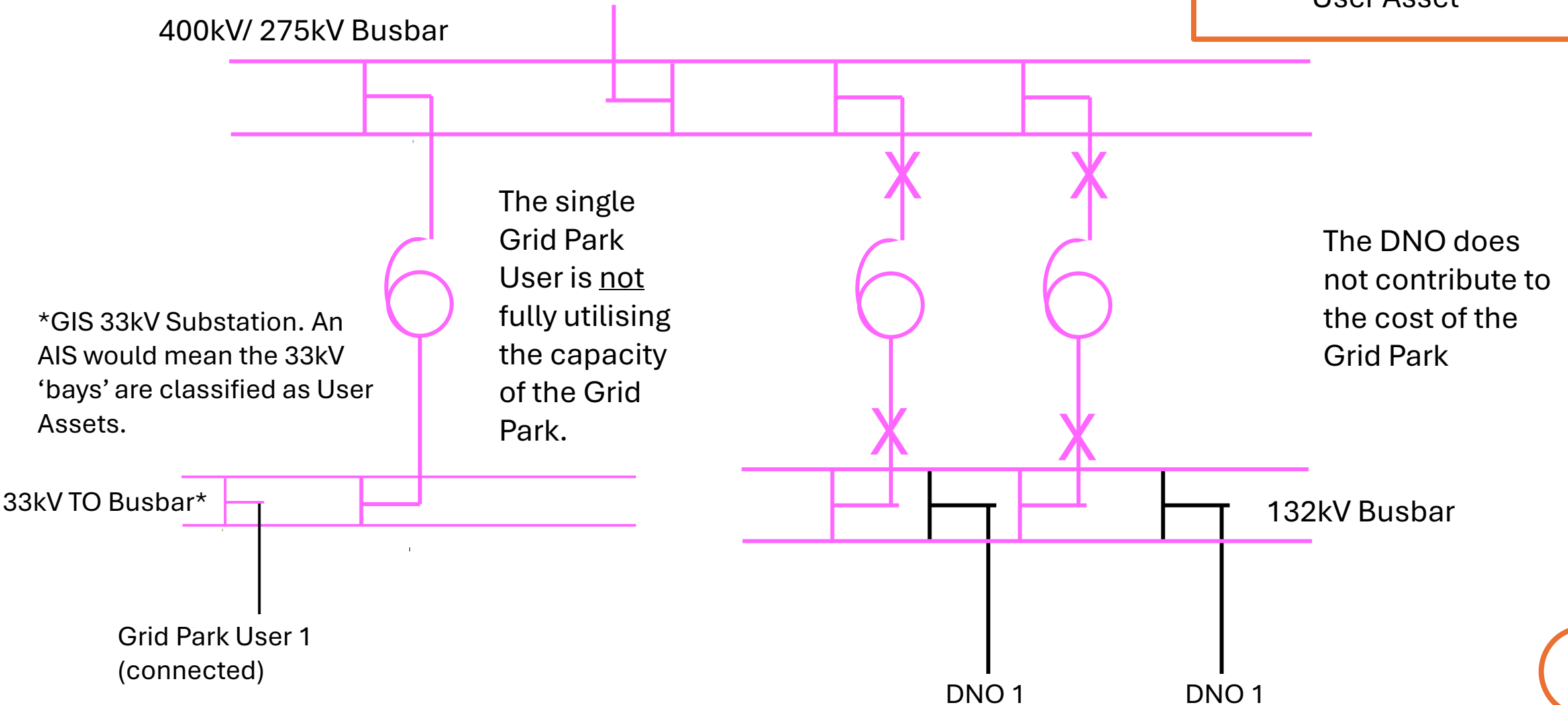
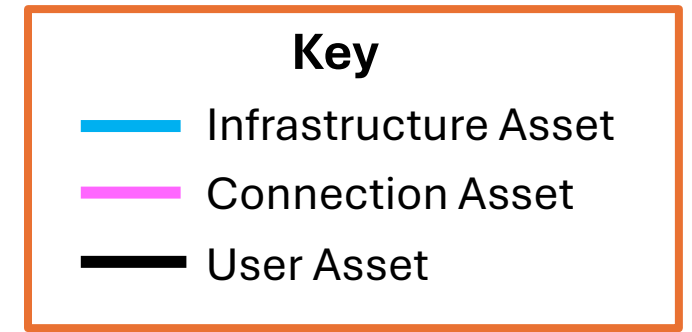
DNO 1

DNO 1

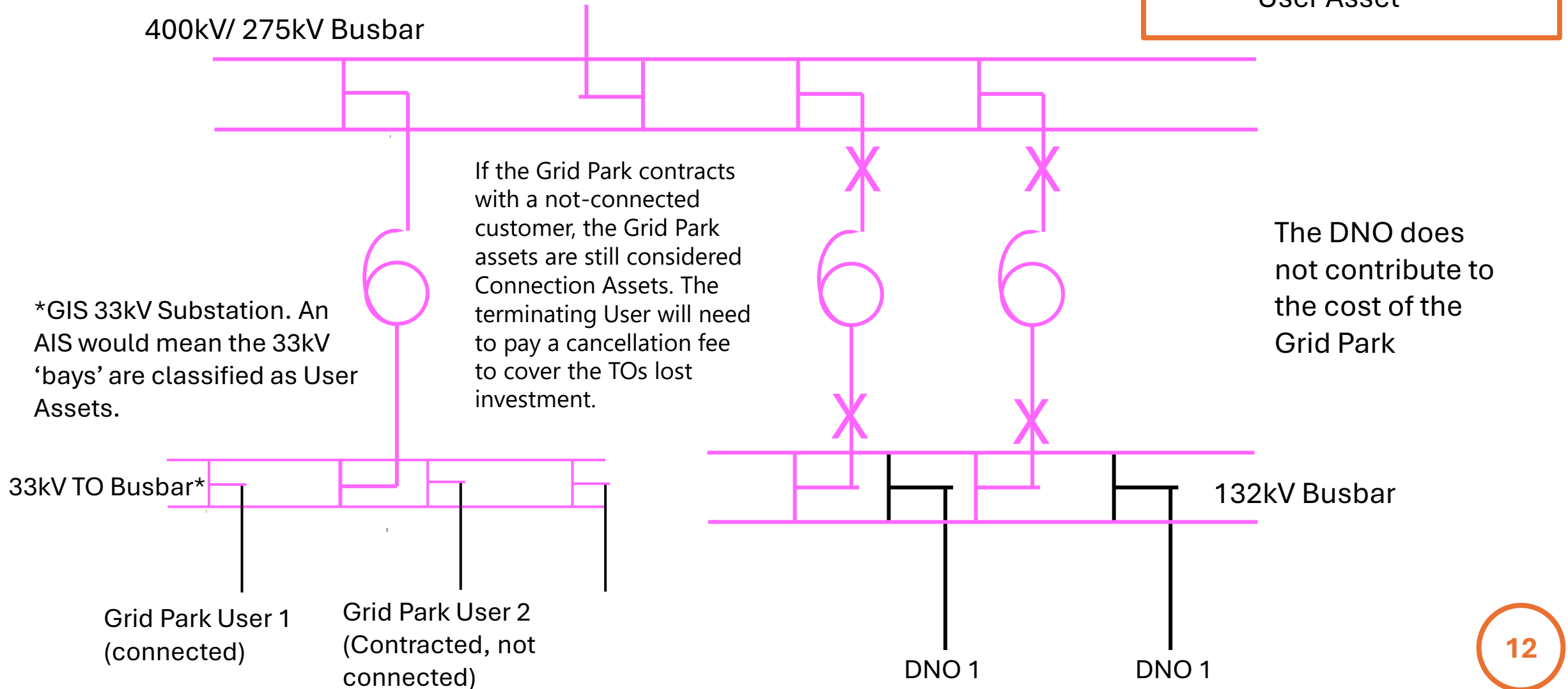
Grid Park Partially Full Capacity– One Customer Contracted



Grid Park Partially Full Capacity – One Customer Connected



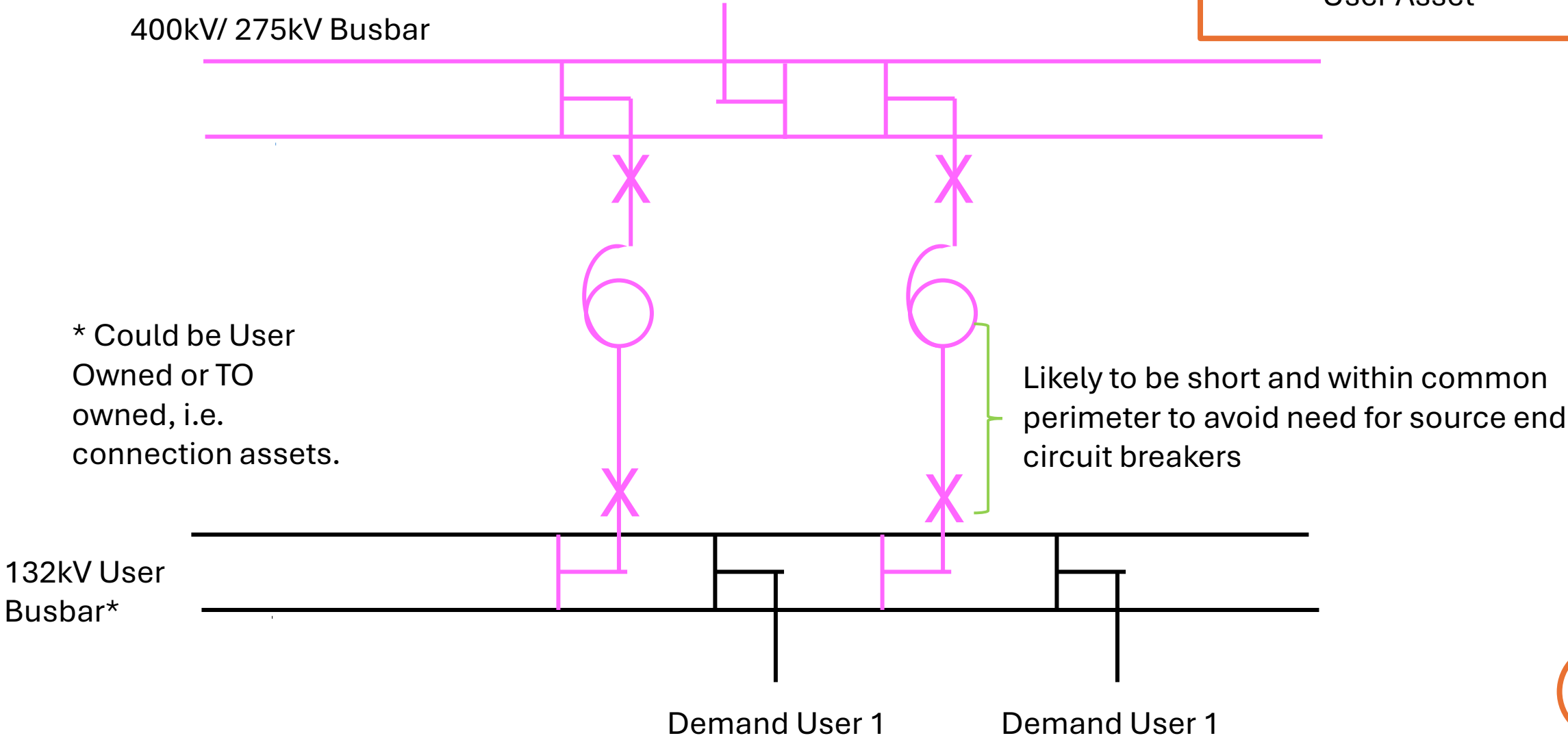
Multiple Grid Park Users



Single Directly Connected Final Demand User Common Location

Key

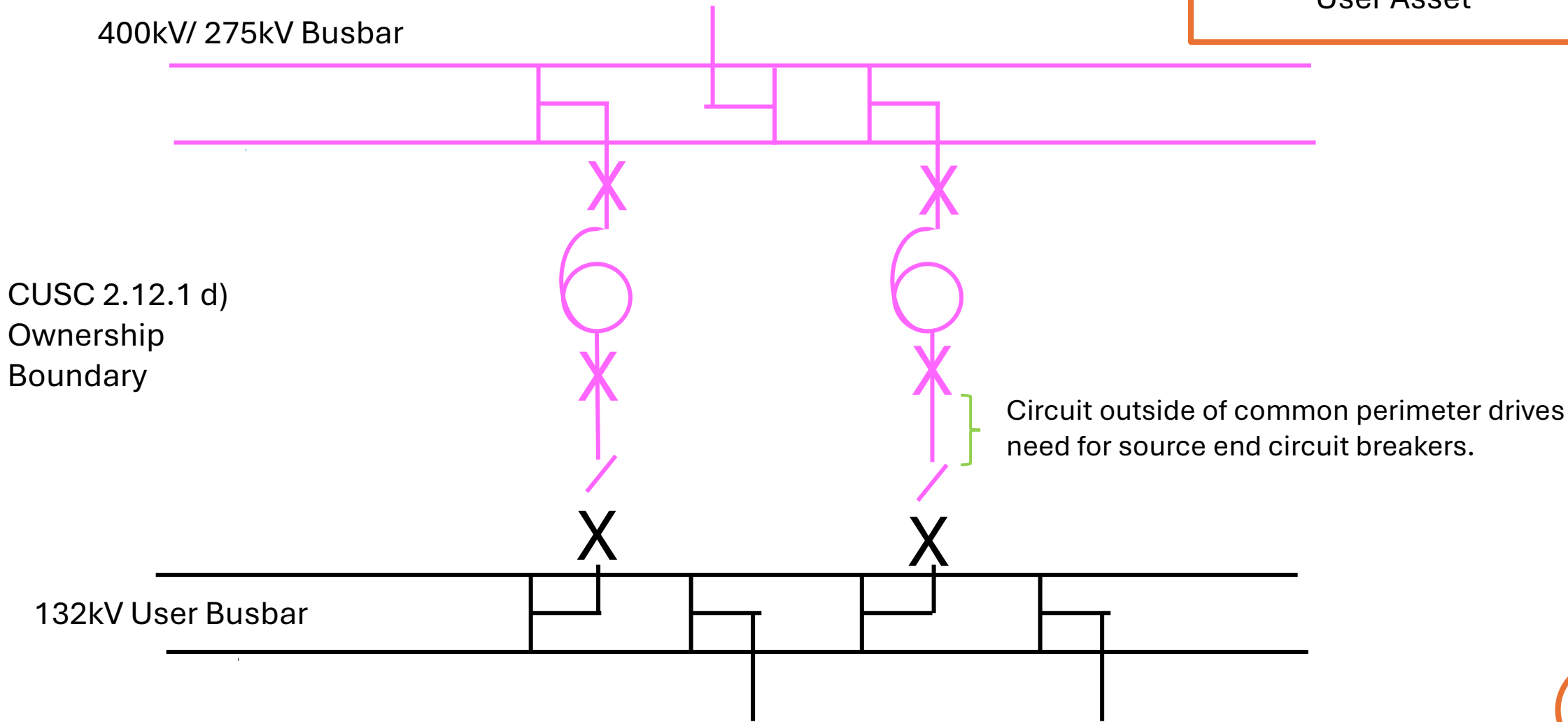
- Infrastructure Asset
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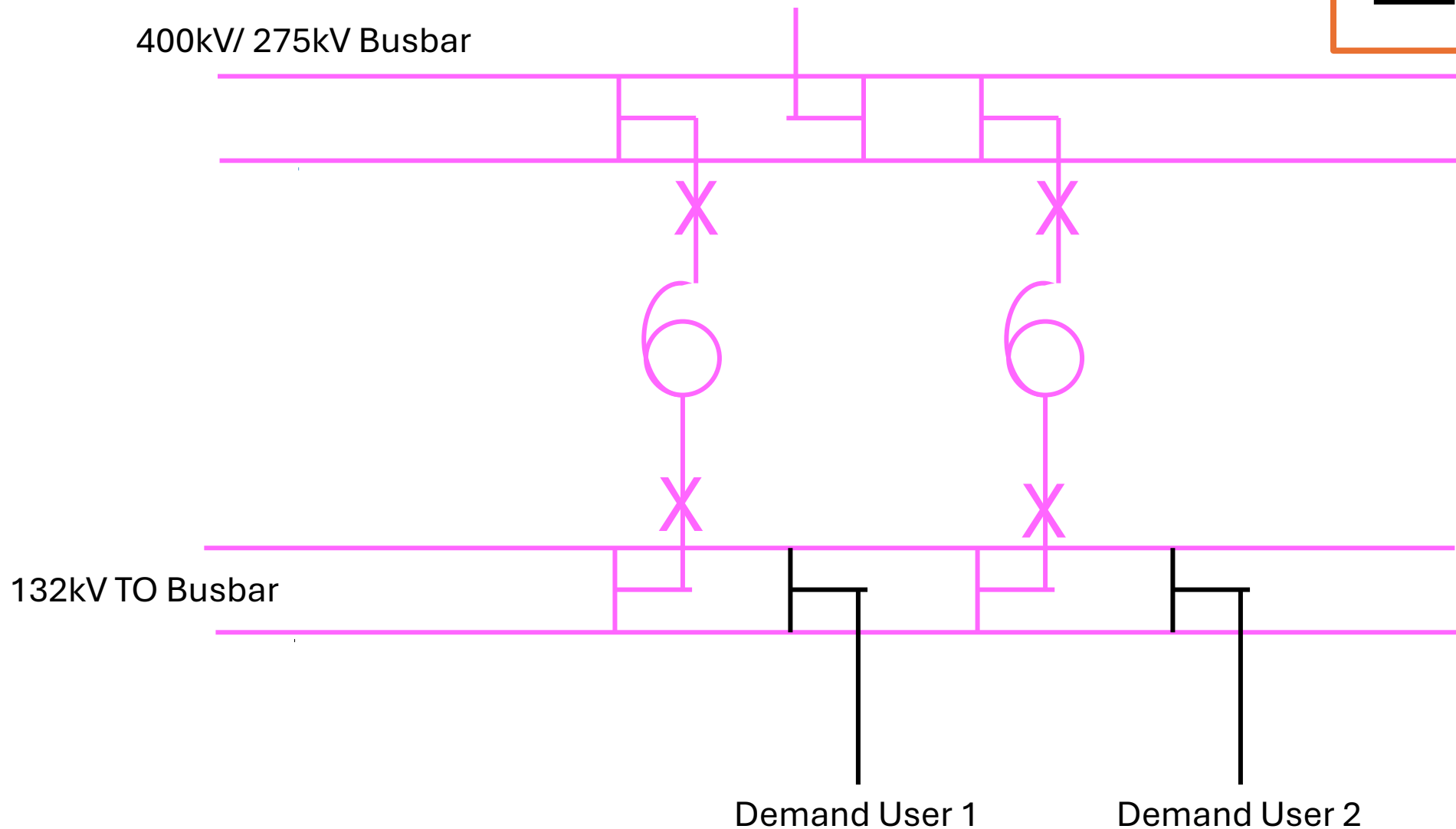
Single Directly Connected Final Demand User Remote Location

Key

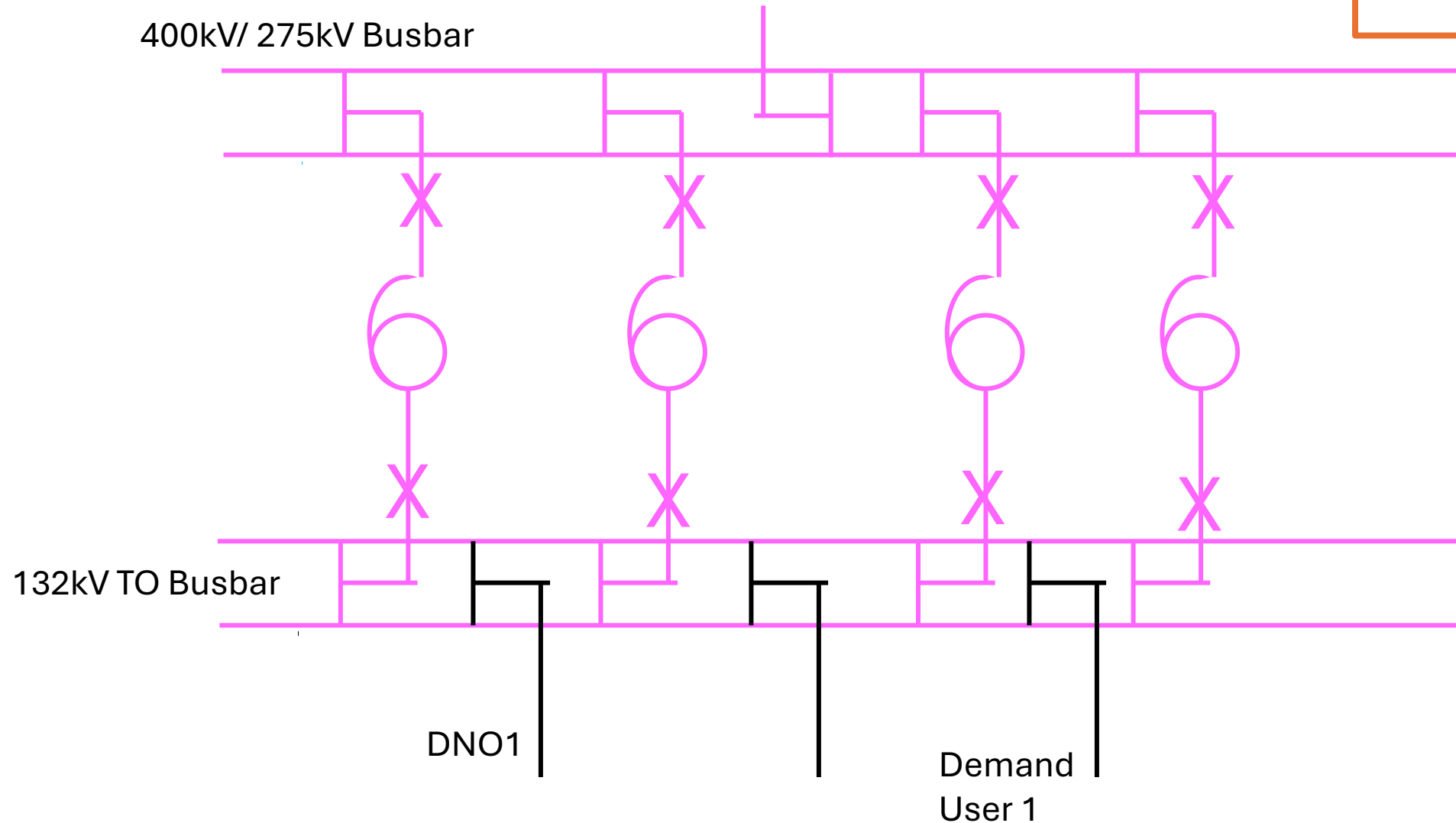
- Infrastructure Asset
- Connection Asset
- User Asset



Multiple Directly Connected Final Demand Users Common Location



DNO and Directly (Transmission) Connected Final Demand User with a Shared 132kV Substation



DNO and Directly (Transmission) Connected Final Demand User with separate 132kV Substations

