Counties Energy

Flexible Connections Guide

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1. Purpose

The purpose of this guide is to support key customer segments, especially commercial and industrial customers, planning to connect significant Distributed Energy Resource (DER) assets to the Counties Energy network, offering a flexible alternative that can avoid the cost and time involved in a traditional network upgrade.

A Flexible Connection may be the right solution for you if you meet one or more of the following:

Electric Vehicle (EV) fleet operators	Planning a commercial EV charging facility with a significant combined charging load (e.g. depot charging, public fast-charging hubs).
Solar PV and battery customers	Installing large-scale solar generation and battery energy storage, where export or charging may coincide with network peak periods.
Commercial & industrial customers	Commercial or industrial sites with controllable loads, including process plants, large boilers or chillers, or data centres with flexibility in when energy is used.

2. What is a Flexible Connection?

Customers can connect to the Counties Energy network in different ways, depending on their needs and circumstances.

A standard (fixed capacity) connection provides customers with a defined amount of network capacity, offering certainty and simplicity for long-term requirements. This option works well where capacity needs are clear and relatively stable over time.

A flexible connection is an alternative option that can suit customers who are comfortable with a more dynamic approach. Instead of securing a fixed level of capacity upfront, customers can connect with limited or no immediate network reinforcement, supported by Counties Energy's digital platform services. This approach can reduce the time and cost involved in getting connected, while also helping make efficient use of existing network capacity.

Customers and Flexible Service Providers (FSPs) are able to participate in other electricity market services. However, under the flexible connection agreement with Counties Energy, the ability for Counties Energy to manage network capacity operation takes priority to ensure network reliability and performance.

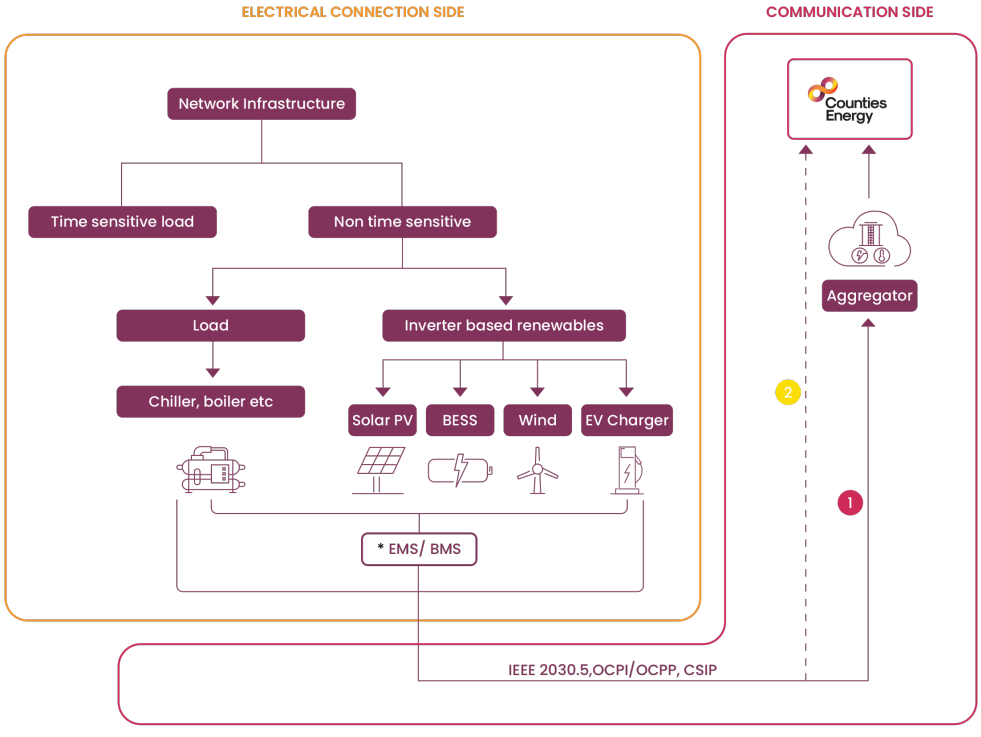
Example

A fleet operator planning to install ten 22 kW EV chargers (total 220 kW) requires higher capacity than the network can supply during peaks. The feeder and transformer can only support around 120 kW during the peak period, meaning a traditional connection would require costly network upgrades. However, the customer does not always need the full 220 kW, vehicles return at staggered times, and most charging occurs overnight when network demand is low.

With a Flexible Connection, the operator receives real-time Dynamic Operating Envelopes (DOEs) for dynamic capacity headroom allocation. During the evening peak (for example 5pm–9pm) the import limit might be set to 100 kW. From 10pm onwards, the full 220 kW is available. The depot charging is still completed before the morning, and no network upgrade was required.

Standard Connection vs Flexible Connection at a glance

	Standard Connection	Flexible Connection
Capacity limit	Remains fixed over time.	Dynamic, adjusting in response to network conditions.
Network upgrade required	Typically required for larger loads.	Generally avoided or minimised.
Connection speed	Timeframes can extend to 12 – 24+ months for major upgrades.	Often faster, subject to assessment.
Capital cost	Higher costs, with customers contributing to required upgrades.	Lower upfront costs, supported by software and ongoing monitoring.
Flexibility required from customer	No requirements.	Applies where load or generation can be managed or adjusted.
Contract term	Ongoing over the life of the connection.	Initial term of 3-5 years, followed by a review.



1 Preferred connection through an aggregator

2 Cases where customer doesn't have an aggregator direct connection to Counties Energy

* EMS/BMS is prefrred as the single integration point but not manadatory

3. The Application Process

The Flexible Connection process includes seven stages. A high-level assessment and indicative quote are provided at no cost. A non-refundable design fee of *$6,000.00 excl. GST* applies if you choose to proceed to the Detailed Assessment stage.

1 STEP	**Submit your enquiry** Apply via the standard connections form on the Counties Energy website Click here . Tell us about your site, the type and size of asset you are connecting, and your intended operating pattern. No fee applies at this stage.
2 STEP	**Initial (high-level) Assessment** Counties Energy reviews your application and carries out initial network modelling to confirm whether a Flexible Connection is viable for your site. We may contact you to collect further information about your load, generation equipment, or Flexibility Service Provider. You will receive indicative options including both a standard connection and a flexible connection alternative with high-level costs for comparison. This stage is completed within our standard connections timeframes and there is no charge.
3 STEP	**Detailed Assessment** If you choose to proceed, a non-refundable design fee applies (*$6,000.00 excl. GST*). Counties Energy undertakes detailed network modelling, full optioneering, and produces a fully designed solution with an indicative curtailment assessment based on current network conditions. A final quote will be provided, along with the terms and conditions attached.

4 STEP

Confirm acceptance of the offer

You have 30 business days to review and accept the offer. Minor amendments that do not require further network modelling can be requested during this period. Additional modelling requests will incur a fee.

5 STEP

Connection works

Once you accept, Counties Energy schedules the physical connection works which may include installation of a new connection point, cables, metering equipment, or monitoring devices. In parallel, any solar or battery systems included as part of the connection must be registered with Counties Energy using DG1 or DG2 forms. All the Distributed Energy Resource Management Systems (DERMS) compatible equipment is configured and registered during this step.

6 STEP

Commissioning and testing

Before going live, all components are tested including communication links, device responses to DOE signals, and the fallback behaviour if connectivity is lost. This stage verifies that your site will operate safely and correctly within its agreed envelope before it is energised under the Flexible Connection.

7 STEP

Connection is commissioned

Once commissioning is successfully completed, Counties Energy issues a certificate of acceptance and your Flexible Connection become operational. We monitor performance on an ongoing basis and provide monthly performance reports.

4. Technical Requirements

To participate in a Flexible Connection, your site and equipment must meet the following requirements.

4.1 Communication and control capability

Your flexible asset whether that is an EV charger, a battery management system, an inverter, or any other controllable device must be able to receive and respond to DOE signals from Counties Energy's DERMS platform using CSIP-AUS IEEE 2030.5.

If you are working with a Flexibility Service Provider (FSP) or energy aggregator, they can connect to Counties Energy's DERMS on your behalf.

Counties Energy will send a day ahead forecast of the imports and exports for each 15 minutes. This export and import limits are subject to change based on real time network conditions and emergency situations.

4.2 Reliable internet connectivity on site

The flexible DER device must maintain a reliable internet connection. You are responsible for maintaining this connectivity. If communication is lost, your device will automatically fall back to a conservatively set operating limit which is programmed and tested before go-live. Counties Energy will notify if we detect a loss of communication, and customer will be responsible for restoring it promptly.

4.3 Metering or monitoring

Counties Energy requires visibility of energy flows at your connection point to calculate accurate DOEs. In most cases, an existing Counties Energy smart meter provides this. Where one is not available, Counties Energy will install a monitoring device at the transformer or your switchboard as part of the connection works.

This data is aggregated at a site level not at individual flexible asset level.

4.4 Compliance with New Zealand electrical regulations

All equipment must be installed by a registered electrician to New Zealand Electricity Regulations and must meet applicable product compliance standards (e.g. AS/NZS 4777 for inverters, appropriate IEC and UL standard for EV charging hardware, etc.).

4.5 Fallback behaviour

The flexible DER device must be configured with a fallback operating limit that applies automatically if the DERMS communication link is lost. This protects the network in the event of a connectivity outage. The fallback setting is agreed with Counties Energy during the design phase and validated during commissioning.

5. Appendix

5.1 Case Study - Flexible Connection for a Public EV Charging Station

A public EV Charge Point Operator (CPO) has approached Counties Energy seeking additional network capacity of 340 kVA to support a new EV charging hub. The site's current allocated capacity of 110 kVA is insufficient for the planned deployment. The site is currently supplied from a 1 MVA distribution transformer, which got the headroom most of the period to support this customer. A traditional network upgrade would have cost over $250,000 and taken more time to deliver. This is exactly the kind of situation a Flexible Connection is designed to solve.

Counties Energy's proposed solution for the customer

Following detailed assessment, the Counties Energy team provided the customer with the following options:

Options	Description	Capacity	Cost*	Connection Type
1	Upgrade adjacent Distribution transformer, LV cable & pillar	340 kVA fixed	$255,000	Standard
2	New MV connection to site	300 kVA fixed	$436,000	Standard
3	Fuse upgrade for 135 kVA capacity	135 kVA fixed	$30,000	Standard
4	Upgrade existing LV cable, pillar.	135 kVA fixed + 205 kVA flex	$95,137	Flexible

**All the cost shown in the above example are indicative and it changes based on case by case.*

As a result, the customer selected Option 4, which delivered the required capacity with minimal impact on operations and at less than half the cost of a traditional upgrade.

Curtailment assessment report

Below outlines a sample curtailment assessment report for a request to connect 340 kW EV chargers.

Transformer constraints

Day of a week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.31	1.25	1.14	39.81	20.80	11.95	2.84	14.20	37.55	9.78	0.24	8.27	0.00	0.00	0.00	0.95
2	5.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.72	22.79	7.05	39.05	5.26	2.33	27.96	0.06	0.04	0.02	3.83	11.97	0.00	1.01	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.48	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.36	11.56	3.02	0.00	0.00	4.87	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.00	0.00	0.00	30.05	21.57	0.40	15.40	0.14	55.14	0.37	0.58	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47	0.00		0.00	8.06	0.00	0.47	17.34	0.01	23.30	5.96	0.02	8.05	0.00	0.00	4.44
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.87	15.47	0.83	0.00	0.12	28.86	23.29	29.21	8.64	11.78	7.42	32.81	1.68	6.55	9.34	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	70.29	41.71	6.89	12.34	10.10	1.20	2.29	1.04	0.00	2.12	1.45	0.00	0.00

For a 340 kVA connection a maximum of 70kVA may be required to be curtailed between 11 am and 12pm on the localised distribution transformer.

5.2 Pricing Comparison

Below is a high-level pricing comparison for standard connection and a Flexible Connection for a 500A connection.

Standard Connection costs:

- Detailed design
- Upstream capacity charge

Power Quality Metering charge (applicable where a Counties Energy smart meter is not available) LV Connection charge.

Flexible Connection costs:

- Establishment Fee
- Onboarding Fee

Ongoing Costs:

Standard Connection fee (Collected via the Energy retailer) Flexible Connections fee (billed separately by counties energy to customer directly.)

5.3 Glossary

Abbreviation	Meaning	Description
LV	Low Voltage	Low voltage electricity network supplying residential and small commercial customers.
DERs	Distributed Energy Resources	Renewable energy resources such as solar, battery, wind, Electric vehicles that can generate, store, manage electricity.
IEEE 2030.5	Communication protocol used to control DERs.	A standardised communication protocol used for secure, interoperable control and monitoring of distributed energy resources.
DERMS	Distributed Energy Resources Management System	A system used by utilities to monitor, control, and orchestrate distributed energy resources connected to the network.
SIQ	5 min Power quality data (voltage, current, power)	Sensor IQ data, in this context 5min Power Quality and Consumption data.
DOEs	Dynamic Operating Envelopes.	Time-varying limits on how much energy a DER can import or export, designed to optimise network capacity while maintaining reliability.
FSP	Flexibility Service Provider.	An entity that provides demand or generation flexibility services to support network operation and optimisation.
Smart Meter	Record power consumption electronically and transmit using their cellular reception.	A digital meter that records electricity usage in real time or near real time and communicates data remotely to utilities and retailers.

EV	Electric Vehicle	A vehicle powered by electricity, using rechargeable battery systems.
kVA	Kilovolt ampere	A unit of apparent power, representing the total power supplied in an electrical system.
kW	kilowatt	A unit of real (active) power, representing the actual power consumed or produced.
CPO	Charge Point Operator	A company responsible for installing, operating, and maintaining EV charging infrastructure.
MVA	Megavolt ampere	A unit of apparent power, representing the total power supplied in an electrical system.
DG	Distribution Generation	Electricity generation from small-scale sources connected directly to the distribution network (e.g. rooftop solar).
BESS	Battery Energy storage system	A system that stores electrical energy in batteries for later use, supporting grid stability and flexibility.
EMS	Energy management system	A system used to monitor, control, and optimise energy usage within a facility or network.
BMS	Building management system	A system that manages, controls and automates systems such as HVAC, lighting, and energy usage within a building.