

# Electricity Transmission

## Trawsyrru Trydan yng Nghymru | Electricity Transmission in Wales

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nationalgrid



# Targedau Llywodraeth Cymru

Ein targed yw cyrraedd yr hyn sy'n cyfateb i 100% o'n defnydd trydan blyneddol o ffynonellau adnewyddadwy erbyn 2035, a pharhau i gadw i fyny â'r defnydd ar ôl hynny. Mae hyn yn amlygu'r pwysigrwydd a roddwn ar ein hymrwymadau sero net a'r angen i gynyddu cyflymder ein hymateb i'r argyfwng hinsawdd.

Gan ddangos ein huchelgais i Gymru gadw budd wrth i ni symud i ynni adnewyddadwy, mae gennym darged i o leiaf 1.5 GW o allu ynni adnewyddadwy fod yn eiddo lleol erbyn 2035, gan gynyddu ein targed presennol ar gyfer 1 GW erbyn 2030.

Mae Cymru'n gwneud cynnydd da tuag at gyrraedd ein targedau ynni adnewyddadwy presennol. Mae ein data diweddaraf yn dangos, yn 2022, ein bod yn cyflenwi tua 59% o'n defnydd trydan blyneddol o ynni adnewyddadwy.

Rydym wedi cyflawni 97% o'n targed 1 GW o berchnogaeth leol erbyn 2030.

# Welsh government targets

Our target is to meet the equivalent of 100% of our annual electricity consumption from renewable sources by 2035, and to continue to keep pace with consumption thereafter. This highlights the importance we place on our net zero commitments and the need to increase the pace of our response to the climate emergency.

Demonstrating our ambition for Wales to retain benefit as we move to renewables, we have a target for at least 1.5 GW of renewable energy capacity to be locally owned by 2035, scaling up our current target for 1 GW by 2030.

Wales is making good progress towards meeting our current renewable energy targets. Our latest data shows that in 2022, we supplied approximately 59% of our annual electricity consumption from renewables.

We have achieved 97% of our 1 GW local ownership target by 2030.

# Barn Llywodraeth Cymru ar rwydweithiau'r dyfodol

Mae tystiolaeth o'n hadroddiad Gridiau'r Dyfodol, cynllunio ynni a thrafodaethau gyda busnesau yn glir bod angen i ni ail-weirio'r wlad ar gyfer yr 21ain ganrif.

Heb y buddsoddiad hwn mewn seilwaith grid newydd, yn y dyfodol ni fydd pobl yn gallu cael cartrefi cynnes a mynediad i drafnidiaeth, yn enwedig mewn ardaloedd gwledig. Ni fydd Cymru'n gallu cyflawni ymrwymadau sero net statudol, cael system ynni diogel neu gyfleoedd mynediad o'r cyfnod pontio i ynni glân.

Mae angen i ni sicrhau bod grid newydd wedi'i ddylunio'n dda a'i leoli'n sensitif i leihau effaith a sicrhau'r gwerth mwyaf posibl.

Rydym yn defnyddio'r dystiolaeth hon i lywio cynlluniau a rhaglenni cyflenwi rhwydwaith trydan rhanbarthol a chenedlaethol.

Mae Llywodraeth Cymru yn cydweithio â gweithredwyr rhwydwaith, y rheoleiddiwr ac amrywiaeth o bobl i sicrhau bod anghenion Cymru yn llywio cynlluniau ar gyfer grid newydd.

# Welsh government view of future networks

Evidence from our Future Grids report, energy planning and discussions with business are clear that we need to re-wire the country for the 21st century.

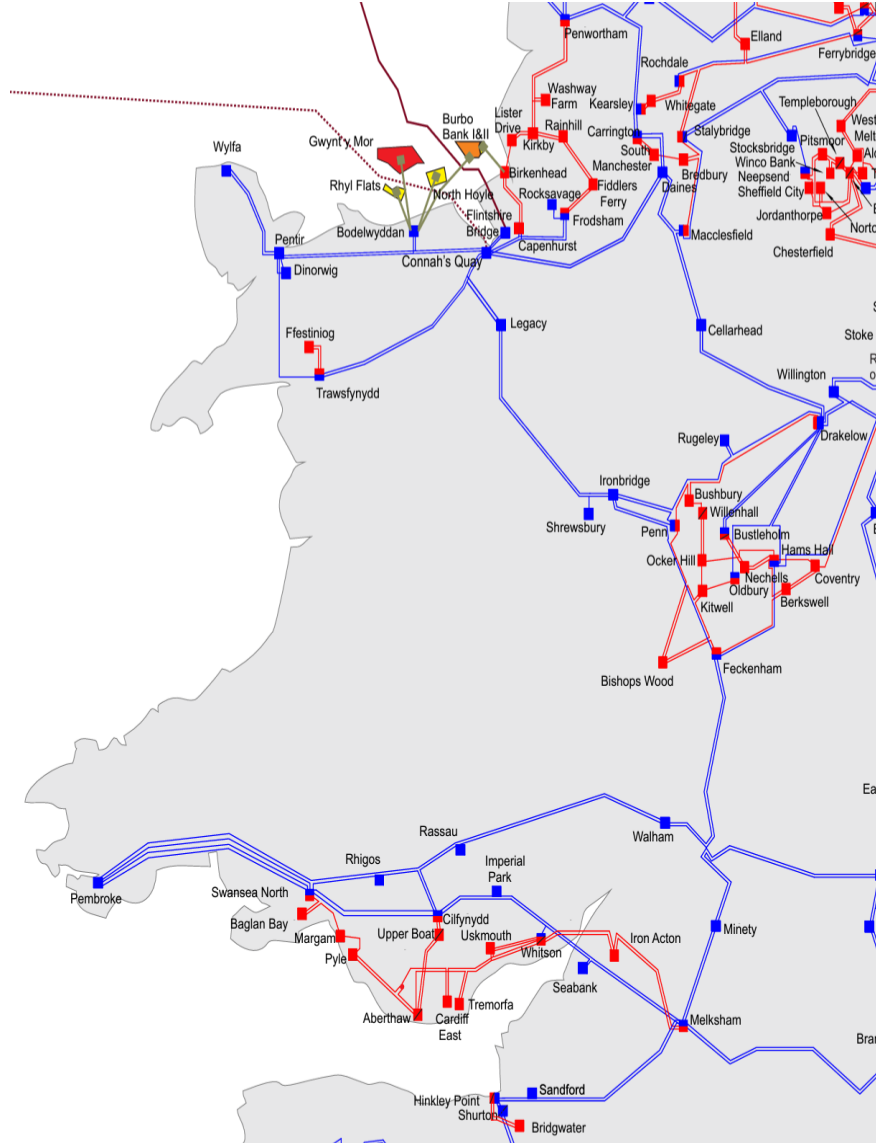
Without this investment in new grid infrastructure, in future people won't be able to have warm homes and access transport, particularly in rural areas. Wales will be unable to deliver on statutory net zero commitments, have a secure energy system or access opportunities from the transition to clean energy.

We need to make sure that new grid is well designed and located sensitively to minimise impact and maximise the value it delivers.

We are using this evidence to inform regional and national electricity network plans and delivery programmes.

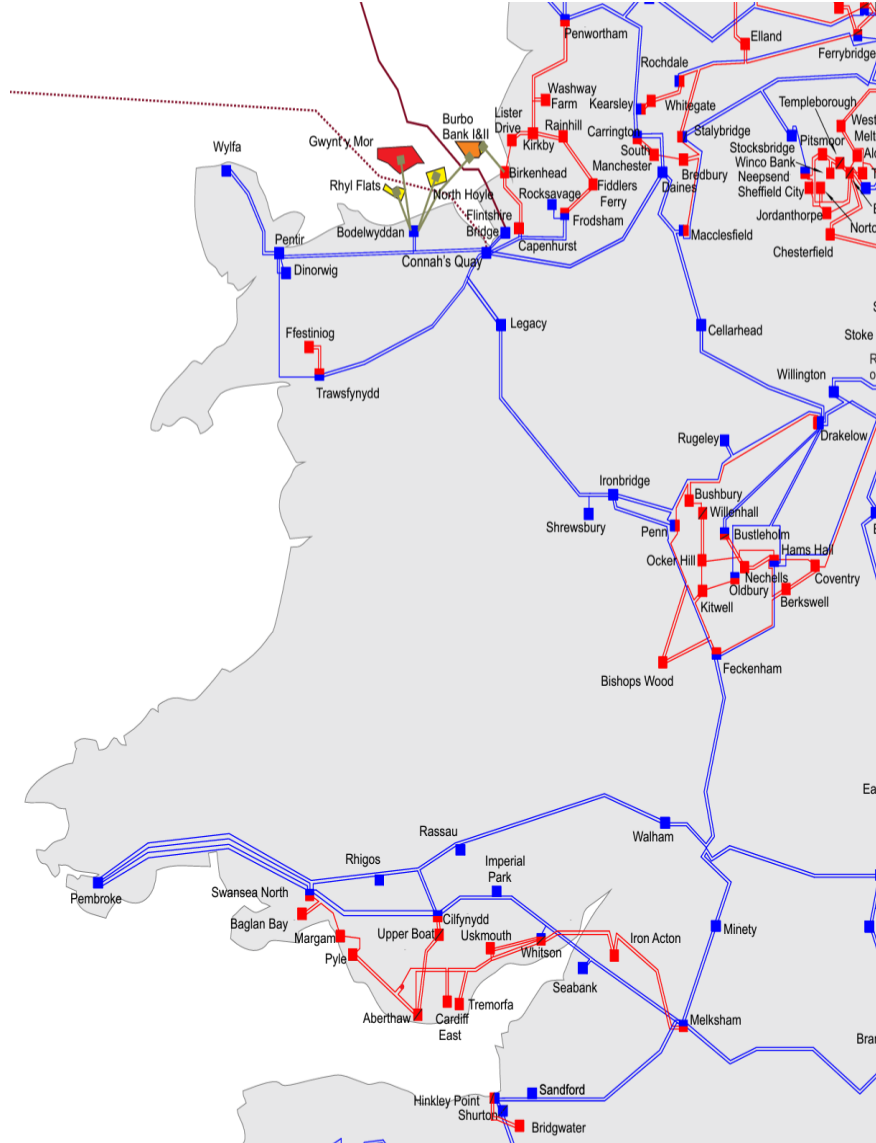
The Welsh Government is working collaboratively with network operators, the regulator and a range of people to ensure that the needs of Wales inform plans for new grid.

# Y system drawsyrru bresennol



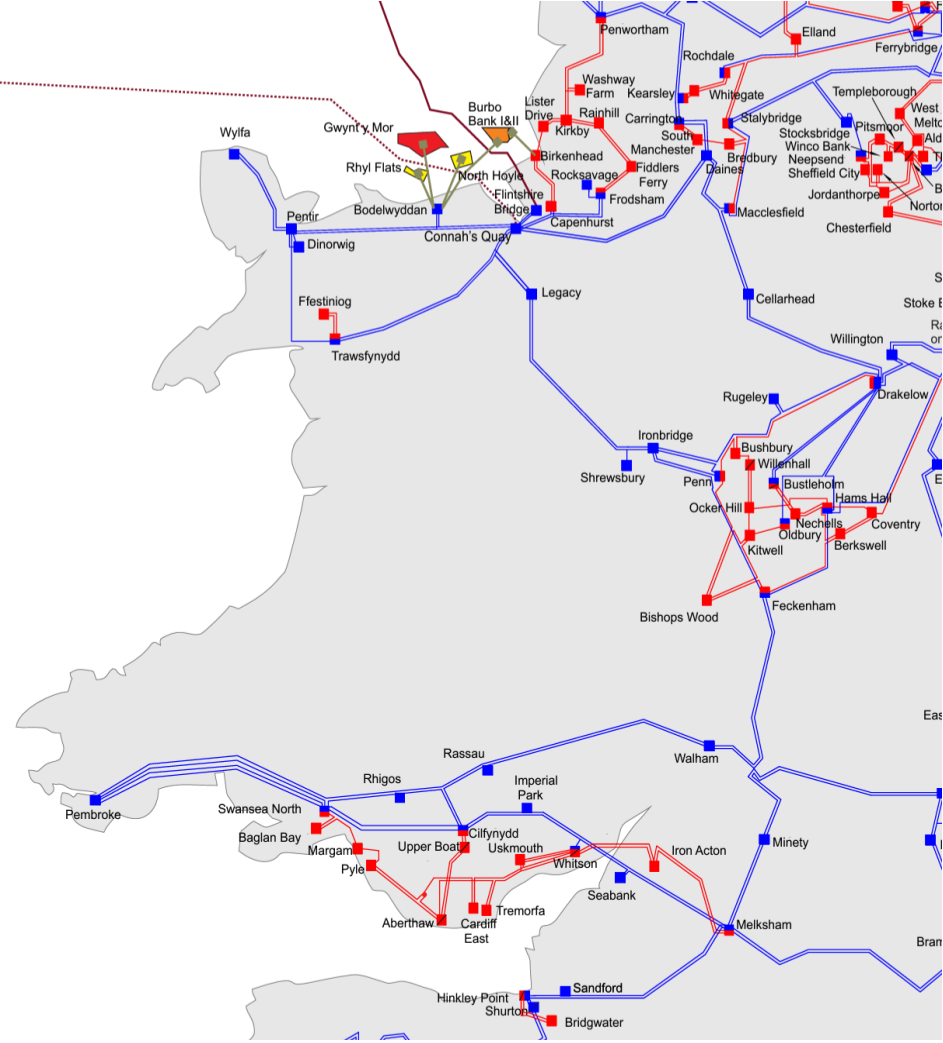
- Mae gennym gylchedau trawsyrru yng ngogledd a de Cymru ond nid yn y canolbarth
- Llinellau glas – 400kV
- Llinellau coch – 275kV
- Sgwariau – is-orsafoedd lle'r ydym yn cysylltu'r gwaith cynhyrchu a'r galw â'i gilydd
- Mae gan y seilwaith ddigon o gapasiti ar gyfer yr angen sy'n bodoli ar hyn o bryd

# Existing transmission system



- We have transmission circuits in North Wales and in South Wales but not in mid-Wales
- Blue lines – 400kV
- Red line – 275kV
- Squares – substations where we connect generation and demand
- Infrastructure has sufficient capacity for existing need

# Anghenion y dyfodol

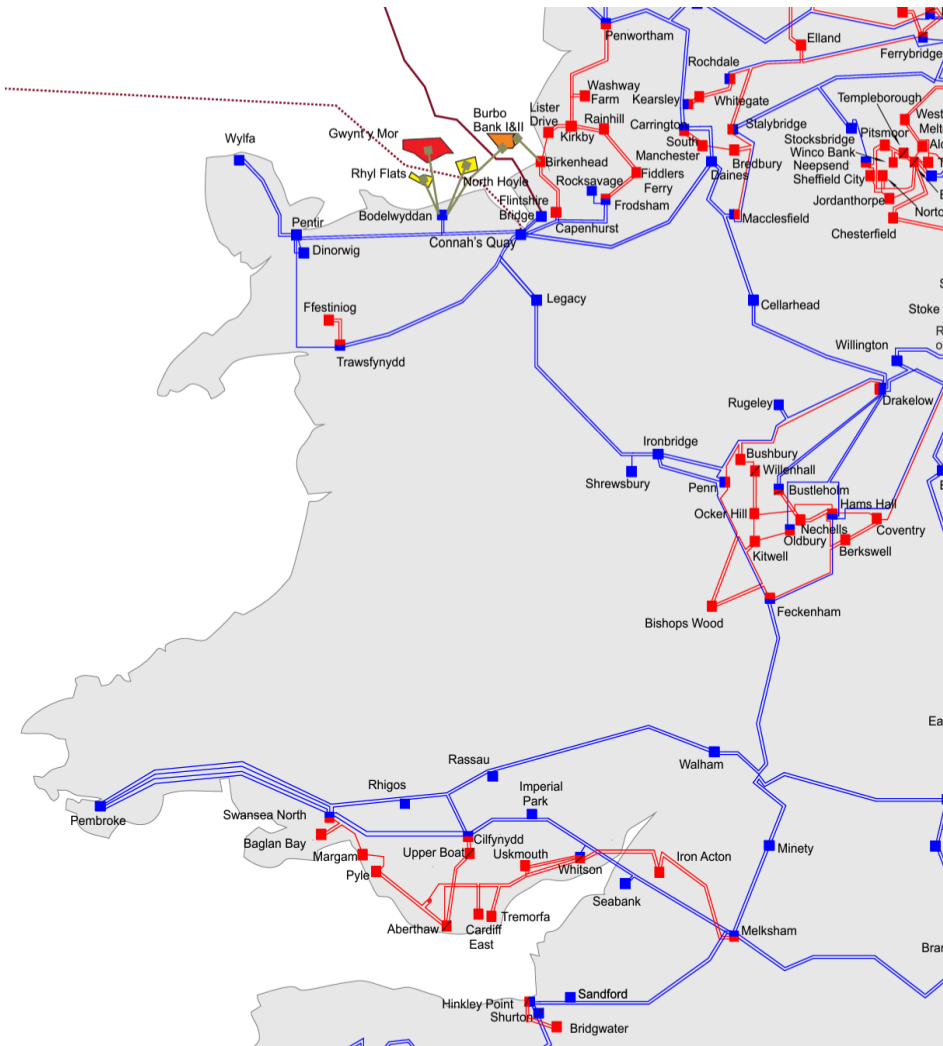


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- Mae gennym gontractau i gysylltu datblygiadau newydd sylweddol â'i gilydd o safbwynt gwaith cynhyrchu a'r galw, yn y gogledd a'r de
- Ar y tir ac ar y môr
- Mae gennym gontractau i gysylltu rhywfaint o waith cynhyrchu yn y canolbarth
- Rydym yn deall bod potensial i gynhyrchu llawer mwy o drydan yn y canolbarth
- Drwy drafodaethau â'r gweithredwyr rhwydweithiau dosbarthu a Llywodraeth Cymru, rydym yn rhagweld twf yn y galw yn y canolbarth – oherwydd systemau gwresogi, pwyntiau gwefru cerbydau trydan, a datblygu diwydiannol



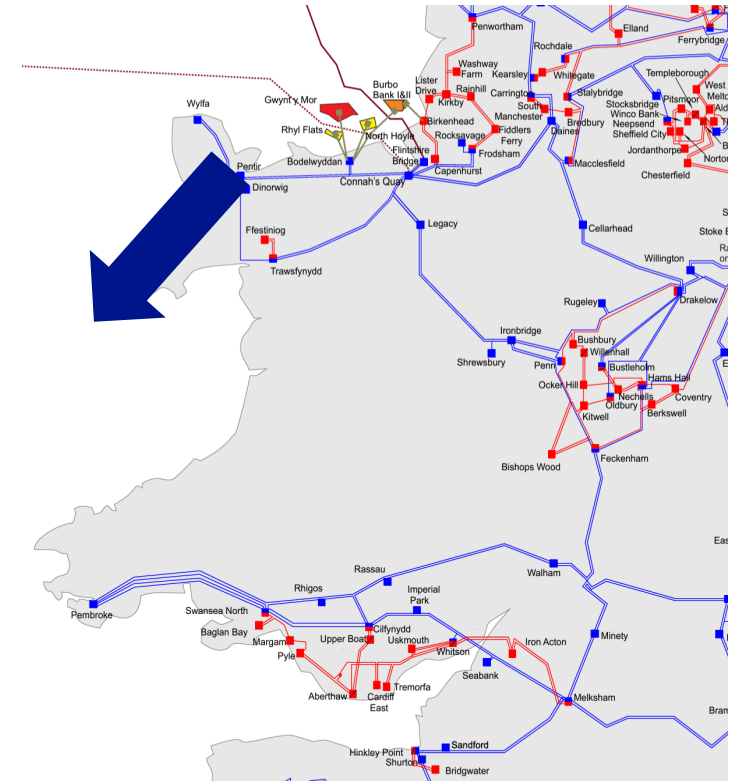
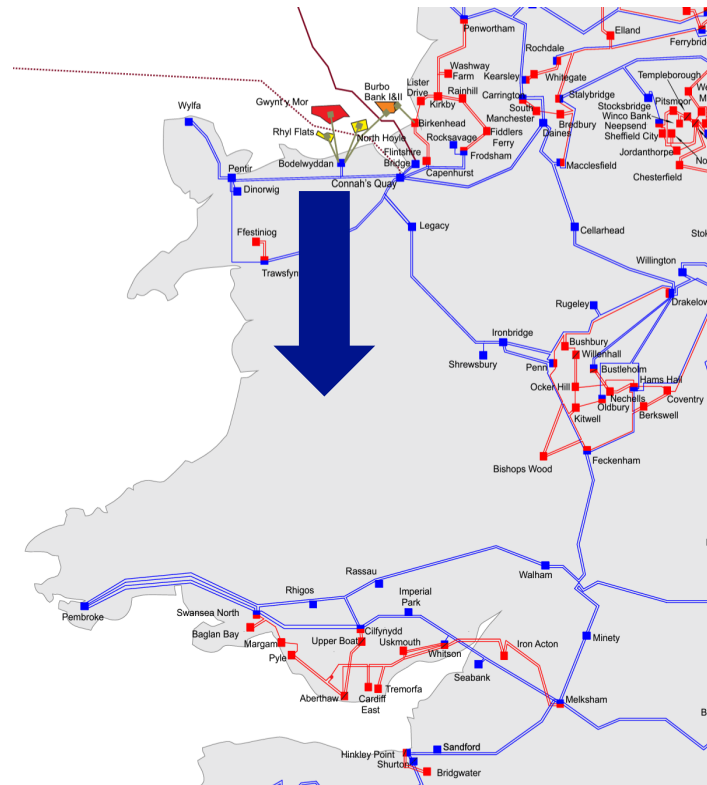
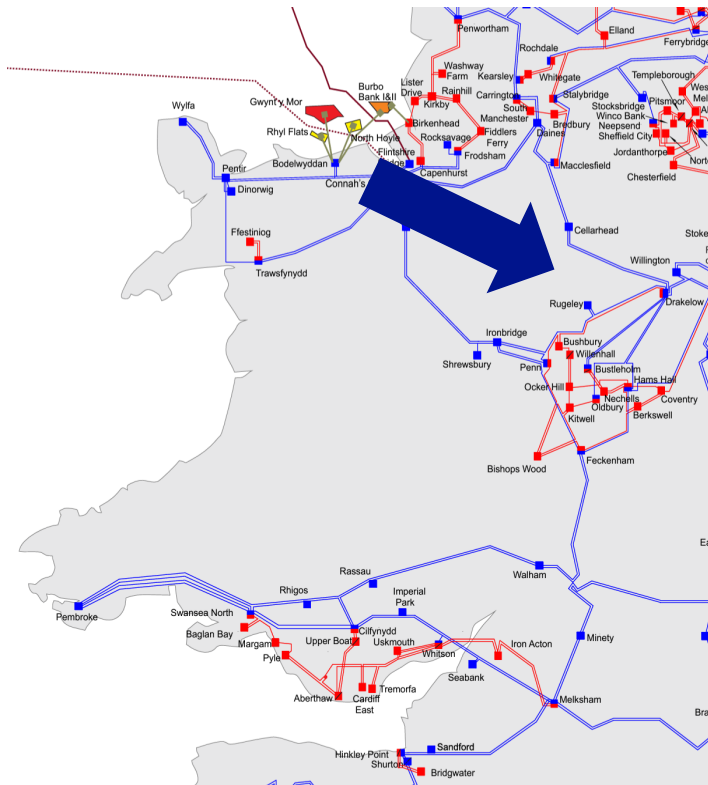
# Future needs



- We have contracts to connect significant new generation and demand developments in both North Wales and South Wales
- This is both onshore and offshore
- We have contracts to connect some generation in mid Wales
- We understand there is substantially more generation potential in mid Wales
- Through discussions with the DNOs and Welsh government we anticipate demand growth in mid Wales - heating, EV charging, industrial development

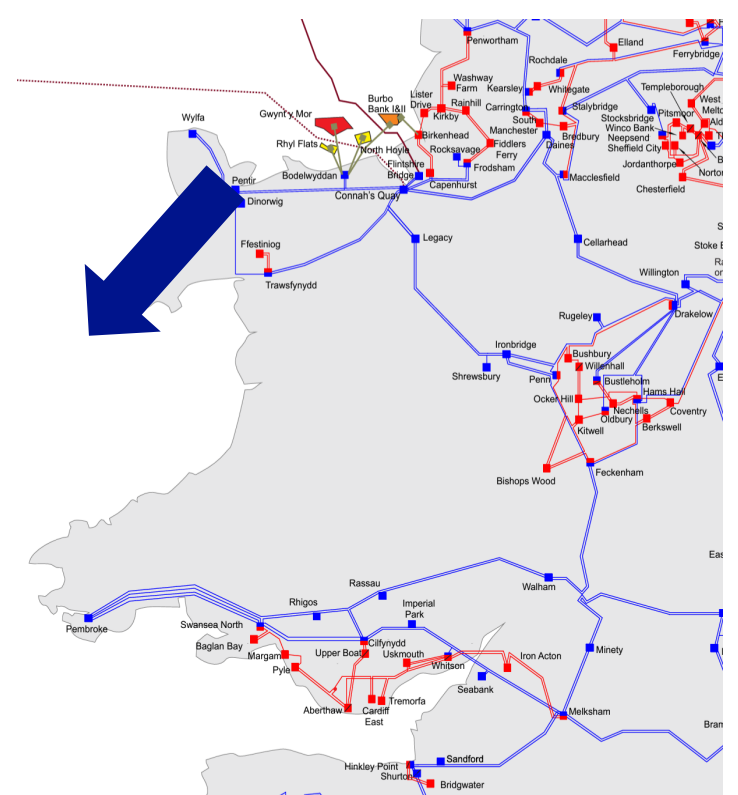
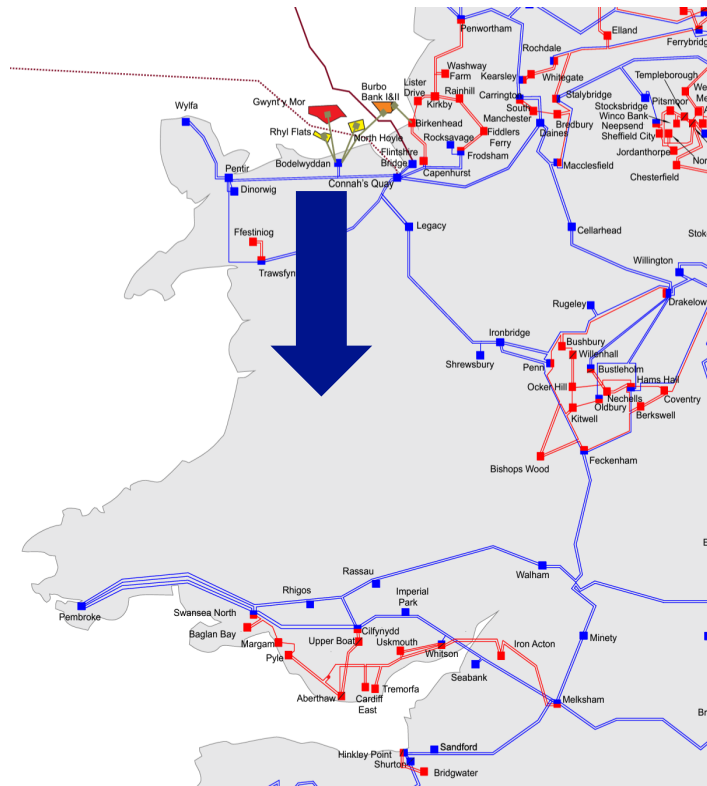
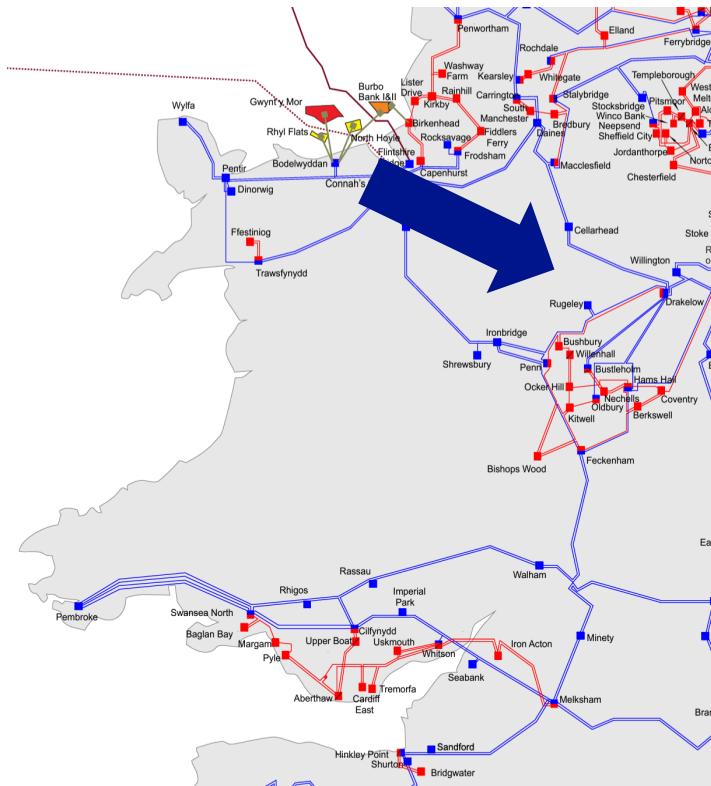
# Beth y mae hynny'n ei olygu i'r rhwydwaith?

- Yn y gogledd, rydym yn uwchraddio'r rhan fwyaf o'r rhwydwaith presennol
- Ond bydd angen o hyd i ni adeiladu cylched newydd i fynd â thrydan allan o'r rhanbarth



# What does that mean for the network?

- In North Wales we are upgrading most of the existing network
- But we will still need to build a new circuit to take power out of the region



# Beth y mae hynny'n ei olygu i'r rhwydwaith?

- Yn y de, ein barn ar hyn o bryd yw y gallwn ymdopi â'r cysylltiadau heb fod angen cylched newydd
- Mae'n debygol y bydd angen gwneud rhywfaint o waith uwchraddio ar y rhwydwaith o linellau 275kV
- Gallai cyflwyno cylched newydd i'r rhanbarth o ogledd Cymru arwain at orlwytho cylchedau



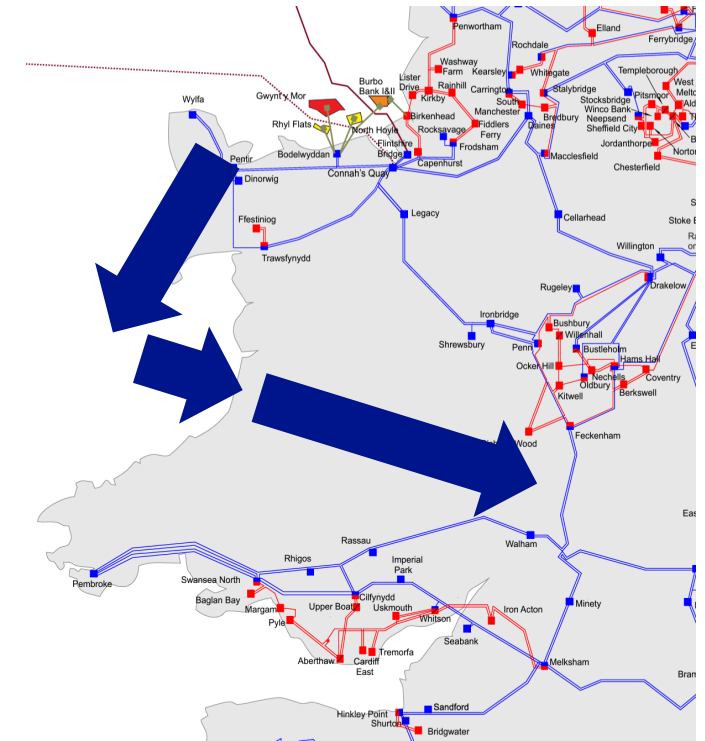
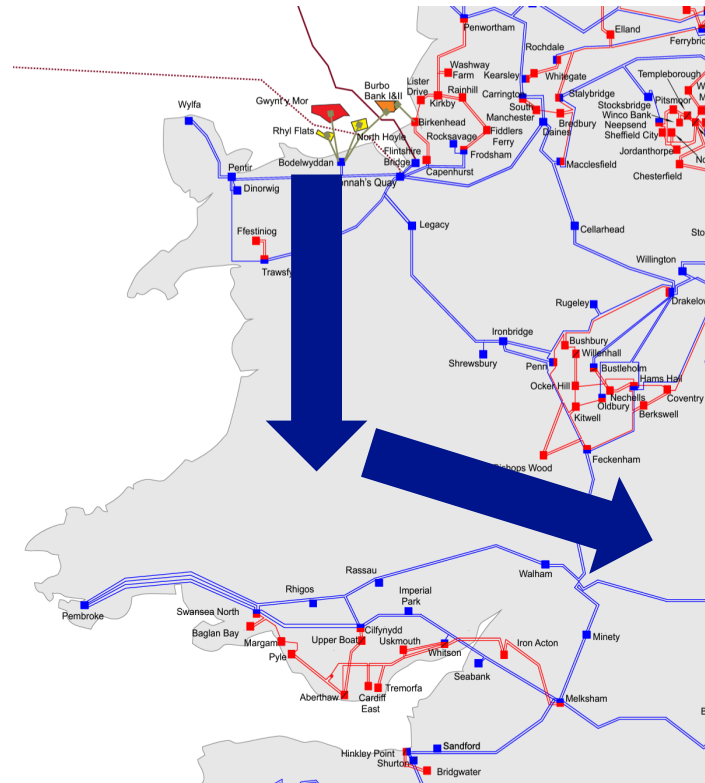
# What does that mean for the network?

- In South Wales our current view is that we can accommodate the connections without the need for a new circuit
- Some upgrades of the 275kV network are likely to be required
- Bringing a new circuit into the region from North Wales may cause circuit overloads



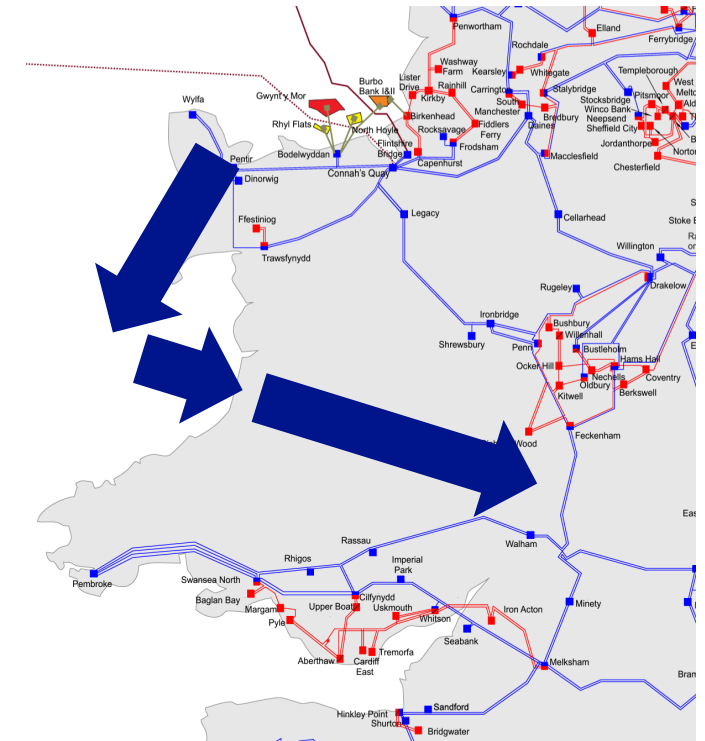
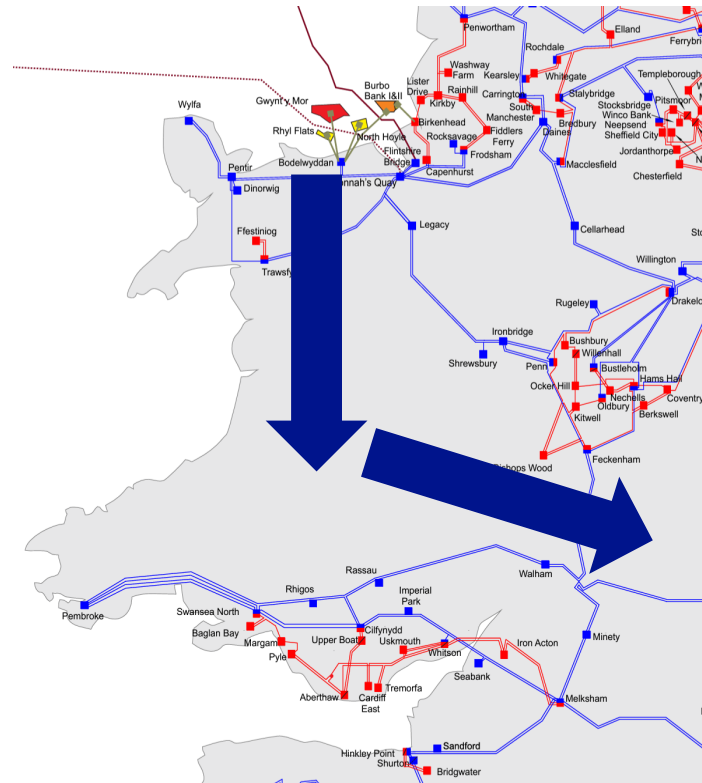
# Beth y mae hynny'n ei olygu i'r rhwydwaith?

- Yn y canolbarth, gallem ehangu rhwydweithiau'r gweithredwyr rhwydweithiau dosbarthu a chreu cysylltiadau ar wahân rhwng pob cynhyrchydd a'n rhwydwaith
- Ond byddai hynny'n gofyn am sawl cylched newydd
- Rydym ar ddeall bod anghenion y dyfodol o fewn capasiti un llwybr trawsyrru
- Gallai cylched trawsyrru newydd alluogi twf economaidd yn y canolbarth gyda bach iawn o seilwaith newydd



# What does that mean for the network?

- In mid Wales we could expand the DNO networks and build separate connections from each generator to our network
- But that would require several new circuits
- Our understanding is that the future needs are within the capacity of a single transmission route
- A new transmission circuit has the potential to allow for economic growth in mid Wales whilst minimising new infrastructure



# Pa fanteision y byddai llinell drawsyrru yn eu rhoi i Gymru?

Bydd cylched newydd yng Nghymru, sydd â chysylltiad cryf â system Prydain Fawr, yn caniatáu:

Cynhyrchu ynni adnewyddadwy yng Nghymru i gyflenwi'r galw yng Nghymru

– gallai cynhyrchu a galw gysylltu â'r lein

Diogelwch y galw yng Nghymru ar adegau o wynt isel

– gellir cyflenwi pŵer drwy'r llinell o'i gysylltiad yn Lloegr

Cynhyrchu gormodol i'w allforio o Gymru ar adegau o wynt cryf

– gall pŵer lifo i Loegr drwy gysylltiad y lein



# What benefits would a transmission line bring to Wales?

A new circuit in Wales, strongly connected to the GB system, will allow:

Renewable generation in Wales to supply demand in Wales

– both generation and demand could connect to the line

Demand security in Wales at times of low wind

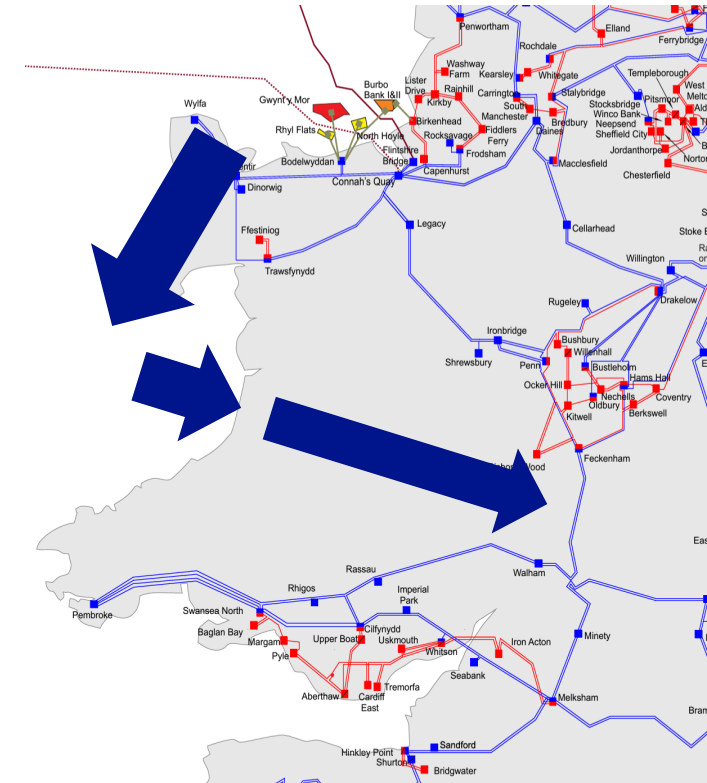
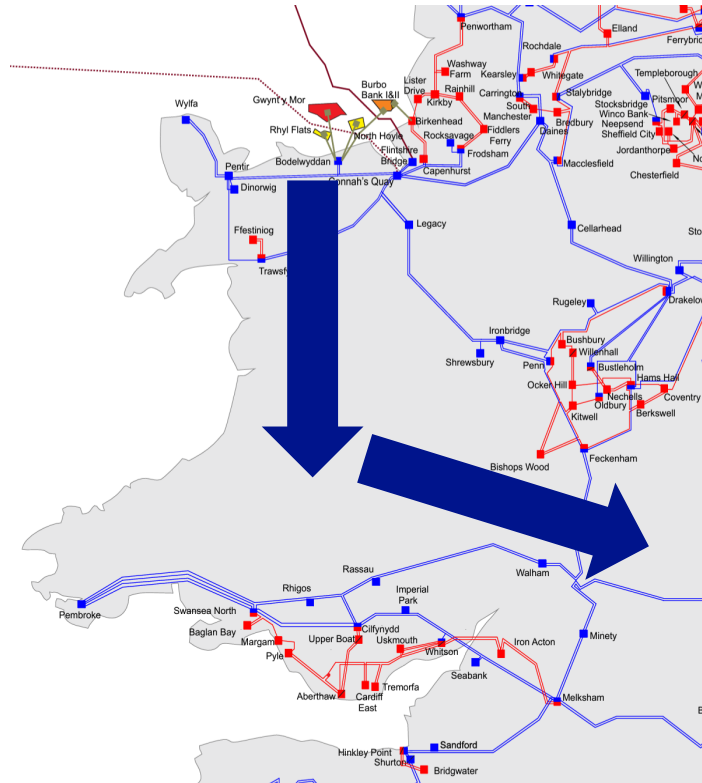
– power can be supplied through the line from its connection in England

Excess generation to be exported from Wales at times of high wind

– power can flow to England through the line's connection

# Sut yr ydym yn datblygu ein cynigion?

- Drwy weithio gyda'r canlynol:
  - Y gweithredwyr rhwydweithiau dosbarthu er mwyn deall lleoliadau a lefelau'r galw a deall a allwn ddefnyddio coridorau sy'n bodoli eisoes
  - RenewableUK Cymru er mwyn deall lleoliadau a lefelau cynhyrchu
  - Llywodraeth Cymru er mwyn deall ysgogwyr polisi ehangach
  - Rhanddeiliaid eraill – cymunedau, tîrfeddianwyr ac ati
- Rydym yn disgwyl cyflwyno cynigion cychwynnol yn yr hydref



# How are we developing our proposals?

- Working with
  - the DNOs to understand demand levels and locations, and whether we can utilise existing corridors
  - RenewableUK Cymru to understand generation levels and locations
  - Welsh government to understand wider policy drivers
  - Other stakeholders – communities, landowners etc
- We anticipate we will identify a preferred option later this year, with public engagement early next year

