

Utility challenges and responding to demands of Future Homes Standard

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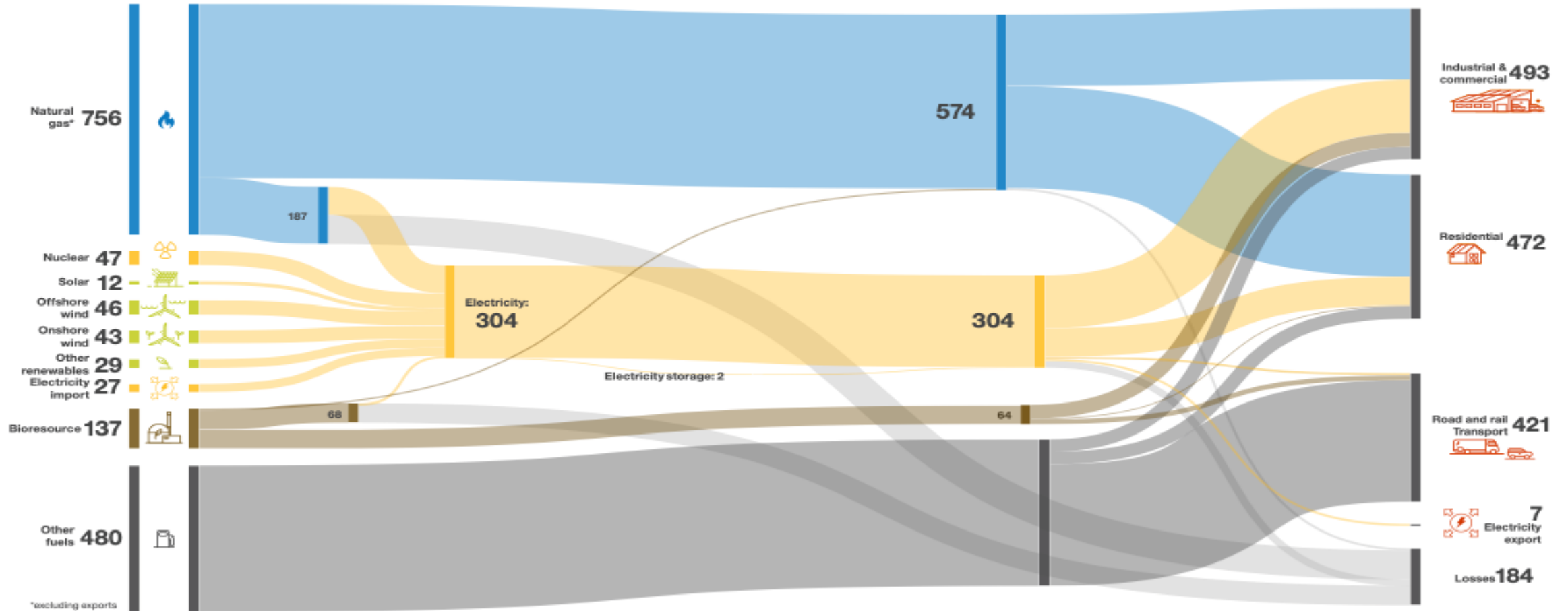
Positive progress so far – on site

- Rationalised loadings for electrically heated plots
- Part S - EV charging on plot = ZERO extra load
- Consistency of lower loads across all IDNO's
- Land appraisals based on likely gas / elec split and live POC costs
- Plans for transition
 - Swap to elec increasing
 - Invest WIP into footings prior to transition
- Most ICP's Massive investment in stock

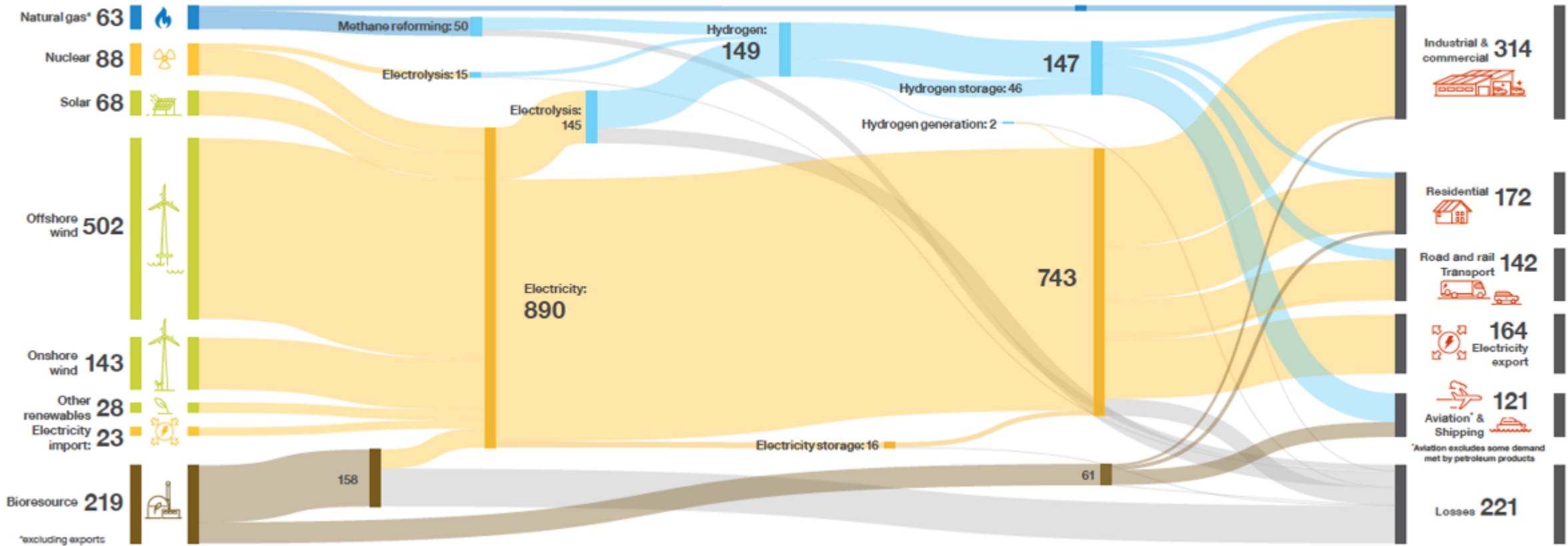
The different world - off site

- Whole energy transition is centred around electrification
- Accelerating year on year
- Wont be a power generation issue
- Increased demand for network materials and staff
- The grid is the common factor
- New market / project constraints are imminent

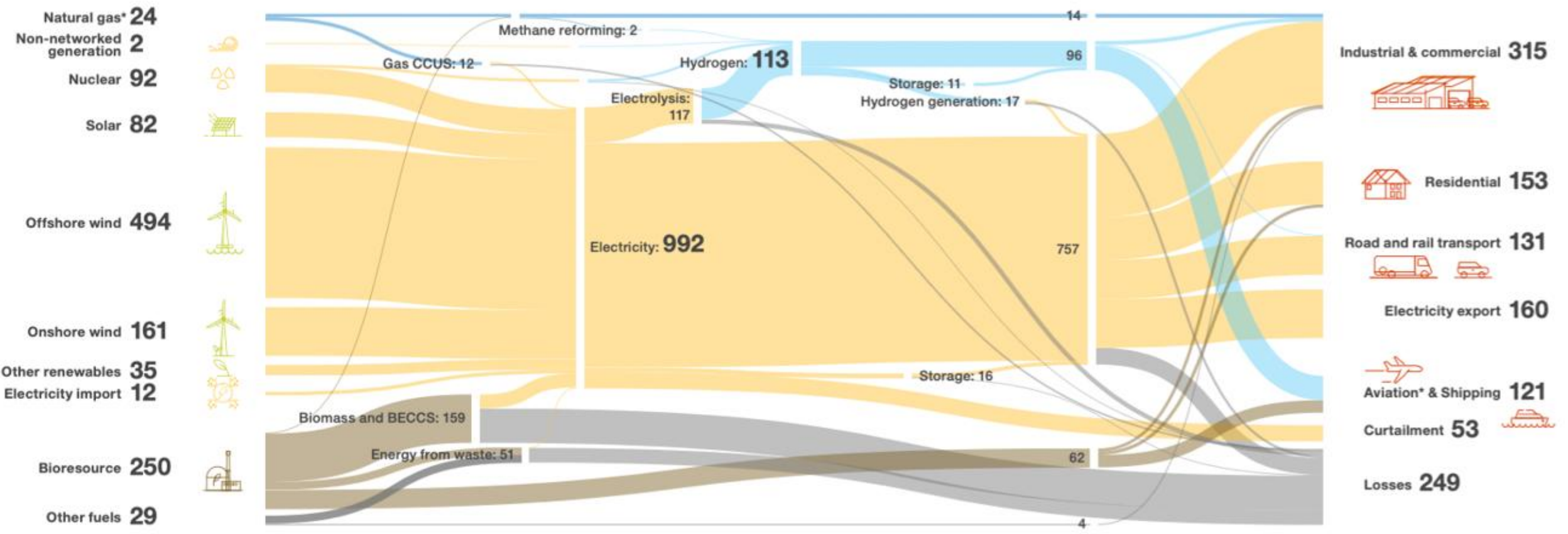
Future Energy Scenario – 2020 base



FES @ 2050 – Last Year



FES @ 2050 – This Year



*excluding exports

*Aviation excludes some demand met by petroleum products

Main sectors competing for power

- Housing
- EV Charging infrastructure
- Logistics & fulfilment centres
- Food production & Storage
- Data Centres
- Commercial and industrial sites
- Renewable generation

Each sector is not created equal.

- Differing peak load and load profile requirements
- Geographically diverse
- Short timescales from inception to energisation
- Well funded – rapid decision making
- Quicker path through planning
- Public support
- Smaller supply chain and low reliance on multiple trades

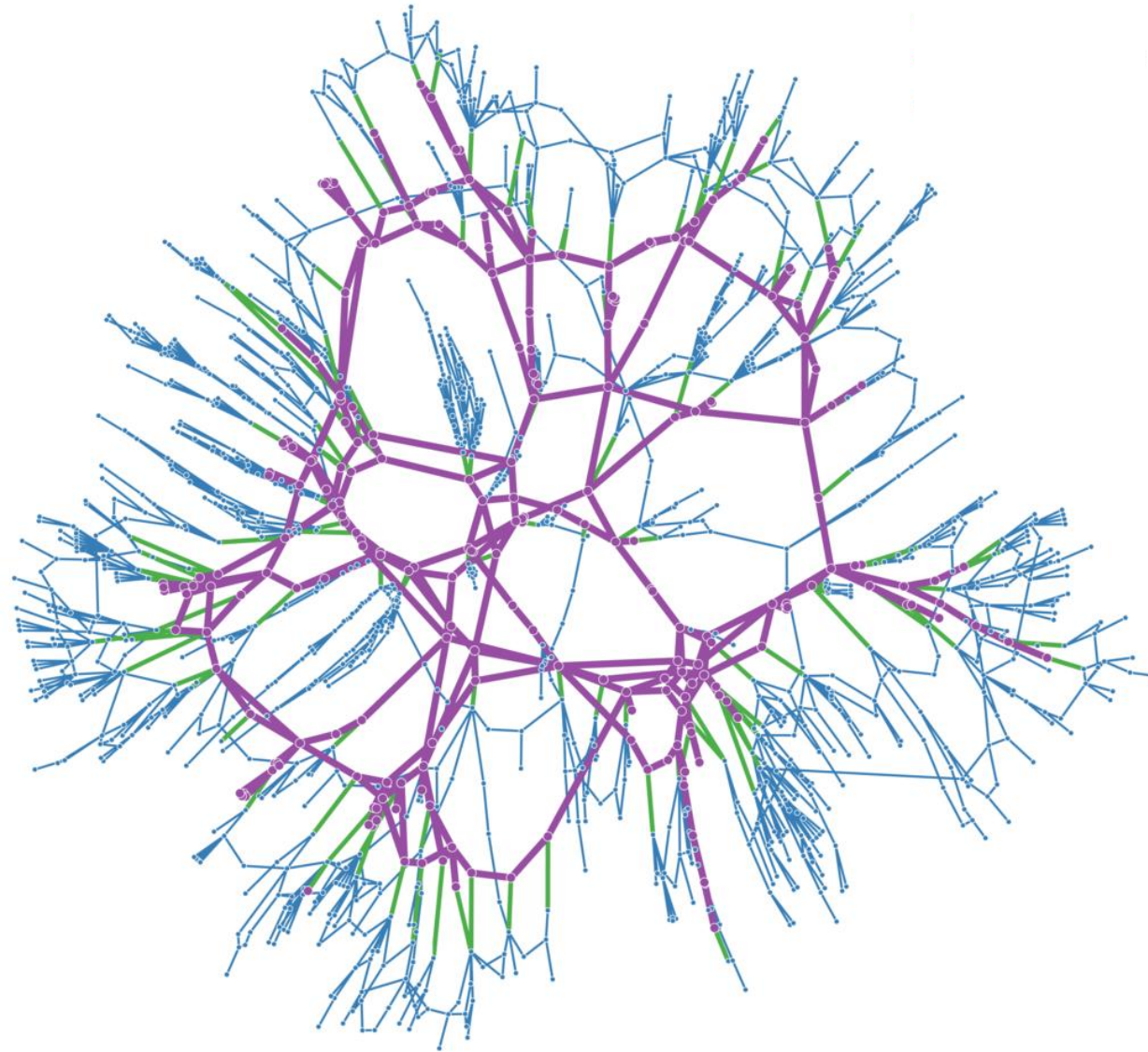
Small and Slow

Project	Average load	Equivalent houses	Time to energise	# in pipeline	Integration Y/N
New Build Housing	450kVa	150	36 months (plot 1)	?	N
LV Charging hub	90kVa	30	9 weeks	2000	N
HV EV Charging hub	900kVa (6x150)	300	8-9 Months	250	Y
EV forecourt	6,000kVa	2,000	12-18 Months	10	Y
Bus Garage	3,000kVa	1,000	12-18 Months	25	Y
Fulfilment centre	3,000kVa	1,000	12-18 Months	10	Y
Data Centre	40,000kVa	13,333	24-36 months	11	N
Film Studio	11,000kVa	3,666	24-36 months	3	N
Food Production	9,000kVa	3,000	24-36 months	4	N

Example EV hub

- 6 x 150kW chargers
- Existing site
- Installed under lease
- Minimal civils
- Standardised design / install
- Fully funded pipeline / framework
- Multi site deals with single landowners
- Delivering 5 per month all over UK
- Could still go ahead with battery





The 'next' 3 challenges

1 - Interactivity

- Significant increase in 2022
- Wont affect the same site
- Needs fast decisions
- Requires early commitment
- Needs available cash
- In queue with other sectors



2 - Milestones

- Have been around for a long time – since 2015
- Affect different projects in different DNO's
- Use is increasing
- Not normally on LV

Table 1

Type of Project	Connection Voltage		
	Low Voltage	High Voltage	Extra High Voltage
Small Works Projects ¹	No	N/A	N/A
Demand Projects	No	Yes	Yes
Generation Projects	No	Yes	Yes
Mixed Demand and Generation Project	No	Yes	Yes
Storage Project	No	Yes	Yes
Augmentations (no new assets required)	No	Yes	Yes
Augmentations (new assets required)	No	Yes	Yes

Example best practice milestones

- Initiate Planning 2 Months
 - Land rights 2 Months
 - Secure Planning 12 Months (24 Months where EIA)
 - Commence works 6 Months after planning
 - Progress works In line with programme
 - Complete works In line with programme
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- DNO may extend each with sufficient documentary evidence

3 - Reinforcement Costs

- Will be socialised from early 2023
- Reduces cost to Zero
- Moves responsibility for delivery into DNO's
- Lobbying to allow elective payment but not expected to be allowed
- Alternative voltage / location for POC's will help



What to do next

- Create and maintain a live view of the grid status for your whole pipeline
- Build a rapid decision making team to deal with interactivity
- Make sure you are aware of any milestone risks on each site
- Track payments made and request refunds
- Investigate options for alternative connection offers

Thank you