

The Case for Change

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To support the drivers...

- Data from Future Energy Scenarios 2016
- Analysis of “do nothing”
- Model of future TNUoS tariffs
“Ask the Expert” session
- What further analysis?

Market
Developments



Distributed
Generation



Smart & HH Metering



Facilitating Flexibility



Predictable Charges

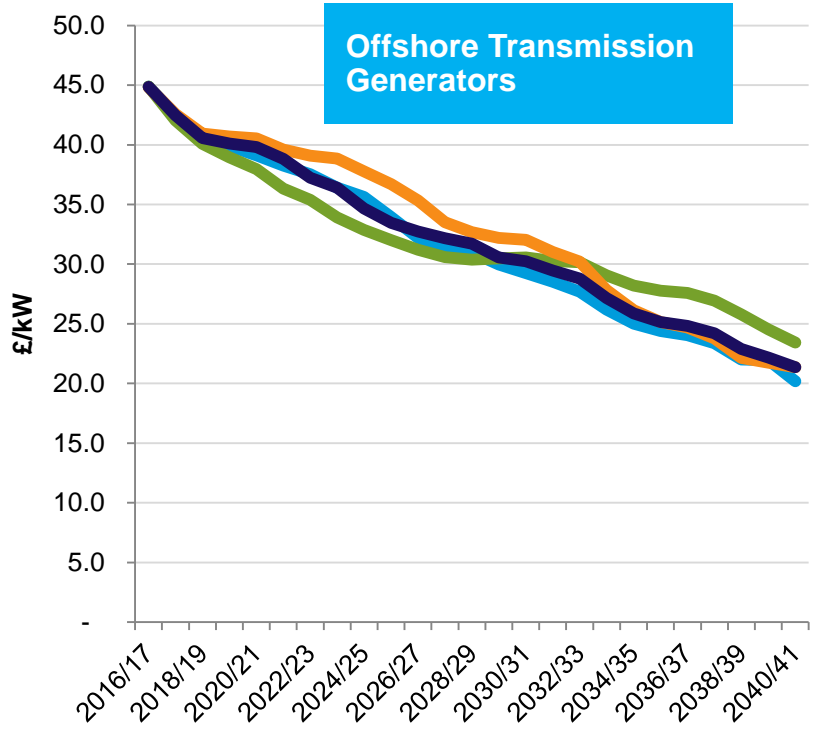
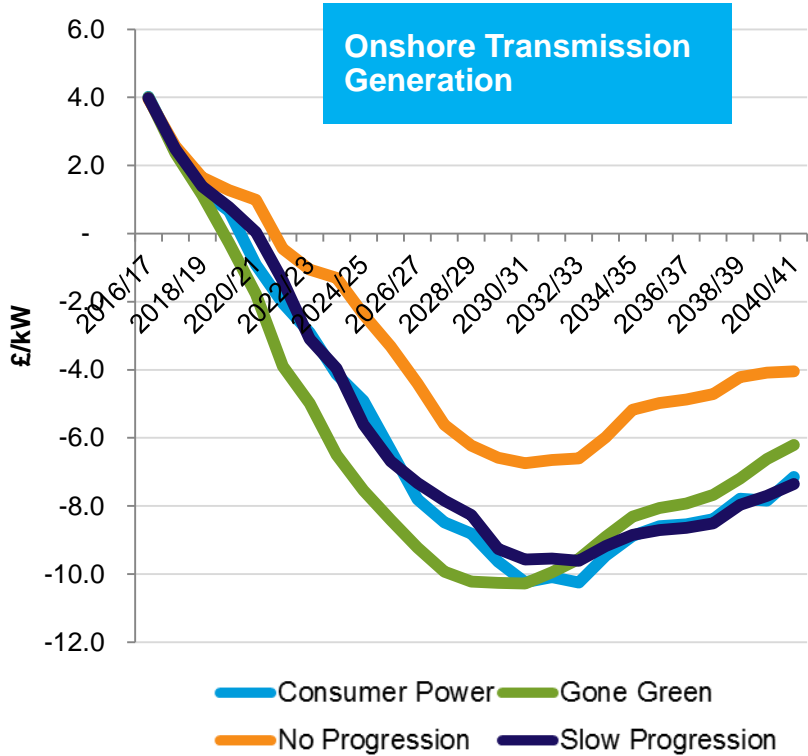


Reflecting
Sunk Costs





Average Generation TNUoS G/D Split and €2.50/MWh Cap

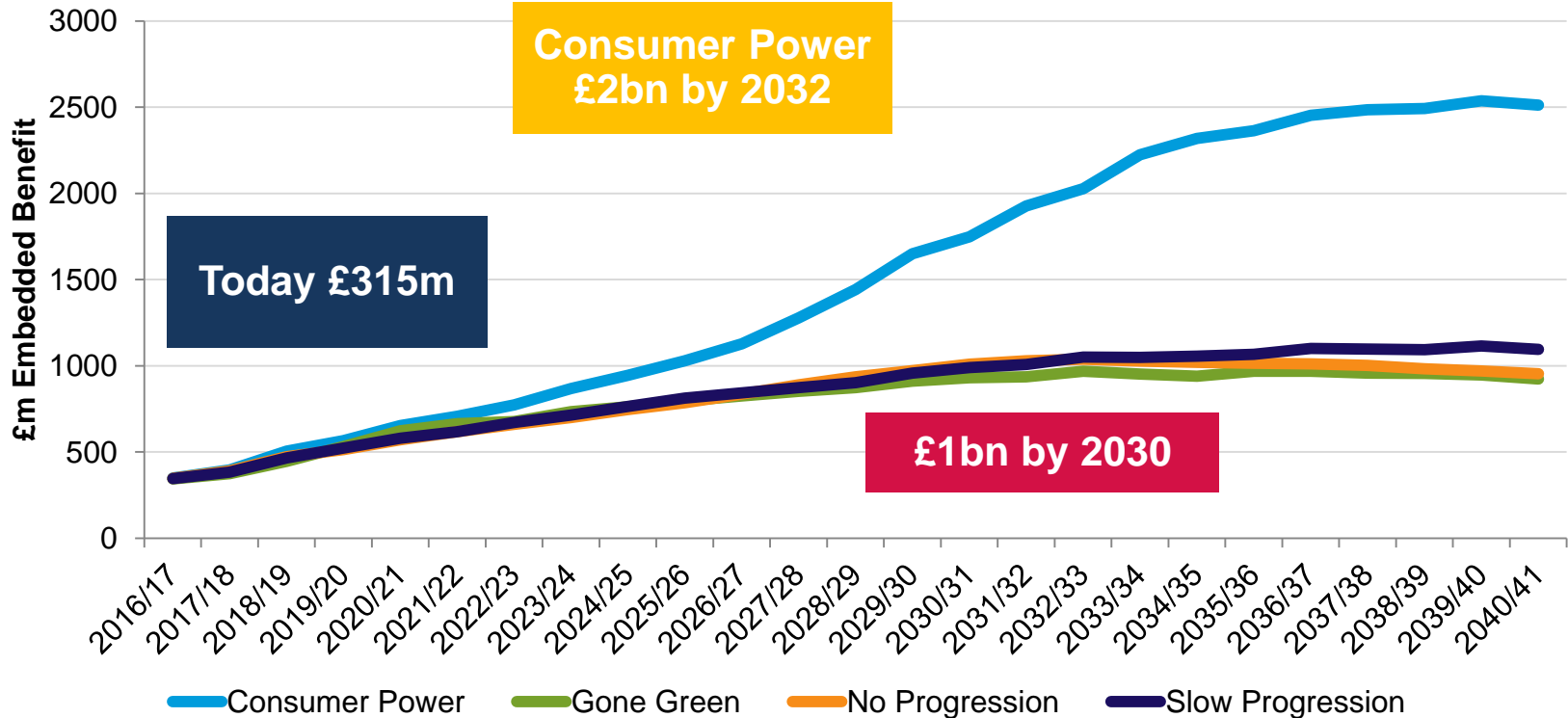




Distributed Generation

TNUoS Embedded Benefit

Reducing Net Demand and increase embedded generation



Today £315m

Consumer Power
£2bn by 2032

£1bn by 2030

Data from Analysis on FES2016



Smart & HH
Metering

Domestic Customers to Triads

A consequence of Smart Meter Rollout

Today (as NHH profiled)

On average, for TNUoS
11p per day
doesn't matter when I charge

Future (as HH settled)

If "hit a triad"
£33 per Triad

If miss triad
£0 TNUoS



Cost per Triad	2030
Consumer Power	£71
Gone Green	£58
No Progression	£54
Slow Progression	£61



**Vulnerable
Customers ...**



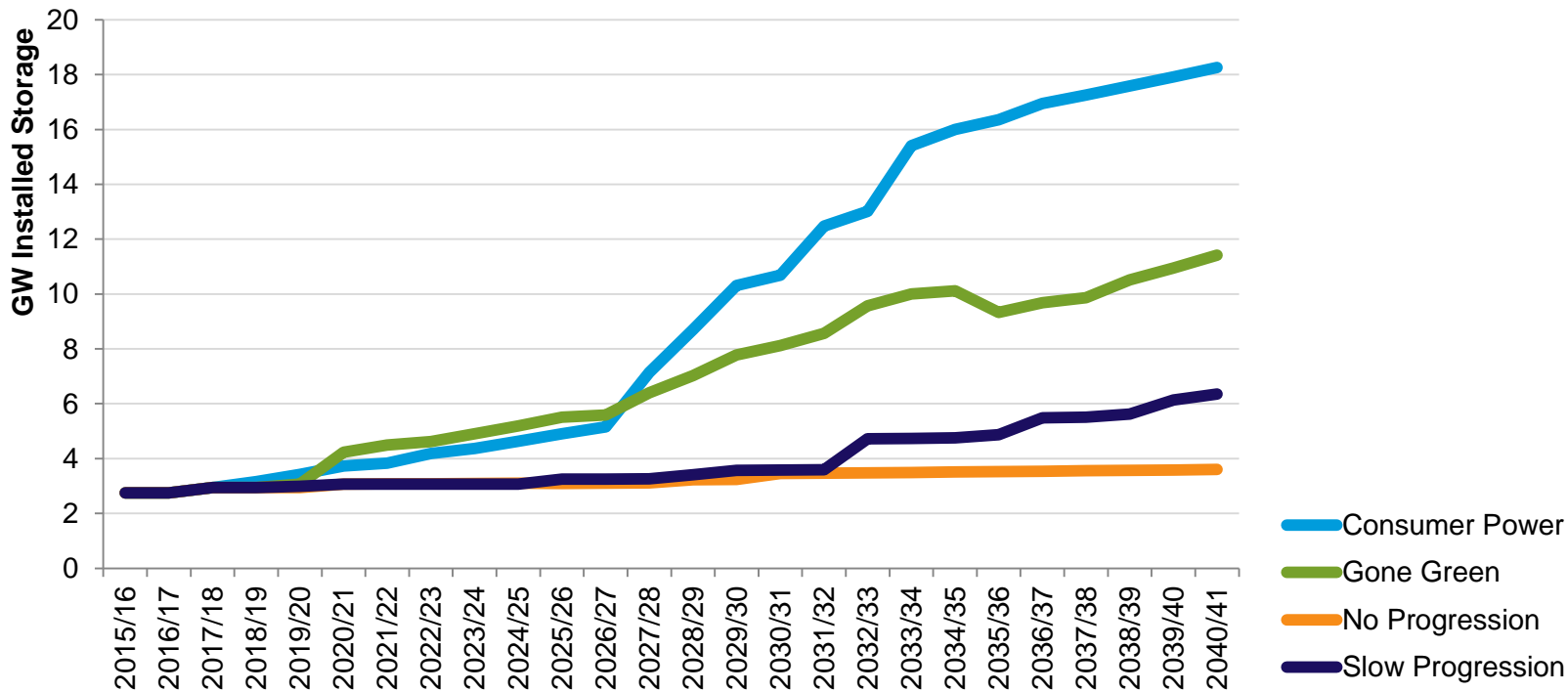
Audi A3 e-tron 8.8 kWh Battery



Facilitating Flexibility

Storage, Storage Everywhere

What signals should charging send?



Data from FES2016



**Predictable
Charges**

TNUoS Generation Zones

Zones are reviewed at Price Control

**Contract for
Difference**

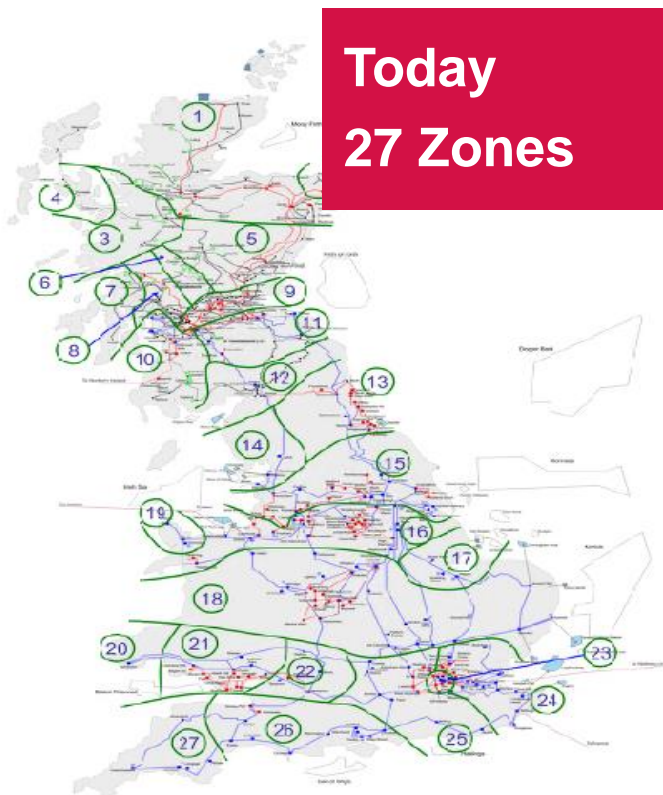
**Capacity
Mechanism**

**Investment
Timelines**

**Transmission
Development**

**BSUoS
Volatility**

**TNUoS
Volatility**



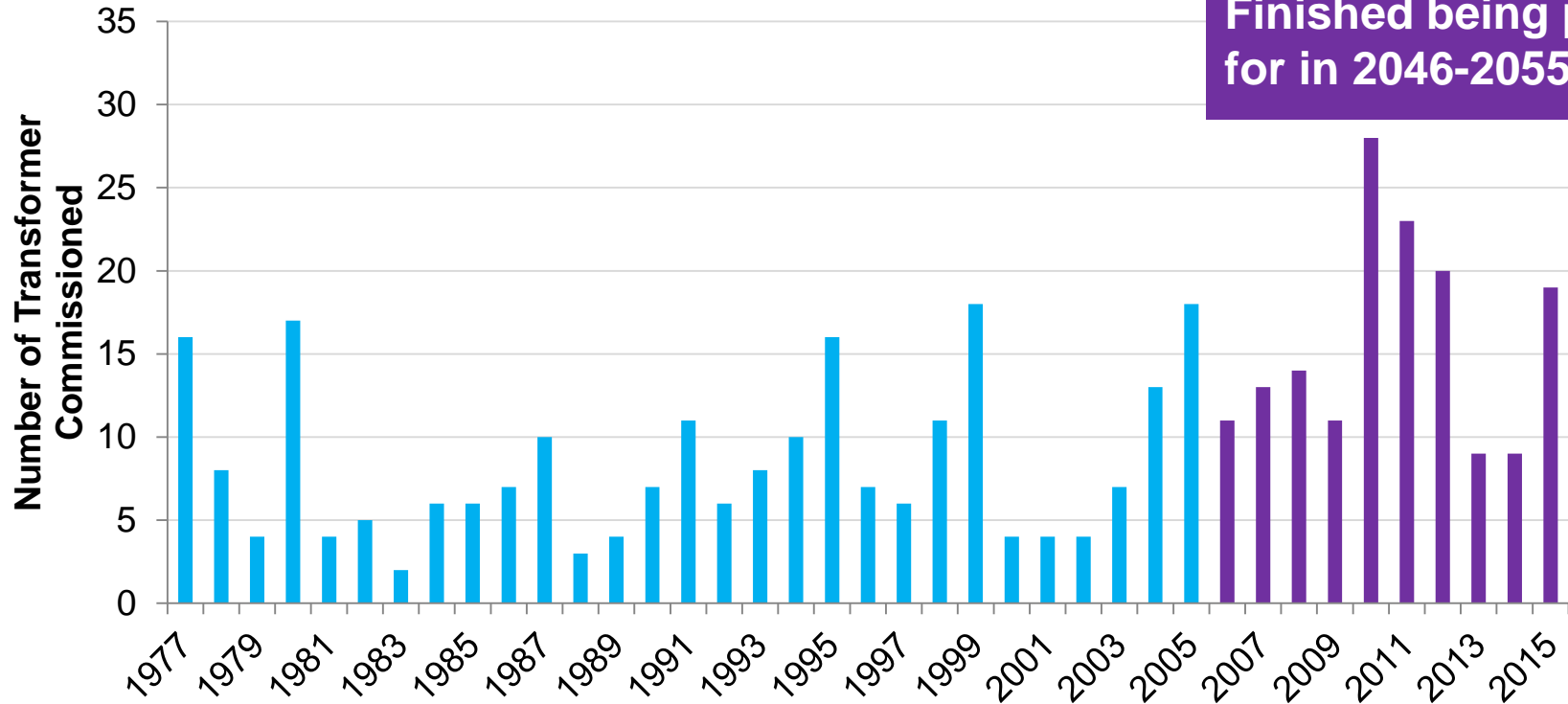
For illustrative purposes only



Reflecting
Sunk Costs

Installed Transformers

Costs are recovered over 40 years



**Move to address unintended consequences,
and watch out for interactions**



**Is the current view of the network appropriate with
more distributed generation?**



**How do we facilitate 'prosumer' whilst protecting
vulnerable consumers?**



**More Storage? Maybe!
Frameworks needs to be agile enough to respond**



**Stability / Predictability and Cost Reflectivity
are often in conflict**



**Networks exists, and will continue to exist, and
need to be paid for**



“Ask the Expert”

FES 2016
Data

Model for
Future Tariffs

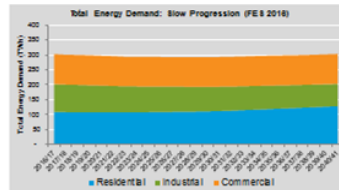
Evidence to
inform a
Review

How much will my TNUoS charges be, if the current charging arrangements continue?

2016/17 to 2035/36

1 Pick your FES Demand Scenario

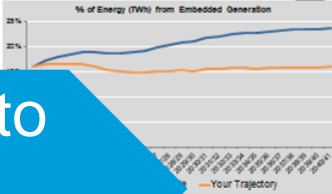
Consumer Power Gone Green No Progression Slow Progression



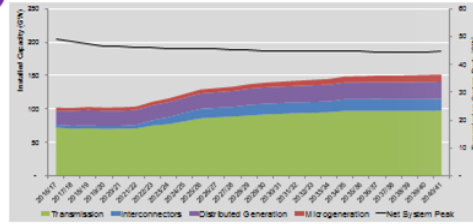
2 Adjust how much Energy will come from Embedded Generation by 2040?

This FES Scenario has 34% generation from Embedded by 2040, compared to 15% today.

You have chosen 16% from Embedded generation by 2040.



3 Your predicted Generation Mix



4 Read your Future Annual Statement of Network Charges

Annual Statement Transmission Network Charges	TODAY	2025	2035
Domestic Consumer			
TNUoS Network Charge, if you charge 2.5kW Electric Vehicle at 11PM	Charge on average 1p per day	£160	£160
If you have a battery, will go 'off grid'		£Zero	£Zero
1GW Transmission Generation			
Outlets - TNUoS	Pay £2.5 m	Receive £9.8 m	Receive £88 m
Others - TNUoS	Pay £88 m	Pay £88 m	Pay £88 m
Embedded Benefit			
50MW Generator, hitting all Trips/ Total Value of TNUoS Embedded Benefit	Receive £2.3 m	Receive £3.6 m	Receive £4.1 m
	£345	£781	£738 m

6 Explore more data about Charging under each of the FES 2016

More Details

5 This does not feel sustainable...



Market developments

By 2025, due to an EU Regulation a 10W Outlets generation will be £9.8 million for TNUoS, whilst a 10W Office generation will be £4.5 million.

Is their creating a fair and level playing field, or GB's interpretation of the Regulation creates unintended effects?



Distributed generation

By 2025, a 50MW embedded generator may receive £10 million 'embedded benefit' if they generate power 24hrs a day.

They would pay nothing toward the cost of the Transmission Network, even though generate it.



Smart & HH metering implications

A domestic customer currently pays around £30 per year for TNUoS. When they have smart meters, if they charge their Electric Vehicle in 2025 at 11PM will cost £160 but they can get a battery and go 'off grid' at peak they pay nothing.

How can we facilitate generation without causing affecting vulnerable groups?



Facilitating Flexibility

By 2030 with 16% of energy coming from embedded generation, it is right to give to customer to provide incentives for flexibility to operate the system.

What signals does flexibility require from the charging arrangements?



Predictable Charges

By 2025, a 10W reduction in demand at Peak will mean £100 million in revenue. Customer also want predictable bills and understandable tariffs.

Is their level of volatility acceptable to the end user customers?



Reflect Sunk Costs

Since 2000, over 200 SuperGrid Transmission lines have been built. Some of these will still be a part of the TNUoS network.

How do we appropriately reflect the costs of the transmission network?

Feedback

- Welcome your thoughts on analysis:
 - Cards on your tables
 - Come and talk to me
 - Use the interactive tool
- What further data does the industry need to evidence the debate?

