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A view on the  
British approach



# Direction-setting for energy system transformation

## Look ahead – we need to change course!

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# 1. Hazards emerging – a new direction is needed



- ❖ The energy transition requires 35 new power system functions to be implemented
- ❖ These will span ownership & regulatory boundaries
- ❖ However, we have neither the accountabilities nor the mechanisms for such Whole-System coordination

- The 35 functions have been analysed & reported by the *Future Power System Architecture programme*
- They enable such developments as smart EV charging, community energy, and network flexibility
- Technical, commercial & regulatory changes are needed
- Open data systems, incorporating cyber security, will be key enablers for change but don't exist today
- **Today's silos of ownership & governance no longer align with critical system functionality, especially at the grid edge**



## 2. Why a change of course is essential



- ❖ GB change processes and accountabilities are silo-based, designed in 1990 for the world at privatisation
- ❖ They are totally unsuited to new Whole-System issues and grid edge parties
- ❖ Today's processes can only move at glacial pace

- GB electricity sector change processes centre around 8 'Code Panels' & some 30 administrative organisations
- The Panels have tightly constrained remits, no forward-looking roles, and no knowledge retention capabilities
- They are dominated by the incumbents and are impenetrable to entrepreneurs and new grid edge parties
- Tinkering with Panel interfaces or membership is not the answer; **the core issue is that no party has Whole-System oversight for ensuring *coordinated* outcomes**



# 3. A simple example of the rocks ahead



- Consider, just **2% of cars are electric** in the early 2020s, and have 7kW smart-chargers that responds to market prices
- The market moves from a high to a low price period
- Nationwide, EV chargers will turn on simultaneously, creating a **step in demand of some 4GW**
- This is about four-times the System Operator's safe limit today – a serious threat security.

## Potential solutions:

- 1) Do nothing, take a chance that it won't happen and risk a widespread black out, or
- 2) The System Operator buys significantly more fast response, an expensive service, and increases this as the EV fleet expands, or
- 3) Develop technology/market solutions such as randomised delays, price banding, or frequency-sensitive charger controls. These need not be costly *options but they require coordination and on-going monitoring across EV and charging point manufacturers, network companies, the system operator, and the standards for App developers.*
- 4) Noting the many parties, the key question is: **So, whose job is that? (Answer: No one's...)**



## 4. Signs that we're currently on the wrong course...

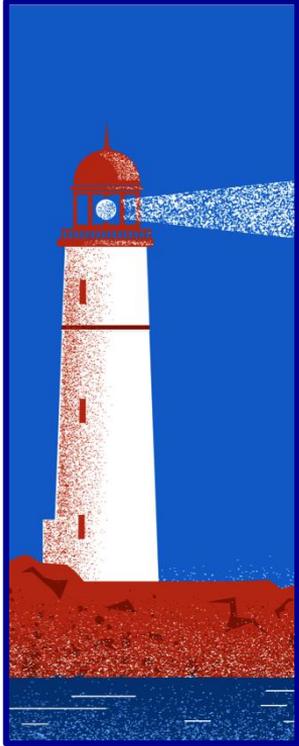


- ❖ *Whole-System* terminology is used by policy makers but only means “T&D” (so does not include the grid edge)
- ❖ RII02 appears not to be addressing the gap in cross-boundary coordination & accountability, or change process core deficiencies

- Some good initiatives can be seen, but overall progress of smart network solutions to Business As Usual is going slowly. Similarly hesitant are incumbents' ambitions for DSO roles and delivering flexibility through 'Non-build' solutions
- ENA's flagship Open Networks project includes Whole-System and DSO themes, but appears deeply TSO/DNO centric and 'stops at the meter'
- Yet, it's the grid edge is where disruptive changes originate. Legal remits may currently 'stop at the meter' **but this isn't a valid reason for inaction**



## 5. In summary, what is needed



- ❖ *Policy makers* must address the pressing need for cross-boundary coordination and agile change governance
- ❖ Wider thinking and pace of engagement by *network companies* must be facilitated (and positively challenged)
- ❖ These issues need visibility

- RII02 could lock us into outdated frameworks into the late 2020s
- Network companies may hesitate to propose change for evident reasons of self-interest, and current licence constraints
- GB risks failing to deliver energy policy goals, bankrupting grid edge entrepreneurs, adding costs, and frustrating customers
- FPSA's work offers pointers for governance change, drawing lessons from other sectors
- Every day takes us further down the wrong path, making it harder and more costly to establish the open systems and new markets to benefit customers & society



## Last week's headlines in UK...

# “AN ABSENCE OF WHOLE-SYSTEM COORDINATION...”

See ORR's report at <http://orr.gov.uk/rail/consumers/inquiry-into-may-2018-network-disruption>

**Damning report reveals 'no one took charge' of rail timetable chaos**

**Evening Standard.**

NOTE Solving this does *not* require re-nationalisation or a return to central planning

**Report into rail timetable chaos set to claim 'no leadership' in the industry** THE YORKSHIRE POST



**The Guardian** UK edition ▾

**'No one took charge': rail industry and Whitehall rebuked for timetable chaos**

# The UK as a world leader in clean growth, energy innovation... jobs, exports, quality of life... yes?



**But it involves many parties and disciplines and will slip through our grasp, unless we change today's direction of travel.**

**Thank you for your attention**



# Discussion points:

**CLASS** not taken up by other DNOs... why?

**DS2030** major report in 2016 not followed through.. Why?

National Grid's new **ESO organisation** proudly identifies whole system priorities, but these, without caveat, are confined to T & D ?

What about the treatment of **V2G**; does this make EV's "generators"? Do they have to comply with all the technical compliance issues faced by DG?

More importantly, whose job is it to make sure the V2G initiative is integrated smoothly with the power system? This will need ongoing accountability, a Working Group is insufficient.

BEIS is conducting work on **smart appliance standards** apparently isolated from whole-systems thinking ?

ENA's **Open Networks project** appears strongly T&D-centric, rather than customer centric, it is not taking a genuine whole-system perspective. It's the voice of the old system and its remits, rather than the new energy system and the requirements of its users

The **incumbents need to speak up** for change, but this requires **policy-maker leadership** to signal new thinking is wanted.

**RIO2** is setting the framework to the late 2020s so risks locking in 'old thinking' that's totally unsuited to emerging requirements. This will disadvantage consumers and wider GB

**RIO2 lacks 'signalling' by Ofgem.**

Signalling starts conversations, builds trust, and helps de-risk structural/legal changes as industry parties are given time to position themselves etc.

ALSO the need for investors to be able to price the risk of innovation... and the longer we fail to address the challenges the more reluctant the investors will be to come to the table and make change possible

The ENA's joint **electricity and gas innovation strategy** is confined to the T & D systems. Traditional-think only ?

Not to mention: skills gaps; cyber security urgency; consumer uncertainty and weakening trust; data privacy concerns; smart metering acceptance; limited GB engagement with international standards; EnergyUK initiating work on EV standards; democratisation trends; IoT & Block Chain... **no lack of innovation potential, just many stumbling blocks.**