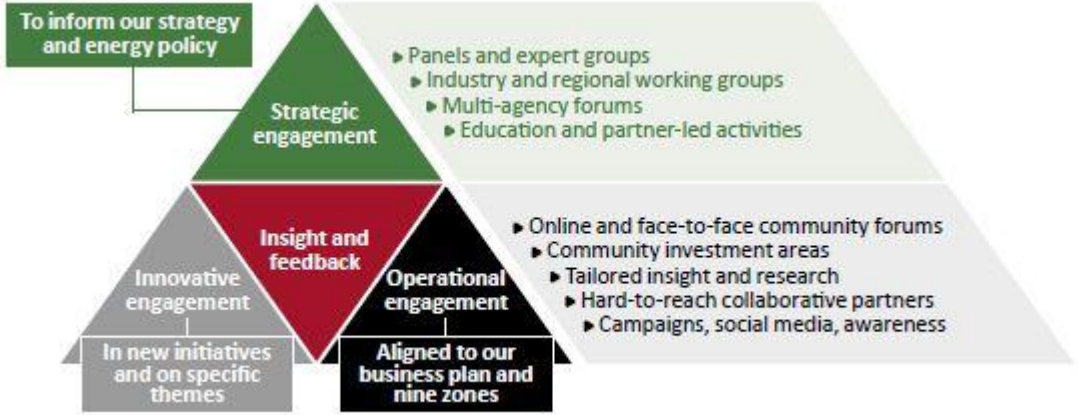
Welcome

Siobhan Barton – *Head of Stakeholder Relations*




Active Engagement



Engagement Approach

1. Early, deliberative engagement – to discuss open questions with our stakeholders
2. To better understand and incorporate stakeholders' perspectives and priorities
3. To provide challenge and insight to our decision making and future plans

Consultative roundtables

We are listening to your views, challenges and priorities to help us refine our DSO plan and your feedback will be reflected in our revised plan published later this year and our resulting actions.

Unlocking the energy transition for our customers

Patrick Erwin – *Policy and Markets Director*

Agenda

Outline of the day:	Timings:
Our DSO vision and emerging themes	10.15 – 10.45am
BREAK	**10.45 – 11.00am**
Customer and commercial roundtable discussions: Flexibility services: building our expertise A socially inclusive transition Local energy as a catalyst for energy system change Innovation driving customer benefit	11.00 – 11.45am
Keynote speaker – Rt Hon Charles Hendry: Optimising the smart energy transition	11.45 – 12.15pm
LUNCH	**12.15 – 1.00pm**
Technology, data and systems roundtable discussions: Network flexibility through new technology and our customers New forecasting capability for future investment Supporting local energy markets through data	1.00 – 1.45pm
Expert Panel: An open question and answer session	1.45 – 2.45pm
Summary and next steps	2.45 – 3.00pm

Unlocking the energy transition for our customers

Discuss with us:

- The transition to a low carbon, decentralised and much more active network
- Delivering an energy network that is prepared for the realities of a changing climate
- Reshaping our network, enabled by new technology, so that it is more responsive to the needs and views of our customers

Our DSO vision and emerging themes

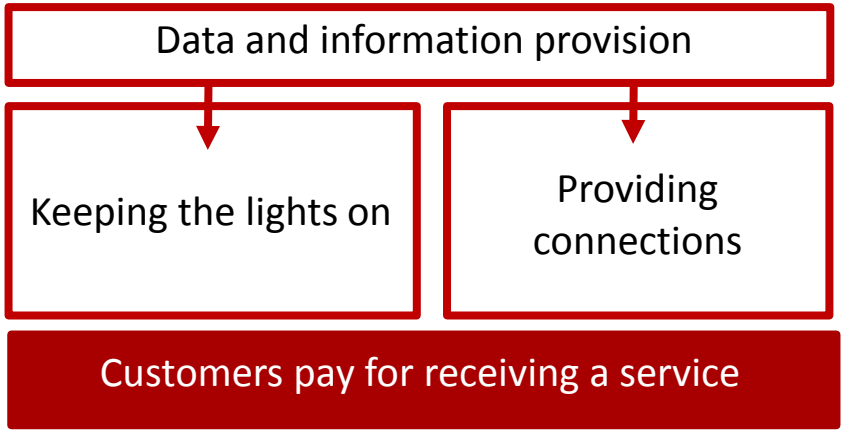
Jim Cardwell – Head of Policy Development
Anne-Claire Leydier – Sustainability Manager



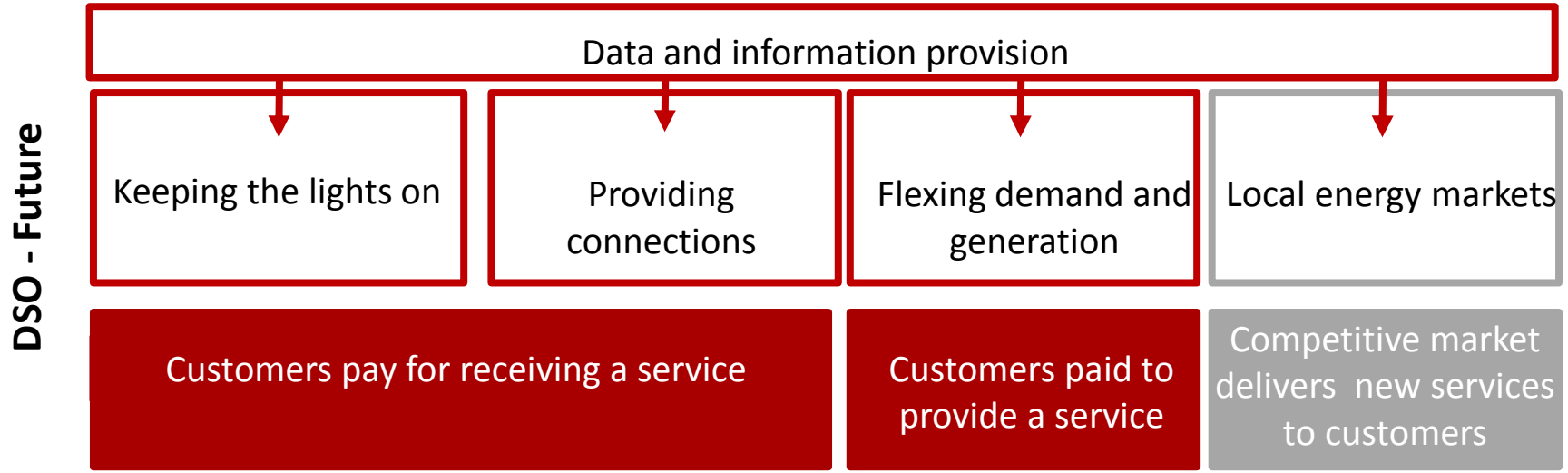

An evolving world

What DSO means for our customers

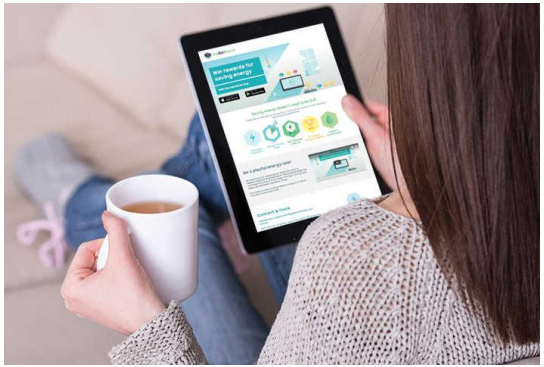
DNO - Today



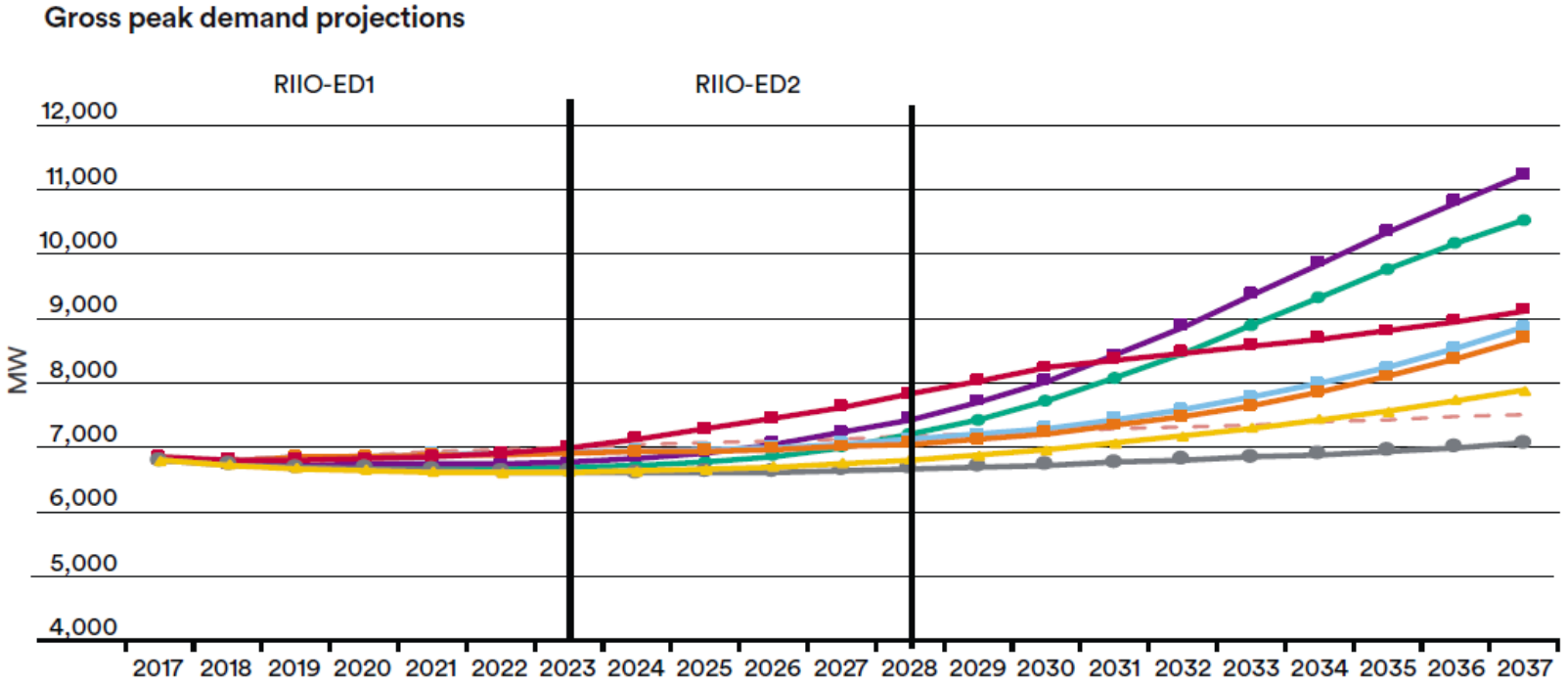
What DSO means for our customers



Exploring the future: our innovation portfolio

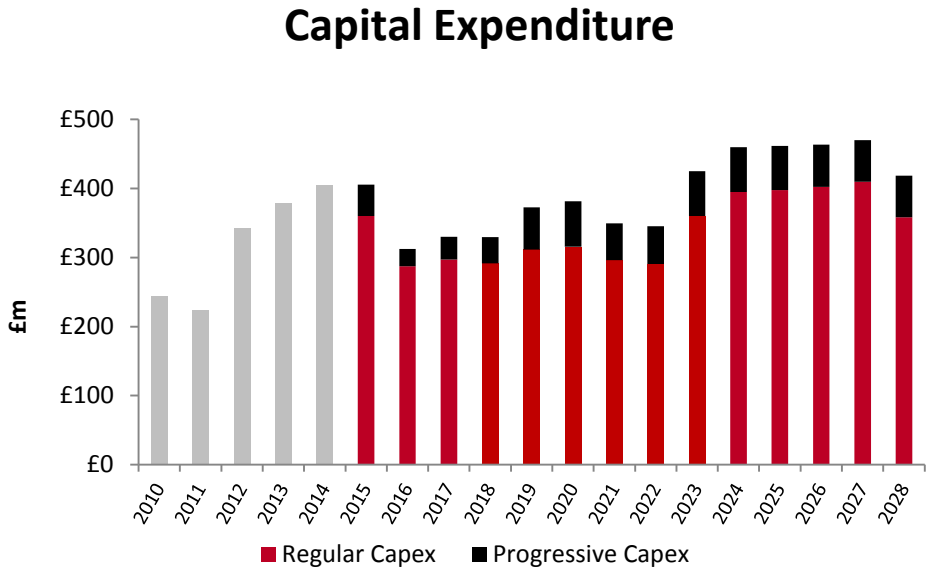


Scenario based modelling informing our network needs



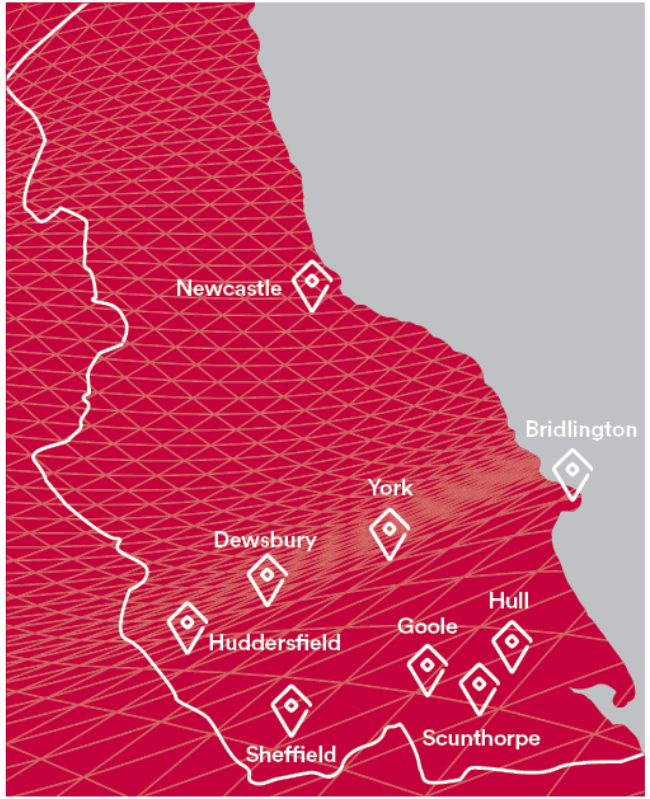
Investment in our Network

2015-2023	
Asset Replacement/Upgrades	£1,100m
Replacement of Failed Assets	£719m
Diversions	£43m
Legal, Environment & Safety	£152m
Network Reinforcement	***£189m***
Low Carbon Driven Reinforcement	***£44m***
Flood Defences	£48m
Operational IT	£16m
Quality of Supply (inc. Automation)	£42m
Smart Grid Enabling Technology	***£115m***
Other Operational Capex	£18m
Non-Operational Capex	£141m
Total Capex	**£2,650m**



15% of our capital program is to create enhanced smarter functionally to support the energy transition

Implementing first phase of customer flexibility



2019-2023
Capacity required for flexibility
up to 14 sites, 16MW

2023-30
Capacity required for
up to *ca.* 40MW

Customer flexibility – a significant change built on trust

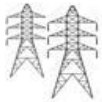
- ✓ Blend of RIIO regulation and incentives
- ✓ Track record introducing positive changes
- ✓ Company culture promoting service ethos
- ✓ **Clear definition of roles within our teams**
- ✓ **Reporting and visibility of our actions**

LEVEL PLAYING FIELD
COMPETITION

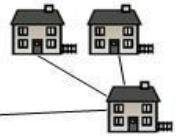
Network solutions
vs
Customer flexibility solutions

The largest coordinated change to our network assets since the 1970s

Asset area	Asset investment	Spend(£)
Voltage control and monitoring	• Replacement of 1,356 transformer automatic voltage control relays • Installation of control equipment at 47 HV voltage regulators • Functionality for ANM & DSO services for improved visibility & alternative settings	£34m
Primary substation RTUs	• Upgrade or replacement of 850 RTUs • Platform for local substation control & IP capable	£17.6m
Telecoms (secondary)	• Replacement of existing UHF radio system, operating over 9,500 sites • Providing communications for grid edge control & monitoring	£13.8m
Telecoms (primary)	• IP based network replacement providing more bandwidth and resilience across 850 sites	£9.9m
Control and OT systems	• Rollout of standard ANM systems, first one at Driffield in 2019 with forecast of two per year after that • New databases for monitoring data and platform for data analytics	£4.3m
Distribution monitoring	• Harvesting of data from 2,000 pole mounted reclosers • Retrofitting of LV board monitors to 1,300 GM distribution subs	£3.2m
		£83m



SMARTGRID TIMELINE

	Primary (town) networks	Local (street) networks
1960s	✓ Locally managed circuit breakers	✓ Dumb, 'fit and forget' passive assets
1970s	✓ Post-fault circuit re-closing	
1980s	✓ Remote operation of circuit breakers ✓ Monitoring one-way power flow ✓ Low bandwidth communications	
1990s	✓ Equipment rationalisation driven by electronics	✓ Temporary LV fault management devices
2000s	✓ Remote reconfiguration post-fault	✓ Low bandwidth HV remote control
2015 - 2023 (ED1)	**✓ Self-healing networks** **✓ Real-time capacity management** **✓ Two-way power flow monitoring** **✓ Advanced substation control devices** **✓ Wideband flexible communications (IP-based)**	**✓ Time of use demand data** **✓ Remote monitoring of LV circuit power flow** **✓ Automated control of voltage** **✓ Fault prediction and smart "fuses"** **✓ Wideband communications** **✓ Harvesting network data from existing HV devices**

Future services: our guiding principles

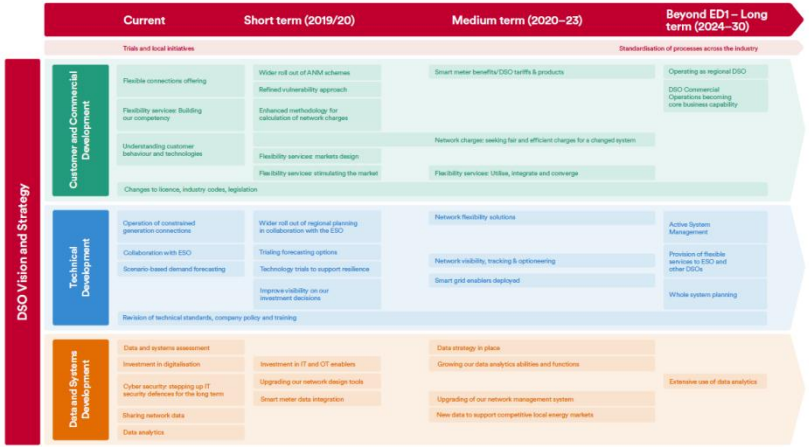
1. Led by our customers' needs

2. Promotes sustainability by being efficient, fair and inclusive, and better for the environment

3. Requires a right-sized regulated business supporting competitive markets for flexibility

4. Changes to duties that optimise the system as the volume of distributed energy resources increases

Our emerging thinking: potential pathways to 2030



- ***Customer and commercial development*** – developing deep and liquid flexibility markets through co-ordinated actions with customers and the sector

- ***Technical development*** – cost effective deployment of well-targeted and well-timed investment smart grids

- ***Data and systems development*** – embracing the opportunities to revolutionise our service delivery

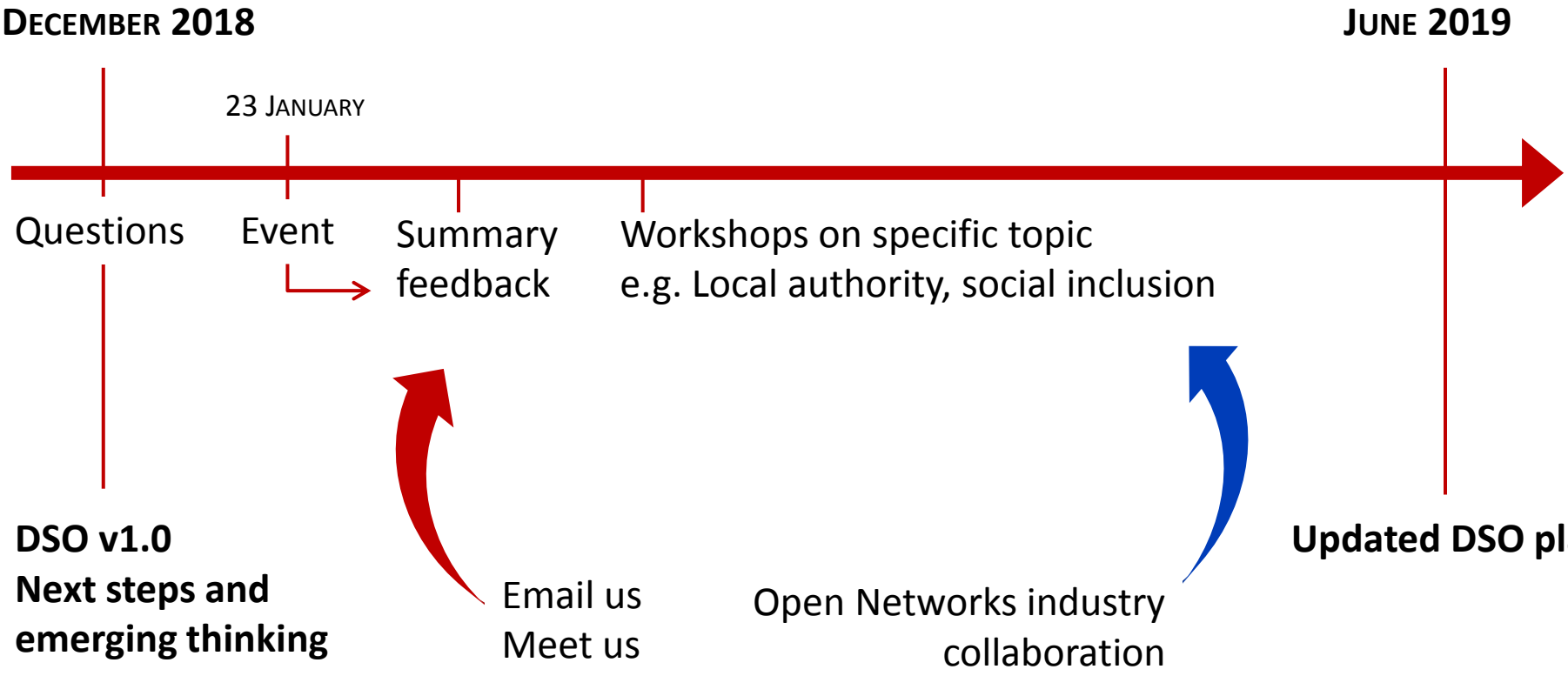
Engagement objectives

Provide clear information

Ensure multiple opportunities to inform our thinking

Seek challenge

Engagement process



Customer and Commercial Roundtables

Discuss with us:

1. Flexibility services: building our expertise
2. A socially inclusive transition
3. Local energy as a catalyst for energy system change
4. Innovation driving customer benefit

Optimising the smart energy transition

Rt Hon Charles Hendry


TIME FOR QUESTIONS
12
1
2
3

Technology, Data and Systems Roundtables

Discuss with us:

1. Network flexibility through new technology and our customers
2. New forecasting capability for future investment
3. Supporting local energy markets through data

Expert Panel Q&A

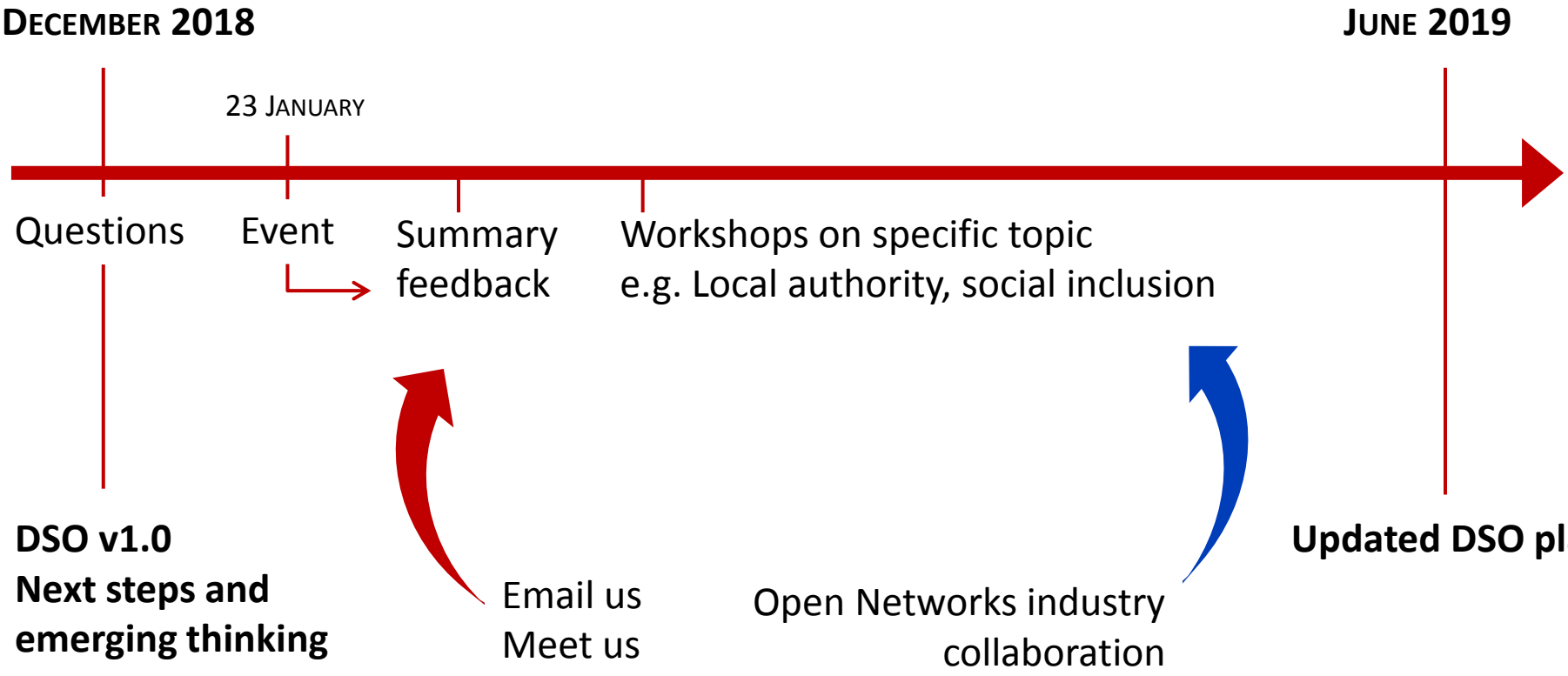
- **Jim Cardwell,** Head of Policy Development
- **Mark Drye,** Director of Asset Management
- **Quentin Scrimshire**, Kiwi Power
- **Graham Ault**, Smarter Grid Solutions
- **Vicky Edmonds**, Office for Low Emission Vehicles
- **Mark Nicholson,** Head of Smart Grid Implementation
- **Issy Middleton,** Smart Metering Programme Manager
- **Anne-Claire Leydier,** Sustainability Manager

Summary and next steps

Patrick Erwin – *Policy and Markets Director*




Engagement process



Your feedback:

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