ESO RIIO-2 Stakeholder Event

2nd October 2019

Material and handouts on the day

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Overview of Key Deliverables for RIIO-2

Theme 1

- Transform our balancing and control capabilities for a zero-carbon system
- Enhancing our resourcing, talent acquisition, training and simulation capability
- Develop a system restoration approach fit for the future

Theme 2

- Build the future balancing and wholesale markets
- Transform access to the Capacity Market
- Develop code and charging arrangements that are fit for the future

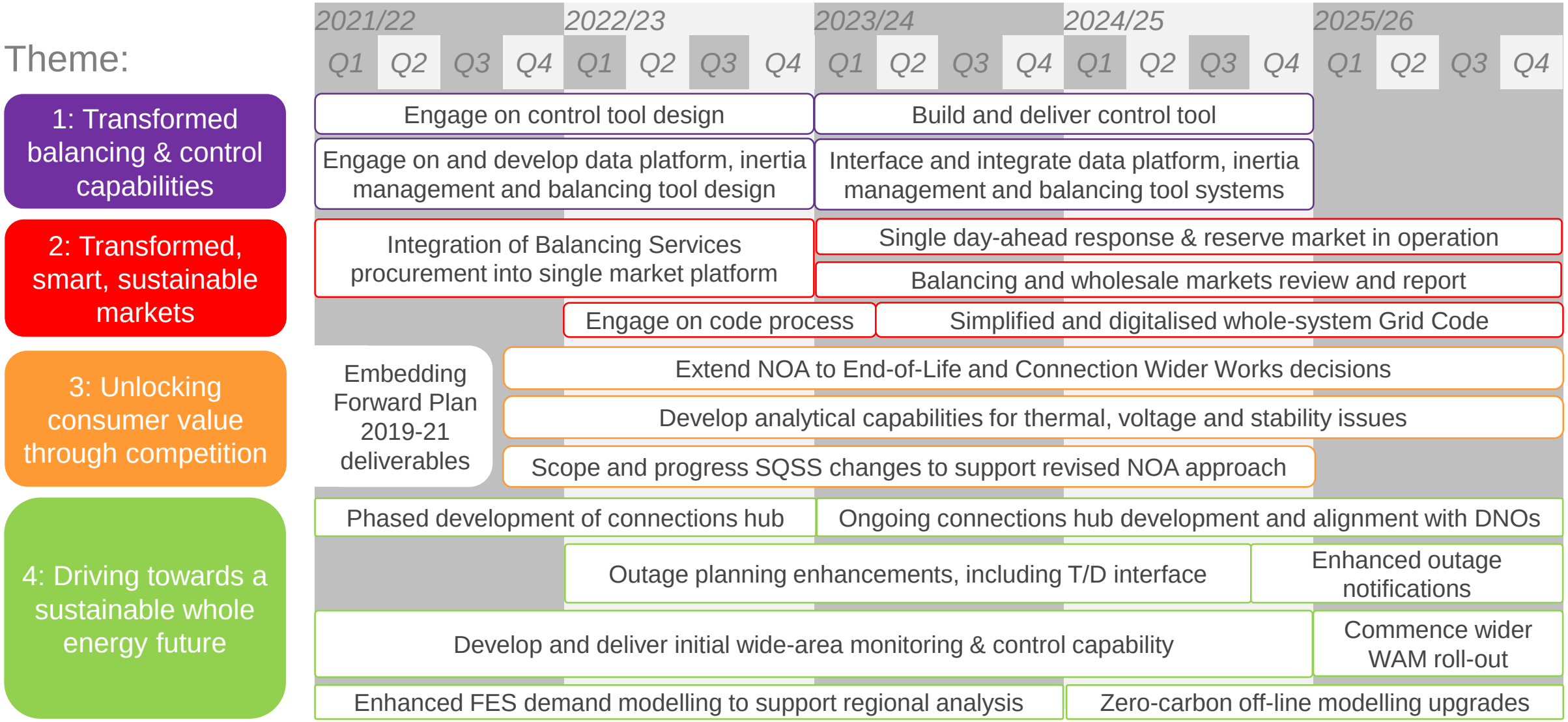
Theme 3

- Embed the Network Development Roadmap enhancements
- Extend the NOA approach by applying it to more connections wider works and end-of-life asset replacement
- Undertake, with industry, a review of the SQSS

Theme 4

- Broader analysis and industry engagement to develop energy policy recommendations
- Established clear ways of working with DNOs to streamline the connection process for smaller players
- A pathway for zero-carbon whole system operability
- A whole system approach to accessing networks

Five-Year Strategy: Key Deliverables



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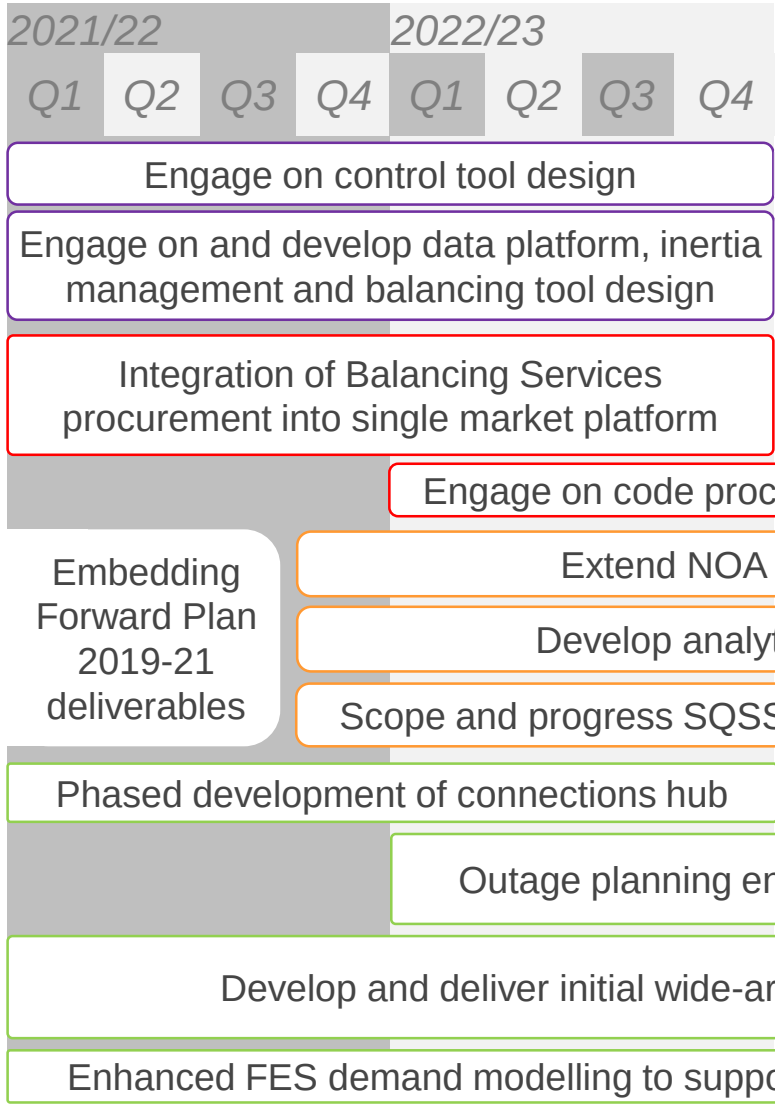
Two-year Business Plan: Key Deliverables

Theme:

- 1: Transformed balancing & control capabilities
- 2: Transformed, smart, sustainable markets
- 3: Unlocking consumer value through competition
- 4: Driving towards a sustainable whole energy future



What does it mean for customers and stakeholders?

- Stakeholder collaboration via Design Authority; modular approach to delivery
- Single point for engagement with and procurement of Balancing Services
- Collaboration through pathfinding projects, ENA and NOA methodology consultations
- Enhanced customer connections experience; broader insights from FES

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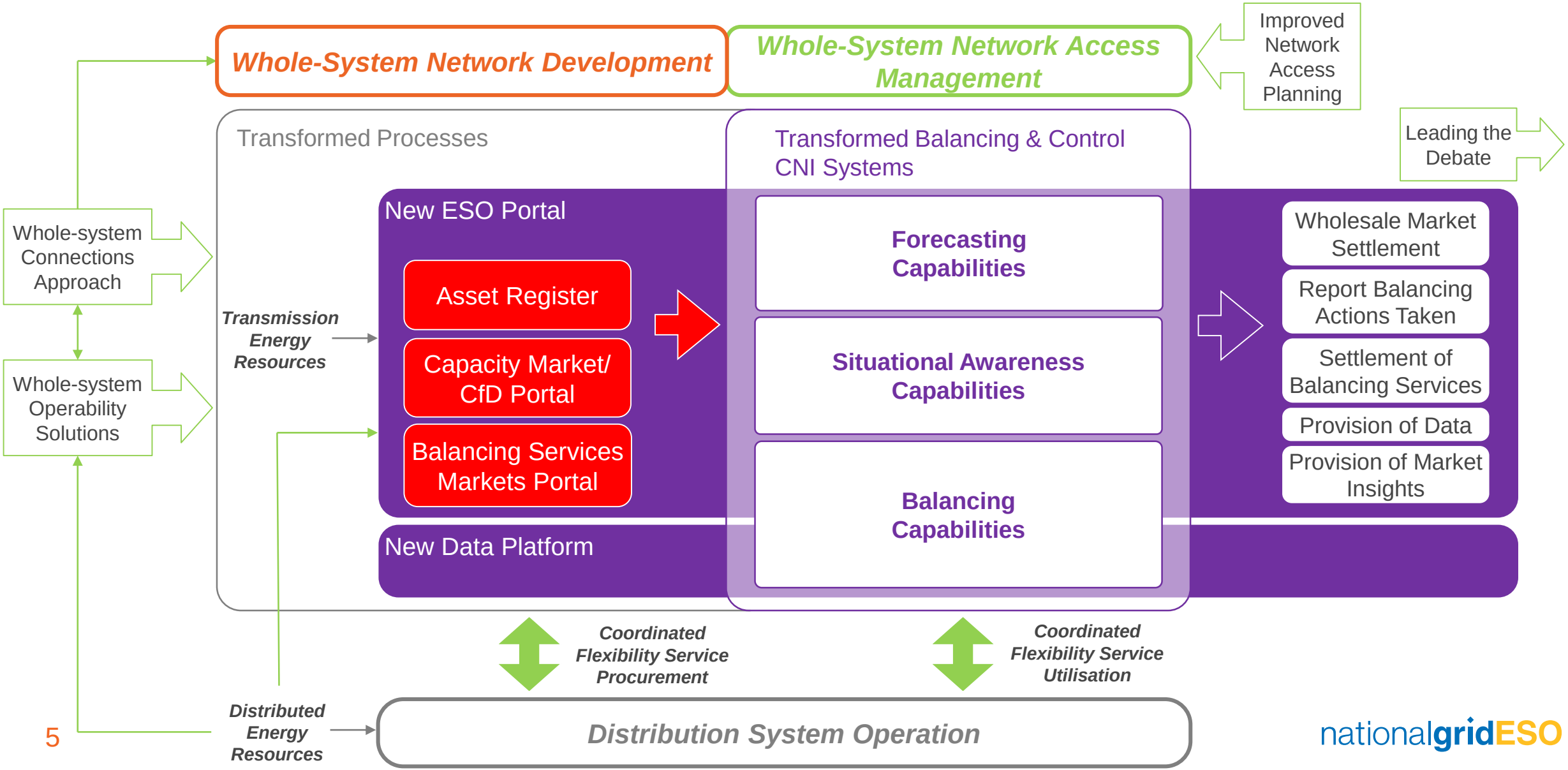
How the key deliverables fit together



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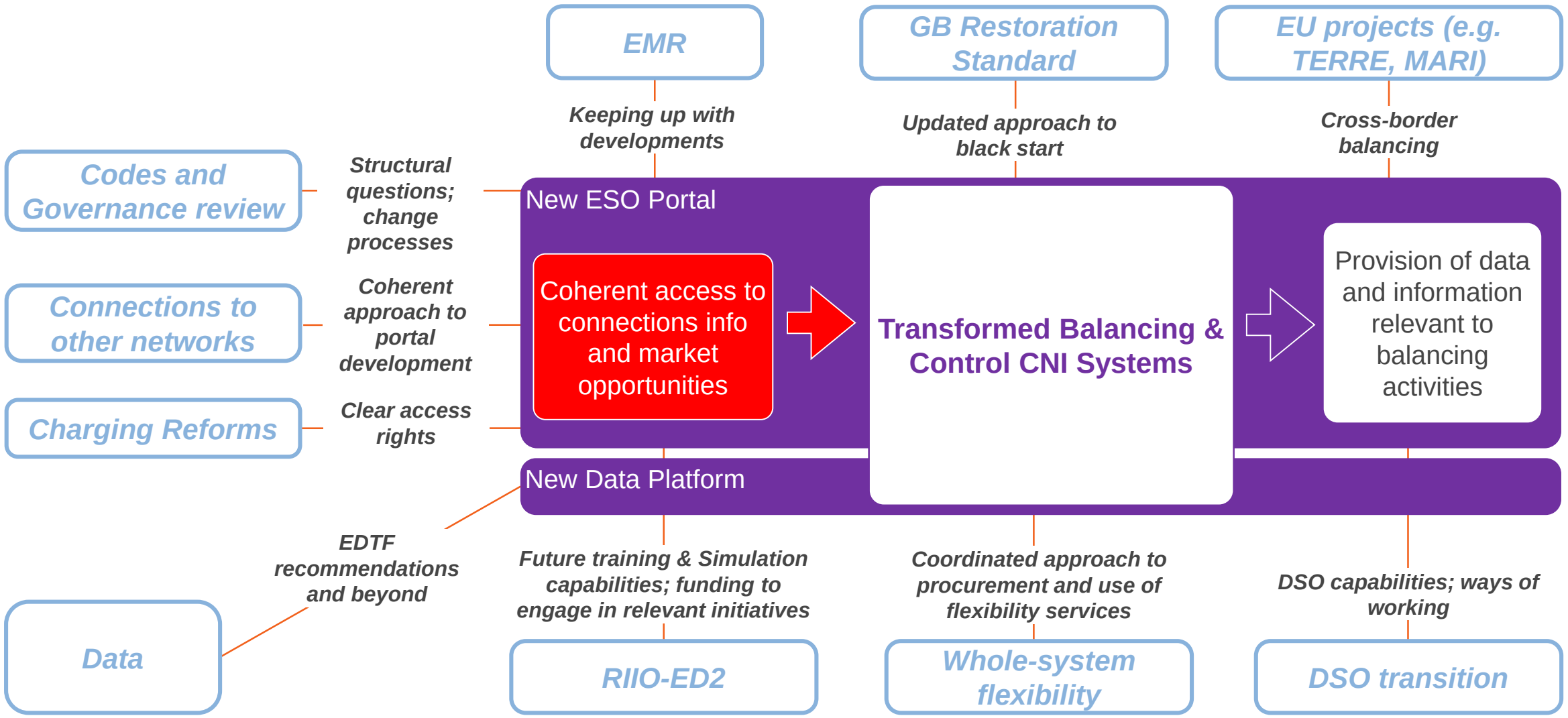
External Linkages



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Theme 1 Control centre architecture and systems

Description: Ensuring the control room has the balancing and control tools to be able to operate a carbon-free system
Investment: £153 million **Benefit**: £338 million **NPV:** £242 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Reduced CO2 emissions: By reducing the carbon intensity of balancing actions by maximising the use of low-carbon technologies and still balance in a technology-neutral manner, creating **£52 million of benefits**	**Reduced CO2 emissions:** • ESO balances 5% of the market as residual balancer • Two Degrees annual demand ~280 TWh, so ~15 TWh influenced as residual balancer • Activity unlocks Two Degrees carbon intensity from Slow Progression *FES* scenarios • Valuing this change in carbon cost at BEIS central estimate
Greater interconnection: Unlocking benefits from greater interconnection by efficient and cost optimal use of low-carbon technologies across Europe, creating **£35 million of benefits**	**Greater interconnection:** • Using £11 billion estimate (from National Grid Ventures report) benefit of increased interconnection over 25 years, so £440 million a year • With ESO delivering 2% of these as part of its residual balancing role • Benefits are incremental, given cumulative benefits of interconnectors
Utilising flexible technology: Reduced balancing costs associated with large volumes of distributed and renewable generation on the system, through efficient use of flexible generation, creating **£104 million of benefits**	**Utilising flexible technology:** • Based on Committee on Climate Change report of between £3.2 and £4.7 billion per year benefits • With ESO delivering 1% of £3.95 billion these (middle of range) as part of its residual balancing role • Benefits are incremental, given modular development of new capabilities
Better inertia forecasting and needs management: A more accurate understanding of system inertia, allowing efficient risk management and reduced RoCoF spend, creating **£16 million of benefits**	**Better inertia forecasting and needs management:** • 10% forecasting improvement, consistent with demand forecasting improvements • Annual RoCoF spend of £144 million a year • Benefits end in May 2022, so claim 13 months of benefit, giving total of ~£16m (10% x £144m x 13 / 12) due to distribution code change
Improved situational awareness: Improved monitoring and understanding of network conditions leading to reduced constraint spend, creating **£127 million of benefits**	**Improved situational awareness:** • Based on NIA project demonstration of 5% reduction in constraint spend • With constraint forecast from *NOA* process ~ £780 million average over RIIO-2 • Benefits are incremental, given modular development of new capabilities
Reduced Balancing Mechanism (BM) outage downtime: Reducing the number and duration of unplanned BM and associated costs - **£5 million of benefits**	**Reduced Balancing Mechanism (BM) outage downtime:** • Reduced unplanned outages from historic rate of 2hr 33 min per year to 1hr • Historic cost of £700k per hour of outage • Benefit calculation: 1.5 hours reduction per year x £700,00 x 5 years = £5 million (over RIIO-2)

Risks to delivering benefits

- Given the uncertainty around market values, such as constraints, flexibility and carbon so the NPV could credibly be **between £69 million and £476 million**

Third party costs and benefits

- Costs for networks and service providers to integrate with new systems
- For new providers it would be part of costs they would incur anyway

Theme 1 Control centre training and simulation

Description: Ensuring our control centre staff can operate the carbon-free system of the future
Investment: £22 million **Benefit**: £38 million **NPV:** £20 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Reduced resource costs: Updated shift patterns, working arrangements and increased staff retention will enable a reduction in resource costs, creating **£5 million of benefits**.	**Reduced resource costs**: • Cost saving is based on past resource costs
Decreased training costs: increased knowledge of new starters, through enhanced training and simulation capabilities, will reduce training time creating **£3 million of benefits**	**Decreased training costs**: • Benefit forecast based on reducing training time from seven to four months, using historic training costs of £75,000 per candidate and assuming 30 candidates trained per year • Benefits are incremental, given modular development of new capabilities
Improved decision making: improved training and simulation capabilities will deliver a 2% saving in response and reserve spend, creating **£31 million of benefits**	**Improved decision making:** • Response and Reserve spend assumed to be £514 million per year (12 year average) • ESO delivers 2% reduction in spend, delivered incrementally given modular development of new capabilities, demonstrated by delivery of Mathematics and uncertainty NIA project with Brattle

Risks to delivering benefits

- Given the uncertainty around market values, such as reserve and response costs, the NPV could credibly be **between £0 million and £35 million**

Third party costs and benefits

- Cost to TOs and DNOs for using our training facilities, but offset by not having to invest themselves
- Wider benefits from efficiencies of scale and better understanding of different systems, networks and interactions

Theme 1 Restoration

Description: Ensuring we can restore a carbon-free system, should the need ever arise
Investment: £34 million **Benefit**: £5 million **NPV: negative** £8 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Benefits from Distributed Energy NIC project: the project CBA estimates an NPV of £115 million from 2025 to 2050. We claim one year (2025/26) of the benefit, creating **£4.6 million of benefits**	**Benefits from Distributed Energy NIC project:** • £115 million NPV can be allocated evenly per year, allowing us to claim £4.6 million in the final year of RIIO-2
Carbon savings: the Distributed Energy NIC project CBA estimates a reduction of 810,000 tonnes of CO2 from 2025 to 2050. We claim one year (2025/26) of the benefit, creating **£0.6 million of benefits**	**Carbon savings** • Reduction of 810,000 tonnes of CO2 can be allocated evenly per year, allowing us to claim £0.6 million in the final year of RIIO-2, by multiplying carbon reduction by carbon price.

Notes about our restoration benefits

- We have not conducted a sensitivity analysis here as we are only claiming a small, one-year benefit.
- Our restoration proposals are an insurance policy, so the NPV is naturally low, because majority of the benefits would only be realised in restoration situation.
- There is strong stakeholder support for our proposals.

Third party costs and benefits

- Costs for service providers in complying with the restoration standard that we will conduct the assurance process for
- DNOs and service providers may need to develop new communications systems, depending on the proof of concept findings from the NIC project.
- Societal benefits from faster restoration and third party benefits from the ability of new technology to provide restoration services.

Theme 2 Build the future balancing service and wholesale markets

Description: Ensuring we can procure, through liquid markets, the flexibility to operate a zero-carbon system at least cost
Investment: £37 million **Benefit**: £106 million **NPV:** £67 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
More liquid response and reserve market: Moving products closer to real time increases the number of potential participants in the reserve and response markets, therefore increasing their liquidity. We have used early trials to show this increased competition reduces market prices, creating **£77 million of benefits**	• The size of the reserve and response market is estimated at £514 million per year (based on 12-year average). • Based on *ESO 2019/21 Forward Plan* (page 111) we assume a five percent saving in the response and reserve markets from 2023/24 and in each of the following two years of RIIO-2 • This would result in an annual benefit of £25.7 million • This allows two years for implementation.
Buying the optimal volume of response: The volume of response varies from day-to-day. At month ahead stage we tender for the minimum volume and manage the daily variation using mandatory response on thermal plant. Having markets which can operate in real time unlocks additional liquidity in three ways: • Parties can choose between a short and longer-term product. • Targeting more specific volume. • Allowing market parties to bid in makes them more confident of their position Creating **£29 million of benefits**	• The size of the response market is £193 million per year (based on 12-year average). • Based on our previous experience, we estimate a 5% reduction on purchased volume from 2023/24 and in each of the following two years of RIIO-2 • This will result in an annual benefit of £9.7 million. • This allows two years for implementation.

Risks to delivering benefits

- Given the uncertainty around reserve and response market values and potential savings the NPV could credibly be **between £115 million and £3 million**

Third party costs and benefits

Delivering this activity relies on third-party engagement with the new system and markets. There may be minor costs from adapting to these new arrangements, but we believe this are within the scope of third parties' ongoing investments

Theme 2 Transform access to the capacity market

Description: By 2025, we will be trusted to deliver security of supply against a clear standard agreed with Government.
Investment: £9 million **Benefit**: £74 million **NPV:** £62 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Enhanced modelling capability: Better industry data and enhanced modelling and analysis capability will allow better forecasting. Much of the theory on which capacity calculations are built is based on systems with conventional generation. We need a new understanding of security of supply for a system with large volumes of renewable generation and distributed flexible assets, creating **£68 million of benefits**	• Assume the clearing price of the T-4 Capacity Market is £17.08 /kW, based on four-year average. • We have assumed that we save consumers the equivalent purchase cost of 1 GW or 2% of capacity • Each T-4 auction saves £17 million
Reduced barriers to entry and cost of participation: Removing barriers to entry for the Capacity Market will make the process as efficient as possible for applicants, reducing their participation costs, with these savings passed to the consumer, creating **£6 million of benefits**	• Based on 400 companies (as seen in the CM register) participating • Saving two FTE weeks of time (mirroring ESO commitments) • Total cost of an FTE at £100,000 per year. • Leading to annual saving of £1.5 million (400 x £100,000 per year x 1/26 of a year)

Risks to delivering benefits

Given the uncertainty around capacity market clearing prices and participation in the Capacity Market the NPV could credibly be **between £94 million and £22 million**

Third party costs and benefits

- Delivering this activity depends on engagement with the new system by industry.
- There may be small costs associated with adapting to these new arrangements, but we believe these are within the scope of ongoing investments.

Theme 2 Work with all stakeholders to create a fully-digitised, whole-system Grid Code by 2025

Description: By 2025, our codes and code governance will be seen as an enabler of change, not a barrier
Investment: £6 million **Benefit**: £6 million **NPV:** £1 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Digitalising the Grid Code provides a more user-friendly and tailored experience for customers. A simpler whole system Grid Code will speed up how important decisions are taken throughout the connection journey. Crucially it will provide more targeted and customised information when our customers need it. These improvements will also aid new smaller entrants, as well as innovation in the market. In the long term, parties will deliver efficiencies and lower cost for consumers, creating **£6 million of benefits**	• We estimate on average 500 potential projects will need to interact with the whole system Grid Code, based on 393 applications for connection to the transmission network alone. • We have assumed that the improved digital service will remove one-person month of effort from each application process • Total cost of an FTE at £100,000 per year. • Leading to annual saving of £4.2 million (500 x £100,000 x 1/12) • Benefits begin to be delivered in 2024/25 and fully in 2025/26 • Based on delivery timelines, we anticipate realising £2.1 million in 2024/25 and £4.2 million from 2025/26 onwards, giving £6.3 million over RIIO-2.

Risks to delivering benefits

- Given the uncertainty around the number of potential projects the NPV could credibly be **between £4 million and negative £3 million**

Third party costs and benefits

- This will require the ESO to work collaboratively with third parties, in particular the distribution networks operators (DNO) to create the whole system element
- For current and future whole system Grid Code users to fully participate in the process.
- There may be minor costs from adapting to these new arrangements, but we believe these are within the scope of third parties' ongoing investments.

Theme 2 Look at fully or partially fixing one or more components of Balancing Services Use of System (BSUoS) charges

Description: Partially fixing BSUoS will reduce volatility and increase predictability, reducing risk to our customers
Investment: £19 million **Benefit**: £324 million **NPV:** £280 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
By changing how BSUoS is charged, reducing volatility and making it more predictable, this will reduce the risk premia which BSUoS parties pay to manage this uncertainty and volatility. With the ESO taking on financing costs to manage this risk on behalf of the industry, creating **£324 million of benefits** **Note these are still early estimates of costs and benefits and is not reflected in our analysis of overall ESO financing costs.**	• Analysis based on previous industry analysis undertaken by the CUSC Work Group exploring fixing BSUoS with a notice period as demonstrated in the Final Modification Report for CMP250, *stabilising BSUoS with at least a twelve-month notification period, Section 2.163* • This report estimates consumer benefits between £81 million and £201 million a year • ESO analysis suggests financing cost between £2.2 million and £7.4 million a year – Again note these are early estimates and not reflected in our analysis of overall ESO financing costs. • Given uncertainty we assume the lower benefits estimate and the average of the financing costs • These changes will come in April 2022 • We also need BSUoS to be confirmed as cost recovery by Ofgem • Benefit calculation: £81 million benefit per year x 4 years delivery = £324 million benefit

Risks to delivering benefits

- Given the uncertainty around the report's benefits and ESO financing costs the NPV could credibly be **between £730 million and £206 million**

Third party costs and benefits

- BSUoS payers pass on any reduced operational costs to consumers and there may be some costs to implement changes to the charging regime.

Theme 3 *NOA* enhancements

Description: Expanding the areas assessed by, and solutions within, the Network Options Assessment (*NOA*)
Investment: £18 million **Benefit**: £725 million **NPV:** £663 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Facilitate competition by embedding pathfinding projects into the *NOA*: 1. Completing the standard *NOA* process 2. Adding a commercial solution to provide additional boundary capacity 3. Use historic costs of commercial solutions as a benchmark for analysis 4. Repeat the *NOA* process with this extra commercial option 5. Calculate the difference between (1) and (4), creating **£429 million of benefits**	**Facilitate competition by embedding pathfinding projects into the *NOA:*** • Using established *NOA* modeling and process with historic (commercially sensitive bilateral contracts) costs • Commercial markets provide 1 GW of solutions from 2024/25, as detailed in pathfinder project from 2018/19 *NOA*.
Extending NOA to end of life asset replacement decisions: By taking a new approach when assets are close to end of life, potentially upgrading earlier to avoid another upgrade within a five-year period, creating **£118 million of benefits**	**Extending NOA to end of life asset replacement decisions:** • Assets are only considered for replacement when their life expires in the next five years, so only 12.5% (5 years of out of 40) of reinforcements are considered. • Of the 36 options in *NOA* to upgrade assets, four schemes could provide benefits. • The average cost of these 36 schemes is £29.5 million. • So, these four schemes would deliver £118 million of consumer benefit (4 x £29.5 million)
Extend NOA approach to all connections wider works: Considering additional boundaries, other than bulk transfer, for inclusion in future *NOA* reports, creating **£148 million of benefits**	**Extend NOA approach to all connections wider works:** • *NOA* is expanded to consider 10% more boundaries. **Note the relationship between more boundaries and cost saving is not linear** • Use a saving of 2% more in addition to £1.85 billion from *NOA* giving £37 million a year.
Support decision making for investment at the distribution level: Considering at the distribution level that a *NOA* type approach can lead to savings, creating **£30 million of benefits**	**Support decision making for investment at the distribution level:** • Assuming £40 million of distribution network investment a year, based on historic data • Assume around 40% of investments are not on the optimal path (consistent with current NOA submissions), so recommend 40% x £40 million = £16 million not to proceed • We claim a conservative estimate of £10m to account for uncertainty, with deliver from 2023/24 onwards giving £30 million benefits

Risks to delivering benefits

Given the uncertainty around market and third party behaviours, such as cost of solutions, total *NOA* savings and number of schemes, so the NPV could credibly be **between £462 million and £906 million**

Third party costs and benefits

There is likely to be additional work for TOs and DNOs in creating options and running new processes. However, we expect that the cost should be offset by potential benefits for network companies to carry out this work because of their regulatory and incentive frameworks.

Theme 4 Taking a whole electricity system approach to connections

Description: We will enhance the way we carry out connections activities, so that we can continue to meet the needs of customers
Investment: £6 million **Benefit**: £8 million **NPV:** £2 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
As the number of connection applications the ESO has received in each of the last three financial years has increased as new market participants look to connect. These are driven primarily by smaller generation units for battery storage and solar connections, new interconnectors and new demand points for data centres and independent DNOs. Improving the efficiency of our connections service will reduce participation costs, with these savings passed to the consumer, creating **£8 million of benefits**	• We estimate on average 460 connection applications, increasing 8% a year, based on historic trends • We estimate a reduction in resource requirements of 5% delivered from April 2022. • An additional 5% will be delivered in April 2022 with capacity information across the transmission-distribution interface. • Roll-out of our secure online account management facility in April 2025 will deliver an additional 30% saving

Risks to delivering benefits

Given the uncertainty around connection application numbers and type the NPV could credibly be **between £3 million and negative £2 million**

Third party costs and benefits

Delivering this activity depends on engagement with the new by industry.
There may be small costs associated with adapting to these new arrangements, but we believe this are within the scope of ongoing investments.

Theme 4 Taking a whole electricity system approach to promote zero-carbon operability

Description: Addressing operability issues so we are able to operate a zero-carbon power system by 2025
Investment: £75 million **Benefit**: £549 million **NPV:** £469 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
Whole system operability NOA-type assessment: By investing in areas to promote whole system zero-carbon operability, such as embed enhanced frequency control capability or efficiently identifying future operability needs, we can reduce operability spend on areas such as voltage and stability. By considering potential investments of known solutions we can estimate reductions in these operability costs, creating **£503 million of benefits**	**Whole system operability NOA-type assessment:** • Operability costs are estimated £596 million • A £2.25 billion operability solution *could be* implemented to alleviate 50% of the need to spend £596 million per year. • Accounting for discounting and uncertainty over 40 years, a CBA would deliver benefits of £126 million per year. • Implementing a similar process from 2022/23 gives £503m of benefits (£126 million per year x 4 years)
Benefits of Regional Development Programs (RDPs): By undertaking more RDPs we expect similar benefits to those undertaken so far such as saving asset build or offsetting carbon, creating **£46 million of benefits**	**Benefits of Regional Development Programs (RDPs):** • ESO works with industry on six RDPs over the RIIO-2 period • Saving estimated from previous RPDs • The six RDPs are split three saving asset build at £13 million each and 3 offsetting ~ 1TWh of thermal generation for renewable generation, avoiding emitting carbon to the value of ~£2 million.

Risks to delivering benefits

Given the uncertainty around market behaviours, such as operability costs, cost operability solutions and carbon prices the NPV could credibly be **between £608 million and negative £333 million**

Third party costs and benefits

Delivering this activity requires industry to deliver solutions, either through investment in assets or commercial solutions, there may be initial costs to developing these solution (see £25 million GVA cost above for example). For RDPs, funding required to partner with DNOs

Theme 4 Delivering consumer benefits from improved network access planning

Description: We facilitate efficient access to the network by Transmission Owners for maintenance and construction activities.
Investment: £8 million **Benefit**: £224 million **NPV:** £205 million

Approach – Are these the right approaches to determine the benefits?	Assumptions – Are these fair assumptions to calculate the benefits?
By rolling out Network Access Policy (NAP) cost recovery mechanism process to England and Wales (it is active in Scotland) and using savings from Scotland extrapolated to England and Wales, creating **£224 million of benefits**	• Consumer benefit for this approach has already yielded results in Scotland which in 2018/19 were forecast to be between £16 million and £36.7 million, equivalent to between a 7 percent and 16 percent reduction in costs. • Our power system knowledge infers a 50:50 split in complexity for outage planning between England & Wales and Scotland, so we have assumed the same proportion of benefits could be realised in England & Wales. • For rolling out the NAP to England & Wales we have assumed the mid-range estimate of 11.5 percent. • We have used the *NOA* process to forecast constraints costs based on the 18/19 outturn numbers ~ £380 million a year • Benefit calculation: 11.5% x £380 million x 5 years = ~£224 million benefit over RIIO-2 • We also require code modifications to be implemented

Risks to delivering benefits

Given the uncertainty around constraint costs and England and Wales savings, the NPV could credibly be **between £310 million and negative £98 million**

Third party costs and benefits

We need DNOs and TOs to participate in the new process, there may be additional costs around implementing the new regime

Theme 1 metric proposals

		Scope		Value			Measurement		
Business area	Metric	What is included in the metric	What areas would not be measured	Ambition alignment	Industry value from performance in metric	End consumer value from metric	Measurement method	Reporting Frequency	Data sources
Control centre architecture and systems	Balancing cost	As per the 2018/19 and 2019-21 Forward Plans. A benchmark is derived from the application of a linear trend to five-year moving averages of historic balancing costs. A certain number of upward and downward drivers are then applied to set the final benchmark	Black start costs	Ambition - competition everywhere Ambition - trusted partner Ambition - ability to operate carbon-free	Transparency of balancing spend and its key drivers	£million	As per the 2018/19 and 2019-21 Forward Plans. A benchmark is derived from the application of a linear trend to five-year moving averages of historic balancing costs. A certain number of upward and downward drivers are then applied to set the final benchmark	Annual	Historic balancing costs
	Network reliability	CNI system reliability, network reliability, scheduling and dispatch tools.		Ambition - trusted partner Ambition - ability to operate carbon-free	Increased visibility on ESO control room system health		Time of planned outage accuracy ± time of unplanned outages. In other words, we would be measured to accurately forecast and deliver planned outages, and minimise unplanned outages	Annual	
	Stakeholder satisfaction on design authority	CSAT / SSAT of the members of the ESO Design Authority		Ambition - ability to operate carbon-free Ambition - trusted partner	Improvements to our engagement on the development of new balancing and control capabilities Additional transparency around our decision making logic	£million, through better designed capabilities	CSAT / SSAT	Annual	Historic CSAT / SSAT / SEIS scores
Restoration	Number of parties providing restoration services	Number of providers contracted to provide restoration services		Ambition - ability to operate carbon-free Ambition - trusted partner (traditionally used opaque bilateral contracts)	Increased transparency around black start requirements and provision	£million saving from increased competition Lower carbon emissions from CO2 emission reduction by contracting low carbon technology and reducing warming of thermal plant	Number of providers	Annual	Historic data
Commercial operations	Forecast accuracy for demand and wind	Day ahead national demand forecast Day ahead BMU wind forecast		Ambition - ability to operate carbon-free Ambition - trusted partner	Improved forecasting, allowing market to self-balance more and sending more accurate price signals to market Increased transparency around forecasting performance and drivers of errors	£m savings from less residual balancing activity and control room holding optimal levels of reserve	Benchmark set by considering past forecasting performance. Targeted number of months to be within a certain monthly mean absolute percentage error	Monthly	Historic performance

Theme 2 metric proposals

		Scope		Value			Measurement		
Business area	Metric	What is included in the metric	What areas would not be measured	Ambition alignment	Industry value from performance in metric	End consumer value from metric	Measurement method	Reporting Frequency	Data sources
Build the future balancing service and wholesale markets	Proportion of balancing and ancillary services procured through competitive means	Commercial Balancing and Ancillary Services - by spend £ rather than MW volume to allow for easier read across and comparable units Measured currently in the Forward Plan - Mandatory, Commercial (other bilaterial arrangements) and Tendered (open, competitive markets) volumes.	BOAs Pathfinders and other innovation projects	Ambition - Competition everywhere	1. Additional Transparency and certainty that a greater proportion of the available market volume is open and accessible. The need is clearer, provides greater certainty and enables new providers to build business cases.	Drives competition and reduced prices to deliver more consumer benefit via lower BSUoS costs	Measured based on total spend per market and the proportion spent in the 3 categories	Quarterly with annual review	1. ESO Settlements (created for the MBSS) broken out into greater detail for individual services / Markets
Codes and governance	For administration continued CSAT scoring. For code manager potential for evaluating consumer benefit of modifications undertaken	1. Assessment of consumer benefit / value saved of implemented modifications vs. counter factual (for reporting reasons only, not target). This is in line with our CBA narrative. 2. Customer survey to measure industry collaboration and ability to participate effectively	1. We would not measure / target the amount of modifications or change driven through the process as this is subjective and dependent on the change horizon. 2. We would not measure the value of change to industry vis survey (due to commercial bias). and therefore £million savings to industry.	Ambition - trusted partner	1. Strategic change delivered at greater pace allowing industry to adapt to a zero carbon world more efficiently. 2. Inceased efficient use of industry regulatory teams (this may not result in reduced costs as the change horizon will increase). Ability for smaller players to more actively particpate in the market.	1. £million & qualitative reduction of GHG emissions from the energy industry. 2. £million, however this would not be measured.	1. Cumulative ex-post evaluation of consumer benefit via modification impact assessment.	1. Annual 2. Quarterly / ad-hoc dependent on commencement of an activity	1. ESO modification impact assessments 2. Self survey / potential industry wide survey conducted by Ofgem
EMR	Ratio of pre-qualified capacity v capacity available in a T-1 and T-4 auction	The amount of capacity that successfully pre-qualifies against the amount of capacity that is available in a T-1 auction		Ambition - Competition everywhere	Amount of capacity that pre-qualifies successfully in the auction	The ratio between pre-qualified and available capacity indicates market liquidity and the greater the ratio the lower the cost to consumers	Ex-post evaluation after each T-1 auction	After each T-1 auction	Auction reports
	Accuracy of T-1 and T-4 peak demand forecast	The difference between our peak demand forecast v actual peak demand		Ambition - Competition everywhere	Ensures the correct amount of capacity is procured through the auction to meet peak demand	Ensures the correct amount of capacity is procured through the auction which keeps the cost to consumers as low as possible whilst ensuring sufficient capacity is available to meet peak demand	Ex-post evaluation after the relevant Delivery Year	After the relevant Delivery Year	EMR modelling team

Theme 3 metric proposals

		Scope		Value			Measurement		
Business area	Metric	What is included in the metric	What areas would not be measured	Ambition alignment	Industry value from performance in metric	End consumer value from metric	Measurement method	Reporting frequency	Data sources
Network development	Customer value savings from NOA	Assessment of value saved by NOA measured by counterfactual of not proceeding NOA for a year (should not be a target). Plus SWW and CION but again no target just reporting		Ambition - Competition everywhere		£million	£million saved	Annual	ESO BID3 models
	Number of non-TO participants	ESO exclusive options, ESO with commercial services from non-TO, ESO collaborative with TO and TO Exclusive		Ambition - Competition everywhere	£million	£million	Percentage bands of total options presented	Annual	NOA options process
	Participant satisfaction	Customer survey measures		Ambition - Competition everywhere	£million		CSAT and absolute/diversity measures	Quarterly	Self survey

Theme 4 metric proposals

		Scope		Value			Measurement		
Business area	Metric	What is included in the metric	What areas would not be measured	Ambition alignment	Industry value from performance in metric	End consumer value from metric	Measurement method	Reporting Frequency	Data sources
Customer connections	Customer satisfaction	Rolling CSAT metric which measures customers of the connections process.		Ambition - trusted partner	Increased service performance from connections process		Rolling CSAT metric which measures customers of the connections process.	Annual	Self-survey
Network Operability	Capacity released	Measurement of capacity released using new operability approaches to network challenges. Measured through a counterfactual, using capacity released for transmission		Competition everywhere	More space for more players in the market	The market can fill the capacity through new connections, reduction in energy bills through increased competition	Production of a counterfactual to demonstrate the value	Annual	
	Balancing cost reduction through new operability approaches	Savings captured from procurement of new services		Competition everywhere		Reduction in balancing cost	Measured from an outturn vs. forecast using a forecast taken at a specific time	Annual	Provided forecast vs. actual
Network access planning	Customer Value Opportunities	Value created for customers by innovative ways of working with TOs and DNOs to release capacity across the whole electricity system	Monetary value created for customer.	zero carbon network & improved quality of service.	>110,000MWh (estimated)	>55,000MWh (estimated)	MWhr value created	Quarterly	Outage Planning process