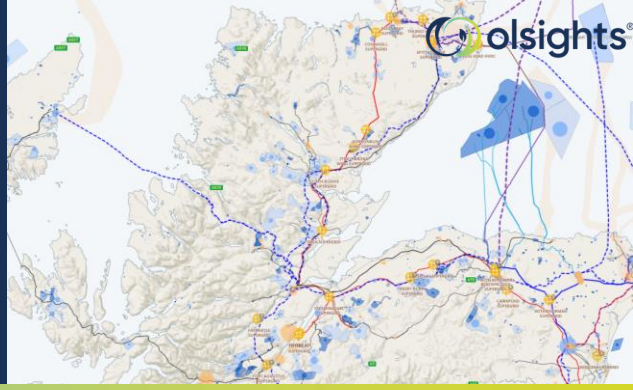
REACT

A Spatial Decision Intelligence Platform for Grid Planning

Enabling risk-based decisions on what grid capacity will actually connect



LEAD NETWORK PARTNER

Scottish & Southern Electricity Networks
TRANSMISSION

DEV PARTNER (FRONT-END)

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DEV PARTNER (DIGITAL MODEL)

MapStand®
LOCATION INTELLIGENCE

The Challenge

The transmission network connections process remains complex, fragmented, and slow, creating significant challenges for developers and network operators.

Decision-making is constrained by fragmented and incomplete data, leading to:

- Limited visibility of project delivery
- Lack of clarity on where projects will connect
- Poor understanding of regional capacity constraints

This results in:

- Inefficient use of network capacity
- Suboptimal project siting
- Delays to investment decisions

A more integrated and predictive approach to grid planning is required – one that reflects not just connection queues, but the likelihood of project delivery and area-wide impact.

REACT enables stakeholders to move beyond static analysis towards real-time, scenario-driven decision-making.

The REACT project, initially funded through Ofgem's Strategic Innovation Fund (SIF) and subsequently the Network Innovation Allowance (NIA), has evolved from an initial spatial planning concept into a live, interactive visual decision-support platform used to inform real-world grid planning decisions.

What REACT Enables

Integrating network, generation, storage and policy data into one decision environment

Identifying which projects are most likely to connect using risk-based scoring

Identifying in which network zones capacity will be delivered and where reinforcement has greatest impact

Providing a transparent view of constraints, opportunities and trade-offs

Key Innovation -

From Nameplate Capacity → Expected Capacity

REACT enables planners to estimate what capacity is likely to connect by:

- Applying risk-based scoring (Inevitability Index)
- Accounting for delivery uncertainty and policy constraints
- Aggregating project likelihood into system-level insight

From weeks to minutes
faster, data-driven decision insights

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How REACT Works: Interactive Planning Workflow

User-driven, real-time analysis of project risk and expected capacity

Define Scenario

Apply scenario filters:

- Geography (network zones, substation areas, regions)
- Technology (generation, storage, hydrogen)
- Time horizon (current vs future pipeline)

Assess Risk & Viability

- Evaluate projects using risk-based scoring (inevitability index)
- Identify which schemes are most likely to connect

Generate System Insight

- Aggregate results into zonal capacity insights
- Understand realistic regional Expected Capacity.
- Identify constraints and reinforcement priorities

From project pipelines to real-world decisions

Key Innovation

From Nameplate Capacity → Expected Capacity

- Quantifying what capacity and most likely to connect
- Moves beyond nameplate pipeline totals
- Visualise risk vs capacity relationships

System Impact

- Reactive → ***Proactive decision-making***
- Deterministic → ***Probabilistic modelling***
- Static data → ***Live decision environment***

How REACT is used

- **Strategic Grid Planning**
  Identify where and when reinforcement is most needed
- **Pipeline Assessment**
  Focus on deliverable, high-value capacity locations & timing
- **Investment Decisions**
  Quantify infrastructure impact

Impact

- **£260M+** potential net benefit to UK consumers
- Improved targeting of high impact network reinforcement
- Reduced risk of inefficient or premature investment

REACT - enabling faster, smarter and more transparent grid planning for the energy transition

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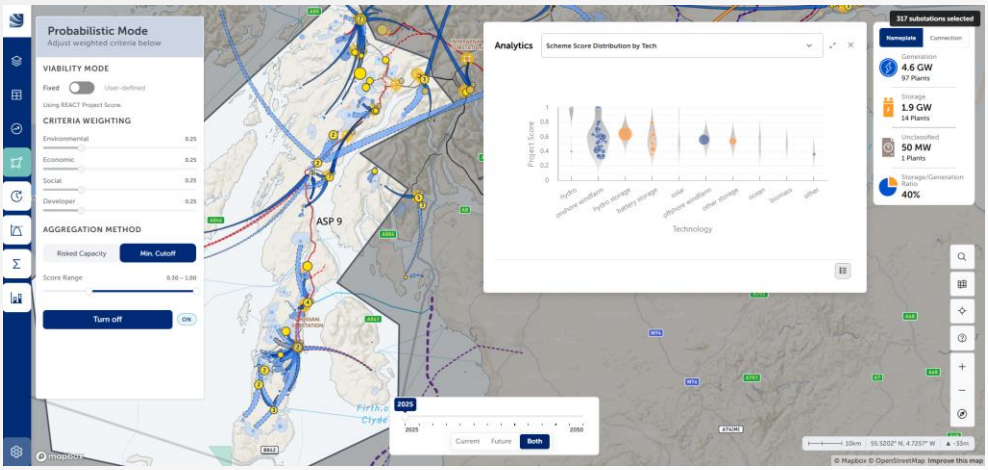
REACT Platform in Action

From data to decision-making in a single environment

Interactive planning environment optimising generation, storage and network capacity

Main Spatial Environment



Data Layers
View generation, storage and network infrastructure

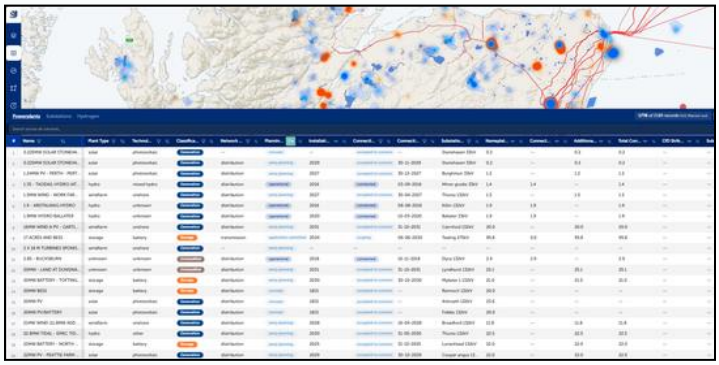
Geographic Filters
Filter by zones, substations and areas

Time Slider
Showing pipeline build-up over time

Capacity Totaliser
Summarise generation & storage capacity for selected areas

Live spatial planning environment integrating generation, storage and network infrastructure

Filter and analyse complex project pipelines

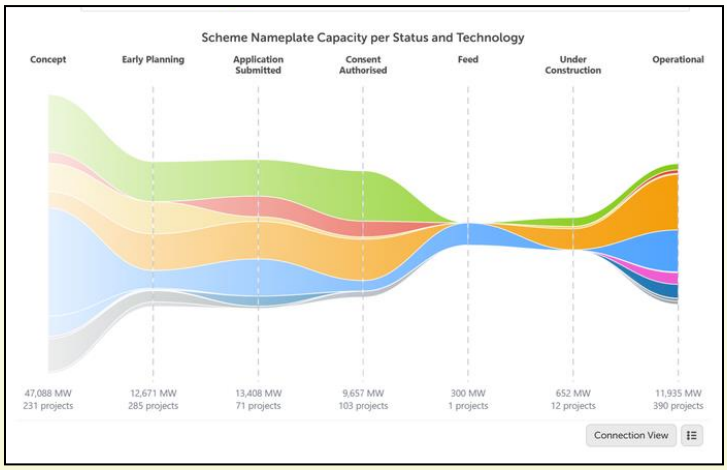


- Filter by technology, capacity, developer & timeline
- Apply geographic constraints (zones, substations, custom areas)
- Link map, table and analytics in real time

Identify which projects will actually connect

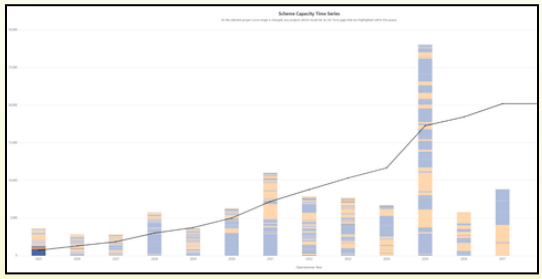
- Apply user-defined weighting criteria
- Generate Inevitability Index scores
- Assess likelihood of successful project delivery

Interactive Analytics



- Visualise capacity build-up over time
- Compare generation vs storage
- Understand substation-level constraints

Scheme Capacity Time Series



Export insights directly into reporting and decision workflows

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Impact & Strategic Value

Enabling informed, data-driven decision-making for the energy transition

Key Impact

£260M+
potential net benefit to UK consumers

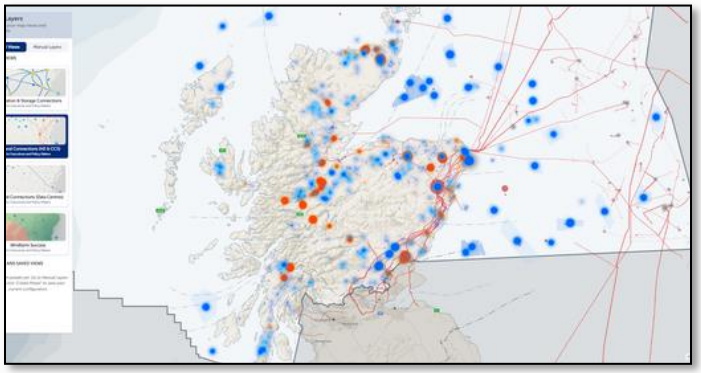
Accelerated and more confident decision-making

Improved targeting of high-impact reinforcement

Reduced risk of inefficient or premature investment

System Level Benefits

- Improved forecasting of deliverable capacity
- Better alignment between networks, developers, communities and policy
- More transparent and consistent decision-making



Strategic Alignment

REACT supports key UK energy sector reforms and strategic initiatives:

- UK Connections Reform
- Future Energy Scenarios (FES)
- Clean Power 2030
- Strategic Spatial Energy Planning (SSEP)

Scaling REACT for the future

REACT is evolving into a scalable planning platform

- Expansion across UK networks, with potential for European deployment
- Integration into operational planning workflows
- Continued development of probabilistic modelling

Enabling smarter and more transparent grid planning in the UK, Europe and beyond

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