



Local Energy Oxfordshire  
Local Energy Accelerating Net Zero

Oxford Energy Day  
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OXFORD  
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# Project LEO: What, How, Why ?

## What?

One of the UK's most ambitious, wide-ranging and innovative energy system projects that will help the Government achieve its legally binding commitment to achieve net zero emissions by 2050.

## How?

By running pilot projects, advancing capabilities and facilitating active participation in the creation of a smart, local balanced energy system to bring social, economic and environmental benefits for all.

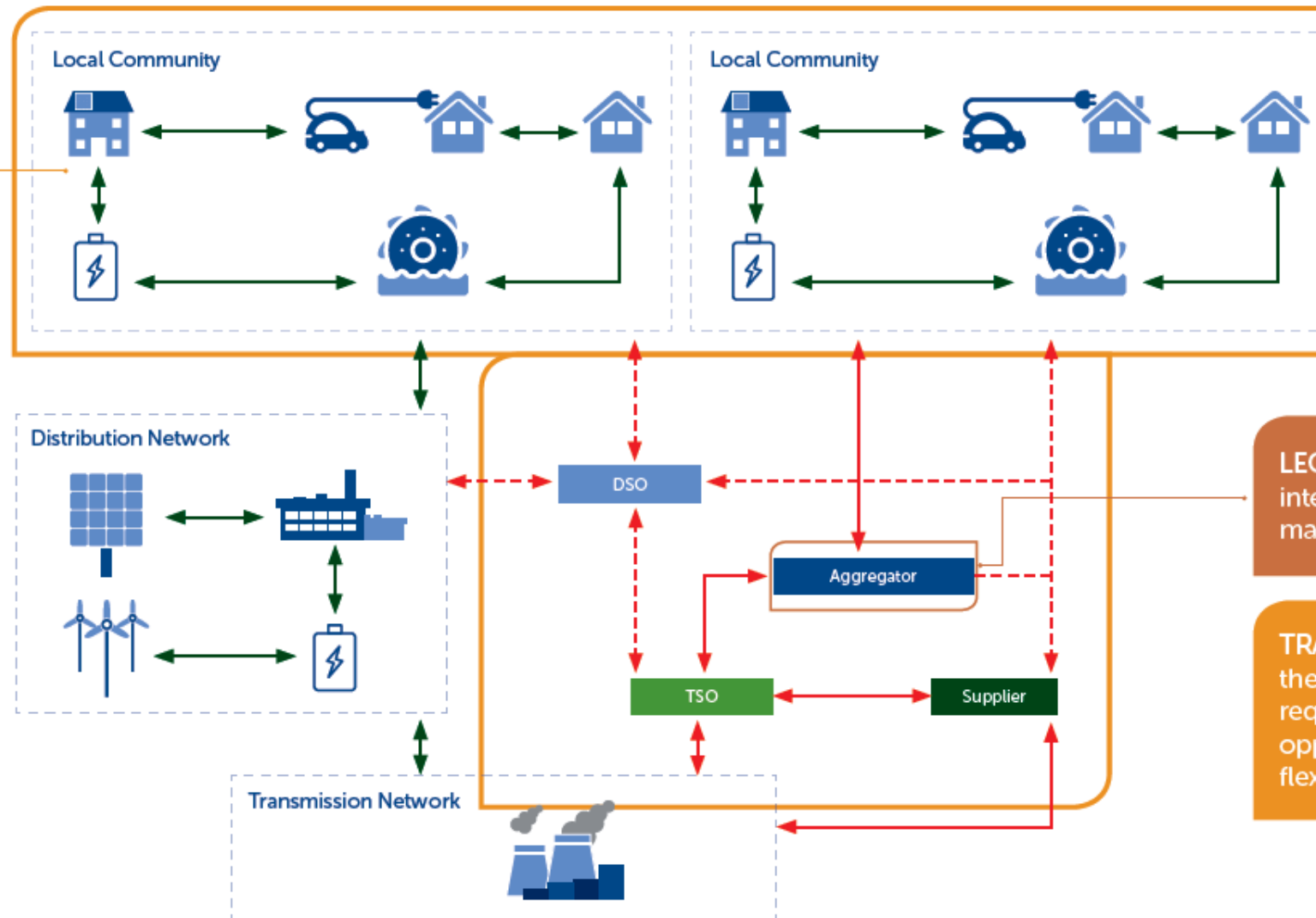
## Why?

A broad range of reliable evidence is required to support policies and investments that will create the technological, market and social conditions for successful systemic change.





LEO enables local energy trading



LEO delivers a mature, quantified, and engaged supply of flexibility within a regional bound

Adapted from the SSEN  
"Supporting a Smarter  
Electricity System —  
Our Transition to DSO" paper

LEO develops the  
interaction between  
marketplace operators

TRANSITION delivers  
the data exchange  
requirements and trading  
opportunities for a  
flexibility market.

Existing information flow

New information flow

Electricity flow



Pre Trial Learning

## Smart Tech

Learning from Battery Configuration to Building Management Systems. Automation for scheduling flexibility and LV monitoring



## Smart Markets

Learning on baselining, and pricing. Market Stimuli package requirements for fledgling markets. DSO Services and Peer to Peer innovation. ESO/DSO Coordination, unintended consequences



## Smart People

Learning from the consortium, generating and sharing knowledge. Communicating a systems project. Zero Carbon Oxford Partnership.





# LEO Trials – DSO Procured Trial Activity

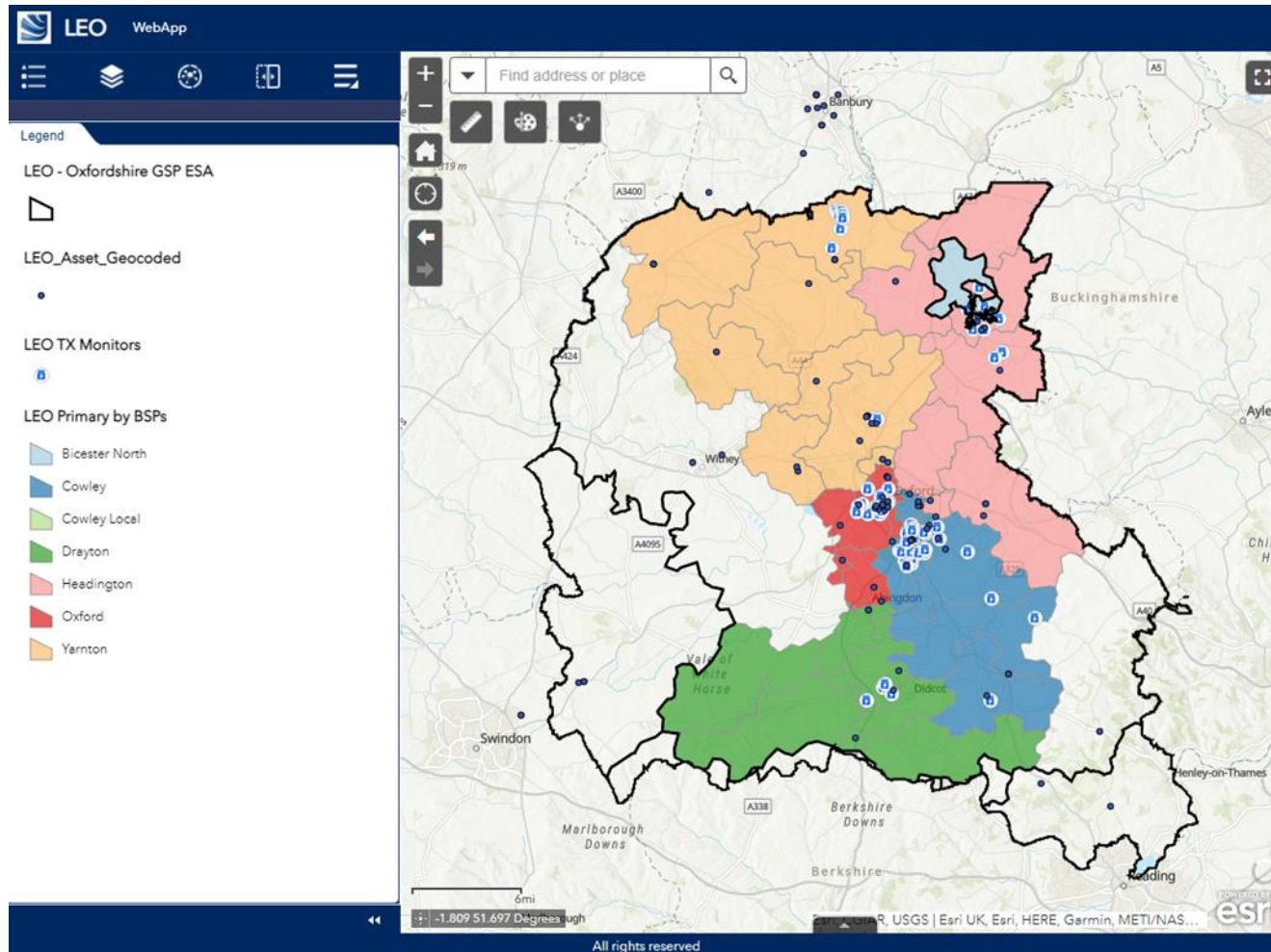
- We have now completed the first set of DSO Procured trials from Request through to Settlement.
- Many processes are now being implemented using both the NMF (Neutral Market Facilitator) and Piclo platforms.
- Auctions have been run for three BSPs (Bulk Supply Points) matched to availability of DERs (Distributed Energy Resource)
- The day, length and time of delivery have been varied throughout January with increasing variation planned throughout the rest of TP1 (Trial Period 1)
- Rose Hill Battery and Nuvve EV chargers have participated to date, with Rosehill Community Centre and Sandford Hydro participating in Peer to Peer Capacity Exchange

		2 week break for holiday period					
Auction Type	Auction Date	6 Jan	13 Jan	20 Jan	27 Jan	3 Feb	10 Feb
	Week Commence	10 Jan	10 Jan	24 Jan	31 Jan	7 Feb	14 Feb
Substation		10	11	12	13	14	15
Weekly	Cowley Local BSP	X	X	X	X	X	X
Weekly	Oxford BSP	X	X	X	X	X	X
Weekly	Bicester North BSP	X	X	X	X	X	X

		2 week break for holiday period											
		10		11		12		13		14		15	
		11 Jan	12 Jan	18 Jan	20 Jan	25 Jan	27 Jan	01 Feb	04 Feb	08 Feb	09 Feb	15 Feb	18 Feb
		Tue	Wed	Tue	Thu	Tue	Thu	Tue	Fri	Tue	Wed	Tue	Fri
Service	Substation												
SPM	Cowley Local BSP	X	X	X	X	X	X	X	X	X	X	X	X
SPM	Oxford BSP	X	X	X	X	X	X	X	X	X	X	X	X
SPM	Bicester North BSP	X	X	X	X	X	X	X	X	X	X	X	X



# Local Area Energy – Flexibility Mapping

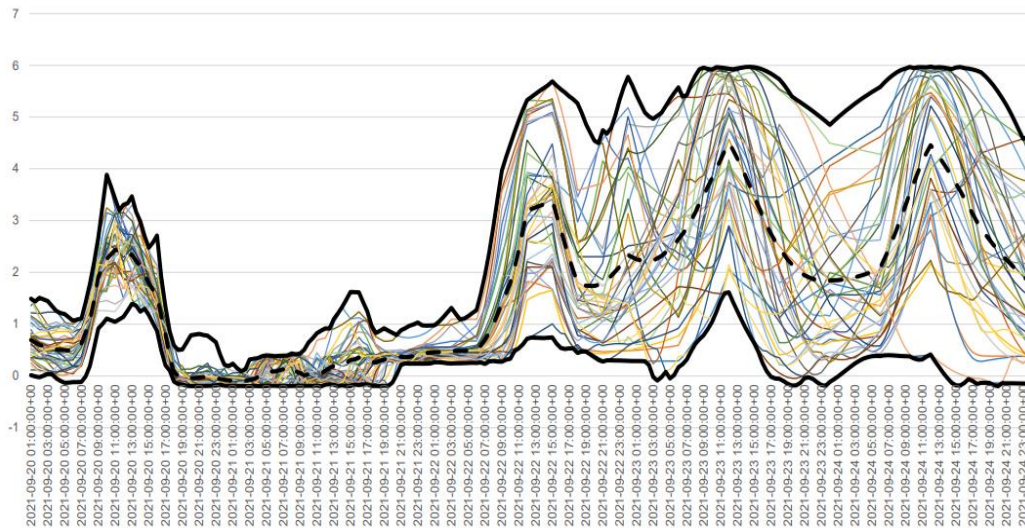




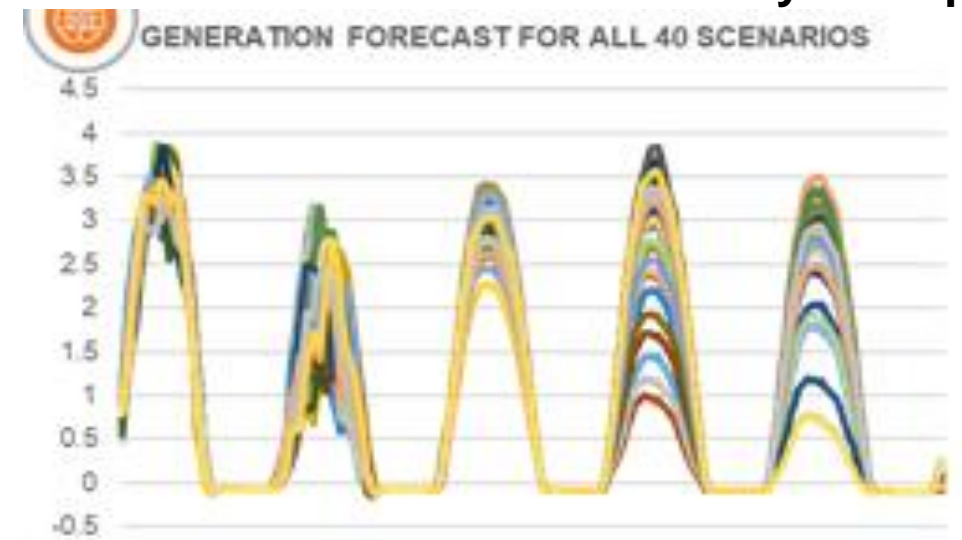
# Modelling for Power System Analysis

- Understanding the variability of renewable energy resources using forecast meteorological data
- Modelling more accurately allows space on the network to be managed most effectively

## Oxfordshire Wind Farm 4-Day Example

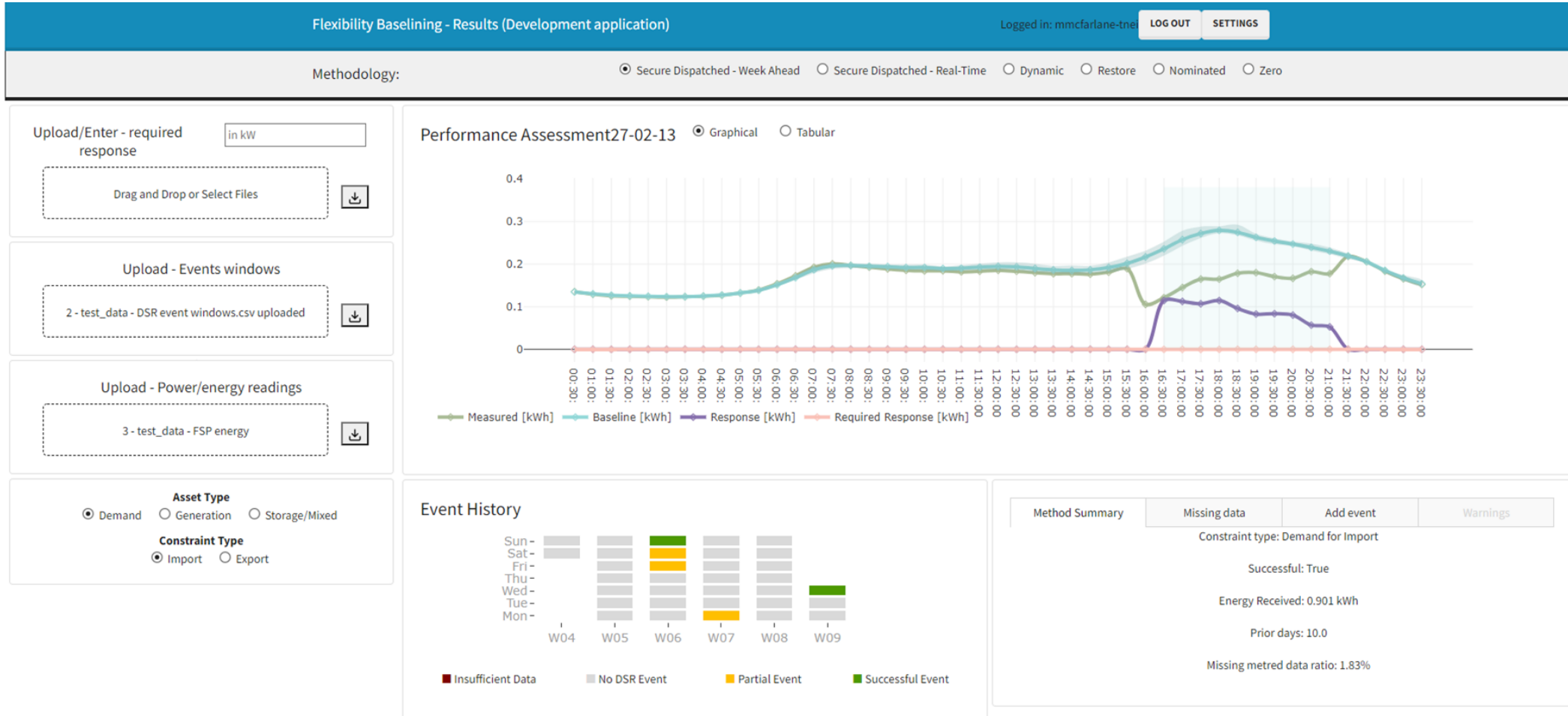


## Oxfordshire Solar-PV Farm 4-Day Example





# TRANSITION Baselining Tool – Adopted as ENA Standard





# Enabling Demand Side Response

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- Multi-stage technical assessment
- Software and Hardware
- Forecasting and Uncertainty
- Finance and Scale
- Personnel Resource



# Oxford Low Carbon Hub - The Very Local

## Active, participating in the system

- Sell or share surplus energy generated with neighbours
- Sell or share network capacity (room in the wires and switches) with neighbours
- Make room on the network for EVs
- Make room on the network for heat pumps

**To be clear:** we don't know how to do this yet; we want to work with real households and real assets to see how it might work





# Osney Smart and Fair Neighbourhood



## Osney has:

- A single secondary substation serving the whole island
- An ‘anchor generator’ in Osney Lock Hydro and its PVs
- 15 households that already have PV – one or two also with storage/heat pump/EV
- An engaged, very active community with lots of potential for new PV and storage to help us test the concept
- An engaged and very active City Council
- An engaged and very active Distribution Network Operator (SSEN) with monitoring equipment already installed in the secondary substation



# COP 26 – Local to Global





# Summary

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- LEO and SSEN supporting Oxfordshire with key ambitions
  - Net Zero by 2040 through Flexibility Provision, connection enablement
  - Testing of high uptake of LCTs in a very local area
  - Producing detailed mapping tools for energy in the city and county
  - Collaboration through the Oxford Net Zero Carbon Partnership
  - Building a knowledgeable and skilled community of people to drive Net Zero





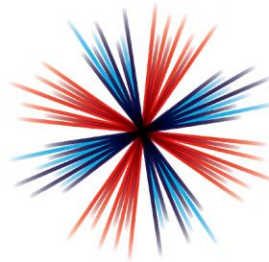


Local Energy **Oxfordshire**

**Local Energy Accelerating Net Zero**

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