

Baselining tool overview webinar

20 April 2022

A joint webinar between ENA, SSEN's TRANSITION and TNEI.



Thank you for joining this Webinar.

This webinar will commence at 2 pm.

- If you are unable to play the audio through your device, you can **dial in by calling +44 20 3855 5885,,890105320# and using access code 890 105 320#**
- All microphones have been set to mute to avoid background noise.
- Please ask questions or make comments **via the chat function** throughout the meeting.
- Please note that the webinar will be recorded and made publicly available on ENA's YouTube channel. Please do not turn your video on if you don't want your likeness to be recorded and shared.
- The slides from the webinar will be made publicly available on ENA's website.
- If you would like to receive information about the Open Networks Programme or have any feedback you would like to submit, please get in touch with us at opennetworks@energynetworks.org.

Joining Slido



Join at sli.do with code #474794

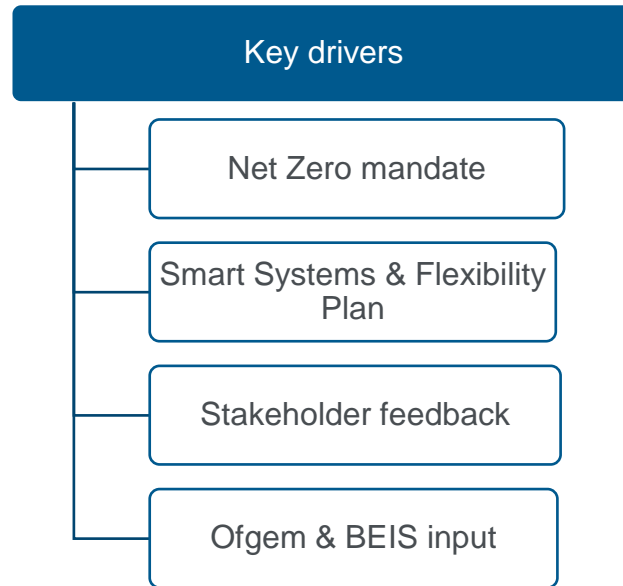
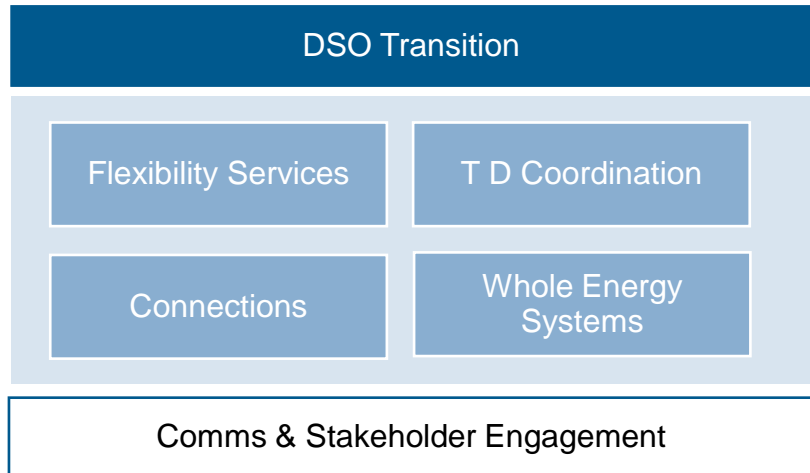
Agenda

Start	Finish	Time	Item	Presenter
14:03	14:06	3	Welcome and Housekeeping	Emily Jones (ENA)
14:06	14:13	7	About Open Networks & P7	Helen Sawdon (Baselining Lead - WPD)
14:13	14:20	7	About TRANSITION, the Tool development and collaboration	Daniel Burke (SSEN)
14:20	14:40	20	Tool overview and demonstration; Q&A	Sarah Sheehy (TNEI)
14:40	14:45	5	Demo of Tool use cases	Genghao Tian (SSEN)
14:45	14:50	5	Poll questions	Helen Sawdon (Baselining Lead - WPD)
14:50	14:55	5	Where to access the tool, supporting materials and next steps	Helen Sawdon (Baselining Lead - WPD)
14:55	15:05	10	Q&A	

Open Networks – Delivering a Smart Grid

Started in 2017, the Open Networks programme is working with the networks and industry to lead the transition to a smart and flexible energy system that will enable net zero.

- ✓ Opening local flexibility markets to demand response and renewable energy
- ✓ Helping customers connect faster
- ✓ Opening data to enable customers identify best locations to invest
- ✓ Delivering efficiencies between network companies to operate secure and efficient networks



Poll question

Q1. How would you describe your interest in baselines?

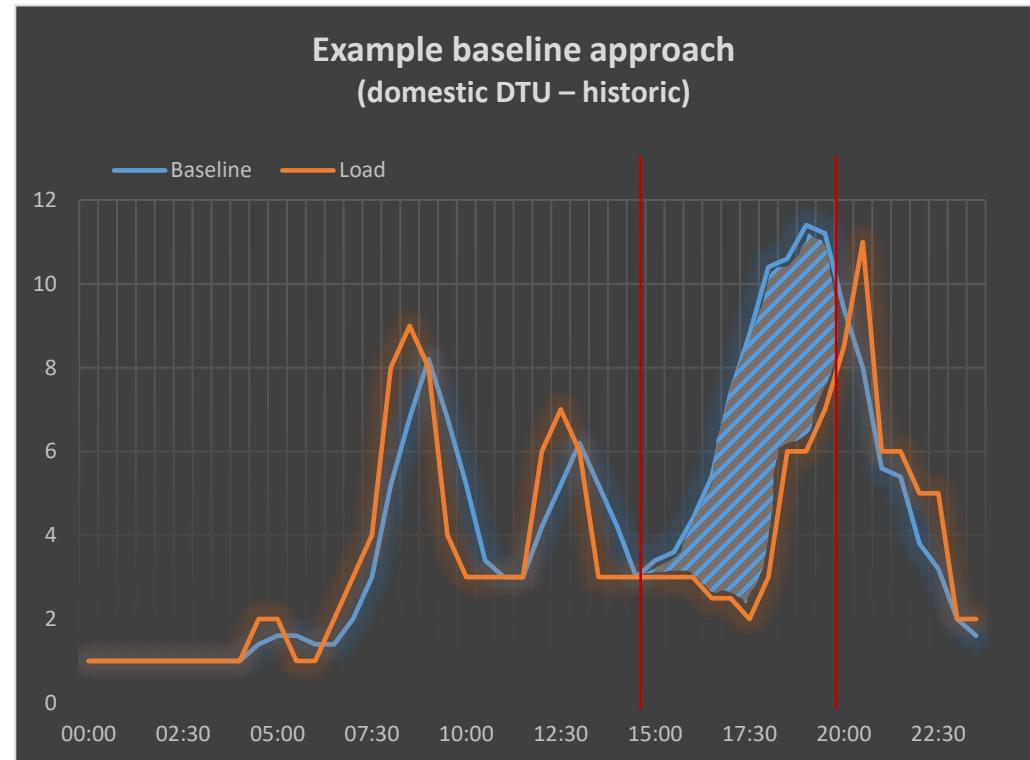
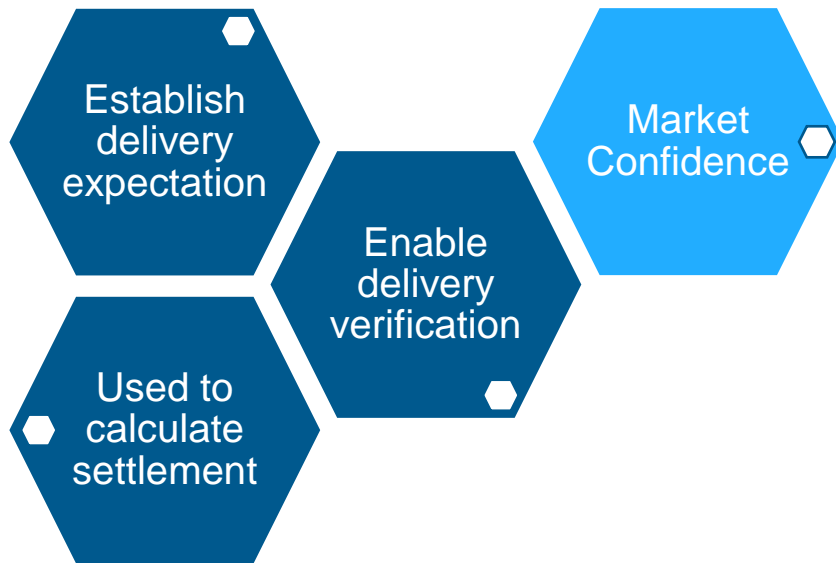
- I am a flexibility service provider
- I am a flexibility operator (DNO, Aggregator, Platform)
- Other stakeholder



Join at sli.do
with code #474794

About baselines

Established level of DER base load from which a delta is measured to determine the level of service delivered.

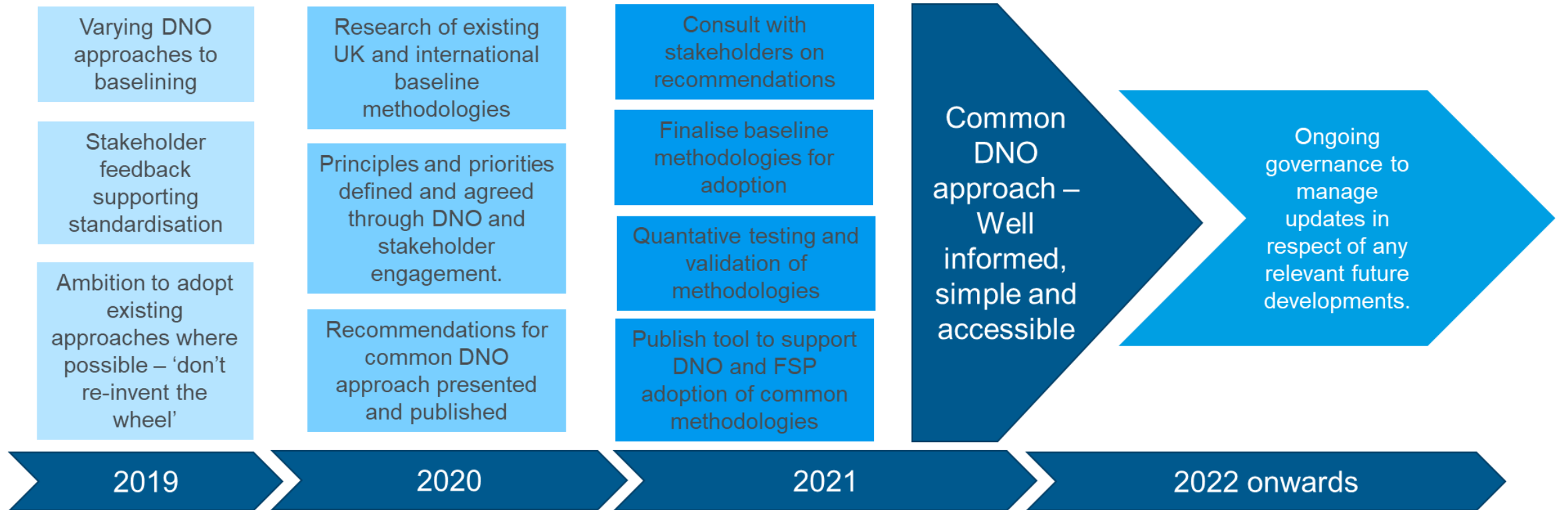


About Open Networks' Baseline product work

Since 2020, this work area been focused on the implementation of common baseline methodologies for adoption by all DNOs.

- Implementation of a common approach will address stakeholder concerns around inconsistencies between DNO baseline methodologies.
- Increase transparency and improve stakeholder confidence with a view to increase participation by:
 - Publishing a clear and adoptable common approach.
 - Development of a common verification tool to support both DNO and Provider with implementation of both prior and post event baseline verifications.
- Governance to ensure:
 - Ongoing monitoring of future changes that could be required as the distribution-flexibility market evolves.
 - Identifying further alignment potential with wider markets.


Our approach



Key Outcomes

A light grey circle on the left side of a dark blue horizontal bar.

Extensive engagement was undertaken which found that FSPs value inclusivity and simplicity higher than other scoreable factors

A light grey circle on the left side of a dark blue horizontal bar.

Recommendations focus on three types of baselining methodologies that are relatively simple, are known in GB markets, and which are currently in use by DNOs and/or in ESO balancing services and/or in the Balancing Mechanism

A light grey circle on the left side of a dark blue horizontal bar.

Future developments in baseline methodologies, particularly those that are technology specific, should be considered for ongoing DNO standardisation

A light grey circle on the left side of a dark blue horizontal bar.

Notably, the TRANSITION Project will share any relevant outcomes with the ENA Product 0; Overarching Flexibility Framework, to ensure it informs future baseline development



transition

Moving to a smart future



With funding from



With funding from

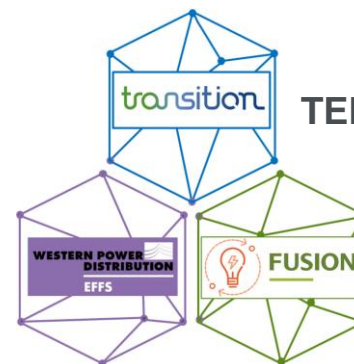


INDUSTRIAL STRATEGY



UK Research and Innovation

Collaborating With

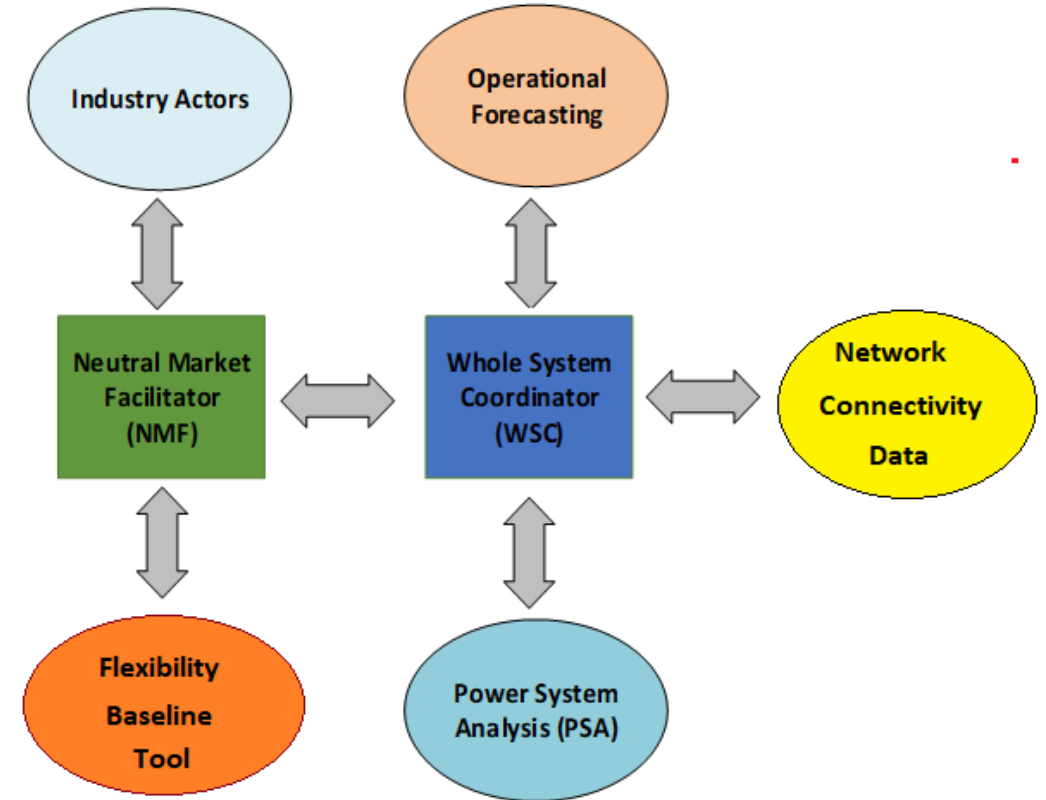


Background to the LEO and TRANSITION Projects

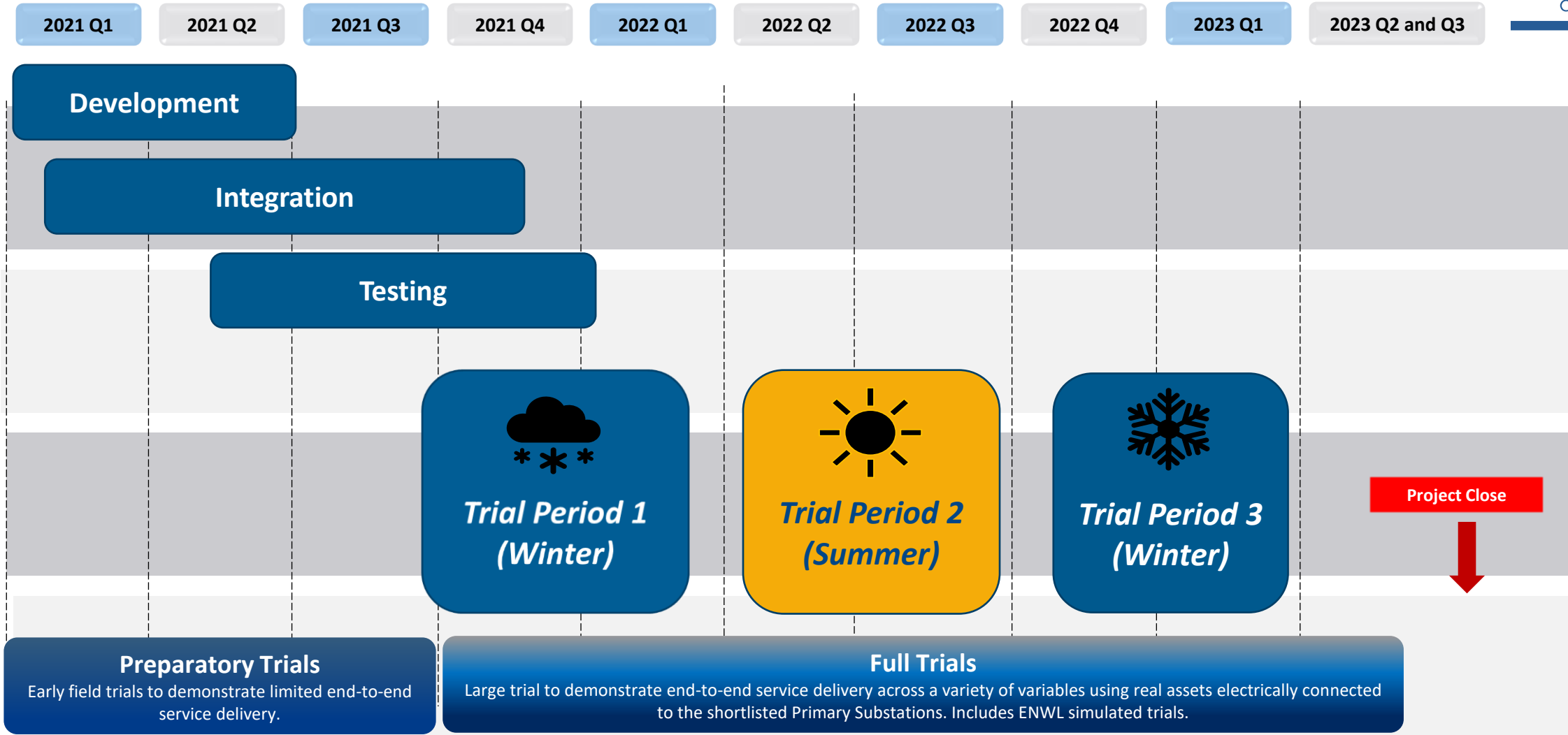
- **Project LEO (Local Energy Oxfordshire) is a ~ four year Innovate-UK funded project** is running trials in Oxfordshire to build a broad range of reliable evidence of the technological, market and social conditions needed for a greener, more flexible, and fair electricity system at local level
- **Project TRANSITION is a ~ five year Ofgem NIC funded project aiming to trial and demonstrate new systems and tools for flexibility market deployment at scale, and to support the transition to Distribution Systems Operation (DSO)**
- **The two projects, working closely together with SSEN as a key partner, are trialling a number of DSO procured and DSO enabled flexibility services across six BSPs and 13 Primary substations in Oxfordshire:**
 - Sustain Peak Management
 - Sustain Peak Export Management
 - Secure
 - Dynamic
 - MIC/MEC Trading
 - Offsetting
 - Indicative ESO-DSO Coordinated Service
- **The projects are developing a number of new and innovative platforms and tools in support of these trials and objectives**

High Level Summary of the LEO/TRANSITION Systems

- **Operational Forecasting:** provides a view of demand/generation profiles at granular nodal level for 0-10 days ahead of real-time
- **Network Connectivity Data :** Provides **input data** for network connectivity and electrical parameters
- **Power System Analysis (PSA):** Computes anticipated power flows under different near-term topology change and forecast scenarios
- **Whole System Coordinator (WSC):** Provides the core intelligence for flex market decision making, allows an input interface for control room, and manages automated data flows between sub-component DSO systems
- **Neutral Market Facilitator (NMF):** Provides a user interface portal for DSO interaction with the Industry Actors to enter/accept their available flex service volumes/costs, and for them to request approval for peer-to-peer (P2P) capacity trades
- **Flexibility Baseline Tool:** A tool that creates a flexibility market participant baseline, that when compared to the requested flex response dispatch, helps to determine a £ settlement value



TRANSITION/LEO Timeline – Three trial periods



LEO/TRANSITION Development of Baseline Tool

- The LEO/TRANSITION project flexibility trials require the application of a flexibility baseline assessment in support of market settlement processes (i.e. payment for flexibility dispatched and delivered by the market participants)
- Working with TNEI Consultants, the projects had been developing a Baseline Tool since mid-late 2020, inspired in part by the 2020 ENA Open Networks programme of work on baseline methodologies
- With the 2021 ENA Open Networks programme of work then aiming to develop a baseline tool also, it was realised that the Baseline Tool developed by the SSEN innovation projects would cover the majority (e.g. 70-80%) of that functionality already
- A gap analysis was carried out to uncover additional work that might be required to complete the full scope of ENA's Open Networks requirement, and as a result of the strong collaboration between the parties, it was decided that TRANSITION project and TNEI would develop the remainder of the scope in tandem with the Open Networks Baseline Product team steering input
- The Baseline Tool has already been deployed and tested in the ongoing LEO/TRANSITION project trials, with application in the field trials driving further improvements and developments to inform and refine the ENA tool functionality scope
- From an innovation point of view, the collaboration between the SSEN projects and ENA, with TNEI as the delivery partner, is an excellent example of knowledge transfer from innovation to BAU, a very desirable outcome for all parties, including the end consumer

Tool Demo – Sarah Sheehy TNEI

TNEI Team



Gordon McFadzean

Principal Consultant



Max McFarlane

Technical Consultant



Owen Patrick

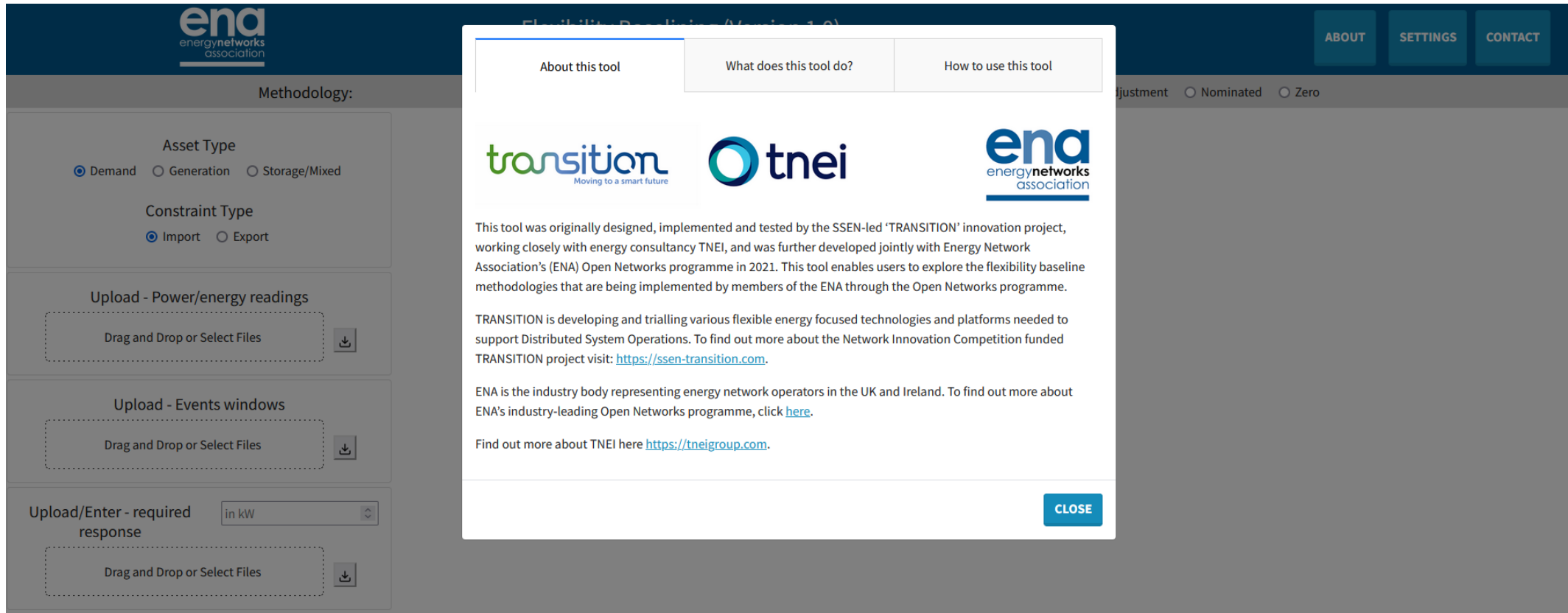
Graduate Consultant



Sarah Sheehy

Technical Consultant,
Project Manager

Flexibility Baseline Tool



The screenshot shows the Flexibility Baseline Tool interface. On the left, the 'Methodology' section includes 'Asset Type' (Demand, Generation, Storage/Mixed) and 'Constraint Type' (Import, Export). Below this are three upload sections: 'Upload - Power/energy readings', 'Upload - Events windows', and 'Upload/Enter - required response'. A modal window is open in the center, titled 'About this tool', with tabs for 'About this tool', 'What does this tool do?', and 'How to use this tool'. The modal contains logos for 'transition', 'tnei', and 'ena energy networks association'. The text in the modal reads: 'This tool was originally designed, implemented and tested by the SSEN-led 'TRANSITION' innovation project, working closely with energy consultancy TNEI, and was further developed jointly with Energy Network Association's (ENA) Open Networks programme in 2021. This tool enables users to explore the flexibility baseline methodologies that are being implemented by members of the ENA through the Open Networks programme. TRANSITION is developing and trialling various flexible energy focused technologies and platforms needed to support Distributed System Operations. To find out more about the Network Innovation Competition funded TRANSITION project visit: <https://ssen-transition.com>. ENA is the industry body representing energy network operators in the UK and Ireland. To find out more about ENA's industry-leading Open Networks programme, click [here](#). Find out more about TNEI here <https://tneigroup.com>.' A 'CLOSE' button is located at the bottom right of the modal.

Functional Specification Summary

Topic	Functionality
Methodologies	<ul style="list-style-type: none"> • Historic rolling baselines, with and without a same day adjustment • Nomination and zero
User-Configurable Parameters	<ul style="list-style-type: none"> • Specify asset location and time-stamp convention • Configurable parameters for the historic rolling method
Access	<ul style="list-style-type: none"> • Hosted online
Publication	<ul style="list-style-type: none"> • Python package of the calculations published privately for use by DNOs • Publish the Mathematical Specification of the calculations online
Data Storage	<ul style="list-style-type: none"> • The Tool must not store any data
Missing Data	<ul style="list-style-type: none"> • Time periods of missing data must be reported to the user • Any inconsistencies in data labels raises a warning for the user
Branding	<ul style="list-style-type: none"> • The logos of all SSEN TRANSITION, TNEI and ENA are shown on the tool pop-up • ENA’s logo is included across the navigation bar of the tool

Functional Specification Summary

Topic	Functionality
Generation and Demand	<ul style="list-style-type: none"> • The user can specify whether the asset is generation, demand or mixed/storage. • Raise a warning if the asset type and sign convention of the data do not match • Responses are always represented as positive
Input Data	<ul style="list-style-type: none"> • Requirements of the uploaded data are specified, including accepted granularity, data labels etc, for each of the required fields: power/energy readings, event windows, required response, and nominated baseline. • Data templates, pre-populated with example data, are downloadable from the tool.
Outputs	<ul style="list-style-type: none"> • Baselines are calculated for every day of data uploaded to the tool • The flexibility response calculated for the specified event windows, with delivery labelled as “full” or “partial”. The other labels are “no event”, or “failed calculation”.
Event Definition	<ul style="list-style-type: none"> • Event windows are defined by the user via a data upload • Data from previous event days is excluded when calculating baselines • Additional event windows can be specified after the outputs have been generated, using the “Add Event” tab

Methodologies

Historic Rolling Baselines:

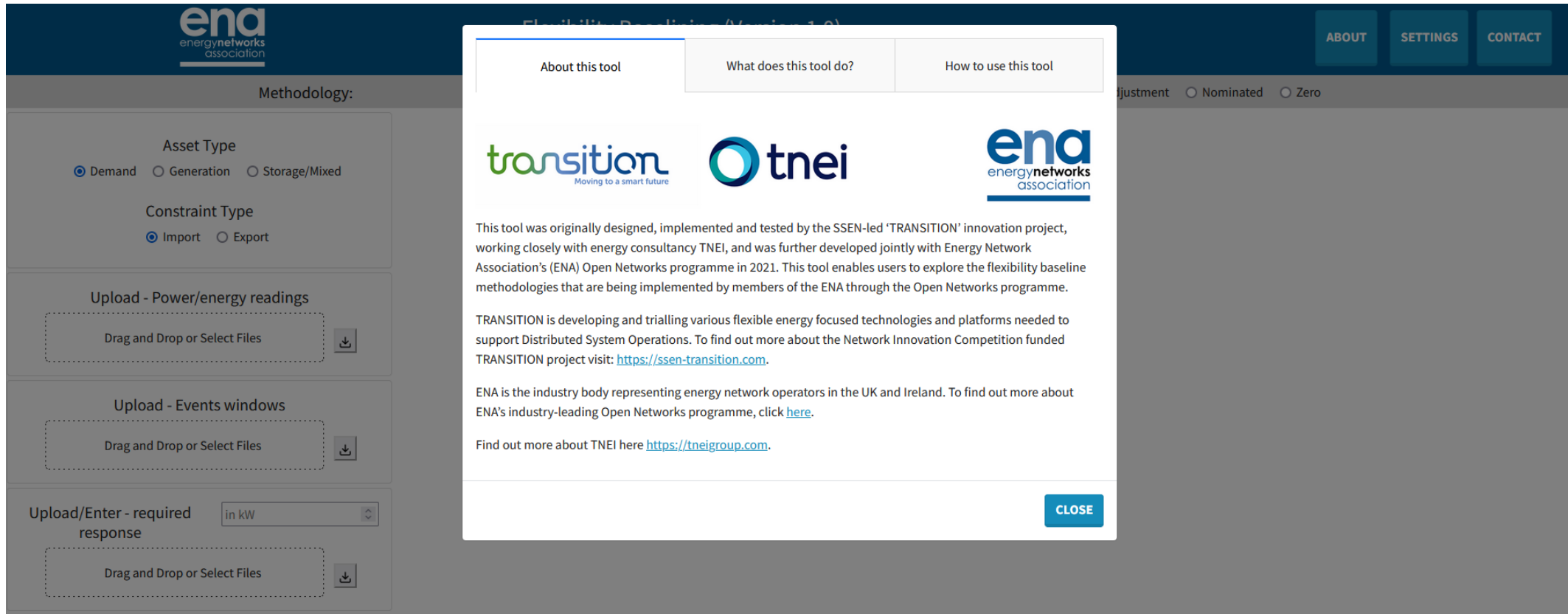
- Mid 8-in-10: A rolling historical baseline which uses data from the “middle” of the last 8 of 10 days.
- Mid 8-in-10 with Same Day Adjustment: A rolling historical baseline which uses data from the “middle” of the last 8 of 10 days, but also applies a “same day adjustment”.
- Mid X-in-Y: A custom rolling historical baseline, where the user can choose how many days to consider and what length of same day adjustment to use.

Nominated: A nominated baseline, which allows the user to input the self-declared baseline of the asset in advance of the flexibility dispatch event.

Zero: A zero baseline.

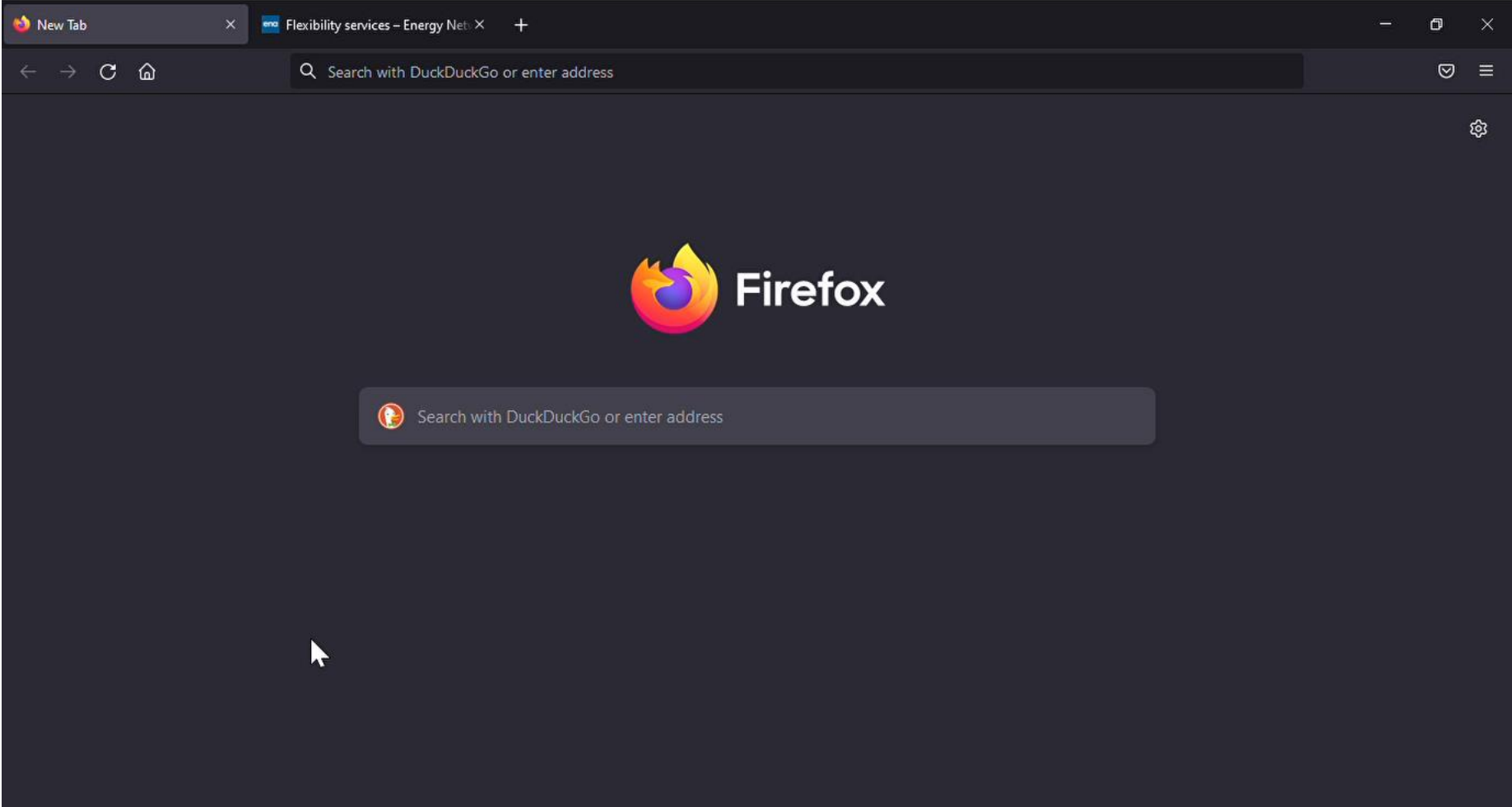
Q&A

Flexibility Baseline Tool – Live Demonstration

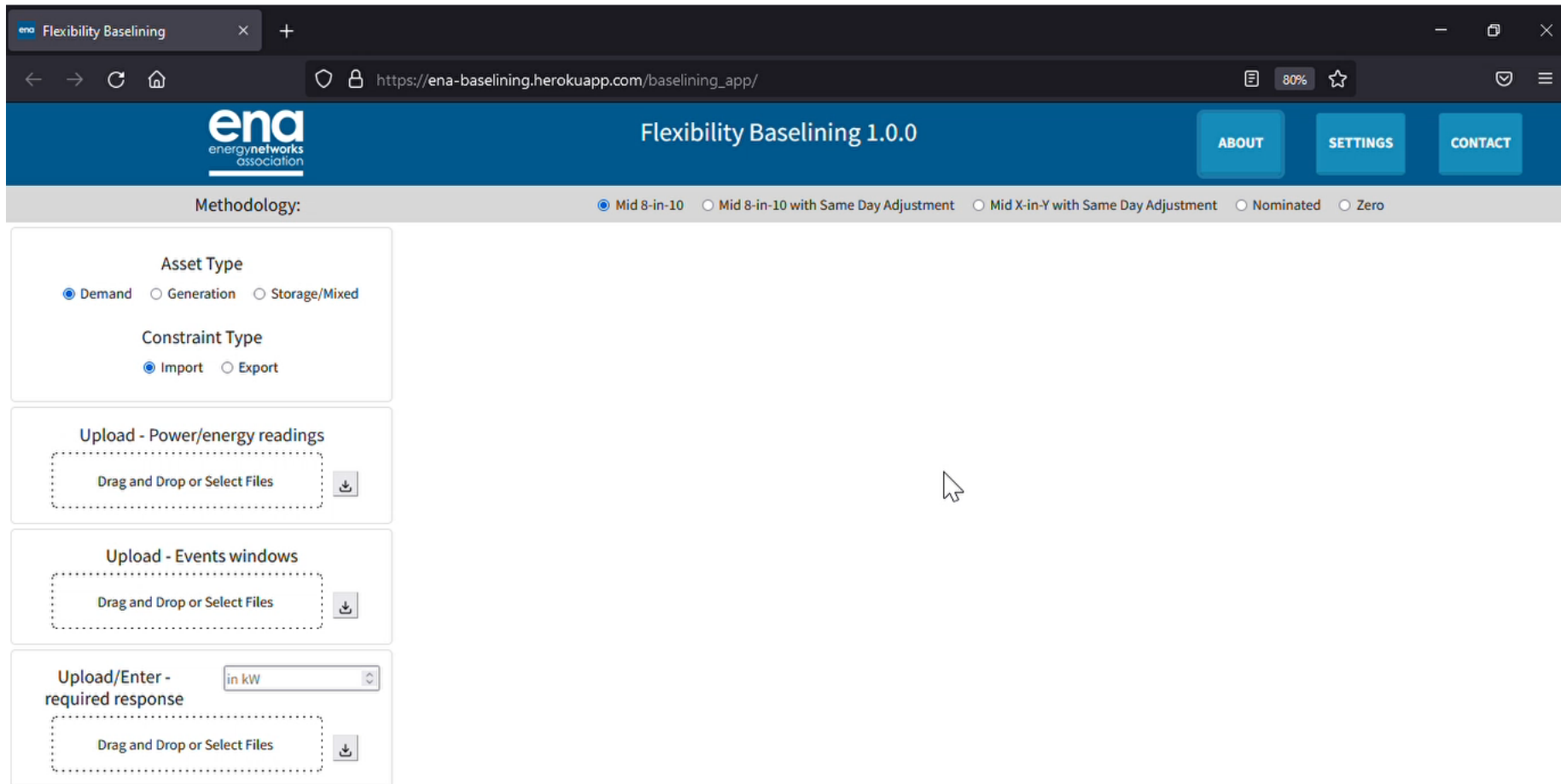


The screenshot shows the 'Flexibility Baseline Tool' interface. On the left, under 'Methodology:', there are three sections: 'Asset Type' with radio buttons for Demand (selected), Generation, and Storage/Mixed; 'Constraint Type' with radio buttons for Import (selected) and Export; and three 'Upload' sections for 'Power/energy readings', 'Events windows', and 'required response', each with a 'Drag and Drop or Select Files' area and a download icon. A dropdown menu is set to 'in kW'. On the right, there are 'ABOUT', 'SETTINGS', and 'CONTACT' buttons, and radio buttons for 'Adjustment', 'Nominated', and 'Zero'. An information modal is open in the center, featuring three tabs: 'About this tool' (selected), 'What does this tool do?', and 'How to use this tool'. The modal contains logos for 'transition' (Moving to a smart future), 'tnei', and 'ena energy networks association'. The text in the modal states: 'This tool was originally designed, implemented and tested by the SSEN-led 'TRANSITION' innovation project, working closely with energy consultancy TNEI, and was further developed jointly with Energy Network Association's (ENA) Open Networks programme in 2021. This tool enables users to explore the flexibility baseline methodologies that are being implemented by members of the ENA through the Open Networks programme. TRANSITION is developing and trialling various flexible energy focused technologies and platforms needed to support Distributed System Operations. To find out more about the Network Innovation Competition funded TRANSITION project visit: <https://ssen-transition.com>. ENA is the industry body representing energy network operators in the UK and Ireland. To find out more about ENA's industry-leading Open Networks programme, click [here](#). Find out more about TNEI here <https://tneigroup.com>.' A 'CLOSE' button is located at the bottom right of the modal.

Tool Access and User Interface



Settings and Methodologies



The screenshot shows a web browser window with the URL `https://ena-baselining.herokuapp.com/baselining_app/`. The page title is "Flexibility Baseline 1.0.0". The header includes the "ena energy networks association" logo and navigation buttons for "ABOUT", "SETTINGS", and "CONTACT".

The main content area is titled "Methodology:" and features several radio button options: Mid 8-in-10, Mid 8-in-10 with Same Day Adjustment, Mid X-in-Y with Same Day Adjustment, Nominated, and Zero.

Below the methodology options are three stacked panels:

- Asset Type:** Demand, Generation, Storage/Mixed
- Constraint Type:** Import, Export
- Upload - Power/energy readings:** A dashed box containing "Drag and Drop or Select Files" and a download icon.
- Upload - Events windows:** A dashed box containing "Drag and Drop or Select Files" and a download icon.
- Upload/Enter - required response:** A dropdown menu set to "in kW" and a dashed box containing "Drag and Drop or Select Files" and a download icon.

Inputs

The screenshot shows a web browser window with the URL `https://ena-baselining.herokuapp.com/baselining_app/`. The page title is "Flexibility Baseline 1.0.0". The navigation bar includes the "ena energy networks association" logo, the title, and buttons for "ABOUT", "SETTINGS", and "CONTACT".

The main content area features a "Methodology:" section with radio buttons for: Mid 8-in-10, Mid 8-in-10 with Same Day Adjustment, Mid X-in-Y with Same Day Adjustment, Nominated, and Zero.

Below this are three input sections:

- Asset Type:** Demand, Generation, Storage/Mixed
- Constraint Type:** Import, Export

There are three "Upload" sections, each with a dashed box for file selection and a download icon:

- Upload - Power/energy readings:** Drag and Drop or Select Files
- Upload - Events windows:** Drag and Drop or Select Files
- Upload/Enter - required response:** Includes a dropdown menu set to "in kW" and a "Drag and Drop or Select Files" area.

Data Templates

Flexibility Baseline (Version 1.0)

ABOUT
SETTINGS
CONTACT

Methodology: Mid 8-in-10 Mid 8-in-10 with Same Day Adjustment Mid X-in-Y with Same Day Adjustment Nominated Zero

Asset Type

Demand Generation Storage/Mixed

Constraint Type

Import Export

Upload - Power/energy readings

Drag and Drop or Select Files

Upload - Events windows

Drag and Drop or Select Files

Upload/Enter - required response

Drag and Drop or Select Files

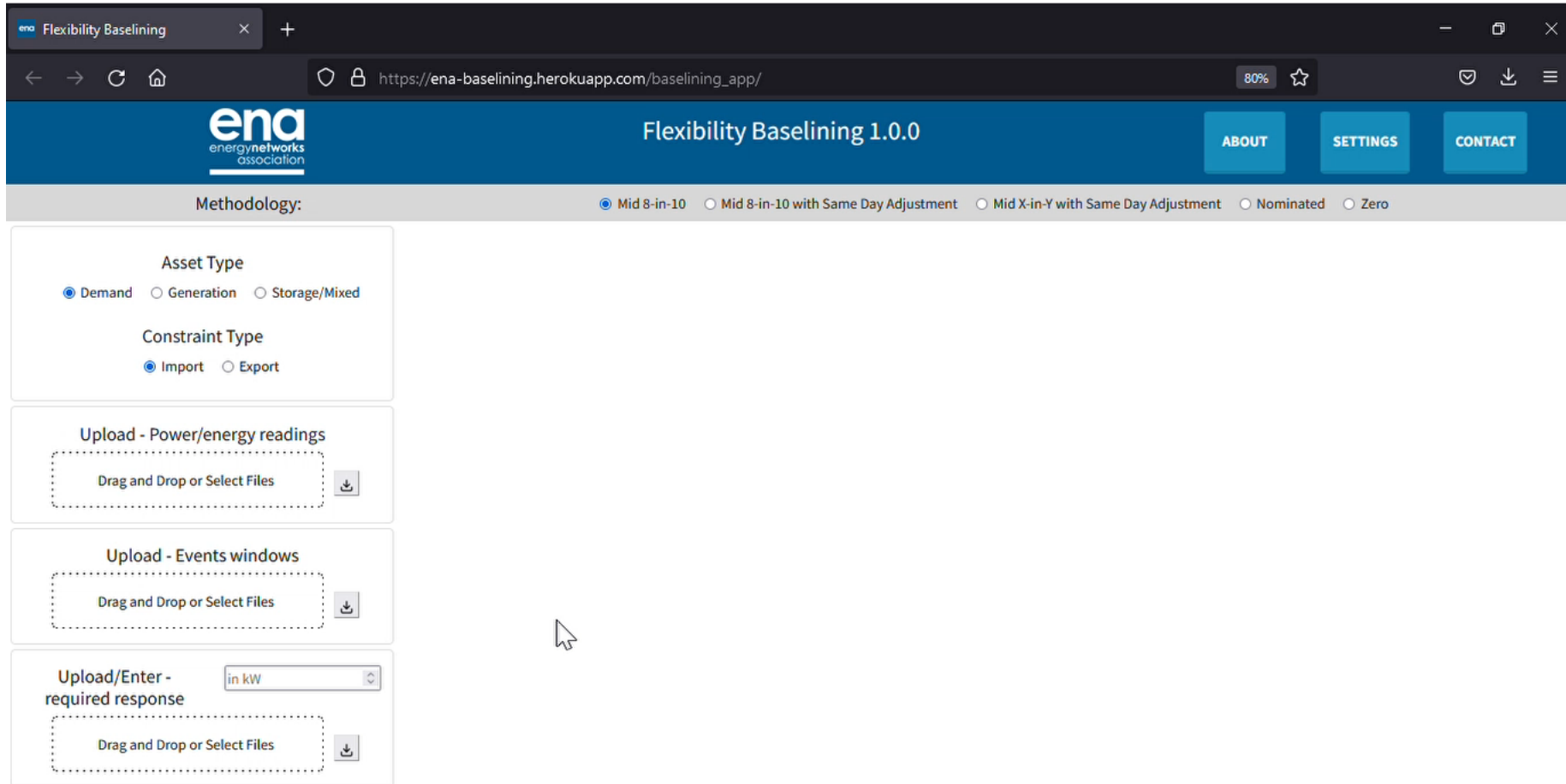
measured data template - Notepad

File Edit Format View Help

```

local_time,MW
01/12/2021 00:00:00,-11899.5
01/12/2021 00:30:00,-11813
01/12/2021 01:00:00,-11604
01/12/2021 01:30:00,-11588.5
01/12/2021 02:00:00,-11629
01/12/2021 02:30:00,-12108
01/12/2021 03:00:00,-12644
01/12/2021 03:30:00,-14090.5
01/12/2021 04:00:00,-15479
01/12/2021 04:30:00,-17167
01/12/2021 05:00:00,-18111.5
01/12/2021 05:30:00,-13492
01/12/2021 06:00:00,-12913.5
01/12/2021 06:30:00,-12768
01/12/2021 07:00:00,-12851.5
01/12/2021 07:30:00,-12843
01/12/2021 08:00:00,-12571
                    
```

Outputs



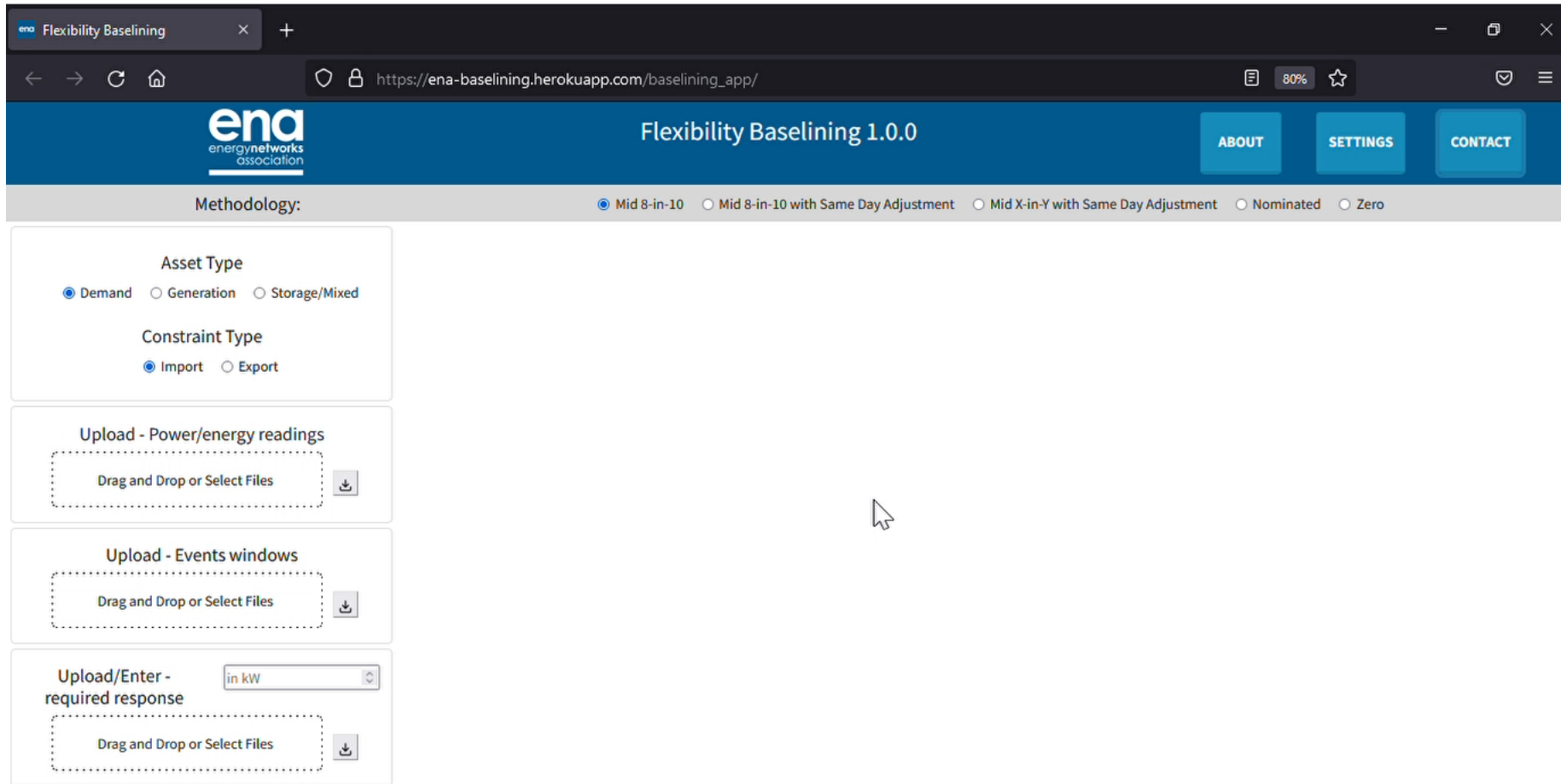
The screenshot shows a web browser window with the URL `https://ena-baselining.herokuapp.com/baselining_app/`. The page title is "Flexibility Baselineing 1.0.0". The header includes the ENA logo and navigation buttons for "ABOUT", "SETTINGS", and "CONTACT".

The main content area features a "Methodology:" section with radio buttons for "Mid 8-in-10" (selected), "Mid 8-in-10 with Same Day Adjustment", "Mid X-in-Y with Same Day Adjustment", "Nominated", and "Zero".

Below this are three configuration boxes:

- Asset Type:** Radio buttons for "Demand" (selected), "Generation", and "Storage/Mixed".
- Constraint Type:** Radio buttons for "Import" (selected) and "Export".
- Upload - Power/energy readings:** A dashed box with the text "Drag and Drop or Select Files" and a download icon.
- Upload - Events windows:** A dashed box with the text "Drag and Drop or Select Files" and a download icon.
- Upload/Enter - required response:** A dropdown menu set to "in kW" and a dashed box with the text "Drag and Drop or Select Files" and a download icon.

Contact



The screenshot shows a web browser window with the URL `https://ena-baselining.herokuapp.com/baselining_app/`. The page header includes the ena logo and the title "Flexibility Baseline 1.0.0". Navigation buttons for "ABOUT", "SETTINGS", and "CONTACT" are visible. The "Methodology:" section has radio buttons for "Mid 8-in-10" (selected), "Mid 8-in-10 with Same Day Adjustment", "Mid X-in-Y with Same Day Adjustment", "Nominated", and "Zero".

The main content area contains three stacked panels:

- Asset Type:** Radio buttons for "Demand" (selected), "Generation", and "Storage/Mixed".
- Constraint Type:** Radio buttons for "Import" (selected) and "Export".
- Upload - Power/energy readings:** A dashed box with the text "Drag and Drop or Select Files" and a download icon.
- Upload - Events windows:** A dashed box with the text "Drag and Drop or Select Files" and a download icon.
- Upload/Enter - required response:** A dropdown menu set to "in kW" and a dashed box with the text "Drag and Drop or Select Files" and a download icon.

Use Case Demo - Genghao Tian SSEN

Poll Questions

Q2. How do you envisage using the tool?

- For education around baselines only
- To calculate my baseline ahead of service provision
- To verify my service provision post event
- All of the above

Q3. How would you want to see accessibility of the tool developed in the future?

- API access
- package of code for offline use
- existing web interface is sufficient
- Other

Q4. Are there any improvements or additional features within the tool that you would like to see in the future?



Join at sli.do
with code #474794

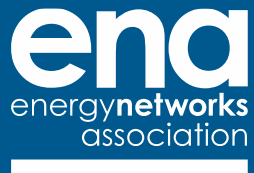
Next Steps

DNO implementation

- Following the conclusion of the handover activities DNOs have committed to implement the standardised baseline methodologies.
- Each DNOs detailed timeline for this will vary due to differing system integration needs. However, DNOs have collectively agreed to target Aug 2022 for the completion of implementation activities.
- The Open Networks P0 Overarching Framework for Flexibility will continue to monitor progress of the implementation and collate DNO and Stakeholder feedback following publication and implementation to assess if Open Networks should revisit this product in the future.

P7 - Implementation Timeline	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tool Development Complete												
Handover Arrangements												
Tool Publication on ENA Website												
Dissemination Webinar												
DNO Implementation Readiness; Trial/test												
DNO Implementation; BAU												
P0 - Revisit; DNO implementation feedback and assess next steps												

Q&A



Energy Networks Association

4 More London Riverside
London SE1 2AU
t. +44 (0)20 7706 5100

🐦 @EnergyNetworks
energynetworks.org

© ENA 2021

Energy Networks Association Limited is a company registered in England & Wales No. 04832301
Registered office: 4 More London Riverside, London SE1 2AU

Appendix

- Baselining tool
- 2020 Baseline Final Report - detailing baseline recommendations;
- 2021 Baseline Interim Report - detailing stakeholder engagement outcomes;
- 2021 Baseline Final Report including;
 - Mathematical calculations
 - Tool Specification

More information on the tool is available on ENA's website.

Find out more about SSEN's TRANSITION project and Project LEO.

Find out more about TNEI.