



# Agenda

## 10:00 – 11:10

- > 10:00 – Introduction and Welcome
- > 10:05 - Ofgem Update
- > 10:20 - Feedback to the Chair
- > 10:30 - Stakeholder Engagement check-in
- > 10:45 - Actions review
- > 11:00 - What TNUoS is/isn't
- > *11:10 Break*

## 11:20 – 14:25

- > 11:20 - Connections: Review of previous change
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- > 11:35 - SQSS Review
- > *12:20 Lunch*
- > 13:05 - The importance of TNUoS Predictability
- > 13:25 - Current TNUoS Design Challenges
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## 14:35 – 15:45

- > 14:35 - TNUoS Design: Defect Prioritisation
- > 15:05 - Literature Review
- > 15:15 - Next Steps & Close



# TNUoS Task Force

## Meeting 3

7<sup>th</sup> September 2022



# Introduction & Welcome

Jon Wisdom

# Ofgem Overview

Harriet Harmon

# Feedback to the Chair

Jon Wisdom



# Feedback to the Chair

Thank you for your feedback from TNUoS Task Force meeting 2. You told us...

## What we did well:

- Flexibility in the agenda allowed time needed for discussion
- Members contributed well
- All topics well covered and well facilitated by the Chair
- Stakeholder session worked well and we should remember that we are acting for wider industry

## What we need to improve:

- Circulation of slides pre-meet would be helpful
- Circulation of minutes and actions immediately after the meeting would be preferable
- Provide clarity on actions to ensure all Task Force Members have the same understanding
- Provide a view on what will be discussed in future meetings to enable members to prepare

# Stakeholder Engagement Check in

Jon Wisdom



# Feedback from Stakeholders



## **Scottish Renewables and RenewableUK members**

- Welcomed consideration being given to Net Zero and inclusion on the ToR
- Scottish Islands - they have a lot of expectations and they are glad to see that the ToR include a point about the appropriate treatment of island connections
- Positive feedback regarding new Principles – Wording is clearer and not open to misinterpretation
- Understanding that these principles are still under review, there was agreement that these should be used for this review only, and if there is any long-term review about TNUoS in the future these principles could be challenged. It would be good to seek clarification from Ofgem on this point

## **Association of Decentralised Energy (ADE)**

- ADE members are actively discussing, in context of TNUoS just as much as possible LMP, to what degree different parties can and will respond to locational market signals; there are supplier members who believe their customers can be exposed to the full signal and some who plan to engage on their behalf, providing some degree of tariff-fixing for their customer bases.

# Action Review

Jon Wisdom



# Actions from Meeting 2

ID/ date	Agenda Item	Description	Owner	Notes	Target Date	Status
1 10/08	2	Include comment in Terms of Reference relating to Net Zero and its impact on Task Force consideration	Harriet Harmon		TF Meeting 3	
2 10/08	1	Statement on what TNUoS is and what it Isn't.	Grace March		TF Meeting 3	
3 10/08	1	Circulate Transport Model training details on 13 <sup>th</sup> Sept 2022	Teri Puddefoot	James Stone/Paul Mullen to provide details	TF Meeting 3	
4 10/08	4	Add Logistics UK to the Stakeholder matrix	Teri Puddefoot		TF Meeting 2	
5 10/08	4	Discuss and implement process for collating Stakeholder feedback pre meet	Teri Puddefoot/Jon Wisdom		Pre TF Meeting 3	



# Actions from Meeting 2

6 10/08	8	Communicate with CUSC Panel Chair regarding Mod review updates	Jon Wisdom	James Stone to support	TF Meeting 3
7 10/08	3	Members to seek feedback from constituents regarding input to Call for Evidence	All		TF Meeting 3
8 10/08	10	Prepare a presentation on Shallow connections	Joe Dunn		TF Meeting 3
9 10/08	10	Identify if ESO are able to set up SharePoint site for all members use	Teri Puddefoot		TF Meeting 3
10 10/08	7	Update Principles	James Stone		TF Meeting 3

# TNUoS Definition

Grace March



# TNUoS Definition

Wider TNUoS is NOT designed to reflect:

- Cost of transporting energy from place to place (the role of Transmission Losses)
- Cost of distribution networks and/or distribution systems (the role of DUoS)
- Cost of operationally balancing the electricity system (the role of BSUoS), other than reflecting peak transmission demand between Nov & Feb
- Any electrical properties other than active power (i.e. it does not consider reactive power, inertia, voltage, etc.)
- Short-term transmission network costs; “within-year” changes in Transmission Owner Costs are excluded (until the following year)
- price or value congestion or constraint management (the role of the Balancing Mechanism).

It also does NOT:

- Recover the Transmission Owner’s revenue (the role of TNUoS Demand Residual)

TNUoS operates within UK law and government policy framework, but is not a tool to deliver government policy.



**Break**





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# Shallow Connections - Reason for moving to Shallow Connection Methodology

Joe Dunn



## Initial change (pre-BETTA) would move E&W to a shallower policy

Key changes - Following April 2003 licence changes (context NGC SO Incentives development):

- 2003 NGC proposed “Plugs methodology” (CCM-M-07)
- Changes introduced to connection charging methodologies (and TNUoS) in April 2004.

Reason:

- “Plugs” approach limits coverage of connection charges to assets solely used by one, identifiable user”
  - Changes included: Removal of land charges, shared asset termination charges, changes to Site Specific Maintenance Methodology:
    - *(From memory):*
      - Administratively complex
      - Lacked transparency
      - Unpredictability in Charges

At NGC Charging Review charging boundary was not necessarily ‘deep’



## Main transition (to enable BETTA) would move Scotland from Deep to Shallow

Moving to BETTA (method based on NGC in E&W):

- Enable single competitive market (inc. common GB methodology)
- Facilitate competition
  - “...Remove benefit/disadvantage to parties on basis of when and where connections are made to the network...” (3.19 Authority Decision)
  - Excludes assets shared or potentially sharable
- Cost Reflectivity
  - “...as far as practicable, in charges that are reflective of costs...” (3.20 Authority Decision)
- Facilitate competition in connection works
  - Connecting parties could undertake works (3.24 Authority Decision)
- Note:
  - Need for 2km rule due to radial nature of Scottish network (already applied to demand connections)

Made in conjunction with changes to regulatory framework, BSUoS and TNUoS



## Main Reference material:

- NGC's proposed GB electricity transmission charging methodologies The Authority's decisions (December 2004)
- REVIEW OF GB-WIDE TRANSMISSION PRICING (NERA) (26 July 2004) - A Report for Scottish Power UK Division
- The proposed transmission charging methodologies of the GB system operator - An Ofgem consultation and Impact Assessment (October 2004)
- Could not locate anything on CCM-M-07 (Implementation of Plugs)

# Principles

James Stone



# Agreed Principles

- TNUoS should be based on the long-run incremental cost of the transmission system (i.e. the physical assets).
- TNUoS payers should face a long run incremental cost signal relative to their impact on the transmission system.
- TNUoS should promote effective competition by ensuring a level playing field.
- TNUoS should balance cost reflectivity and predictability.

# Security and Quality of Supply Standard - Review

**Bieshoy Awad**

**The objective of this session is to:**

- Provide high-level overview of the “SQSS Review” scope
- Identify & discuss SQSS review areas of interest for the Task Force
- Identify any overlaps/gaps – agree how best to approach this and co-ordinate between workstreams.



# SQSS Review

## Main Interconnected Transmission System

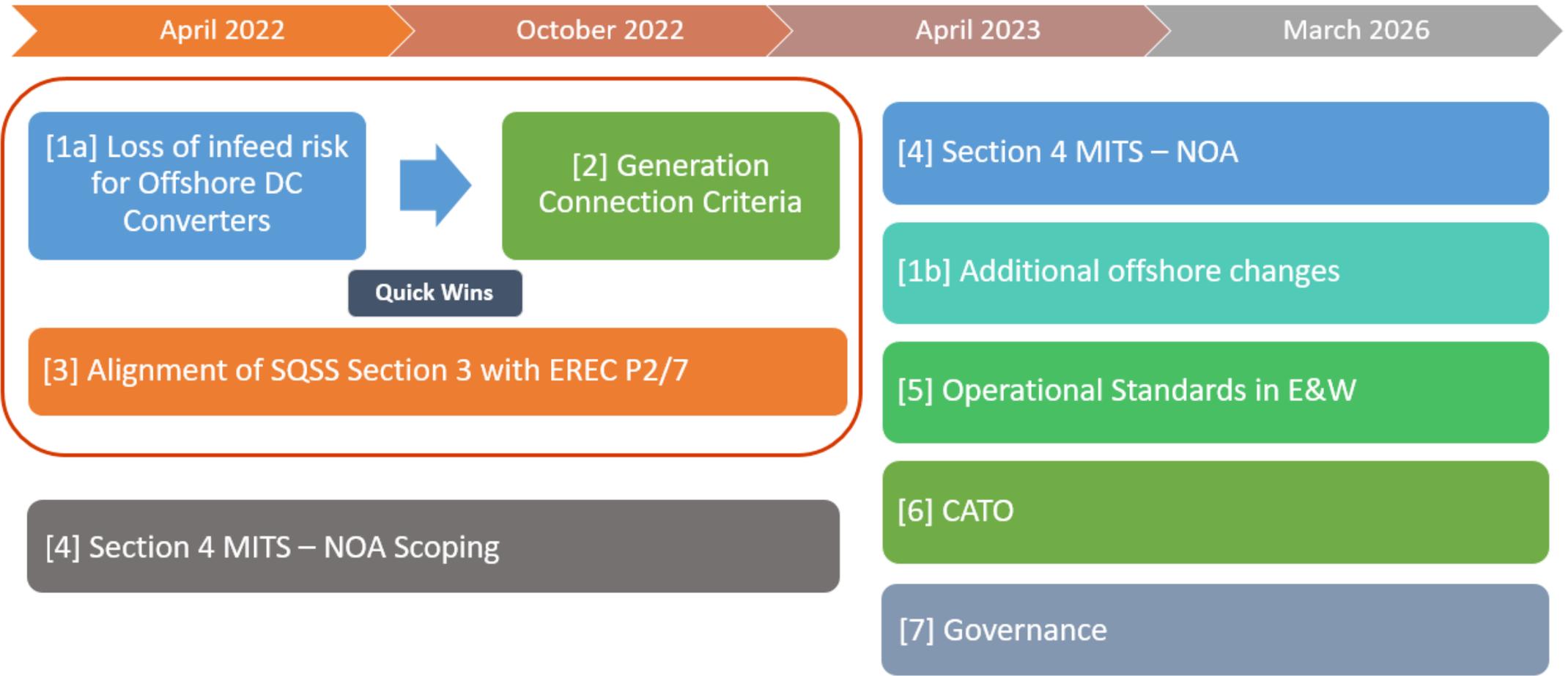
What is the problem?

- a. Scaling factors/availability factors are due for a review
- b. Solar generation is not represented in the assumptions
- c. Low MWh capacity storage is treated using the same assumptions as large pumped hydro plants
- d. Interactions between NOA and SQSS section 4
- e. Operational measures and commercial services as compliance

Issues to be considered

- a. The review could be significantly resource intensive
- b. Potential need for a way to take into account off-peak background assumptions.
- c. Achieving balance between compliance requirements and scenario based Network Options Assessment
- d. Means of ensuring compliance where NOA recommendations do not align with the deterministic criteria.

# ➤ SQSS Review Plan





**Lunch**





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# TNUoS Predictability

James Stone

The objective of this session is to:

- Discuss predictability and themes on why it is important to different TNUoS payers



# Importance of TNUoS Predictability

Stakeholders have previously expressed concerns about the predictability of TNUoS charges.

We asked Taskforce members to provide views on why predictability is important, with the ambition being for this to feed into the final Taskforce report.

Below are the questions posed and the examples of feedback in the following slides:

- Why do you believe predictability of TNUoS is important to your sector?
- What benefits would improvements to predictability of TNUoS bring to your sector and how might this feed through to industry and end consumers?
- How can predictability and any improvements to predictability be measured?
- What importance do you place on predictability versus stability, and cost reflectivity?

To reduce commercial risk; seen through reduced uncertainty to support commercial decision making: pricing; investment and decommissioning; Final Investment Decision (FID) ; CfD / CM bids

Changes in TNUoS charges cannot be mitigated e.g. through hedging

Differing assumptions about TNUoS costs could lead to the 'wrong' projects progressed to commissioning

## Why do you believe predictability of TNUoS is important to your sector?

Importance of time horizons with 4-5 years minimum required to support commercial decisions

To provide investment and budgetary certainty

To provide fair costs to the consumer. Uncertainty passes additional costs to the end consumer via increases in risk premia

➤ Anything else?

Improves price accuracy which drives competitiveness which feeds through to end consumers

Helps to mitigate the potential to falsely inflate the cost of one type of generator over another

To provide a more effective locational investment signal for developers

Reduction in risk capital costs passed through to consumers via higher CM and CfD clearing prices

Lower risk, lower cost and more effective competition if price signals are known at the point when parties make commercial decisions

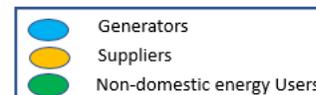
## What benefits would improvements to predictability of TNUoS bring to your sector and how might this feed through to industry and end consumers?

Risk Premiums will reduce which will feed through to Business budgets/costs for their products or services

Delivery of investment and budgetary certainty

➤ Anything else?

30 > TNUoS Task Force > Meeting 3 > 07 September 2022



Through case studies/hypothetical models

To run scenarios varying model input data over a proxy ten year period and test the predictability of tariffs during the period

By considering a range of future scenarios to test the sensitivity of future TNUoS charges

NGESO/FSO to set long term TNUoS tariffs which would also highlight success/difficulties in forecasting

## How can predictability and any improvements to predictability be measured?

Comparison of actual costs and estimated costs

Will not be an exact measurement - Risk Premia varies by supplier

Review the collected funds vs the out-turn actual cost at the end of the period

➤ Anything else?

- Generators
- Suppliers
- Non-domestic energy Users

Pure cost reflectivity should balance absolute versus relative

Predictability is most important  
Stability/Volatility is not, by itself, necessarily a problem

Predictability over longer period of time is very important in the context of providing an investment signal that developers can actually react to

Cost reflective tariffs are a function of the TNUoS design principles e.g. shallow model V deep connection model

Cost reflectivity has become less important. Charges are currently more extreme than cost reflectivity would suggest and as such are causing more distortions, risk and cost to customers than any benefit they are delivering. Cost reflectivity is a means to an end, not an end in itself

### What importance do you place on predictability versus stability, and cost reflectivity?

Predictability above both stability and cost reflectivity

More emphasis on stability and predictability than cost reflectivity

Mechanism in place to ensure stability and recovery of any inaccuracies in out-turned cost

In order of importance: stability, predictability, cost-reflectivity.

➤ Anything else?

# TNUoS Design Challenges

James Stone

**The objective of this session is to:**

- Consider what the TNUoS charging design should do
- Discuss barriers to achieving these requirements & capture defects

Recover an amount for the costs of the network from the Transmission Owners

Provide meaningful long-run investment signals

Be mindful of Holistic Network Design

Whole system thinking - consider network charging as a whole and the interactivity between Transmission & Distribution

# What should TNUoS do?

Strike the 'right' balance of granularity/cost reflectivity/stability/predictability of charges.

Provide predictable tariffs - allows users to make better informed investment decisions

Be simple to reduce barriers to entry

Should reflect the need to invest i.e. where a change in demand or generation increases flows, tariffs then reflect the required investments in the network.

➤ Anything else?



# Challenges in TNUoS?

## What prevents TNUoS doing what it should?

### 1. Large number of inputs which can change significantly - leading to volatility and increased unpredictability of charges;

- Potentially too focused on cost reflectivity - significant data needs.
- Requires various data sources (FES, ETYS, NOA, TO data , Price Control, contracts, WK24 etc) – all with variable levels of reliability .
- Methodology is predictable but sometimes viewed as overly complex with many components.

### 2. Locational signals not effective / “strong enough”;

- Feedback suggests charges are too high in Scotland and hampering development - although pipeline of generator connections still growing.
- Other factors may eclipse the economic signal sent by TNUoS e.g. are favourable planning permission rights, policy limits, availability of natural resources offsetting TNUoS signals – if so does the signal need strengthening.
- Demand unable/unwilling to respond to long-run locational signals.
- Different treatment between Distribution and Transmission connected projects.

### 3. Alignment with SQSS;

- TOs consider a wide range of backgrounds which cannot all be "replicated" transparently by the current model. Potential issues also around TOs less frequently building reinforcement for Peak background
- The SQSS defines the network that is needed - charging should send signals that get the best out of the network that is there.
- SQSS based on planning assumptions – which include an assumption/best view at that point in time around future generation background
- Circuits are Peak or Year-Round, this isn't binary
- SQSS criteria are meant to “discover” required network reinforcement needs/solutions, while the TNUoS model is designed to “reflect” network costs

### 4. Open to regulatory risk;

- Open governance can result in change on change – impacting both volatility and predictability
- Different interpretations by industry of what the purpose of TNUoS is -can lead to large volumes of change.

## ➤ Anything else?



# TNUoS Defects

Below is a snapshot of some potential TNUoS defects;

1. **Model was considered to be less volatile when it used only one scenario and there was no differentiation among fuel types**
2. **Generators at the same point can have differing charges** - counterintuitive if the purpose is to send a locational signal.
3. **Charging is segmented** - generators may be identical electrically but charges differ whether connected at distribution or transmission.
4. **Project TransmiT changes mean circuits can flip between backgrounds** - while overall charges stay the same it can result in tariff volatility for individual circuits (so doesn't work as a LR signal).
5. **Model is reliant on several sets of assumptions** - assumptions around external factors i.e. energy policy changes, whole system / whole network interactivities can also drive changes to the input data and impact locational elements.
6. **TNUoS currently doesn't reflect spare capacity** – is there benefit in this being introduced?
7. **Doesn't consider offshore locational signals for wind** – introduction would then allow these to be considered in the stack of drivers to site a windfarm.
8. **Large number of data inputs / variables** - the model uses several data sets/inputs which means when one variable changes it can have significant impact on some users.

 **Anything else?**



**Break**





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# TNUoS: Defect Prioritisation

James Stone

**The objective of this session is to:**

- Group the defects captured into packages
- Prioritise and agree top issues for future deep dive review & analysis



# Defect Grouping

There are potentially lots of individual defects – for simplicity these could be grouped in to packages. Below is a list of proposed initial groupings;

1. TNUoS & SQSS review interaction
2. Locational signals
3. Data inputs & methodology simplification
4. **Any others?**

➤ **Once the above groupings are agreed, we then need to prioritise the order by which we address these.**

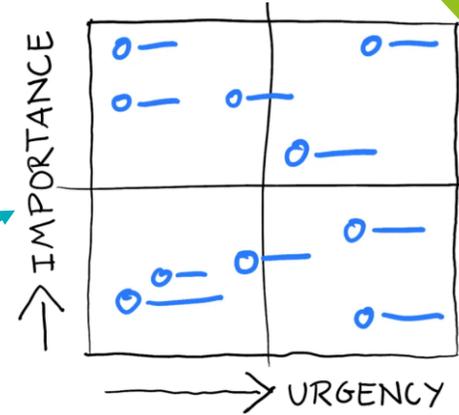


# Prioritisation Criteria

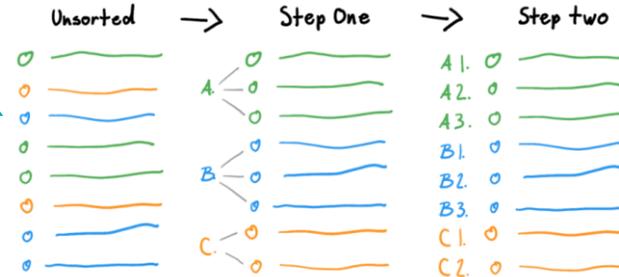
Need to agree how best to prioritise each of the defects and or / groupings;

➤ [9 methods for prioritising tasks;](#)

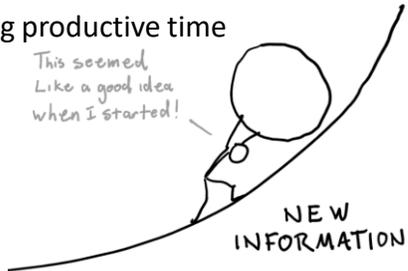
1. Capture on a master list and break down to monthly, weekly & daily goals
2. Separate urgent and important tasks (Eisenhower Matrix)
3. Rank tasks by their true priority
4. Separate tasks with similar priorities (ABCDE method)
5. Do most important work first
6. Cut out 'good enough' goals (2-list strategy)
7. Review priorities
8. Use strategies or tools that create more time for you in the future
9. Prioritise important work during productive time



A. Most Important B. Important C. Least Important



Most Important Goals



TOMMOROW

Do 1<sup>st</sup> \_\_\_\_\_

Do 2<sup>nd</sup> \_\_\_\_\_

1. \_\_\_\_\_

AVOID EVERYTHING ELSE UNTIL #1 IS FINISHED

2. \_\_\_\_\_

# Literature Review

**James Stone**

**The objective of this session is:**

- For the Task Force to identify previous work undertaken by industry in relation to the TNUoS methodology
- Agree approach to creating literature review library for use in future sessions



# Literature Review

We asked Taskforce members to provide historic reports/reviews of TNUoS. The ambition is to;

- Create a reference library of TNUoS work / reports undertaken to date.
  - Summarise the conclusion of each report for circulation amongst the Taskforce.
  - Library to be used by Taskforce members to aid understanding and to support Taskforce discussions.
  - Summary to then act as a index for the reference library.
- 
- **ESO have now started library creation, with more information to be circulated for next session.**

# Next Steps and Close

Jon Wisdom



**Thank you**

