Metering in the NHH market
Roles and responsibilities and Data Standardisation

1 February 2023

John Davies, CIO, MOSL
Martin Hall, Programme Lead, MOSL
Gareth Forrester, PA Consulting
Dene Marshallsay, Artesia Consulting

Recording of webinar

- The following slides were presented at a webinar on 1 February 2023
- Click here for a recording of the webinar
- Key timestamps:

Roles & Responsibilities

- Session 1: 00:07:00
- Discussion: 00:44:30

Data Standard

- Session 2: 01:07:30
- Discussion: 01:24:00

Agenda

Welcome and introductions	Adrian Smith	2 mins
Context and drivers for change	John Davies	10 mins
Session 1: Roles and responsibilities		
Introduction and objectives	Martin Hall	5 mins
Findings and recommendations	Gareth Forrester, PA	25 mins
Project AMIDST	Michelle Thompson, Anglian Water	4 mins
Discussion	Martin Hall	15 mins
Session 2: Data sharing standardisation		
Introduction and objectives	Martin Hall	5 mins
Findings and recommendations	Giles Fox, Artesia	25 mins
Discussion	Martin Hall	15 mins

The non-household market

- NHH market's role in reducing overall water consumption is being recognised
- Defra's Environmental Improvement Plan
  - 9% reduction in NHH consumption by 2037
- Ofwat's PR24 Final Determination:
  - Performance Commitment
  - Smart meters the default standard - need to justify dumb meters
  - Companies expected to work together to develop data sharing standards
- We're working to respond to these challenges and maximise the market's potential…

Strategic Metering Programme

Three workstreams:

1. Developing a national strategy for NHH metering
2. Improving meter reading processes
   - Locating meters
   - Reading meters
   - Transferring data
   - Standardising processes
   - Best practice/guidance docs
3. Making granular consumption data available to all

NON-HOUSEHOLD METERING ROADMAP

	Completed	Current work 2022/23	Future work 2023-25	KPIs
Developing a national strategy for NHH metering	Business case for enhanced metering technology Templates and data to support trading parties' PR24 submissions	Requirements and principles prepared for a national strategy Support provided to PR24 – Ofwat consultation response & Defra WRMP consultation response	National metering strategy for NHH Review and challenge wholesaler plans for enhanced metering in PR24	% increase in smarter metering Reduced customer complaints
Improving meter reading processes	Roles and responsibilities: 12 initial options developed 12 quick start projects (QSPs) to improved meter reading processes: code changes and guidance documents	Roles and responsibilities – 6 options developed and selected options readied change QSPs continued Market Improvement Fund (MIF) Project Looking Glass – long unread meters and MIF Project NoFloW – broken meters MIF Project AMIDST – monthly smart meter read entered direct to CMOS - interim solution Working with the Retailer Wholesaler Group (RWG) to update meter reading standards guidance	Implement change process for outputs from Roles and Responsibilities review Implement new QSPs, complete code changes and promote guidance documents Improved understanding of meter 'asset health', e.g. age, accuracy Understand true cost of effective meter reading	Increase in timely and accurate meter reads to market Elimination of Legacy Long Unread Meters; reduction in Long Unread Meters (LUMs) Improve % of total settlement based on meter reads (R3) Level of read rejections
Making granular consumption data available to all	Data sharing legal agreement prepared and signed 30k hourly records shared with MOSL	Data interoperability standard Wholesalers signed data sharing agreement Wholesalers provide granular consumption data to support water efficiency MIF projects	Encouraging wholesalers to adopt new interoperability standard to share data with retailers/ customers Roles and responsibilities - develop requirement and business case for a data sharing platform Implement an appropriate data sharing mechanism	Proportion of wholesalers sharing data Proportion of retailers accessing shared data

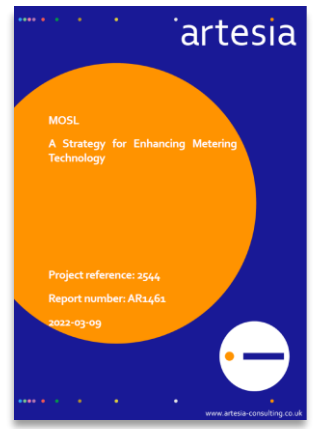
Strategic Metering Programme

Three workstreams:

1. Developing a national strategy for NHH metering
2. Improving meter reading processes
   - Locating meters
   - Reading meters
   - Transferring data
   - Standardising processes
   - Best practice/guidance docs
3. Making granular consumption data available to all

NON-HOUSEHOLD METERING ROADMAP

	Completed	Curr…	…work 2023-25	KPIs
Developing a national strategy for NHH metering	Business case for enhanced metering technology Templates and data to support trading parties' PR24 submissions	Requ… pre… S… Ofw… Defr… resp…	…l metering strategy …H … and challenge …aler plans for …ed metering in	% increase in smarter metering Reduced customer complaints
Improving meter reading processes	Roles and responsibilities: 12 initial options developed 12 quick start projects (QSPs) to improved meter reading processes: code changes and guidance documents	Role… optio… selec… chan… QSP… Mark… (MIF) Project Looking Glass – long unread meters and MIF Project NoFloW – broken meters MIF Project AMIDST – monthly smart meter read entered direct to CMOS - interim solution Working with the Retailer Wholesaler Group (RWG) to update meter reading standards guidance	…ment change process …puts from Roles and …sibilities review …ment new QSPs, complete code changes and promote guidance documents Improved understanding of meter 'asset health', e.g. age, accuracy Understand true cost of effective meter reading	Increase in timely and accurate meter reads to market Elimination of Legacy Long Unread Meters; reduction in Long Unread Meters (LUMs) Improve % of total settlement based on meter reads (R3) Level of read rejections
Making granular consumption data available to all	Data sharing legal agreement prepared and signed 30k hourly records shared with MOSL	Data interoperability standard Wholesalers signed data sharing agreement Wholesalers provide granular consumption data to support water efficiency MIF projects	Encouraging wholesalers to adopt new interoperability standard to share data with retailers/ customers Roles and responsibilities - develop requirement and business case for a data sharing platform Implement an appropriate data sharing mechanism	Proportion of wholesalers sharing data Proportion of retailers accessing shared data



Enhanced Metering Technology report
April 2022

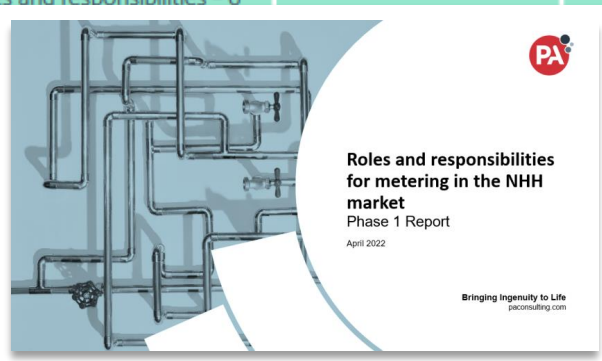
Strategic Metering Programme

Three workstreams:

1. Developing a national strategy for NHH metering
2. Improving meter reading processes
   - Locating meters
   - Reading meters
   - Transferring data
   - Standardising processes
   - Best practice/guidance docs
3. Making granular consumption data available to all

NON-HOUSEHOLD METERING ROADMAP

	Completed	Current work 2022/23	Future work 2023-25	KPIs
Developing a national strategy for NHH metering	Business case for enhanced metering technology Templates and data to support trading parties' PR24 submissions	Requirements and principles prepared for a national strategy Support provided to PR24 – Ofwat consultation response & Defra WRMP consultation response	National metering strategy for NHH Review and challenge wholesaler plans for enhanced metering in PR24	% increase in smarter metering Reduced customer complaints
Improving meter reading processes	Roles and responsibilities: 12 initial options developed 12 quick start projects (QSPs) to improved meter reading processes: code changes and guidance documents	Roles and responsibilities – 6 opt sele cha M (MI lon Pro me MIF sm dire sol Wo Wholesaler Group (RWG) to update meter reading standards guidance		ease in timely accurate er reads to ket ination of acy Long ead Meters; uction in Long ead Meters Ms) rove % of total lement based meter reads Level of read rejections
Making granular consumption data available to all	Data sharing legal agreement prepared and signed 30k hourly records shared with MOSL	Data interoperability standard Wholesalers signed data sharing agreement Wholesalers provide granular consumption data to support water efficiency MIF projects	Encouraging wholesalers to adopt new interoperability standard to share data with retailers/ customers Roles and responsibilities - develop requirement and business case for a data sharing platform Implement an appropriate data sharing mechanism	Proportion of wholesalers sharing data Proportion of retailers accessing shared data



Roles & Responsibilities options report
June 2022

Strategic Metering Programme

Three workstreams:

1. Developing a national strategy for NHH metering
2. Improving meter reading processes
   - Locating meters
   - Reading meters
   - Transferring data
   - Standardising processes
   - Best practice/guidance docs
3. Making granular consumption data available to all

NON-HOUSEHOLD METERING ROADMAP

	Completed	Current work 2022/23	Future work 2023-25	KPIs
Developing a national strategy for NHH metering	Business case for enhanced metering technology Templates and data to support trading parties' PR24 submissions	Requirements and principles prepared for a national strategy Support provided to PR24 – Ofwat consultation response & Defra WRMP consultation response	National metering strategy for NHH Review and challenge wholesaler plans for enhanced metering in PR24	% increase in smarter metering Reduced customer complaints
Improving meter reading processes	Roles and responsibilities: 12 initial options developed 12 quick start projects (QSPs) to improved meter reading processes: code changes and guidance documents	Roles and responsibilities – 6 options developed and selected options readied change QSPs continued Market Improvement Fund (MIF) Project Looking Glass – long unread meters and MIF Project NoFloW – broken meters MIF Project AMIDST – monthly smart meter read entered direct to CMOS - interim solution Working with the Retailer Wholesaler Group (RWG) to update meter reading standards guidance	Implement change process for outputs from Roles and Responsibilities review Implement new QSPs, complete code changes and promote guidance documents Improved understanding of meter 'asset health', e.g. age, accuracy Understand true cost of effective meter reading	Increase in timely and accurate meter reads to market Elimination of Legacy Long Unread Meters; reduction in Long Unread Meters (LUMs) Improve % of total settlement based on meter reads (R3) Level of read rejections
Making granular consumption data available to all	Data sharing legal agreement prepared and signed 30k hourly records shared with MOSL	Data interoperability standard Wholesalers signed data sharing agreement Wholesalers provide granular consumption data to support water efficiency MIF projects	Encouraging wholesalers to adopt new interoperability standard to share data with retailers/ customers Roles and responsibilities - develop requirement and business case for a data sharing platform Implement an appropriate data sharing mechanism	Proportion of wholesalers sharing data Proportion of retailers accessing shared data

Metering roles and responsibilities
Introduction and context

Martin Hall
Metering Programme Lead

Process to date

Phase 1: Dec 2021-June 2022

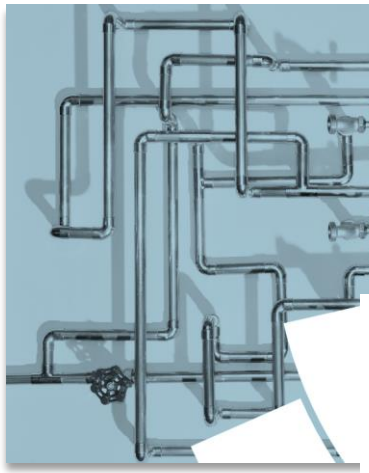
- PA Consulting researches options
- Longlist presented at webinar in June ’22
- Feedback presented to Metering Committee
- Four shortlisted options taken forward

Phase 2: July 2022 - March 2023

- Determine evaluation criteria
- More detailed analysis of options
- Share outputs with the market
- Implementation planning

Phase 3: April 2023 onwards

- Implementation(s) via change programme



Roles and responsibilities for metering in the NHH market
Phase 1 Report

	#	Option
1	9	Asset data improvement programme
	4	Data platform
2	1	Wholesalers responsible for all market meter reads
	2	Wholesaler Reads (Defined circumstances only)
3	6	Full NHH Smart Metering/Technology Rollout
	7	Targeted Smart(er) Metering/Technology Rollout
	10	Wholesaler smart(er) replacement service offering
	11	Retailer/ Customer installation of additional metering technology
4	5	Integrated / independent meter ownership and data service
5	3	Wholesaler Reads and data service (for smart meters only)
	8	Retailers own and are responsible for metering assets
	12	Competition in metering Non-Primary Services

Roles and responsibilities shortlist

- Longlist presented at webinar in June 2022 with indication of options likely to go forward
- Options refined following feedback
- Six options taken forward:
  - #9: Asset data improvement programme
  - #4: Data platform
  - #2: Wholesaler reads (defined circumstances)
  - #1: Wholesalers responsible for all market reads
  - #3: Wholesaler reads & data services (smart meters only)
  - #11: Retailer/customer installation of additional metering technology

		Option
	9	**Asset data improvement programme**
	6	**Full NHH Smart Metering/Technology Rollout**
	4	**Data platform**
	7	**Targeted Smart(er) Metering/Technology Rollout**
	2	**Wholesaler Reads (Defined circumstances only)**
	10	**Wholesaler smart(er) replacement service offering**
	1	**Wholesalers responsible for all market meter reads**
	3	**Wholesaler Reads and data service (for smart meters only)**
	11	**Retailer/Cust installation of additional metering technology**
	12	**Competition in metering Non-Primary Services**
	5	**Integrated / independent meter ownership and data service**
	8	**Retailers own and are responsible for metering assets**

Assumes smart meter-related options delivered via PR24

Objectives and considerations

- Provide more detailed analysis of shortlisted options
- Share assessment of the strength of each option against the five-case model
- Propose ‘no regrets’ starting point and roadmap for change
- Provide opportunity for discussion and further input
- Outline next steps

Balancing the market’s immediate needs and longer-term evolution to:

Expedite resolution of current metering market and asset data issues – for better customer outcomes

Increase volume and quality of data and meter reads available in the NHH market

Accelerate evolution towards smarter technology and data sharing in NHH market

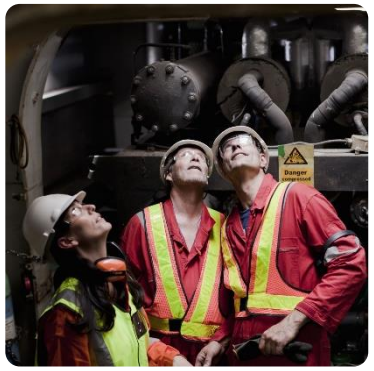
Enable greater ability to offer smart-enabled service offerings to customers

Options analysis

Gareth Forrester
PA Consulting

Non-household Metering Roles & Responsibilities

Update



Bringing Ingenuity to Life.
paconsulting.com

Roles and Responsibilities: shortlisted options

Priority Options			
Option	**1: Wholesalers responsible for all market meter reads**	**2: Wholesaler Reads (Defined circumstances only)**	**3: Wholesaler Reads and data service (for smart meters only)**
Overview	Wholesalers obliged to submit reads on behalf of market for all meter read types within own Wholesale Area	Meter read responsibility switches to wholesaler in defined circumstances only	Meter read responsibility switches to wholesaler where smart metering is installed

Priority Options			
Option	**4: Data Platform**	**9: Asset data improvement programme**	**11: Retailer/ Customer installation of additional metering technology**
Overview	New NHH market-wide data platform to improve access to and standardisation of data for market participants	Centrally-governed programme of initiatives to improve known metering issues	Enhanced ability / rights for retailer/customer to install own smart equipment (or commission installation by qualified contractor)

Evaluation framework – High Level Case for Change

Strategic Case	Economic Case	Commercial Case	Financial Case	Management Case
• NHH market benefits • Customer outcomes • Policy aims and initiatives in the sector	• Value and choice for customers • Reduction of frictions • Addressing known issues (accuracy, timeliness, asset data, LUMs, etc) • Impact on retail and wholesale operations and supply chain	• Required services • Procurement • Risk of stranded assets • Impact on wider businesses	• High level assessment of affordability • Potential funding routes	• Scale of business change • Implementation timescales • Legal/regulatory change required • Long term maintenance, monitoring and oversight

Proposed direction of travel for next phase

Stream 1

Progress two options as potential Code Changes

Option 2: Wholesaler Reads (Defined circumstances)

Option 3: Wholesaler Reads and data service (for smart meters)

- The Code Change Process will provide a robust and controlled approach for consultation, detailed design, impact assessment, full business case development and industry decision-making

Stream 2

Undertake further investigation and design of further option

Option 4: Data Platform

- Further work required to develop and test the strategic case for this option
- Activities will include market engagement (and more detailed service design

Rationale

Case for Change

- **Split of responsibilities** between Wholesaler ownership of meters and Retailer responsibility for reading can cause complexity, friction and cost.
- **Mismatch of risk and incentives**: meters are critical for retailers' businesses and performance outcomes
- **Smart deployment increasing** by wholesalers provides greater opportunity
- **But not fully realising benefits** of accessing more reliable and efficiently read smart metering data
- **Efficiency opportunity** to have standardised solution for data sharing
- **Potential to drive innovation** and improved outcomes for customers

Options 2 & 3 are complementary and appear most likely at this stage to:

- Be viable (e.g. AMIDST piloting)
- Have closest alignment to SMR objectives
- Deliver immediate benefits for market without wholesale change to R&R principles
- Align to smart direction of travel and current market developments

Options 2 & 3 offer a good balance of current market operation improvement and wider strategic future market enablement

They also create strong incentive and future use case for Data Platform (Option 4)

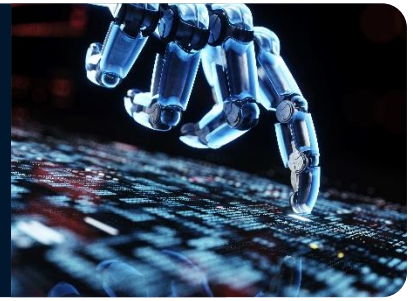
Features & Choices
Option 2: Wholesaler Reads (Defined circumstances only)

Defined circumstances

Detailed definition to be consulted upon and defined, e.g LLUMs

Wholesaler obligations

Mirror Retailer Meter Read obligations



Trigger and evidence

Specific evidence and Reason Code

Transfer process

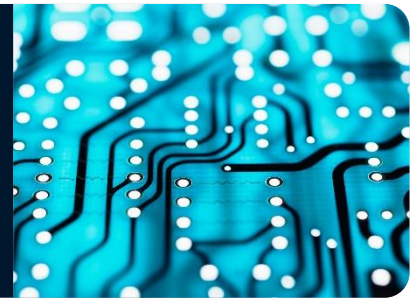
initially manual between R&W, escalate to dispute process

Transfer period

Until evidence that sustainable reads possible

Read –routing & Transactions

New transaction to notify responsibility change. Reads could be direct or via Retailer validation



Disputes

Manual dispute process. New committee/function to resolve and provide guidance/precedent

Monitoring

Minimal monitoring to track trends and issues

Transition

Transition focus – e.g. Legacy LUMs first / Consideration of position re internal meters / MPF Phasing

Option 2: Wholesaler Reads (Defined circumstances only)

Strategic	Positive forecast: PROCEED	• Could be effective means to address issues such as Legacy Long Unread Meters (LUMs)/Hard to read meters and incentivise accelerated smart meter deployment
Economic	Positive forecast: PROCEED	• Better aligned incentives and more efficient delivery to improve market data quality and timeliness, resulting in better outcomes for customers and the market.
Commercial	Positive forecast: PROCEED	• Some proportionate extension to metering services for wholesalers, but limited to only targeted issues and would expect number of problem sites / issues to reduce over time as root causes addressed
Funding	Case inconclusive: REVIEW	• Would require review / adjustment to wholesaler and retailer charging and funding mechanisms and levels
Delivery	Positive forecast: PROCEED	• Relatively limited technical reconfiguration of CMOS and process development

Features & Choices
Option 3: Wholesaler Reads and data service (for smart meters only)

Eligible meters

Wholesaler installed AMI meters

Trigger

Once meter is commissioned as smart

Commissioned flag / transaction

Smart commissioned flag and transaction to action transfer

Performance Standards

Will mirror Retailer MPF standards

Permanent transfer of responsibility

No Retailer obligations once smart commissioned

Read Submission / interface

Transition to direct Wholesaler submission to CMOS

Retailer validation

Could initially use AMIDST solution

Data scope

Analysed data could be value add service (but with common standards)

Transition

Phased – start with core settlement data, then additional data (either CMOS / Data Platform)

Option 3: Wholesaler Reads and data service (for smart meters only)

Strategic	Positive forecast: PROCEED	• As Wholesalers roll out smart meters, the benefits of the availability of enhanced meter read data are immediately made available to CMOS and Retailers
Economic	Positive forecast: PROCEED	• Limited additional marginal costs for wholesalers to make available data as asset costs already addressed through smart metering roll-out programmes
Commercial	Case inconclusive: REVIEW	• Scope of mandatory data provision to be clarified (some may be on a commercial basis)
Funding	Case inconclusive: REVIEW	• Would require review / adjustment to wholesaler and retailer charging and funding mechanisms and levels (may change over time with balance of read responsibilities)
Delivery	Positive forecast: PROCEED	• Project AMIDST offers a potential standardisation approach for making consumption info available to retailers and direct CMOS submission. AMIDST is piloting a solution, hosted by MOSL, that could be scaled for all Wholesalers in respect of market minimum reads.

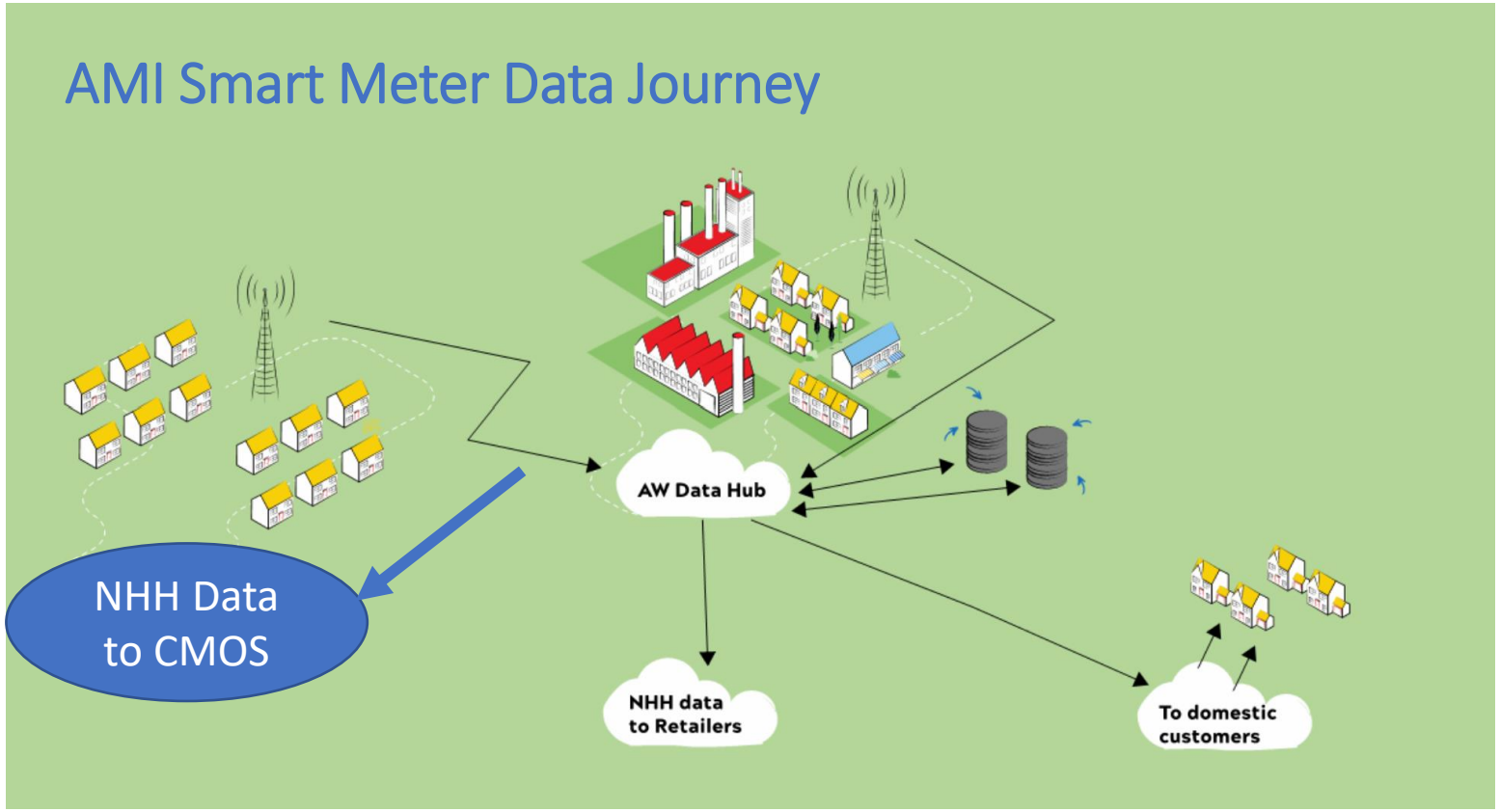
Project AMIDST

Advanced Metering Infrastructure Strategic Data Transfer

Michelle Thompson

Anglian Water

Project AMIDST (AMI Data Strategic Transfer)



A pathfinder project to investigate feasibility and benefits of sharing monthly meter reads from wholesaler smart meters direct to CMOS

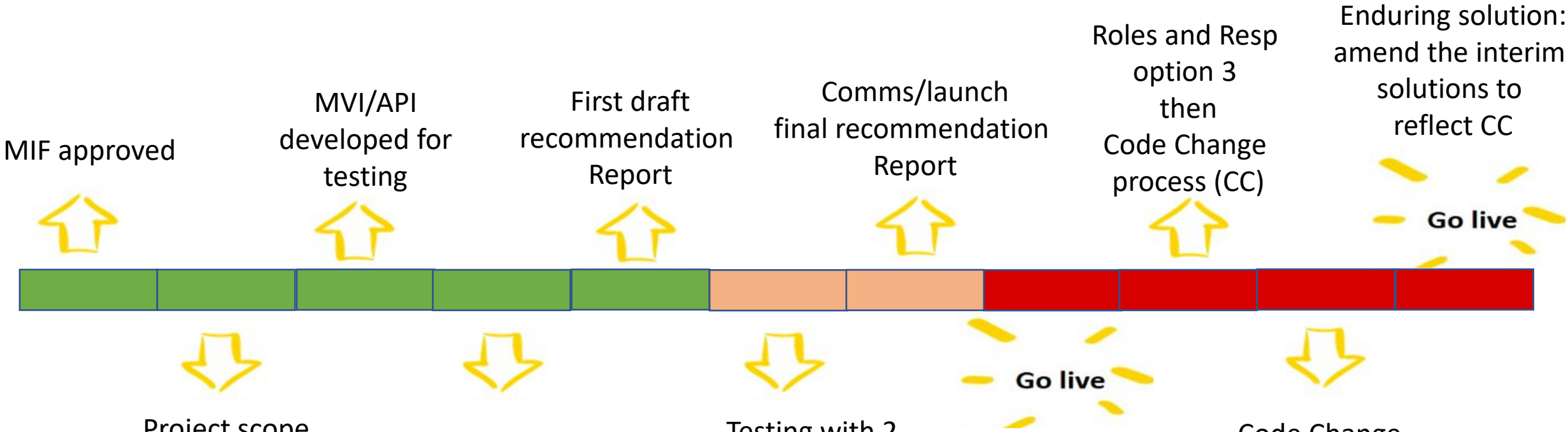
Market Improvement Fund: A joint project, a collaboration between Anglian Water and MOSL.

Market Improvement Fund

MOSL
MARKET OPERATOR SERVICES LTD

love every drop
anglianwater
Wholesale

Project AMIDST (AMI Data Strategic Transfer)



Interim solution – readings require retailer validation before upload to CMOS
Enduring solution – readings direct to CMOS

Market Improvement Fund

love every drop anglianwater Wholesale

Options analysis

Gareth Forrester
PA Consulting

Key activities to further develop Option 4 (Data Platform)

New NHH market-wide data platform to improve access to and standardisation of data for market participants

Market Testing

- Vendor market engagement
- Exploring potential commercial solutions for data platform
- Develop procurement strategy

Service Design

- Confirm data standards
- Data charging arrangements
- Confirm service scope / functionality
- Data ownership/access rights/competition issues
- High-level business and technical architecture/design
- Assess ongoing operational and service management model and costs
- CMOS interaction

Why not the other options (at this point)

Strategic	Case inconclusive: REVIEW
Economic	Case inconclusive: REVIEW
Commercial	Case inconclusive: REVIEW
Funding	Case inconclusive: REVIEW
Delivery	Case inconclusive: REVIEW

Option 1: Wholesalers responsible for all market meter reads

- Fundamental shift in market design
- Concerns re viability of extended service provision by Wholesalers
- Significant commercial and operational impacts
- Selecting Options 2 and 3 reduces need for Option 1

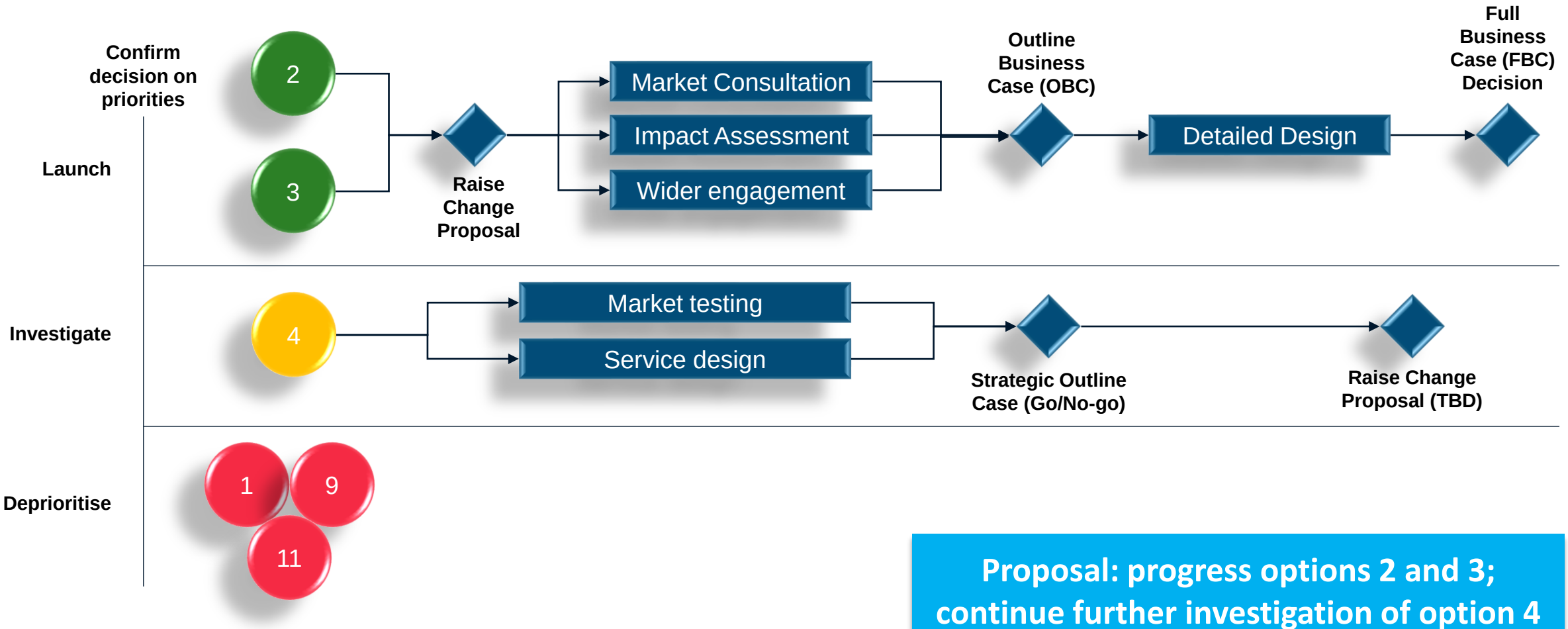
Option 9: Asset data improvement programme

- Not clear that will provide significant additional focus/benefits to improve asset data over Option 2.
- There is already a focus on these issues and avenue to address via MPF reform, data cleanse, and other targeted initiatives

Option 11: Retailer/Customer installation of additional metering technology

- Less immediate benefit for market/settlements operations/accuracy
- Likely to have much more limited benefits in terms of wider market and sector objectives and evolution
- May weaken incentive for faster smart meter deployment

Proposed way forward: change pathway

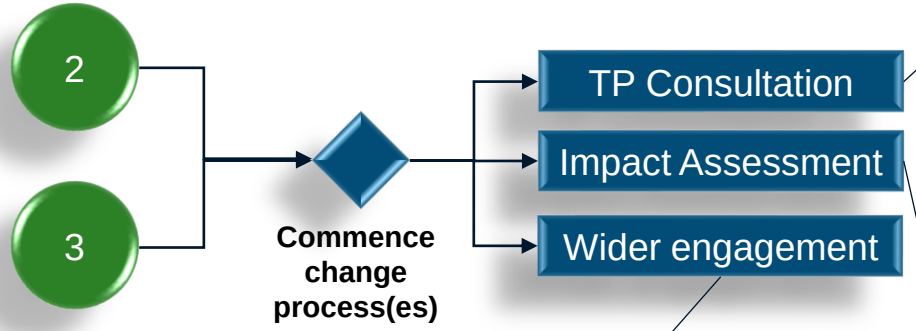


Proposal: progress options 2 and 3; continue further investigation of option 4

Key focus for Change Proposal process (Options 2 & 3)

Option 2:
Wholesaler Reads
(Defined circumstances)

Option 3:
Wholesaler Reads and data service (for smart meters)



- Operational, financial and commercial impacts on retailers
- Impact on wholesale operations
- Likely impact on funding needed via price control / PR24 alignment
- Impact on wholesaler meter reading services
- Cost allocation for allocated read activities

- Market participant Impact Assessment
- Systems Impact Assessment:
  - CMOS
  - Bilateral Transactions Hub
- Impact on consumers (financial impacts, service levels, consumer choice/journey)
- Impact on market operator role, systems, processes and resources

- Ofwat (Funding, PR24, RPR)
- Customer representative bodies
- Meter reading contractors

Outputs due to progress into change process in early FY2023/24

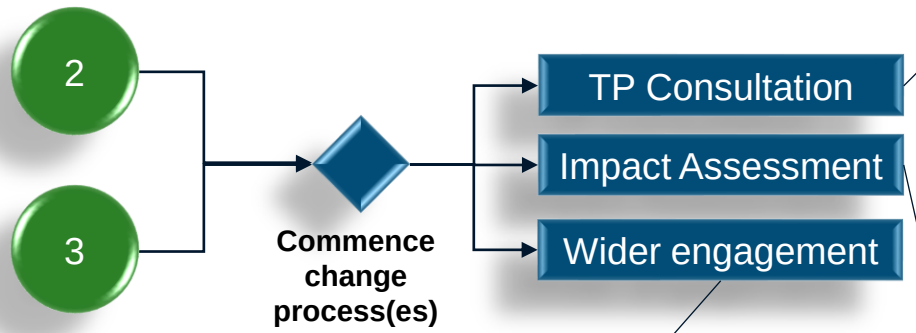
Metering Roles and Responsibilities Discussion (15 mins)

Martin Hall
Metering Programme Lead

Key focus for Change Proposal process (Options 2 & 3)

Option 2:
Wholesaler Reads
(Defined circumstances)

Option 3:
Wholesaler Reads and data service (for smart meters)



- Operational, financial and commercial impacts on retailers
- Impact on wholesale operations
- Likely impact on funding needed via price control / PR24 alignment
- Impact on wholesaler meter reading services
- Cost allocation for allocated read activities

- Market participant Impact Assessment
- Systems Impact Assessment:
  - CMOS
  - Bilateral Transactions Hub
- Impact on consumers (financial impacts, service levels, consumer choice/journey)
- Impact on market operator role, systems, processes and resources

- Ofwat (Funding, PR24, RPR)
- Customer representative bodies
- Meter reading contractors

Q: What do you see as the key impacts on your business of these options?

Q: What specific issues should be consulted upon?

Q: Any other feedback?

Metering Data Standardisation and Interoperability
Introduction and context

Martin Hall
Metering Programme Lead

Objectives and considerations

- **To facilitate improved sharing of granular data in the NHH market**
- Primary wholesaler-to-retailer, but could be any combination of wholesaler, retailer and customer
- Determine benefits to various stakeholders
- Propose a simple, practical data standard
- Seek your input before promoting to the market, e.g. via WaterUK

Developing a data sharing standard that is:

As simple and straightforward as possible

Does not impact choice of meter technology

Easily adopted by as many trading parties as possible – ideally all

Fulfils Ofwat's data sharing standard as set out in the PR24 Final Methodology

Ofwat's expectations

December 2022

Creating tomorrow, together

Our final methodology for PR24

Ofwat

expects to set through secondary legislation.[142] We expect companies to maximise the benefits available from technology and opportunities to collect increasingly detailed demand data on a near real time basis. We expect companies to work collaboratively to introduce national standards for the data collected from smart meters to ensure interoperability across the sector. Consistent with the UK government expectations for water resource planning we expect all companies to consider smart meter solutions as the standard meter installation

Data Standardisation and Interoperability

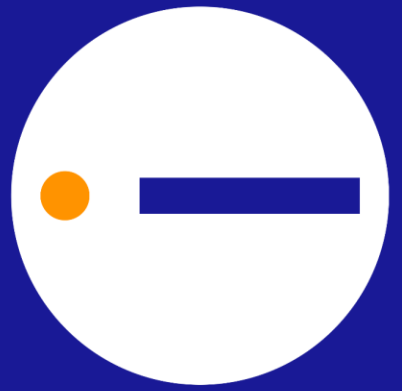
Giles Fox
Artesia Consulting

artesia

MOSL data sharing standardisation Webinar

01/02/2023

Dene Marshallsay, Giles Fox



What are the key objectives for this data standard?

Define a data standard that enables trading parties to effectively share meter reading and consumption data within the market(and potentially beyond)

The focus is on granular consumption data (15 mins, hourly, daily)

Could also include meter readings and other asset data

What are the stakeholder benefits which could be realised through granular data access?

We identified a number of the benefits of granular consumption data in the Enhance Metering Technology.
For this project, Stakeholder engagement was key, so building upon the outcomes from the enhanced meter Technology (EMT) project , we identified a number of stakeholders to discuss their requirements for data sharing and the benefits a data sharing standard could bring.

Retail customers	Wholesalers	Retailers	Market operator
Improved service	Transactions based on valid consumption	Fewer customer complaints	Improved market performance
Bills based on valid consumption	Greater visibility of property level consumption	More accurate cash settlements	Market performance framework can be outcome focussed
Value added services	Ability to target leakage and wastage reductions	Improved cash flow	Data rich metrics
Water efficiency opportunities	More accurate consumption data for regulatory reporting	Scope to innovate and provide customers with added services	Value added insight
Fewer bill shocks	Improved management of meter assets	More confidence in taking on new customers	Evidence based improvements
More informed choices	Benefits align with household metering	Reduced cost to serve	
		Fewer stranded assets	

What information did we want to get from Stakeholders?

What does GRANULAR data mean?

At what frequency is data available?

How long should data be made available?

What volumes of data will be available?

What are the GDPR considerations?

How to link data to CMOS?

Do we include AMR, AMI and logger data?

Do we need to treat data from digital meters and pulse counters differently?

Just granular data or other meta data?

Do we need compulsory and optional fields?

Do we include examples of data use?

Who do we need to engage with?

Additional stakeholder requirements

In addition to responses to our questions, stakeholders were supportive of defining and establishing a standard data sharing specification and nearly all specified the same additional requirements:

The standard should not overly complex

The standard should be broadly aligned with existing systems/processes

Developing the standard

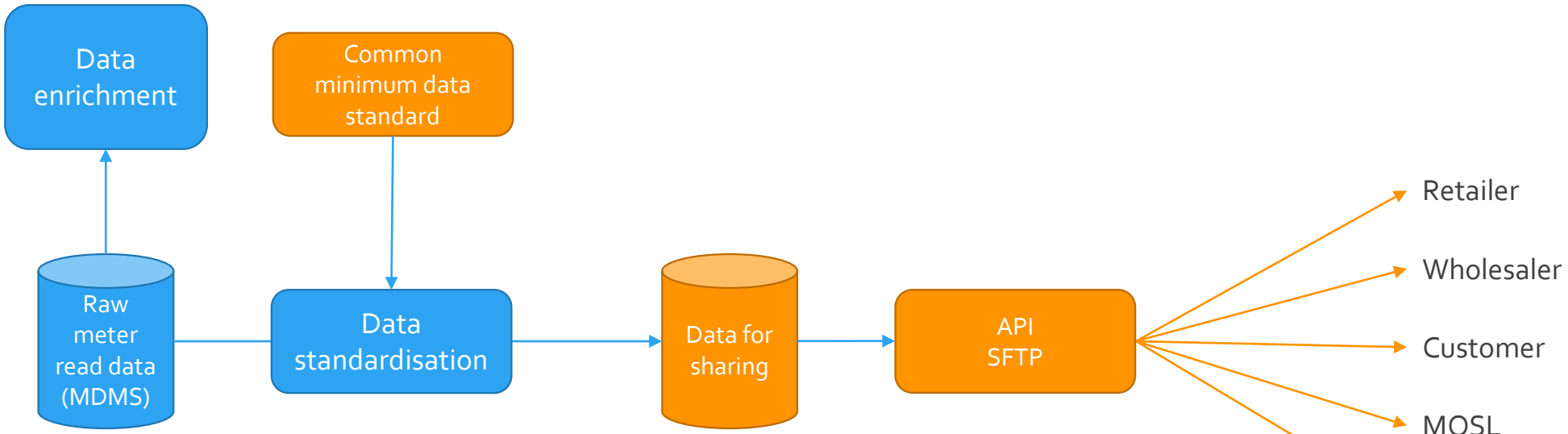
We collated the information collected from stakeholders and developed a draft statement of requirements.
We considered:

Data Requirements:
- Purpose (what it could be used for, e.g. billing, analytics, etc)
- End Users
- What formats the end users are likely to need.

Data Specification
- Minimum mandatory fields
- Definition of each data variable to be stored and shared
- Data structure and format for each data variable

Data Transfer and storage
- Options for data transfer, including functionality requirements and file transfer systems requirements, e.g. Secure FTP/API.

What are the Data Flows for sharing high granularity data?



Data collector:
Wholesaler
Retailer
Self supplier
3rd party

Process to extract data and format for sharing

Minimum data standard

AMI tables

Data field name:	**MeterID**
Description:	Manufacturer Meter Serial Number
Definition:	A character string comprising the serial number from the manufacturer recorded on the meter. This may not be a unique field. The string may be of varying length and will include integers and/or letters.
Units:	Not applicable
Format:	The field should be an ASCIIString (Length 32).
Example:	**G19M203392**

Data field name:	**SPID**
Description:	Supply Point Identification number

Definition:	A SPID is composed of four parts concatenated into a single unique thirteen character string. The four parts are:
	• SPID Core: This is comprised of two sub-parts:
	  ○ SPID Core Serial Part: a serial number generated upon adding a Supply Point to the Supply point register, the SPID Core is unique to each Eligible Premises. The serial number is a 9 digit integer.
	  ○ Core Check Code: The check code enables error detection for the SPID Core and is always used. The check code is a single character and may be either an integer or the letter "X".
	• Category: This identifies the Service Category, and for the purpose of this Standard will always be "W" for Water. An "S" will represent a Sewerage connection.
	• Version: This identifies the version of the SPID and will always be "1".
	• Check code: The check code enables error detection and is an intrinsic part of the SPID. The check code is a single character and may be an integer or the letter "X".

Units:	Not applicable.
Format:	The field should be UTF-8string (length 13).
Example:	**9876543210W13**

AMI cont.

Data field name:	**DateTime**
Description:	Date and Time
Definition:	Date and time elements in descending order of size (years, months, days, hours, minutes, seconds). Separate each date value with hyphens. Separate 'time' from the 'date' with 'space', use the 24-hour format and a colon to separate hours, minutes, seconds. You should refer to midnight as 00:00:00. You should use Coordinated Universal Time (UTC) with no (zero) offset (equivalent to GMT). Relevant standards: ISO 8601.
Units:	Not applicable
Format:	**YYYY-MM-DD HH:MM:SS**
Example:	**2022-07-15 17:32:00** This describes: 15th July 2022 5:32 pm at zero seconds.

Data field name:	**MeterIndex**
Description:	Meter Register reading value
CMOS data item:	Not applicable
Definition:	The register advance read from a meter. The read should be a non-negative decimal with a maximum of 6 digits before the decimal point and 3 digits after the decimal point. For a unique combination of SPID and MeterID the MeterIndex should either not change or increase with increasing time.
Units:	m^3 (cubic metres)
Format:	Non-negative decimal (length 6.3)
Example:	**123456.789**

AMR tables (not shown in webinar recording)

The following definitions are the same as in AMI above:

MeterID

SPID

DateTime

MeterIndex

Data field name:	**LeakAlarm**
Description:	The presence of continuous flow passing through the meter (typically this may be a leak).
Definition:	A Boolean value to flag the presence of continuous flow through the meter. This can be used to provide an alert that there is a leak or other form of continuous flow. The value should either be a "1" to indicate continuous flow, or "0" (zero) to indicate the absence of continuous flow being reported.
Units:	Not applicable
Format:	This field should be a. Boolean and contain a value of "1" or "0" (zero) only.
Example:	**1**

Logger tables (not shown in webinar recording)

The following definitions are the same as in AMI above:

MeterID

SPID

DateTime

Data field name:	**FlowRate**
Description:	Average volumetric flow rate between two datetime stamps.
Definition:	The average volumetric flow rate (a volume per unit time) passing through the meter between the previous datetime stamp and the current datetime stamp. This should be decimal with a maximum of 12 digits before the decimal point and 4 digits after the decimal point. The value may be negative, which would indicate flow passing in the reverse direction. The units should be stated in the data field name header of the table, after the field name within brackets. For example, "FlowRate (m^3/hr)". Units are defined by the logger setting should be a volume per a unit of time.
Units:	Variable, and should be stated in the field name header.
Format:	Decimal (length 12.4)
Example:	**DateTime** **FlowRate (m^3/hr)** 2022-07-15 17:30:00. 1000.0000 2022-07-15 17:45:00 500.0000 In the above example the average flow between 15th July 2022 5:30 pm and 15th July 2022 5:45 pm was 500 m^3/hr.

Minimum Mandatory Fields (for data sharing interoperability)

Considering the data flows and user requirements, this standard has been designed to provide a minimum core set of data definitions for sharing data to be used for delivering the outcomes identified through our stakeholder engagement.

We have identified the following minimum mandatory fields for all data sources (AMI, AMR and loggers) required for effective data sharing

AMI	AMR	Data loggers
• Meter ID • SPID (service connection) • Date/time stamp • Meter Register Reading	• Meter ID • SPID (service connection) • Date/time stamp • Meter Register Reading • Continuous flow alert	• Meter ID • SPID (service connection) • Date/time stamp • Volume flow rate

Analysed data measures

The standard has been designed to provide a **minimum core set of data definitions for sharing data** to be used for delivering the outcomes set out at the start of this project.

Some stakeholders already carry out data enhancement to derive further metrics and we anticipate that other parties will develop their own analytical techniques to use this data to deliver the outcomes, although not all parties may have in-house capability to derive secondary data in support of these metrics

- Benchmarking NHH consumption
- Conversion of meter reads into volumes
- Identify wastage and leakage (continuous Flows)
- Improve efficiency in switching
- Wholesaler insight for peak demand periods
- Identifying zero flow periods
- Burst outbreaks

Further investigation is required to understand and define standard methods for deriving these secondary data sets

Next Steps

- Subject to identification of any 'blockers', the Standard will be published by MOSL in March
- Further consideration of secondary derived data measures
- Provides input to development and design of data platform (i.e. Roles and Responsibilities Option 4)
- MOSL to explore how to maximise adoption of Standard

Data Standardisation and Interoperability Discussion (15 mins)

Martin Hall

Does the proposed Data Interoperability Standard achieve its aims?

Is it simple and straightforward?

Is it easily adopted by trading parties?

Does it fulfil Ofwat's data sharing standard?

Views on secondary derived data measures?

Do you see any obstacles to adopting this standard in your organisation?

Next steps

- Presentations and recording of today's webinar will be published on the MOSL website this week
- Please send any feedback or comments to comms@mosl.co.uk
- **Roles and responsibilities**
  - Options 2 & 3 will go forward into Code Change process, which includes further consultation with trading parties
  - Option 4 will continue to be developed with the Metering Committee
- **Data Interoperability Standard**
  - Subject to identification of any blockers, the data standard will be published by MOSL in March


Thank you.

Comments made during discussions (1)

Key questions and comments that were recorded in Teams 'chat' are reproduced here. These will used to facilitate further development of both projects:

- **RP:** I am pleased to see that Option 1 [Wholesalers take responsibility for reading all meters] is not suggested for taking forward. I can see the sense in preparing for increased volumes of smart (AMI) meter reads and therefore can see the potential value in taking Option 3 [Wholesaler take responsibility for reading smart meters] through to the code change process. Hence, I would support taking it forward as described for development and consultation/challenge, although the actual proposed change is still somewhat unclear, as is the transition.

  However, I suggest that the time for Option 2 [Wholesalers take responsibility for reading meters in defined circumstances] has already passed and question the need/value. Also, there are considerable practical issues with Option 2 - for example, the various handoffs, with say meters moving from being a retailer's responsibility, changing state to then be under a wholesaler's responsibility, and then moved back. Funding, hand-offs, management, etc are all obvious issues. The code change is likely to be complicated as a consequence. Ultimately, whatever the market obligations and responsibilities to submit reads to the market, they do not negate a retailer's obligations to its customers and to issue accurate and timely bills to its customers based on metered consumption, etc. Nor does it negate a retailer's obligations under the Customer Protection Code of Practice.

  I would suggest that the current market code provides sufficient tools, obligations, and rights to get the underlying data/asset issues fixed by a wholesaler, and transferring responsibility temporarily under defined circumstances won't fundamentally change that and will leave the retailer without the current tools that it has to push a wholesaler to address issues. One can see that happening, but it has been too long a journey and hence my suggestion that this Option 2 is perhaps 5-6 years too late. Its day may have been when the market opened, not now. It seems a backward step and complex.

  [These are considered] valid reasons for not taking this to the code change process and therefore for us to question why this is on the next phase list. Will we see the nature of the code change and drafting to get an idea of what is proposed for Options 2 and 3, before they are submitted into the formal change process in April?

Comments made during discussions (2)

Key questions and comments that were recorded in Teams 'chat' are reproduced here. These will used to facilitate further development of both projects:

- **CF:** On the R&R work, where there is a material shift in responsibilities driving a thinning down of the already thin retailer/thick wholesaler model, we need to ENSURE CUSTOMERS ARE PROTECTED from potential double counting of meter reading costs within the end tariffs they pay. Ideally no change to their total bill even if wholesaler fair 'regulatory allowed costs' therefore charges rise (retailer direct costs drop). Ofwat may need to revisit retail caps for default tariffs.
- **NB:** In deprioritising Option 11 [Retailer/ Customer installation of additional metering technology], isn't there a danger of not taking on board the outcome from OFWAT on the Thames Water investigation that smart meter models should have additional signal outputs for the use of NHH customers and 3rd parties. The market still shows a weak understanding of customer requirements for granular data (15 min av) and they appear to be getting what the market wants, not what the customer requires.
- **EP:** In 2022, the SPID switch rejection rate was 25.2%. Do you anticipate a similar rejection rate when efforts are made to transfer meters to from retailers to wholesalers in Options 2 and 3. If so, would the dispute process be able to cope with this?
- **RP:** I suggest that management of a transition to a smart metering world under Option 3 is far more manageable and progressive than any move under Option 1. We can manage the former, but no the latter. We'll have stranded assets and additional costs under Option 1, that I can't easily see being managed. It will also overnight move us back to regional monopolies and remove competition in meter reading services. In contrast, we are handling well the introduction of smart meter reading into the market and that data is getting to CMOS (monthly, not half-hourly).
- **SD:** Whatever strategy is agreed, there must be a mechanism for the market to recognise skip codes. There is often a valid reason as to why a meter cannot be read, and that meter then becomes a LLUM or LUM. Perhaps some work needs to be done in that area as part of stream 2
- **LD:** Still 180k LUMs after 6 years after market opening - which does suggest that something extra needs to happen to get these meters read

Comments made during discussions (3)

Key questions and comments that were recorded in Teams ‘chat’ are reproduced here. These will used to facilitate further development of both projects:

- **SB:** CPW130 is due to be implemented in May which will hopefully capture more info why estimated reads are being used. This may go someway to understand why meters are skipped.
- **KM:** LUM needs to include engagement with customers as a key metric, as we see c70% of current LUMs are related to Meter Covered, No Access External or No Access Internal, so any movement from Retailer to Wholesaler is unlikely to make any real change, as the gift of return is in engagement with customers for access.
- **RR:** Although Option 2 and 3 are joined for the change process, and should be consulted together, they are totally separate options. Option 3 is already happening to a degree (we are putting in 30k smart reads each month into CMOS as W reads). It would not require much change although some code and CMOS system changes. Option2 is a significantly different option that would require funding and Wholesalers to get additional field resource. I agree with RP comments with the issue meters (LUR or hard to read) are already being implemented by retailers and wholesalers
- **LS:** I agree with NB about the need to avoid 'Smart' meters being installed that cannot be logged - often the infrastructure is not in place to pick up the reads to make the meter smart. We are seeing an increasing number of customers where their old meter with a logger has been removed and a not-yet-enabled smart meter installed. The customer then loses their data and the ability to be water efficient
- **RB:** With regards to granular data and logging - we at Thames Water have a Digital Data Service offering 15min or hourly data (near real time) and if customers want pulse enabled meters (ie. loggable) these can also be requested

Comments made during discussions (4)

Key questions and comments that were recorded in Teams ‘chat’ are reproduced here. These will used to facilitate further development of both projects:

- **SK:** I think it's the case that the data platform will include functionality around allowing customer access to their own data, at some to be decided granularity
- **SM:** Are there any Data Sharing challenges around granular data - both on what its ultimate purpose is and therefore how its collected and shared? would the Strategy resolve challenges around ownership/GDPR (if any)?
- **DM:** Has MOSL conducted a thorough investigation as to the root cause issue on long unread meters i.e. 'how do they end up long unread’? Where is the option that props up current roles and responsibilities and ensures trading parties are issuing WIA fines
- **MOSL:** The OccuTrace report on long unread meters can be found at https://mosl.co.uk/document/bilaterals-programme/6318-long-unread-meters-report-by-occutrace/file
- **MT:** Supportive of NB’s question regarding reflecting customer needs. For who's benefit is the project being carried out? If it is for the environment let's not dress it up as benefiting customers. Those customers who need or use this type of data am I correct in thinking they already have the ability to install loggers etc? There may be a huge tranche (50%) of customers who will never use this data.
- **CF:** The Environmental Improvement Plan 2023 is a good shot in the arm for faster Smart deployments than WRMPs themselves may drive
- **MD:** [in reply to MT] Good point. I'd argue that all customers would "use" the data at a base level for accurate/timely billing of their consumption i.e. this replaces the costly/ineffective manual collection of meter reads as a minimum.
- **DM:** I am aware of project looking glass; there's an unfortunate disconnect and emphasis that 1) meters are being removed by 3rd parties, and 2) trading parties do not have current operations in place enforcing WIA fines. The options posed only encapsulate 'those meters that are found'. We will have greater and more granular data in future, my question is quite simply; how will the market adjust to enforce WIA fines, where absolutely warranted?

Comments made during discussions (5)

Key questions and comments that were recorded in Teams 'chat' are reproduced here. These will used to facilitate further development of both projects:

- **NB:** Giving customers choice of granularity is key, whilst retaining a standard level of data acquisition to ensure more accurate settlement. Additionally, having meter models to offer a variation in granularity could cut down data transfer loads and storage requirements, so best resolution being available only at times of need (e.g. locating leaks & assessing water efficiency at sites). I fear that this comes too late for current metering technology and was a missed opportunity 5+ years ago. Leakage management relies on 15 min data, so why the shift in granularity definition for customers?
- **MOSL (MH):** Smart meters tend to be more effective at collecting hourly data - trade-off between battery life and data frequency.
- **MT:** [Sharing granular data] There is a very small one-off charge to set up log in details. To confirm, Anglian Water provide Logger Data and AMI data in this standard to the Retailer as a free service and believe this standard sets us up for the potential data platform. (Option 4)
- **DM:** In my opinion, It's clear that there's a need for defined Wholesaler and Retailer roles, defined by 'developer customer management' and 'end-customer management'.
  Any solution not working towards unblurring these lines will not create the intended result. This is the crux of why data coming in is not being adequately screened; both parties are having to indirectly manage the other customer type.
- **RR:** [Sharing granular data] Thames Water provides two data services: 1) Granular (15min or hourly) AMI data through our Digital Data Service with a small set up fee (cost reflective for us to set up). 2) free monthly smart reads into CMOS for all smart meters (AMI)
- **MW:** We are coming up with some issues with 15 minute data where the customer hasn't consented on the household side and I guess for some non-households we might have similar concerns, (accept where there is an operational issue there's probably a different argument)
- **RR:** We also now have an option for Larger meters (50mm - 100mm) to request a smart (AMI) meter with a pulse output (loggable)