

**INTERNAL SYSTEMS & PROCESSES:
TRANSITION AID FOR SOFR ADOPTION**

July 8, 2020

Internal Systems & Processes: Transition Aid for SOFR Adoption

INTRODUCTION:

The Alternative Reference Rates Committee (ARRC)¹ is a group of private-market participants convened by the Federal Reserve Board and the New York Fed to help ensure a successful transition from U.S. dollar (USD) LIBOR to a more robust reference rate. Time is of the essence for market participants to prepare given the likelihood that LIBOR will become unusable after 2021.²

The ARRC recognizes the importance of providing market participants further clarity on the practical considerations for the transition from LIBOR, and that additional information may be useful to certain firms that have not yet fully commenced taking steps to transition.

The ARRC's "Internal Systems & Processes: Transition Aid for SOFR Adoption" was developed as an informational document for market participants. The document broadly classifies transition activities into 10 categories with a one-page summary for each of 50 selected sub-categories. Each summary lists transition steps and activities for market participants to consider, as well as sections discussing upstream and downstream areas that may be affected by transition. The summaries also identify dependencies that may influence the timing and sequence of transition activities. Firms planning their transition away from LIBOR may find this document to be an important aid in planning the steps needed for a smooth transition.

Statements made by regulators have clearly expressed that (i) the discontinuation of LIBOR is a certainty³ and (ii) market participants should take appropriate action to transition from LIBOR to an alternative risk-free rate.⁴

The Secured Overnight Financing Rate (SOFR) is the ARRC's recommended alternative to USD LIBOR, and the ARRC has published a Paced Transition Plan⁵ with specific steps and timelines to encourage voluntary adoption of the rate. This document is part of the ARRC's continued efforts to promote a timely transition, including by: encouraging an expanded membership and participation in its working groups; supporting the adoption of SOFR; developing robust fallback language; and creating educational materials for market participants. In addition, Federal Reserve Board staff holds weekly office hours to answer questions from market participants on the transition.

¹ The ARRC is comprised of a diverse set of private-sector entities that have an important presence in markets affected by USD LIBOR and a wide array of official-sector entities, including banking and financial sector regulators, as ex-officio members, including but not limited to: Federal Reserve Bank (FRB), Securities and Exchange Commission (SEC), Consumer Financial Protection Bureau (CFPB), Office of the Comptroller of the Currency (OCC), Federal Housing Finance Agency (FHFA), and state prudential regulators.

² Source: The [FCA Statement on LIBOR Panels](#), November 2017, the [Future of LIBOR](#) July 2017

³ Source: [Opening Statement of Chairman J. Christopher Giancarlo before the Market Risk Advisory Committee Meeting](#), July 2018

⁴ Source: [LIBOR: Preparing for the End](#), July 2019

⁵ Source: [The ARRC's Paced Transition Plan](#), adopted in October 2017

ALTERNATIVE REFERENCE RATES COMMITTEE

Important disclosures about this document:

- It is provided for informational purposes only and is intended to provide a consolidated source of information and tools for voluntary use by impacted stakeholders in preparing for the transition to a new reference rate.
- It does not constitute legal, accounting or financial advice and is not exhaustive.
- It does not define regulatory or supervisory expectations.
- Each stakeholder should decide for itself whether and to what extent to use this document in preparing for the transition from US Dollar LIBOR (i.e., use of the information is voluntary).
- It focuses on the needs of impacted firms with USD LIBOR exposures but does not address non-USD exposures. All mentions of LIBOR in this document, should be considered as referring to USD LIBOR.
- While it might be helpful for other types of users, it is focused on banking institutions.

TABLE OF CONTENTS (1 of 2)

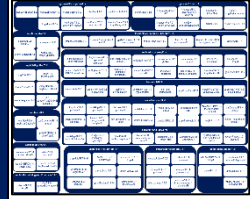
Taxonomy Area	Page Number
1. Product & Business Development	3
1.1 Product Creation and New Business Approval	3
2. Trading & Brokerage	4-9
2.1 Market Making	4
2.2 Pre-Trade	5
2.3 Order Capture	6
2.4 Order Execution	7
2.5 Trade Execution	8
2.6 Trade Capture and Lifecycle Management	9
3. Client Servicing	10
3.1 Lending	10
4. Trading Risk Management	11-13
4.1 Model Development	11
4.2 Market Risk Management	12
4.3 Counterparty Credit Risk Management	13
5. Data Management	14-16
5.1 Reference Data Management	14
5.2 Real Time Market Data Management	15
5.3 EOD Pricing Data Management	16
6. Operations	17-19
6.1 Transaction Management	17
6.2 Document and Contract Management	18
6.3 Deals and Position Management	19
7. Risk Controls	20-27
7.1 Risk Appetite and Limit Setting	20
7.2 Risk Policies and Governance	21
7.3 Risk Data Management	22
7.4 Risk Identification	23
7.5 Risk Models and Methodology	24
7.6 Risk Measurement	25
7.7 Risk Monitoring and Control	26
7.8 Risk Analysis	27
8. Financial Controls	28-40
8.1 Finance Data Management	28
8.2 Profit and Loss and Balance Sheet Control	29
8.3 Independent Price Verification	30
8.4 Financial Reporting	31
8.5 Regulatory Reporting	32
8.6 Tax Management / Reporting	33
8.7 Fund Transfer Pricing	34
8.8 Liquidity Management	35
8.9 Asset-Liability / IRR Management	36
8.10 Capital Management	37
8.11 Funding / Money Market Management	38
8.12 Financial Planning and Analysis	39
8.13 Financial Management Reporting	40

TABLE OF CONTENTS *(2 of 2)*

Taxonomy Area	Page Number
9. Legal and Compliance	41-48
9.1 Legal Process Support	41
9.2 Regulatory Compliance and Controls	42
9.3 Monitoring and Surveillance	43
9.4 Compliance Data Management	44
9.5 Internal Compliance and Controls	45
9.6 Client/Counterparty Management	46
9.7 Legal and Compliance Reporting	47
9.8 Regulatory Affairs and Litigation	48
10. Information Technology	49-52
10.1 Technology Impact Identification	49
10.2 Technology Operational Readiness	50
10.3 Technology Back Book Migration	51
10.4 Program and Project Management	52
Acknowledgements	53

**Category: 1.
Product and
Business
Development**

**Sub-category: 1.1 Product
Creation and New Business
Approval**



Transition Steps and Activities:

1. Confirm business/product requirements
2. Bring new product proposal to New Instrument Committee for approval (if required)
3. Understand/scope the system landscape impacted by new product creation (configured for an RFR)
4. Establish new product setup working group with required stakeholders
5. Draft development (or configuration) playbook and review with working group
 - a. Tag any dependencies
 - b. Tag owners
 - c. Establish start/end dates for work to be completed
6. Draft UAT Plan, document acceptance criteria, configure UAT environment, if necessary
7. Test changes in UAT environment/ End to end test trade
8. Upon successful testing, release changes to Production
9. Run test trade in Production, if necessary (and cancel test trade)
10. Regression testing, if necessary

Impacted Systems:

- Order Management Systems
- Account Management systems
- Product Data Hub
- Portfolio Accounting System

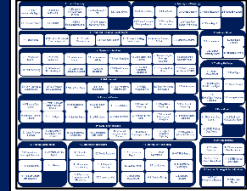
Impacted Processes:

- Instrument terms from source systems
- Market data feeds from external systems
- Credit spread data from internal systems
- Pricing support
- Trade Mgmt.

Additional Transition Considerations and Dependencies:

**Category: 2.
Trading and
Brokerage**

**Sub-category: 2.1 Market
Making**



Transition Steps and Activities:

1. Evaluate the impact of IBOR transitioning on the trading and investment activity as well as on the bid-ask spreads and trade volume.
2. Assess the effect on the market maker’s inventory of securities, principal trades and trading services by factoring in new reference rates, IBOR-based product volumes, timing of demand, spreads, market volatility and impact on bank funding costs.
3. Check if there are any changes in the regulatory requirements and market conventions for market making.
4. Identify the impact on profits and reserve requirement as a result of the introduction of ARRs.
5. Analyze IBOR transition scenarios to assess profits under various market conditions for all kinds of trades.
6. Implement the required changes by designing systems to update the market making mechanism for the ARRs.
7. Check the completeness of the updated market making mechanism.
8. Establish adequate support teams and analytic processes.
9. Proactively monitor and adjust the implementation plan based on the shift in the external industry and/or evolving regulatory development.

Impacted Systems:

- Market Making Systems
- Trading Systems
- Profitability Analytics Systems
- Enterprise Risk Management Systems
- Value at Risk System
- Reconciliation Systems
- Order Management Systems

Impacted Processes:

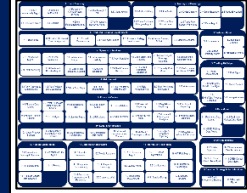
- Market Making
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Hedging analysis
- Profitability forecasting
- Capital provisioning

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Consider costs which will be incurred to support the transition.
- Consider any intersections with regulatory reforms and necessary regulatory approvals.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 2.
Trading and
Brokerage**

Sub-category: 2.2 Pre-Trade



Transition Steps and Activities:

1. Assess the impact on front office functions like order initiation and delivery as well as middle office functions like risk management and order routing, as a result of IBOR transitioning.
2. Check if there are any changes in the regulatory requirements and market conventions such as risk management checks, collateral requirements, order types etc. for pre-trade activities.
3. Assess the changes in the credit worthiness of the client as a result of the transition.
4. Analyze IBOR transition scenarios to assess risks under various market conditions for different types of orders and clients.
5. Implement the required changes by designing systems to update the pre-trade mechanism for the introduction to ARR
6. Check the completeness of the updated pre-trade mechanism.
7. Establish adequate support teams for the updated systems.
8. Monitor and adjust the implementation plan based on the shift in the external industry and/or evolving regulatory development

Impacted Systems:

- Pre-trade activity systems
- Reconciliation systems
- Order Management systems
- Enterprise Risk Management Systems

Impacted Processes:

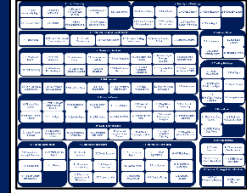
- Pre-trade activities
- Risk Exposure and tolerance analysis
- Hedging analysis
- Capital provisioning
- Market risk monitoring activities
- Front office activities
- Middle office activities

Additional Transition Considerations and Dependencies:

- Consider technology and staffing related costs which will be incurred to support the transition.
- Consider internal & external risks and agree on a strategy to handle the risks.
- Consider any intersections with regulatory reforms and necessary regulatory approvals.
- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 2.
Trading and
Brokerage**

**Sub-category: 2.3 Order-
Capture**



Transition Steps and Activities:

1. Identify the alterations in order details as a result of the introduction of alternate reference rates (ARRs).
2. Check if there are any changes in the regulatory requirements and market conventions such as extent of order details required, types of order that can be captured etc.
3. Analyze the required changes in technology and processes.
4. Implement the required changes by designing systems to update the order capture mechanism for the introduction of ARR.
5. Check the completeness of the updated order capture mechanism.
6. Establish adequate support teams for the updated systems.
7. Proactively monitor and adjust the implementation plan based on the shift in the external industry and/or evolving regulatory development.

Impacted Systems

- Order capturing unit
- Pre trade activity systems
- Order management systems

Impacted Processes:

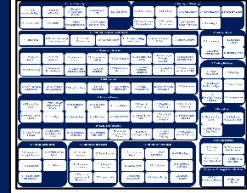
- Order capturing activities
- Market data feeds from external and/or internal sources
- Front office activities

Additional Transition Considerations and Dependencies:

- Consider technology related costs which will be incurred to support the transition.
- Consider any intersections with regulatory reforms and necessary regulatory approvals.
- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.

**Category: 2.
Trading and
Brokerage**

**Sub-category: 2.4 Order
Execution**



Transition Steps and Activities:

1. Evaluate the impact of IBOR transitioning on the executable order types, margin requirements and broker’s trading system.
2. Assess the effect on the broker’s inventory of securities and trading services by factoring in the ARRs, IBOR-based product volumes, timing of demand, spreads, market volatility and bank funding costs.
3. Identify the changes in categorization and ranking of trades in the order book.
4. Analyze the impact on the benchmark feeds, fixed income securities and posted collaterals due to the ARRs.
5. Check if there are any changes in the regulatory requirements and market conventions for order execution.
6. Consider the use of vendor tools for updated order execution systems.
7. Incorporate the required changes by designing systems to update the order execution mechanism for the ARRs.
8. Establish adequate support teams and check the completeness of the updated systems.
9. Take charge of monitoring and adjust the implementation plan based on the shifts in the external industry and/or evolving regulatory development.

Impacted Systems:

- Order execution systems
- Trading systems
- Profitability Analytics Systems
- Enterprise Risk Management Systems
- Reconciliation Systems
- Order Management Systems

Impacted Processes:

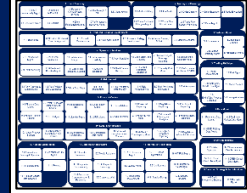
- Order execution processes
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Hedging analysis
- Margin and Collateral management

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Consider costs which will be incurred to support the transition.
- Consider any intersections with regulatory reforms and necessary regulatory approvals.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 2.
Trading and
Brokerage**

**Sub-category: 2.5 Trade
Execution**



Transition Steps and Activities:

1. Assess the impact on trade execution performance due to changes in order execution systems.
2. Check if there are any changes in the regulatory requirements and market conventions such as broker notifications, contract notes, details of the trades executed, taxes charged on the executed trade, commission charged by the broker, clearing corporation, custodian etc. for trade execution.
3. Analyze IBOR transition scenarios to assess risks under various market conditions for different types of trades including structured products and exotics on various asset classes.
4. Implement the required changes by designing systems to update the trade execution mechanism for the introduction to ARR.
5. Check the completeness of the updated trade execution mechanism.
6. Establish adequate support teams for the updated system.
7. Observe and adjust the implementation plan based on the shift in the external industry and/or evolving regulatory development.

Impacted Systems:

- Trade execution systems
- Front office trading systems
- Back office trade management systems
- Enterprise Risk Management Systems

Impacted Processes:

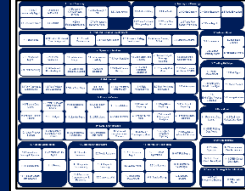
- Trade execution activities
- Trade Lifecycle
- Risk Exposure and tolerance analysis
- Hedging analysis
- Market risk monitoring activities
- Front office activities

Additional Transition Considerations and Dependencies:

- Consider staffing related costs which will be incurred to support the transition.
- Consider internal & external risks and agree on a strategy to handle the risks.
- Consider any intersections with regulatory reforms and necessary regulatory approvals.
- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.

**Category: 2.
Trading and
Brokerage**

**Sub-category: 2.6 Trade
Capture and Lifecycle
Management**



Transition Steps and Activities:

1. Assess the impact of ARRs on trade booking into the systems for any structured product or exotic for various asset classes.
2. Analyze the changes in the complexity of the trade, the economic, non-economic and static details of the trade that may affect the ability of the system to capture the trade.
3. Check if there are any changes in the regulatory requirements and market conventions in the trade lifecycle process.
4. Assess the required changes in the allocation of trades to different funds as a result of IBOR transitioning.
5. Evaluate the impact on custodian activities of clearing and settlement of trades due to the transition.
6. Analyze IBOR transition scenarios to assess risks under various market conditions.
7. Identify the required alterations in the automated systems of trade capture and lifecycle management as a result of the introduction of ARRs.
8. Incorporate the required changes by designing systems to update the trade capture and lifecycle management processes.
9. Establish adequate support teams and check the completeness of the updated systems.
10. Monitor and adjust the implementation plan based on the regulatory and market development.

Impacted Systems

- Trade Capture systems
- Trade Validation systems
- Trade Agreement systems
- Transaction reporting systems
- Clearing and settlement systems

Impacted Processes:

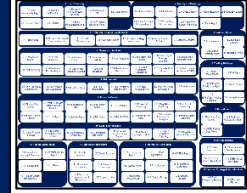
- Trade Lifecycle Processes
- Front office activities
- Risk Exposure and tolerance analysis
- Hedging analysis
- Market risk monitoring activities
- Trade Settlement processes

Additional Transition Considerations and Dependencies:

- Consider staff and technology related costs which will be incurred to support the transition.
- Consider any intersections with regulatory reforms and necessary regulatory approvals.
- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 3.
Client
Servicing**

Sub-category: 3.1 Lending



Transition Steps and Activities:

1. Call-Center/Loan and Servicing operators Training:
 - a. Conduct training sessions for relevant operators on the concept of index rate changes and its impact on borrowers' payments as well as on the understanding of the new index being used so they can articulate the changes effectively to the borrowers.
 - b. Establish a dedicated website where the educational material can be accessed 24/7.
 - c. Provide continuous system training as changes are being made into all relevant end-user systems.
2. Borrower Communication:
 - a. Strategize and design an effective way to notify borrowers before changes take effect. Considerations include:
 - Understanding of the state regulations related to notification to the borrowers, specifically as it concerns payment modifications
 - Streamline and standardize communication methods to the borrowers based on state requirements
 - Design an effective marketing methodology in order to ensure borrowers to pay attention to the changes being made to their loans
 - Provide clear notification or alert on the company's website and customer's portal
3. Establish a robust process in contract amendments based on state and regulatory guidelines and provide a transparent communication method for borrowers to understand the changes that are impacting their loans.
4. Obtain borrower's acknowledgement of their understanding of the changes that are happening to their loans.
5. Establish a task force that ensures close collaboration between capital markets team (typically in charge for monitoring interest rate and pricing updates) and underwriting/origination team.
6. Establish a strong understanding of current processes related to sourcing of index rate, spread adjustments and determinations, and create a road map of such processes to identify all the interdependent areas that serve as touchpoints that will need to be updated.
7. Establish a robust change management process between updates made to the external systems and their interactions with internal data and reporting. This includes:
 - a. Strong documentation of system criteria and governance oversight
 - b. Draft UAT plan and establish robust testing environment
 - c. Robust control log to keep track of system updates/changes

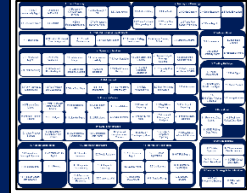
Impacted Systems:	Impacted Processes:
<ul style="list-style-type: none"> • Servicing system • Origination system • Secondary marketing model/database 	<ul style="list-style-type: none"> • Call-center operations • Collection/Loss mitigation process • Liaison with Secondary Marketing/Capital Markets team • Investor reporting

Additional Transition Considerations and Dependencies:

In the case of Mortgage Servicing Rights (MSR), a seamless transition between MSR transfers is a must in order to avoid disruptions in P&I advances since volatility on the interest rate will affect the value of the MSRs.

**Category: 4.
Trading Risk
Management**

**Sub-category: 4.1 Model
Development**



Transition Steps and Activities:

1. Identify the list of models with LIBOR impact across firm
 - a. Tag owners
 - b. Tag model risk
2. Establish a model working group with required stakeholders
3. Understand the nature of the impact to the model (i.e. input change, compounding change)
 - a. Identify use / purpose of the model
 - b. Tag any dependencies (internal / external to firm)
4. Determine the type of change required and assess the materiality of the change
 - a. Development of a new model
 - b. Update an existing model
 - c. Update to model documentation only
5. Establish criterion where vetting/validation of model needed
6. [For Implementation] Draft development (or configuration) plan and review with working group
 - a. Establish start/end dates for work to be completed
 - b. Test changes in UAT environment
 - c. Model Control / Model Validation testing
 - d. Release changes to Production (run test trade in Production if necessary)

Impacted Systems:

- Risk systems
- Market data systems / repository
- Accounting system
- Book of record systems

Impacted Processes:

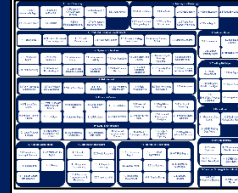
- Market data feeds from external and/or internal sources
- Pricing platform
- Market risk monitoring activities

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks
- Consider any intersections with regulatory reforms (e.g. FRTB) and necessary regulatory approvals
- Sufficient historical data available to support modelling

**Category: 4.
Risk Controls**

**Sub-category: 4.2 Market
Risk Management**



Transition Steps and Activities:

1. Assess financial risks identified in the risk inventory and confirm alignment to an instance repository of legacy IBOR exposure
2. Assess impact on model risk for the models requiring updates to accommodate ARR
3. As derivatives and debt instruments with legacy exposure are migrated, and any new ARR business underwritten, periodically produce updated risk reporting measuring exposure to ARRs accumulating in the revised back book and front book
4. Refine/adjust future state market risk reporting to accommodate ARRs
5. Provide input to ORM and/or Legal on risk controls around the client acceptance process: pre-communicate the change; produce a template letter describing the change and how adjusted fallback terms and transition terms were calculated; create a customer feedback portal to aggregate feedback; use industry materials where available (e.g. ISDA materials)
6. Refine New Product Approval process to consider market risk aspects of ARR-linked products
7. Contribute to internal conduct risk controls establishing guidelines to avoid deliberate or inadvertent value transfer to the entity

Impacted Systems:

- Systems implementing any internal models with an ARR nexus
- Data required for ARR support
- Loan management, trade capture systems
- Vendor products & internally developed systems used to generate financial risk metrics
- Legacy instance repository to monitor line-item level transition status and produce a summary status dashboard

Impacted Processes:

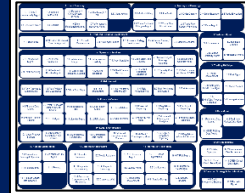
- Market risk reporting
- Treasury risk analytics (e.g. IRR, NII Simulation, EVE calculators, FTP system) and related ALCO materials if an FI
- Risk limit setting: firmwide level, business unit level, desk/other level
- Documentation (e.g. RMF, op. procedures, Capital Plan, accounting policies, etc.)
- If the entity's business units take strategic IR risk, it will have additional processes

Additional Transition Considerations and Dependencies:

- Dependencies:
 - Legacy exposure instance repository
 - Subset of Risk inventory produced in the Risk ID process pertaining to financial risks
- Additional considerations:
 - Consider ERM nexus: The risk inventory may need to be refined once detailed risk analytics using ARRs are produced. If risk appetite related to IRR has been articulated, updates will be required to documentation, trigger event definition and calibration, etc. If an FI, Capital Plan scenarios should consider known financial risks associated with ARRs (e.g. "Zombie Libor", lack of term SOFR, etc.) and the LW might need updates.
 - Be prepared for retrospective scrutiny from examiners. Retain transition workpapers and documentation of the review processes at the instance level.
 - Articulate outcomes in this discipline with the interim strategy, communication strategy, and go-live plan.

**Category: 4.
Risk Controls**

**Sub-category: 4.3
Counterparty Credit Risk
Management**



Transition Steps and Activities:

1. Assess credit risks against risk inventory. Augment instance repository with a status field indicating whether instances have a counterparty credit risk nexus, and update throughout
2. Participate in the task to identify spread adjustment and repricing logic to accommodate the credit basis created when transitioning to an ARR that excludes credit risk such as SOFR
3. Refine credit risk mitigation policies as needed, including:
 - a. Adjust xVA / PFE logic for ARR discounting. Adjust policies as needed
 - b. Identify legacy IBOR-linked collateral and plan for transition to ARR-linked collateral
 - c. Evaluate whether the entity uses non-Treasury investment grade collateral (e.g. IG CMBS) and whether the basis risk vs. SOFR is accurately captured
4. Update accounting policy to reflect updates to CVAs pertaining to financial stmt. preparation
5. Evaluate impact to credit risk resulting from funding and treasury activities
6. Update firmwide capital and risk processes and materials as needed: e.g. SA-CCR, CEM, IMM, CCAR/DFAST, Reg. W, margin policy, etc.

Impacted Systems:

- Vendor products and internally developed systems used to generate xVAs, PFEs, and related reporting
- Collateral management systems
- Loan management, trade capture systems
- Legacy inventory tracking tool monitoring each instance of legacy exposure

Impacted Processes:

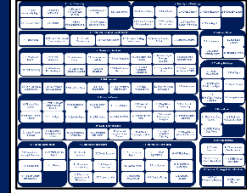
- Credit risk reporting
- Collateral reporting
- Risk limit setting: firmwide level, business unit level, desk/other level
- Margin processes where applicable
- Documentation (ISDA/CSAs, RMF, operating procedures, Capital Plan, accounting policies, etc.)

Additional Transition Considerations and Dependencies:

- Dependencies:
 - Legacy exposure instance repository
 - Subset of risk inventory produced in the Risk Identification process pertaining to counterparty credit risks
- Additional considerations:
 - Consider ERM nexus: The risk inventory may need to be refined once detailed risk analytics using ARRs are produced. If risk appetite related to IRR has been articulated, updates will be required to documentation, trigger event definition and calibration, etc. Capital Plan scenarios should consider known counterparty credit risks associated with ARRs (e.g. lack of an “I-SOFR” rate for non-Treasury IG instruments, etc.). The LW/RRP might need updates for ARR-linked counterparty credit risks.
 - Be prepared for retrospective scrutiny from examiners. Retain transition workpapers and documentation of the review processes at the instance level.
 - Articulate outcomes in this discipline with the interim strategy, communication strategy, and go-live plan.

**Category: 5.
Data
Management**

**Sub-category: 5.1 Reference
Data Management**



Transition Steps and Activities:

1. Incorporate the required changes to reference data source for all ARRs.
2. Use vendor tools for repapering of contracts.
3. Update the existing contracts with the appropriate fallback language.
4. Ensure robust contract design to make new contracts resilient to the possible cessation or material alteration of existing or new benchmarks.
5. Check for the completeness and accuracy of reference data.
6. Implement required changes to impacted contracts and market data reports.
7. Establish adequate support teams and analytic processes.

Impacted Systems:

- Contractual Agreements
- Front to back product booking systems.
- Value at Risk System

Impacted Processes:

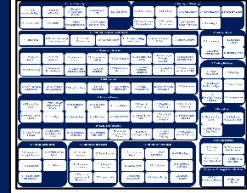
- Product Valuation
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Hedging analysis
- Risk assessment and audit process
- Risk Forecasting

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.

**Category: 5.
Data
Management**

**Sub-category: 5.2 Real Time
Market Data Management**



Transition Steps and Activities:

1. Incorporate the required changes to data source/vendor for all ARR across business lines.
2. Integrate the proprietary data with the new market data.
3. Raise relevant market data management systems' update requests.
4. Aggregate intra-day market data including new and maturing deals.
5. Check for the completeness and accuracy of market data.
6. Identify any necessary steps required to monitor the data providers at certain events relating to ARRs. Assess deviations in the market data to factor in known anomalies.
7. Implement required changes to impacted market data reports upon system update / data availability.
8. Establish adequate support teams and analytic processes.

Impacted Systems:

- Real-time market data management systems
- Front to back product booking systems.
- Pricing Models
- Value at Risk System

Impacted Processes:

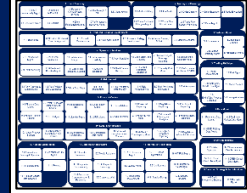
- Product Valuation
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Hedging analysis
- Risk assessment and audit process
- Risk Forecasting
- Testing and Validation

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.

**Category: 5.
Data
Management**

**Sub-category: 5.3 EOD Pricing
Data Management**



Transition Steps and Activities:

1. Incorporate the required changes to data source/vendor for all ARR's across relevant product types.
2. Expand the processes to new calculation methodologies into firm systems, to be consistent with industry best practices.
 - a. Construct / obtain access to ARR's curves' to be used for pricing ARR based products calculating interest on collateral and discounting derivatives.
3. Raise relevant market data management systems update requests.
4. Integrate the proprietary data with the new market data.
5. Check for the completeness and accuracy of market data.
6. Identify any necessary steps required to monitor the data providers at certain events relating to ARR's. Assess deviations in the market data to factor in known anomalies.
7. Implement required changes to impacted market data reports upon system update / data availability.
8. Establish adequate support teams and analytic processes.

Impacted Systems:

- Market data management systems.
- Front to back product booking systems.
- Value at Risk System
- Pricing Models

Impacted Processes:

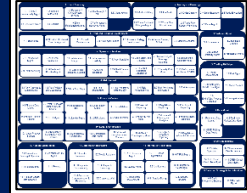
- Product Valuation
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Hedging analysis
- Risk assessment and audit process
- Risk Forecasting
- Testing and Validation

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.

Category: 6. Operations

Sub-category: 6.1 Transaction Management



Transition Steps and Activities:

1. Ensure properly resourced to support increased transaction volume
2. Ensure transaction systems can support new risk free rates
 - a. Update any product configuration systems to support new rates
 - b. Update any LIBOR hard-coding to support new rates
3. Scope/remediate any manual process touchpoints tied to the risk free rates
4. Understand impact of transaction guidelines, update checklists, and engage clients accordingly
5. Update Trade Agreements/ Account Opening/ transaction docs (i.e. confirms, MCAs) if tied to LIBOR
6. Ensure Vendor support as needed to support transactions (i.e. clearing houses, fund admins, etc.) / how to support STP
7. Understand industry approach for bespoke products / support as needed

Impacted Systems:

- Order Management Systems
- Account Management systems
- Product Data Hub
- Portfolio Accounting System
- Reconciliation systems
- Interest Payment Schedule Engines

Impacted Processes:

- Pricing – configuration for new product, manual processes may need to be updated to support
- Confirms and Settlements, manual processes to support

Additional Transition Considerations and Dependencies:

Category: 6. Operations

Sub-category: 6.2 Document and Contract Management

Transition Steps and Activities:

1. Assumption: a working group has been established in the firm to draft/review/approve cessation language. The purpose of this stream is to track documentation for appropriate action
1. Establish a subgroup responsible for tracking of all legal documents
2. Based on the list of in-scope products applicable, identify the documents where LIBOR replacement/fallback language resides (identify system(s) if applicable)
3. Inventory all documents for fallback language, transaction, and maturity
4. Categorize the (pre) cessation language for tracking purposes (e.g. no language exists, interim fallback language exists, or final fallback language exists)
5. Establish a repeatable process to track changes to any new or existing transaction documentation
6. Flag any language not aligned with language approved by working group to be actioned by working group or appropriate relationship manager

Impacted Systems:

- Trade agreement repository
- Credit agreement repository

Impacted Processes:

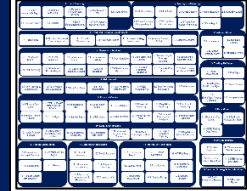
- Loan/Credit agreement negotiation
- Trade Confirmations process (change to confirmation language)

Additional Transition Considerations and Dependencies:

- ARRC has published guidelines and principles for recommended robust fallback language. A summary of the available language can be found here: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/LIBOR_Fallback_Language_Summary.pdf

**Category: 6.
Operations
Services**

**Sub-category: 6.3 Deals and
Position Management**



Transition Steps and Activities:

1. Deal / Position Exposure Inventory
 - a. Transactions
 - b. Loans/Assets
 - c. Liabilities
 - d. Derivatives
 - e. Misc.
2. Transition outcome analysis
 - a. Each business line/department/sector analyzes its book for LIBOR transition
 - i. Inventory each exposure
 - ii. Assess any LIBOR transition/fallback language
 - b. Potential outcome scenarios developed for each exposure
 - c. Identify contingencies and dependencies
 - d. Create action plans
 - i. Understand direction of dependencies
 - ii. Potential Resolution of contingencies
 - iii. Assess each outcome scenario
3. Realization of outcomes

Impacted Systems:

- Portfolio management system
- Surveillance/monitoring system
- Data on-boarding system
- Rate feeds / systems

Impacted Processes:

- Interest rate volatility assessment process
- Sponsor/servicer transaction (periodic or change (amendment) reporting
- Counterparty exposure assessment
- Info/data acquisition processes

Additional Transition Considerations and Dependencies:

- LIBOR volatility as the interest rate benchmark changes from LIBOR to alternatives

**Category: 7.
Risk Controls**

**Sub-category: 7.1 Risk
Appetite and Limit Setting**

Transition Steps and Activities:

1. Review Risk Appetite Statement (RAS)
2. Understand how the RAS translates into the risk limit setting for your organization, including calculation methodologies, across the business
3. Ascertain the following in adherence with the RAS and aggregated risk appetite
 - Revised IBOR exposure appetite
 - ARR exposure appetite
4. Calculate the following on a firm wide level
 - Revised IBOR risk limits
 - ARR risk limits
5. Allocate the proposed new risk limits to each business line and legal entity as relevant in accordance with firm strategy and business objectives
6. Submit new proposed limits to relevant committees, gather all relevant approvals / achieve business sign-off
7. Communicate revised limits to the business
8. Update relevant systems with new established limits (implementation, testing etc.)

Impacted Systems:

- All market risk, credit risk and counterparty systems which provide details of credit limits and their usage and any systems they feed to e.g. any sales / relationship management systems which state credit risk / market risk limits

Impacted Processes:

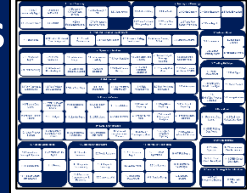
- Credit and market risk limit update processes
- Credit and market risk limit usage update processes

Additional Transition Considerations and Dependencies:

- Revisions to these limits should be revised periodically between now and the transition date to ensure they reflect the changing liquidities of the IBOR and ARR markets.
- System Testing considerations
 - Consider upstream and downstream dependencies for each system and process
 - Test updates to systems and processes as an interconnected system
 - Consider running tests on pilot basis

**Category: 7.
Risk Controls**

**Sub-category: 7.2 Risk Policies
and Governance**



Transition Steps and Activities:

Policies

- d. Create inventory of impacted risk policies
- e. Update risk policies with newly established risk limits for IBORs and ARRs
- f. Achieve all relevant sign-offs for each policy update
- g. Communicate updated policies to all relevant stakeholders

Governance

- h. LIBOR Transition Committee to review new risk limits and policies
- i. LIBOR Transition Committee to present and achieve sign-off from Risk Committee
- j. Internal Audit to assess and challenge new risk limits and policies
- k. Compliance to assess and challenge new risk limits and policies

Impacted Systems:

- New policies to be included in inventory

Impacted Processes:

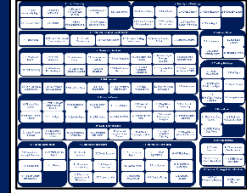
- New policy creation and approval
- Internal Audit review processes
- Compliance review processes

Additional Transition Considerations and Dependencies:

- LIBOR Transition Committee established

**Category: 7.
Risk Controls**

**Sub-category: 7.3 Risk Data
Management**



Transition Steps and Activities:

1. Create inventory of impacted risk reports
2. Identify required changes to each risk report from the introduction of ARR across all relevant product types and business lines
3. Identify any necessary additional reports required for monitoring the exposure to different IBORs and ARRs throughout the transition
4. Create inventory of impacted risk data management systems on the back of the required reporting updates
5. Identify any aggregate required risk data changes
6. Raise relevant risk data management systems update requests
7. Implement required changes to impacted risk reports upon system update / data availability

Impacted Systems:

- Risk data management systems
- Front to back product booking systems

Impacted Processes:

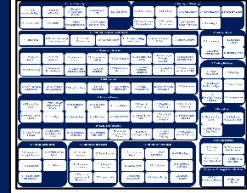
- Risk reporting processes

Additional Transition Considerations and Dependencies:

- Overview by the LIBOR Transition Committee should facilitate consistency across business lines for reporting the ARR and IBOR exposures
- System Testing considerations
 - Consider upstream and downstream dependencies for each system and process
 - Test updates to systems and processes as an interconnected system
 - Consider running tests on pilot basis

**Category: 7.
Risk Controls**

**Sub-category: 7.4 Risk
Identification**



Transition Steps and Activities:

1. Risk Identification: Identify Portfolio (Inventory) Exposure Levels
 - a. Identify LIBOR exposed areas
2. Organize identified Portfolio(s) by business sector and geography
 - a. Each business line/department/sector analyzes its business for LIBOR transition exposure
 - b. List of exposed transactions
 - i. Identify area of LIBOR exposure – Asset, Liability, Derivative
 - c. Business lines analyze tools used for assessing interest rate exposures
 - d. Recognition of contingencies and dependencies

Impacted Systems:

- Analytical tools/systems used for assessing interest rate exposure
- Methodological approach(es) to assessing interest rate exposure
- Other systems requiring change due to LIBOR transition

Impacted Processes:

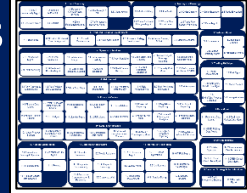
- Assessing interest rate exposure
- Communications with counterparties/3rd parties
- Information acquisition/exporting/onboarding for modified/changed information

Additional Transition Considerations and Dependencies:

- Availability of data
- Duration of data
- Contingencies dependent on counterparty/third party actions
- LIBOR volatility as the interest rate benchmark changes from LIBOR to alternatives

**Category: 7.
Risk Controls**

**Sub-category: 7.5 Risk Models
and Methodology**



Transition Steps and Activities:

1. Examine each approach for assessing interest rate risk
 - a. Inventory each area/step/process that needs to transition from LIBOR to an alternative rate
 - b. Models / methodologies used for assessing LIBOR exposure/volatility
 - i. Any other benchmarks reliant on, or deemed highly correlated to, LIBOR
 - c. Organize by business sector and geography
2. Assess alternatives and/or replacements
 - a. SOFR/SONIA
 - b. New ICE benchmark
 - c. Others
3. Review/consider available data for assessing volatility
 - a. Direct and indirect, proxy data
 - b. Availability period, duration, performance history
4. Modify models/methodologies for alternative rates
5. Test & validate models/methodologies with alternative rates for success
6. Apply new models/methodologies as applicable to existing portfolio

Impacted Systems:

- Data on-boarding
- Model/methodology governance/inventory
- Automated surveillance/monitoring systems/scorecards

Impacted Processes:

- Data cleaning
- Surveillance/monitoring using new benchmark

Additional Transition Considerations and Dependencies:

**Category: 7.
Risk Controls**

**Sub-category: 7.6 Risk
Measurement**

Transition Steps and Activities:

1. ARR Exposure Measurement
 - Formulate risk measurement methodologies for new ARR exposure across product types and business lines in line with risk management policies and procedures
 - Identify any required system updates in order to automate the risk measurement calculation and reporting
 - Implement system updates

2. IBOR Liquidity
 - Review and revise IBOR exposure measurement in terms of liquidity risk as market evolves
 - Review IBOR exposure within the Liquidity Asset Buffer and other reserves; remeasure and reallocate as necessary in order to comply with liquidity policies and regulatory requirements

Impacted Systems:

- Risk and Front Office pricing / booking systems
- Risk management systems

Impacted Processes:

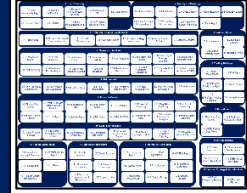
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Reserve analysis
- Hedging analysis
- Risk assessment and audit process
- Netting and Collateral Management
- Risk budgeting process
- Risk governance process

Additional Transition Considerations and Dependencies:

- Liquidity risk measurement of IBOR products will need to be periodically evaluated as the market changes
- LIBOR Transition Committee should ensure consistency of the risk measurements across business lines and legal entities
- System Testing considerations
 - Consider upstream and downstream dependencies for each system and process
 - Test updates to systems and processes as an interconnected system
 - Consider running tests on pilot basis

**Category: 7.
Risk Controls**

**Sub-category: 7.7 Risk
Monitoring and Control**



Transition Steps and Activities:

1. Review Risk Management Oversight plans to ensure that they have been updated based on the IBOR transition
2. Review Risk Register to ensure that they have been updated based on the IBOR transition
3. Review the following risk management items to ensure that they have been updated based on the IBOR transition:
 - a. Key Indicators
 - b. Triggers
 - c. Thresholds
4. Update control inventory to account for IBOR transition
5. Examine and review risk audit process to incorporate IBOR transition
6. Update management reporting templates and tools to account for IBOR transition

Impacted Systems:

- Risk management systems (including market risk, credit risk, risk reporting etc.)

Impacted Processes:

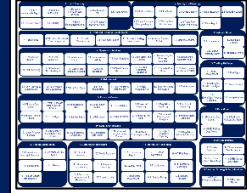
- Limit setting and VAR analysis
- Risk Exposure and tolerance analysis
- Reserve analysis
- Hedging analysis
- Risk assessment and audit process
- Netting and Collateral Management
- Risk budgeting process
- Risk governance process

Additional Transition Considerations and Dependencies:

- System Testing considerations
 - Consider upstream and downstream dependencies for each system and process
 - Test updates to systems and processes as an interconnected system
 - Consider running tests on pilot basis

**Category: 7.
Risk Controls**

**Sub-category: 7.8 Risk
Analysis**



Transition Steps and Activities:

1. Review current processes for conducting risk analysis and identify impacted areas from the IBOR transition
2. Assess the various possible transition scenarios and determine the impact they may have on risk analysis
3. Update both the quantitative and qualitative risk analysis processes to incorporate potential rate changes from IBOR
4. Evaluate internal and external risk data sources and ensure that pending changes to IBOR have been taken into consideration
5. Monitor changes to risk analysis outputs to ensure that any differences with past results align to any impacts of the IBOR transition

Impacted Systems:

- Value at Risk System
- Credit Risk Models
- Market Risk Models

Impacted Processes:

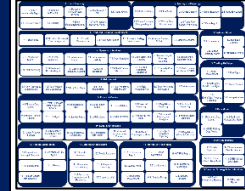
- Risk Analysis
- Risk Forecasting
- Testing and Validation
- Risk Reporting

Additional Transition Considerations and Dependencies:

- Make sure to consider international impacts of the IBOR transition

**Category: 8.
Financial
Controls**

**Sub-category: 8.1 Finance
Data Management**



Transition Steps and Activities:

1. Assess data impact due to any required updated to Finance-owned models, e.g., IFRS 9 and CECL credit loss models, and CCAR – PPNR stress testing
2. Assess the full inventory of spreadsheets for any required data feed updates
3. Assess and update manual data adjustment processes
4. Assess and update data feeds used for financial forecasting, pricing and investment, and strategic decisions for each business or product line
5. Develop IBOR transition scenarios to analyze business profitability under various market conditions and source the related data to support the analysis
6. Source new data and develop assumptions to assess new rate and existing IBOR product volumes and profitability under evolving market conditions
7. Source data to assess the impact to overall firm profitability (e.g., net interest income) under various transition scenarios, e.g., factoring in new reference rate and IBOR-based product volumes, timing of demand, spreads, and impact on bank funding costs
8. Assess data impact due to required updates to management and regulatory reporting
9. Assess data impact due to required updates to enterprise performance analytics, e.g., Risk-Adjusted Return on Capital (RAROC), Risk-Adjusted Performance Measures (RAPM), Risk-Weighted Asset (RWA)
10. Assess data management processes for required updates

Impacted Systems:

- Financial reporting
- Finance data warehouse
- Profitability analytics systems
- Critical use spreadsheets and tools

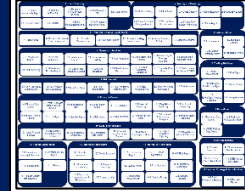
Impacted Processes:

- Manual data adjustment processes
- New product profitability
- Profitability forecasting
- Product marketing investment decisioning
- Technology investment decisioning
- Internal and external financial reporting

Additional Transition Considerations and Dependencies:

**Category: 8.
Financial
Controls**

**Sub-category: 8.2 Profit and
Loss and Balance Sheet
Control**



Transition Steps and Activities:

1. Assess the impact on business processes under the various transition scenarios, e.g. factoring in new reference rate, IBOR-based product volumes, timing of demand, spreads and impact on bank funding costs.
2. Update the full inventory of deals to accommodate the changes due to ARR.
3. Calculate the reserve requirements as a result of changes to Finance-owned models, e.g., IFRS 9, CECL credit loss models, CCAR – PPNR, VaR, IRC/CRM models.
4. Develop assumptions and IBOR transition scenarios to analyze business profitability under various market conditions and accordingly adjust the reserve requirements.
5. Adjust the reserve requirements based on updates to enterprise performance analytics, e.g. Risk-Adjusted Return on Capital (RAROC), Risk-Adjusted Performance Measures (RAPM), Risk-Weighted Asset (RWA).
6. Assess the impact to P&L and Balance sheet due to transition led changes in management and regulatory reporting.
7. Implement the required changes by designing system and process enhancements to update the P&L statement and Balance sheet.
8. Check completeness and accuracy of the updated P&L statement and Balance sheet.
9. Establish adequate support teams and analytic processes.

Impacted Systems:

- Financial reporting
- Profitability analytics systems
- Enterprise Risk Management Systems.
- Value at Risk System

Impacted Processes:

- New product profitability
- Profitability forecasting
- Product marketing investment decisioning
- Technology investment decisioning
- Risk exposure and risk tolerance analysis
- Hedging analysis
- Risk assessment and audit process
- Risk Forecasting

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process. Identify dependencies with related LIBOR transition workstreams, e.g. new product development, models, systems, operations and contract fallback repapering.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 8.
Financial
Control**

**Sub-category: 8.3
Independent Price
Verification**

Transition Steps and Activities:

1. Identify, test, and implement new valuation data sources across impacted cash and derivative products: interest rate curves and related valuation inputs used for curve building, volatility surfaces, cash product price feeds
2. Develop a back up plan to ensure proper valuation of legacy Libor products under a scenario of declining market liquidity
3. Develop a valuation plan for Libor products which cannot be remediated prior to the end of 2021
4. Assess and update valuation tolerances at position, product, and business level in the context of evolving market liquidity on new alternative rate(s);
5. Perform the same assessment of tolerances on existing IBOR based book due potential deterioration in liquidity as market shifts to away from IBORs
6. Assess and update impacted price verification policies
7. Assess and update impacted price verification reports
8. Identify collateral and client related impacted products and associated required valuation updates
9. Maintain an up to date and complete inventory of impacted products and related systems and processes

Impacted Systems:

- Vendor system data sources
- Bank-owned position systems
- Collateral systems
- Systems housing client related positions
- IPV analytical engine
- IPV reporting engine

Impacted Processes:

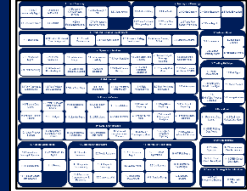
1. FO Valuation approach
2. IPV methodology
3. Models and inputs used
4. Sources of market data
5. Data cleansing
6. Valuation tolerances
7. Valuation adjustments
8. Criteria applied to alternative valuation techniques
9. Trader communication timelines and escalation protocols

Additional Transition Considerations and Dependencies:

- Reconcile population of impacted products and systems with other Libor transition workstreams
- Identify dependencies with related Libor transition workstreams, e.g., new product development, models, systems, operations, contract fallback repapering

**Category: 8.
Financial
Control**

**Sub-category: 8.4 Financial
Reporting**



Transition Steps and Activities:

1. Identify population of contracts in the instance repository that have exposure to legacy IBORs and identify ASC Topics to be included as status flags and rules across similar groups
2. Capture financial reporting control requirements for reference rate reform (ASC 848 or IFRS 9) in the instance repository and amend status flags as needed, and update data across the repository
3. Contribute to updates to valuation systems to accommodate valuations based on ARRs
4. Partner with Treasury on updates to payment and accrual calculations and reconciliations
5. Update disclosures in external financial statements and other financial reporting

Impacted Systems:

- Valuation systems
- Payment and accrual systems
- Instance repository

Impacted Processes:

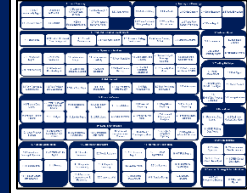
- Accounting analysis of contract modifications
- Cash reconciliations
- Financial statement preparation

Additional Transition Considerations and Dependencies:

- Event driven accounting analysis:
 - Reference rate reform activities involve changes to existing contracts, contract templates, and new contracts as well as market events such as the change in discount rates.
 - Monitoring controls will be required such that each of these events is captured and appropriate accounting analysis and documentation can be performed.
- ASC 848 relief:
 - Relief is conditioned upon contraction changes that conform with the scope of ASC 848 and IFRS 9.
 - All of the relief is optional and there is no precedent to rely on for procedures or documentation.
 - Close coordination with Treasury, Legal and other organizations that will be negotiating the contracts will be required in order to maximize use of the relief.
 - Work closely with auditors to get agreement on the changes to policies and procedures.
- Additional considerations:
 - Be prepared for retrospective scrutiny from auditors and examiners. Retain transition workpapers and documentation of the review processes at the instance level.
 - Articulate outcomes in this discipline with the interim strategy (periodic financial statement reporting), communication strategy, and go-live plan.

**Category: 8.
Financial
Control**

**Sub-category: 8.5 Regulatory
Reporting**



Transition Steps and Activities:

1. Analyze the impact to all the reporting requirements with the introduction of ARR.
2. Update the reserve requirements as a result of changes to regulations such as IFRS 9, CECL, CCAR, BASEL, EU-BMR etc.
3. Accommodate the impact of changes in regulatory mandated risk metrics, e.g., RAROC, RAPM, RWA.
4. Assess and update the feeds used for financial reporting for each business and product line.
5. Develop assumptions and IBOR transition scenarios in accordance with the new regulations to analyze business profitability under various market conditions and adjust the reserve requirements.
6. Assess the impact to regulatory reporting due to the changes in overall firm profitability (e.g., net interest income) as a result of the transition processes e.g. factoring in ARRs, IBOR-based product volumes, timing of demand, spreads and impact on bank funding costs.
7. Check for the completeness and accuracy of the reporting process.
8. Design system and process enhancements to implement the updates.
9. Establish adequate support teams and analytic processes.

Impacted Systems:

- Capital Reserve Management Systems
- Enterprise Risk Management Systems
- Value at Risk System
- Collateral Management Systems
- Financial Reporting Systems
- Regulatory Reporting Engine

Impacted Processes:

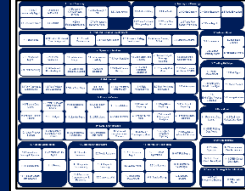
- RWA reporting
- SEC transition disclosure investor reporting
- Supervisory authority (OCC, FDIC, Fed) transition progress reporting
- Methodology for Valuation and Modelling
- Valuation adjustments
- Criteria applied to alternative valuation techniques and required reserve calculations.

Additional Transition Considerations and Dependencies:

- Reconcile population of impacted products and systems with LIBOR transition workstreams.
- Identify dependencies with related LIBOR transition workstreams.

**Category: 8.
Financial
Control**

**Sub-category: 8.6 Tax
Management**



Transition Steps and Activities:

1. Check for updates in tax regulations with respect to the ARR.
2. Check for provisions in the debt instruments space, which could lead to a tax realization event.
3. Assess if the introduction of ARRs impact the fair value of the contracts to cause a tax event.
4. Assess whether amending an integrated IBOR-referenced debt instrument or hedge to address the elimination of the IBOR could result in adverse tax consequences.
5. Analyze if the introduction of ARRs change the source or character of the contracts.
6. Check if the grandfathered debt instruments and non-debt contracts (which are currently tax-exempt) lose the exemption if the IRS treats those now-exempt contracts as reissued due to the modification.
7. Update all calculation methodologies to compute taxes E.g. interest rate expenses, fair value computation etc.
8. Implement the required changes by designing systems and processes to update tax calculations.
9. Check completeness and accuracy of the updated tax calculation.
10. Establish adequate support teams and analytic processes.

Impacted Systems:

- Tax Management Systems
- Profitability Analytics Systems
- Cashflow Management Systems
- Contingency Planning Systems

Impacted Processes:

- Tax Management Processes
- Cash Position Reconciliation
- Trade Execution
- Regulatory Reporting
- Profitability Forecasting
- Risk Exposure and Risk Tolerance Analysis
- Hedging Analysis
- Risk Assessment and Audit Process
- Risk Forecasting

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system. Identify dependencies with related LIBOR transition workstreams, e.g. new product development, models, systems, operations, fallback language etc.
- Consider running tests on pilot basis.

**Category: 8.
Financial
Controls**

**Sub-category: 8.7 Fund
Transfer Pricing**

Transition Steps and Activities:

1. Analyze the impact of ARR on the interest rate differential between the central treasury and the funds lending and raising departments.
2. Check if any business unit's performance is adversely affected as a result of factoring in new reference rate, IBOR-based product volumes, timing of demand, spreads etc.
3. Update the cost of risks involved in the funding process due to the introduction of ARRs.
4. Check if there are any changes in the regulatory requirements for fund transfer pricing.
5. Analyze IBOR transition scenarios to assess business revenues and costs under various market conditions for each business unit.
6. Implement the required changes by designing systems to update the FTP mechanism for the ARRs.
7. Check the completeness of the updated FTP mechanism.
8. Establish adequate support teams and analytic processes.

Impacted Systems:

- Fund Transfer Pricing Systems
- Profitability Analytics Systems
- Enterprise Risk Management Systems
- Value at Risk System

Impacted Processes:

- FTP Mechanisms
- Profitability Forecasting
- Asset-Liability Management Processes
- Technology Investment Decisioning
- Continuation of Business Unit Functioning
- Risk Exposure and Risk Tolerance Analysis
- Hedging Analysis
- Risk Assessment and Audit Process
- Risk Forecasting

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.

**Category: 8.
Financial
Control**

**Sub-category: 8.8 Liquidity
Management**

Transition Steps and Activities:

1. Update cash flow assumptions based on the requirements related to the ARR.
2. Develop IBOR transition scenarios to analyze the cash flow projections under various market conditions and accordingly adjust the reserve requirements.
3. Review and update risk limits.
4. Review and update cashflow reserves based on changes in interest rate scenarios as a result of IBOR transitioning.
5. Maintain an up to date and complete inventory of impacted systems and processes.
6. Design system and process enhancements to accommodate new reference rate product requirements and implement the updates.
7. Update the cashflow contingency plans with respect to ARRs.
8. Establish adequate support teams and analytic processes.

Impacted Systems:

- Liquidity Management Systems.
- Interest Rate Risk / Asset Liability Management system(s)
- Funds Transfer Pricing (FTP) system(s)
- Cashflow management systems.
- Contingency planning systems.
- Asset and Collateral liquidity classification and metrics modeling

Impacted Processes:

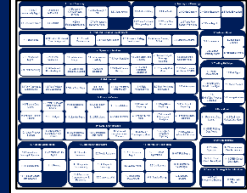
- Cashflow forecasting
- Cash Position Reconciliation
- Initial Margin
- Trade Execution
- Regulatory reporting
- Liquid and ready marketable liquidity classification modeling (both Libor and ARR products)
- Margin Period of Risk modeling (both Libor and ARR products)

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process
- Test updates to systems and processes as an interconnected system
- Consider running tests on pilot basis.

**Category: 8.
Financial
Control**

**Sub-category: 8.9 Asset-
Liability / IRR Management**



Transition Steps and Activities:

1. Update benchmark curves from LIBOR to new reference rate
2. Review and update risk limits
3. Review and update interest rate scenario
4. Review and update product pricing
5. Update spread calculations to reference new benchmark
6. Run impact analysis on bank risk position given different risk and sensitivity profiles of new reference rate products
7. Maintain an up to date and complete inventory of impacted systems and processes
8. Design system and process enhancement requirements to accommodate new reference rate product conventions, and implement the updates

Impacted Systems:

- Interest Rate Risk / Asset Liability Management system(s)
- Funds Transfer Pricing (FTP) system(s)
- Investment Securities system
- Derivative Pricing system
- Liabilities system

Impacted Processes:

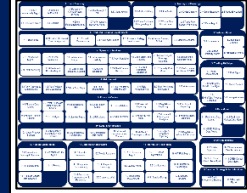
- Cash Position Reconciliation
- Clearing
- Funds Transfer Pricing
- Initial Margin
- Intercompany Funding
- Product Pricing
- Trade Execution
- Rate Setting
- Collateral Pledging

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process
- Test updates to systems and processes as an interconnected system
- Consider running tests on pilot basis

**Category: 8.
Financial
Controls**

**Sub-category: 8.10 Capital
Management**



Transition Steps and Activities:

1. Analyze the impact on both the economic capital and regulatory capital.
2. Assess if the introduction of ARR has changed the capital focus for the firm.
3. Update the capital optimization algorithm for the impact of ARRs.
4. Check and update the firm’s liabilities and cost projections by analyzing the impact on business processes i.e. by factoring in new reference rate, IBOR-based product volumes, timing of demand, spreads and impact on bank funding costs.
5. Update the full inventory of securities to update the capital calculations for accommodating the ARRs.
6. Recalculate and establish the capital requirements as a result of changes to Finance-owned models, e.g., IFRS 9, CECL credit loss models, CCAR – PPNR, VaR, IRC/CRM models.
7. Analyze IBOR transition scenarios to assess business revenues and expenses under various market conditions and accordingly adjust the capital requirement.
8. Adjust the capital requirement based on updates to enterprise performance analytics, e.g. RAROC, RAPM, RWA.
9. Implement the required changes by designing systems and processes to update capital requirement for the ARRs.
10. Check the accuracy of the updated capital requirement.
11. Establish adequate support teams and analytic processes.

Impacted Systems:

- Capital Management Systems
- Capital Optimization Systems
- Profitability Analytics Systems
- Enterprise Risk Management Systems
- Value at Risk System

Impacted Processes:

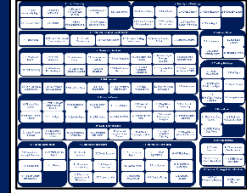
- Capital Provisioning
- Profitability Forecasting
- Asset-Liability Management Processes
- Technology Investment Decisioning
- Risk Exposure and Risk Tolerance Analysis
- Hedging Analysis
- Risk Assessment and Audit Process
- Risk Forecasting

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process. Identify dependencies with related LIBOR transition workstreams, e.g. new product development, models, systems, operations etc.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 8.
Financial
Control**

**Sub-category: 8.11 Funding /
Money Market Management**



Transition Steps and Activities:

1. Assess the impact on the firm’s current assets and liabilities with the introduction of ARR.
2. Check and update the firm’s expenses by analyzing the impact on business processes i.e. by factoring in new reference rate, IBOR-based product volumes, timing of demand, spreads and impact on bank funding costs.
3. Update the portfolio hedging algorithm for the impact of ARRs.
4. Check the impact of ARRs on the money market securities.
5. Analyze IBOR transition scenarios to assess business revenues and costs under various market conditions.
6. Adjust the funding requirements based on updates to performance analytics.
7. Implement the required changes by designing system enhancements to update the fund management process.
8. Check completeness and accuracy of the updated fund management processes.
9. Establish adequate support teams and analytic processes.

Impacted Systems:

- Fund Management Systems
- Money Market Securities Trading Systems
- Profitability Analytics Systems
- Cashflow Management Systems
- Contingency Planning Systems

Impacted Processes:

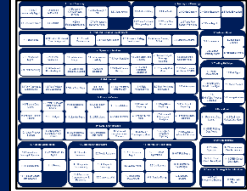
- Fund Management Processes
- Asset-Liability Management Processes
- Cash Position Reconciliation
- Initial Margin
- Trade Execution
- Regulatory reporting
- Profitability Forecasting
- Liquid and ready marketable liquidity classification modeling (both LIBOR and ARR products)
- Margin Period of Risk modeling (both LIBOR and ARR products)

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process.
- Test updates to systems and processes as an interconnected system.
- Consider running tests on pilot basis.

**Category: 8.
Financial
Control**

**Sub-category: 8.12 Financial
Planning and Analysis**



Transition Steps and Activities:

1. Review and update cashflow budgeting, analysis and forecasting for the impact of ARR
2. Analyze the impact on profitability and growth and accordingly adjust the planning for the impact of IBOR transition
3. Update critical use spreadsheets and tools used in financial planning
4. Update the impacted management reports
5. Assess resource and budget needs to deliver the activities in the implementation roadmap for the new benchmark rate
6. Evaluate the financial, operational and legal risks related to the transition and the associated mitigating action items
7. Establish process optimization around implementation of the new benchmark rate
8. Establish dashboards and tools to monitor status of work efforts
9. Establish adequate support teams and analytic processes
10. Proactively monitor and adjust the implementation plan based on the shift in external industry and/or evolving regulatory developments

Impacted Systems:

- Financial modeling/forecasting system
- Management reporting
- Ongoing financial performance monitoring systems
- Profitability analytics systems
- Cashflow management systems
- Capital management systems
- Contingency planning systems
- Enterprise risk management systems
- Fund management systems

Impacted Processes:

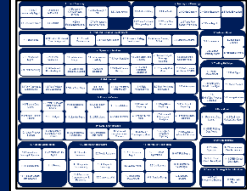
- Strategic planning process
- Funding process
- Controls process
- Budgeting and financial planning process
- Project Management/Decision support
- Gap analysis
- Regulatory reporting
- Profitability forecasting
- Capital provisioning

Additional Transition Considerations and Dependencies:

- Test updates to systems and processes as an interconnected system, considering the upstream and downstream dependencies.
- Consider running tests on pilot basis.

**Category: 8.
Financial
Control**

**Sub-category: 8.13 Financial
Management Reporting**



Transition Steps and Activities:

1. Identify impacted financial management reports due to the areas impacted by transition to the new rate(s), e.g., product profitability, product volumes and run-off, tax, accounting, basis risk, regulatory provisioning requirements, etc.
2. Analyze the impact on firm’s financial ratios due to the introduction of ARRs and accordingly adjust the position of the business.
3. Assess key financial performance indicators and metrics’ calculation methodology for required updates as a result of ARRs.
4. Identify required updates to financial management reports to meet any external reporting regulatory requirements specific to the transition, e.g., SEC-issued guidelines with regards to IBOR transition.
5. Assess impact to systems used to support financial management reporting.
6. Check completeness and accuracy of the updated financial management reporting process.
7. Establish adequate support teams to manage the changes in the systems and processes.
8. Monitor and adjust the implementation plan based on the shift in the external industry and/or evolving regulatory developments.

Impacted Systems:

- Financial Management Reporting system
- Treasury management system
- Ongoing financial performance system
- Management reporting
- Ongoing financial performance monitoring system
- Profitability analytics systems
- Enterprise risk management systems

Impacted Processes:

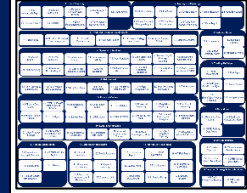
- Controls process
- Financial reporting process
- Project Management/Decision support
- Gap analysis
- Budgeting and financial planning process
- Regulatory reporting
- Profitability forecasting
- Capital provisioning

Additional Transition Considerations and Dependencies:

- Consider upstream and downstream dependencies for each system and process. Identify dependencies with related LIBOR transition workstreams, e.g. new product development, models, systems, operations etc.
- Test updates to systems and processes as an interconnected system.

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.1 Legal
Process Support**



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact across Legal Processes
 - a. Client and counterparty legal contracts, systems, processes
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Identify Legal Processes Impacted
 - a. Establish a Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify different areas of the legal operating model to focus on remediation areas
 - c. Identify processes performed by outside counsel, legal managed service providers
2. Create a contract remediation plan to transition away from LIBOR
 - a. Identify all in-scope contracts
 - b. Digitize contracts
3. Search contracts for LIBOR related language and data to ensure correct capture
 - a. Validate industry standards
 - b. Incorporate recommended fallback language
 - c. Conduct legal review of fallback language and other provisions across contracts

Pre-implementation Prep

1. Configure contracts against risk-free-rates
2. Agree on client engagement model
3. Establish controls to mitigate risk

Execution

1. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Centrally manage tracking, reporting, and next steps
 - b. Contract remediation
 - c. Transition exposure / benchmarks

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

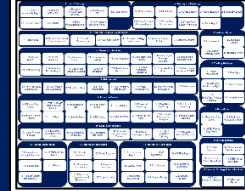
- Project management areas to keep in mind as the transition progresses
- General Counsel / External Legal Providers
 - TPRM framework
 - Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.2 Regulatory
Compliance and Controls**



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact Compliance Functions
 - a. Regulatory Reporting, systems, processes, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify areas across the compliance function to create workstreams to focus robust controls framework
 - c. Have project management team to report to CCO and senior management on regulatory reporting and controls
2. Create a remediation plan to transition away from LIBOR
 - a. Establish a framework for monitoring and testing
 - b. Monitor conduct across business lines and new products
 - c. Ensure surveillance systems can capture new rates
 - d. Review risk and control process to update for new products and risks
3. Establish cadence for communications with relevant regulators

Pre-implementation Prep

1. Configure products against risk-free-rates
2. Agree on client engagement model
3. Establish controls to mitigate risk

Execution

1. Understand Regulatory requirements and timelines
 - a. Centrally manage tracking, reporting, and next steps
 - b. Transition exposure / benchmarks

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

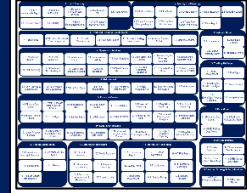
- Compliance framework
- Regulatory Reporting framework
- Surveillance framework
- Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.3 Monitoring
& Surveillance**



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact Surveillance and Monitoring Systems
 - a. Front, Middle and Back Office systems, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify ability of surveillance systems to capture trading in new products
 - c. Create framework to report “Red Flags” to Compliance management
 - d. Establish framework to capture conduct risk across business lines
2. Create a remediation plan to transition away from LIBOR
3. Establish tracking tools/ reporting dashboards
4. Establish transition process for positions & performance benchmarks

Pre-implementation Prep

1. Ensure new products are captured in monitoring and surveillance systems
2. Define conduct risk issues with regard to new products
3. Establish controls to mitigate risk

Execution

1. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Centrally manage surveillance tracking and reporting
 - b. Monitor new risks as a result of changing benchmark rates

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

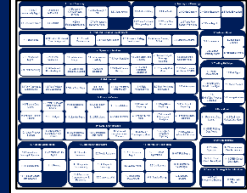
- Control Mgmt./ Compliance framework
- Surveillance monitoring framework
- Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.4 Compliance
Data Management**



Transition Steps and Activities:

Scope

1. Identify LIBOR Data Impact across firm
 - a. Market Data feeds, Exposure, benchmarks, systems, processes etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across firm
 - b. Identify market data feeds from external sources and mapping to new rates reference data
 - c. Have project management team to assist senior committee on establishing milestones, measuring progress, and reporting on progress
2. Create a remediation plan to transition away from LIBOR
5. Identification of potential data integration opportunities and upgrades
6. Uplift tracking tools/ reporting dashboards
7. Establish testing factory to support business processes, data analytics and technology changes

Pre-implementation Prep

1. Develop a data inventory to align with the risk taxonomy
2. Establish controls to mitigate risk

Execution

1. Understand internal and external data sources across business lines
 - a. Ensure visibility of data sources
 - b. Develop risk architecture to predict Transition exposure

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

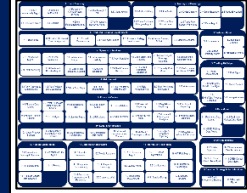
- Control Mgmt./ Compliance framework
- Data Mgmt. framework

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.5 Internal
Compliance and Controls**



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact Internally across firm
 - a. Exposure, controls, systems, processes, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify different areas of the business to create workstreams to focus on remediation areas
 - c. Have project management team to assist senior committee on establishing milestones, measuring progress, and reporting on progress
2. Create a remediation plan to transition away from LIBOR

Pre-implementation Prep

1. Configure products against risk-free-rates
2. Identify existing controls for variable rate products
3. Establish controls to mitigate risk
4. Establish client communication plan for replacement rates

Execution

1. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Establish monitoring and testing for conduct across business lines
 - b. Track client communication during and after implementation of replacement rates
 - c. Establish Board reporting plan
 - d. Transition exposure / benchmarks

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

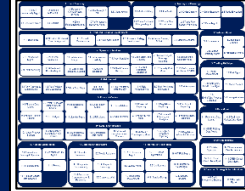
- Control Mgmt./ Compliance framework
- Conduct and Surveillance framework
- Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.6 Client /
Counterparty Management**



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact for Clients and Counterparties across firm
 - a. Exposure, communication, benchmarks, systems, processes, legal, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify different areas of the business to create workstreams to focus on remediation areas
 - c. Have project management team to assist senior committee on establishing milestones, measuring progress, and reporting on progress
2. Create a communication plan to transition away from LIBOR and establish agreement on new benchmark rates

Pre-implementation Prep

1. Reach out to clients and counterparties to open discussions on new benchmark rates
2. Agree on client and counterparty engagement model
3. Review client feedback and discuss and agree on remediation action

Execution

1. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Centrally manage tracking, reporting, and next steps
 - b. Update contracts to contain newly agreed fallback language
 - c. Book contracts to trading, risk and accounting systems
 - d. Digitize and store contracts in a secure environment accessible to stakeholders

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

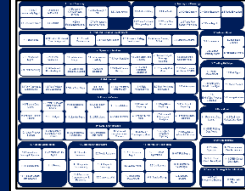
- Control Mgmt./ Compliance framework
- Contract Remediation framework
- Trading, Risk and Accounting Systems
- Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

Category: 9. Legal and Compliance

Sub-category: 9.7 Legal and Compliance Reporting



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact in Legal and Compliance Reporting across firm
 - a. Exposure, monitoring, benchmarks, systems, processes, legal, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify different areas of the business to create workstreams to focus on remediation areas
 - c. Have project management team to assist senior committee on establishing milestones, measuring progress, and reporting on progress
 - d. Establish Board reporting cadence
2. Create a remediation plan to transition away from LIBOR

Pre-implementation Prep

1. Establish new controls and metrics around conduct and surveillance frameworks
2. Identify Board and stakeholder responsibility
3. Establish controls to mitigate risk

Execution

1. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Centrally manage tracking, reporting, and next steps
 - b. Establish legal reporting framework
 - c. Manage external legal counsel and TPRM frameworks

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

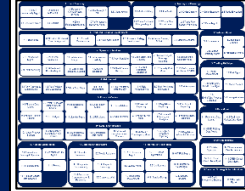
- Control Mgmt./ Compliance framework
- Regulatory Reporting framework
- TPRM framework
- Internal Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 9.
Legal and
Compliance**

**Sub-category: 9.8 Regulatory
Affairs and Litigation**



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact across firm
 - a. Exposure, monitoring, benchmarks, systems, processes, legal, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

1. Establish a governance structure
 - a. Join Compliance and Legal LIBOR SteerCo with senior members across the firm
 - b. Identify different areas of the business to create workstreams to focus on remediation areas
 - c. Have project management team to assist senior committee on establishing milestones, measuring progress, and reporting on progress
2. Create a remediation plan to transition away from LIBOR

Pre-implementation Prep

1. Communicate transition plan to counterparties and regulatory stakeholders
2. Agree on client engagement model
3. Establish documentation requirements and issue guidance on retaining access to relevant documents and contracts
4. Agree and establish fallback language in line with industry standards
5. Establish controls to mitigate risk

Execution

1. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Centrally manage tracking, reporting, and next steps
 - b. Update contracts to contain newly agreed fallback language
 - c. Establish cadence for communication with relevant regulators
 - d. Update systems to monitor and conduct internal investigations

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

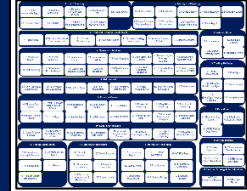
- Control Mgmt./ Compliance framework
- Regulatory Reporting framework
- Legal and Litigation processes
- Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

**Category: 10.
Information
Technology**

**Sub-category: 10.1
Technology Impact
Identification**



Transition Steps and Activities:

1. Identify segmentation scheme for in-scope legal entities
 - a. Revenue-generating units
 - b. Infrastructure units
2. Identify (i) business processes and (ii) finance/ops/infra processes associated with each segment
 - a. Identify model and system nexus for each process identified within the segment
 - b. Identify whether systems are vendor, internal system, or EUDA
3. Three-way handshake between Head of LIBOR transition, Head of technology for the transition, and the segment head

Impacted Systems:

- Market Data
- Curves and Surfaces
- MTM Pricing
- Risk Analytics
- Loan/Trade Management
- Management Reporting
- Document Management
- Accounting
- Regulatory
- Compliance
- Settlement Processing
- Collateral Management
- Clearing
- Treasury Management
- Client Relationship Management

Impacted Processes:

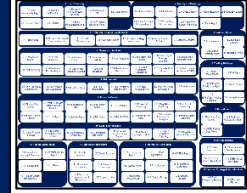
- Business Processes (illustrative)
 - a. Modeling and Pricing
 - b. Deal Pipeline/CRM
 - c. Controls
- Finance, Ops, and Infra Processes (illustrative)
 - a. Legal Documentation
 - b. Accounting
 - c. Regulatory
 - d. Risk Management
 - e. Settlement, Collateral
 - f. Controls

Additional Transition Considerations and Dependencies:

- **Dependencies:**
 - The segmentation scheme identified for this process should align to any segmentation scheme used in the broader LIBOR transition program
 - Each of the IT systems listed has dependencies on the business units that it supports.
 - The IT plan should be driven by and aligned with the business plans.
- **Additional considerations:**
 - Inclusion of end user developed applications is critical to developing a complete technology inventory. Excel, visual basic, and python are common tools for end user automation and must be updated along with vendor and in-house technologies.

**Category: 10.
Information
Technology**

**Sub-category: 10.2
Technology Operational
Readiness**



Transition Steps and Activities:

1. Go Live Planning:
 - a. Develop a release plan for in house software updates identified in activity 10.1.
 - b. Begin vendor readiness assessment and negotiations for vendors identified in 10.1.
 - c. Develop a change management plan to ensure seamless transition between in house, vendor, and end user developed technologies used in common workflows.
2. Interim Planning:
 - a. Develop tactical AAR support plan for early adoption of AAR prior to go live plan completion.
 - b. Engage and vendors and begin work on end user develop applications required to support the interim plan.
3. Communication:
 - a. Internal communication of Go Live and Interim plan to business users.
 - b. Communication of timelines and readiness to clients and/or counterparties.
 - c. Communication of plan and process changes to relevant examiners/regulators.

Impacted Systems:

- Product Management Systems
- Vendor Risk Management Systems
- All systems identified in 10.1

Impacted Processes:

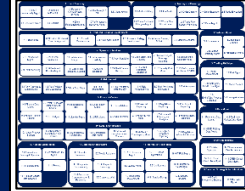
- Release Planning
- Vendor Risk Management
- CRM/Client communication

Additional Transition Considerations and Dependencies:

- Dependencies:
 - IBOR transition manager will require access to product management or other investment decision makers.
- Additional considerations:
 - As information becomes available, these activities may not line up with an organization’s investment and planning cycle.

**Category: 10.
Information
Technology**

**Sub-category: 10.3
Technology Back Book
Migration**



Transition Steps and Activities:

1. Tactical Transition Tools
 - a. Identify workflows required for back book migration.
 - b. Develop necessary software required to track and automate migration process.
 - c. Capture migration workflows and dependencies in a workflow system or dashboard to ensure dependent processes execute
 - i. For example, a trade fallback will trigger regulatory reporting and accounting changes.
2. Production Systems
 - a. Ensure that relevant production systems are in place for go live plan or fall back to interim operational readiness plan.
 - b. Ensure all back-book transition changes are captured in audit system, including what changes were made, when they were made, and who/what made the change.
 - c. Ensure that trade migration does not execute concurrently with operational processes that consume the changing data. For example, don't run the migration while you are running an accounting process.

Impacted Systems:

- Workflow Management/Dashboards
- Trade capture systems and any existing automation of these systems.
- Risk Analytics
- Loan/Trade Management
- Management Reporting
- Document Management
- Accounting
- Regulatory / Compliance
- Collateral Management
- Clearing
- Treasure Management
- Client Relationship Management

Impacted Processes:

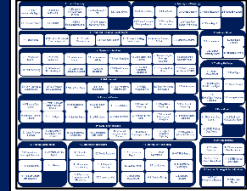
- Production release planning
- Operational processes that consume transaction data, e.g. Accounting, Clearing, and Regulatory workflows
- Transaction Controls Processes

Additional Transition Considerations and Dependencies:

- Dependencies:
 - Back book migration is not a single process, but a series of processes in an interconnected workflow. The ability to track and execute these dependencies using a multi user technology is critical to success of the migration.
- Additional considerations:
 - Different organizations will want to develop tactical transition tools in very different ways. Development of these tools may or may not require software engineers. For smaller organizations a simple Excel worksheet may be sufficient. For larger organizations with complex workflows larger development efforts would be required.

Category: 10. Information Technology

Sub-category: 10.4 Program and Project Management



Transition Steps and Activities:

Scope

1. Identify LIBOR Impact across firm
 - a. Exposure, benchmarks, systems, processes, legal, etc.
2. Communicate impact to subject matter experts across firm, collect feedback

Plan

3. Establish a governance structure
 - a. Establish a LIBOR SteerCo with senior members across the firm
 - b. Identify different areas of the business to create workstreams to focus on remediation areas
 - c. Have project management team to assist senior committee on establishing milestones, measuring progress, and reporting on progress
4. Create a remediation plan to transition away from LIBOR
 - a. Communicate project plan to counterparties, regulatory stakeholder
 - b. Uplift tracking tools/ reporting dashboards
 - c. Establish transition process for positions & performance benchmarks

Pre-implementation Prep

5. Configure products against risk-free-rates
6. Agree on client engagement model
7. Establish controls to mitigate risk

Execution

8. Understand industry drivers and execute against milestones/timelines accordingly
 - a. Centrally manage tracking, reporting, and next steps
 - b. Contract remediation
 - c. Transition exposure / benchmarks

Impacted Systems:

Any systems requiring change as a result of the transition

Impacted Processes:

Project management areas to keep in mind as the transition progresses

- Control Mgmt./ Compliance framework
- Change Mgmt. framework
- Communication management

Additional Transition Considerations and Dependencies:

- Important to consider costs which will be incurred to support the transition, i.e. technology, staffing, etc.
- Should consider internal & external risks; agree on a strategy to handle risks

Acknowledgements:

The ARRC appreciates the support of all members of ARRC's Operations & Infrastructure Working Group, including the following organizations who made significant efforts to contribute to this document.

- Accenture
- Chatham Financial
- DBRS
- Deloitte
- Goldman Sachs
- KPMG
- Morgan, Lewis & Bockius LLP
- Oliver Wyman
- TD Bank