INTEREST RATE RISK MODEL
VENDOR AND ALM CONSULTANTS QUESTIONNAIRE

The purpose of this questionnaire is to update and expand the FFIEC member agencies (the agencies) information base on Asset/Liability Management (ALM) models used to model depository institutions interest rate risk (IRR). The questionnaire is to be filled out by vendors that build models and consultant firms that do not build the model, but offer a vendor's model (or a specific installation of a vendor model) to their clients. This survey is aimed at gaining an understanding of full capabilities of the models' feature sets and capabilities for measuring short- and long-term IRR. Likewise, to understand how depository institution management may use their ALM model capacities to assess interest rate sensitivity of their budget, business plan, and future strategies. The questionnaire is also requesting information on other features the model offers such as dynamic balance sheet change and interest rate change over time (e.g. rate ramps and vectors).

The information requested is only for the internal use of the agencies, including distribution to field examination staff. The information you provide will assist agency policy makers by offering important insights on model features and industry practices and trends. However, the primary purpose of this effort is to develop more comprehensive reference material that can be used by the examiners reviewing sensitivity to market risk at financial institutions. The information your firm provides should also enhance the dialogue between your firm, your clients, and supervisory staff.

Please feel free to expand upon the information requested or to revise the existing information in any manner that may facilitate the clarity and use of the information. For ALM model vendors, please respond for each model to highlight any differences between your models. You may complete separate questionnaires for each type of model or distinguish the various models in your response. For ALM consultants, please answer the questionnaire to the best of your ability. It is entirely understandable that some questions will not be answerable by consultants but we appreciate your efforts.

If you wish, you may attach or insert additional information in hard copy or digital form to clarify or expand a response. Please provide copies of sample reports when available. In particular, standard reporting packages (such as what would be used by a bank to prepare reporting to ALCO or similar committee), assumption report(s), the latest independent review/validation report, and other key output reports and user manuals are requested. Please reference any attached information to the section and item number.

Your cooperation in this effort is greatly appreciated. **Please submit a response by XX/XX/2015.** If you have any questions on completing this questionnaire, please call or e-mail the agency contacts listed below. While electronic responses are preferred, you may also mail the responses and sample reports. Please send the completed questionnaire to each agency contact.

PLEASE RETURN THE COMPLETED QUESTIONNAIRE TO:

Office of the Comptroller of the Currency **Administrator of National Banks** **Washington, DC 20219** **Mail stop:** **Attention:**
Via E-mail to: **Telephone:**

I. CONSULTANT/VENDOR INFORMATION

1. Consultant/Vendor Name and Corporate Owner

Insert responses for each of the following items in the blank portion of the text box. N/A is an acceptable response.

a. Headquarters location:

Street address:			
Suite #:			
City:	**State:**	**Zip Code**	**Country:**

b. Main telephone number:

c. Representative(s)' name(s) extension number(s) and e-mail address(es):

Name	Phone Number	E- mail

d. Website:

e. Other Office Locations:

Location Name	City	State	Country

II. BASIC MODEL INFORMATION

1. Services Offered

Provide documentation for, or detail below, a general description of the services offered (IRR measurement, deposit studies, prepayment studies, AL strategies, new business sensitivity analysis, etc.).

2. Model Name(s)

a. Model Name:

b. Indicate if the model is run on-site at the bank or at the vendor/consultant's location:

3. Version:

a. Publishing dates for the current and prior two versions. All subsequent responses in this questionnaire should address the current version.

Current version -	Date: / /
Prior version –	Date: / /
Prior version –	Date: / /

b. Cost for current and prior models (if still utilized by clients):

c. **Please indicate whether there are higher operating capabilities in the current version. For instance, if a client is running a prior version what are the implications for not being on the current model?**

d. **Please describe any sub-modules available with the model and whether modules are licensed separately or included in the master license. External product add-ons are addressed in #5 of this section:**

e. **Please note if your product has special hardware requirements for your clients (e.g., requires a server platform). Also note if your product is capable of running in a client/server mode.**

4. General Description of the Latest Version of the Model:

a. **Features and capabilities:**

b. **Benefits of this model:**

c. **Do clients have the option to purchase certain levels of the model? If so, please describe the various levels of function/service delivered on the level of model/service purchased.**

d. Are alternative model packages/add-ons available that may provide alternative ALM functionality depending on the client's needs/risk profile? If alternative model packages/add-ons are available, what additional functionality is provided through these additional packages? What is the additional cost to the client?

e. What controls are in place to ensure the integrity of the model when changes are made to the software?

f. Please describe the level of access control settings/permissions settings within the model, including if there are user option settings that allow for internal controls such as dual control and segregation of duties.

| 5. | Additional Financial Management Solutions Published by <u>You</u> that Interface with <u>Your</u> ALM Model: |

Please provide a list and a description of how these products expand the capability of the basic model. You may address the expanded capabilities provided by a module or other product as it may apply to each response in this questionnaire, or you may provide a summary narrative to that effect in this response.

| 6. | Additional Financial Management Solutions from <u>Other Vendors</u> that Interface with Your ALM Model: |

Please provide a list and a description of how these products expand the capabilities of the basic model. For example, can clients incorporate third party services (i.e. prepayment speeds, yield curves, structured cash flows) in the model? You may address the expanded

capabilities provided by these external products in responses throughout this questionnaire as appropriate, as well as a summary narrative to that effect here.

7.	Client Base Overview:

a. Number of clients:

b. Types of clients (e.g., Banks, Credit Unions, Insurance Companies, Broker-Dealers, etc.):

c. Describe geographical coverage of client base. If client base is diverse on a national or global basis, please note any significant geographic concentrations (e.g., northeast USA, Central USA, Europe).

d. Size (range or average or median) of individual clients:

Under 25M	X% of total clients
25M – 100M	X%
100M – 250M	X%
250M – 500M	X%
500M – 1B	X%
1B – 5B	X%
5B – 10B	X%
Over 10B	X%

e. If alternative model packages or add-ons are available, what percentage of your client base uses the core or base model only and what percentage use various alternative models or add-ons?

8.   FOR VENDORS ONLY (Consultants DO NOT answer): Please provide information on Consultants Offering Your ALM Model With or Without Enhancements to Their Clients:

a. Describe the nature of relationship with your clients that are consultants. Please provide a breakdown of the percent of end-user clients and consultants who provide services based on your model to their end-user clientele.

b. Please provide a list of consultants who offer an original version of your model to their end-user clients.

c. Please provide a list of consultants who offer an enhanced or altered version of your model to their end-user clients.

d. Please describe allowable model changes or alterations that can be made by consultants. Do you believe the changes or alterations are significant enough to warrant the changed or altered models be considered as stand-alone models from the original model?

9. Support Offered by You on This Model and on Overall ALM Related functions:

For the questions below, please indicate yes or no. If yes, please describe in the space provided. You may also provide an overview here for specific support items not addressed below. Please discuss cost of various services.

a. Do you provide product setup support (installation, data mapping, customer specific configuration, product training)?

b. Do you provide consulting support (asset liability management, interest rate risk mitigation strategies, modeling new business, etc.)?

c. Do you provide education/ongoing training, such as ongoing model and/or asset liability training?

d. Do you provide auditing support (data entry, data mapping, model setup including option selections, software updates)?

e. Do you provide application review:

f. Do you provide independent validation? Please indicate whether or not you have an independent third party validation of the model's processing component for mathematical accuracy, sound logic, etc.

g. **Do you provide independent certification?**

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h. **Do you provide ongoing operational support? Please also provide some common operational or implementation issues clients have with this version, if any, – focusing on the top 3 or 4.**

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i. **Do you provide documentation (e.g. user guides, or related assumptions)? Please indicate how often documentation is updated.**

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j. **Please describe any vendor support offerings not specifically discussed above**

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III. APPROACHES TO RISK IDENTIFICATION

A. ANALYSIS TYPES

For analysis types, first indicate if the specific analysis type is produced by placing a yes or no next to the analysis type. For those types produced, please provide a description.

1. Simulation methodologies:

a. Gap:

b. Deterministic cash flow modeling (i.e., single rate path simulation):

c. Stochastic:

2. Simulation Analysis Detail:

a. Describe the model's capability and default settings for the reinvestment of maturing assets and liabilities over simulation horizon. Can simulations be run on the basis of a static balance sheet (rollover reinvestment into like products to maintain constant size) and/or dynamic balance sheet (balance sheet growth or change in product mix over time)?

3. Earnings at risk:

    a.   **Please describe the standard net interest income earnings at risk measurement your model generates.**

    b.   **Please describe the standard net income earnings at risk measurement your model generates.**

    c.   **Describe scenario range for both rate shocks and ramps. This could include parrellel rate shocks up to +/- 400bp, ability to move rates/indexes or tenors independently, other scenario types such as credit spread widening/tightening.**

        i. **Capacity and ease in creating both rate ramps and rate shocks:**

        ii. **Describe default rate <u>range</u> for both shocks and ramps (e.g. +/- 100 to +/- 300 in 100bp increments. How many shock scenarios can be selected? Can the client select the number and amount of the shock?).**

iii. Can rate <u>range</u> for both shocks and ramps be customized (e.g. scale based on +/-50bp increments to include +/- 200 to +/-300).

iv. Describe the model's capabilities for nonparallel yield curve shifts including tests for yield curve twists and inversions.

d. Simulation horizon: (e.g., 12 months, 24 months, etc.) Can a custom horizon be used (e.g., 18 months, daily, quarterly?)

e. Describe the level of detail for non-interest expense and non- interest income categories. Do the model's capabilities permit changes to non-interest income categories where such sources may contribute significantly to profitability? For example, fees from mortgage banking activities.

4. Valuation analysis:

a. Economic Value of Equity (EVE): Please describe the standard valuation measurement your model generates. Describe also the discount rate structure your model uses (single path, montecarlo, lattice), and whether users can supply spreads to discount rates.

b. **Duration of Equity: (if the model calculates a net duration for assets and liabilities, please describe the general process used).**

c. **Describe default rate range for both rate shocks and ramps. This could include parrellel rate shocks up to +/- 400bp, ability to move rates/indexes or tenors independently, other scenario types such as credit spread widening/tightening.**

    i. **Capacity and ease in creating both rate ramps and rate shocks:**

    ii. **Describe default rate <u>range</u> for both shocks and ramps (e.g. +/- 100 to +/- 300 in 100bp increments. How many shock scenarios can be selected? Can the client select the number and amount of the shock?).**

    iii. **Can rate <u>range</u> for both shocks and ramps be customized (e.g. scale based on +/-50bp increments to include +/- 200 to +/-300).**

    iv. **Describe the model's capabilities for nonparallel yield curve shifts including tests for yield curve twists and inversions.**

5. Advanced valuation settings

a. Are any interest rate term structure models available (e.g. BK, HW, Regime Shift, or Libor Market Model)? How are the models calibrated?

b. For stochastic modeling, how many paths is the model capable of producing? Please include any detail on path reduction techniques your model may offer.

c. Can you use different volatilities for rate structures? How are volatility assumptions supplied (directly or implied from swaptions/caps/etc.)? Does the model require/allow term-structures and/or volatility smiles (i.e. volatility surface)?

d. Does the model derive option-adjusted spreads? How are benchmark prices supplied?

6.Sensitivity Analysis Functionality to Test Assumptions:

What analytics in the model can be used to determine assumption stress points (e.g. prepayment, growth, decay, key rate duration, sensitivity of deposit assumptions)?

7. Budgeting (Variance Analysis) – Describe Ability to Run and Compare Budget Data With ALM Analysis:

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8. Liquidity (Sources & Uses – Describe Ability to Run Cash-flow Based vs. Repricing Based) Projections/Simulations:

Is a sources and uses report standard in the reporting package to the client?

9. What Tools/Functionality Options are Available to Allow a User to Back-test the Model? Does the Model allow for Recursive Analysis?

Recursive analysis refers to back-testing using actual assumptions. For example, if a client wanted to test the reliability of a model, they could take an income shock from a prior period and substitute "actual" assumptions, (interest rates, prepayment speeds, decay rates, etc.

B. REPORTING CAPABILITIES

1. Standard Reports:

Please describe items included in standard reporting.

a. Do standard reports include an Executive Summary?

b. Do standard reports contain permanent and instantaneous rate shocks for short and long term interest rate risk measures?

c. Do standard reports describe what other interest rate scenarios are reported?

d. Do standard reports provide a comparison of exposure estimates to supplied/specified risk limits?

e. Do standard reports provide a summary of assumptions? Report of customized settngs vs. default settings? Report for how current assumptions differ from previous assumptions?

f. List all other standard reports:

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2. Report Customization:

Please describe any of the below that apply. Please note cost structure if customized reports are an add-on to client charges.

a. User defined custom report writer feature

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b. Graphics capability

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c. Export capacity of results to spreadsheet or database products

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d. Other custom reports / features available

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C. INTEREST RATE DATA SOURCES AND HORIZONS

1. Flexibility in the use of Interest Rate Data Sources:

Please describe capacity, method, and speed, as applicable.

a. Driver rates

    i. Maximum number of key driver rates/yield curves (including forward curves):

    ii. Capacity of system to derive forward curves:

    iii. System capacity to build yield curves: (i.e. construct a libor/swap curve)

b. Rate update and forecast sources and applications

    i. Periodic updating of key driver rates/yield curves:

    ii. Capacity to directly download rate scenarios (non-parallel yield curves):

iii. Ability to tie to outside economic forecasts:

(blank response box)

iv. Can the model create customized yield curves based on externally derived pricing information?

(blank response box)

c. Other features

(blank response box)

D. Model Process Specifics

1. Real Estate Loan and Mortgage Back Security Product Analysis:

    a. Fixed Rate Residential Real Estate Loans & Mortgage Backed Securities

        i. Are prepayment speeds for Fixed Rate Residential Real Estate Loans & Mortgage Backed Securities input and utilized in the model?

        ii. Describe the methodology for determining prepayment speeds by product, customer, market conditions, etc.? How often are prepayment speeds updated?

        iii. Does the model accept multiple prepayment speed vectors for specific loans/securities?

        iv. Do the model's prepayment speed assumptions consider the inability to refinance regardless of a change in interest rates (e.g. for borrowers that have negative equity or other credit issues that prohibit refinance)?

        v. Are there any model constraints that would impact the cash flow generation of residential mortgage products?

b. **ARMs**

   i. **What options are available for supplying rate reset indicies? (index, forward curve, etc.)**

   ii. **Describe how indices are input into the model and linked to ARM products within the model?**

   iii. **Describe how the cash flows generated for ARMs are adjusted for embedded caps/floors.**

c. **Option Arms**

   i. **Describe how the cash flows of Option ARM products are modeled.**

d. **Structured Securities (for instance, CMOs)**

   i. **Are structured securities cash flows created in the model or imported from external sources?**

ii. **When generated internally, how are the structured security cash flows adjusted for the cash flow waterfall structure, credit loss hierarchy, and event triggers of the entire deal? In addition, how are prepayments adjusted?**

2. Other Structured Assets and Liabilities

How are the cash flows of structured assets and liabilities with call and put options or other interest rate swap features generated by your model?

3. Mortgage Servicing

a. **Are Mortgage Servicing Assets cash flows generated in the model or input from external sources?**

b. **If internal, are there any model constraints for the prepayment speeds of large volumes of product types?**

c. For internally generated cash flows, does model use synthetic pools vs. loan level cash flow generation?

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4. Off-Balance Sheet Items/ Derivatives

Describe method of addressing, specify type of product. Describe any model aspects that would affect these products. What are the default assumptions?

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5. Non-Maturity Deposits

a. NMD assumptions

i. Do you offer deposit studies? Can a client input information from an external deposit study? Are deposit assumptions based on individual accounts or average balance? For instance, decay/maturity by maturity buckets, repricing rates, weighted average life, aggregation of all products into a small number of accounts each with different repricing and maturity characteristics, account specific (by product) price change decay characteristics, product average balance with implied reprice/decay characteristics.

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b. Describe how NMD cash flows are generated for both earnings and valuation approaches?

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c. **In regards to above decay/maturity characteristics, are these cash flows truncated after a pre-determined period?**

d. **Describe model default assumptions. How much flexibility do clients have to adjust default assumptions?**

e. **Does the cash flow calculation include non-interest expense related to maintaining these deposit accounts?**

6. Other:

E. DATA CAPTURE / AGGREGATION / WAREHOUSING

1. Method/Overview for Data Capture:

Please provide a general description of the model's capability for data download and input and of methods used. The purpose of this question is to understand how easily the model pulls data directly from client source systems vs. relying on an interface program or database dump. If you provide data capture/aggregate/warehousing for client, please describe this process.

2. Indicate Which Data Extracts/Sources can be Imported Directly (vs. Manually Input) Into the Model:

a. **General ledger**

b. **Loan and Deposit Account Trial Balance**

c. **Call Report data**

d. **Maturity Date (Account specific or weighted average summaries)**

e. **Interest Rate Resets (Account specific or weighted average summaries)**

f. **Investments (indicate source(s) used)**

   i. **general ledger**

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   ii. **subsidiary ledger**

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   iii. **third party bond accounting/ pricing/ analysis report**

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g. **Other extracts/sources**

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3. **Describe the download process for one balance sheet date from the bank's systems:**

(e.g. for general ledger, maturity and repricing information, investments.)

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4. **Identify the Data Used in the Model that is not Usually Downloaded Directly from the Client's Systems (e.g. rate forecasts, prepayments) and the Processes Available to Input that Data (e.g. excel interface, manual input).**

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5. **Describe How Exceptions or Errors in Data Inputs are Identified by the model:**

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6. Chart of Accounts:

    a. Please describe the degree of flexibility in mapping/use of the chart of accounts:

    b. Please describe how the model consolidates subsidiary entities into the chart of accounts:

7. Confidential Customer Information

8. Data Aggregation /Data Stratification:

    a. Can the model run on transaction level detail or does it need to be summarized externally before input?

9. Data Warehousing:

Please describe historical range and level of detail. Also, describe the level of statistical analysis that can be performed. For example, many institutions do not seem to have the internal data system capabilities to historically measure and analyze deposit balance history (on a fixed set of accounts over time).

F. OTHER SERVICES, FEATURES, OR PROGRAMS NOT PREVIOUSLY COVERED

Please address any other significant services offered by you to your clients, any significant new features of the model and any other matter you deem significant which was not previously covered. For instance, funds transfer pricing, RAROC, etc.