



South African Reserve Bank

Advanced internal ratings-based approaches

Self-assessment instructions

December 2010

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Abbreviations

AIRB Approach	Advanced internal ratings-based approach
IRB Approach	Internal ratings-based approach
FIRB Approach	Foundation ratings-based approach
PD	Probability of default
LGD	Loss given default
EAD	Exposure at default
QRRE	Qualifying revolving retail exposures
SME	Small- and medium-sized entity
RWA	Risk-weighted assets
RRS	Risk rating system
CRCU	Credit risk control unit
IA	Internal audit
CG	Corporate governance
Regulations	Regulations relating to Banks

1. Introduction

1.1. Definition

This document represents the next step in the IRB framework.

Banks are required to complete and submit the following self-assessment to the Bank Supervision Department (BSD) on an annual basis:

- (i) RRS summary (Schedule 1)
- (ii) RRS Scorecard (Schedules 2)
- (iii) Vendor model inventory (Schedule 3).

The self-assessment instructions describe the self-assessment process and elaborate on the contents of the self-assessment templates, such as the RRS summary and the vendor model inventory, as well as other areas not explicitly provided for.

A comprehensive self-assessment process is necessary to assist BSD in monitoring ongoing compliance with the IRB minimum requirements. If completed with accuracy and appropriateness, the self-assessment process will provide an assessment and analysis that are structured and consistent across banks that adopted the IRB approach.

It is expected that the bank already has a clearly defined and robust self-assessment process that is supported by a variety of documentation. The bank must be able to provide evidence of the self-assessment work performed by delivering a self-assessment package and other supporting documents to the BSD (see Section 2 – self-assessment package of this document for detail).

This self-assessment package summarises the self-assessment work performed by the bank and provides a “road map” to all self-assessment documents developed and used by the bank for IRB purposes. All documents that the bank refers to in its self-assessment package should be made available to BSD on request.

1.2. Scope

The self-assessment process will assist BSD to determine if the bank has the following:

- (i) A clear understanding of the IRB minimum requirements
- (ii) Appropriate measures/criteria of success for each IRB minimum requirement
- (iii) Adequate remedial actions for each gap identified
- (iv) A regular and well-defined process for assessment of compliance with the IRB minimum requirements
- (v) A clearly defined and documented role and scope of work performed by risk and/or business management (as applicable) and internal audit in respect of the IRB framework.

1.3. Self-assessment

The completed self-assessment package shall be signed off by the chief executive officer and will include his/her view of the bank's adherence to the IRB minimum requirements. Risk and/or business management (as applicable) and internal audit will provide the necessary assurance that the bank is in compliance with the IRB minimum requirements.

2. Self-assessment package

The bank has to submit its self-assessment package annually. Refer to Figure 1 for a graphical presentation of the self-assessment package.

Figure 1 Self-assessment package

Self-Assessment Documents	Templates	Worksheets
1. Chief Executive Officer sign-off	N/A	N/A
2. Chief Internal Auditor's letter	N/A	N/A
3. Description of Self-Assessment Process	N/A	N/A
4. Materiality, temporary exemptions and permanent exemptions	N/A	N/A
5. RRS Summary	RRS Summary Schedule 1	Front page RRS Summary
6. Risk Rating System Scorecard	Self Assessment Schedule 2	Front Page Overall Compliance RRS Design RRS Operations CG, CRCU and IA Use of RRS Risk Qualification Validation
7. Vendor Model Inventory	Vendor Model Inventory Schedule 3	Front Page Vendor Wholesale Models Vendor Retail Models

The supporting documents requested as part of the self-assessment package should demonstrate the scope, depth and quality of the self-assessment work performed by the bank. This work should demonstrate that all material and relevant issues have been identified and that the bank has undertaken appropriate steps to address them in a timely fashion.

In order to provide more structure to the self-assessment templates, the following schedules were used. The schedules identify distinct sections of the RRS summary, RRS scorecard and vendor model inventory. All schedules in the self-assessment documents are listed below in Exhibit 1.

Exhibit 1 List of schedules

Schedule number	Template/schedule title
RRS summary template	
Schedule 1	RRS summary
RRS scorecard template	
Schedule 2	Self-assessment
Model inventory template	
Schedule 3 – Section 1	Vendor wholesale models
Schedule 3 – Section 2	Vendor retail models

A description of all work performed to date by risk and/or business management (as applicable) is to be provided in respect of the bank’s adherence to the IRB minimum requirements. Where such work was performed, the results of the assessment must also be included in the form of assessment ratings within the self-assessment package.

2.1. Chief Executive Officer's Letter

The bank must submit, with the self-assessment package, a cover letter duly signed-off by the chief executive officer. The letter must include the status of the bank's level of adherence to the IRB minimum requirements.

2.2. Chief Internal Auditor's Letter

The self-assessment package also has to be accompanied by a cover letter from the chief internal auditor, which would provide an assessment in the form of negative assurance, based on the following:

- (i) A description of the work performed to date by internal audit in respect of the bank's adherence to the IRB minimum requirements, including the internal audit's review of the BA regulatory returns. Where internal audit work is performed, the internal auditor's opinion must also be included.
- (ii) The effectiveness of the internal controls.
- (iii) Whether the controls are designed appropriately to ensure adherence to all applicable IRB minimum requirements.

2.3. Description of self-assessment process

The bank has to provide a description of its internal self-assessment process. There is no prescribed form of such a description. This report will include the following:

- (i) An outline of the bank's self-assessment approach
- (ii) A listing of all key steps in the self-assessment process
- (iii) An explanation of how the bank arrived at its overall assessment of IRB compliance
- (iv) Information relating to those internal controls and/or tracking systems used respectively for monitoring design and development, implementation and validation, use testing, internal assessment and approval
- (v) A description of the governance process around the bank's self-assessment

- (vi) Details of the process followed to identify deficiencies and gaps in the bank's self-assessment processes, policies, procedures and controls, including criteria, methods and other means used
- (vii) A clear description of guidelines around the sign-off process

2.4. Description of materiality including temporary exemptions and permanent exemptions

The IRB approval process recognises the importance of materiality and provides various mechanisms to accommodate the phased roll out of IRB. To support this approach, the bank should provide sufficient detail on the assumptions underpinning the self-assessment process, including materiality assumptions. As part of this document, the bank should show its assessment of materiality for all Basel II asset classes listed in Exhibit 2.

In addition, all portfolios adopting the IRB approach, including temporary exemptions and permanent exemptions,¹ should be listed together with a description of the tracking process used to monitor exemptions throughout the roll out of IRB as part of the self-assessment process. In order to minimise duplication with the roll-out plan, this section should focus primarily on the self-assessment itself and the management process and procedures supporting the self-assessment, as opposed to a description of exemptions.

2.5. The RRS summary

The RRS template is presented in Schedule 1. The purpose of Schedule 1 is to give an overview and index of all RRSs used by the bank and all temporary and permanent exemptions.

In addition, Schedule 1 requests the bank to indicate the amount and percentage of gross credit assets and the IRB credit risk-weighted assets covered by each RRS.

¹ Permanent exemptions apply to those portfolios that are immaterial and not expected to be IRB compliant.

2.6. IRB RRS Scorecard

RRS scorecards were designed as a tool to assist the self-assessment process. The structure of the scorecards is based on the provisions of the Regulations. It also attempts to integrate other aspects, including work effort around the gap analysis reviews, the dynamic nature of IRB roll out and the results of internal audit reviews.

The self-assessment package will be used for monitoring of the adherence to the IRB requirements.

The bank will be required to use two approaches within the self-assessment process. The first approach is based on assessment at the level of the RRS, whereas the second approach is based on assessment at the level of the Basel II asset class. See Exhibit 2 for an illustration of the approaches.

Exhibit 2 Mapping self-assessment approaches to the Basel II asset classes

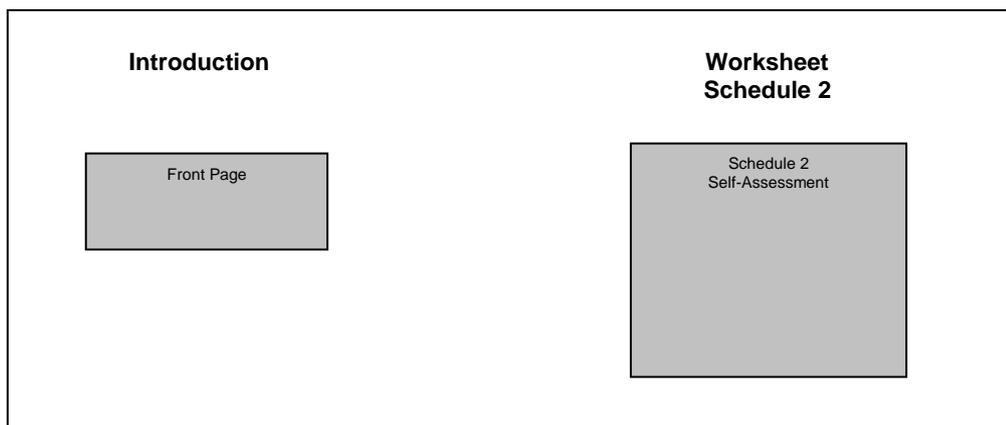
Type of self-assessment approach	Basel II asset class
1. One self-assessment scorecard per <i>RRS</i> (templates are provided)	Corporate Corporate SME Sovereign Bank Retail – Mortgages Retail – QRRE Retail – SME Retail – Other
2. Self-assessment per <i>asset class</i> (templates are not provided)	Purchased receivables Specialised lending IRB equity IRB securitisation

Exhibit 2, above, illustrates that the bank is required to populate one scorecard per RRS for corporate, corporate SME, sovereign, bank, retail mortgages, QRRE, retail SMEs and other retail asset classes.

Internal rating-system designs vary among banks; therefore, some banks will have one RRS per asset class, while others will have several RRSs per asset class. In situations where one RRS covers several asset classes, banks are expected to complete a separate scorecard for each Basel II asset class

For example, if the bank has one RRS for retail exposures, the bank should populate three scorecards, respectively, for retail mortgages QRRE and other retail exposures. Refer to Section 4 for a more detailed description of the RRS scorecard and Figure 2 for the structure of the RRS scorecard.

Figure 2 RRS scorecard structure



It is recognised that IRB is implemented on a consolidated basis. However, in instances where material and relevant differences arise in the application and operation of an RRS across multiple legal jurisdictions, the bank should identify these within the self-assessment, and explain how these differences were combined into the consolidated RRS self-assessment of IRB compliance.

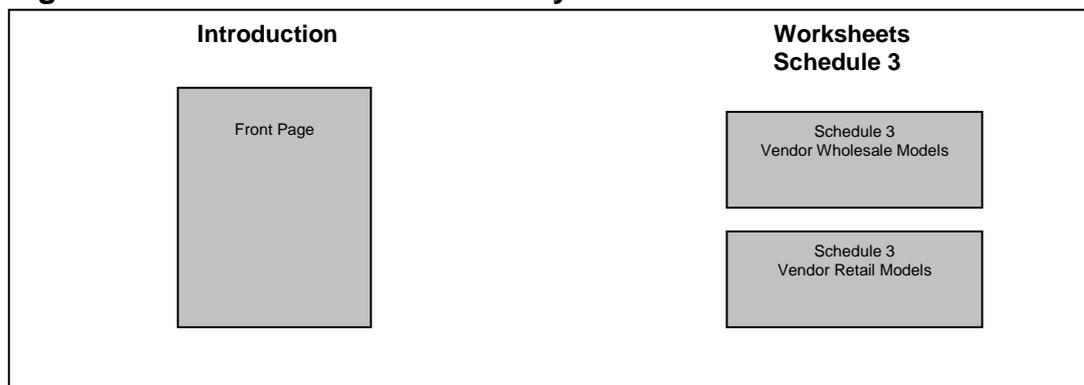
There are no separate scorecards explicitly designed for specialised lending². Therefore a self-assessment should be conducted against the relevant paragraphs of the Regulations to ensure that they meet the requirements of the Regulations; this self-assessment should be made available to BSD as well.

2.7. Vendor model inventory

The vendor model inventory workbook is presented in Schedule 3. The workbook contains two sections: Section 1 – Vendor Wholesale Model Inventory and Section 2 – Vendor Retail Model Inventory.

Schedule 3 captures key information relating to those external vendor models used by the bank³ for retail and wholesale retail portfolios. Further detail on Vendor Model Inventory is available in Section 5. Figure 3 shows the structure of the Vendor Model Template.

Figure 3 Vendor model inventory



² If the wholesale RRS covers several asset classes, including specialised lending (SL), and the bank populates one RRS Scorecard for several asset classes, SL should be assessed using the templates.

³ This information should not be considered as a substitute for complete and comprehensive model documentation that the bank is required to maintain.

3. Schedule 1: RRS summary

Schedule 1 (the RRS Summary) provides an overview of all RRSs used by the bank, including exemptions and extensions. This is an index and a summary table that gives a snapshot of distribution of credit assets by RRS. On the front page, the bank will complete summary information, such as the bank's name and the date of the latest self-assessment.

The template provides space for three RRSs. If the institution uses more than three RRSs, it should copy and paste additional rows into the table and provide the information, as applicable. The template provides additional rows and includes extensions and exemptions. Refer to Section 2.4 for the definitions.

At the bottom of the table, the institution will provide information on total amounts of gross credit assets and total IRB credit risk-weighted assets covered by all RRSs in columns 10, 11, 12 and 13. If the bank adds additional rows, it should ensure that the total includes all assets listed under the various RRSs, including extensions and exemptions.

The RRS summary table has 13 columns. A description outlining the required fields is given in Exhibit 3 below.

Exhibit 3 RRS summary

Required Information	Definition
Reference #	This is used for reference purposes. Every row has a distinct reference number.
Risk rating system	All the RRS used are to be listed here. Provide the name and abbreviations used internally to describe the RRS.
Type of Risk Rating System	Provide a description of the rating mechanics (model-based, constrained expert judgement or hybrid).
Date of introduction	Provide the years/months in use.
# of grades/buckets	Provide the number of grades/buckets used by the RRS for each rating dimension within the rating system.

# of borrowers/facilities	Indicate the number of borrowers/facilities covered by the RRS as of the same date the assessment of the size of the portfolio was performed.
Country	Provide the countries in which the RRS are used.
Business unit/division	Define the relevant business unit/division that uses this RRS.
IRB asset class	Identify the Basel II asset class that is covered by this RRS.
Gross credit assets	Provide the size of portfolio that the RRS covers in terms of R x billion and % of consolidated gross credit assets.
IRB credit RWA	Provide IRB credit RWA in terms of R x billion and % of consolidated IRB credit RWA.
Waivers / Extensions	Provide the entities to which IRB approval relates/extends.
Exemptions	Refer to provisions of Position Paper 193.

4. Schedule 2: IRB RRS scorecard

4.1. General overview

The purpose of the RRS scorecard is to create a framework for self-assessment and supervisory review purposes. The scorecard framework captures all the applicable IRB minimum requirements. All answers and assessments provided in the RRS scorecard are specific to the RRS identified by the bank.

Different parts of the RRS scorecard are shaded in different colours to assist in the assessment process. The bank must complete the shaded areas of the scorecard. Risk and/or business management (as applicable) should complete all areas shaded in blue. By contrast, internal audit must complete the areas shaded in grey.

It is expected that risk and/or business management (as applicable) is to be primarily responsible for populating the scorecard. As part of self-assessment, risk and/or business management will identify gaps and map them to projects initiated by the bank, as well as provide an assessment of compliance with the IRB minimum requirements as at the appropriate assessment date.

Risk and/or business management should have clear measures of success for every assessment, whether the bank meets the requirement or has an outstanding gap to close. In addition, risk and/or business management should assess the status of projects, where these are identified as necessary for gap closure.

Internal audit has to complete columns 12 and 13 of the self-assessment table and assess the bank's adherence to the IRB minimum requirements, as set out in the Regulations.

4.2. Front page

On the front page, the bank will complete summary information relating to the risk rating system as follows: The bank name, the business unit that uses the RRS, the name of the

RRS, the name of the portfolio⁴, the Basel II asset class that is covered by the RRS and the date of the latest self-assessment.

4.3. Schedule 2: Self-assessment

Schedule 2 (Self-assessment) consists of seven sections:

- 1) Overall compliance
- 2) RRS design
- 3) RRS operation
- 4) Corporate governance, CRCU and internal audit
- 5) Use of RRS
- 6) Risk quantification
- 7) Validation.

Refer to 4.3.3 for details.

4.3.1. Overview

In line with the Regulations, the minimum requirements for IRB in terms of key approval areas, such as RRS design and operations, brief descriptions for each approval area of each paragraph have been listed for reference purposes. The bank is requested to assess itself against these paragraphs

4.3.2. Ratings and audit status

There are three rating types used in the supporting worksheets: ratings 1, 2 and 3. These ratings are to be completed by the risk and/or business management. Internal audit indicates audit status in column 12. A summary of the rating types is outlined below:

⁴ Portfolio definition is based on the RRS coverage of asset classes. If one RRS covers an entire Basel II asset class, the portfolio and asset class should be identical for self-assessment purposes. If one RRS covers several asset classes, the portfolio should be one asset class covered by the RRS scorecard.

4.3.2.1. Rating 1 – Gap definitions

Rating 1 (column 5) is based on definitions used for gap-analysis review purposes. This rating is to be completed by risk and/or business management (as applicable). The bank indicates the rating by using a drop-down menu of one of the following:

- (i) Met (full compliance) – Green
- (ii) Minor (insignificant implementation risk) – Yellow
- (iii) Major (significant implementation risk)⁵ – Red.

4.3.2.2. Rating 2 – Project completion status

Rating 2 (column 10) indicates the degree of completion for projects/activities that have been undertaken to close any compliance gaps related to the IRB minimum requirements. This rating must to be completed by risk and/or business management (as applicable).

Risk and/or business management must be prepared to provide supporting documentation upon request to support its assessment, as part of the supervisory review process. Supporting documentation could include such things as project status dashboards, as well as other internally produced project management reports. The bank must indicate the rating by using a drop-down menu of one of the following:

- (i) Completed – Green
- (ii) On schedule – Green
- (iii) Somewhat behind schedule – Yellow
- (iv) Significantly behind schedule – Red
- (v) No work has been completed – Blue.

⁵ For example, there are other projects that are highly dependent on the completion of this requirement; a significant work effort is required and/or significant technological solutions are required.

4.3.2.3. Rating 3 – Compliance status

Rating 3 (column 11) indicates the bank’s assessment of its status and progress towards full compliance with the IRB minimum requirements. This rating must be completed by risk and/or business management (as applicable). It could also be used as a reference point by internal audit in its assessment of adherence to the IRB minimum requirements. The bank must indicate the rating by using a drop-down menu of one of the following:

- i) Full compliance – Green
- ii) Substantial compliance (validation/use) – Yellow
- iii) Partial compliance (implementation) – Yellow
- iv) Non-compliance – Red
- v) No internal assessment/approval work has been completed – Blue.

Exhibit 4 (below) provides a rough guideline of mapping of rating-type 3 (compliance) versus the stages of IRB implementation.

Exhibit 4 Mapping of compliance versus IRB implementation stages

	Gap analysis / Gap Identified	Design	Development	Testing	Initial validation	Implementation	Ongoing validation	Use
Full compliance – Green								x
Substantial compliance – (validation/use) – Yellow							x	x
Partial compliance – (implementation) – Yellow						x	x	
Non-compliance – Red	x	x	x	x	x	x		
No internal assessment/approval work has been performed - Blue								

4.3.2.4. Audit status

Audit status (column 12) should be completed by internal audit, based on work performed as at the date of the self-assessment. The bank indicates audit status by using a drop-down menu of one of the following:

- i) Audit work completed
- ii) Audit work in progress
- iii) Audit work planned
- iv) No audit work planned.

The bank will indicate the audit date, performed and/or planned, in column 13. If the bank has done or plans to do several audits in the same area, the dates of all audit work must be captured.

4.3.3. Structure of self-assessment

As indicated earlier, Schedule 3 (self-assessment) consists of seven sections, one for each selected subsection of the key IRB minimum requirements:

- 1) Overall compliance
- 2) RRS design
- 3) RRS operations
- 4) Corporate governance, CRCU and internal audit
- 5) Use of RRS
- 6) Risk quantification
- 7) Validation.

4.3.3.1. Self-assessment scorecard

Table 1.2 (self-assessment scorecard) has 14 columns. It contains sections that must be completed by risk and/or business management (as applicable), and sections that have to be completed by internal audit. A detailed summary of what is required for each column is listed in Exhibit 5.

Exhibit 5 Self-assessment scorecard

Column #	Required information	Definition
Column 1	Reference #	This column is pre-populated. It is used for reference purposes.
Column 2	Paragraph description	This column is pre-populated. It contains brief descriptions of the respective paragraphs contained in the Regulations.
Column 3	Source/Paragraph #	This column is pre-populated. It is the related paragraph in the Regulations for the standards listed in column 2, above.
Column 4	Asset class	This column is pre-populated. It indicates all related IRB asset classes subject to the paragraph.
Column 5	Gap assessment (Rating 1)	Provide a gap assessment using Rating 1.
Column 6	Target compliance date	Provide a target compliance date, where a gap currently exists.
Column 7	Measures of success	Define the measures of success used to assess compliance with the AIRB minimum requirements, including those paragraphs where no gaps were identified.

Column #	Required information	Definition
Column 8	Activities/Initiatives/Projects	List the names of activities/initiatives/projects used to close the gaps identified.
Column 9	Project owner (Division/Individual)	Provide information on the project owner (i.e., the name/position/division or business unit responsible for this project, as applicable).
Column 10	Current project status (Rating 2)	Indicate the current project status using Rating 2. This column has to be completed by risk and/or business management (as applicable).
Column 11	Compliance (Rating 3)	Indicate if compliance has been achieved using Rating 3. This column has to be completed by risk and/or business management (as applicable).
Column 12	Internal audit (Audit status)	Indicate the status of audit work performed This column has to be completed by internal audit.
Column 13	Internal audit (Audit date)	Indicate when audit work was performed or will be performed If there are several audits has been done or planned, please indicate all applicable dates.
Column 14	Comments	Provide any additional supporting comments, if required.

5. Schedule 3: Vendor model inventory

This template integrates information on the Vendor Model Inventory for wholesale and retail asset classes. See Figure 3 for an overview of the Vendor Model Inventory structure.

Schedule 3 (Vendor Model Inventory) applies only to those vendor models that are

material and relevant to the internal risk rating systems of the bank.

The Vendor Model Inventory contains two worksheets:

- 1) Vendor Wholesale Models
- 2) Vendor Retail Models.

The wholesale worksheet applies to, for example, corporate, corporate SME, bank, sovereign, specialised lending, and purchased receivables asset classes. The retail worksheet applies to retail mortgages, retail SME, QRRE, and other retail asset classes.

The information requested in the vendor wholesale models and vendor retail models worksheets is identical. However, the respective responses must be customised for wholesale and retail asset classes.

Each worksheet contains a sufficient number of tables for analysis of three such models. If the bank requires more tables because it uses more than two vendor models, it must copy and paste additional tables to provide a complete listing overall. A description outlining the required fields is given in Exhibit 6, 7, 8 and 9 below.

Exhibit 6**Vendor models: General overview**

Required information	Definition
Type of underlying portfolio	Identify the types of underlying portfolios covered by the model, as defined for internal management purposes.
Size of portfolio R #	Indicate the size of the portfolio in R x billion covered by the model. Indicate the size of the portfolio in terms of the number of facilities/borrowers covered by the model.
Implementation date	Provide an implementation date for when the vendor model was introduced.

Exhibit 7 Key model characteristics

Required information	Definition
Brief description	Provide a brief description of key model characteristics.
Model time horizon	Provide the model's assumed time horizon.
Use of model	Identify the process that the model supports e.g. origination/credit application, account management recovery/scorecard, etc.
Definition of model output	Provide a description of the model output (e.g. default rate).
Definition of default	Describe the definition of default assumed by the model.
Developers of model	Describe how the model was developed, e.g. in-house development, bespoke/custom (by external vendor), pooled (closed user group), bureau/credit reporting agency development, expert/judgmental, etc.
Key assumptions	Provide a list of the key assumptions used in the model development.
Data sources (external/internal)	Describe internal and external sources of data used in the model development.
Validation last day	Provide the date of the last formal validation review.
Validation – number of defaults for each time period	Provide the total number of defaults used in the development sample and the validation sample.
Validation – number of years covered	Provide the number of years covered in the development sample and the validation sample.
Supporting documents	Provide supporting documents.

Exhibit 8 Vendors

Required information	Definition
List of vendors	Provide a list of names of vendors used, including model names.
Extent of vendor liability, obligations and responsibilities	Describe the extent of vendor liability, obligations and responsibilities.

Exhibit 9 Future development

Required information	Definition
Latest developments and initiatives	Provide a brief description of the current plans and initiatives as they relate to model development. Also, describe the availability of new data sources that will support your plans for future model development/change.
Stress tests	Describe vendor contribution to the application of stress testing to the model.