CECL Prep: Data Requirements and Loss Methodologies.

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Presented by

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**Business Process Management**
- Workflow
- Workflow with Templates

**Credit Risk Management**
- Credit Analysis (ETRR)
- Credit Report Access
- Risk Rating
- Probability of Default Model
- Loan Pricing
- Loan Administration
- Document Library

**Business Analytics**
- Management Reporting
- Management Reporting with Templates

**Portfolio Risk Management**
- Risk Rating
- TDR
- ALLL
- ALLL Forecasting
- Stress Testing
- Document Library
- Financial Performance & ALLL Benchmarks
- Loan Pricing

**Integration**

**Training**

**Advisory Services**

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Agenda.

• What is CECL?
• Recent News – April 1 Draft
• Loss Methodologies Under CECL
• CECL Data Requirements
• Preparation timeline
What is CECL?

• FASB released proposal December 2012

• CECL = Current Expected Credit Loss

• What’s changed from Incurred Loss Model?
  » Forward-looking requirements
  » “Probable loss” threshold removed
  » Need for accessible, loan-level data
  » Longer loss horizon
  » Makes ALLL more institution-wide calculation

• Purpose: Quicker recognition of losses. Changes in ALLL reserve balances will reflect changes in credit quality and flow through earnings (“Fed Perspectives,” 2015)
What is your institution doing to prepare now for CECL?

*Multiple-select poll

- Nothing; waiting for release of guidance
- Planning for changes by examining methodology
- Exploring automated ALLL solutions
- Archiving loan-level data
• Reviewed at first Transition Resource Group Meeting

• Under CECL, institutions can use general historical loss if deemed necessary

• Cannot rely solely on past events to estimate expected credit losses

• Must consider the need to adjust historical experience based on conditions during evaluation, and how current and future conditions differ

• Adjustments may be qualitative in nature and should reflect changes related to relevant data

Adapted from April 1st Draft, paragraph 326-20-30-8
Forecasts Under CECL.

- Some entities may be able to develop reasonable and supportable forecasts over the contractual term of the financial assets.

- For periods beyond reasonable and supportable forecasts, revert to historical loss information:
  » Can be internal or external
  » Must reflect an economic cycle
• In determining estimate of expected credit losses, evaluate information related to:
  » Member’s creditworthiness
  » Issuer’s underwriting practices
  » Current and forecasted direction of the economic environment

• No particular loss methodology is specified, can vary depending on:
  » Size of the entity
  » Range of the entity’s activities
  » Nature of the entity’s financial assets
  » Other factors
Factors to Consider.

• When adjusting historical credit loss experience for current conditions and reasonable and supportable forecasts, consider these factors in addition to existing qualitative factors:

  » Borrower’s financial condition, credit rating, credit score, asset quality or business prospects
  » Borrower’s ability to make scheduled interest or principal payments
  » Remaining payment terms of the financial assets
  » Remaining time to maturity and the timing and extent of prepayments
Loss Methodologies Under CECL.
Measurement of ECLs.

Unadjusted historical lifetime loss experience + Adjustments for past events and current conditions + Adjustments for reasonable and supportable forecasts = Estimate of expected credit losses

• Choice of methods include:
  • Loss-rate methods
  • PD/LGD
  • Migration analysis
  • Vintage analysis

• Any reasonable approach may be used – guidance is not prescriptive

Source: “Loss Data, Data Analysis, and the Current Expected Credit Loss (CECL) Model”, Fed Perspectives Webinar, 10/30/15
What methodologies are you considering for CECL scenario building? (multi-select)

- Adapt current methodology, or different methods by loan type: 10%
- Vintage Analysis: 20%
- Migration analysis: 20%
- PD/LGD: 20%
- Not sure: 60%
Determining the Best Method.

• Detailed examination of loan portfolio performance with special consideration given to:
  » Loss experience during times of economic uncertainty
  » Changes in:
    • Portfolio concentrations
    • Risk profile
    • Management

• Engage credit risk management personnel to more accurately estimate expected credit losses

• Document research and periodically review the method for accuracy
Historical Loss Rate-Based Estimate of Expected Losses.

Source: “Credit Risk Management’s Role in Measuring ECLs” by Graham Dyer of Grant Thornton at 2015 Risk Management Summit
Forecasting Expected Credit Losses.

Lifetime Loss Curve

Reasonable & Supportable Forecast

Regression to the Mean

Losses identified and confirmed via charge-off
Losses incurred but not charged-off (Period: LDP)
Losses expected but not incurred as of measurement date

Source: “Credit Risk Management’s Role in Measuring ECLs” by Graham Dyer of Grant Thornton at 2015 Risk Management Summit
Historical Loss.

- Available options
  - Peer group data
  - Call report data
  - Internal aggregate historical loss data

- Incurred loss model utilizes an annualized average net charge-off rate incurred during a prescribed time period as a proxy for determining probable losses
Historical Loss – Items to Consider.

• Availability of data
  » Loan-level information is preferable for accurate loss rates
  » Peer loss data must be gathered and calculated

• Loss horizon
  » One size fits all?
  » How long?

• Portfolio segmentation
  » Use the segmentation that best represents the risk inherent in the underlying loans
  » Sub-segmentation not necessary but allows for deeper level of granularity
Migration Analysis.

- Evaluates the movement of a sub-segment (risk level, risk grade, etc.) of loans to loss over a selected timeframe, without regard to new loans

- Exposes greater clarity on loan quality within each segment

- Appropriate for certain asset sizes?
  » Adequate number of loans in each segment is necessary
Migration Analysis – Items to Consider.

• Detailed sub-segmentation is required to accurately measure migration
  » Segment by product, loan type, etc.
  » Sub-segment by risk level or risk rating, for example

• Sound risk rating process and program needed

• When segments change due to re-organization or merger, those changes must be pushed back in time

• Loss horizons
  » Segments perform differently over time and may need different migration periods

• Considerable data requirements
Migration Analysis – Benefits.

- Statistically viable method to accurately derive a loss rate
- Highlights changes in portfolio composition and quality
- Reserve may be more accurate because it factors in the risk profile and underwriting standards in place during the loss horizon
- Attractive to regulators – involves a statistical, granular analysis of the portfolio
### Migration Analysis vs. Historical Loss Rate Method ALLL Provisions

#### Migration Analysis for ALLL Provisions using Current Balances

<table>
<thead>
<tr>
<th>Category</th>
<th>C&amp;I Pass</th>
<th>0.08</th>
<th>13.04</th>
</tr>
</thead>
<tbody>
<tr>
<td>C&amp;I Special Mention</td>
<td>57</td>
<td>0.14</td>
<td>7.98</td>
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<td>C&amp;I Substandard</td>
<td>30</td>
<td>0.36</td>
<td>10.80</td>
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<tr>
<td><strong>Total ALLL Provision</strong></td>
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<td><strong>31.82</strong></td>
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</table>

#### Using Re-Structured Ratings

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<td>C&amp;I Special Mention</td>
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<td>0.14</td>
<td>7.98</td>
</tr>
<tr>
<td>C&amp;I Substandard</td>
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<td>0.36</td>
<td>3.60</td>
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<td><strong>Total ALLL Provision</strong></td>
<td></td>
<td></td>
<td><strong>26.22</strong></td>
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</table>

#### Historical Loss Rate for ALLL Provisions using Current Balances

<table>
<thead>
<tr>
<th>Category</th>
<th>250</th>
<th>0.093</th>
<th>23.29</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total ALLL Provision</strong></td>
<td>23.29</td>
<td></td>
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</table>

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<td>23.29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PD / LGD Method.

- Methodology gaining popularity after mentions in Basel II, Basel III and FASB CECL guidance
- Currently used by larger institutions, primarily

- **PD (probability of default):** the average percentage of members that default over a certain time period
- **LGD (loss given default):** the percentage of exposure to a credit union if the member defaults
- **EAD (exposure at default):** an estimate of the outstanding amount, or exposure to the credit union, in the event a member defaults
Probability of Default – Example.

- Definition of “default” must be determined – 90 days past due?
- Also, time period over which PD is measured
Loss Given Default – Example.

![Image of Loss Given Default Calculations](image-url)

**Loss Given Default Calculations**

**Please use this screen to configure your Loss Given Default Factors**

- **Segment:** Commercial & Industrial (C & I)

**Loss Given Default Factors**

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Loss Given Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.0000%</td>
</tr>
<tr>
<td>2</td>
<td>6.0000%</td>
</tr>
<tr>
<td>3</td>
<td>8.5000%</td>
</tr>
<tr>
<td>4</td>
<td>11.2500%</td>
</tr>
<tr>
<td>5</td>
<td>12.7500%</td>
</tr>
<tr>
<td>6</td>
<td>20.0000%</td>
</tr>
<tr>
<td>7</td>
<td>35.0000%</td>
</tr>
<tr>
<td>8</td>
<td>50.0000%</td>
</tr>
<tr>
<td>9</td>
<td>75.0000%</td>
</tr>
</tbody>
</table>

**Unknown**

0.0000%

*Upload Your Own Supporting Documents*

*Save*
### PD / LGD – Example.

<table>
<thead>
<tr>
<th>Loan Number</th>
<th>Customer Name</th>
<th>Loan Balance</th>
<th>Reserve Amount</th>
<th>Loan Type Code</th>
<th>Probability of Default</th>
<th>Loss Given Default</th>
<th>Qualitative Adjustments</th>
<th>Loss Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>180110550</td>
<td>SULLIVAN FARM ASSOCIATION INC</td>
<td>$79,295</td>
<td>$1,067</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>12.7500%</td>
<td>1.2500%</td>
<td>1.3456%</td>
</tr>
<tr>
<td>180110558</td>
<td>COMMODORE COMMONS CONDOMINIUM</td>
<td>$128,514</td>
<td>$2,069</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>1.8000%</td>
<td>20.0000%</td>
<td>1.2500%</td>
<td>1.6100%</td>
</tr>
<tr>
<td>180110599</td>
<td>TWIN OAKS CONDO ASSOC INC</td>
<td>$65,868</td>
<td>$886</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>12.7500%</td>
<td>1.2500%</td>
<td>1.3456%</td>
</tr>
<tr>
<td>180110619</td>
<td>AREA CONGREGATION S TOGETHER INC</td>
<td>$267,883</td>
<td>$3,605</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>12.7500%</td>
<td>1.2500%</td>
<td>1.3456%</td>
</tr>
<tr>
<td>180110722</td>
<td>FIRST ORONOKE INC</td>
<td>$952,374</td>
<td>$12,815</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>12.7500%</td>
<td>1.2500%</td>
<td>1.3456%</td>
</tr>
<tr>
<td>180110751</td>
<td>JOE'S REFUSE REMOVAL LLC</td>
<td>$40,087</td>
<td>$539</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>12.7500%</td>
<td>1.2500%</td>
<td>1.3456%</td>
</tr>
<tr>
<td>18531345</td>
<td>ALL ABOUT SERVICE S &amp; P CARTING INC</td>
<td>$0</td>
<td>$0</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>4.0000%</td>
<td>1.2500%</td>
<td>1.2800%</td>
</tr>
<tr>
<td>180210504</td>
<td>PIONEER GAS &amp; APPLIANCE CO</td>
<td>$236,674</td>
<td>$3,185</td>
<td>Commercial &amp; Industrial (C &amp; I)</td>
<td>0.7500%</td>
<td>12.7500%</td>
<td>1.2500%</td>
<td>1.3456%</td>
</tr>
</tbody>
</table>
PD / LGD – Challenges & Benefits.

• Challenges
  » Calculating PD and LGDs using internal resources – more complex
  » Gathering and interpreting loss data
  » Validating the model and proving forecasting accuracy

• Benefits
  » Enables estimation of the reserve on a loan-by-loan basis
  » Useful in situations where there is limited historical data by leveraging peer or industry data until internal data is developed
  » Drive improvements in underwriting standards, data collection
  » Leverage for Basel III or CCAR/DFAST (larger institutions)
Vintage Analysis.

- Track homogeneous loans by origination period
  - Year, quarter, etc.
- Measure losses accumulated on each vintage
- Apply the expected cumulative loss to the remaining vintages outstanding
- At measurement date, adjust expected loss rate for current conditions and reasonable & supportable forecasts

<table>
<thead>
<tr>
<th>Origination Year</th>
<th>Loss Rates by Vintage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
</tr>
<tr>
<td>2010</td>
<td>0.20%</td>
</tr>
<tr>
<td>2011</td>
<td>0.25%</td>
</tr>
<tr>
<td>2012</td>
<td>0.30%</td>
</tr>
<tr>
<td>2013</td>
<td>0.25%</td>
</tr>
<tr>
<td>2014</td>
<td>0.35%</td>
</tr>
<tr>
<td>2015</td>
<td></td>
</tr>
</tbody>
</table>

Can use economic indicators to forecast

Adapted from: “Credit Risk Management’s Role in Measuring ECLs” by Graham Dyer of Grant Thornton at 2015 Risk Management Summit
Vintage Analysis.

- **Challenges**
  - Does not capture the impact of Q Factors inherently
  - May require more sophisticated techniques to identify correlations
  - Difficult for new or growing product offerings
    - Must capture life of loan in history for analysis to be meaningful

- **Benefits**
  - Establishes strong historical basis for expectation of lifetime losses
  - Able to address portfolios that have inconsistent seasoning (growing or shrinking portfolios)

Source: “Credit Risk Management’s Role in Measuring ECLs” by Graham Dyer of Grant Thornton at 2015 Risk Management Summit
How to Choose the Right Method.

• Carefully analyze your portfolio’s performance and loss history
  » For each line of business
  » Engage credit and risk management partners

• Review your credit union’s resources and data collection processes

• Account for changes in credit policies, portfolio volume and management

• Develop quantifiable research and documentation to support decision

• Consider different loss methods or periods across segments if portfolio analysis warrants the change
CECL Data Requirements.
## Data Requirements

### Now

**Historical Loss Rate**
- Charge-offs
- Recoveries
- Aggregate pool data
- Beginning balance of pool
- Ending balance of pool

### Future

**Expected Loss Rate**
- Charge-offs
- Recoveries
- Aggregate pool data
- Beginning balance of pool
- Ending balance of pool

- Risk rating by individual loan
- Loan duration
- Individual loan balance
- Individual loan charge-offs and recoveries (partial and full)
- Individual loan segmentation

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New
Ways to Capture Loan-Level Data.

3 METHODS FOR DATA COLLECTION

**Limited method**
Use your institution’s core to capture detailed data. Most cores go back to an approximate max of 13 months.

**Static method**
Begin storing core archives in a data warehouse. If you don’t have the internal IT resources, some core providers offer storage, or you can seek out a third party vendor.

**Dynamic method**
Use an automated solution to capture and store data for your institution automatically. It will also make the data accessible for reporting purposes.
Loan-Level Detail: Benefits.

1. More defensible, documented calculations
2. Simplify balance reconciliation
3. Reduce potential future subjectivity
4. Stress testing & scenario building
   - PD / LGD
   - Migration analysis
   - Backtesting

Perform more robust portfolio analysis
Important Data Characteristics.

- Transparency
- Granularity
- Accessibility
- Holistic
- Frequency
- Security
Data Adequacy Checklist.

- The data is labeled appropriately (headers consistently applied and are understandable)
- Data does not contain duplicates (fields, rows or entities)
- There are no inconsistencies in values (e.g., truncated by 000’s vs. not truncated)
- Data is stored in the right format (e.g., numbers stored as numbers, zip codes stored as text)
- The file extracted from the core system is stored as the right file type
- File creation is automated; not requiring manual file creation
- Data is reliable and standardized throughout the institution, across all departments
- Data fields are standardized and governed to ensure consistency going forward
- Data storage does not have an archiving time limit (e.g., 13 months)
- Data is accessible (usable format like exportable Excel files, integrates with other solutions)
- Archiving function captures data points required to perform range of robust methodologies
CECL Preparation Steps.
Create Roadmap.

Key Action Items

- Build committee
- Set project plan
- Review final CECL language
- Inform board & management of committee/ALLL changes
- Examine data/current processes
Scenarios and Modeling.

Key Action Items

- CECL scenario modeling – begin running parallel models
- Test methodologies
- Develop data validation process
- Identify any capital issues
- Update board/management
Final Model and Validation

- Identify final CECL model, approval from audit, board, regulators
- Incorporate model and reserve data into current portfolio management – pricing, reporting, stress testing
- Capital adjustment
- Update board/management
Contact Information & Questions.

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2016 Risk Management Summit  
• Sept. 14-16 in Austin, TX  
• ALLL & Stress Testing Conference  
• www.sageworks.com/summit

CECL Prep: Data Guide  
• web.sageworks.com/CECL-Prep-Guide-Data/