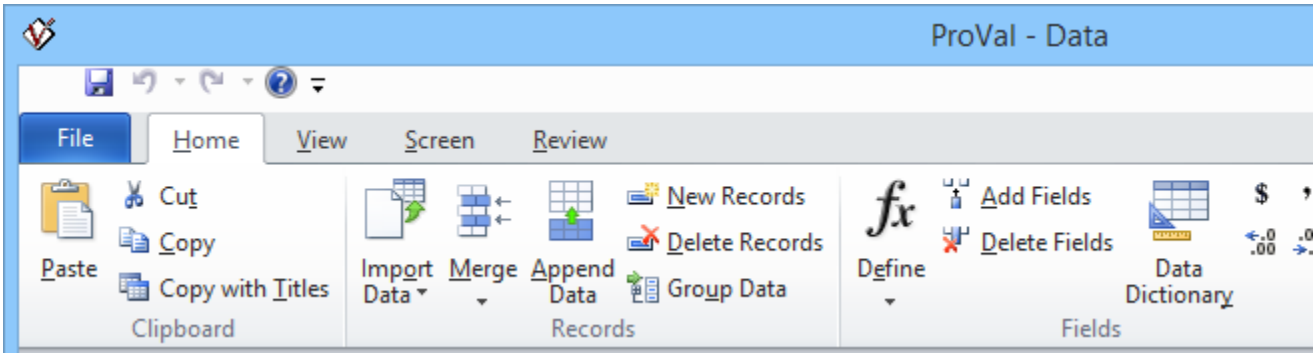
What's New in version 3.09 August 2016

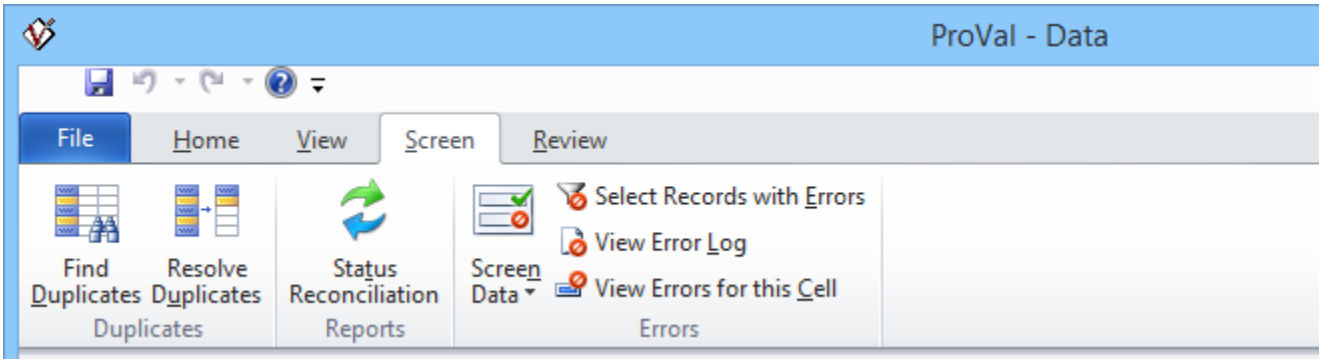
ProVal version 3.09 introduces a Ribbon interface for editing data, a notes feature for documenting your work, a change history for library entries, long term disability valuations with monthly mortality and recovery rates, and many other features listed below.

Interface

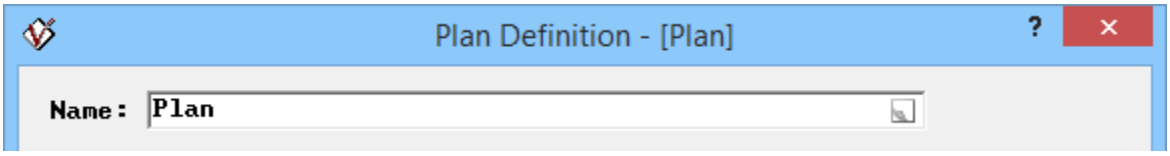
- **Ribbon for editing data**. Spreadsheet Edit's menus have been replaced with a Ribbon, making it easier to discover the data tools.



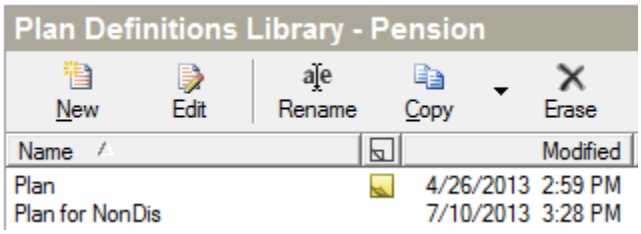
The tools have been organized to suggest an order and flow to data work, especially on the Screen tab, where you might find duplicates, resolve them, reconcile statuses to check for unexpected or illogical events, and then finally run screening tests and deal with the errors.



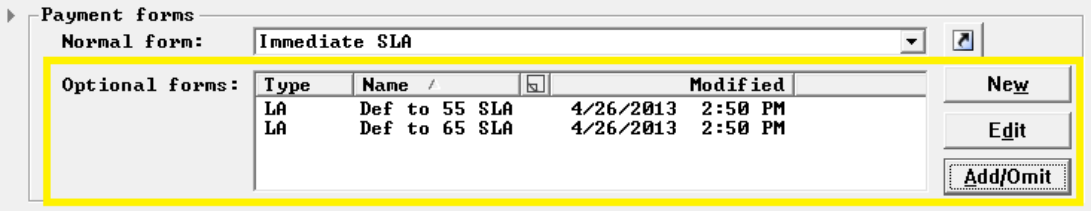
- **Notes.** Do you write long entry names because you're trying to document some essential detail? Now you can enter notes instead. They are separate from the name and there's plenty of space to describe the details. Simply click the button and enter a note.



In the library, you can hover your mouse over the image to read the note without having to edit the entry.

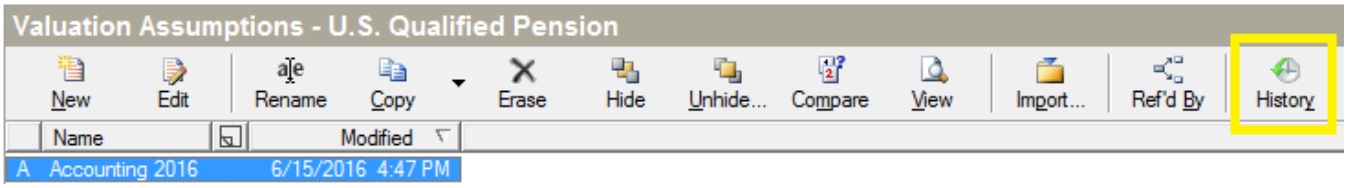


- **Optional forms selection** now uses Add/Omit rather than a list with checkboxes. It makes it clearer which optional forms are included and reduces visual clutter.

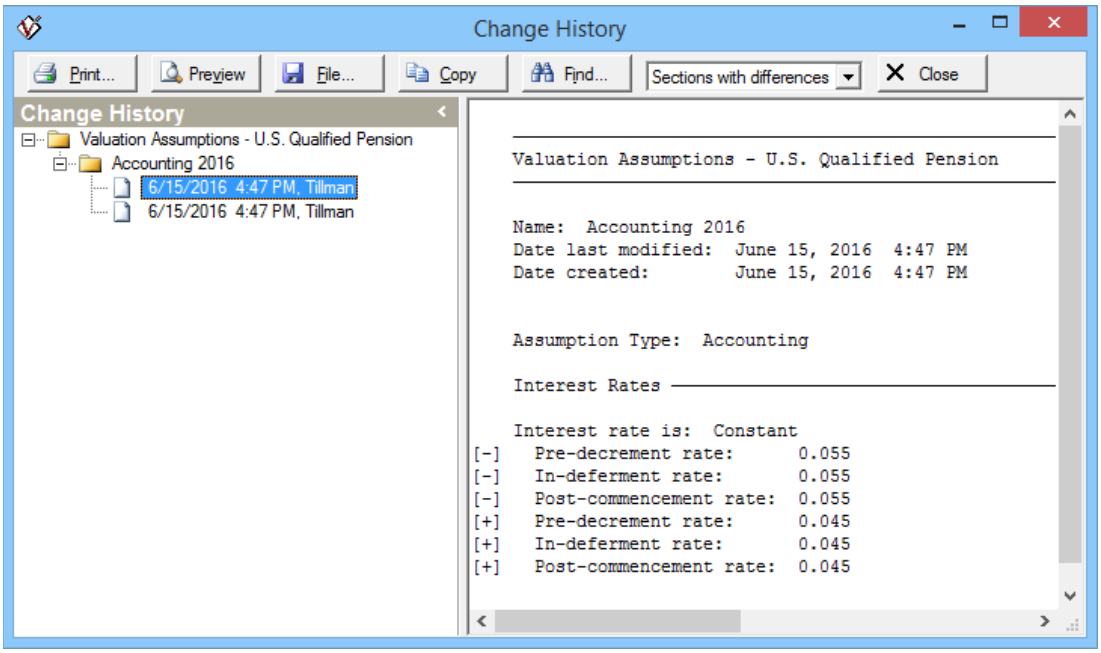


Reviewers

- **Change history for library entries.** Changes are now logged every time you edit an existing entry and click Replace. To see the changes, select one or more entries and click History.



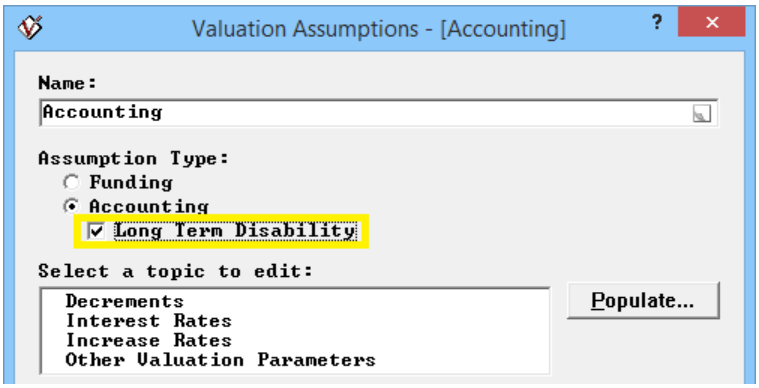
This displays the entire history for the selected entries, from the most recent change to the original change. Selecting a particular change, you can see the details of what changed in a format similar to comparing two library entries, including the option to switch the view between "Sections with differences" and "All sections".



To view the complete change history across all libraries in a client, use File > Change History.

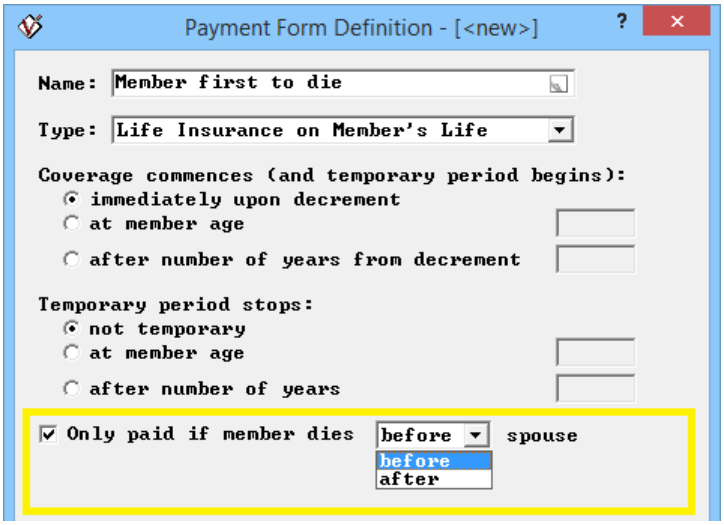
OPEB Plans

- **LTD valuations.** ProVal now supports Long Term Disability (LTD) accounting assumptions to value the benefits of disabled members and their beneficiaries for ASC712 accounting. Disabled member mortality is assumed to be the NAIC 2012 Group Long Term Disability (GLTD) valuation table and you simply supply the data for Diagnosis, Elimination Period, etc. as needed for lookups. ProVal's calculations then reflect the table's monthly mortality and recovery rates, with the option to start and stop benefits on a monthly basis (e.g., using #PMTAGE). All of the normal accounting results are produced, with projected benefit payments available by month.



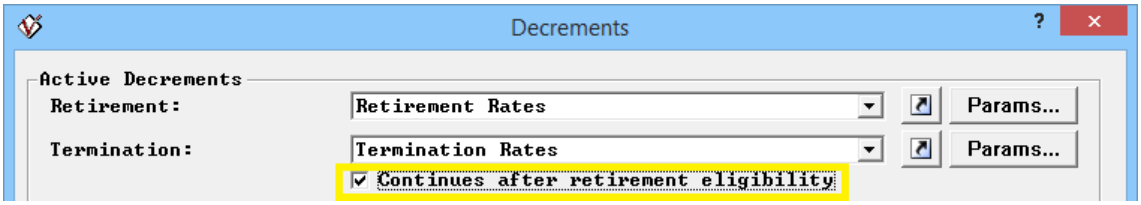
LTD accounting assumptions can only be used in Valuations. For more, see LTD Valuations on page 8.

- **Joint life insurance payment forms.** New Payment Form options now let you pay life insurance to the first to die or last to die, either member or spouse. This is especially useful for EITF 06-04 and 06-10 involving the valuation of split dollar life insurance plans.



All Plans

- **Termination rates after retirement eligibility.** A new Valuation Assumptions > Decrements option lets termination decrements continue past retirement eligibility (rather than be mutually exclusive with retirement decrements).



- **Administration expenses and contribution policies.** A new Asset & Funding Policy > Contribution Policy option lets you include or exclude administrative expenses and PBGC premiums for "Percentage of Payroll", "Multiple of expected employee conts.", and "Defined by Participant in Plan Defn." contribution policies. (This enhancement was actually released in an update to 3.08, but mentioned here in case you missed it.)

Pension Plans

- **Smarter exclusions.** Records are no longer excluded from Valuations and Core Projections for missing data if that data does not apply to them. This reduces the need to set data defaults to avoid excluding records.
- **Contribution rate for hours-based contribution policies.** A new Asset & Funding Policy > Contribution Policy parameter lets you multiply a factor by a "Defined by Participant in Plan Defn." For example, suppose the Participant Data represented hours worked, then the factor could represent the contribution rate per hour. Since this factor can vary by year, you can easily model the effect of different proposed contribution rates without having to rerun the underlying Valuation or Core Projection. (This enhancement was actually released in an update to 3.08, but mentioned here in case you missed it.)
- **Annuity substitution for accounting.** A new Asset & Funding Policy > Accounting Methodology option for ASC715 and IAS19 lets you use Annuity Substitution benefit payments for calculating expense components. These benefit payments will be used to calculate the effective discount rate under the effective discount rate interest method or for interest calculations under the individual spot rate interest method. For plans that pay lump sums, this can have a noticeable effect on the interest on the PBO and PBO normal cost, by giving greater weight to the later years in the yield curve. To use this feature, make sure the underlying Valuations or Core Projections are run under version 3.09 or later so that annuity substitution benefit payments are calculated and stored. For more, see Accounting Annuity Substitution on page 12.
- **Accounting optional form interest rates.** Accounting optional payment forms can now reference the underlying valuation interest rate.
- **Stop ages by record.**
    - For Post-Decrement Death payment forms, the member commencement age can now be drawn from a database field instead of being hardwired (e.g., age 65). This member commencement age can also flow through to the coverage end age.
    - For Certain Only Annuity and Certain & Life Annuity active payment forms, the stop age can now be drawn from a database field.
- **Vested liability override for ASC 960.** This lets you, for example, run a separate valuation or core projection for vested liabilities that allows participants age into retirement subsidies in vested liabilities and then use that run in Valuation Sets, Deterministic Forecasts, and Stochastic Forecasts.

US Qualified Pension Plans

- **Mid-year calibration of quarterly contributions.** A new Asset & Funding Policy > Forecast Analysis parameter lets you switch quarterly payments mid-year from 100% of the prior year minimum to 90% of the current year minimum if less. The idea is to reflect the real-world lag between the valuation date and when valuation results are available. If there's an overpayment, you can either reduce the final payment, the remaining quarterlies, or the next quarterly.

Pension Reserving

- **Interest rate by record.** In Universal Pension mode, the valuation interest rate can now be drawn from a database field. This lets insurance companies calculate reserves for a block of

purchased annuities where the interest rate depends on the plan it originated from, the year the annuity was issued, etc. This feature can only be used in Valuations.

Canadian Registered Pension Plans

- **Excess employee contributions.** ProVal can now automatically calculate and pay out employee contributions in excess of 50% of the liability. Simply check which Benefit Definitions and Employee Contributions to include in the calculation of excess contributions. This eliminates the need to create excess benefits for each decrement. For more, see Canadian Excess Employee Contributions on page 14.
- **Employee contribution crediting rate.** A new option in Valuation Assumptions lets you link the crediting rate on employee contributions to the valuation interest rate underlying each liability. This option is available for both Contribution Definitions and cash balance Benefit Formula Components. This lets you use a single set of valuation assumptions to get ongoing funding and solvency results. For more, see Canadian Interest on Employee Contributions on page 16.

German Pension Plans

- Lump Sum Factors and Optional Forms are now available in German Pension mode. This is especially useful for contribution related DB plans that offer optional lump sums.
- In Lump Sum payment forms that are divided into equal annual installments, a new parameter lets you specify the interest rate on the unpaid balance. This feature is available for both actives and inactives, and while inspired by German Pension plans, can be found in all Pension modes (other than UK Pension).
- A new option in Valuation Assumptions > Other Valuation Parameters lets you set Actuarial Retirement Age equal to a database field, State Pension Normal Retirement Age, State Pension Early Retirement Age, or Benefit Promise Normal Retirement Age (actives only). The Actuarial Retirement Age can be used to:
  - Set the 100% retirement age
  - Commence or stop benefits
  - Switch disabled mortality to retirement mortality. This eliminates the need to blend disabled and retired mortality into a single table, with different versions for each possible retirement age.
- A new option in Valuation Assumptions > Other Valuation Parameters lets you exclude Terminated Vested participants from liabilities when over Normal Retirement Age (and optionally over the State Pension Normal Retirement Age too). A common use is to exclude these participants from Tax and PSVaG liabilities, but it can also be used in accounting to be consistent with those other valuations.
- In Census Specifications, you can now enter both a primary benefit (e.g., annuity) and secondary benefit (e.g., lump sum) for Terminated Vested participants if you are normalizing benefits using #NormtoNRB. Previously, you were restricted to a single benefit.

Austrian Pension Plans

- In Valuation Assumptions in German mode, a new option in Teilwert Parameters allows you to ignore the German statutory minimum funding age of 27, 28, or 30. This allows the Teilwert to be calculated from the actual funding age of each participant, consistent with Austrian valuation methods.

Forecasting

- In Core Projection pension output, the number of actives exiting due to retirement, termination, disability, and death is now available in each projection year.

- In Core Projection output, experience benefit payments can now be split by lump sum, annuity, and life insurance similar to Deterministic Forecast output.
- A new option in Asset & Funding Policy > Forecast Analysis lets you leave the amortization basis set to working lifetime after a curtailment rather than the default treatment of switching to life expectancy.
- Throughout ProVal, the terminology for government yield curves has been changed from the US-centric “Treasury” term to the more international “Government” terminology.
- In Stochastic Forecast trial detail, a unique short name is provided with the description of selected variables. This can be relied upon for lookups in case descriptions change.

Gain/Loss Analysis

- Gain/Loss Analysis can now be run on a Max tax not-at-risk (UC) liability basis.

Experience Studies

- Excluded RecIDs are now formatted with commas and spaces to facilitate copying and pasting (just like in Valuations and Core Projections). This makes it easy to copy RecIDs from the Experience Study processing messages and paste them into a selection expression so you can track down the issue.

Administration Factors

- Lump sum payment forms are now available in Administration Factors. For example, you might calculate an age 65 conversion factor for a cash balance plan by dividing a deferred annuity by a deferred lump sum (i.e., normal form of deferred annuity and optional form of deferred lump sum).

Report Writer

- You can now convert numeric values or codes to text by using #IF in the field spec. For example, #IF “X”=0 #THEN 'At Risk' #ELSE 'Not At Risk' #ENDIF, where X is the data item. (#IF can now also be used to return character strings in Census Specifications>Data Defaults).
- All projected benefit payment bases are now available in the Report Writer.
- Field specs that refer to the following tables can now be shortened by using aliases. Shortening is useful when you are writing an expression involving multiple values and you are bumping up against the 138 character limit.

Table name	Alias
ProVal_Acctg_Funded_Status	AFS
ProVal_DevExpense	DE
ProVal_FundTgt	FT
ProVal_MaxFundTgt	MFT
ProVal_USMaxPPA	MAX
ProVal_USMinPPA	MIN
ProVal_USShrtflChg	SC
ProVal_Statement_of_Assets	SA
ProVal_Headcount_Benefits	HB
ProVal_Reconciliation_of_Market_Value_of_Assets	MVA
ProVal_MaxBase	MB
ProVal_AggNCQual	ANC

Processing Speed

- Clients with lots of databases will see speed ups in many areas. For example, in one client with 54 databases, running a gain/loss analysis that took previously took 68 seconds now takes 35 seconds, scanning database files (e.g., before deleting a field from the Data Dictionary) previously took 7.5 seconds and is now instantaneous, and editing a Capital Market Simulation

entry (which can draw yield curves from a database) previously took 3 seconds and is now instantaneous.

- Valuations and Core Projections are now faster:
  - Across the board. Memory usage and error trapping have been optimized that will speed up all runs.
  - With a lot of subtotals.
  - With a lot of records. Previously, the final phase of aggregating results could take longer than the distributed processing phase of calculating values for each record.

ProVal API

- The ProVal API now lets you revise valuation assumptions, rerun a valuation, and get valuation results. See "ProVal API Users Guide.pdf" in the ProVal installation folder for more details (specifically the functions GetValAssum, SetValAssum, GetValssumDoc, RunVal, GetValResults, and GetValResultsDoc).

Third Party Tools

- Exporting to PFaroe has been vastly streamlined with fewer steps, validated inputs, and no longer a need for a manual. If you have a PFaroe license, simply click "Export to PFaroe" on ProVal's toolbar, supply a Deterministic Forecast and a streamlined set of Stochastic Assumptions and you're good to go.

Changes Log

- Be sure to read the changes log (see "changes log.doc" in the ProVal installation folder) about updates to certain calculations that may change results.

WinTech

Two Greenwich Office Park
Greenwich, CT 06831

+1 203 861 5530
support@winklevoss.com
www.winklevoss.com

LTD Valuations

ProVal 3.09 supports Long Term Disability (LTD) accounting assumptions to value the benefits of disabled members and their beneficiaries for ASC712 accounting. These assumptions can only be referenced in a valuation.

Benefits

An LTD plan pays benefits, such as income, medical, or life insurance, to participants who are disabled for an extended period of time. Only participants who are currently receiving LTD payments (and thus have passed any elimination period) and their beneficiaries are valued. Unlike non-LTD valuations, all calculations are based on monthly intervals and include recovery rates. For example:

$$PV\ annuity = \sum_{m} {}_{m}p_x \cdot v^m \cdot B_{x+m}$$

$$m = 0, \frac{1}{12}, \frac{2}{12}, \frac{3}{12}, \ldots = \textit{one month intervals}$$

$${}_{m}p_x = \left(1 - {}_{\frac{1}{12}}q_x\right)\left(1 - {}_{\frac{1}{12}}q_{x+\frac{1}{12}}\right)\ldots\left(1 - {}_{\frac{1}{12}}q_{x+m-\frac{1}{12}}\right) = \textit{product of monthly survival}$$

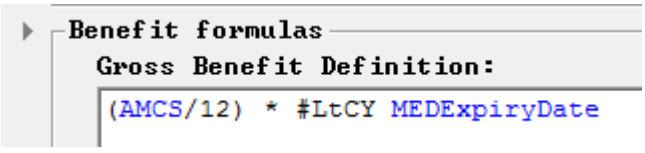
$${}_{\frac{1}{12}}q_x = {}_{\frac{1}{12}}q_x^{mort} + {}_{\frac{1}{12}}q_x^{recovery} = \textit{mortality and recovery rates}$$

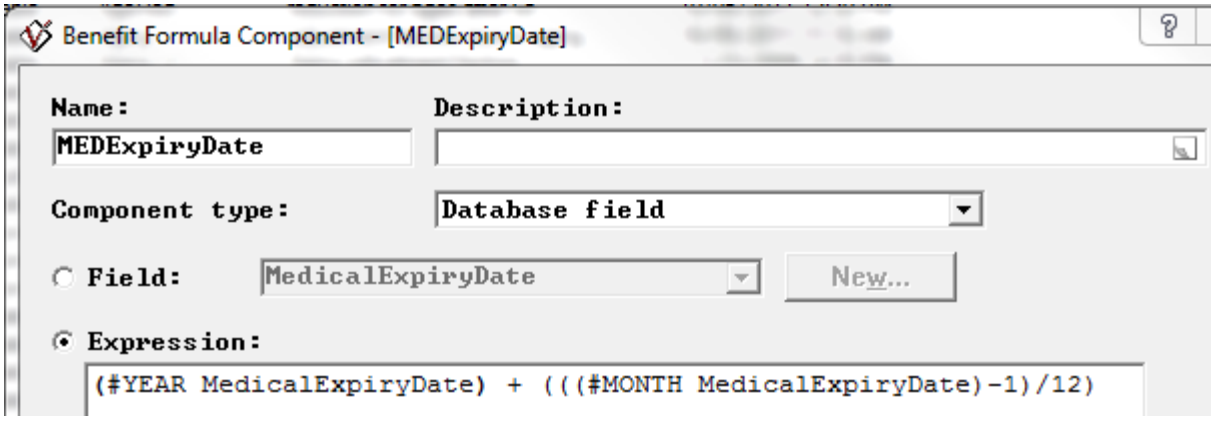
$$PV\ life\ insurance = \sum_{m} {}_{m}p_x \cdot {}_{\frac{1}{12}}q_{x+m}^{mort} \cdot v^m \cdot B_{x+m}$$

${}_{m}p_x \cdot {}_{\frac{1}{12}}q_{x+m}^{mort}$ = *staying disabled (not dying or recovering) and then dying (but not recovering)*

LTD benefit formulas are evaluated monthly. Therefore, LTD benefit definitions should specify monthly gross benefit definition and participant contribution amounts. However, benefit formula components continue to be evaluated annually just like in non-LTD valuations. This includes annual increases due to trend, annual table lookups, etc. For example, a component with a value of $1,000 at the valuation date that applies 2% annual trend will return $1,000 for the 12 months of the valuation year, $1,020 for the following 12 months, etc. To change a benefit mid-year, such as to stop benefits at a certain date, use the benefit formula operators #PMTAGE, #PMTYEAR, #EQCY, #GECY, #GTCY, #LECY, #LTCY, or #NECY. These operators now accept fractional arguments (e.g., #PMTYEAR (2016+1/12) refers to 2/1/2016) in an LTD valuation.

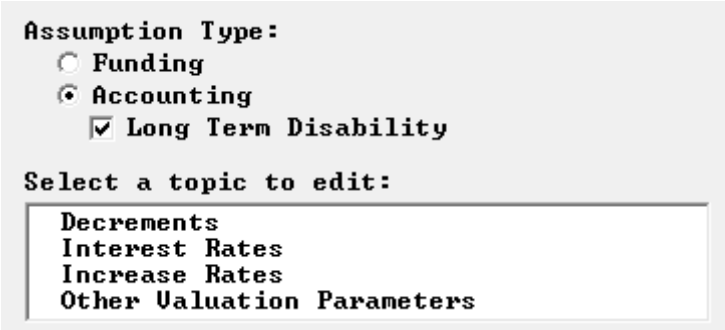
Here is an example where the formula equals the medical claims (annual amount divided 12) multiplied by zero once the medical expiration date has passed. The Medical Expiry Date has been converted into a fractional number.



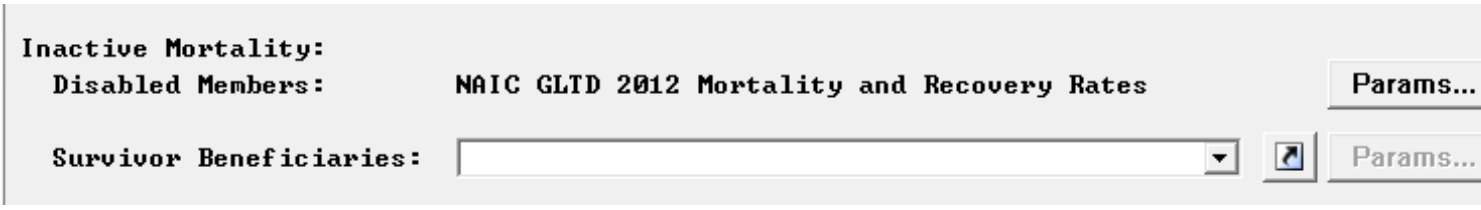


Assumptions

Checking Long Term Disability will condense the assumption topics to only those applicable to LTD valuations.



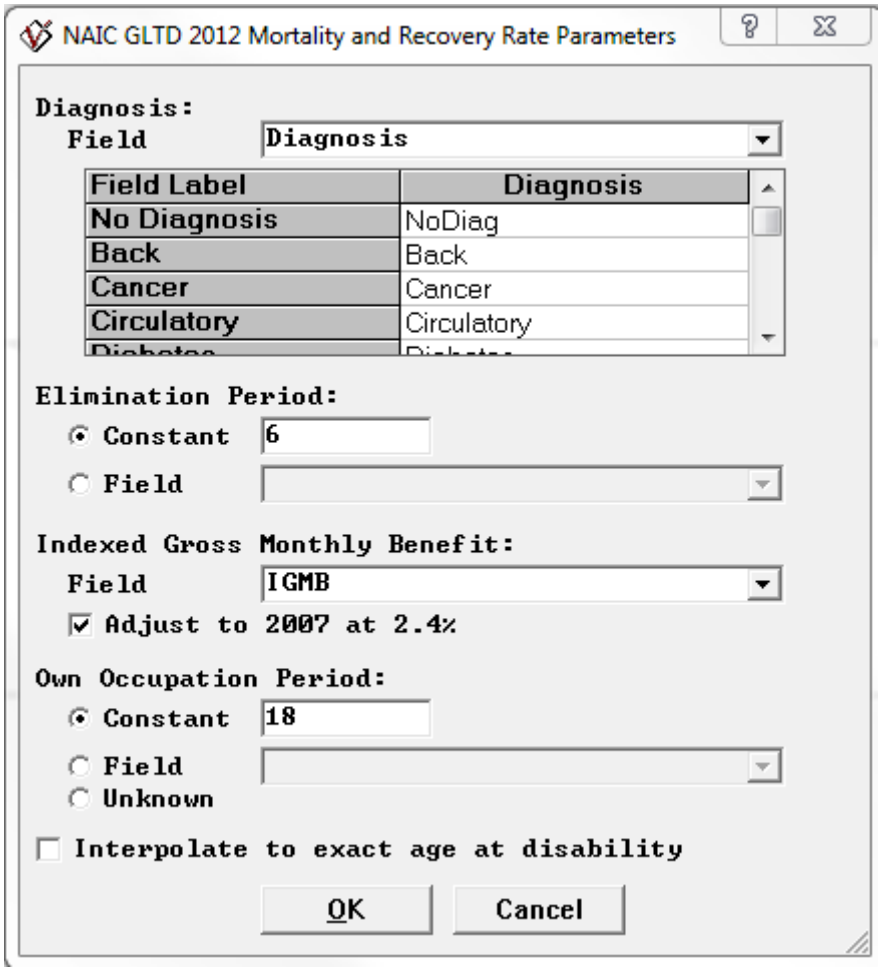
Disabled member mortality is assumed to be the [NAIC 2012 Group Long Term Disability (GLTD)] valuation tables. Beneficiary mortality can use any table from the Mortality Rates library. Since all calculations are monthly, the beneficiary mortality table will be converted from annual to monthly rates using py^(1/12).



Under NAIC 2012 GLTD:

- Death rates are the product of 3 factors (Table 1D, 2D, and 3D) with look-ups based on diagnosis, sex, age at disability, duration of disability, elimination period, months since elimination period and IGMB.
- Recovery rates are the product of 5 factors (Table 1R, 2R-E, 2R-M, 3R, 4R, and 5R) with look-ups based on diagnosis, sex, age at disability, duration of disability, elimination period, months since elimination period, IGMB, definition of disability, and own occupation period.
- Table MN-1 (Mental and Nervous Limit Termination Rates) have been ignored.

The Params.. button lets you parameterize the look-up values not derived from census specification inputs.



If "Interpolate to exact age at disability" is checked, the look-up values from tables 1D and 1R will be interpolated to the decimal age at disability.

Sample Lives and Output

Sample life displays are monthly.

GLTD 2012 Death and Recovery rates

RecID: 20

Date	Member Age	Duration of Disability (months)	Table 1D Age Lookup	Rate 1D	Rate 2D	Rate 3D	Death Rate	Table 1R Age Lookup	Rate 1R	Rate 2RE	Rate 3R	Rate 4R	Rate 5R	Recovery Rate	P
1/01/2015	62y 0m	214	42	0.002326	1.000000	1.019633	0.002372	42	0.000468	1.000000	1.008500	1.102108	1.000000	0.000520	
2/01/2015	62y 1m	215	42	0.002326	1.000000	1.019633	0.002372	42	0.000468	1.000000	1.008500	1.102108	1.000000	0.000520	
3/01/2015	62y 2m	216	42	0.002326	1.000000	1.019633	0.002372	42	0.000468	1.000000	1.008500	1.102108	1.000000	0.000520	
4/01/2015	62y 3m	217	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
5/01/2015	62y 4m	218	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
6/01/2015	62y 5m	219	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
7/01/2015	62y 6m	220	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
8/01/2015	62y 7m	221	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
9/01/2015	62y 8m	222	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
10/01/2015	62y 9m	223	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
11/01/2015	62y 10m	224	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
12/01/2015	62y 11m	225	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
1/01/2016	63y 0m	226	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
2/01/2016	63y 1m	227	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
3/01/2016	63y 2m	228	42	0.002536	1.000000	1.019633	0.002586	42	0.000435	1.000000	1.008500	1.102108	1.000000	0.000483	
4/01/2016	63y 3m	229	42	0.002719	1.000000	1.019633	0.002772	42	0.000403	1.000000	1.008500	1.102108	1.000000	0.000448	

All of the normal accounting results are produced, with projected benefit payments available by month.

Valuations	B.O.Y. EPBO
LTD plan	2,706,728

Basis: BOY EPBO
Variable: Total Projected Benefits

Date	LTD plan
1/01/2015	36,269.04
2/01/2015	35,648.04
3/01/2015	35,564.01
4/01/2015	34,948.04
5/01/2015	34,334.57
6/01/2015	34,253.03
7/01/2015	34,171.62
8/01/2015	34,090.41
9/01/2015	34,009.37
10/01/2015	33,404.32
11/01/2015	33,324.84

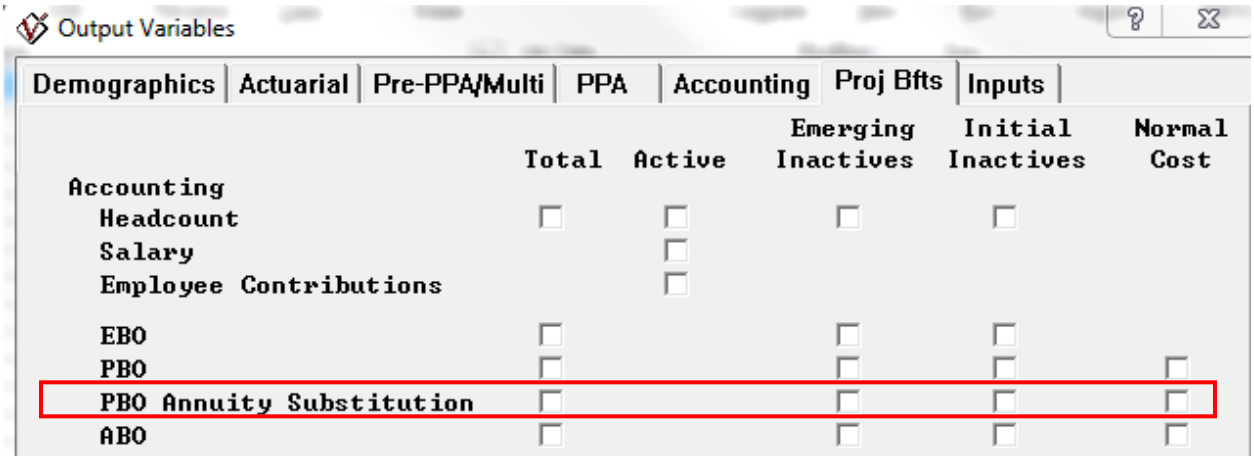
Accounting Annuity Substitution

ASC 715 and IAS 19 expense calculations utilize projected benefit payments. When the interest method for calculating interest on service cost and PBO is the effective discount rate, the projected benefit payments are used to calculate the effective discount rate. When the interest method is the individual spot rate, the projected benefit payments are directly used for interest calculations. The projected benefit payments used reflect the form of payment expected to be paid to the participant. Some plans that pay lump sums, may choose to use the projected benefit payments reflecting "annuity substitution", in other words, the annuity payments underlying the lump sum. ProVal 3.09 calculates and stores PBO and PBO NC annuity substitution liability and normal cost benefit payments in US Qualified, Universal, and Canadian modes.

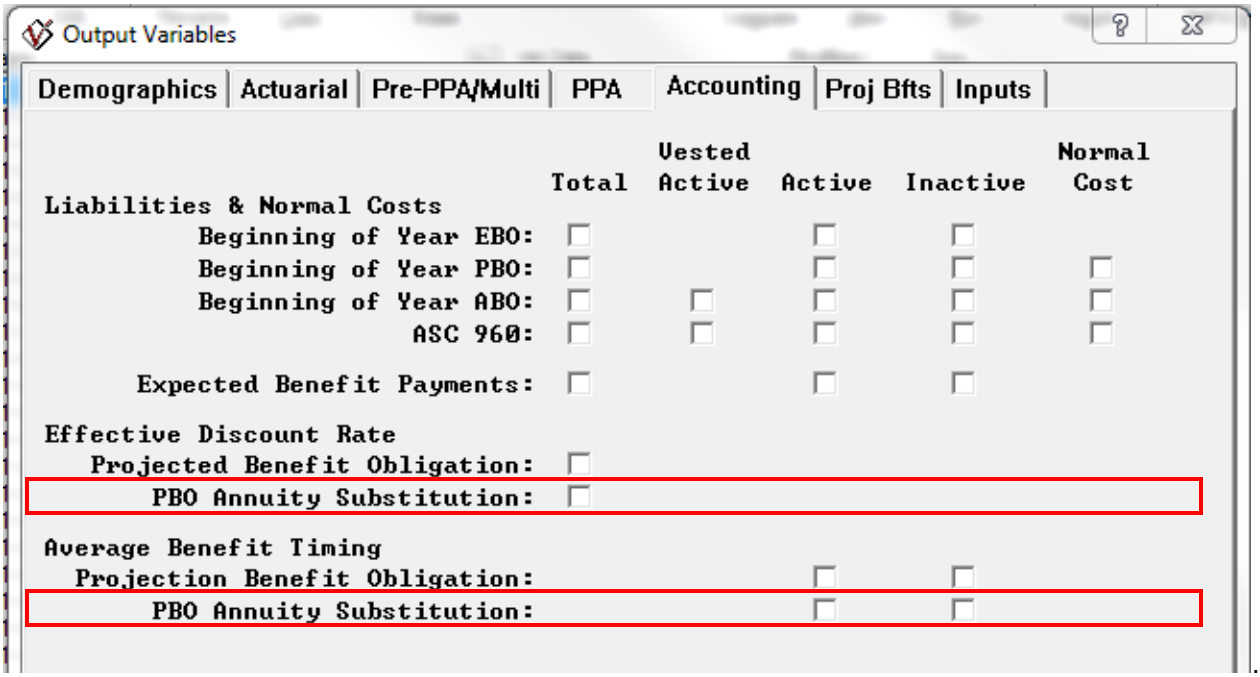
During an accounting run, annuity substitution benefit payments will automatically be calculated for optional forms that convert from an annuity normal form to a lump sum optional form using interest and mortality. In US Qualified and Universal modes, a new option allows the interest rate for conversion to be specified as "use valuation interest rates" (this was previously only available in Canadian mode). For optional payment forms that do not convert from an annuity to a lump sum using valuation interest rates, the normal form projected benefit payments will be converted to a lump sum using optional payment form assumptions and then converted back to an annuity using the liability assumptions. This will ensure that the annuity substitution projected benefit payments discount to the liability.

The following new output items are available in valuation and core projection output:

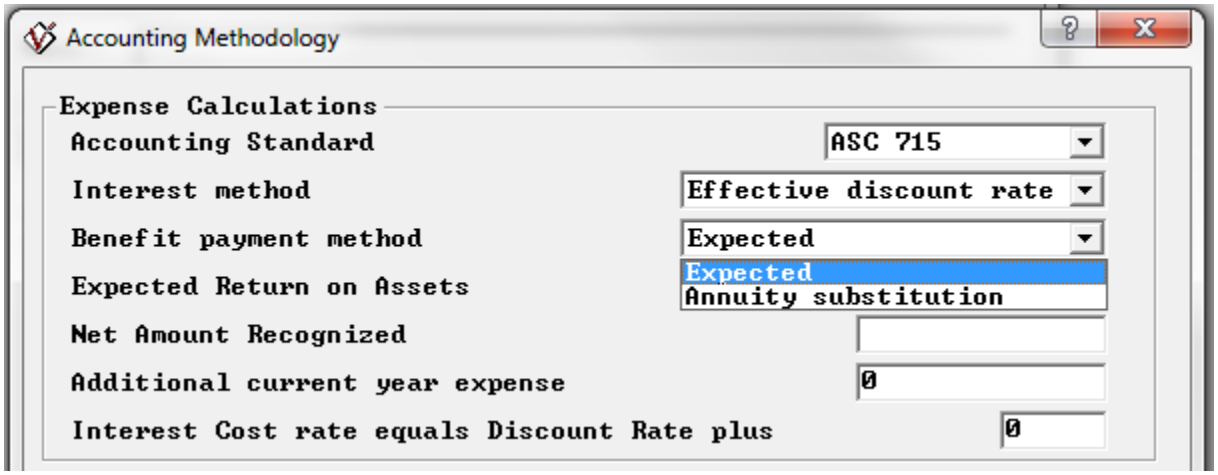
- On the Projected Benefits tab, PBO Annuity Substitution projected benefit payments:



- On the accounting tab, the effective discount rate and average benefit timing calculated using the PBO Annuity Substitution projected benefit payments:



In the Asset & Funding Policy, a new option determines which benefit payments to use for calculating expense components. The choices are “expected” or “annuity substitution”. The selected benefit payments will be used to calculate the effective discount rate under the effective discount rate interest method or for interest calculations under the individual spot rate interest method.



Canadian Excess Employee Contributions

Background

In Canadian mode, the value of employee contributions is generally not permitted to exceed 50% of the value of the total plan benefits. If they do, the excess contributions are returned to the participant. Previously, to measure the liability associated with this benefit in ProVal, users typically created a benefit formula that looked something like this:

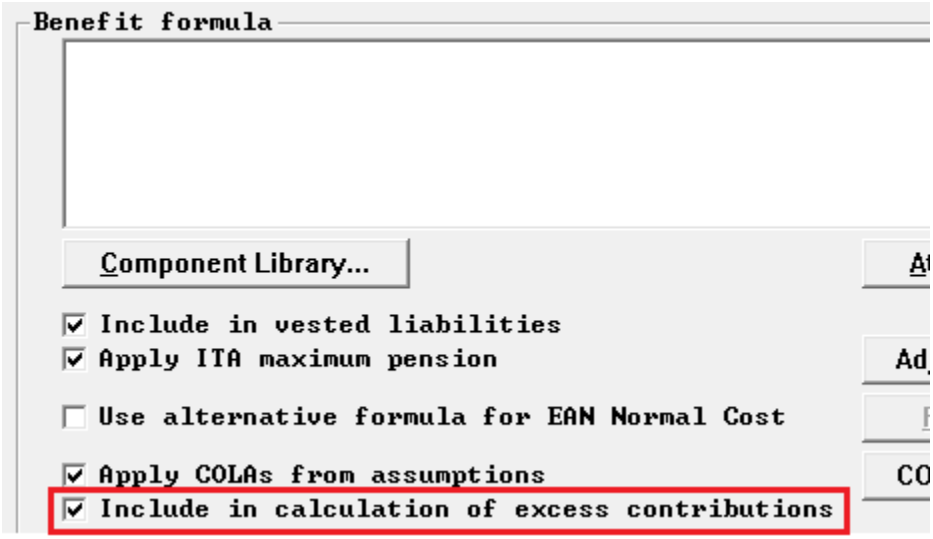
EECWI #ZMINUS [.5 * AccruedBenefit * LumpSumFactor]

where "EECWI" is employee contributions with interest, typically a cash balance component that projected the employee contributions into the future; "AccruedBenefit" is an accrual definition for the benefit defined in the plan; and "LumpSumFactor" is a lump sum factor reflecting the normal payment form of the accrued benefit. This excess contribution calculation was done for each decrement valued (termination, retirement, and for non-solvency liability valuations, death and disability).

New Automated Calculation

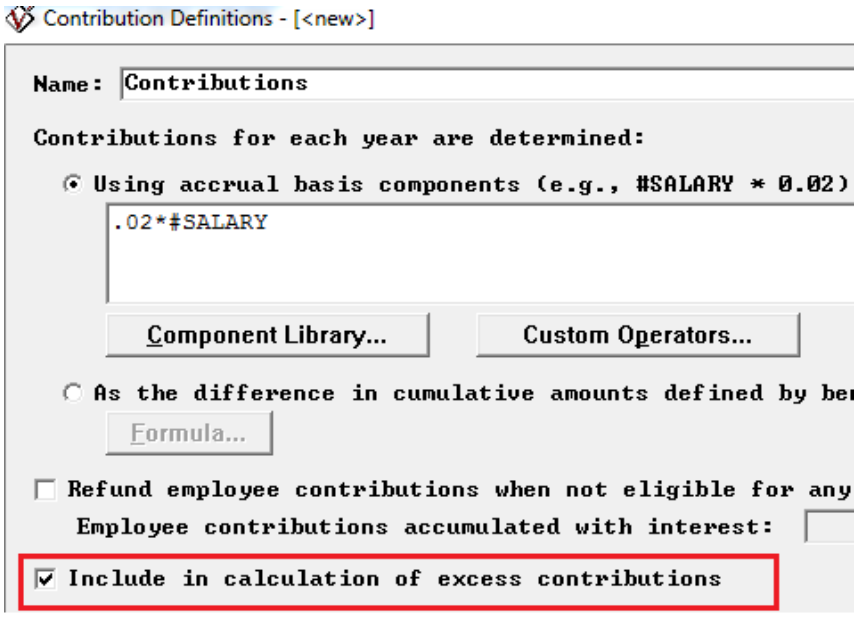
In Canadian mode, ProVal has been enhanced to automatically perform the excess contribution calculation. Now instead of defining the benefits, users simply check a box to identify which Benefit and Contribution Definitions should be compared.

- Benefit Definitions
  - There is a new checkbox to identify which Benefit Definitions should be compared to the accumulated employee contributions.



  - You can select multiple Benefit Definitions for each decrement so that, for example, the value of employee contributions can be compared against the total value of a lifetime pension Benefit Definition plus the bridge Benefit Definition.

- Contribution Definitions
  - There is a new checkbox to identify which Contribution Definitions are used to determine the accumulated contributions with interest that are applicable to the calculation (e.g., excluding voluntary excess employee contributions). The total of all selected Contribution Definitions will be used.

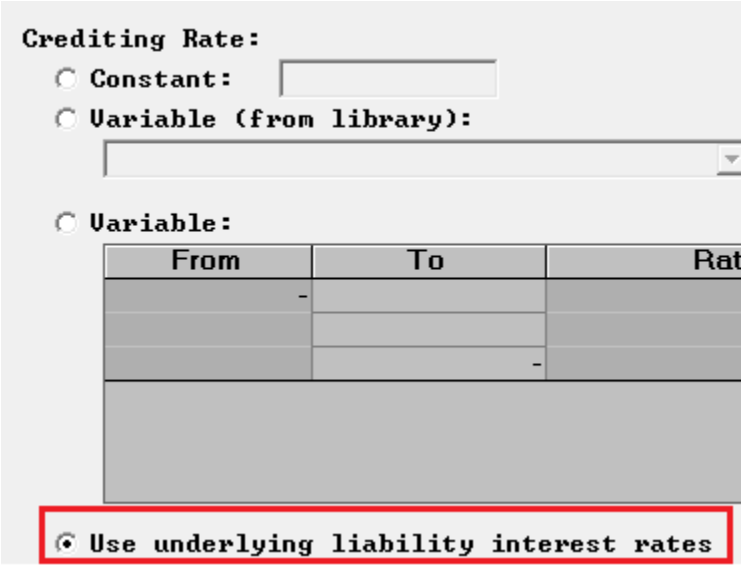


Calculations

- ProVal will assume that the value of employee contributions may not exceed 50% of the value of the benefit.
- Calculation of excess contributions will be done separately for each decrement.
- Excess contributions are assumed to be paid as a lump sum on the date of decrement.
- For purposes of determining the excess amount, the present value of each benefit will be based on the normal payment form, where:
    - The payment form value will be based upon the underlying liability's assumptions. Thus,
        - For ongoing liability, the ongoing interest rate and mortality will be used, where the mortality used for participants is the table specified for inactive vested terminated participants, and the mortality used for contingent annuitants is the table specified for inactive survivor beneficiaries.
        - For solvency annuity purchase liability, the annuity purchase interest and mortality will be used.
        - For solvency transfer value, the transfer value interest and mortality will be used.
    - Optional forms, if any, will be ignored.
    - Any post-decrement probabilities applied to the normal form will be ignored and 100% used instead.
- Excess contribution sample life reports will be available for checking the calculations in detail.
- Output results (including individual results) will be available with a split by benefit. For example, if excess contributions were calculated for the retirement decrement, there will be a Benefit Definition labeled "Ret - <Excess Contributions>".

Canadian Interest on Employee Contributions

In Canadian mode, a new option was added to the Increase & Crediting Rates topic of Valuation Assumptions for Contribution Definitions and Benefit Formula Components that are a cash balance. Now you can credit interest at the same rate used to measure the liability by choosing a crediting rate of “Use underlying liability interest rates.”



Under the new option, the interest crediting rate for:

- Ongoing liability will be the ongoing liability interest rate;
- Solvency transfer value liability will be the transfer value interest rates;
- Solvency annuity purchase liability will be the annuity purchase interest rates; and
- Accounting liabilities will be the accounting liability interest rate.

This enhancement will allow users who tie the interest crediting rate to the underlying liability rate to run funding and solvency in a single valuation run.