What's New in version 3.15   January 2021

Census Data

♦ **Historical fields.** While editing data, you can now view historical fields (i.e., fields from other databases) alongside current year fields by clicking the Historical Data button (found on either the Home or View tab). Historical fields are shown with a prefix, e.g., "py." and are read-only to prevent accidental changes.

Displaying historical fields is an easy and powerful way to review data changes from one year to the next. It can also be useful when reviewing individual results, such as for gain/loss analysis, to quickly reference data from the beginning of period or end of period valuations.

Historical fields can be used for most things, including selection expressions ("status <> py.status"), finding records that match a criterion (py.salary less than 30,000), sorting records, and copying data values to the clipboard. Historical fields initially appear next to the current field of the same name, but you can reorder them as well as control which are hidden/unhidden. These customizations can be saved as part of a Spreadsheet Edit style for later reuse.

Interface

♦ **Quick search** has been added to many lists, including where you select Individual Results, Stochastic Trial Detail Variables, Add/Omit Valuations in a Valuation Set, and more. This lets you quickly find specific items in long lists, especially if you're not sure what name ProVal uses (e.g., "PBO" vs "Projection Benefit Obligation").
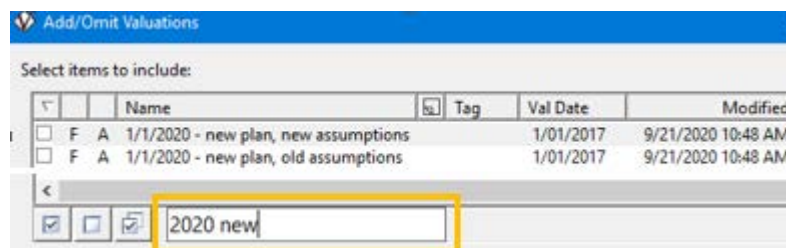
♦ **Flatter Benefit Formula Components**

   o Links now display summary information that previously could only be seen by clicking into another screen. For instance, at a glance you can see that the component below represents 5% of final average pay per year of service.
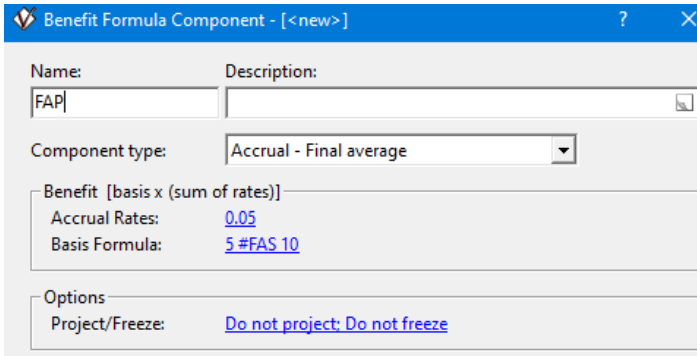

   o There are now separate component types for Final Average, Career Average, Cash Balance, and Basis Only. This removes the unnecessary and unintuitive step of having to first choose "accrual definition" before choosing the accrual format.
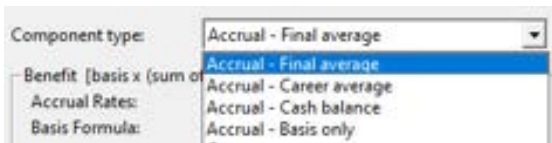
♦ **Autocomplete in expressions** now suggests unhidden components before hidden ones (marked with an * in the picture below). Similarly, fields in the current database are suggested before those which are not. For clients with lots of unused components/fields, this helps you find the intended item faster. This preference is also reflected in expression help (F1).
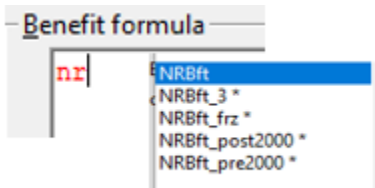
♦ **Assumptions filter.** You can now apply a filter when viewing/comparing assumptions so only relevant benefits and components are displayed. This applies to election percentages, lump sum assumptions, and more. If you view assumptions from within a run (e.g., valuation), the relevant filter will be applied automatically. Otherwise, you can set it using the Filter button.
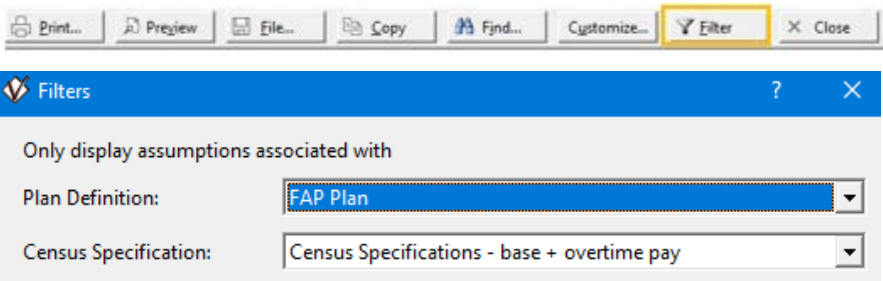
♦ **Increase rate assumptions.** In assumptions, more information is now shown for increase rates (e.g., table name, rates by year, etc.) to give you a sense of the rates at a glance, without having to click into each one. This also facilitates sorting items with like assumptions together so you can edit them as a group.

♦ **Scaling factors grid.** Scaling factors have been consolidated into a grid, making it easy to review all your factors at once as well as facilitating a single copy/paste of all factors to/from

Excel. In addition, in US Public Pension mode, scaling factors can now vary by group (requires the corresponding Asset & Funding Policy to vary by group).

♦ **Additional columns for valuations and core projections.** You can now select additional columns to display inputs for valuations and core projections, such as the plan definition, census specifications, database file, etc. On a related note, the inputs you can display in valuation and core output now include the individual results database and subtotal fields.

♦ **Keyboard shortcuts**

o Shortcuts keys have been added to input items on the valuation and core projection screens. For example, you can press Alt+I to modify the settings for Individual Results.

o You can use the menu key (if your keyboard has one, or Shift+F10 if not) as an alternative to right-click throughout ProVal.


♦ ProVal's standard font (Segoe UI) is now used in more places, including the data editor, which allows for finer zoom percentages and also gives a consistent look with the rest of the interface.

Forecasting

♦ **Custom capital market simulations** now support two custom full yield curves and two benchmark yields. In Canadian mode, if you simulate the transfer value and annuity purchase interest rates outside of ProVal, you can now import those rates to be used directly by ProVal. One custom yield curve can hold the short and long term interest rates for the transfer value portion of solvency liability and the other for the windup liability. The two corresponding custom benchmark yields can be used to import the annuity purchase interest rates for solvency and windup, respectively.

♦ **Dynamic Asset Allocation** is now supported for Deterministic Forecasts. Dynamic asset allocation lets you change the investment return rates based on the funded status of the plan. In other words, if the asset allocation of the plan follows a glide path, the asset mix (and therefore expected investment returns) may change as the funded status of the plan changes.

To use dynamic asset allocation, first select that dynamic asset allocation applies on the Investment Return topic of the Deterministic Assumptions.
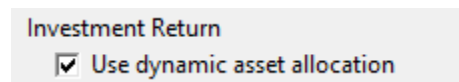
Then go to the Dynamic Asset Allocation topic and specify the liability and asset measures to calculate the funded ratio, as well as the breakpoints at which the asset mix will change. In the example below, the asset mix changes at funded ratios of 70%, 80%, 90%, 100%, and 110%. Each one of these funded ratios is assigned an asset mix and each asset mix is assigned an investment return. Note that the investment return for a given mix can vary by forecast year. This might be useful if for example, a glide path is not expected to be implemented for another year or two.

Dynamic Asset Allocation

Number of asset mixes: 6

Funded Ratio Definition

Liability: Actuarial Liability

Asset Value: ⦿ Market Value   ○ Actuarial Value

Funded ratio breakpoints:

0.7 0.8 0.9 1.0 1.1

Mix map (enter Mix #):

Funded ratio	Mix #
0.0 <= x < 0.7	1
0.7 <= x < 0.8	2
0.8 <= x < 0.9	3
0.9 <= x < 1.0	4
1.0 <= x < 1.1	5
1.1 <= x	6

Investment Returns*:

| Year	Mix #1	Mix #2	Mix #3	Mix #4	Mix #5	Mix #6
1	0.08	0.075	0.07	0.065	0.06	0.055

♦ **Funding interest rate tied to the expected return on assets.** In Canadian and Public mode stochastic assumptions, the funding liability interest rate can now vary based on the asset mix's expected return. If dynamic asset allocation is used, the expected return may change over time as the mix changes.

☑ Vary based on   [Asset mix ▼]   times [1]

♦ **Stochastic trial detail**

  o Trial detail can now save directly to Excel, with results for each mix saved in a separate sheet. This makes it easy in Excel to refer to like items across mixes (e.g., contributions) since they are in the same position on each sheet, rather than scattered positions on a single sheet (or .csv file).

  o When turning on trial detail, all years, mixes, and custom variables are now selected by default. This eliminates the need to remember to select what is likely to be what you want. What's more, the standard variables list can now be searched to easily find what you're looking for.

Canadian Registered Pension Plans

♦ **Windup Liability.** ProVal now calculates an explicit windup liability – previously the windup liability was assumed to be the same as the solvency liability. The maximum tax deductible contribution and accessible surplus calculations have been updated to reference the windup liability. In Valuation Assumptions, you will find:

  o A new Windup Interest Rate topic that lets you specify separate windup interest rates, or use the solvency interest rates.
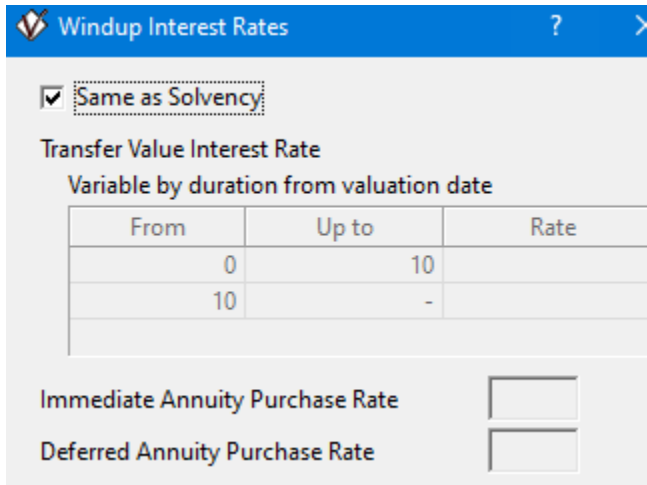
- o The Cost-of-Living Adjustments (COLAs) topic now lets you apply COLAs to the windup liability only. If you check this new option, the COLAs will be 0 when calculating the solvency liability.


- o The mortality specified for Transfer Value Liability and Annuity Purchase Liability will be used for both solvency and windup.

♦ **Commuted Values.** The assumptions required to measure commuted values have changed effective December 1, 2020. ProVal has a number of new enhancements to facilitate the new rules including:

- o Separate election probabilities for the solvency & windup liabilities.

- o Payment form commencement age based on an age/service/points eligibility.

- o New checkboxes on the Benefit Definitions for Solvency & Windup valuations to facilitate calculating benefits at the earliest unreduced age and most valuable commencement ages.

    For more information, see Canadian Commuted Values on page 13.

♦ **British Columbia minimum required contributions.** ProVal now supports the British Columbia minimum required contribution calculations that changed effective for valuation dates on or after December 31, 2019. To reflect the 2019 Pension Reform, go to the Minimum Funding Amortization Bases topic of the Asset & Funding Policy, select British Columbia as the Applicable Provincial Law, then click on the Params button and check the box to apply the new law and enter the provision for adverse deviation for the current year.
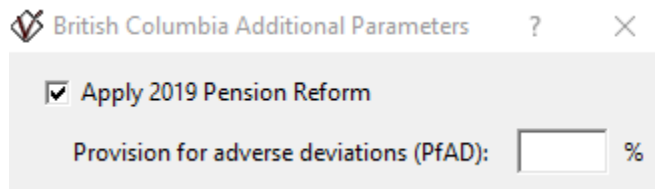
♦ **Provisions for adverse deviations (PfAD)** can now vary in a forecast for Ontario and British Columbia.

- o Deterministic Forecasting - in the Future Valuation Interest Rates topic of Deterministic Assumptions, enter the PfAD to be used for each future forecast year.

- o Stochastic Forecasting – in the Provision for Adverse Deviations topic of Stochastic Assumptions, select which provincial law is applicable. If British Columbia is selected, no other parameters are required. If Ontario is selected, indicate if the plan is open or closed as well as any adjustment to the going concern interest rate to determine the gross rate.

- ♦ **Average entry age normal.** ProVal's average entry age normal technique (also known as the aggregate entry age normal method) has been extended from Universal mode to Canadian mode. Additionally, it now lets you specify multiple records to determine the "average" entry age normal cost rate to apply to all records. In addition, the gain/loss tool now supports the average entry age normal cost method.

- ♦ A new parameter in the Contribution Policy topic of the Asset & Funding Policy allows contribution holidays to be shared with employees. This is useful in a forecast for asset projections and will stop experience employee contributions when the employer is on a contribution holiday.

- ♦ In Stochastic trial detail, the total normal cost is now available, equal to employer normal cost + employee normal cost + expenses. The standard normal cost excludes the employee piece.

US Qualified Pension Plans

- ♦ **SECURE Act.** The period over which new shortfall amortizations bases should be amortized is now a parameter on the Shortfall Amortization topic of the Asset & Funding Policy. This is useful for community newspaper plans which may amortize over 30 years.

- ♦ **CARES Act.** In case you missed it, an update to 3.14 added explicit support for the CARES Act to allow you to:

  o use the AFTAP from 2019 for plan years that include calendar year 2020.

  o assume 2020 contributions will be deferred to December 31, 2020 or January 4, 2021 with no late interest.

  For more, see The CARES Act on page 17.

- ♦ The Pre-MAP 21 EIR and FTAP have been added to the Pre-MAP 21 exhibit for easy access.

US Public Pension Plans

- ♦ In Valuation Assumptions, Employee Contributions timing can now be the same as the timing for PVFS, PVFL, valuation salary and number, with no further adjustment for middle of year decrements. Using the same timing for employee contributions and salary ensures the ratio PVFEEC / PVFS equals the employee contribution rate, in plans where this is constant.

- ♦ The GASB Accounting Balance Sheet exhibit in a Valuation Set now displays the future amortization payments required.

	Baseline Gain or Loss	EOY
5. Future recognition of deferred outflows and inflows for years beginning:		
January 1, 2021		3,632,956
January 1, 2022		3,632,956
January 1, 2023		3,632,956
January 1, 2024		3,632,956
January 1, 2025		(138,634)
Thereafter		(815,251)

OPEB Plans

♦ **Spending Accounts**. The annual increase in the spending account for active participants can now be specified by a formula. This is useful for HRA-style retiree medical plans, for example, where the plan's annual HRA credit varies by service at decrement.

♦ **Election probabilities.** Election probabilities specified by coded field and/or calendar year can now be entered as constants. This avoids having to create a table for each constant value.

Pension Plans

♦ **Late retirement adjustments.** A new component type, Late retirement, adjusts an existing component (typically a subformula component) for late retirement. For ages after normal retirement age, it returns the greater of the component with projected accruals and an actuarial adjusted value at normal retirement age.

   For more, see Late Retirement Adjustments on page 21.

♦ **Lump sum factors** may now be referenced in subformula components. This facilitates use of lump sum factors with late retirement components. It also makes it easier to create maintainable plan setups when many benefit formulas share common elements with one or more lump sum factors.

♦ **Partial year inactive pension benefits.** You can now achieve higher precision for inactive benefits that are deferred or temporary for a fractional number of years. Inactive benefits where the deferral or temporary period are based on a date or number of years now reflect the partial year rather than rounding (e.g., a benefit deferred to 7/1/2022 will be deferred for 1.5 years from a valuation date of 1/1/2020). If a period is based on an age ProVal continues to round to the nearest whole year (e.g., deferred to age 64.7 becomes 65). ProVal will also continue to round both the deferral and temporary periods if one is based on an age and another on a date.

♦ **Payment form commencement age**. In active payment forms, you can now specify commencement age as the earliest age that a participant meets age/service/points criteria.

♦ You may now save individual results for the PVB and EBO liabilities by benefit for participants with a status of vested valued through active.

Mortality Tables

♦ **Survivor mortality "Approach 2"** has been extended to OPEB mode. This allows survivor mortality to be applied only after the member death as defined by the Pub-2010 and Pri-2012 mortality reports published by the Society of Actuaries. This feature was added to pension modes in 3.14.

♦ **Club Vita.** In case you missed our 3.14 announcement, WinTech has integrated Club Vita's suite of personalized longevity curves, known as VitaCurves, for use in ProVal. VitaCurves can be licensed directly from Club Vita.

For more information, see Club Vita on page 20.

All Plans

♦ **Plan Constants** can now be referenced in more locations:

o Temporary periods, certain periods, and survivor percentages for payment forms

o Projection age and freeze age for accrual benefit formula components

o Youngest and oldest recognized age for table benefit formula components

♦ **Automated low/high sensitivities** in a Valuation have been expanded to:

o Allow asymmetrical sensitivities – this lets you assume for example, a high interest rate sensitivity of +2% and a low interest rate sensitivity of -1%

o Add mortality sensitivities – you can get mortality sensitivities by specifying a setback, an adjustment factor, or both.

o Clarify that valuation sensitivities are run in aggregate and not separately for each assumption.

- ♦ **Improved handling of benefit payments when the measurement date is after the liability calculation date**
  - o A new option allows expected benefit payments used in expense to be rolled forward to the measurement date, regardless of the rollforward method for liabilities. Previously, this was only done when liabilities were based on a benefit payment rollforward.

    ☑ Roll forward expected benefit payments to the measurement date

  - o Fiscal year and plan year experience benefit payments now automatically reflect timing differences in these years (e.g., 1/1 vs 4/1), with fiscal year benefit payments prorating the two plan years the fiscal year overlaps. Previously, the plan year and fiscal year experience benefit payments were deemed to be the same. On a related note, you can now separately override the first year for both plan year and fiscal year experience benefit payments.

    Override first year experience
    ☐ Plan year benefit payments:
    ☐ Fiscal year benefit payments:

- ♦ **Administrative expenses**
  - o Separate first year overrides of actual plan year and fiscal year administrative expenses can now be specified.

    ☐ Plan year administrative expenses:
    ☐ Fiscal year administrative expenses:

  - o A flat administrative expense assumption can now be assumed in all forecast years, i.e., you can now turn off inflation increases on dollar expenses during a forecast.

    ☐ Increase dollar expenses with inflation during a forecast.

  - o The administrative expenses timing fraction can now be reflected in the calculation of the accounting expense. Previously, when calculating the expected return on assets component of accounting expense, beginning of year timing was always assumed.

    Fraction of year to average date expenses are paid: 0.5
    ☑ Reflect fraction when calculating accounting expense

- ♦ **Individual Results.** Individual results of projected results can now be specified by duration from valuation date, rather than only by fixed calendar years. This is recommended, for example, if you want the first 3 years of benefit payments following the valuation date. Previously, you would have to update the calendar years annually when the valuation date changed.

- ♦ **Service definitions** now allow you to specify a cap on service. The cap may either be specified as a constant or database field. This is useful, for example, if you are using linear proration (rather than the more common accrual rate proration) for PUC and want service to stop (i.e., reach 100%) at 35 years of service.

  ☑ Apply a cap on service
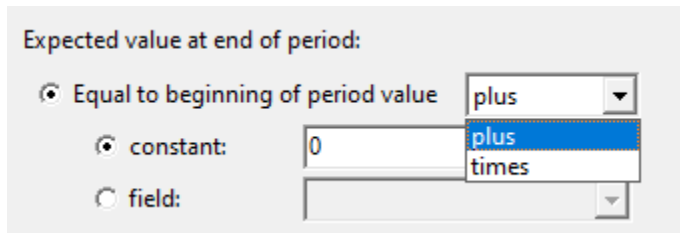 ⦿ Constant: 35
  ○ Field:

- ♦ A new contribution policy lets you contribute an amount equal to the accounting service cost.

Sample Lives

♦ **Experience benefit payments.** In Core Projection sample lives, the Benefit Definition report now shows a separate table detailing the benefit amounts on an experience basis. This lets you easily see the development of items like lump sum payments based on experience assumptions. Additionally, Benefit Definition sample life reports now vary by optional payment form and display benefit conversion factors previously found in the liability reports.

Gain/Loss Analysis

♦ **Continuing active/inactive data sources.** The expected value of numeric fields at end of period can now be determined by multiplying the beginning of period value by a factor, rather than just adding a numeric amount. It also allows the multiplicative/additive value to come from a database field instead of a constant. This might be useful, for example, to reflect expected COLAs for inactive benefits, either as a factor (e.g., x 1.01) or a numeric amount (e.g., + 200.00).
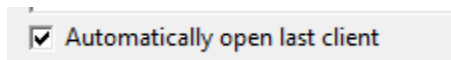

Output & Reporting

♦ When selecting output Variables to view for a Valuation, Valuation Set, Core Projection, or Deterministic Forecast, a new Reset button reverts selections to the default. This lets you easily start over with a blank slate to select variables you are currently interested in.

♦ US-centric dollar ($) formatting has been eliminated from exhibits.

System

♦ **Start with no client.** By default, when ProVal starts up it opens the last client automatically. Unchecking this new checkbox in File > Open Client lets you start ProVal without opening a client. This is useful, for instance, if you are working remotely and the connection to your client files is slow, or may not always exist.

♦ **Show in Folder.** After saving results such as output, exhibits, etc. to a file, you can now "Show in Folder". This might be useful, for instance, if you've saved more than one file and you want to compare them, open them both, etc.
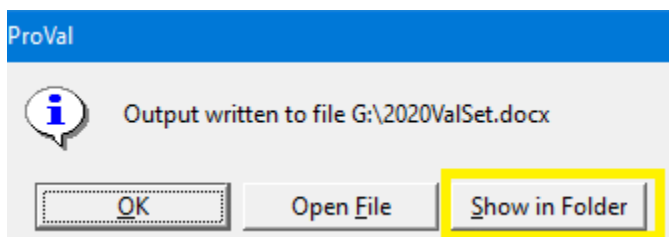
♦ **Custom regulatory data.** Valuation and core projection processing messages now include a list of the regulatory data files used and their dates for documentation.

♦ For ProVal license server users, if you have a previous license that was stranded (perhaps due to a connection issue), ProVal now detects this and prompts you to release it at startup. In most cases, this relieves administrators of ProVal license servers from having to clean up stranded licenses manually.

♦ The Help menu now has convenient links to What's New, Updates Log, Changes Log, as well as online support and training.

Performance

♦ **Screen Data** performance has been vastly improved for large populations. It is faster, uses less memory, and no longer requires temporary disk space. For example, a case with over 400k lives that previously took 75 minutes now runs in under 4 minutes.

♦ **Valuations and core projections with subtotals** now require much less temporary diskspace to store subtotals during the run. In one core projection with a lot of subtotals, it previously required more than 30 GB of free diskspace and now only requires 8 GB. If local diskspace is still insufficient, a new .ini file setting ([GRID] Loader.CacheDir) lets you specify a location with more free space (e.g., network drive).

♦ **Valuations and core projections with lump sum factors / optional form conversions** that reference COLAs that vary by calendar year are now much faster. In one example, a core projection with 100+ lump sum factors now runs over 3x faster. (This change was originally released in a 3.14 update but included here in case you missed it.)

♦ **Valuations and core projections with COLA expressions** that reference fields more than once are now much faster. For instance, the field ProVal_COLA_Type is referred to 3 times in the COLA expression "#IF (ProVal_COLA_Type = 1) #THEN … #ELSEIF (ProVal_COLA_Type = 2) #THEN … #ELSEIF (ProVal_COLA_Type = 3) #THEN …". In one example, a valuation with complicated COLA expressions now runs over 2x faster.

♦ **Valuation sets** have been sped up when adding many valuations together, e.g., for a U.S. Public pension plan that varies by group and underlying valuations subtotaled on multiple fields. In one example with hundreds of groups, a valuation set now runs over 3x faster.

♦ **Deterministic forecasts with plan amendments** now run much faster. In one complicated example with hundreds of benefits and a long projection period, it now runs over 8x faster. (This change was originally released in a 3.14 update but included here in case you missed it.)

♦ Deep Copy can now be used on items with a huge number of children (e.g., a large plan definition) without using nearly as much memory. Speed has also been improved.

ProVal PS

♦ When ProVal PS is installed under the "Program Files (x86)" folder, user settings (provalps.ini) are now saved in the user's %appdata% folder. This avoids issues with obtaining write access to "Program Files (x86)" or relying on the presence of a compatibility (VirtualStore) folder.

♦ ProVal PS has been sped up when the underlying forecast adds many core projections together. In one complicated example, a forecast now runs nearly 3x faster.

♦ The ProVal PS API is now available in c#.net.

♦ Metrics can now be copied from another file. This allows you to set metrics to your liking and use them across similar files.
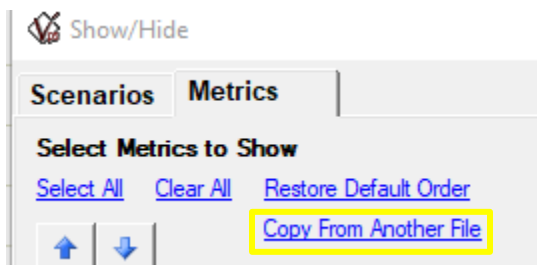
ProVal API

♦ The new functions **GetPlanConstants** and **SetPlanConstants** let you query/save Plan Constant values from/to a Plan Definition. This might be useful, for example, to create various what-if scenarios by revising Plan Constants and then running a valuation or core projection.

Training

♦ ProVal's online training at https://www.winklevoss.com/proval/training/ has been upgraded with a new look and better compatibility for the future. Please note that existing accounts and progress are not transferred to the new site; please re-register to access the training.

Changes Log

♦ Be sure to read the changes log (see the "changes log.doc" file in the ProVal directory) about updates to certain calculations that may change results.

Canadian Commuted Values

Background

Previously, commuted values were required to be valued assuming 100% will commence at the most valuable age. In ProVal, when performing the solvency valuation, ProVal values the most valuable age by comparing the present value of termination and retirement benefits and choosing the [commencement] age with the largest present value. For going concern, ProVal does not explicitly determine a most valuable age. To determine the most valuable commencement age in going concern, users must manually determine the most valuable age by finding the maximum across the present values of each possible commencement age within the benefit definitions.

Under the new standards of practice issued by the CIA, participants expected to receive a commuted value should be valued by assuming:

• 50% will commence at the most valuable age

• 50% will commence at the earliest unreduced age

Essentially, users need 50% of the commuted value they are currently calculating and 50% of a new value. The most valuable calculations in ProVal will remain the same. This means users who measure a commuted value for ongoing purposes will still have to determine the maximum present value by comparing values at all possible commencement ages. Our enhancements are designed to make it easier to take 50% of the most valuable age and 50% of the earliest unreduced age.

Summary

When commuted values are measured, two Benefit Definitions will be required to measure it under the new standard. One to handle the most valuable age and one to handle the earliest unreduced age. If you are currently using ProVal to measure commuted values, you should already have your Plan set up to handle the most valuable age. You would simply need to create a new Benefit Definition set up to assume earliest unreduced age. Election probabilities would be used to indicate the assumed percentage of participants receiving each benefit.

Solvency Calculations

There is a new checkbox at the bottom of the Benefit Definition dialog box under a new "Solvency & Windup Valuations" section.

If you check this box, this benefit will be excluded from the solvency & windup calculation to determine the most valuable age. Benefits that have this checked will be valued at the commencement age specified in the payment form. We expect that this would be checked for all benefit definitions set up to capture the liability for commuted values at the earliest unreduced age.

To further assist with the valuation of benefits payable at the earliest unreduced age, we have enhanced payment form definitions to allow benefits to commence at an age specified by an age/service/points grid. Note that this new option requires participants to attain the age/service/points criteria, rounded age and service are not used. This option is designed to work like the eligibility for a benefit definition.

The most valuable age will be determined the same way that it is currently except that benefits that do not have the checkbox above selected will be excluded.

Election probabilities should continue to be used to indicate the percentage of participants who will receive commuted values. For the new benefit definition coded to assume commencement at the earliest unreduced age, we would expect this probability to be 50% of the percentage of participants assumed to take a commuted value. (Note that the election probability for the benefit definition coded to measure the commuted value payable at the most valuable age should be similarly coded to reflect that 50% of participants assumed to take a commuted value will receive it at the most valuable age).

The solvency liability for the earliest unreduced age benefit definitions will be calculated as the present value at the valuation date based on the benefit definition, payment forms and assumptions defined. We would expect commuted values payable at the unreduced age to be coded with a lump sum payment form, with a benefit definition that has no reduction factors, a lump sum factor deferred to the earliest commencement age (or using a lump sum optional payment form), and with election probabilities applied.

For solvency and windup valuations that allow participants to grow in to benefit eligibility and that may wish to value a different retirement benefit for those that grow in to retirement eligibility (for example, if you assume that participants retirement eligible on the valuation date will receive a lifetime annuity but participants that grow-in to retirement eligibility will receive a commuted value), we have added a parameter to control that. You may select whether a benefit definition is applicable to all eligible participants (the default), those who grow-in to the eligibility, or those who are eligible on the valuation date.

Going Concern calculations for plans that assume a commuted value

Currently, the most valuable age must be determined for going concern by comparing the present value at each possible commencement age and valuing the largest amount. This will continue to be required for going concern. A new benefit definition that measures the liability at the earliest unreduced age will need to be setup with election probabilities as described in the solvency section above.

Valuation Assumptions

The Solvency & Windup Liability topics within Valuation Assumptions have a new topic "Election Probabilities". You can now specify separate election probabilities for solvency liability. Previously, if you wanted different election probabilities for going concern and solvency, you had to create two different Valuation Assumptions and run two Valuations.

☐ Same as Ongoing Liability

Transfer Value Election Probabilities:

Probabilities	Vary by	Benefit ▲
0.5		Ret - Retirement - EUA
0.5		Ret - Retirement MV

Furthermore, the election probabilities may be different for the transfer value and annuity purchase liabilities. This is useful, for example, when the plan assumes that 50% of the retirement eligible participants will receive an annuity and 50% will receive a commuted value. To measure the transfer value liability under the new standard, an "earliest unreduced age benefit" definition should be setup. However, this benefit is only applicable to the transfer value liability so the election probability for the annuity purchase liability would be set to 0.

Annuity Purchase Election Probabilities:
☐ Same as Transfer Value

Probabilities	Vary by	Benefit ▲
0		Ret - Retirement - EUA
1		Ret - Retirement MV

Example:

Commutation assumptions:
- Solvency – 80% of participants receive a commuted value for retirement and termination
- Going concern – 0% commutation

Benefits Provided:
- Bridge is only paid upon retirement
- Termination and retirement benefits may be paid as either an annuity or lump sum. Benefits are reduced for early commencement.

		Election Probabilities	
		Solvency	**Ongoing**
Termination	Bft deferred to age 65		
Annuity		.2	1
LS		.4	0
Termination *	Bft deferred to unreduced age		
LS		.4	0
Retirement	Bft*ERF payable immediately		
Annuity		.2	1
LS		.4	0
Retirement *	Bft deferred to unreduced age		
LS		.4	0
Retirement Bridge	Bridge payable from retirement to age 65		
Annuity		.2	1
LS		.4	0
Retirement Bridge *	Bridge payable at unreduced age		
LS		.4	0

*These benefit definitions should have the parameter "this is an earliest unreduced age benefit" checked.

Results:
Ongoing
- ProVal will value the benefits as written.

Solvency
- ProVal will determine the most valuable liability the same way it does currently but by excluding the present values of benefits that are marked as earliest unreduced age benefits.
- The liability for the earliest unreduced age benefits will be measured as the present value on the valuation date.
- In this case, the election probabilities for the transfer value and annuity purchase were the same.

The CARES Act

Under the CARES Act, the AFTAP from the plan year ending in 2019 may be used for any plan years that include calendar year 2020. See the new option below which allows you to apply this provision. Aside from displaying the AFTAP in output, ProVal uses the AFTAP to determine whether to waive credit balances, if that option is selected. Note that if the AFTAP entered for the plan year ending in 2019 is below the threshold selected for waiving balances, ProVal will still waive current year balances to attempt to reach the threshold. For example, assume we are performing a 1/1/2020 valuation, the plan has a 55% AFTAP for the 2019 plan year, and ProVal calculates a 51% AFTAP for the 2020 plan year. If you have selected to waive credit balances to meet a 60% AFTAP, ProVal will attempt to waive balances to meet a 60% AFTAP for 2020 (in this case, the 2019 AFTAP had no impact).

Minimum Funding Rules & Plan Assets

The Contribution Policy topic in the Asset & Funding Policy now has an Apply CARES Act option if pay quarterly and final contributions is chosen as the contribution timing. If checked

- All contributions due during the 2020 calendar year, if calculated by ProVal, will be deferred until 12/31/2020 or 1/4/2021, as selected.

- For quarterly contributions due in the 2020 plan year, ProVal will use the EIR of the plan year in effect at the payment date to apply interest from the original due date until 12/31/2020 or 1/4/2021. Therefore, the plan year ending 2020 and/or 2021 EIR are required inputs depending on the initial valuation date, assumed payment date, and contribution schedule date.

- As always, ProVal will honor any contributions entered in the contribution schedule.

- Penalty interest will not be applied to contributions due during the 2020 calendar year, unless made after 1/4/2021. If made after 1/4/2020, penalty interest is calculated from 1/1/2020.

There is a new column in the Contribution Schedule that allows you to enter the discounted value of contributions credited to a prior plan year. The new discounted contribution receivable column is **required** when the contribution is applied to a prior plan year but is made more than 2 years after the prior valuation date.

Example

Valuation Date: 1/1/2020

Contribution Schedule: Contribution on 1/4/2021 applied to the prior plan year (2019)

Analysis

The 1/4/2021 contribution may cover both the 4th quarterly payment and the final makeup payment for the 2019 plan year – each of those amounts would be discounted differently.

- The amount intended to cover the 1/15/2020 quarterly would be discounted using the 2021 EIR back to 1/15/2020 and then the 2019 EIR back to 1/1/2020.

- The final makeup payment would be discounted back to 9/15/2020 using the 2021 EIR and then back to 1/1/2020 using the 2019 EIR.

The new discounted contribution receivable column is **recommended** when you have prior plan year deferred contributions under the CARES Act since ProVal does not have enough information in the schedule to determine which requirements a contribution is intended to satisfy.

Example

Valuation Date: 1/1/2020

Contribution Schedule: Contribution on 12/31/2020 applied to the prior plan year (2019)

Analysis

- The 12/31/2020 contribution may cover both the 4th quarterly payment and the final makeup payment for the 2019 plan year – each of those amounts would be discounted differently.
    - The amount intended to cover the 1/15/2020 quarterly would be discounted using the 2020 EIR back to 1/15/2020 and then the 2019 EIR back to 1/1/2020.
    - The final makeup payment would be discounted back to 9/15/2020 using the 2020 EIR and then back to 1/1/2020 using the 2019 EIR.

- If you leave the new column blank, and it is not required, ProVal will calculate the value by discounting the contribution back to the final date the minimum required contribution was originally expected to be made (9/15/2020) using the 2020 EIR and then back to the valuation date using the 2019 EIR.

If you do not apply the CARES Act and enter deferred contributions on the schedule, the calculations will not apply the CARES Act and late penalty interest will be applied to the contributions made after the original due date.

If you do not apply the CARES Act, ProVal will calculate, as it always has, the value of discounted contribution receivables when the new column is left blank.

Note that in a forecast, the EIR for a plan year ending in 2020 or 2021 may be entered in the Asset & Funding Policy for Valuation Dates before 2020 or 2021 and will also be calculated for the 2020 or 2021 plan year during a forecast year. In this case, the EIR entered in the Asset & Funding Policy will be used for plan years prior to 2020 or 2021 and the calculated EIR will be used in the forecasted year.

ProVal continues to expect that all contributions receivable (included deferred contributions) are included both in the Market Value of Assets entered as of the initial valuation date, and in the contribution schedule.

No changes will be made to the assets used for Maximum Tax purposes although 1/1/2021 may be after the tax return filing deadline.

For plans that do not intend to restate expense to reflect application of the CARES Act, use the contribution schedule and denote which contributions to "Include in EROA" or are Applied to "EROA only."

Club Vita

Background

Club Vita has analyzed the patterns of longevity in large, diverse populations of retirees in the US, Canada, and the UK. Through this research, Club Vita has found material differences between sub-groups of retirees, deviating from what the "average" retiree looks like. VitaCurves enable you to tailor your assumptions to a plan's population using easily available data fields contained in pension recordkeeping systems. You can read more about Club Vita's research here: https://www.clubvita.us/news-and-insights/zooming-in-on-zipcodes.

According to Club Vita, the VitaCurves model is particularly useful for groups of pension plan participants where there is little or no historical experience data or the group is not representative of the "average" retiree. Examples include small plans, individual employers in a multiemployer plan, or a sub-group of a plan in a pension risk transfer "buy out". Club Vita has found the use of more personalized assumptions can change valuation liabilities by up to 5 percentage points, with reductions being more frequent than increases.

VitaCurves can be licensed directly from Club Vita. If you would like to learn more, please drop a message to Dan Reddy FSA EA, CEO of Club Vita US LLC at daniel.reddy@clubvita.net, or Ian Edelist FCIA FSA, CEO of Club Vita Canada Inc at ian.edelist@clubvita.net.

Steps to using Vita Curves

1. After installing the Club Vita curves, go to the Mortality library and select a Club Vita curve entry to edit.

2. Apply an improvement scale if applicable.

3. Choose the character database field used to map participants to curves.

4. You may now save the mortality rate table and use it throughout ProVal.

Age	CVUSv1_1416_FPNa	CVUSv1_1416_FPNaoc	CVUSv1_1416_FPNaocV	CVUSv1_1416_FPNapb	CVUSv1_1416_FPNapb	CVUSv1_1416_FPNapb
<= 15	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
16	0.000149	0.000152	0.000147	0.000151	0.000149	0.000145
17	0.000162	0.000166	0.000159	0.000164	0.000162	0.000157
18	0.000176	0.000181	0.000173	0.000179	0.000176	0.000170
19	0.000192	0.000198	0.000188	0.000196	0.000192	0.000185
20	0.000209	0.000217	0.000204	0.000214	0.000209	0.000200
21	0.000228	0.000237	0.000222	0.000233	0.000228	0.000217
22	0.000248	0.000259	0.000241	0.000255	0.000248	0.000235
23	0.000270	0.000283	0.000262	0.000278	0.000271	0.000255
24	0.000294	0.000309	0.000285	0.000304	0.000295	0.000277
25	0.000321	0.000338	0.000310	0.000331	0.000321	0.000300
26	0.000349	0.000370	0.000336	0.000362	0.000350	0.000325
27	0.000380	0.000404	0.000366	0.000395	0.000381	0.000353
28	0.000414	0.000442	0.000397	0.000431	0.000415	0.000383
29	0.000451	0.000482	0.000432	0.000470	0.000452	0.000415

Mortality Rate Table - [CVUSv1_VitaCurves]

Name: CVUSv1_VitaCurves

Club Vita Mortality Curves:

☐ Apply Improvement Scale   Base year: 2015

Scale:

Projection: ● Fully generational   ○ To year

Database field mapping: ClubVita

☐ Scale rates by database field:

Late Retirement Adjustments

Background

In US Qualified plans, the benefits of participants working past their normal retirement date (NRD) are often adjusted for late retirement. One common approach is to pay the greater of:

A) The accrued benefit calculated at the NRD, increased with actuarial equivalence to the actual retirement date, and

B) The accrued benefit calculated at the actual retirement date.

Currently in ProVal, to reflect late retirement increases users must code static tables of late retirement factors. If the definition of actuarial equivalence changes over time, this workaround can be cumbersome to maintain.

Late Retirement Components

Overview

ProVal 3.15 makes it much easier to reflect late retirement increases by introducing a new type of benefit formula component called "Late retirement". This component type requires users to input the benefit formula component that calculates the accrued benefit, the normal form payment type, and the normal retirement age. The interest and mortality used for actuarial equivalence will be specified in the Valuation Assumptions (no more updating benefit component tables every year!). Now your formula in the Benefit Definition simply references the late retirement component rather than a combination of components and tables.

Example

Your current benefit formula reflecting late retirement increases might look something like this where you have a component that allows accruals past normal retirement age, a component that freezes accruals at normal retirement age, and a table of late retirement adjustment factors:

This formula can be simplified by following these steps:

1. Create a new benefit formula component that is a "late retirement" type.
2. Fill in the required parameters:
    a. The benefit component that calculates the accrued benefit. In this case, you would reference NRBft. You can reference a subformula component for more complicated plans.
    b. The normal form type (either a life annuity or a certain & life annuity).
    c. The normal retirement age which may either be a constant or a database field. (A field is useful for plans that define the normal retirement age as 65 years with 5 years of service).

3. Edit the Benefit Definition formula to reference the new late retirement component.

Benefit formula

NRB_LateRet * ERF

4. In Valuation Assumptions, Late Retirement Components are now listed in the Conversion Factor topic. Select the desired component and enter the interest and mortality assumptions used to determine actuarial equivalence.

Late retirement components can be checked in the benefit formula component sample life report.

Year	Member Age	Accrued Benefit	Immediate Annuity at NRD	Annuity deferred from NRD	Late Retirement Factor	Benefit Component
2012	65	48,788.52				48,788.52
2013	66	50,252.18	13.221193	12.240686	1.080102	52,696.59
2014	67	51,759.74	13.221193	11.302270	1.169782	57,071.94
2015	68	53,312.53	13.221193	10.404969	1.270661	61,993.70
2016	69	54,911.91	13.221193	9.547803	1.384737	67,559.26
2017	70	56,559.27	13.221193	8.729831	1.514485	73,889.46

- The accrued benefit column is the value at each possible decrement age of the component specified as the accrued benefit in the late retirement component.
- Immediate annuity and deferred annuity columns are calculated based on the normal form type and normal retirement age specified in the late retirement component and the conversion assumptions specified in Valuation Assumptions.

- The late retirement factor column is the ratio of the immediate annuity to the deferred annuity.
- The benefit component column is the maximum of the accrued benefit column and the accrued benefit at normal retirement age (65 in this example) times the late retirement factor at each decrement age. In this example, the actuarial equivalent value of the age 65 benefit provides the maximum benefit.