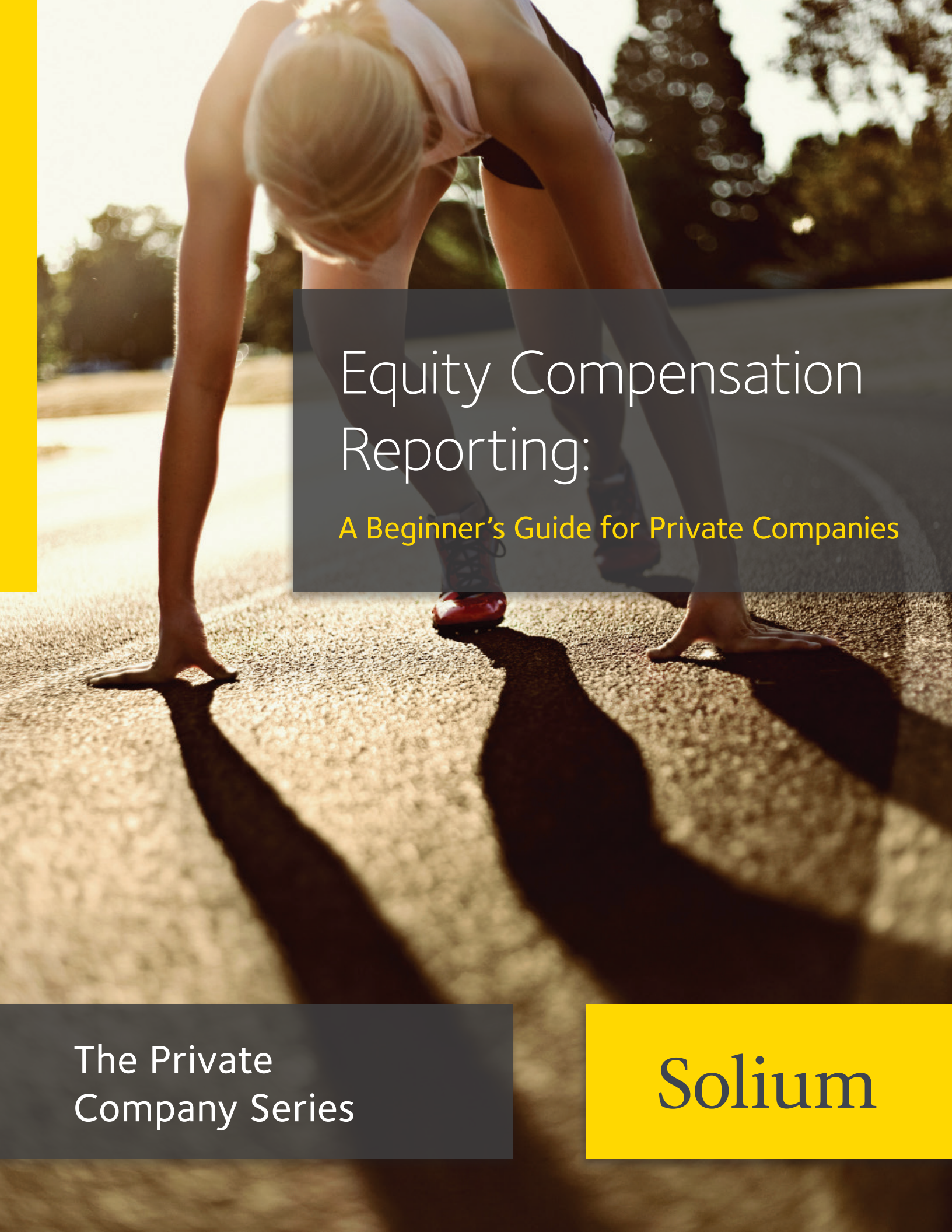


Equity Compensation Reporting:

A Beginner's Guide for Private Companies

The Private Company Series

Solium

Overview

This handbook contains some basic terminology that individuals responsible for equity compensation reporting should understand in order to properly calculate and report the expense under ASC 718.
This is an introductory guide and does not include advanced topics. For assistance with your expense accounting, you should consult a qualified professional.

The terms are limited to those most relevant to privately-held companies that grant employee stock options.

The terminology in this handbook is organized into three main categories:

- Valuation
- Expensing
- Disclosures

An understanding of the terms presented in these three sections will help you accurately report your equity compensation expense.

Valuation

Before you can determine how much expense to take with respect to your non- cash equity compensation, you need to value the stock option grant.

The fair value of the stock option is most commonly determined for privately-held companies using the Black-Scholes formula. The formula has a number of variables, which are described in this section.

Black-Scholes formula

A mathematical formula used for valuing employee stock options.

$$C = Se^{-qT}N(d_1) - Ke^{-rT}N(d_2)$$

$$d_1 = \frac{ln(S_o/K) + (r - 8 + \sigma^2/2)T}{\sigma\sqrt{T}}$$

$$d_2 = \frac{ln(S_o/K) + (r - 8 + \sigma^2/2)T}{\sigma\sqrt{T}} = d_1 - \sigma\sqrt{T}$$

Black-Scholes Calculator

Does algebra strike fear in your heart? Take advantage of our free online Black-Scholes calculator!

The variables in the formula shown have the following definitions:

$d1$ – Adjusts the stock price for risk

$d2$ – Adjusts the exercise price for risk

e – Standard exponential constant (2.718...)

S – Fair market value

K – Exercise price

T – Expected term

r – Interest rate

σ – Volatility

q – Dividend rate

$N( )$ = Standard normal distribution function

Prices

Fair market value

Fair market value is the value of the underlying stock that the option converts into (i.e., common stock) on the date of grant. For a privately-held company, fair market value is typically determined as part of a 409A valuation.

Exercise price

The exercise price is the price at which an option may be exercised, sometimes called a "strike price." It is determined by the company's Board of Directors.

Expected term

The expected term is a projection of the amount of time it will take for the option to be exercised.

There are several ways to calculate expected term. For private companies with little historical information, FASB suggests the formula (weighted average vesting + contract term)/2.

- **Contract term** – The life of the grant. For example, a 10-year grant's contract term is 10, and a 7-year grant's contract term is 7.
- **Weighted average vesting** – Measures the amount of time from date of grant to each vesting tranche and weighs it based on the number of shares vesting

Interest rate

The interest rate is the expected rate of return.

Take the following steps to determine the interest rate to use for the Black-Scholes calculation:

- Go to the Federal Reserve Board website and download the Treasury Constant Maturities.

  NOTE: Some documentation indicates the need to use a Zero Coupon Rate. Because the Treasury Rate is widely available and the results of using the Treasury Rate versus the Zero Coupon Rate are similar, auditors will generally accept the Treasury Rate.

  The Treasury Constant Maturities gives you forward looking rates for 1, 2, 3, 5, 7 and 10 years.

- Match the expected term you calculated to the appropriate year to determine the interest rate. If your expected term is 5, use the 5-year rate. If your expected term is 6, you need to average the rates for years 5 and 7 to get the appropriate rate for 6 years.

Volatility

A measurement of stock price fluctuation. Since privately-held companies do not have a stock price that changes on a regular basis, they typically estimate their volatility on the historical volatility of similar publicly-traded companies, or "peer companies."

To calculate the volatility variable, determine a set of publicly-traded peer companies to use. Typically, you will need to select between 4 and 10 peer companies. Download the daily closing prices for the peer companies from a source such as Yahoo Finance. Calculate the volatility of the closing prices for a period equal to the expected term.

To calculate volatility for each peer company, take the standard deviation of the difference in the natural logarithms of the stock prices over the number of days in each trading year. Do this for each peer company you selected, and average the rates (or do a more advanced weighted-average) to determine volatility.

Dividend rate

The dividend rate is the expected dividend payments. A typical private company does not distribute dividends, so the dividend rate is normally zero.

Expensing

Once you have determined the fair value of a stock option on its date of grant, you now can calculate the total value to the participant (or the total expense to the company). This expense is not booked all at once but is instead accrued throughout the vesting period of the grant, otherwise known as the "service period." The speed and timing of which this expense is accrued can be done via different expensing methods.

Expensing methods

The amortization schedule for an option grant determines the amount of expense taken in each reporting period. Typically, there are three expensing methods used by privately-held companies.

- **Straight-line method** – An expensing method where you divide the projected fair value by the number of days in the service period. This method expenses the same amount in each reporting period. The problem with using the straight-line method is that ASC 817 requires a company to recognize expense equivalent to the shares vested at any point in time. With the straight-line method, there is a chance that the expense booked at any point in time may be less than the total value of shares vested as of that same point in time.
- **Modified straight-line** – A highly-recommended method based on the straight-line expensing method. This method accrues expense for each vesting tranche one at a time, during the time it is vesting. This ensures the expense is at least equal to what's vested throughout the entire service period.
- **FIN 28 (accelerated method)** – An expensing method that treats each vesting tranche as a separate amortization period from grant date to vest date. This method results in the expense being front-loaded, since expense from each vesting period is taken in the current reporting period. Although this typically satisfies the FASB requirement that, at any given point, a company has recognized expense equivalent to the shares vested, it can result in a much greater expense being taken in earlier years and a much lower expense in later years.

The amount of expense booked will be based on how much of the total value is accrued during the specified reporting period. This total value however has a slight adjustment to it, though, to account for "estimated forfeitures." The terms below give insight to what "estimated forfeitures" are as well other concepts discussed above.

Fair value per share

Fair value per share is the value of the option based on the Black-Scholes calculation.

Total expense

The total expense is the amount expensed for the option over its service period, assuming the employee is not terminated before the option fully vests. Total expense is calculated by multiplying the fair value per share by the number of options granted.

Requisite service period

The requisite service period is the time period over which you expense the option grant. For plain vanilla option grants, the requisite service period is based on the period the option vests. For example, if the option's vesting schedule is 25 percent per year for four years, the requisite service period for the option is four years.

Forfeiture rate

The forfeiture rate is a projected annual rate that you expect options to be forfeited (i.e., canceled before they vest) in the future. Forfeiture does not include options that expire, meaning options canceled after they vest.

The rate is used to discount the amount of actual fair value expensed in each reporting period. Private companies with little or no historical employee forfeiture data may need to use a comparable rate, such as the turnover rate at peer companies, to determine a reasonable forfeiture rate until sufficient historical data is available.

There are many different types of forfeiture rates, and they impact your expensing schedule in different ways, the most popular being the dynamic forfeiture rate.

Reporting period

The reporting period is the time period in which you report your expense. For example, if the company reports annually and the fiscal year end is December 31, the reporting period for 2014 is January 1, 2014, to December 31, 2014.

Expense true ups

While expensing an award, a company must adjust its expense when different scenarios occur. For example, if an award is forfeited, the company gets to take a credit equal the expense that was booked previously for those forfeited shares. And when an award vests, the company must ensure the expense on the books for those shares is equal to the full value. Because an estimated forfeiture rate was in use previously, this means you would expect to take some additional expense to get to that full total value.

Disclosures

In addition to determining how much equity compensation expense to include in your total compensation expense number, there are a number of disclosures required in the footnotes to the company's financial statements.

There are many numbers related to option plans and equity compensation that need to be reported to explain the option plan, the options granted and expensed, how the amount of expense was determined and the range of values used. The terms in this section will help you properly prepare your equity compensation disclosures as required by ASC 718.

Valuation summary

For options granted in the current reporting period, you need to disclose the range and weighted average values for certain variables used in the Black-Scholes formula (volatility, interest rate, expected term and dividend rate).

You will disclose a total of 10 numbers in the valuation summary section – the range and weighted average values for each of the four Black-Scholes variables, as well as the range and weighted average values for fair value per share.

Range

The range is the low and high end of each variable. For example, if a 20-percent volatility was the lowest value you used when determining fair value for options granted in the reporting period and a 30-percent volatility was the highest, you would disclose a range of 20 to 30 percent.

Weighted average

The weighted average is the average in which each variable is multiplied by a number (weight) based on the variable's relative importance. The sum of the weights is divided by the total number of shares granted to calculate the weighted average.

For example, if there is one grant for 1,000 shares with a 25 percent volatility and another grant for 500 shares with a 30 percent volatility, the weighted average volatility would be [(25*1,000) + (30*500)]/1,500 = 26.67 percent.

Option activity

Option activity is a required disclosure that, at a minimum, includes the number of exercises, cancellations and expirations during the period specified and an outstanding balance at the beginning and end of the period specified.

Total outstanding at start of period

As its name makes clear, the total outstanding at the start of the period is the total number of options outstanding as of the beginning of the period. If the reporting period is January 1, 2014, to December 31, 2014, it is the total number of options outstanding at the end of the day on December 31, 2013. The number will be total options granted minus exercises, forfeitures and expirations.

Grants during the period

The total number of options granted during the period, including canceled grants.

Exercises during the period
The total number of options exercised during the period.

Forfeitures during the period
The total number of options canceled *prior to* vesting during the period.

Expirations during the period
The total number of options canceled *after* vesting during the period.

Total outstanding at end of period
Again, no mystery here!

To determine the total number of options outstanding at the end of the period, take the total outstanding at the start of the period, add any options granted during the period, and subtract exercises, forfeitures and expirations.

Total exercisable at end of period
The total number of options exercisable at the end of the period is the number of options that have vested less the number of options that have been exercised for outstanding option grants.

Total vested or expected to vest at end of the period
The total vested or expected to vest at end of the period is equal to the sum of the number vested plus the number expected to vest.

- Total vested – The number of vested shares that are exercisable at the end of the period.
- Expected to vest – The number of shares projected to vest at the end of the period. This value is determined by first identifying the number of shares that are outstanding but have not yet vested as of the end of the period but then applying the estimated forfeiture rate.

Other required calculations

Weighted average exercise price
For each of the previous nine disclosures, you also need to disclose the weighted average exercise price. For example, if an option was granted for 1,000 shares at an exercise price of $2.00 and another option granted for 1,000 shares at an exercise price of $3.00 during the year, the weighted average exercise price for the number granted during the period would be (1,000*$2.00) + (1,000*$3.00)/2,000 = $2.50.

For each disclosure, look at each individual grant, exercise or cancellation that goes into the calculation, and calculate the weighted average exercise price. A standard formula for the weighted average exercise price for each item could be expressed as (SUM(Disclosure Item for that grant * Exercise Price for that grant) for all option grants used in the Disclosure Item)/SUM of that Disclosure Item.

Weighted average contractual life

For the disclosures relating to total outstanding at end of the period, total exercisable at end of the period, total unvested at end of the period, and total vested or expected to vest at end of the period, you also need to disclose the weighted average remaining contract term. For this calculation, you must first determine the remaining contract term for each option and apply a weighted average based on the number of shares.

Calculate the remaining contract term for each option by taking the number of days left between the reporting period end date and the date of expiration for the grant and dividing it by 365 (because the value is disclosed in number of years). A standard formula for the weighted average remaining contract term for each item could be expressed as (SUM(disclosure item for that grant * Remaining contract term for that grant) for all option grants used in the disclosure Item)/SUM of that disclosure Item.

Aggregate intrinsic value

For the disclosures relating to total outstanding at end of the period, total exercisable at end of the period, total unvested at end of the period and total vested or expected to vest at end of the period, you may also need to disclose the aggregate intrinsic value. Intrinsic value is the difference between the fair market value at the end of the reporting period and the exercise price of the option. Aggregate intrinsic value is the total of the intrinsic values for all the options included in the calculation of the disclosure item. Intrinsic values are not always required for privately-held companies, but if you have the data, you may choose to report it.

A standard formula for aggregate intrinsic value for each item could be expressed as [SUM(disclosure item * (fair market value on reporting period end date – exercise price for the grant)] for all option grants used in the disclosure item. For example, assume the fair market value of an option on the reporting period end date is $3.00. Then, assume there is an option grant for 1,000 shares outstanding at an exercise price of $2.00 and another option grant for 500 options outstanding at an exercise price of $1.00. The aggregate intrinsic value would be calculated as [1,000 * ($3.00 – $2.00)] + [500 * ($3.00 – $1.00)] = $2,000.00

Expense disclosures

When reporting your equity compensation expense, at a minimum, you should report the following additional information in your disclosures.

Projected fair value

The projected fair value is the total amount of expense expected to be recognized. This includes everything expensed to date, the amount being expensed in the current period and the amount to be expensed in future periods.

Expense reported prior to period

The amount of expense recognized prior to the beginning of the current reporting period.

Projected expense

The projected expense is the amount of expense you expect to recognize in the current period based on the amortization schedule at the beginning of the period or at grant date (if the option was granted during the current period)

True up amount
The total credit or debit disclosed in the current reporting period.

Expense to report
The expense to report is the total amount of expense recognized as equity compensation expense in the current reporting period. It is equal to the projected expense plus the true-up amount.

Total reported expense
The total reported expense is the total amount of expense recognized through the end of the current reporting period. It is equal to the expense reported prior to period plus the expense to report.

Remaining expense (aka unrecognized compensation)
The remaining expense, or unrecognized compensation, is the amount to expense over the remaining service period (after the current reporting period). It is equal to projected fair value minus the total reported expense.

Weighted-average period to recognize unrecognized compensation
This disclosure is an estimate of the amount of time it will take to fully expense the remaining amount of unrecognized equity compensation expense. To calculate the remaining period left to expense all option grants, take the number of months from the current reporting period end date for each option grant and multiply by the unrecognized expense for the future period.

The sum of the value for all grants is then divided by the total unrecognized expense. It will equal the weighted average period left to recognize the unrecognized equity compensation expense. The disclosure should be expressed as a number of years (e.g., such as 2.25 years).

Appendix: All about dynamic forfeitures rates

When companies issue stock awards, they are required to recognize the expense for each grant. In doing so, they must take into account the number of forfeitures they anticipate. This estimate is based on historical forfeiture activity analysis and is expected to change over time as continued analysis is done. Expense is accrued according to a schedule that takes this estimate into account, with the additional requirement that expense accrued at any given point in time must at least be equal to expense associated with shares vested at that time.

The dynamic method is one of many ways to calculate the estimated forfeiture rate. It's based on the concept that as the vesting date (or more specifically the service period end-date of an award's tranche) draws near, the chance of those shares forfeiting decreases. Therefore, companies following this approach will gradually decrease the estimated forfeiture rate when calculating the expense at every reporting period, until the service period end-date is reached and 100% of the expense is realized.

Your forfeiture rate serves as the starting point of the dynamic forfeiture rate calculation. Ideally, your software will update your forfeiture rate as your reporting periods progress. The expense realized in each period is based on this new rate. The new expense also takes into account the necessary retroactive adjustments that must be done, due to the changed forfeiture rate.

The graphs on the right show a comparison between the flat-rate and dynamic models. The dotted black line represents the shares that would be accrued in each period based on the total shares granted. The colored sections show what would actually be expensed due to an estimated forfeiture rate reduction.

A flat rate forces a company to take a bulk positive expense adjustment in the period when shares become vested to ensure the expense is equal to the number of shares vested. Depending on the forfeiture rate in use, this could represent a material increase to the company's expense.

In the dynamic model, where this rate is adjusted to gradually decrease over time, that adjustment is instead spread throughout the service period.

Forfeiture rate comparison

Grant date: 01 January 2011

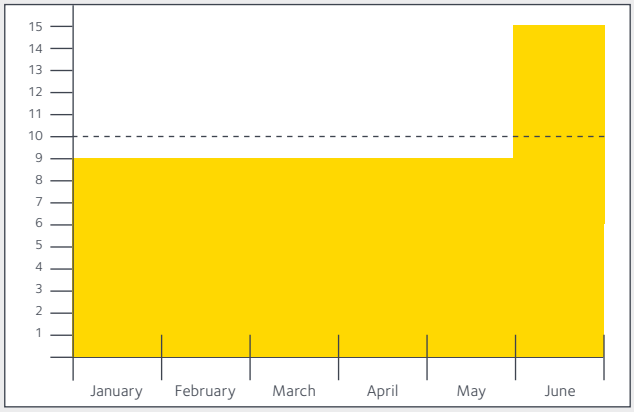
Vest date: 30 June 2011

Shares vesting: 60

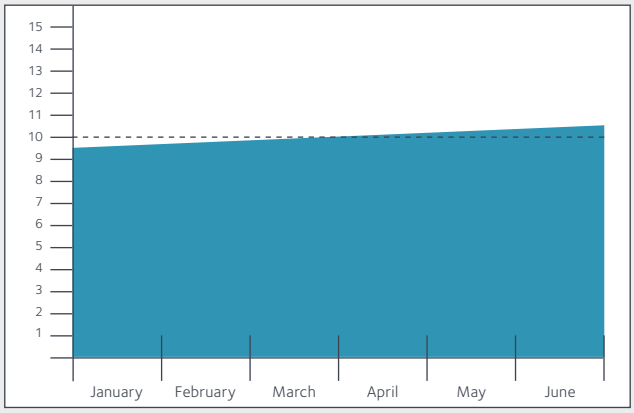
Forfeiture rate: 10%

Note that graphs are approximated in order to demonstrate conceptual differences.

Static forfeiture rate expense recognition



Dynamic forfeiture rate expense recognition



Okay, breathe now.

Whew. That was exhausting. And it makes us think of our favorite quotation.

> *"Everything should be made as simple as possible. But not simpler."*

Know who said that? Our man Albert Enstein. Chances are, he wasn't talking about the labyrinthine world of expense accounting for share-based payments, but he may as well have been.

We help you manage that complexity through brilliantly simple software and remarkable service.

Spreadsheets may be doing the trick for you now, but when things start to get complicated, talk to us. We promise we'll make it as simple as possible.

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About Solium

Since 1999, Solium (TSX: SUM) has been helping companies decomplexify their equity compensation plans.

Our software, Solium Shareworks™, brings all the key elements of equity compensation administration together in one powerful cloud-based solution. Now you can collaborate, share, comply, model, support decisions, create reports and control your plan more simply, securely and brilliantly.

Solium has offices in the United States, Canada, the United Kingdom and Australia.

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