Figure: 28 TAC §3.1506

$1000q_x^{2012+n} = 1000q_x^{2012} * (1 - G2_x)^n$

where:

x is the age in year 2012+n;

$1000q_x^{2012}$ is the applicable mortality rate from the 2012 IAM Period Table in Figure: 28 TAC §3.1501(5)(A); and

$G2_x$ is the projection scale rate from Scale G2 in Figure: 28 TAC §3.1501(5)(B).

The resulting $1000q_x^{2012+n}$ must be rounded to three decimal places, e.g., 0.741 deaths per 1,000. The rounding must occur only once according to the formula above which begins with the 2012 period table rate.

For example:

For a male age 30 in 2013 (2012 + 1):
$1000q_{30}^{2013} = 1000q_{30}^{2012} * (1 - G2_{30})^1 = 0.741 * (1 - 0.010)^1 = 0.73359$, which is rounded to 0.734

For a male age 30 in 2014 (2012 + 2):
$1000q_{30}^{2014} = 1000q_{30}^{2012} * (1 - G2_{30})^2 = 0.741 * (1 - 0.010)^2 = 0.7262541$, which is rounded to 0.726

For a male age 30 in 2015 (2012 + 3):
$1000q_{30}^{2015} = 1000q_{30}^{2012} * (1 - G2_{30})^3 = 0.741 * (1 - 0.010)^3 = 0.718991559$, which is rounded to 0.719

For a male age 30 in 2016 (2012 + 4):
$1000q_{30}^{2016} = 1000q_{30}^{2012} * (1 - G2_{30})^4 = 0.741 * (1 - 0.010)^4 = 0.711801643$, which is rounded to 0.712

For a male age 30 in 2037 (2012 + 25):
$1000q_{30}^{2037} = 1000q_{30}^{2012} * (1 - G2_{30})^{25} = 0.741 * (1 - 0.010)^{25} = 0.576365627$, which is rounded to 0.576

A method leading to incorrect rounding would be for the male age 30 in 2014, above, to calculate $1000q_{30}^{2014}$ as $1000q_{30}^{2012} * (1 - 0.010)$ rounded to 0.734 and then multiply again by (1 – 0.010) and round a second time which would produce 0.727. It is incorrect to round more than once in order to calculate $1000q_{30}^{2014}$.

Example for a specific valuation year where future projections involving mortality are needed for that valuation year:

The mortality rate must be calculated per the formula and rounding above for the valuation year and for each projection year needed for that valuation year. For a person age x in the valuation year the mortality rate would be derived for that person age x in the valuation year, then the rate would be derived for that person who would be age x+1 in the first projection year after the valuation year, then the rate would be derived for that person who would be age x+2 in the second projection year after the valuation year, etc.

For example, assume a male age 30 in the valuation year 2015.

The mortality rate for this male age 30 in the valuation year 2015 is calculated as:
$1000q_{30}^{2015} = 1000q_{30}^{2012} * (1 - G2_{30})^{3} = 0.741 * (1 - 0.010)^{3} = 0.718991559$, which is rounded to 0.719

The mortality rate in the first projection year (2016) past the valuation year for this male (age 31 in 2016) is:
$1000q_{31}^{2016} = 1000q_{31}^{2012} * (1 - G2_{31})^{4} = 0.751 * (1 - 0.010)^{4} = 0.721407604$, which is rounded to 0.721

The mortality rate in the second projection year (2017) past the valuation year for this male (age 32 in 2017) is:
$1000q_{32}^{2017} = 1000q_{32}^{2012} * (1 - G2_{32})^{5} = 0.754 * (1 - 0.010)^{5} = 0.717046498$, which is rounded to 0.717

The mortality rate in the twenty-second projection year (2037) past the valuation year for this male (age 52 in 2037) is:
$1000q_{52}^{2037} = 1000q_{52}^{2012} * (1 - G2_{52})^{25} = 2.545 * (1 - 0.011)^{25} = 1.930167846$, which is rounded to 1.930

The mortality rate in the twenty-third projection year (2038) past the valuation year for this male (age 53 in 2038) is:
$1000q_{53}^{2038} = 1000q_{53}^{2012} * (1 - G2_{53})^{26} = 2.779 * (1 - 0.012)^{26} = 2.030341567$, which is rounded to 2.030