CRM_{AdjFac} = component ratio method adjustment factor (eq. 4)
Top_SLA = top and branch structural loss adjustment factor

Standing dead belowground biomass:

$$BG_{odt} = ROOT * CRM_{AdjFac} * BG\_SLA \quad \text{(eq. 10)}$$

Where:
BG_{odt} = oven-dry biomass (kg) of standing dead coarse roots (≥ 0.254 cm diameter)
CRM_{AdjFac} = component ratio method adjustment factor (eq. 4)
BG_SLA = belowground structural loss adjustment factor
ROOT= total_AG_biomass_Jenkins * root_ratio (from Jenkins)

Standing dead tree example calculations

Standing dead biomass calculation for a 26.7 cm quaking aspen tree in decay class 3 in the Lake States region (please note values may not be exact due to rounding).

Volume to merchantable bole biomass

1. Gross volume (VOLCFGRS) = 0.377 m^3
2. Sound volume (VOLCFSND) = 0.202 m^3

Proposed SDT decay and bark structural reductions: merchantable bole biomass

3. Stem wood biomass (eq. 1): $B_{odw} = V_{gw} * SG_{gw} * W * DRF * BOLE\_SLA$ = 0.202 * 0.35 * 1000 * 0.540 * 1 = 38.18 kg
4. Bole bark biomass (eq. 2): $B_{odb} = V_{gw} * BV\% * SG_{gb} * W * DRF * BARK\_SLA$ = 0.202 * 0.144 * 0.5 * 1000 * 0.540 * 0.39 = 3.06 kg
5. Total bole biomass (eq. 3): $B_{odt} = B_{odw} + B_{odb}$ = 38.18 + 3.06 = 41.3 kg

Merchantable bole biomass to tree component biomass

6. CRM adjustment factor (eq.4): $CRM_{AdjFac} = \frac{B_{odt}}{MST} = \frac{41.3}{201.79}$ = 0.20

Proposed SDT structural reductions: tree component biomass

7. Stump volume (eq. 5): $S_{vosb} = \frac{\pi(dbh)^2}{4(144)}\left[\left((A-B)^2h + 11B(A-B)\ln(h+1) - \frac{30.25}{h+1}B^2\right)\right]_a^b =$
$\frac{\pi(10.5)^2}{4(144)}\left[\left((1-0.09658)^2 1 + 11 * 0.09658(1-0.09658)\ln(1+1) - \frac{30.25}{1+1}0.09658^2\right) - \left((1-0.09658)^2 0 + 11 * 0.09658(1-0.09658)\ln(0+1) - \frac{30.25}{0+1}0.09658^2\right)\right]0.02832$ = 0.0276 m^3
$S_{visb} = \frac{\pi(10.5)^2}{4(144)}\left[\left((0.91882-0.08593)^2 1 + 11 * 0.08593(0.91882-0.08593)\ln(1+1) - \frac{30.25}{1+1}0.08593^2\right) - \left((0.91882-0.08593)^2 0 + 11 * 0.08593(0.91882-0.08593)\ln(0+1) - \frac{30.25}{0+1}0.08593^2\right)\right]0.02832$ = 0.0230 m^3
8. Stump wood biomass (eq. 6): $S_{odsw} = S_{visb} * SG_{gw} * W$ = 0.0230 * 0.35 * 1000 = 8.05 kg
9. Stump bark biomass (eq. 7): $S_{odsb} = (S_{vosb} - S_{visb})SG_{gb} * W$ = (0.0276 – 0.0230)0.5 * 1000 = 2.3 kg
10. Total stump biomass (eq. 8): $S_{odt} = (S_{odsw} + S_{odsb})CRM_{AdjFac} * STUMP\_SLA$ = (8.05 + 2.30)0.20 * 1 = 2.1 kg
11. Top and branch biomass (eq. 9): $T_{odt} = (TAB - MST - STP - FOL)CRM_{AdjFac} * Top\_SLA$ = (277.94 – 201.79 – 10.36 – 5.85)0.20 * 0.20 = 2.5 kg
12. Belowground biomass (eq. 10): $BG_{odt} = ROOT * CRM_{AdjFac} * BG\_SLA$= 52.82 * 0.20 * 0.80 = 8.6 kg

Biomass to carbon

13. Total aboveground biomass = $B_{odt} + S_{odt} + T_{odt}$ = 41.3 + 2.1 + 2.5 = 45.9 kg
14. Total above and belowground biomass = 45.9 + 8.6 = 54.5 kg
15. Total aboveground carbon = $(B_{odt} + S_{odt} + T_{odt})0.5$ = (41.3 + 2.1 +2.5)0.5 = 22.95 kg C
16. Total above and belowground carbon = 54.5 * 0.5 = 27.25 kg