

Eq. 1:	$lbs - CO_2 = 2C_{gasoline} \left[\frac{lbs-CO_2}{gal} \right] d_{staff} [mi] v_{ass} \left[\frac{1}{day} \right] t_{ass} [days] \left(FE_{pick-up} \left[\frac{gal}{mi} \right] (1 - C) + FE_i \left[\frac{gal}{mi} \right] \cdot C \right)$
Eq. 2:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{geo} FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{geo} [ft] C_{geo} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 3:	$lbs - CO_2 = C_{diesel} \left(\frac{n_{mon,ass} C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] FE_{mon} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{mon,ass} [ft] C_{mon,ass} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 4:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{geo} FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{geo,pilot} [ft] C_{geo} LOE}{R_{geo} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 5:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{mon} FE_{mon} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{mon,pilot} [ft] C_{mon} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 6:	$lbs - CO_2 = 2C_{gasoline} \left[\frac{lbs-CO_2}{gal} \right] d_{staff} [mi] v_{operate} \left[\frac{1}{month} \right] 12 \left[\frac{months}{year} \right] t_{operate} [years] \left(FE_{pick-up} \left[\frac{gal}{mi} \right] (1 - C) + FE_i \left[\frac{gal}{mi} \right] \cdot C \right)$
Eq. 7:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left((n_{geo} + n_{mon,ass} + n_{mon} + n_{exist}) \frac{FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{avg} [ft] C_{over-drill}}{R_{aband} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$

Eq. 8:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(PE_{exc,pilot} \left[\frac{gal}{hr} \right] 4[hrs] + 2n_{exc,pilot} FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery}[mi] \right) + 4C_{gasoline} \left[\frac{lbs-CO_2}{gal} \right] FE_{pick-up} \left[\frac{gal}{mi} \right] d_{staff}[mi]$
Eq. 9:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{boring} FE_{boring} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{boring}[ft] C_{boring} LOE}{R_{geo} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery}[mi] \right)$
Eq. 10:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{mon} FE_{mon} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{mon}[ft] C_{mon} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery}[mi] \right)$
Eq. 11:	$lbs - CO_2 = n_{exc} C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] PE_{exc} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] t_{operate}[days]$
Eq. 12:	$lbs - CO_2 = 4n_{semi} d_{delivery}[mi] FE_{semi} \left[\frac{gal}{mi} \right] C_{diesel} \left[\frac{lbs-CO_2}{gal} \right]$
Eq. 13:	$lbs - CO_2 = C_{pot-wat} \left[\frac{kWh}{MG} \right] Q_{potable}[MG] C_{elec} \left[\frac{lbs - CO_2}{kWh} \right]$
Eq. 14:	$lbs - CO_2 = 2C_{gasoline} \left[\frac{lbs-CO_2}{gal} \right] d_{staff}[mi] v_{operate} \left[\frac{1}{day} \right] t_{operate}[days] \left(FE_{semi} \left[\frac{gal}{mi} \right] (1 - C) + FE_i \left[\frac{gal}{mi} \right] C \right) + 4n_{exc} C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery}[mi]$
Eq. 15:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] C_{over-drill} \left((n_{geo} + n_{mon,ass} + n_{bor} + n_{mon} + n_{exist}) \frac{FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{avg}[ft]}{R_{aband} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery}[mi] \right)$

Eq. 16:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(PE_{i,pilot} \left[\frac{gal}{hr} \right] 8 \left[\frac{hrs}{day} \right] t_{pilot} [days] + 2d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right) + 2C_{gasoline} \left[\frac{lbs-CO_2}{gal} \right] FE_{pick-up} \left[\frac{gal}{mi} \right] d_{staff} [mi] t_{pilot} [days]$
Eq. 17:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{bor} FE_{bor} \left[\frac{gal}{hr} \right] 8 \left[\frac{hrs}{day} \right] h_{bor} [ft] C_{bor} LOE}{R_{bor} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 18:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{mon} FE_{mon} \left[\frac{gal}{hr} \right] 8 \left[\frac{hrs}{day} \right] h_{mon} [ft] C_{mon} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 19:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{rec} FE_{rec} \left[\frac{gal}{hr} \right] 8 \left[\frac{hrs}{day} \right] h_{rec} [ft] C_{rec} LOE}{R_{rec} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 20:	$lbs - CO_2 = PE_i \left[\frac{MMBTU}{year} \right] C_{i,operations} \left[\frac{lbs - CO_2}{MMBTU} \right] (1 - C_{i,suppliment}) t_{operate} [years] + C_{pot-wat} \left[\frac{kWh}{MG} \right] Q_{potable} \left[\frac{MG}{year} \right] t_{operate} [years] C_{elec} \left[\frac{lbs - CO_2}{kWh} \right] + E_{enclosure} \left[\frac{kWh}{ft^2 year} \right] C_{elec} \left[\frac{lbs - CO_2}{kWh} \right] A_{enclosure} [ft^2] t_{operate} [years] \cdot B$
Eq. 21:	$lbs - CO_2 = C_{i,operations} \left[\frac{lbs - CO_2}{MMBTU} \right] (1 - C_{i,suppliment}) t_{operate} [years] \left(n_{GAC} PE_{GAC} \left[\frac{MMBTU}{year} \right] GAC_{\%} + f_{GAC} \left[\frac{1}{year} \right] PE_{GAC-regen} \left[\frac{MMBTU}{lbs} \right] GAC_{lbs} [lbs] + \frac{525,600 \left[\frac{min}{year} \right] C_{p,air} \left[\frac{MMBTU}{lbs^{\circ}F} \right] \rho_{air-70^{\circ}F} \left[\frac{lbs}{ft^3} \right]}{0.5} \left(F_{off-gas-ThermOx} \left[\frac{ft^3}{min} \right] \Delta T_{ThermOx} [^{\circ}F] ThermOx_{\%} + F_{off-gas-CatOx} \left[\frac{ft^3}{min} \right] \Delta T_{CatOx} [^{\circ}F] CatOx_{\%} \right) + PE_{blower} \left[\frac{MMBTU}{year} \right] (ThermOx_{\%} + CatOx_{\%}) \right) + 2v_{delivery} \left[\frac{1}{year} \right] C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] t_{operate} [years]$

Eq. 22:	$lbs - CO_2 = 2C_{gasoline} \left[\frac{lbs - CO_2}{gal} \right] d_{staff} [mi] \left(\left(FE_{pick-up} \left[\frac{gal}{mi} \right] (1 - C) + FE_i \left[\frac{gal}{mi} \right] C \right) v_{operate} \left[\frac{1}{month} \right] 12 \left[\frac{months}{year} \right] t_{operate} [years] \right. \\ \left. + FE_{pick-up} \left[\frac{gal}{mi} \right] v_{install} \left[\frac{1}{day} \right] t_{install} [days] \right) + 2C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi]$
Eq. 23:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(FE_{YI} \left[\frac{gal}{hr} \right] t_{YI} [hr] + 2d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$
Eq. 24:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left((n_{geo} + n_{pilot} + n_{mon,ass} + n_{mon} + n_{exist} + n_{rec}) \frac{FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{avg} [ft] C_{over-drill}}{R_{aband} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right)$
Eq. 25:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(PE_{i,pilot} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] t_{pilot} [days] + 2d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right) + C_{gasoline} \left[\frac{lbs - CO_2}{gal} \right] FE_{pick-up} \left[\frac{gal}{mi} \right] 2d_{staff} [mi] t_{pilot} [days]$
Eq. 26:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(\frac{n_{bor} FE_{bor} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{bor} [ft] C_{bor} LOE}{R_{bor} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$
Eq. 27:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(\frac{n_{mon} FE_{mon} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{mon} [ft] C_{mon} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$
Eq. 28:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(\frac{n_{rec} FE_{rec} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{rec} [ft] C_{rec} LOE}{R_{rec} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$

<p>Eq. 29a:</p>	$ \begin{aligned} lbs - CO_2 = & PE_i \left[\frac{MMBTU}{year} \right] (1 - C_{i,supp}) C_{i,operations} \left[\frac{lbs \cdot CO_2}{MMBTU} \right] t_{operate} [years] \\ & + n_{rec}[well] 2 \left[\frac{hp}{well} \right] 0.002545 \left[\frac{MMBTU}{hr \cdot hp} \right] 8760 \left[\frac{hr}{year} \right] t_{operate} [years] C_{i,operations} \left[\frac{lbs \cdot CO_2}{MMBTU} \right] (1 - C_{i,supp}) \\ & + E_{enclosure} \left[\frac{kWh}{ft^2 \cdot year} \right] C_{elec} \left[\frac{lbs \cdot CO_2}{kWh} \right] A_{enclosure} [ft^2] t_{operate} [years] \cdot B \end{aligned} $
<p>Eq. 29b:</p>	$ \begin{aligned} lbs - CO_2 = & \left(n_{GAC,water} PE_{GAC,water} \left[\frac{MMBTU}{year} \right] GAC_{\%} + f_{GAC,water} \left[\frac{1}{year} \right] PE_{GAC,regen} \left[\frac{MMBTU}{lbs} \right] GAC_{lb,water} [lbs] \right) C_{i,operations} (1 \\ & - C_{i,supp}) t_{operate} [years] + 2v_{delivery} \left[\frac{1}{year} \right] C_{diesel} \left[\frac{lbs \cdot CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] t_{operate} [years] \\ & + C_{pot,wat} \left[\frac{kWh}{MG} \right] Q_{potable} \left[\frac{MG}{year} \right] t_{operate} [years] C_{elec} \left[\frac{lbs \cdot CO_2}{kWh} \right] \end{aligned} $
<p>Eq. 30:</p>	$ \begin{aligned} lbs - CO_2 = & 2C_{gasoline} \left[\frac{lbs \cdot CO_2}{gal} \right] d_{staff} [mi] \left(FE_i \left[\frac{gal}{mi} \right] v_{operate} \left[\frac{1}{month} \right] 12 \left[\frac{months}{year} \right] t_{operate} [years] \right. \\ & \left. + FE_{semi} \left[\frac{gal}{mi} \right] v_{install} \left[\frac{1}{day} \right] t_{install} [days] \right) + 2C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \end{aligned} $
<p>Eq. 31:</p>	$ lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(FE_{YI} \left[\frac{gal}{hr} \right] t_{YI} [hr] + 2d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right) $
<p>Eq. 32:</p>	$ lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left((n_{bor,ass} + n_{bor} + n_{mon,ass} + n_{mon} + n_{exist} + n_{rec}) \frac{FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{avg} [ft] C_{cover-drill}}{R_{aband} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right) $
<p>Eq. 33:</p>	$ lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(PE_{i,pilot} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] t_{pilot} [days] + 2d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right) + C_{gasoline} \left[\frac{lbs - CO_2}{gal} \right] FE_{pick-up} \left[\frac{gal}{mi} \right] 2d_{staff} [mi] t_{pilot} [days] $

Eq. 34:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{bor} FE_{bor} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{bor} [ft] C_{bor} LOE}{R_{bor} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$
Eq. 35:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{mon} FE_{mon} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{mon} [ft] C_{mon} LOE}{R_{mon} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$
Eq. 36:	$lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left(\frac{n_{rec} FE_{rec} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{rec} [ft] C_{rec} LOE}{R_{rec} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right)$
Eq. 37:	$lbs - CO_2 = PE_i \left[\frac{MMBTU}{year} \right] C_{i,operations} \left[\frac{lbs - CO_2}{MMBTU} \right] (1 - C_{i,supp}) t_{operate} [years] + C_{pot-wat} \left[\frac{kWh}{MG} \right] Q_{potable} \left[\frac{MG}{year} \right] t_{operate} [years] C_{elec} \left[\frac{lbs - CO_2}{kWh} \right] + E_{enclosure} \left[\frac{kWh}{ft^2 year} \right] C_{elec} \left[\frac{lbs - CO_2}{kWh} \right] (1 - C_{i,supp}) A_{enclosure} [ft^2] t_{operate} [years] \cdot B$
Eq. 38:	$lbs - CO_2 = \left(n_{GAC,water} PE_{GAC,water} \left[\frac{MMBTU}{year} \right] GAC_{\%} + f_{GAC} \left[\frac{1}{year} \right] PE_{GAC-regen} \left[\frac{MMBTU}{lbs} \right] GAC_{lbs-water} [lbs] \right) C_{i,operations} \left[\frac{lbs - CO_2}{MMBTU} \right] (1 - C_{i,supp}) t_{operate} [years] + 2v_{delivery} \left[\frac{1}{year} \right] C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] t_{operate} [years]$

<p>Eq. 39:</p>	$ \begin{aligned} lbs - CO_2 = & \left(n_{GAC} PE_{GAC} \left[\frac{MMBTU}{year} \right] GAC_{\%} + f_{GAC} \left[\frac{1}{year} \right] PE_{GAC-regen} \left[\frac{MMBTU}{lbs} \right] GAC_{lbs} [lbs] \right. \\ & + \frac{525,600 \left[\frac{min}{year} \right] C_{p_{air}} \left[\frac{MMBTU}{lbs^{\circ}F} \right] \rho_{air-70^{\circ}F} \left[\frac{lbs}{ft^3} \right]}{0.5} \left(F_{off-gas-ThermOx} \left[\frac{ft^3}{min} \right] \Delta T_{ThermOx} [^{\circ}F] ThermOx_{\%} \right. \\ & \left. \left. + F_{off-gas-CatOx} \left[\frac{ft^3}{min} \right] \Delta T_{CatOx} [^{\circ}F] CatOx_{\%} \right) + PE_{blower} \left[\frac{MMBTU}{year} \right] (ThermOx_{\%} + CatOx_{\%}) \right) C_{i,operations} \left[\frac{lbs - CO_2}{MMBTU} \right] (1 \\ & - C_{i,supp}) t_{operate} [years] + 2v_{delivery} \left[\frac{1}{year} \right] C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] t_{operate} [years] \end{aligned} $
<p>Eq. 40:</p>	$ \begin{aligned} lbs - CO_2 = & 2C_{gasoline} \left[\frac{lbs - CO_2}{gal} \right] d_{staff} [mi] \left(\left(FE_{pick-up} \left[\frac{gal}{mi} \right] (1 - C) + FE_i \left[\frac{gal}{mi} \right] \cdot C \right) v_{operate} \left[\frac{1}{month} \right] 12 \left[\frac{months}{year} \right] t_{operate} [years] \right. \\ & \left. + FE_{pick-up} \left[\frac{gal}{mi} \right] v_{install} \left[\frac{1}{day} \right] t_{install} [days] \right) + 2C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \end{aligned} $
<p>Eq. 41:</p>	$ lbs - CO_2 = C_{diesel} \left[\frac{lbs - CO_2}{gal} \right] \left(FE_{YI} \left[\frac{gal}{hr} \right] t_{YI} [hr] + 2d_{delivery} [mi] FE_{semi} \left[\frac{gal}{mi} \right] \right) $
<p>Eq. 42:</p>	$ lbs - CO_2 = C_{diesel} \left[\frac{lbs-CO_2}{gal} \right] \left((n_{bor,ass} + n_{bor} + n_{mon,ass} + n_{mon} + n_{exist} + n_{rec}) \frac{FE_{geo} \left[\frac{gal}{hr} \right] 8 \left[\frac{hr}{day} \right] h_{avg} [ft] C_{cover-drill}}{R_{aband} \left[\frac{ft}{day} \right]} + 2(n_{sup} + 1) FE_{semi} \left[\frac{gal}{mi} \right] d_{delivery} [mi] \right) $