Linear Program Model for Precision Transfer

Minimize

$$\begin{aligned}&2520W_1 + 2400W_2 + 2760W_3 + 2520W_4 + 2640W_5 + 2640W_6\\&+ 450(H_1 + H_2 + H_3 + H_4 + H_5 + H_6)\\&+ 600(L_1 + L_2 + L_3 + L_4 + L_5 + L_6)\\&+ 5(I_1 + I_2 + I_3 + I_4 + I_5 + I_6)\end{aligned}$$

subject to
(Production-capacity constraints)

$$P_1 \le 84W_1, \quad P_2 \le 80W_2, \quad P_3 \le 92W_3, \quad P_4 \le 84W_4, \quad P_5 \le 88W_5, \quad P_6 \le 88W_6,$$

(Work-force constraints)

$$\begin{aligned}&W_1 = 35 + H_1 - L_1, \quad W_2 = W_1 + H_2 - L_2, \quad W_3 = W_2 + H_3 - L_3,\\&W_4 = W_3 + H_4 - L_4, \quad W_5 = W_4 + H_5 - L_5, \quad W_6 = W_5 + H_6 - L_6,\end{aligned}$$

(Inventory-balance constraints)

$$\begin{aligned}&I_1 = P_1 - 2760, \quad I_2 = I_1 + P_2 - 3320, \quad I_3 = I_2 + P_3 - 3970,\\&I_4 = I_3 + P_4 - 3540, \quad I_5 = I_4 + P_5 - 3180, \quad I_6 = I_5 + P_6 - 2900\,(= 0),\end{aligned}$$

(Non-negativity constraints)

$$\begin{aligned}&P_1, P_2, P_3, P_4, P_5, P_6, W_1, W_2, W_3, W_4, W_5, W_6, H_1, H_2, H_3, H_4, H_5, H_6,\\&L_1, L_2, L_3, L_4, L_5, L_6, I_1, I_2, I_3, I_4, I_5, I_6 \ge 0\end{aligned}$$