

Minimize $3855.84y_{11}$

$$+ 125804.84y_{21} + 269304.84y_{22} + 464304.84y_{23} + 761304.84y_{24} + 1623982.84y_{25}$$

$$+ 13456.00y_{31}$$

$$+ 6583.98y_{41}$$

$$+ 84000y_{52}$$

$$+ 61.150x_{11}$$

$$+ 68.099x_{21} + 66.049x_{22} + 64.099x_{23} + 62.119x_{24}$$

$$+ 62.19x_{31}$$

$$+ 72.488x_{41}$$

$$+ 70.150x_{51} + 68.150\left(0.9995^{\frac{x_{52}}{1000}}\right)x_{52}$$

Subject to: $x_{11} + x_{21} + x_{22} + x_{23} + x_{24} + x_{31} + x_{41} + x_{51} + x_{52} = 239600.48$

$$x_{11} \leq 33000y_{11}$$

$$y_{11} \leq 1$$

$$x_{21} \geq 22000.001y_{21}$$

$$x_{21} \leq 70000y_{21}$$

$$x_{22} \geq 70000.001y_{22}$$

$$x_{22} \leq 100000y_{22}$$

$$x_{23} \geq 100000.001y_{23}$$

$$x_{23} \leq 150000y_{23}$$

$$x_{24} \geq 150000.001y_{24}$$

$$x_{24} \leq 160000y_{24}$$

$$x_{25} \leq 22000y_{25}$$

$$\sum_{i=1}^5 y_{2i} \leq 1$$

$$x_{31} \leq 165600y_{31}$$

$$y_{31} \leq 1$$

$$x_{41} \leq 12000y_{41}$$

$$y_{41} \leq 1$$

$$x_{51} \leq 4200y_{51}$$

$$x_{52} \geq 42000.001y_{52}$$

$$x_{52} \leq 77000y_{52}$$

$$\sum_{i=1}^2 y_{5i} \leq 1$$

$$x_{ij} \in \mathbb{R}_0^+$$

$$y_{ij} \in 0, 1$$