

```
% Linear program to minimize shipping costs for rubber duck company
```

```
cost = [0, 0, 0, 6, 3, 3, 7, 2, 7, 5, 4, 6, 7, 4, 5, 6, 2, 4, 5, 2, 0, 0, 0, 0, 0];
upper = [700, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200];
lower = [700, 200, 200, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 150, 300, 250, 200];
```

```
beq = zeros(8, 1);
Aeq = zeros(8, 25);
```

```
% Santa Fe Conservation Constraints
```

```
Aeq(1, 1) = 1;
Aeq(1, 4) = -1;
Aeq(1, 5) = -1;
Aeq(1, 6) = -1;
Aeq(1, 7) = -1;
```

```
% El Paso Conservation Constraints
```

```
Aeq(2, 2) = 1;
Aeq(2, 8) = -1;
Aeq(2, 9) = -1;
Aeq(2, 10) = -1;
```

```
% Tamba Bay Conservation Constraints
```

```
Aeq(3, 3) = 1;
Aeq(3, 11) = -1;
Aeq(3, 12) = -1;
Aeq(3, 13) = -1;
```

```
% Houston Conservation Constraints
```

```
Aeq(4, 6) = 1;
Aeq(4, 8) = 1;
Aeq(4, 12) = 1;
Aeq(4, 14) = -1;
Aeq(4, 15) = -1;
Aeq(4, 16) = -1;
Aeq(4, 17) = -1;
Aeq(4, 20) = 1;
Aeq(4, 22) = -1;
```

```
% Atlanta Conservation Constraints
```

```
Aeq(5, 7) = 1;
Aeq(5, 10) = 1;
Aeq(5, 11) = 1;
Aeq(5, 17) = 1;
Aeq(5, 18) = -1;
Aeq(5, 19) = -1;
Aeq(5, 20) = -1;
Aeq(5, 21) = -1;
```

```
% Chicago Conservation Constraints
```

```
Aeq(6, 4) = 1;
Aeq(6, 14) = 1;
Aeq(6, 18) = 1;
Aeq(6, 25) = -1;
```

```
% LA Conservation Constraints
```

```
Aeq(7, 5) = 1;  
Aeq(7, 9) = 1;  
Aeq(7, 15) = 1;  
Aeq(7, 24) = -1;
```

```
% NY Conservation Constraints
```

```
Aeq(8, 13) = 1;  
Aeq(8, 16) = 1;  
Aeq(8, 19) = 1;  
Aeq(8, 23) = -1;
```

```
% Call linprog
```

```
options=optimset ('display', 'off');  
x = linprog(cost, [], [], Aeq, beq, lower, upper, [], options);  
min_cost = dot(cost, x)
```