We say that

- $\text{LA} = \text{City 1}$, $\text{Houston} = \text{City 2}$, $\text{NY} = \text{City 3}$, $\text{Miami} = \text{City 4}$. For convenience, we also think of City 1 as being City 5 as well.
- $d_i$ is the distance from City $i$ to City $i + 1$ ($i = 1, \ldots, 4$). According to the convention City 5 $\equiv$ City 1, $d_4$ is the distance from City 4 to City 1.
- $c_i$ is the price of a gallon of fuel in City $i$. ($i = 1, \ldots, 4$).

The model assuming that we have $n$ cities, is:

- **Variables:**
  - $x_i = \text{fuel bought in City } i$ ($i = 1, \ldots, n$).
  - $y_i = \text{fuel left in tank when arriving in City } i$ ($i = 1, \ldots, n + 1$).

- **Objective:**
  - $\min \sum_{i=1}^{n} c_i x_i$.

- **Constraints:**
  - $x_i \leq 10,000$ ($i = 1, \ldots, n$) (at most 10,000 gallons of fuel can be bought in each city).
  - $y_i \geq 600$ ($i = 1, \ldots, n + 1$) (at least 600 gallons of fuel must be left on arrival in each city).
  - $x_i + y_i \leq 12,000$ ($i = 1, \ldots, n$) (fuel tank capacity is 12,000 gallons).
  - $\frac{(y_i + x_i)}{y_{i+1}} - \frac{y_{i+1}}{\text{fuel on arrival in city } i+1} = d_i \left(1 + \frac{1}{2000} \frac{(y_i + x_i) + y_{i+1}}{2 \text{ avg fuel on this trip}} \right)$. ($i = 1, \ldots, n + 1$) Fuel balance flying from city $i$ to city $i+1$.
  - $y_{n+1} = y_1$ (expressing the fact that we want to plan for infinitely many circles).