have continuous derivatives. The energy consumption of a zero length link should be zero, \( f(0) = 0 \).

Clearly, the \( k \) segments of the link should all have the same length. Otherwise, the energy cost is higher as the sum of a nonlinear function of \( k \) variables, \( \sum_{i=1}^{k} f(l_i) \) with the condition \( \sum_{i=1}^{k} l_i = l \) is minimized with \( l_i = l/k \). Hence let us consider the scenario when \( k \) drivers with each one driving a segment of length \( l/k \) are introduced. Then the energy required is given by \( k f(l/k) \). The time taken is \( \min\{k, T\} \), which is \( O(k+T) \). We wish to analyze the \( ET \) cost for the complete range of values for \( k \) and find the value of \( k \) that minimizes it. Figure 4 shows the rough shape of this plot.

\( k \leq T \): For all functions \( f(x) \geq x \), \( ET \) is a non-increasing function of \( k \) for \( k \leq T \). For \( k \leq T \), the time is at least \( T \), while the energy is given by \( k f(l/k) \). Thus the \( ET \) product is \( g(k) = kT f(l/k) \). We claim that \( g(k) \) has a derivative that is non-positive for all \( 1 \leq k \leq l \).

\[
g'(k) = T \left[ f\left(\frac{l}{k}\right) + \frac{f'(l/k)}{k} \right]
\]

Since \( T \geq 0 \), to show that \( g'(k) \) is non-positive, we need to show that \( \left[ f\left(\frac{l}{k}\right) + \frac{f'(l/k)}{k} \right] \) is non-positive. Replacing \( l/k \) by \( x \), we get \( g_1(x) = f(x) + xf'(x) \) for \( 1 \leq x \leq l \). Since \( f(x) = 0 \) for \( x = 0 \), \( g_1(0) = 0 \). We show that for \( f(x) \geq x \) and \( x \geq 0 \),