The winch capacity (number of cars tha can be moved) can be approximated by considering the following factors*:

A (Starting Resistance)	=	25 lbs./ton of cargo for operation in ambient temperatures above freezing and up to 35 lbs./ton for operation below freezing.
B (Curve Resistance)	=	0.8 lbs./ton of cargo per degree of curvature.
C (Grade Resistance)	=	20 lbs./ton of cargo per percent of grade.
D (Track Condition)	=	0 lbs./ton of cargo for track in excellent condition to 10 or more lbs./ton for track in poor condition.
E (Condition of Railcar)	=	0 lbs./ton of cargo for a well maintained car to 10 or more lbs./ton for cars in poor condition.
Pulling capacity required per ton of cargo	=	A + B + C + D + E
N (Number of cars that can be moved)	=	$\frac{\text{Winch Capacity}}{(A + B + C + D + E)(\text{Cargo tonnage per car})}$

EXAMPLE:

With the following conditions, how many 80-ton railcars can be moved?

- Above freezing ambient temperature
- 1°F
- 1%
- Good track conditions
- Well maintained car

A + B + C + D + E = 25 lbs./tons + 0.8 lbs./ton + 20 lbs./ton + 0 lbs./ton = **45.8 lbs./ton**

N = 22,000/(45.8)(80) = 6 railcars

If B, C, D and E are all 0, eleven 80-ton railcars can be moved.

*Factors are based on the average requirements given in the A.R.E.A Manual for Railway Engineering and on railcar pull tests conducted by NABRICO. These factors are only guidelines.