

Sample Economic Evaluation of Calcium Chloride

You can use this evaluation sheet supplied by the City of Keene, NH to evaluate the use of calcium chloride as a deicing agent.

Data Collection

1. Estimate the number of tons of road salt being used each year.	<u>375</u> (1)
2. Estimate the percentage reduction of the total amount that is used when temperatures range from 0° to 25°F.	<u>60%</u> (2)
3. Estimate the percentage reduction in salt usage that is expected (Suggestion: if rates are now high use 40%; if low, use 30%).	<u>30%</u> (3)
4. Record the cost of road salt, per ton.	<u>35.00</u> (4)
5. Record the cost of liquid calcium chloride, per gallon (about \$0.75 per gallon).	<u>0.75</u> (5)
6. Select the number of gallons of calcium chloride to be applied to each ton of road salt (Suggested rate: 8 to 10 gallons per ton).	<u>10</u> (6)
7. Estimate the average capacity of salting trucks in tons.	<u>6.5</u> (7)
8. Estimate the average time it takes to return from a route, reload and drive to the next starting point.	<u>1</u> (8)
9. Estimate the average hourly cost of labor used on each truck. This should include whatever local burdens are appropriate (e.g., fringes, overtime, supervision, support, etc.).	<u>18.00</u> (9)

Evaluation Usage in The Temperature Range of 0° to 25°F

10. Calculate the amount of salt currently used:	<u>375</u> (1)	x	<u>60%</u> (2)	=	<u>225</u> (10)
11. Calculate the amount of salt to be saved:	<u>225</u> (10)	x	<u>30%</u> (3)	=	<u>68</u> (11)
12. Calculate the amount of salt that will continue to be used:	<u>225</u> (10)	-	<u>68</u> (11)	=	<u>157</u> (12)

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Material Cost Savings

13. Calculate the annual savings in salt costs: $\frac{68}{(11)} \times \frac{35}{(4)} = \frac{2380}{(13)}$
14. Calculate the annual cost of liquid calcium chloride: $\frac{157}{(12)} \times \frac{10}{(6)} \times \frac{0.75}{(5)} = \frac{1177.5}{(14)}$
15. Calculate the annual net material savings: $\frac{2380}{(13)} - \frac{1177.5}{(14)} = \frac{1202.5}{(15)}$

Labor Cost Savings

16. Calculate the number of truck loads of salt corresponding to #10 above: $\frac{225}{(10)} \div \frac{6.5}{(7)} = \frac{35}{(16)}$
17. Calculate the number of hours spent between: $\frac{35}{(16)} \times \frac{1}{(8)} = \frac{35}{(17)}$
18. Calculate the hours saved with reduced salt usage: $\frac{35}{(7)} \times \frac{30\%}{(3)} = \frac{10.5}{(18)}$
19. Calculate labor cost savings: $\frac{10.5}{(18)} \times \frac{18}{(9)} = \frac{189}{(19)}$

Total Estimated Savings

20. Material Saving & Labor Saving. $\frac{1202.5}{(15)} + \frac{189}{(19)} = \frac{1391.5}{(20)}$

Economic Payback Period

21. Calculate the number of years (or seasons) needed to payback the \$???? equipment costs (for this sample we used \$3,500). $\frac{3500}{(20)} \div \frac{1391.5}{(20)} = \boxed{2.51}$

*The numbers in the above sample may not work for your municipality.
Try plugging in your own numbers and doing your own analysis.*