6.1 IMPLEMENT A PAVEMENT MANAGEMENT SYSTEM

Source: Asset Management Guide for Local Agencies in Michigan
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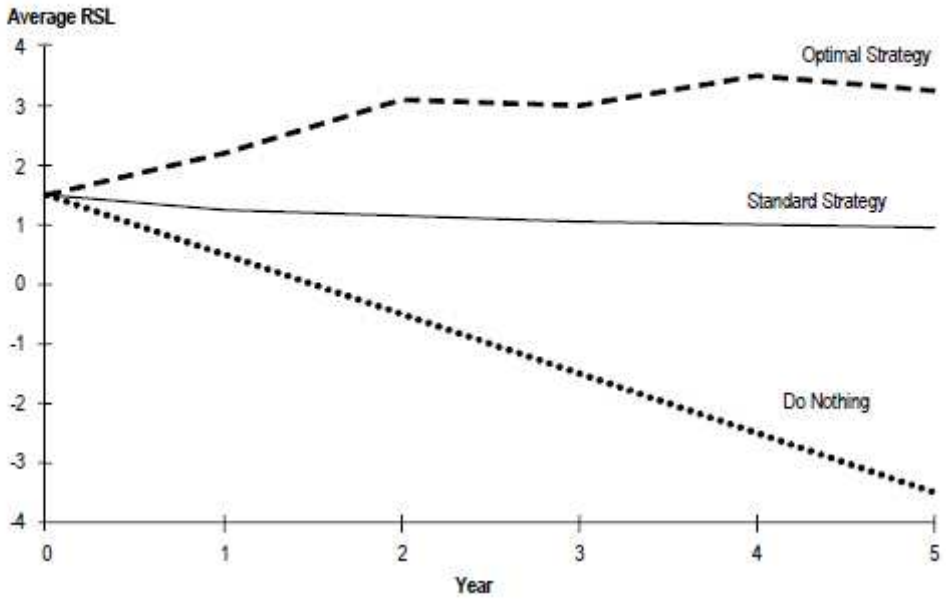
Figure 6.2 Comparing Funding Scenarios



6.2 IMPLEMENT A SPREADSHEET ANALYSIS

Another option for predicting future pavement condition is a spreadsheet analysis—this can also be done with pencil and paper. The *Quick Check of Highway Network Health* developed by the National Center for Pavement Preservation (NCPP) is an understandable methodology that can be used by agencies large and small. The Quick Check (see Appendix G. Resources) uses the number of lane-miles in your network, the ESL lost every year to deterioration, the ESL gained from treatments, and the quantity and cost of treatments performed.

Assume you have 220 lane-miles in your network. If you did absolutely no work on your road network over the course of one year the system would deteriorate (at a minimum) 220 lane-mile-years (one year for each lane-mile). If you apply treatments and structural improvements (adding ESL), you gain lane-mile-years. The difference between what the network loses through deterioration and what

it gains through improvement indicates whether the agency is gaining ground or losing ground.

The Quick Check process requires the following steps:

1. Determine the number of lane-miles in your network.
2. Build a summary of the following:
    a. the treatments you plan to apply in the coming season
    b. treatment cost per lane mile
    c. the ESL gained by the treatment
    d. the number of lane miles treated
3. Use a spreadsheet (or paper and pencil) to calculate the lane-mile-years gained and total cost of the applied treatment.
4. Total up the lane-mile-years gained by all the treatments and the applied treatment costs. Total treatment costs should reflect your current treatment budget or proposed budget. Compare the lane-mile-years gained against the lane-mile-years lost for your network. Are you gaining ground or losing ground?
5. If you come up short, consider changing the Mix of Fixes. You can run different treatment scenarios and see the impact that capital preventive maintenance has on the overall network condition.

Example – Predicting Future Conditions Using the NCPP Quick Check

Figure 6.6 uses actual data from a local agency in Michigan (prorated to keep the agency anonymous) and the NCPP approach applied to the local agency situation. This agency has 625 lane-miles in its network. Therefore, each year the network will deteriorate 625 lane-mile-years. Their challenge is to overcome the deterioration with extended life gained through treatment.

Notice that the treatments gained 204 lane-mile-years (ESL), but at the same time the system lost 625 lane-mile-years (RSL), for a net loss of 421 lane-mile-years. They are losing ground fast—only recovering 30% of a year's deterioration!

Consider these observations about the example:

- 84% of the budget is being devoted to only 1.8% (10 lane-miles) of the system.
- Crack sealing was done on only 6 lane-miles—on a 625 mile network! Cracks are being ignored, which directly leads to deterioration requiring more expensive treatment.
- They are only getting 2 years of ESL from Non Structural Overlays—very little "bang for the buck". Is this a case of the wrong fix in the wrong place at the wrong time?

This example clearly shows that a strategy devoting the majority of resources to structural improvement (worst first) contributes to a downward spiral of overall network condition. In each succeeding year it will become more costly to reverse that trend. Implementing a more aggressive CPM program would go a long way towards keeping the good roads good and overcoming the annual deficit of lane-mile-years. Most likely they also need to make the case for an increase in resources.

Figure 6.6 Spreadsheet Prediction of Future Pavement Conditions Using the NCPP "Quick Check" Approach (625 Lane-Mile Network)

Programmed Activity	Fixed cost per lane mile	ESL Years	# of Lane Miles of Fix	Lane Mile Years	Total Cost
Reconstruction	$530,000	15	4	60	$2,120,000
Rehabilitation	$170,000	14	6	84	$1,020,000
Mill & Overlay	$68,000	8	5	40	$340,000
Non Struc. Overlay	$32,000	2	7	14	$224,000
Crack Seal	$4,800	1	6	6	$28,800
Totals				**204**	**$3,732,800**

204 lane-mile-years gained — 625 lane-mile-years lost = a deficit of 421 lane-mile-years