

City of Vancouver Pavement Management System

Ryan Miles, Street Operations Program Manager
City of Vancouver

Minnesota Asset Management Peer Exchange
May 16-17, 2017

CITY OF
Vancouver
WASHINGTON

5/24/2017 5:46 AM

Presentation Overview

- Vancouver's pavement network and pavement management system (PMS)
- StreetSaver® program and selection
- How Vancouver is using its PMS

Vancouver's Pavement Network

- 580+ centerline miles (1,800 lane miles)
- Pavements segmented at intersections
- Over 7,000 segments in the system
 - Length, width, number of lanes, functional classification, surface type, etc.
- Multiple surface types

Pavement Management System

- Started using in the 1990's
- Historical condition data as far back as late 90's
- Have used multiple pavement management systems:
 - Centerline
 - Hansen/Infor
 - StreetSaver®

Pavement Management System - Needs

- Segment Information
- Condition assessment
- Long term budget analysis
- Performance prediction
- Treatment options
- Other

StreetSaver® vs. Paver™

- StreetSaver®
 - Developed by MTC (San Francisco Bay Area)
 - First released in 1987
 - 300+ agencies (mostly on west coast)
- Paver™
 - Developed by Army Corps of Engineers
 - First released in the late 1970's
 - Agencies and airport authorities worldwide

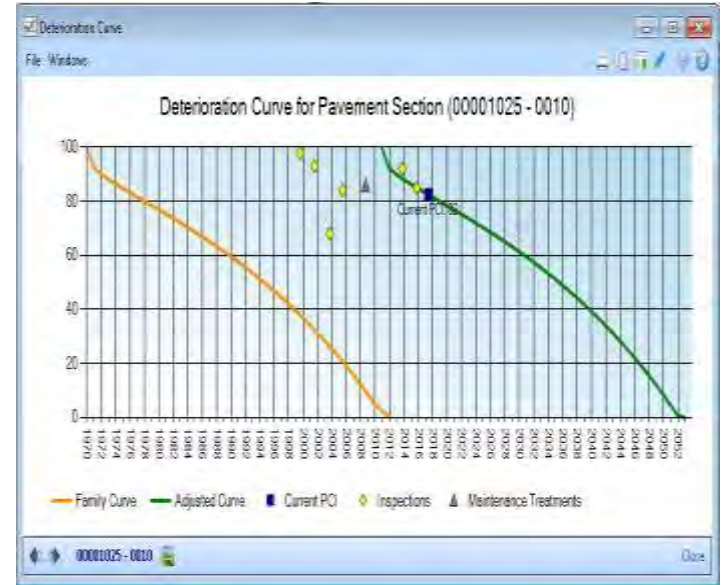
StreetSaver®

- Database
 - Web based
 - User login information
- Inventory and Work History
 - Section characteristics
 - Can group segments



StreetSaver® (continued)

- Pavement Condition Index (PCI)
 - Modified version of ASTM D6433
 - MobileRater™ application for condition assessment
- Performance Prediction
 - Based on thousands of local agency segments
 - Adjusts for latest PCI ratings and for treatments



StreetSaver® (continued)

- Maintenance & rehabilitation activities
 - Common and user-specified treatments
 - Decision trees
 - Determined based on PCI, functional classification, surface type, and type of distress
- Budget Analysis

Selected PCI Display:

Functional Class	Surface Type
Arterial	AC

Condition Category

PCI Cap: 100
90
70
55
40

Non Load	II	Load	III
	Good		
No Transitional Windows			
			IV
Poor			
No Transitional Windows			
			V
Very Poor			

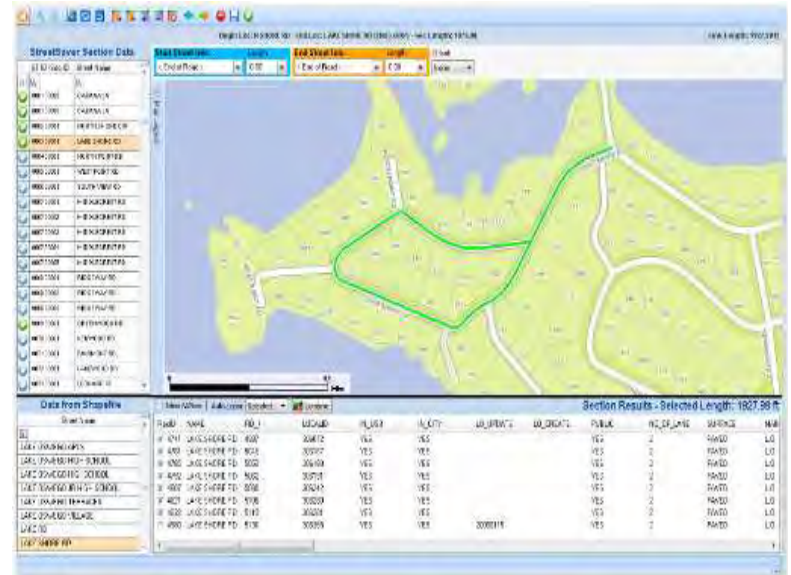
Use Transitional Windows for Deferred Maintenance in Calculations?

Apply PCIs to All Surface Types in FC Apply PCIs to All

Save Save & Close Close

StreetSaver® (continued)

- GIS capabilities
 - Can use agency's system or StreetSaver's®
 - Create maps from models
- Reporting
 - Built in and user specified
 - Training through StreetSaver®



Choosing StreetSaver® - General

- Cost of program
- Technical support and responsiveness
- Ease of use
- Customizable reporting
- Web based for multiple users
- Used by many other local agencies nearby

Choosing StreetSaver® - Technical

- PCI scoring increase with each treatment application
- Utilize agency specific treatments and project lists
- Performance modeling and analysis
 - Fixed budget or target conditions
 - Speed of analysis
 - Long term forecasting

The screenshot displays the StreetSaver software interface, organized into five main steps:

- Step 1 - Scenario:** Shows a scenario goal: "Achieve PCI 70 in 5 Years".
- Step 2 - Review Optimal Target Caps:** A table comparing conditions before and after analysis.

	Condition Before Analysis	Optimal Target Cap
Pavement Condition Index for the Entire Network	53	71
Percentage of the Pavement Network in Very Good Condition	27%	75%
Percentage of the Pavement Network in Poor and Very Poor Condition	40%	18%
Pavement Remaining Service Life for the Entire Network (years)	14	21

- Step 3 - Define Objective:** Shows the objective as "Minimum Network Average PCI". Radio buttons are present for "Overall Target", "Target by Year" (selected), "Target by Functional Class", and "Target by Functional Class and Year".
- Step 4 - Objective Values:** A table showing the target PCI values for each year.

Scenario Year	Minimum Network Average PCI
Year 1	66.0
Year 2	67.0
Year 3	68.0
Year 4	69.0
Year 5	70.0

- Step 5 - Weighting Factors:** A table showing weighting factors for different functional classes.

Functional Class	Factor
Arterial	1
Collector	0.72
Residential/Local	0.55
Other	0.55

Additional panels on the right include "Optional Steps", "Selection Criteria" (Functional Class <-> D - Other), and "Project Selection" (PCI to 70 - Utility Conflict Streets).

Choosing StreetSaver® - Technical

- PCI scoring increase with each treatment application
- Utilize agency specific treatments and project lists
- Can use either a fixed or target budget
- Performance modeling and analysis
 - Model for fixed budget or target conditions
 - Speed of analysis
 - Long term forecasting

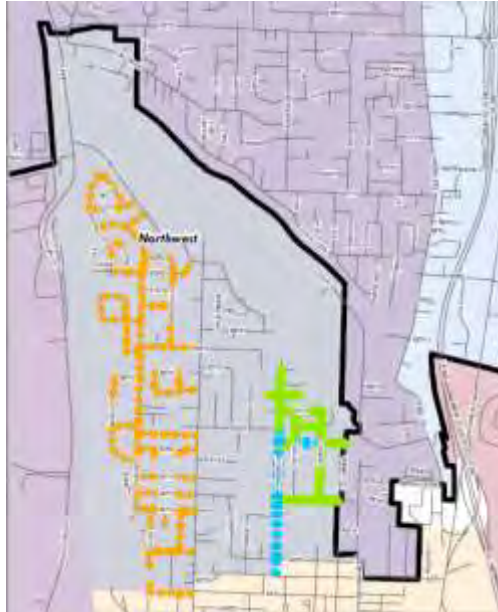
How Vancouver is Using StreetSaver®

- Treatment needs
- Street selection and project lists
- Long term analysis and funding needs
- Maps and displays
- Reporting
- Presentations to Council

Treatment Needs

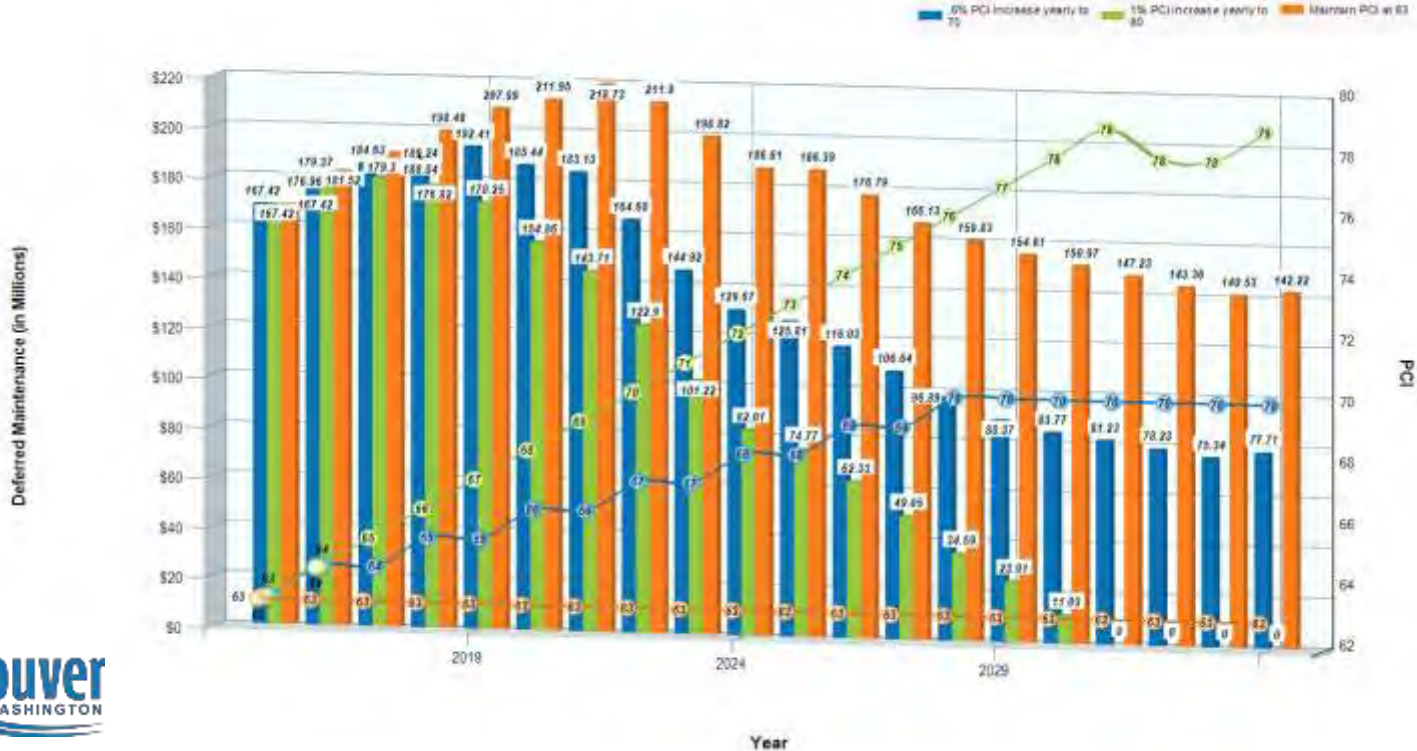


Street Selection and Project Lists



Network Analysis

Target-Driven Scenario Comparison - Deferred Maintenance and PCI



Reporting

Budget Amounts | Sections Selected | Sections Not Selected | Projected PCI's | Cost Summary | Network Condition | Stop Gap

Network Condition Summary

Base year 2015, prior to applying						Base year 2015, after schedulable						'Year 2034, after schedulable					
	ART	COL	R/L	OTH	Total		ART	COL	R/L	OTH	Total		ART	COL	R/L	OTH	Total
I	12.5	5.8	30.9	0.0	49.2	I	12.9	5.8	37.6	0.0	56.3	I	8.7	8.7	37.2	0.0	54.6
II/III	8.2	4.0	10.5	0.0	22.7	II/III	7.8	4.0	5.3	0.0	17.2	II/III	3.0	0.1	9.2	0.0	12.3
IV	2.6	1.6	10.1	0.0	14.4	IV	2.6	1.6	8.7	0.0	12.9	IV	0.1	0.0	0.0	0.0	0.2
V	1.5	1.6	10.5	0.0	13.7	V	1.5	1.6	10.5	0.0	13.7	V	13.0	4.2	15.0	0.0	32.9
Total	24.9	13.0	62.0	0.0	100.0	Total	24.9	13.0	62.1	0.0	100.0	Total	24.9	13.0	62.2	0.0	100.0

Projected Network Average PCI

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Without Treatment	63	61	58	56	54	52	49	47	45	42	41
With Treatment	65	64	63	62	61	60	60	59	58	57	56

Calculate | Interest: 0% - Inflation: 0% | Create | Open | Close

Sections Selected | Objective Info | Sections Not Selected | Projected PCI's | Cost Summary | Network Condition | Network Construction

Cost Summary

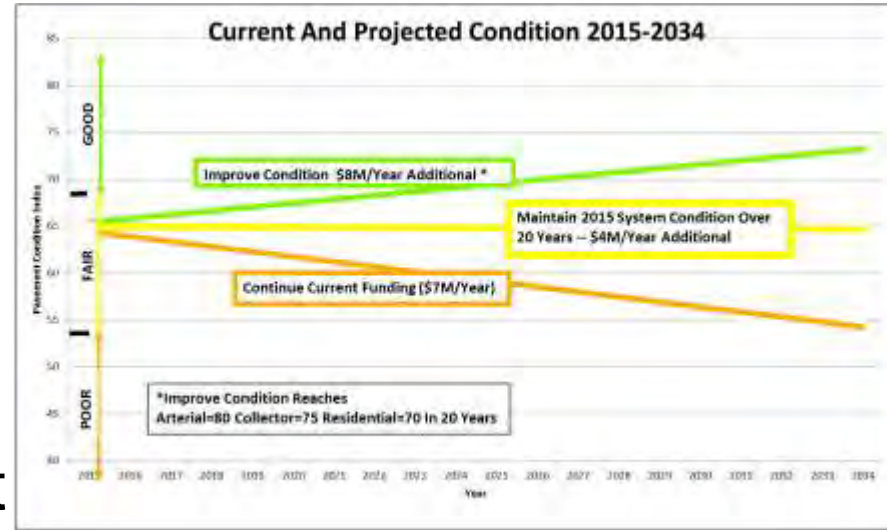
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rehabilitation	0	4,535,520	9,761,029	14,505,107	18,416,046	24,095,062	19,270,666	23,469,904	21,270,585	17,384,021
Condition II	0	2,203,527	630,791	679,673	1,428,384	2,798,619	2,234,234	932,511	820,777	1,275,058
Condition III	0	0	0	0	45,506	613,004	201,322	237,818	136,052	64,869
Condition IV	0	2,332,012	8,930,238	13,915,514	16,941,763	8,641,411	10,374,975	5,532,227	632,945	212,856
Condition V	0	0	0	0	0	12,842,626	2,479,137	16,762,246	19,649,911	15,832,202
Prev. Maint.	14,906	5,468,479	2,229,903	1,183,320	1,517,142	496,469	1,348,607	867,267	15,267	16,850
Totals	14,906	10,004,010	11,890,932	15,778,907	19,933,187	25,392,331	18,626,279	24,207,296	21,254,872	17,400,871

	Grand Total	Arterial	Collector	Pre-Local	Other
Rehabilitation	240,482,509	99,963,895	21,569,172	118,959,478	0
Prev. Maint.	37,509,436	12,906,153	4,822,759	19,880,524	0
Totals	278,001,945	112,770,068	26,391,931	138,840,002	0

Calculate | Interest: 0% - Inflation: 0% | Create | Open | Close

Presentations to Council

- Comprehensive street funding
- Multi-year effort
- Council adopted asset management policies
- Utilized StreetSaver® analysis
- Additional \$3.4M/yr in pavement management funding



Questions and Discussion

Ryan Miles, Street Operations Program Manager

Ryan.miles@cityofvancouver.us

360-487-7708



Other Agencies Using StreetSaver®

Agency	Population	Miles
City of Camas (WA)	21,000	130
City of Washougal (WA)	15,000	68
Hood River County (OR)	23,000	180
Crook County (OR)	21,000	472
Trinity County (CA)	13,000	460 (582 total)
Colusa County (CA)	21,500	699

StreetSaver Dashboard



GIS Dashboard

