



State of the Roadway Network in City of Longview



Roadways are the economic lifeline of a community; they provide the means for communities to thrive and commerce to flourish.

As such they are an investment to be maintained.

Stephen Smith, P.E., Principal
IMS Infrastructure Management Services

State of the Road Network in City of Longview



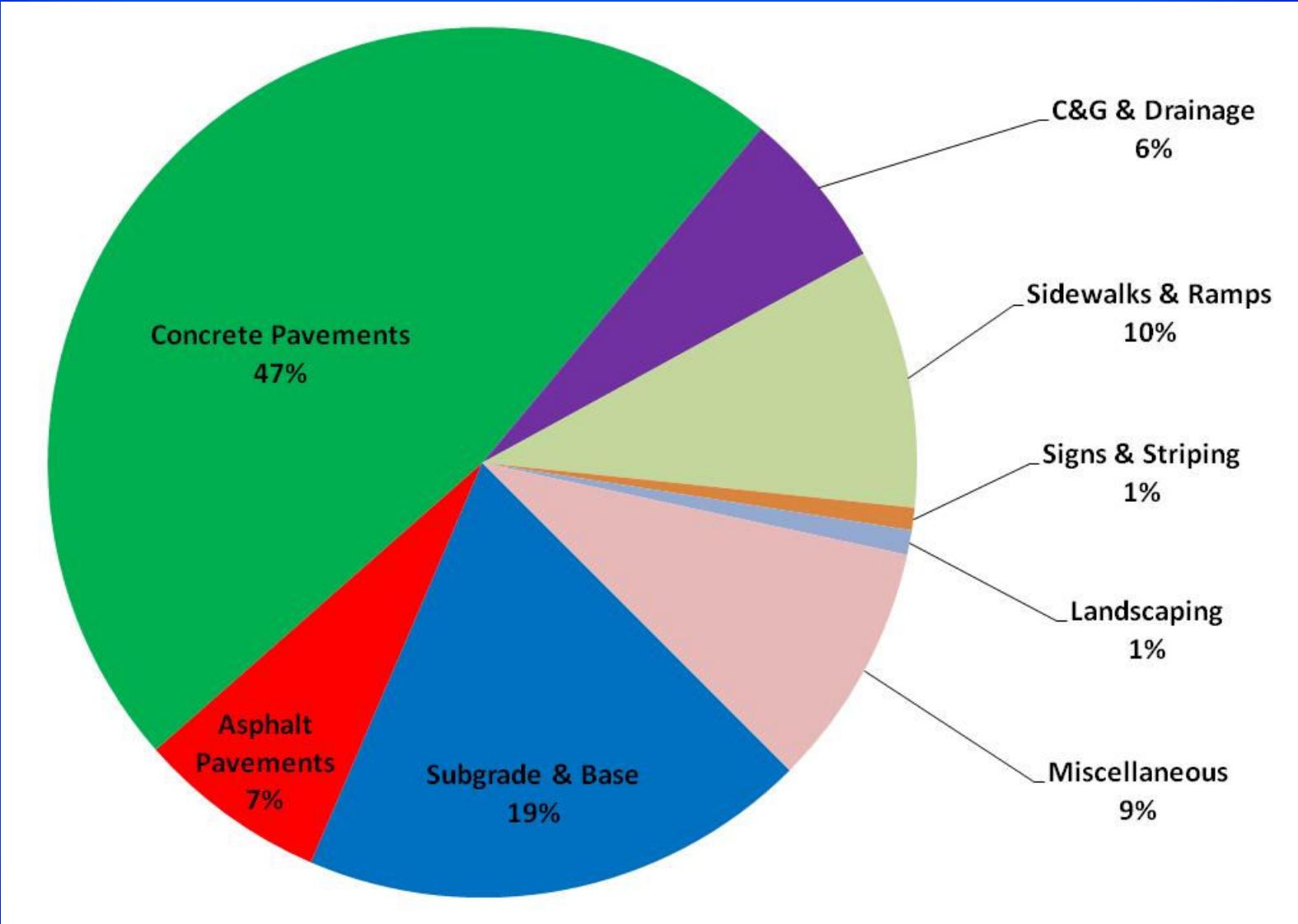
*35,000 +/- people, 14.5 sq. miles
138 CL +/- miles of City roadways
22 M square feet of pavement = 385 football fields*

*City's most visible asset, replacement cost of
\$250M plus land, signals and improvements.*

*Early look at the results:
Network OCI = 68
Network average is slightly above average
Solid B+*



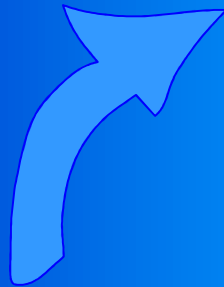
Asset Value Shares...\$250M



Concept of Payroll Management...



**City Objectives,
Policies & Budgets**



**Balanced
Approach**

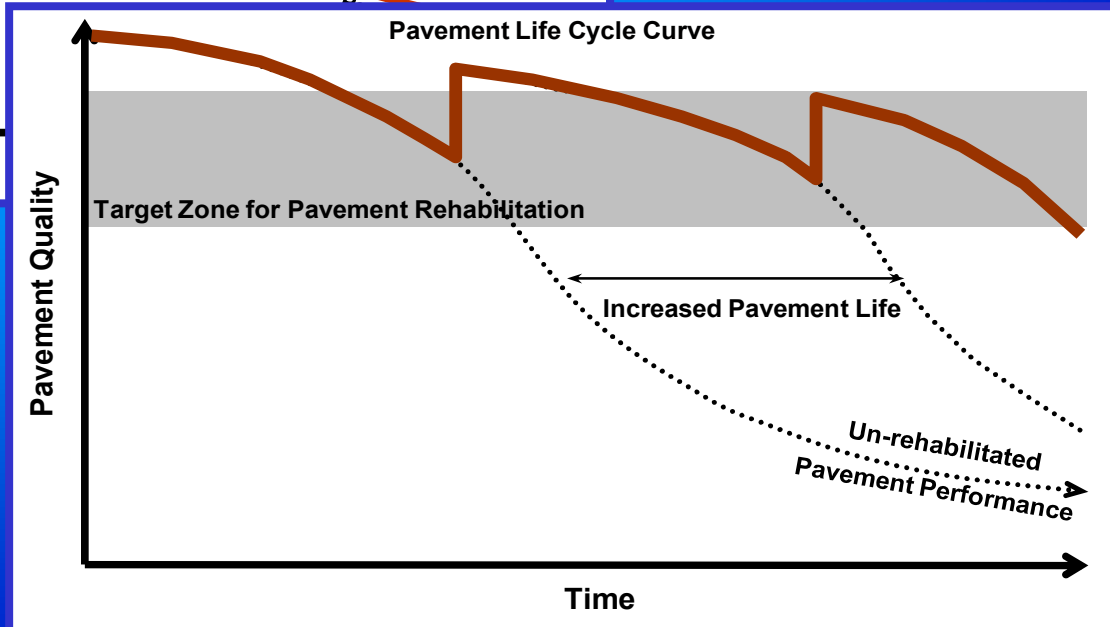
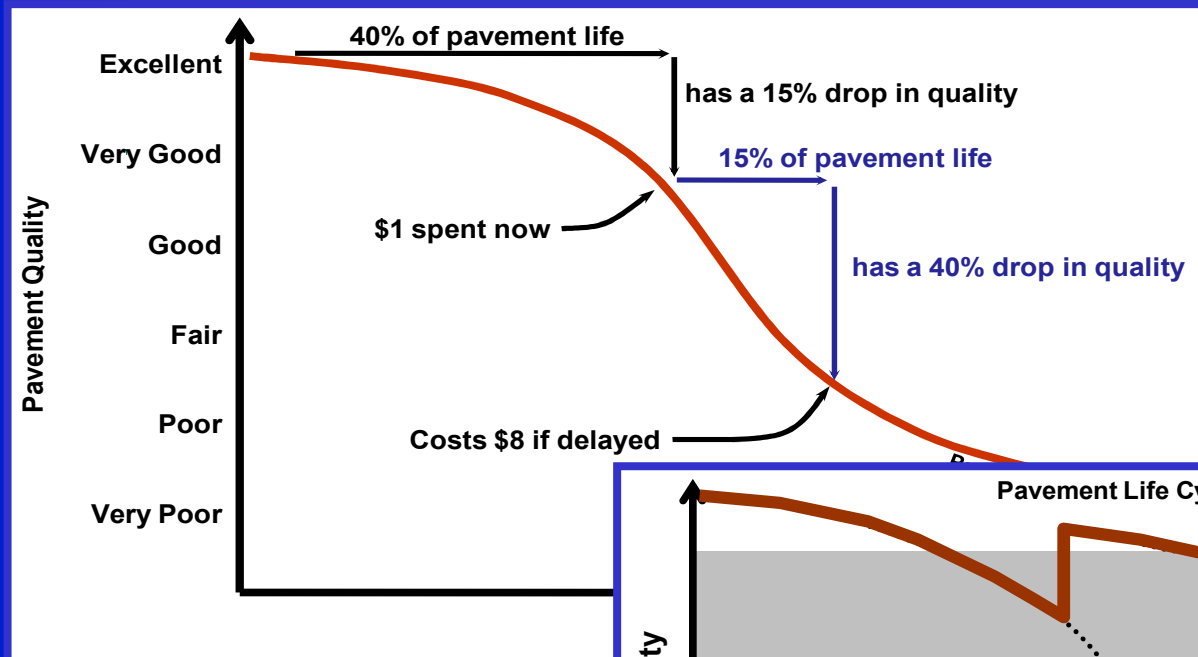
**Priorities,
Analysis Techniques
& Reporting**



**Understanding of
Condition**



Why do Pavement Management...

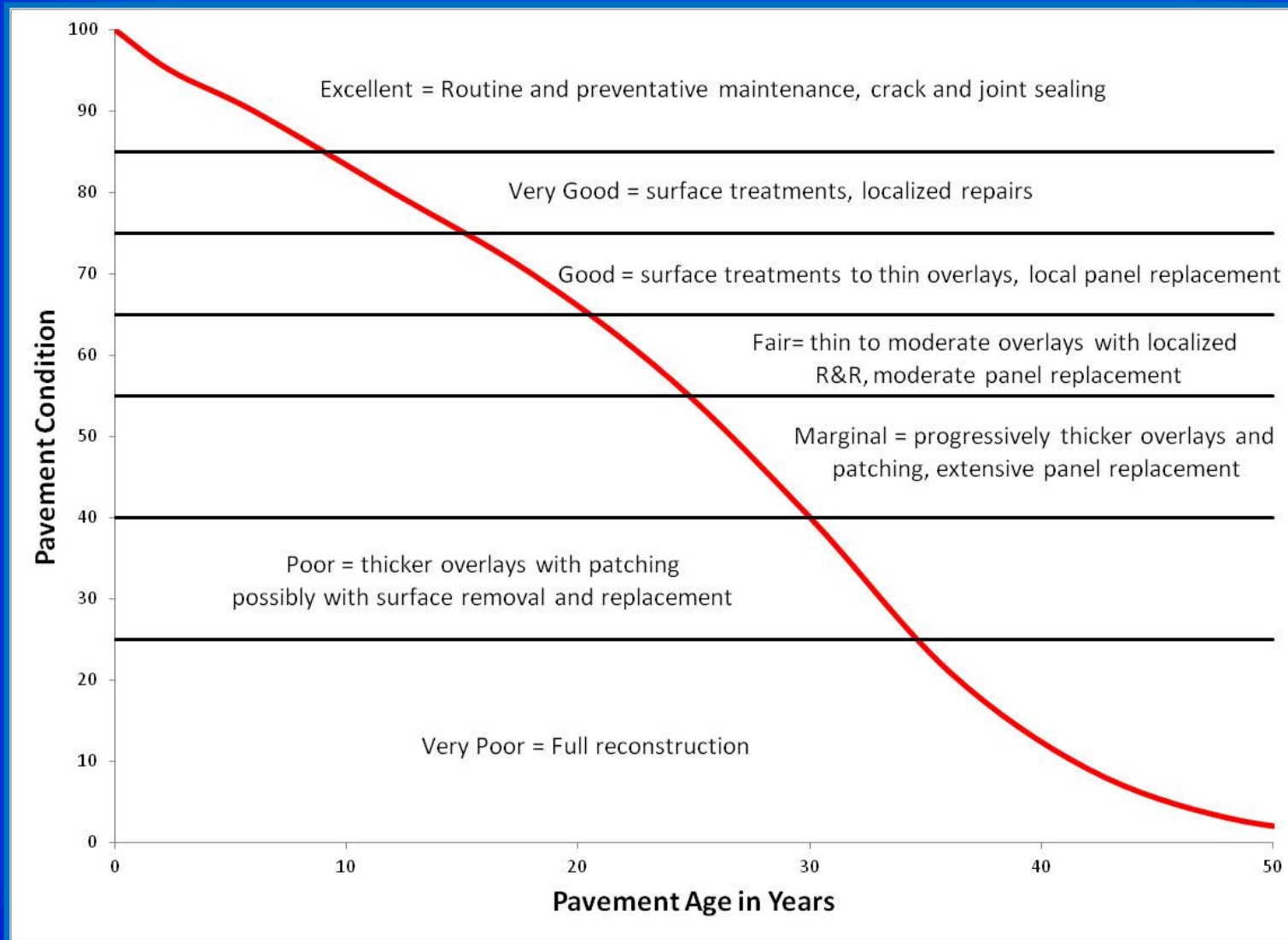


Why do Pavement Management...



- 1. Investments in preventative maintenance is more cost effective than reconstruction**
- 2. After several rehab cycles, streets still need to be reconstructed**
- 3. It is critical not to let streets deteriorate past their overlay rehab limit - large jump in costs and inconvenience**
- 4. When pavements start to show cracks – rehab is already past due**

Understanding the Pavement Condition Score...



Tools to Rate the Streets – Objective Surveys



Condition Rating Focuses on:

Cracking & Rutting

Distortions, Weathering & Flushing

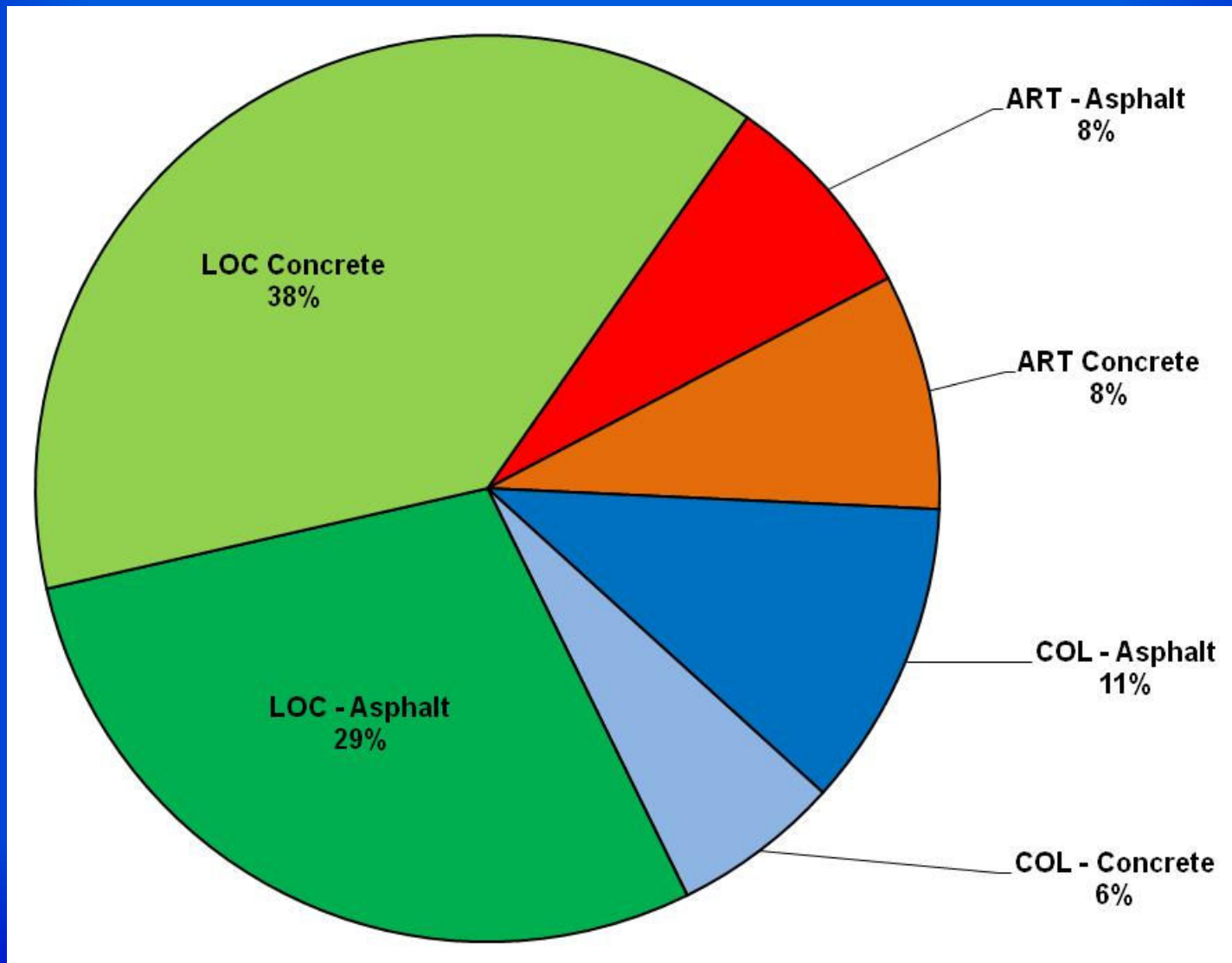
Patching & Potholes

Panel Condition and Separation

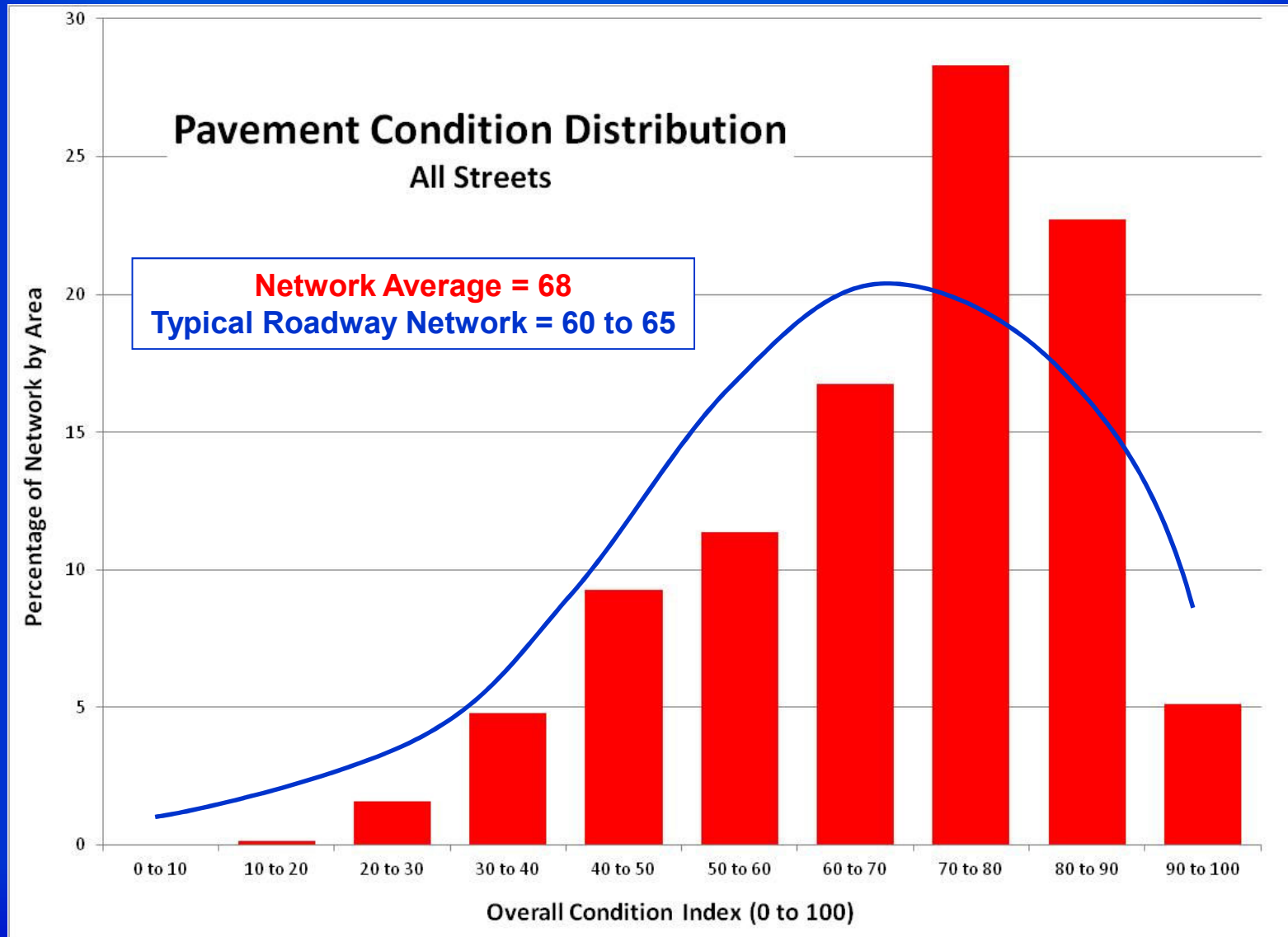
Roughness



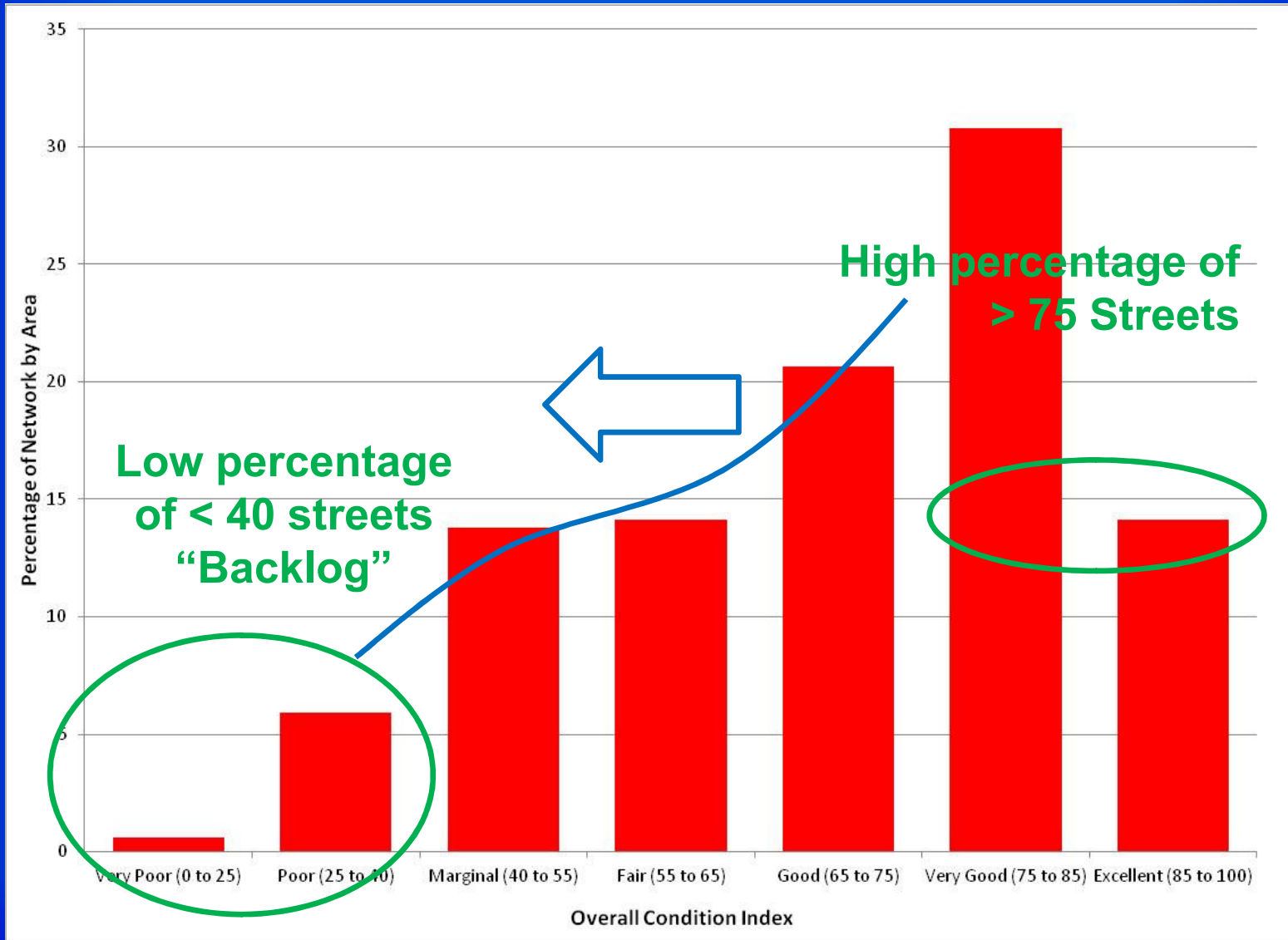
City of Longview Results...Functional Class & Pavement



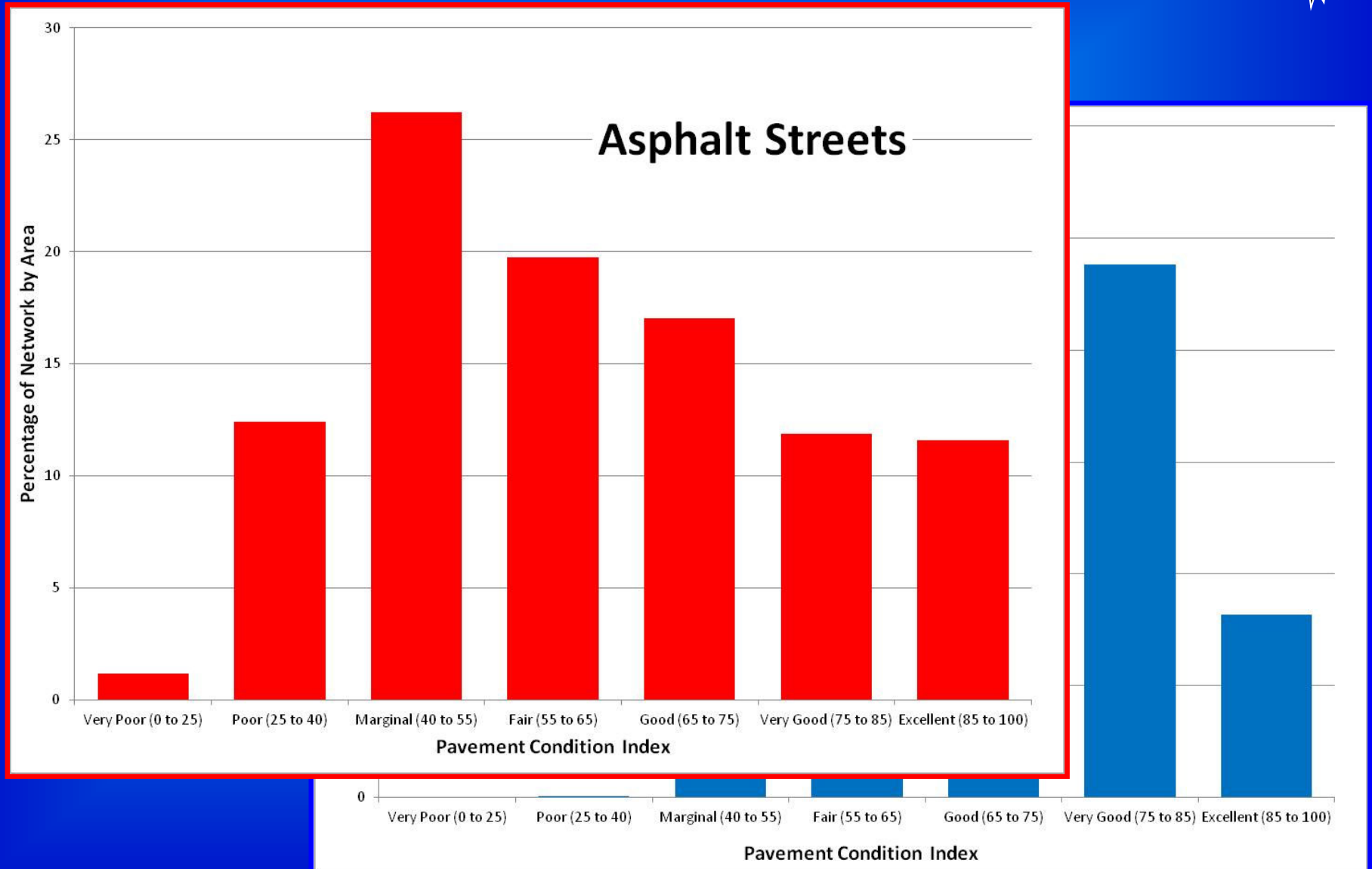
City of Longview Results...by OCI



City of Longview Results...by Good/Fair/Poor



City of Longview Results...by Pavement Type



City of Longview Results...by Functional Class



Arterials have the lowest OCI at 59

Residentials have the highest OCI at 72

They also form the greatest percentage of streets

Arterials however, are the most costly

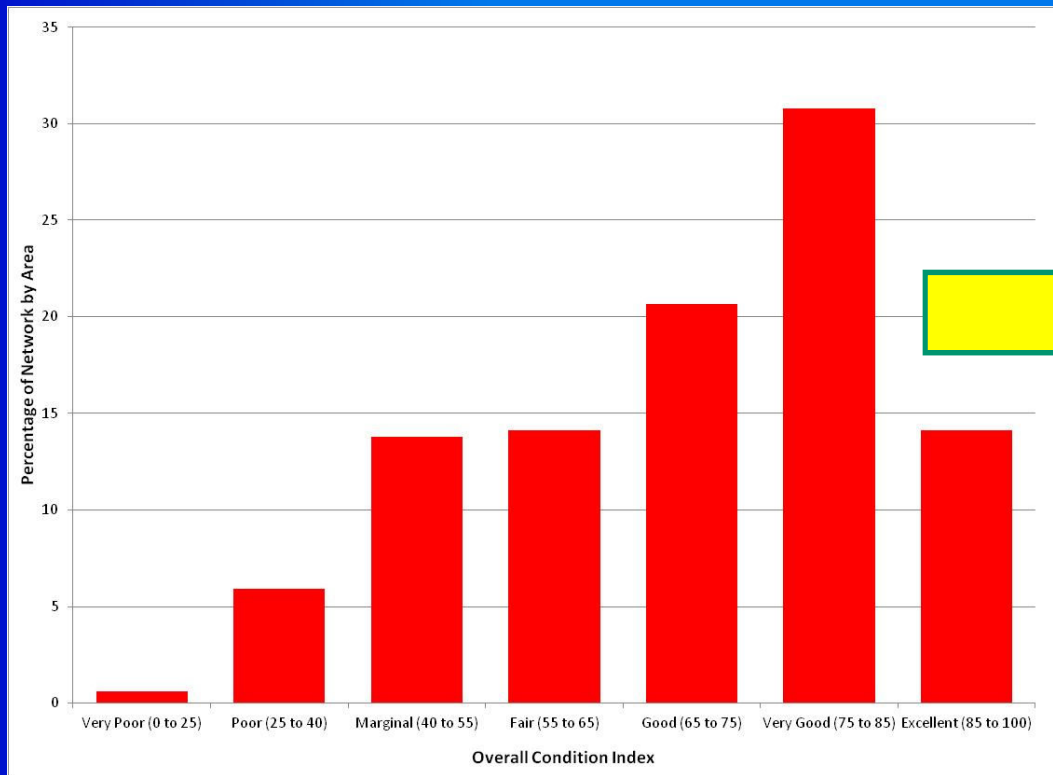


City of Longview Looking Forward...



1. Funding is not \$0, nor is it unlimited
2. Longview places a value on its roadway network
arterials – collectors - locals
3. Identify annual budget to maintain current OCI
 4. Examine effects of current funding levels
 5. Prevent deterioration in pavement quality

Step 1... Identify Magnitude of Current Deficit



Rehabilitation Activity	Total Cost (\$)
ACP Surface Treatment	3,770,000
ACP Thin Overlay	4,330,000
ACP Moderate Overlay	6,180,000
ACP Thick Overlay	4,650,000
ACP Partial Reconstruction	1,850,000
ACP Full Reconstruction	4,030,000
PCC Crack Seal & Patch	1,620,000
PCC Localized R&R	3,460,000
PCC Localized Pnl Rplcmnt	3,980,000
PCC Moderate Pnl Rplcmnt	1,100,000
PCC Extensive Pnl Rplcmnt	210,000
PCC Partial Recon	130,000
PCC Full Recon	40,000
Total Deficit:	35,350,000

The five year cost to raise the network OCI to 87 = \$35.3M

Step 2.... Estimate Annual Steady State Costs



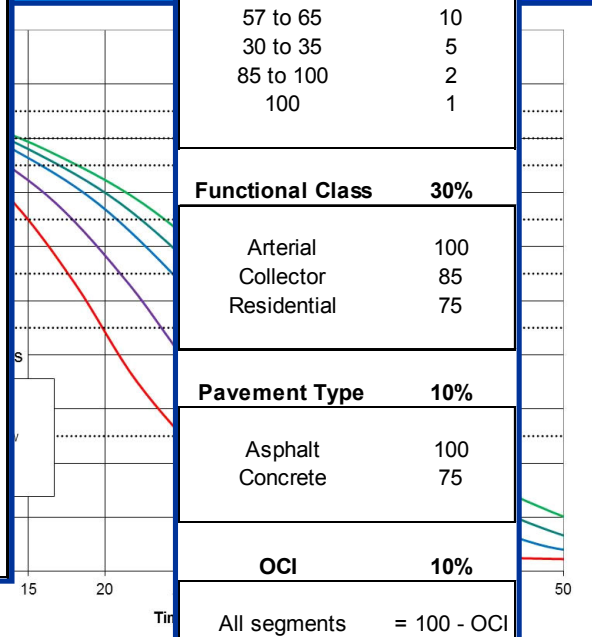
Rehabilitation Activity	Total Cost (\$)	Life Cycle (years)	Life Cycle Cost (\$/yr)
ACP Surface Treatment	3,770,000	5	754,000
ACP Thin Overlay	4,330,000	15	289,000
ACP Moderate Overlay	6,180,000	15	412,000
ACP Thick Overlay	4,650,000	15	310,000
ACP Partial Reconstruction	1,850,000	30	62,000
ACP Full Reconstruction	4,030,000	40	101,000
PCC Crack Seal & Patch	1,620,000	5	324,000
PCC Localized R&R	3,460,000	10	346,000
PCC Localized Pnl Rplcmnt	3,980,000	20	199,000
PCC Moderate Pnl Rplcmnt	1,100,000	20	55,000
PCC Extensive Pnl Rplcmnt	210,000	20	11,000
PCC Partial Recon	130,000	30	4,000
PCC Full Recon	40,000	50	1,000
Total Deficit:	35,350,000		2,868,000

Step 3.... Set Priorities and Operating Parameters

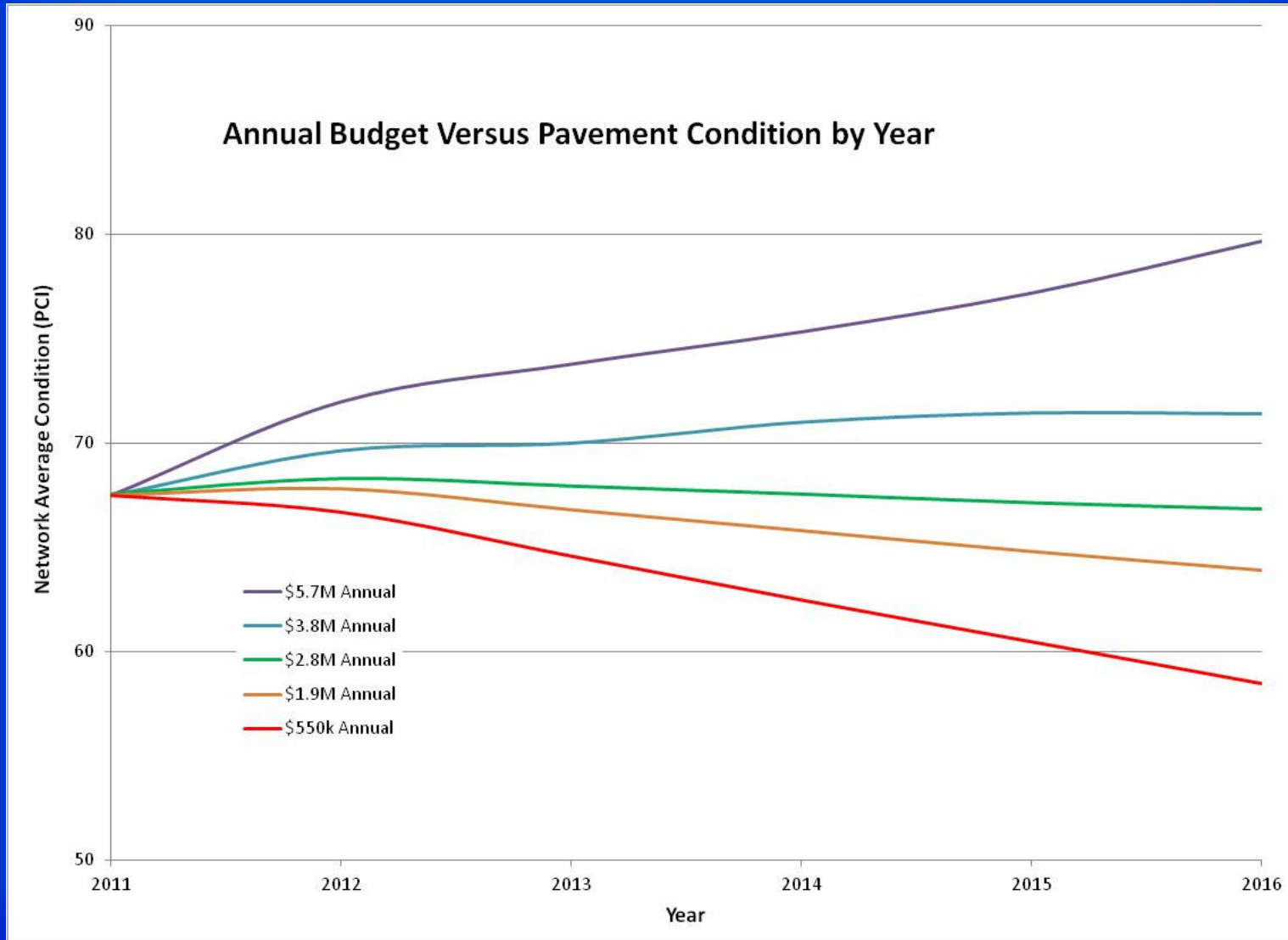


Pavement Type	Description	OCI Range		Constraints		Unit Rates (\$/yd2)		
		Min OCI	Max OCI	Min LAD	Max LAD	ART	COL	LOC
Asphalt	Slurry Seals	75	85			2.00	1.75	1.50
Asphalt	Microsurface, double slurries or Chip Seals	65	75	0	25	5.75	5.50	5.25
Asphalt	Microsurface + R&R	65	75	25	100	7.00	6.75	6.50
Asphalt	Thin overlay (ACP < 2")	55	65	0	35	11.50	11.00	10.50
Asphalt	Thin overlay + R&R	55	65	35	100	12.50	12.00	11.50
Asphalt	Moderate overlay (ACP < 3")	45	55	0	45	15.50	15.00	14.50
Asphalt	Moderate overlay + R&R	45	55	45	100	16.50	16.00	15.50
Asphalt	Thick Overlay (ACP > 3")	35	45			18.50	18.00	15.50
Asphalt	Surface removal, base compaction and overlay	25	35			35.00	30.00	25.00
Asphalt	Full roadway removal and reconstruction	0	25			55.00	45.00	35.00
Concrete	Localized cut out and replace	65	85			7.50	6.25	5.00
Concrete	Remove and replace <5% panels	55	65			15.00	12.50	10.00
Concrete	Remove and replace <10% panels	45	55			20.00	17.50	15.00
Concrete	Remove and replace <20% panels	35	45			35.00	30.00	25.00
Concrete	PCC Surface removal, base compaction and replace	25	35			95.00	75.00	55.00
Concrete	PCC Full roadway removal and reconstruction	0	25			150.00	125.00	100.00

NPR Factor	NPR Score
OCI Range	50%
35 to 38	100
45 to 47	90
65 to 67	80
75 to 77	70
55 to 57	50
25 to 30	40
0 to 25	35
38 to 45	30
47 to 55	25
67 to 75	20
77 to 85	15
57 to 65	10
30 to 35	5
85 to 100	2
100	1
Functional Class	30%
Arterial	100
Collector	85
Residential	75
Pavement Type	10%
Asphalt	100
Concrete	75
OCI	10%
All segments	= 100 - OCI

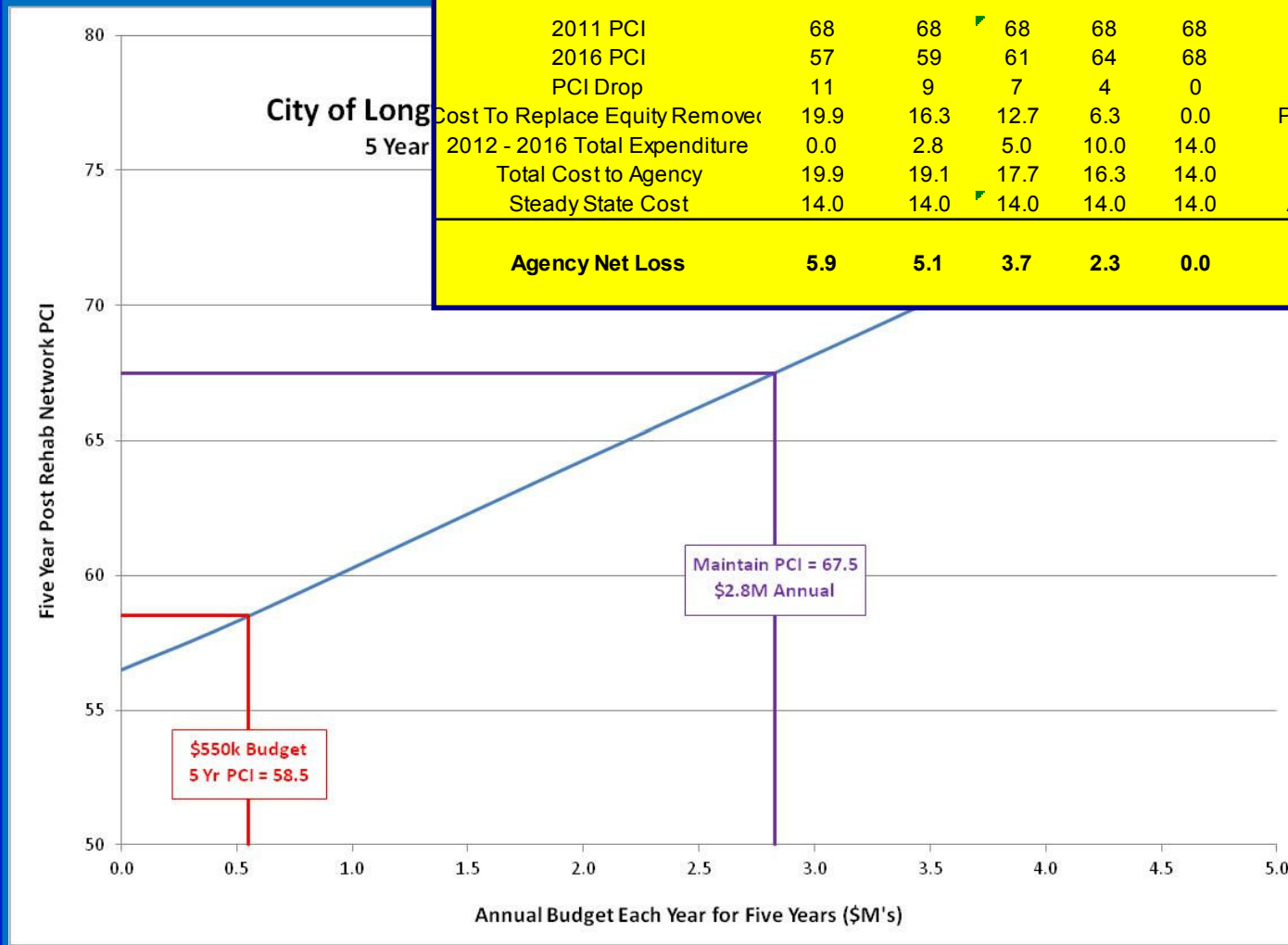


Step 4.... Complete 5 Year Budget Analysis

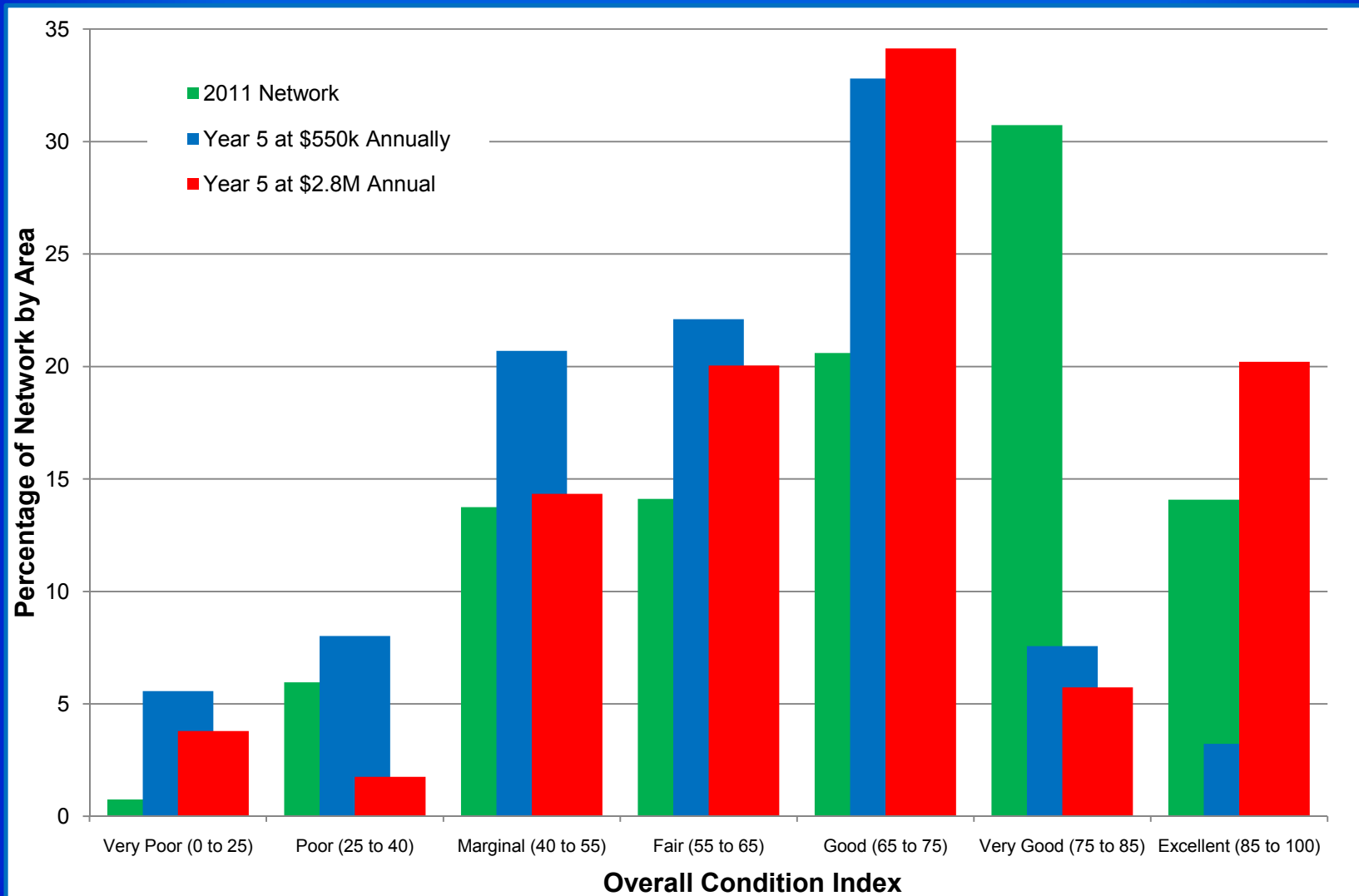


Step 5.... Examine Results

	Annual Budget					Comment
	Do Nothing	\$550k	\$1.0M	\$2.0M	\$2.8M	
Cost per PCI Point Increase	1.81	1.81	1.81	1.81	1.81	(\$M/pt) = Cost of Equity Removal per point
2011 PCI	68	68	68	68	68	From 2011 survey
2016 PCI	57	59	61	64	68	From analysis results
PCI Drop	11	9	7	4	0	
Cost To Replace Equity Removed	19.9	16.3	12.7	6.3	0.0	PCI Drop x Cost/point to replace equity
2012 - 2016 Total Expenditure	0.0	2.8	5.0	10.0	14.0	Annual budget x 5 Years
Total Cost to Agency	19.9	19.1	17.7	16.3	14.0	
Steady State Cost	14.0	14.0	14.0	14.0	14.0	Annual steady state budget x 5 years
Agency Net Loss	5.9	5.1	3.7	2.3	0.0	Net loss over 5 years (\$M)



Step 5.... Examine Results and Program Effectiveness



City of Longview Recommendations....



1. Target OCI between 65 - 70 and backlog below 10% for ACP and at current levels for PCC

This equates to a \$2.8M annual budget

A budget of \$550k is inadequate

Results in an OCI of 58 with a snowballing backlog

2. Additional long-term funding needs to be secured
Borrowing /bonding will not provide full solution – growth, inflation
3. Maintenance only defers eventual reconstruction
4. Steady – effective rehabilitation and maintenance on an annual basis saves the City money over deferred maintenance.

Questions....



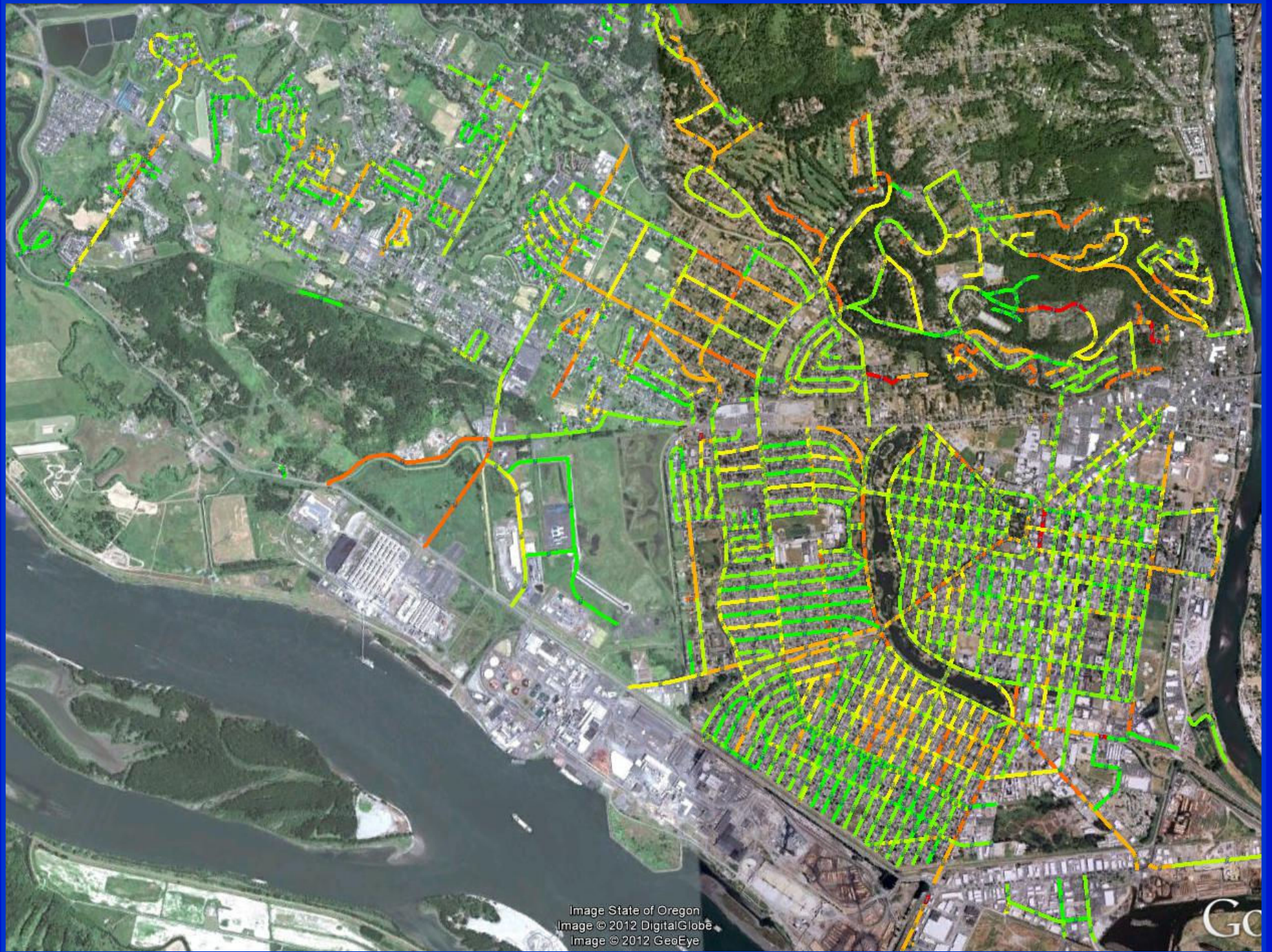


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