

# Pavement Management

# Pavement Management Program Review

September 2017 - City Council requested:

1. Further analysis of pavement applications
2. Application effectiveness and community impact/influence; loose aggregate, tracking, safety, uneven wear, multi-modal use, road noise, aesthetics, etc.
3. Field trip
4. Results of all 5 scenarios
5. Life expectancy
6. Costs
7. Summary of street selection process

# Pavement Maintenance Application Costs

Pavement Application	Cost (\$/Lane Mile)	Longevity (Yrs)
Crack Sealing	\$1,000	NA
Rejuvenator	\$3,500	2-3
Pavement Seal	\$11,700	2-3
<b>High Performance Pavement Seal (e.g., Onyx, HA5)</b>	<b>\$24,600</b>	<b>4-5, 7-10</b>
Single Coarse Surface Treatment	\$25,000	6-8
Double Coarse Surface Treatment	\$42,000	8-10
<b>Ultra-Thin Bonded Wearing Course</b>	<b>\$55,000</b>	<b>10-12</b>
<b>Hot In Place Recycled Pavement (HIPR w/ RAP)</b>	<b>\$60,000</b>	<b>15 plus</b>
Hot In Place Recycled Pavement (HIPR)	\$110,000	15 plus
Mill & Overlay	\$127,500	15 plus
Rehabilitation (Point Repair with Chip Seal, HIPR, or Mill & Overlay)	\$141,000	15 plus

- All values are estimated.

# Scenarios

- 1 – Crack Seals  
Pavement Seals  
Single Coarse Surface Treatment (Residential and Minor Collector)  
Double Coarse Surface Treatment  
Hot-In Place Recycling  
Rehabilitation
  
- 2 – Crack Sealing  
Pavement Seals  
Double Coarse Surface Treatment (Residential and Minor Collector)  
Double Coarse Surface Treatment  
Hot-In Place Recycling  
Rehabilitation
  
- 3\* – Crack Sealing  
Pavement Seals  
Ultra-Thin Bonded Wearing Coarse (Residential and Minor Collector)  
Double Coarse Surface Treatment  
Hot-In Place Recycling  
Rehabilitation
  
- 4 – Crack Sealing  
Pavement Seals  
Ultra-Thin Bonded Wearing Coarse (Residential and Minor Collector)  
Ultra-Thin Bonded Wearing Coarse  
Hot-In Place Recycling  
Rehabilitation
  
- 5 – Crack Sealing  
Pavement Seals  
Hot-In Place Recycling (Residential and Minor Collector)  
Hot-In Place Recycling  
Rehabilitation

# Model analysis with current budget and 9% yearly increase.

	Budget (9%/YR)		Network PCI	
	Year 1	Year 10	Year 1	Year 10
Scenario 1	\$3,325,000	\$7,250,000	83	71
Scenario 2	\$3,325,000	\$7,250,000	83	69
<b>Scenario 3</b>	<b>\$3,325,000</b>	<b>\$7,250,000</b>	<b>83</b>	<b>75</b>
Scenario 4	\$3,325,000	\$7,250,000	83	73
Scenario 5	\$3,325,000	\$7,250,000	83	70

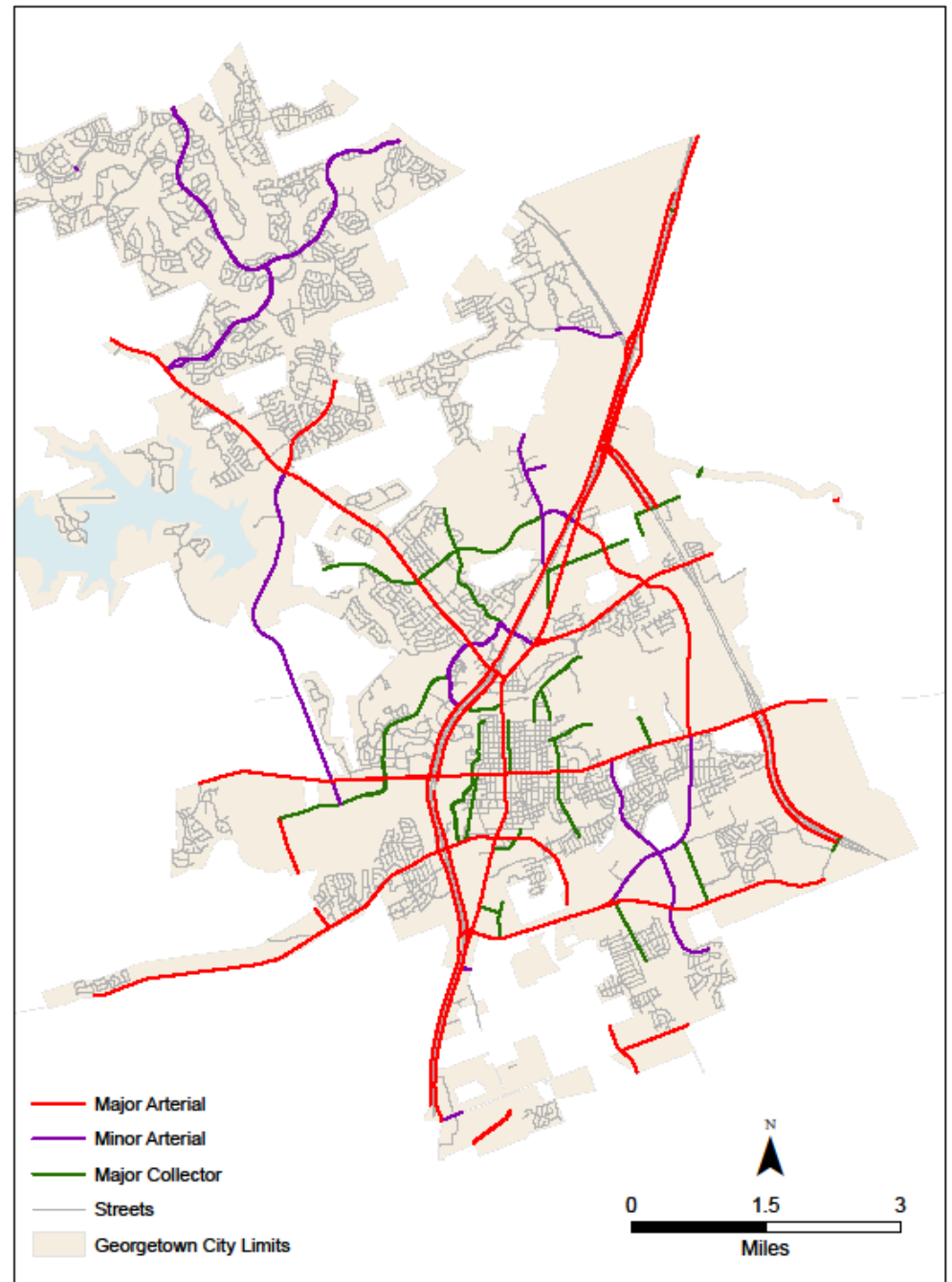
- Scenario 3 – Best performance over 10 year period, PCI declines from 83 to 75.
- To hold PCI steady would require generally doubling the budget.

# Model analysis with flat budget.

	Budget	Network PCI	
	Year 1-10	Year 1	Year 10
<b>Scenario 1</b>	<b>\$6,000,000</b>	<b>84</b>	<b>78</b>
<b>Scenario 2</b>	<b>\$6,800,000</b>	<b>84</b>	<b>81</b>
<b>Scenario 3</b>	<b>\$5,850,000</b>	<b>82</b>	<b>83</b>
<b>Scenario 4</b>	<b>\$6,450,000</b>	<b>84</b>	<b>81</b>
<b>Scenario 5</b>	<b>\$6,600,000</b>	<b>84</b>	<b>81</b>

Scenario 3 – Best performance over 10 year period, PCI holds steady.

Scenario 3 "A"  
removes Minor  
Arterial and  
Major Collectors  
as candidates for  
Double Coarse  
Chip Seal



# Minor Arterials and Major Collectors

## Minor Arterials

AIRPORT RD  
AVIATION DR  
BERRY CREEK DR  
BLUE SPRINGS BLVD  
D B WOOD RD  
DEL WEBB BLVD  
FIELDSTONE DR  
HERSHEY AVE  
LAKEWAY DR  
NORTHWEST BLVD  
RABBIT HILL RD  
RIVERY BLVD  
SE INNER LOOP  
SOUTHWESTERN BLVD  
SUN CITY BLVD  
WESTINGHOUSE RD

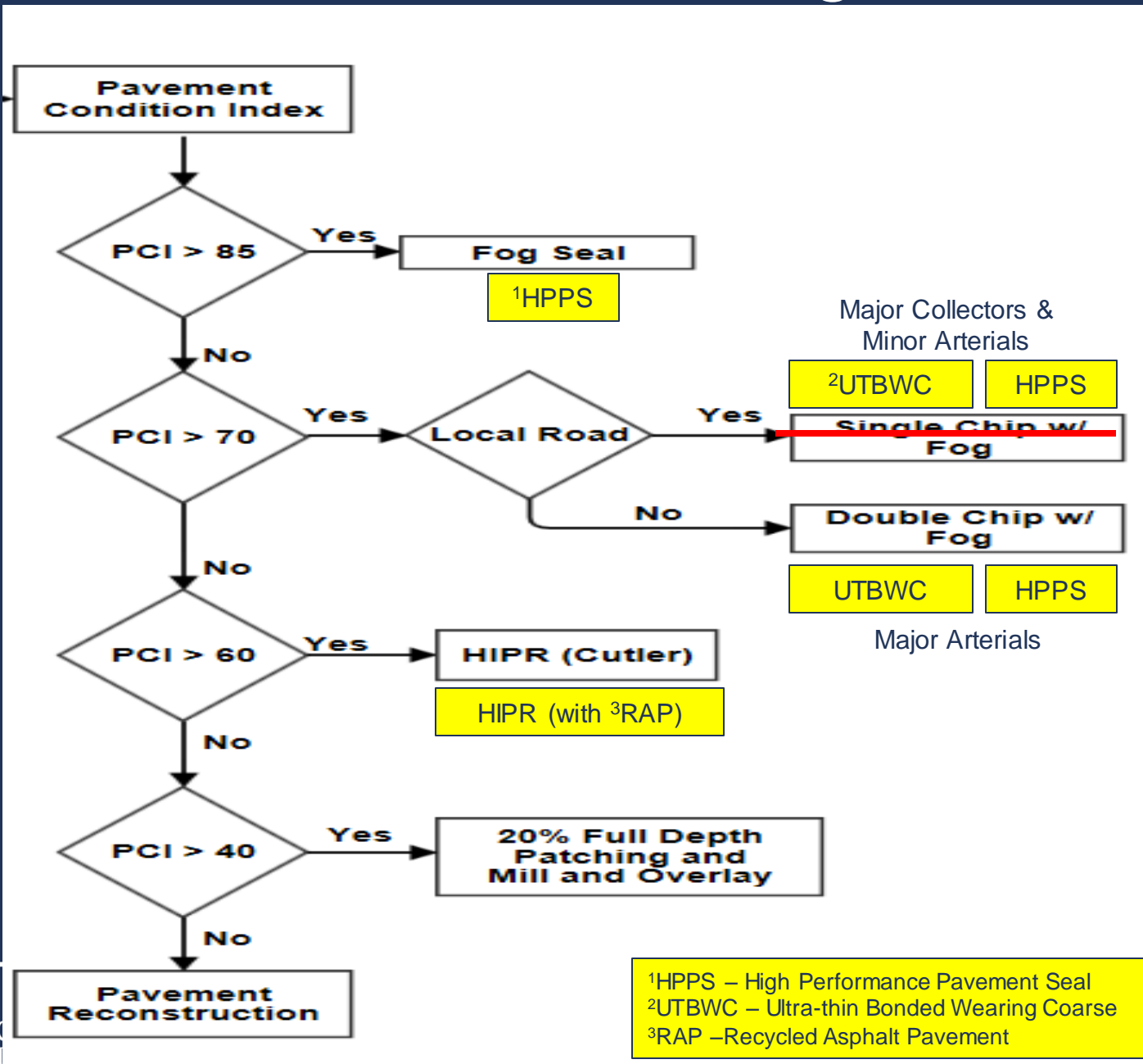
## Major Collectors

BELL GIN RD  
BOOTYS CROSSING RD  
COOPERATIVE WAY  
CR 152  
E 7TH ST  
HOLLY ST  
INDUSTRIAL AVE  
LAKEWAY DR  
MAPLE ST  
N COLLEGE ST  
NORTHWEST BLVD  
OLD AIRPORT RD  
PATRIOT WAY  
RAILROAD AVE  
ROCKRIDE LN  
S MAIN ST  
SAN GABRIEL VILLAGE BLVD  
SCENIC DR  
SMITH CREEK RD  
SNEAD DR  
STADIUM DR  
WOLF RANCH PKWY

Scenario 3A removes Minor  
Arterial and Major Collectors  
as candidates for Double  
Coarse Chip Seal  
Scenario 3A - \$ 6,200,000

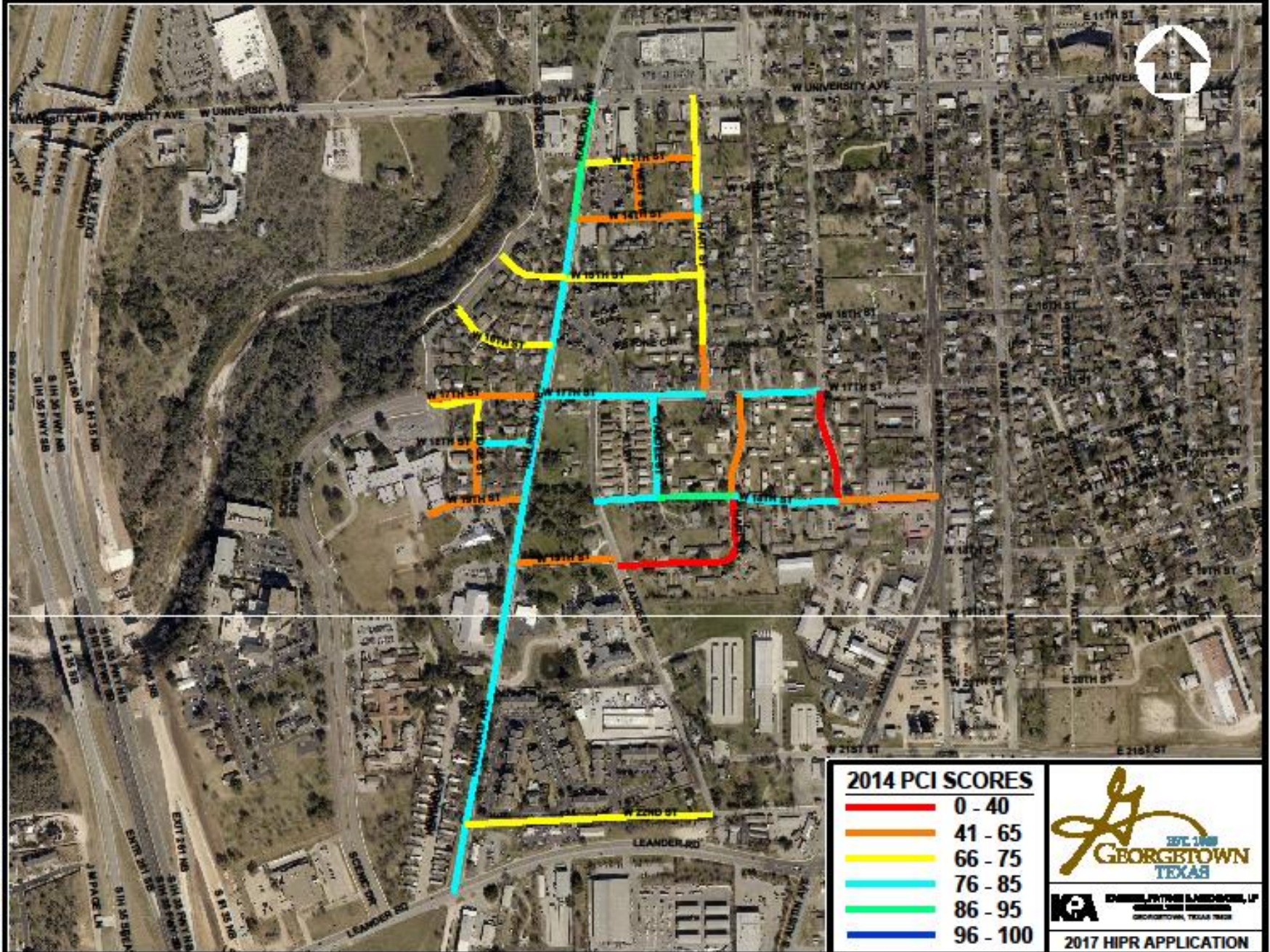


# Street Selection Design Tree



# Street Selection Process

- Street maintenance applications are initially selected by model based on individual street classification and PCI score (Network Level Analyses)
  - Candidate streets are then analyzed at the “project level” by staff and KPA Engineers (Project Level Analyses), including :
    - » visual inspection of candidate streets
    - » logical grouping of nearby streets (e.g., neighborhoods)
    - » develop groups into program given budget constraint
- Note: Applications may span multiple years budget consideration.*



**2014 PCI SCORES**

	0 - 40
	41 - 65
	66 - 75
	76 - 85
	86 - 95
	96 - 100



2017 HIPR APPLICATION

# Recommendation

- Continue to use:
  - Pavement Rejuvenation
  - Pavement Seals
  - Double Coarse Surface Treatments
  - Hot-In Place Recycling (Virgin Mix)
- Incorporate additional applications in 2018 bid package
  - High performance pavement seals (e.g., Onyx, HA5)
  - Ultra-thin Bonded Wearing Coarse
  - Hot-In Place Recycling (with Recycled Asphalt Pavement)
- Pavement Management
  - Monitor performance of new applications, including technical aspects and community support
  - Update model with new applications and PCI Study and report findings Summer/Fall 2018

# Next Steps

- City Council authorization to proceed developing Street Maintenance Program Bid Plans during Winter 2017/18 that include Ultra-Thin Bonded Wearing Coarse, High Performance Seals (e.g., Onyx and HA-5), and HIPR (with and without RAP).
- Street Maintenance Program competitively bid Spring 2018 (City Council will approve bids).
- Implement Street Maintenance Program Summer 2018 (City Council vote to proceed).

Questions

Thank You