Newburyport Pavement Management Plan
Public Meeting

October 22, 2019

Meeting Outline

- Mayor's Introduction
- Financing
- Beta Presentation
- Questions and Comments

Last 10 Years of Road Paving

- 18 miles of roads paved and repaired
- 24,041 ft of new sidewalks

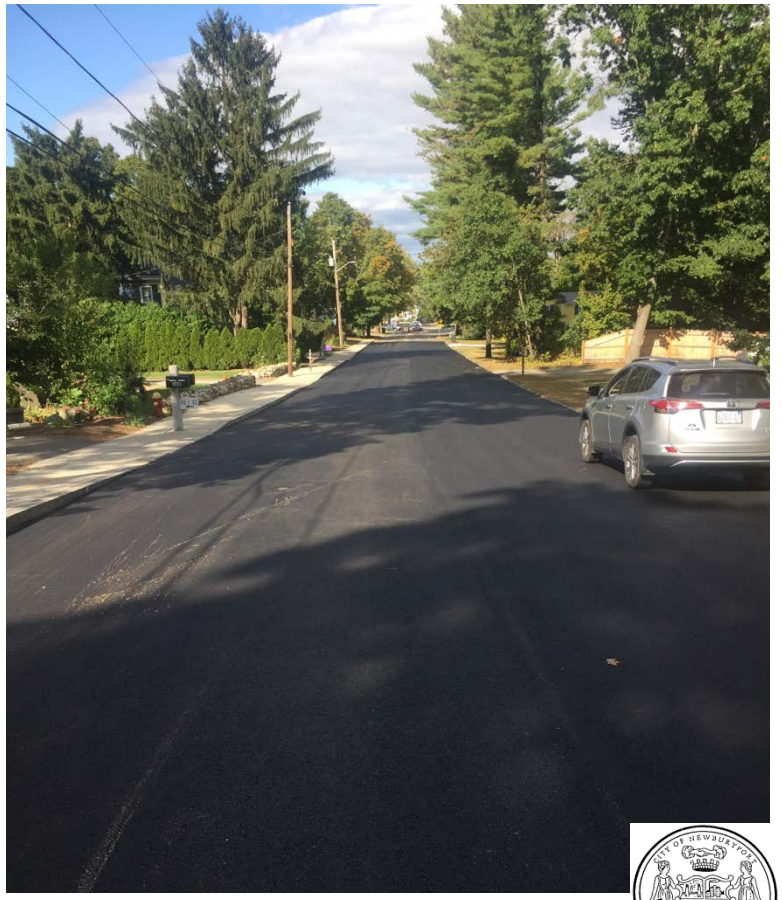
- State St
- Turkey Hill Rd
- Zabriskie Dr.
- Auburn St
- Plummer Springs Rd
- Curzon's Mill Rd
- Pop Crowley Way
- Whites Ct
- Bayberry Rd
- Spofford St
- Malcolm Hoyt
- Liberty St
- Center St
- Boylston St
- Foster Ct
- State St
- Elm St
- Plum St
- Tyng St
- Kent St
- Moseley Ave
- Lime St
- Hill St
- Boylston St
- Artichoke Terr.
- Wilson Way
- Greenleaf St
- Prospect St
- Essex St
- Brown Sq.
- Lafayette Ct
- Ocean St
- Papanti Ct
- Kent Street
- Currier's Ct
- Low Street
- Coltin Drive
- Wilkinson Drive
- Mulliken Way
- Water Street
- Jefferson Street
- Lancey Court
- Jefferson Court
- Stanley Ave
- Merrill Street
- Purchase St
- Jackson St
- Carlton Dr.
- Beacon Ave.
- Brooks Ct
- Highland Ave.
- Merrimac St
- Charter St
- North Atkinson St and access road to school
- Pine Hill Rd
- Pond St
- Water Street
- Prospect St
- Eppa Way
- Charles St
- Green St
- Hale St
- Marlboro St
- Parker St
- Graf Rd
- Harris St
- Hale St
- Park St
- Plum Island Turnpike
- Doe run Dr.
- Lavalley Ln
- Longfellow Dr.
- Marquand Ln
- Opportunity Way
- Wildwood Dr.
- Ferry Rd
- Dove St
- Russia St
- High St
- Cashman Park
- Toppans Ln
- Pleasant St
- Temple St

2019 Paving Season

Completed:

10,000 ft. of pavement | 5,000 ft. of curbing |8,000 ft. of sidewalk

- Pleasant St (Titcomb St to Market St)
- Spofford Street
- Toppans Lane (Low St to Summit Place)
- Merrimack St (sidewalk only 2019, paving spring 2020)
- High Street*



Repairs – 190 separate patches/ pothole repairs

Total Spending: $1,566,500

High Street Update

Mistakes in lining and striping by contractor

Hi-Way Safety's remediation of mistakes caused damage to road

City has contracted a pavement expert (ATC) to test and provide detailed assessment of damage

City working with KP Law to mitigate and return High St. to pre-striping status

Challenges to Paving

- **Decades of declining infrastructure**
- **Underground utilities (water, sewer and gas) and coordination of work with National Grid**
- **Contracting – Low bid, Prevailing Wage, contractor's schedule dependent**
- **Short paving season, weather dependent**
- **Competing capital priorities**
- **Inconveniences during construction – traffic, detours, noise, accessibility, time of day, length of time etc.**

How are roads and sidewalks Funded?

1. State Chapter 90 funding - $517,000/year
2. 50% of Local Meals Tax (since 2010)- $300,000/yr
3. City Budget
4. Additional sources
   - ✓ Conditions on permits for development
   - ✓ Mitigation for development
   - ✓ City Sidewalk Partnership Replacement Program
   - ✓ Grants
   - o Betterment Districts
   - o Bonding

Funding History

Fiscal Year	Ch. 90	Meals Tax[1]	Free Cash/ Op. Budget	Other Sources[2]	Total
2009	$392,773	$0	$60,000	$0	**$452,773**
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(1) Amount represents 50% of prior year meals excise tax collections.

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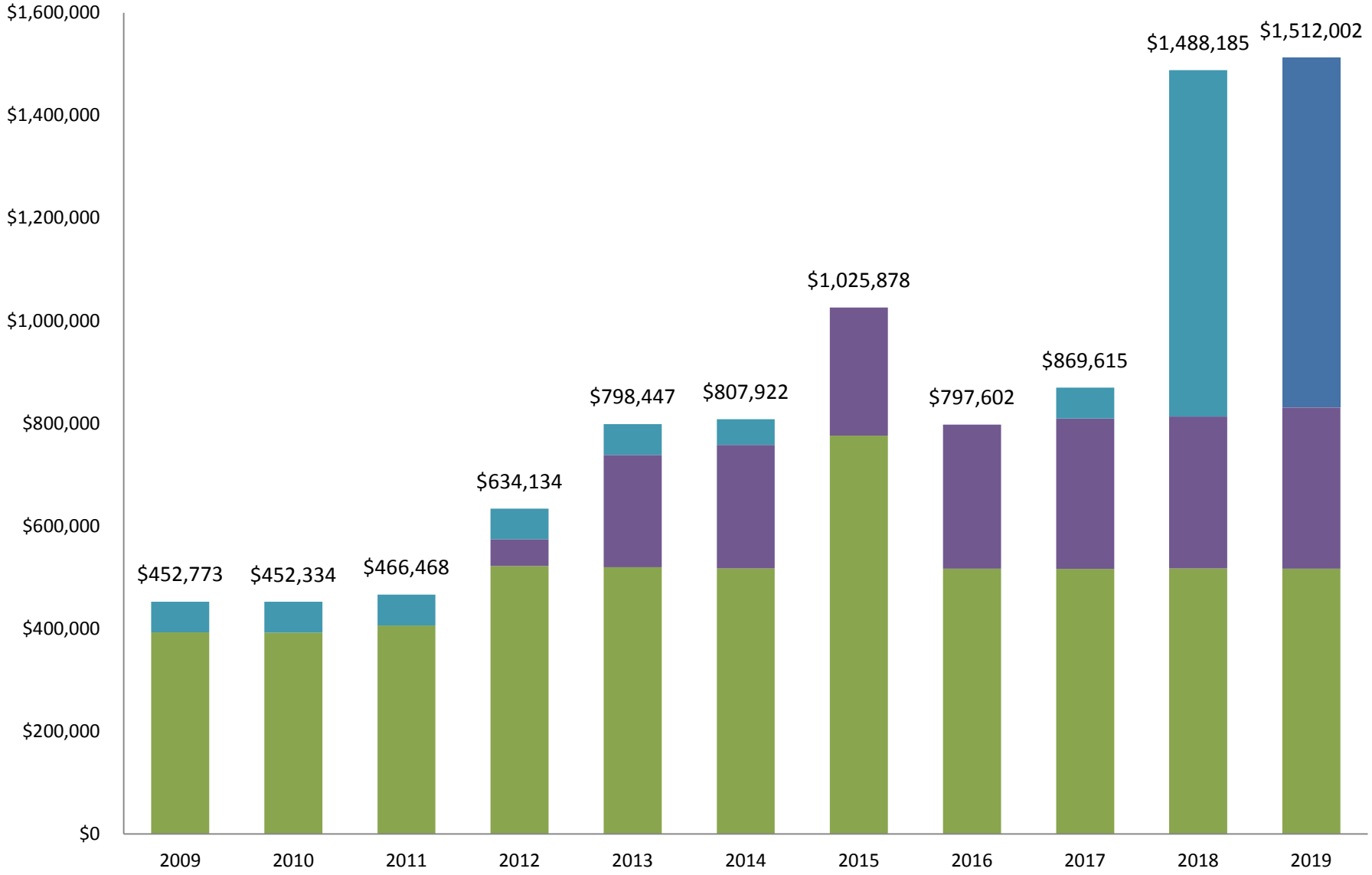
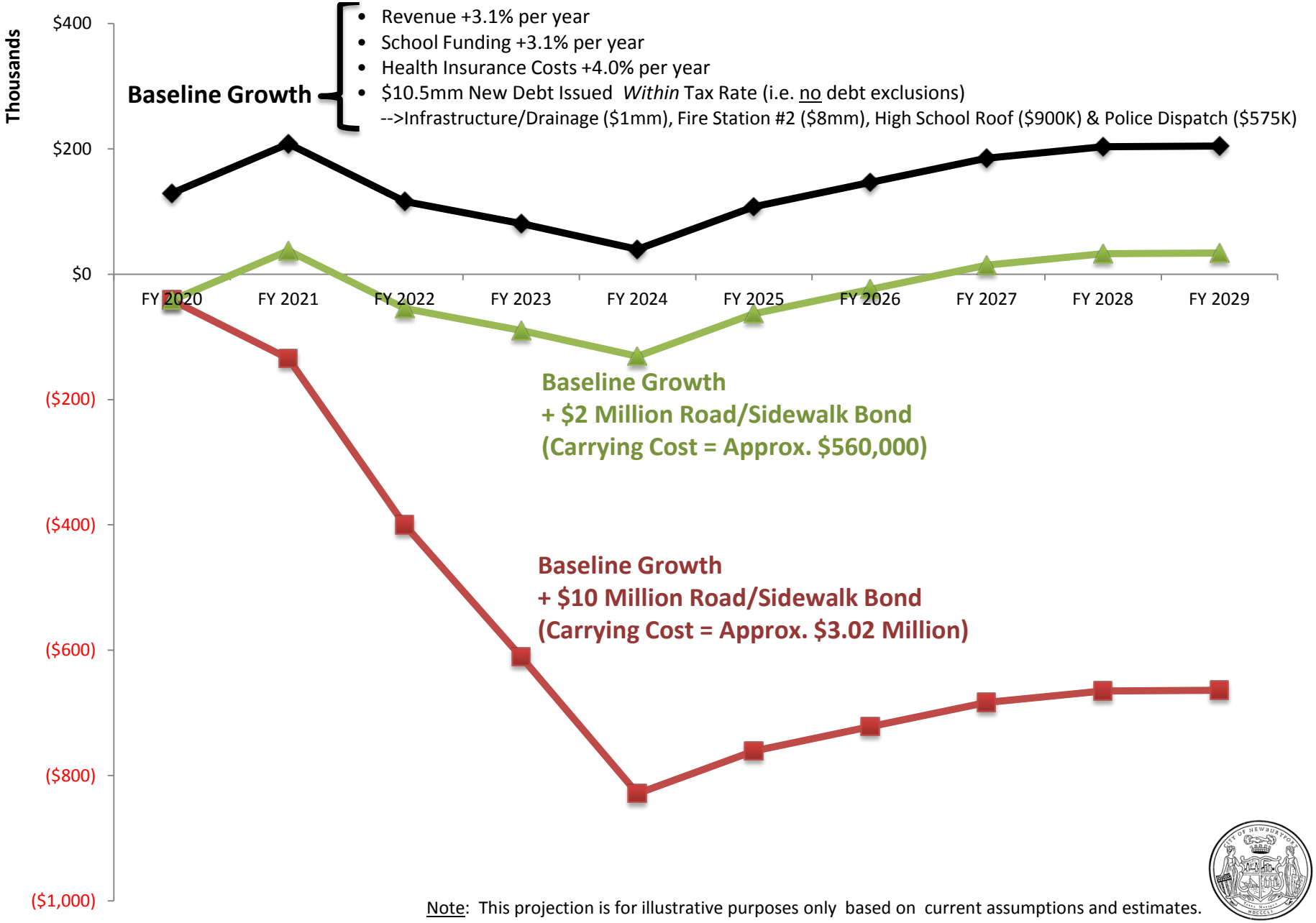
Funding History



10-Year Financial Projection: Annual Surplus/(Shortfall)



Note: This projection is for illustrative purposes only based on current assumptions and estimates.

Outstanding Debt Obligations

(General Fund as of 6/30/2019)

Purpose	Amount Outstanding	Borrowed	Matures	Years Left
New Bresnahan School	$17,116,000	2016	2036	16
Nock/Molin School Renovation	$12,129,000	2016	2036	16
Senior Community Center	$5,325,000	2015	2035	15
High School Renovation	$2,190,300	2005	2025	5
Fire Trucks (2)	$1,530,000	2020	2040	20
Nock/Molin Athletic Fields	$1,360,000	2016	2036	16
High School Stadium	$1,235,000	2016	2030	10
Drainage	$795,888	2019	2044	24
Fire Trucks (2)	$620,000	2016	2025	5
Roof Replacements	$600,000	2020	2040	20
Library Renovation	$45,000	2001	2020	0
City Hall	$10,000	2001	2020	0
Total	**$42,956,188**			

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IMPROVING COMMUNITIES TOGETHER

Beta Presentation

Anthony Garro

Senior VP

City of Newburyport

Pavement Management Program

Status Summary

October 22, 2019

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Anthony J. Garro
Vice President
GIS & Asset Management Services

BETA Works with more than 140 communities throughout New England on developing and maintaining Pavement Management Programs.

- Relied on by organizations to teach pavement management theory and project process
  - NE APWA
  - Bay State Roads (MA)
  - MA Highway Associations
  - T2 Connecticut

- Attend national conferences on pavement preservation and maintenance.

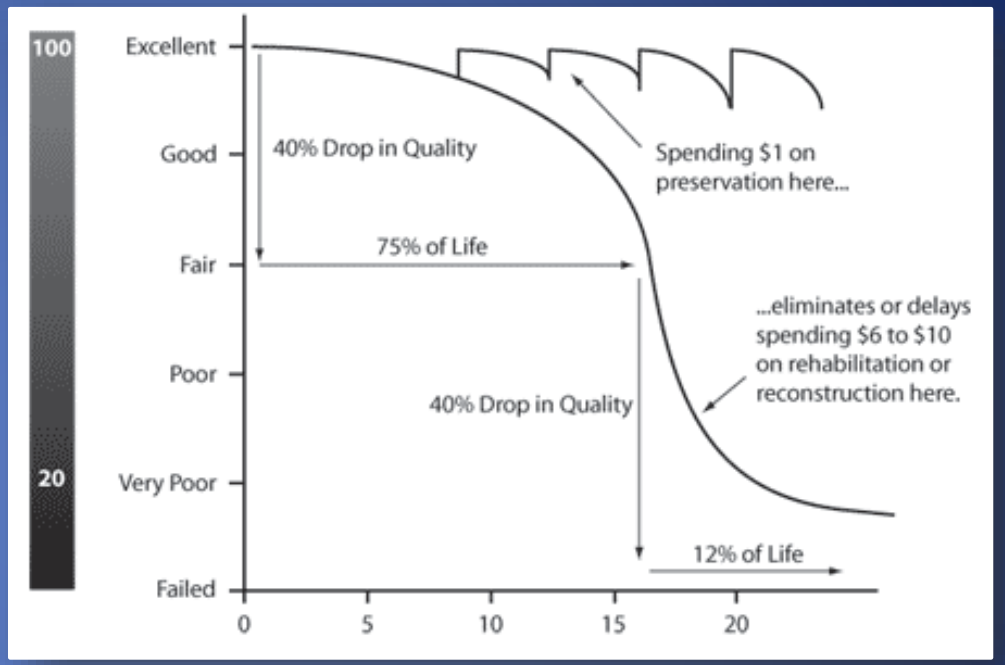
We complete projects like this every day!

Benefits of Pavement Management

- The practice of planning for pavement maintenance and rehabilitation with the goal of maximizing the value and life of a pavement network
- It is more cost effective to keep good roads in good condition
- ***Proactive* vs. *Reactive***

Program Goals & Objectives

- ✓ Conduct Pavement Condition Assessment
- ✓ Evaluate Repair Strategies & Benefits
- ✓ Establish Backlog
- ✓ Develop Prioritized Plan



- ➢ ***Provide Foundation for Decision Making***

CIP Tool

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Five Step Project Approach

1. Database Design & Configuration
2. Pavement Inspection Program (Aug-Sept 2019)
3. Existing Conditions Analysis
4. Capital Planning & Prioritization
5. System Deployment & Training

Field Data Collection Program

Type	Miles
City Accepted	72.64
Unaccepted/Private	4.11
State	9.96
Total	**86.71**

Roadway Inventory & Inspection Data

✓	Feature ID
✓	Street Name
✓	Segment Description
✓	Length/Width
✓	Pavement Distresses
✓	Curb Type/Reveal
✓	Sidewalk Condition/Material
✓	Curb Ramp Condition/Material
✓	Striping
✓	Gas (Y/N)
✓	Sewer (Y/N)
✓	Water(Y/N)

Calculate RSR
Road Surface Rating
(0-100 Scale)

Good
Fair
Poor

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RSR– Representative Examples
Good Condition

RSR– Representative Examples
Fair Condition


RSR: 74

RSR: 56

RSR– Representative Examples
Poor Condition

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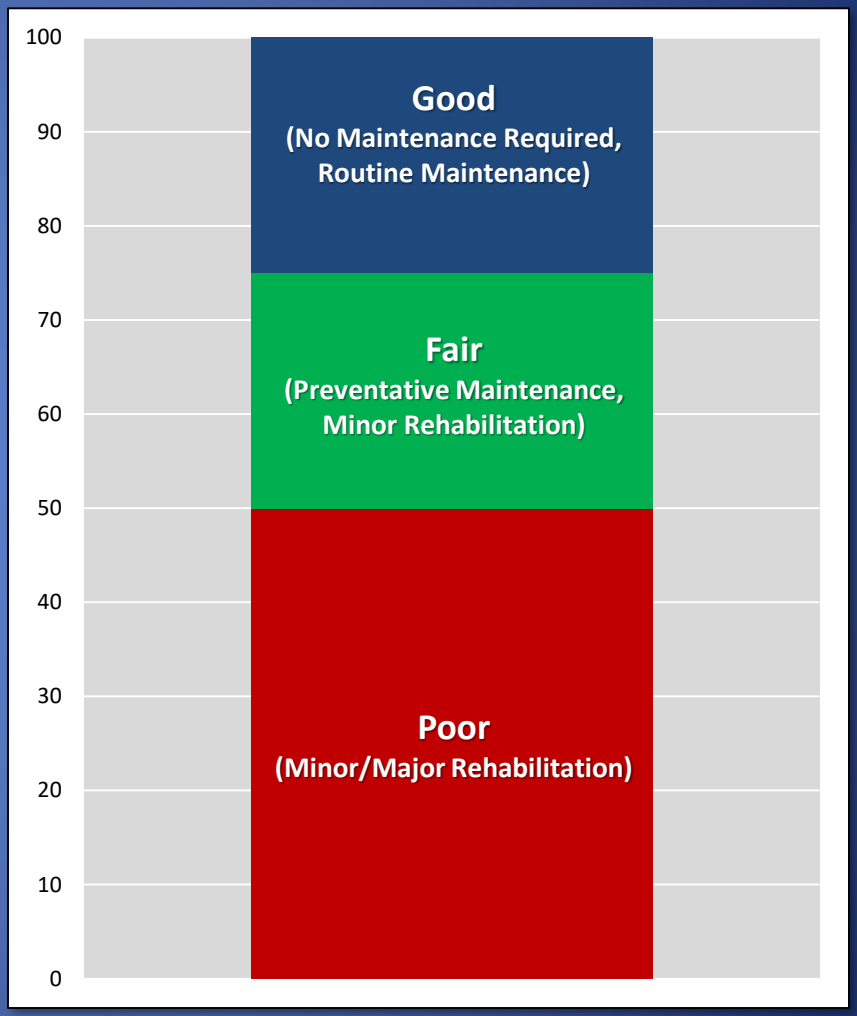
Establish Repair Options & Unit Costs

- No Maintenance Required
- Routine Maintenance
  - Crack Sealing
  - Fog Seal
- Preventative Maintenance
  - Chip Seal
  - Microsurface
  - Shim & Overlay
- Minor Rehabilitation
  - Mill & Overlay
- Major Rehabilitation
  - Full Depth Reclamation
  - Reconstruction



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Existing Conditions Analysis

Breakdown of Estimated Repairs					
Condition (RSR Range)	***Average Unit Cost ($/SY)***	***Length (Miles)***	***Square Yards***	***Percent Repair***	***Estimated Cost***
Good	$0.50	17.95	288,152	24.70%	$144,076
Fair	$14.00	34.33	538,410	47.26%	$7,537,743
Poor	$32.00	20.37	339,706	28.03%	$10,870,598
Total		**72.64**	**1,166,268**	**100%**	***$18,552,417**

Network Rating = 68.4

**Based on curb to curb improvements only, does not include sidewalk, curb ramp or utility improvements. Estimated costs as shown are for planning purposes only and do not reflect fluctuations in liquid asphalt or other pavement mix components.*

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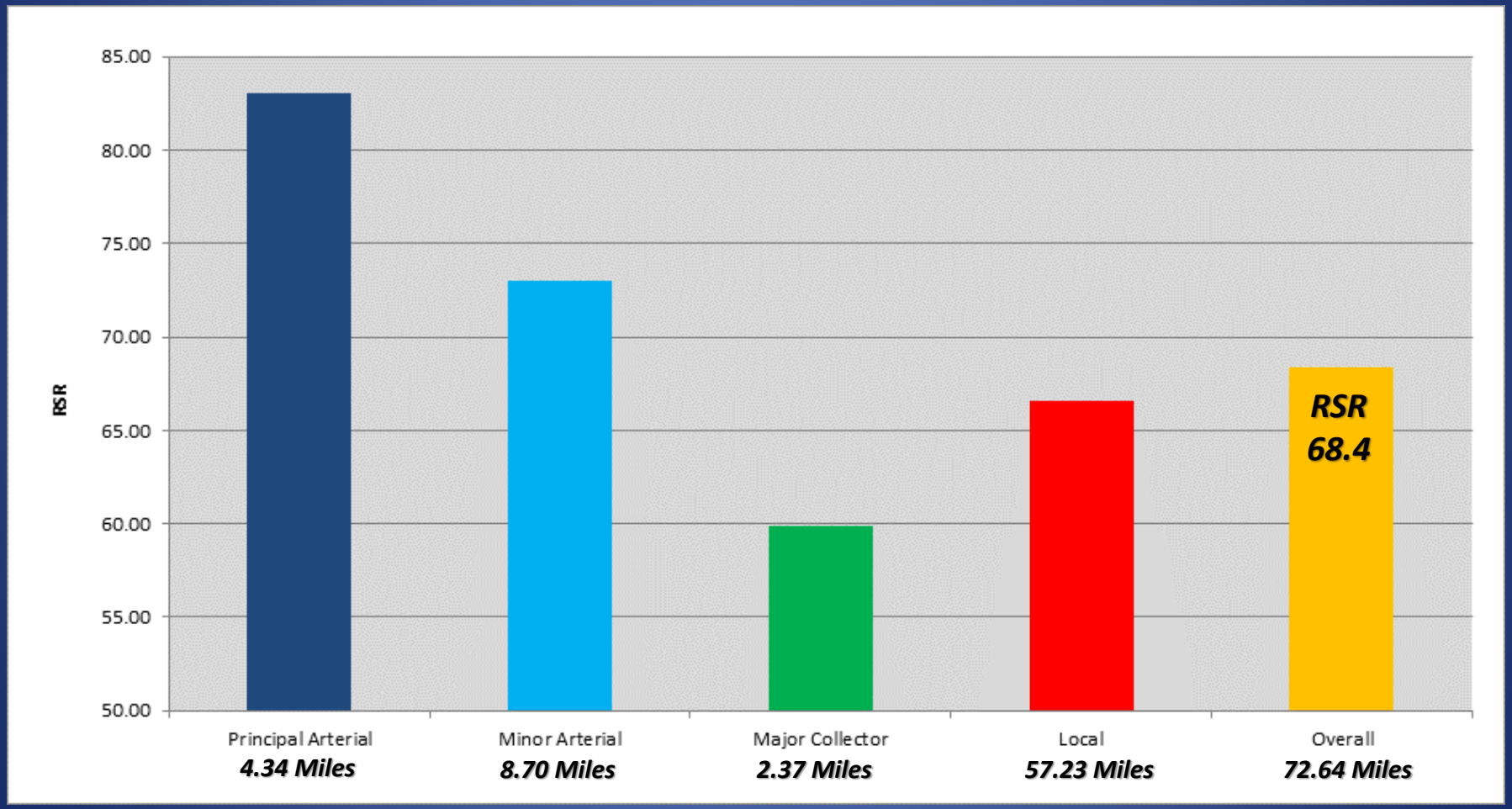
Existing Conditions Analysis

Road Condition by Functional Class



Existing Conditions Analysis

Roadway Functional Classification – ADT's & Examples

Principal Arterials:

ADT – Approx. 5,000 to 10,000

Street Name	Length (Miles)	Length (Ft)
GREEN STREET	0.26	1386.65
LOW STREET	1.94	10219.39
MERRIMAC STREET	2.4	12662.55
OCEAN AVENUE	0.17	895.42
PLUM ISLAND TPKE	0.53	2815.89
POND STREET	0.32	1679.86
STATE STREET	0.9	4737.58
WATER STREET	1.33	7015.98

Collectors:

ADT – Approx. 1,250 to 2,500

Street Name	Length (Miles)	Length (Ft)
FAIR STREET	0.29	1517.48
FRUIT STREET	0.11	576.47
KENT STREET	0.32	1679.7
NORTH ATKINSON STREET	0.4	2103.51

Local Roadways: ADT – Approx. 500

Cul-du-sacs & Dead Ends: ADT - Approx. 250

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Comparable Pavement Conditions
Essex County Region

Network RSR	Centerline Miles	Chapter 90* Allotment
79.35	95.29	$849,063
77.42	226.38	$1,535,612
74.36	184.24	$1,370,839
70.86	167.39	$1,180,385
68.55	54.89	$303,295
68.42	**72.64**	**$516,788**
62.66	35.67	$230,577
57.94	72.01	$440,336

Newburyport

** Denotes FY2020 Figures*

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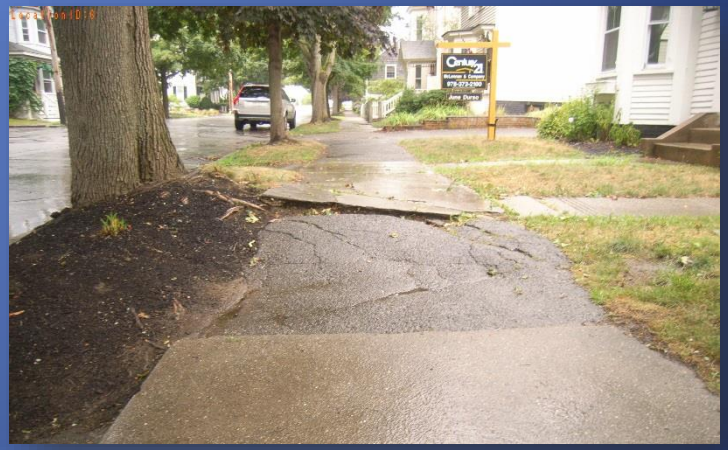
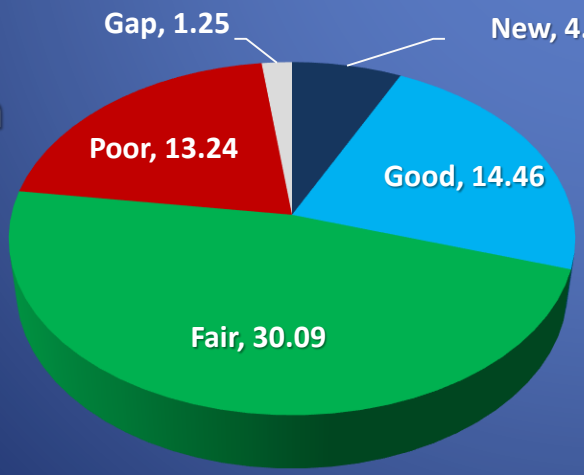
Sidewalk Inventory & Assessment

Sidewalk Ramp Material (Miles)	
Asphalt	25.73
Brick	10.97
Concrete	24.14
Mix Materials	1.30
Pavers	0.21
Total	**62.35**



Sidewalk Condition (Miles)



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Sidewalk Inventory & Assessment

Breakdown of Estimated Repairs

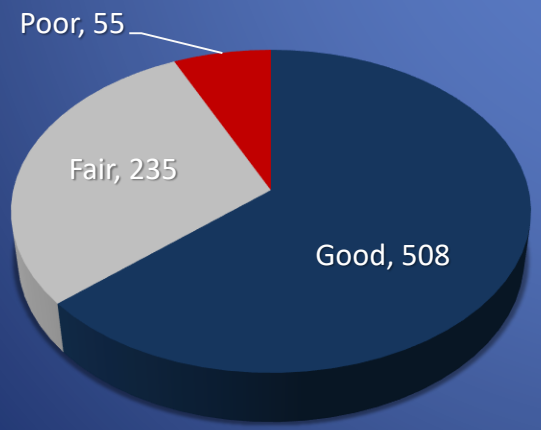
Condition	Repair Type	Length (Miles)	Est. Cost New GC	Est. Cost Adjust GC	Est. Cost No GC
Asphalt	**Replace With:**	**Concrete**			
Gap	Gap	0.78	$219,983.65	$0.00	$0.00
Poor	Rehabilitation	8.21	$2,367,092.23	$1,988,357.48	$1,420,255.34
Fair	Surface Treatment	12.74	$3,792,452.60	$3,185,660.19	$2,275,471.56
Good	Routine Maintenance	2.84	$201,655.80	$201,655.80	$201,655.80
New	Defer Maintenance	0.94	$0.00	$0.00	$0.00
		25.51	**$6,581,184.29**	**$5,375,673.46**	**$3,897,382.70**
Brick	**Replace With:**	**Brick**			
Gap	Gap	0.09	$43,559.01	$0.00	$0.00
Poor	Rehabilitation	2.23	$1,247,900.67	$1,119,910.86	$863,931.23
Fair	Surface Treatment	4.67	$2,799,622.11	$1,938,199.92	$1,938,199.92
Good	Routine Maintenance	5.53	$443,928.78	$887,857.55	$443,928.78
New	Defer Maintenance	0.86	$0.00	$0.00	$0.00
		13.37	**$4,535,010.57**	**$3,945,968.33**	**$3,246,059.93**
Concrete	**Replace With:**	**Concrete**			
Gap	Gap	0.38	$100,138.42	$0.00	$0.00
Poor	Rehabilitation	2.02	$608,553.92	$511,185.29	$365,132.35
Fair	Surface Treatment	12.20	$3,641,484.18	$3,058,846.72	$2,184,890.51
Good	Routine Maintenance	5.91	$421,225.72	$421,225.72	$421,225.72
New	Defer Maintenance	2.73	$0.00	$0.00	$0.00
		23.23	**$4,771,402.24**	**$3,991,257.73**	**$2,971,248.58**
Mix Materials	**Replace With:**	**Concrete**			
Poor	Rehabilitation	0.48	$141,274.79	$118,670.82	$84,764.87
Fair	Surface Treatment	0.62	$187,070.49	$157,139.21	$112,242.30
Good	Routine Maintenance	0.17	$12,833.39	$12,833.39	$12,833.39
		1.27	**$341,178.67**	**$288,643.43**	**$209,840.56**
Pavers	**Replace With:**	**Brick**			
Fair	Surface Treatment	0.01	$6,725.36	$4,656.02	$4,656.02
Good	Routine Maintenance	0.18	$11,685.87	$23,371.74	$11,685.87
		0.19	**$18,411.22**	**$28,027.75**	**$16,341.88**
Total		**63.59**	**$16,247,186.99**	**$13,629,570.70**	**$10,340,873.65**

GC = Granite Curb

Curb Ramp Inventory & Assessment

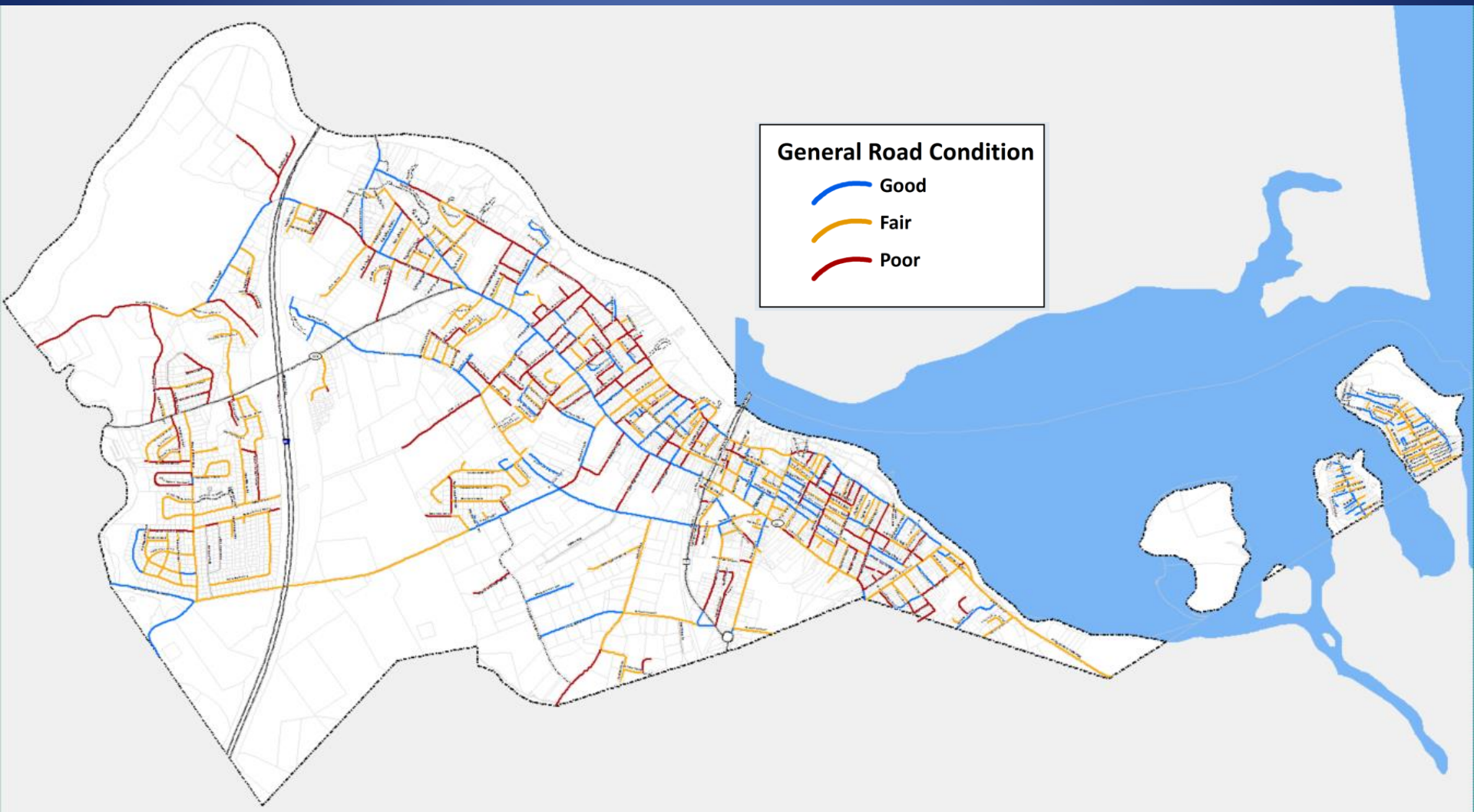
Curb Ramp Material	
Asphalt	204
Brick	161
Concrete	433
Total	**798**

Curb Ramp Condition

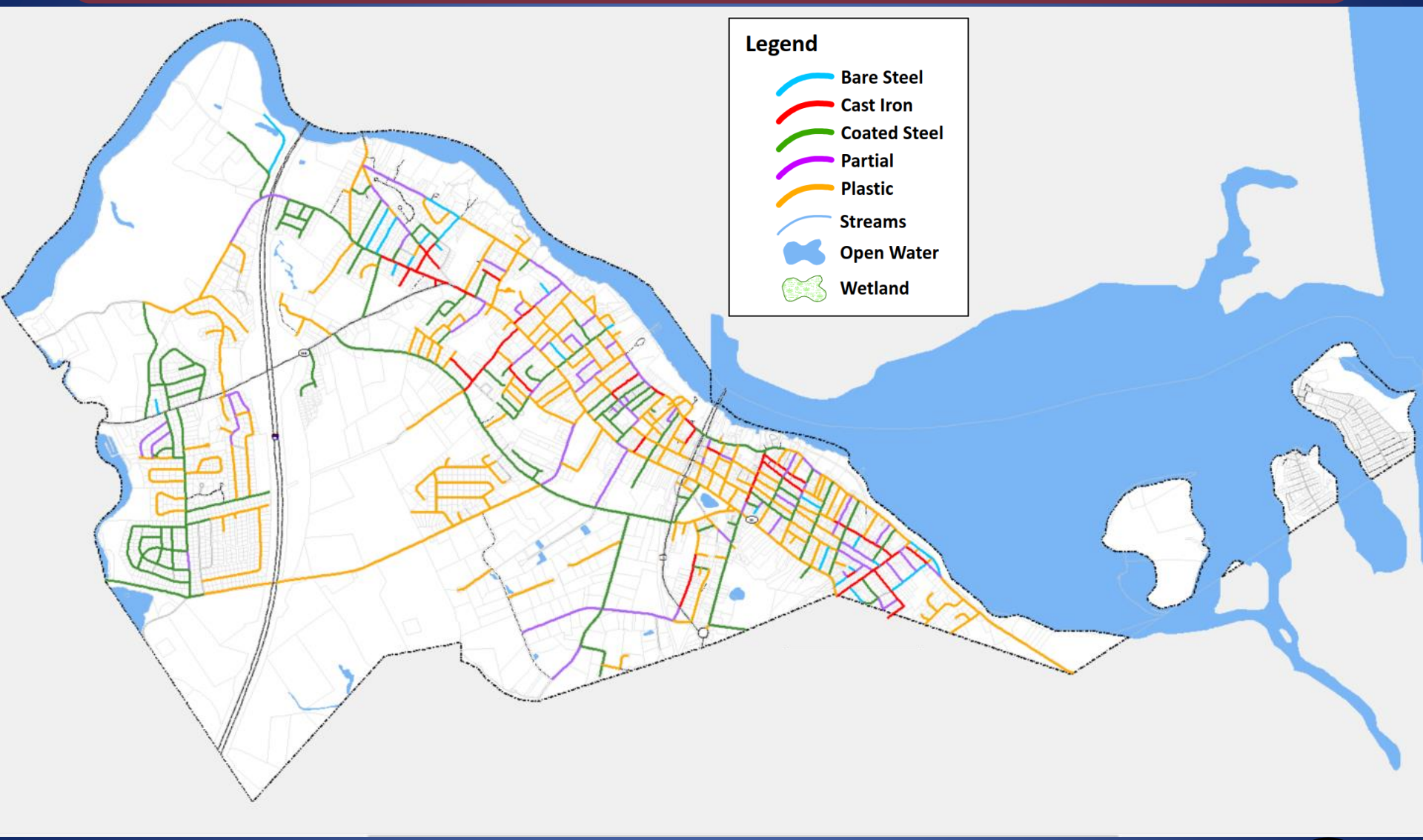


Estimated Curb Ramp Replacement Cost:
$5,000 to $10,000 per

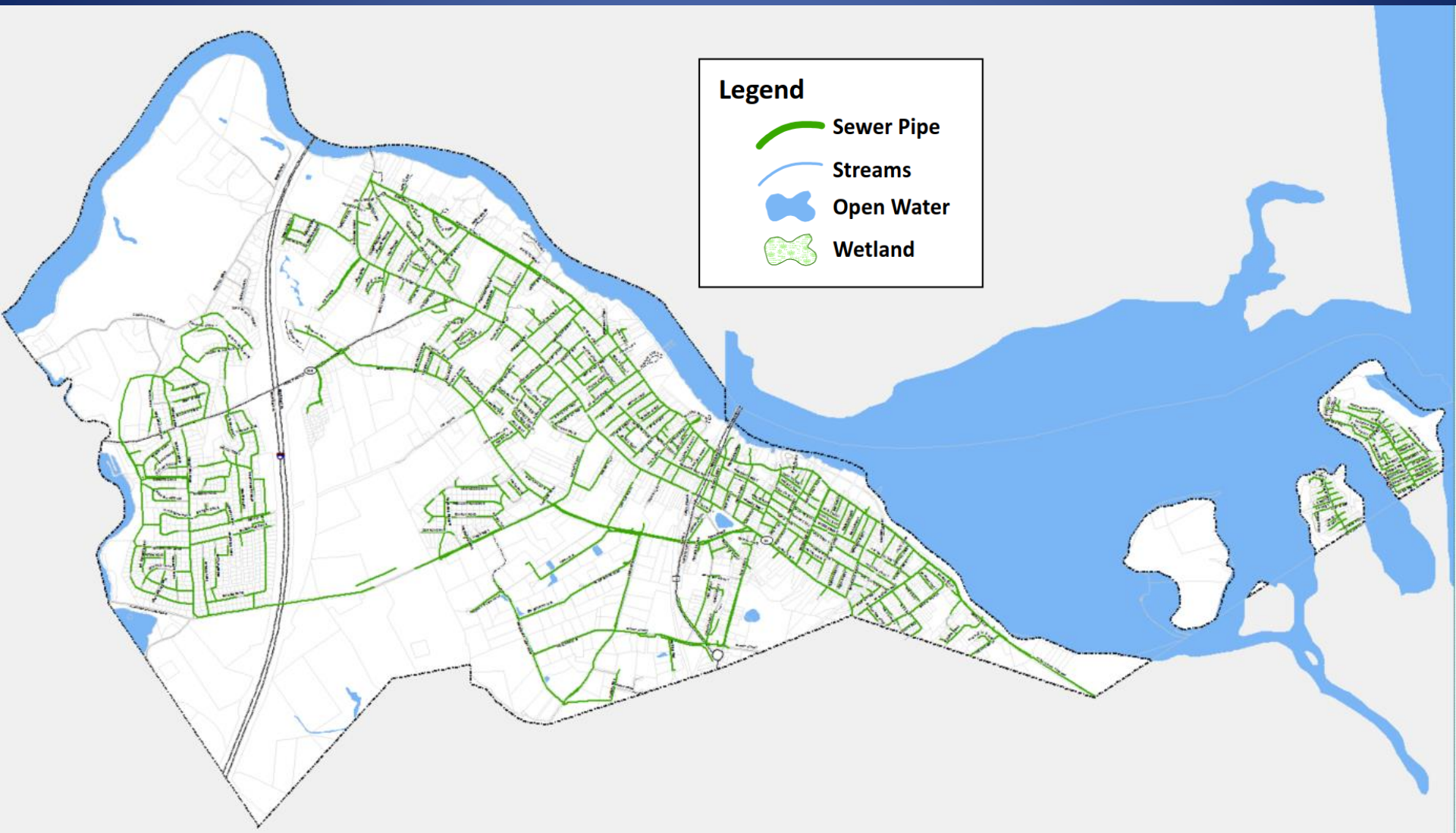
Pavement Conditions Map



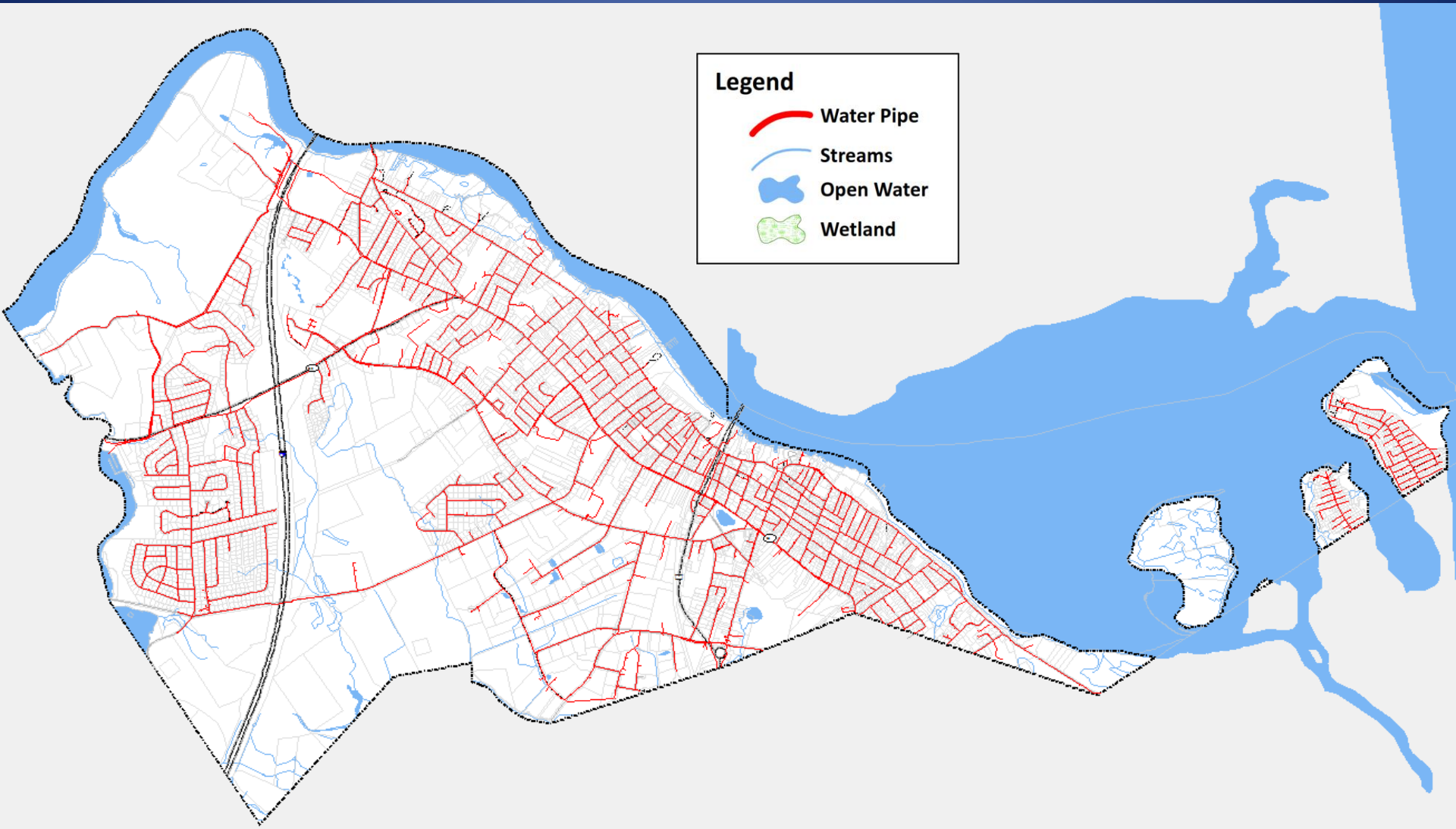
Gas Network Map



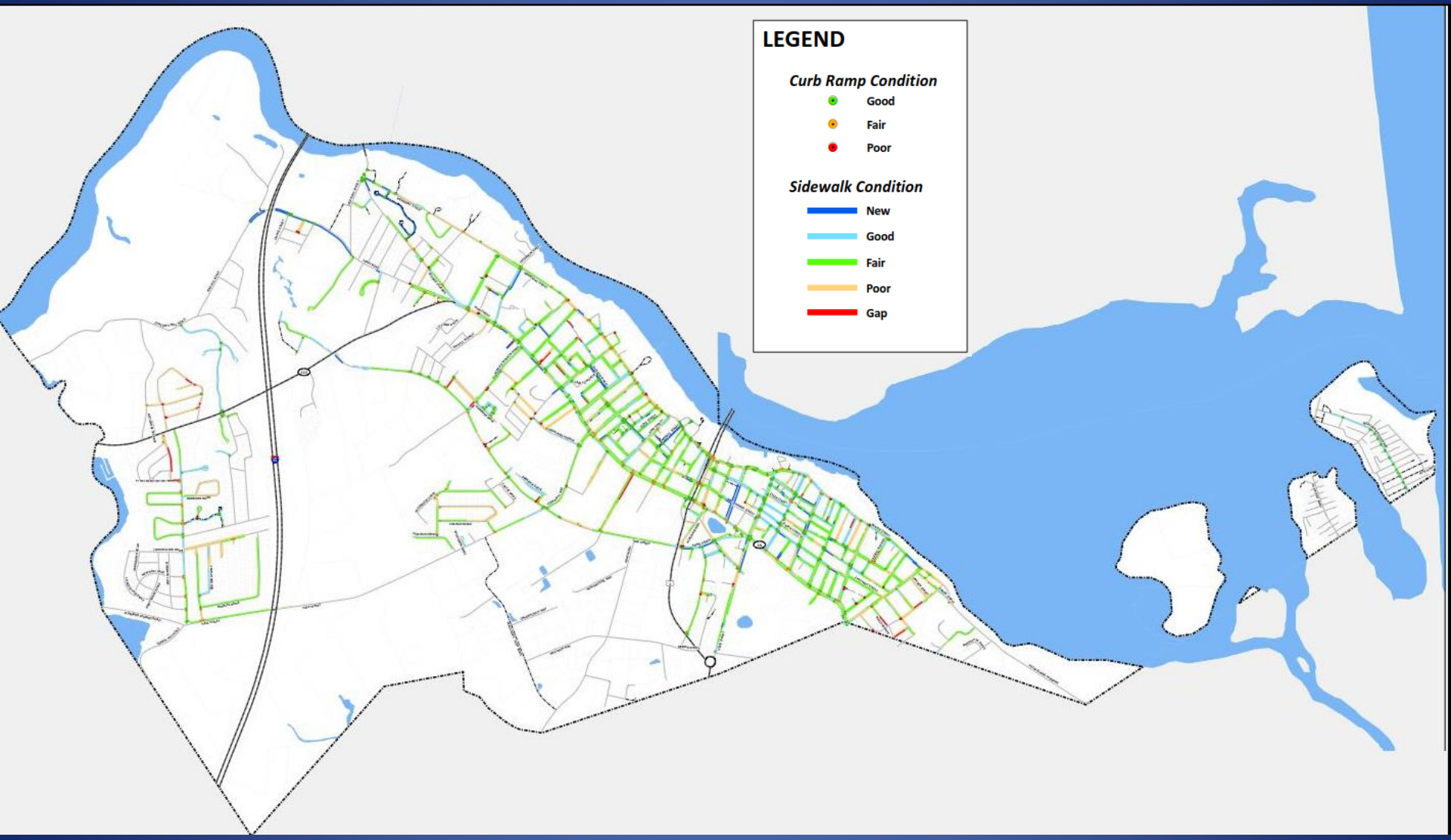
Sewer Network Map



Water Network Map

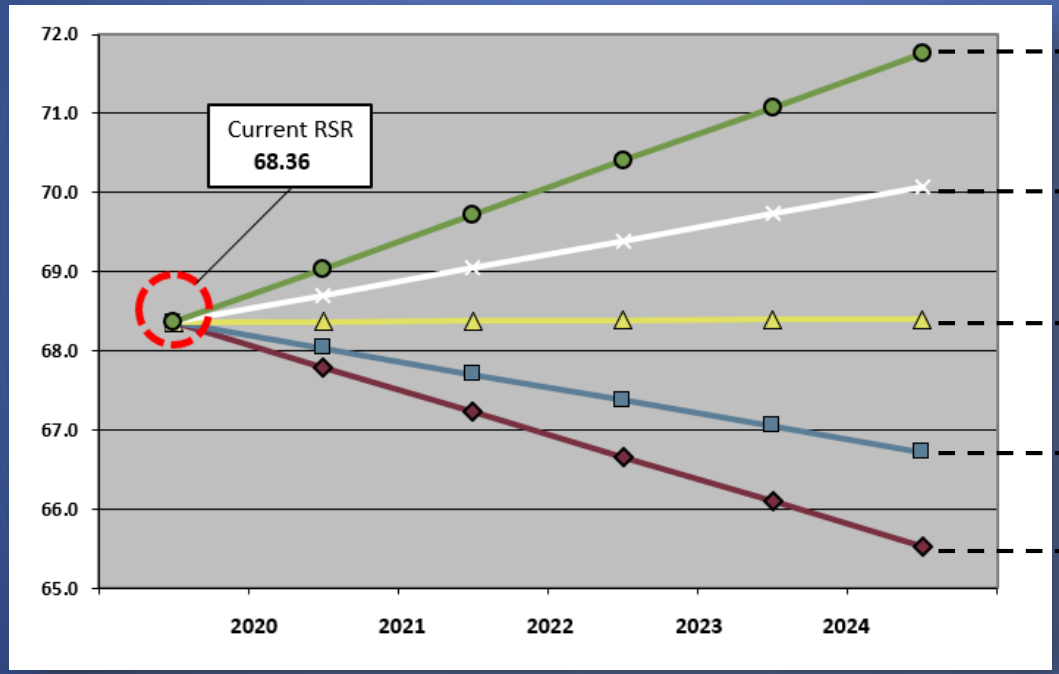


Sidewalk & Curb Ramp Conditions



Data Analysis & Planning

Projected RSR By Year*



Good - 10% Fair - 40% Poor - 50%

Estimated Amount Per Year (Present Day Dollars)

- $2.0M
- $1.6M
- $1.2M
- $800K
- $517K*

*Denotes FY2020 Ch. 90 Apportionment

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Next Steps

Capital Improvement Planning & Prioritization

Next Steps

Capital Improvement Planning & Prioritization

Analysis Considerations

Roadway Condition (Good, Fair, Poor)
Roadway Functional Classification
Cost Benefit Value (CBV)
Repair Costs
Life Improvement
Sub-Surface Utilities (Gas, Water, Sewer)
Sidewalks & Curb Ramps

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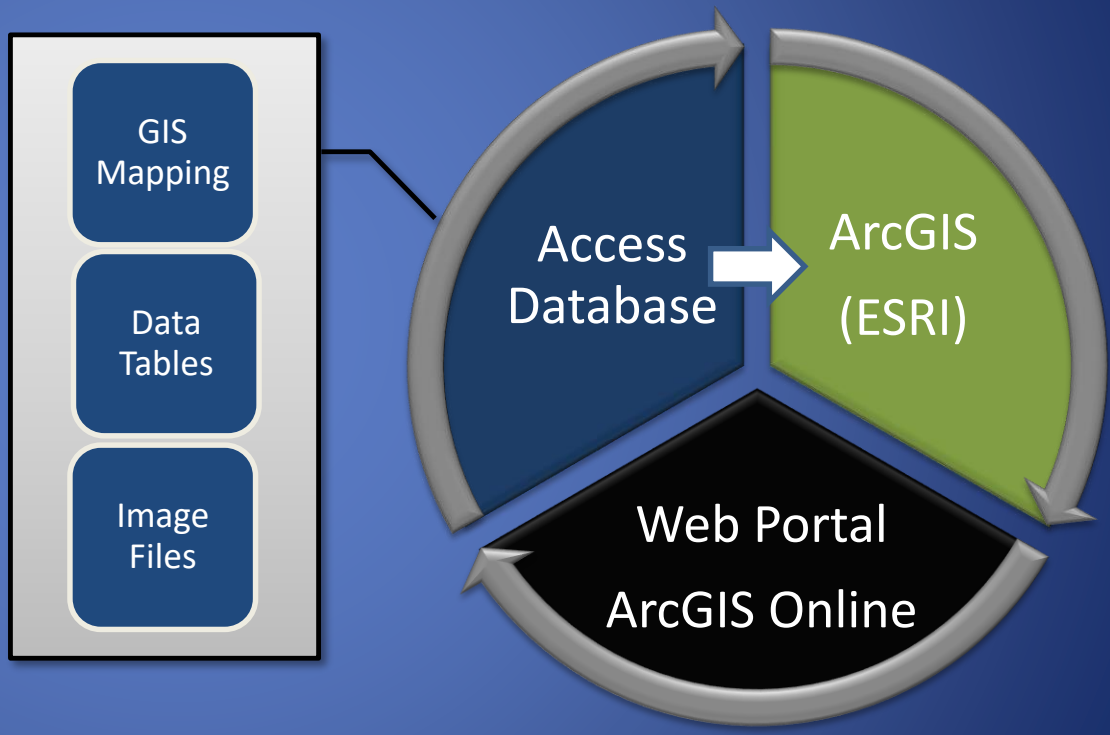
Next Steps

System Deployment & Data Management

- Training Program
- Update data as improvements are completed
- Monitor and update actual costs
- Re-assess roadways every 3 years
- **System Support**



ManageMyRoads Platform
(For City Use Only)

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Insert City Slides

2019 Paving Season

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Repairs – patches, sealing, etc.

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Funding calendar year 2019: $1,566,500

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Challenges to Paving

- Decades of deferred maintenance
- Cost
- Short paving season
- Construction is weather dependent
- Inconveniences during construction – traffic detours, noise, access, accessibility, time of day, length of inconvenience construction, etc.
- Paving season coincides with middle of prime season for businesses
- Condition of underground utilities
- Coordination with National Grid
- Beholden to contractor's schedule, communities competing for service

Guidelines for Paving Plan

- Paving + Sidewalks and Curbing
- Greatest impact
- Beta Score
- Age and condition of underground utilities
- Grouping construction for cost efficiency
- Over 5 years period, be as equitable as possible with improvements among Wards

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City of Newburyport

Pavement Management Program

Status Summary

Thank You

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Water Street