

# Town of Barrington

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## Pavement Management

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# Barrington's Paved Roads

- ▶ About 69 miles of paved roads maintained by the Town
- ▶ Automated pavement condition assessment completed by Street Scan in 2021



# Pavement Condition

- ▶ Pavement Condition Index  
(**PCI**)

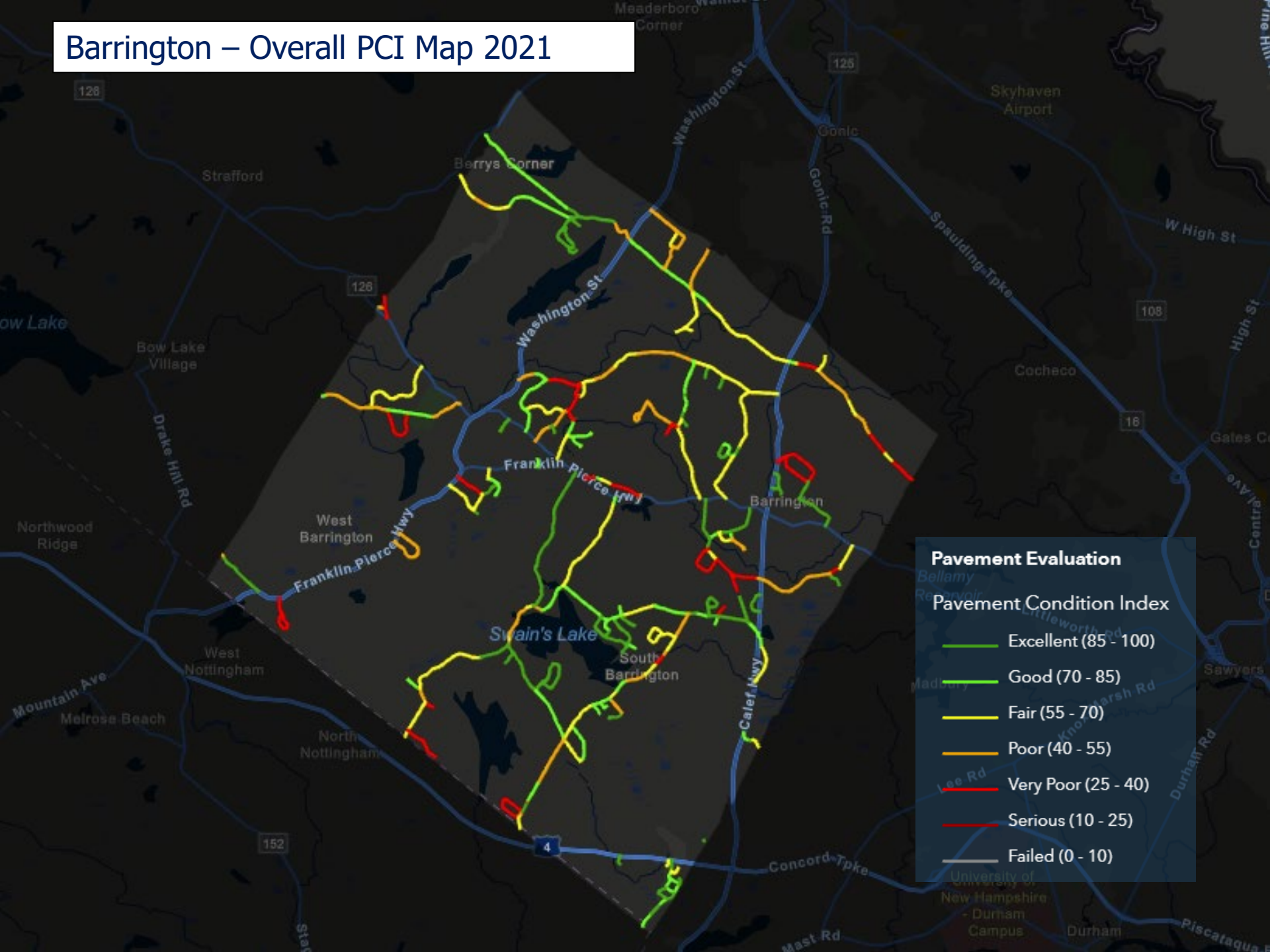
- ▶ Ranges from 0 to 100  
(*higher is better*)

- ▶ Target Range: 70-80

- ▶ Town-wide average  
**PCI = 68**

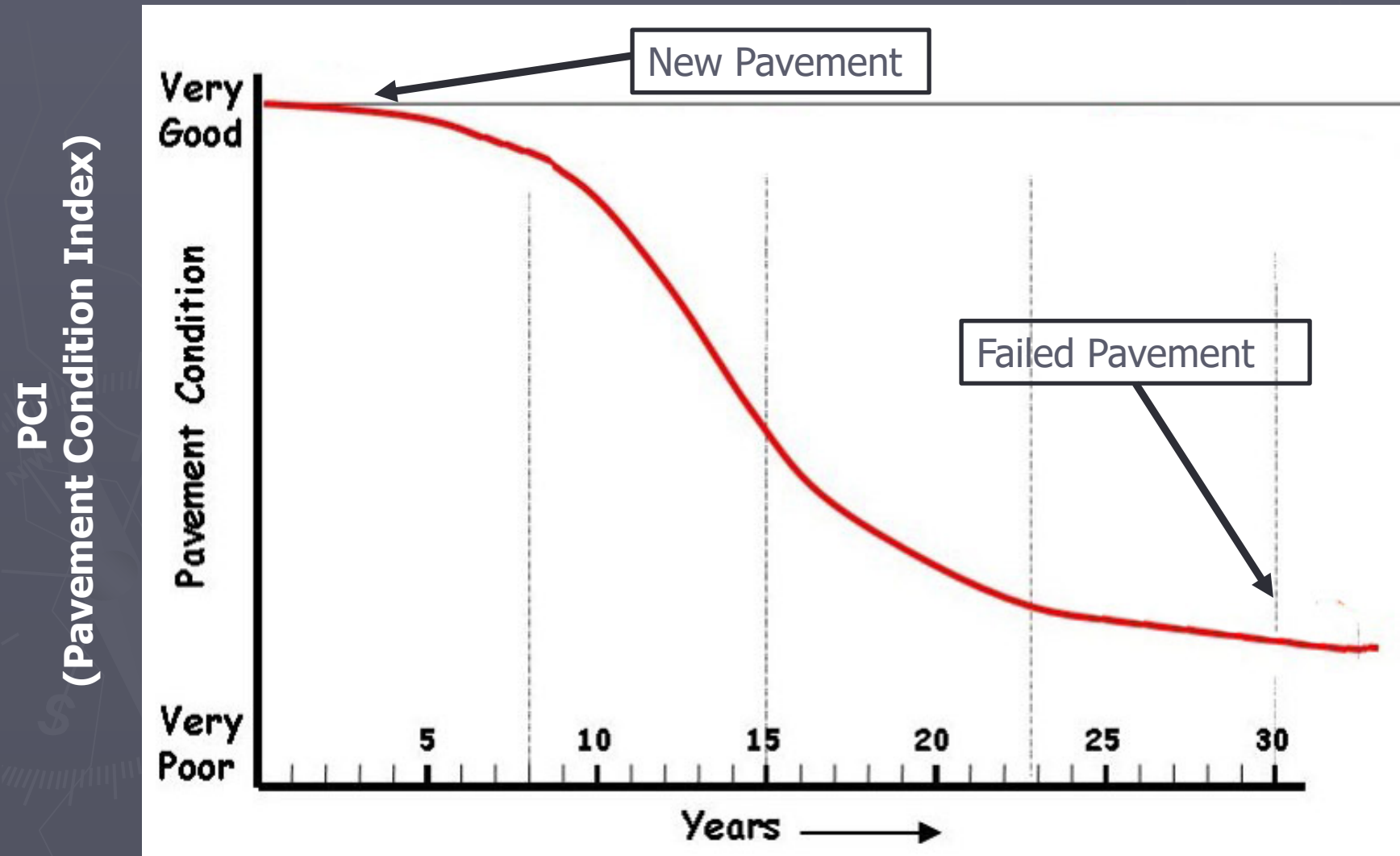
<i>PCI Rating Scale</i>	
86-100	Excellent
71-85	Very Good
56-70	Good
41-55	Fair
29-40	Marginal-Poor

# Barrington – Overall PCI Map 2021

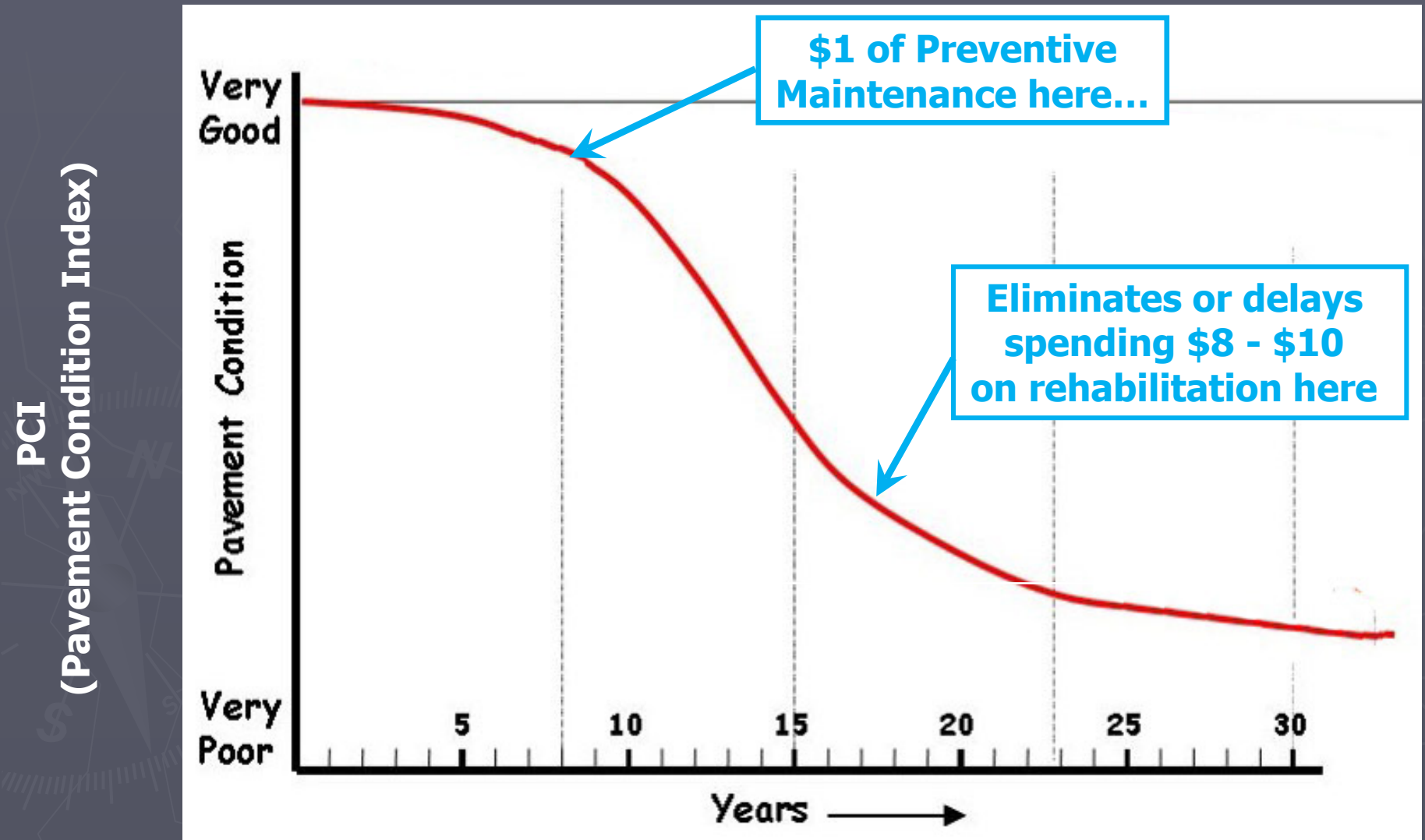




# Pavement Continually Degrades - Loses Quality and Life Every Year



# Pavement Rehabilitation Costs Increase with Time



# Pavement "Treatments" as function of Pavement Condition

## Preservation, Maintenance and Remediation Methods as Function of PCI

<u>PCI</u>	<u>Maintenance or Repair Method</u>	<u>Cost</u>	
90-100	Preventative Surface Treatment	\$0.50 / square foot	Preservation
75-89	Minor Maintenance Repair	\$0.50 / square foot	
60-75	Shim and 1.5" Overlay:	\$1.25 / square foot	Maintenance
51-60	Shim and 2" Overlay	\$1.50 / square foot	
41-50	Mill and 2" Overlay	\$1.75 / square foot	
31-40	Reclaim and 4" New Pavement (2.5" binder; 1.5" overlay)	\$3.00 / square foot	Rehabilitation/ Reconstruction
21-30	Reclaim with Strength Additive and 4" New Pavement (2.5" binder; 1.5" overlay)	\$3.50 / square foot	
0-20	Full Reconstruction with 24" Base; 4" Pavement (2.5" binder; 1.5" overlay)	\$6.75 / square foot	

# Pavement Repair Unit Costs

## Preservation Methods (1-4yrs)

Crack Seal  
Spot Repair

Cost Range: up to \$ 0.50/sf



## Resurfacing Methods (4-12 yrs)

Mill, Shim, and Overlay

Cost Range: \$ 1.25/sf to \$ 1.75/sf



## Reconstruction Methods (12-20 yrs)

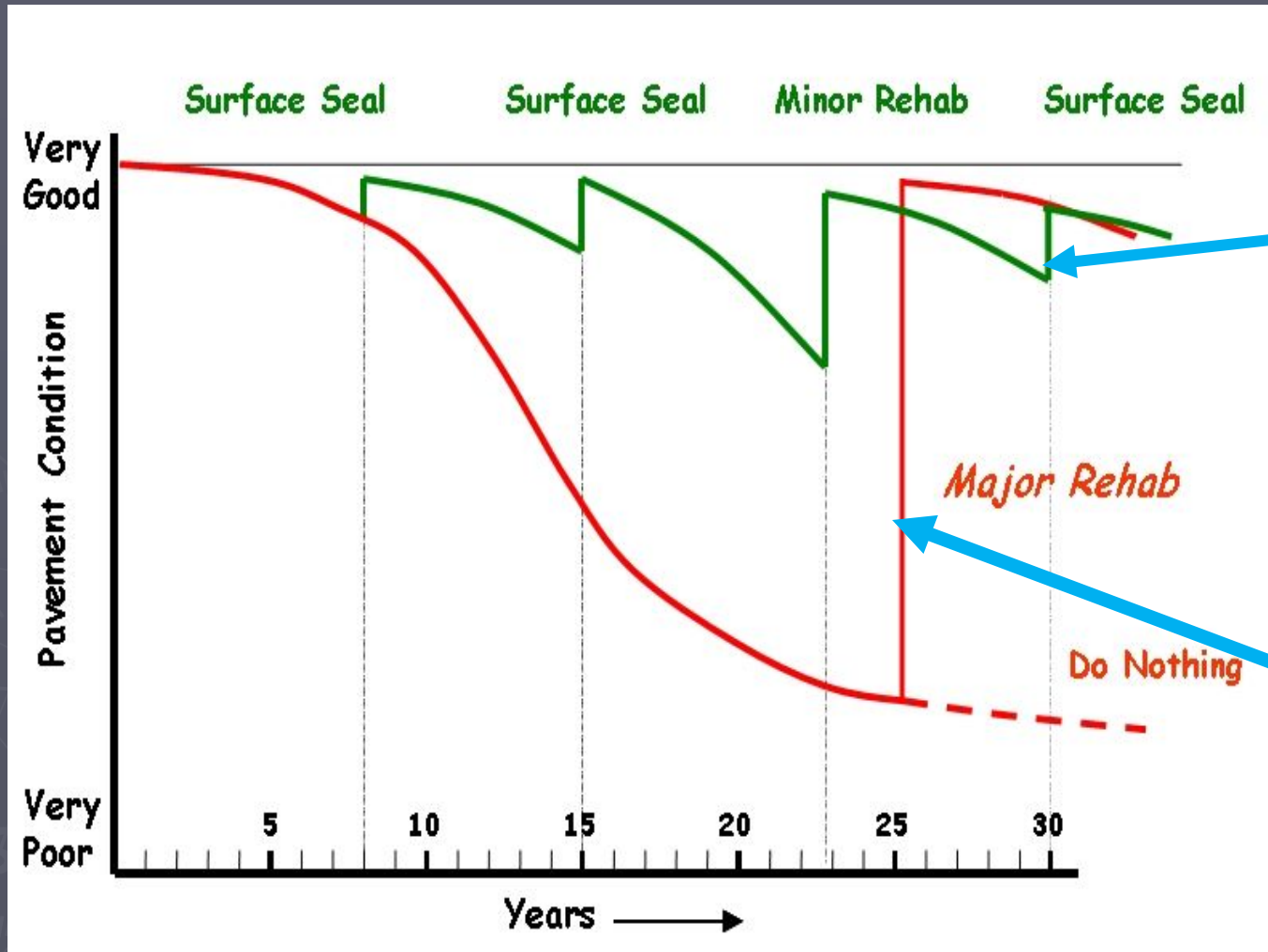
Reclaim and Overlay  
Reclaim with Strength Additive & Overlay  
Full Box Reconstruction

Cost Range: \$ 3.00/sf to \$ 6.75/sf





# Preserving Good Pavement Costs Less over Long Term than waiting for Major Repair/Reconstruction



Lowest  
Total \$\$\$

Highest  
Total \$\$\$

# Pavement Optimization- General Goals

Distribute annual budget to:

1. *Keep Good Roads Good*
2. *Maintain or Raise Average PCI*

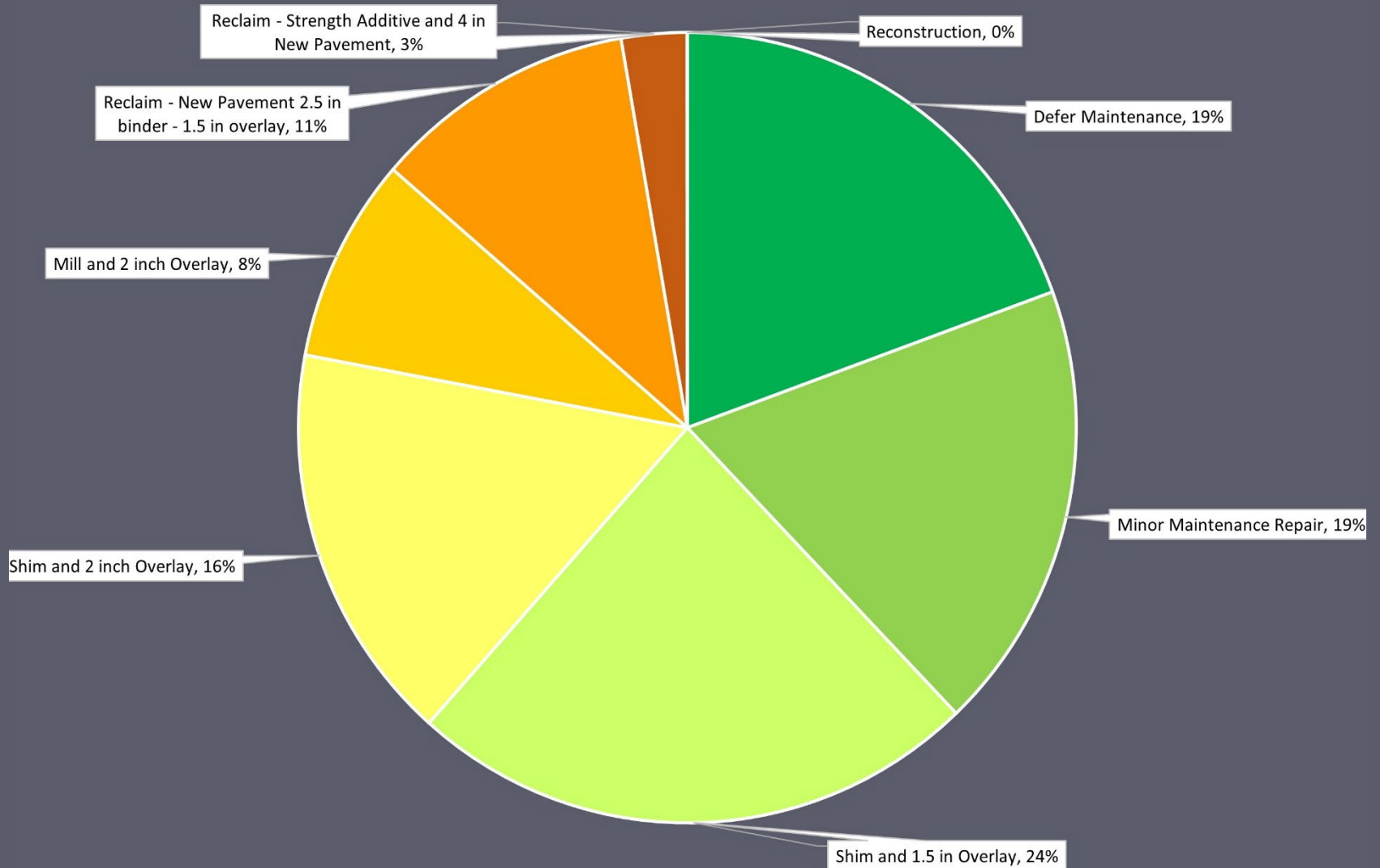
These must be done in a practical manner

# Pavement Optimization- Obstacles

- *Reconstruction (\$\$\$) takes money away from preservation (\$).*
- *1 mile of road reconstruction = approximately 13 miles of road preservation.*
- *Preserving and resurfacing roads is the most cost-effective way to manage the road network and increase Town-wide PCI*
- *The optimal management plan will delay road reconstruction projects(\$\$\$) until preservation(\$) and resurfacing(\$\$) of good to fair roads is completed*

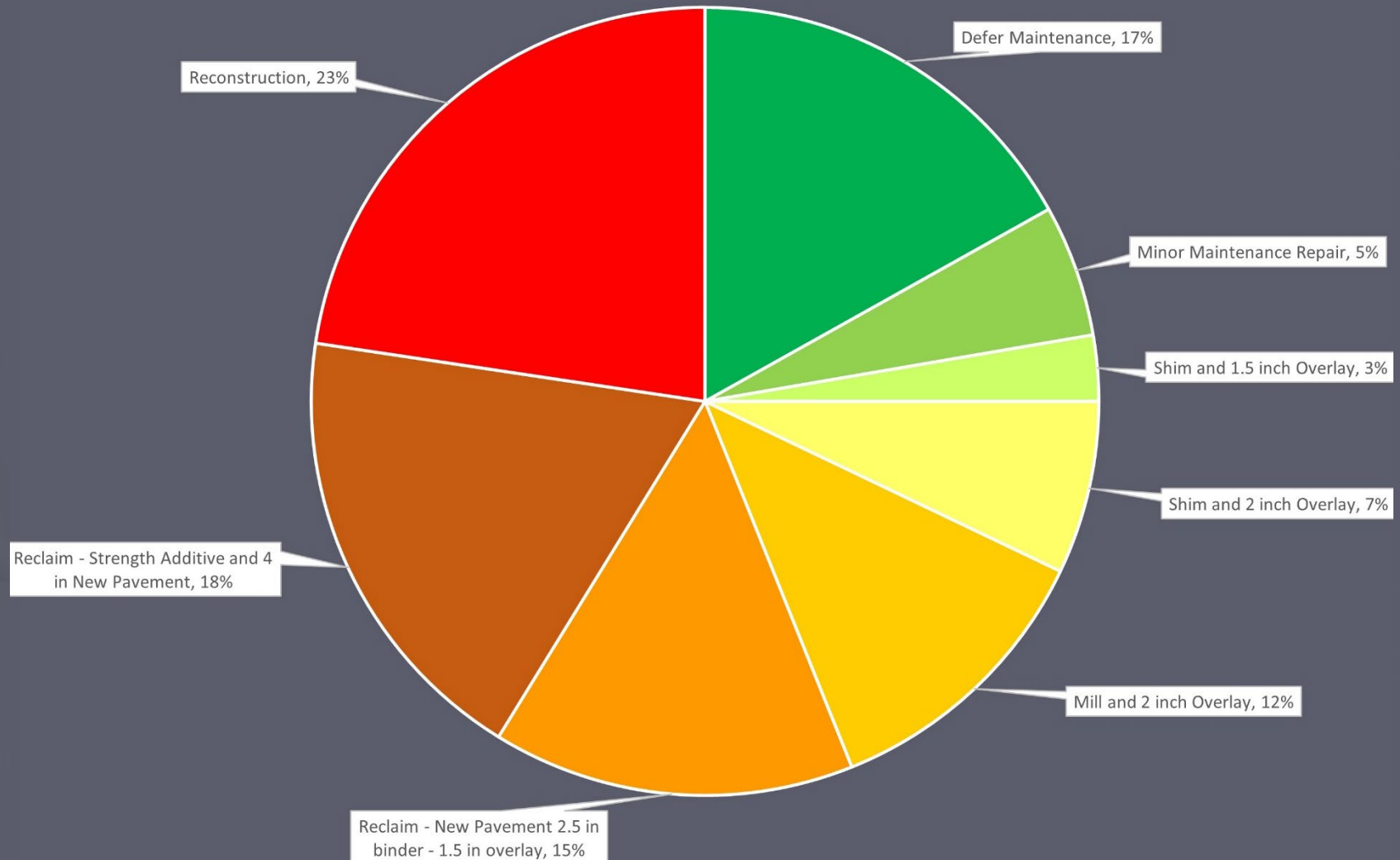
# Barrington's Current Maintenance Needs

## 2022 Maintenance Suggestion



# Barrington's Future Maintenance Needs (No Action)

2027 Maintenance Suggestion





# Road Reconstruction Segments (5 Year Period)

**Pavement Evaluation**

**Pavement Condition Index**

- Excellent (85 - 100)
- Good (70 - 85)
- Fair (55 - 70)
- Poor (40 - 55)
- Very Poor (25 - 40)
- Serious (10 - 25)
- Failed (0 - 10)

# Barrington's Reconstruction Needs

- Over the next 5 years, approximately \$10 million in reconstruction projects
- Includes approximately \$1 million of road segments already slated for improvements
  - Cost is based on reconstruction only and does not address underlying issues and engineering
  - Tolend Road
  - Mallego Road
  - Deer Ridge Drive
  - Others?
- Approximately \$4 million of reconstruction projects are on low volume, neighborhood roads
- Leaving approximately \$5 million of reconstruction projects on collector and higher priority roadways
- Frontloading reconstruction projects in the plan takes away from preservation efforts, reducing the Town-wide PCI over time

# Barrington's Reconstruction Priorities

- Review road reconstruction segments
  - Is leaving low PCI roads as is, in order to catch up on preservation/resurfacing of roads acceptable?
  - Low volume, neighborhood roads do not have typical truck traffic, which influences deterioration rate

Stone Farm Drive

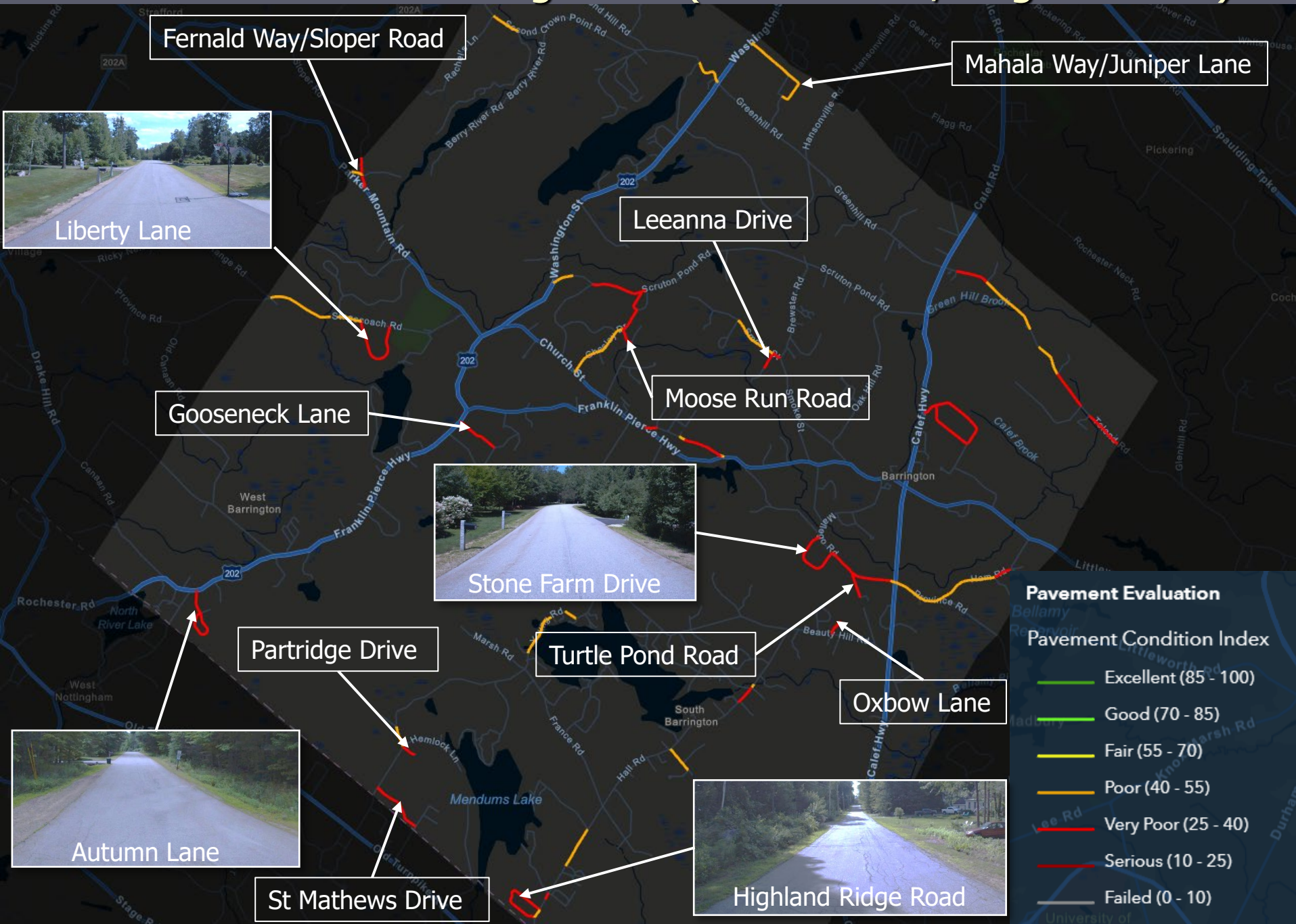


Liberty Lane

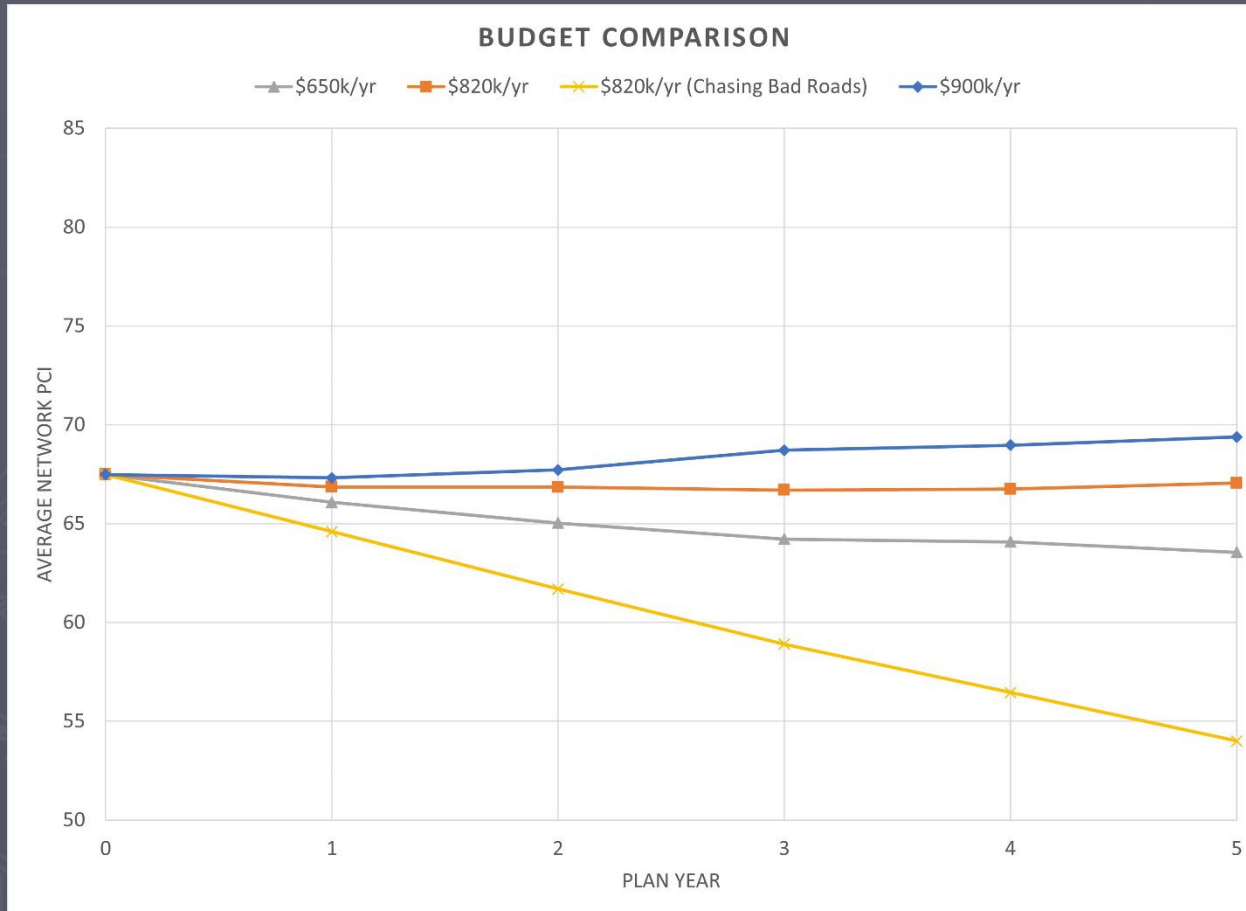




# Road Reconstruction Segments (Low Volume/Neighborhood)



# Pavement Optimization- Test Budgets



- Multiple budgets tested with Streetlogix tool



# Pavement Management Plan- Budget Selection

- Propose a \$820k/year maintenance budget
- Maintain Town-wide PCI with the lowest budget by preserving and resurfacing roads, keeping them off the steep part of the degradation curve
- Lower budgets may fail to maintain favorable PCI
- Reconstruction projects begin in year 4 & 5
- Prioritize which reconstruction projects fall in the 5 year plan
- Remaining reconstruction projects under capital improvement fund, or delayed until caught up on preservation and resurfacing efforts – leave low volume, neighborhood roads for last

# Pavement Management Plan-Tune Work Plan to Meet Goals

Group segments by road

- Prioritize reconstruction of collector road segments over local road segments
- Prioritize local road segments that provide significant value to the community
- Will group some roads into same year due to geographic proximity

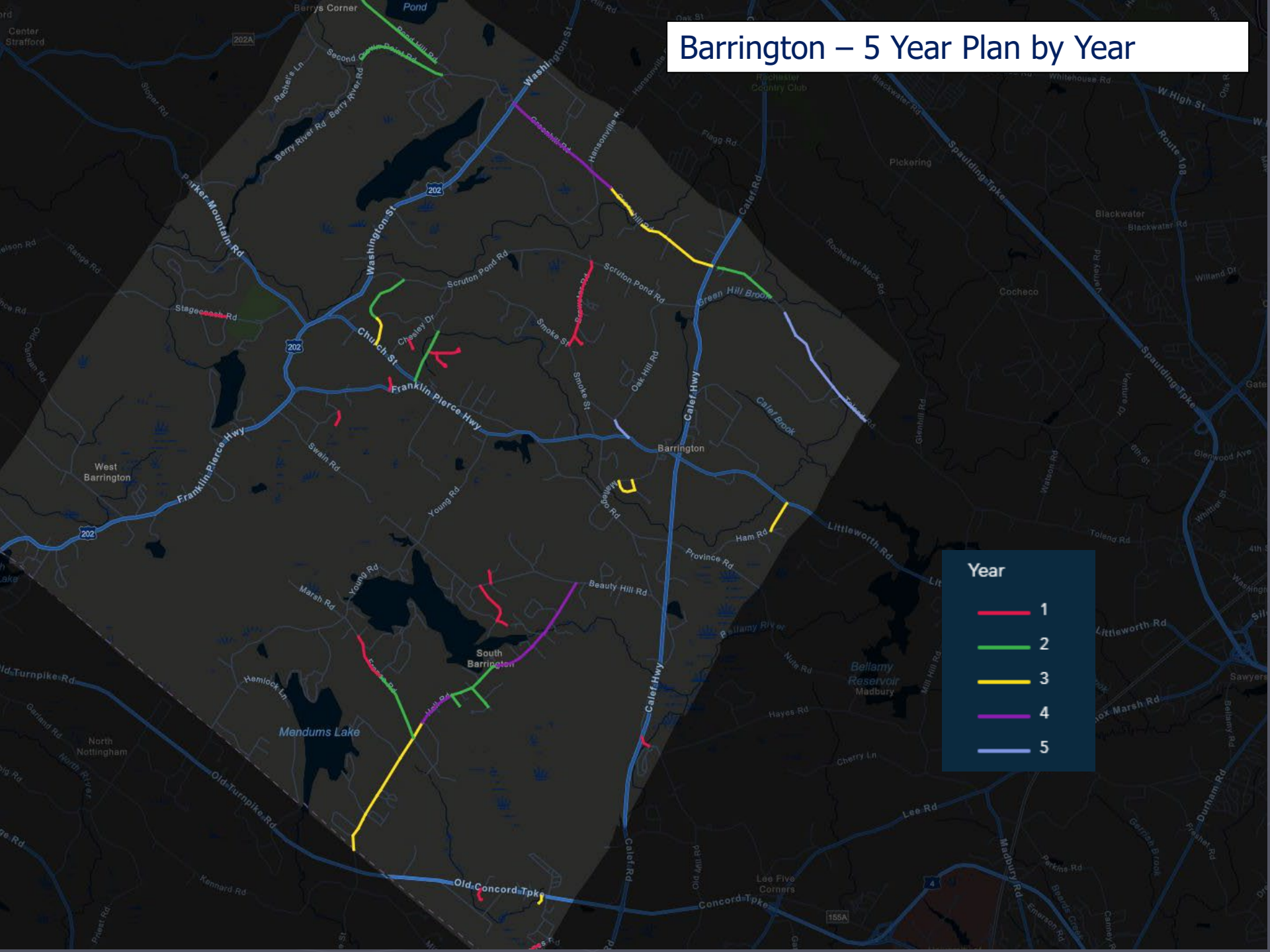
# Meeting with Town Staff

- Met with Town Staff on 1/13/22 to go over the draft 5 year plan
- General agreement with the approach
- Subsequent discussions over the details
  - A portion of Town's road maintenance fund could be used to pavement management (preservation)
  - Multiple roads with base pavement only and need top coat
  - Town prefers crack sealing as pavement preservation

# Final 5-year Plan

- \$840k/year pavement management budget
  - \$20k from existing road maintenance budget
  - Slow decline of PCI, but the trend will reverse to a positive trend in the next 5-year plan
- Preserving roads while fixing higher volume roads
  - Hall Rd
  - Tolend Rd
  - Green Hill Rd
- Periodic update to the plan is recommended
  - Unit cost updates
  - Specific road issues
  - Fine tune deterioration curve

## Barrington – 5 Year Plan by Year





# Questions?

