



# City of Milwaukee

200 E. Wells Street  
Milwaukee, Wisconsin 53202

## Meeting Minutes CAPITAL IMPROVEMENTS COMMITTEE

**ALD. JOSEPH DUDZIK, CHAIR**

**Ald. Robert Bauman, Ald. Michael Murphy, Jeffrey Mantes, W.  
Martin Morics, Mark Nicolini, and Mariano Schifalacqua**

**Staff Assistant, Terry MacDonald**

**Phone: (414)-286-2233; Fax: (414) 286-3456, E-mail:  
tmacdo@milwaukee.gov**

---

Wednesday, March 3, 2010

9:00 AM

Room 301-B, City Hall

---

**Meeting convened: 9:04 A.M.**

**1. Roll call:**

**Members Present: 7 - Ald. Joseph Dudzik, Chair, Gerald Froh (Ald. Michael Murphy Alternate), Ald. Bauman, Jeffrey Mantes, Michael Daun (W. Martin Morics Alternate), Mark Nicolini, and Mariano Schifalacqua**

**Members Excused: 0**

**Also present: Venu Gupta, Dept. of Public Works, Erik Shambarger and Dennis Yaccarino, Dept. of Admin., Budget & Management Div., Marianne Walsh, Barry Zalben and Michael Talarczyk, Legislative Reference Bureau**

**2. Review and approval of the minutes of the February 10, 2010 meeting**

*Mr. Mantes moved approval of the minutes. There were no objections.*

**3. Discussion relating to what order City departments will appear before this Committee to give their proposed 2011 capital improvements budget request presentations**

*Ald. Dudzik said there are three large departments that will take a lot of time in giving their presentations and that needs to be taken in to consideration when scheduling them. He said the large departments are DPW, Fire and Police. He suggested that maybe one large department and several smaller departments could be scheduled at same meeting.*

*Mr. Nicolini said that many City departments did not have any capital improvement requests for 2010 and he doesn't foresee those submitting requests for 2011. He suggested that one way to schedule the departments would be to put them in two categories, non DPW facility items and economic development items.*

*Mr. Schifalacqua said that DPW will have the most capital improvement budget requests and suggested they be scheduled by themselves. He said the scheduling of all other departments could be determined when the departments submit their 2011 capital improvement budget requests.*

*Ald. Dudzik said he recalls Mr. Mantes saying that DPW would be ready to give their 2011 proposed capital improvements budget presentation at the March 25th meeting.*

*Mr. Mantes replied in the affirmative.*

*Ald. Dudzik said that he would like to schedule one or two smaller departments to give their presentations at the March 25th meeting.*

*A motion was made by Mr. Schifalacqua to schedule one large department and one or more smaller departments at each of the next three meetings. There were no objections.*

**4. Presentations given by City departments on their condition data and proposed 2011 capital improvements budget request**

*Ald. Dudzik said the Department of Public Works (DPW) will give their condition data presentations today.*

*Mr. Mantes said he provided the committee members with the DPW condition data report prior to the last meeting. He said today each DPW section will give a presentation on how that section looks at the condition of the City's capital facilities and infrastructure and how some decisions are made as to which improvements should be ordered (Exhibit 1).*

*Ms. Shirley Krug, Admin. Services Director and Ms. Cindy Angelos, Parking Financial Manager, appeared to give a presentation for the DPW, Administrative Services Division. She gave an overview on the parking fund and public safety communications sections. She said those two sections projected capital budget is \$2,500,000. The assets in the parking fund section are the parking structures, meters and surface lots. She said the public safety communication's section projected capital cost is \$500,000 and that covers the city wide paving projects general engineering, data network expansion and telephone system expansion.*

*Mr. Schifalacqua asked what are the condition and the replacement plan for the remaining 4,000 older meters?*

*Ms. Angelos replied that the older meters in the UWM, Marquette, Mt. Sinai area and some scattered sites in the downtown area will be replaced, and the remaining older meters don't get used as much and would not need to be replaced for about six-years.*

*Ald. Dudzik said the City has 45 surface lots and he is stunned that they only generate \$100,000 a year.*

*Mr. Angelos replied that some of those lots have meters. She said most lots require a permit and that was established so that the City can receive some kind of revenue from them.*

*Dale Mejaki, Operations Manager, DPW-Infrastructure Services Division appeared to give the presentation on the DPW major bridge program. He said the City owns and maintains 176 bridges.*

*Mr. Nicolini asked how many of the 176 bridges are in the state/federal eligibility category?*

*Mr. Mejaki replied that he doesn't know off hand but he would get that information for him.*

*Ald. Bauman asked how does the \$20,000,000 in ARRA (American Recovery and Reinvestment Act) funds factor into the budget for bridges?*

*Mr. Mejaki replied that the 2011 projected budget is currently being restructured to include those ARRA funds.*

*Ald. Bauman asked at what point does the City shut down or require weight control*

for a bridge?

Mr. Mejaki replied that the decision to close or put a weight limit control for a particular bridge is determined during its annual inspection.

Mr. Nicolini asked what is the schedule for bridge painting and repair?

Mr. Mejaki replied that painting and repair of a bridge is determined during its annual bridge inspection.

Mr. Schifalacqua said that for a bridge to be eligible for federal funding the bridge has to have a sufficiency rating of less than 50 and asked if the state uses the same criteria?

Mr. Mejaki replied in the affirmative.

Mr. Froh said that there are 176 bridges that the city is responsible for and asked how many bridges are located in the City?

Mr. Mejaki replied that he doesn't have to exact number, but it is over 200.

Mr. Froh asked who is monitoring the safety of those bridges that the City is not responsible for?

Mr. Mejaki replied that he doesn't know, but he will find out.

Mr. Clark Wantoch, Admin. & Transportation Design Manager, Infrastructure Services Division appeared to give the presentation on the street paving program and on the infrastructure surrounding the streets, such as traffic signals and signs, lighting, manholes and underground conduits.

Mr. Schifalacqua asked Mr. Wantoch to provide the committee members with a chart that shows the age of all the City streets.

Mr. Schifalacqua said the pavement management system includes the department going out every seven years and doing a whole new inventory and asked if the department uses that data to develop deterioration curves to be use as a predictive model?

Mr. Wantoch replied in the affirmative.

Mr. Wantoch said the federal government recently adopted a 2009 Manual on Uniform Traffic Control Devices that all states are required to adopt. He said some of the required changes will have a financial impact to the City, such as the changes to the traffic controls, signs and pavement markings.

Ald. Dudzik asked how long does the City have to convert all those traffic control devices?

Mr. Wantoch replied that some of the devices need to be converted by 2015, but the state does give time extensions, if needed.

Mr. Schifalacqua asked what is the annual conduit lease amount?

Mr. Mantes replied that it is around a half a million per year.



*Mr. Aquino replied that all the local sewer pipes are owned and maintained by the City, about 2,500 miles, and MMSD owns' the Metropolitan Interception System (MIS), deep tunnel and water treatment plants.*

*Mr. Schifalacqua said that the City has 83 bypass pumps and asked if there is pressure by the State to replace those?*

*Mr. Aquino replied that the Dept. of Natural Resources has allowed the City to keep them.*

*Mr. Daun asked how long does it take for the engineers to assess system?*

*Mr. Aquino replied that it would take 10 years to assess the whole system.*

*Mr. Venu Gupta, Buildings and Fleet Superintendent, DPW, Operations Div. appeared to give the presentation on the strategic asset management of public buildings, recreational facilities and monuments. He said the DPW conducts data condition reports for about 80 City buildings. He said there are many other City buildings that could use a data condition report, but those are not under DPW authority. He said every year the DPW does a data condition report for 20-25 City buildings and the capital improvements budget is determine by those reports results.*

*Mr. Daun said that the facilities condition index show an index of 23% and asked what is the implication if the index of 23% extends well into the future?*

*Mr. Gupta said that whenever the index is that high the City would be subjected to higher replacement cost in the future. He also said the deferred maintenance costs would also be substantial.*

*Mr. David Sivyver, Forestry Services Manager, DPW, Operations Div., Environmental Services appeared to give the presentation for the Forestry Section. His presentation included tree planting and production, concealed irrigation and general landscaping and the emerald ash borer response.*

*Ms. Wanda Booker, Sanitation Services Manager, DPW, Operations Div. Environmental Services appeared to give the PowerPoint presentation for the Sanitation Services Section. She said sanitation capital use includes site, facility and service upgrades. She said their fleet equipment requests are handle by the Fleet Services Section.*

*Mr. Jeff Tews, Fleet Services Manager, appeared to give the presentation for DPW Operations Div. Fleet Services operation.*

*Mr. Schifalacqua asked Mr. Tews to provide this committee with charts or graphs that shows all the equipment by age and category and include the mileage for each.*

*Ald. Dudzik said that some departments rent or lease vehicles and asked if it would be beneficial if those departments would better off owning their vehicles.*

*Mr. Daun replied in the negative. He said from an economically stand point it is an operational balance.*

*Ms. Carrie Lewis, Superintendent, appeared to give the presentation for the Water Works. She said the capital improvements budget for the water department consists of plant treatment improvements, plant building improvements, pumping and storage facilities, back-up power generation and water main replacements.*

*Mr. Schifalacqua said the ozone generators are about fifteen years old now and asked how are they holding up?*

*Ms. Lewis replied that they not using them as much as the thought they would so they are doing very well and should last a long time.*

*Mr. Nicolini asked Ms. Lewis if she has any comparative information regarding capacity utilization with other northeast Midwest great lakes major water utilities?*

*Ms. Lewis replied that she is most familiar with large cities on the eastern shore, which are Kenosha and Racine and they are in the same situation as Milwaukee is in that their facilities were built very large and costumer utilization has shrunk. She said Milwaukee is fortunate that it has two water plants.*

**5. Next meeting date and agenda**

*Next meeting: March 25, 2010 at 9:00 A.M.*

*Agenda item:*

*1. Dept. of Public Works will appear and to give a presentation on its proposed 2011 budget capital improvements plan requests.*

**Meeting adjourned: 11:12 P.M.**

**Terry J. MacDonald  
Staff Assistant**

# CAPITAL IMPROVEMENTS PLAN

## Department of Public Works

Capital Improvements Committee  
March 3, 2010

Jeffrey J. Mantes – Commissioner

Preston D. Cole – Director of Operations

Jeffrey S. Polenske – City Engineer

## **MISSION**

***To promote the health, safety, mobility, and quality-of-life for all City of Milwaukee residents and visitors by providing:***

- Safe, attractive, and efficient surface infrastructure systems;***
- Solid waste collection, disposal, recycling, and waste reduction;***
- Safe, aesthetically pleasing, and sufficient drinking water;***
- Storm water and waste water conveyance; and,***
- Support services and facilities for the Department of Public Works (DPW) and other city departments***

## **C. CAPITAL IMPROVEMENTS**

### **EXECUTIVE SUMMARY**

**MISSION:** *To maintain and enhance the city's infrastructure in a cost efficient and effective way to ensure that the city remains economically competitive.*

**OBJECTIVES:** *Prepare a six year capital improvements plan to identify long range capital needs and to establish spending, debt, and tax levy goals.*

*Develop investment strategies to ensure favorable rates of return on city capital investments.*

**STRATEGIES:** *Match capital borrowing to debt retirements in order to manage the debt levy and enhance the city's financial flexibility.*

*Furnish information and recommendations to the reformed Capital Improvements Committee for the preparation of the 2010-2015 Capital Improvements Plan and the 2011 budget process.*



# PARKING FUND

- Parking Structures
- Parking Meters
- Surface Parking Lots



# Parking Structures

- Milwaukee/Michigan(1957) 500 spaces
- 2<sup>nd</sup>/Plankinton(1961) 473 spaces
- MacArthur Square(1967) 1,437 spaces
- 4<sup>th</sup> / Highland(1988) 980 spaces
- 1000 N Water(1992) 1,493 spaces

- Annual structural inspections by licensed engineers
- Average capital needs of \$1M annually
- Generate annual revenues over \$5.6 million



# Parking Meters

- o **Single Space – 4,362 meters**
- o **Multi-Space – 217 meters**



- Replacing single space meters charging \$1+ p/hr with multi-space meters
- \$1 million estimated total in 2011-2012 for UWM and Marquette University areas
- Generate annual revenues of \$5M+





# Surface Lots (45)

- Metered lots
- Permit lots
- Leased lots
- Mixed use lots



- General repairs typically funded through O&M
- No new lots anticipated to be built
- Generates <\$100k in annual revenue



# Public Safety Communications

- **CITY-WIDE PAVING PROJECTS - \$50,000**  
-Temporary and/or permanent network improvements associated with paving projects.
- **GENERAL ENGINEERING - \$50,000**  
-Planning, design, estimates, and reports related to the program.
- **DATA NETWORK EXPANSION - \$350,000**  
-Provides new or diverse connections to over 150 City facilities.
- **TELEPHONE SYSTEM EXPANSION - \$50,000**  
-Ongoing maintenance and phased upgrades to over 5,000 phones lines.

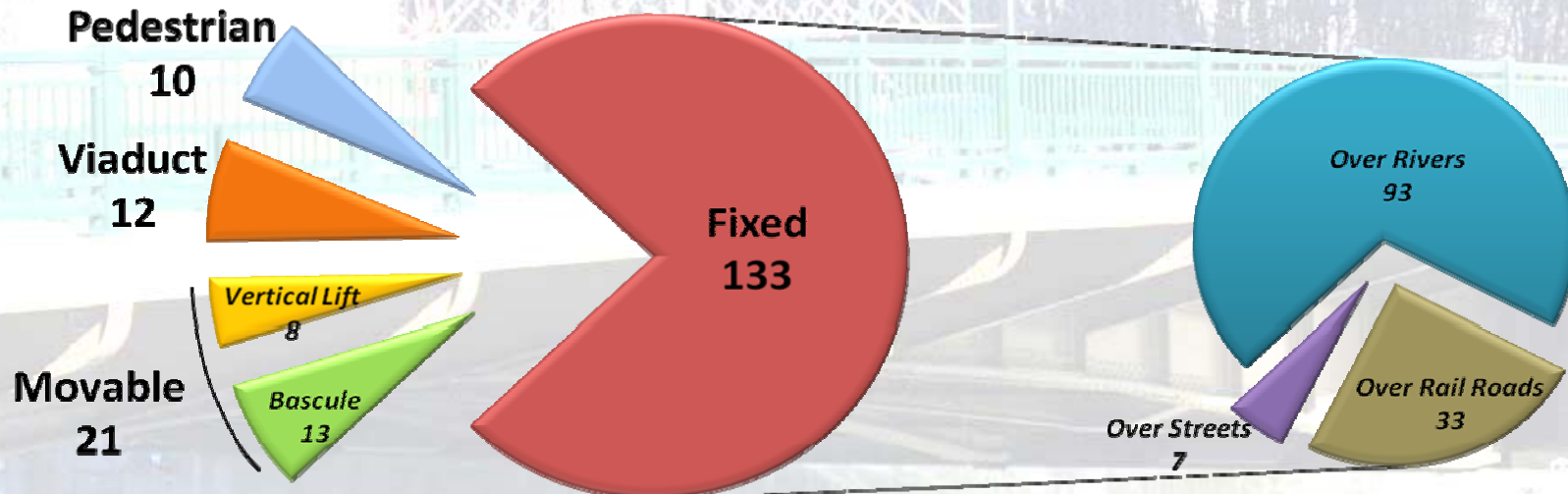
# **City of Milwaukee Department of Public Works**

## **Major Bridge Program**



# Inventory and Classification

- 176 City-owned and maintained bridges
- Relative comparison of bridge types:





# Rehabilitation and Replacement Program

- Bridge Structure Inspection
  - In accordance with FHWA and WisDOT standards
  - Conducted by DPW personal
    - FHWA certified Bridge Inspectors
  - Bridges inspected *every* 24 months, except:
    - Annually for:
      - Movable bridges
      - Structurally deficient bridges



# Rehabilitation and Replacement Program

- Standardized inspection reports
  - Submitted to WisDOT and entered into their database
  - Highway Structures Information (HSIS) database generates a bridge Sufficiency Rating (SR)

## Report:

## Photographs:

**BRIDGE INSPECTION REPORT**  
Wisconsin Dept. of Transportation  
DT2007 2009 8&17 Wb. State Type: 6000000 INSPECTION

page 1  
Inventory Data  
Structure No. B-40-0552  
Location: B-40-0552  
County: MILWAUKEE  
Municipality: CITY OF MILWAUKEE (10011)  
Ins. Rating: 2009 8&17 Wb. State Type: 6000000 INSPECTION  
Inspection Date: 2009-04-14  
Inspection Time: 08:00 AM  
Inspector: [Name]  
Team Leader: [Name]  
Team Members: [List]  
Inspection Date: 2009-04-14  
Inspection Agency: CTEV (3)District/Local Manager and No. Printed: [Name]

Inspection Type	Inspection Date	Inspection Time	Inspection Agency	Inspection Agency Code
2009-04-14	08:00 AM	CTEV (3)		

**Load Rating Information**

Structure No. B-40-0552  
Structure Name: [Name]  
Structure Type: [Type]  
Structure Material: [Material]  
Structure Length: [Length]  
Structure Width: [Width]  
Structure Height: [Height]  
Structure Area: [Area]  
Structure Volume: [Volume]  
Structure Weight: [Weight]  
Structure Capacity: [Capacity]  
Structure Condition: [Condition]

**Expansion Joints**

Location	Type	Temp.	Temp. Range	Temp. Min.	Temp. Max.	Temp. Comments
2009-04-14	F-3024					
2009-04-14	F-3024					
2009-04-14	F-3024					
2009-04-14	F-3024					

**Structure Types**

Material	Configuration	# of Spans	Overall Length (ft)	Span Length (ft)	Span Spacing (ft)	Span Comments
STEEL	CONC. PIERS	1	100.0	100.0	100.0	
STEEL	CONC. PIERS	1	100.0	100.0	100.0	
STEEL	CONC. PIERS	1	100.0	100.0	100.0	

**Inspector Information**

Inspector Name: [Name]  
Inspector Title: [Title]  
Inspector Agency: [Agency]  
Inspector Code: [Code]

**Inspector Information**


Team Leader Name: [Name]  
Team Leader Title: [Title]  
Team Leader Agency: [Agency]  
Team Leader Code: [Code]

**Inspector Information**


Inspector Name: [Name]  
Inspector Title: [Title]  
Inspector Agency: [Agency]  
Inspector Code: [Code]

The Air 30 08:03:27 OCT 2009


#100 Broadway over the Milwaukee River  
Movable Inspection




Basic bridge opening




Southeast wing wall, note excess debris



East elevation of bridge



North approach slab looking west



North abutment with spalling and cracking - typical condition

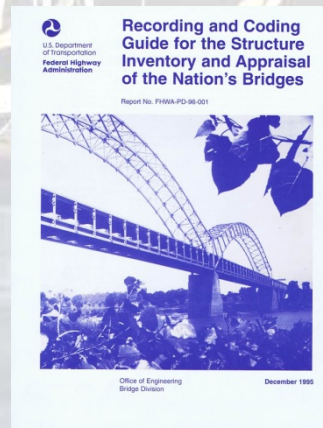
Top of deck and up

Page 2  
4/16/2009

# Sufficiency Rating (SR)

- FHWA standard measures service condition
- Three separate group factors determine SR Rating
  - Structural adequacy (Deck, Superstructure, and Substructure)
  - Serviceability and functional obsolescence
  - Essentiality for public use
- Condition and function are rated to current standards (not what the bridge may have been built to)

FHWA Coding Guide





# Sufficiency Rating

- 100 percent would represent an entirely sufficient bridge; 0 is insufficient or deficient bridge
- Rating is not a quantitative measure of safe versus unsafe
- Example, a 50 year old bridge may be structurally adequate but deficient due to current roadway widths, standards, or clearance



U.S. Department  
of Transportation

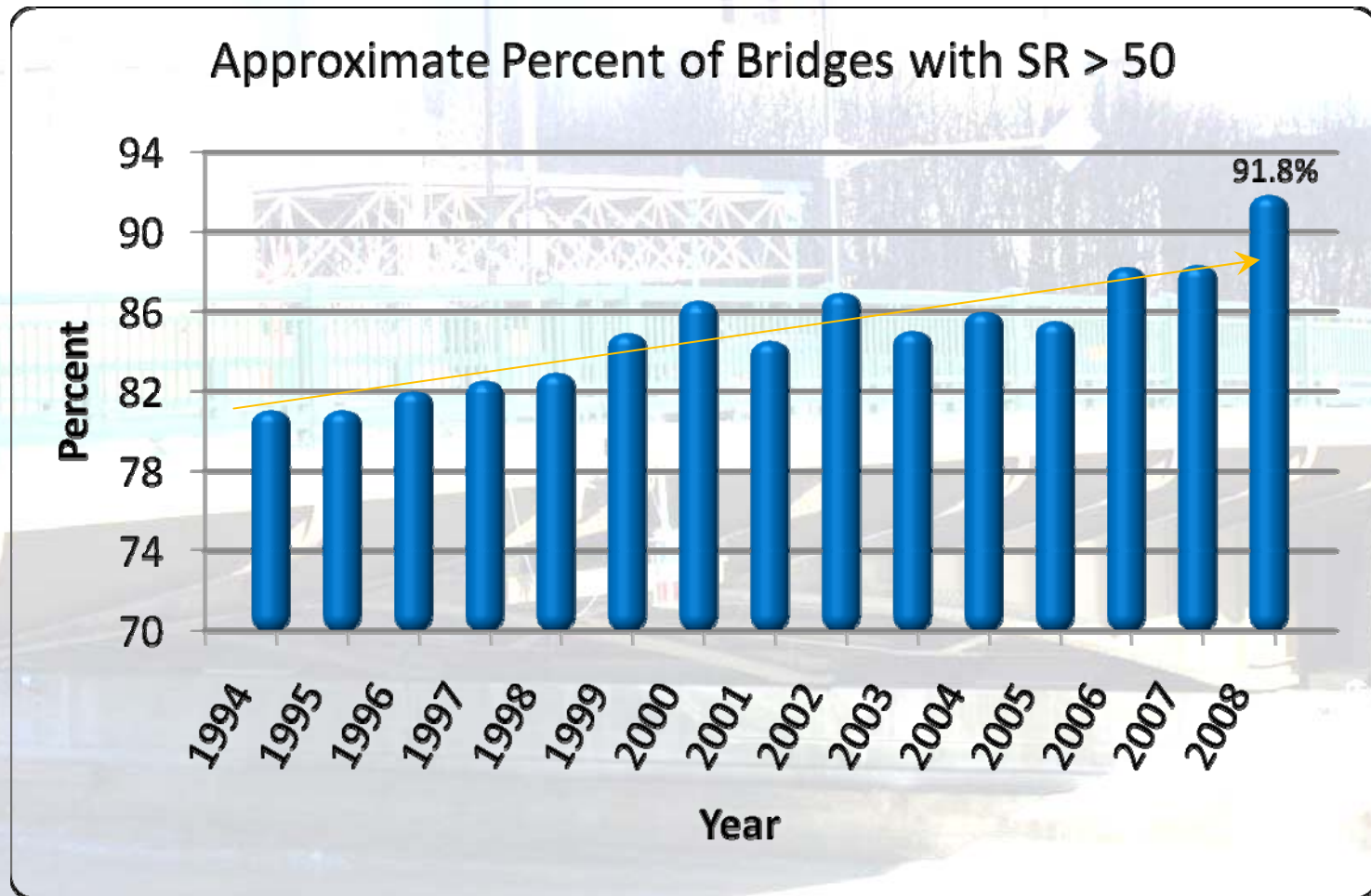
**Federal Highway  
Administration**





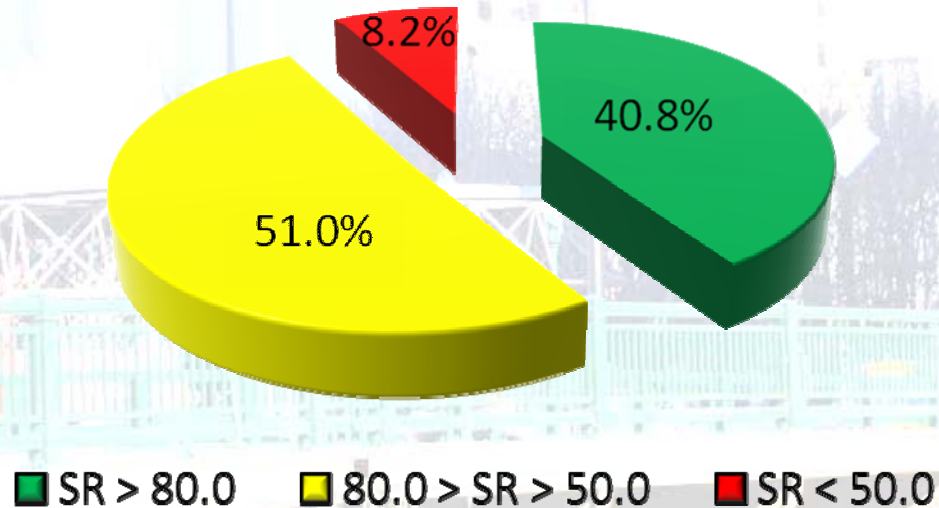
# Milwaukee Bridge Performance

- SR of bridge inventory trending upwards



# Milwaukee Bridge Performance

- Relative comparison of SR for city rated bridges, 2008



- Federal/State funding eligibility
  - SR < 80.0 : Bridge eligible for rehabilitation
  - SR < 50.0 : Bridge eligible for rehabilitation or replacement

# Bridge Funding Sources

- Federal/State Program
  - Available only for those bridges deemed as federally eligible
  - Competitive application process for limited state-wide program dollars
  - Applied for on a 3 year cycle
  - Generally 80% Federal/State funded with 20% local share
  - Project schedule generally established by limits on available funding



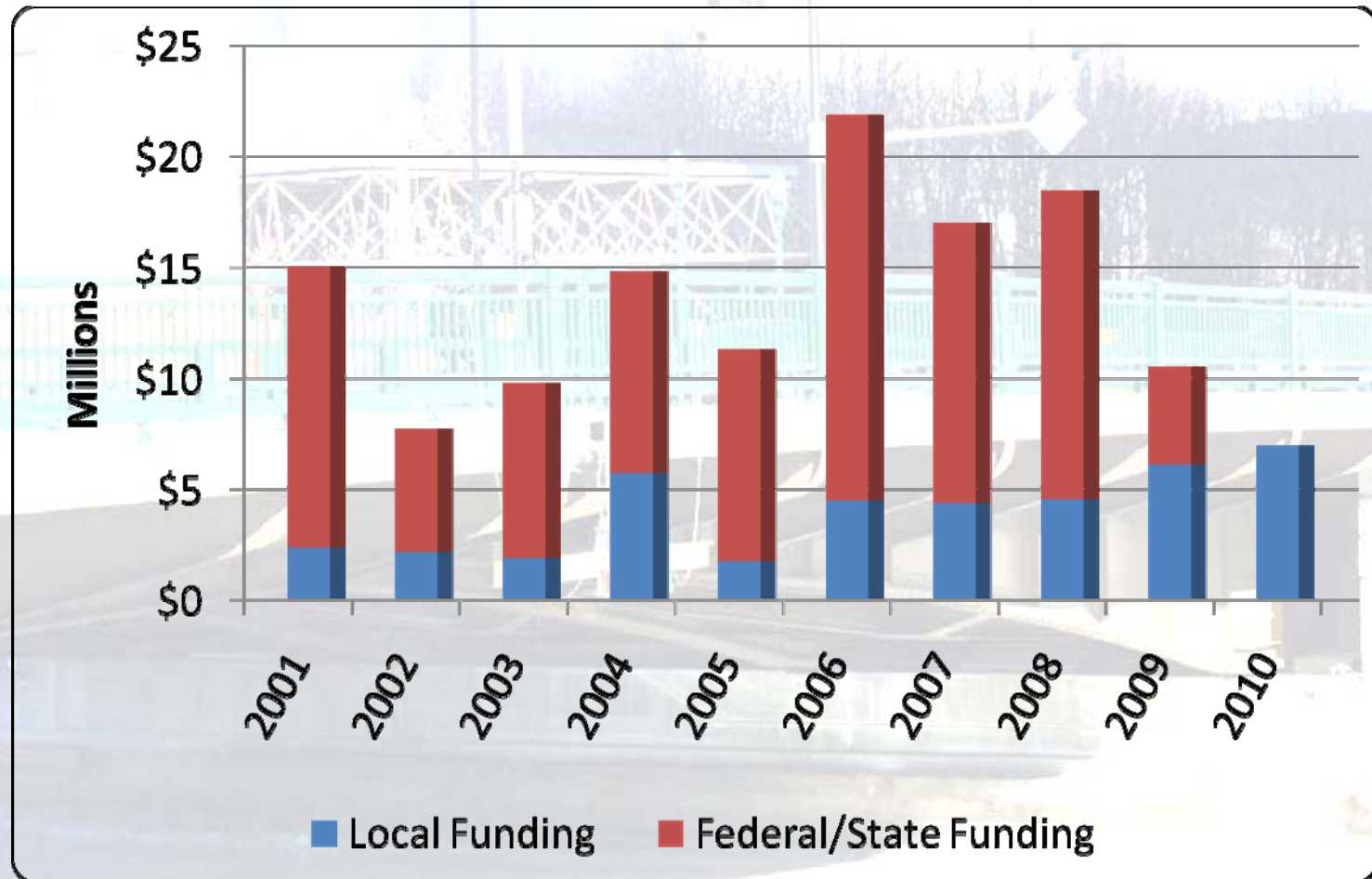


# Bridge Funding Sources

- Local Program
  - Bridges not deemed Federal/State eligible
  - Bridges in which Federal/State funds not available or insufficient
  - Maintenance work including structure repair, painting mechanical upgrades, inspections, pre-engineering activities, etc.



# Summary of Capital Bridge Program 2001-2010









# Street Paving





# Pavement Performance

Measured on a 2 to 9 scale

Pavement Quality Index (PQI)

# PMA background

For over 10 years the City of Milwaukee has collected condition data on the entire network that is analyzed within Stantec's Pavement Management Application (PMA) to provide an objective assessment of the City's road network.

# Distress Measurements

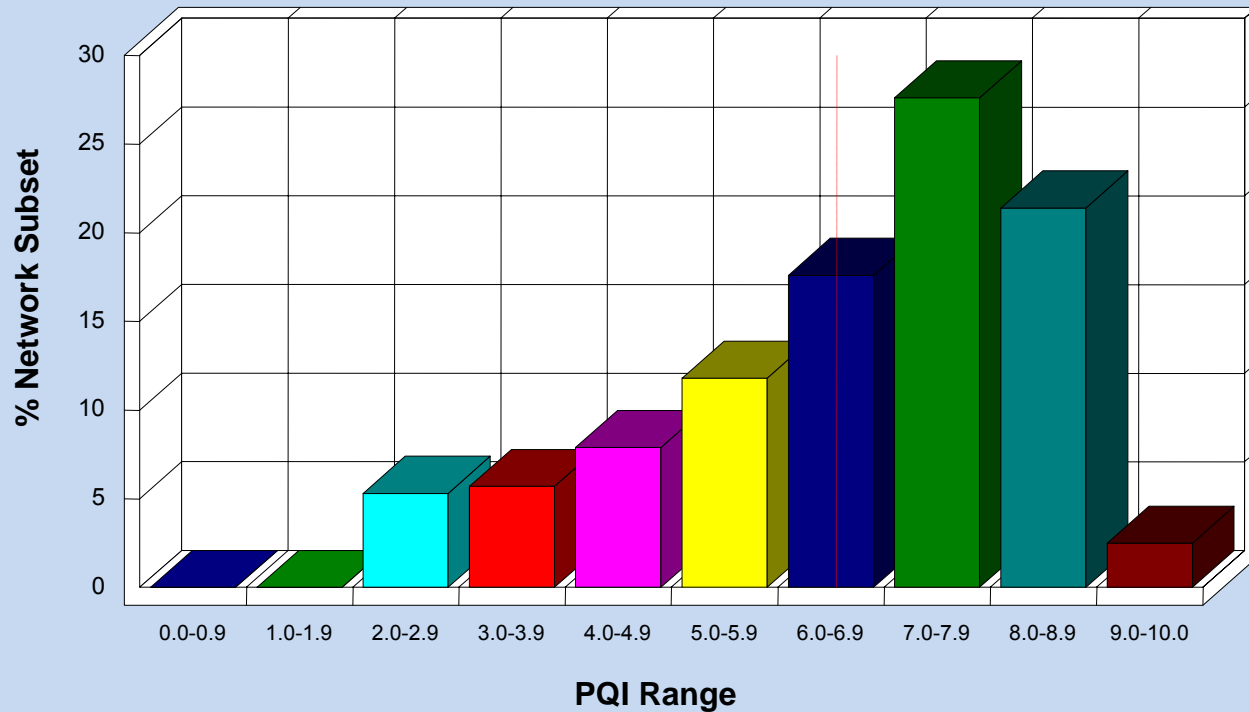
- Patching
- Potholes
- Rippling & Shoving
- Raveling/Streaking
- Flushing & Bleeding
- Distortion
- Excessive Crown
- Progressive alligator cracking
- Longitudinal cracking
- Wheel Track Rutting
- Scaling
- Raveling & Weathering
- Polishing
- Distortion/Frost Heave
- Coarse Aggregate Loss
- Joint Sealant Loss
- Joint spalling and faulting

# Network

## present status

### PERFORMANCE INDICATORS

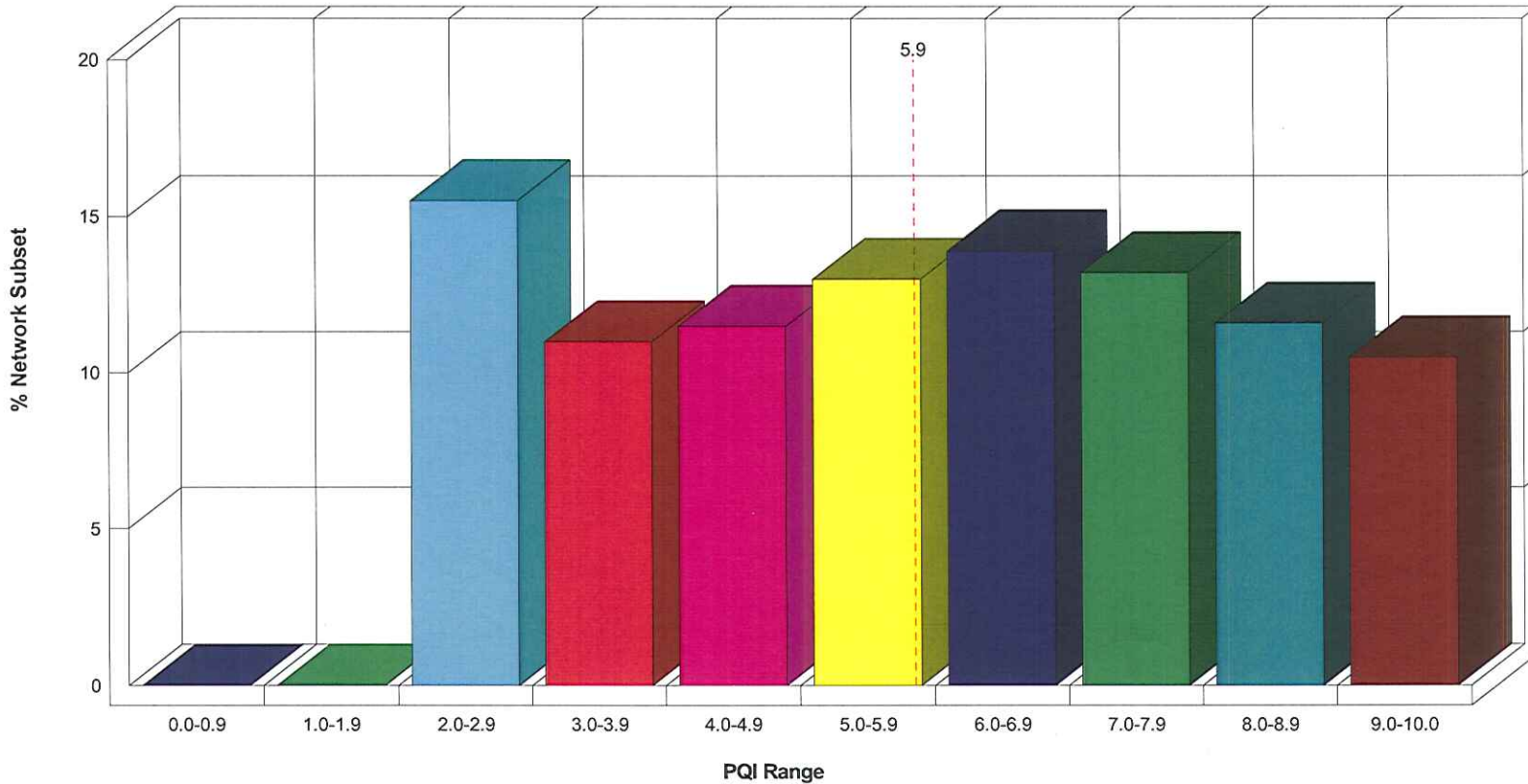
Data defined for analysis a : PQI by Lane-Miles



PQI Range:	0.0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0- 10	
Sections:	0	0	119	148	206	314	453	715	559	66	2580
%:	0.0	0.0	5.3	5.7	7.9	11.8	17.6	27.6	21.4	2.5	
Ln-mi x 10 :	0.0	0.0	2.6	2.8	3.8	5.7	8.5	13.2	10.3	1.2	48.0

**PERFORMANCE INDICATORS**  
 Default - All Network Sections : Aged PQI by Lane-Miles

First year of analysis is 2010



PQI Range:	0.0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0- 10	
Sections:	0	0	2951	2049	2134	2414	2523	2589	2372	2107	19139
%:	0.0	0.0	15.5	11.0	11.5	13.0	13.9	13.2	11.6	10.5	
Ln-mi: x 10	0.0	0.0	73.5	52.4	54.4	61.6	66.0	62.6	55.0	50.0	475.5

# Major & Minor Arterials Pavement Type

## Principal Arterials:

Type:	Miles	% of total	Estimated life (years)	Replacement rate (miles/yr)	Replacement pavement	Cost per mile	Amount needed per year
Composite (asphalt over concrete):	31.2	26%	25	1.2	asphalt 40%	\$ 1,000,000	\$ 1,248,000
Composite (asphalt over concrete):	46.7	40%	25	1.9	reconstruct 60%	\$ 2,000,000	\$ 3,736,000
Rigid (concrete)	40.1	34%	40	1.0	asphalt	\$ 1,000,000	\$ 1,002,500
<b>TOTAL</b>	<b>118</b>	<b>100%</b>					<b>\$ 5,986,500</b>

## Minor Arterials:

Type:	Miles	% of total	Estimated life (years)	Replacement rate (miles/yr)	Replacement pavement	Cost per mile	Amount needed per year
Composite (asphalt over concrete):	68	24%	30	2.3	asphalt 40%	\$ 1,000,000	\$ 2,253,333
Composite (asphalt over concrete):	101	37%	30	3.4	reconstruct 60%	\$ 2,000,000	\$ 6,753,333
Rigid (concrete)	108	39%	45	2.4	asphalt	\$ 1,000,000	\$ 2,400,000
<b>TOTAL</b>	<b>277</b>	<b>100%</b>					<b>\$ 11,406,667</b>

## GRAND TOTAL MAJOR STREETS

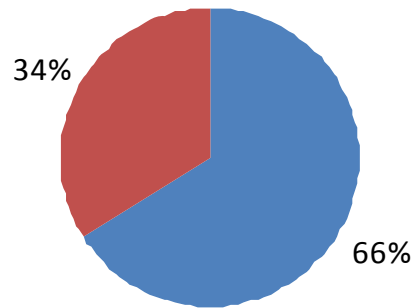
395

12.2

\$ 17,393,167

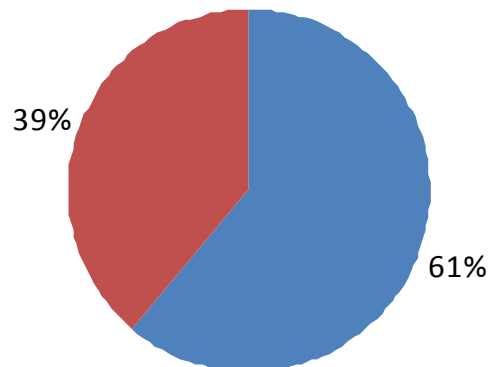
## Principal arterials - existing pavements

■ Composite (asphalt over concrete):      ■ Rigid (concrete)



## Minor arterials - existing pavements

■ Composite (asphalt over concrete):      ■ Rigid (concrete)



# 2009 Service Life Estimate

## Existing pavements of local streets:

Type:	Miles	% of total	Estimated life (years)	Replacement rate (miles/yr)	Replacement pavement	Cost per mile	Amount needed per year
Composite (asphalt over concrete):	90	9%	45	2.0	reconstruct(45%)	\$ 1,450,000	\$ 2,900,000
Composite (asphalt over concrete):	110	11%	45	2.4	asphalt (55%)	\$ 725,000	\$ 1,772,222
Flexible (asphalt)	240	25%	55	4.36	asphalt	\$ 725,000	\$ 3,163,636
Macadam	90	9%	100	0.90	asphalt	\$ 750,000	\$ 675,000
Rigid (concrete)	430	45%	70	6.14	asphalt	\$ 700,000	\$ 4,300,000
<b>TOTAL</b>	<b>960</b>	<b>100%</b>		<b>15.85</b>			<b>\$ 12,810,859</b>

## Existing pavements of collector streets:

Type:	Miles	% of total	Estimated life (years)	Replacement rate (miles/yr)	Replacement pavement	Cost per mile	Amount needed per year
Composite (asphalt over concrete):	27	30%	45	0.6	concrete (50%)	\$ 1,450,000	\$ 870,000
Composite (asphalt over concrete):	28	31%	45	0.6	asphalt (50%)	\$ 725,000	\$ 451,111
Macadam	4	4%	100	0.04	asphalt	\$ 750,000	\$ 30,000
Rigid (concrete)	31	34%	70	0.44	asphalt	\$ 700,000	\$ 310,000
<b>TOTAL</b>	<b>90</b>	<b>100%</b>		<b>1.71</b>			<b>\$ 1,661,111</b>

**GRAND TOTAL**

**1050**

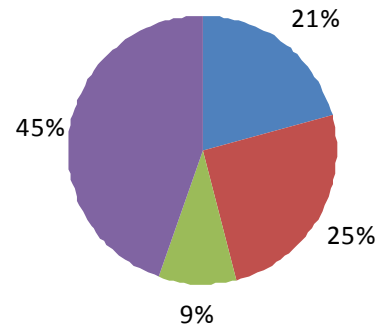
**17.56**

**\$ 14,471,970**



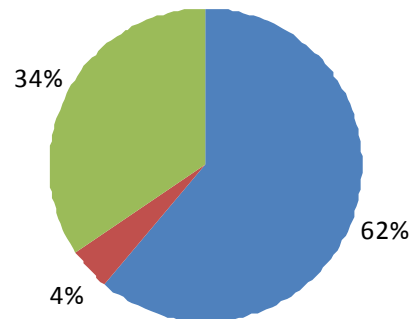
## Local Streets - existing pavements

■ Composite (asphalt over concrete): ■ Flexible (asphalt)  
■ Macadam ■ Rigid (concrete)

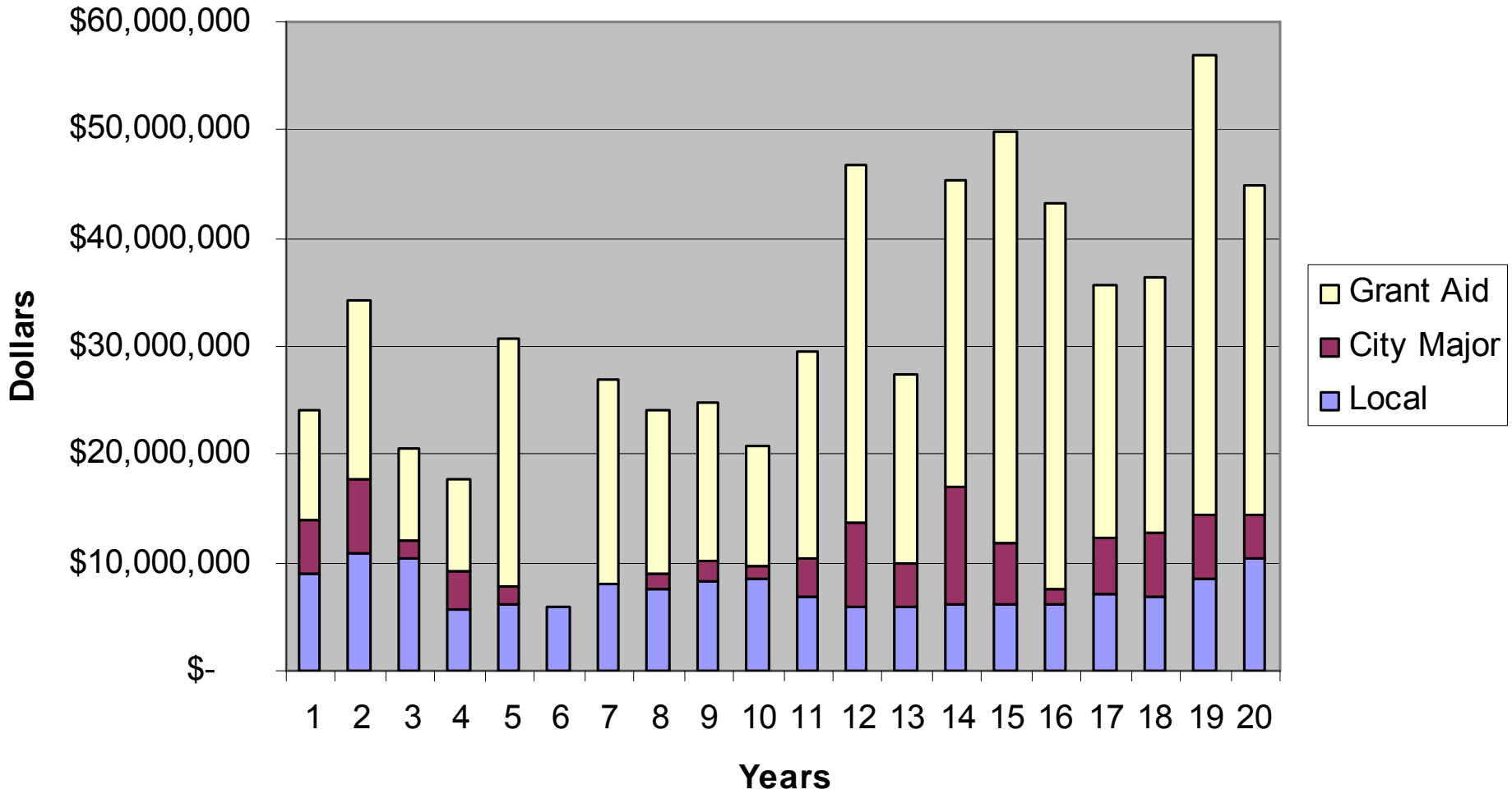


## Collector Streets-existing pavements

■ Composite (asphalt over concrete): ■ Macadam ■ Rigid (concrete)



# 1990-2009 Budget Amounts for Local and Major Street Programs



# Traffic Control Project

## Traffic Signals & Signs



W. North Ave and 3<sup>rd</sup> Street



# Traffic Signals



# Traffic Signal Facilities

- 742 Signalized Intersections
  - 706 Intersections Fully Converted to LED Signal Indications
  - 246 Intersections with Fire Preemption Active
- 13 Flashing Beacons

# Traffic Signs

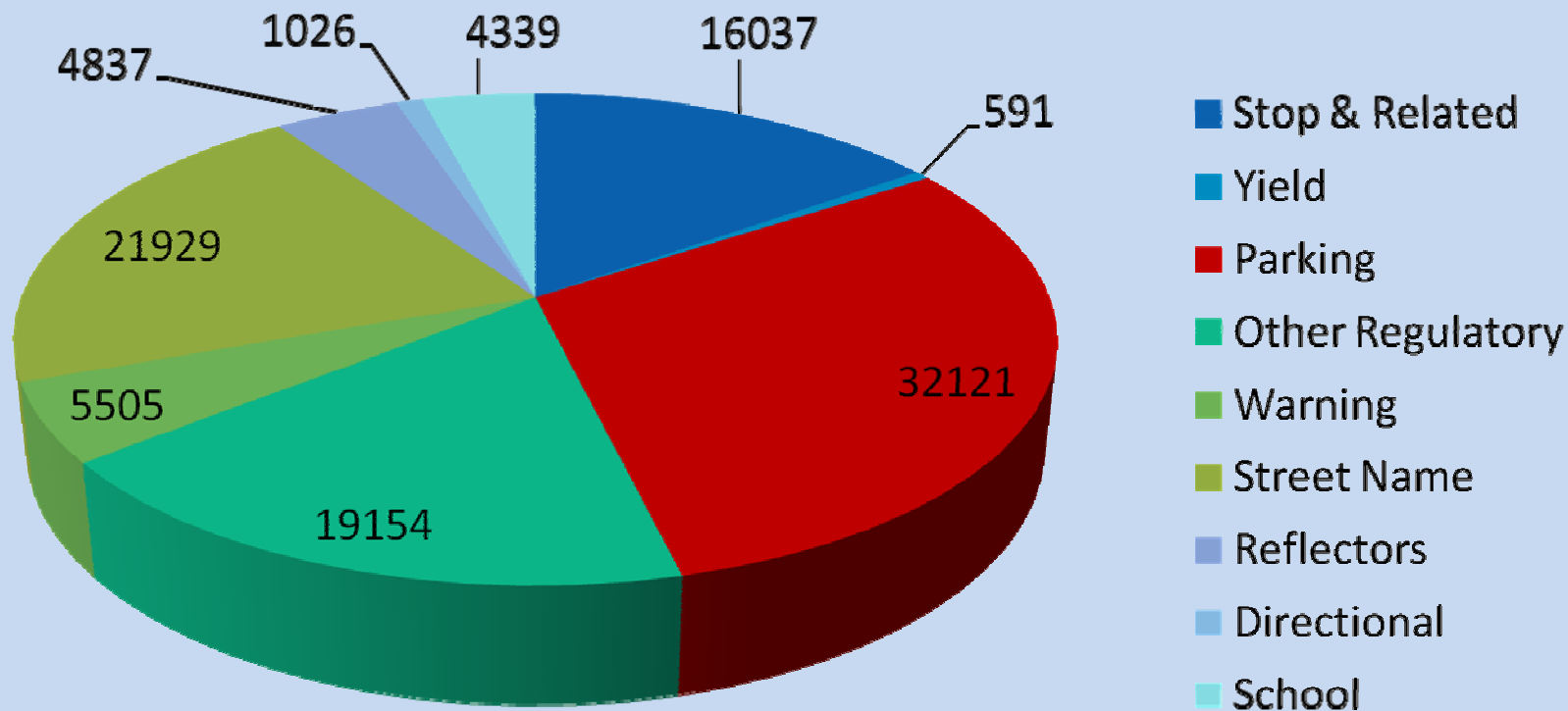




# Traffic Signs by Sign Type

(As of January 1, 2010)

**Total Existing Traffic Control Signs: 105,539**



# 2009 Manual on Uniform Traffic Control Devices

Federal Effective Date:  
January 15, 2010

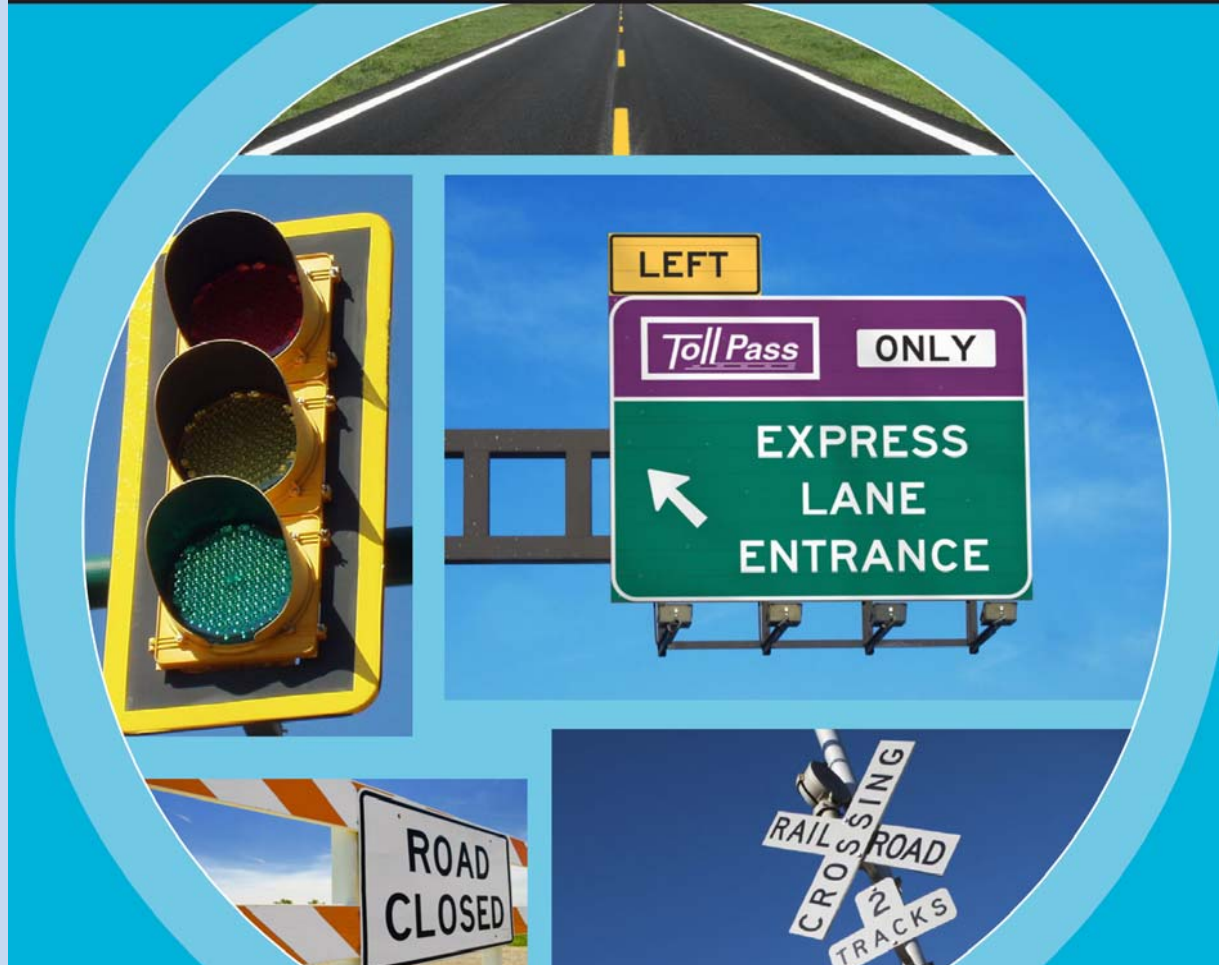
Must Be Adopted into  
State Law Before  
Becoming Effective in  
Wisconsin (Est. 2010)

Source: FHWA

# Manual on Uniform Traffic Control Devices

for Streets and Highways

2009 Edition

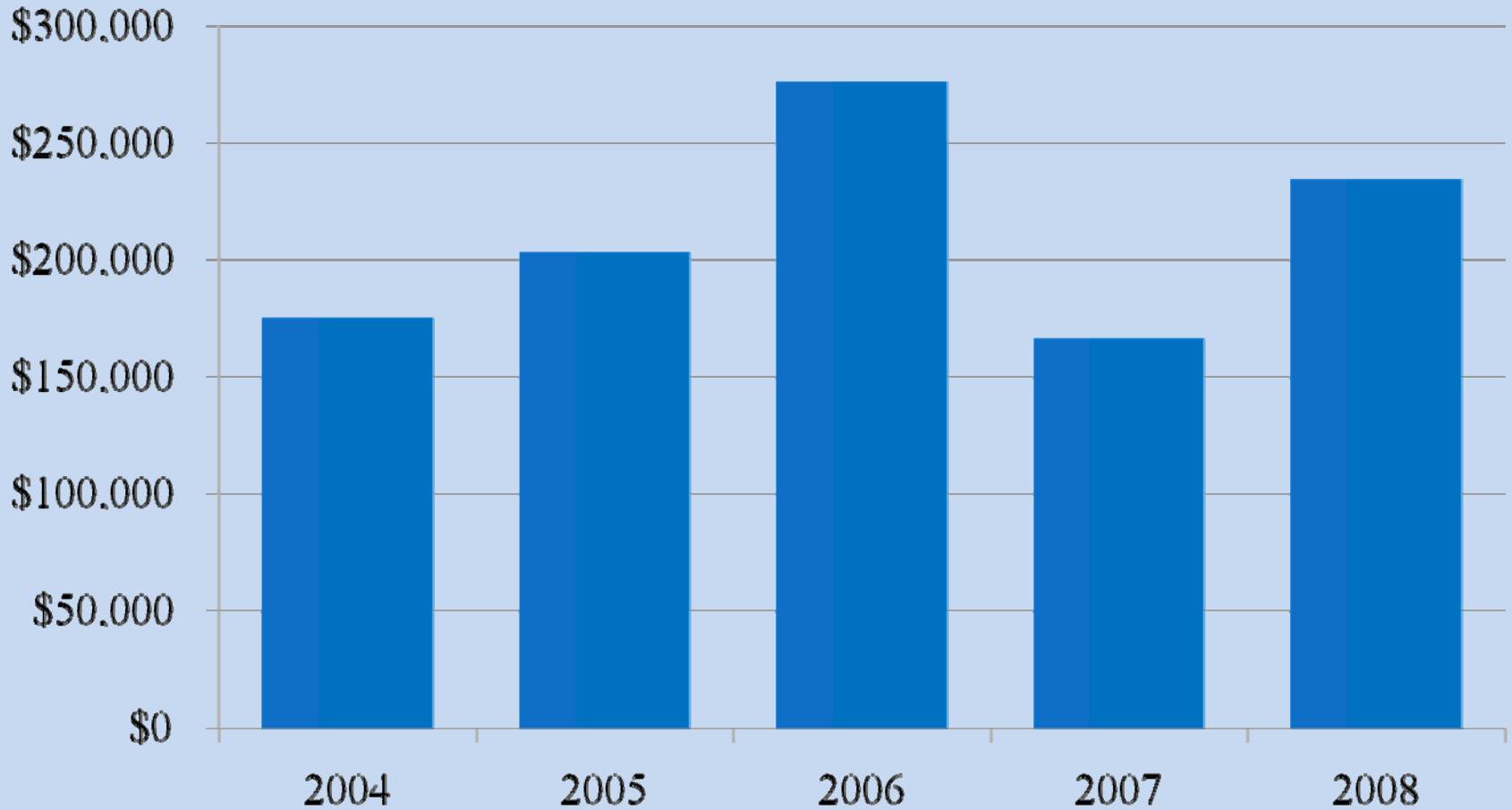




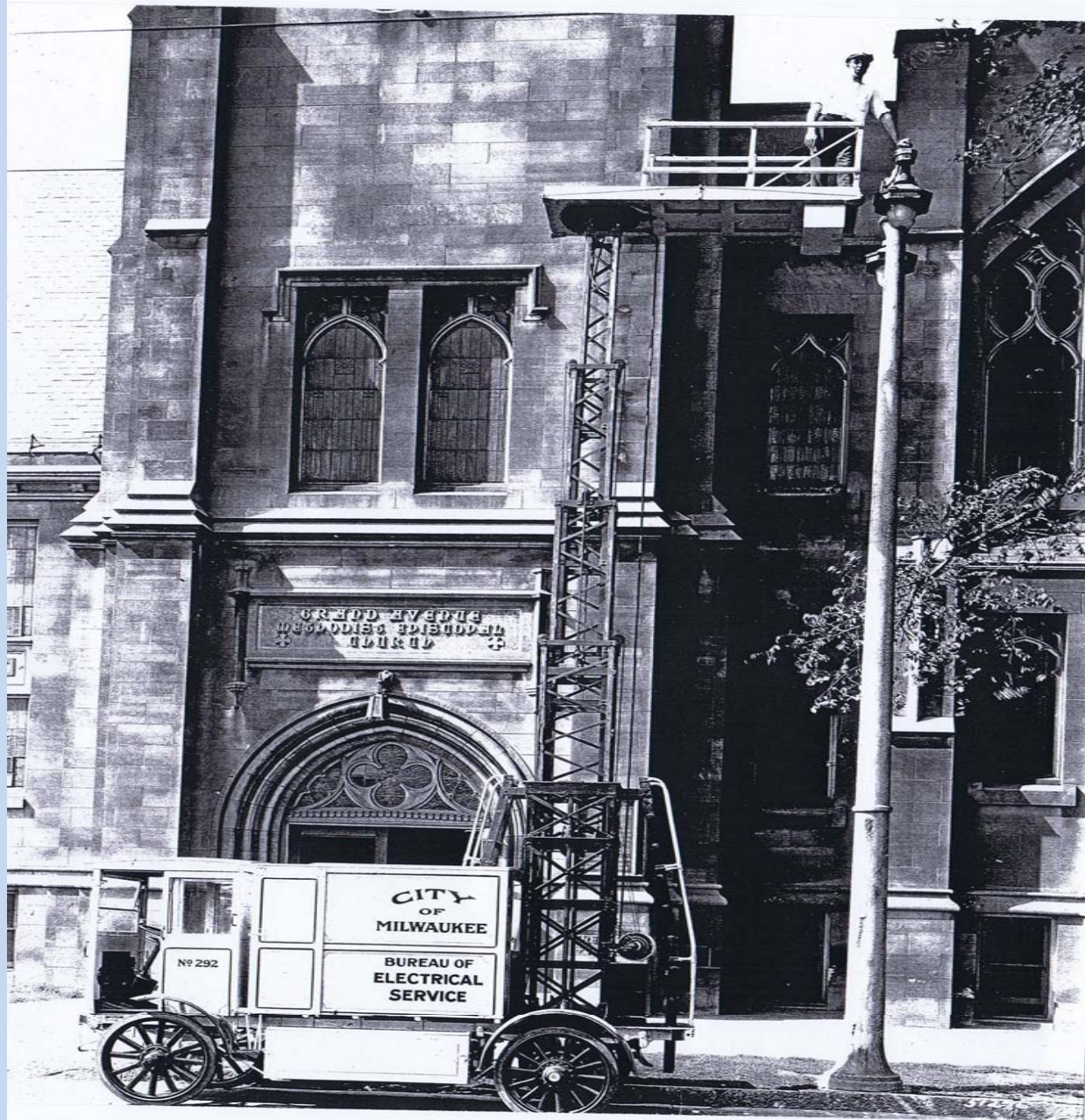
# Changes in MUTCD Standards

- Sign Standards
  - New Retroreflectivity Standards require replacement of over 40% of existing signs by 2015  
Equipment Installed Must Comply with New MUTCD Provisions
  - Changes in sign size, placement and content
- Signal Standards
  - Changes in signal mounting, locations, size, types and configuration

# Cost of Uncollectable Traffic Sign and Signal Knockdowns (2004 through 2008)



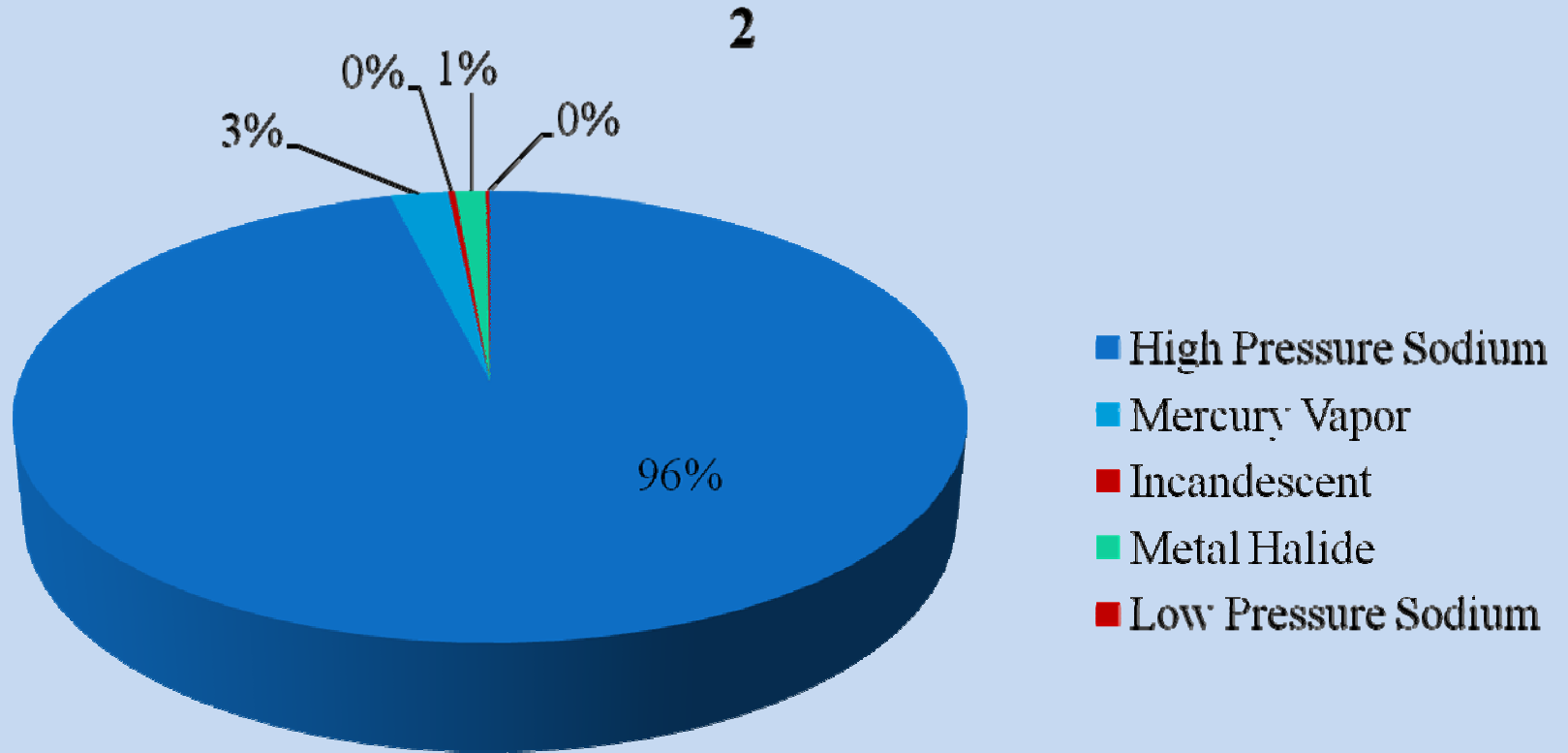
# Street Lighting Program



# Street Lighting Facilities

- 1,300 Miles of Lighted Streets
- 248 Substations and Enclosures
- 67,229 Street Lights
  - 28,290 Series Lamps
  - 38,939 Multiple Lamps
- 8,931 Alley Light
- 569 Specialty Lights

# Street & Alley Light Lamp Types



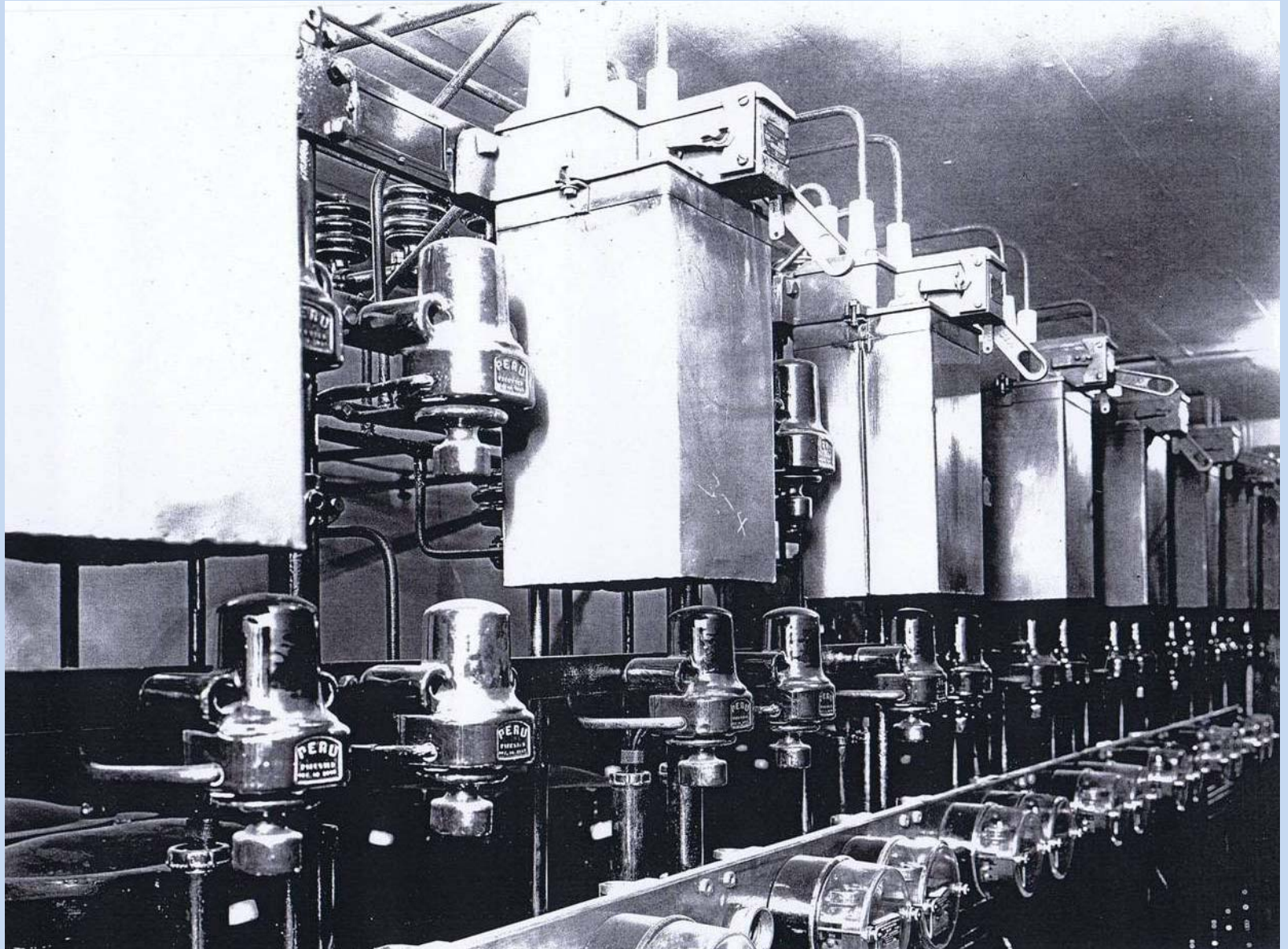


# Paving Related Improvements





# Street Lighting Substations



# Master Control System Replacement

- Advanced Computer Based Master Control System currently being deployed
  - Operational at 33 stations; 46 stations currently under design
  - Controls street light on and off times
  - Fail safe system at each enclosure to turn lights on and off if communication system fails
  - Monitor operation of each street lighting circuit



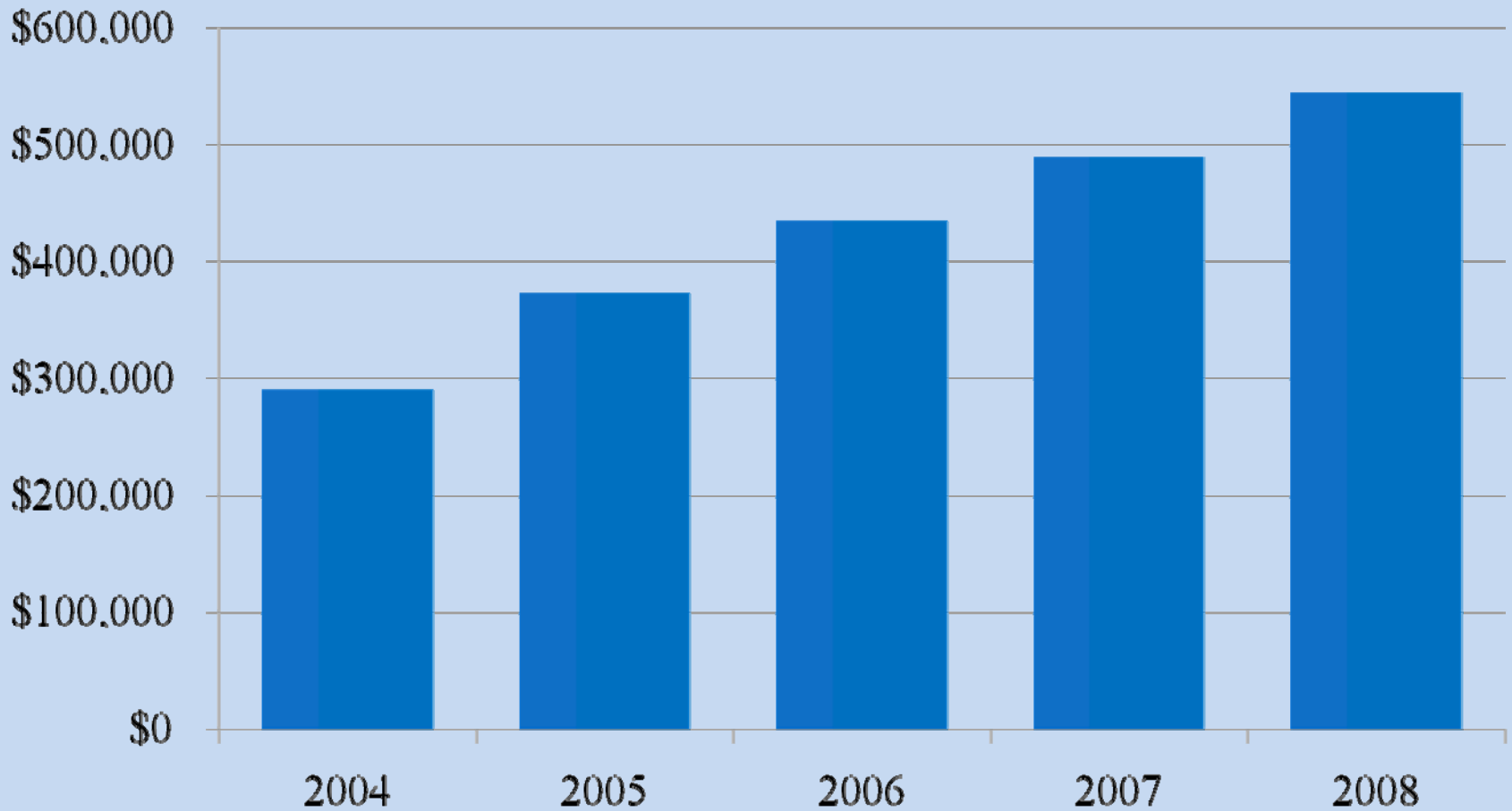
# Street and Alley Light Upgrades



# Series Circuit Replacement

- Outdated Technology Used Initially in the late 1910's and Early 1920's
- Aging Cable Plant Prone to Failure
- Transition Began to More Modern Multiple Circuitry in the 1950's
- Approximately 58% of Circuitry Converted to Multiple
- 60 year replacement cycle at annual cost of \$1,000,000 per year

# Cost of Uncollectable Street Lighting Equipment Knockdowns (2004 through 2008)



# Underground Conduit Program

- Provides reliable cable route for City communication network, traffic control and street lighting that supports
  - MPD
  - MFD
  - Milwaukee Health Dept
  - Milwaukee Public Library
  - DPW Fiber Optic, Signals and Lighting
  - Port of Milwaukee

# Underground Conduit Program

- 2010 Budget = \$1M new conduit & manhole construction
- Existing system:
  - 560 miles of conduit
  - 7,500 manholes
  - 1890's first communication conduit installed
- Expansion & improvements made as part of roadway paving projects when possible to reduce costs

# Underground Manhole Reconstruction Program

- 2010 Budget = \$200,000 manhole repairs and replacement
- Subject to damage from vehicle traffic, rain, freeze/thaw cycles and road salt

# City of Milwaukee Department of Public Works



Sewer Maintenance Fund



# 2010 Capital Improvement Program

- Sewer Maintenance Relay \$15.1 Million
- Pump Rehabilitation Projects \$0.5 Million
- Infiltration/Inflow (I/I) Projects \$6.4 Million
- Storm Water Quality Projects \$1.9 Million

# Sewer Replacement Program

On what basis are Sewer Mains selected for replacement?

- Index Rating based on Sewer Exams
- Existing Hydraulics – Backwater studies
- Paving Projects – Not part of Index Rating

# Sewer Exam Rating Sheet

- Sewers are continually assessed by engineers based on their structural and hydraulic conditions. The physical condition of sewer is obtained through closed circuit television examination (CCTV) report of every sewer segment.
- The column labeled “Index Rating” contains a number between zero (0) and 100 and reflects the condition of the sewer.
- A new sewer would have an index rating of 100 and a sewer that has completely collapsed would be a 0.
- Sewers that have an Index Rating less than 65 are considered for replacement or rehabilitation and are scheduled depending on the amount of funds available.

# Sewer Exam Rating Sheet

## INDEX RATING CALCULATION FOR SEWER PROJECT

Block # \_\_\_\_\_ In: \_\_\_\_\_

FROM: \_\_\_\_\_ TO: \_\_\_\_\_

Index Rating \_\_\_\_\_  
 Program No. \_\_\_\_\_  
 Budget \$ \_\_\_\_\_  
 Initials \_\_\_\_\_  
 Exam Date \_\_\_\_\_  
 Review Date \_\_\_\_\_

Exam Number \_\_\_\_\_ Sewer Size \_\_\_\_\_  
 Tape Number \_\_\_\_\_ Pipe Material \_\_\_\_\_  
 Plat Page # \_\_\_\_\_ Sewer Type \_\_\_\_\_  
 Entered into Database Y N Total Exam Length \_\_\_\_\_

Upstream Manhole \_\_\_\_\_  
 Downstream Manhole \_\_\_\_\_  
 Run Length \_\_\_\_\_

<b>1 Structural Condition</b>				
a. Losing shape or collapsed	_____	4	3	2
b. Crack - 1/8" longitudinal (or larger)	_____	4	3	2
c. Pieces Missing	_____	4	3	2
d. Cracks, checkerboard	_____	4	3	2
e. Cracks, 1/8" circ. Or 1/16" longitudinal	_____	4	3	2
f. Pipe Old & Porous	_____	4	3	2
g. Heavy Mineral Deposits (Sanitary Only)	_____	4	3	2

<b>2 Age of Sewer</b>				
a. Over 100 years	_____	25		
b. 75-99 years	_____	15		
c. 60-74 years	Year Built: _____	10		
d. 25-59 years	_____	7		
e. 10-24 years	_____	2		
f. 0-9 years	_____	0		

<b>3 Hydraulics</b>				
Combined Surcharge > 1.5'/100'	_____	15		
Sanitary Surcharge > 0.5'/100'	_____	15		

<b>4 Inflow and Infiltration</b>				
----------------------------------	--	--	--	--

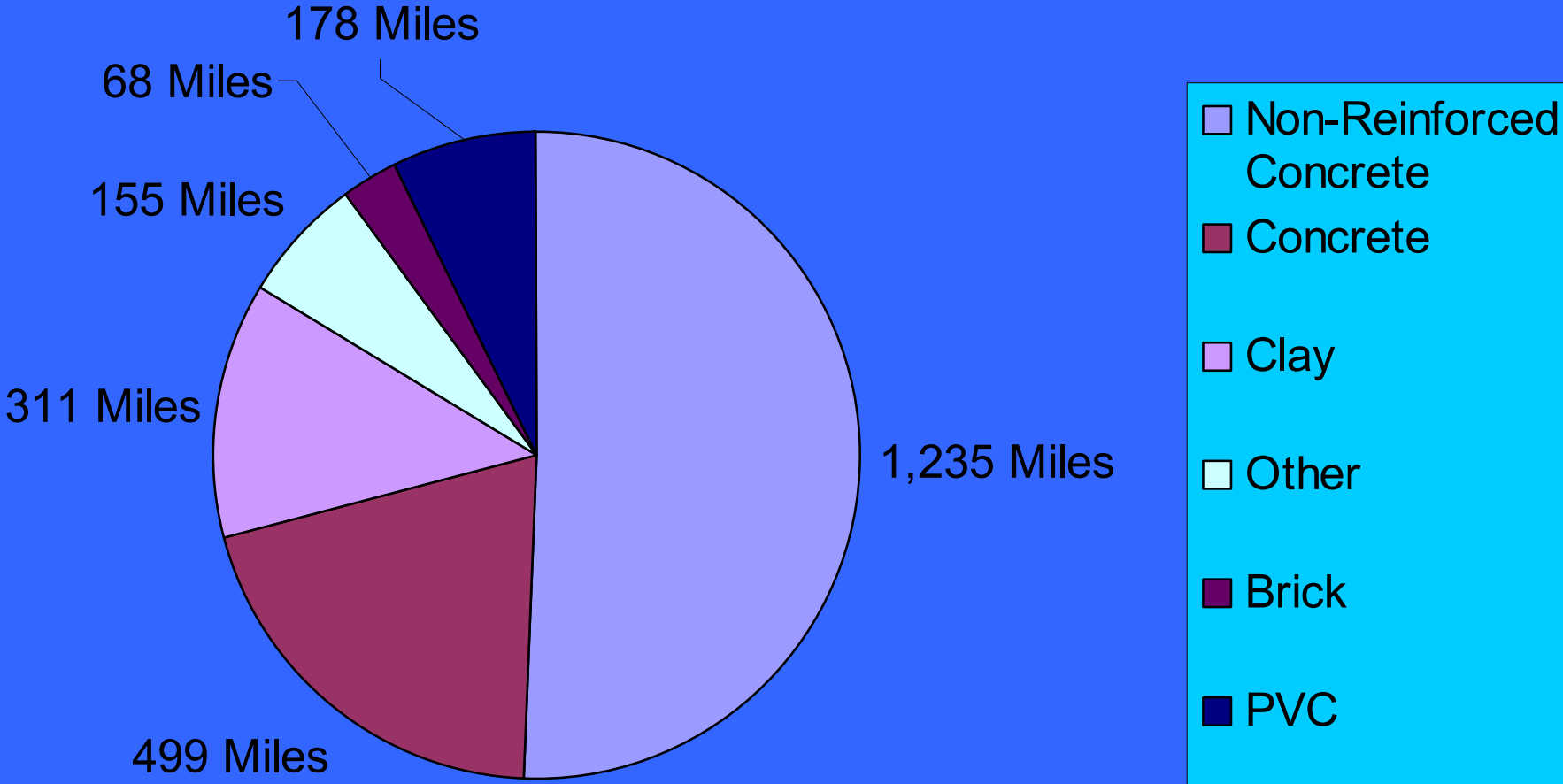
<b>5 Backwater (Use only one)</b>				
a. 4 or more residences within the last 3 years or 1 to 3 in the last 3 years with previous history	_____	40		
b. 1 to 3 residences within the last 3 years	_____	30		
c. Previous history: Last 4 to 10 years and no system relief change	_____	20		
d. Previous history: Over 10 years and no system relief change	_____	15		

<b>6 Cleaning/Maintenance Problem Per Field Operations Letter</b>	_____	10		
<b>7 Project on Paving Program</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>			
<b>8 Mandatory work per Regulatory Agency</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>			
<b>9 Mandatory Work per Alderman Service Request (ASR)</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>			

Total Points \_\_\_\_\_  
 Index Rating \_\_\_\_\_

Comments or Special Considerations \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# Total lengths of sewer by material type



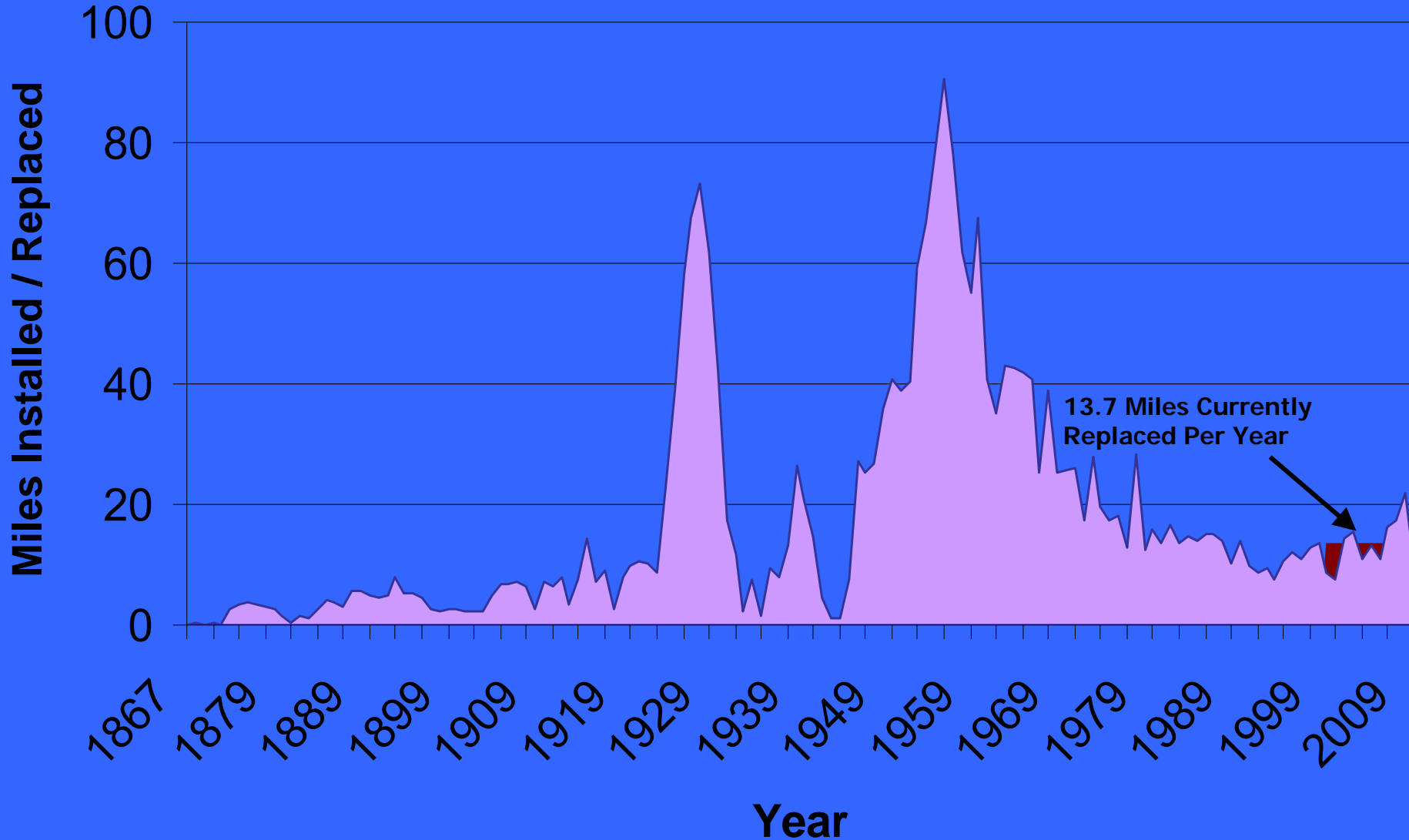
\* Non-Reinforced Concrete Pipe has shown to decay at a much faster rate than other materials



# Sewer Replacement Information

- Over the past 10 years the average annual sewer replacement budget is \$20 Million
- Over the past 10 years the average annual rate of replacement is 13.70 miles

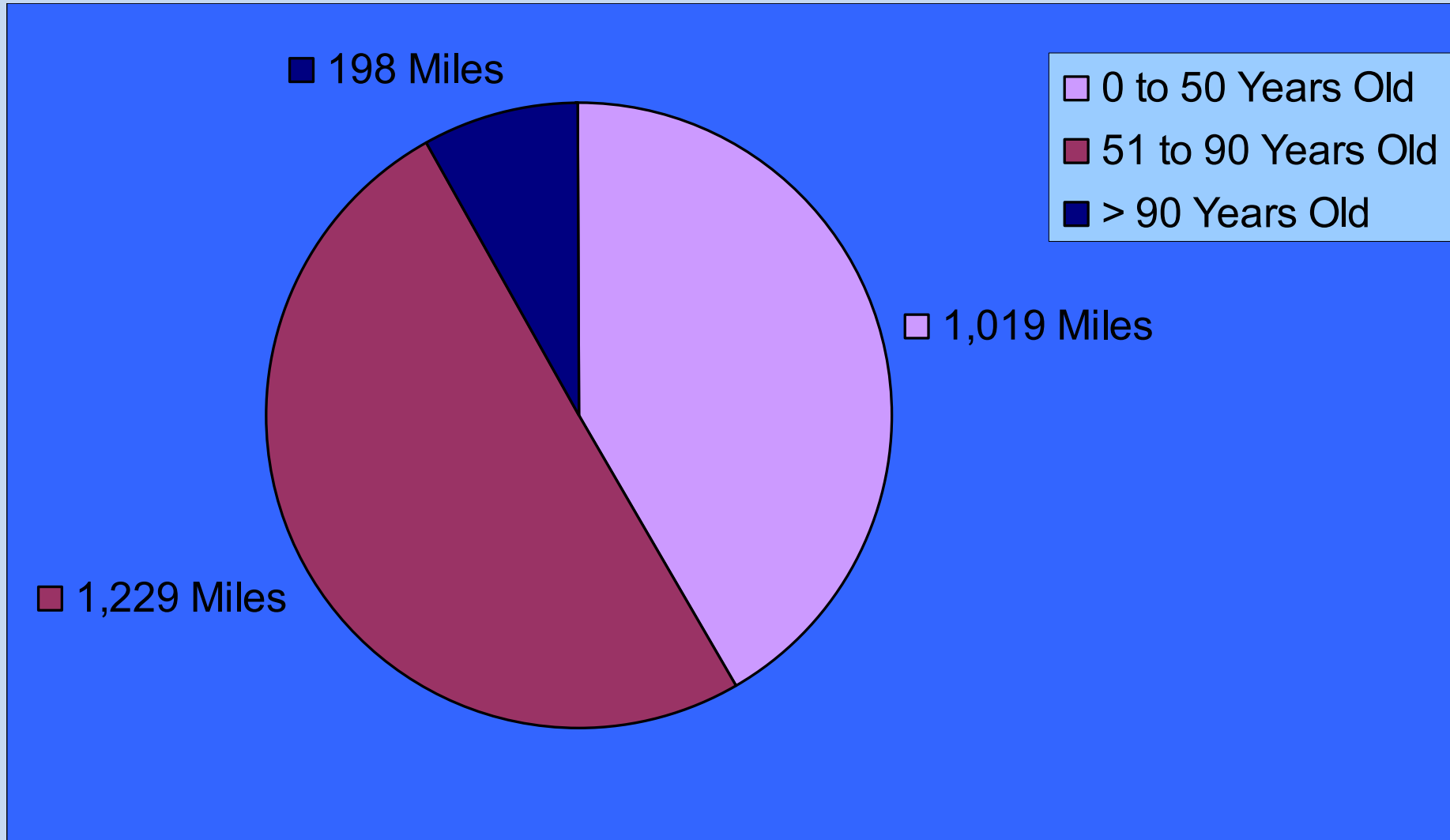
# Sewer Replacement Information



# Sewer Replacement Information

- Currently there are 198 miles of City of Milwaukee sewers that are greater than 90-years old
- With 2,446 miles of sewer in the City and an annual replacement rate of 13.7 miles our current sewer replacement rate is once every 179 years
- With 2,446 miles of sewer in the City and a useful sewer life cycle of 90 years the replacement rate needed to meet the 90 year useful life cycle is 27 miles annually

# City of Milwaukee sewers by age





City of Milwaukee West  
Becher Street 89" and 86"  
Sewer. Asbestos Bonded  
Coated and Paved Pipe in  
a failing brick sewer. The  
pipe has flattening of its  
crown and cracks.

1953



# Becher Street Sewer Tunneling

- Diameter = 9 feet
- Length = 1 mile
- Cost = \$16 million

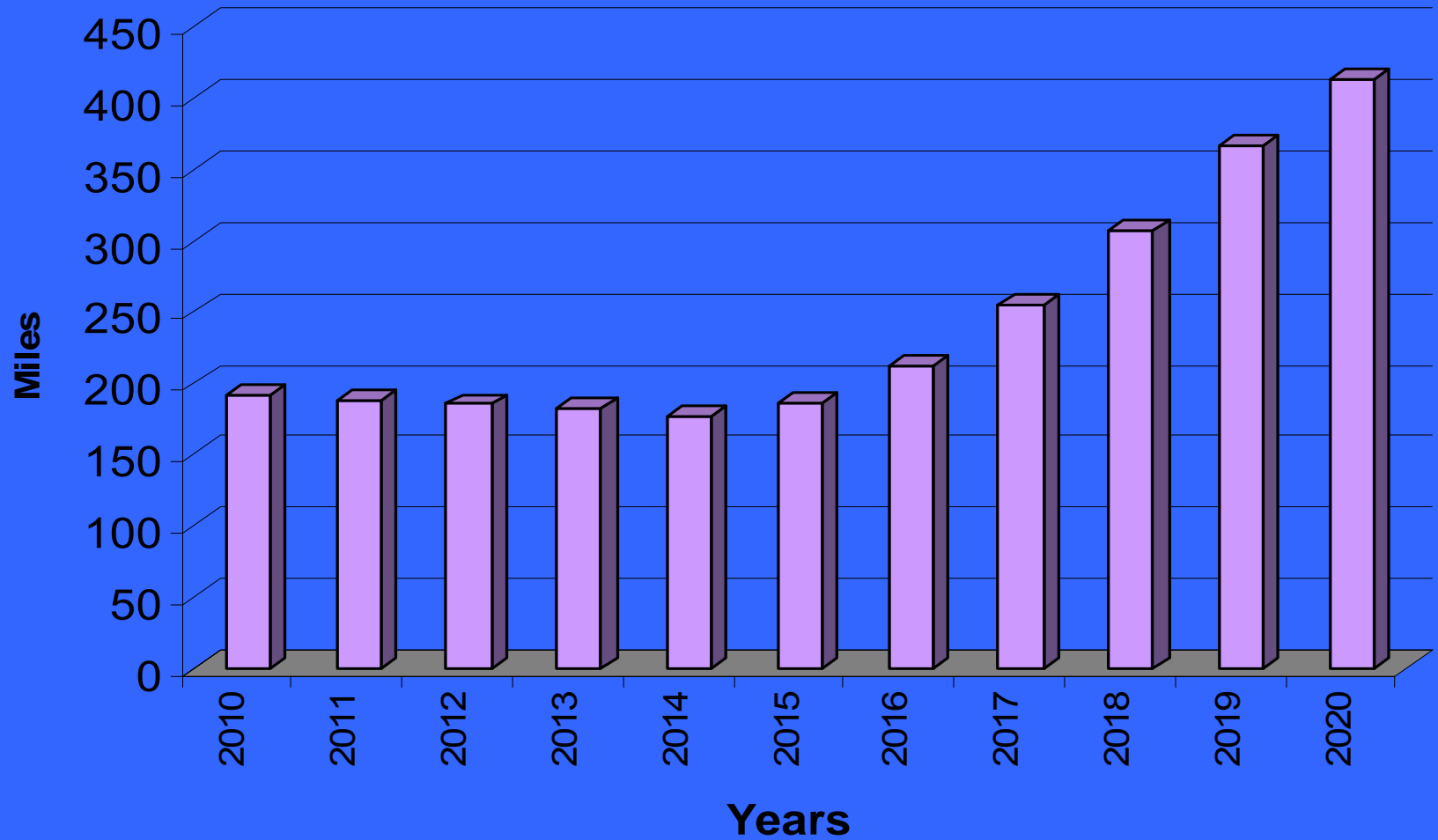


# Replacement Costs

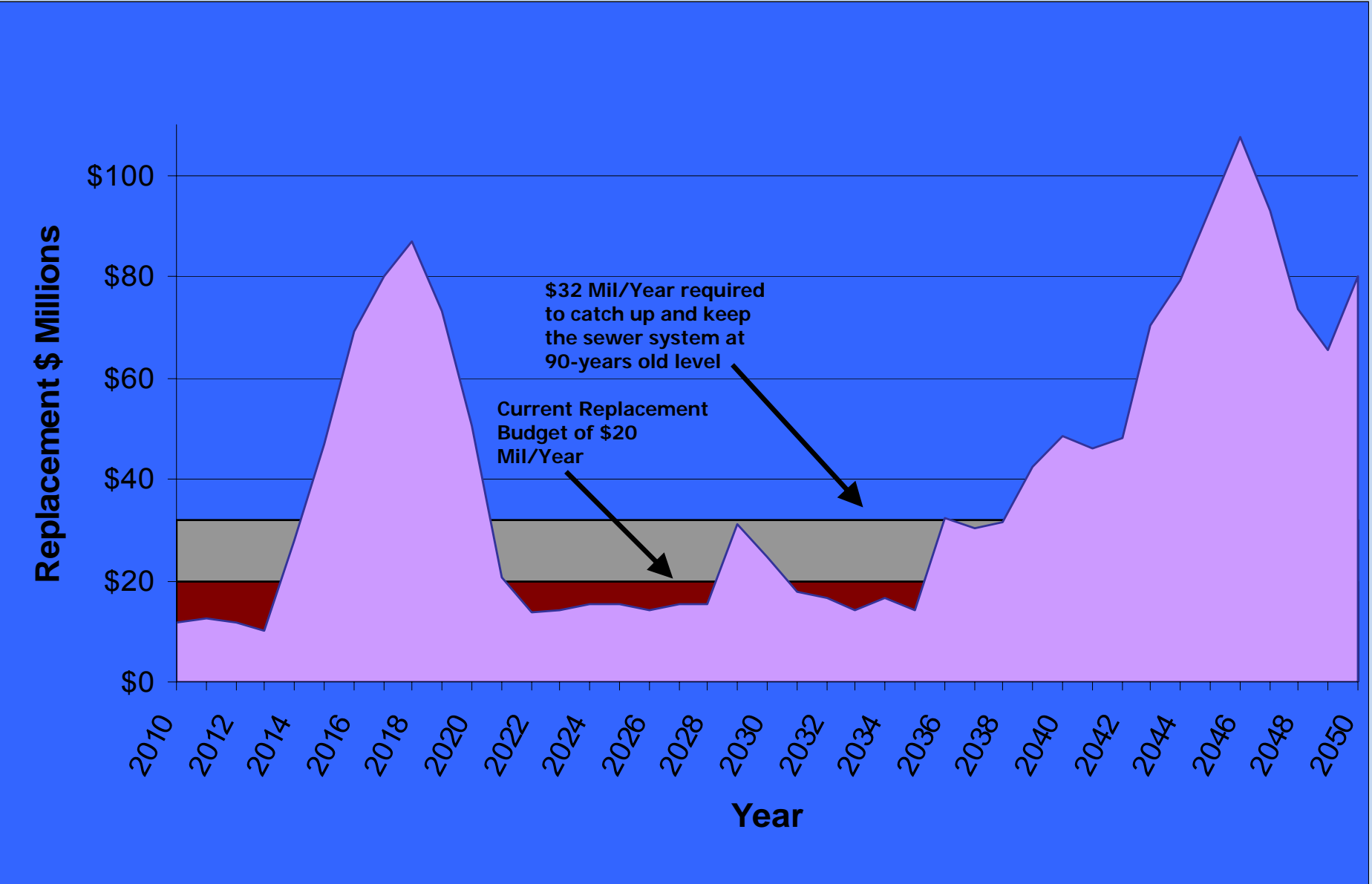
- The average cost of replacement per foot of sewer is estimated to be \$225
- At \$225 per foot, the annual cost to replace 27 miles of City of Milwaukee sewers to meet the 90-year expected life is \$32 Million (2010 dollars)



# Future Sewer Lengths needed to be rehabilitated that are greater than 90- Years Old 2010-2020 (assuming an average replacement rate of 13.7 miles per year)



# Future Replacement Dollars





Markus Thomsen of Globe Contractors Inc. supervises a section of sewer pipe being moved into place Aug. 26 on East Keefe Avenue at North Bremen Street. This section of Keefe will receive a new road top, gutters and sidewalks next year.

- 2009 Keefe Avenue Relay Project
- Diameter = 5 feet
- Length = 1.2 miles
- Cost = \$5.5 million

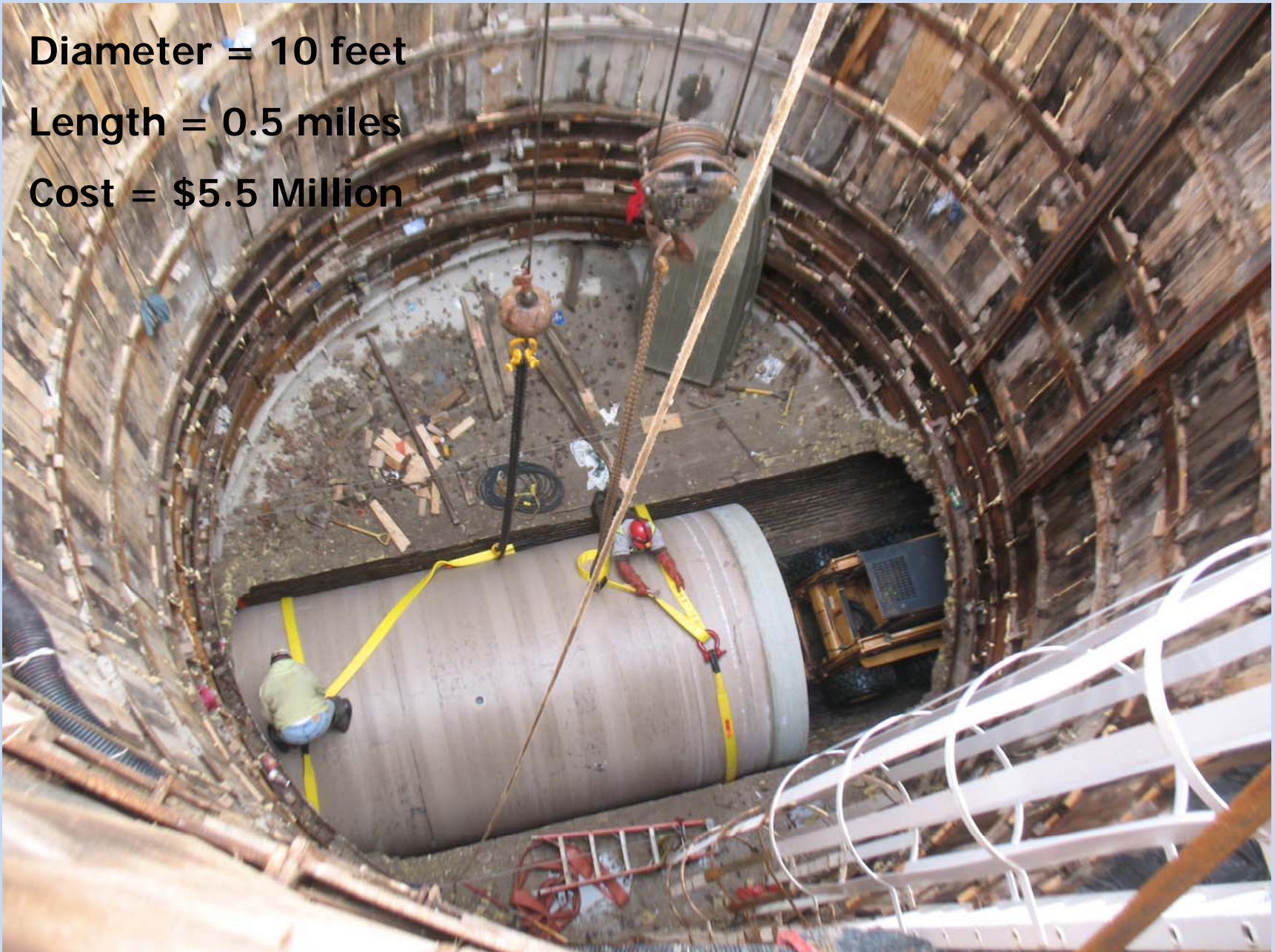


# McKinley Ave Sewer Construction

**Diameter = 10 feet**

**Length = 0.5 miles**

**Cost = \$5.5 Million**





# Pump Rehabilitation Program

- 83 Bypass Pumps
- 6 Lift Stations



Sanitary Bypass Pump Controls



Sanitary Bypass Pump

# Annual Pump Rehabilitation Program

- Annual Pump Rehabilitation Program = \$0.4 Million (3 year average)
- Life Expectancy of Pumps = 30 years
- This program was moved from Operation and Maintenance (O/M) to the Capital Program in 2008

# Infiltration / Inflow Program

- I/I projects include: Manhole Inspection and Rehabilitation, Sewer Mainline and Lateral Lining, Dye Flooding and Smoke Testing
- Addresses Department of Natural Resources (DNR) regulations and mandates by the Department of Justice (DOJ)
- 3 year average = \$4.1 Million

# Examples of Inflow and Infiltration





# Storm Water Quality Projects

- Storm Water Quality Projects include: Detention Ponds, Bio-retention Facilities, Green Streets, and Storm Water Treatment Devices
- Reduces the total suspended solids (TSS) as required by DNR regulations
- The TSS in Milwaukee must be reduced by 40 % by the end of 2013



Storm Water Quality Project at N. 91<sup>st</sup> St  
and W. Dean Ave





**2008-N. 27<sup>th</sup> Street Green Street Project**

# 6 Year Capital Improvement Program

## 2010-2015 Capital Improvements Plan

	2010 Adopted Budget	2011 BUDGET PLAN	2012 BUDGET PLAN	2013 BUDGET PLAN	2014 BUDGET PLAN	2015 BUDGET PLAN	TOTAL DRAFT SIX YEAR PLAN
<b>Sewer Maintenance Relay Program</b>	\$15,162,000	\$29,000,000	\$30,000,000	\$31,000,000	\$31,000,000	\$32,000,000	\$168,162,000
<b>I&amp;I Reduction Projects</b>	\$6,350,000	\$6,370,000	\$4,890,000	\$4,900,000	\$3,000,000	\$3,000,000	\$28,510,000
<b>Pump Facilities</b>	\$500,000	\$1,000,000	\$1,000,000	\$1,000,000	\$500,000	\$500,000	\$4,500,000
<b>BMPs for TSS reduction (NR 151)</b>	\$1,925,000	\$2,000,000	\$2,000,000	\$2,000,000	\$0	\$0	\$7,925,000
<b>TOTAL SEWER MAINTENANCE FUND</b>	\$23,937,000	\$38,370,000	\$37,890,000	\$38,900,000	\$34,500,000	\$35,500,000	\$209,097,000

# CONCLUSION

- The Rehabilitation of Sewers, Pump Stations, and the reduction of I/I is needed to maintain infrastructure and reduce backwaters
- Storm Water Quality Projects must be completed annually to improve water quality in rivers and lakes of Milwaukee





**DPW**  
**Facilities Development and Management**

**Strategic Asset Management  
of  
Public Buildings  
Recreational Facilities  
and  
Monuments**

# Strategic Asset Management

- What do you own?
- What is it worth?
- What is the deferred maintenance?
- What is its' condition?
- What is the remaining service life?
- What do you fix first?

# Facilities Development & Management Capital Asset Statistics

Department	No. of Buildings/ Facilities	Area (sq. ft.)	Current Replacement Value (CRV)	Average Age (years)	Facilities Condition Index (FCI)
Department of Public Works					
Buildings	92	4,238,238	\$440,846,384	43	0.23
Parking Garages	5	1,975,690	\$100,399,148	42	0.19
Recreational Facilities	95	381 (acres)	\$92,400,000	NA	NA
Monuments	18	NA	\$8,487,423	NA	0.07
Fire Department	42	447,000	\$95,400,000	55	NA
Police Department	12	905,700	\$157,852,000	52	NA
Sub-Total	264	7,566,628	\$895,384,955	48	NA
Health Department	5	171,106	\$27,173,437	71	NA
Library Properties	14	710,791	\$173,563,561	43	NA
Port of Milwaukee	14	363,695	\$23,664,322	51	NA
Vacant Properties	12	177,313	\$12,730,271	66	NA
Water Department	37	871,229	\$113,638,111	56	NA
<b>Total Facilities</b>	<b>346</b>	<b>9,860,762*</b>	<b>\$1,246,154,657</b>	<b>56</b>	

\* Not incl. Rec. Fac.



# DPW Facilities



Buildings 4,028,238 square feet

Building Roofs 1,008,008 square feet  
(22.4 football fields)

Facilities Systems 256 Air Handling Units  
212 Heating  
195 Pumps  
198 Exhaust Fans  
200 Electrical Switch Gear  
400 Electrical Transformers

Communications 4,080 Phones  
250 miles of Fiber Optic Cable  
650 miles of Copper Cable

Responsibilities include design, construction and management for other City Agencies



# DPW Recreational Facilities



Before



After

- 19 Tot Lots
- 23 Play Lots
- 6 Play Areas
- 26 Play Fields
- 10 Play Grounds
- 11 Green Spaces

## Lewis Play Field

Impervious reduction of 20,000 square feet  
(Supports City's goal of Storm water runoff reduction)





# Citywide Energy Efficiency Initiative

## 15% reduction by 2012



### **Zeidler Municipal Building**

Natural Gas Generator  
700 KWH on Request  
\$4,000 Savings/Month Possible

### **Recycling Education Center**

Solar Photovoltaic Energy  
3,949 KWH Average Monthly Reduction  
\$235 Average Energy Savings/Month

### **Geothermal Energy**

50% Reduction in Heating Cost  
22.5 cents/KWH Solar Credit

### **CHC Chiller Plant**

Cost \$3.5 Million  
Annual Energy Savings of \$39,500



# Green Building Initiative



Before



809 N Broadway

After

- Storm Water Reduction
- Energy Efficiency
- Improve Air Quality
- Improve Performance
- Greening/Beautification

# New DPW Field Headquarters North 35<sup>TH</sup> Street and West Capital Drive



## Improved Efficiencies With Consolidation of 7 Sites

	<u>First Year</u>
<b>Deferred Maintenance Savings</b>	<b>\$8,900,000</b>
<b>Operations Savings (Staffing and Energy)</b>	<b>\$1,330,000</b>



# New 3<sup>RD</sup> District Police Station



**Improved Efficiencies With Facilities Consolidation**

**Oversaw Project Design and Construction**

- \$26 Million / 2001
- 201,370 Square Foot Facility
- Consolidation of District Station and Data Communication Center
  - Replaced Antiquated Facilities
  - Improved Police Operation Efficiencies
  - Provided Needed Space in the PAB
  - Provided Police Presence in Community

# Operational Facilities Improvement Studies



**Architectural and Engineering Study to  
Remodel 270,000 Square Feet**

**Police Administration Building**

**June, 2010**



**Study to replace**

**Fire Department - Maintenance Shop**

**1<sup>st</sup> and Virginia**

**Estimated Cost \$14,000,000 (2006)**



# Facilities Development and Management 2010 Capital Programs

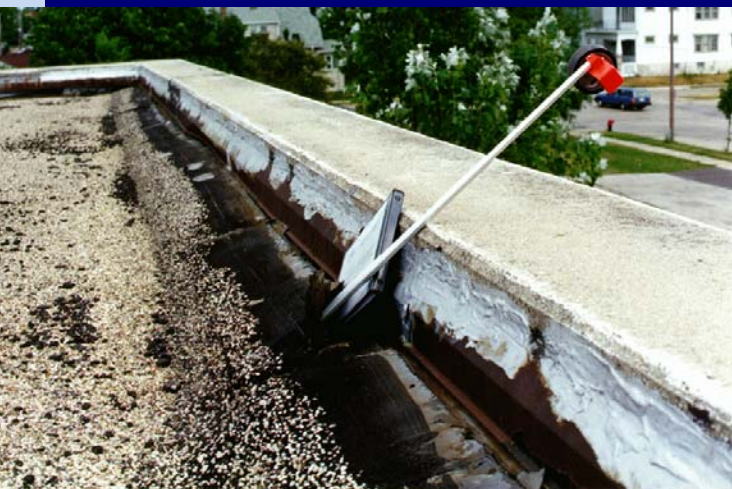
<b>Program Description</b>	<b>Budget</b>
<b>1 Environmental Program</b>	<b>\$100,000</b>
<b>2 ADA Compliance Program</b>	<b>\$95,000</b>
<b>3 Facilities Exterior Program</b>	<b>\$1,409,700</b>
<b>4 City Hall Complex Remodeling Program</b>	<b>\$80,000</b>
<b>5 Municipal Garages/Outlying Facilities Remodeling Program</b>	<b>\$295,000</b>
<b>6 Facilities Systems Program</b>	<b>\$685,000</b>
<b>7 Recreation Facilities Program</b>	<b>\$388,240</b>
<b>8 Space Planning, Alterations and Engineering</b>	<b>\$160,000</b>
<hr/>	
<b>Sub-Total Capital Program</b>	<b>\$3,212,940</b>
<b>City Hall Foundation restoration Project</b>	<b>\$2,700,000</b>
<b>ZMB-Lower Parking Floor Restoration, (Design only)</b>	<b>\$86,500</b>
<hr/>	
<b>Sub-Total Special Projects</b>	<b>\$2,786,500</b>
<b>Total</b>	<b>\$5,999,440</b>

# Facilities Development and Management Capital Planning Tools



- **Software Database: Facilities Conditions Information System Provided by AME, Inc.**
- **Mayor's Energy Reduction Mandate of 15% by 2012.**
- **Operating & Maintenance Costs**
- **Capital Requests from other City Agencies.**
- **Facilities Studies**
- **Structural Reports**

# Facilities Condition Information System



**Maintenance Backlog Examples**

# Facilities Condition Information System

## FCI Table

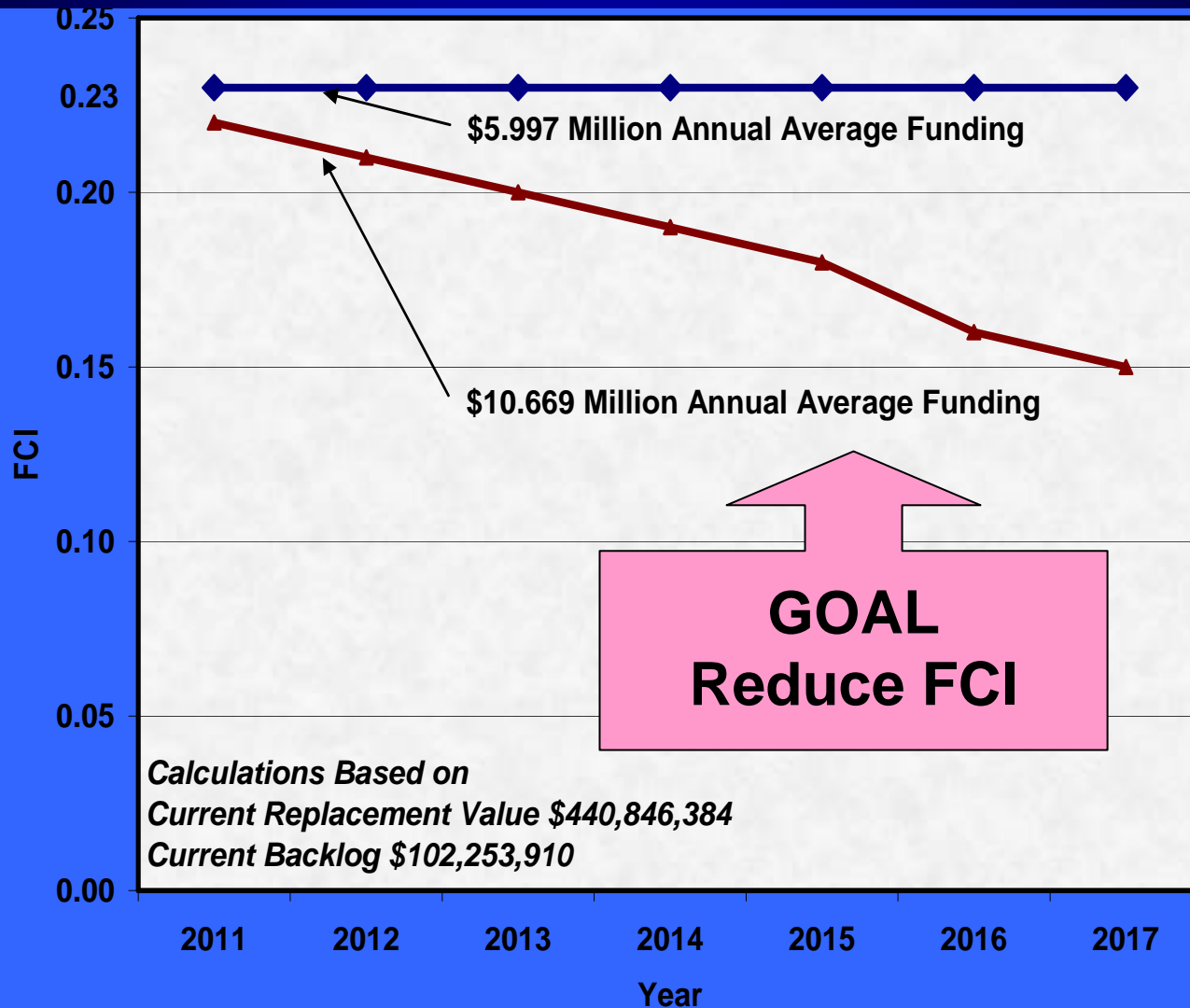
Total Buildings/ Structures	Usage Code	Division/Section	Range of Year Constructed	Maintenance Backlog	Current Replacement Value	FCI	Average Weighted Age
9	0000	General City Buildings	1893-1965	\$64,554,718	\$194,430,432	0.33	55
5	5010	Department of Public Works	1921-2006	\$853,844	\$16,756,002	0.05	8
12	5230	DPW - Infrastructure	1926-1970	\$5,104,743	\$3,072,288	1.66	43
6	5450	Buildings & Fleet	1914-2006	\$21,905,754	\$23,531,189	0.93	44
39	5650	DPW - Sanitation	1969-1999	\$5,895,230	\$13,155,846	0.45	11
18	5810	DPW - Forestry	1936-2002	\$2,881,770	\$5,372,788	0.54	52
7	6610	DPW Admin. - Parking	1956-1991	\$19,928,686	\$85,383,062	0.23	19
96	Grand Total - All Usage Codes			\$121,124,745	\$341,701,607	0.35	

$$FCI = \frac{\text{Backlog of Maintenance and Repair}}{\text{Current Replacement Value}}$$

(2005 Evaluation)

<i>FCI Range</i>	<i>Condition Rating</i>
Under 0.05 (5%)	Good
Between 0.05 (5%) - 0.10 (10%)	Fair
Over 0.10 (10%)	Poor

# Six Year Facilities Condition Indexes (For DPW Facilities Only)





# Department of Public Works

## OPERATIONS DIVISION

Forestry Services

Sanitation Services

Fleet Services

# FORESTRY 2011 CAPITAL IMPROVEMENT PROGRAMS

- TREE PLANTING AND PRODUCTION
- CONCEALED IRRIGATION AND  
GENERAL LANDSCAPING
- EMERALD ASH BORER RESPONSE

# TREE PLANTING AND PRODUCTION

- Adds 5,905 new trees
  - 3,455 street trees
  - 2,450 boulevard trees
  - Maintains 98% stocking goal
- Supports Tree Production at City Nursery



# CONCEALED IRRIGATION AND GENERAL LANDSCAPING

- Updates 105 Irrigation Water Taps on Boulevards
- Renovates Municipal Building Landscaping





# EMERALD ASH BORER RESPONSE



- Inoculates 14,000 ash street trees annually
- Provides 2 years protection
- Manages public safety risk
- Provides orderly transition to resistant species
- Prevents catastrophic loss of street tree canopy and associated benefits
- Least disruptive to other forestry operations





# SANITATION CAPITAL USES

- Site upgrades
- Facility Upgrades
- Service Upgrades
  - Requiring new or upgraded equipment
  - Requiring new or upgraded facilities



# SANITATION 2011 CAPITAL IMPROVEMENT PROGRAMS

- Construction of two scales to weigh construction debris at self help stations
- Site acquisition, planning, design and relocation of Industrial Road Transfer Facility
- Consolidation of Forestry Holt St. and Sanitation S1 operations on 37<sup>th</sup> & Lincoln site (old Water Works facility)

# IMPACTS

- Weight Scales at Self Help Centers
  - Allows for charging based on actual loads
  - Allows for acceptance of contractors
  - Allows for greater offset of operating expenses by allowing more customers
- Consolidation of Forestry and Sanitation at 37<sup>th</sup> & Lincoln
  - If not approved, the 35<sup>th</sup> St. Sanitation office is in dire need of repairs and expansion
  - As of 2006, \$975,000 in deferred maintenance costs for S1



- Industrial Road Site Relocation
  - Necessitated by Direct Supply's option to purchase facility

# Fleet Services Section



Capital Budget funds the replacement of Fleet Services equipment valued at \$50,000 and higher.

- Number of Capital Units: 654
- Replacement Value : \$106 million  
(Does not include 2,354 pieces of O&M equipment valued at \$33 million, or units owned by Police, Water, INFR-Underground, or DPW-Parking)



# Fleet Services Section



2011 Capital Budget request:  
\$12,982,000 to purchase 85  
units, including:

- Backhoes
- Digger-Derrick Truck
- Aerial Lift Trucks
- Dump Trucks
- Refuse and Recycling Packers
- Roll-Off Trucks
- Sweepers





# Impact - Fleet Age



Optimal Average Age of Fleet: 6.0 Years

- Based on a reasonable life expectancy of 12 years

Current Average Age of Fleet: **11.5 Years**

- At \$12,982,000 average age reduced to 10.1 years

*Maintaining the availability of an older fleet is a continuous challenge*

117 Refuse (Cart) Trucks in the Fleet

1990 truck #32985 (right) is one of 38 refuse packers beyond its reasonable expected life



# Balancing Fleet Efficiency, Costs, and the Environment



- Hybrid Aerial Trucks: 2

- Smaller diesel engine
- 330 volt Li-Ion battery, used to power boom and assist to propel truck
- Quieter neighborhood operation
- 11% improvement in mileage



- Compressed Natural Gas (CNG) Refuse Trucks: 2

- Significant reductions in fuel costs and CO<sub>2</sub> released
- City awarded \$4.84 million grant to build two CNG fueling stations and help purchase 20 additional CNG trucks



# Milwaukee Water Works



Provide water service to

- 15 communities
- 162,000 metered accounts
- 860,000 population

Extensive infrastructure

- Two water treatment plants
- Eleven pumping stations
- Six storage tanks

# Own, Operate and Maintain in *Four\** Communities

- 2,000 miles of water main
- 20,000 hydrants
- 50,000 valves
- 162,000 water meters

\*Milwaukee, Greenfield, Hales  
Corners, St. Francis





# CIP Drivers

- Current emphasis is on pumping facilities, storage facilities and water mains
  - Enhancing system to handle changes in water use
  - Anticipating additional large customers
  - Redundancy and resiliency are key
- Treatment processes in great shape. Plant buildings aging.
- Many complex, multi-year projects carefully scheduled





# Capital Budget (millions of dollars, est.)

- Plant Treatment Improvements \$ 4
- Plant Building Improvements \$ 3
- Pumping & Storage Facilities \$ 6
- Back-up Power Generation \$ 4
- Water Main Replacements \$17

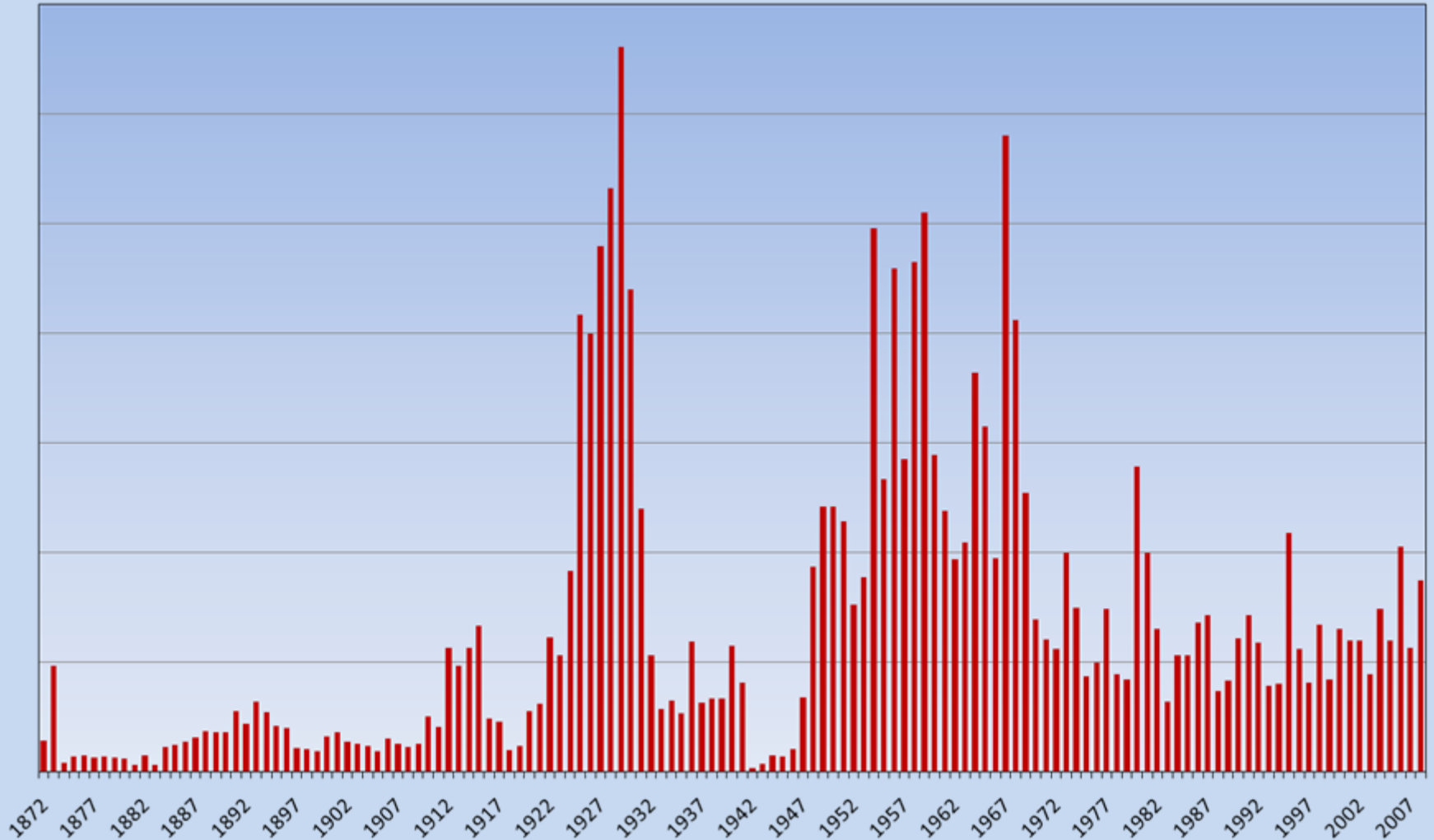


# Main Replacement Program

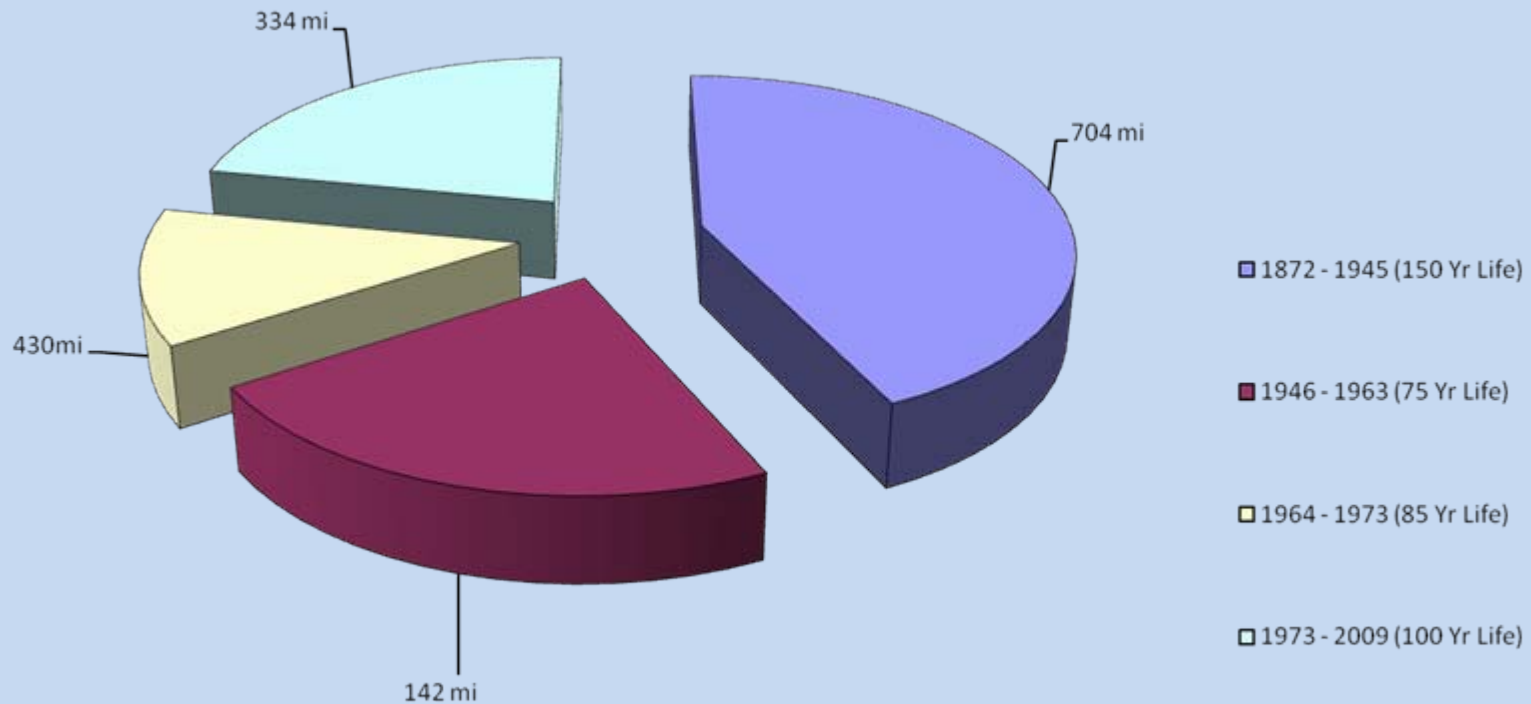
A large stack of black pipes and blue-wrapped pipes outdoors, with trees in the background. The pipes are stacked in a way that shows their length and diameter. The blue-wrapped pipes are on the left side, and the black pipes are on the right side. The background shows green trees and a clear blue sky.

- Selected for replacement based on:
  - Ranking on Main Break Index
  - Hydraulic characteristics
  - Coordination with paving projects
  - Coordination with other construction projects
  - Water quality concerns

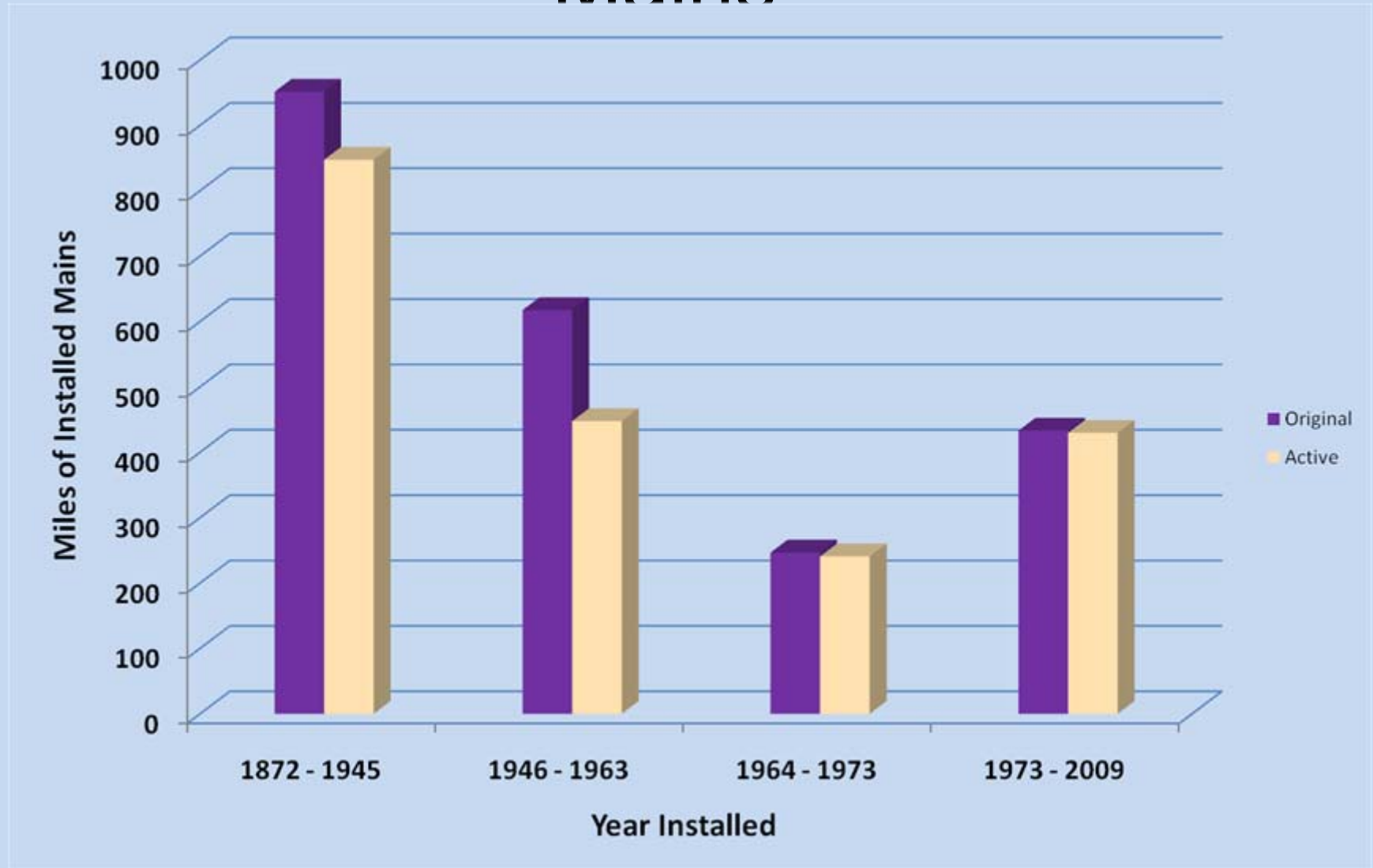
# Water Mains Installed by Year



# Life Expectancy Estimates

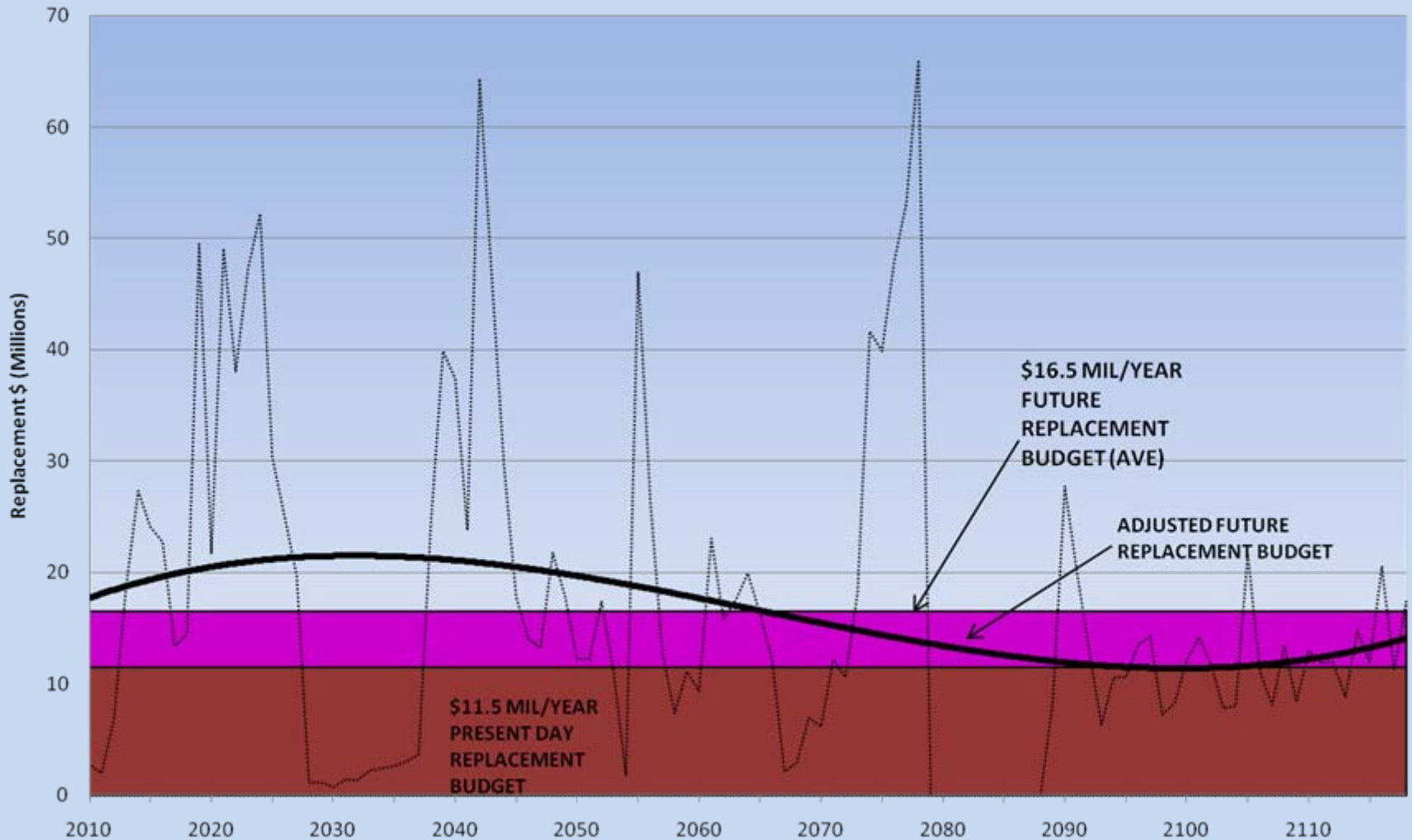


# Replacements Focus on Failing Mains





# Future Replacement Estimates



# Water Main Breaks

