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***

Clinton Street and Lincoln Avenue 6-8-28

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.

Cherry St Bridge

PARKING FUND

- Parking Structures
- Parking Meters
- Surface Parking Lots

Parking Structures

- **Milwaukee/Michigan(1957) 500 spaces**
- **2nd/Plankinton(1961) 473 spaces**
- **MacArthur Square(1967) 1,437 spaces**
- **4th / 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

- **Single Space – 4,362 meters**
- **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.

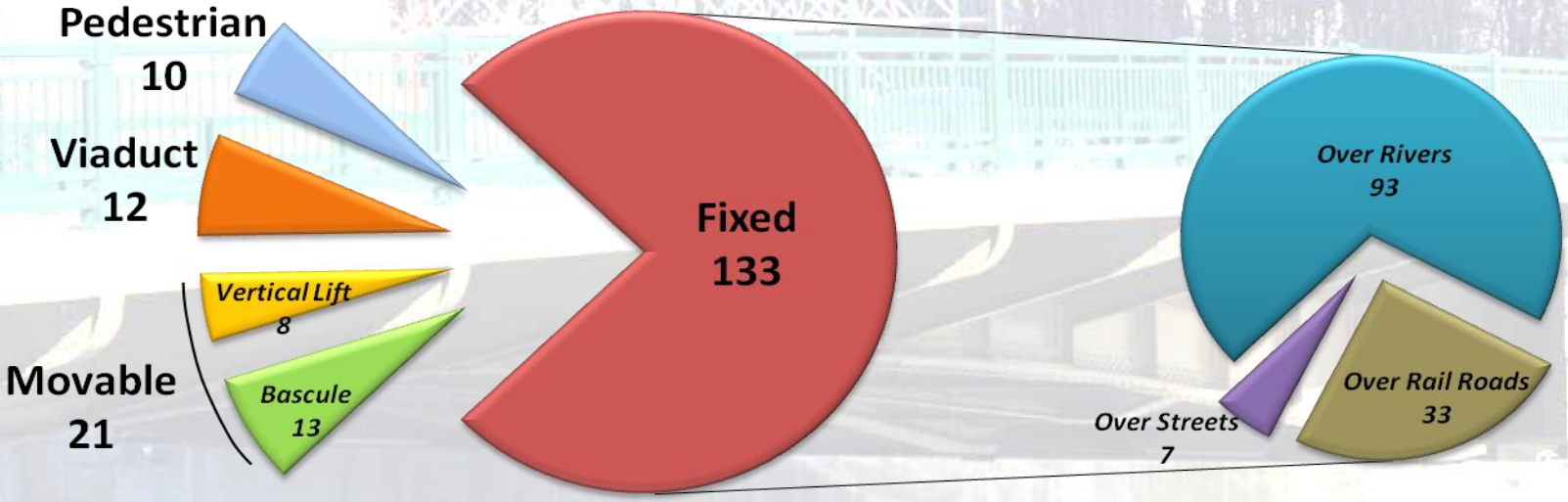
- **TELEPHONE SYSTEM EXPANSION - $50,000**
  -Ongoing maintenance and phased upgrades to over 5,000 phones lines.

City of Milwaukee
Department of Public Works

Major Bridge Program

Inventory and Classification

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



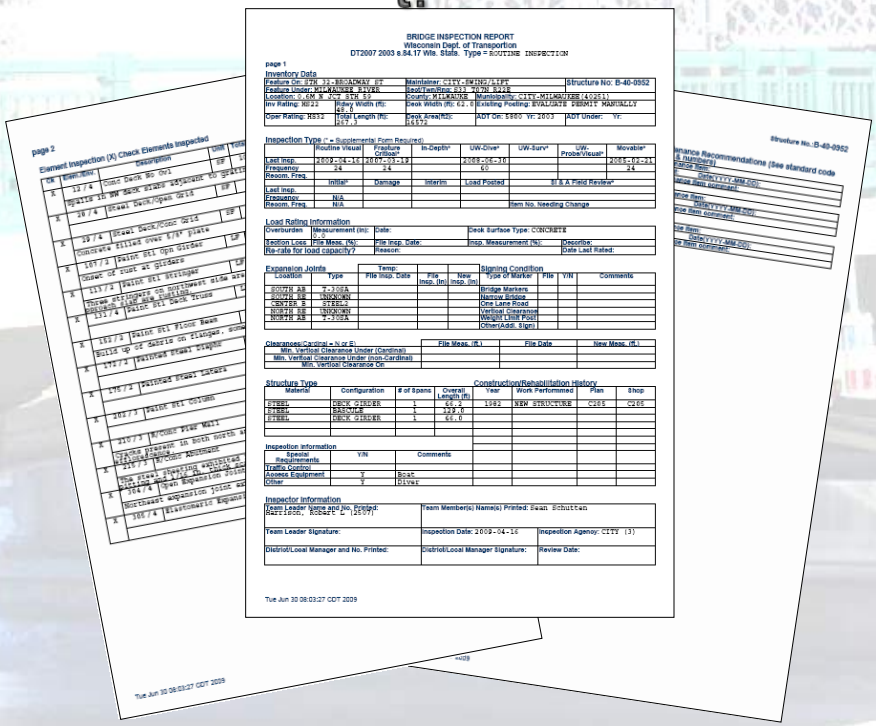
Rehabilitation and Replacement Program

- 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

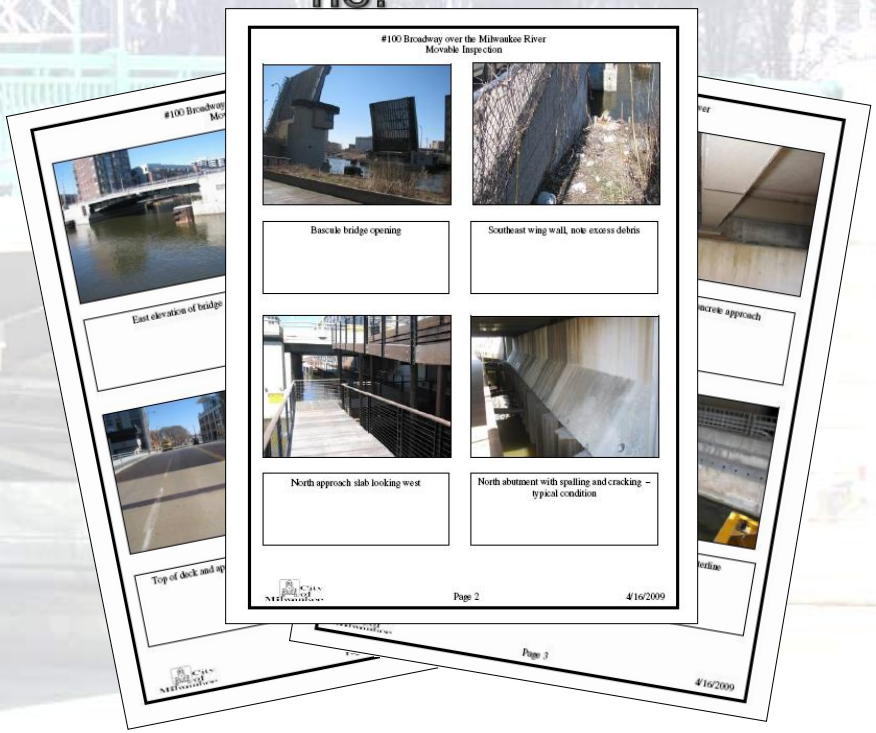
Rehabilitation and Replacement Program

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

Report:


BRIDGE INSPECTION REPORT
Wisconsin Dept. of Transportion
DT2007 2003 s.84.17 Wis. Stats. Type = ROUTINE INSPECTION

Photographs:


#100 Broadway over the Milwaukee River
Movable Inspection

Bascule 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

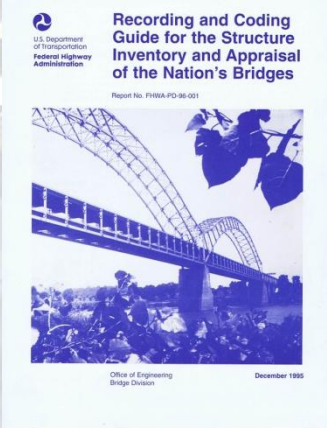
Page 2

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

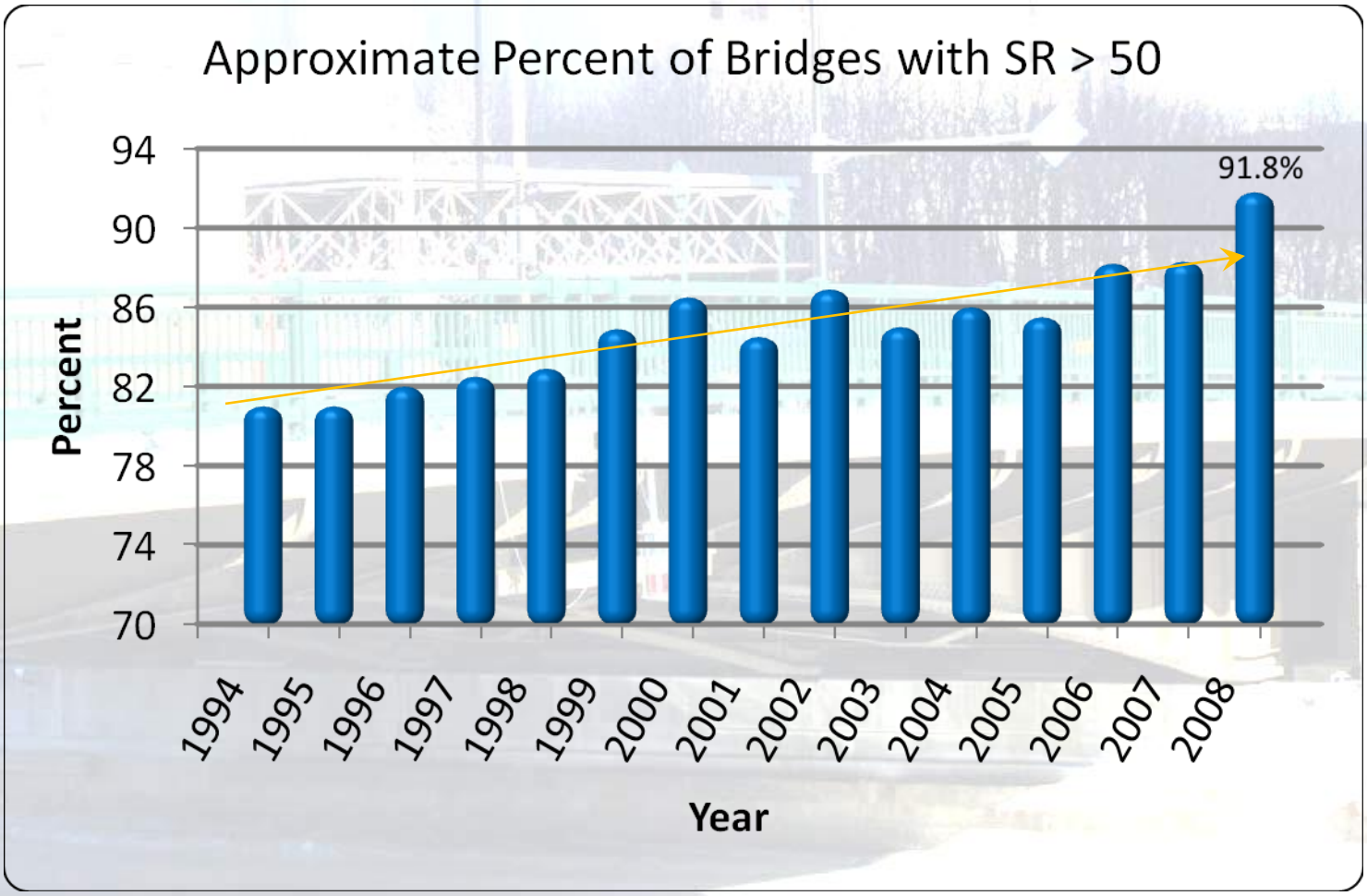
U.S. Department of Transportation
Federal Highway Administration

Sufficiency Rating (SR)

- Bridge rehabilitation/replacement prioritized by SR and overall condition

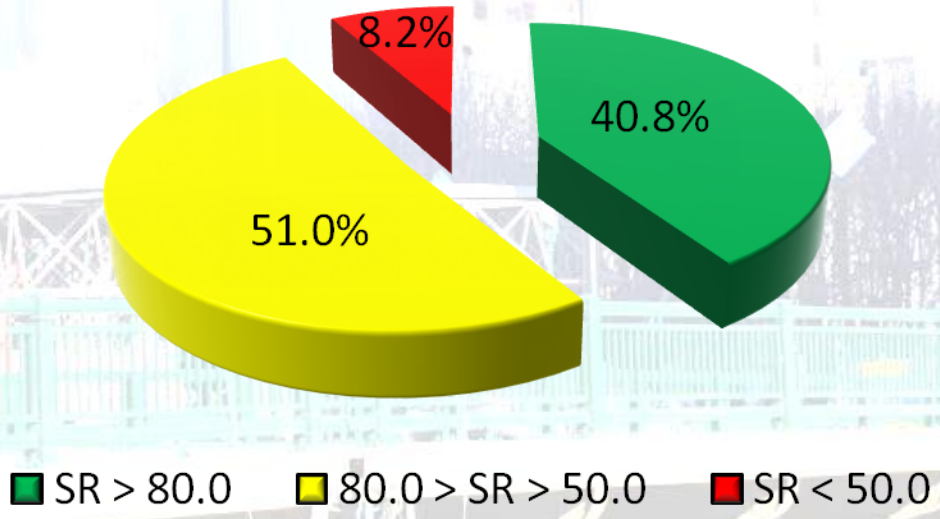
Milwaukee Bridge Performance

- 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

FHWA

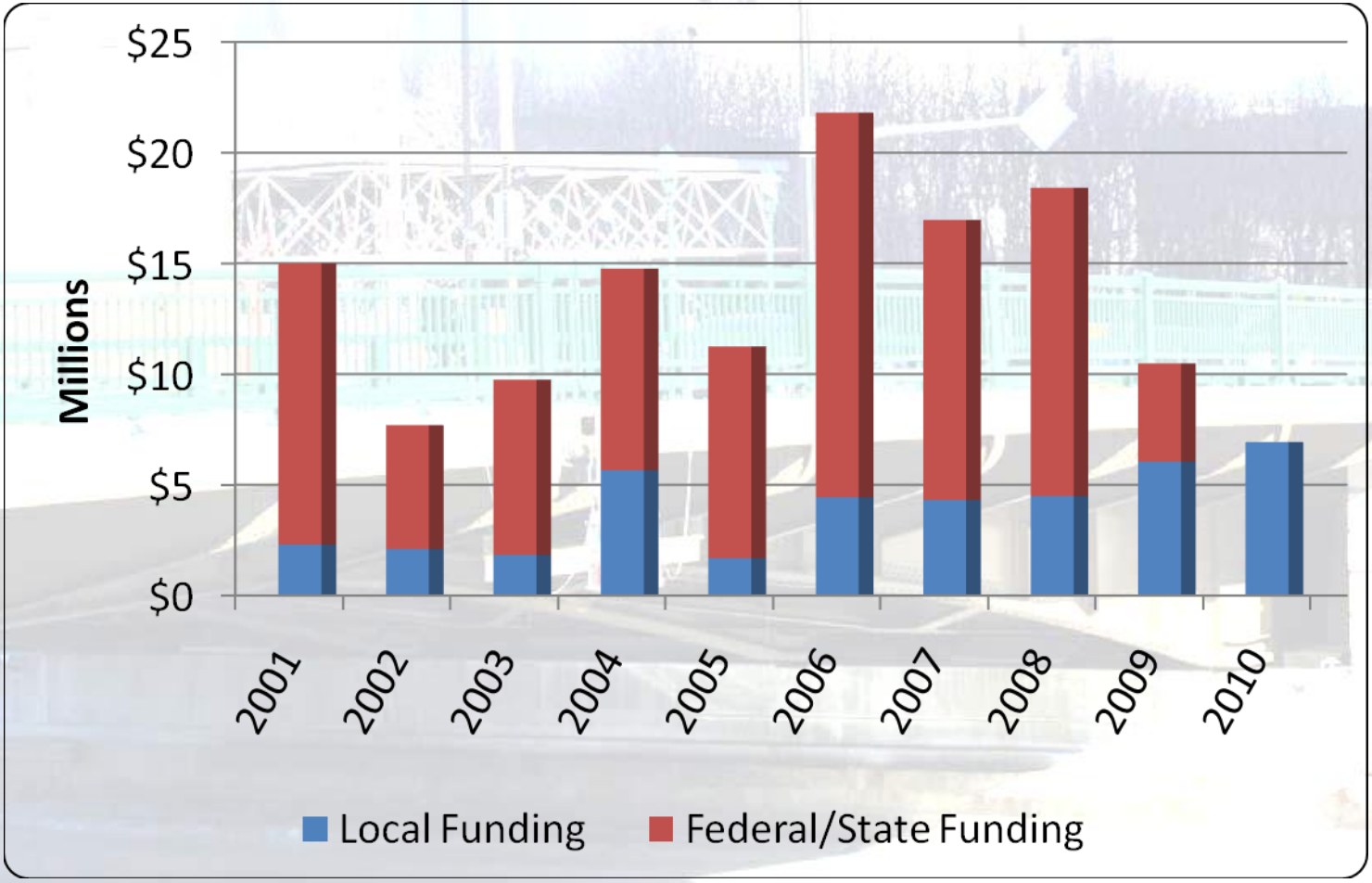
WISCONSIN DEPARTMENT OF TRANSPORTATION

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.

CITY OF MILWAUKEE

Summary of Capital Bridge Program 2001-2010




CITY OF MILWAUKEE
1846
DEPT. OF PUBLIC WORKS

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

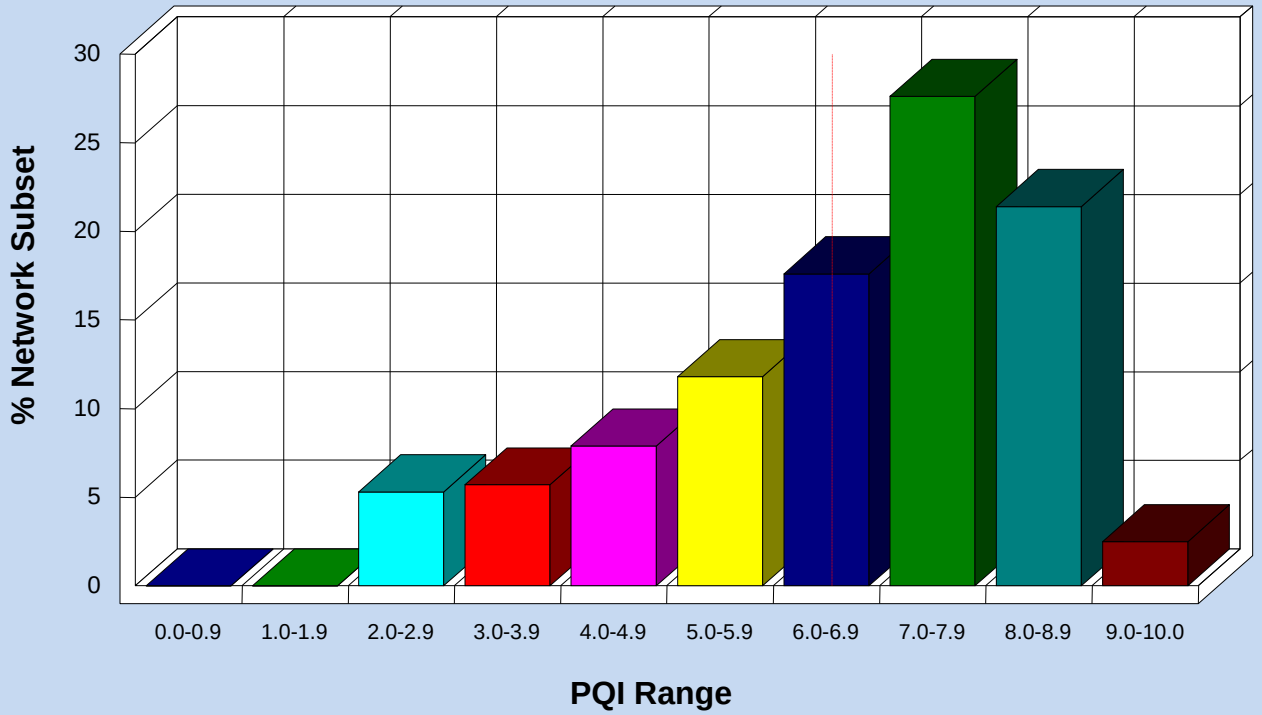
- Patching
- Potholes
- Rippling & Shoving
- Raveling/Streaking
- Flushing & Bleeding
- Distortion
- Excessive Crown
- Progressive alligator cracking
- Longitudinal cracking
- Wheel Track Rutting
- Scaling
- Raveling & Weathering
- Polishing
- Distortion/Frost Heave
- Coarse Aggregate Loss
- Joint Sealant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

Major & Minor Arterials Pavement Type

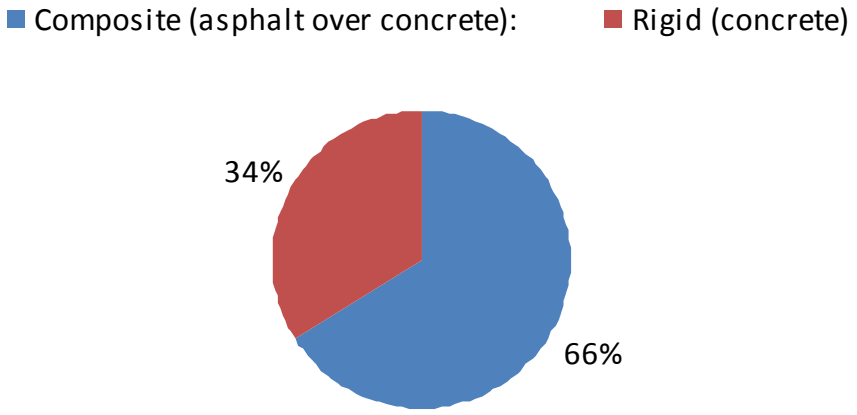
Principal Arterials:

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
TOTAL	**118**	**100%**					**$ 5,986,500**

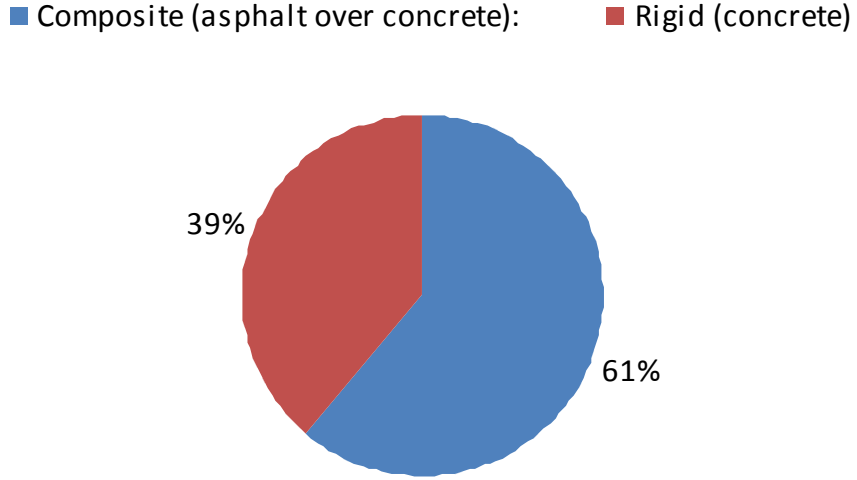
Minor Arterials:

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
TOTAL	**277**	**100%**					**$ 11,406,667**
GRAND TOTAL MAJOR STREETS	**395**			**12.2**			**$ 17,393,167**

Principal arterials - existing pavements



Minor arterials - existing pavements



2009 Service Life Estimate

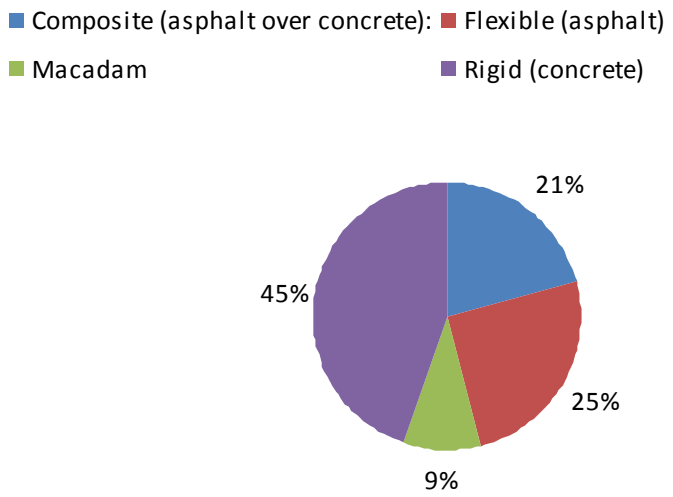
Existing pavements of local streets:

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
TOTAL	**960**	100%		**15.85**			**$ 12,810,859**

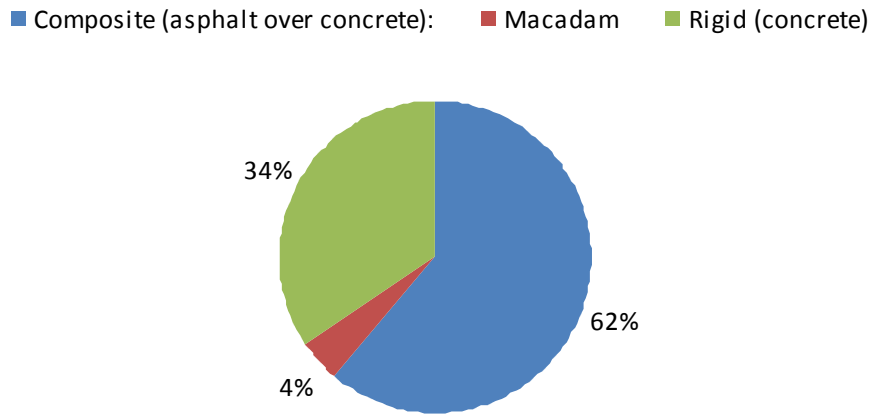
Existing pavements of collector streets:

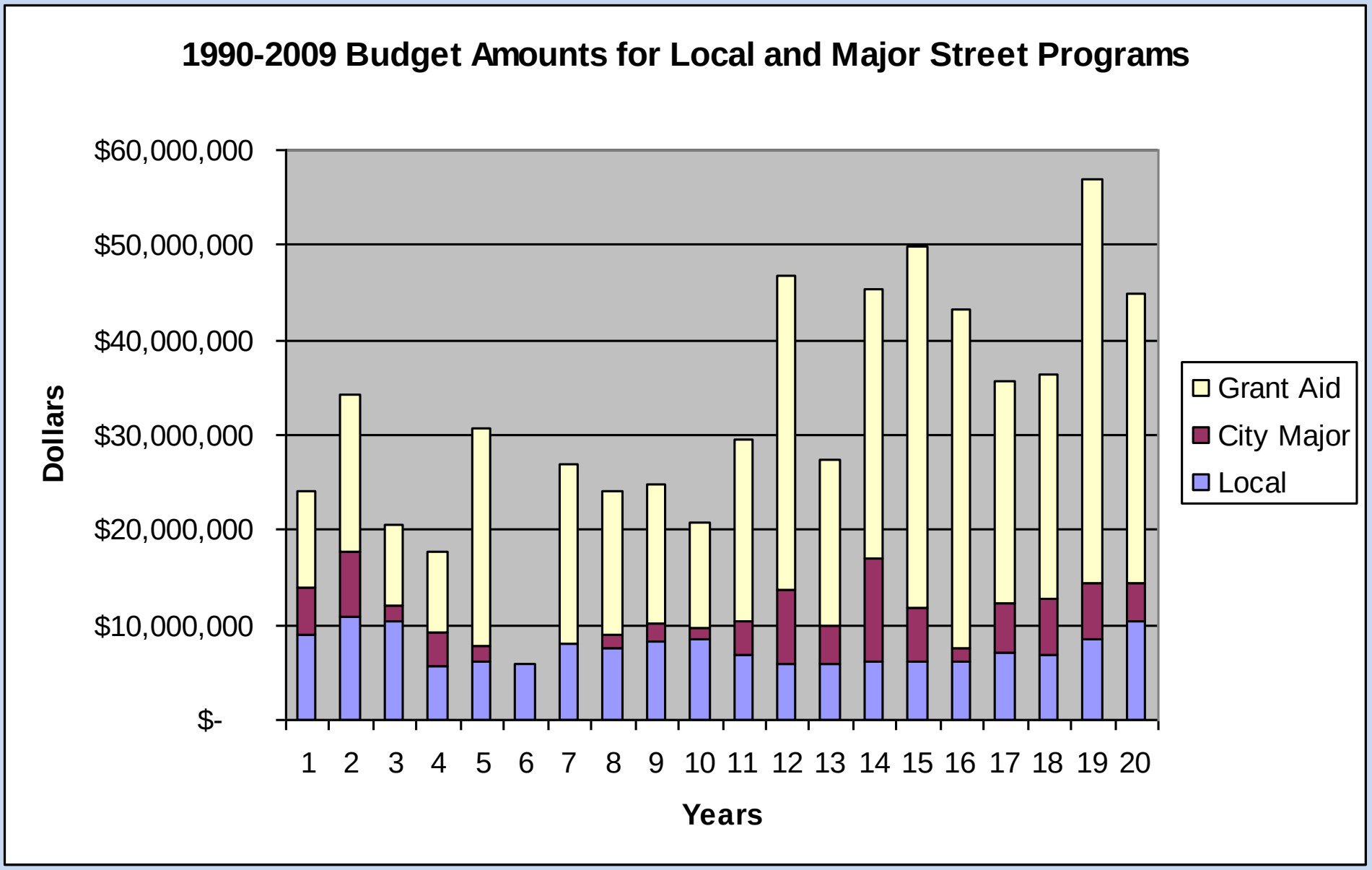
Type:	Miles	% of total	Estimated life (years)	Replacement rate (miles/yr)	Replacement pavement	Cost per mile	Amount needed per year
Composite (asphalt over concrete):	27	30%	45	0.6	concrete (50%)	$ 1,450,000	$ 870,000
Composite (asphalt over concrete):	28	31%	45	0.6	asphalt (50%)	$ 725,000	$ 451,111
Macadam	4	4%	100	0.04	asphalt	$ 750,000	$ 30,000
Rigid (concrete)	31	34%	70	0.44	asphalt	$ 700,000	$ 310,000
TOTAL	**90**	100%		**1.71**			**$ 1,661,111**
GRAND TOTAL	**1050**			**17.56**			**$ 14,471,970**

Local Streets - existing pavements



Collector Streets-existing pavements




1990-2009 Budget Amounts for Local and Major Street Programs
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$-
Dollars
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Years
Grant Aid
City Major
Local

Traffic Control Project
Traffic Signals & Signs

W. North Ave and 3rd Street

Traffic Signals

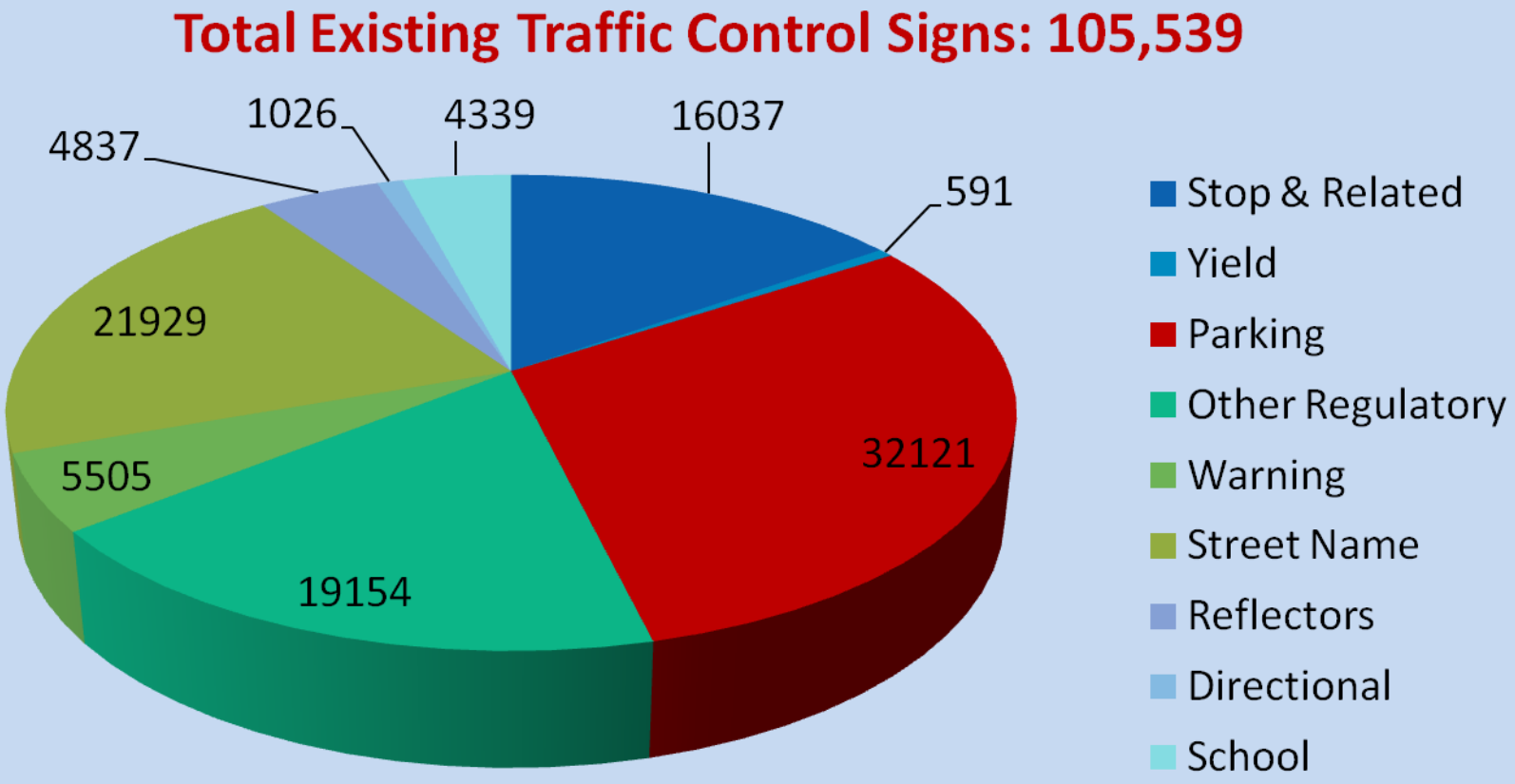
Traffic Signal Facilities

- 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

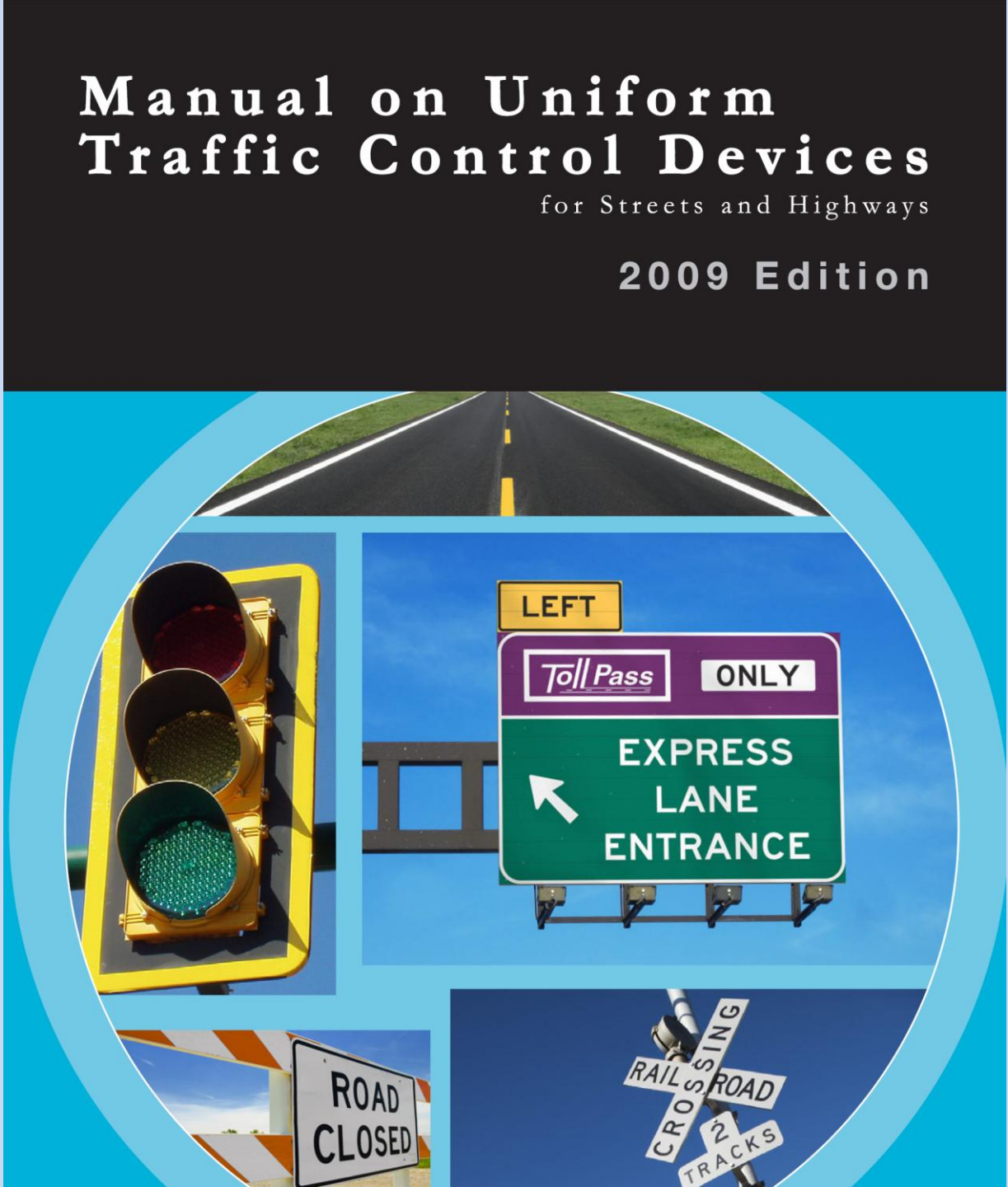
(As of January 1, 2010)



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)

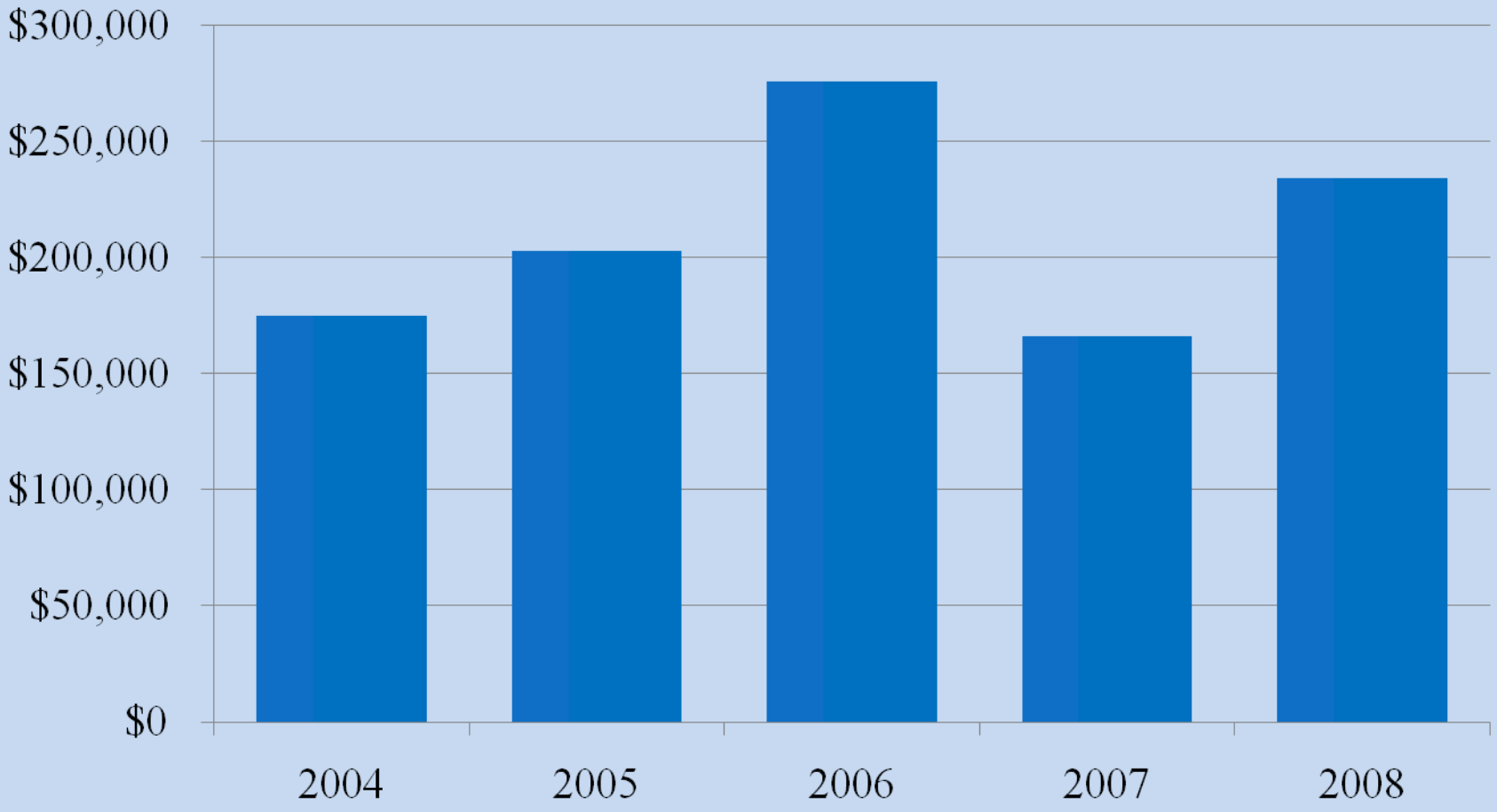
Source: FHWA



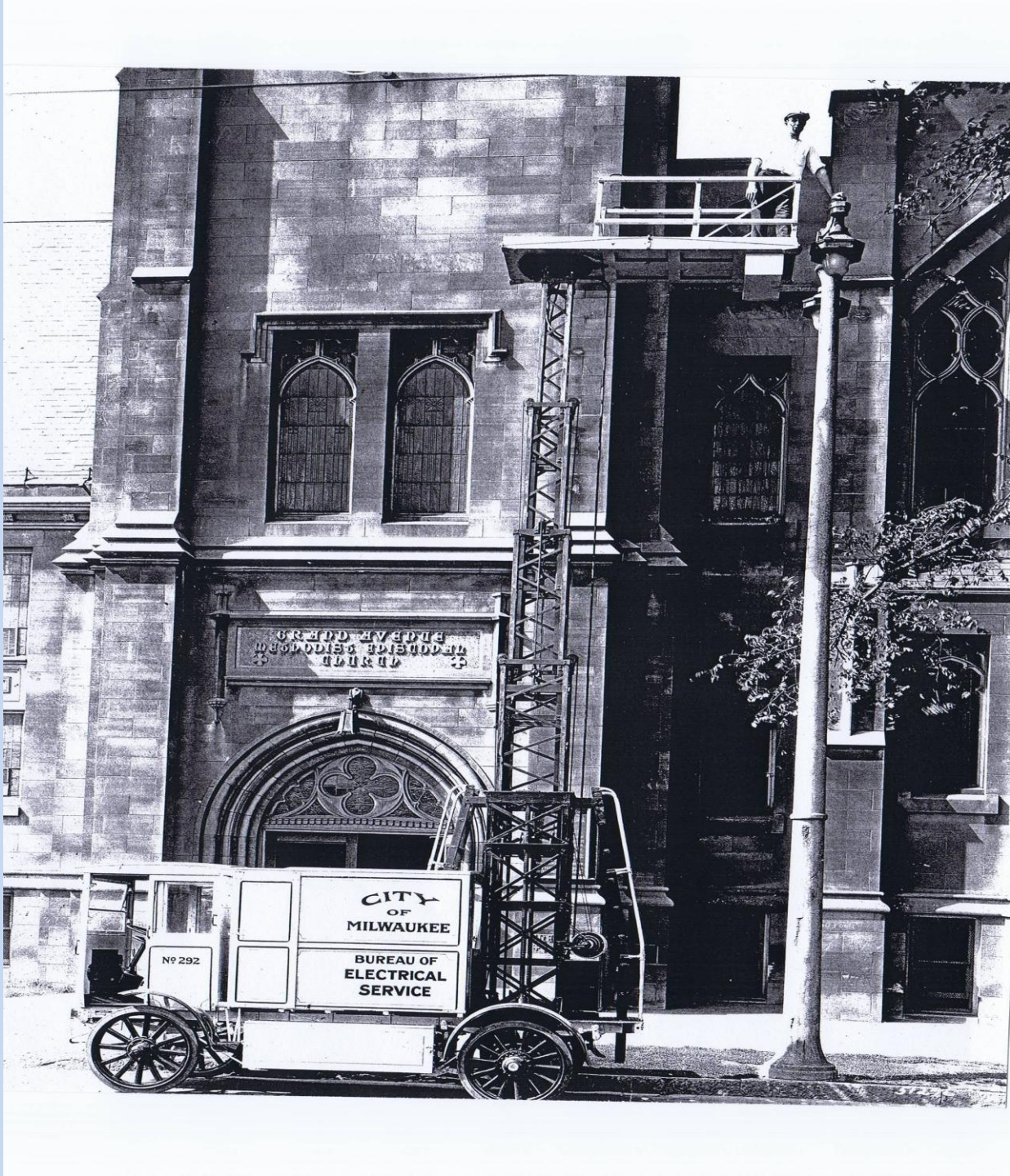
Changes in MUTCD Standards

- Sign Standards
  - New Retroreflectivity Standards require replacement of over 40% of existing signs by 2015Equipment 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)



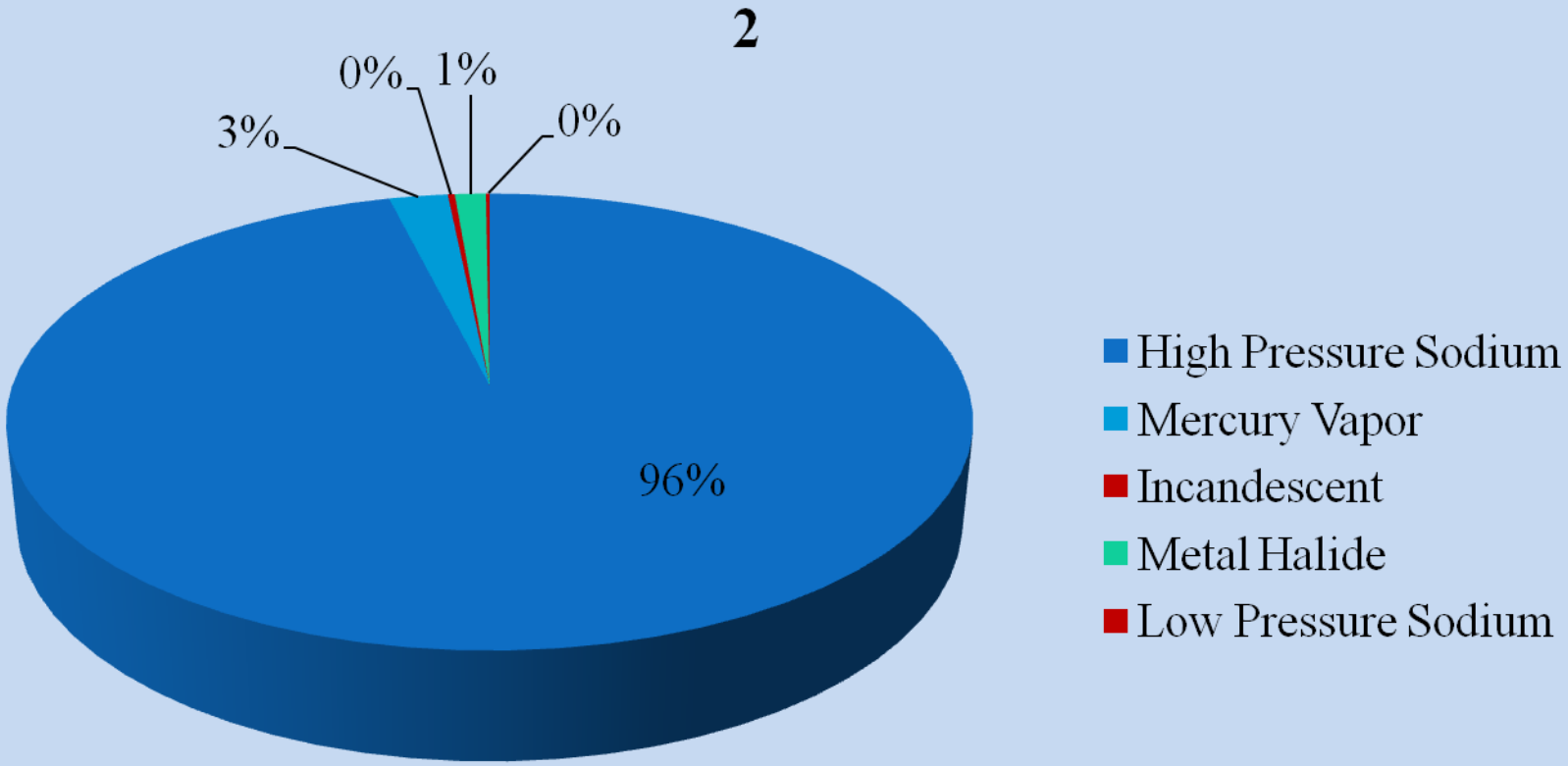
Street Lighting Program



Street Lighting Facilities

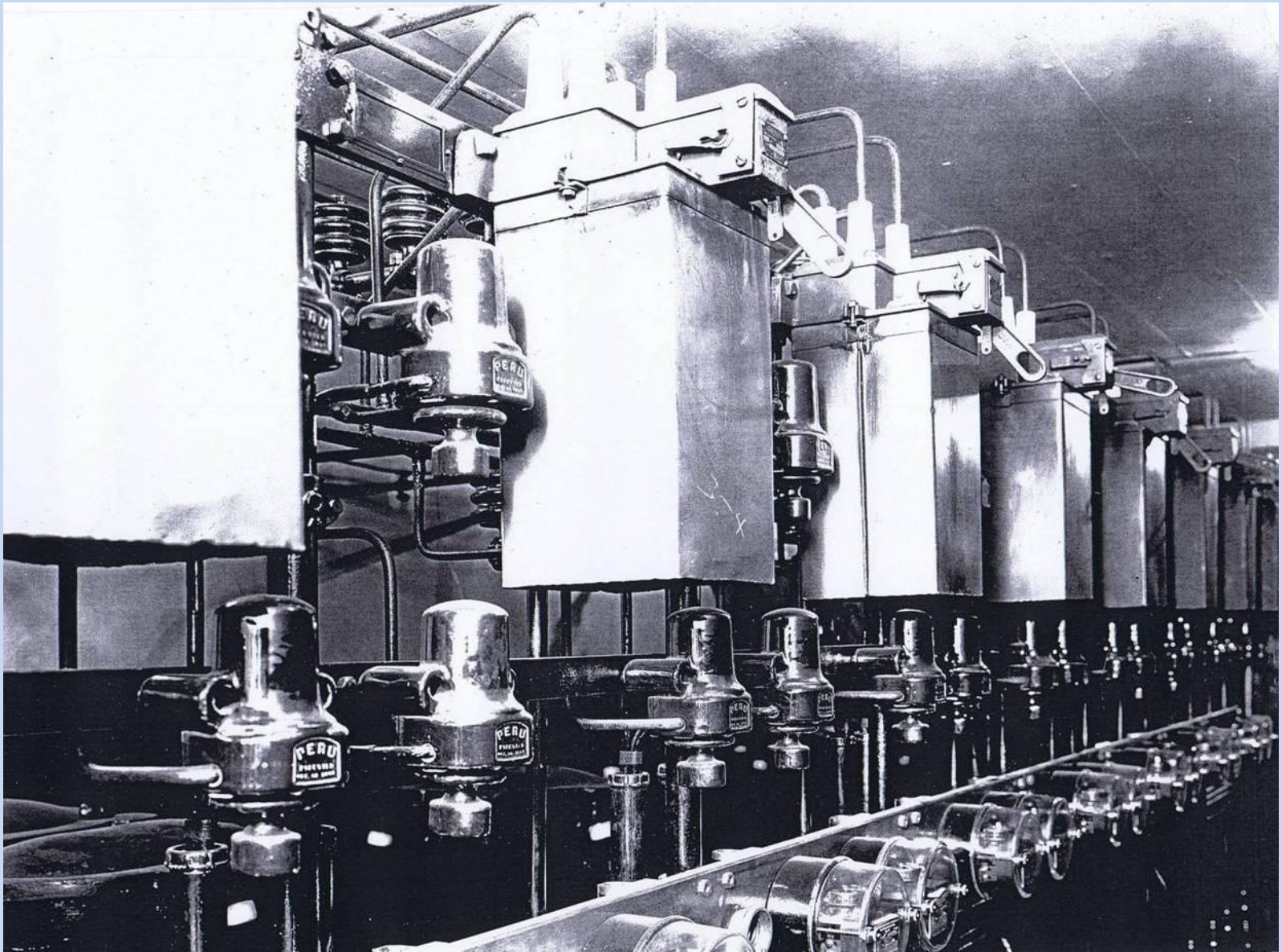
- 1,300 Miles of Lighted Streets
- 248 Substations and Enclosures
- 67,229 Street Lights
  - 28,290 Series Lamps
  - 38,939 Multiple Lamps
- 8,931 Alley Light
- 569 Specialty Lights

Street & Alley Light Lamp Types



Paving Related Improvements

Street Lighting Substations



Master Control System Replacement

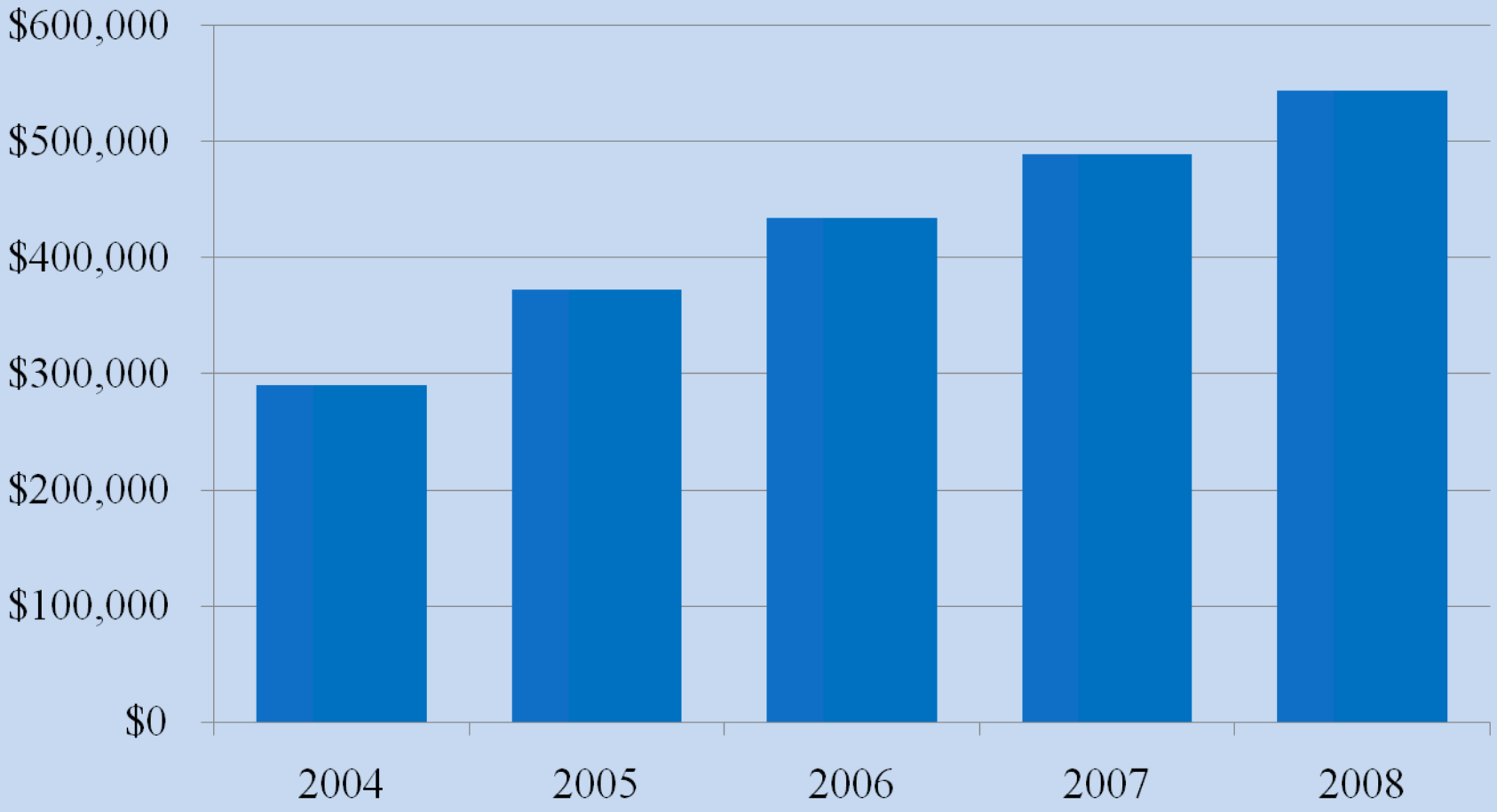
- Advanced Computer Based Master Control System currently being deployed
  - Operational at 33 stations; 46 stations currently under design
  - Controls street light on and off times
  - Fail safe system at each enclosure to turn lights on and off if communication system fails
  - Monitor operation of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

Index Rating _____
Program No. _____
Budget $ _____
Initials _____
Exam Date _____
Review Date _____

Block # _____ In: _____
FROM: _____
TO: _____

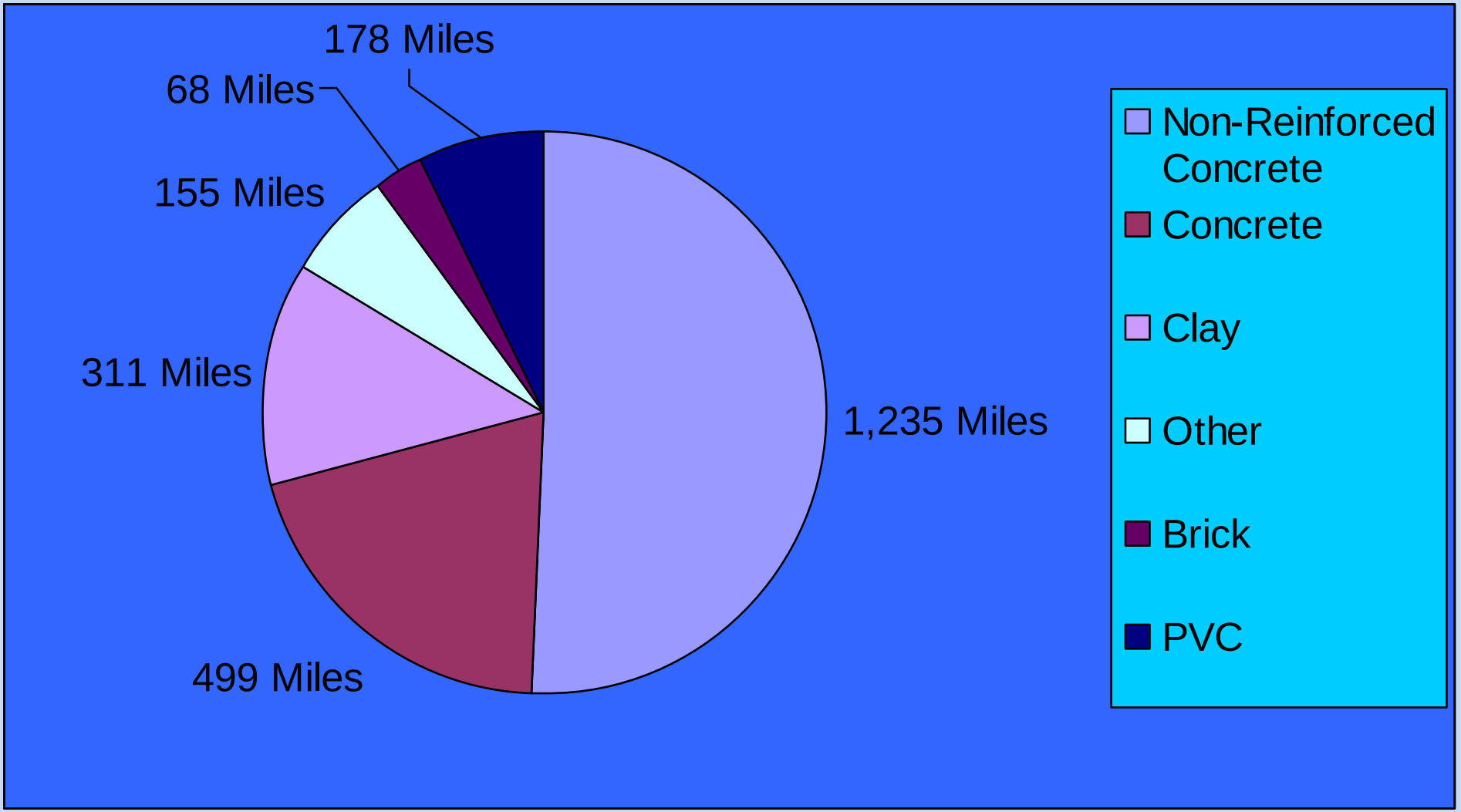
Exam Number _____ Sewer Size _____
Tape Number _____ Pipe Material _____
Plat Page # _____ Sewer Type _____
Entered Into Database Y N Total Exam Length _____

			Upstream Manhole		
			Downstream Manhole		
			Run Length		
1 Structural Condition					
a. Losing shape or collapsed		4 3 2 1 x 10			
b. Crack - 1/8" longitudinal (or larger)		4 3 2 1 x 8			
c. Pieces Missing		4 3 2 1 x 7			
d. Cracks, checkerboard		4 3 2 1 x 5			
e. Cracks, 1/8" circ. Or 1/16" longitudinal		4 3 2 1 x 3			
f. Pipe Old & Porous		4 3 2 1 x 6			
g. Heavy Mineral Deposits (Sanitary Only)		4 3 2 1 x 6			
2 Age of Sewer					
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			
3 Hydraulics					
Combined Surcharge > 1.5'/100'		15			
Sanitary Surcharge > 0.5'/100'		15			
4 Inflow and Infiltration					
5 Backwater (Use only one)					
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			
6 Cleaning/Maintenance Problem Per Field Operations Letter		10			
7 Project on Paving Program	☐ Yes ☐ No				
8 Mandatory work per Regulatory Agency	☐ Yes ☐ No				
9 Mandatory Work per Alderman Service Request (ASR)	☐ Yes ☐ No				
		Total Points			
		Index Rating			

Comments or Special Considerations

Revised 10/2/2007

Total lengths of sewer by material type

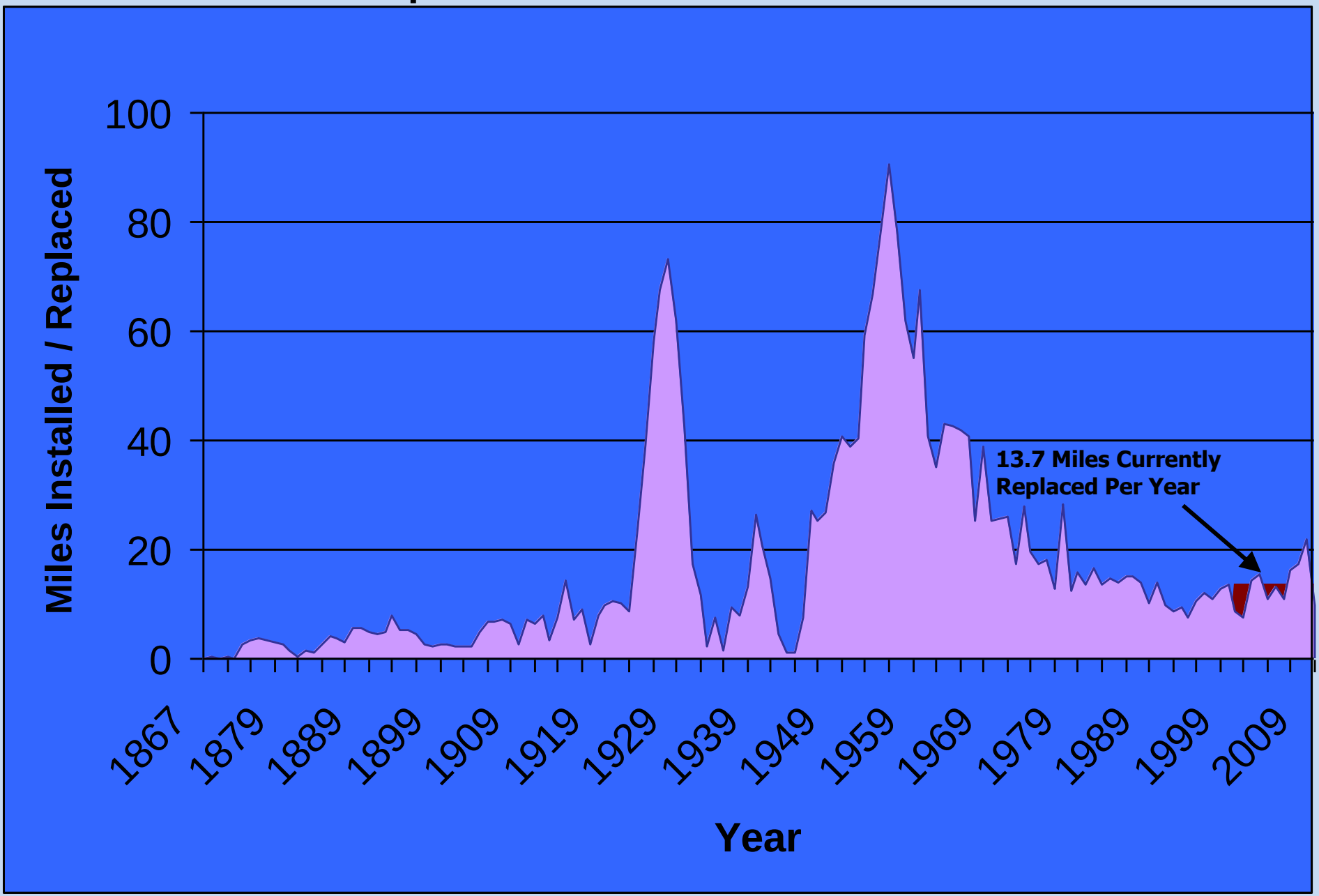


* Non-Reinforced Concrete Pipe has shown to decay at a much faster rate than other materials

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



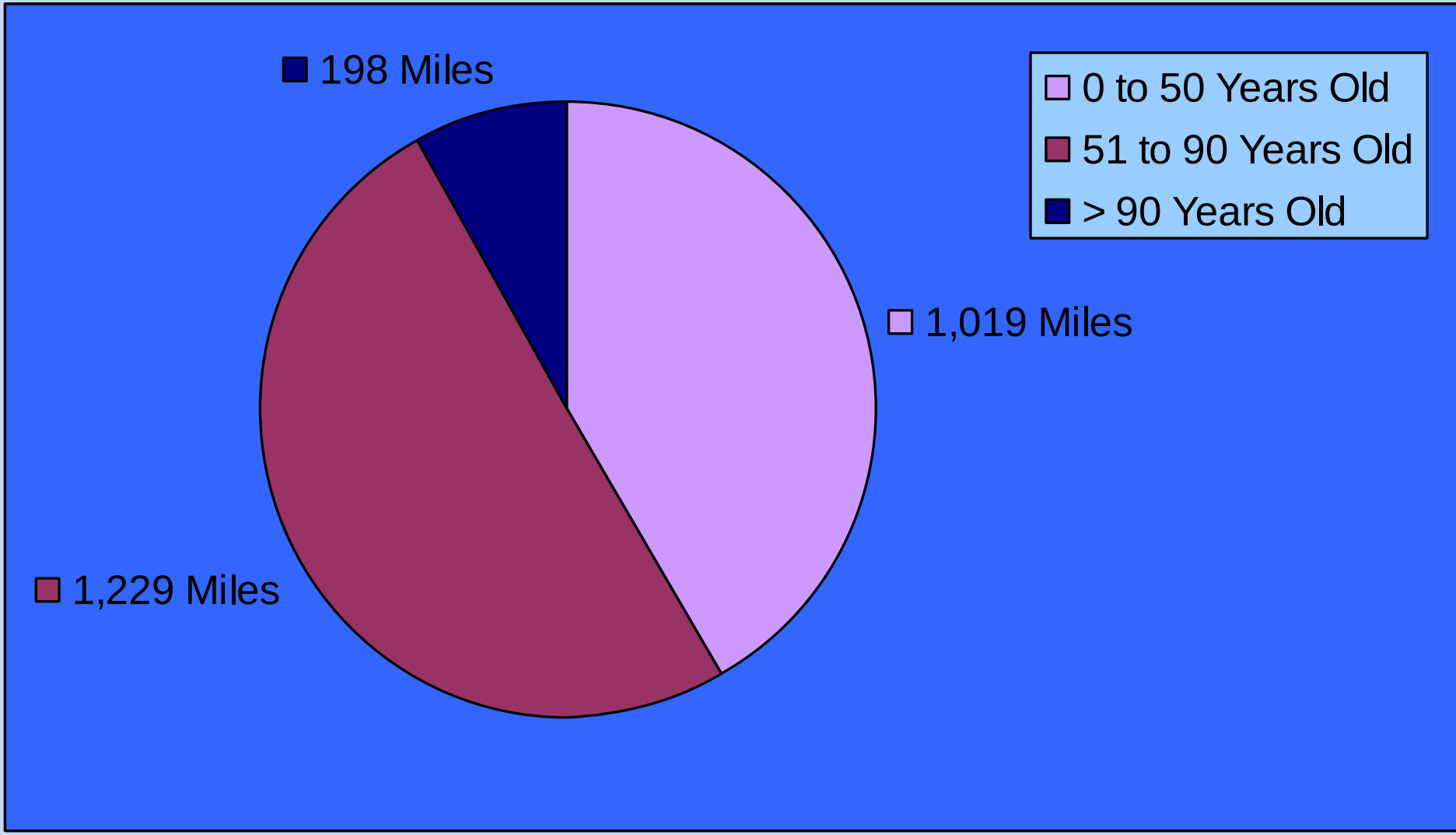
Sewer Replacement Information

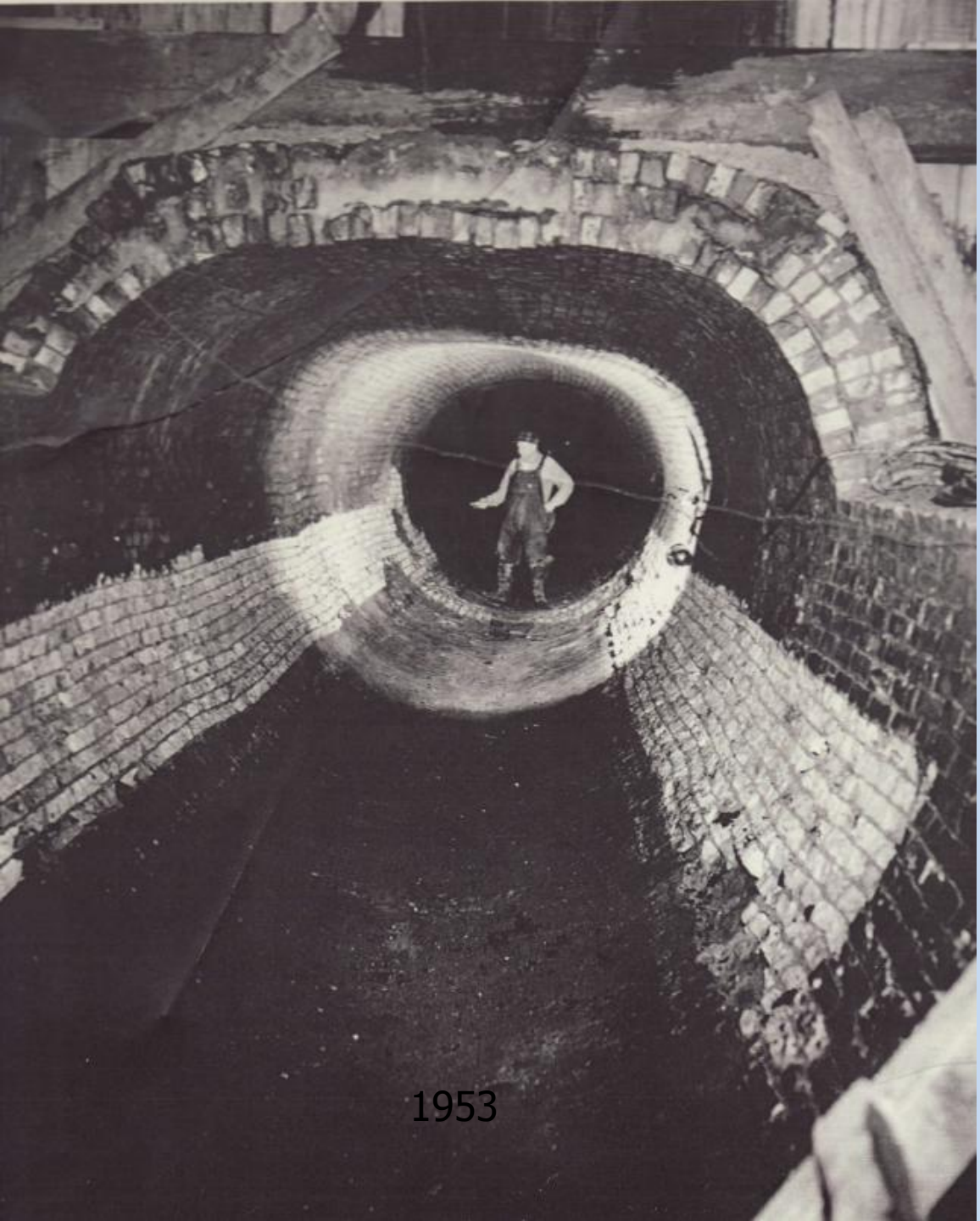
- Currently there are 198 miles of City of Milwaukee sewers that are greater than 90-years old

- 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.

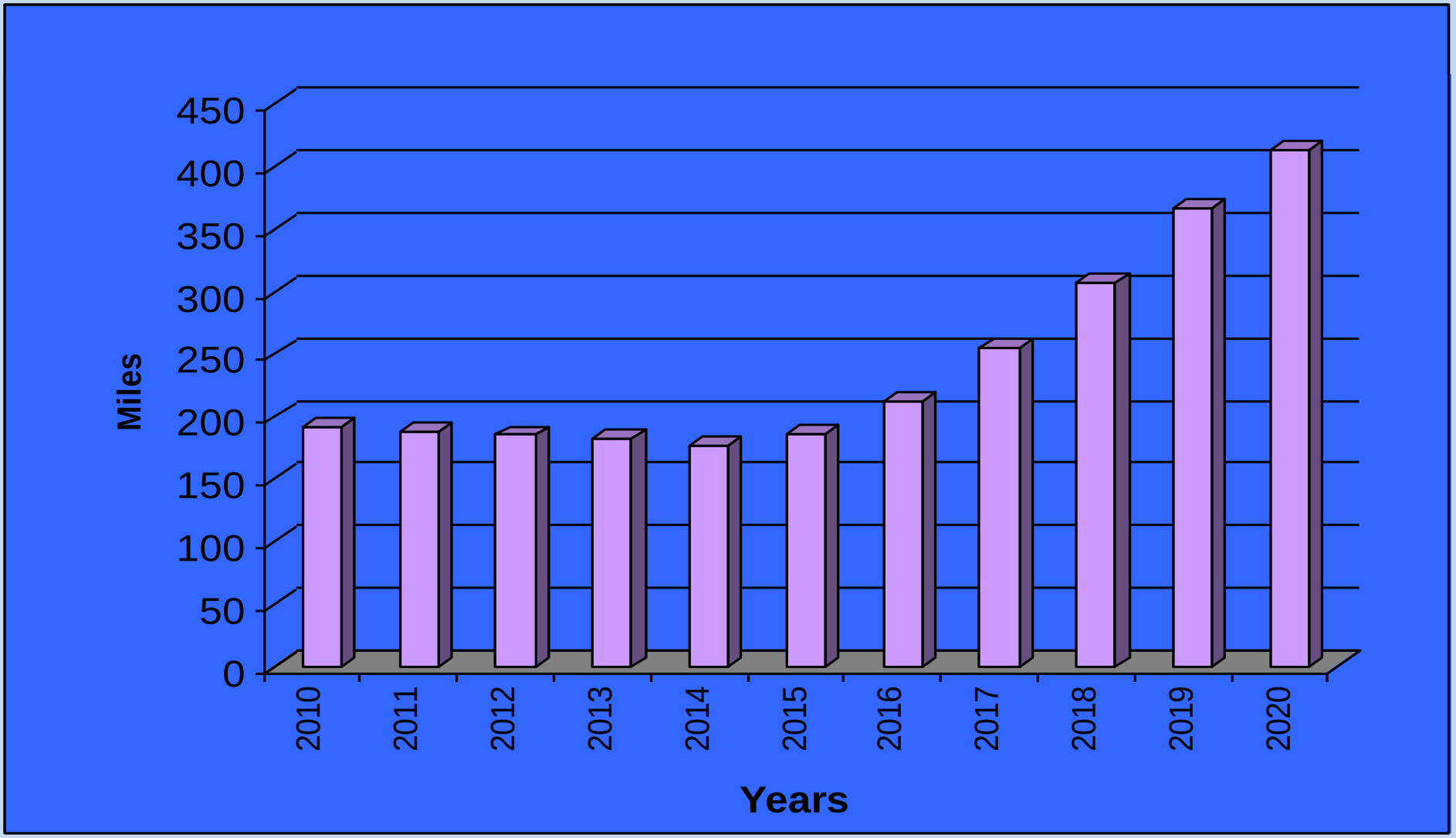
Becher Street Sewer Tunneling

Replacement Costs

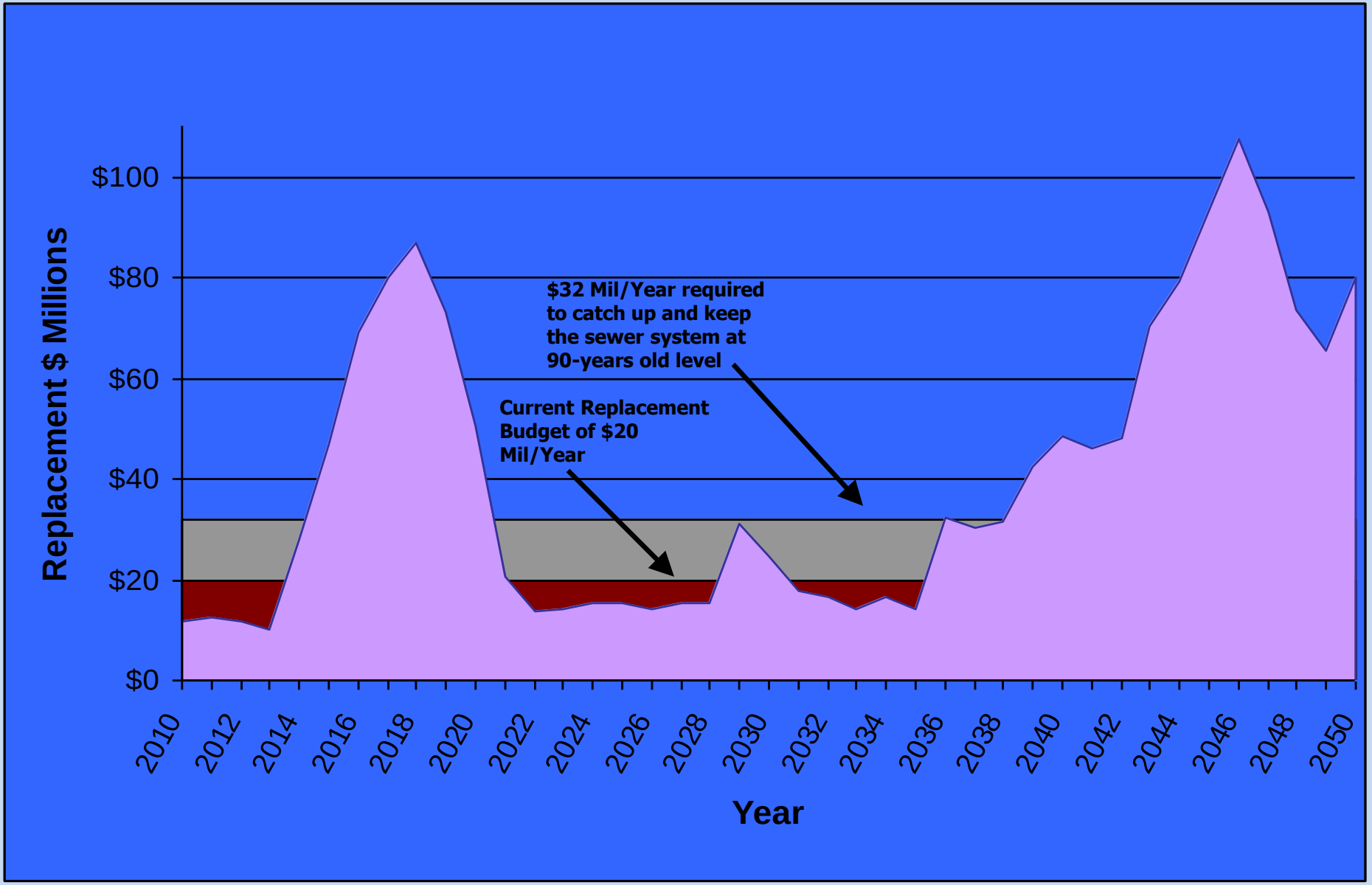
- The average cost of replacement per foot of sewer is estimated to be $225

- 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)



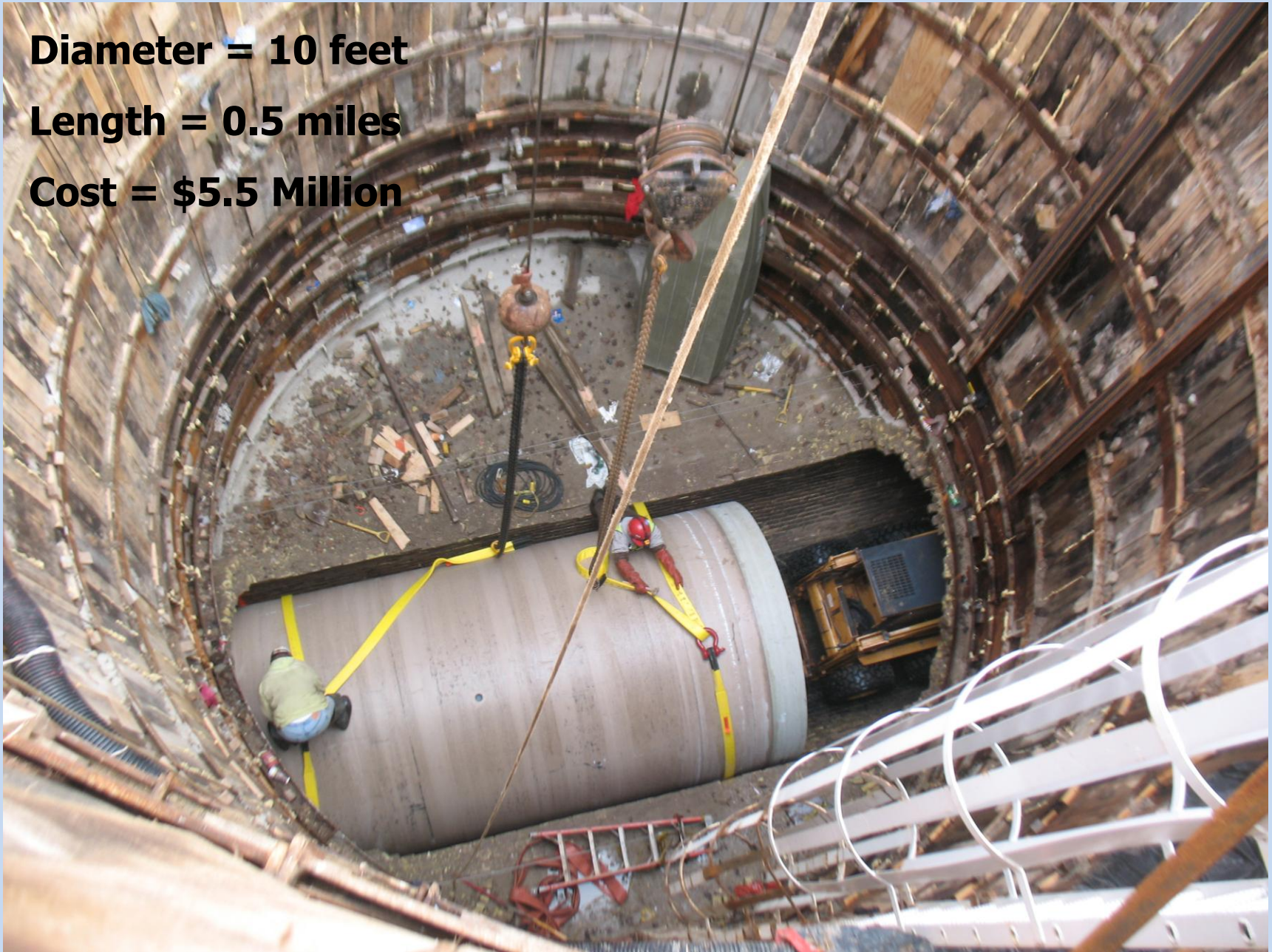
Future Replacement Dollars



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



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. 91st St
and W. Dean Ave


2008-N. 27th 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
Sewer Maintenance Relay Program	**$15,162,000**	**$29,000,000**	**$30,000,000**	**$31,000,000**	**$31,000,000**	**$32,000,000**	**$168,162,000**
I&I Reduction Projects	**$6,350,000**	**$6,370,000**	**$4,890,000**	**$4,900,000**	**$3,000,000**	**$3,000,000**	**$28,510,000**
Pump Facilities	**$500,000**	**$1,000,000**	**$1,000,000**	**$1,000,000**	**$500,000**	**$500,000**	**$4,500,000**
BMPs for TSS reduction (NR 151)	**$1,925,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$0**	**$0**	**$7,925,000**
TOTAL SEWER MAINTENANCE FUND	**$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
Total Facilities	346	9,860,762*	$1,246,154,657	56	

* 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

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

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

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

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

New DPW Field Headquarters
North 35TH Street and West Capital Drive

Improved Efficiencies With Consolidation of 7 Sites

	First Year
Deferred Maintenance Savings	$8,900,000
Operations Savings (Staffing and Energy)	$1,330,000

New 3RD 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

1st and Virginia

Estimated Cost $14,000,000 (2006)

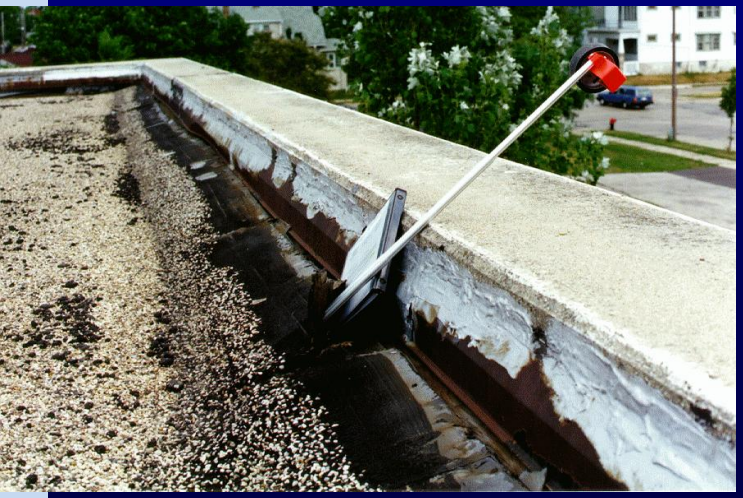
Facilities Development and Management
2010 Capital Programs

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

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

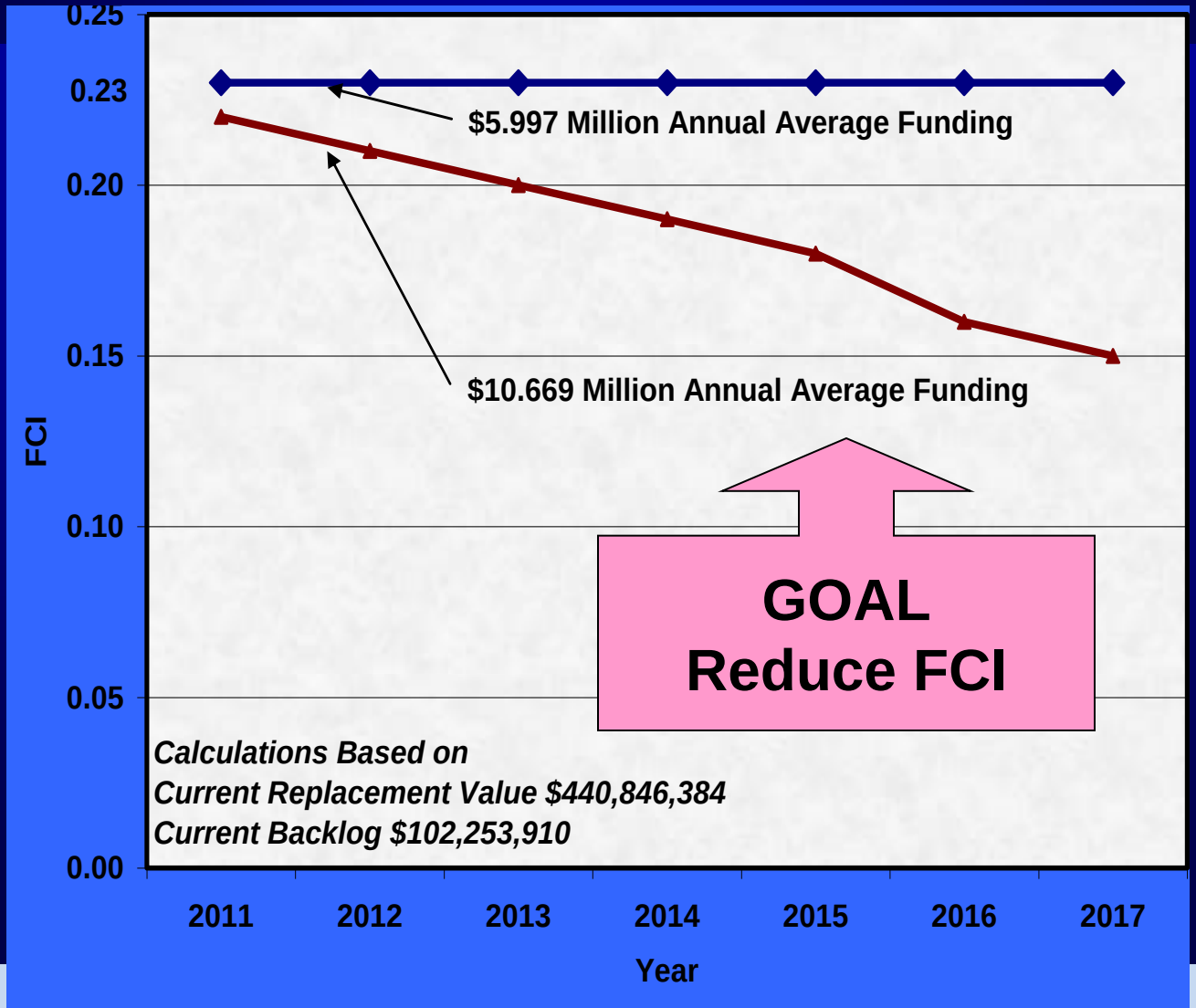
Total Buildings/ Structures	Usage Code	Division/Section	Range of Year Constructed	Maintenance Backlog	Current Replacement Value	FCI	Average Weighted Age
9	0000	General City Buildings	1893-1965	$64,554,718	$194,430,432	0.33	55
5	5010	Department of Public Works	1921-2006	$853,844	$16,756,002	0.05	8
12	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	

(2005 Evaluation)

FCI = • **Backlog of Maintenance and Repair** / • **Current Replacement Value**

FCI Range	*Condition Rating*
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 37th & 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 37th & Lincoln
  - If not approved, the 35th 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: **<u>11.5 Years</u>**

- 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_2 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

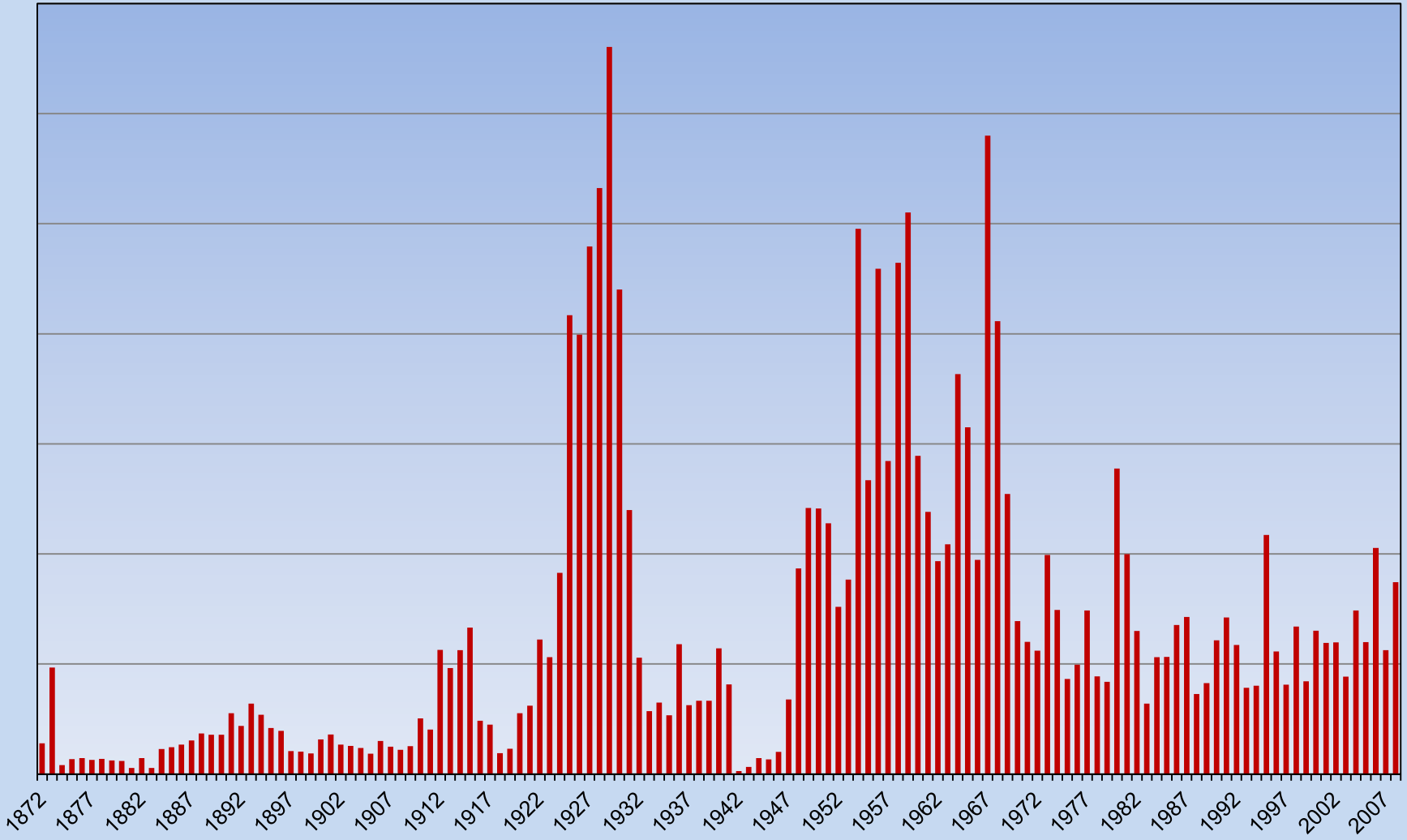
Capital Budget
(millions of dollars, est.)

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

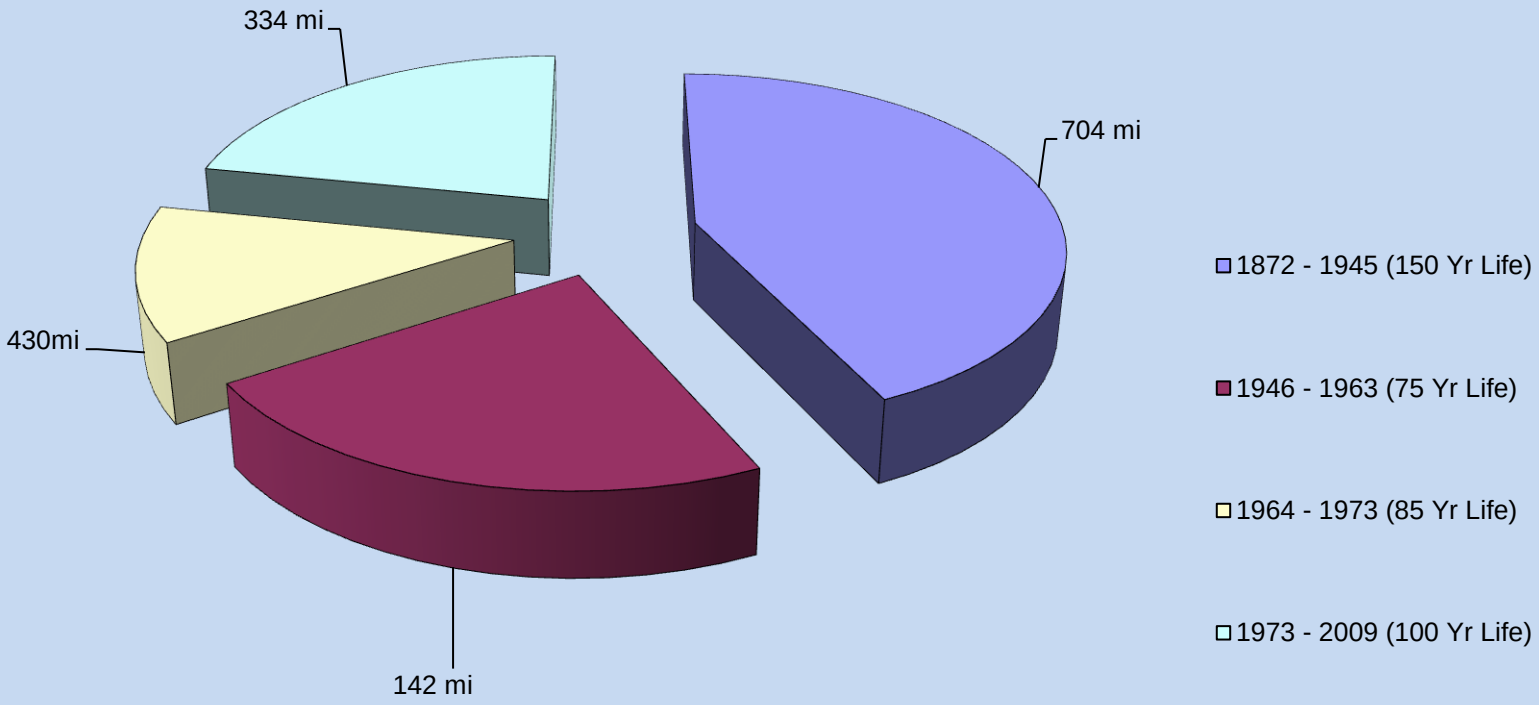
Main Replacement Program

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

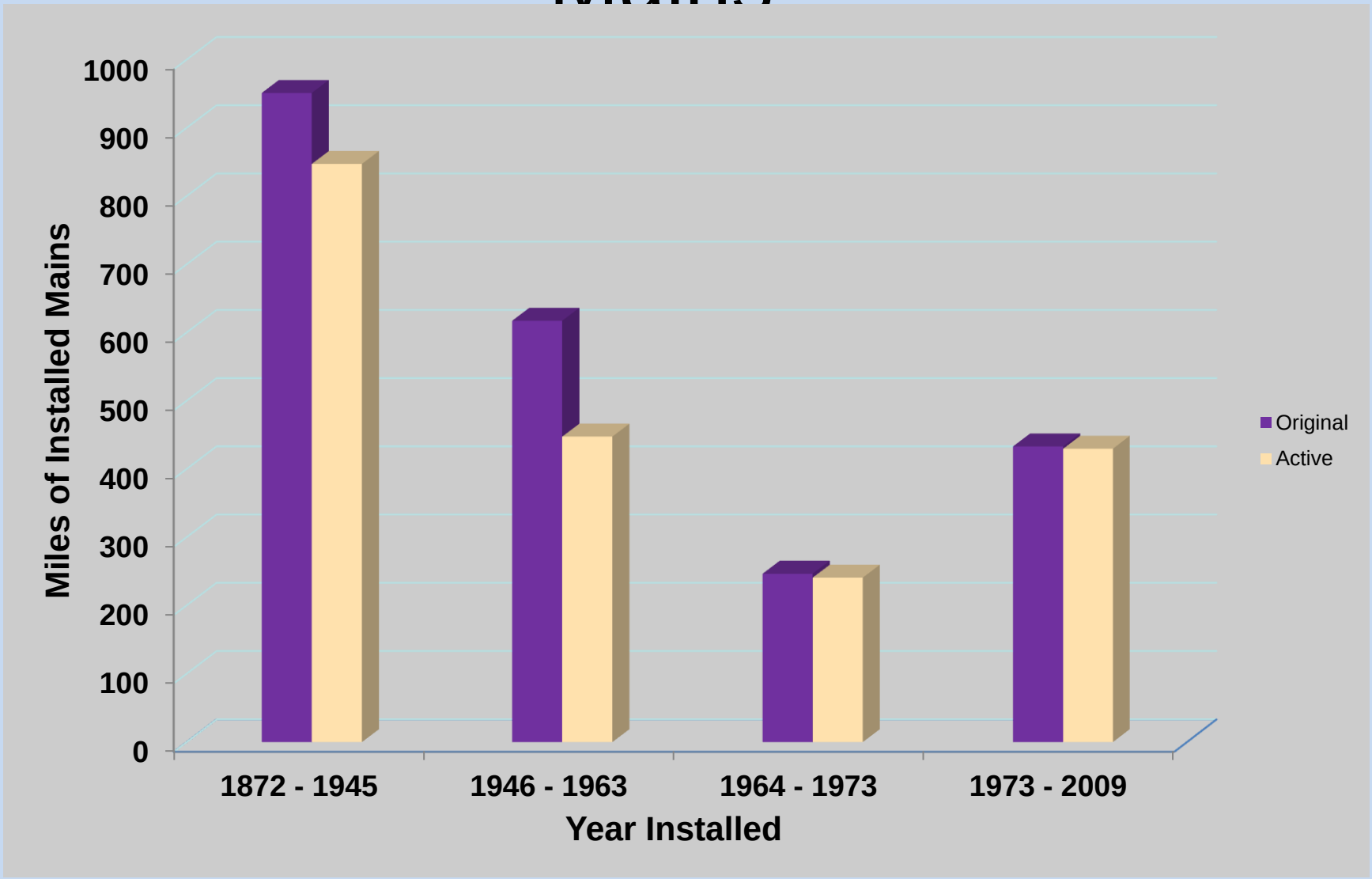
Water Mains Installed by Year



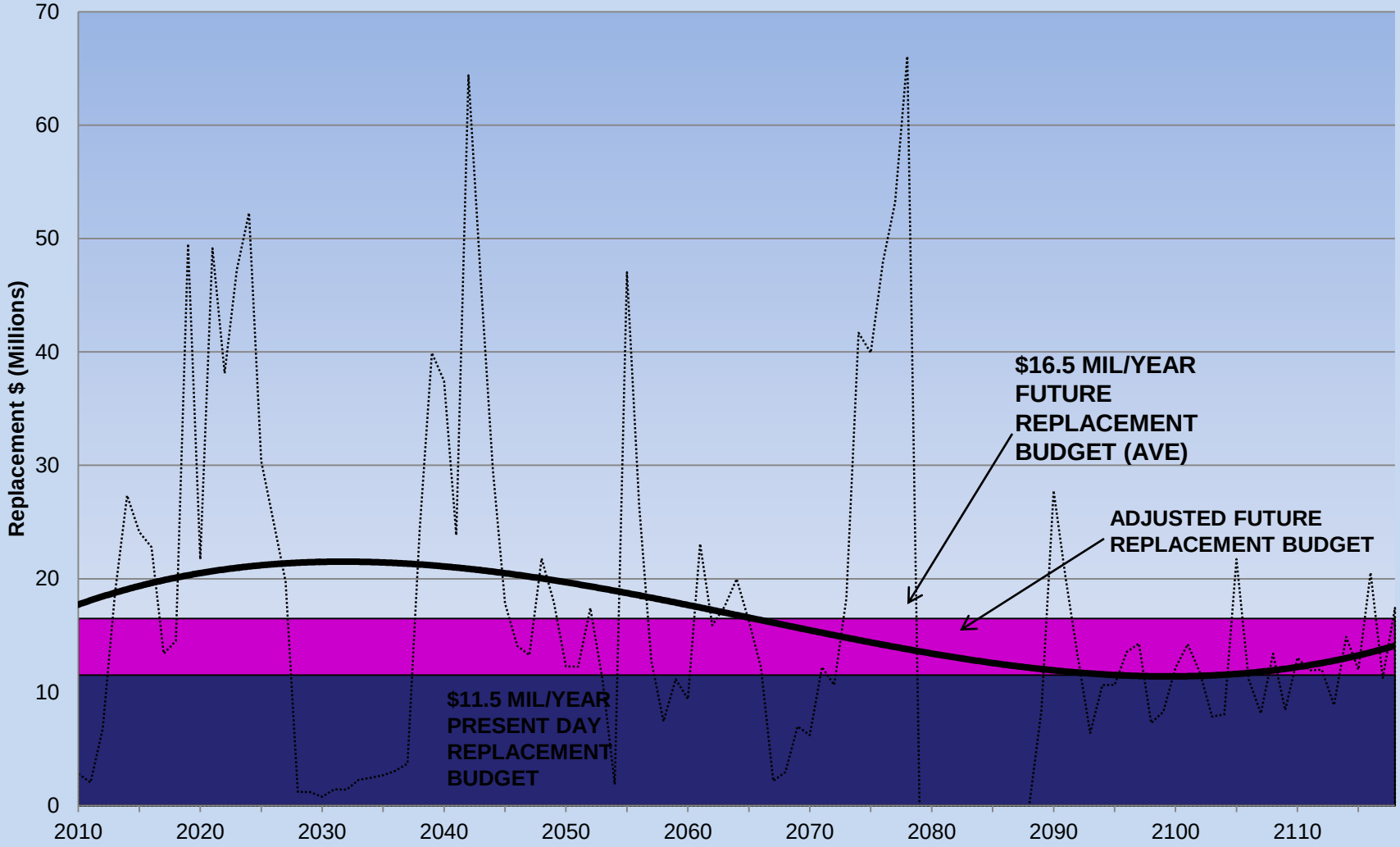
Life Expectancy Estimates



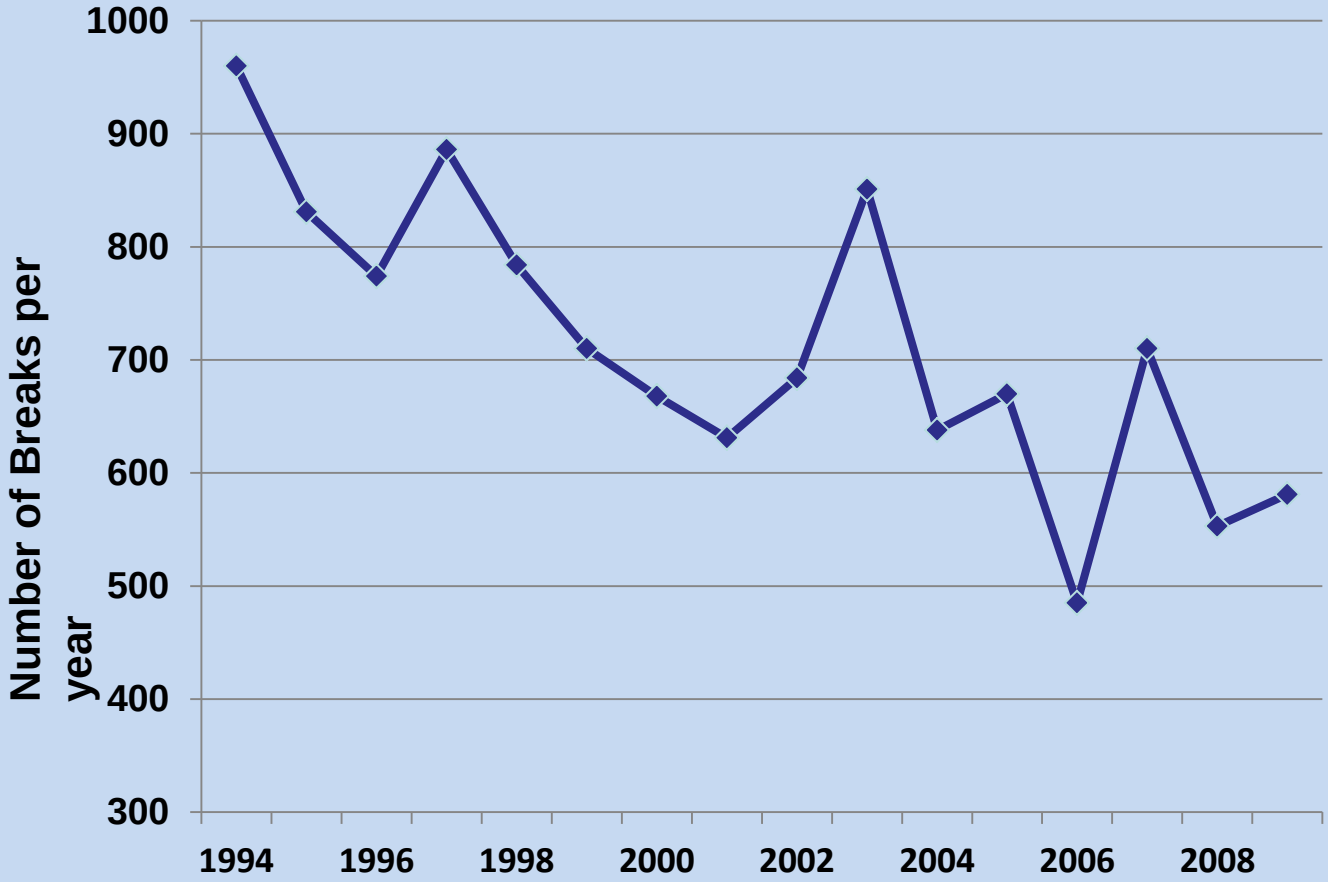
Replacements Focus on Failing Mains



Future Replacement Estimates



Water Main Breaks



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