



# Infrastructure Condition Assessment for Capital Improvements Committee

September 4, 2014

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**Water Works**

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# Today's Presentation

- Projects completed and in progress
- Condition ratings for plants, pumping and storage
- Impacts of harsh winter on distribution system

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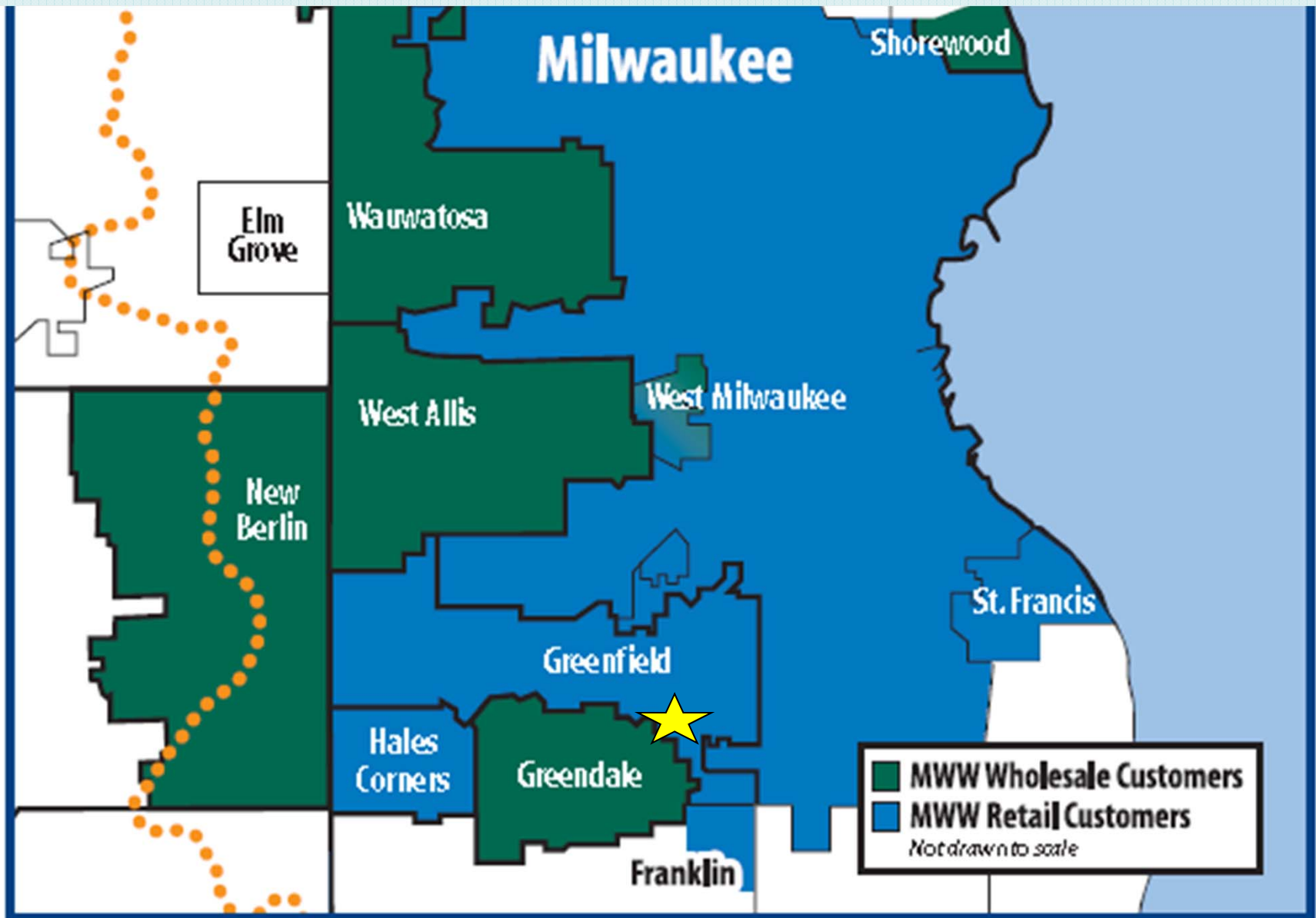
# Texas Avenue Emergency Exterior Repair





# Texas Avenue Pumping Station Emergency Interior Lining



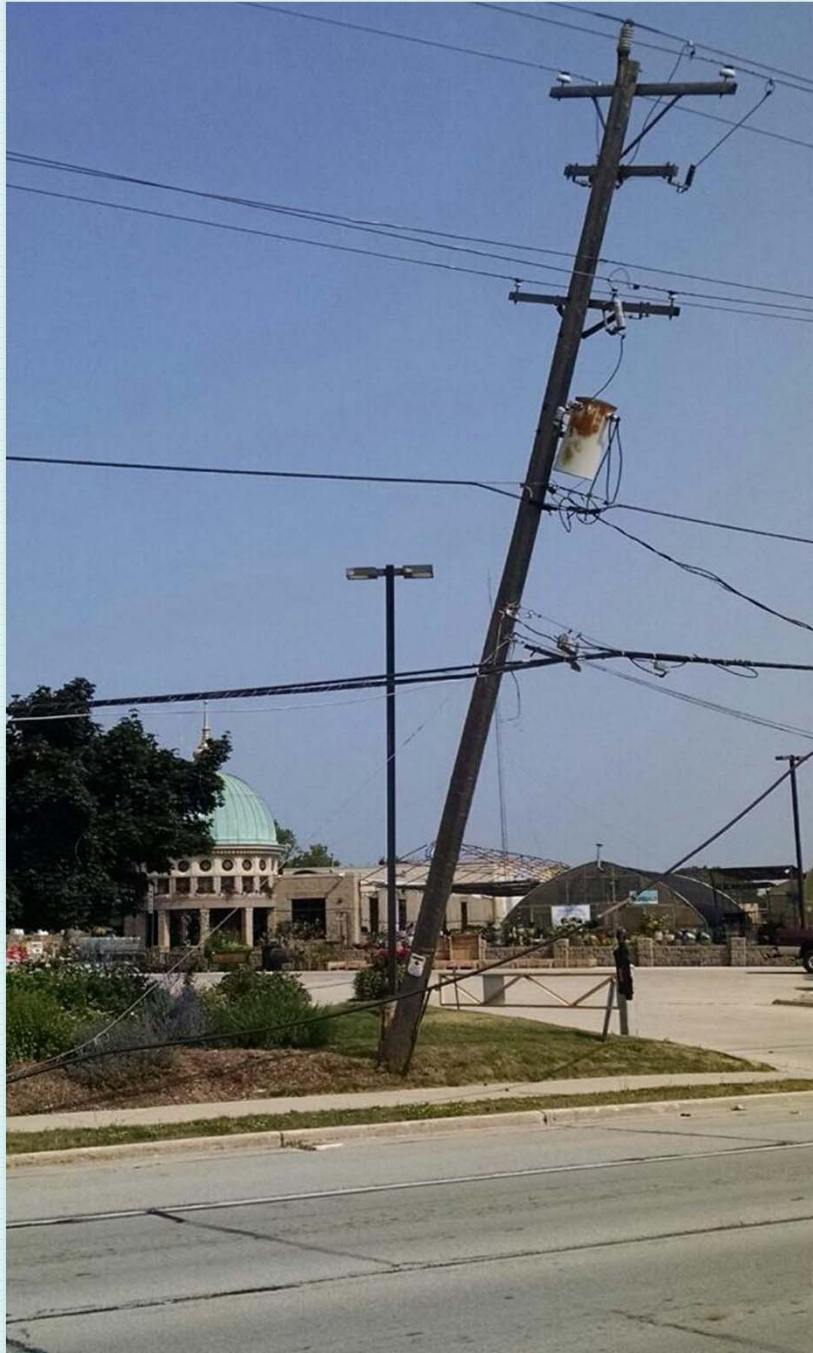




# Backup Power Generation Grange Pumping Station







# Generators Activated

July 31, 2014

# Completed Projects, cont.

- Lincoln Station fill valve
- Many smaller projects to prepare for Riverside Tunnel Inspection
- Ozone generator dielectric replacements
  - Linnwood third of four complete
  - Howard third of three completion fall 2014



# Approach

- Water Treatment Plants
  - Individual ratings of 5 aspects of 42 features at both plants = 210 attributes rated
- Pumping and Storage Facilities
  - Individual ratings of 117 aspects in 15 facilities
- Distribution System
  - Focus on harsh winter water main breaks

# Example of Rating System: Linnwood

Feature	Building in which feature is located	Physical structure of feature	Pipes and valves leading to feature	Electrical	SCADA
Crib	n/a	5	4	n/a	n/a
Intake piping	n/a	3	4	n/a	n/a
Raw water pumping	3	2	2	4	5
Zebra mussel control system	4	3	3	4	3

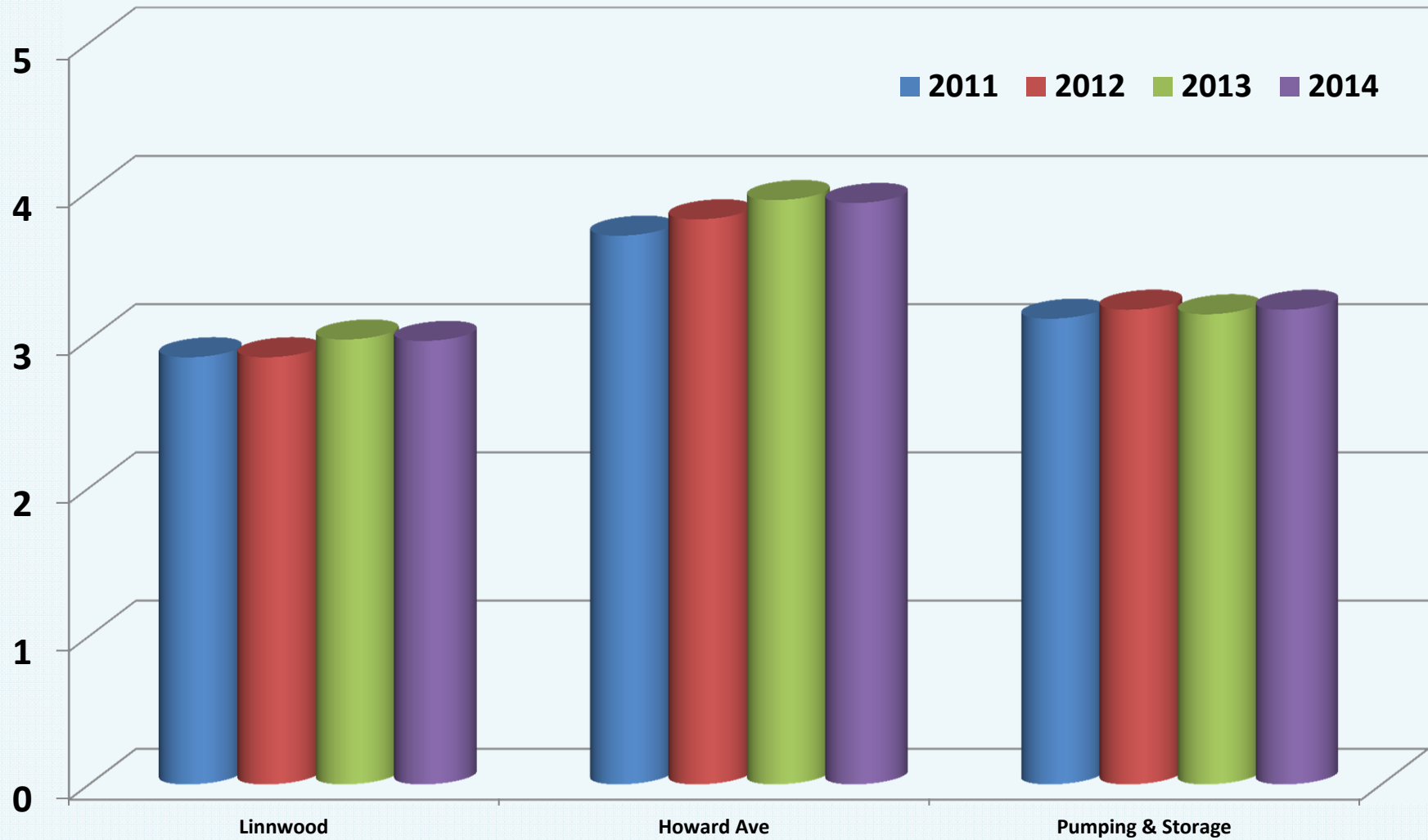


# Example of Rating System: Grange Pumping Station

	2012	2013	2014
Structure	4	4	4.5
Electrical	3	3	5
Pipes and valves	3	3	3
Pump 1	2	3	3
Pump 2	3	3	3
Pump 3	5	5	5
Pump 4	3	3	3
Pump 5	3	3	3
Average	3.25	3.38	3.69

# Overall Ratings

Scale 0 (out of service) to 5 (best condition)





# Projects In Progress

- Linnwood
  - Ozone bypass valves, replace ozone dielectrics
  - Backup power generation (construction)
  - Steel pipe assessments/remediation
  - Motor control centers
  - Inspection of tunnel to Riverside Pumping Station
- Howard Ave
  - Pump soft starts and Pump 2 replacement

# Linnwood Ozone Bypass Valves





# Distribution System

- In Milwaukee, Greenfield, Hales Corners and St. Francis
  - 1,960 miles of water main
  - 19,870 hydrants
  - 49,846 valves
  - 168,550 service connections

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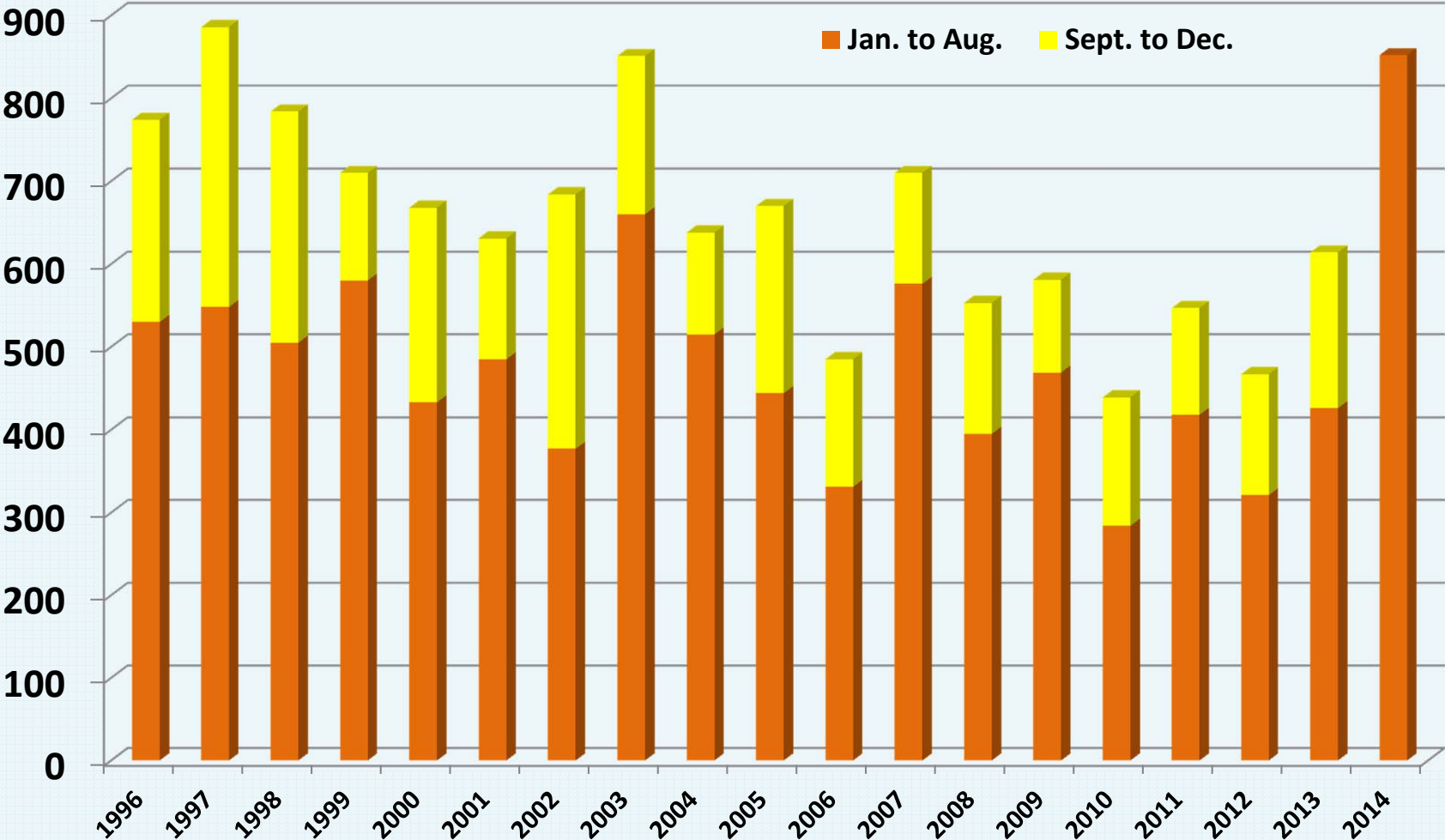
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# Harsh Winter

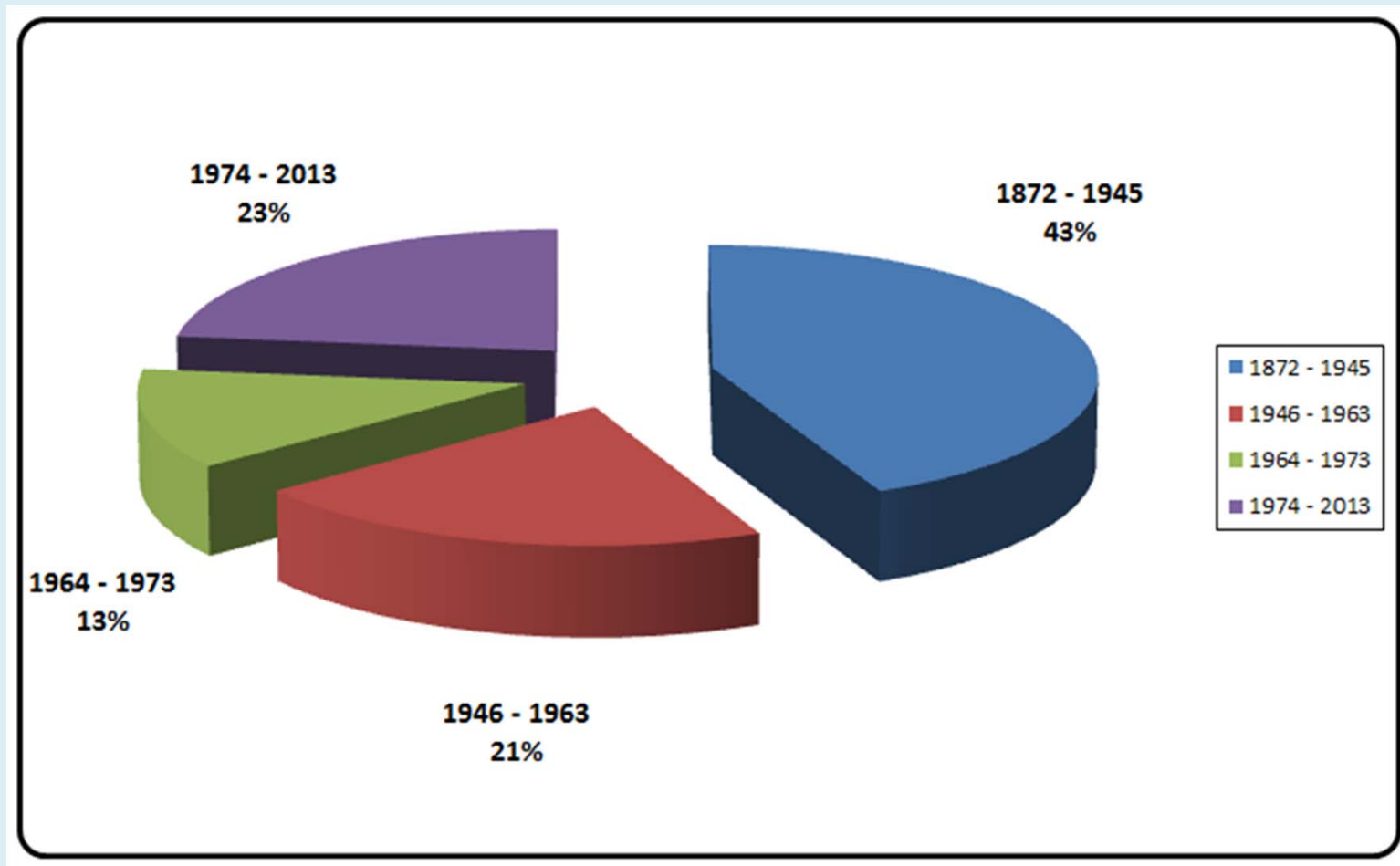
	<b>Dec. 1, 2012 to March 31, 2013</b>	<b>Dec. 1, 2013 to March 31, 2014</b>
Investigations	3,171	4,091
Main Breaks	345	661
Frozen Services	0	154
Burst Meters	126	509
Excavations	801	1,093



# Water Main Breaks

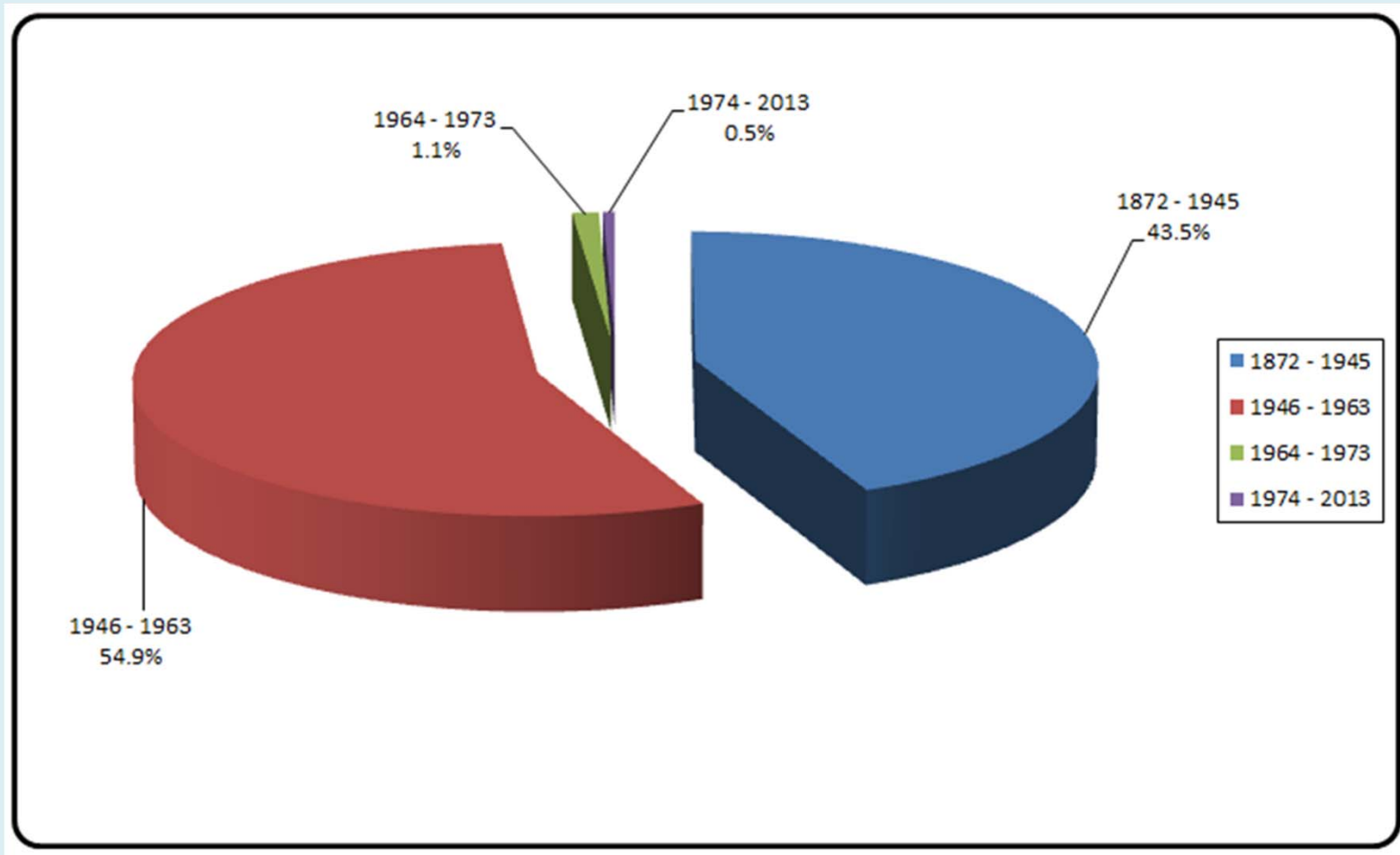


# Miles of Mains – By Year Constructed



Data from Milwaukee Water Works Annual Reports

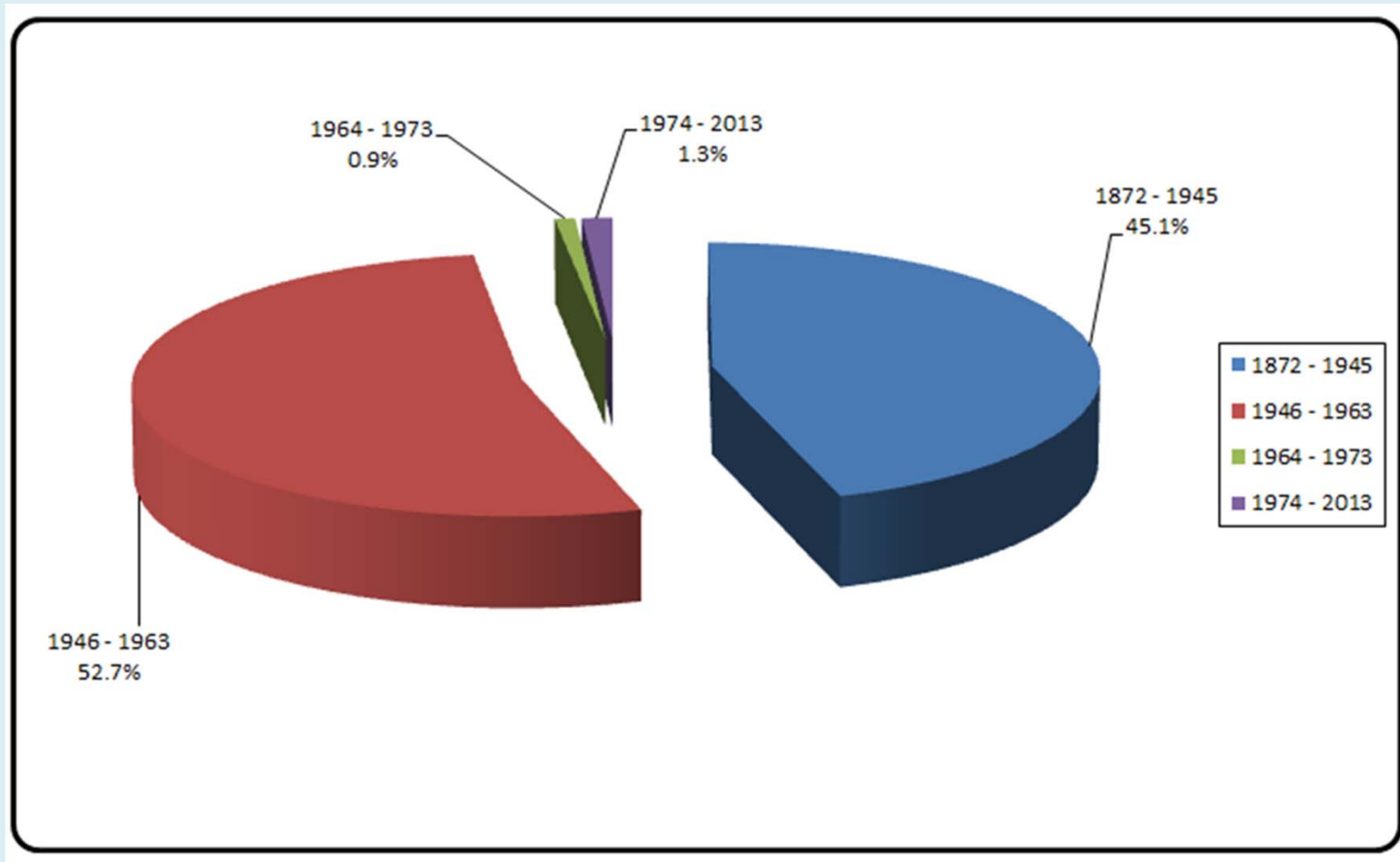
# Main Breaks



Data from Water Main Break Analysis

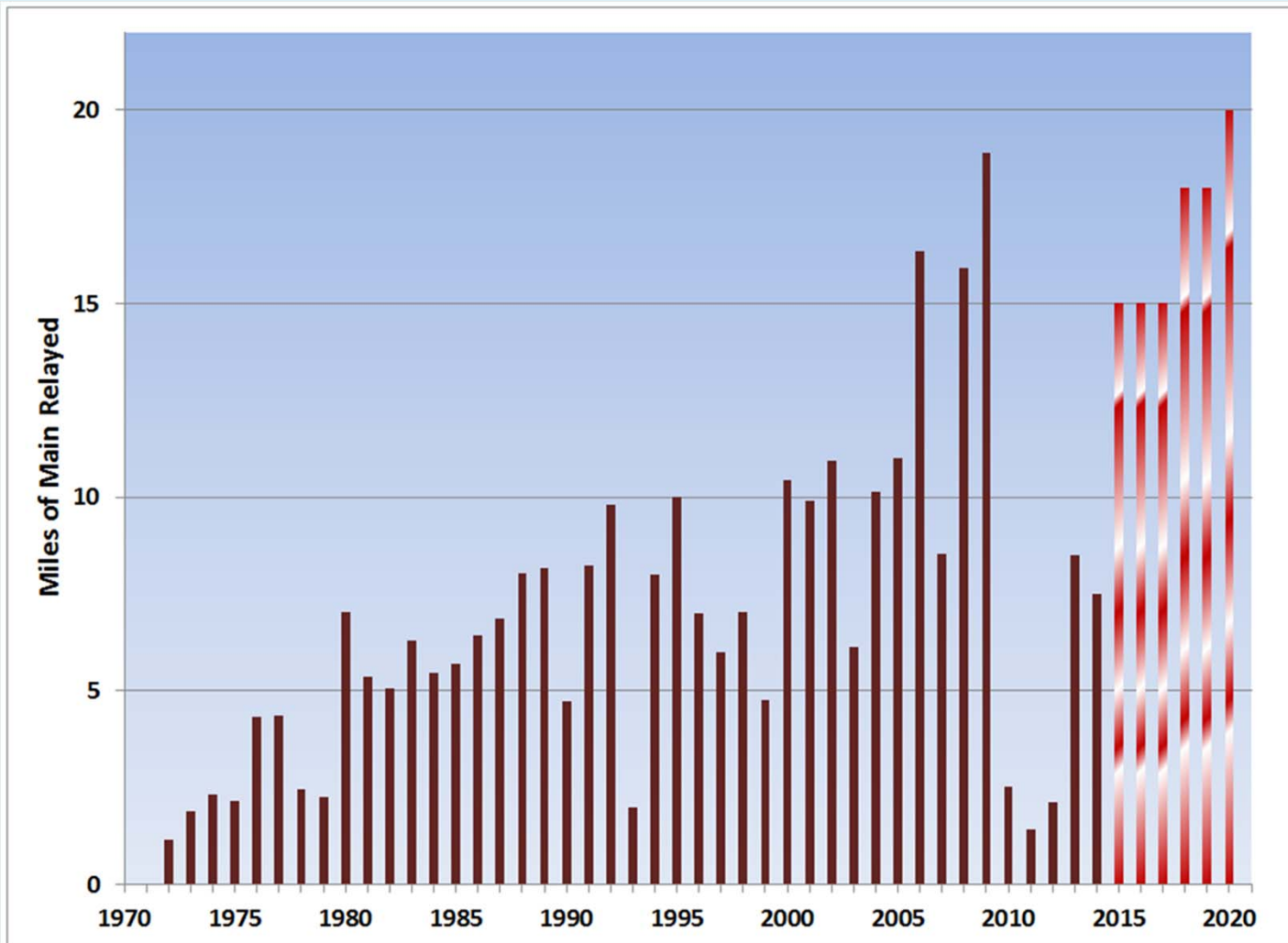


# Main Breaks in Jan & Feb 2014



Data from Water Main Break Analysis

# Miles of Main Replaced





Questions?

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