

# Traffic Control Program



City of Milwaukee  
Department of Public Works  
February, 2014

# Capital Program Funding Elements

# Traffic Signals



# Traffic Signal Totals

( Maintained As of January 1, 2014)

- 762 (+5) Signalized Intersections
  - All intersections are fully converted to LED signal indications
  - 318 (+8) intersections with active fire preemption
  - 17 time-based coordinators
  - 394 (+7) intersections with pedestrian countdown timers
  - 23 (+2) intersections with audible pedestrian signals
  - 13 flashing beacons
- 6 (+3) Crosswalks With Rectangular or Circular Rapid Flashing Beacons
- 3 (+2) Pedestrian Hybrid Beacons (HAWK Signals)
- Reversible Lane Control Signals on Canal Street at Miller Park for Use during Stadium Events

# New Signalized Intersections: 2013

- N. Port Washington Rd. & W. Capitol Dr. (Eastbound Off Ramp)
- W. Lapham Bl. & S. 13<sup>th</sup> St.
- W. North Av. & N. 51<sup>st</sup> St.
- W. Locust St. & N. 17<sup>th</sup> St.
- N. Water St. & E. Erie St.



# 2 New Pedestrian Hybrid Beacons Installed on N. Industrial Rd. at Direct Supply Pedestrian Crossings

(Pedestrian Hybrid Signal on Cesar Chavez Drive south of Scott Street)



### 3 New Rectangular/Circular Flashing Beacons at: W. Wisconsin Av. and Vacated N. 15<sup>th</sup> St. N. 16<sup>th</sup> St. North of W. Wisconsin Av. N. 16<sup>th</sup> St. South of W. Wisconsin Av.



# **Traffic Control Capital Improvement Projects in 2013 Using Federal Aid Funding Sources**



# Federal Aid Paving Projects

- W. Capitol Dr. – N. 84<sup>th</sup> St. to N. Mayfair Rd.
- N. 27<sup>th</sup> St. – W. St. Paul Av. to W. Highland Bl.



# Highway Safety Improvement Program (HSIP)

- Installed at Various Intersections:
  - Overhead Traffic Signal Mast Arms
  - Monotubes
  - Loop/Microwave Vehicle Detectors
  - Larger 12” Signal Indications
  - Vertical Signal Heads with Backplates for Arm Mounted Signal Indications
  - Countdown Timers
  - Emergency Vehicle Preemption Equipment
- Additional Projects are in the Design Process

# Congestion, Mitigation, and Air Quality (CMAQ) Improvement Program

- Installed “No Turn on Red” and “No Left Turn” LED Signs at Various Intersections
- Began Design of a Traffic Responsive Signal System at Various Intersections on the South Side
- Design Underway for Re-timing Approximately 100 Signals in the Capitol Drive and Fond du Lac Avenue Corridors
- Design Underway for Re-timing approximately 35 signals in Bay View
- Began Construction of Phase 1 of the Summerfest Parking Management System

# Temporary and Permanent Traffic Control Improvements Associated With Various Wisconsin DOT Freeway Projects

- Zoo Interchange
- I-94/43 North/South Bridges Rehabilitation
- Hoan Bridge / Lake Interchange Reconstruction
- Stadium Freeway Bridges Rehabilitation



# New 2014 Capital Program Traffic Signal Initiatives

# 2014 Traffic Control Capital Improvement Program

- New Traffic Signals
  - W. Kilbourn Avenue and N. 16<sup>th</sup> Street
  - W. Kilbourn Avenue and N. 17<sup>th</sup> Street
- Audible Pedestrian Signals
  - Improve Safety and Accessibility for Visually Impaired in UWM Campus Area
- Paving Program and Responses to Traffic Pattern Changes, Accident Countermeasures, Complaints and Other Ongoing Needs

# Federal Aid Paving Program

- W. Hampton Avenue from N. Teutonia Avenue to N. Green Bay Avenue
- S. 27<sup>th</sup> Street from W. Howard Avenue to W. Dakota Street
- W. Appleton Avenue from N. 107<sup>th</sup> Street to W. Capitol Drive
  - Jurisdictional Transfer of 6 Signalized Intersections From Wisconsin DOT to City of Milwaukee

# Pedestrian Countdown Signals





# Countdown Pedestrian Signals

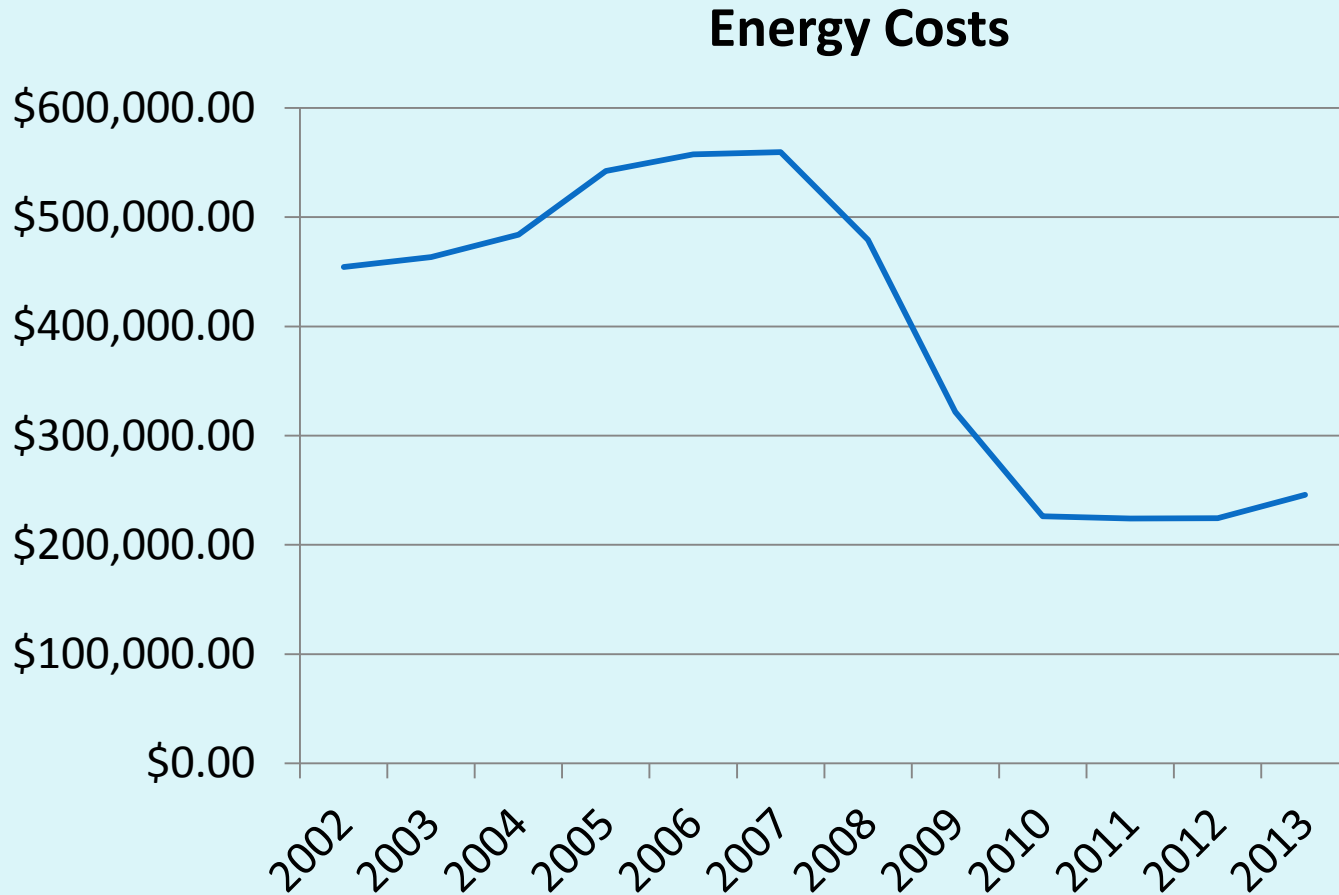
- Display the Amount of Time Remaining in the Flashing Don't Walk Signal Phase Before the Start of Yellow Phase
- Currently Required for All Signalized Intersections When Intersection is Improved
- Work began in 2011 on a Series of Federal Highway Safety Improvement Program Grants for Group Replacement of All Pedestrian Indications
- Final Grants Pending Approval, With All Intersections to be Completed in 2015

# **Future Budgetary Considerations**

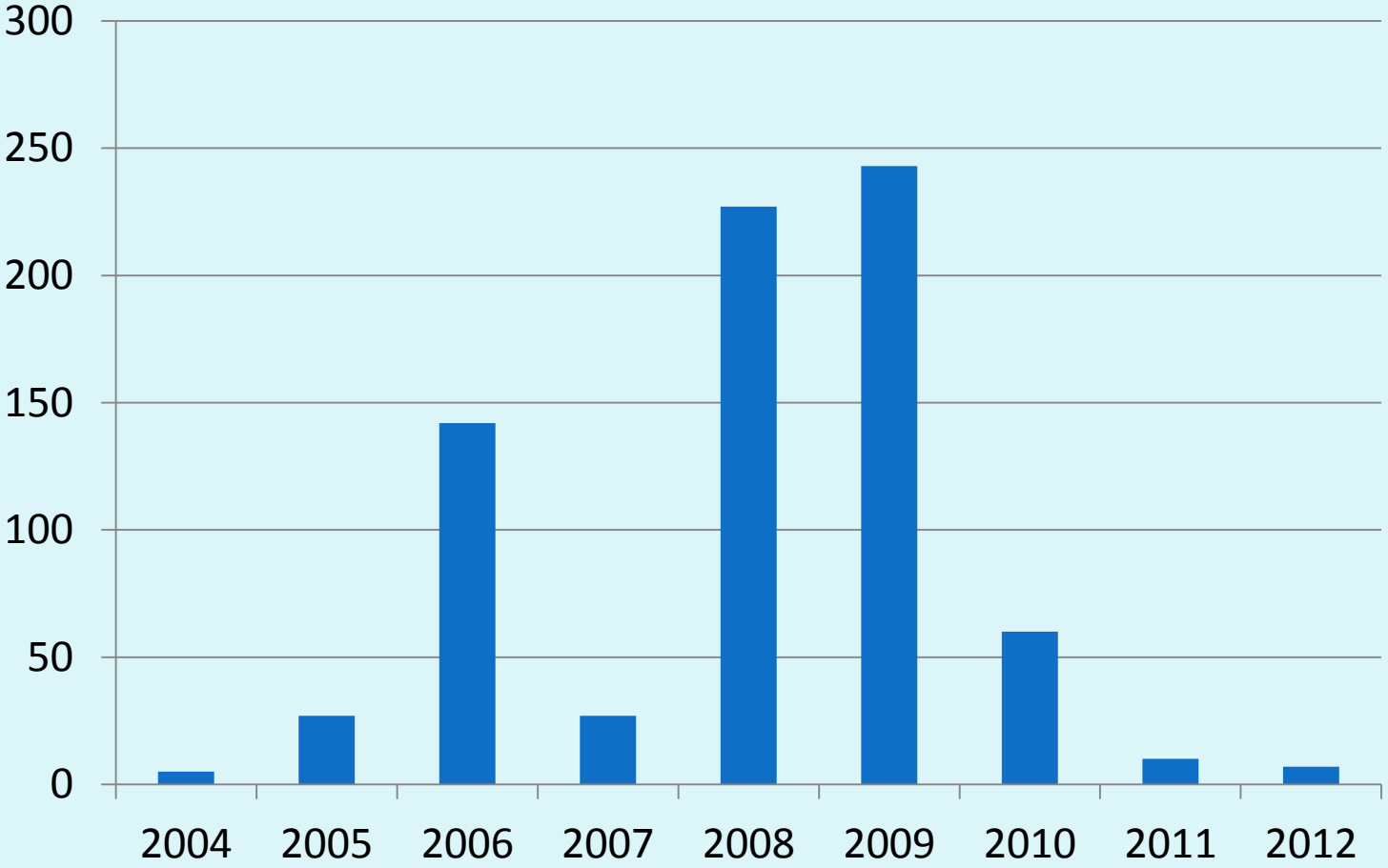
# LED Signal Indications

- Group Replacement Program for Incandescent Lamps in Signal Heads with LED Signals began in 2005
- Significant Energy Savings and Maintenance Cost reduction with LED Signal Lamps
- Anticipated Lamp Life of 6 to 7 Years at Start of Replacement Project
- Current Wisconsin DOT Experience is Lamp Life of Approximately 8 years
- Anticipate Group Replacement to Begin by 2016

# Electrical Energy Costs for Signalized Intersections: 2002 to 2013



# Number of Intersections Converted to LED Signal Indications by Year



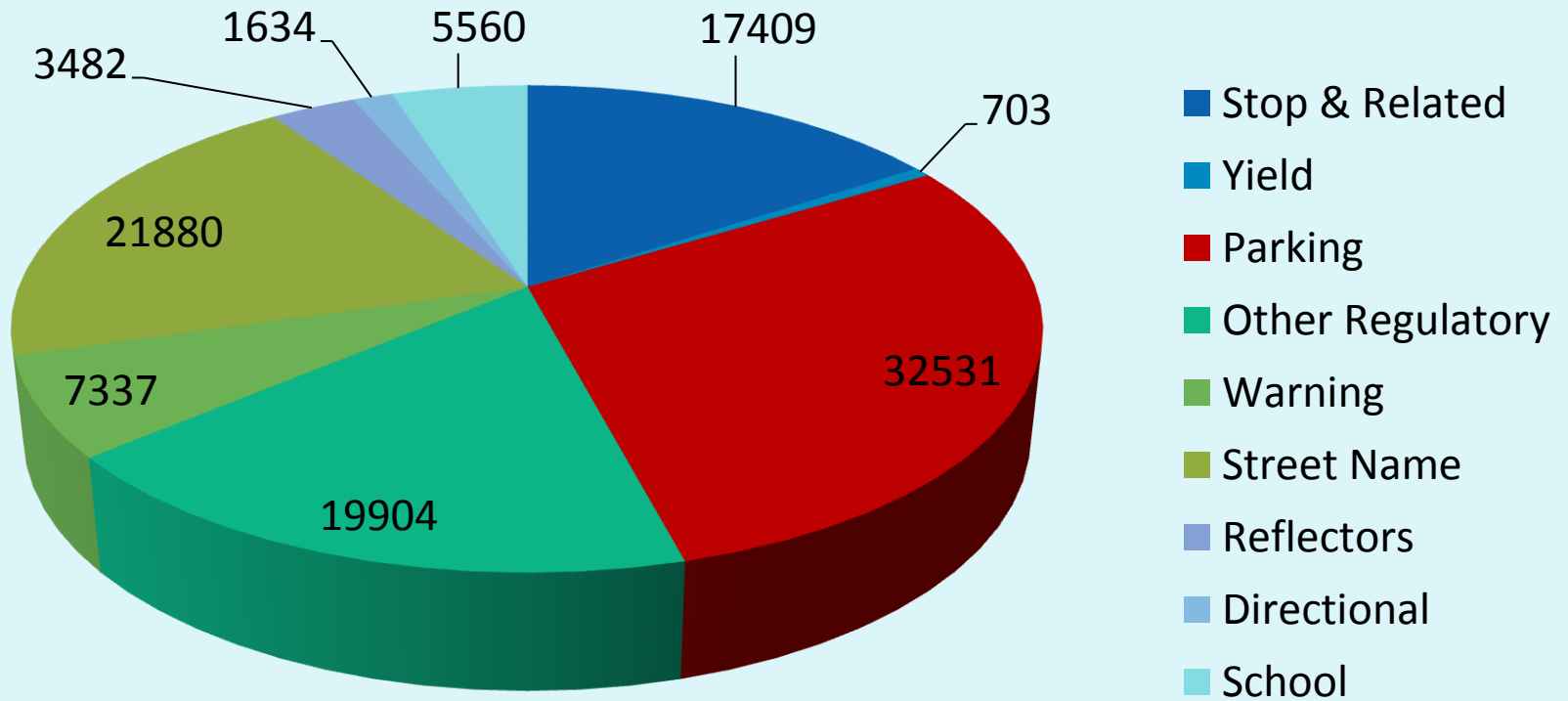
# Traffic Signs



# Traffic Signs by Sign Type

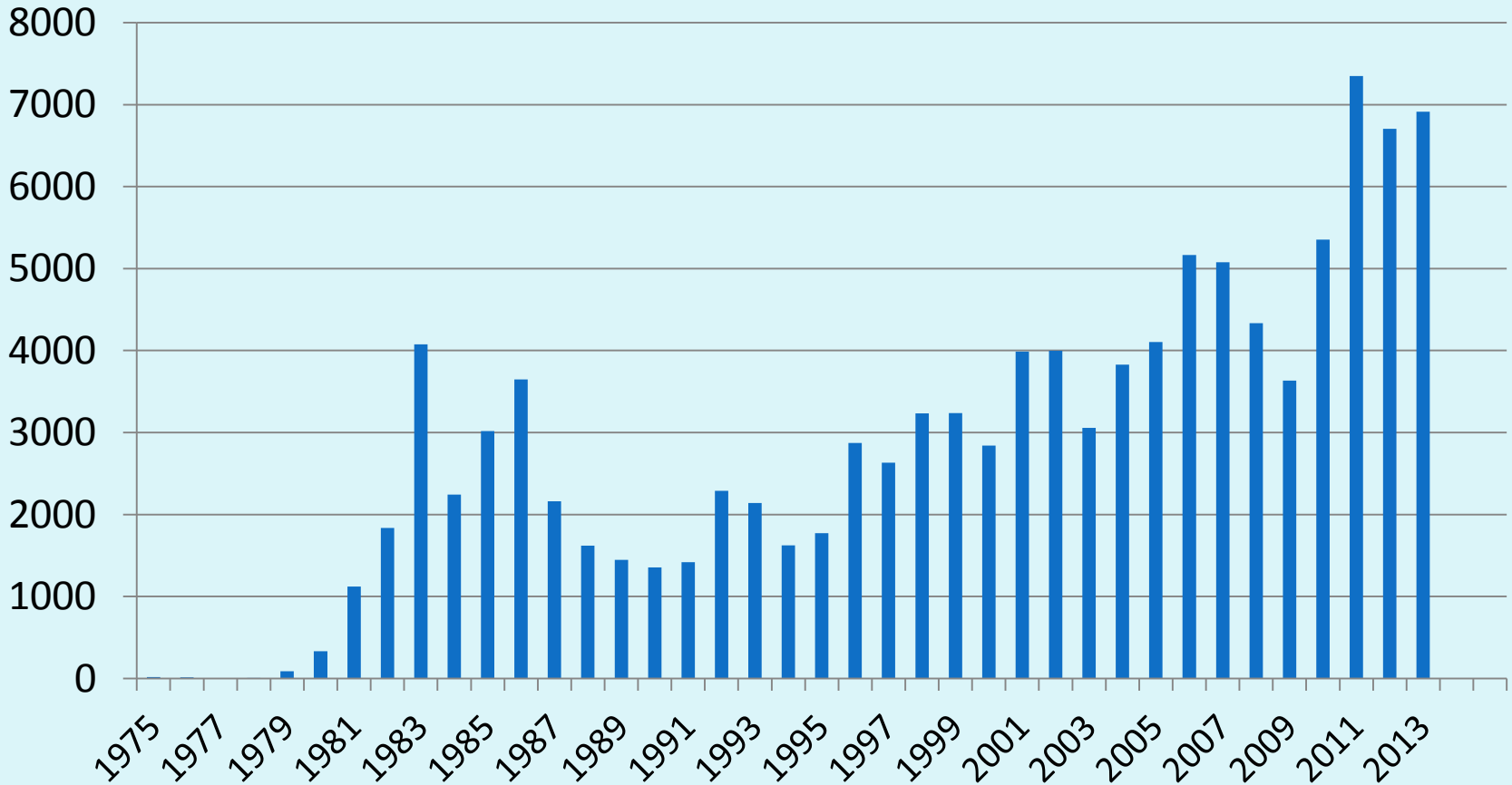
(As of January 1, 2014)

**Total Existing Traffic Control Signs: 110,440**



# Existing Signs by Sign Installation Date

(as of January 1, 2014)



DPW Traffic Control Program

February, 2014



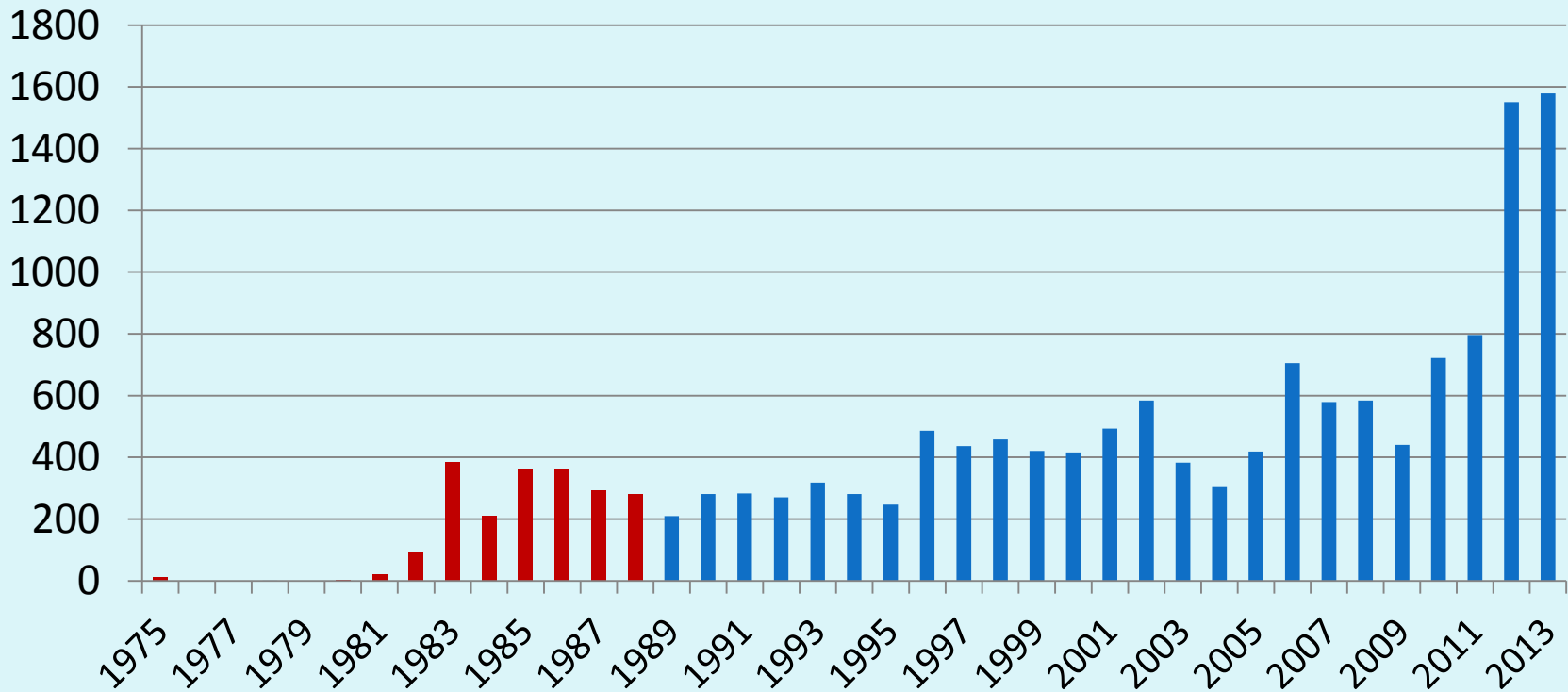
# Sign Sheeting Useful Life

- Retroreflectivity Measured on Existing Signs in Service
- Observed Sign Sheeting Life Maintaining Minimum Retroreflectivity
  - Green                      18 Years
  - Red                         20 Years
  - Yellow                     16 Years
  - White                      25 Years

# Existing White Signs by Sign Installation Date (Excluding Parking and Parking Related Signs)

(as of January 1, 2014)

**Measured Life – 25 years**  
**2,024 Signs Installed prior to 1989**



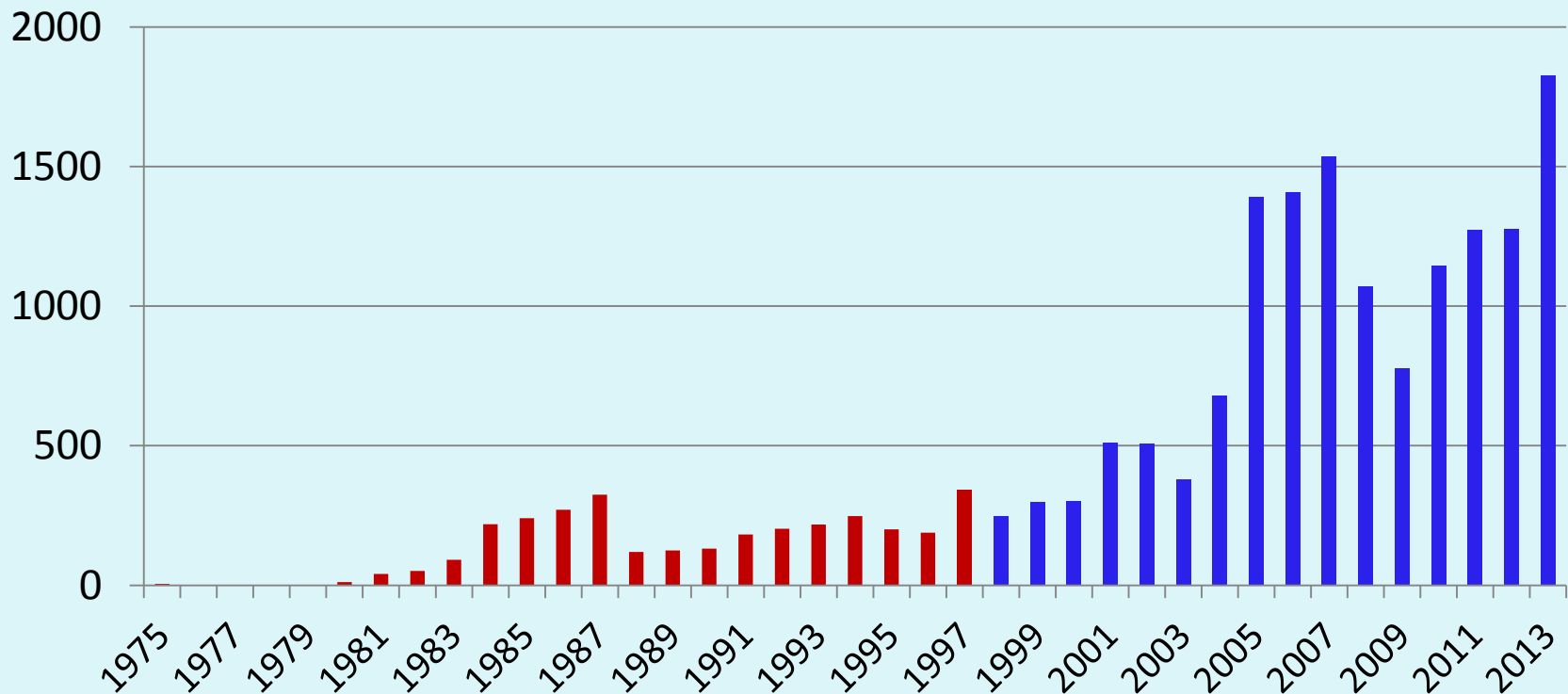
DPW Traffic Control Program

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# Existing Yellow Signs by Sign Installation Date

(as of January 1, 2014)

Measured Life – 16 years  
3,213 Signs Installed prior to 1998



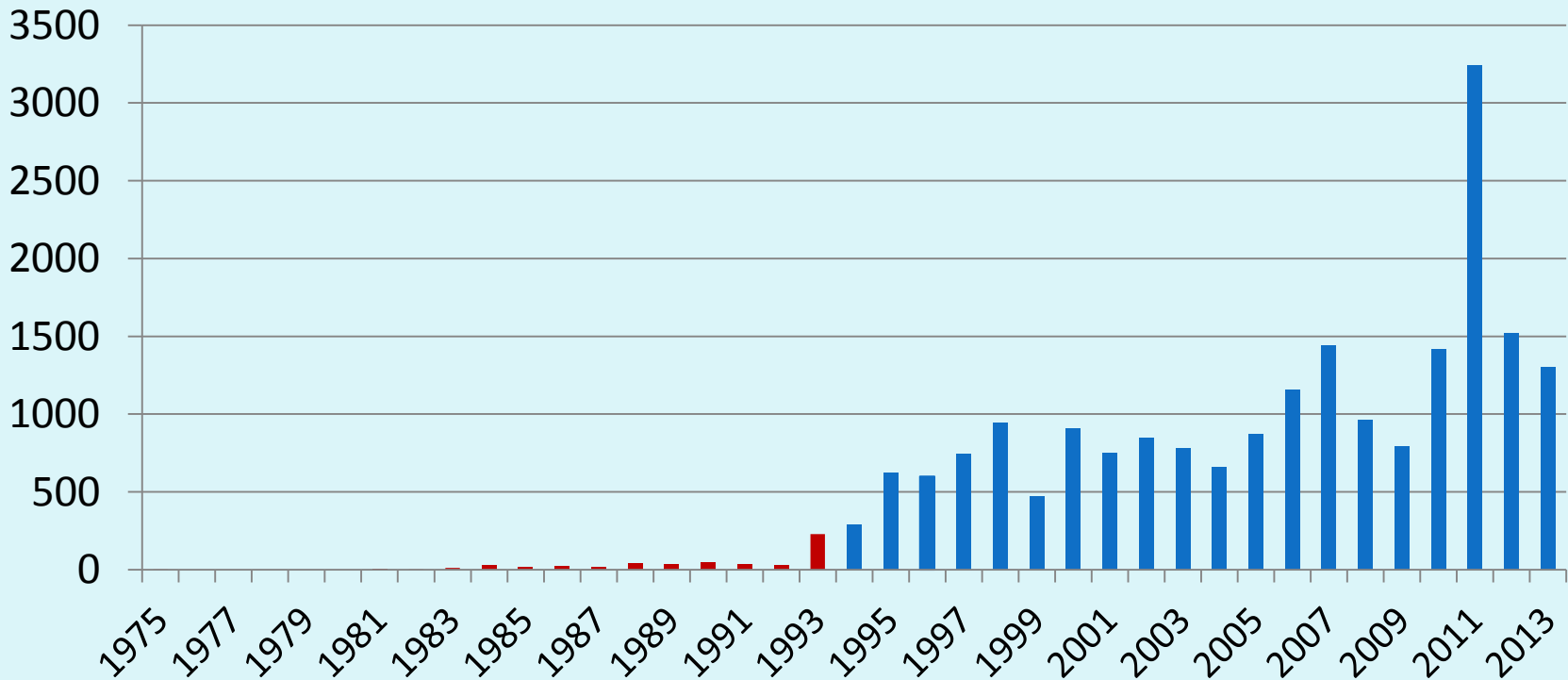
DPW Traffic Control Program

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# Existing Red Signs by Sign Installation Date

(as of January 1, 2014)

**Measured Life – 20 years**  
**515 Signs Installed prior to 1994**

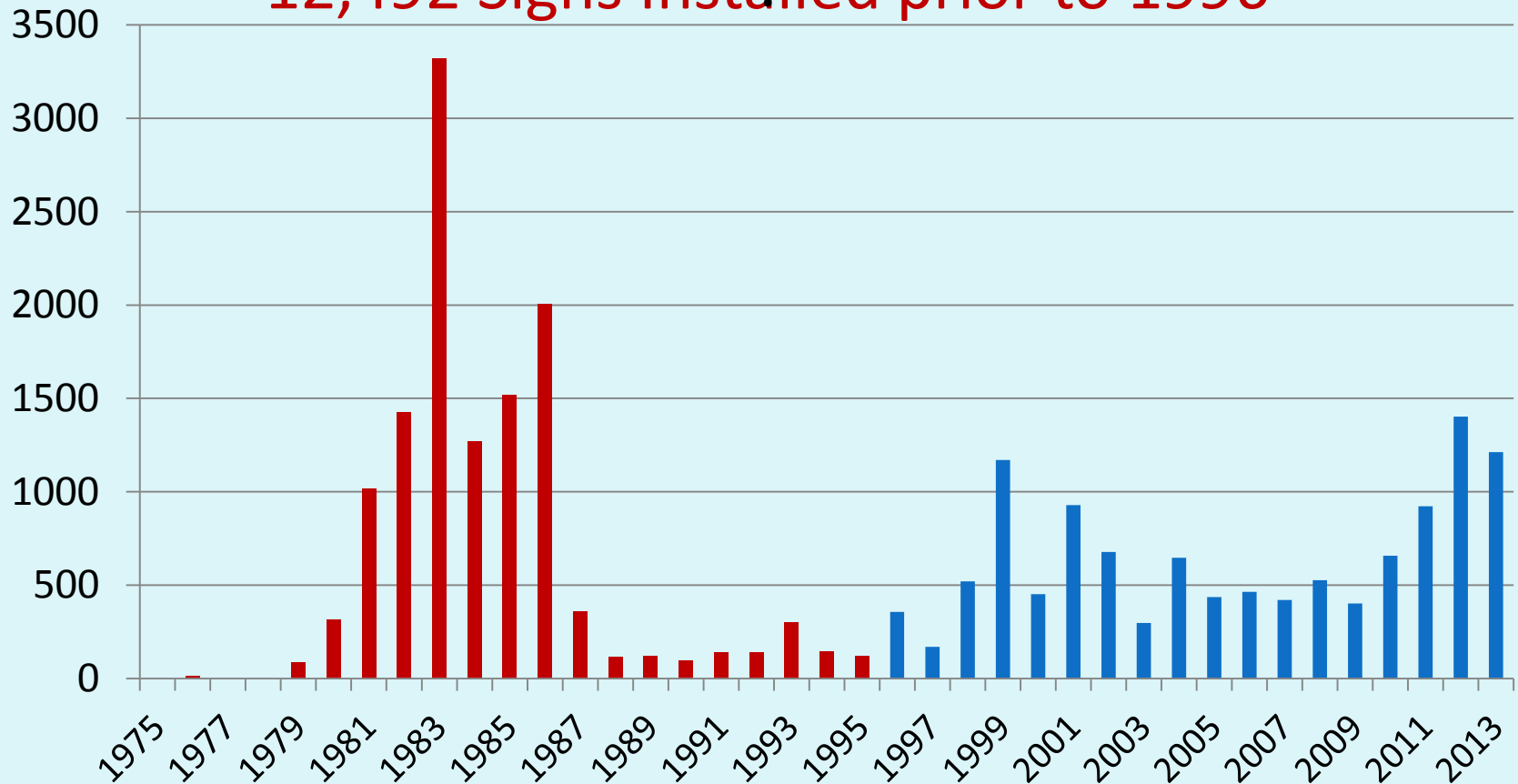


# Existing Green Signs by Sign Installation Date

(as of January 1, 2014)

Measured Life – 18 years

12,492 Signs Installed prior to 1996



# Signing Program Retroreflectivity Compliance Dates at Budgeted Funding Levels

- Regulatory and Warning Signs
  - January, 2018
- Street Name and Other Guide Signs
  - January, 2026

# School Zone Signing Upgrades





# Pavement Marking Program

DPW Traffic Control Program

February, 2014



# Types of Pavement Markings Maintained

(As of January 1, 2014)

- Lane Lines and Center Lines
  - 337 Miles
- Arrows, “Only”, Bicycle Symbols and Sharrows
  - 386 Locations
- Bike Lanes (Single and Double Lined)
  - 146 (+32) Miles
- Crosswalks
  - 1,837 (+10) Locations



# Crosswalk Marking Installation

High Visibility and Decorative Crosswalks

# Average Useful Life of Pavement Markings

- Painted: 1 Year
- Inlaid Plastic: 5 Years
- Epoxy: 3 Years

# Other Budgetary Impacts

# Uncollectable Knockdowns



DPW Traffic Control Program

February, 2014

## Uncollectable Knockdowns

- Applied to the Cost of Equipment Replacement Resulting From Traffic Accidents, Vandalism or Other Damage when Costs Cannot be Recovered from Parties Responsible For Damage
- First Included in Capital Program in 2004
- Total Expenditures of approximately \$175,000 to date for Damages Experienced in 2013