

Memorandum



CITY OF DALLAS

DATE 21 February 2014

TO Honorable Members of the Transportation and Trinity River Project Committee:
Vonciel Jones Hill (Chair), Lee M. Kleinman (Vice Chair), Monica R. Alonzo,
Tennell Atkins, Sheffie Kadane, Sandy Greyson

SUBJECT Status of Street Condition and Repair Work

On Monday, 24 February 2014, you will be briefed on the Status of Street Condition and Repair Work. The briefing materials are attached for your review.

Please let me know if you have any questions or need additional information.

A handwritten signature in blue ink, appearing to read 'Jill Jordan'.

Jill A. Jordan, P.E.
Assistant City Manager

Attachment

c: Honorable Mayor and Members of the City Council
A.C. Gonzalez, City Manager
Warren M. S. Ernst, City Attorney
Rosa A. Rios, City Secretary
Judge Daniel F. Solis, Administrative Judge
Craig D. Kinton, City Auditor
Ryan S. Evans, Interim First Assistant City Manager
Forest E. Turner, Assistant City Manager
Joey Zapata, Assistant City Manager
Charles M. Cato, Interim Assistant City Manager
Theresa O'Donnell, Interim Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Frank Libro, Public Information Officer
Elsa Cantu, Assistant to the City Manager- Mayor and Council Office

Status of Street Condition and Repair Work

Presented to the
Transportation and Trinity River Project Committee
24 February 2014



Purpose

Demonstrate the way streets are rated, the departments that work on streets, the streets condition and what is needed to maintain them

Outline

- Life cycle of streets
- Rating streets condition
- Condition of streets and the City's goals
- Work plan for maintaining and improving streets
- Requirements to maintain and/or improve our streets

Life Cycle of a Street

- Typical life of street - 20 to 50 plus years depending on:
 - Pavement design
 - Traffic loads
 - Soil conditions
 - Weather/precipitation patterns
 - Maintenance schedule
- National records reveal that streets without a proactive and major maintenance programs degrade annually at the following rates:
 - Satisfactory streets 2.5% - 5.5%
 - Unsatisfactory streets 5.5% - 10%


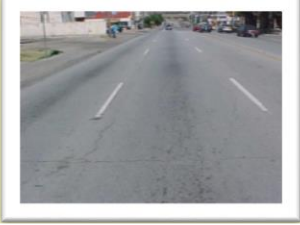

Note: Work is underway to confirm these rates on Dallas' streets


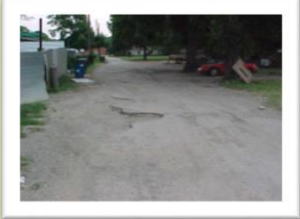
How Streets Are Graded

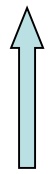
- Visual inspections started in 1975
 - Ratings were subject to judgment by staff
- Since 2007 streets and alleys are reviewed every two (2) years using the street analysis vehicle
- Ground penetration testing, radar, cameras used to inspect
- Technical rating of streets based on extent and severity of distress (roughness, cracking, etc.) = Pavement Condition Index [PCI] measuring roughness, cracking and distress
- For decades PCI ratings have been assigned letter grades: A (best) to E (worst)



Street Condition Ratings

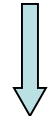
Rating	Description	PCI
A 	Excellent Pavements that have no distress (mostly new or newly rehabilitated surfaces)	100-85
B 	Good Very good ride quality - requires preventive maintenance (slurry seal or similar) if any	85-70
C 	Fair Acceptable ride quality, though road surfaces are becoming worn – slurry, microsurfacing, partial reconstruction or similar is needed to prevent rapid deterioration	70-45

D 	Poor Marginally acceptable ride quality – microsurfacing, chip sealing, or partial reconstruction, resurfacing or rehabilitation is needed to prevent rapid deterioration	45-35
E 	Very Poor Pavements that have extensive amounts of distress and requires partial or full reconstruction or restoration	>35



Satisfactory

Unsatisfactory



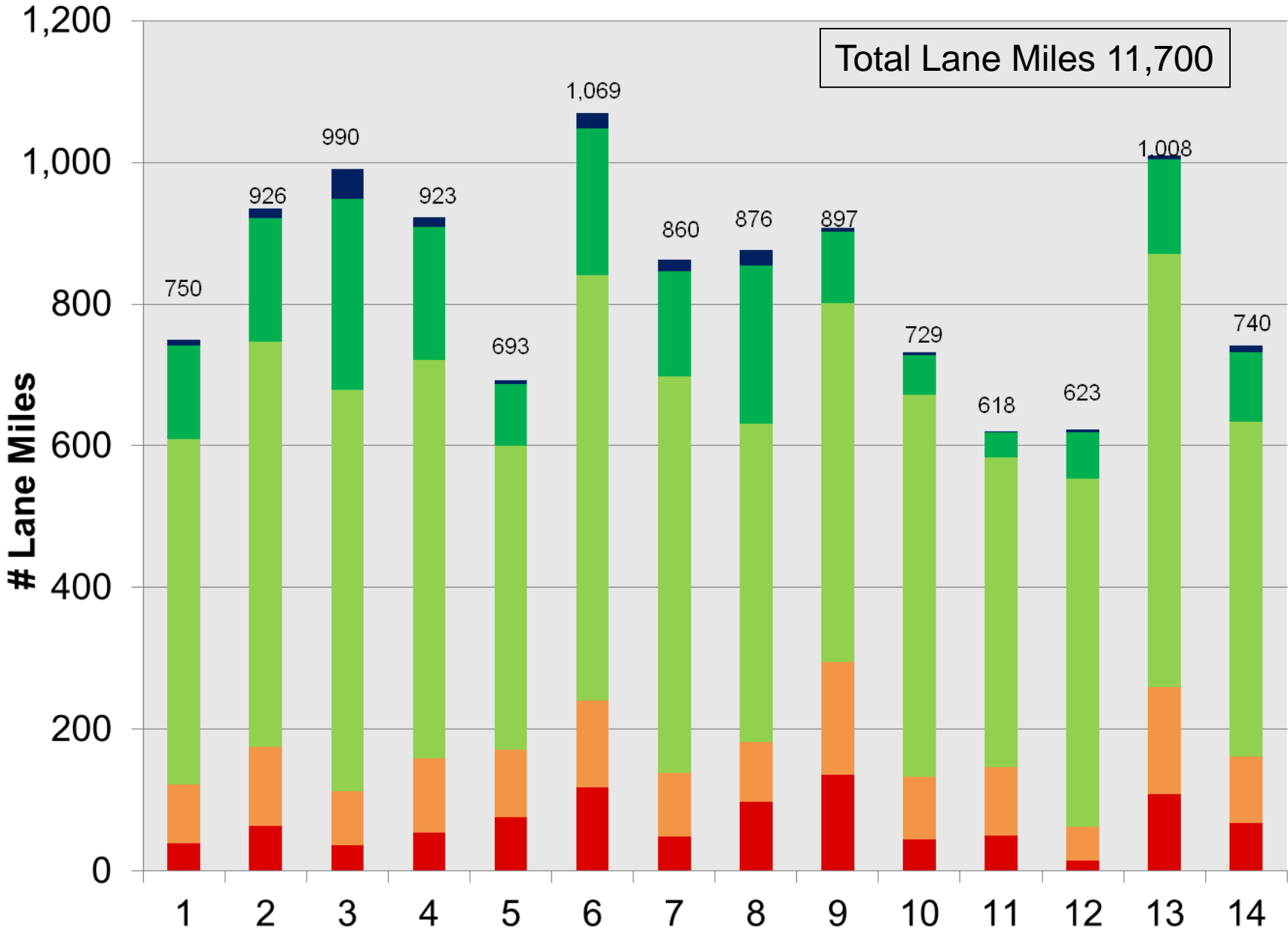
Street Condition Goals and Background

- Street condition goals - revised and adopted by City Council in 2006:
 - 87% satisfactory Citywide (Satisfactory = A's, B's, and C's)
 - Minimum 80% satisfactory in each Council District
 - Goals were to be achieved by completion of 2006 Bond Program in conjunction with an enhanced O&M program
- Reaching the Council's 2006 goal of 87% overall satisfaction rating requires additional funding of over \$900 million in the next four (4) years
 - Regular Bond Programs (infrastructure improvements)
 - Annual street maintenance

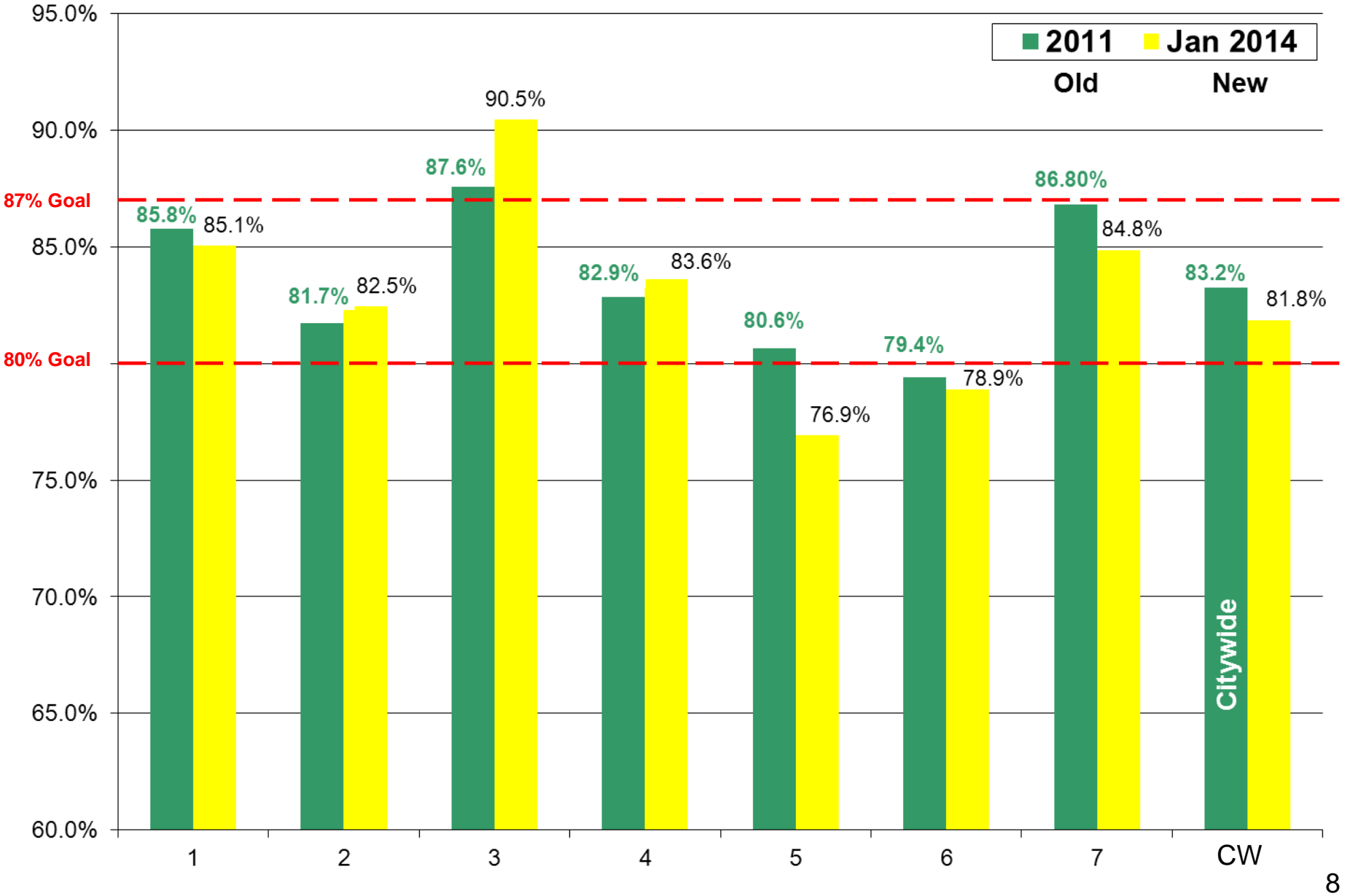
Lane Miles of Streets by Council District (Jan 2014)

Total Lane Miles 11,700

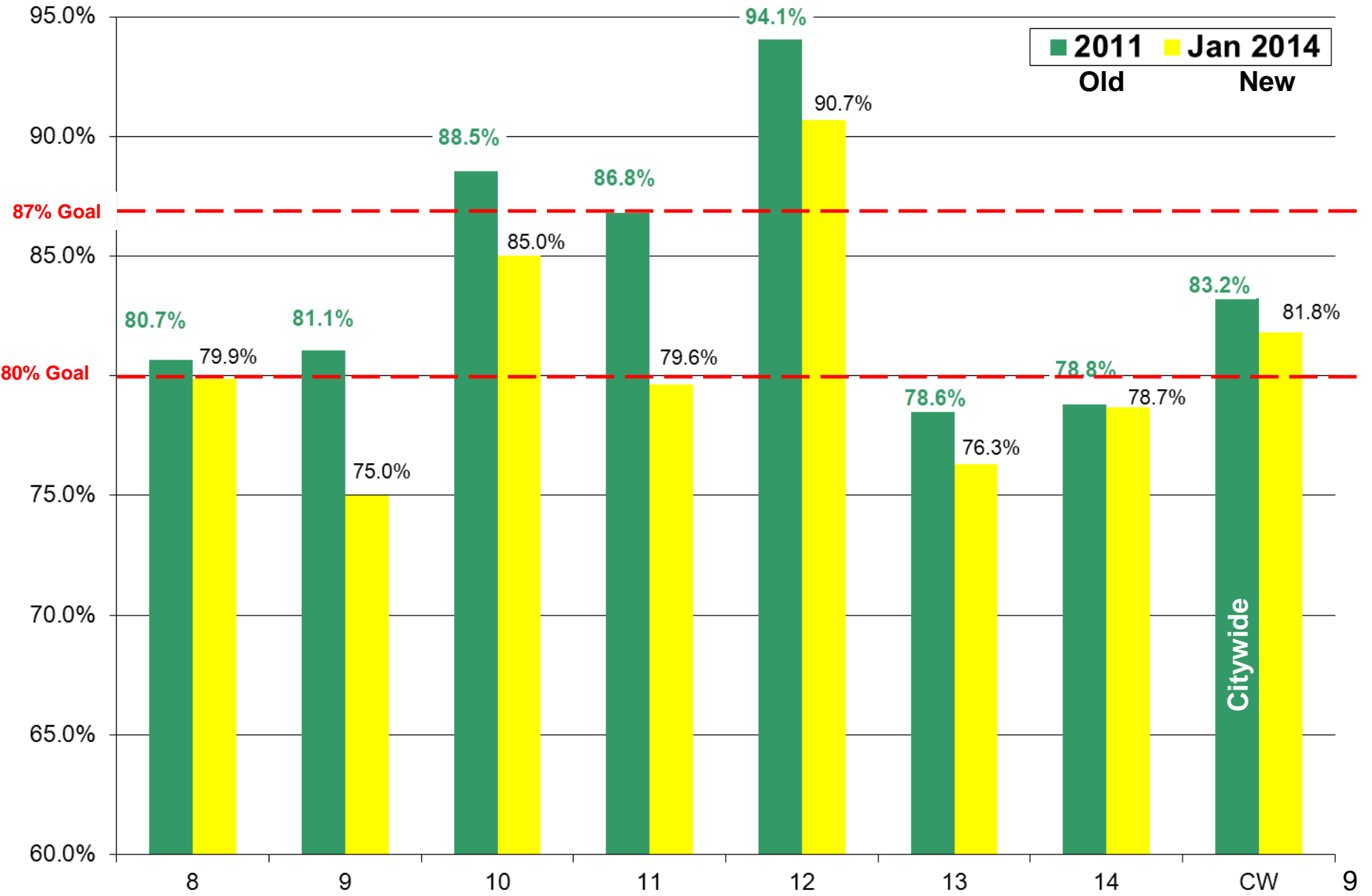
- Excellent
- Good
- Fair
- Poor
- Very Poor



2011 and 2014 Street Condition Ratings



2011 and 2014 Street Condition Ratings



Departments that Construct and Maintain Streets

Street Services

- **Responsible for Streets, Alleys & Bridges through:**
 - **Maintenance & Repair**
 - **Major maintenance**
 - **Restoration & Rehabilitation of “unimproved” asphalt streets**
 - **Performs own construction**
 - **Selects contractors to perform overflow construction**
- Funding: General fund**

Note: Larger projects are referred to Public Works

Public Works

- **Responsible for Streets, Alleys and Bridges through:**
 - **New construction**
 - **Reconstruction**
 - **Resurfacing**
 - **Selection of design consultants**
 - **Bidding projects for construction**
 - **Managing, inspecting design and construction projects**
- Funding: Bond program**

Water Department

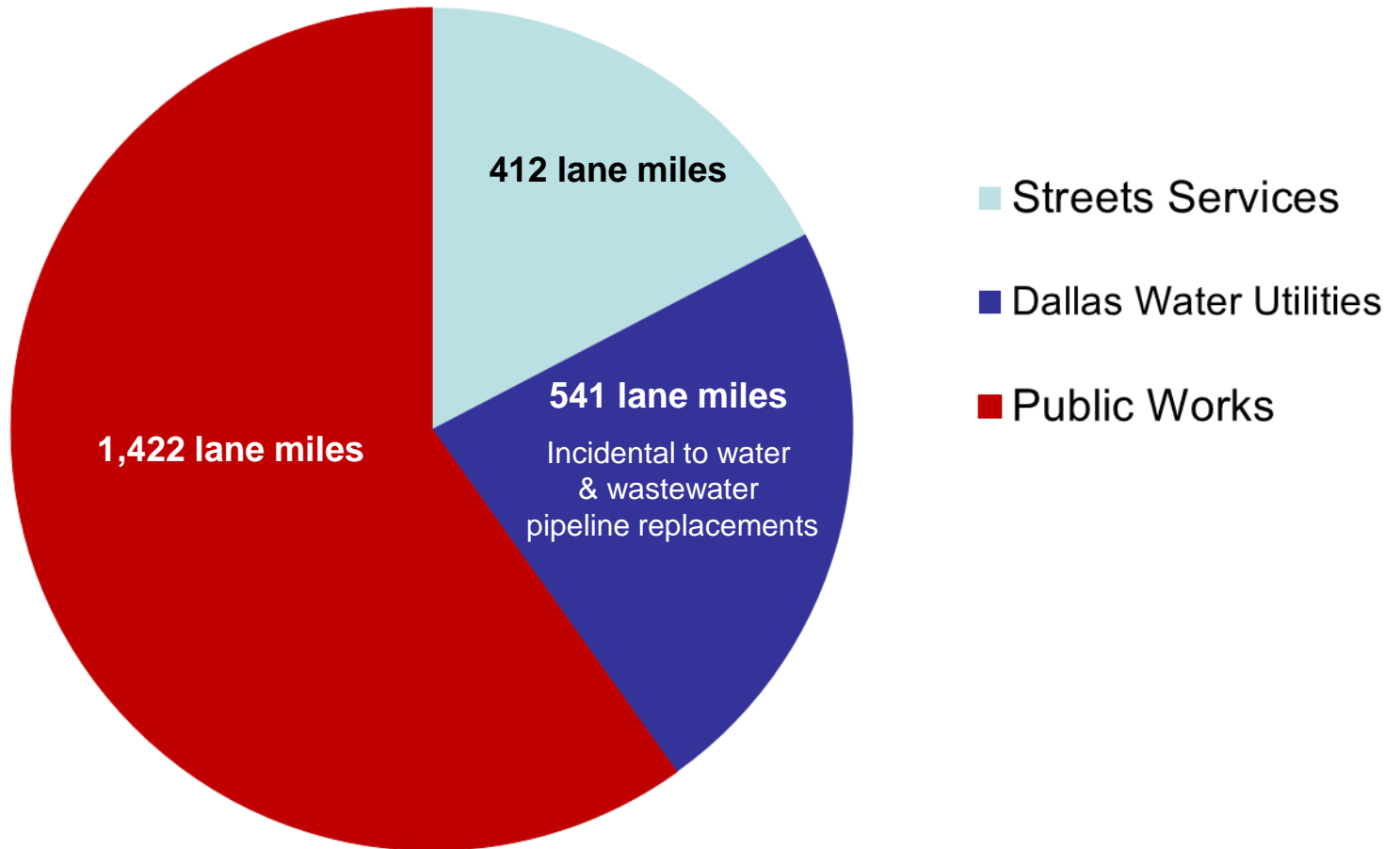
- **Street reconstruction as a result of water and wastewater replacement**
 - **Selection of design consultants**
 - **Bidding projects for construction**
 - **Managing, inspecting design and construction**
- Funding: Enterprise funding**

- Bond Program investment is for construction, reconstruction & resurfacing
- Maintenance extends the life of these infrastructure items

Street Replacements

2,375 Lane Miles

Resurfaced/Reconstructed/Rehabilitated/Restored 2004-2013



Departments & private utilities collectively develop multi-year work plans to avoid conflicts and duplication of efforts as well as adding to and expanding projects

Street Services Department

- \$62M Budget with 588 employees
- Maintains over 11,700 lane miles of streets
- Organized into four business units:
 - Street Repair Division
 - Service Maintenance Areas (4 plus night operations)
 - Contracts, Finance & Inspections
 - Transportation Operations

Street Services

- Streets & Alleys
 - Pothole repair
 - Street & alley repair
 - Litter removal
 - Response to roadway hazards
 - Roadside drainage
 - Guard rail repair
 - Inlet cleaning
 - Severe weather response
- Contracted Services
 - Street sweeping (major thoroughfares)
 - Mowing of medians/ TXDOT rights-of-way
 - Sealing of streets (prevent water infiltration)
 - Lane line and crosswalk
- Transportation Operations
 - Traffic Studies
 - Traffic Signals
 - Street Stripping
 - Traffic Signs
 - Street Lighting
 - Congestion Management
 - Lane Closure Permits

Treatments Performed / Contracted by Streets Services

Contracted Treatments

Slurry Seal

\$13K per lane mile and last from 5-7 years

Micro Surfacing

\$19K per lane mile and last from 5-7 years



Partial Reconstruction (both in-house and contracted)

\$67.50 per square yard (including curb & gutter repair)
and last from 10-12 years



Treatments Performed / Contracted by Streets Services

In-House Treatments

Full-Depth Repair

\$20.50 per square yard for asphalt street
\$69 per square yard for concrete street
and last from 5-7 years



Asphalt Street Rehabilitation

\$160K per lane mile and last from 10-12 years

Asphalt Street Restoration

\$180K per lane mile and last from 18-20 years



Partial Reconstruction (both in-house and contracted)

\$73 per square yard (including curb & gutter repair)
and last from 10-12 years

*Cost is within 7.5% of the contracted cost for similar work



Impacts of Maintenance on Street Condition Ratings

- Proactive maintenance effectively extends life expectancy of streets
- Maintenance work is planned or service request-driven
 - Preventive Maintenance (primarily Full-depth Asphalt/Concrete, Micro Surfacing and Slurry Sealing)
 - Major Maintenance (primarily Rehabilitation, Restoration, and Partial Reconstruction)
- Since most preventive maintenance is performed on satisfactory streets, the overall rating does not increase. Preventive maintenance prevents deterioration that decreases ratings
- Major maintenance on unsatisfactory streets increases the satisfactory overall ratings

Public Works Department

- \$16.6M annual operating budget with 173 employees
 - Engineers, Surveyors, Inspectors & Support staff
- \$331M capital budget for street and thoroughfare improvements
- \$18M capital budget for aviation and city facilities
- Organized into three (3) main work units
 - Street and paving infrastructure and surveying
 - New facilities and facility major maintenance
 - Air Quality, Parking Adjudication, and Finance

Public Works

- Street and Paving Infrastructure – Design and Construction
 - Street and alley reconstruction and street resurfacing
 - New street and alley petitions
 - Complete streets
 - Thoroughfares and urban design / streetscaping
 - Intergovernmental partnerships and bridge repairs
 - Pavement management and life cycle analysis

Program Development and Street Selection Process For Capital Programs and Annual Work Plans

- Develop a preliminary criteria for candidate streets for each treatment type/maintenance program
- Allocate funding among street improvement/maintenance programs
- Obtain Council input on street needs
- Evaluate candidate streets (includes field verification)
- Coordinate with utility owners and City departments
- Select projects

Street Treatments Managed by Public Works



Resurfacing

\$200K per lane mile, includes curb and gutter and base repairs
Last from 15-20 years with maintenance



Reconstruction

\$1M per lane mile, includes curb and gutter, base replacement and drainage
Last from 20-50 years with maintenance

Work is performed by contractors and managed by staff engineers and inspectors

Street Treatments Managed by Dallas Water Utilities



Street and alley repairs by the Dallas Water Utilities are associated with pipeline replacement. For asphalt streets the City policy requires that an entire lane be reconstructed at the location for where the pipeline is replaced. From joint to joint for concrete streets.

Four Year Work Plan For Repairing and Replacing Unsatisfactory Streets By Department

	2013/14	2014/15	2015/16	2016/17
Street Services E's & D's into C's	42	42	42	42
Public Works E's & D's into A's & B's	59	89	78	56
DWU E's & D's into B's & C's	48	58	65	67
Total Lane Miles Improved	149	189	185	165

Note: The total lane miles in unsatisfactory condition today is 2,361

How Streets Degrade

- Streets degrade for the following reasons:

- Shifting soil
- Harsh weather
- Age
- Usage
- Under-designed streets

These events cause streets to crack, allowing for water infiltration that undermines the base material

- Streets degrade at different rates

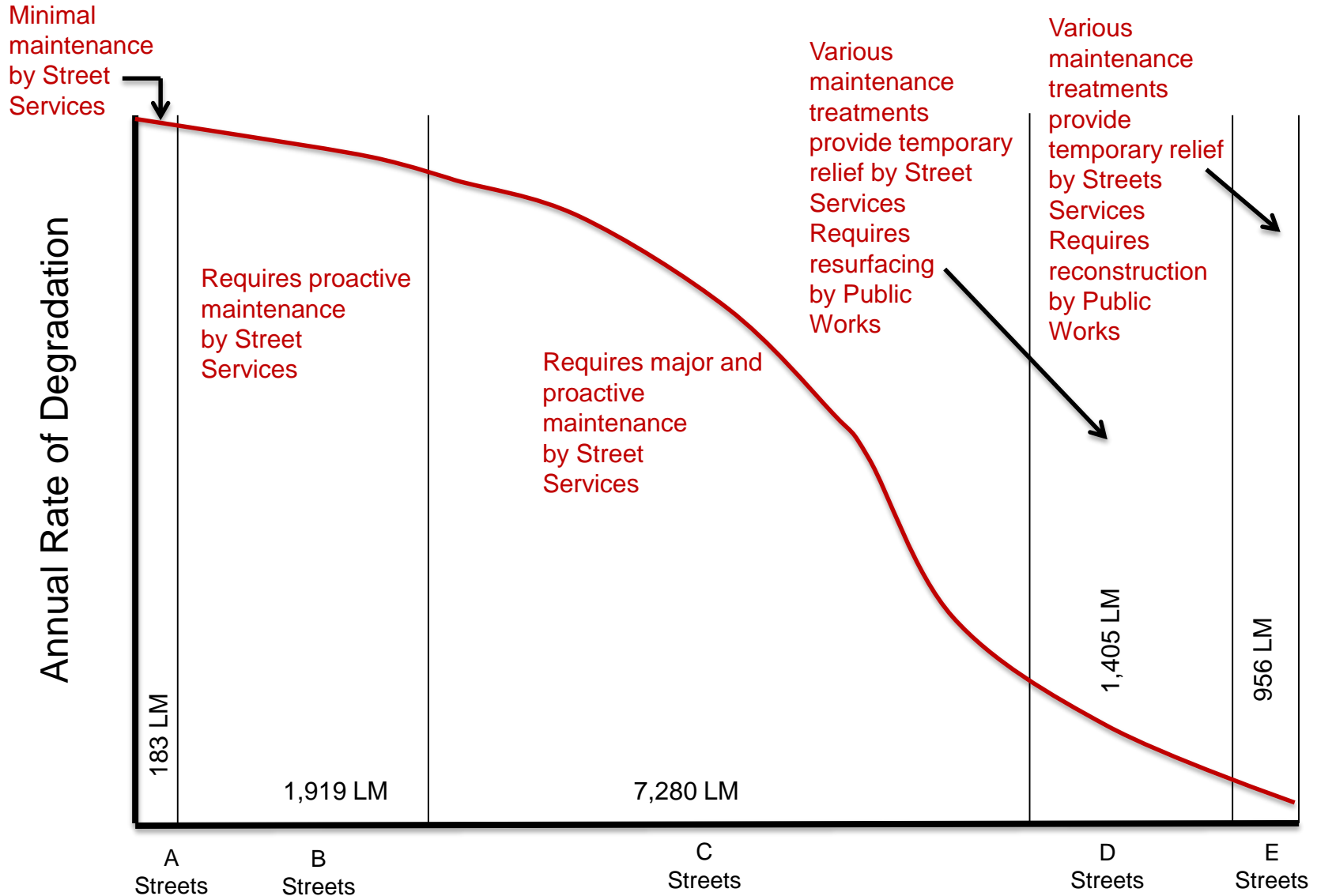
- A, B and E streets degrade the slowest
- C and D streets degrade the fastest

- 62% of our streets are in C condition

- A at 1.5%, B at 16.4%, C at 62%, D at 12% and E at 8.1%

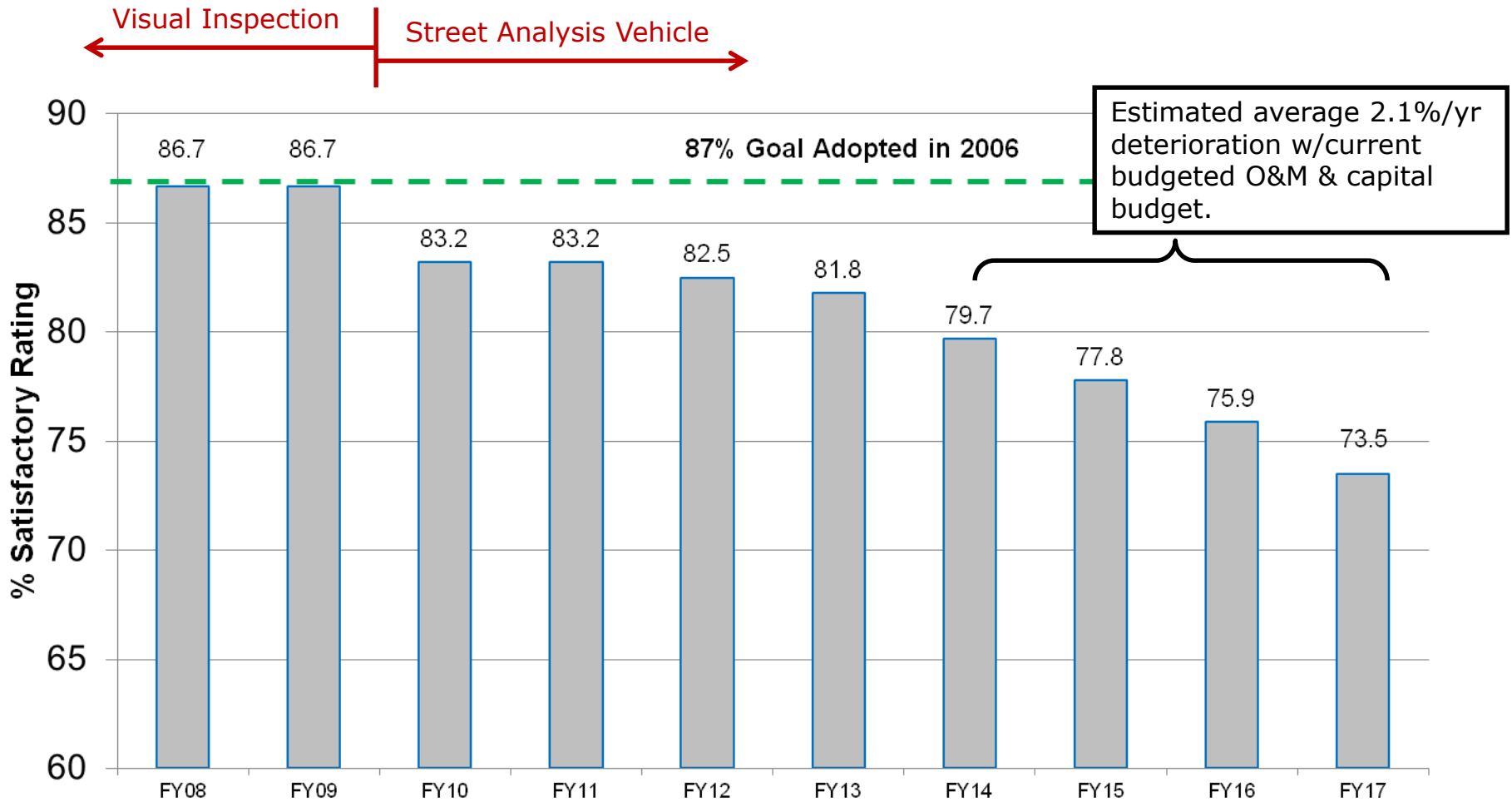
Street Degradation Curve

Streets degrade at a rate from 0.3% to over 10% yearly



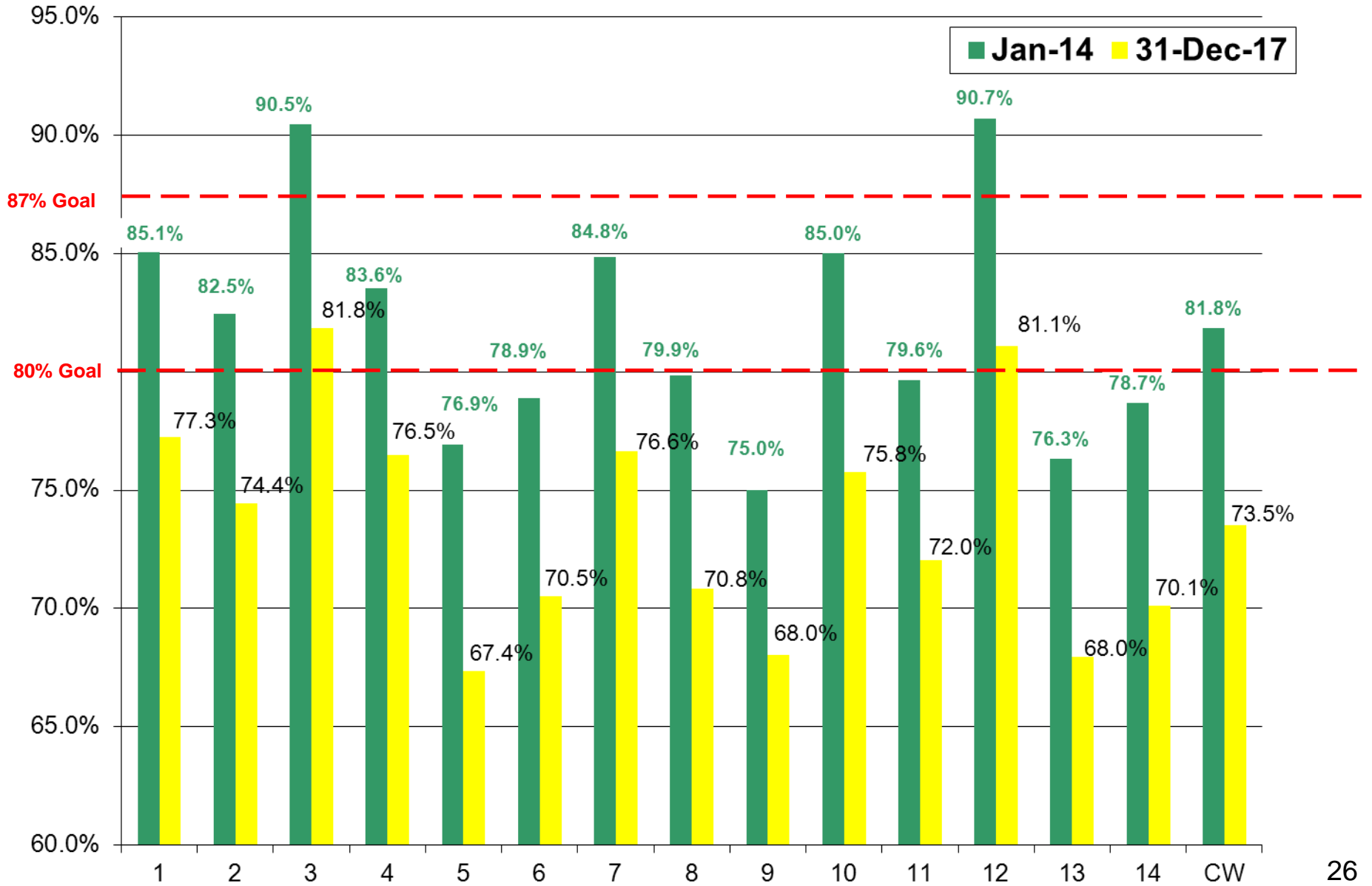
Condition Of Streets – Expected Deterioration

Street Condition Ratings - 2008-2017



Citywide rating decreased from 86.7% to 83.2% in FY10 due to deferred maintenance and development of a more precise condition rating system. Continued analysis of local degradation rates will cause refinement of these projections.

Street Condition Ratings Projections – Present through December 2017



Alternatives for Reducing the Deterioration Rate

- Repair C streets to avoid them from becoming D streets
62% of streets are C streets and have the highest deterioration rate
 - Requires additional investment of \$245 million for four (4) years to reach a degradation rate of 0%
 - Disadvantage is that many repairs have a short term effect 3-10 years
- Resurfacing D streets at the rate that C's become D's to achieve 0% degradation
 - Requires an additional investment of \$728 million over four (4) years
 - Makes D streets into A & B streets which last longer
- Resurface and reconstruct thoroughfares, collector and arterial streets – most used by the public
 - 444 LM of thoroughfares, collector and arterial streets are in unsatisfactory condition
 - Requires an investment of \$187 million for four years to replace 444 LM
 - Will not address residential streets
 - Overall deterioration rate continues to climb

Future Policy Considerations

- In future bond programs, focus on projects that improve street conditions
 - Only 55% of the Proposition 1 (Street and Thoroughfare Improvements) in the 2012 Bond Program improved street conditions
- Allow for unequal street repair funding among Council Districts
- Re-evaluate the 2006 Council goal for overall street satisfaction of 87% with no Council District under 80%
 - Reduce the requirements to reflect affordability
- Set aside additional funds in future bond programs to allocate to Dallas Water Utilities for replacing the remaining portion of streets not addressed in a pipeline replacement project

Questions & Comments