Managing Infrastructure

Data Collection
Data Display - Drill-down Capability
Data Use, Analysis and Decision Making
Backbone of the dashboard is created using SQL, web services and html/javascript

Performance dashboard includes a landing page with narrative as well as data for key areas – public safety, keeping neighborhoods maintained, and financial health

Contains a link to the Metrics Dashboard and to Stats

Metrics are listed by category and by department
- Overall progress easily displayed
- Graphs
- Trend lines
- Maps
- Narrative
Metrics are written in SQL then displayed with html/javascript.

- Key Performance Indicators (KPI) are highlighted.
- Every metric is listed – by name or by value and includes department, goal, today’s value, the weekly average, and the monthly average are displayed for each metric.
- User can select the metric to drill down.
## Infrastructure Metrics and Stats - Currently On Dashboard

### Queried Metrics:
- Average age of Fleet
- Average days to complete pothole service request
- Average days to complete traffic signal/sign service request
- Current Drinking Water Turbidity (NTU)
- Current Water Pumped (gal.) per Capita per Day (Yearly Avg.)
- Number of Days to repair a Water Main Break
- Total Linear ft of Sidewalk Repair over the past 365 days
- Percent of Wireless Network Available
- Percent of City Water Meters Under 15 Years

### Static Metrics:
- Alley Condition Rating
- Pavement Condition Rating
- Bridge Condition Rating
- Change in percentage of streets with PCI rating of good or satisfactory between 2013 and 2016
- Satisfaction with Sidewalks
- Satisfaction with Street Lighting in Neighborhoods
- School Zone Beacon Condition Ratings
- Screening Wall Condition Rating
- Street Condition Rating
- Traffic Signal Condition Rating
- Various Park Infrastructure Condition Ratings

### Stats:
- % Permitted Effluent Flow of Wastewater Plant
- Avg Cost of Pothole Repairs
- Avg Cost of Sidewalk Repairs
- Number of Service Requests Processed w/in 48 hours
- Number of Work Orders Processed w/in 48 hours
- Number of Sanitary Sewer Overflows over the Past 5 Years
- Water Consumption Per Capita Per Day
Infrastructure to Discuss in Detail Today

1. Water Meter Age
2. Capital Projects
3. Water Lines and Water Valves
4. Parks Infrastructure
Water Meters
Query STW Database containing water meter data

- Performance Metric – Percentage of City Water Meters Under 15 Years Old
- Details include the department, metric description, goal, period measured, data source, and when it was last updated.
- There are options for additional information – history, details, and a map
Data Display

### Percentage of City Water Meters Under 15 Years Old

<table>
<thead>
<tr>
<th>Meter Number</th>
<th>Year in Service</th>
<th>Meter Age (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100977</td>
<td>1990</td>
<td>26</td>
</tr>
<tr>
<td>1100980</td>
<td>1990</td>
<td>26</td>
</tr>
<tr>
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<td>26</td>
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<td>29</td>
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</tr>
<tr>
<td>1107028</td>
<td>2016</td>
<td>24</td>
</tr>
<tr>
<td>1107029</td>
<td>2016</td>
<td>24</td>
</tr>
</tbody>
</table>

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### Percentage of City Water Meters Under 15 Years Old

Graph showing the percentage of city water meters under 15 years old over time.
Drill-down Capability

Meter Operational Dashboard/Map
The data is analyzed to drive decisions on prioritization of projects, funding requests, and determinations of how well the overall infrastructure is being maintained.

- When a meter is replaced, the data is updated, thereby having a completely up-to-date database.

- Eventually it is hoped that the data will begin to show predictive trends in life of particular meters within Lewisville, likelihood of repair needed within specific timeframes, replacement scheduling, etc.
Capital Improvement Projects
Capital project information is queried from the New World Financial Software where all financial information is stored, and from GIS for project location coordinates.
Data Display
Drill-down Capability

Capital Improvement Projects

Valley Ridge Blvd and Old Orchard Ln (SW corner) (G1407), Valley Ridge Blvd and Old Orchard Ln (SW corner)
TRAFFIC IMPROVEMENT
This project is:

Project Description:
TRAFFIC IMPROVEMENT
This project funds replacement of signal poles nearing the end of their service life. 10/04/2018 - Bid documents are currently in progress. Additional
Data Use, Analysis and Decision Making

- Information is used in an informative manner to educate the Council and public on the overall CIP as well as specific projects.
- Data is used to determine sequence and timing of needed capital projects; discover problems associated with specific projects regarding budget or time to complete and to help identify solutions.
- Analysis of this application provides an overview of which areas of the City are being improved, ignored, overburdened, etc.
- Data is analyzed to monitor where dollars are being spent, what type of projects are being funded most often, etc.
Water Lines and Valves
Data Collection

- Contract with RJN to assess water distribution system
- Report Card Grades for Water Lines and Valves
- Risk Analysis for Each Asset
- Our internal GIS Staff was able to provide GIS locations for every asset and to upload all water distribution system assets into a GIS layer
Data Display

![Data Display Image]
Drill-down Capability

Data can be sorted to show only those lines with the worst ratings and/or only those valves with the worst rating and to drill-down to the specific attributes of the line/valve.
Data Use, Analysis and Decision Making

- The data is analyzed to determine overall health of the water distribution system.
- Analysis is conducted on which lines and valves are in most need of repair/replacement.
- Which have the greatest impact, if they are to fail, etc.
- Data is used to schedule line and valve repairs/replacements.
- Data is used to determine funding request timing and amounts.
- In the near future we will work to integrate work order system data into analysis to update report card scores as changes are made to infrastructure.
Parks Infrastructure
We are adding a GIS layer for Parks assets including playgrounds, trash cans, sprinklers, pavilions, picnic tables, etc.

Parks staff is utilizing aerial maps to locate assets and mark/draw them into GIS.

Parks department staff will use their new, GIS integrated, work order system to conduct inspections of assets (playgrounds, benches, etc).
Drill-down Capability

Bench
Analysis of this application will eventually provide information on age, condition, location, etc. of all parks assets.

- Analysis could provide locations where trails or parks are needed within the City based on 10-minute walk to a park goals.
- Analysis can provide details on how well the overall park system is being maintained.
- Data will be used to make decisions on which parks need assets, where to locate new parks and trails, and how to prioritize funding requests and amounts.
Questions?