

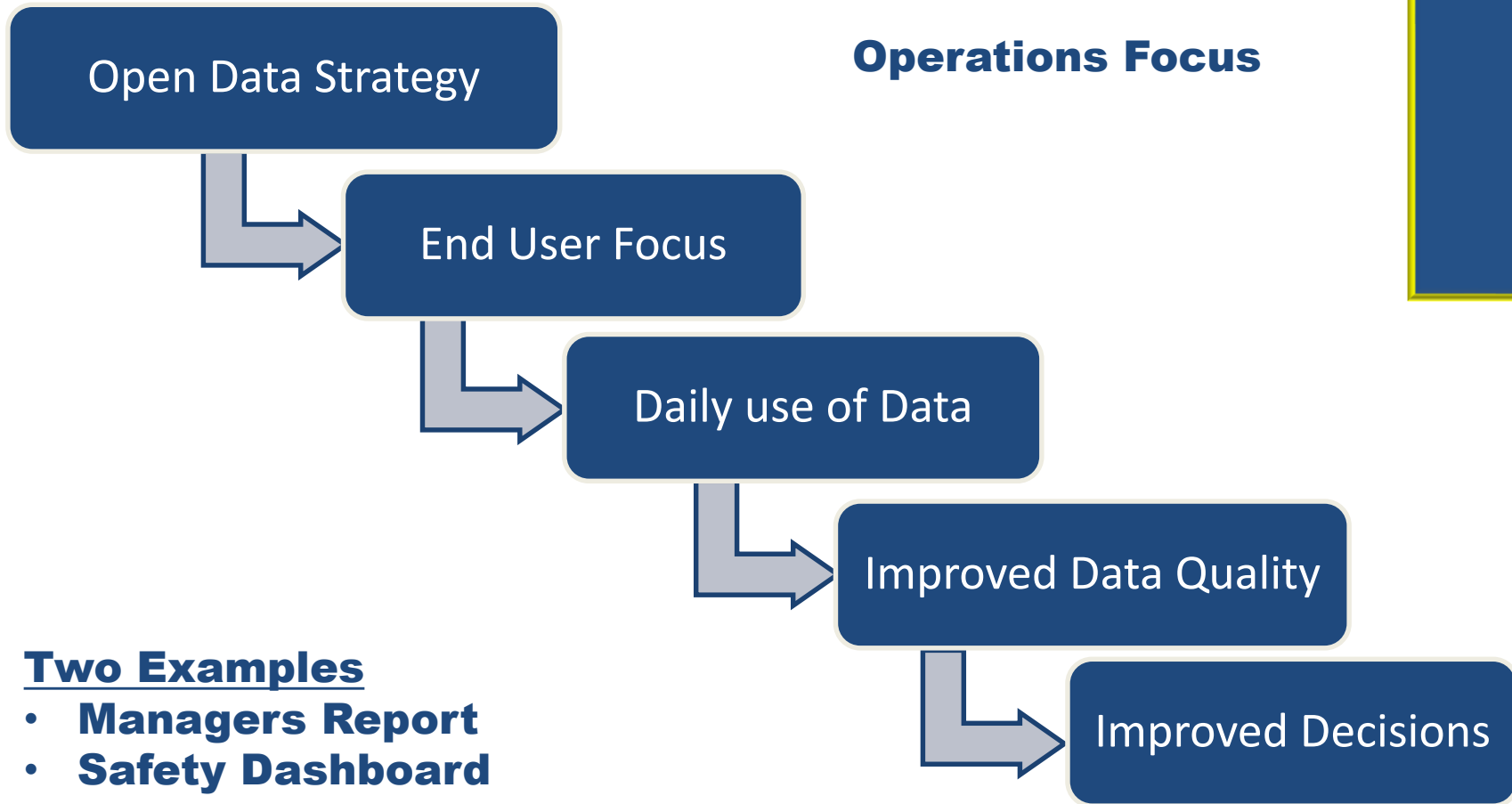


# Dashboards to Decisions

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EPCOR Utilities Inc.

# EPCOR Approach



**Operations Focus**

**The Four A's**  
**Archeology**  
**Anthropology**  
**Architecture**  
**Ad-Hoc**

**The Power of the Human Brain**

## Two Examples

- **Managers Report**
- **Safety Dashboard**

# Performance Measure Driven

| Measure                           | PBR1<br>2001-2006 | PBR2<br>2006-2011 | PBR3<br>2011-2016 | PBR4<br>2016-2021 |
|-----------------------------------|-------------------|-------------------|-------------------|-------------------|
| Main Breaks                       | 640               | 630               | 574               | 419               |
| Main Break Repair Duration        | 92.8%             | 93.6%             | 93.7%             | 93.7%             |
| Hydrants out of Service >30 days  | 75                | 75                | 75                | 75                |
| Hydrants out of Service > 90 days | 0                 | 0                 | 0                 | 0                 |

| System Size                         | 2001    | 2006    | 2011    | 2016    |
|-------------------------------------|---------|---------|---------|---------|
| Number of Services                  | 194,216 | 214,835 | 238,831 | 271,271 |
| Number of Hydrants<br>(nearest 500) | 14,000  | 16,000  | 18,000  | 20,000  |

# Managers Report

Summary / Excavations / Hydrants / Valves

- CMMS Driven
- Multiple Years
- Performance Flags
- Updated from Field in real time

| Year Reported | WO Number | WO Title                    | Title                 | Address                      | WR Number | Call Received Time  | Confirmed Time      | Wait                |
|---------------|-----------|-----------------------------|-----------------------|------------------------------|-----------|---------------------|---------------------|---------------------|
| 2017          | 138812    | DCM DISTRIBUTION MAIN BREAK | 91 AV W 153 ST        | 91 AV W 153 ST               | 222312    | 02/01/2017 21:59:00 | 02/01/2017 22:16:00 | 02/01/2017 23:15    |
| 2017          | 138813    | DCM DISTRIBUTION MAIN BREAK | 104 ST N 73 AV        | 104 ST N 73 AV               | 222314    | 03/01/2017 04:16:00 | 03/01/2017 04:29:00 | 03/01/2017 04:58    |
| 2017          | 138887    | DCM DISTRIBUTION MAIN BREAK | ALLARD WAY - 51 AVE   | 51 AVE & ALLARD WAY          | 222380    | 04/01/2017 12:14:00 | 04/01/2017 12:16:00 | 04/01/2017 12:30    |
| 2017          | 138937    | DCM DISTRIBUTION MAIN BREAK | HAS ANOTHER BREAK     | 51 AVE ALLARD WAY            | 222436    | 05/01/2017 18:15:00 | 05/01/2017 18:16:00 | 05/01/2017 18:17    |
| 2017          | 139036    | DCM DISTRIBUTION MAIN BREAK | 119 ST - 111 AVE      | 119 ST S 111 AVENUE NW       | 222492    | 08/01/2017 05:51:00 | 08/01/2017 06:13:00 | 08/01/2017 06:38    |
| 2017          | 139213    | DCM DISTRIBUTION MAIN BREAK | W 44 ST - 116 AVE     | 116 AVE W OF 44 ST           | 222602    | 10/01/2017 17:28:00 | 10/01/2017 17:55:00 | 10/01/2017 19:05    |
| 2017          | 139235    | DCM DISTRIBUTION MAIN BREAK | LW 133 ST - N 104 AVE | 10433 134 STREET NW EDMONTON | 222648    | 11/01/2017 13:29:00 | 11/01/2017 13:46:00 | 11/01/2017 15:23    |
| 2017          | 139246    | DCM DISTRIBUTION MAIN BREAK | 172 ST - N 106A AVE   | 172 ST S OF 107 AV           | 222678    | 12/01/2017 01:57:00 | 12/01/2017 02:22:00 | 12/01/2017 04:10    |
| 2017          | 139262    | DCM DISTRIBUTION MAIN BREAK | W 119 ST - 135 AVE    | W 119 ST 135 AV              | 222693    | 12/01/2017 10:08:00 | 12/01/2017 10:20:00 | 12/01/2017 11:19    |
| 2017          | 139276    | DCM DISTRIBUTION MAIN BREAK | W 75 ST ON 82 AVE     | W. 75 ST ON 82 AVE           | 222716    | 12/01/2017 16:00:00 | 12/01/2017 16:30:00 | 12/01/2017 17:28    |
| 2017          | 139289    | DCM DISTRIBUTION MAIN BREAK | 101 ST - 113 AVE      | LW 97 ST N 113 AVE           | 222763    | 14/01/2017 02:03:00 | 14/01/2017 02:17:00 | 14/01/2017 02:31    |
| 2017          | 139293    | DCM DISTRIBUTION MAIN BREAK | LW 126 ST 107 AV      | LW 126 ST N 107 AV           | 222789    | 16/01/2017 06:09:00 | 16/01/2017 06:27:00 | 16/01/2017 06:57:00 |
| 2017          | 139306    | DCM DISTRIBUTION MAIN BREAK | 41 ST - 121 AVE       | LW 40 ST - N 120 AV          | 222795    | 16/01/2017 08:14:00 | 16/01/2017 08:37:00 | 16/01/2017 09:00:00 |
| 2017          | 139360    | DCM DISTRIBUTION MAIN BREAK | 67 ST - 128 AVE       | LW 66 ST N 128 AV            | 222831    | 16/01/2017 17:42:00 | 16/01/2017 18:05:00 | 17/01/2017 16:00:00 |
| 2017          | 139364    | DCM DISTRIBUTION MAIN BREAK | 120 ST - 109A AVE     | 120 ST S 109A AVE            | 222833    | 17/01/2017 04:49:00 | 17/01/2017 05:12:00 | 17/01/2017 06:15:00 |

Highlights Excavation

**Last Refresh Date & Time:** Tuesday ,April 26,2016 14:02:33

**Current Distribution System Response Condition:** Green

Filters

Select Year: 2015 Go

Recent Main Breaks (As of Last Refresh Date)

| Time     | # Of Calls |
|----------|------------|
| 06 Hours | 0          |
| 12 Hours | 0          |
| 24 Hours | 0          |
| 72 Hours | 1          |

Days Since Recent Main Break (As Of Last Refresh Date)

13

**Water Main Breaks - Actual to Expected**

| Year          | Month     | Total Breaks By Month | Expected Breaks By Month | Cumulative Expected | % Of MTD Expected Breaks | % Of YTD Expected Breaks |
|---------------|-----------|-----------------------|--------------------------|---------------------|--------------------------|--------------------------|
| 2015          | January   | 26                    | 42                       | 42                  | 66.67%                   | 66.67%                   |
| 2015          | February  | 16                    | 37                       | 79                  | 43.24%                   | 55.7%                    |
| 2015          | March     | 23                    | 54                       | 133                 | 42.59%                   | 50.38%                   |
| 2015          | April     | 19                    | 28                       | 161                 | 67.86%                   | 53.42%                   |
| 2015          | May       | 11                    | 21                       | 182                 | 52.38%                   | 53.3%                    |
| 2015          | June      | 30                    | 16                       | 198                 | 187.5%                   | 64.14%                   |
| 2015          | July      | 19                    | 28                       | 226                 | 67.86%                   | 64.6%                    |
| 2015          | August    | 27                    | 22                       | 248                 | 122.73%                  | 69.76%                   |
| 2015          | September | 15                    | 21                       | 269                 | 71.43%                   | 69.89%                   |
| 2015          | October   | 25                    | 20                       | 289                 | 125%                     | 73.7%                    |
| 2015          | November  | 40                    | 33                       | 322                 | 121.21%                  | 78.57%                   |
| 2015          | December  | 23                    | 27                       | 349                 | 85.19%                   | 79.08%                   |
| <b>Totals</b> |           | <b>276</b>            | <b>349</b>               |                     |                          |                          |

**Water Main Break Projections**

| Measure                          | Value |
|----------------------------------|-------|
| Y.E. Projection (YTD + Expected) | 275   |

| Measure                           | Value |
|-----------------------------------|-------|
| Y.E. Projection (YTD + %Expected) | 182   |

**Performance to PBR Targets**

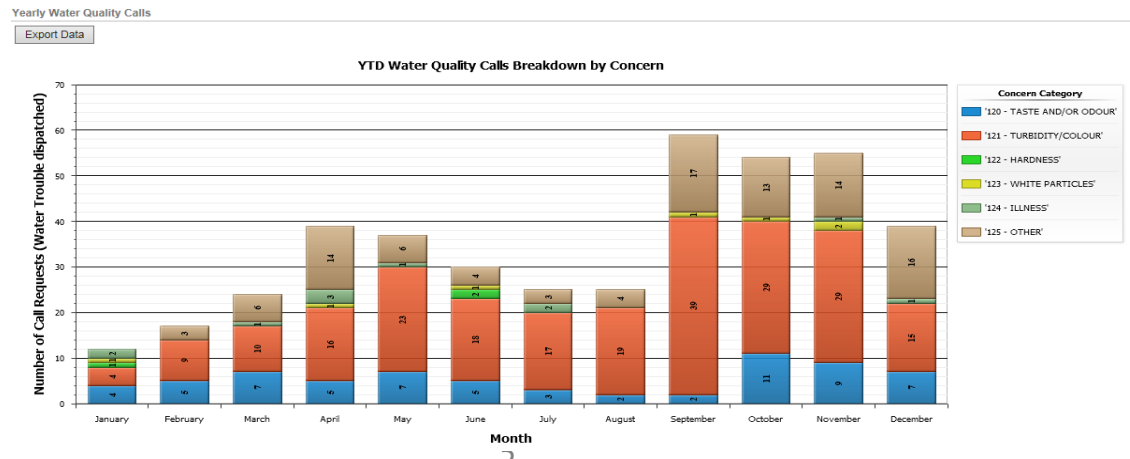
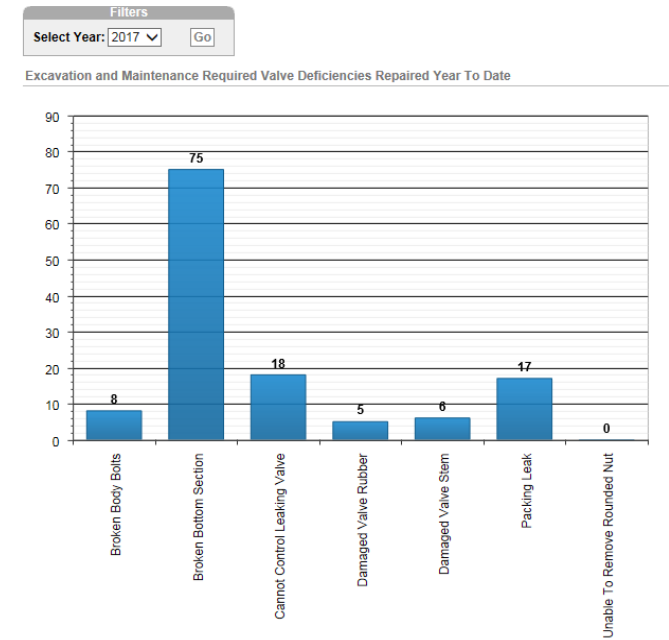
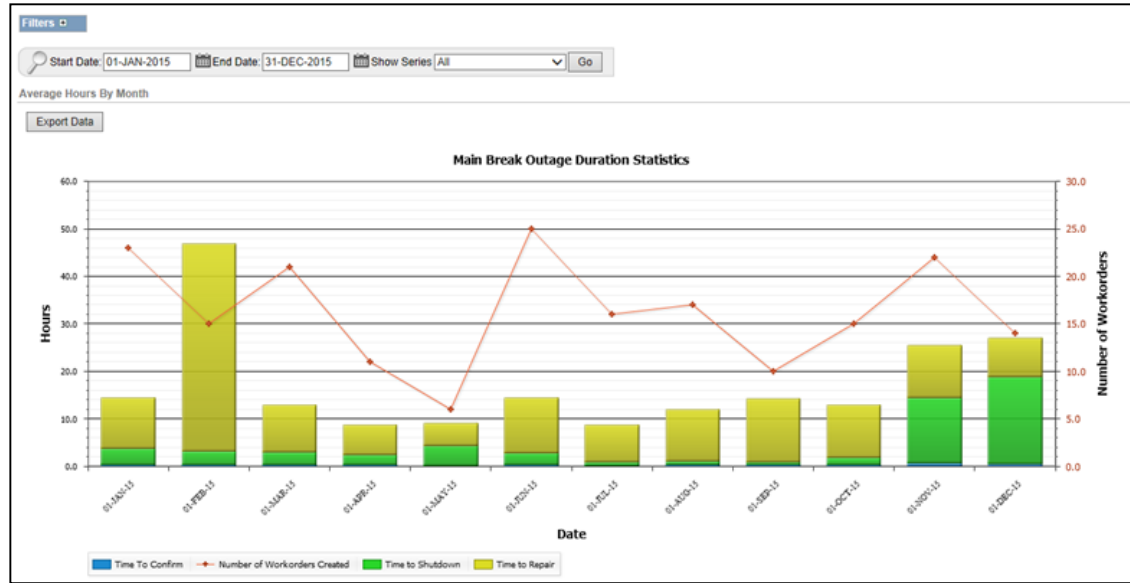
| Measure  | Target | Actuals |
|--|--------|---------|
| (PBR) Percentage of Main Breaks Repaired within 24 Hours               | 93.7   | 97.44   |
| (PBR) Main Breaks Repairs requiring more than 24 hours                 | 0      | 5.00    |
| (PBR) Average Response Time From Call to Water Main Break Confirmation | 25     | 21.30   |

**Main Breaks by Pipe Material**

| Year | Pipe Material | # Of Breaks |
|------|---------------|-------------|
| 2015 | Cast Iron     | 234         |
| 2015 | A.C           | 14          |
| 2015 | Steel         | 14          |
| 2015 | PVC           | 8           |
| 2015 | Other         | 6           |

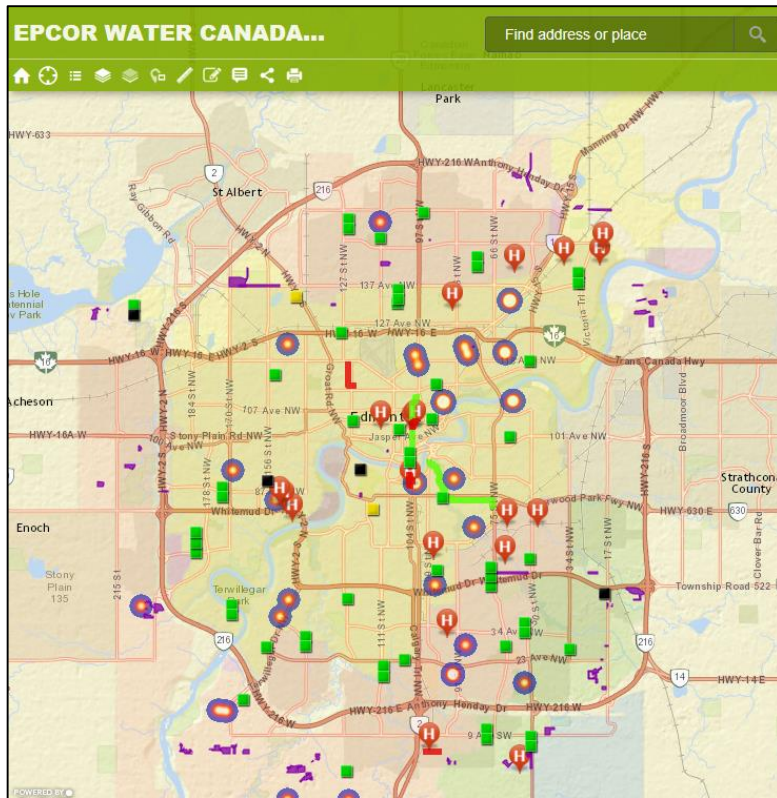
Dynamic Hyperlinks  
Between Lists and Dashboard

# Managers Report – Charts



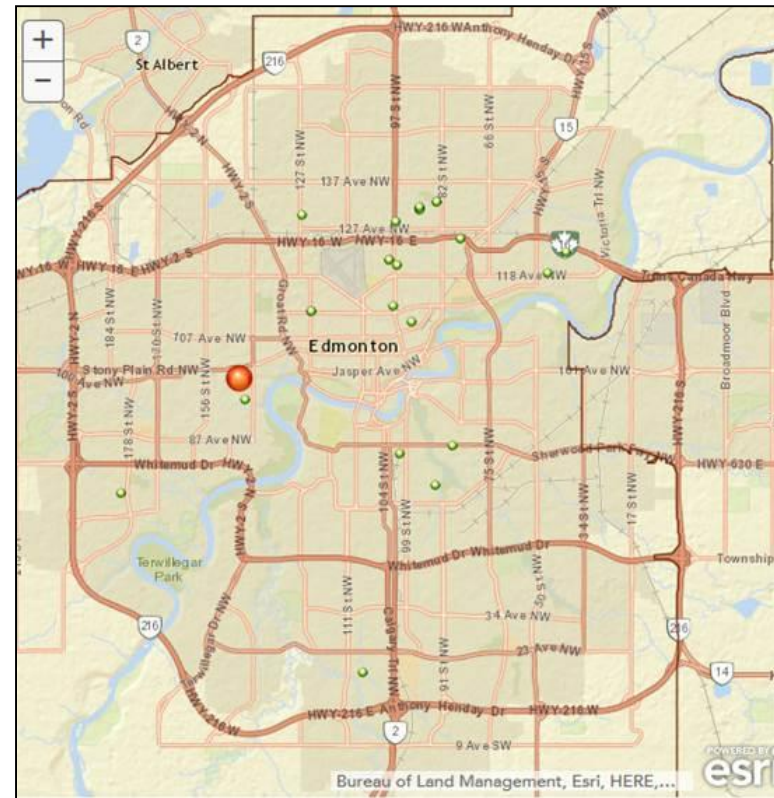
- All Charts link to List View
- Year over Year comparisons
- Export to Excel

# Situational Awareness Maps



## Internal Audience

Includes – main breaks, hydrant outages, active construction, water quality complaints, transmission shutdowns, current pressures



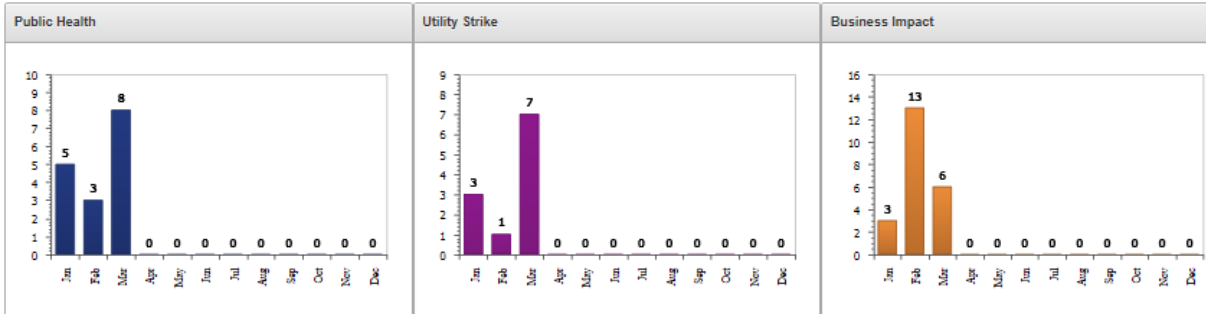
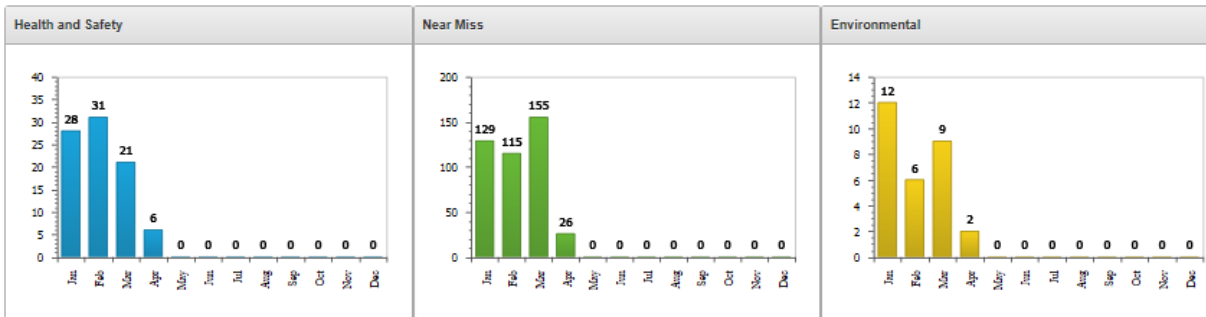
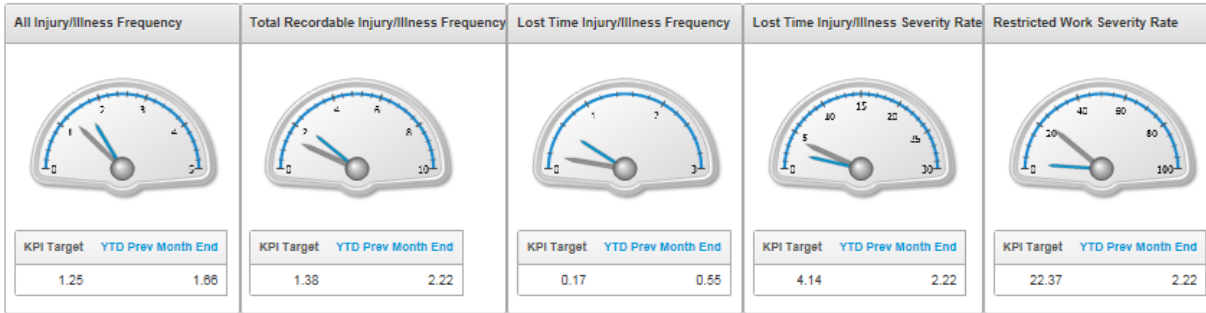
## External Audience

Main Breaks and Utility Strikes only – includes estimated water restoration times and whether customers are impacted and information on site restoration.

# Safety Dashboard

- Dynamic list view links
- Able to drill down to functional work groups
- Employee and Contractor incident analysis

|                     |                        |                               |                                   |
|---------------------|------------------------|-------------------------------|-----------------------------------|
| Last Lost Time Date | Days Without Lost Time | Last Recordable Incident Date | Days Without Recordable Incidents |
| January 31, 2017    | 70                     | February 22, 2017             | 48                                |



## Categories

- Health and Safety – People, Vehicles, Property Damage
- Near Miss
- Environment
- Public Health
- Utility Strikes – aligned with DIRT reporting methodology
- Business Impact – missed KPI, Financial impact

## Specific Data Collected

- Initial Incident Details – demographics, location, incident characteristics
- Detailed Investigations – root cause analysis, witness statements
- Corrective Actions – set dates to complete

## Performance Management and Reporting

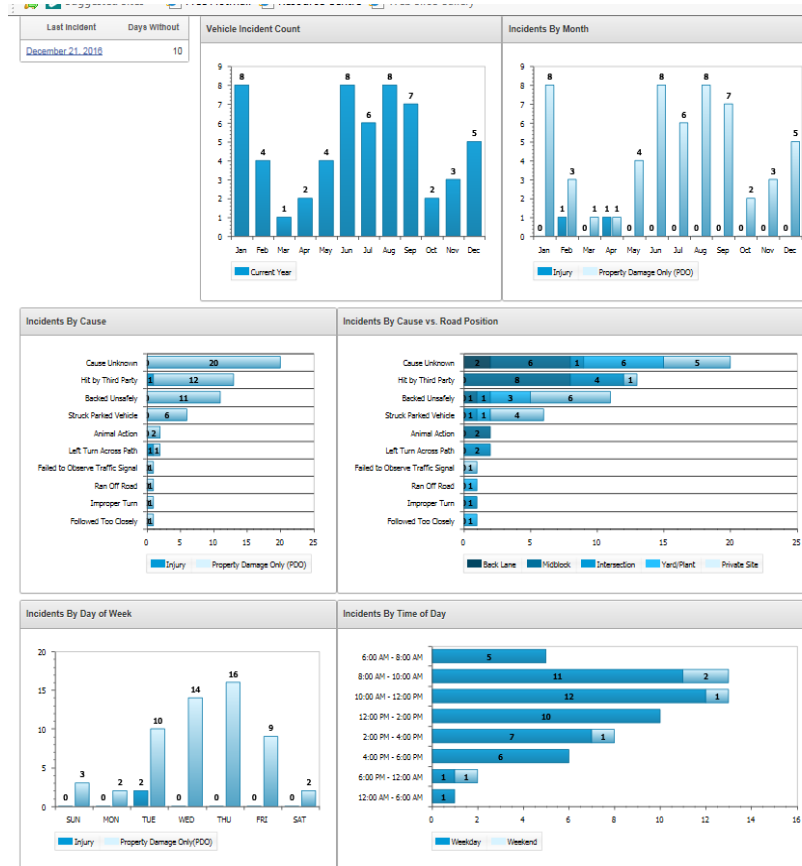
- Time to Complete Investigation
- Timeline for Corrective Actions
- Annual Verification of Corrective Action Effectiveness
- Year over Year Comparisons

# Safety Dashboard Detailed Charts

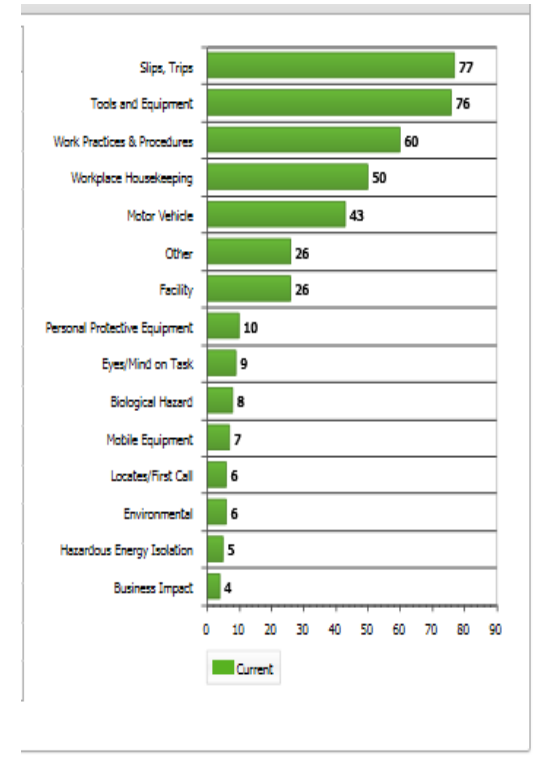
## Incidents by OHS Category and Injury Type



## Vehicle Incident tracking to match Office of Traffic Safety Metrics



## Near Miss by Risk Factor





# Safety Performance Results

