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LIVERMORE CALIFORNIA

# CAMP Meeting – Traffic Signs, Traffic Signals, and Street Lights

City of Livermore General Fund Asset Management Program

May 15, 2017

# Agenda

- Old business
  - Parks
    - Criticality adjustment
  - Trails
    - Incorporate commuter usage
- New business
  - Traffic Signs
  - Traffic Signals
  - Street Lights

# Parks, Plazas, and Trails

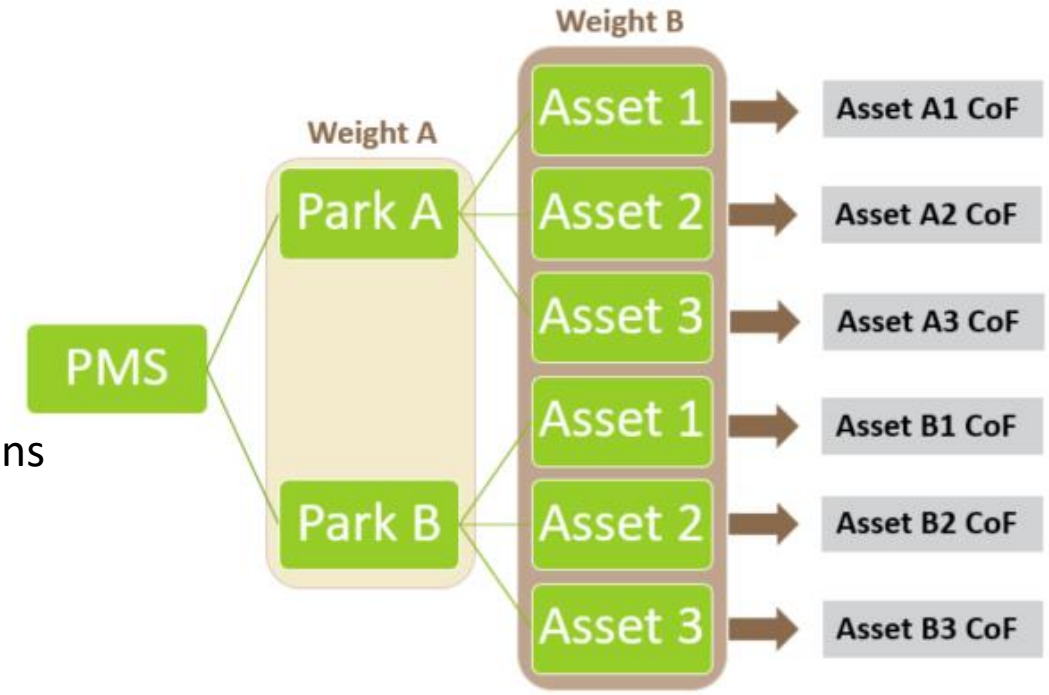
# Park Criticality

| Park/Plaza Name | Usage | Redundancy |
|---|---|---|
| Flagpole Plaza | High | Yes |
| Lizzie Fountain Park | High | Yes |
| Mills Square/Livermorium Plaza | High | Yes |
| Shea Plaza/LVC Plaza | High | Yes |
| Civic Center Park | High | Yes |
| Portola Park | High | Yes |
| Carnegie Park | High | Yes |
| Dolan Park | High | Yes |
| Freisman Park | High | No |
| East Ave Greens | High | Yes |
| Brickyard Park | Medium | Yes |
| Centennial Park | Medium | Yes |
| Hansen Rose Garden | Medium | Yes |
| Crater Walkways | Medium | Yes |
| Desiree Park | Medium | Yes |
| Sister City Park | Low | No |
| Rotary Park | Low | Yes |
| Madeira Park | Low | Yes |

- Further adjusted by:
  - Redundancy (LARPD park within ½ mile)

# Multi-Tiered Asset Criticality Methodology

- Criticality Methodology
  - By park type and location
    - Type
    - Usage
    - Location
  - By asset class
    - Example:
      - Playground
      - Drinking fountains
      - Bench
      - Picnic tables

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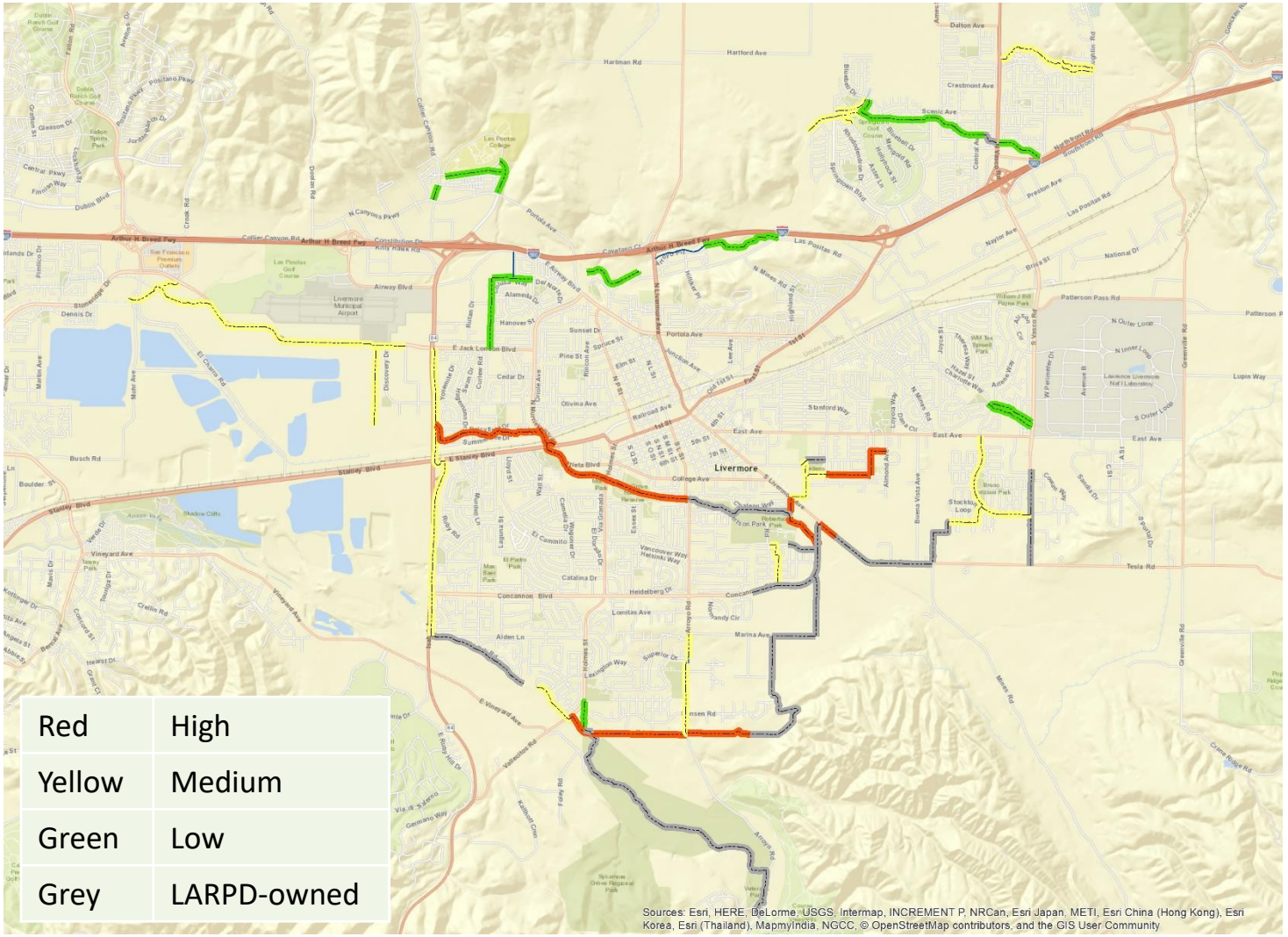
# Trail Criticality by Usage

| High Usage | Medium Usage | Low Usage |
|---|---|---|
| Almond School | Altamont Creek | Arroyo Seco |
| Arroyo Mocho Trail | Arroyo Del Valle | Collier Canyon Rd |
| Concannon Blvd | Arroyo Road | Deer Hollow Ln |
| Quezaltenango Parkway | Charlotte Way | Stealth |
| Wetmore Rd | Civic Center | Arroyo Las Positas |
| | Isabel Parkway | |
| | Pacific Ave | |
| | Vinsanto | |
| | West Jack London Blvd | |

- High – High traffic (especially commuter use)
- Medium – Medium traffic
- Low – Low traffic

# Trail Criticality Map




| | |
|---|---|
| Red | High |
| Yellow | Medium |
| Green | Low |
| Grey | LARPD-owned |

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# Traffic Signs

# Traffic Signs



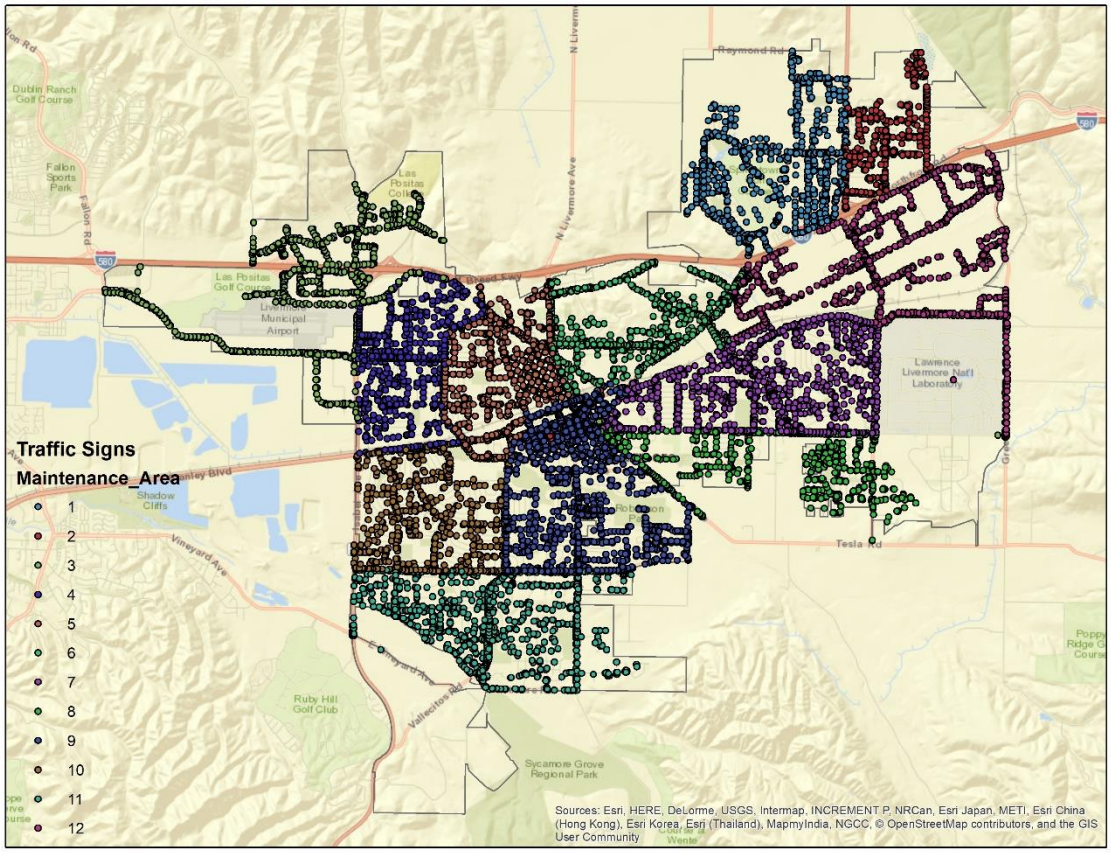


# Traffic Signs – Inventory

- 12,460 signs
  - Tracked by maintenance zone
  - Install year based on last blanket replacement year for maintenance zone
- 11,497 posts
  - From GIS
  - Removed non-pole types (e.g., street light, traffic pole, fence)

# Traffic Signs – Level of Service

- Replace signs every 12 years
  - All signs in a maintenance zone
  - 12 maintenance zones

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# Traffic Signs – Risk

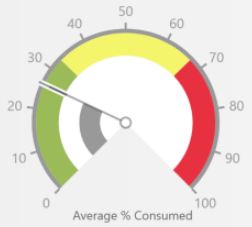
- PoF
  - Replace signs every 12 years
- CoF
  - Signs vary in criticality by type
    - Regulatory
      - Stop sign
      - Speed limit
      - Etc.
    - Warning
      - Pedestrian crossing
      - Caution
      - Etc.
    - Directional
      - Street name sign
      - Etc.

# Traffic Signs – Management Strategy

| | Cost | Useful Life | Comment |
|---|---|---|---|
| Sign/Facing | $ 100 | 12 years | $35 for blank sign, remaining for labor |
| Post & Shoe | $ 200 | 24 years | $100 for post, remaining for labor |

# Traffic Signs – Initial Results

## Traffic Signs

| Install Range | Total Annualized R&R | Sum of Asset Replacement Cost | Consumption |
|---|---|---|---|
| 2006 - 2017 | $185,610 | $3,545,400 |  |
| **Average % Consumed** | **Total R&R for Planning Horizon** | **Total Assets** | |
| 26 % | $5,568,300 | 23,957 | |

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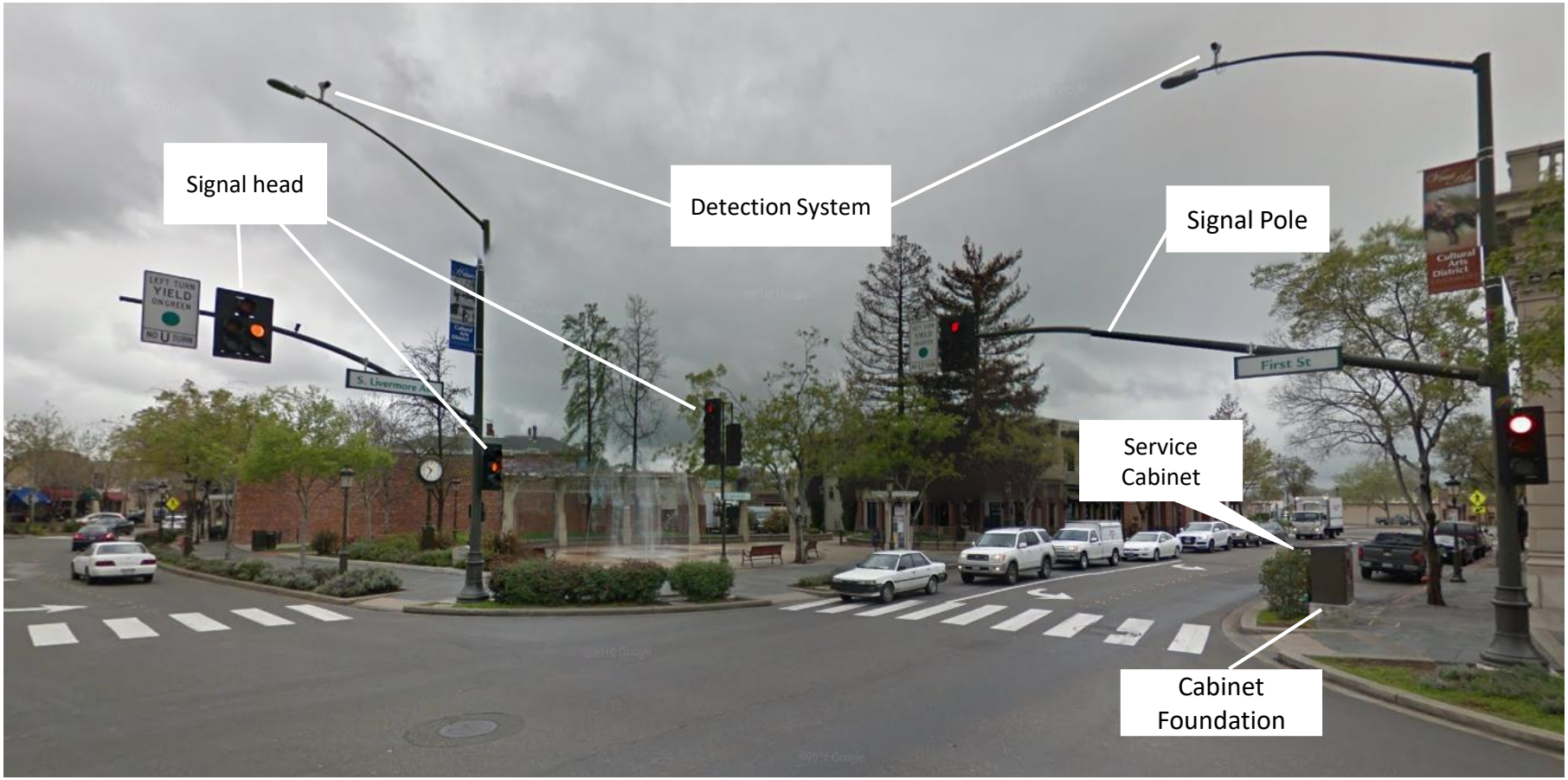
# Traffic Signals

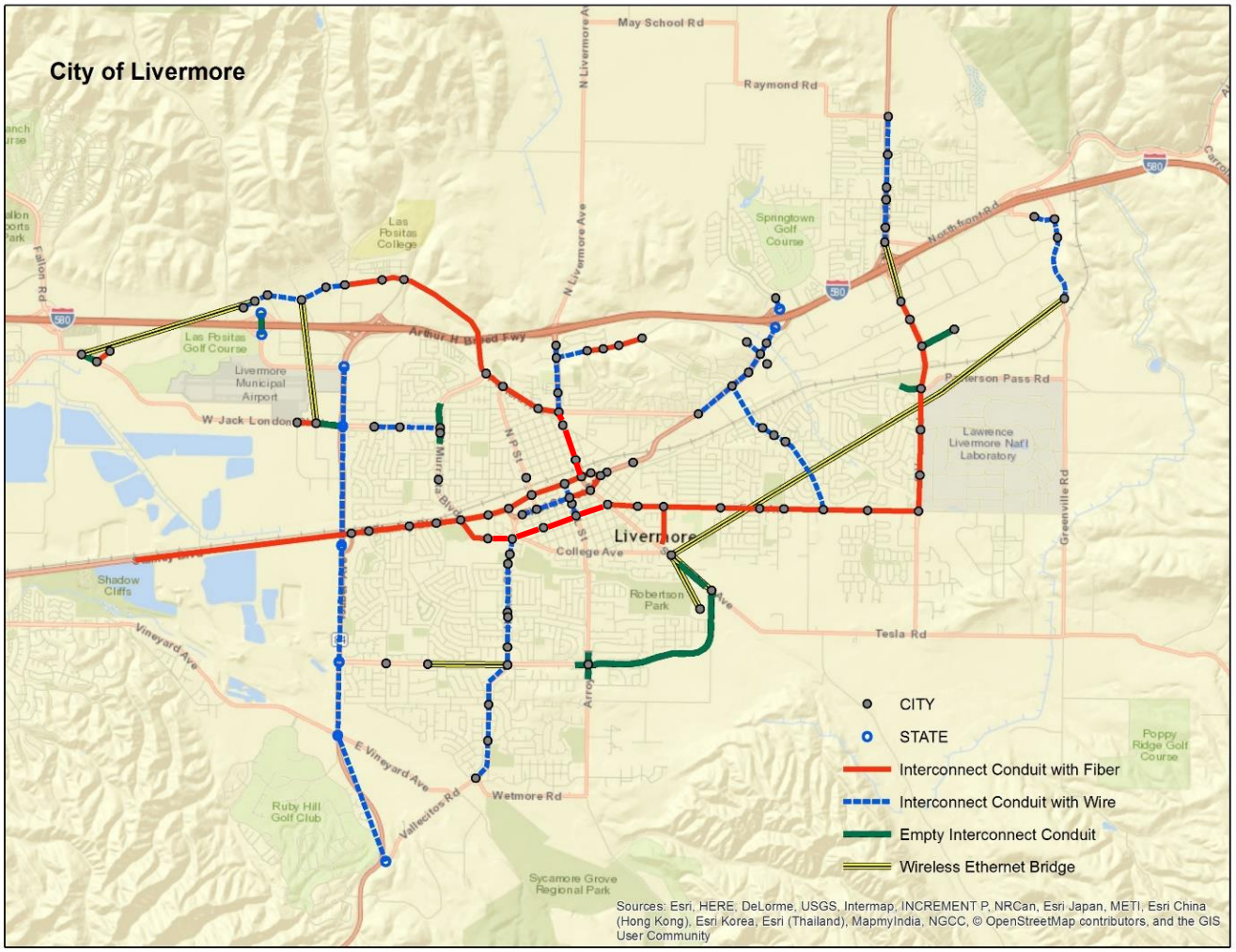
# Traffic Signal Assets



# Traffic Signals - Inventory

- Number of signals: 106
- Assets
  - Signal Pole (1B/TS)
  - Signal Heads
  - Controller Components
  - Pedestrian Signal Head
  - Pedestrian Push Buttons
  - Street Light
  - Service Cabinet with BBS
  - Detection System (Loops, Camera)
  - Cabinet Foundation
  - Service Cabinet
  - CCTV
  - Interconnects

# Traffic Signals – Interconnects

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# Traffic Signals – Level of Service

- Replace all traffic signals before failure

# Traffic Signals – Management Strategy

| Asset | Type | Useful Life | Replacement Cost | Rehab Activity 1 | Frequency | Cost | Rehab Activity 2 | Frequency | Cost |
|---|---|---|---|---|---|---|---|---|---|
| Signal Pole | 1B | 50 | $ 10,000 | | | | | | |
| | TS - Small | 50 | $ 20,000 | | | | | | |
| | TS - Large | 50 | $ 30,000 | | | | | | |
| Signal Heads | | 40 | $ 5,000 | Replace LEDs | 10 | $ 1,000 | | | |
| Controller Cabinet | | 30 | $ 30,000 | Update internal components | 5 | $ 4,000 | | | |
| Cabinet Pedestal | | 60 | $ 3,000 | | | | | | |
| Service Cabinet (no BBS) | | 40 | $ 18,000 (Replace with BBS) | Replace batteries | 3 | $ 2,500 | Replace BBS Controller | 10 | $ 3,000 |
| Service Cabinet with BBS | | 30 | $ 18,000 | Replace batteries | 3 | $ 2,500 | Replace BBS Controller | 10 | $ 3,000 |
| Detection System | Loop | 12 | $800 per loop | | | | | | |
| | Video | 15 | $5,000 per camera | | | | | | |
| Ped Buttons | | 15 | $ 2,000 | | | | | | |
| Ped Head | | 25 | $ 2,000 | Replace LEDs | 12 | $ 1,000 | | | |
| Street light (on signal pole) | | 15 | $ 600 | | | | | | |
| CCTV | | 15 | $ 10,000 | Rehab | 8 | $ 1,000 | | | |

# Traffic Signals – Interconnects

| Asset | Useful Life | Replacement Cost |
|---|---|---|
| Interconnect Conduit | 50 | $25 per FT |
| Interconnect Fiber Cable | 25 | $6 per FT |
| Interconnect Wire Cable | 25 | $3 per FT |
| Ethernet Wireless | 10 | $7,000 per intersection |

# Traffic Signals – Risk

PoF:

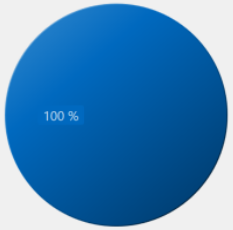
- Based on age or condition

CoF:

- All signals are critical!
- Criticality of intersection based on volume and speed of traffic
- Asset criticality by function

| Class/Type | CoF |
|---|---|
| Signal Pole (1B/TS) | 5 |
| Signal Heads | 5 |
| Controller Components | 5 |
| Pedestrian Signal Head | 5 |
| Pedestrian Push Buttons | 5 |
| Street Light | 5 |
| Service Cabinet with BBS | 5 |
| Detection System (Loops, Camera) | 4 |
| Interconnect | 4 |
| Controller Cabinet | 3 |
| Cabinet Foundation | 3 |
| Service Cabinet | 3 |
| CCTV | 3 |

# Traffic Signals – Initial Results

| Install Range | Total Annualized R&R | Sum of Asset Replacement Cost | Valuation |
|---|---|---|---|
| 0 - 0 | $1,560,992 | $34,900,673 |  |
| **Average % Consumed** | **Total R&R for Planning Horizon** | **Total Assets** | |
| 73 % | $46,829,773 | 6,719 | |



# Street Lights

# Street Lights - Inventory

- Lights
  - City GIS cleanup in progress
  - Estimated inventory: Approx. 8,000
    - 6,200 converted during the LED conversion project
    - 1,800 unknown type
- Poles
  - Estimated inventory: 6,226
  - 3 different pole types: ornamental, street light, and power pole (not included as the City is not responsible)

# Street Lights – Level of Service

- Ensure all lights are functioning
- Upgrade to LED lights

# Street Lights - Risk

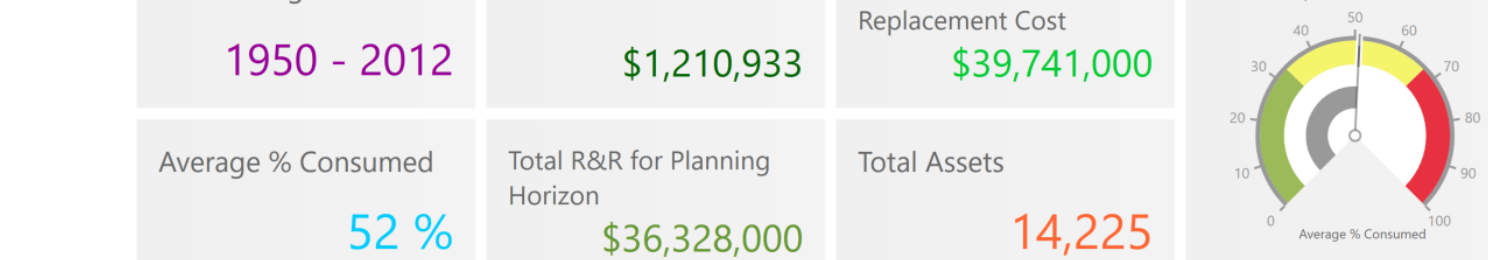
- PoF
  - By age
- CoF
  - Gathering places most critical (e.g., Downtown area)
  - By road type: arterial > collector > residential

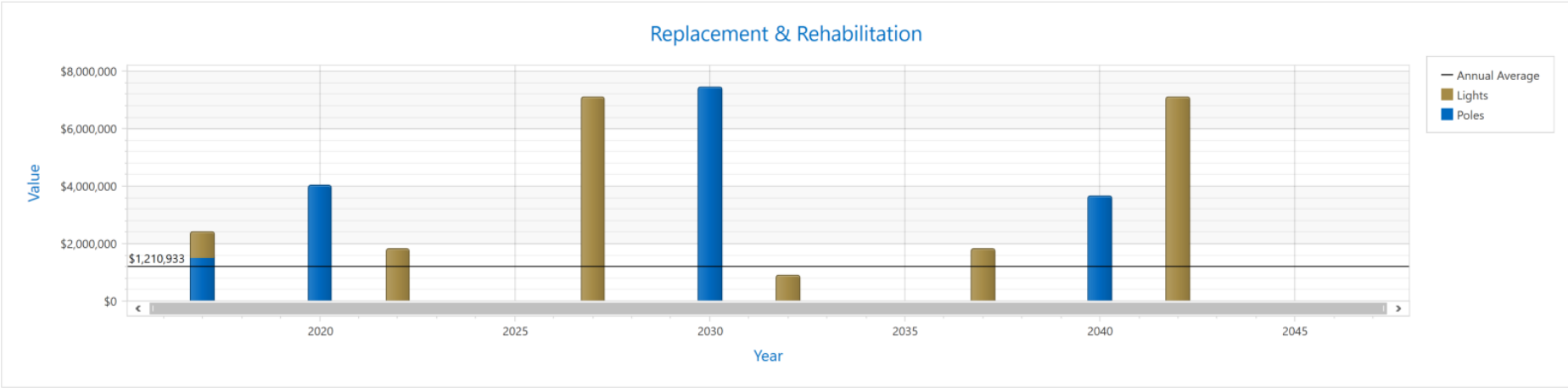
# Street Lights – Management Strategy

| Asset Class/Type | Useful Life | Replacement Cost ($/Unit) |
|---|---|---|
| Ornamental Pole | 60 | $6,000 |
| Street Light Pole | 60 | $5,000 |
| Power Pole | Not City's responsibility | |
| LED Light Fixture – Bridgelux (Retrofit) | 8 | To be replaced with Leotek @ $1,000 |
| LED Light Fixture – Bridgelux (Assume replace with Leotek) | 15 | $1,000 |
| LED Light Fixture - Leotek | 15 | $1,000 |

# Street Lights – Initial Results

| | | | |
|---|---|---|---|
| Install Range<br>1950 - 2012 | Total Annualized R&R<br>$1,210,933 | Sum of Asset Replacement Cost<br>$39,741,000 | Consumption |
| Average % Consumed<br>52 % | Total R&R for Planning Horizon<br>$36,328,000 | Total Assets<br>14,225 | |

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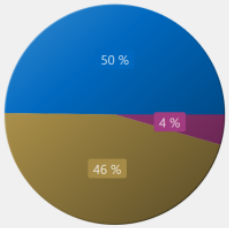
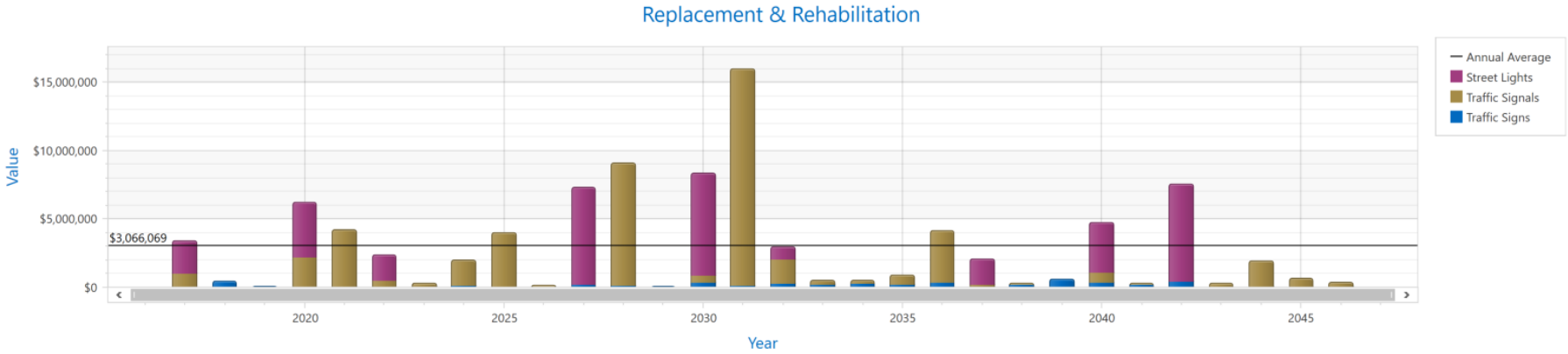
# Roadway Combined

# Lights, Signals & Signs - Initial Results

Roadway Management System

| Install Range | Total Annualized R&R | Sum of Asset Replacement Cost | Valuation |
|---|---|---|---|
| 1950 - 2017 | $3,066,069 | $79,815,073 |  |
| **Average % Consumed** | **Total R&R for Planning Horizon** | **Total Assets** | |
| 60 % | $91,982,073 | 44,901 | |



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