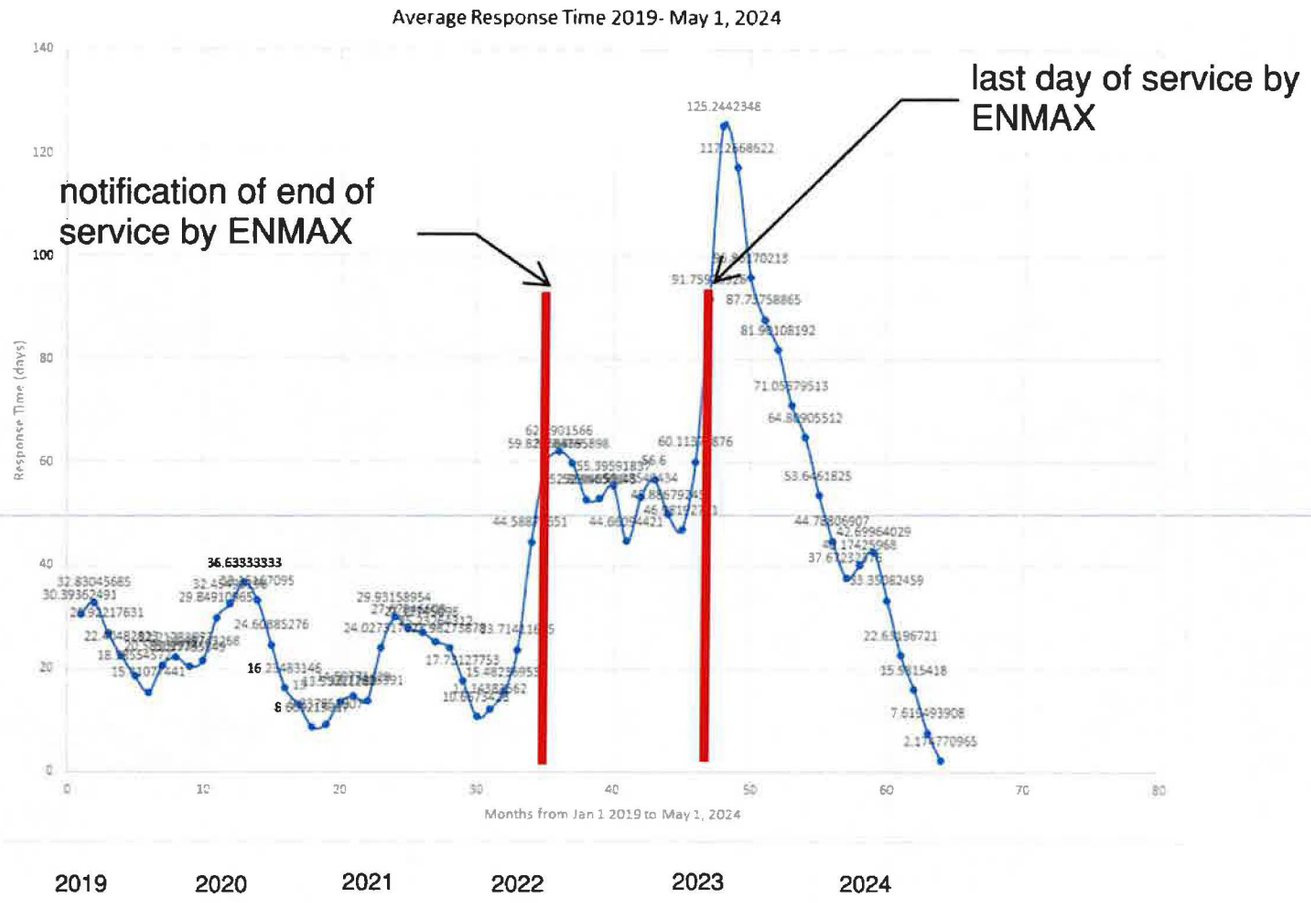
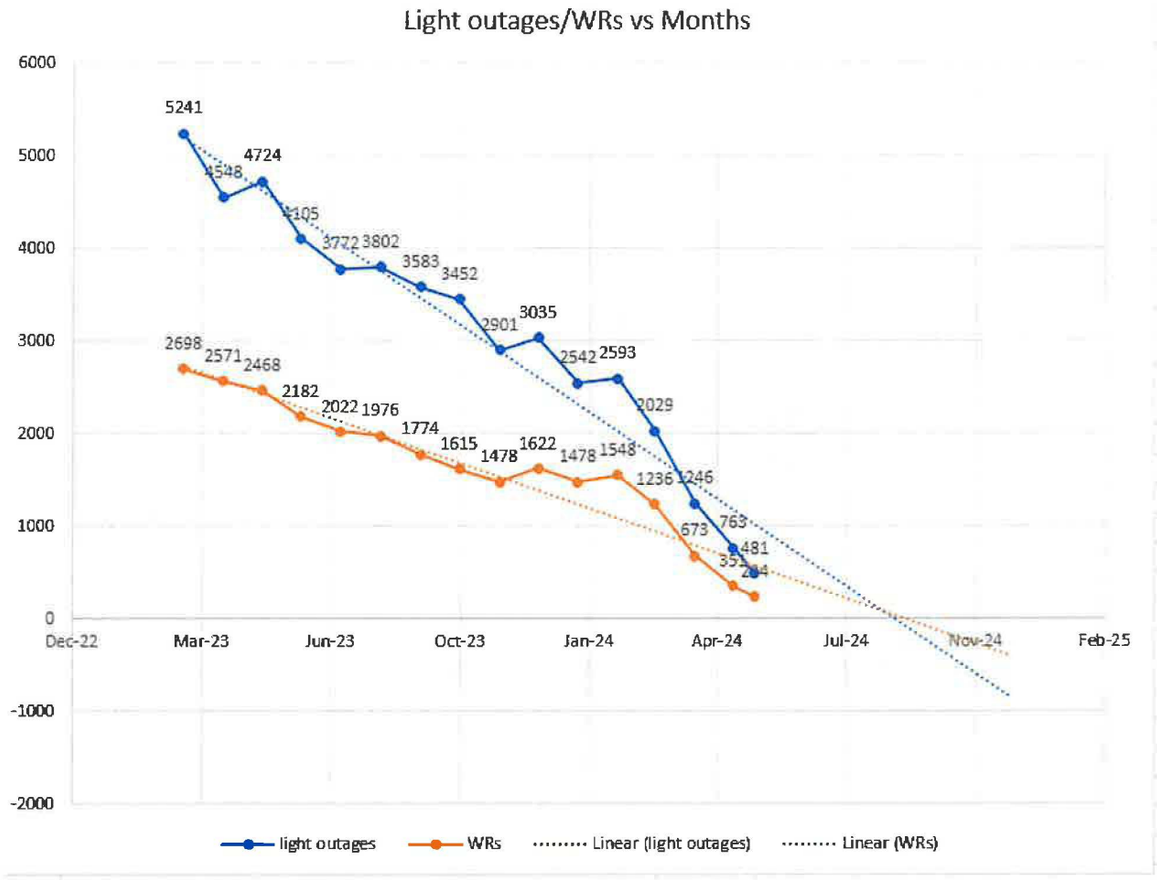
Street Lighting Maintenance & Repair Operations Audit

Audit Committee - May 23, 2024

Average Response Time To Repair (2019-2024)

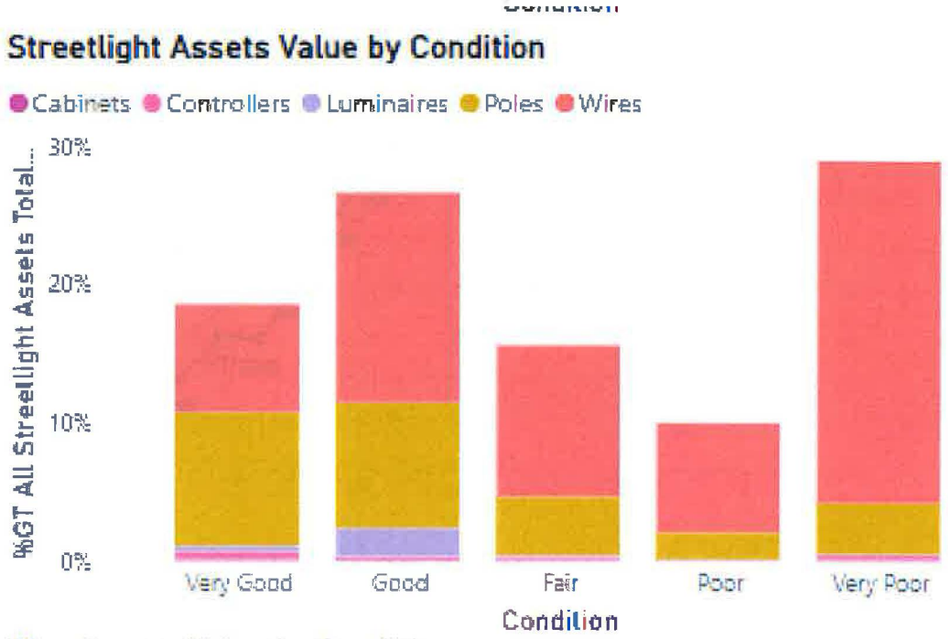


Streetlight Outage Trendline



Asset Condition

- 1.0% reinvestment ratio (CAPEX) is a recommended best practice
- 0.4% is the reinvestment ratio achieved in 2023
- Require increase from $8M annual capital budget to $20M to achieve 1%



City Street Light Program

Streetlights are key safety features along major roadways and in communities that support safe use of the street and sidewalk networks 24 hours a day. There are 105,000 streetlights in Calgary.

Contracted work includes:

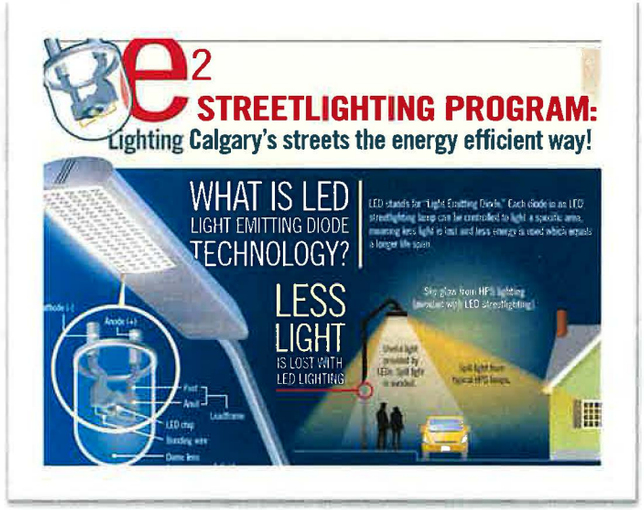
- Outage response (break-fix)
- Specialty maintenance (e.g. high mast poles)
- Critical pole replacement
- Underground repairs.

Assets (as of Feb 2024)			
	Amount	**Replacement Value ($1M)**	**Avg Growth per unit (new per year)**
Poles/foundations (#)	90,549	543	850
Foundations	88,380		840
Luminaires (#)	105,288	52.6	2,000
Wires (km)	7,344	1,285	34
Controllers (#)	11,386	22.7	225
Cabinets (#)	643	12.86	15

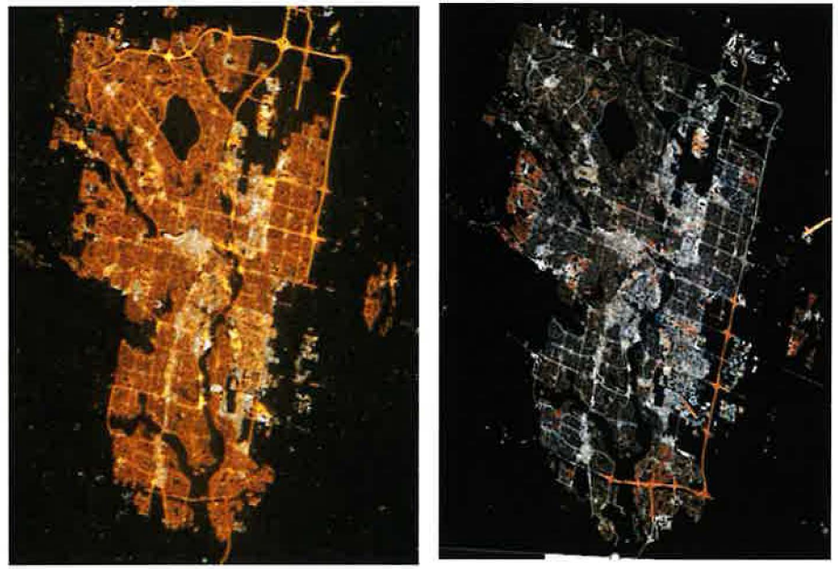
Total Asset Value - $1.9B

LED Retrofit Program

- The LED retrofit program was completed in 2017
- $7.6M/year or 40MkWhrs/yr or 15,900 tons CO2/yr reduction
- ~$56M cost avoidance since 2017
- The program won the Emerald Award in 2018



HPS LED



Recommendations

Before Audit	Recommendation	After Audit
Use a first in first out system Geographic approach Escalations are done by the street light team based by manual query and on demand by citizens through 311 and the work management system (WMS)	# 1 Work Order Prioritization, Resource Optimization and Escalation Process	Sustainable staffing levels SOP in place for escalation and management response and a prioritization criteria using customer centered considerations such as high pedestian areas, land-use, flickering lights, etc A revised escalation management strategy will be developed once the number of outages is 500 or less. This escalation management strategy will incorporate the type of roadway, adjacent land use, pedestrian levels, and special events.
Informal progress meetings with vendor Work with various City business units as required in the contract (Law, Supply, Risk, Finance, Safety) to execute the contract Limited reporting data available prior to audit	# 2 Contract Compliance Monitoring	Formally document and ensure contract compliance for the following but not limited to: Safety management system Review insurance, COR, bonding Prequalification Align PO to budget Contract renewals Progress meetings Business object reporting of response and repair times automation to ensure compliance to contract
WMS, financial system, and 311 system are not connected Some data is free text field for field crews but that data is not easily queried Property damage is not managed through the WMS	#3 Work Management System Data	Integration with financial system, property damage Explore integration with 311

Common Sources of Outages

Prolonged Outages

1. Underground failure due to sidewalk construction, infills, utility work, driveway widenings
2. Majority (50%) of the outages are due to condition of the underground infrastructure.
3. Specialized material (luminaires, poles, bases) with long lead times
4. Heritage locations with customized features
5. Road closures on major roads, bridges and high pedestrian areas
6. Access to confined spaces
7. Theft
8. Non FAC lights under private care

Routine Outages

1. Fuse replacement
2. Cobrahead luminaire replacement

Why we have righted the ship

Critical Pole

- Annual programs to replace ~1000 to 1500 poles per year
- Zero fallen poles from wind since 2022
- Inspection program to inspect ~5,000 poles per year since 2019

SLA

- Reduced backlog from 5200 in Feb 2023 to 481 outages as of May 21 2024 (99.95%)
- Response time in Dec 2022 was 125 days down to 22.6 days in Dec 2023 and to 7.6 days in April 2024
- We have added on-demand capacity with private crews outside the SLA vendor
- Added staff to track materials
- Will implement the recommendations of the audit to bring the street light program to program maturity

Performance	2019	2020	2021	2022	2023	2024 (May 1, 2024)
Work Requests reported	8,784	8,355	7,606	8,644	8686	4,385
Maintenance response time (annual avg days to respond) ***	25.5	22.1	30.7	65	61	11.57
Critical poles replaced	767	1,200	1,500	1,000	1200	350
Fallen critical poles	6	6	3	4	0	0

***Response time is represented as an annual aggregate