



IMPLEMENTATION PLAN FOR THE LED STREET LIGHT REPLACEMENT PROGRAM

May 10, 2018

Public Works Commission



Outline

- Background
- Electrical and Cost Saving Analysis
- LED Fixture and Adaptive Control Analysis
- Smart City
- Public Safety Analysis
- Fiscal Analysis
- Conclusion
- Recommendation



Background

- City Council Priority
- Public Works Commission recommended to proceed during January 11, 2018 meeting.
- IT Technical Committee recommended to include Adaptive Controls.



Electrical and Cost Savings

- Initial estimate: 2,400 MWh/year = \$184,000
- Energy and Cost Benefits

TABLE 1: ENERGY SAVINGS SUMMARY

MWh Existing System	MWh LEDs	MWh Saved	Additional MWh Saved With Adaptive Controls	Total MWh Saved
4761	1508	3254	527	3781

TABLE 2: COST SAVINGS SUMMARY

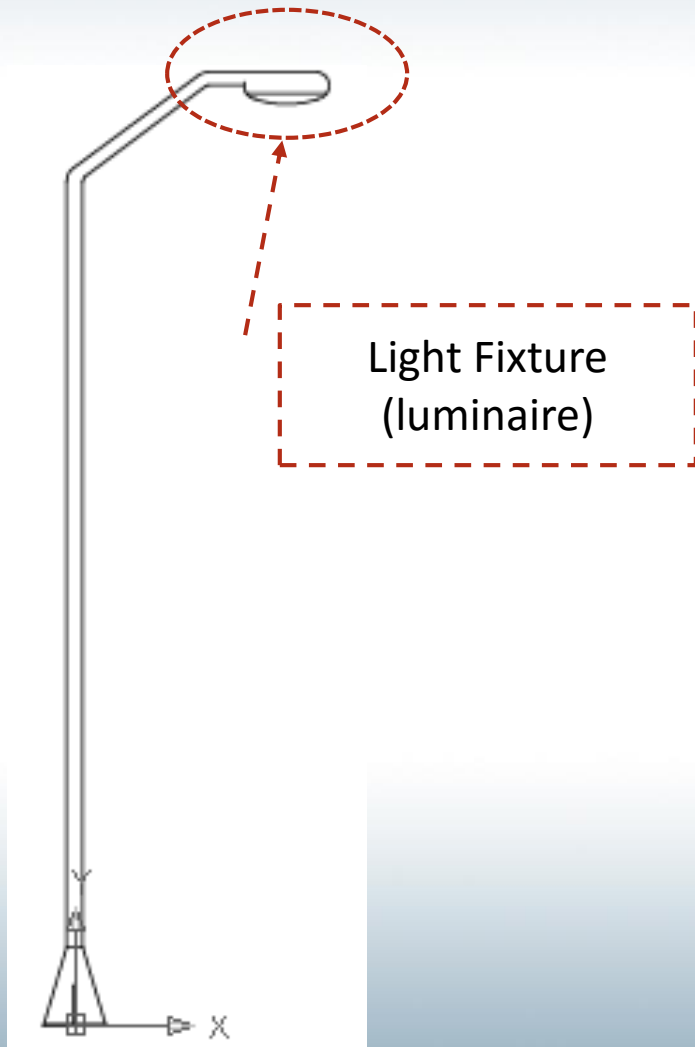
PART 1	LED New Fixtures No Adaptive Controls	Adaptive Controls With Dim Values
	Totals	Totals
<i>Estimated Existing Annual Lighting Energy Cost</i>	\$ 367,000	\$ 367,000
<i>Estimated Proposed Annual Lighting Energy Cost</i>	\$ 120,000	\$ 120,000
<i>Estimated Annual Lighting Energy Savings</i>	\$ 247,000	\$ 247,000
<i>Advance Controls Savings</i>	\$ -	\$ 40,000
1st Year Estimated Energy Savings	\$ 247,000	\$ 287,000
Project Annual Energy Cost	\$ 120,000	\$ 80,000.00



LED Fixtures and Adaptive Controls



TLRSR Option



Light Fixture
(luminaire)



Smart City Device

- Street light fixtures provide power and communication needs for Smart City device.

Benefits of being System ready



Flexible

Luminaires have an SR socket on the bottom and NEMA socket above

Simple installation and maintenance

Plug and play; easy to retrofit in the field

Standardized technology

Aesthetics

Unobtrusive design, compact form factor

Future-proof

Flexibly scale up to meet future requirements



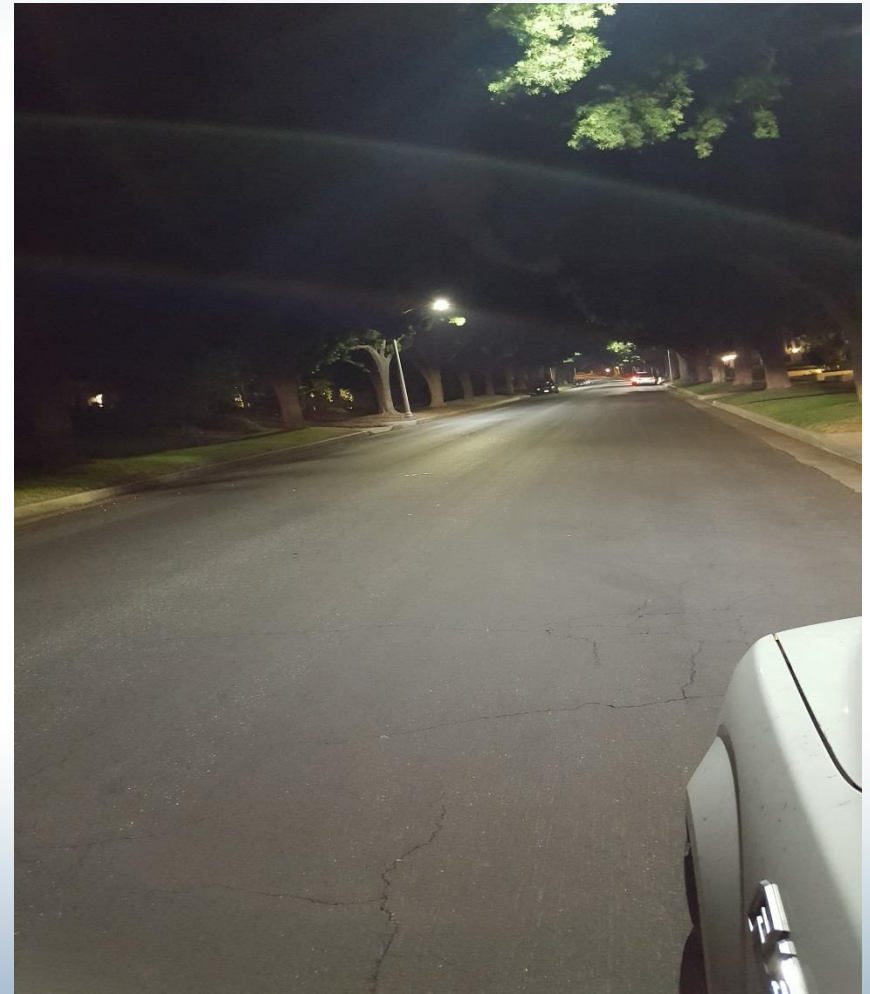
Smart City
Leverage existing lighting infrastructure / (extra) sockets





Public Safety

- Provides a clearer image of the overall environment vs. existing lights.
- No issues with different light settings.





Fiscal Analysis

- LED Light Conversion: \$2.4M to \$2.7M (10-11 years return)
- Adaptive Control: + \$1.7M to \$1.8M
- Overall Cost: \$4.2M to \$4.5M (15-16 years return)



Conclusion

- Philips LED fixtures & City Touch
 - Environmental and Cost Savings
 - Cost
 - Integration for future Smart City devices



Next Steps

- City Council Liaison → Council for execution in June 2018.
- Use National Joint Powers Alliance (NJPA) for procurement and installation.
- Product procurement 4 to 6 weeks.
- Installation up to 6 months.



Recommendation

- Full LED Conversion with Adaptive Controls.
- Recommend to appropriate additional
~\$2.0M.



Fiscal Analysis Table

TABLE 7: FISCAL ANALYSIS SUMMARY

PART 1		LED New Fixtures No Adaptive Controls	Adaptive Controls With Dim Values	
		Totals	Totals	Totals
<i>Estimated Existing Annual Lighting Energy Cost</i>		\$ 367,000.00	\$ 367,000.00	
<i>Estimated Proposed Annual Lighting Energy Cost</i>		\$ 120,000.00	\$ 120,000.00	
<i>Estimated Annual Lighting Energy Savings</i>		\$ 247,000.00	\$ 247,000.00	
<i>Advance Controls Savings</i>		\$ -	\$ 40,000.00	
1st Year Estimated Energy Savings		\$ 247,000.00	\$ 287,000.00	
Projected Annual Energy Cost		\$ 120,000	\$ 80,000.00	
PART 2		LED New Fixtures No Adaptive Controls	LED with Adaptive Controls	Additional Cost for Adaptive Controls incl. Cellular Contract
		Totals	Totals	Totals
Philips		\$ 2,469,720.00	\$ 4,223,458.00	
Estimated Utility Incentive		\$ (52,000.00)	\$ (52,000.00)	
Net project cost		\$ 2,417,720.00	\$ 4,171,458.00	\$ 1,753,738.00
Payback		10	15	
GE		\$ 2,766,720.00	\$ 4,570,866.67	
Estimated Utility Incentive		\$ (52,000.00)	\$ (52,000.00)	
Net project cost		\$ 2,714,720.00	\$ 4,518,866.67	\$ 1,804,146.67
Payback		11	16	
Leotek		\$ 2,664,891.43	\$ 4,410,608.22	(Echelon)*
Estimated Utility Incentive		\$ (52,000.00)	\$ (52,000.00)	
Net project cost		\$ 2,612,891.43	\$ 4,358,608.22	\$ 1,745,716.79
Payback		11	15	

* Echelon- Cellular cost is not included in the price. There is also a \$12,000 yearly subscription fee for software use.



LED Fixtures Analysis

- Criteria: Costs, options for Adaptive Controls and integration with Smart City Device
- Products
 - Leotek
 - Philips
 - GE



Tool Less Receptacle standard



2-Clamp Option



TLRSR Option



Adaptive Control Analysis

- Criteria:- In addition to cost and warranty
 - Flexibility with other LED Light Fixtures
 - Robust Communication Network Design for Reliability
 - Reducing communication failures by limiting the potential communication equipment that may fail. (I.E. No. of Gateways)
 - Flexibility for future Smart City Devices (Open Architecture)
- Products:
 - Echelon
 - Philips – City Touch
 - GE – Lite Grid

