Mayor's Environmental Task Force

Meeting Summary

October 6, 2016

- An attendee list is included as Attachment 1.
- After introductions, the following announcements were made:
    - Dan King reminded attendees of the 2016 Environmental Leadership Awards to be held Wednesday, November 2nd at the Nebraska Innovation Campus. Reservations can be made through the LLCHD by calling 402-441-8023 before October 26th.
    - Cecil Steward announced that the Joslyn Institute for Sustainable Communities had received a "Value Added Producer Grant" from the USDA partnering with Prairie Plate Restaurant near Waverly.
    - Frank Uhlarik announced that LES was evaluating a number of "light emitting diode" (LED) streetlight luminaire products from different manufacturers in a pilot project staged along Van Dorn St. from 72nd St. to 82nd St. LES would appreciate feedback on the quality of the lighting and encourages METF participants to safely drive the area during evening hours (**WITHOUT LOOKING INTO THE LIGHTS**) to observe the quality of illumination at street level. Please also walk the corridor to more carefully observe the lighting characteristics and complete the feedback form which can be found with a guide for LED lighting and labeled maps of the test fixture locations in Attachment 2.
- Sub-committee representatives next summarized goals/recommendations for further consideration in updating the Sustainable Lincoln Plan. Recommendations were largely accepted with a few suggestions related to district specificity in infill incentives, analysis/reconsideration of the bus flagging policy and the need for greater on-street connectivity and marking related to bikeways (to be reiterated in the next update to the LRTP).
- Frank concluded regarding the path forward with the intent of briefing Cabinet on recommendations, having further detailed discussions with individual directors and staff to further vet and clarify actions and responsibilities related to the recommendations and circling back with the METF with a status report on November 3rd.
- A copy of the draft recommendations is included as Attachment 3.

Attachment 1 – Attendee List

CLEANER GREENER LINCOLN
MAYOR CHRIS BEUTLER
"OUR HOME, OUR FUTURE, OUR CHOICE"

Mayor Beutler's Environmental Task Force -- October 6, 2016

Name	Representing	E-mail	Phone
Lucas Sabalka	Nebraska League of Conservation Voters, Lincoln Citizens' Climate Lobby	Sabalka@gmail.com	402-770-0588
Donna Garden	City of Lincoln – PWU	dgarden@lincoln.ne.gov	402-441-8605
Karla Welding	City/PW+U/ Solid Waste Management Division	Kwelding@lincoln.ne.gov	402-441-7867
Maggi Thorne	SHS	nevergiveup@maggithorne.com	402-304-4651
Jessica Wheeler	The Groundwater Foundation	jwheeler@groundwater.org	402-434-2740
Victoria Keating	PWU	VKeating@lincoln.ne.gov	402-441-7558
Gene Hanlon	Solid Waste	ghanlon@lincoln.ne.gov	402-441-7043
Steve Owen	PWU – Water	sowen@lincoln.ne.gov	402.441.5925
Amy Swoboda	Legal Aid of Nebraska	aswoboda@legalaidofnebraska.org	402 660 7928
Pat Anderson	NeighborWorks Lincoln	panderson@nwlincoln.org	477-21[illegible]
Rosina Paoline	~~Local Food~~ Food Policy Council METRO Area Planning	rapaoline@gmail.com	402-423-1260
Scott Holmes	LLCHD (Health)	sholmes@lincoln.ne.gov	402-441-8634

CLEANER GREENER LINCOLN
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Mayor Beutler's Environmental Task Force – October 6, 2016

Name	Representing	E-mail	Phone
Marilyn McNabb	Wachiska Audubon	mmcnabb1@windstream.net	402-476-7463
Anne McCollister	NCEA	anne@ecpnebraska.com	402 613 9566
Dan Schlitt			
Doma Woudenberg	JISC - UNL	dwoudenberg2@unl.edu dwoudenberg@sustainabledesign.org	402-730-5996
Kim Morrow	Verdis Group	kim@verdisgroup.com	402.405-9425
Cecil Steward	Joslyn Mfg.	csteward1@unl.com	402-730-0890
Dan King	Citizen	dannythek@gmail.com	402.480.3046
Mark Brahman	NET	mark.brahman@nebraska.gov	402-471-6795
Brandon Garrett	Planning	bgarrett@lincoln.ne.gov	402-441-6373
Megan McGuffey	Lincoln-Lancaster EPC / UNO	mmcguffey@unomaha.edu	402-618-6087
Tim Rinne	Nebraskans for Peace	walterinne@gmail.com	402-730-6675
Kendall Weyers	Bluestem Sierra	skyweyers@gmail.com	402-613-5774

CLEANER GREENER LINCOLN
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"OUR HOME, OUR FUTURE, OUR CHOICE"

Mayor Beutler's Environmental Task Force – October 6, 2016

Name	Representing	E-mail	Phone
Kurt ELDER		KELDER@Lincoln.ne.gov	1-7874
Sara Hartzell	Parks + Rec	shartzell@lincoln.ne.gov	1-8261
Greg Long	Kennedy / Jenks	greglong@kennedyjenks.com	402 937-3308
Ben McShane-Jewell	Community Corps	Ben@communitycorps.org	402-474-9802

Attachment 2 – LED Information Packet and Evaluation Form

LIGHT EMITTING DIODE (LED) TEST SITE FEEDBACK FORM

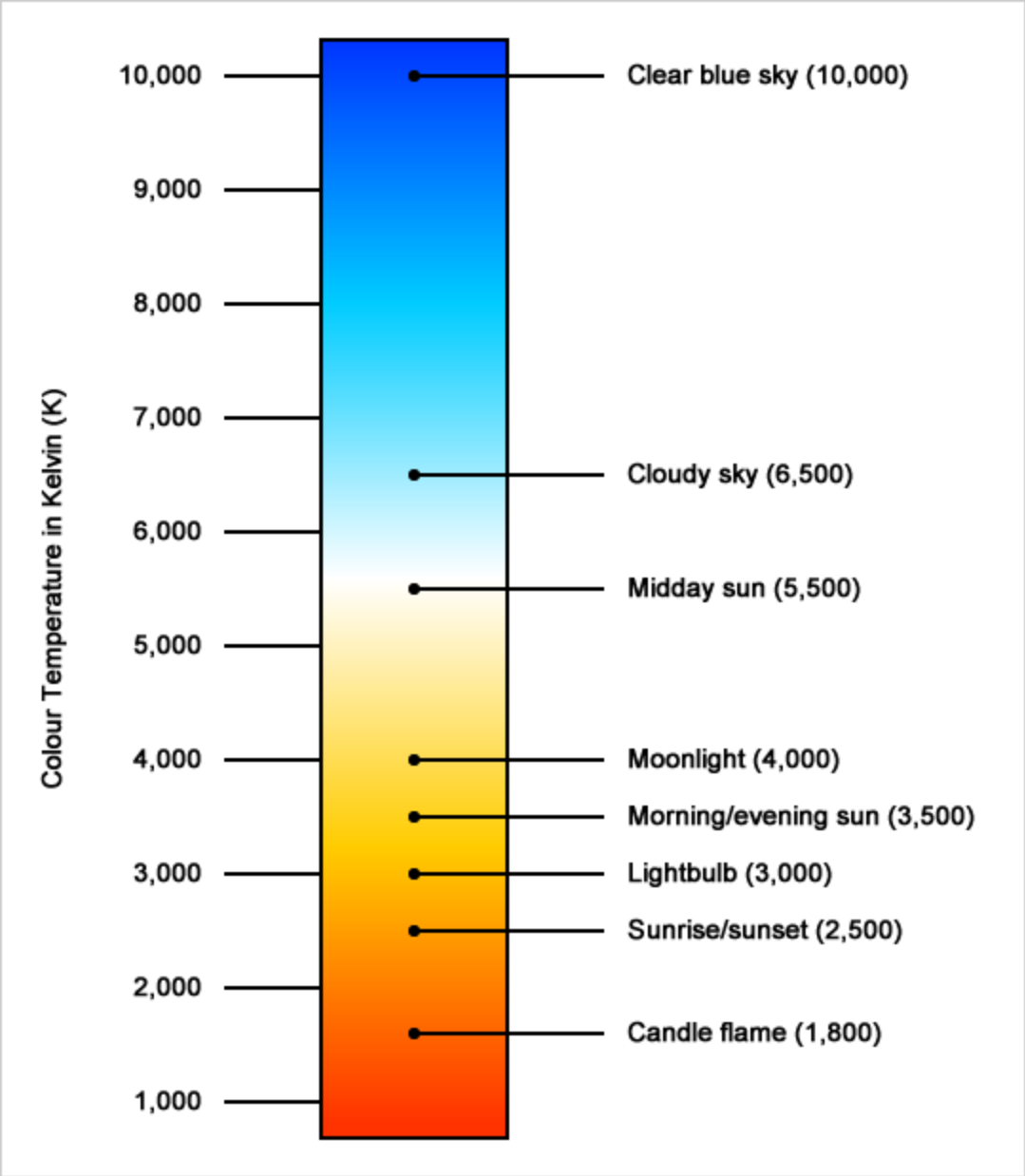
PLEASE RATE AS SUPERIOR, AVERAGE OR POOR; PLEASE SCAN AND E-MAIL YOUR COMPLETED FORM TO: jhlavac@les.com or fax to: 402-466-6479, Attn: Jeff Hlavac

Manufacturer	Overal Light Level and Comfort	Pattern Consistency (no odd patterns/shading)	Light Trespass (doesn't stray off street/walkway)	Other Comments
A				
B				
C				
D				
E				
F				
G				

The City street light system is designed to City and IESNA standards as set forth in the City of Lincoln Design Standards Section 3.100, Design Standards for Outdoor Lighting, Class III Lighting (Street Lighting). All approved LED street lights meet or exceed this standard. The design of City street lighting per 3.100 is set at 70% of IESNA standard illuminance, meaning the street light illuminance level on roadways in Lincoln is designed at 30% less illuminance than the IESNA national standard. This was adopted to save energy, reduce glare and reduce roadway surface reflectance. Yet, given this reduced light level, the arterial street light illuminance ***must still*** meet the IESNA ***max to min*** and ***average to min*** design requirements.

In residential neighborhoods, the light level is reduced even further with residential pole spacing at 200' to 240'. This is a City of Lincoln adopted standard as set forth in 3.100 Design Standards for Outdoor Lighting and does not meet the IESNA national standards for: roadway illuminance, max to min or average to min design specifications.

LES has been researching LED Street Lighting for the past 5 years. The technology has advanced tremendously. Cities like Seattle, Los Angeles and others were early adopters of LED street light technology. The early technology revolved around 6,500 degree kelvin and 5,000 degree kelvin color temperature. LES has been in contact with Edward Smalley, Manager of Seattle City Light Conservation Resources Division and other Seattle City Light Street Light Design personnel to discuss their Street Light Conversion project including: benefits, setbacks, and lessons learned. With this information, LES and the City of Lincoln has taken a more conservative approach. Specifications were written to provide for a high quality luminaire from a reputable manufacturer with considerations for the existing street light layout, roadway widths, pole spacing, mounting height, luminaire wattage and color rendering. While manufacturers were pushing for 5,000 and 6,500 degree kelvin color temperature, LES and the City adopted a 4,000 degree kelvin color temperature as standard for the City. By comparison, moonlight is 4,000 degree kelvin color temperature. Thus the color temperature selected to light the City's roadways at night most closely matches the natural nighttime light source, moonlight. By contrast, sunlight at its peak each day is 5,500 degree kelvin color temperature. (See color temperature chart below.)



B.U.G. ratings indicate the amount of **Backlight, Uplight and Glare** a luminaire produces. The ratings are based on a scale of 0 to 5, with 0 being the lowest or best rating, indicating zero or near zero light spill and 5 being the highest rating, indicating more light spill. It's important to note that the numbers are not a percentage of the light output of the luminaire, only a number on a scale. B.U.G. ratings are the rating system designed to show the effectiveness of the cutoff of a luminaire. There are 4 categories of luminaires, a ***noncutoff***, ***semi-cutoff, cutoff*** and ***full cutoff***. A ***noncutoff*** luminaire is limited in uplighting only by the brightness it can produce. This type of luminaire may be designed specifically as an uplight luminaire to uplight trees in landscaping, or building facades. A ***semi-cutoff*** will allow up to 5% of the light output as Uplight. A ***cutoff*** luminaire will allow up to 2.5% of the light output as Uplight, typically limited by a shroud of some sort. A ***full cutoff*** luminaire will have zero Uplight and is ***Dark Sky Compliant***.

Illuminating Engineering Society: Fundamentals of Lighting - B.U.G. RATINGS – Backlight, Uplight, and Glare

https://www.ies.org/pdf/education/ies-fol-addenda-1-%20bug-ratings.pdf

The approved LED arterial street lights being used are all ***full cutoff*** rated with an Uplight rating of 0, and have a similar to or better than ***B.U.G.*** rating versus existing City high pressure sodium vapor (HPSV) street lighting. The existing HPSV luminaires have ratings of ***full cutoff*** and ***cutoff***, with Uplight ratings of 0 to 3 respectively. (This addresses the concerns of glare, cutoff and uplighting.)

To provide a comparison between high pressure sodium vapor (HPSV) with light emitting diode (LED), the lumen output of the ***full cutoff*** HPSV and ***full cutoff*** LED luminaires are provided below. It can be seen that the lumen output of the LED is actually considerably less than lumen output of the HPSV lamp. In addition, the HPSV luminaire has a single light source providing the lumens, where LEDs have multiple sources providing the lumens. LED light appears brighter, due to perception of white light by the human eye versus yellow light. The information below shows that in actuality, that is not the case. There is less light emitted by the LED luminaire. The whiter LED light is only perceived to be brighter. Having said that, given the fact that the LED color temperature used is nearly identical to moonlight, it is likely that filtering out that light temperature would be difficult.

FULL CUTOFF HPSV ROADWAY LUMINIARE
290 watts, 28,000 lamp lumens; 17,253 roadway lumens (59.5% efficiency); roadway luminance=0.58 cd/sq. M, Max/Min=5.96; Ave/Min=3.01

FULL CUTOFF LED ROADWAY LUMINAIRE
133 watts, 17,127 lamp lumens; 17,127 roadway lumens (100% efficiency); roadway luminance=0.45 cd/sq. M, Max/Min=4.6; Ave/Min=2.23

Note:
Watts – measurement of the power consumed by the luminaire.
Lumens – amount of light emitted by the light source.
Roadway lumens – amount of light being emitted by the light source actually reaching the roadway surface.
Roadway luminance – measurement of light at the illuminated roadway surface, measured in cd/sq M (candela per square meter).
Max/Min – ratio of max illumination on the roadway surface to the min. A lower number reflects a more uniform lighting pattern.
Ave/Min – ratio of average illumination on the roadway surface to the min. A lower number reflects a more uniform lighting pattern.
Dark Sky Compliant – a luminaire with a ***full cutoff*** rating per recommendation by the International Dark-Sky Association (IDA).

Reviewing the max/min and ave/min numbers, it can be seen that the LED luminaire has a more even and consistent light level on the roadway with fewer dark spaces and less variance in light level along the roadway surface. As an example of the even lighting provided by LED luminaires, below is a picture of the completed road widening project on Old Cheney from 70th to 84th. By contrast, you can see the harsh shadows and uneven light levels in the adjacent residential neighborhoods. (This addresses the concern expressed for harsh shadows and even light levels.)

Below are pictures and information on existing arterial roadway luminaires in Lincoln and their B.U.G. ratings. When comparing HPSV with LED, we see that the Uplighting components of the LED luminaire and the Glare rating of the LED luminaire is the same as or better than the HPSV luminaires.

EXISTING HPSV ARTERIAL ROADWAY LIGHTING

250W ***drop lens cutoff*** American Electric Lighting HPSV, ***B=3, U=3, G=3***
http://www.visual-3d.com/Tools/PhotometricViewer/Default.aspx?id=56101

250W ***cutoff*** American Electric Lighting HPSV, ***B=3, U=3, G=3***
http://www.visual-3d.com/Tools/PhotometricViewer/Default.aspx?id=17238

250W ***full cutoff*** American Electric Lighting HPSV, ***B=2, U=0, G=3***
http://www.visual-3d.com/Tools/PhotometricViewer/Default.aspx?id=29220

APPROVED LED ARTERIAL ROADWAY LIGHTING

133W ***full cutoff*** American Electric Lighting HPSV, ***B=3, U=0, G=3***
http://www.visual-3d.com/Tools/PhotometricViewer/Default.aspx?id=90834

The residential high pressure sodium vapor (HPSV) street lights are ***noncutoff*** and as such, there is no rating for the uplighting component. The residential LED street lights are ***cutoff*** rated and have a better B.U.G. (Backlight, Uplight and Glare) rating than the existing residential HPSV street lights. (See the information provided below.)

EXISTING HPSV RESIDENTIAL ROADWAY LIGHTING

70W ***noncutoff*** American Electric Lighting HPSV, ***B=1, U=X, G=1*** (Note: uplight component is not specified due to this not being a cutoff rated luminaire.)
http://www.visual-3d.com/Tools/PhotometricViewer/Default.aspx?id=17108

EXISTING APPROVED LED RESIDENTIAL ROADWAY LIGHTING

35W ***cutoff*** American Electric Lighting LED, ***B=0, U=3, G=1***
http://www.visual-3d.com/Tools/PhotometricViewer/Default.aspx?id=106975

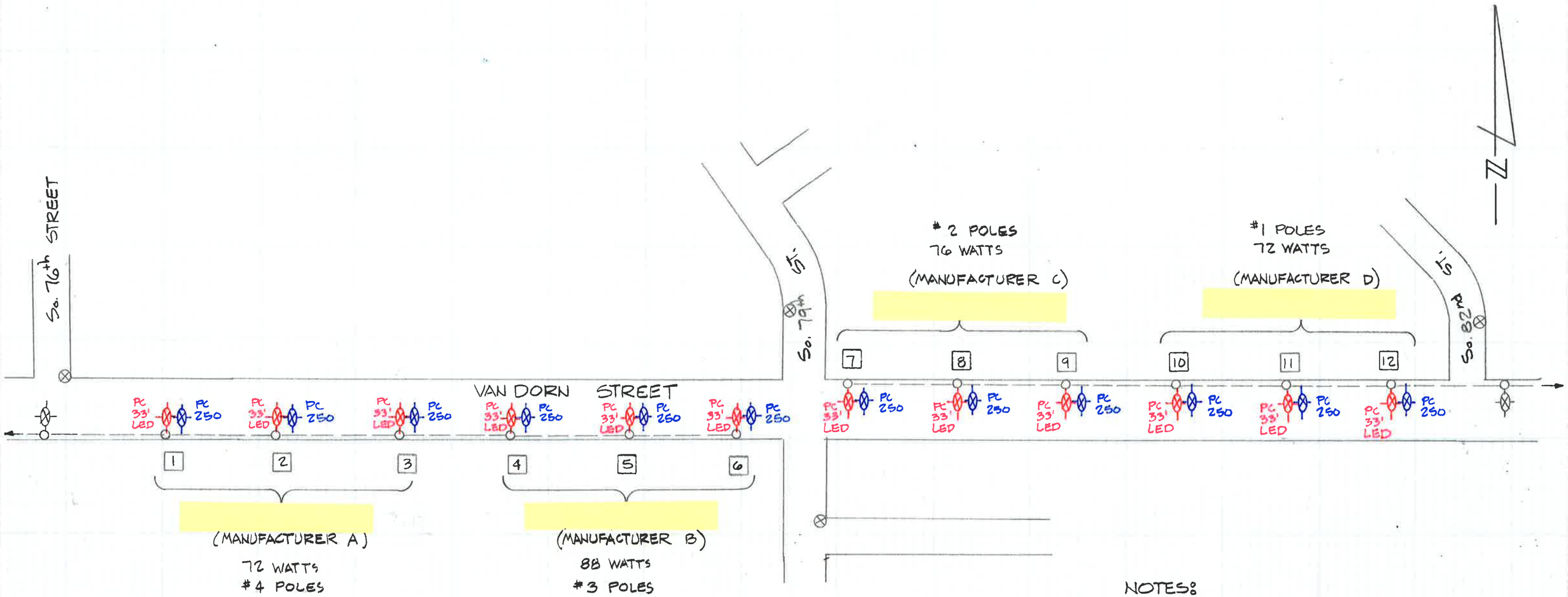
Regarding concerns over the Hyde Observatory, the closest arterial street light to the observatory is over 2,200' away on S. 56th Street. The lighting within Holmes park itself (Holmes Golf Course Parking lot, pathway and building lighting; and the baseball park lighting) may have more of an effect on the

observatory than the surrounding street lighting, which is lower in elevation, will be Dark Sky Compliant ***full cutoff*** LED luminaires and blocked by trees in all directions.

The benefits to LED Street Lighting far outweigh the drawbacks.

- Long life, over 100,000 hours.
- Lower energy consumption, typically 45% to 65% energy reduction.
- Lower maintenance costs.
- Instant on capability.
- Dimming capabilities if a control system is provided.
- Better color rendering.
- Directional light control.
- More consistent light levels on the roadway, less shadowing.
- Reduced emissions, including CO2.

Let me conclude by saying that LES has received no negative feedback about the installation of LED street lighting. It has been quite the opposite. All communications from customers/Lincoln residents to the LES Street Light Design Team have been positive, with inquiry about how soon more will be installed.



NOTES:

1. INSTALL 33' LED LUMINAIRES GROUPED BY MANUFACTURER AS SHOWN ON PLAN.

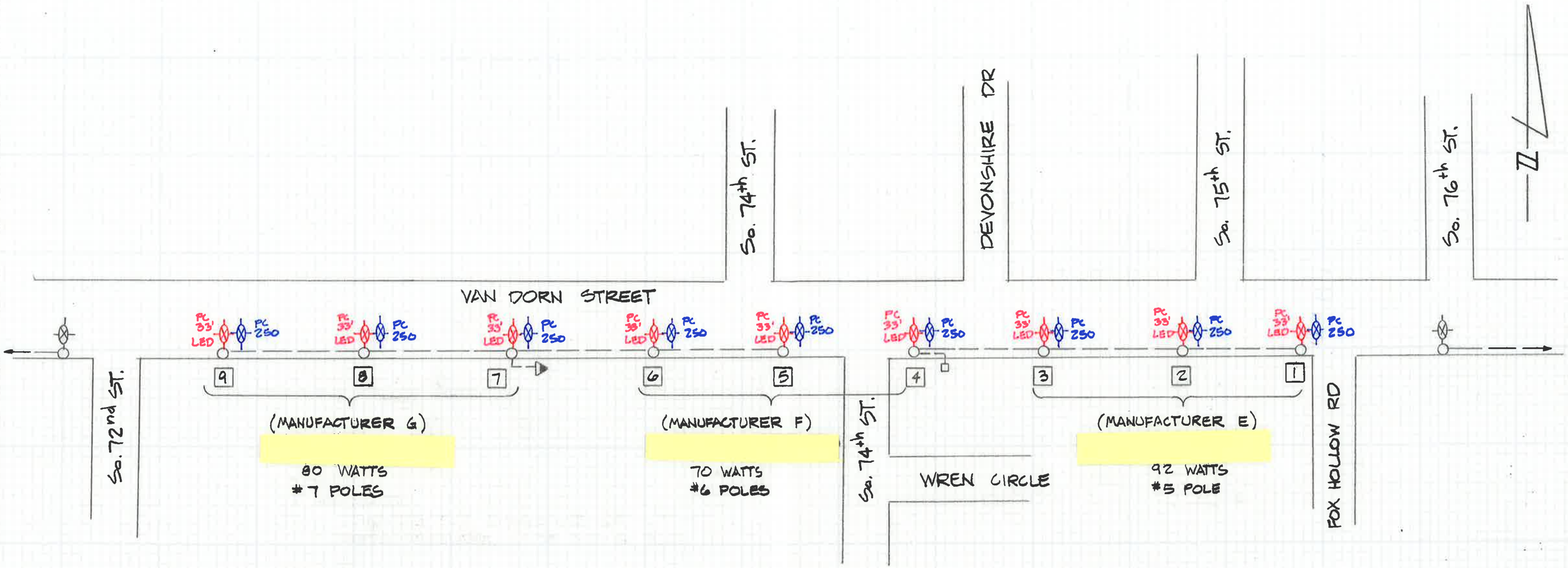
REVISIONS					
	NETWORK: 5027459	BASE			
		DRAWN BY			
	D.N.: 285 - 76E	ENGINEER	SPOMER	7-8-16	
	STR.: 3-9-7	CHECKED BY			
		CHECKED BY			
		APPROVED BY			

LINCOLN ELECTRIC SYSTEM

INSTALL SAMPLE LED LUMINAIRES FOR PILOT PROJECT

VANDORN, So. 76th - 82nd STREETS

SCALE:
NONE
DRAWING NO.
LA-B-0486 SHT. 1 of 1



REVISIONS	NETWORK: 5027803	BASE		
		DRAWN BY		
	D.N.: 285-72E	ENGINEER	SPOMER	8-17-16
	STR.: 3-9-7	CHECKED BY		
		CHECKED BY		
		APPROVED BY		

LINCOLN ELECTRIC SYSTEM

INSTALL SAMPLE LED LUMINAIRES FOR PILOT PROJECT
VAN DORN, So. 72nd - 76th STREETS

SCALE:
NONE
DRAWING NO.
LA-B-0491 SHT. 1 of 1

Attachment 3 – Subcommittee Draft Recommendations

Sustainable Lincoln Plan

METF Subcommittee Recommendations

City of Lincoln, Nebraska

ENERGY

- Reduce Annual Community Energy Consumption by 10% by 2025 using 2014 as a baseline year.
- Reduce Municipal Energy Consumption by 20% by 2025 using 2014 as a baseline year.

Energy consumption will be monitored on an annual basis and expressed as a unit of energy per capita to account for community growth.

Specific actions proposed to achieve these goals include:

- Develop a tool/mechanism for consistently collecting annual energy usage (and related GHG emission data) in order to have current and relevant data to monitor community wide progress.
- Implement a program to convert the City's 33,000 + streetlights to LED technology using an energy savings performance contract (ESPC) to guarantee savings and generate a "Green Fund" for sustainability initiatives.
- Complete energy evaluations (preliminary audits) of all municipal facilities in 2017; prioritize projects for Investment Grade Audits (IGA) seeking the best returns for energy efficiency and cost savings.
- Complete the Theresa Street Renewable Natural Gas (RNG) and Startran fueling facility project (including 100% fleet conversion to RNG/CNG) by 2025.
- Develop a procurement policy and plan to convert 25% of the City's light duty fleet to no or low emission vehicles by 2025.
- Update City of Lincoln municipal code in 2017 to reflect as a minimum the 2012 version of the International Energy Conservation Code (IECC).
- Evaluate the benefits of establishing a Property Assessed Clean Energy (PACE) program as allowed for under LB 1012. Implement a PACE program in 2017 if determined to be a good fit for Lincoln.
- Implement key elements of the District Energy Corporation Master Plan (Ever-Green Energy; August, 2016). (need to list)

LAND USE

<u>Emerald Ash Borer</u>

There is an urgent need to mitigate the threat of the emerald ash borer (EAB) to the City's estimated 14,000 public and 40,000 private ash trees. An EAB Mitigation Plan must be prepared and supported which:

- Considers growth rate of ash trees and increased cost of deferring removal
- Ensures diversity of tree replacement, including reconsideration of the planting of fruit and nut trees in the public right of way
- Ensures adequate and professional staffing to execute the plan and
- Encourages the highest and best use of removed tree product

Tree Canopy

- The City should establish a goal of 1:1 tree replacement on public property for trees lost to intentional removal, damage, decline or disease.
- Funding options to ensure the replacement goal is maintained should be evaluated for both the public and private sector.

Parks and Open Space

- Planning and development activities should continue to ensure all residential units are within 0.5 miles of a neighborhood, community or regional park.
- Conduct an inventory of City owned property held in conservation easements (CE) to determine conformance with CE restrictions; establish responsibility for periodic CE reviews.

Urban Agriculture

- Support the Lincoln Food Policy Council's (FPC's) efforts to:
    - Inventory public and private lands for urban agriculture opportunities
    - Identify *33 acres of "candidate" properties for potential urban agriculture projects
    - Increase community garden acreage to 5 acres by 2020 and 10 acres by 2025
    - Expand pollinator habitat

*1% of total required acreage estimated to supply Lincoln residents with fresh produce (*Planting for Prosperity, LJS Op-Ed, 2015)*

Infill

- Develop policies and incentives geared towards encouraging urban infill (staying on track to achieve no less than the LPlan 2040 goal of 8000 units by 2040) including consideration of recommendations provided in the White House's recently published Housing Development Toolkit: https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Housing_Development_Toolkit%20f.2.pdf.

TRANSPORTATION

- Fully deploy Greenlight Lincoln (GL2) Traffic System upgrades by 20__ (need date from Traffic)
- Increase StarTran ridership and rider satisfaction as measured under Taking Charge
- Monitor and support efforts of the Midwest Interstate Passenger Rail Commission (through Pro Rail Nebraska) to bring high speed passenger rail service to Lincoln.
- Develop a strategy for EV infrastructure deployment together with the MPO, Lincoln Chamber of Commerce and other stakeholders.
- Complete buildout of electric vehicle (EV) fueling infrastructure (24 City/LES - owned stations) in 2016 followed by demand-based programming of additional capacity by 2025.
- Implement and monitor usage of the Bike Share program.
- Monitor usage and customer satisfaction related to the "N" St. Bikeway

- Add a minimum of 0.5 miles of multi-use trail per year
- Continually improve upon Lincoln's bikeability and walkability by tracking Bikescore™ and Walkscore® ratings and supporting priority improvements through "Complete Streets" and other programs.
- Consider use of an infrastructure sustainability rating system (Envision or similar) for large municipal capital improvement projects.
- Survey City employees to identify preferred commuter incentives for participation in:
    - Walking
    - Biking
    - Public transit
    - Guaranteed rides
    - Electric Vehicle charging
    - Other innovative strategies to reduce congestion and emissions
- Poll businesses/solicit challenges and incentives

WASTE

- Establish a structure and format for implementing and reporting progress of recommendations of the SWMP 2040 plan.
- Continue to monitor (and adjust as appropriate) per capita disposal rate goals as described in the SWMP 2040 plan
- Decrease the amount of waste disposed by Municipal operations commensurate with the SWMP goals (10% reduction by 2018, 20% reduction by 2025).
- Evaluate recycling incentives to be developed and funded by the City and private contributions to increase recycling participation and waste diversion in the community.
- Develop a comprehensive residential and commercial waste reduction and recycling education and outreach that will result in a decrease in the annual per capita disposal rate
- Develop a multi-year phased construction and demolition (C&D) waste diversion planning requirement for:
    - Major municipal construction and renovation projects
    - Publicly (TIF) funded economic or community development projects
    - Expand to commercial construction sector as appropriate
- Continue to manage HHW/CESQG waste with a goal of diverting 50 TPY of waste; evaluate options to maximize consumer convenience, broaden the types of materials accepted and enhance focus on serving small businesses
- Develop a city wide green procurement policy in 2017

WATER RESOURCES

General Policy

- Engage government subdivisions in discussion regarding the long term sustainability and resiliency of groundwater use and food production in Lancaster County.

Water Conservation

- Continue to strive for a community goal of 110 gal/capita/day water consumption
- Renew the Water Conservation Task Force under the Water Resources Subcommittee of the METF with accountability for specific actions and schedules.
- Consider appointment/assignment of a person to serve as the Water Conservation Coordinator
- Evaluate and update the City plumbing code to address low-flow fixture and lawn irrigation requirements
- Continue the established drought planning and drought rate structure process and in addition consider:
    - Automatic annual application of the drought rate structure
    - Seasonal noon to 5:00 PM restriction
    - Seasonal odd/even watering schedules
    - Monthly billing (potentially in combination with LES billing cycle)
- Evaluate funding sources and options for water conservation programs and incentives

Watershed

- Evaluate funding sources and options for programs and actions required under the City's Municipal Separate Storm Sewer System (MS4) permit issued by the Nebraska Department of Environmental Quality (NDEQ) including fees for permits.
- Continue to maintain FEMA's Community Rating System (CRS) rating allowing for 25% reduction in flood insurance premiums.

Wastewater (Water Reclamation)

- Implement key recommendations of the "Wet Weather" study including code modifications to address sump pump discharges
- Continue to promote wastewater effluent re-use including support of an expanded re-use initiative with UNL/Innovation Campus
- Conduct research relative to developing a model domestic graywater reuse project (possibly in cooperation with UNL students)