



TOWN OF CHAPEL HILL

Town Hall
405 Martin Luther King Jr.
Boulevard
Chapel Hill, NC 27514

Legislation Text

File #: [20-0062], Version: 1

Receive a Report Regarding LED Conversion Options for Outdoor Lighting.

Staff:

John Richardson, Community Resilience Officer
Phil Fleischmann, Director
Lance Norris, Director
Kumar Neppalli, Traffic Engineering Manager

Department:

Manager's Office
Parks & Recreation
Public Works

Overview: The Council strives to lower the amount of energy we use throughout town. On September 25, 2019, the Council adopted a [resolution <https://chapelhill.legistar.com/View.ashx?M=F&ID=7914933&GUID=209FE6B7-B120-41C7-BA86-77EDBC0626ED>](https://chapelhill.legistar.com/View.ashx?M=F&ID=7914933&GUID=209FE6B7-B120-41C7-BA86-77EDBC0626ED) asking the Manager to change all standard street lights to LED (light emitting diode), which will result in 50% less energy usage for the 2,000 lights that are being replaced. As part of this action, the Council also asked the Manager to return with information comparing the costs and benefits of converting other outdoor lighting to LED, such as decorative street lights, park athletic field lights and outdoor facility lights. The attached technical memorandum compares each of these options, summarizes the results and lists some possible next steps for pursuing them.

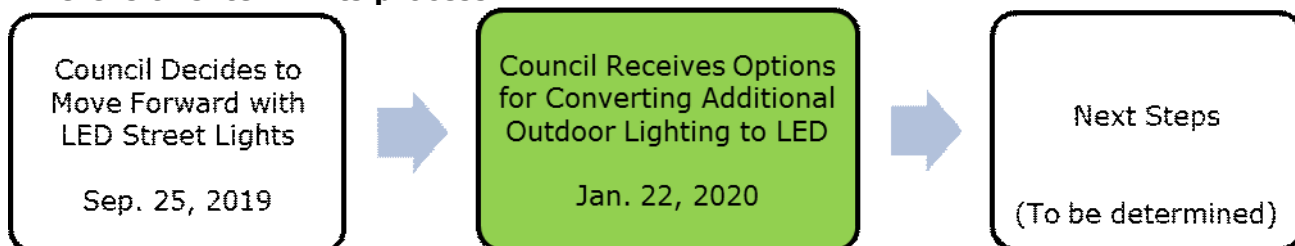


Recommendation(s):

That the Council receive the staff's technical report.

Fiscal Impact/Resources: There are no fiscal impacts associated with this item.

Where is this item in its process?



Attachments:

- Technical Memorandum

Technical Memorandum

January 16, 2020

Prepared by Town Staff from Parks & Recreation,
Public Works and the Manager's Office

Key Findings

- Changing all of the decorative street lights, park athletic field lights, and outdoor lights at Town facilities to LED would lower the carbon footprint from Town operations by about 3%, or a reduction of 404 metric tons.
- An investment in LED lighting will save energy and reduce carbon emissions for each of the three lighting types; but there are no long-term cost savings. Outdoor lights at facilities have the best environmental benefit for the lowest cost.
- The Council can consider these lighting options within the context of the 5-year budget strategy, which includes a broader range of carbon-reduction options. These options may also be part of what the Council considers with the Climate Action and Response Plan.

Table 1. Cost-Benefit Comparison: What would it mean to change different outdoor lights to LED?

Light Type	Number of Lights	Transition Cost (\$)	Ongoing Cost (\$/year)	Energy Savings (kilowatt hours/year)	Carbon Reduction (metric tons of carbon/year)
Decorative Street Lights	1,157	\$365,234	\$37,164	285,077	202
Park Athletic Field Lights	312	\$1,361,000	(\$23,628)	133,680	95
Outdoor Lights at Facilities	329	\$12,904	\$1,043	151,157	107
Totals	1,798	\$1,739,138	\$14,579	569,914	404

Definitions:

- Transition cost (\$) - one-time charge to replace the current hardware with LED lighting.
- Ongoing cost (\$/year) - additional amount the Town will pay in electricity each year. A positive value indicates that the Town will pay more for electrical service. A negative number indicates that the Town will save money on electricity and avoided maintenance costs.
- Energy savings (kilowatt hours/year) - amount of energy that would be saved in one year by switching to LED.
- Carbon reduction (metric tons of carbon) - measure of how many tons of carbon emissions would be avoided per year by changing to LED.

- The number shown in **bold** represents the best value for that category (e.g., lowest cost).

Based on Table 1, changing decorative street lights to LED would generate the most energy savings and carbon reduction. Table 2 (below) explores what kind of benefits the Town would receive for each investment. The table also shows the total costs for each lighting project over a 25-year period, which is approximately how long the park athletic field lighting is expected to last before it needs to be replaced.

Table 2. Environmental Impact Comparison: How much carbon is reduced for every \$1,000 the Town invests in different types of outdoor LED lighting? What is the total cost of each project to the Town?

Light Type	Number of Lights	Metric Tons of Carbon Reduced for Every \$1,000 Spent on New LED Hardware (one-time)	Metric Tons of Carbon Reduced for Every Light Replaced (annual)	Total Cost of Ownership / Lease* (25-year Period)
Decorative Street Lights	1,157	0.55	0.17	\$1,294,334
Park Athletic Field Lights	312	0.07	0.30	\$593,986
Outdoor Lights at Facilities	329	8.29	0.32	\$38,980

About the table:

- The higher the number of metric tons reduced, the more environmental benefit the Town receives for its investment.
- The last column shows that by converting each of the three lighting types to LED, the Town is projected to pay more than it saves in utility bills over the 25-year period.
- (*) The Town has an agreement with Duke Energy to lease the decorative street lights and outdoor lights shown in the table above. The Town owns and maintains the park athletic field lights and pays Duke Energy for the electricity.
- The number shown in **bold** represents the best value for that category (e.g., greatest environmental benefit).

The Agenda will reflect the text below and/or the motion text will be used during the meeting.

By accepting this report, the Council receives information regarding LED conversion options for outdoor lighting.