

1. Jason Tanko, Chief Executive Officer, Tanko Lighting – Streetlighting Feasibility Study.



Palm Bay, FL Streetlighting Options

Presentation to City Council
August 13, 2024



Jason Tanko
Chief Executive Officer

Who is Tanko Lighting?



**Sole Focus
Municipal Streetlighting
Consultant**



**901,000+ Streetlights
In Contract**



**523,000+ Streetlight
Acquisitions**



**73,000+ Fixtures
Maintained**



**260+ Projects
Nationwide**

Streetlighting Importance & Issues Facing Municipal Leaders

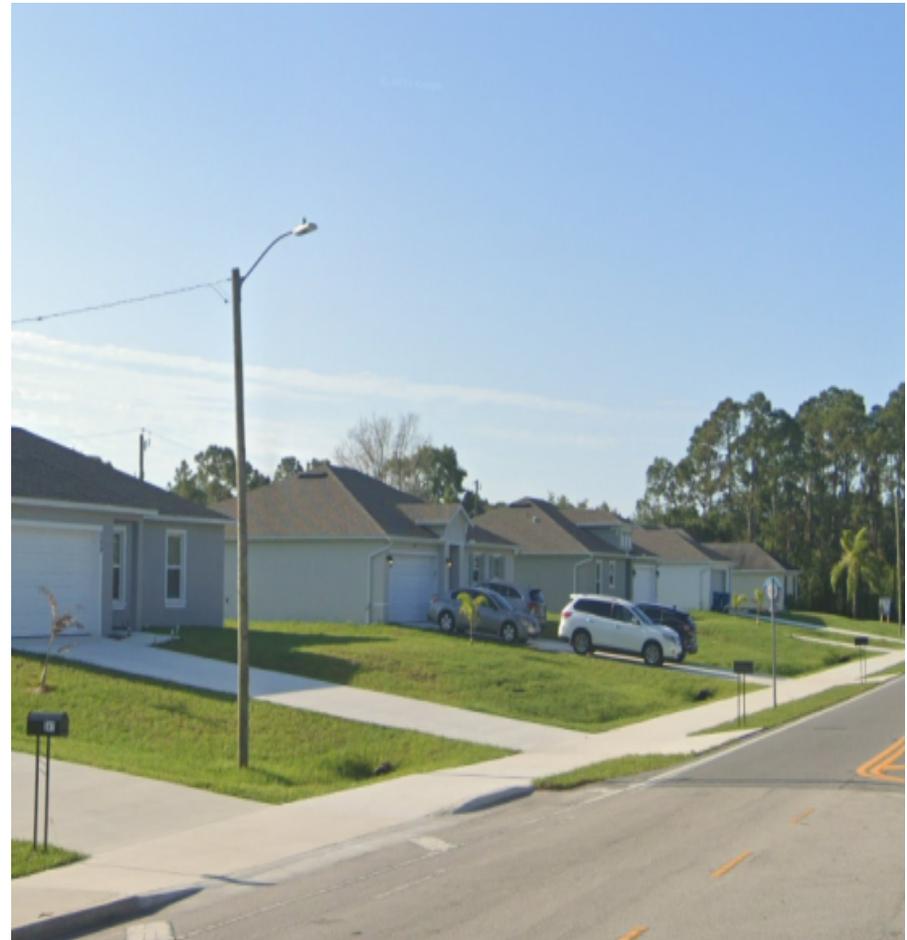


- **Critical Piece of City Infrastructure**
- **Public Safety Concerns**
- **High Costs**



Streetlighting Issues Facing Palm Bay

- **High costs**
- **Lack of control over lighting design**
- **Inability to utilize Smart City technologies**
- **Control of right-of-way**



Feasibility Analysis Methodology



Inventory



Rate



Ownership



LED Conversion



Maintenance

Options



Option 1

Ownership Transfer from FPL to City, LED Conversion, and Ongoing Maintenance

Option 2

Status Quo (No Action)

Comparison of Costs and Savings for Options 1 & 2



		Existing Energy and Maintenance Cost (Option 2**)	New Energy and Maintenance Cost	Savings	% Savings
Option 1	Annual Energy + Maintenance	\$775,749	\$149,698	\$626,051	81%
	20-Year Energy + Maintenance	\$17,081,219	\$4,495,712	\$12,585,507	74%***

Recommendation



Option 1 Ownership Transfer from FPL to City, LED Conversion (Decos) & Ongoing Maintenance





Tariff Change | Cost Reduction Per-Fixture



**Current
Monthly Cost**

\$9.26

*(28 Watt LED flat
rate)*

Ownership Change



**New
Monthly Cost**

\$0.72

(28 Watt LED)

Financial Analysis | Option1 – Acquisition, LED Conversion, Maintenance



Project Overview

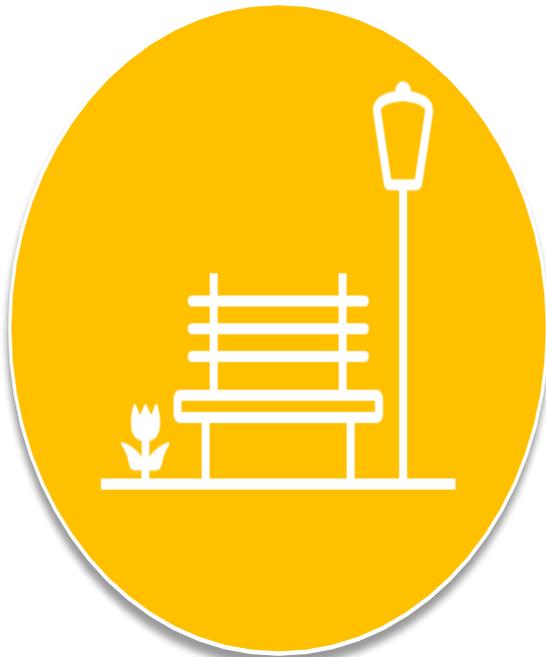
Total Cost (<i>Ownership + Conversion</i>)	\$4,231,580
20 Year Savings	\$12,585,507
Payback Period (<i>Energy Savings Only</i>)	5.7 years
Payback Period (<i>Energy + Maintenance Savings</i>)	6.56 years

Year 1 Analysis	Existing	New	Savings
Energy Usage [kWh]	702,564	686,168	16,396
Utility Bill Cost	\$775,749	\$51,394	\$724,355
Maintenance Cost	<i>Included in current Utility Bill Costs</i>	\$98,304	(\$98,304)
Total	\$775,749	\$149,698	\$626,051

Next Step



Route A



**Audit and Data
Reconciliation**

**Pick one or the
other or do both!**

Route B

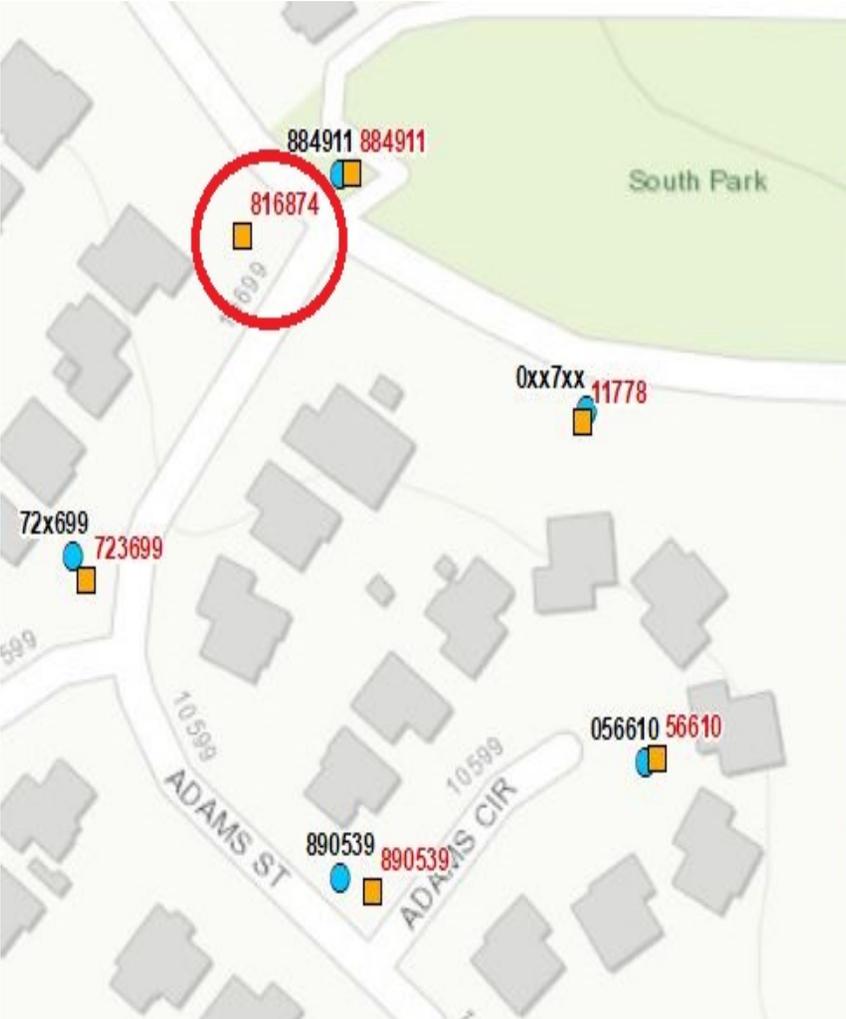


Negotiations

Route A: Audit and Data Reconciliation



Route A: Audit and Data Reconciliation (Continued)



Route B: Negotiations



Next Step:

- Exploratory negotiation meeting with the utility

Benefits of Ownership



**Reduced
Costs**



**Smart
Cities**



**Improved
Lighting Levels**



**100% Fully
Outsourced**

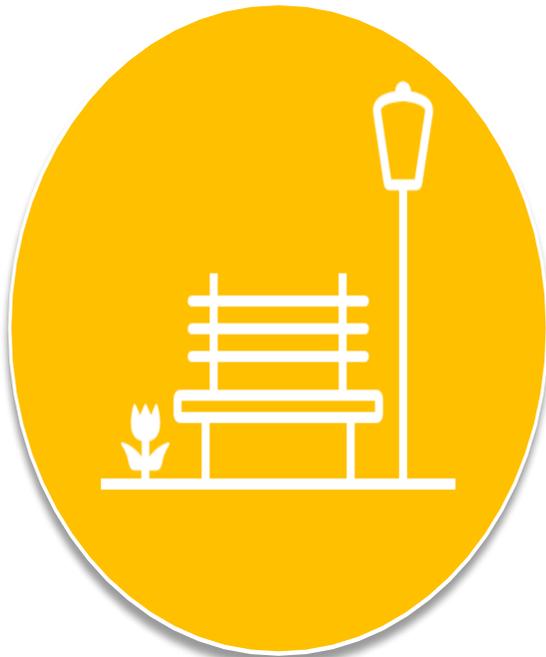


**Guaranteed
Response Times**

Next Step



Route A



**Audit and Data
Reconciliation**

**Pick one or the
other or do both!**

Route B



Negotiations

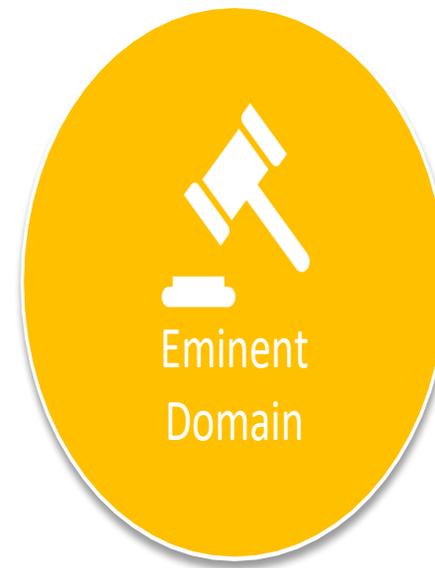
Additional Questions?

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Types of Acquisition & Tanko Experience





FEASIBILITY ANALYSIS REPORT OF STREETLIGHT SYSTEM OWNERSHIP TRANSFER, CONVERSION, AND MAINTENANCE OPTIONS FOR THE CITY OF PALM BAY, FL

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EXECUTIVE SUMMARY

Introduction

Tanko Lighting was engaged by the City of Palm Bay, FL to develop a preliminary analysis of the ownership and operational options related to the streetlight assets located within the City. Currently, approximately 4,096 of these assets are owned and maintained by the City's local utility, Florida Power & Light (FPL), and paid for by the City of Palm Bay. There are also approximately 300 City-owned streetlights within the system, but these were not included in the analysis.

Given the high cost of electricity and maintenance associated with utility ownership of the system, the City requested that Tanko Lighting explore the impact of municipalizing these assets, as well as the costs and benefits associated with potential ongoing direct ownership, operations, and maintenance of the streetlight system. If an ownership transfer is feasible, subsequent steps (such as an audit, data reconciliation, and appraisal) will confirm the fair market value of the streetlight system within the City of Palm Bay.

Please note that this evaluation is intended to be a completely exploratory document. All outcomes are contextually viewed from a perspective of possible or potential. The information provided in no way leads to any predetermination of the City's approach. It is merely intended to be a guide, analyzing the financial and logistical hypothetical feasibilities of the various options presented.

Methodology

The Tanko Lighting team conducted the following tasks to determine the analysis:

- Streetlight Inventory Analysis
- Rate Analysis
- Streetlight Ownership Transfer Analysis
- Light Emitting Diode (LED) Conversion Analysis
- Streetlight Maintenance Analysis

Summary of Findings

The following options were evaluated for projected energy use and cost impacts:

- **Option 1: Ownership Transfer from FPL to City, LED Conversion, Ongoing Maintenance**
 - With this option, ownership of the City's streetlight system will be transferred from FPL to the City and the City would convert all remaining High Pressure Sodium (HPS) streetlights to LED, as well as be responsible for maintaining the entire streetlight system via either internal staff or a third party qualified contractor. The standalone streetlight poles would be fully transitioned to City ownership. The distribution poles would remain owned by FPL, but the arms and fixtures would be fully transitioned to City ownership.
 - Option 1 is estimated to cost the City approximately **\$4,231,580** upfront for ownership and conversion.
 - This option results in approximately **81%** savings in its first year. The payback period is approximately **6.56 years** based on energy and maintenance savings.
 - The City would save an estimated total of **\$12,585,507** based on the energy and maintenance savings over 20 years.
- **Option 2: Status Quo (Baseline): Continued Utility Ownership – No Action**
 - With this option, the City would continue with existing operations and there would be no change to the City's streetlight system. FPL will continue to own, operate, and maintain the existing system with this scenario. The City will have no direct oversight of the fixtures or design of the system, nor control over the efficiency with which they are maintained.
 - Under the best-case option, the City's energy and maintenance costs would remain the same in future years.

Recommendations

Based on these options, Tanko Lighting recommends that the City:

- Proceed with a further exploration of Option 1 that includes FPL Streetlight Ownership Transfer to the City, LED Conversion, and Ongoing Maintenance, as the estimated Total Annual and 20-year savings are significantly greater than the other option.
- Conduct a comprehensive streetlight audit and utility inventory reconciliation.
- Schedule a meeting or call with Tanko Lighting to review options and next steps.

FEASIBILITY ANALYSIS REPORT

Project Background

Tanko Lighting was engaged by the City of Palm Bay to develop a preliminary analysis of the ownership and operational options related to the streetlight assets located within the City. Currently, the majority of these assets are owned and maintained by the City's local utility, Florida Power & Light (FPL). Given the high cost of electricity and maintenance associated with utility ownership of the system, the City requested that Tanko Lighting explore the impact of municipalizing these assets, as well as the costs and benefits associated with ongoing direct ownership, operations, and maintenance of the streetlight system. If an ownership transfer is feasible, subsequent steps (such as an audit, data reconciliation, and appraisal) will confirm the fair market value of the streetlight system within the City of Palm Bay.

The growing national trend in which municipalities are acquiring their streetlight infrastructure from their local private utility companies poses tremendous advantages to a municipality. Not only does it allow the municipality to control the management and maintenance of the system within its geographic borders, but it also involves significant cost savings – particularly related to maintenance and energy.

Historically in Florida, streetlight systems have been owned predominantly by investor-owned utilities (IOUs). Over the decades, some municipalities have purchased their streetlights from their respective IOUs. Both nationally and in Florida, the model proven to be the most advantageous for a municipality is the one in which it owns its streetlight system. Thus, this analysis of the feasibility of streetlight acquisition is an important step in the City's determination of its options.

For this feasibility analysis, Tanko Lighting reviewed approximately 4,096 streetlight assets owned and maintained by FPL and paid for by the City of Palm Bay. There are also approximately 300 additional City-owned streetlights within the system, which were not included in the analysis due to inadequate data. The inclusion of the City-owned lights would not significantly impact the study's results. Option 1 assumes all previously FPL-owned streetlights will be converted to LED fixtures and continually maintained by the City. Option 2 assumes no further LED conversion and a continuing of the status quo (FPL ownership and maintenance of the FPL-owned streetlights).

Please note that this evaluation is intended to be a completely exploratory document. All outcomes are contextually viewed from a perspective of possible or potential. The information provided in no way leads to any predetermination of the City's approach. It is merely intended to be a guide, analyzing the financial and logistical hypothetical feasibilities of the various options presented.

Methodology

Tanko Lighting used the following methodology to complete this analysis:

- **Inventory Analysis:** Reviewed the City's March 2024 through July 2024 FPL streetlight bills to determine the estimated current inventory.
- **Rate Analysis:** Analyzed the current electricity rates and the potential new rates to calculate the estimated impact of transitioning ownership of the system and converting to LED fixtures.
- **Ownership Analysis:** Evaluated previous municipal streetlight ownership transfers in the City's utility territory and statewide history, including purchase price and depreciation of the assets. Incorporated estimated purchase price for the FPL-owned system of approximately \$2,867,200 total or approximately \$700 per fixture.
- **LED Conversion Analysis:** Developed budgetary estimates for the LED conversion costs based on average material, installation costs, and pricing in the City's region. Incorporated estimated costs for the City's LED conversion of the remaining LED streetlights of \$24,725 total or approximately \$588 per fixture. Note that the estimated conversion costs are for non-cobra head streetlights which tend to have higher design, installation, and material costs.
- **Maintenance Analysis:** Estimated budget for the (post-ownership transfer) maintenance services based on the nationwide industry standard of services, average pricing in the region, and number of pole replacements in a given year for outsourced maintenance options.

Options

This analysis considers two options regarding the ongoing operation of the City's streetlight system:

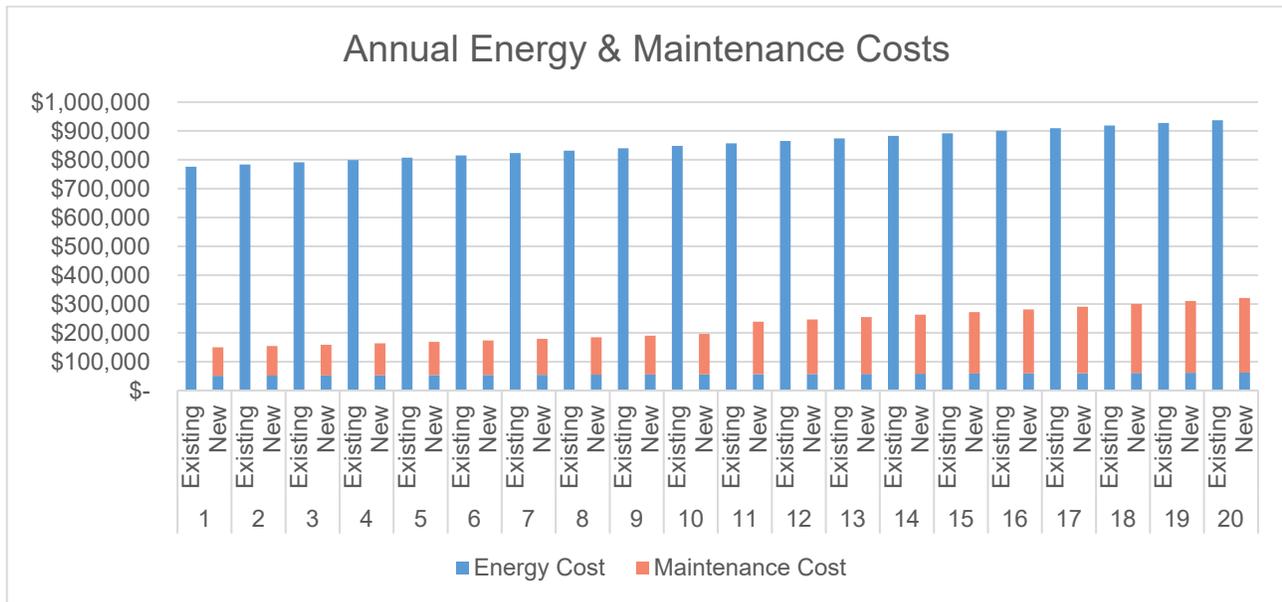
- **Option 1: Ownership Transfer from FPL to City, LED Conversion, Ongoing Maintenance**
 - With this option, ownership of the City's streetlight system will be transferred from FPL to the City. The City would convert all remaining High Pressure Sodium (HPS) streetlights to LED, as well as be responsible for maintaining the entire streetlight system via either internal staff or a third-party qualified contractor. The standalone streetlight poles would be fully transitioned to City ownership. The distribution poles would remain owned by FPL, but the arms and fixtures would be fully transitioned to City ownership.
 - Further, with this option, the City would:
 - Transfer all streetlights on the utility-owned electricity rate (SL-1, FPL-Owned) to a municipal-owned electricity flat rate (SL-1, Customer-Owned), see appendix A for more details.
 - Eliminate the maintenance fees previously included in SL-1, FPL-Owned.
 - Upgrade the decorative fixtures (which are not currently LED) during the LED conversion – which will enhance the City's aesthetics.
 - After the LED conversion of all remaining HPS fixtures, transfer to a (reduced) LED fixture electricity rate for that streetlight infrastructure.
 - Maintain the system via a qualified contractor.
 - Have the option to employ smart systems management and explore third party attachments.
 - Option 1 is estimated to cost the City approximately **\$4,231,580** upfront for ownership and conversion.
 - This option results in approximately **81%** savings in its first year. The payback period is approximately **6.56 years** based on energy and maintenance savings.
 - The City would save an estimated total of **\$12,585,507** based on energy and maintenance over 20 years.
- **Option 2: Status Quo (Baseline): Continued Utility Ownership – No Action**
 - With this option, the City would continue with existing operations and there would be no change to the City's streetlight system.
 - FPL would continue to own, operate, and maintain the 4,096 fixtures with this scenario.
 - For the streetlighting owned by FPL, the City would continue to have no direct oversight of the fixtures or design of the system, nor control over the efficiency with which they are maintained.
 - Under the best-case option, the City's energy and maintenance costs would remain the same in future years.

Results

Chart 1, and Table 1 below compare the costs and benefits for Options 1, and 2. **The costs and savings listed below are associated with the annual energy and maintenance charges only, and do not include the upfront cost to purchase the system.** For detailed costs associated with the project (including acquisition cost, and projected return on investment), please refer to Appendix A: Financial Analysis & Assumptions.

Option 1: Ownership Transfer from FPL to City, LED Conversion, Ongoing Maintenance

Chart 1 – Option 1 Annual Energy and Maintenance Costs



Option 1: The Annual Energy & Maintenance Costs chart represents the energy and maintenance costs for the next 20 years for both the existing and converted streetlight system. Note that under the existing tariff rates, FPL-owned (SL-1, FPL-Owned) streetlights include both energy and maintenance costs on the City’s monthly utility bill.

Table 1 - Comparison of Costs and Savings for Option 1 & Option 2*

		Existing Energy and Maintenance Cost (Option 2**)	New Energy and Maintenance Cost	Savings	% Savings
Option 1	Annual Energy + Maintenance	\$775,749	\$149,698	\$626,051	81%
	20-Year Energy + Maintenance	\$17,081,219	\$4,495,712	\$12,585,507	74%***

*See Appendix A: Financial Analysis & Assumptions for detailed results.

**Option 2: No Action would involve the City making no change to its current streetlight system. Energy and maintenance costs under Option 2 would match existing energy and maintenance costs.

***Note that the percent savings differs between the annual and 20-year analyses. This is because maintenance costs increase over time as warranties for fixtures expire.

RECOMMENDATIONS & CONCLUSIONS

Tanko Lighting recommends that the City:

1. **Proceed with Option 1 (Ownership Transfer and Conversion):** Proceed with exploring the concept of purchasing the streetlight system from FPL and converting the remaining HPS fixtures to LED. This will allow the City to gain control over its streetlighting levels and maintenance of the system. This option also has the potential to save the City an estimated 74% on its annual energy and maintenance costs, or approximately \$12,585,507 over the next 20 years. In order to see savings as quickly as possible, Tanko Lighting recommends converting the non-LED City-owned streetlights as soon as possible, while simultaneously taking steps to purchase the utility-owned lights. The main justifications for purchasing the utility-owned system are:
 1. Lower maintenance costs for the City. The City would have the option to provide or outsource ongoing maintenance for the system, thus removing the high maintenance fees included in FPL’s Company Owned streetlight tariff rates (SL-1, FPL-Owned).
 2. Improved response time for repairs. The most common complaint voiced to Tanko Lighting by municipalities with utility-owned systems is that maintenance service timelines are slow, and the infrastructure is not well maintained. While the utility will still play a role in the overall health of the system, the City will be able to dispatch its maintenance crews or contractor at the pace that it determines is appropriate to address the issues.
 3. Reduced maintenance needs. Once the City converts all streetlights to LED, there will be less maintenance needed on the system, because LED streetlights are more reliable than HPS fixtures.
 4. Control of lighting levels and coverage throughout the City’s roadways. The City can collaborate with its consultant to design a system or make updates that meets the community’s needs.

If the City decides to pursue the potential acquisition, negotiation would be the recommended initial approach. Tanko Lighting has gathered a significant amount of research, documentation, and streetlight specific knowledge that would be highly beneficial if the City decides to pursue negotiations. If the City decides to pursue acquisition and negotiations are stalled, in a worst-case option, the City could decide to take legal action against FPL to transfer the ownership of the streetlight system on the basis of

eminent domain. This has been done in many states. If this approach is chosen, Tanko Lighting can provide additional support (as we currently support other municipalities with similar projects in Florida and other states) – see Recommendation 3, below.

2. **Proceed with an Audit and Data Reconciliation:** Proceed with a comprehensive streetlight audit and utility inventory reconciliation. While the utility bills provided by the City were helpful in estimating the quantity of streetlights in the existing system, Tanko Lighting suggests that the City proceed with a comprehensive audit to collect more information. This will help evaluate the current condition of the system, especially in regard to the standalone poles, as well as assist in defining the current value of the system. This will allow the City to review a more accurate financial analysis and determine the financing implications for the full project. It will also provide the City with an updated understanding of its streetlighting system. For an outline of the full project process, please see Appendix B: Ownership Transfer & Ongoing Maintenance Processes.
3. **Connect with Tanko Lighting on Next Steps:** Tanko Lighting is the most nationally experienced company with municipal streetlight ownership transfers. As such, our team is qualified to serve as a liaison between the City and FPL to update inventory, initiate a dialogue for ownership transfer, and create a conversion plan. We recommend connecting with our team to review options and next steps.

Appendices

- Appendix A – Financial Analyses & Assumptions
- Appendix B – Ownership Transfer, & Ongoing Maintenance Processes
- Appendix C – Smart Cities

Appendix A – Financial Analysis & Assumptions

Assumptions

The following assumptions were made to determine the results for this report:

- **Materials**
 - Reputable fixture manufacturers and recent fixture pricing
 - Photocells
 - Ownership labels
- **Labor**
 - Per fixture installation rates from qualified electrical workers in the region (budgetary)
 - Labor costs included installation, photocell, and any required ancillary materials
- **Utility**
 - Existing rate:
 - FPL’s Streetlight Service Tariff effective February 1, 2024:
 - Utility-Owned Tariff Rate: SL-1, FLP-Owned
 - Municipal-owned rate:
 - FPL’s Streetlight Service Tariff effective February 1, 2024:
 - Muni-Owned Tariff Rate: SL-1, Customer-Owned
 - Monthly rates:
 - The City’s March 2024 through July 2024 FPL streetlight bills and FPL’s SL-1 Streetlight Tariff were utilized to determine monthly rates.
 - Purchase price (Option 1):
 - Estimated to be approximately \$2,867,200 total, or approximately \$700 per fixture.
- **Quantities and Lamp Type**
 - Quantity and existing lamp type derived from data provided by in the City’s March 2024 through July 2024 FPL streetlight bills.
 - Accounts included: 52237-05236, 17216-54166
 - Accounts reviewed, but not included: 03131-99291, 69643-59001
 - 4,096 utility-owned (SL-1, FPL-Owned) streetlight fixtures
 - Existing lamp type (see table below)
- **Preliminary watt-for-watt design replacement of existing fixtures**
 - 20% ballast factor applied to HPS wattages (not shown in table)
 - These assumed replacement fixtures and wattages are based on what we have seen be most successful in our nationwide conversion experience, and manufacturer lumen standards for LED replacements.

Table 3 – Watt-for-Watt Design Replacement

Existing Fixture	Option 1: Assumed Tanko Replacement Fixture	Fixture Quantity
70W HPS Cobra Head	25W LED Cobra Head	6
100W HPS Cobra Head	35W LED Cobra Head	1
150W HPS Cobra Head	45W LED Cobra Head	2
200W HPS Cobra Head	60W LED Cobra Head	1
400W HPS Cobra Head	125W LED Cobra Head	2
100W HPS Decorative	40W LED Retrofit Kit	30
Existing LED	N/A	4,054

- Federal Inflation Rate: 4%
- Energy Cost Inflation Rate: 1%
 - Note that 1% is a conservative estimate as this rate can reach about 3%

- Sales Tax Rate: 0%
- Budgetary Maintenance Program Costs
 - Option 1: \$2.50/month administrative fee for LED fixtures (post warranty period)
 - Time & Materials repair work (based on qualified electrical workers in the region)
 - Emergency costs assumed recuperated through insurance
 - Average call-out frequency, hourly pricing, and batched responses

Financial Analysis



Summary of Financial Analysis - Palm Bay, FL
August 7, 2024

Project Overview

Total Cost (<i>Ownership + Conversion</i>)	\$4,231,580
20 Year Savings	\$12,585,507
Payback Period (<i>Energy Savings Only</i>)	5.7 years
Payback Period (<i>Energy + Maintenance Savings</i>)	6.56 years

Project Costs

Utility Asset Purchase Cost (<i>estimated cost of utility streetlight purchase</i>)	\$2,867,200
Tanko Fees	
Ownership Support Fees (<i>Audit, Utility Negotiation, Final Asset Transfer, etc.</i>)	\$431,240
LED Conversion Fees (<i>Material, Installation, Construction Management</i>)	\$280,127
Estimated Legal Fees	\$625,000
Contingency	\$28,013
Net Project Cost (<i>Grants/Rebates included</i>)	\$4,231,580

Year 1 Analysis	Existing	New	Savings
Energy Usage [kWh]	702,564	686,168	16,396
Utility Bill Cost	\$775,749	\$51,394	\$724,355
Maintenance Cost	<i>Included in current Utility Bill Costs</i>	\$98,304	(\$98,304)
Total	\$775,749	\$149,698	\$626,051

20 Year Analysis	Existing	New	Savings
Energy Usage [kWh]	14,051,274	13,723,356	327,918
Utility Bill Cost	\$17,081,219	\$1,131,644	\$15,949,575
Maintenance Cost	<i>Included in current Utility Bill Costs</i>	\$3,364,068	(\$3,364,068)
Total	\$17,081,219	\$4,495,712	\$12,585,507

Assumptions & Notes

Quantity of Lights Included in Analysis	4,096
Purchase Cost per Light	\$700
Tariff Rate of Old System	SL-1 (FPL-Owned)
Tariff Rate of New System	SL-1 (Customer-Owned)
Federal Inflation Rate	4.00%
Utility Cost Inflation Rate	1.00%

Estimates are calculated using Net Future Values



Appendix B – Ownership Transfer, and Maintenance Processes

The outline below explains Tanko Lighting's process for the potential streetlight ownership transfer, and ongoing maintenance. This is intended to provide the City with more information, should it choose to proceed with the ownership transfer of its streetlights. This outline shows an approximate 12-month project. Often, the longest delays come from utility processes, including ownership transfer paperwork and discrepancy reviewing. Please note that while some project processes can overlap with utility timelines, others are dependent on utility or City actions before proceeding. Tanko Lighting will coordinate with the City, utility, and other project partners to ensure that the project is completed in a prompt and reasonable timeframe.

1. Audit & Data Reconciliation -
 - a. Perform a comprehensive streetlight audit ~ 8-10 weeks
 - i. Tanko Lighting performs an in-field audit in which an auditor visits and collects approximately 30 attributes at each streetlight fixture. These data points will be reviewed by our in-house data analysts for quality control and will help to evaluate the Net Book Value of the system and the condition of the system, especially in regard to the standalone poles that would be purchased in the ownership transfer phase.
 - b. Reconcile the in-field conditions with the utility inventory: ~ 6-8 weeks
 - i. The project data analyst will compare the data collected during the audit to FPL's billing inventory for the City and produce a concise report highlighting all discrepancies.
2. Ownership Transfer – Timeline is utility-dependent
 - a. Provide ownership transfer assistance:
 - i. Tanko Lighting will work with FPL to help guide the City through the ownership transfer process. We suggest that municipalities buy the system as-is and then work with the utility to reconcile the inventory in a second or "true-up" phase. This ensures that the City starts to realize savings immediately and is not delayed by a minority of discrepancies.
 - b. Validate and reconcile the inventory:
 - i. Using the audit and data reconciliation report, Tanko Lighting will work with the City to update the inventory and confirm all eligible lights have transferred ownership.
3. Design & Procurement – Design: ~ 4-6 weeks; Materials lead time: 6-8 weeks
 - a. Design a custom streetlighting system for all remaining non-LED fixtures:
 - i. Tanko Lighting uses industry-accepted standards, as well as the data collected during the audit, as guidelines, while working closely with the City to develop a customized proposed streetlight design that matches its needs.
 - b. Guide the City with fixture selection:
 - i. Tanko Lighting will work with the City to educate all stakeholders on the available fixture models, the important features to consider, and how best to meet the City's needs.
 - c. Manage procurement and logistics:
 - i. Tanko Lighting will work with the City to order and to coordinate delivery for all materials.
4. Installation ~ 4 - 6 weeks
 - a. Manage the installation:
 - i. Tanko Lighting will work with the City to determine the best procurement options for the installer. The project manager will manage all aspects of the installation and meet all City requirements.
 - ii. Tanko Lighting provides data collection devices to the installers and creates custom installation maps (paper and digital) for clean, easy installation.
 - iii. Installation rates vary by project, but the v should expect about 20-30 installs per crew per day. The installer checks the voltage, troubleshoots the fixture to confirm that it is functioning properly, and reports any in-field issues when discovered.
 - iv. Tanko Lighting will review all data provided by the installer for any discrepancies.

5. Final Reporting ~ 3-5 weeks
 - a. Submit the utility rate change:
 - i. Tanko Lighting will produce and submit all required documentation for FPL's rate change processes.
 - b. Provide the final streetlight data
 - i. Tanko Lighting will provide a final project deliverable to assist the City with managing the new streetlight system. This will be a final report summarizing the project with updated financial models.
6. Ongoing Maintenance
 - a. Assist the City with choosing a maintenance program:
 - i. There are multiple options that the City can choose for ongoing maintenance.
 1. City Maintenance:
 - a. With this option, the City would utilize its internal staff to maintain the streetlight system. Maintenance services provided by City employees could potentially include re-lamping, preventative maintenance, emergency services (knockdown streetlight poles), day-to-day maintenance (including day burners), utility engagement, locates, etc.
 2. Outsourced Maintenance:
 - a. With this option, the City would outsource the streetlight maintenance services to a qualified contractor. The contractor would be responsible for both routine and emergency maintenance needs, in addition to having contractually obligated and guaranteed response times. Typically, an outsourced maintenance contract involves a scope of work that includes administrative support (outage, dispatch, and tracking/reporting), as well as routine and emergency services:
 - i. Unit Price + Hourly Rates: A fixed unit price based on a dollar amount per streetlight per month that includes routine maintenance services and administration, along with hourly rates for emergency services billed on a time and materials basis; or
 - ii. Hourly Rates: Hourly rates for administrative support, as well as both routine and emergency services billed on a time and materials basis.
 - ii. Tanko Lighting will help the City to understand the process and requirements, as well as assist with procuring a maintenance contractor. Recommended maintenance programs typically include:
 1. A monthly per-pole administrative fee (usually \$1-2 per pole per month). This monthly fee provides:
 - a. An online work request management system
 - b. Administrative support to City staff
 - c. The establishment and management of a streetlight outage call center
 - d. The intake and processing of outage reports, warranty related repairs, and utility repair requests
 - e. Time-sensitive dispatch of the subcontractor
 2. Time and materials invoicing for maintenance work for all streetlight maintenance-related labor performed in the field. Tanko Lighting recommends compiling non-urgent reports until there are enough to batch together for a full or half day of work, to minimize additional travel surcharges and maximize value if time and materials-related work is billed at an hourly minimum.
 3. Emergency services, which encompass all pole knockdowns and other streetlight-related public safety hazards on City-owned poles. A 24-hour call center or contact number (and usually a 2-6 hour response time) are guaranteed, depending on the City's requirements.
 4. Administrative support for reports on streetlights not owned by the City. If maintenance is required, Tanko will provide the City with all relevant information about the report in order for the City to coordinate directly with the utility and/or appropriate entity for repair.
 - iii. An example of a non-emergency call would be as follows:
 1. A resident reports an outage through the call center or online form.

2. The maintenance project manager confirms the location and all relevant information in the streetlight data and adds it to the pending maintenance list.
 3. The maintenance project manager provides the list to the City for approval and dispatches the contractor to address the issues.
- iv. An example of an emergency call would be as follows:
1. A pole is knocked down after hours, around 10pm.
 2. Either the City, first responders, or a bystander will call the call center number and report the emergency.
 3. The call center will dispatch the contractor directly and the contractor will arrive at the site within the contracted response time.

Appendix C – Smart Cities

Smart controls can offer many benefits to cities, including asset management, increased fixture life (due to dimming), and more control over the streetlight system. They are not always the correct choice for each community, however, and the project managers at Tanko Lighting like to have a discussion with each client to see if it is the right move for their community. Tanko Lighting has managed the installation of 19 streetlighting projects that included smart controls systems from a variety of manufacturers. Smart Cities options are becoming more prevalent in the discussion of LED streetlight conversions and provide a wide array of services that can be categorized as follows:

- **Asset Management/Streetlighting Controls**

This is the most tested and developed technology available. Most packages include either a software or cloud-based management system that can remotely control the system and alert the user to outages. This is often used for dimming schedules, outage monitoring, and related tasks. Some utilities throughout the country are starting to create metered billing rates for the control systems that have utility-grade meters. These rates are often cheaper than non-metered rates and could save the City in energy costs if it decides to use a dimming schedule. Asset management is a cost to the City but will ultimately help maintain the system.

- **Small Cell Technologies**

This is a new and developing aspect of streetlighting controls and can potentially help the City to generate revenue by leasing the space on the streetlight poles to small cell carriers. Most small cell providers consider a guaranteed revenue contract. As such, small cell technology has the potential to generate income for the City.

- **Internet of Things (IoT) & Extras**

This encompasses a variety of new ideas and technologies, such as Wi-Fi, surveillance cameras, parking enforcement, gunshot detection, electric car charging stations, etc. Similar to small cell, most of these options are new and developing. However, please note that there are not many proven opportunities for revenue generation with these elements.

While Tanko Lighting has installed multiple projects with “smart controls” and can provide more information if requested, it is our professional opinion that the technology is still expensive and in its early stages. Over the next 5-10 years, we expect that these technologies will adapt to the demand and become stronger, as well as more affordable. This is why we typically recommend that clients look at Smart City options once they realize the cost savings from owning their LED lights.