

LED STREETLIGHT CONVERSION FEASIBILITY STUDY

Oak Hill, TN



PATH™

INFRASTRUCTURE SOLUTIONS.
DELIVERED.

INFRASTRUCTURE SOLUTIONS. DELIVERED.

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Energy
Management
Control System



LED Commercial
Lighting



Street & Roadway
Lighting



Project
Management



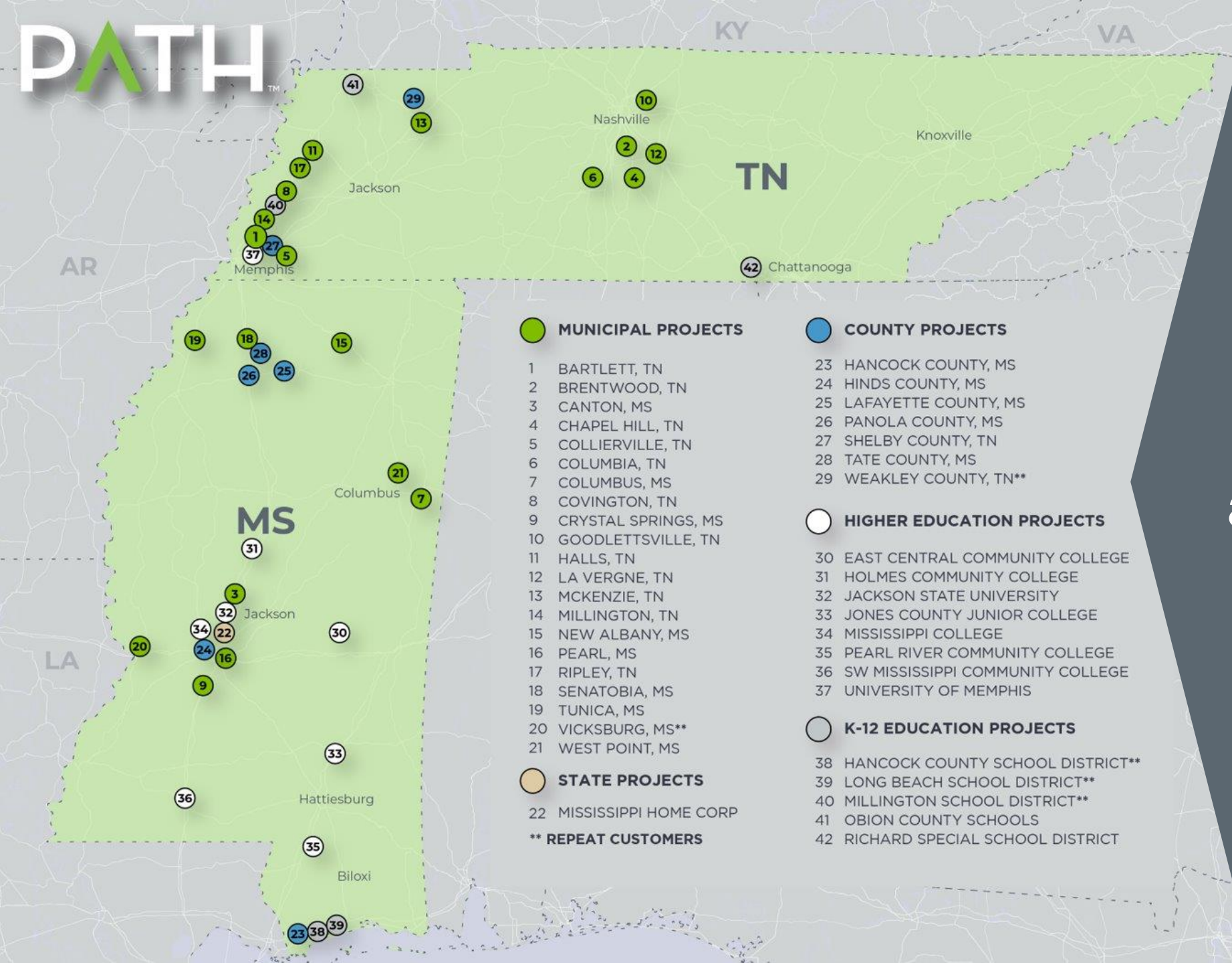
Water
Management
& Water Efficiency



HVAC



Renewable Power
Regeneration



MUNICIPAL PROJECTS

- 1 BARTLETT, TN
- 2 BRENTWOOD, TN
- 3 CANTON, MS
- 4 CHAPEL HILL, TN
- 5 COLLIERVILLE, TN
- 6 COLUMBIA, TN
- 7 COLUMBUS, MS
- 8 COVINGTON, TN
- 9 CRYSTAL SPRINGS, MS
- 10 GOODLETTSVILLE, TN
- 11 HALLS, TN
- 12 LA VERGNE, TN
- 13 MCKENZIE, TN
- 14 MILLINGTON, TN
- 15 NEW ALBANY, MS
- 16 PEARL, MS
- 17 RIPLEY, TN
- 18 SENATOBIA, MS
- 19 TUNICA, MS
- 20 VICKSBURG, MS**
- 21 WEST POINT, MS

STATE PROJECTS

- 22 MISSISSIPPI HOME CORP

** REPEAT CUSTOMERS

COUNTY PROJECTS

- 23 HANCOCK COUNTY, MS
- 24 HINDS COUNTY, MS
- 25 LAFAYETTE COUNTY, MS
- 26 PANOLA COUNTY, MS
- 27 SHELBY COUNTY, TN
- 28 TATE COUNTY, MS
- 29 WEAKLEY COUNTY, TN**

HIGHER EDUCATION PROJECTS

- 30 EAST CENTRAL COMMUNITY COLLEGE
- 31 HOLMES COMMUNITY COLLEGE
- 32 JACKSON STATE UNIVERSITY
- 33 JONES COUNTY JUNIOR COLLEGE
- 34 MISSISSIPPI COLLEGE
- 35 PEARL RIVER COMMUNITY COLLEGE
- 36 SW MISSISSIPPI COMMUNITY COLLEGE
- 37 UNIVERSITY OF MEMPHIS

K-12 EDUCATION PROJECTS

- 38 HANCOCK COUNTY SCHOOL DISTRICT**
- 39 LONG BEACH SCHOOL DISTRICT**
- 40 MILLINGTON SCHOOL DISTRICT**
- 41 OBION COUNTY SCHOOLS
- 42 RICHARD SPECIAL SCHOOL DISTRICT

Our work speaks for itself, and any of these customers will agree.



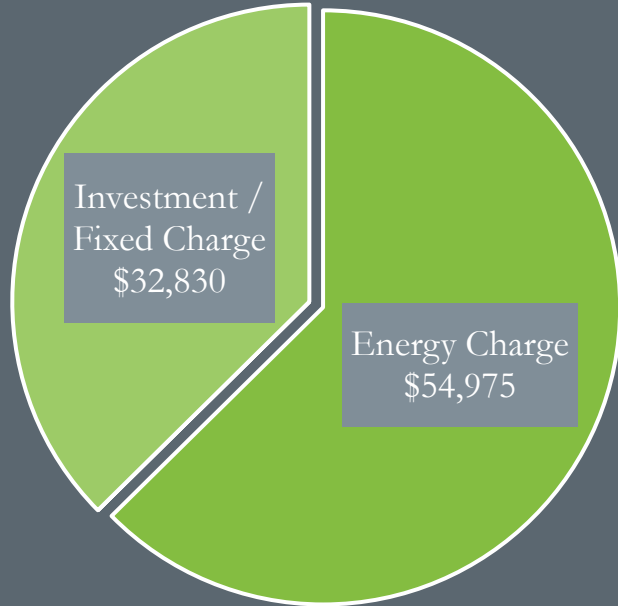
ADVANTAGES OF LED STREETLIGHT CONVERSION

- Cost
- Aesthetics
- Performance
- Public safety
- Environment

EXISTING SUMMARY

- Billed through Nashville Electric Service
- Total year (12 months) provided for analysis
- 505 existing streetlights (9 are already LED)
- Annual expenses for these lights total \$87,805 for streetlight energy costs and investment charges
- This feasibility analysis based on average estimated rate (\$0.0911/kWh)

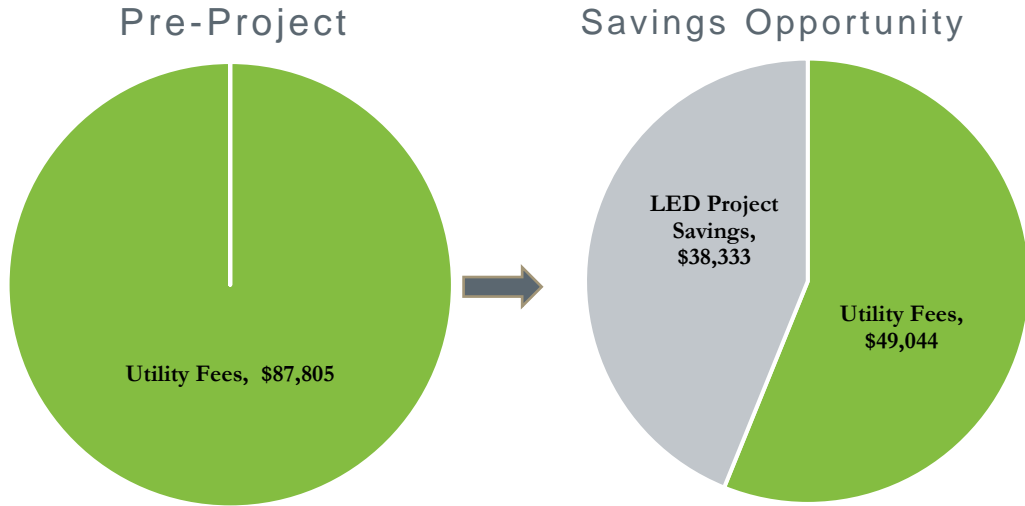
Current Annual Streetlight Bill



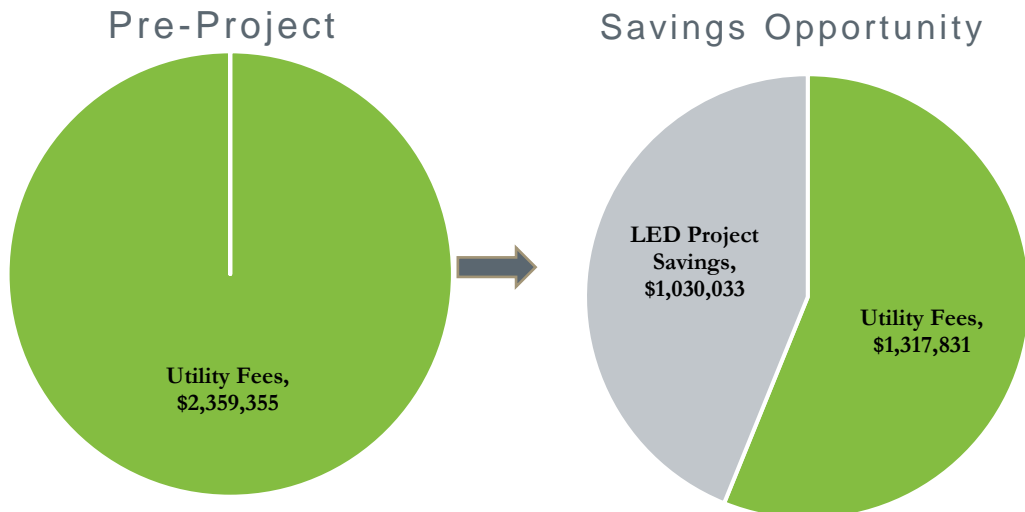
Annual Total = \$87,805



YEAR 1 STREETLIGHT BUDGET IMPACT



20-YEAR STREETLIGHT BUDGET IMPACT



OAK HILL, TN STREETLIGHT CONVERSION

Estimated Project Budget: \$492,489

Estimated Project Budget includes:

- Investment Grade Audit and design engineering
- Buyout of existing infrastructure from utility (approximated) + utility admin fees
- New LED fixtures and controls with installation
- Path fees (10%)

Simple Payback: 12.8 years

Estimated Payment (if financed): \$36,238

- Assumed 4% interest
- 20-year term



PROJECT IMPACT CASHFLOW

Program Details		
(A)	Total Project Upfront Costs	\$492,489
(B)	Energy Savings - Year 1	\$26,883
(C)	Investment Charge Savings - Year 1	\$16,500
(D)	O&M Savings - Year 1	\$0
(E)	Attachment Fee Costs - Year 1	\$0
(F)	Maintenance Allowance - Year 1	(\$5,050)
(G)	Utility Rebate to Customer (Non-Guaranteed)	\$0
(H)	Extra Capital Project	\$0
(I)	Downpayment	\$0
(J)	Loan/Lease Amount (A + F - G)	\$492,489
(K)	Project Interest Rate	4.00%
(L)	Loan/Lease Term (Years)	20
(M)	Annual M&V Cost	\$0
(N)	Project Term (Years)	20
(O)	Equipment Useful Life (Years)	22

Program Summary			
First Year Program Costs	\$36,238	Lifetime Program Costs	\$724,764
First Year Program Savings	\$38,333	Lifetime Program Savings	\$1,030,033
First Year Budget Impact	\$2,095	Lifetime Budget Impact	\$305,269
Simple Payback (Years)	12.8	Cumulative Payback Ratio	142%

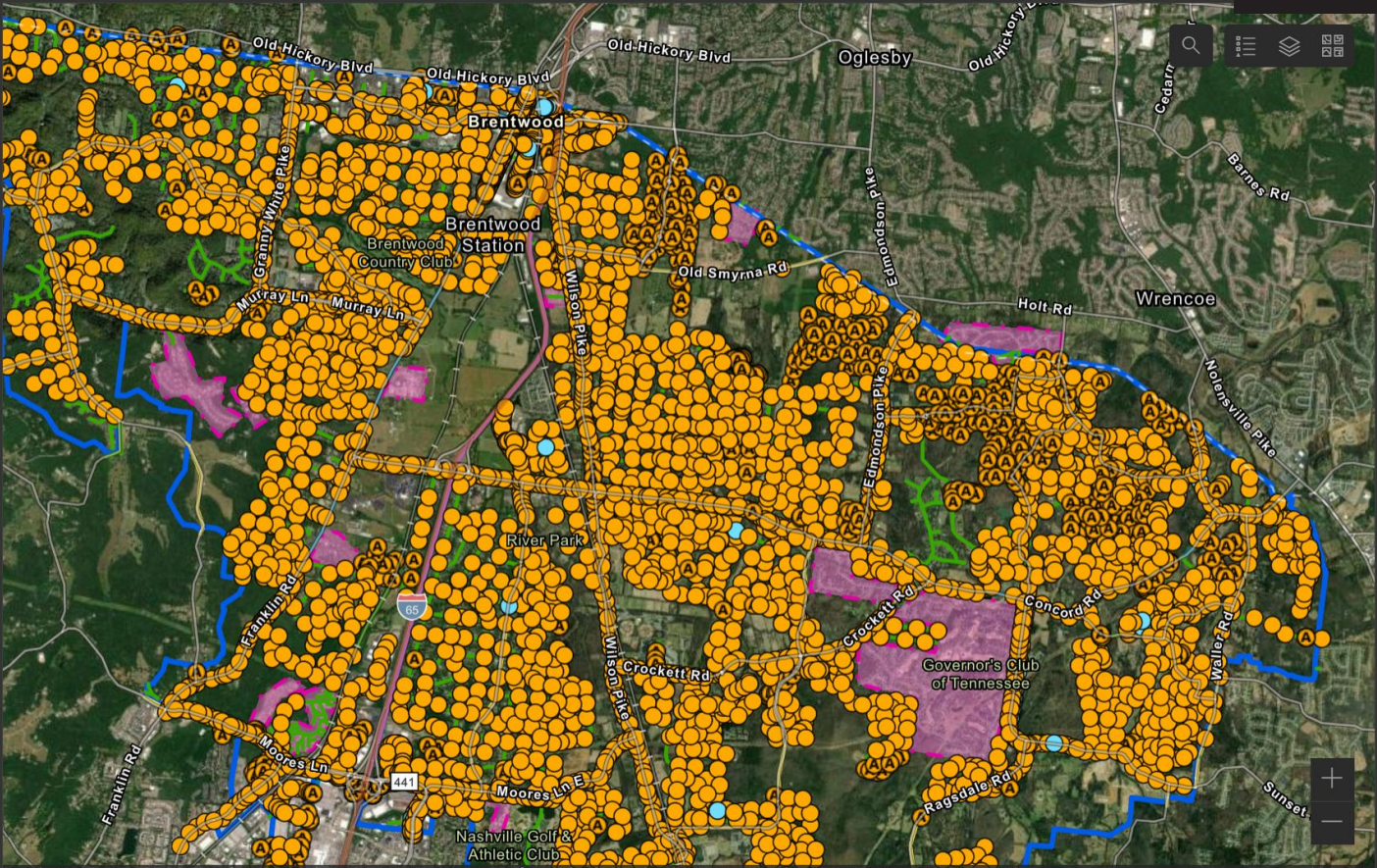
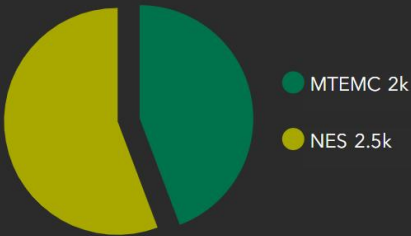
Program Cash Flow												
Year	(P)	(Q)	(R)	(S)	(T)	(U)	(V)	(W)	(X)	(Y)	(Z)	(AA)
	Program Costs			Program Savings						Budget Cash Flow		
	Annual Project Cost (based on J, K, & L)	Annual Verification Cost (M)	Annual Program Cost (P + Q)	Energy Cost Savings (B)	Investment Charge Savings (C)	O&M Savings (D)	Attachment Costs (E)	Maintenance Allowance (F)	Utility Rebate (G)	Total Annual Savings (S + T + U + V + W + X)	Net Annual Cash Flow (R - Y)	Cumulative Cash Flow
	3% Escalation	3% Escalation	3% Escalation	3% Escalation	3% Escalation	3% Escalation	3% Escalation	Year 1				
1	\$36,238	\$0	\$36,238	\$26,883	\$16,500	\$0	\$0	(\$5,050)	\$0	\$38,333	\$2,095	\$2,095
2	\$36,238	\$0	\$36,238	\$27,690	\$16,995	\$0	\$0	(\$5,202)	\$0	\$39,483	\$3,245	\$5,340
3	\$36,238	\$0	\$36,238	\$28,521	\$17,505	\$0	\$0	(\$5,358)	\$0	\$40,668	\$4,430	\$9,770
4	\$36,238	\$0	\$36,238	\$29,376	\$18,030	\$0	\$0	(\$5,518)	\$0	\$41,888	\$5,650	\$15,420
5	\$36,238	\$0	\$36,238	\$30,257	\$18,571	\$0	\$0	(\$5,684)	\$0	\$43,145	\$6,906	\$22,326
6	\$36,238	\$0	\$36,238	\$31,165	\$19,128	\$0	\$0	(\$5,854)	\$0	\$44,439	\$8,201	\$30,527
7	\$36,238	\$0	\$36,238	\$32,100	\$19,702	\$0	\$0	(\$6,030)	\$0	\$45,772	\$9,534	\$40,061
8	\$36,238	\$0	\$36,238	\$33,063	\$20,293	\$0	\$0	(\$6,211)	\$0	\$47,145	\$10,907	\$50,968
9	\$36,238	\$0	\$36,238	\$34,055	\$20,902	\$0	\$0	(\$6,397)	\$0	\$48,560	\$12,321	\$63,289
10	\$36,238	\$0	\$36,238	\$35,077	\$21,529	\$0	\$0	(\$6,589)	\$0	\$50,016	\$13,778	\$77,067
11	\$36,238	\$0	\$36,238	\$36,129	\$22,175	\$0	\$0	(\$6,787)	\$0	\$51,517	\$15,279	\$92,346
12	\$36,238	\$0	\$36,238	\$37,213	\$22,840	\$0	\$0	(\$6,990)	\$0	\$53,062	\$16,824	\$109,170
13	\$36,238	\$0	\$36,238	\$38,329	\$23,525	\$0	\$0	(\$7,200)	\$0	\$54,654	\$18,416	\$127,586
14	\$36,238	\$0	\$36,238	\$39,479	\$24,231	\$0	\$0	(\$7,416)	\$0	\$56,294	\$20,056	\$147,642
15	\$36,238	\$0	\$36,238	\$40,664	\$24,958	\$0	\$0	(\$7,639)	\$0	\$57,983	\$21,745	\$169,387
16	\$36,238	\$0	\$36,238	\$41,883	\$25,706	\$0	\$0	(\$7,868)	\$0	\$59,722	\$23,484	\$192,871
17	\$36,238	\$0	\$36,238	\$43,140	\$26,478	\$0	\$0	(\$8,104)	\$0	\$61,514	\$25,276	\$218,146
18	\$36,238	\$0	\$36,238	\$44,434	\$27,272	\$0	\$0	(\$8,347)	\$0	\$63,359	\$27,121	\$245,267
19	\$36,238	\$0	\$36,238	\$45,767	\$28,090	\$0	\$0	(\$8,597)	\$0	\$65,260	\$29,022	\$274,289
20	\$36,238	\$0	\$36,238	\$47,140	\$28,933	\$0	\$0	(\$8,855)	\$0	\$67,218	\$30,980	\$305,269
TOTAL	\$724,764	\$0	\$724,764	\$722,367	\$443,361	\$0	\$0	(\$135,695)	\$0	\$1,030,033	\$305,269	

INVESTMENT GRADE AUDIT SAMPLE AUDIT DASHBOARD

Streetlight Audit - Brentwood, TN

Total Lights
4,455

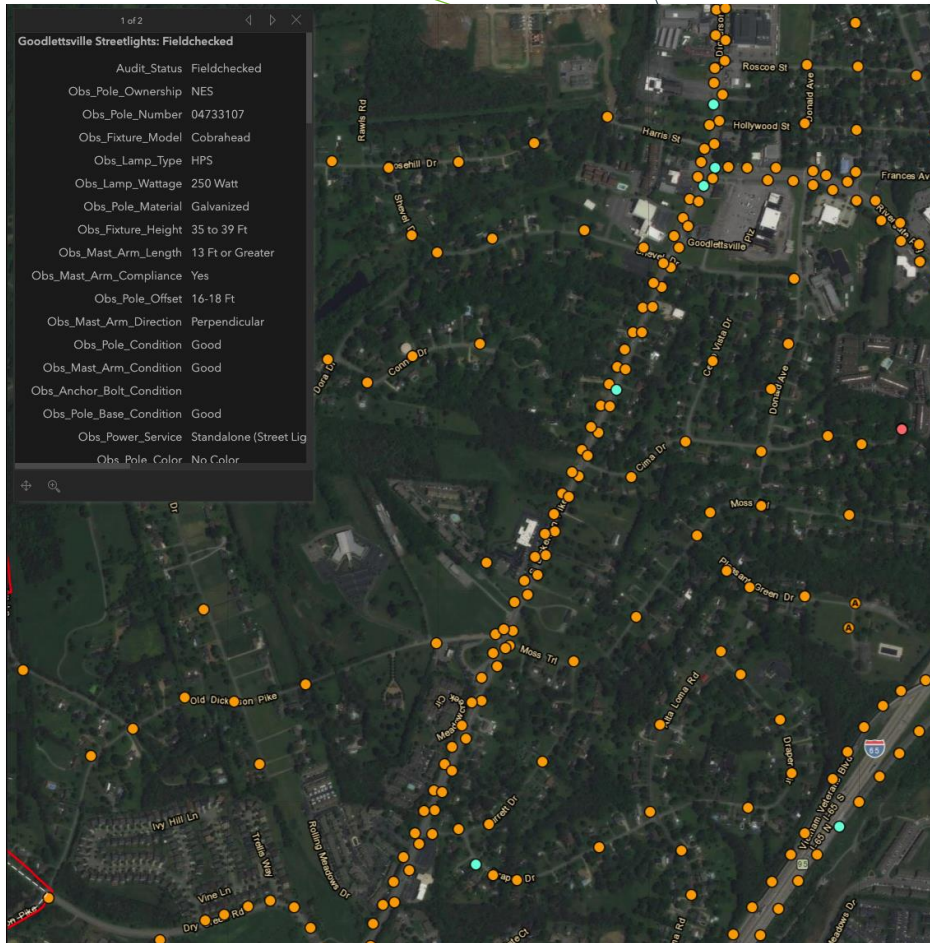
Utility



Audit Status

Utility

INVESTMENT GRADE AUDIT DATA COLLECTION & TYPICALS



Pole Dimensions

Fixture Mounting Height

Fixture Mounting Arm Length

Pole Tag

Fixture Detail

Arm Mount Detail

PoleID	S33041	Fixture Height	31'4"
Date	2014-10-01	FixtureType	S250
Distance	88'9"	FixtureStyle	Cobrahead
Latitude	40.263709239	SafetyConcern	No Safety Concern
Longitude	-76.889492604	Performance	No Concerns, No Intersection
Altitude	346'9"	Roadway	Three Lane One-Way Arterial



OAK HILL, TN | NEXT STEPS

1. PDA: Professional Development Agreement approved and signed
2. IGA: PATH performs Investment Grade Audit (~6 months)

Utility negotiations

- Rate structures
- Buyout offers
- Utility bills received



Streetlight Audit

- GIS mapping
- Existing specs
- Utility bill analysis



Design

- Typical engineering
- Savings calculations
- Cost analysis

3. Contract: Final Proposal presented; vote to approve project
4. Execution: Project implemented & commissioned
5. Verification: Confirm savings

