



Derby Public Schools Bradley and Irving Schools Energy Efficiency Opportunities

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Presented By:



**TURTLE &
HUGHES**



Introduction to Turtle & Hughes Energy Solutions Model

- Turtle & Hughes is a privately owned, electrical solutions provider with a New Haven presence celebrating its 90th year of service to the marketplace.
- Our in house staff has extensive experience in the energy solutions outlined below

Conservation:

Lighting

Lighting Controls

HVAC Upgrades / Controls

Building Automation / Boiler Controls

Real Time Energy Metering

Integrated Technologies:

Motor Controls/ VFD

Thermal Energy Storage

Combined Heat and Power Solutions

Renewable Applications:

PV Solar, Solar Thermal

Geothermal

Fuel Cells

Professional Services

Energy Advocacy

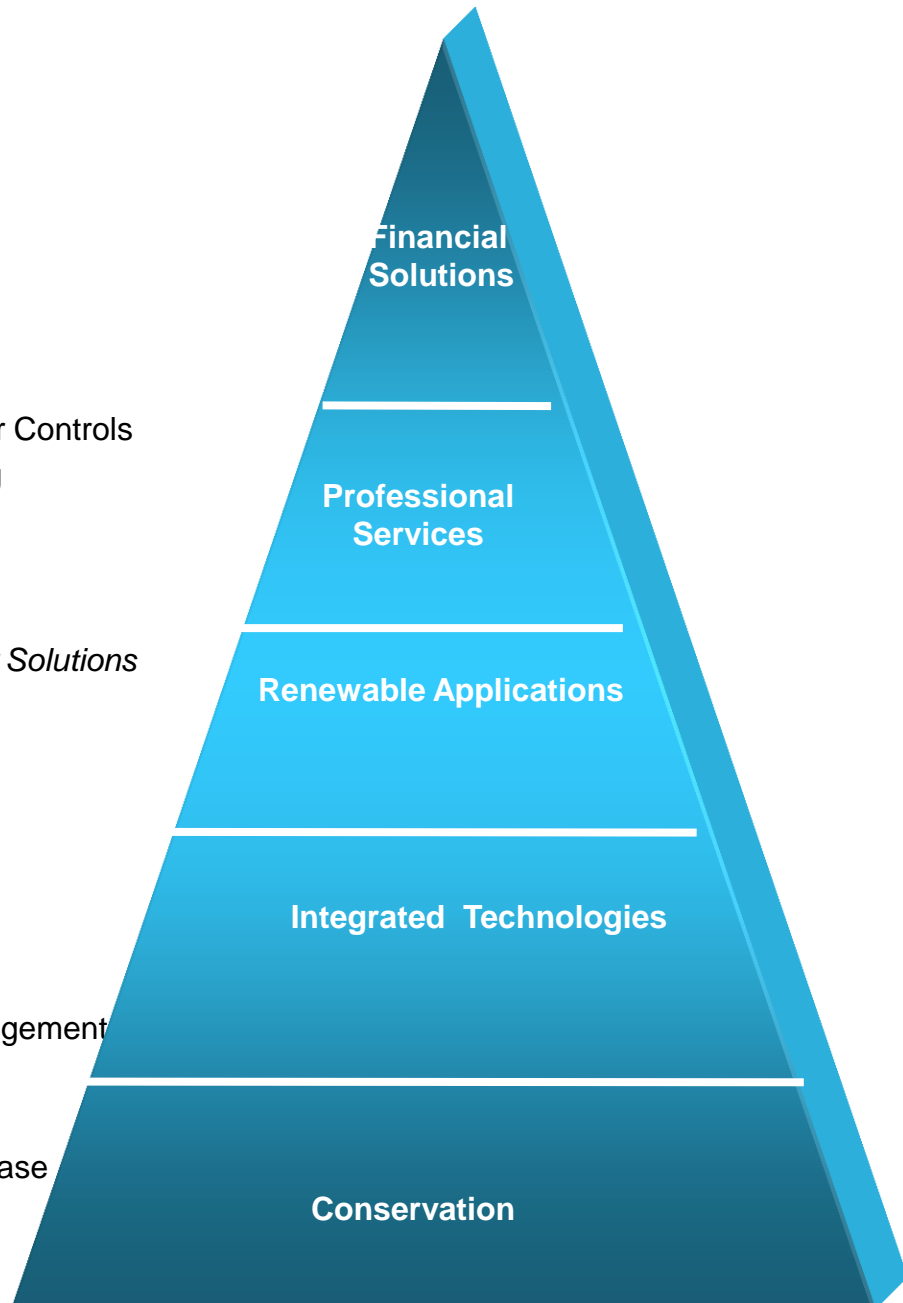
Energy Budget Preparation

Federal / State Grant Management

Financial Solutions

Third Party Financing

3rd Party Commodity Purchase



Objectives

- Identify energy saving opportunities for Bradley and Irving Schools across all energy commodities and end uses including:
 - **Interior and Exterior Lighting and lighting controls**
- Optimize available Utility, State, and Federal grants, tax credits and incentives
- Design and present a turn key project that results in improved operating conditions while mitigating increasing operating costs to both Bradley and Irving Schools.

Bradley School Findings

- **2012 consumption: 193,680 kWh**
- **2013 consumption: 204,800 kWh**

- **Significant opportunities exist to reduce energy related costs within the Bradley School campus:**
 - **Interior Lighting**
 - **New LED fixtures for Media Center, Gymnasium, Offices, Classrooms**
 - **Latest LED technologies to retrofit remaining low use areas.**
 - **Occupancy sensors to control hallway fixtures and other areas currently running during non occupied periods**
 - **Exterior Lighting**
 - **Existing exterior fixtures will be replaced with new LED luminaires.**

Irving School Findings

- **2012 consumption: 208,320 kWh**
- **2013 consumption: 234,400 kWh**

- **Significant opportunities exist to reduce energy related costs within Irving School campus:**
 - **Interior Lighting**
 - **New LED fixtures for Gymnasium, Offices, Classrooms, and corridors.**
 - **Latest LED technologies to retrofit remaining low use areas**
 - **Occupancy sensors to control hallway, offices and classrooms currently running during non occupied periods**

 - **Exterior Lighting**
 - **All exterior fixtures will be replaced with new LED luminaires**

Project Benefits

- Create a **sustainable** reduction of energy and operational costs.
- Turn key solutions including design, implementation, project management, and utility coordination
 - Utility incentives to buy down project cost by \$0.30 per kWh saved
 - A 0% loan offered through UI will be used for the balance of the project, repaid on each facility UI bill.
 - Result- little to no capital cost required from DPS budgets.
 - Operational impact:
 - Significant reduction in operational / fixture maintenance costs
 - Significant mitigation of rising energy costs.
Example: Existing classroom fixture consuming 128 watts, replaced with a unit consuming 40 watts.

Environmental Benefits

This initiative is projected to save 127 Metric Tons of CO₂ equivalent to:

- 295 Barrels of Oil consumed
- 1.7 tanker trucks worth of gasoline
- 11.6 average homes worth of annual electricity consumption
- 45.4 tons of waste sent to a landfill
- 26.7 passenger vehicles

Bradley School Financials

Lighting Project Cost	\$ 119,085.63
Utility Incentive (Estimated)	\$ 25,106.23
0% Project Loan	\$ 93,979.40
1st Year Projected Savings	\$ 19,300.70
10 Year Projected Net Cash Flow	\$ 108,468.00
Project Payback	4.8 Years
ROI	21%

Irving School Financials

Lighting Project Cost	\$ 129,842.00
Utility Incentive (Estimated)	<u>\$ 29,982.21</u>
0% Project Loan	\$ 99,849.00
Annual Projected Savings	\$ 24,187.63
10 Year Projected Net Savings	\$ 192,613.00
Project Payback	4.1 Years
ROI	24%

Project Summary

Lighting Project Cost	\$ 248,927.00
Utility Incentive (Estimated)	<u>\$ 55,088.00</u>
0% Project Loan	\$ 193,839.00
Annual Projected Savings	\$ 47,176.00
10 Year Projected Net Savings	\$ 355,789.00
Project Payback	4.1 Years
ROI	24%

Next Steps

- Motion to authorize Turtle & Hughes to finalize an offer of incentive and financing from United Illuminating and authorize the Superintendent of Derby Public Schools to execute Letters of Agreement between UI and Derby Public Schools for energy efficient lighting upgrades for Bradley and Irving Schools.
- Finalize documentation from United Illuminating
- Execute Letter of Agreement (LOA) and financing agreement between Derby PS and United Illuminating
- Project Implementation