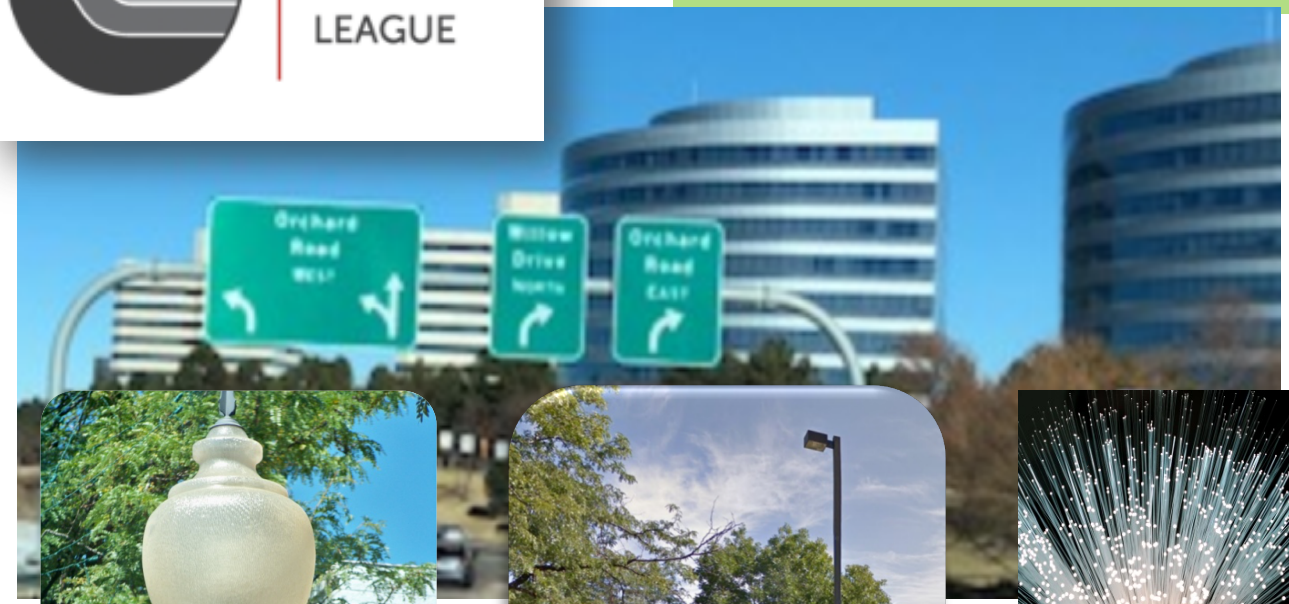
COLORADO MUNICIPAL LEAGUE

STREET LIGHTING STRATEGIES



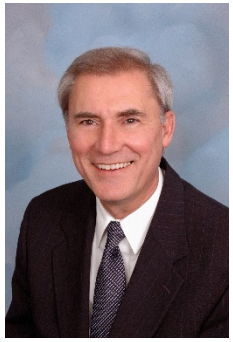
January 27, 2021

K&F Kissinger & Fellman P.C.

REALTERM ENERGY

HRGreen

Today's Presenters



Dave Zelenok, PE

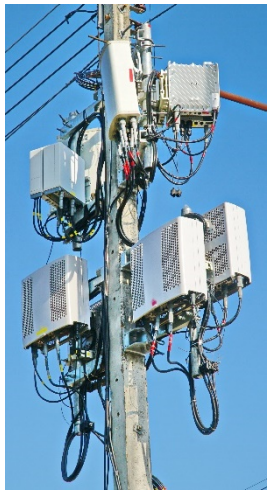
- 34 years experience in Colorado local government, public works and telecommunications management
- Overseen the operation/maintenance of 30,000 Colorado municipal street lights
- Installed hundreds of miles of municipal fiber, traffic and smart city infrastructure
- Former President American Public Works Association Colorado Chapter
- Public Works Director - Colorado Springs and Centennial Colorado, engineering faculty at the US Air Force Academy

Paul Vesel, MBA

- 25+ years leading municipal infrastructure and energy efficiency projects
- Led 50 streetlight municipalization projects in 4 states
- Former CEO of Omniwatt and Poderco, renewable energy and energy efficiency companies
- Currently Rocky Mountain regional Director for RealTerm Energy

Ken Fellman, Esq.

- 36 years' experience in local government utility and telecommunications practice
- Member, CML and Metro City Attorneys Association
- Former President, National Assoc. of Telecommunications Officers and Advisors
- Has served as municipal and county attorney, city council member and mayor



AGENDA

- ✓ Overview / History / Context
- ✓ Legal Issues and Challenge
- ✓ Streetlight Overview: A Strategic Asset
- ✓ Streetlights: the gateway to Smart City
- ✓ How to upgrade streetlight assets without any capital investment
- ✓ Opportunities
- ✓ Next Steps / “The Way Ahead”

Why is this Important to Your City?

- **Current Situation: (Per 1,000 lights) - Annual cost ~$250,000**
  PLUS….+ Knockdowns (less insurance recoveries)
  + Corrosion replacements
  + Area Lighting & Signals
  + LED, system upgrades and new installations
- Limited ability to meet:
  - Aesthetic, repair or maintenance levels
  - Energy goals (HPS - 1930's)
  - Opportunities for Innovating (e.g., P3's)
  - System upgrades / Repurposing infrastructure

Poorly Maintained Streetlight

- Potential to Convert from a "Must Pay" ***Cost*** to Potential long term ***Revenue*** Source
- Related / Broader Issues –
  - Telecommunications, Small Cell, Smart City Initiatives: **Imminent**
- **Reduced annual costs ~$100K**
- **Cost savings ~ 55% ($150,000) potential per 1,000 lights**

Colorado Street Lighting Executive Overview

- Muni's, Co-Ops, IOU's ~$20+/month typical per light
- $16/month ~ 80% Profit / Maintenance, etc.
- Power is often ~ **10-20%** of total expenses
- Power < $2-4/month (typical HPS)
- LED's – reduce power expenses by about 50%

Colorado cities now municipalizing lighting

- Paying separately for energy
- Up-front capital & conversion costs
- P3's and alternative constructs (RealTerm)
- R.O.I. ~ 3-6 years (varies)
- R.O.I. LED Conversions alone: ~20+ years

Significant cost savings possible –
Re-purposing street lights: signals, utilities and public broadband
Conduit Can be even more valuable (~$20-$100/LF)

STREET LIGHTING – Why Bother?

Reasons Vary –

- ✓ Cost Savings
- ✓ Limited New Revenues
- ✓ Sustainability
- ✓ Smart Cities/Sensors
- ✓ Utility Metering & SCADA
- ✓ Fiber
- ✓ Telecommunications
- ✓ Property Values (~3%)
- ✓ Aesthetics
- ✓ New Developments

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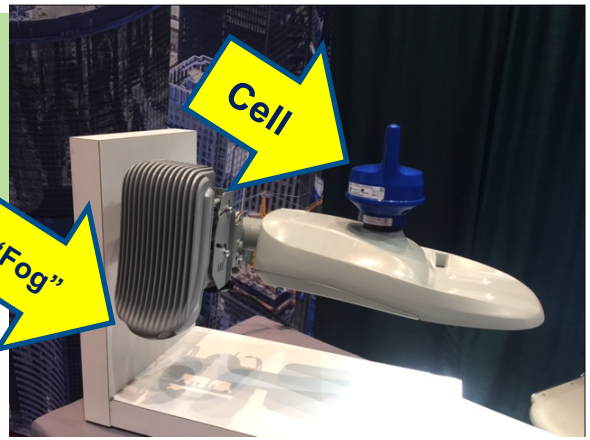
Street Lights – Key to a Larger Strategy

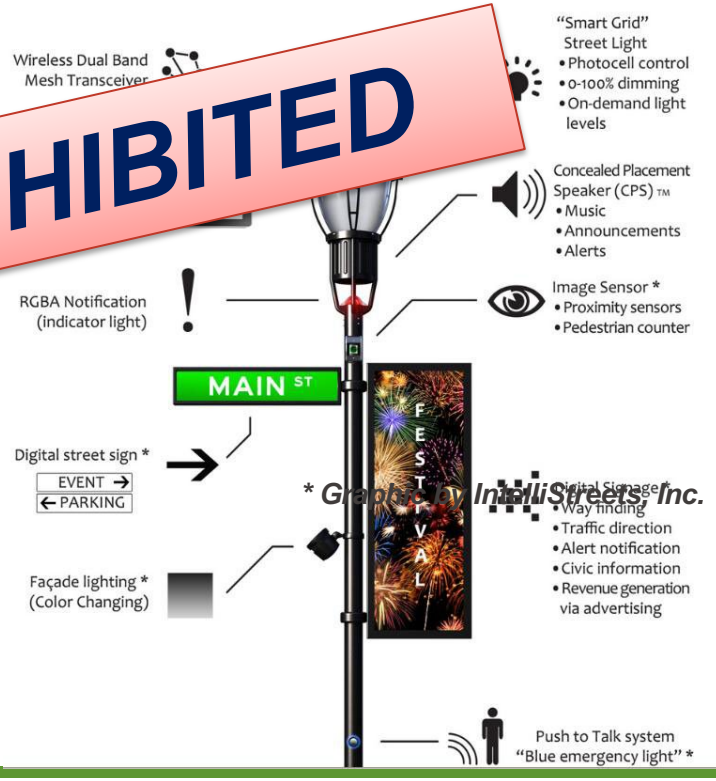
- ✓ Streetlight Municipalization
- ✓ Traffic Signal Fiber Interconnection
- ✓ Conduit = Valuable
- ✓ Small Cells: Friends or Foes?
- ✓ Fiber Optic Plans
- ✓ Smart City Strategies
- ✓ “FUTUREPROOFING”

Tech Trends: It's Just a Streetlight… Or – is it?



- Lighting now PLATFORMS
  - "Smart" (Dimming) Streetlights
  - 5G
  - Signage / Wayfinding
  - Sensors & Counters
  - Speakers to l…
  - …ge detection and
  - …parking, surveillance cameras
  - Electric vehicle charging ports
  - Visual banners
  - Drone Launch Platforms
  - Environmental sensors

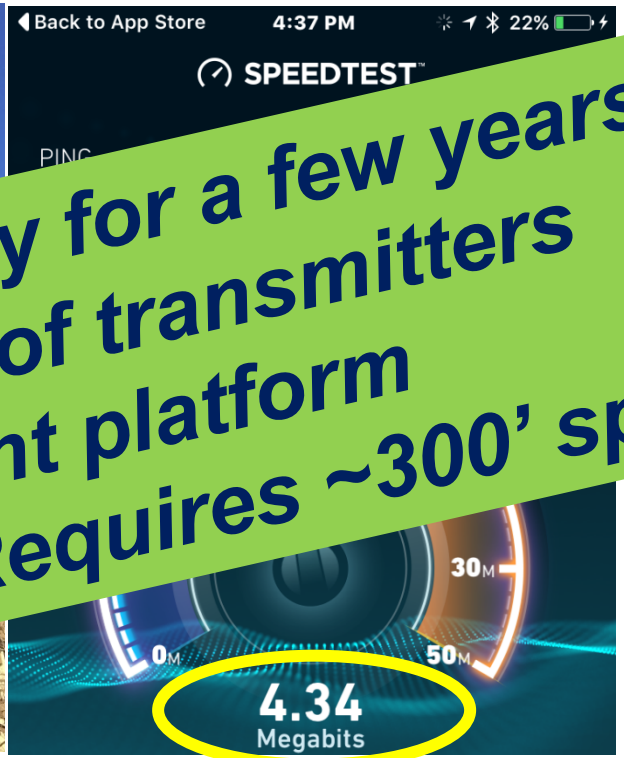
Effectively ALL PROHIBITED



* Graphic by IntelliStreets, Inc.

What Are Others Doing – and Why?

VAIL: Street lighting & FREE WiFi



"5G" won't exist widely for a few years
Requiring thousands of transmitters
Street lights; Excellent platform
Gig Mesh: Physics Requires ~300' spacing

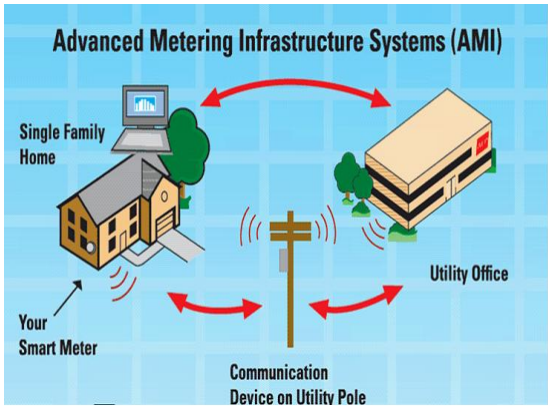
5G and Small Cell "Densification"

Not all 5G Is Created Equal

- Carriers ~ 50 mbps - 1,000 mbps
- Vastly Different Frequencies & Towers
- ~ 600 - 50,000 MHz (50 GHz)
- US Laws vs Laws of Physics
- ~ 300 feet (gigabit goal)

- **Small Cell Antennas ~ Every Block**
- Fiber Optic Backbones
- At full deployment (mm wave)…
- **100+** Small cells per Sq Mile
- **2X small cells as street lights (?)**
- **Two street cuts per tower**
  - ~200 cuts per square mile
  - ~ $1,000 = $200K/sq mile
- **~$250 per tower "FCC Safe Harbor"**
  - X 100 = $25,000/Sq mi/year

Utility + Fiber = Another New Revenue Source



The data network that meter companies will most often recommend is a single-function RF system.

BUT – it is not the only option and may **not** be the best for:

- Longer term investments
- Smart City initiatives

STUDY:
What role should **fiber** play?

AMR vs AMI vs Fiber

Repurposing Your Street Lighting Infrastructure

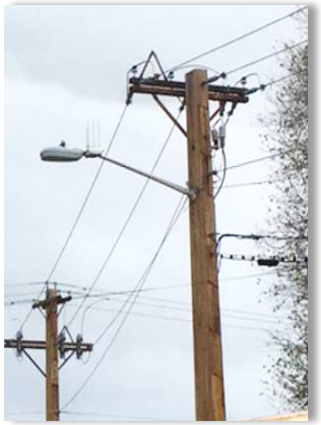
- Do you own pipes in the ground?
- Do you control how they are placed?
- Do you have room in the **Street Light Conduit** for **fiber optics?**
- Important to understand:
  - Complex **inter-relationships**
  - **Revenue** opportunities
  - How the commercial "fiber game" is really **played**
  - Changes **Daily** – New FCC Rules

Why is Your City so well positioned?

- Solid Understanding of Importance of Technology
- Already Have:
  - Permitting, Records, Billing, Ops
  - Crews / Bucket Truck Rolls
  - Billing / Customer Service
- Telecommunications:
  - Nearby Excellent Backhaul
  - High Demand Area & Growth Potential
  - Many customers already unbundled & buying separately
- Own Some Conduit, Recordkeeping, GIS enhancements
- Infrastructure – Abandoned (?)
- Traffic Signal Maintenance

Defining costs vs benefits?

1. Determine Original Value - Old “construction allowances”
2. Calculate Depreciated Value
3. Estimate transition costs
   - Consider “Hot Zones” or parallel poles?
   - Installing power “demarcation points” or “disconnects”
4. You might expect the “all-in” negotiated system cost, including transition and disconnection costs
5. **Condemnation may be a factor**
6. **May take 3-5+ years** to repay the cost to acquire the system, depending on the agreed-upon system valuation
7. Consider Inter-relationships with Small Cells / Signals / Broadband / Fiber
8. **Revenue generation, aesthetics and fiber backbone valuations are bonuses - tough to quantify**



Next Steps / How can we help?

- Detailed Analysis of Network Infrastructure
- Develop offer
- Engage in negotiations
- Consider Inter-relationships with
  - Small Cells
  - 5G
  - Broadband
  - Fiber
  - Traffic Signals
  - Conduit
  - Asset Management

Source: "Governmental Services", https://www.hrgreen.com/markets-projects/governmental-services/

LED Streetlight Conversion Solutions

Webinar Colorado

January 27, 2021

Presented By:
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Smart Cities are the Future

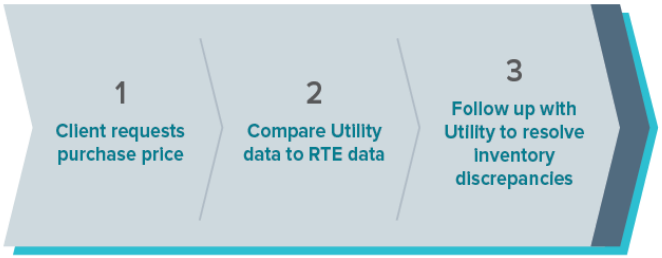
POLES & STREETLIGHTS ARE THE BEDROCK ON WHICH SMART CITIES ARE BUILT

Streetlights Form A Smart City Network

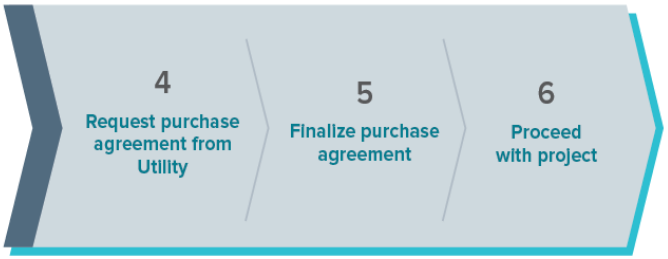
Smart LED Streetlights with Controllers and Smart City Sensors

Municipalization

Experience with streetlight acquisition in over 50 towns and cities in 4 states



Approach



Steps to Take:

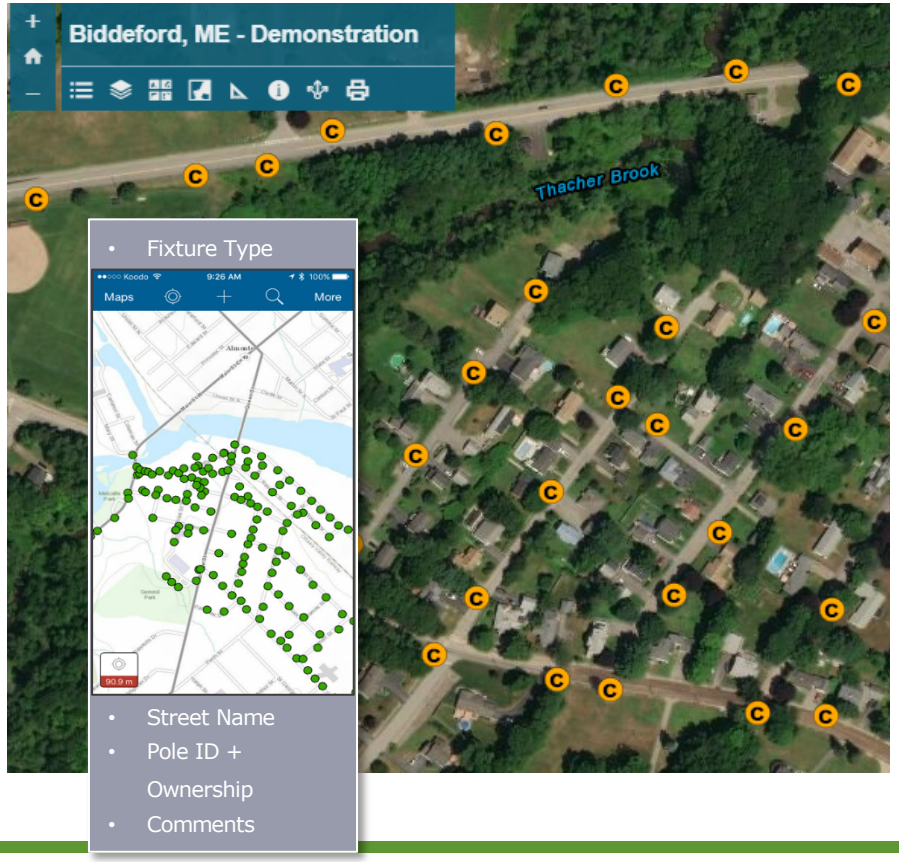
- Inventory analysis and reconciliation
- Evaluate buyback terms
- Apply incentives and tariff changes
- Prepare post-acquisition maintenance program

Utilities Worked with:

- National Grid
- Orange and Rockland Utilities, Inc.
- Rochester Gas & Electric
- Central Maine Power
- National Grid Massachusetts
- Kennebunk Light & Power District
- Eversource Connecticut
- Eversource Massachusetts
- Emera
- San Diego Gas & Electric
- Florida Power & Light Company

1. GIS Field Audit

A GIS Field Audit is essential for optimizing design and efficiency of LED replacements.



Benefits of a Field Audit

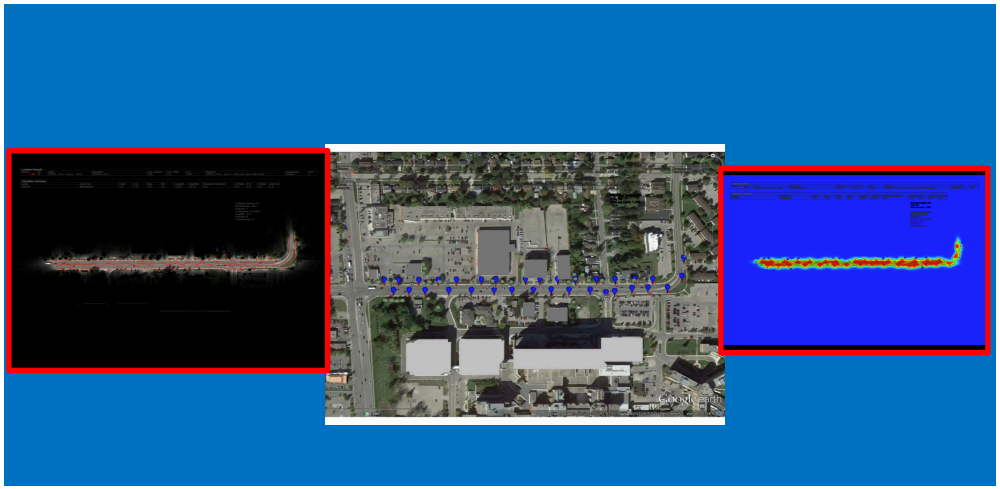
- Streetlight Asset Management is seldom a priority with municipalities or utilities
- First step in Asset Management: True-up the existing database
- Becomes the foundation for future management of existing and new assets

What a GIS Field Audit Includes:

- RealTerm Energy has a proprietary, customized ESRI data collection app
- The app clarifies:
  - Location of each asset
  - Ownership
  - Physical attributes
  - Site/asset conditions
  - 3rd party hardware

2. Lighting Design

Custom designs eliminate the mistakes of the past and optimize energy savings



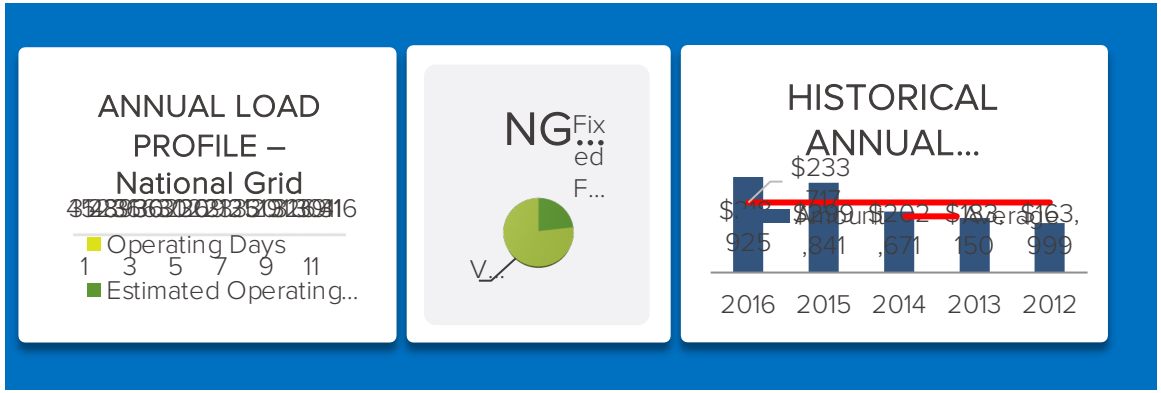
Elements of Lighting Designs

- Designs calculated for each unique street
- Use RP–8–18 as a guideline, or customized for client preferences
- Dimming profiles can be specified
- Adjusted for various color temperatures and roadway classifications
- Additional energy savings over traditional 1 for 1 replacement methodology

Result: Optimized Lighting for Each Roadway

3. Investment Grade Audit

An Investment Grade Audit (IGA) minimizes the chances of overruns and delays



What Investment Grade Audit Includes:

- Updated inventory and fixture/control selection results
- Detailed breakdown and comprehensive analysis of costs & benefits
- Full financials including ROI & payback, financing options for decision-makers
- Installation costs with historically-derived, responsible provisional calculations (fuses, holders, arms, etc.)

4. Community Outreach

These activities keep key stakeholders engaged throughout your project.

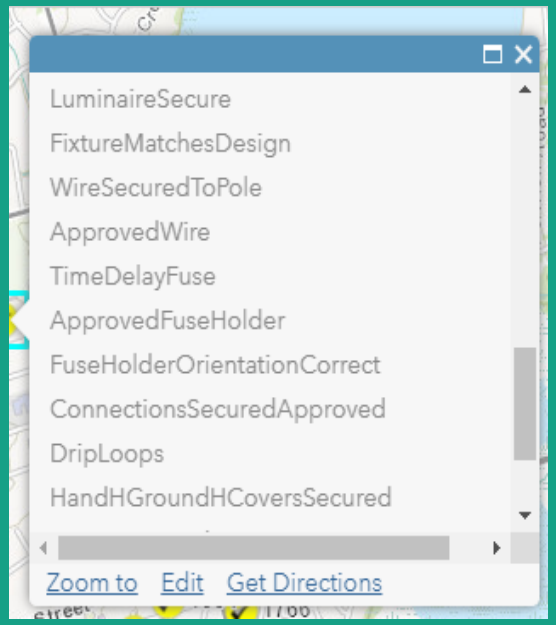
5. Installation Management

Installation Management Features and Benefits

Customized App, Handheld Devices and Dashboard

- Planning tool for installation crews
- Tracks progress of each installer in real-time
- Monitors stores depletion
- Identifies issues to be resolved prior to job termination
- Ensures complete accuracy of installation for future asset management (warranty issues, repairs, etc.)

6. Commissioning



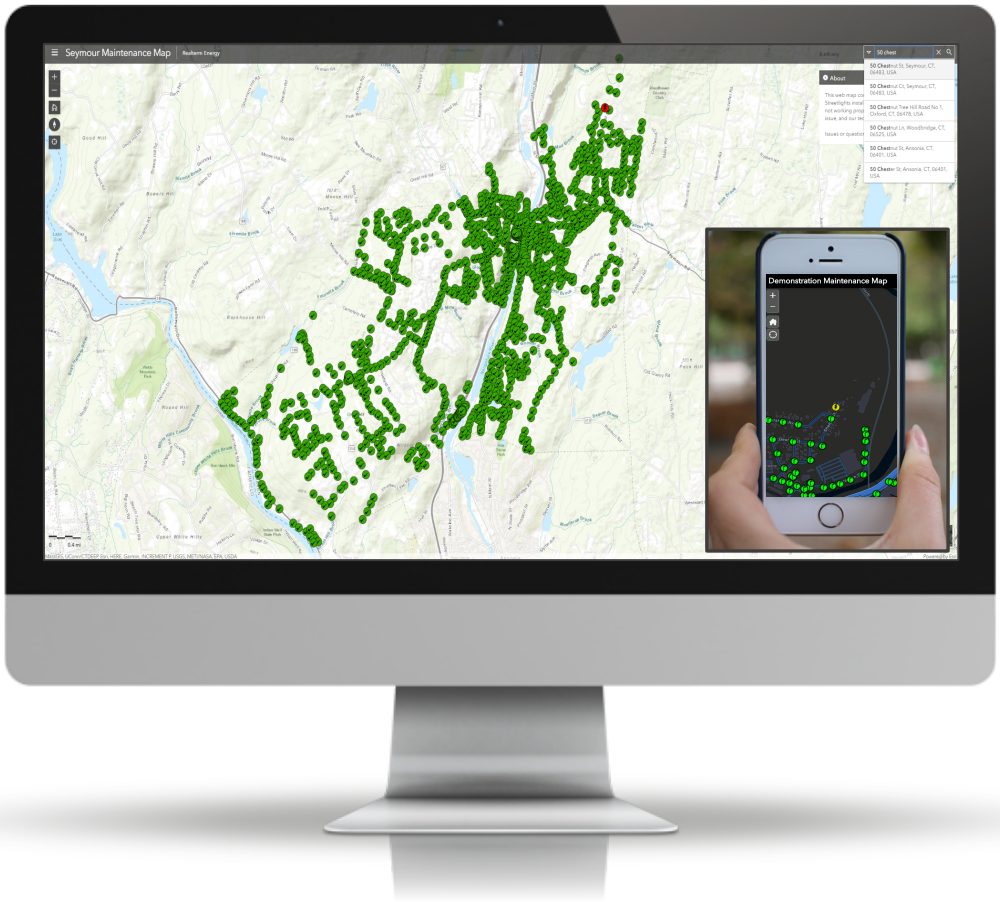
Commissioning involves the following checks to ensure all components of the new streetlight system are properly installed and functioning at 100% capacity:

- Spot check of all fixture types
  - First day of installation
  - Mid-way through the installation phase
  - Commissioning phase
- Ensure compliance with all utility guidelines
- Ensure installation is in accordance with manufacturer guidelines

Upon completion of the contract an e-commissioning binder will be delivered including the following:

Closing and Contractor letters	Disposal approvals
Luminaire and photocell warranties	Lighting designs
Cost outline	Customer care information
All collected metadata on the street lights and their LED replacements	Final installed mapping (ESRI, KMZ and Excel Spreadsheet Format)
Insurance	Emergency contact details of our key staff
Final incentive and/or rebate application documentation	Billing change confirmation from the utility

7. Maintenance Services



Maintenance provides ongoing customer support in 4 key areas:

- Online Map-based Outage Reporting System
- Electrical Contractor (EC) Management
- RMA (Return Merchandise Authorization) Services
- Smart Controls Management (if applicable)

Benefits

- Increased Safety
- Lower Emissions
- Lower Energy Costs

Financial Options

Energy Performance Contract

Public Private Partnership

Tax-Exempt Lease Purchase

Financial Options

Self-financed or Vendor Assisted, We Offer:

- Energy Performance Contracting (EPC)
- Currently 15 EPC contracts
- Assistance with buy-backs, bond and tax-exempt lease purchase contracts
- RealTerm Energy participates in P3s, long-term approach and shares the risk

Company Overview

REALTERM ENERGY

A NORTH AMERICAN
LED/SMART CONTROL/SMART CITY LEADER

300 MUNICIPAL AND UTILITY CLIENTS

OVER 350,000 LIGHTS AND CONTROLS DEPLOYED/DEPLOYING

10 STATES & 3 CANADIAN PROVINCES

MEMBERS OF THE ILLUMINATING ENGINEERING SOCIETY (IES)

ADVISORY MEMBER TO THE STREET & AREA LIGHTING CONFERENCE (SALC)

QUALIFIED AS AN ENERGY SERVICE COMPANY (ESCO) FOR THE US DEPARTMENT OF ENERGY (DOE)

THE WORLD BANK

REALTERM ENERGY RECOGNIZED AS AMONG THE BEST PRACTICE SERVICE PROVIDERS IN THE WORLD

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Legal Issues in Planning for Streetlight Acquisitions

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Acquiring Streetlights: Legal Issues

Before you move forward

- Complete your inventory
- Undertake financial analysis and understand funding options
- Study and consider impact of existing franchise provisions
- Make sure you have support from your elected officials!

Creating a Framework for Ownership

- What department will be responsible?
- Do you need to create a new department?
- Will you need to create a municipal enterprise fund or will you operate within an existing budgetary framework?
- Will maintenance be performed by employees or will it be contracted?

Recent Regulatory History Impacting Acquisition

- Aurora discovery in early-2000s: there was no non-metered, energy only rate for municipally owed streetlights
- Between 2008 – 2012 municipal advocacy results in non-metered energy only rate and metered rate for other electric uses on a streetlight pole
  - proceedings involved Xcel attempts to impose a one size fits all formula on purchase price
  - attempt defeated, but PUC may revisit it after multiple purchases take place
- 2011 - 2019: Golden negotiates for purchase of Xcel streetlights
- 2019: Greenwood Village negotiates for purchase of Xcel streetlights

Recent Regulatory History Impacting Acquisition

- Pending Xcel Phase II rate case: municipalities intervene to seek tariff changes to increase flexibility and decrease costs involved in streetlight acquisitions
- Xcel opposes municipal raising of these issues
- Municipalities have been permitted to intervene and raise these issues; Xcel may object on the merits after evidence has been offered in the case

Strategies

- Develop your negotiating team
- Negotiating the non-disclosure agreement
- Internal commitments to keep negotiations moving forward (understand what obstacles you face)
- Understand the applicable tariffs

Key Issues in a Purchase and Sale Agreement

- Price
- Conversion: Process for determining costs of separation
- Methods of separation; defining point of separation
- Addressing streetlights on electric distribution poles
- Sale back provisions
- Uses of poles after sale is completed
- Liability/Indemnification issues
- Confidentiality

You've Got a Contract! Now …

- PUC approval process
- Utility usually prepares the filing
  - Review it carefully
  - Ensure agreement is clear that municipality has a say in what the filing contains
- Confirm execution of all closing documents
- Remember to comply with ongoing NDA provisions

Thank you! Contact info:

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Questions