Helio Energy Solutions

Energy Cost Optimization:

Using real time energy monitoring to quantify & manage energy

Presented by:

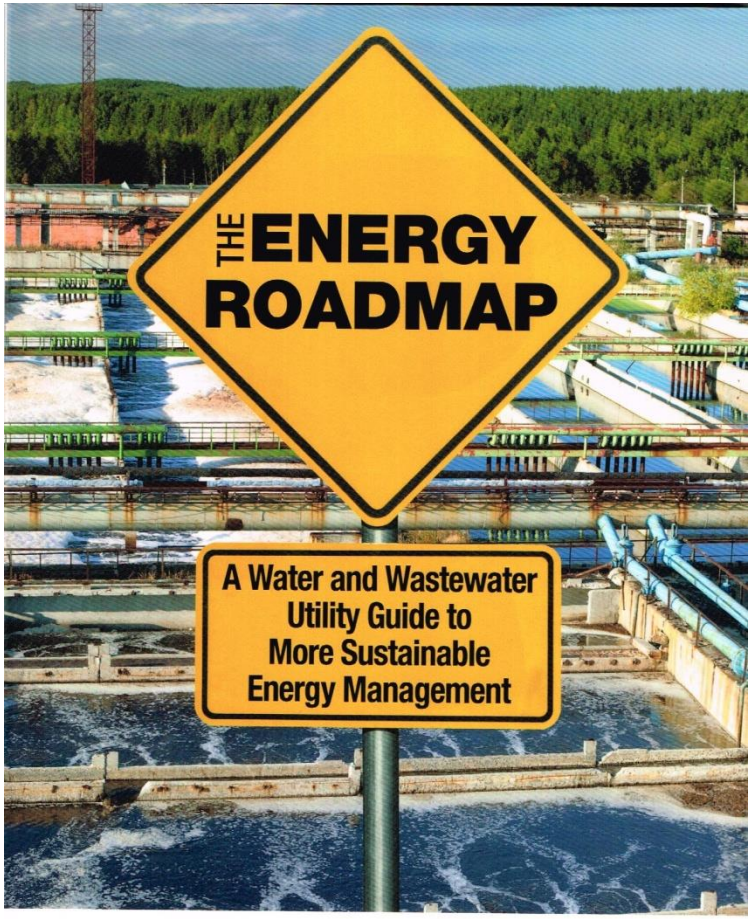
Nick Weber & Mike Murray

Helio Energy Solutions

Who We Are

Helio Energy Solutions

- Provider of Consultative Software Solutions
  - Food Manufacturing
  - Distribution/Logistics
  - Water/Wastewater Utilities
- WEF Energy Roadmap Co-Author
- Sister Company to HelioPower, Inc.
  - Commercial Solar Provider
  - Integrated Energy Solutions



Presentation Overview

1. The Traditional Energy Management Approach
2. Incorporating “Big Data” methodologies into the water/wastewater Industry
    a) Data
    b) Analytics
    c) Professional Services
3. Optimization
4. Discussion/Questions

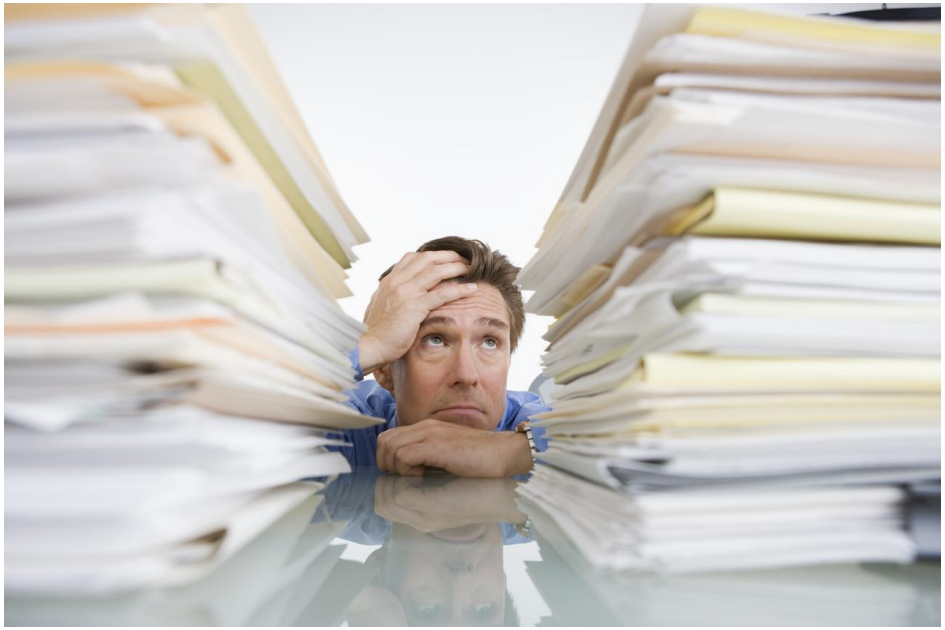
Simple Problem – Simple Solution

- Traditional Problem:
  - Review Utility Bill – Too high!

- Traditional Solution:
  - Tell Facilities Engineer to reduce energy
  - Engineer installs latest energy efficiency items with the best rebate; lights, VFDs, blowers, etc.
  - Review Utility Bill – Looks Better!
  - Done

Traditional Energy Approach Ignores Complex Information

- Energy data is not evaluated against tariff schedule
- Energy Costs not segmented by operations or process (How does it relate to cost/MGD)
- Raw energy and production data is ~~awkward~~ impossible to work with



Traditional Energy Management

7%/year reduction cannot be sustained with the industry standard approach

“Cherry Picking” is not a long term energy plan

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Insight comes from bringing data, analytics and professional services together

Step 1: Data

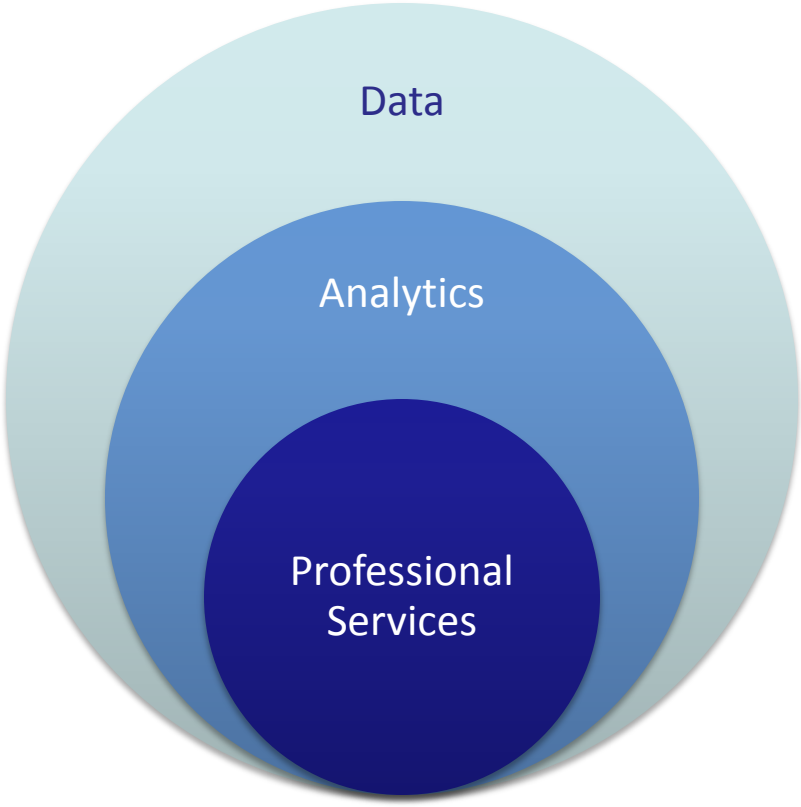
+

Step 2: Analytics

+

Step 3: Professional Services

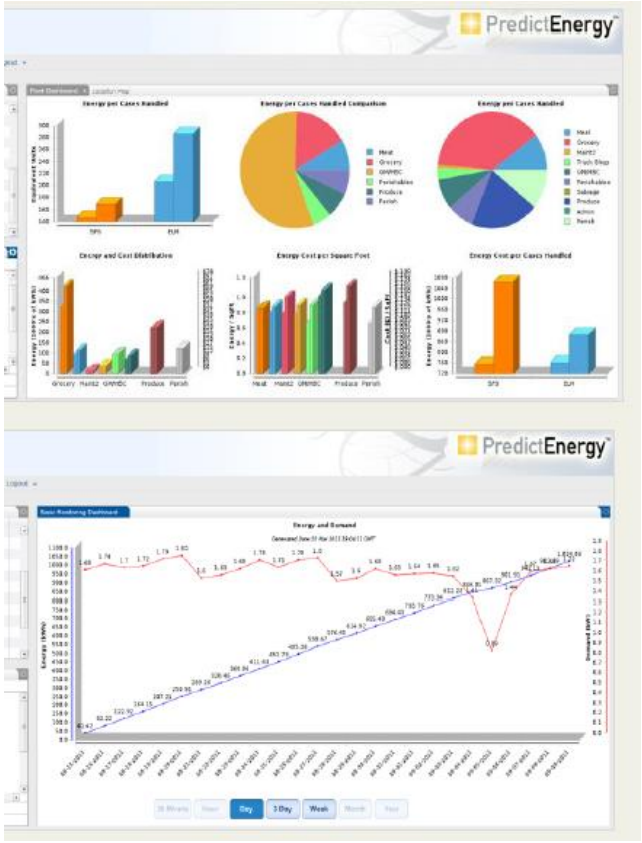
= **Energy Cost Savings**



The Right Data Enables the Right Analysis

- Electricity Data
  - Energy (kWh)
  - Power (kW)
- Utility Tariff Schedule
- Equipment Performance Specs
- Plant Flow/Production Data

Energy Analytics Provide the Leverage to the Right Solution



- Ability to integrate different kinds data types
- Apply Tariff Schedule to energy use
- Segregate and Normalize Energy Costs
- Support Energy KPIs (Key Performance Indicators)

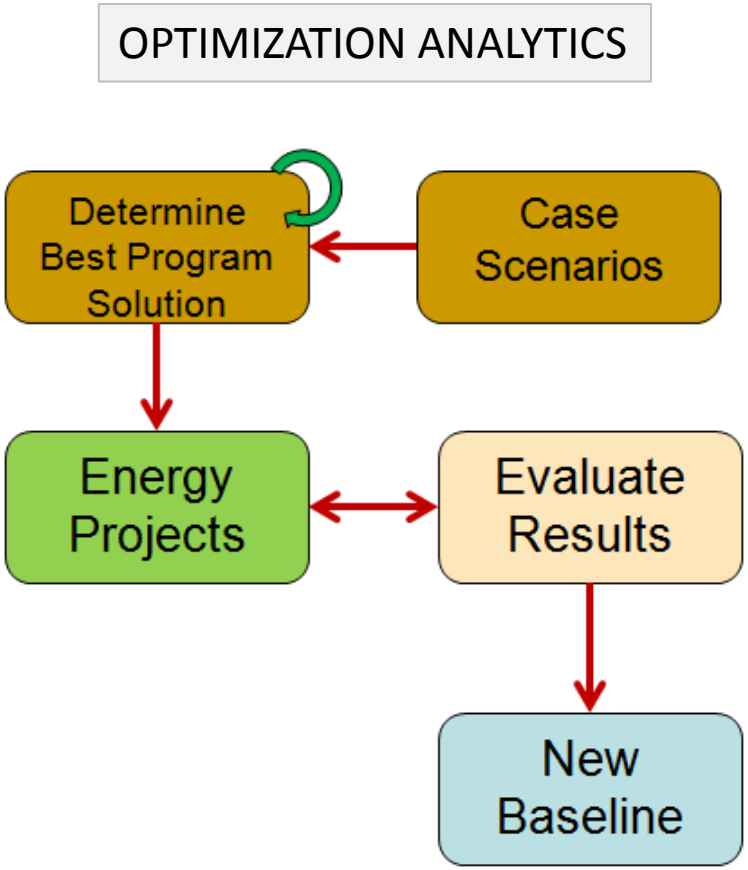
Energy Professionals Enable Optimization

Tilting at Windmills -

"confrontations where adversaries are incorrectly perceived"

- **Align Data and Analytics to Support Agency Goals**
  - **energy costs**
  - **cost per MGD**
  - **actionable intelligence real-time**
- **Define Key Energy Metrics**
- **Incorporate non-standard Solutions**
- **Create Solution Scenarios**

Optimization analytics provides the best program solution and outcome



- Iterate on key scenario cases
- Use Optimization to determine best outcome and Predict Results
- Evaluate Results/Reconcile Differences
- Monitor Gains for Continued Performance

PredictEnergy™ Analytics for Wastewater

Headworks | Primary | Secondary | Final | Total Effluent | Digester Analysis | BOD Analysis | Agency Comparison | Distributed Generation

REPORTS

- Print to Screen
- PDF File
- CSV File
- Process Cost Analysis
- Flare Variance Report
- Gas Distrib Report
- All

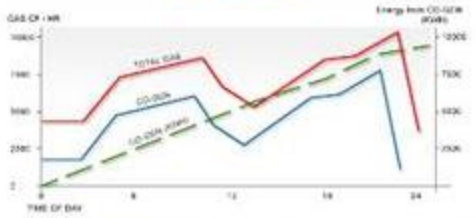
Submit

South San Francisco

AGENCIES

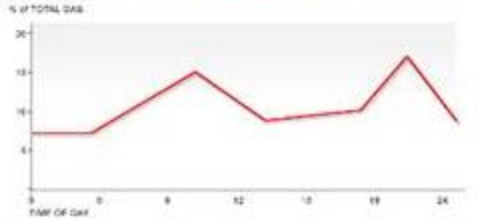
- San Bruno
- Millbrae
- Burlingame
- SFIA

Gas Processing



Hour | Day | 3 Day | Week | Month

Flare Variance



Hour | Day | 3 Day | Week | Month

Date Range	Total Gas(CF)	Gas to Flare(CF)	% of Total	Gas to Gen(CF)	% of Total	Gas to Boiler(CF)	% of Total	Energy Production (kWh)	Avoided Cost($)	% of Total Consumption
9/1/2012 to 9/1/2012	9465	1703	18	6310	66	472	5.3	9600	2112.00	8

On-site generation from Biogas “Optimized”

Conclusion:

Real-time Energy Monitoring with Analytics Maximizes Energy Cost

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Discussion

Questions/Comments?

Thank you,

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