



A Systematic Approach to Energy Management

*Municipal water & wastewater plants move
towards energy savings.*

A partnership with EPA & IDEM.

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CHANGE

POLITICIANS ARE LIKE DIAPERS. THEY NEED TO BE CHANGED OFTEN
AND FOR THE SAME REASON.

Poster courtesy of *Despair.com*

City of Angola WWTP

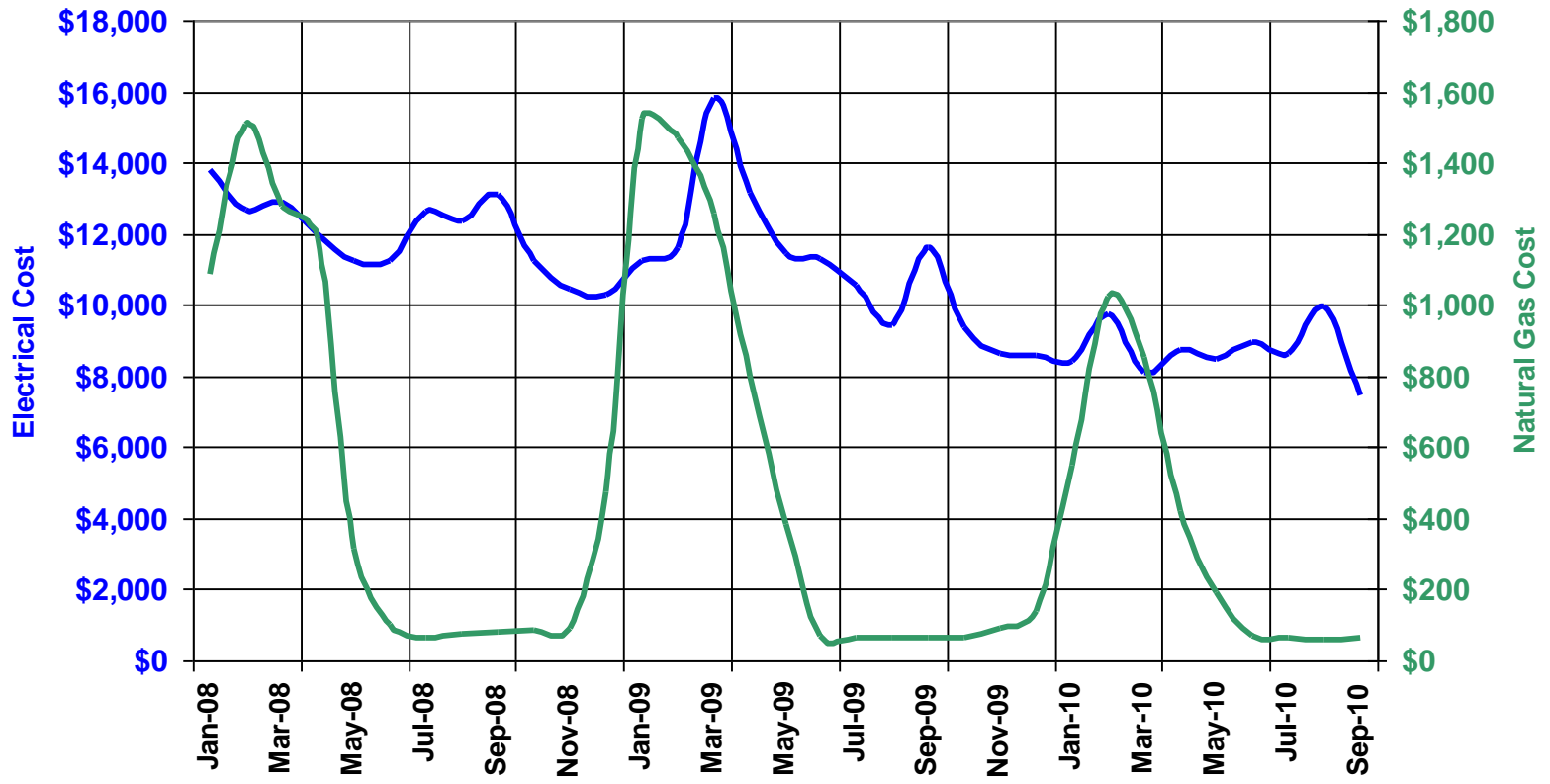
- 1.2 MGD Average Daily Flow
- Up to 13.0 MGD Peak Wet Weather Flow (8.1 MGD to side stream flow equalization)
- Conventional Activated Sludge Treatment
- UV Disinfection
- Aerobic Sludge Digestion
- Class A Sludge – biosolids composting with residential yard waste



Indiana Energy Pilot Project

- Handful of Water & Wastewater Utilities Participating
- EPA's Guide to Energy Management
 - Plan, Do, Check, Act
- Halfway into a 2-Year Program
- What Have We Learned so Far?
- What We Have to Show for Our Efforts

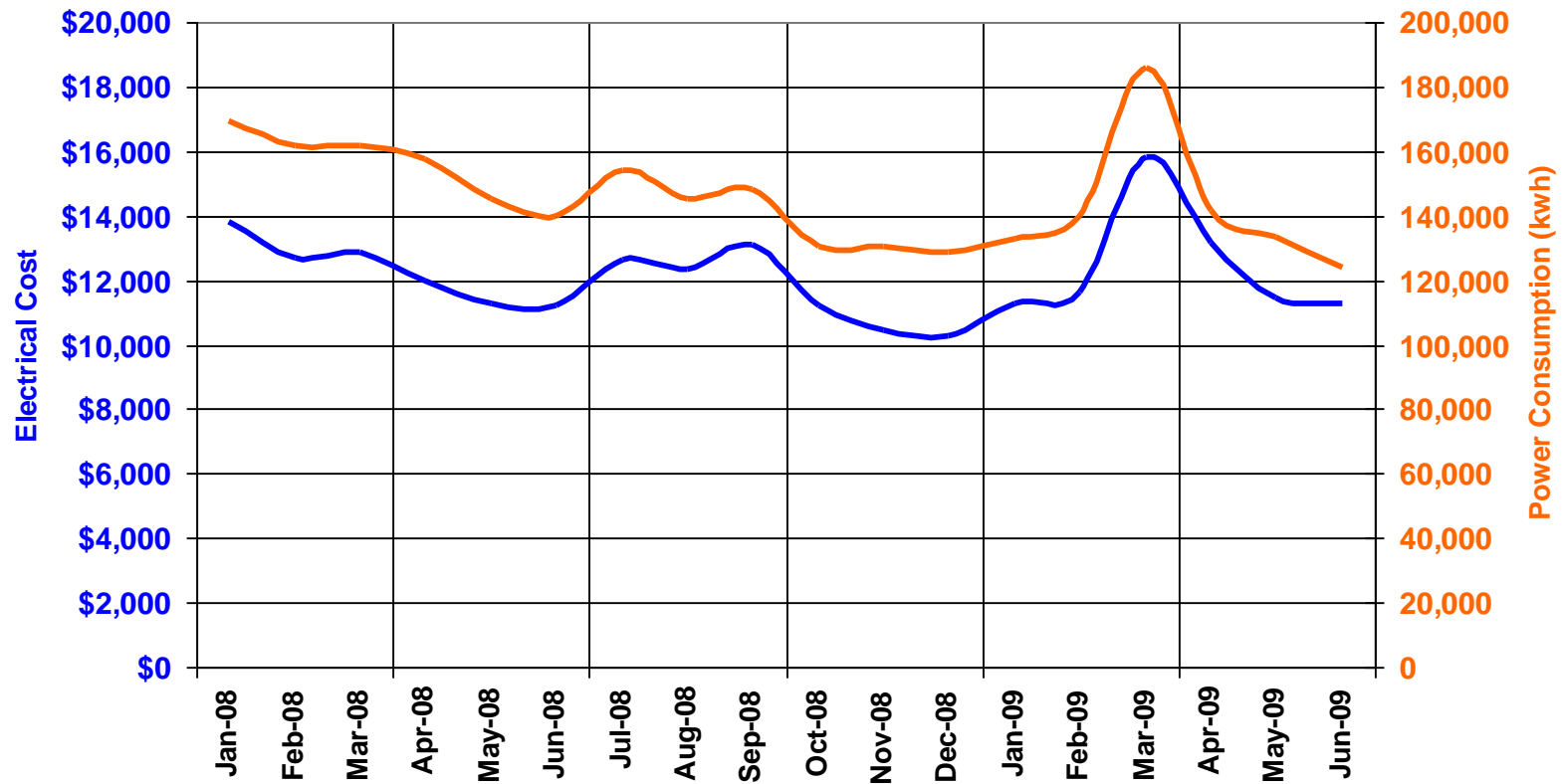
Angola WWTP Energy Costs



Lessons Learned

- Lesson 1:
 - You need to see your utility bills!

Angola WWTP Energy Costs



Lessons Learned

- Lesson 1:
 - You need to see your utility bills!
- Lesson 2:
 - You need to understand how you are being billed.

Summary

Service Location

270 E Redding Rd Bldg Sewer Pl /
Angola IN 46703

Meter Readings (32 Billing Days)

Actual Reading on 01/15		53618
Actual Reading on 12/14	-	52678
Difference	=	940
Constant	X	180

Electric Used (kwh)	=	169,200
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Maximum Demand (kw)	=	351.54
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Power Factor 99.89% Average		
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Power Factor Correction (kw)	-	34.77
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Total Billing Demand (kw)		316.77
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Electric Bill

Non-Residential Electric Service

Detail of Charges for Electric Service

Charges for Std Serv, Sec Mtring - Rate 824

Energy Charge	\$9,337.82
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Demand Charge	\$3,455.86
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Fuel Cost Adjustment	\$1,325.51
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Environmental Cost Recovery	\$342.12
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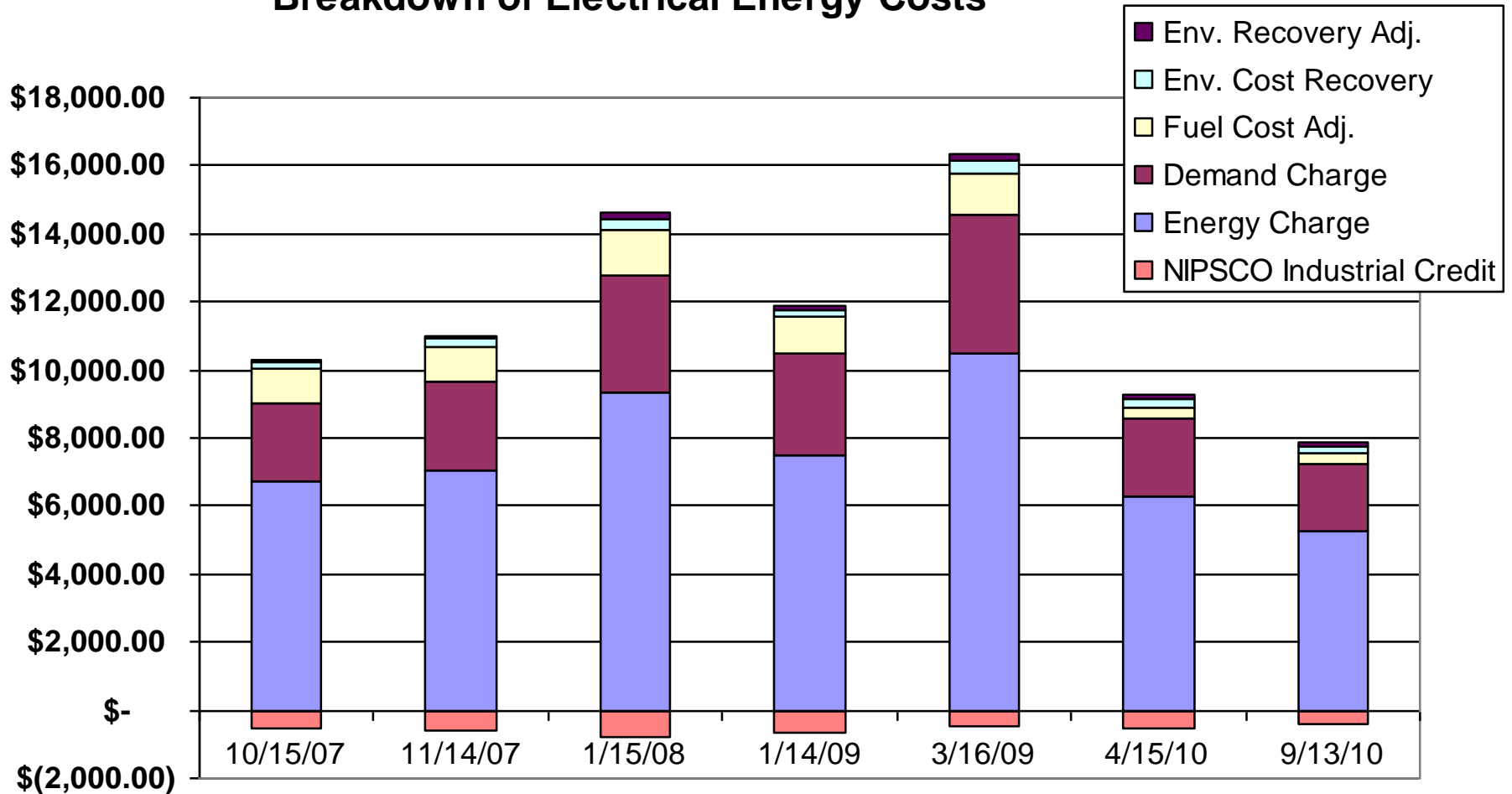
Environmental Recovery Adjustment	\$144.16
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Charges	\$14,605.47
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DUCC*/Industrial Group/NIPSCO 5.4098% Credit -	\$790.13
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Total Charges for Electric Service This Period	\$13,815.34
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Breakdown of Electrical Energy Costs

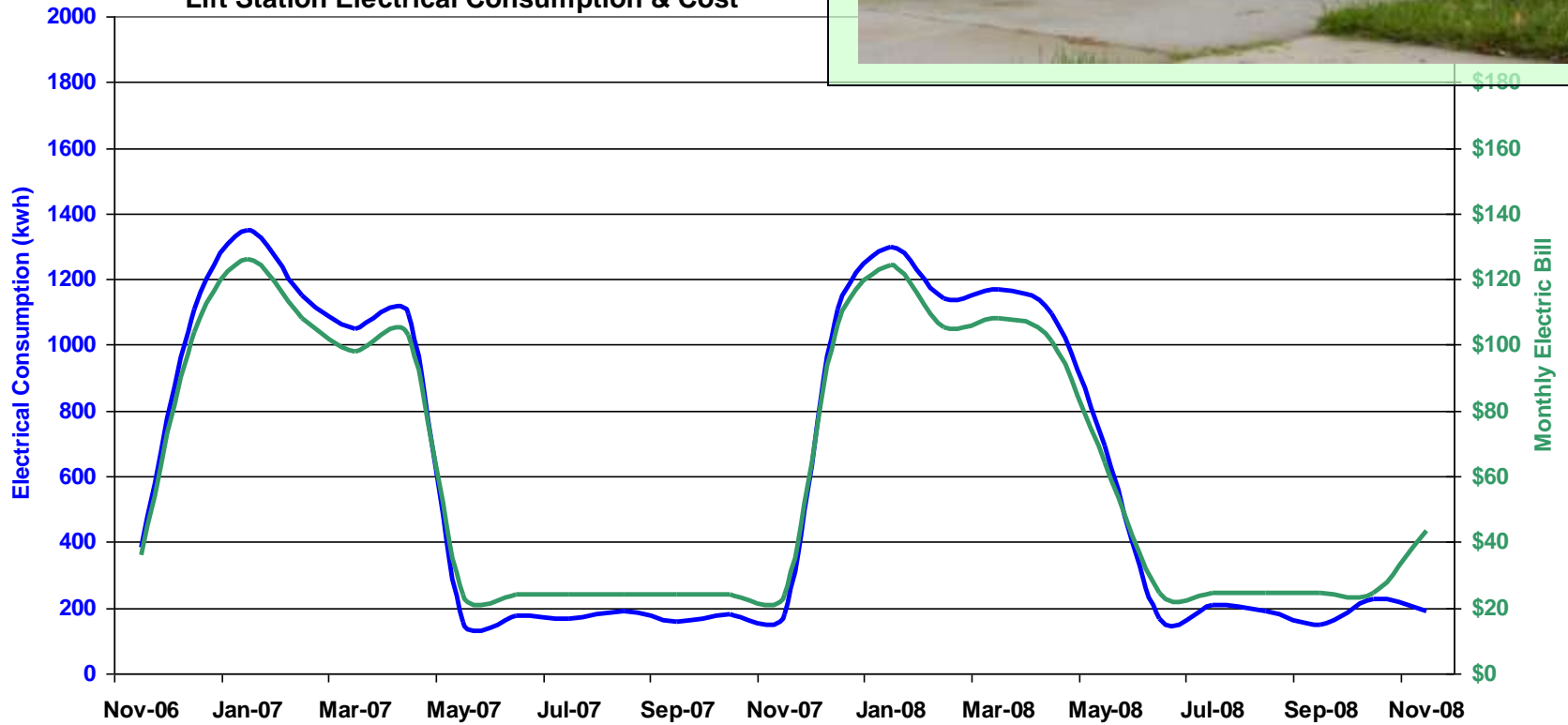


Lessons Learned

- Lesson 1:
 - You need to see your utility bills!
- Lesson 2:
 - Understand how you are being billed.
- Lesson 3:
 - Understand how you use energy.



Lift Station Electrical Consumption & Cost



Lessons Learned

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 - Understand how you are being billed.
- Lesson 3:
 - Understand how you use energy.
- Lesson 4:
 - Find a way to track your energy consumption & document improvements.



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Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities



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OLINES

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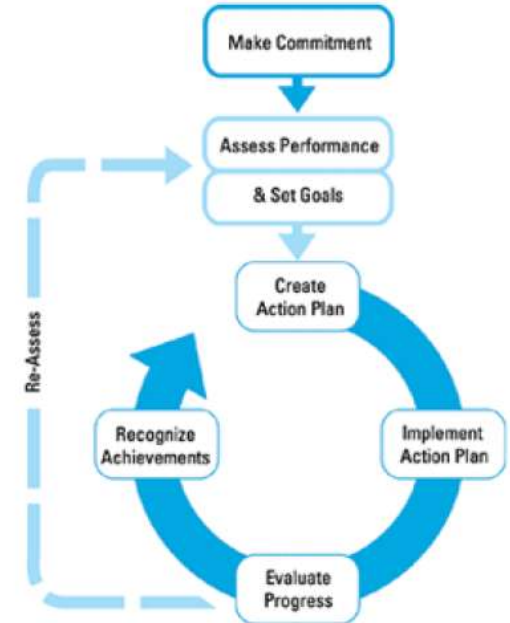
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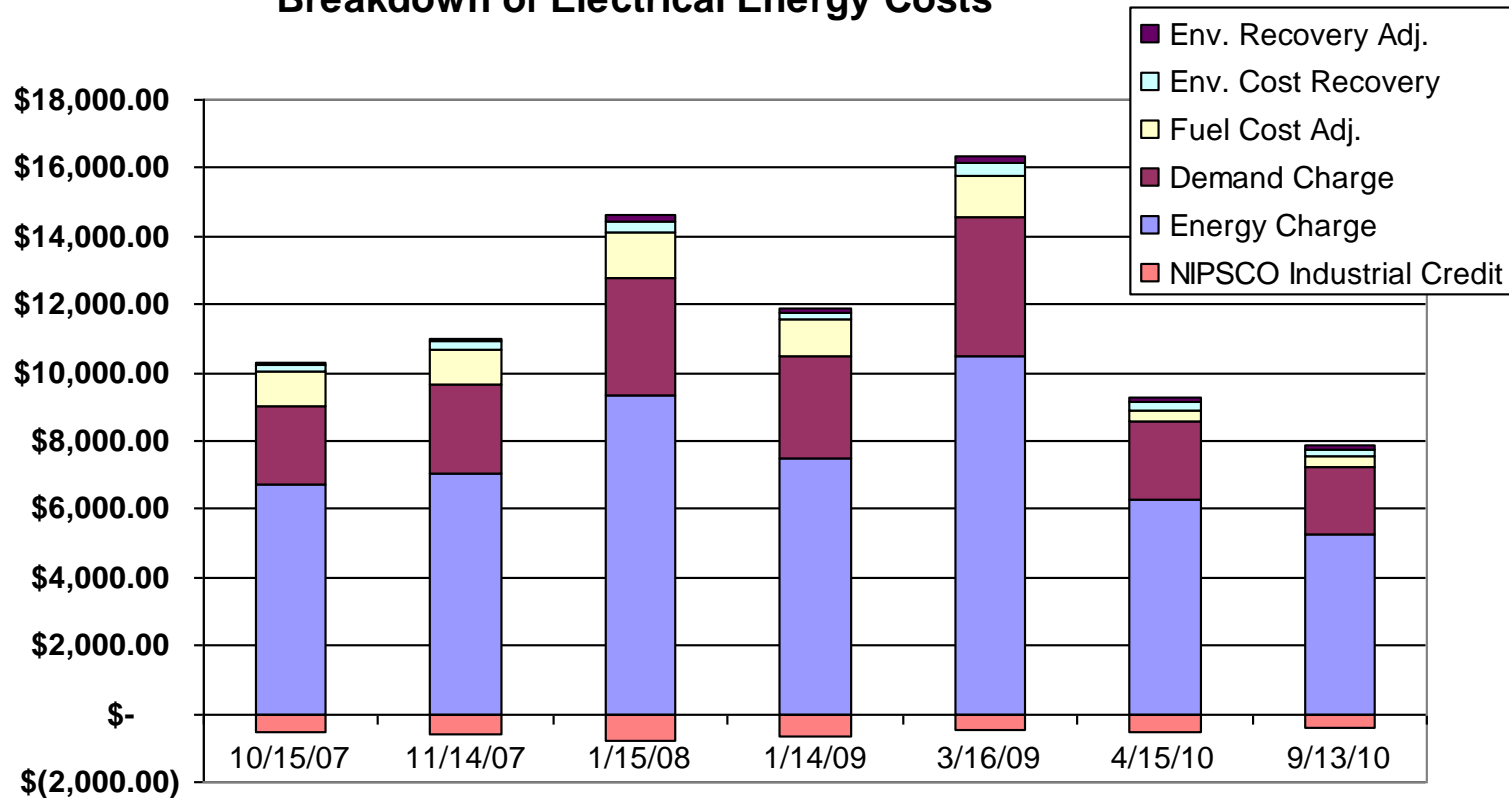
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elines.

[Matrix](#) (127KB) to help evaluate management at their

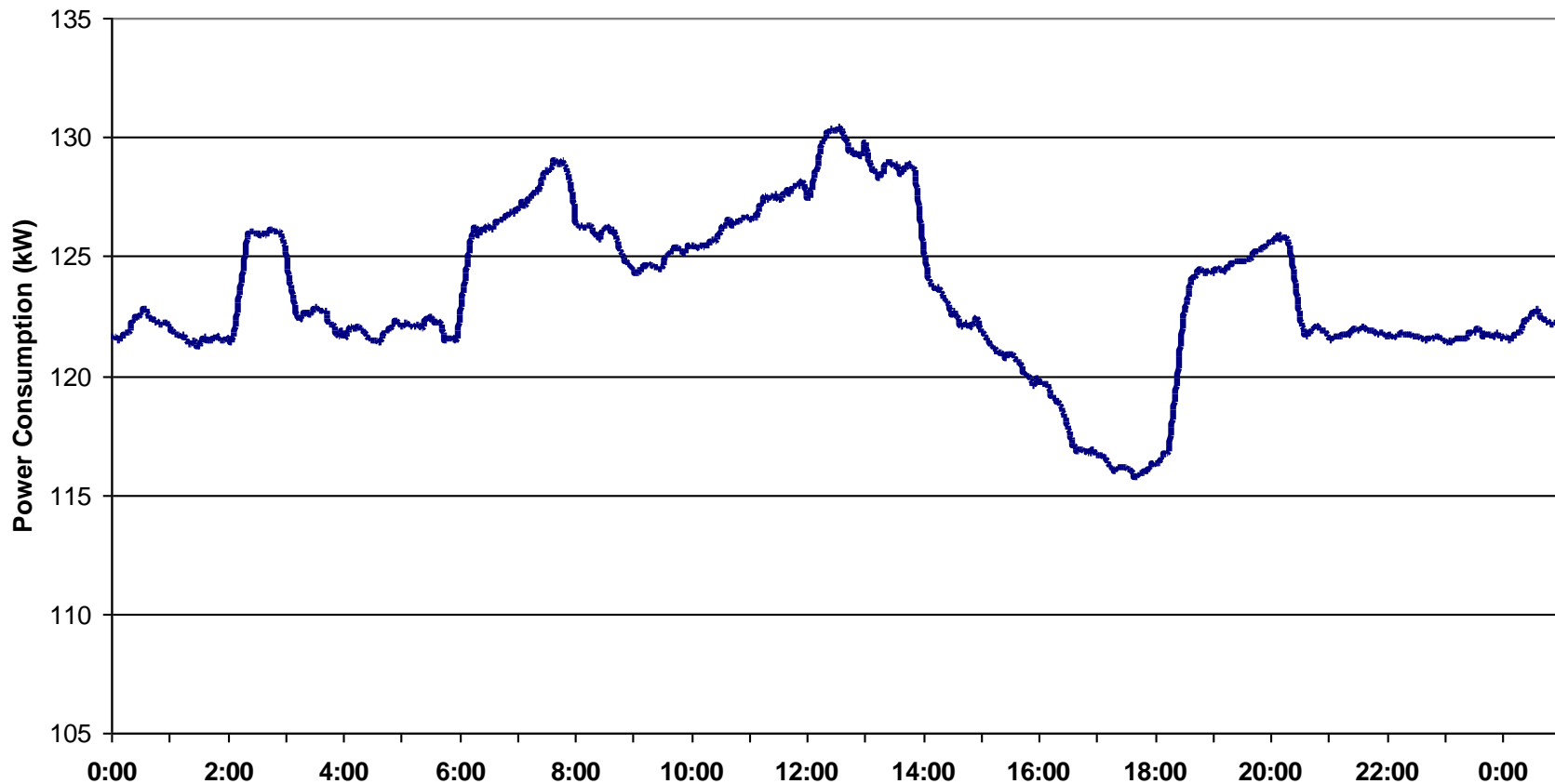


Now What?

Breakdown of Electrical Energy Costs



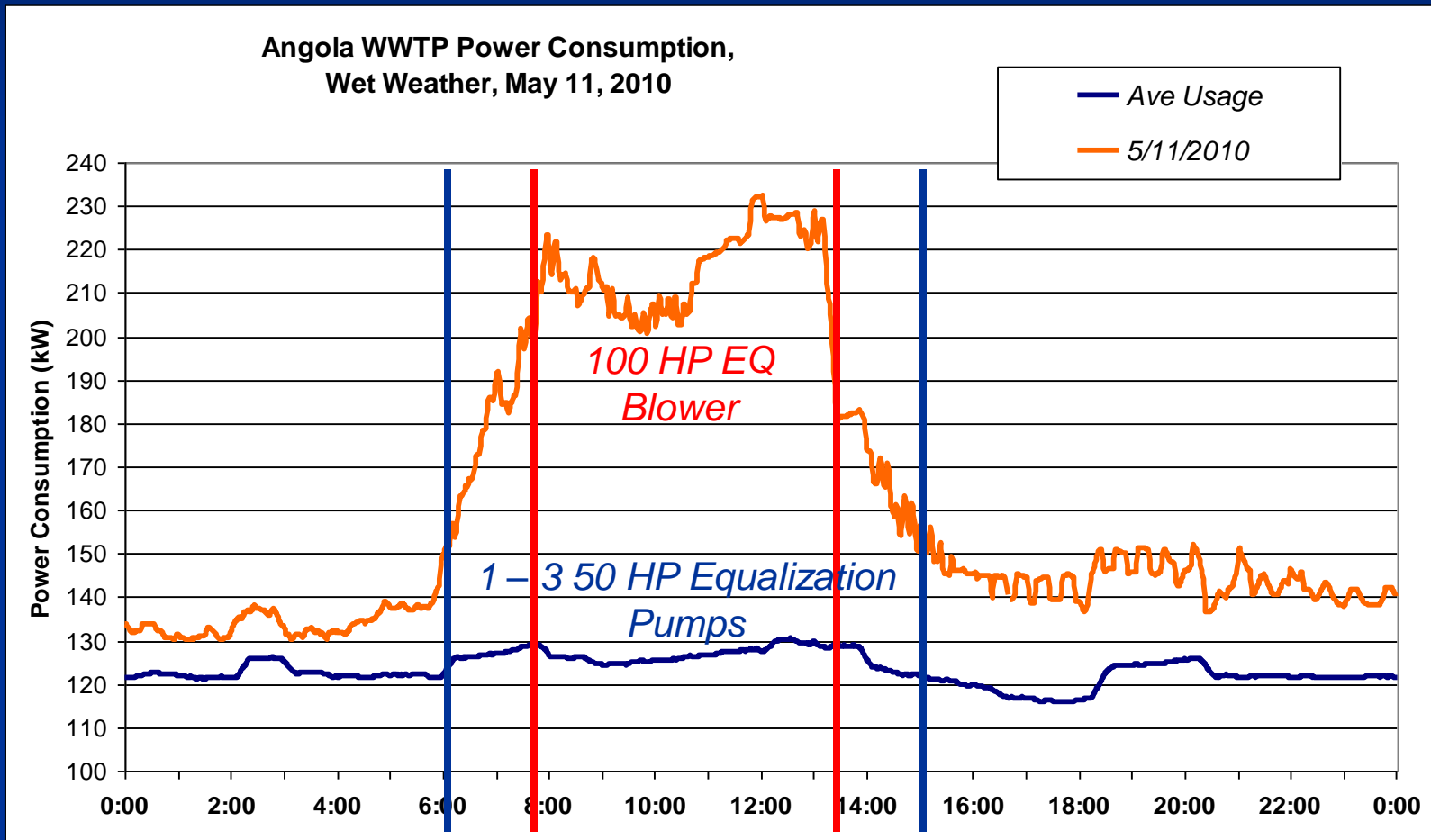
Average Diurnal Electric Consumption, Dry Weather



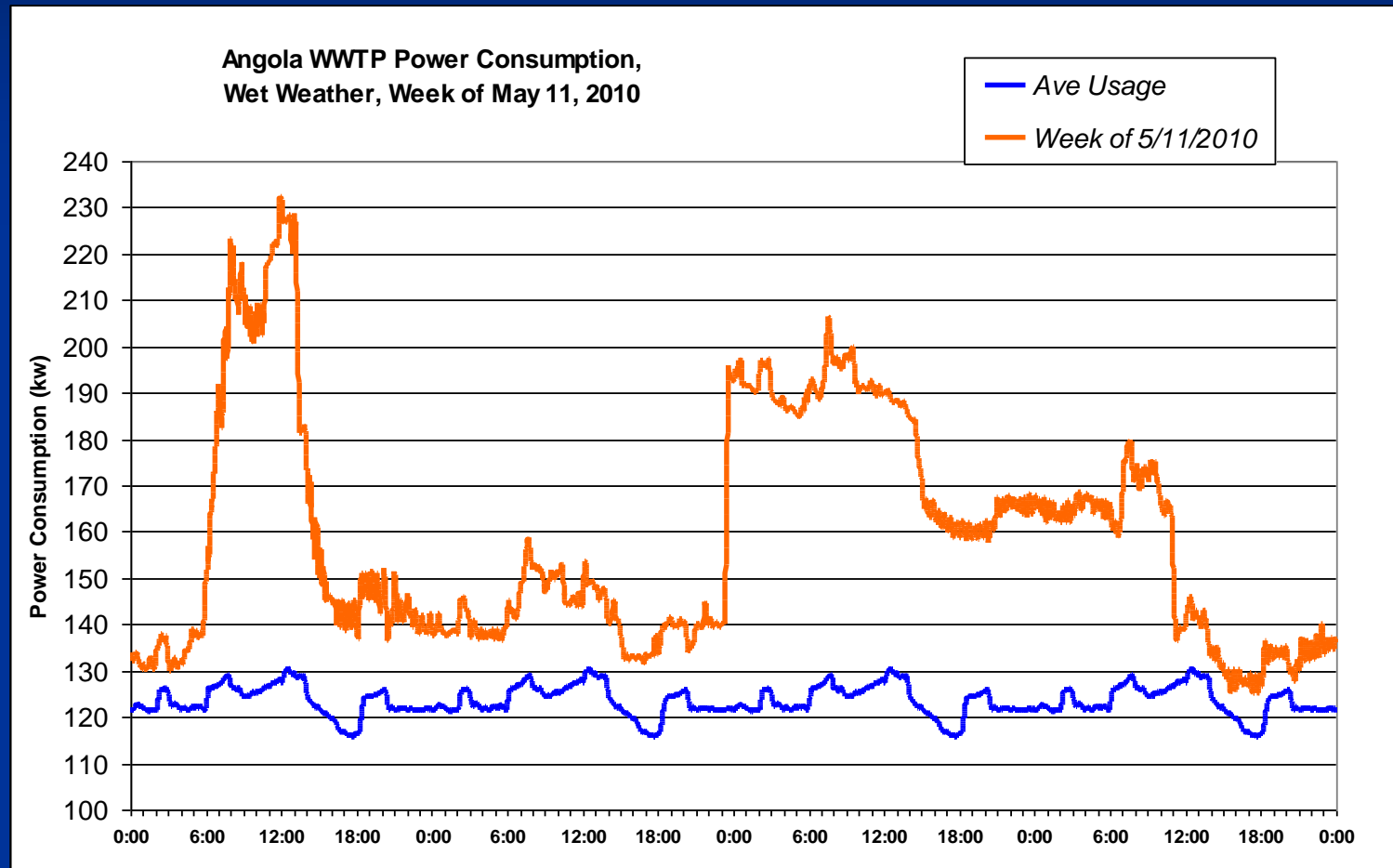
Lessons Learned

- Lesson 1:
 - You need to see your utility bills!
- Lesson 2:
 - Understand how you are being billed.
- Lesson 3:
 - Understand how you use energy.
- Lesson 4:
 - Find a way to track your energy consumption & document improvements.
- Lesson 5:
 - Put that equipment runtime data to work.

A Little Monitoring Goes a Long Way



A Little Monitoring Goes a Long Way





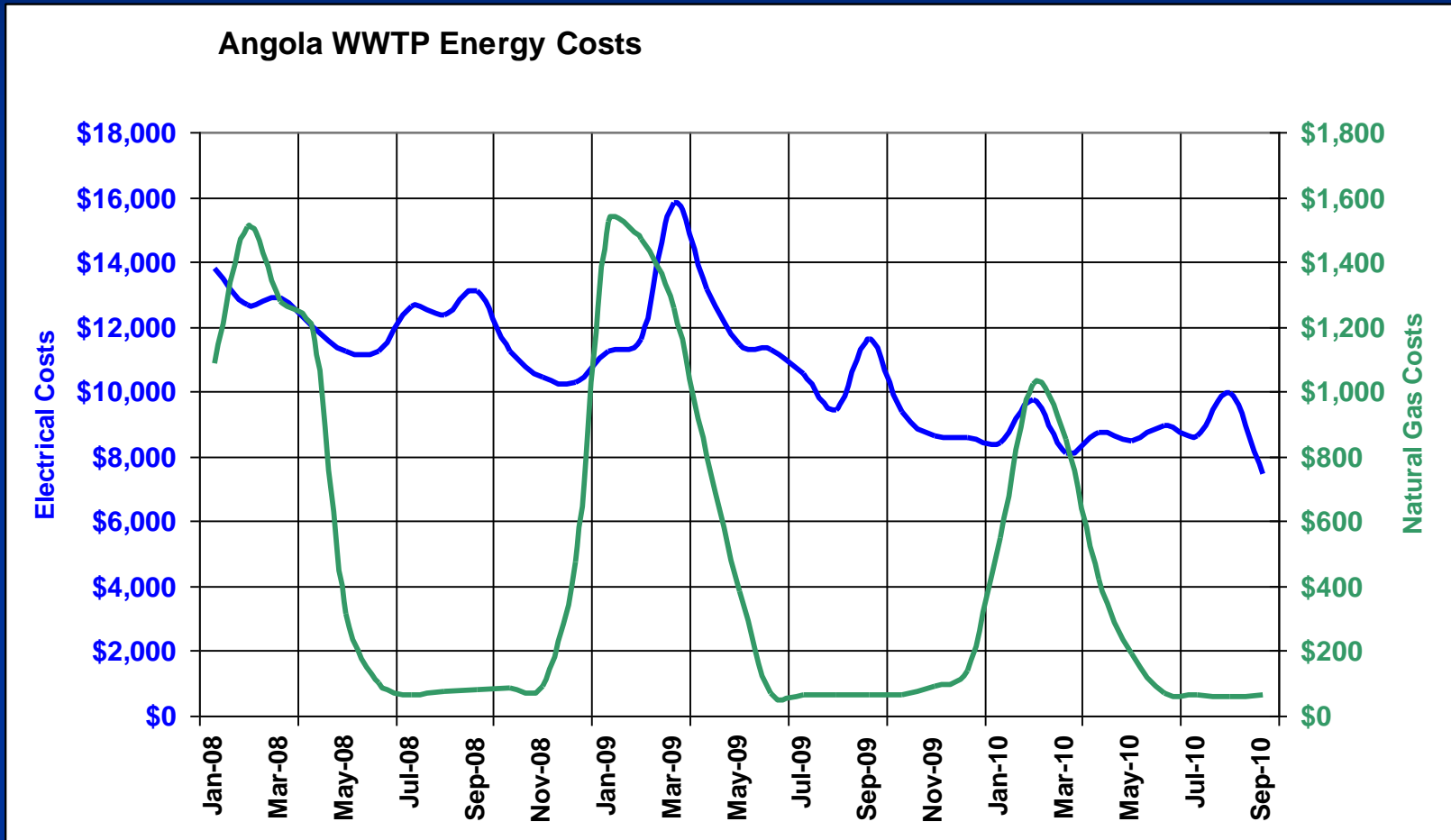
TRADITION

JUST BECAUSE YOU'VE ALWAYS DONE IT THAT WAY
DOESN'T MEAN IT'S NOT INCREDIBLY STUPID.

What Do We Do With All of This Data?

- Modify SOP's
 - EQ Blower off Auto...turned on only AFTER wet weather & peak flows, and only long enough to mix tank (1-2 hrs/day)
 - Only 1 digester blower at a time, unless CLEAR NEED.
- Minor Modifications
 - Replace (3) 20 year old refrigerators with Energy Star models.
 - Relamp/reballast interior lighting (DOE Grant)
- Major Modifications (Capital Improvements)
 - Aeration blowers & DO controls
 - Influent pump control replacement with VFD's

Has it Been Worth the Effort?



Has it Been Worth the Effort?



PORTFOLIO MANAGER



ACCOUNT INFORMATION



CONTACTS



FREQUENTLY ASKED QUESTIONS



CONTACT US



HELP



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Portfolio Averages	
Baseline Rating: NA Facilities Included: 0	Current Rating: NA Facilities Included: 0
Change from Baseline: Portfolio Adjusted Percent Energy Use (%): NA Facilities Included: 0	
Averages are weighted by Total Floor Space. More about Baselines More about Change from Baseline: Adjusted Energy Use	
Portfolio Averages (for all Water Utilities and Wastewater Treatment Facilities)	
Baseline Rating: 36 Facilities Included: 1	Current Rating: 57 Facilities Included: 1
Change from Baseline: Portfolio Adjusted Percent Energy Use (%): -20.4% Facilities Included: 1	
Averages are weighted by Average Daily Flow. More about Wastewater	

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Reporting and Analysis

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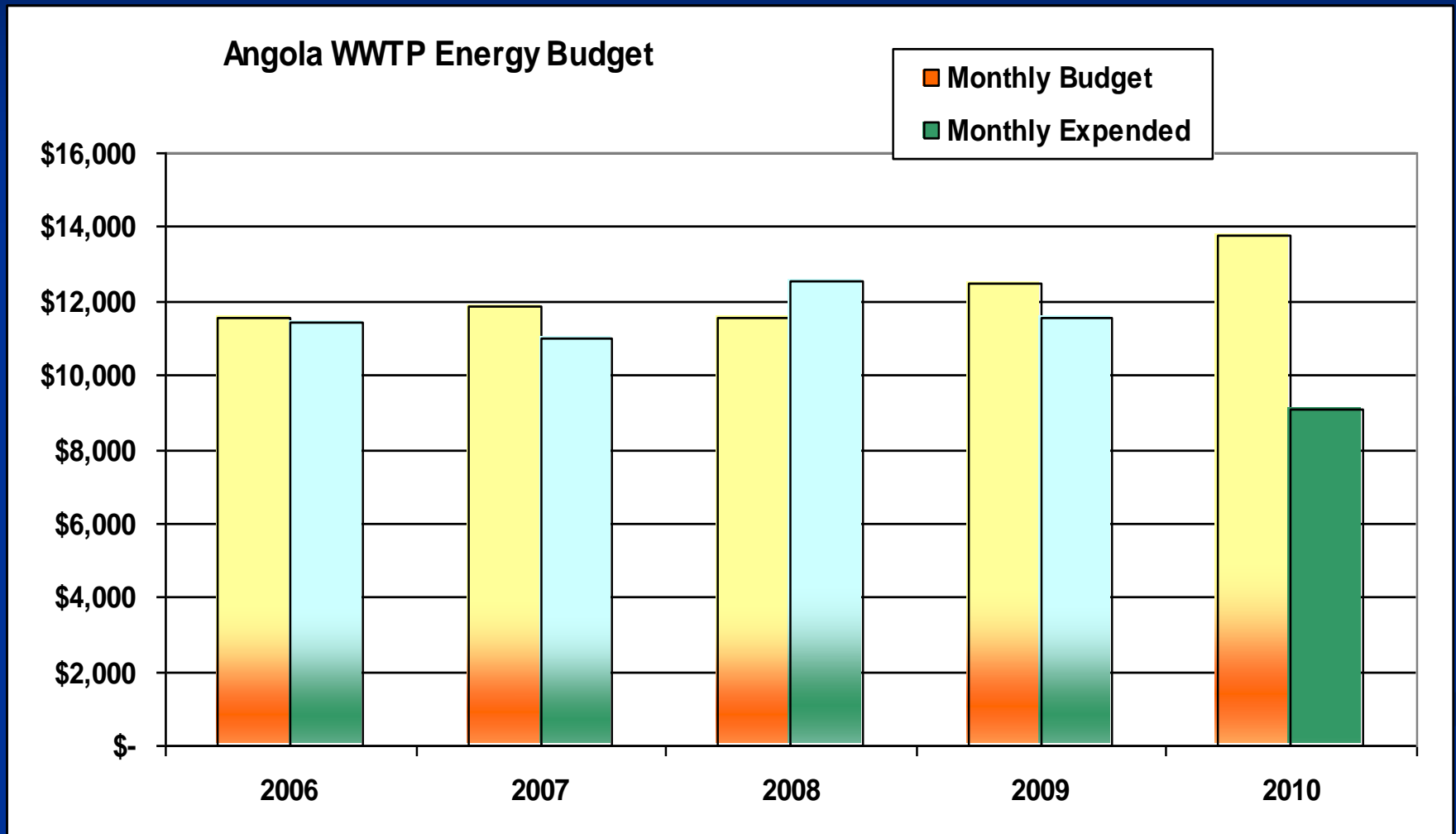
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Has it Been Worth the Effort?



Where Do We Go From Here?

- List of prioritized projects
- Continue looking at options & opportunities
- Run to fail often not least cost option
- Communicate results
 - Council supportive of capital improvements, even with tight budgets

Resources

- Jennifer Schick, IDEM OPPTA
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- Kurt Giesselman, Siemens Industry, Inc.
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- Technical Assistance Program (TAP), Purdue University
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