

# Energy Use Management, Utility Incentives and Zero Capital Energy Upgrade Financing

Presentation to  
CWPAAs DEP Energy Seminar  
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**FUSS & O'NEILL**  
*Disciplines to Deliver*

# Energy and Wastewater Treatment

*Energy costs account for approximately 35% of WWTF's total cost to provide wastewater service – 2nd only to labor costs.*

- Ø Most plants - Designed and built when
  - ü *Energy costs were not a concern*
  - ü *Much smaller percent of the operating costs*
- Ø Northeast US Energy costs are among the highest in the nation
- Ø Continual increases in energy demand, consumption and cost
  - ü *Strain your Budgets*
  - ü *Put pressure to contain or reduce costs of other budget line items including labor costs*

# Energy and Wastewater Treatment

- Ø Expect your energy costs to continue their rise.
  - ü *Global demand for energy continues to rise,*
  - ü *More Stringent Environmental requirements*
- Ø If it isn't already, energy will become a topic of regular discussions among Managers and Operators
- Ø Energy can be and should be deliberately managed
- Ø These factors will contribute to a broader acceptance of energy efficiency best practices by the WWT community

# Energy, At What Cost?

## *Connecticut Example*

### **With no increases in Plant Flows or Environmental Requirements**

If your energy bill was \$800,000.00 in 2004 and no action to contain or manage energy was taken, the energy bill for 2007 would be approximately \$1,200,000.00

With no increases in Plant Flows or Environmental Requirements - If energy costs rise 10% a year for the next 3 years your energy bills will be approximately

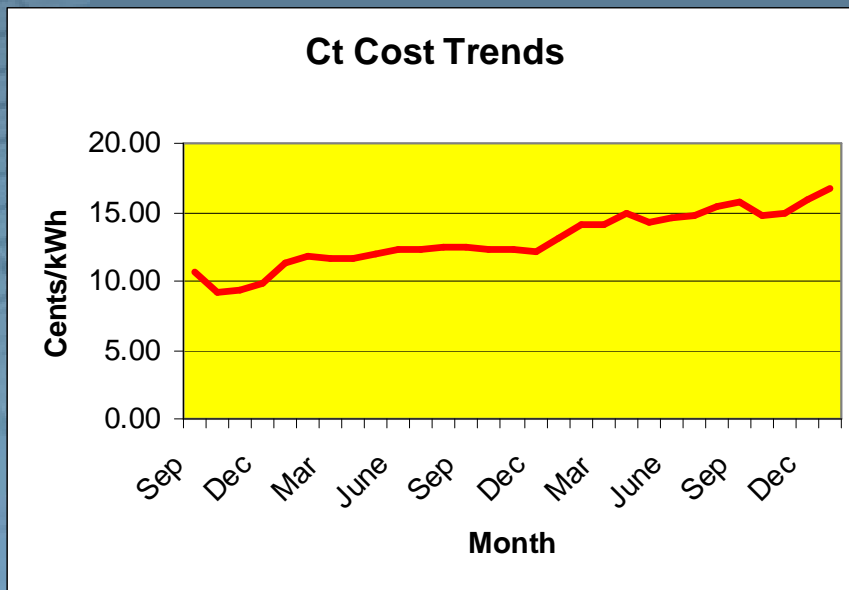
2008 - \$1,320,000	} <b><u>\$797,000</u></b> No increases in plant flows, No new environmental requirements No action
2009 - \$1,452,000	
2010 - \$1,597,000	

***Doubling of Energy \$\$ in 6 years W/O Treating 1 More Gallon of Wastewater !***

# Electric Costs in the Northeast

Despite Variance in Facility design detail, motor pumps and Blowers are used in much the same way. These can Account for approximately 40% and 45% of the Facility Energy use respectively.

**Electric Cost**  
*All Sectors Blended*  
**Rank – State – Cents/kWh**  
 January, 2007



2<sup>nd</sup> highest in the nation at 16.67 ¢/kWh

Rank	State	Cents/kWh	Rank	State	Cents/kWh
1	Idaho	4.91	27	Mississippi	7.63
2	West Virginia	5.11	28	Arizona	7.71
3	Wyoming	5.37	29	Illinois	7.73
4	Kentucky	5.44	30	Colorado	7.82
5	Missouri	5.77	31	Wisconsin	8.07
6	Utah	6.04	32	Louisiana	8.34
7	Nebraska	6.08	33	Michigan	8.56
8	North Dakota	6.18		<i>National Average</i>	8.77
9	Indiana	6.32	34	Pennsylvania	8.87
10	Washington	6.40	35	Nevada	9.28
11	Oklahoma	6.46	36	Florida	10.19
12	Iowa	6.49	37	Texas	10.21
13	Kansas	6.55	38	Maryland	10.28
14	South Dakota	6.68	39	Delaware	10.83
15	South Carolina	6.84	40	District of Columbia	11.00
16	Virginia	6.85	41	California	11.81
17	Oregon	6.90	42	New Jersey	11.85
18	Arkansas	6.92	43	Vermont	12.04
19	Tennessee	6.95	44	Rhode Island	12.70
20	Alabama	7.02	45	Alaska	13.08
21	New Mexico	7.06	46	Maine	13.44
22	Minnesota	7.13	47	New Hampshire	13.59
23	Georgia	7.42	48	New York	14.54
24	Montana	7.43	49	Massachusetts	15.13
25	North Carolina	7.59	50	Connecticut	16.41
26	Ohio	7.61	51	Hawaii	18.73

# What Should We Do About It?

## Develop and Implement an Energy Use Management Plan

### Ø Assemble a team

- ü *Identify and engage stakeholders (managers, operators, engineers)*

### Ø Establish goals to reduce the energy intensity of your facility

- ü *Transformation of Thought Processes*

- ü *Energy Efficiency Best Practices*

- ü *Buying 'Right' as Opposed to Buying "Cheapest"*

# What Should We Do About It?

## Develop and Implement an Energy Use Management Plan

### Ø Learn where and how your energy is being consumed

ü *Track energy usage and costs (challenge – at many/most facilities, energy use is recorded at one recording station and this does not allow personnel to see energy use by individual processes)*

ü *Energy audits*

# What Should We Do About It?

## Develop and Implement an Energy Use Management Plan

Ø Learn where and how your energy is being consumed

    ü *Identify energy efficiency opportunities*

    ü *Determine where your load profile can be optimized*

Ø Develop a strategy to implement cost effective opportunities

    ü *Assessment of Capital Requirements and Opportunities*

# What Should We Do About It?

## Develop and Implement an Energy Use Management Plan

- Ø Develop an effective electric supply purchasing strategy
- Ø Evaluate Enrollment in demand response programs
- Ø Train staff and other stakeholders
- Ø Regularly report on and post information on energy initiatives, usage and costs
- Ø Stay informed and engaged in the continuously evolving energy market

# Performance Contracting?

Ø What is It ??

Ø Turnkey service –performed by an Energy Services Company (ESCO)

- *Similar to Design/Build*

Ø Full range of measures installed

Ø Guaranteed savings

- *Sufficient to finance cost of improvements*

Ø Substantial industry history



# What is it?

- Ø Facility owners, operators know energy cost are high and opportunities may exist
- Ø Barriers
  - *Technical expertise*
  - *Finances*
  - *Reservation about realizing savings*
- Ø Innovative contracting to address barriers
- Ø An ESCO implements projects using saving to fund the capital investment
- Ø “Results Driven” as opposed to “Price Driven” such as traditional contracting

# Overview of a Performance Contract

- Ø Energy Audit; A detailed facility study
- Ø Establishing baseline energy use for specific equipment, systems and/or whole facility
- Ø Collaboratively designing a project with the client
- Ø Turnkey design, installation and commissioning
- Ø Training the client
- Ø O&M the systems and/or equipment for the life of the contract, and
- Ø Ongoing M&V to determine actual savings

# Benefits of Energy Performance Contracting

- Ø Technical Risk - shifts risk from your organization to ESCO
  - *Project will perform as designed*
  - *Project remains within budget regardless of technical difficulties*
  - *Ongoing professional O&M*
- Ø Project Financing – An alternative source of funding for plant upgrades
  - *Project is funded out of Cash Flow rather than capital expenditure*
- Ø Simplicity of single source provider
- Ø Guaranteed project savings performance
- Ø Value based solution
- Ø Accountability over the term of the contract

# ESCO and Performance Contracting

- Ø ESCO provides guarantee that savings will meet or exceed a specific amount
- Ø Guarantees meet federal and state standards, according to the jurisdiction
- Ø Who are PC Customers ?
  - *Need infrastructure improvements*
  - *Looking for energy efficiency help*
  - *Best value buyers*
  - *Looking for partnership with ESCO*
  - *Leadership involved in projects*
  - *Understand the technical drivers*