

The Rising Cost of Clean

Optimizing Energy Use & Reacting to Chemical Supply Interruptions

NACWA Winter Conference

January 31, 2007



Up for Discussion Today

- A Bit of History...
- Optimizing Energy Opportunities
- The Methanol Saga...



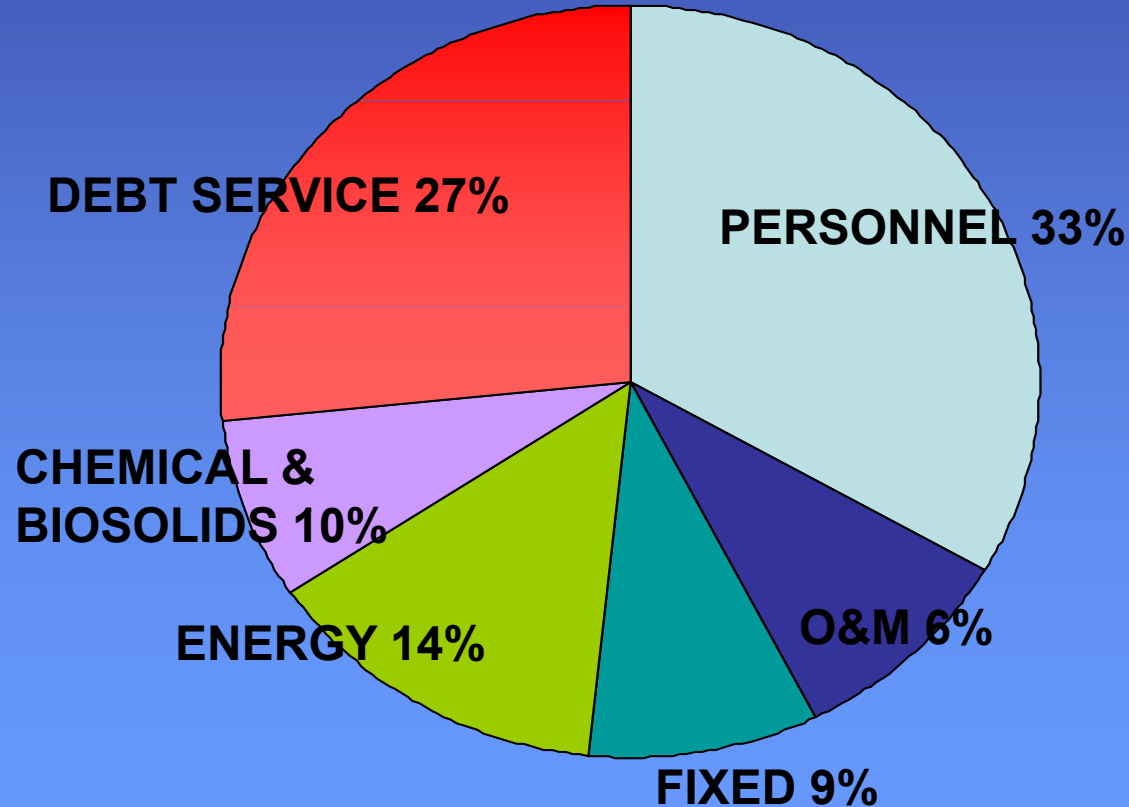
A Brief Summary



- 33 acres / 54 MGD
- Current Upgrade completed 2006
- \$356 M
- Nitrogen Removal @ 8 mg/l

A Brief Summary

A Look at Operating Budget...



A Brief Summary

Our Vision Drives Our Actions...



To Have the Smallest
Environmental Footprint of any
Wastewater Utility in the
Country

AND

Be the public service employer
of choice!

A Brief History



Pick a KEY Domino...

PEOPLE?

CHEMICALS & BIOSOLIDS?

ENERGY!!

A Brief Summary

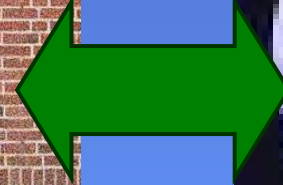
A Technologically Advanced Plant
But “Smart Car” it’s not!



ASA Energy Evaluation

THE FOCUS: ENERGY

Created Employee Led
Energy Management Team



ASA Energy Evaluation

THE FOCUS: NATURAL GAS



ASA Energy Evaluation

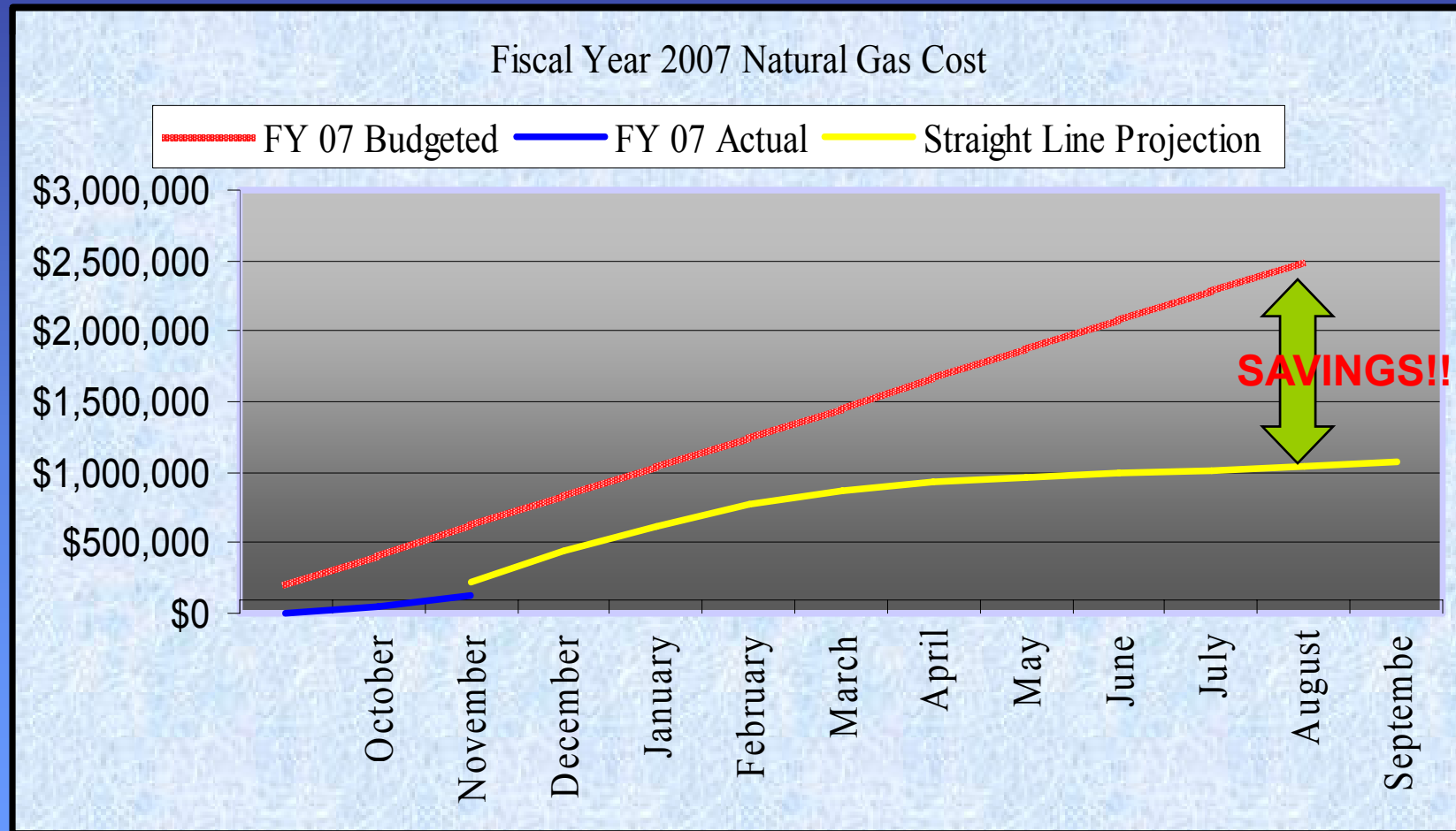
THE FOCUS: NATURAL GAS

- Baseline Gas Usage
- Understand Payment Scheme
- Use of Dual Fired Boilers
- Increase Digester Effectiveness



ASA Energy Evaluation

THE FOCUS: NATURAL GAS



ASA Energy Evaluation

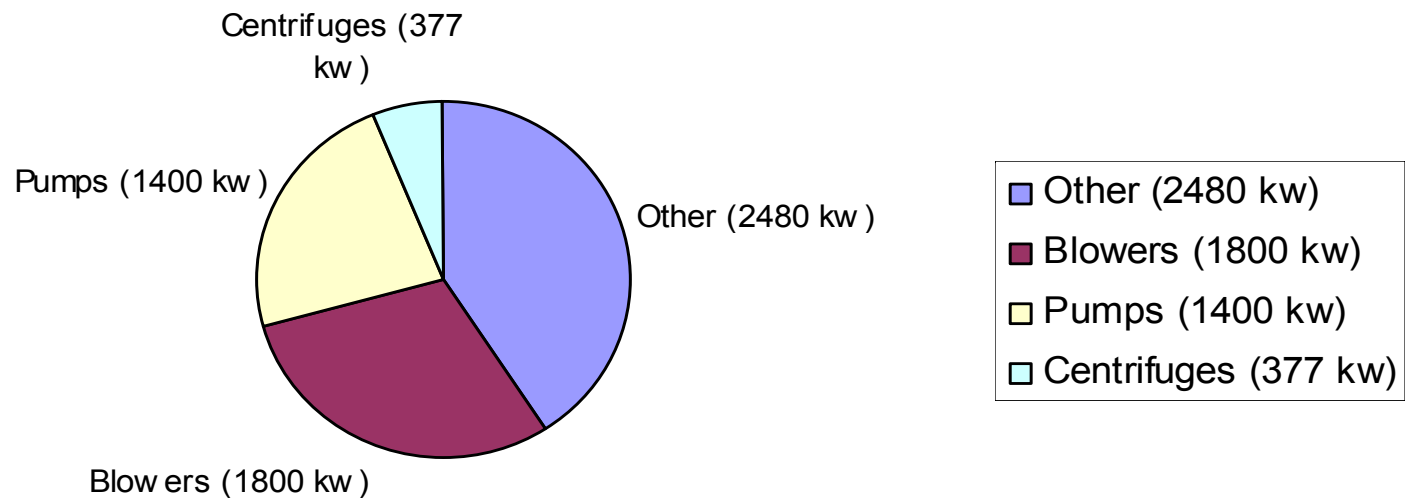
THE FOCUS: ELECTRICITY



ASA Energy Evaluation

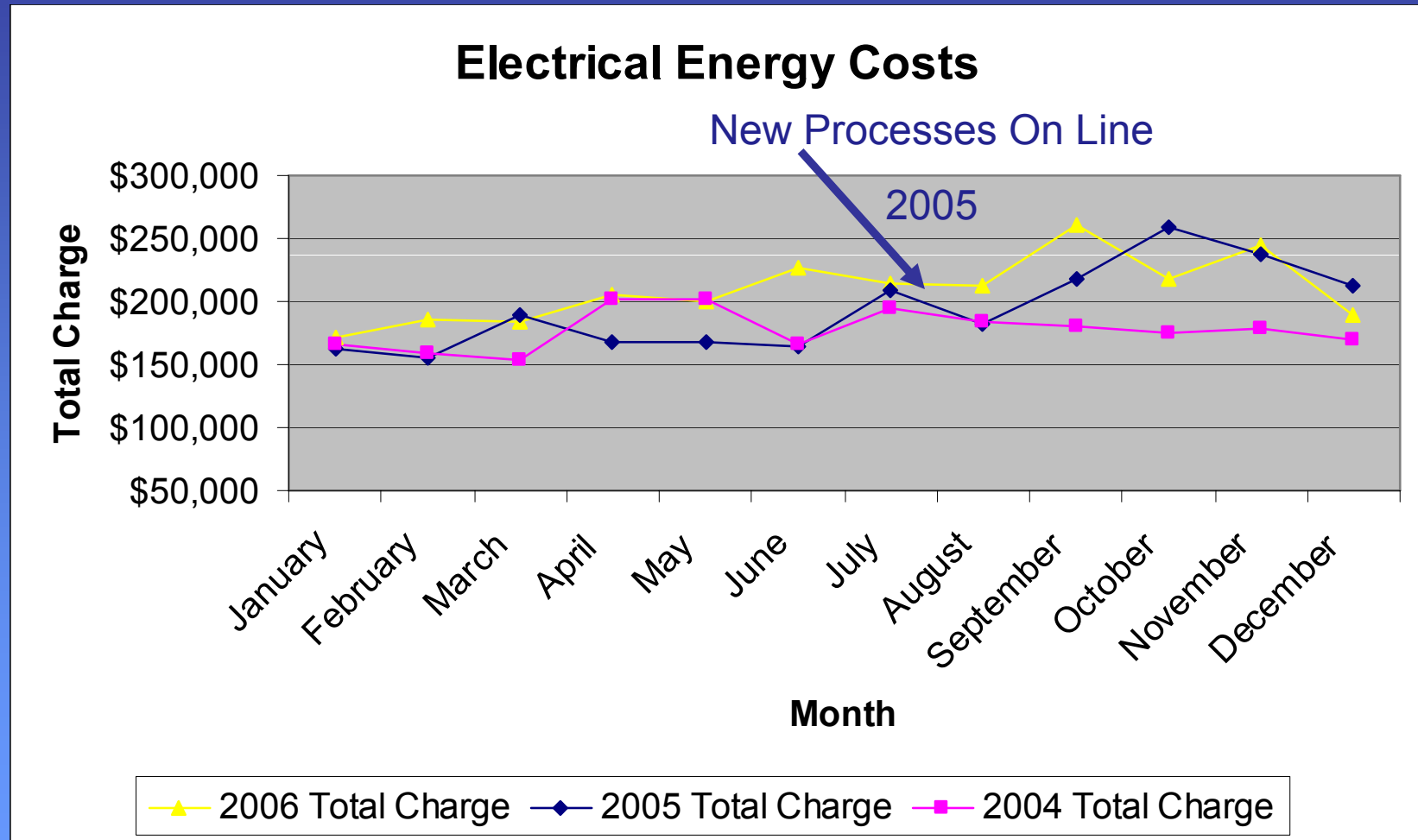
THE FOCUS: ELECTRICITY

Plant Load Normal



ASA Energy Evaluation

THE FOCUS: ELECTRICITY



ASA Energy Evaluation

THE FOCUS: ELECTRICITY

Determined...

Energy Audit Needed

BUT

Not enough in house
resources or capability

Plenty of consultants

Funding was an issue...



ASA Energy Evaluation

THE FOCUS: ELECTRICITY

Solution for ASA

Stumbled across “ESCO”
on Department of Energy
Web Site



<http://www.eere.energy.gov/buildings/info/plan/financing/contracts.html>

ASA Energy Evaluation

THE FOCUS: ELECTRICITY

“ESCO”... Or Energy Service Company

Develop, design and finance energy projects

Install, measure, and verify energy savings

Assume risk that project will save the projected energy



ASA Energy Evaluation

THE FOCUS: NEXT STEPS

Board Approves RFP for ESCO

Continued efforts on Natural Gas reduction

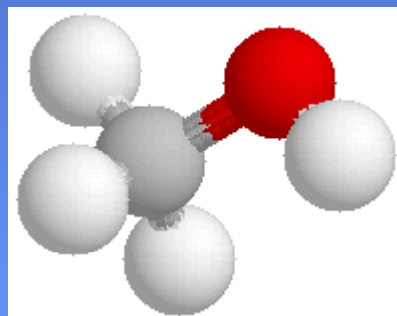
Use of adsorption chiller to offset use of electric chillers in summer



Chemical Supply Concern

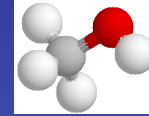
THE FOCUS: METHANOL

- Methanol
 - ▶▶ Clear, colorless liquid
 - ▶▶ Made up of carbon, hydrogen and oxygen



Chemical Supply Concern

THE FOCUS: METHANOL



- Methanol

- ▶▶ Used as a building block for other chemicals:

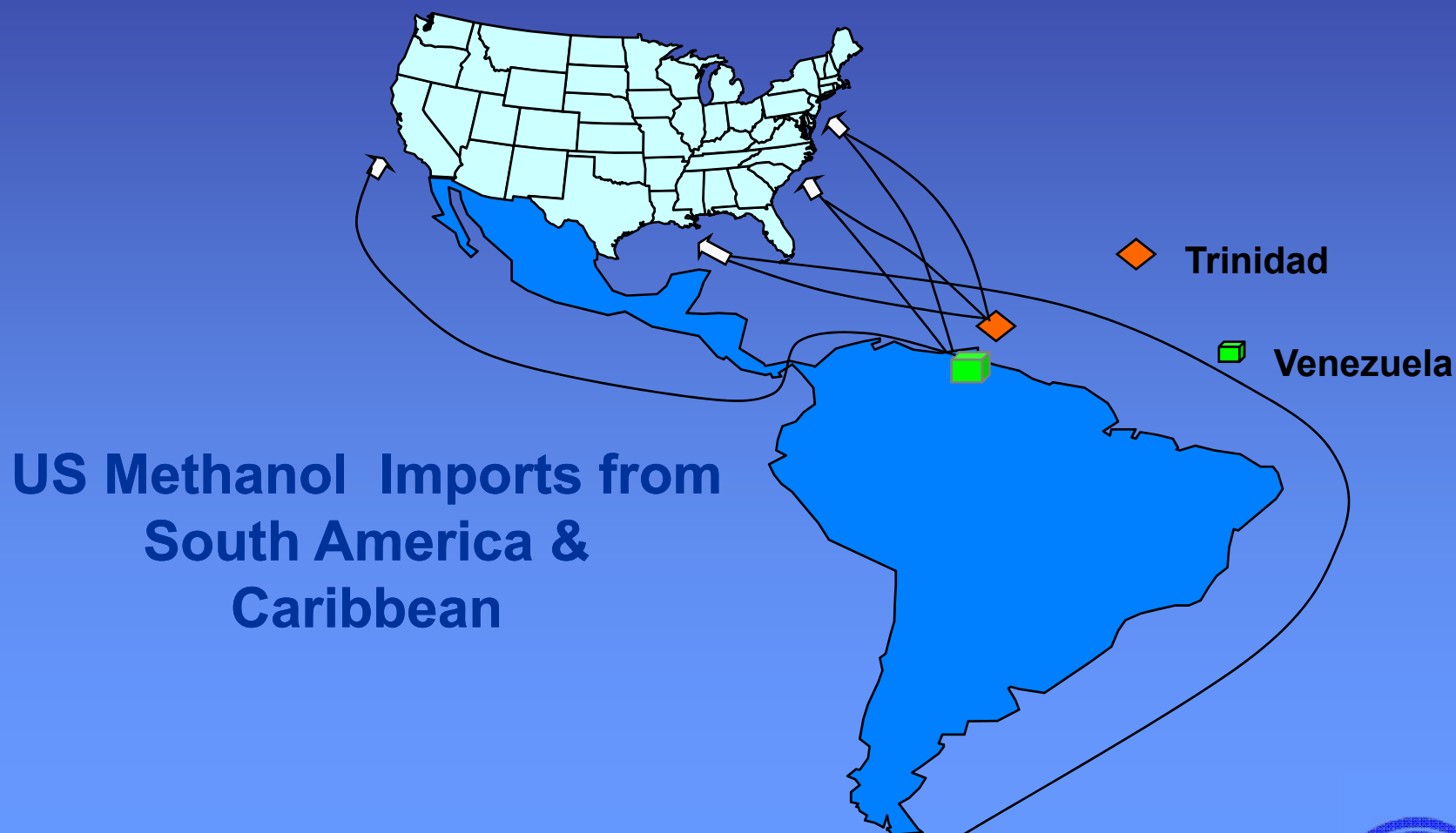
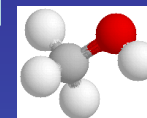
- formaldehyde, acetic acid, methyl amine, methyl methacrylate ...
 - which in turn are used to make adhesives, paints, plastics, resins, textiles ...

- ▶▶ Many other uses:

- windshield wiper fluid
 - biodiesel
 - waste water treatment
 - fuel – race cars, model aircraft, fuel cells, cooking

Chemical Supply Concern

THE FOCUS: METHANOL



Chemical Supply Concern

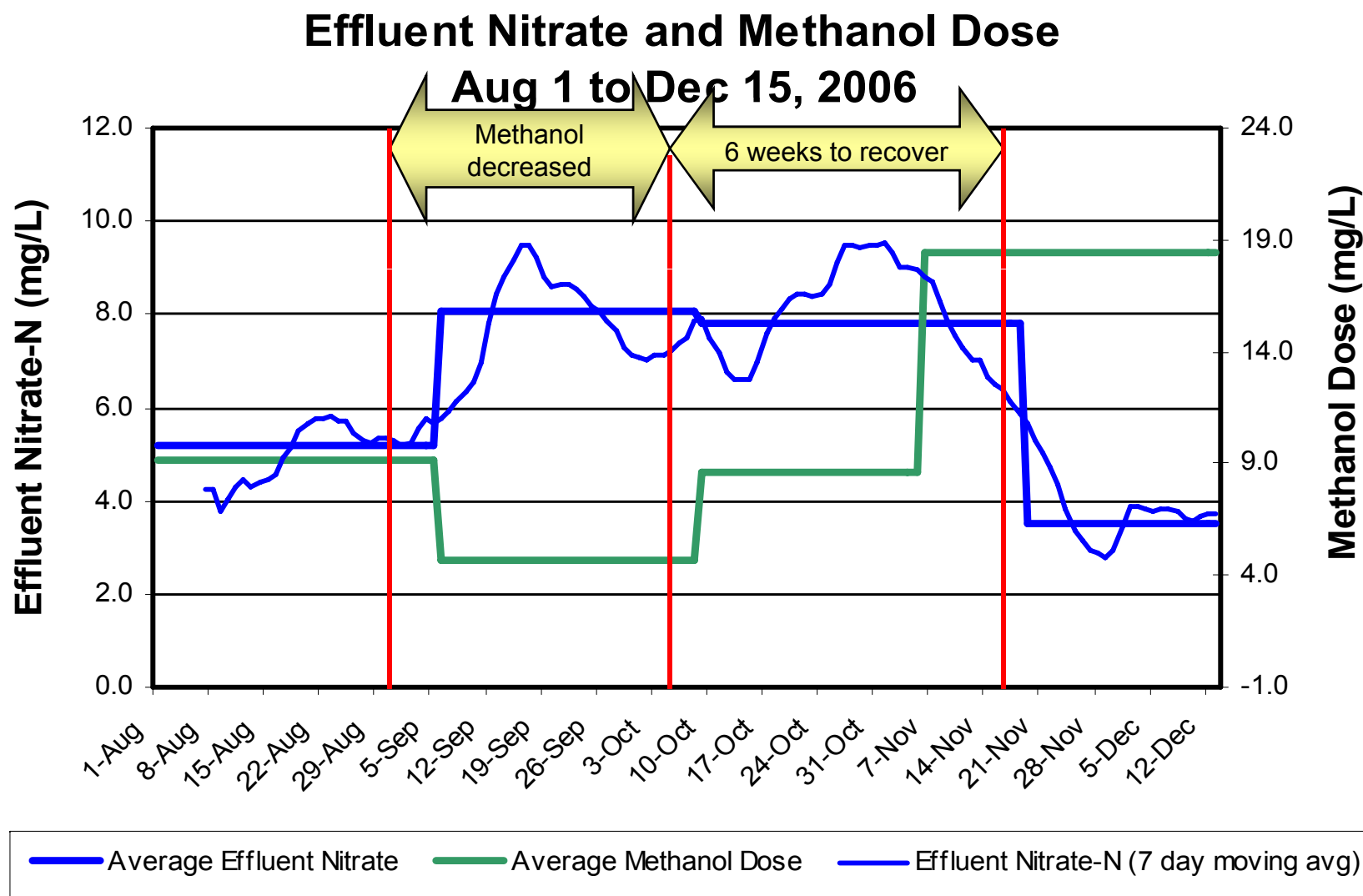
THE FOCUS: METHANOL

- In August, 2006 methanol supplier declared Force Majeure
- Resulted in a one month interruption in regular methanol supply
- Supplier offered reclaimed methanol at a 40% increase in contract price



Chemical Supply Concern

THE FOCUS: METHANOL



Chemical Supply Concern

THE FOCUS: METHANOL

- Cost & Process Implications
 - Need to continue to denitrify
 - Need to Understand process impacts
 - Specific biomass populations, yield
 - Need to plan for alternative carbon sources
 - For example ethanol, acetic acid
 - Plan for compatibility of materials (storage tanks, pumps, conveyance)

Rising Cost of Clean

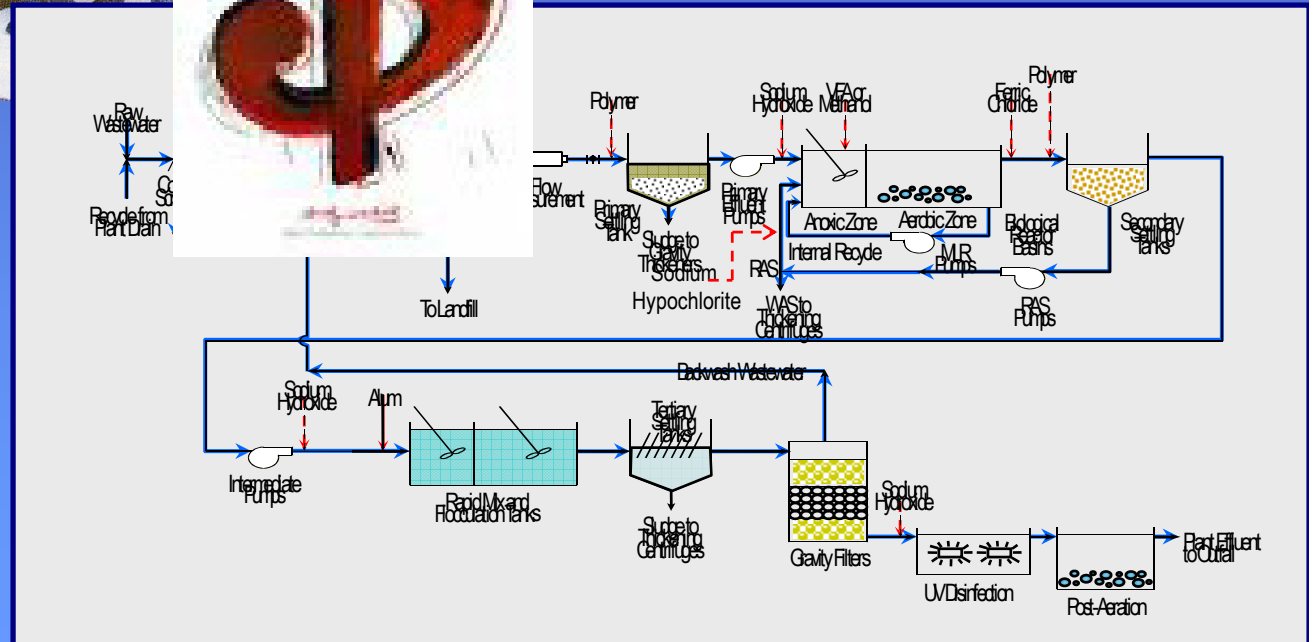
SUMMARY



PEOPLE



PROCESS



PANEL Q&A

