U.S. Department of Energy
Energy Efficiency and Renewable Energy

IAC Student Meeting
Field Management Review

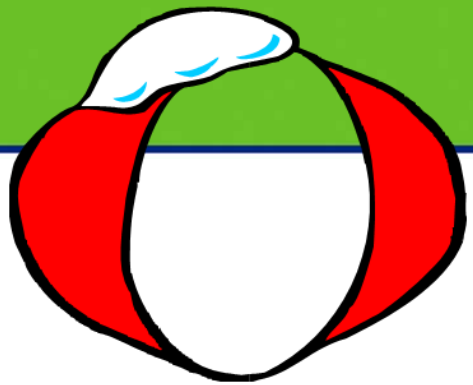
Don Kasten
Manager of Technical Operations
February, 2009
Washington, DC

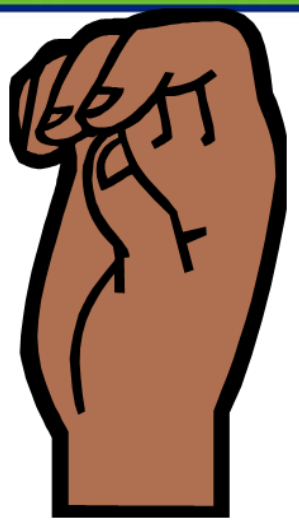
CAES
CENTER FOR ADVANCED ENERGY SYSTEMS

Rutgers The State University of New Jersey

AS IAC goes into its 33nd year…

So, This Year is Business as Usual…






NO
6

BAD ECONOMY

- Good for you?
  - –What Will Change?
  - –When Will it Change?

When Will It Change?

- We think when prices quadruple…
  - We can all cut our energy use in half with current technologies
  - Then, prices will have to double before it hurts

What Will Change?

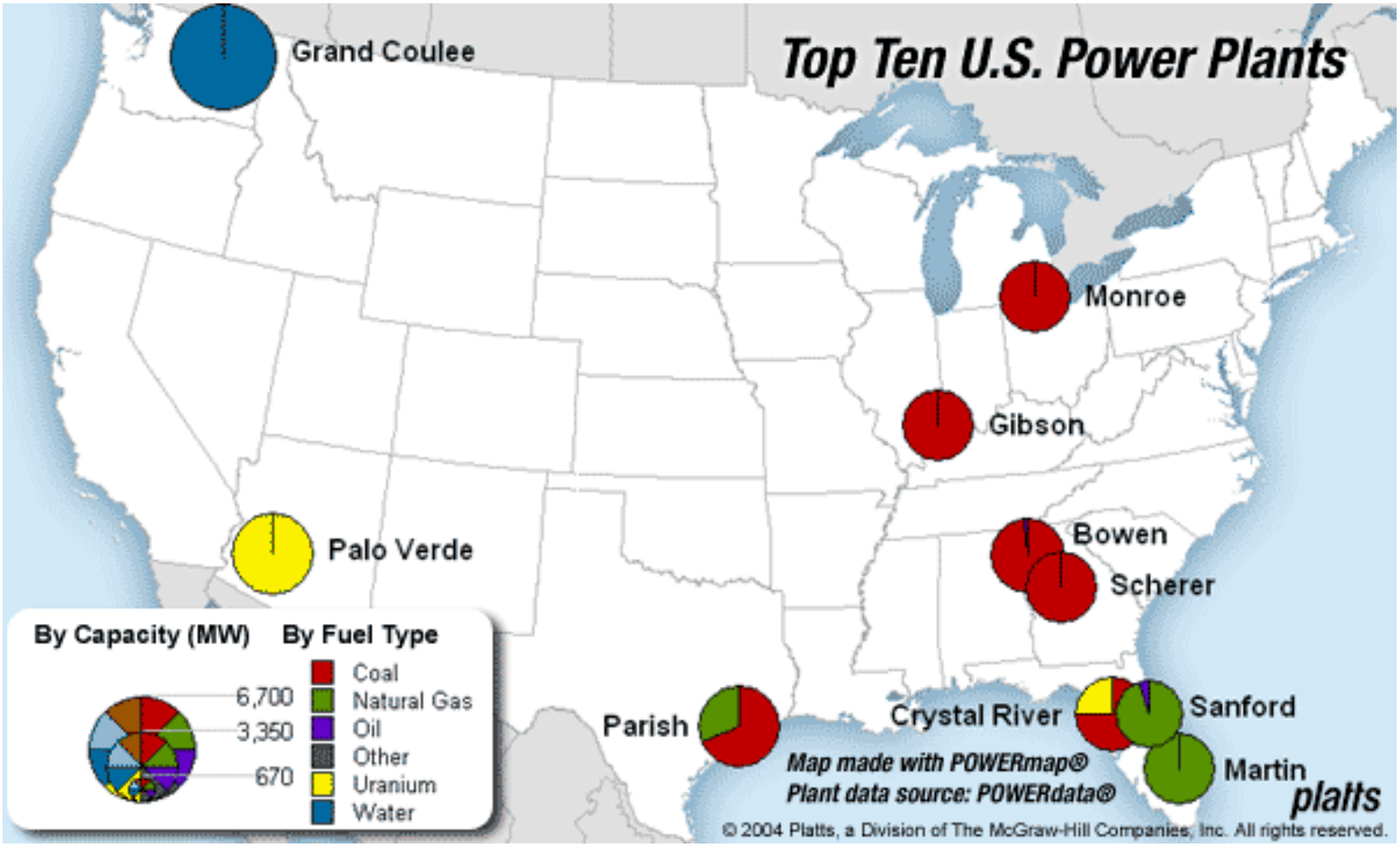
- This is where you fit in.

- New fuels, H or Carbon Fuel Cells – Something else?
- Old economies of scale?
  - Costs related to the square
  - Production related to the cube
- Large Grids replaced by distributed energy
  - Obama promises east-west grid capacity improvement
  - Temporary solution

What Will Change?

- Disruptive Technologies

- Cell Phones
  - Kenya
  - Finland


Top Ten U.S. Power Plants
Grand Coulee
Monroe
Gibson
Palo Verde
Bowen
Scherer
Parish
Crystal River
Sanford
Martin
By Capacity (MW)
By Fuel Type
6,700
3,350
670
Coal
Natural Gas
Oil
Other
Uranium
Water
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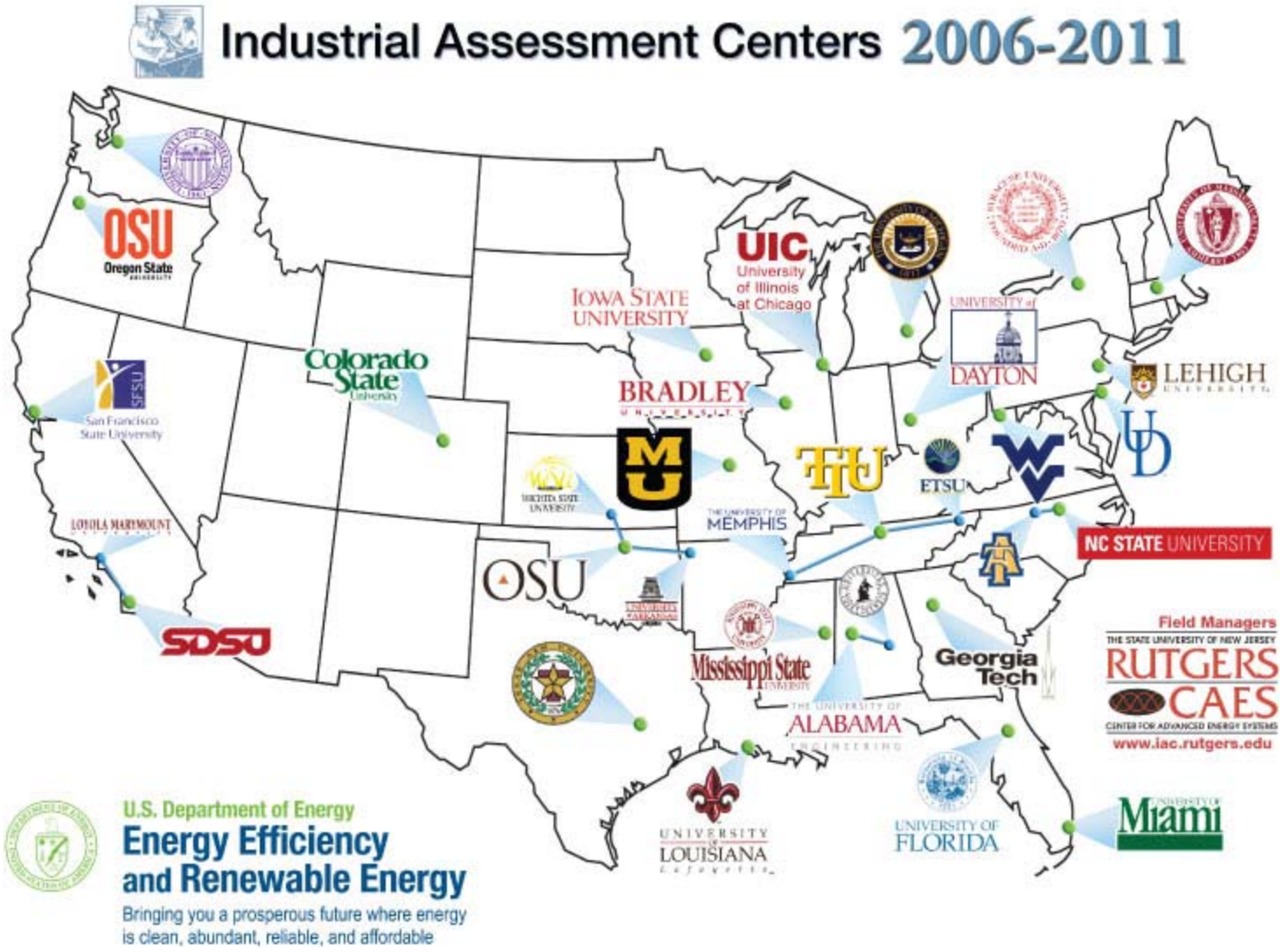
What do you do?



IACs Produce Power

- a source or means of supplying energy

We Produce Nega-watts

Definition of Power:

- ability to act or produce an effect

We Produce Energy Engineers

How?

One day assessments – With Numbers!

This is a dramatic concept

What Do We Do?

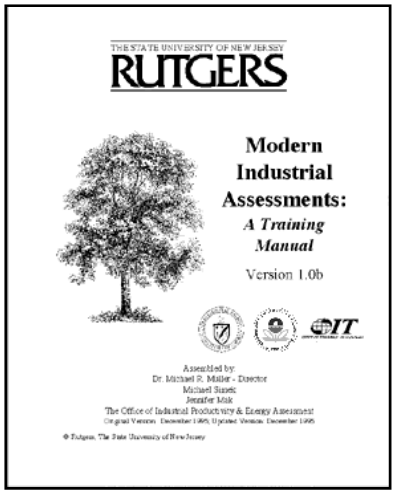
- Manage
  - Technical support
    - Database

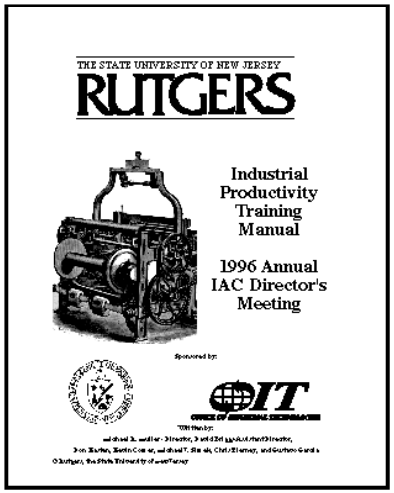
Manage

- Make sure the work gets done each year (boring!)
  - Not uncommon in fed programs not to be on time
  - *We have a great on time record!*
- Provide education about the program to the public
  - SEN Webcast
- Act as interpreter
  - Top down - Focus of DoE – **MEP!**
  - Bottom up - Voice of your concerns to DC

Technical Support

- Training – IAC , Manuals, Webcast
- Directors meeting
- Review of reports (Critiques)
- Research new technologies
- Advise new programs, BP tools





Database – don't touch that dial!

- Mike will tell you more than you want to know

What do We look for?

- Our half-way house at Rutgers have placed 22 people in energy jobs

- We critique your reports
- When we hire we created a application form
  - Writing
    - Write so you can not be misunderstood

- Funny Story about that…

Estimate!

- Games we play
- Zen Energy Audit
  - The plant is the box
- What does it cost?
  - Energy
  - dollars

Housekeeping

What We don't Need to See

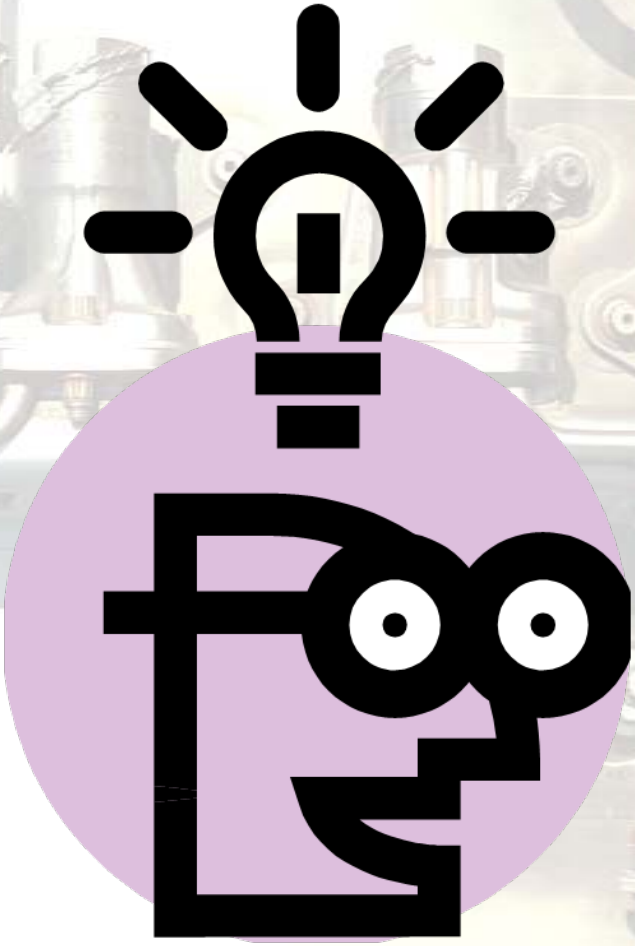
- Misplaced Precision
  - Recipes that call for exact amounts, then a "pinch"
  - Too many significant figures
  - ***The 20,000,007 year old dinosaur***

- The IAC model of assessment
- The IAC style report

Is becoming recognized in the field

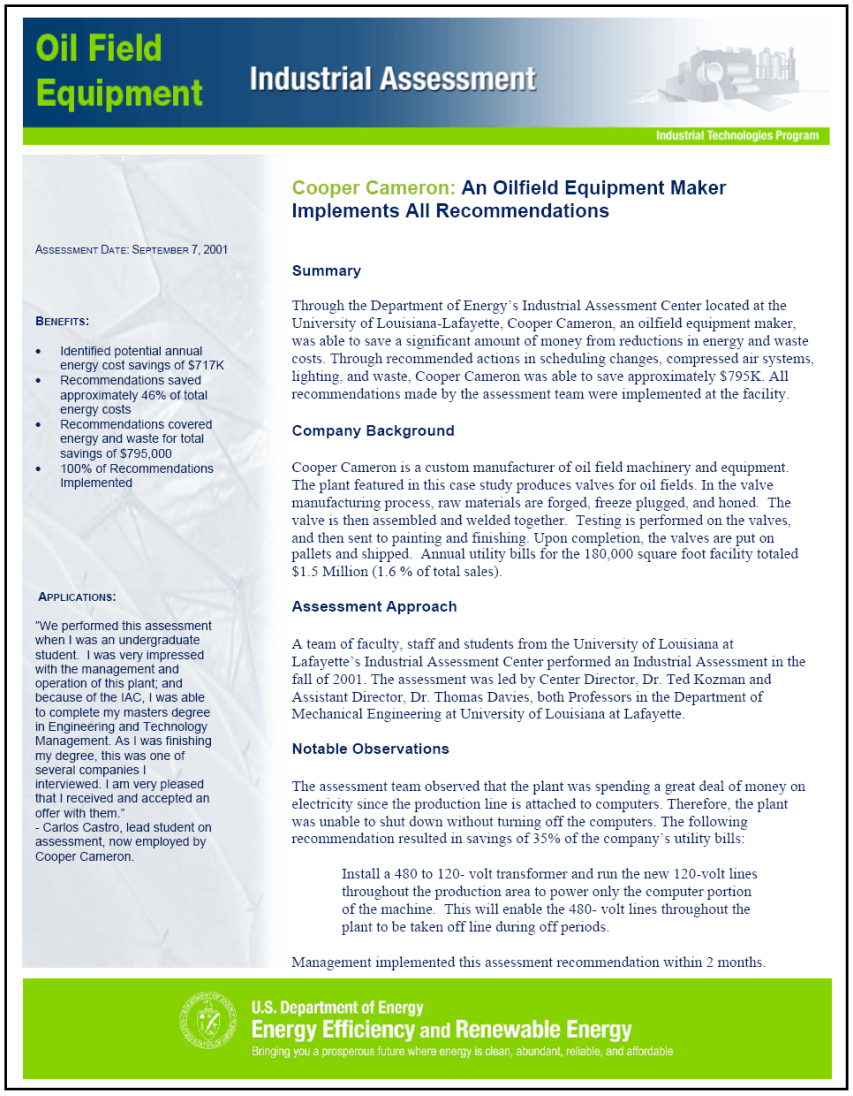
Housekeeping

What We would like to see



- Good Ideas
- Consistency

Case Studies



Oil Field Equipment Industrial Assessment

Industrial Technologies Program

Cooper Cameron: An Oilfield Equipment Maker Implements All Recommendations

ASSESSMENT DATE: SEPTEMBER 7, 2001

BENEFITS:

- Identified potential annual energy cost savings of $717K
- Recommendations saved approximately 46% of total energy costs
- Recommendations covered energy and waste for total savings of $795,000
- 100% of Recommendations Implemented

APPLICATIONS:

"We performed this assessment when I was an undergraduate student. I was very impressed with the management and operation of this plant; and because of the IAC, I was able to complete my masters degree in Engineering and Technology Management. As I was finishing my degree, this was one of several companies I interviewed. I am very pleased that I received and accepted an offer with them."
- Carlos Castro, lead student on assessment, now employed by Cooper Cameron.

Summary

Through the Department of Energy's Industrial Assessment Center located at the University of Louisiana-Lafayette, Cooper Cameron, an oilfield equipment maker, was able to save a significant amount of money from reductions in energy and waste costs. Through recommended actions in scheduling changes, compressed air systems, lighting, and waste, Cooper Cameron was able to save approximately $795K. All recommendations made by the assessment team were implemented at the facility.

Company Background

Cooper Cameron is a custom manufacturer of oil field machinery and equipment. The plant featured in this case study produces valves for oil fields. In the valve manufacturing process, raw materials are forged, freeze plugged, and honed. The valve is then assembled and welded together. Testing is performed on the valves, and then sent to painting and finishing. Upon completion, the valves are put on pallets and shipped. Annual utility bills for the 180,000 square foot facility totaled $1.5 Million (1.6 % of total sales).

Assessment Approach

A team of faculty, staff and students from the University of Louisiana at Lafayette's Industrial Assessment Center performed an Industrial Assessment in the fall of 2001. The assessment was led by Center Director, Dr. Ted Kozman and Assistant Director, Dr. Thomas Davies, both Professors in the Department of Mechanical Engineering at University of Louisiana at Lafayette.

Notable Observations

The assessment team observed that the plant was spending a great deal of money on electricity since the production line is attached to computers. Therefore, the plant was unable to shut down without turning off the computers. The following recommendation resulted in savings of 35% of the company's utility bills:

> Install a 480 to 120- volt transformer and run the new 120-volt lines throughout the production area to power only the computer portion of the machine. This will enable the 480- volt lines throughout the plant to be taken off line during off periods.

Management implemented this assessment recommendation within 2 months.

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Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

- **2007 Case Studies Due**
- **Must have results**
- **Must have permission**

What Does This Have to Do With Me?

- Student Utilization
- Student Experience

Student Utilization

- How many students in each center
- what does a typical student life look like?
  - How many assessments do you do on
  - How long does a student stay with a center
  - What is the mix of students
- Pay! (should be more than the dining hall)

Student Experience

- Opportunity, not a job
- Attend meetings, write papers
- Looking for diverse experience – not specialization
- Lead student
- Report lead, safety lead
- Our visit to center is crucial

Student Experience

- Certification
- Talk the Talk
- Make Connections!
- It’s not all about payback

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