HYDROGEN LEARNING FOR LOCAL LEADERS
GILLS ONIONS ADVANCED ENERGY RECOVERY SYSTEM
MAY 17, 2011
Gills Onions’ Growing Regions

- INDUSTRIAL
- FOODSERVICE
- RETAIL
• GENERATED UP TO 300,000 LBS OF ONION WASTE PER DAY (TOP, TAIL AND PEEL)
• WASTE BECAME UNMANAGEABLE AND COST-PROHIBITIVE
• CREATED ODOR PROBLEMS, POTENTIAL GROUND WATER CONTAMINATION
SOLUTION
ONION WASTE TO ENERGY
ADVANCED ENERGY RECOVERY SYSTEM (AERS)

• CONVERTS ONION WASTE TO RENEWABLE ENERGY, ULTRA-CLEAN BIOGAS AND CATTLE FEED

• MEETS OUR GOALS FOR AIR QUALITY, ZERO WASTE AND RENEWABLE ENERGY

• WASTE NOW BECOMES A RESOURCE VS. LIABILITY
SIMPLIFIED PROCESS SCHEMATIC

JUICE EXTRACTION

JUICE PREPARATION

UASB

BIOGAS PREPARATION

FUEL CELLS

Advanced Energy Recovery System (AERS)
FUEL CELLS BECOME THE MOST INNOVATIVE PRACTICAL SOLUTION TO FULFILL OUR NEEDS

• MEETS OUR GOALS FOR AIR QUALITY, ZERO WASTE, AND RENEWABLE ENERGY

• HIGH FUEL-TO-ELECTRICITY CONVERSION RATE: 47-50% EFFICIENCY

• ELIMINATION OF 40,000 GALLONS DIESEL FUEL TO HAUL ONION WASTE TO FIELDS

• REDUCES GHG AND KEEPS US AHEAD OF AB 32 REGULATIONS
OVERALL PROJECT COSTS

• AERS TOTAL COST INSTALLED: $10.8 M
• SEMPRA ENERGY SELF GENERATION INCENTIVE $2.7 M
• ARRA (AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 $3.2 M
• CEC (TO WORK WITH GTI FOR THE STUDY OF THE GAS CLEAN UP) $499,000 (GRANT)
• $10.8 MILLION PROJECTION ANTICIPATED PAYBACK BETWEEN 5-6 YEARS
• IMMEDIATE SAVINGS IN HAULING AND ENERGY COSTS OF $1.1 MILLION ANNUALLY
• GILL’S GENERATES UP TO 300,000 LBS/DAY OF ONION WASTE – CONVERTED TO BIOGAS
• 2 FUEL CELL ENERGY FUEL CELLS – 600 KW
• PROVIDES 100% OF BASE-LOADED ELECTRICITY REQUIREMENT
“WE ARE TRULY HONORED TO HAVE OUR SUSTAINABILITY EFFORTS EXTENSIVELY VALIDATED THROUGH THESE PRESTIGIOUS AWARDS SIMPLY BY DOING THE RIGHT THING.”
CHALLENGES

• HIGH SULFUR CONTENT - REMOVE IMPURITIES AND MOISTURE FROM BIOGAS

• PERMITTING OF NEW TECHNOLOGY – NO STANDARDS EXISTED FOR REFERENCE

• FIRE & SAFETY - EXTRA ALARMS, LIABILITY WAIVER

• FINANCING – HAD TO DEVELOP A GOOD ECONOMIC MODEL
WHAT CAN BE DONE TO MAKE IT EASIER TO USE FUEL CELLS?

• EDUCATION FOR LENDERS
• EDUCATION FOR GOVERNMENT, REGULATORS AND CONTRACTORS
QUESTIONS & COMMENTS

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