

Case Study: Coal to Natural Gas Conversion at Citizens Thermal's Perry K Plant

Presentation to the Council of Industrial Boiler Owners

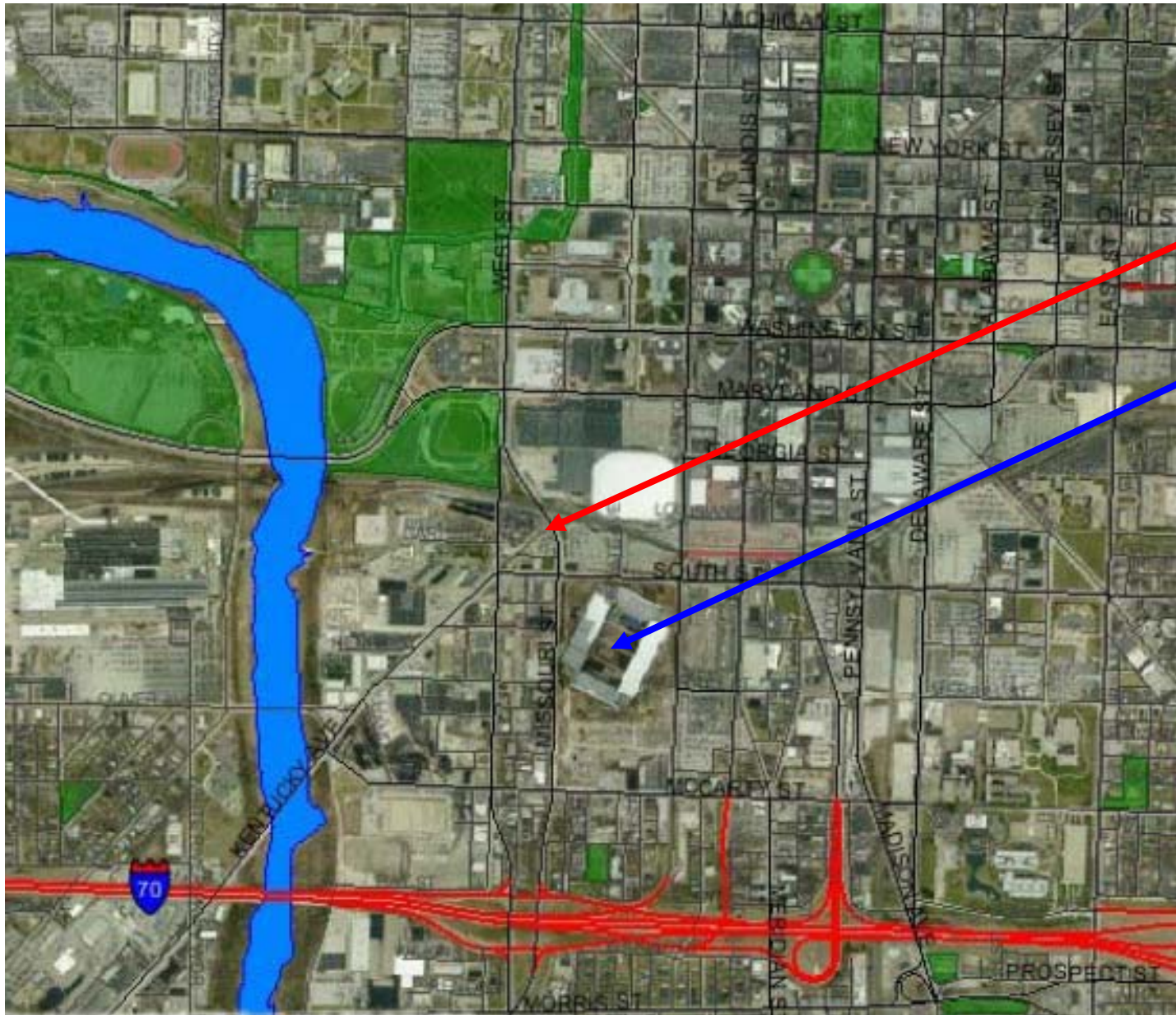
March 13, 2012

Who is Citizens Thermal?

- Member of Citizens Energy Group
 - Public charitable trust (nonprofit) in Marion County, Indiana
- District energy provider (steam and chilled water) in Indianapolis
 - Perry K Steam Plant constructed in 1893
 - 2nd largest district steam system in the U.S. (in terms of sales)
 - Eight boilers: coal, #2 fuel oil, natural gas

Perry K Steam Plant

- Eight (8) boilers:
 - 3 coal-fired
 - One (1) c. 1938 F-W PC wall fired (650 psi)
 - Two (2) c. 1951 B&W / Detroit stoker (250 psi)
 - 3 gas-fired (natural gas and COG)
 - One (1) c. 1938 F-W wall fired (converted to gas in 1998) (650 psi)
 - Two (2) c. 1947 CE wall fired (converted to gas in 1998) (250 psi)
 - 2 c. 1971 distillate oil-fired (250 psi)
- Two steam turbines (5 MW and 15 MW)
- Two topping turbines (1.7 MW each)



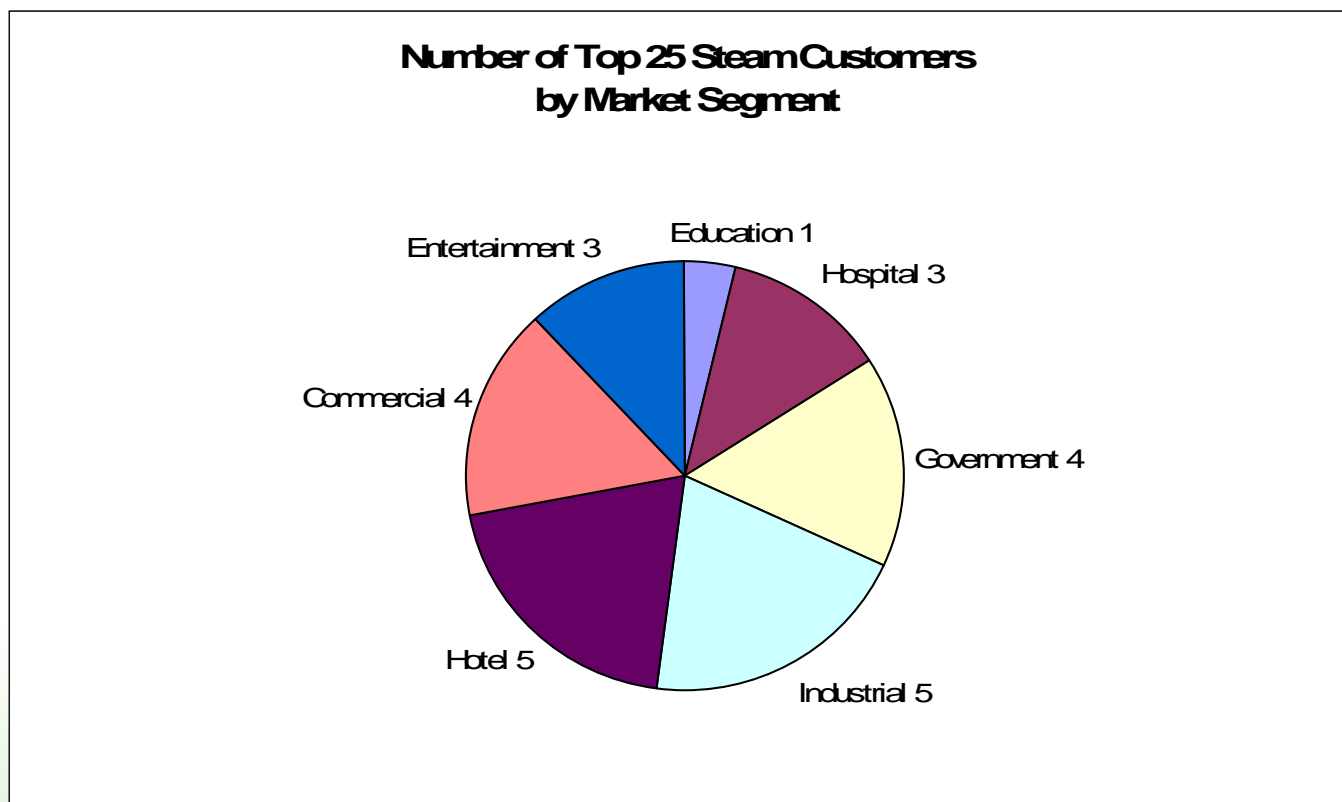
Perry K
Steam Plant

Lucas Oil
Stadium

Citizens Thermal

- Perry K produced approximately 53 million therms in 2011
 - 165,000 tons of Indiana bituminous coal (~84%)
 - 690,000 MCF of natural gas (~16%)
 - <210 barrels of #2 fuel oil (<1%)
- Imported 48 million therms of 400 psi steam from waste-to-energy plant
 - Represents ~52% of overall energy sold to customers

2007 TOP 25 STEAM CUSTOMERS



Top Steam Customers

- Industrial:
 - Eli Lilly & Company
 - National Starch
 - General Motors
- Health Care
 - VA Medical Center
 - Wishard Health Services
 - IU Health (Methodist, IU, Riley)
- Indiana University – Purdue University at Indianapolis
- State of Indiana
- Capital Improvement Board
 - Conseco Fieldhouse
 - Lucas Oil Stadium
 - Indianapolis Convention Center
- Citizens Thermal West Street Chilled Water

Increasing Costs and Competition

- Rising Steam Rates (+52% last 5 yrs)
 - Fuel Costs (+49%)
 - Operating Costs (+38%)
 - Load Loss (-8%)
- Low Cost Alternative Fuel - Natural Gas
 - Perry K (\$9/dth >> \$6/dth)
- Pending Environmental Compliance Costs
- Lost Opportunities for Steam Business

Business Review Process

- Cross Functional Team
 - 17 Members (8 Departments)
- Objectives
 - Competitive Steam Rates
 - Sustainable Steam Business
 - Improvement Strategies
- Evaluation Criteria
 - Delivered Steam Cost (\$/therm)
 - Customer Impact

Cost Advantage of Gas Boilers vs. Steam

	Steam \$/therm	Gas Boiler \$/therm	Diff. %
Rate 1 (Small Customer)	\$1.84	\$1.77	4%
Rate 2 (Large Customer)	\$1.26	\$1.10	15%

Notes:

- Assumes \$6.7/dth Natural Gas Price for on-site Boilers
- Difference Increases with Pending Environmental Compliance

Environmental Compliance Rules Increase Costs and Rates

- Boiler MACT I Rules
 - Perry K Modifications (2006-2007)
 - Perry K Capital (\$12 Million)
- Boiler MACT II Rules
 - Compliance Date (March 2014)
 - Est. Perry K Capital (\$24 Million *est*)
 - 2 Years for Regulatory Approvals and Construction

Future of Steam Business

- Limited Customer/Load Growth
- Continued Customer Conservation
 - No Decoupling on Steam Rates
- Continued Load and Margin Decline
- Sharp Decline Possible with Loss of Major Customer
- Must Consider Alternative Strategies

Strategy Assessment

Scenario Comparison

Current Business Model:

1. Base Case – Current 20 Years Forecast

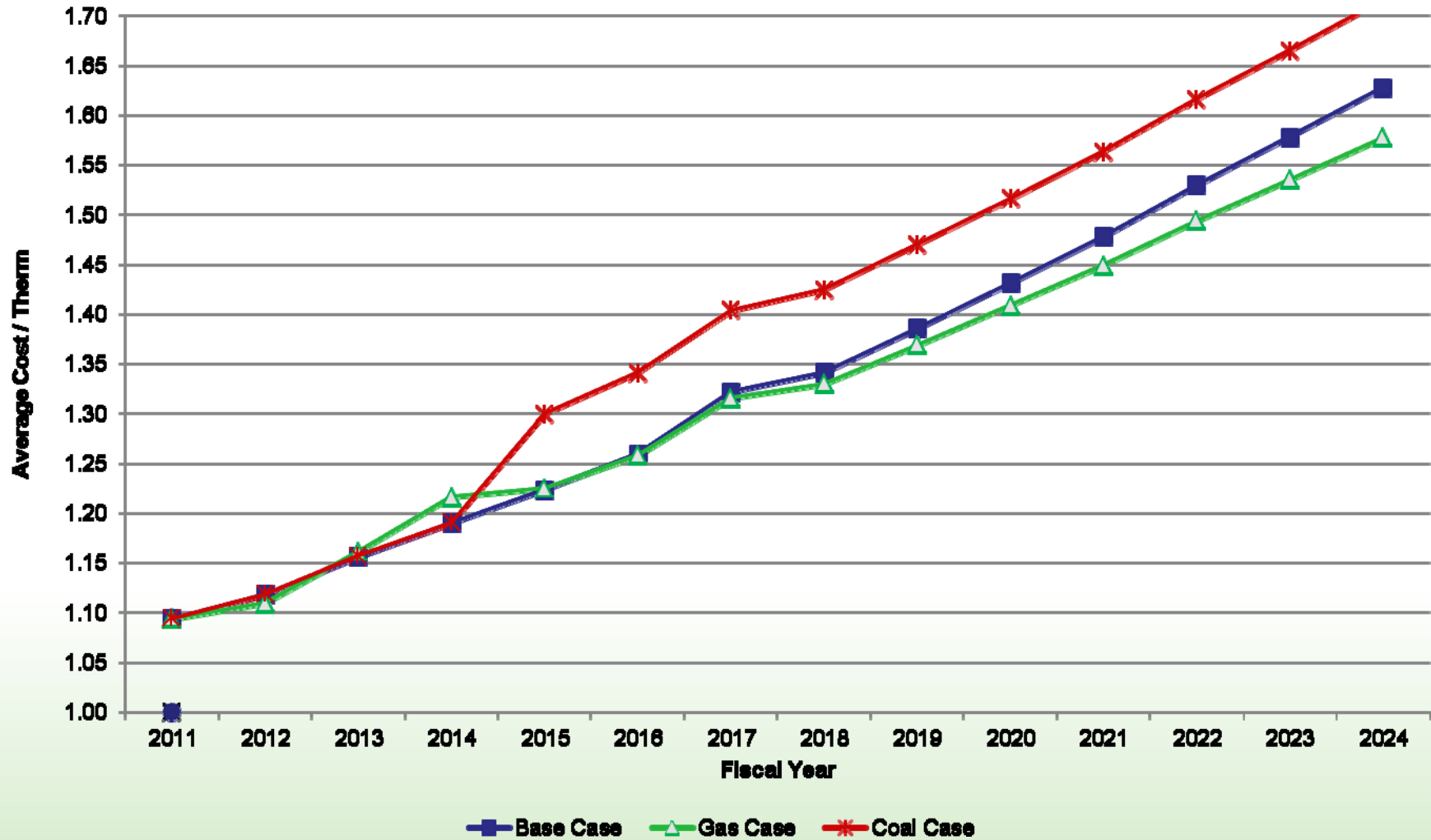
New Business Models:

1. Compliance Case – Base Case + Boiler MACT II
2. Perry K Coal-to-Gas Conversion

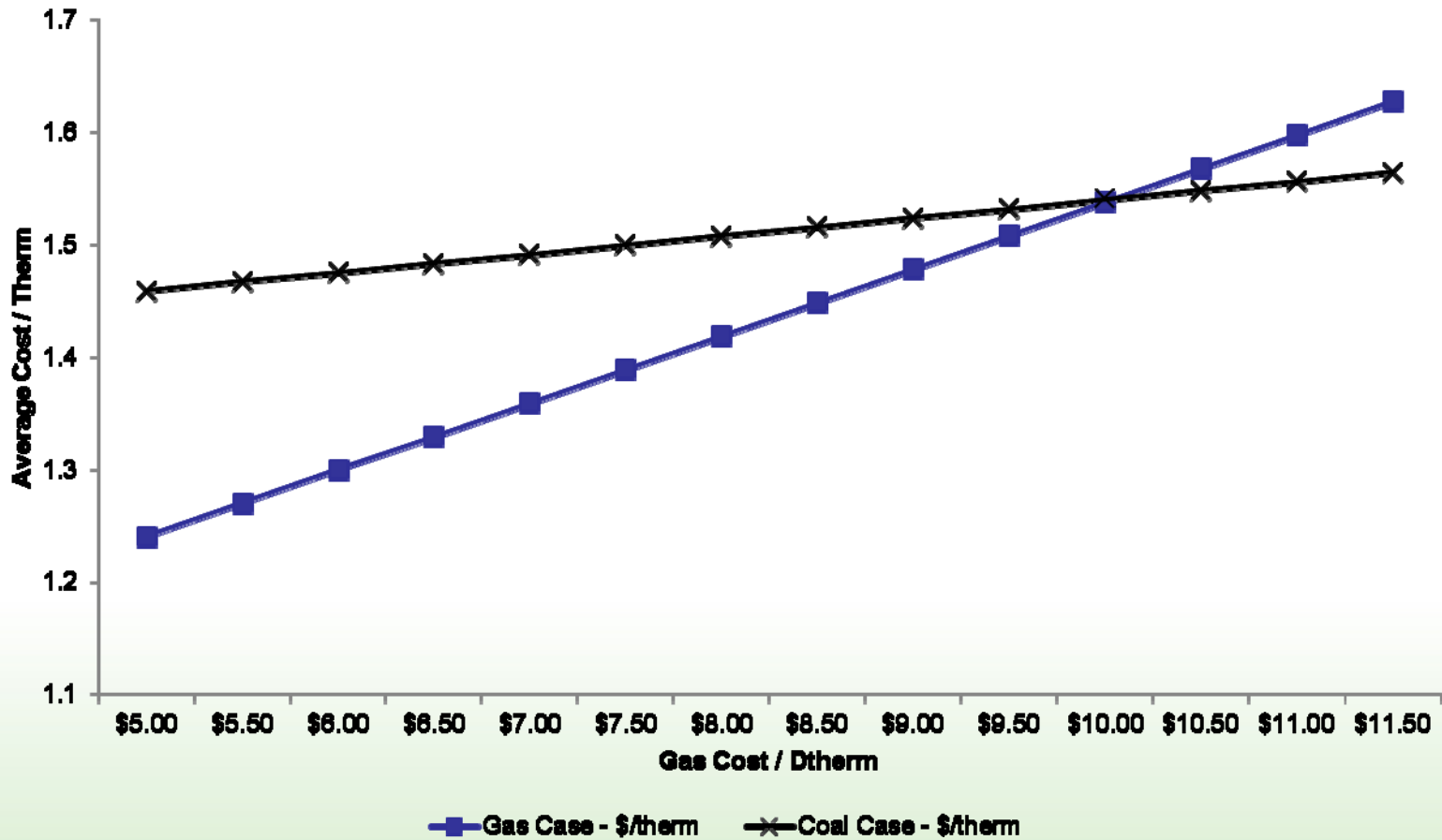
Scenario: Perry K Coal-to-Gas Conversion

- Natural Gas Replaces Coal at Perry K
- Convert 3 Coal Boilers to Natural Gas (\$9M)
- Timing:
 - 2012 Regulatory Approvals
 - 2013 Perry K Construction

Reduced Long-term Steam Costs



Perry K Coal-to-Gas Conversion Breakeven Gas Price (\$10/dth)



Conclusion: Break Even Natural Gas Price for Gas Case and Coal Case = \$10.04/dth

Recommendation

- Pursue Lowest Rate/Capital Scenarios
 - Convert 3 Coal Boilers to Gas
- Pursue regulatory approval through IURC for tracking mechanism to allow customers to realize cost savings

Benefit Assessment

- Reduce Steam Costs and Rates
- Reduce Steam Capital Costs
 - Compared to ~\$24M Boiler MACT II Compliance
- Environmental Leadership
 - Eliminate Coal from Perry K

Risk Assessment

- Perry K Fuel Diversity without Coal
- Natural Gas Reliability and Price
- Covanta Steam Contract Indexed to Coal
- Work Force Adjustments

Project Timeline

Activity	Target
Boiler MACT II Compliance Study	Aug 2011
Final Decision on Perry K Strategy	Sept 2011
Stakeholder Communications	Oct-Dec 2011
Regulatory Submittals/Approvals	2012
Perry K Modifications	2013
Perry K Boiler MACT II compliance	March 2015



Questions?