

# Energizing Brownfields

Presented by:

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# Win Win

Who could ask for a better scenario than integrating Brownfield development with alternative energy?

- Sustainable Remediation
- Powering Brownfields
- Powering Beyond the Brownfield



# Sustainable Remediation

Powering long-Terms Solutions with Renewable Energy

## Federal Government Leading the Way

- EPA
- DOD

Brownfields should be next



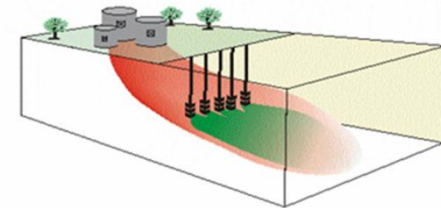
Elizabeth, NJ

- Solar Powered recovery Well

## European Practicality

The Netherlands – Ameland Center

- Thermal slab accelerates in-situ bioremediation



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# Alternative Energy Powering Brownfields

## Christy Weber Landscapes

12.5 acres of former auto scrap yard/landfill in Chicago.

- Geothermal heating/cooling,
- Solar panels to actively heat water and air,
- Off-site wind turbine to generate electricity.
- Green roof system.
- Rainwater reclamation.



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# Powering Beyond the Brownfield



**Employing a brownfield to support and even provide alternative energy beyond its boundaries.**



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## Brownfields to Brightfields



### **Brockton Gas Light Co.'s Gas Works Brockton, MA.**

- 465-kilowatt solar-generation facility.
- \$1.6 million city bond
- \$789,000 grant U.S. DOE
- \$1 million Massachusetts Technology Collaborative's Renewable Energy Trust.



### **Environmental Consultants**

- Applying expertise to alternative energy
- Expanding services to energy evaluations
- Installing energy systems
- Partnering with capital sources to own and lease these systems.



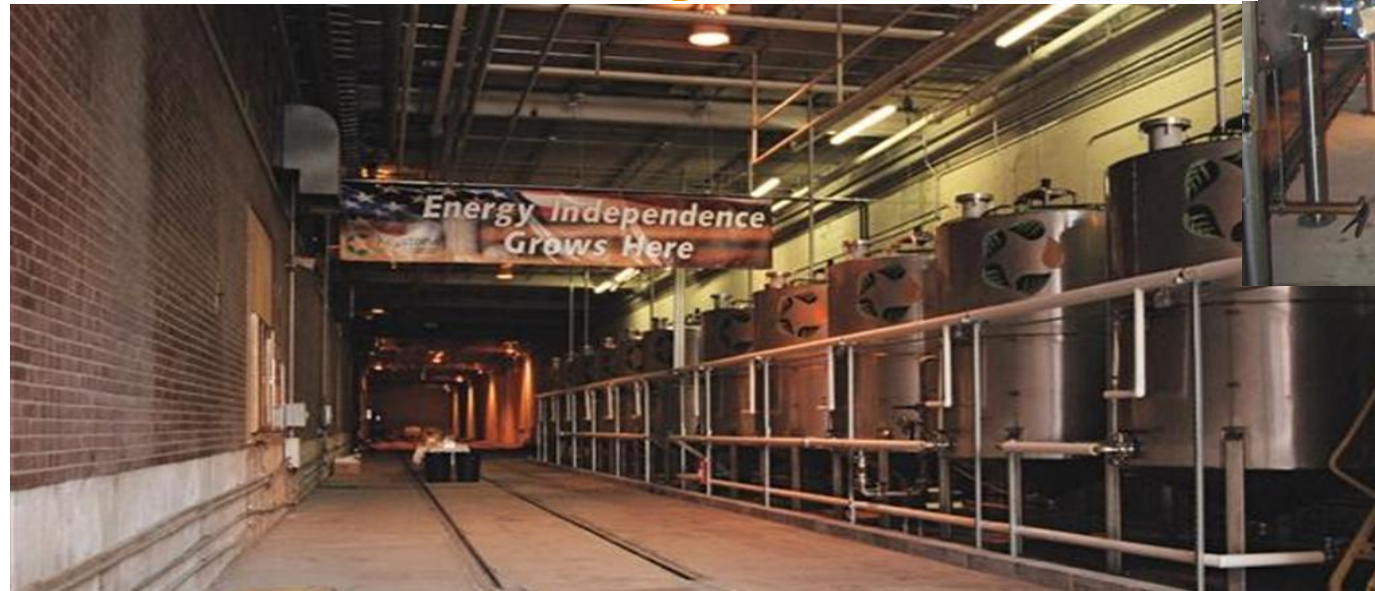
# Keystone Biofuels

Shiremanstown, PA

## Redeveloped Quaker Oats Facility

- Utilizes soybean oil provided by Pennsylvania farmers to produce ASTM certified B100.
- Reused infrastructure (ASTs, Building, Generators, steam lines)
- Reduced capital costs 80%

**Keystone BioFuels Inc.**



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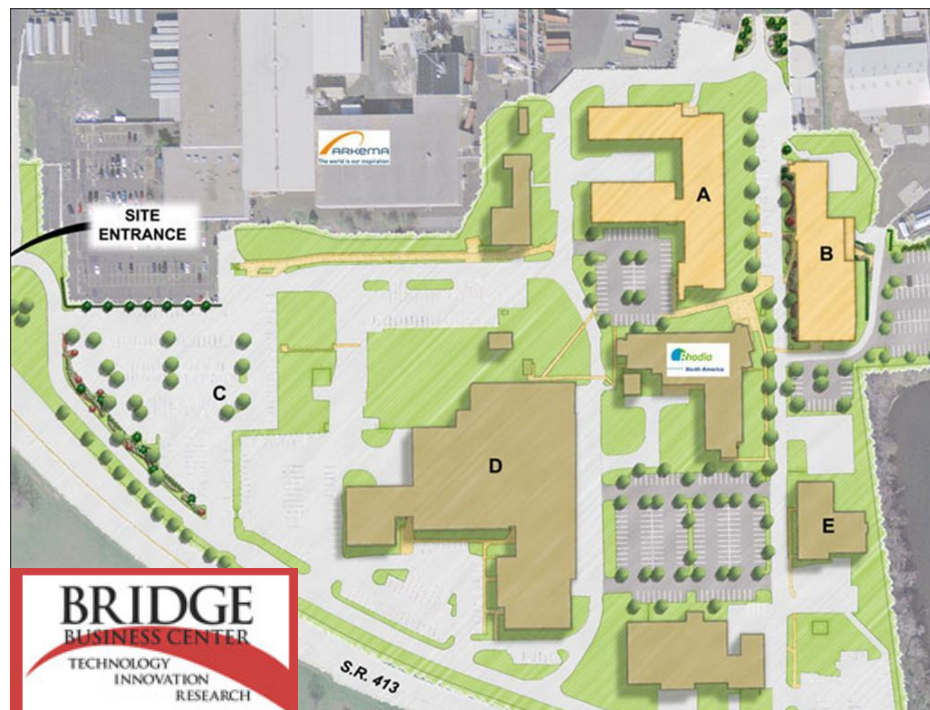
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# Bridge Business Center Bristol, PA

## Former Rohm & Haas R&D campus.

- 300,000 sq. ft in 5 buildings
- Industrial Plant setting
- Integrated into remaining R&H facility
- Asbestos issues remain in vacant buildings
- Soil remediation completed
- GW impacted by third party



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# Bridge Business Center Bristol, PA



## Tech-Center Positioning

- Bucks County Community College
- Contract Research Orgs. (CROs)
- Alternative Energy Lab
  - R&D, QA/QC for polysilicon mfr.



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# High-Impact Government Support

## *Financial Incentives*

- Local Economic Real Estate Tax Abatements (LERTA).
- PA Machinery and Equipment loan Fund (MELF): 10 year, 3% financing for up to \$5 million in new and used machinery and equipment
- PA Enterprise Zone Tax Credit: Up to \$500,000 saleable tax credit on leasehold improvements
- PA Research and Development Tax Credit: prorated saleable 10% tax credit of a company's increased investment in R&D over a base period
- PA Opportunity Grant Program: up to \$5,000 grant for each new job created
- PA Job Creation Tax Credits: up to \$1,000 for each new job created over a 3 year period



# Low Impact to Environment

## Onsite Low-impact Power Generation

- 5x Natural Gas Powered Microturbines
- 65kw each (energy export)
- Ultra-low emission
- \$1mm ARRA grant from Pa Energy Development Authority



## Environmental Risk Management

- Site remediation
- Process refurbishment/upgrade
- Insurance-funded loss protection



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