

Facilities & Infrastructure Assessment



Statewide Capital Master Plan

"Conducting an Infrastructure Audit"



October 10, 2006

WOOLPERT

Woolpert, Inc.

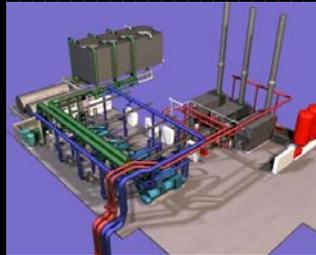
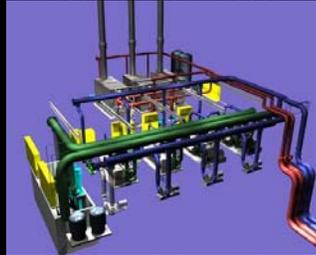


- Full Service Planning, Engineering, Architecture and Technology Related Services Firm
- Focused in 4 Markets
 - Higher Education
 - State/Local Government
 - Federal Government
 - Private
- 750 Employees Nationally
 - 300+ in Ohio (Cincinnati, Columbus & Dayton)
- Experience On Over 100 University/College Campuses
 - 80%+ are State Supported
 - Over 25 Two & Four Year Campuses in Ohio
 - Reputation in Campus Planning

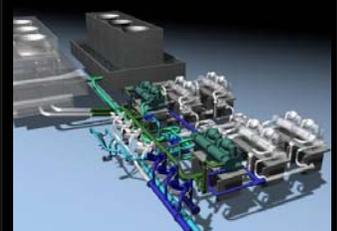


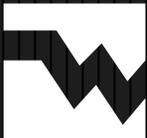
Woolpert University Experience

- Ambassador Baptist College
- Auburn University
- Ball State University
- Benedict College
- Bennett College
- Berea College
- Bowling Green State University
- Butler University
- Central State University
- College of William and Mary
- Cornell University
- Davidson College
- Denison University
- Depauw University
- Duke University
- Earlham College
- Embry-Riddle Aeronautical University
- Faulkner State Community College
- Gaston College
- Georgetown University
- Illinois State University
- Indiana State University
- Indiana University
- Johnson C. Smith University
- Kent State University-Ashtabula
- Kent State University-Geauga
- Kent State University-Salem
- Lander University
- Lenoir-Rhyne College
- Longwood College
- Loyola College
- Marian College
- Marietta College
- Marshall University
- Massachusetts Institute of Technology
- Medical College of Ohio
- Miami University-Hamilton
- Miami University-Oxford
- Michigan State University
- Norfolk State University
- North Carolina Central University
- North Carolina State University
- Northern Kentucky University
- Oberlin College
- Ohio Dominican College



- Ohio State University-Columbus
- Ohio State University-Mansfield
- Ohio State University-Marion
- Ohio State University-Newark
- Ohio University-Athens
- Ohio University-Chillicothe
- Old Dominion University
- Penn State University
- Presbyterian College
- Purdue University
- Queens University
- Shawnee State College
- Shippensburg University
- Sinclair Community College
- South Carolina State University
- Southern Illinois University
- Southwestern Illinois College
- Spring Hill College
- St. Louis University
- University of Alabama
- University of Cincinnati
- University of Dayton
- University of Illinois-Urbana/Champaign
- University of Iowa
- University of Kentucky
- University of Louisville
- University of Maryland
- University of Missouri-Columbia
- University of Missouri-Rolla
- University of Montevallo
- University of North Carolina at Chapel Hill
- University of North Carolina at Charlotte
- University of Northern Iowa
- University of Pittsburgh
- University of Rochester
- University of South Alabama
- University of Texas at Dallas
- University of Virginia
- Vincennes University
- Virginia Institute of Marine Science
- Wabash College
- Washington University
- West Virginia University
- Western Carolina University
- Winston-Salem State University
- Winthrop College
- Wright State University



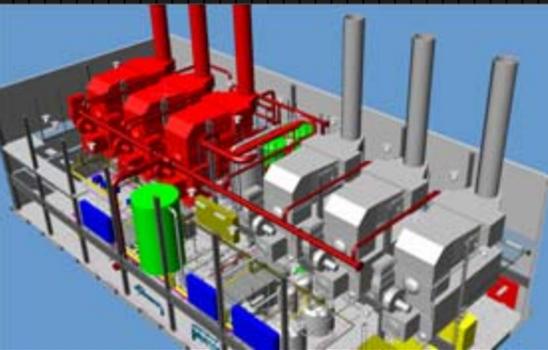


The Ohio State University

- 4 Step Infrastructure Master Planning Process
 - Data Gathering, Capacity Analysis, Capital Improvement Master Plan and GIS Integration
- Scope of Infrastructure Assessment & Planning
 - Storm & Sanitary Sewers
 - Domestic Hot & Cold Water
 - Chilled Water
 - Steam, Condensate Return & Hot Water
 - Natural Gas
 - Electric Power
 - Campus Data & Communication
 - Utility Tunnels & Roadways
 - Exterior Lighting & Emergency Phones
 - Campus Green Space

Challenges of Infrastructure Planning

- Historically, Infrastructure Has Been Secondary
- Infrastructure Assessments Are Different
- Broad Spectrum of Campus Types
- Wide Ranges of Complexity, Condition & Documentation
- Who Owns the Infrastructure?
- Equitable Process for All



What Are Your Expectations?

- Funding Level to Sustain Current Level of Service?
 - Minimum Funding Level
- Funding Level to Sustain Growth?
 - 5 years? 10 years? 25 years?
- Consider Energy Options?
 - Solar, Wind, Geothermal, Coal Gas, etc.



Approaches for Minimum Funding Level

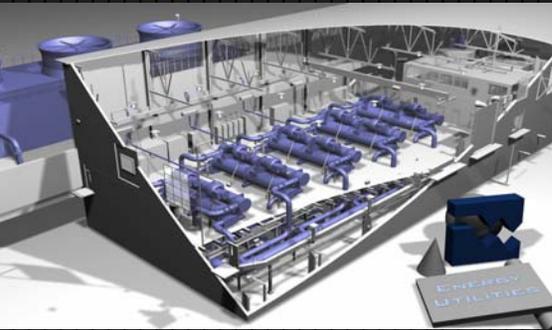
- Mathematical
- Full Physical Inspection
- Statistical



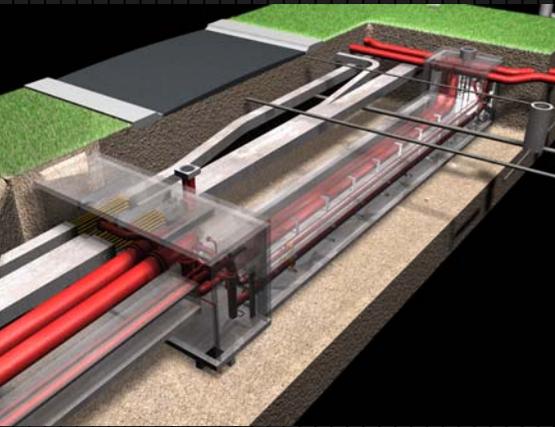
Mathematical

- Pro's
 - Least Expensive
 - Least Impact to the Institution
 - Quickest Process

- Con's
 - Least Accurate
 - Least Defensible
 - Uses Age as the Only Indicator of Condition



Full Physical Inspection

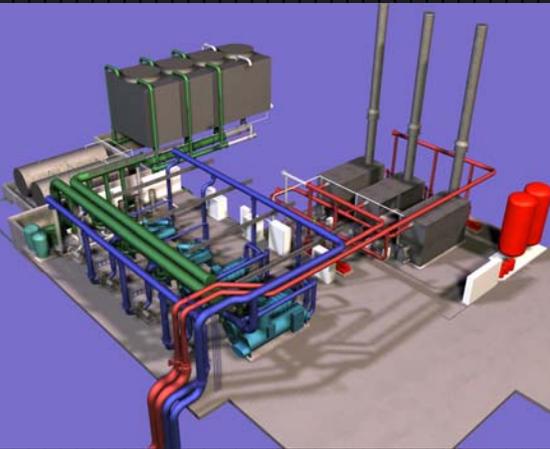


- Pro's
 - Most Accurate
 - Most Defensible

- Con's
 - Most Expensive, Not Cost Effective
 - Most Disruptive
 - Longest Duration



Statistical Approach



- Pro's
 - Statistically Accurate
 - More Defensible than Mathematical
 - Not Highly Disruptive
 - Modest Schedule
 - Best Value

- Con's
 - Less Defensible than Physical
 - Some Level of Disruption
 - Modest Schedule

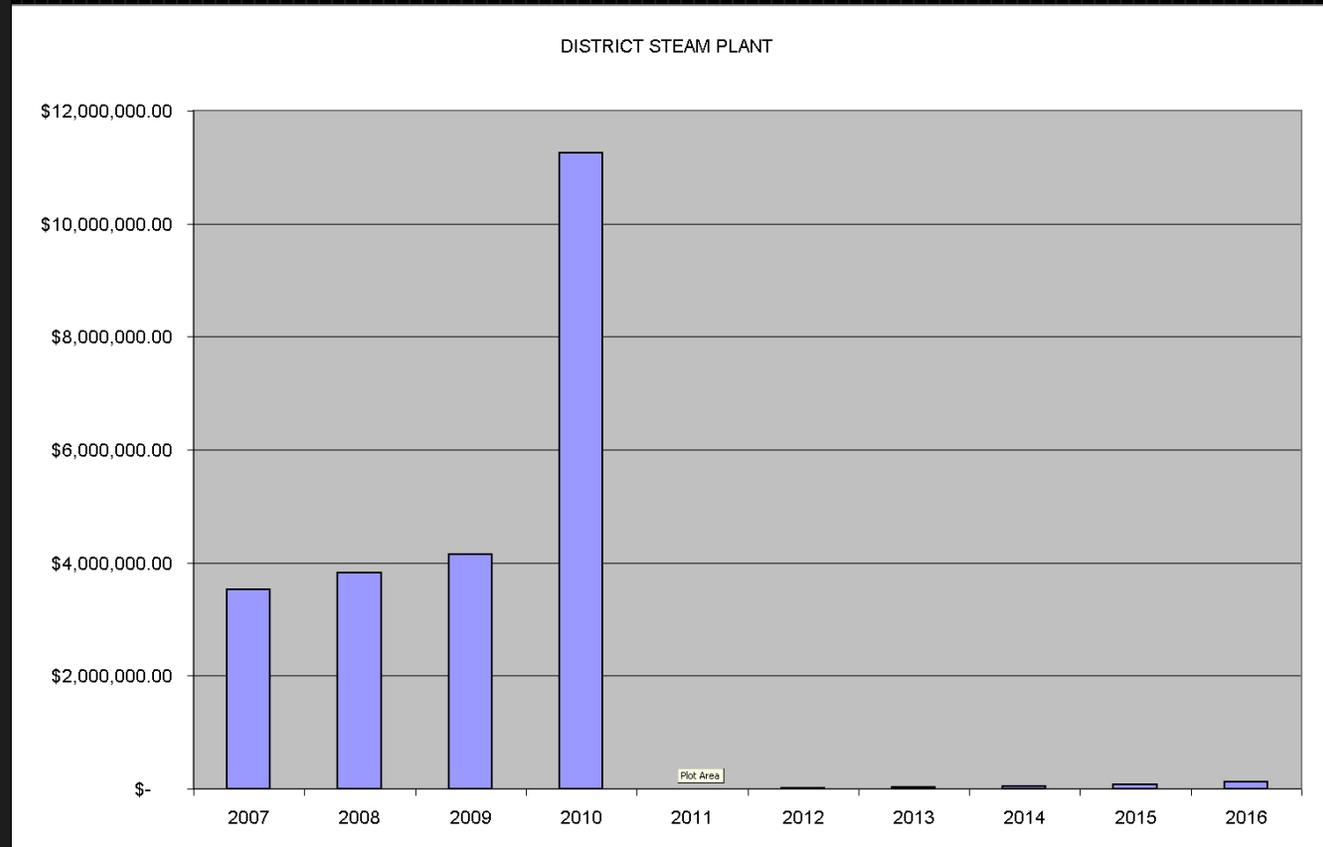


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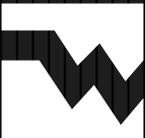
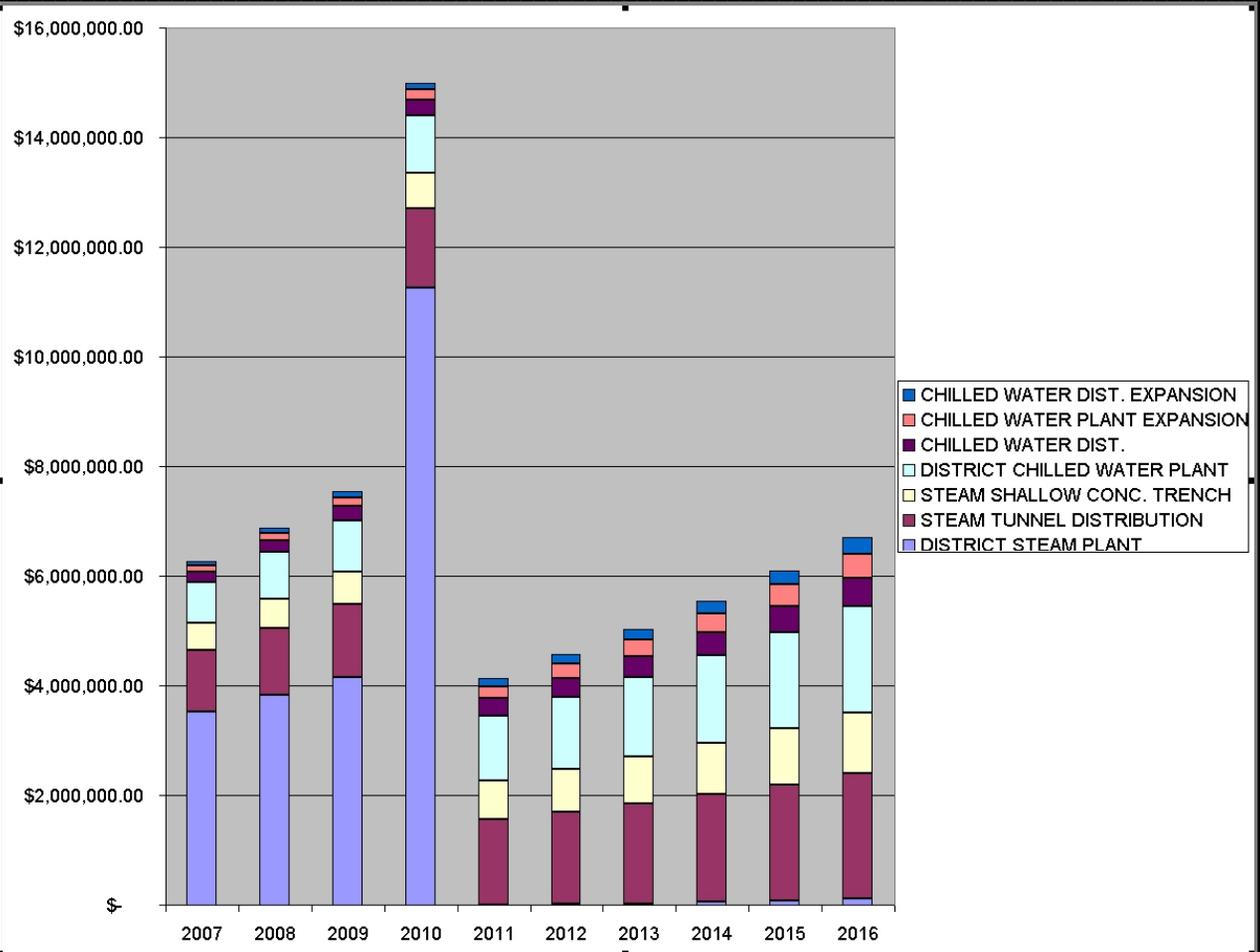
Open Discussion



Maintenance/Replacement – Single Asset



Maintenance/Replacement Multiple Assets



Most Rudimentary

- Requires a utilities asset inventory
- Basic data needed:
 - Extent of the asset (eg. 1,200 lineal feet of 7 ft. dia. steam tunnel)
 - Date put into service
 - Anticipated useful life
- An economic model will provide:
 - Replacement cost
 - Current value
 - Annual maintenance budget for asset

