

# FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

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Nashville, TN

## Redstone Arsenal - TVA UESC Case Study

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*U.S. Army Garrison-Redstone*

Hosted by:



# Thank You!



# Redstone Arsenal

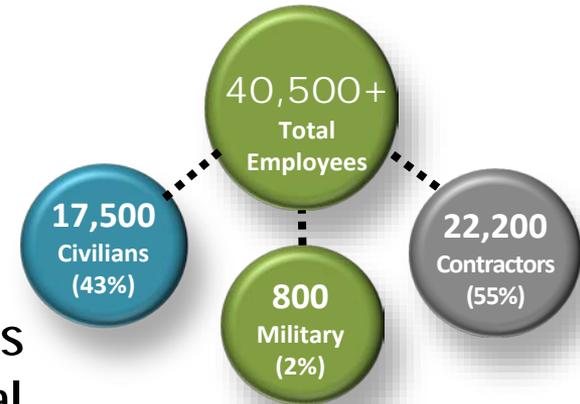


## Overview

- ✓ **38,162 Acres**
- ✓ **13,000 Developable Acres**
- ✓ **1,774 Buildings (19M sq ft)**
- ✓ **78 Tenant Organizations**

## Major Redstone Career Fields Supporting Redstone Arsenal

- ✓ **Science and Engineering**
- ✓ **Logistics Management**
- ✓ **Acquisition & Contracting**



~\$18B Total Annual Economic Impact  
 ~104,500 Total Jobs Across Tennessee Valley

- ✓ **40K Direct Jobs on RSA**
- ✓ **66.5K Indirect & Induced Jobs Across Region**
- ✓ **Over 1,200 RSA Employees live in Tennessee**
- ✓ **Approximately 500 live in Fayetteville**

# Keystone Area of Interest: Commercial

## Logistics Services

Matériel Management, Acquisition, Contracting & Sustainment

## Space Operations & Missile Defense

Exploration & Defensive Capabilities

## Research, Development, Test & Engineering

Innovation Application of Sciences & Technology

## Intelligence & Homeland Defense

Threat Analysis & Explosives Training

*Sustaining the Force*



# RSA Energy Strategy



## How we're getting there...

### Efficiency:

- Energy Source Selection (TVA UESC Steam Pruning)
- Facility and Installation Energy Demand Reduction (Facility Energy Audits)

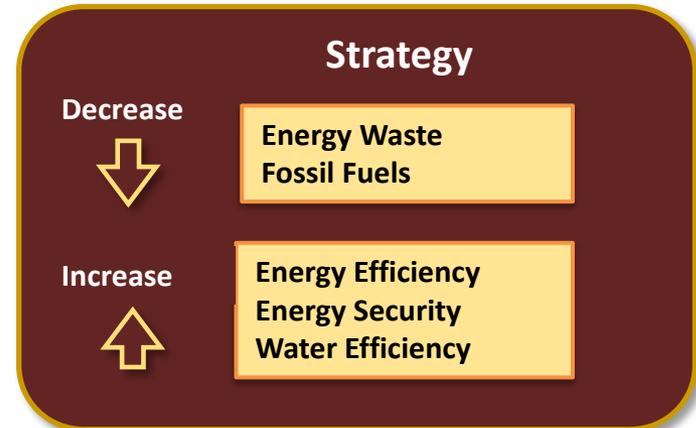
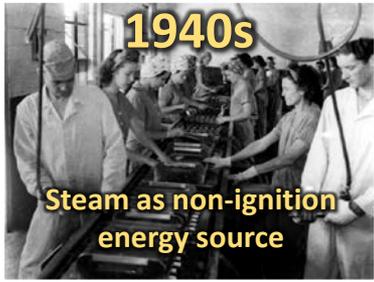
### Controls:

- Facility & Utility Level Metering
- Bldg Controls & Monitoring Systems
- Utility Switching Capability

### Production:

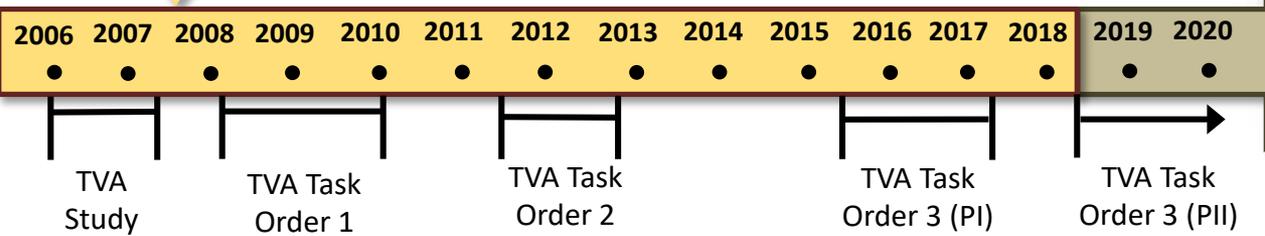
- Increase Secure & Renewable Energy
- Budget Neutral Requirement

# History & Direction



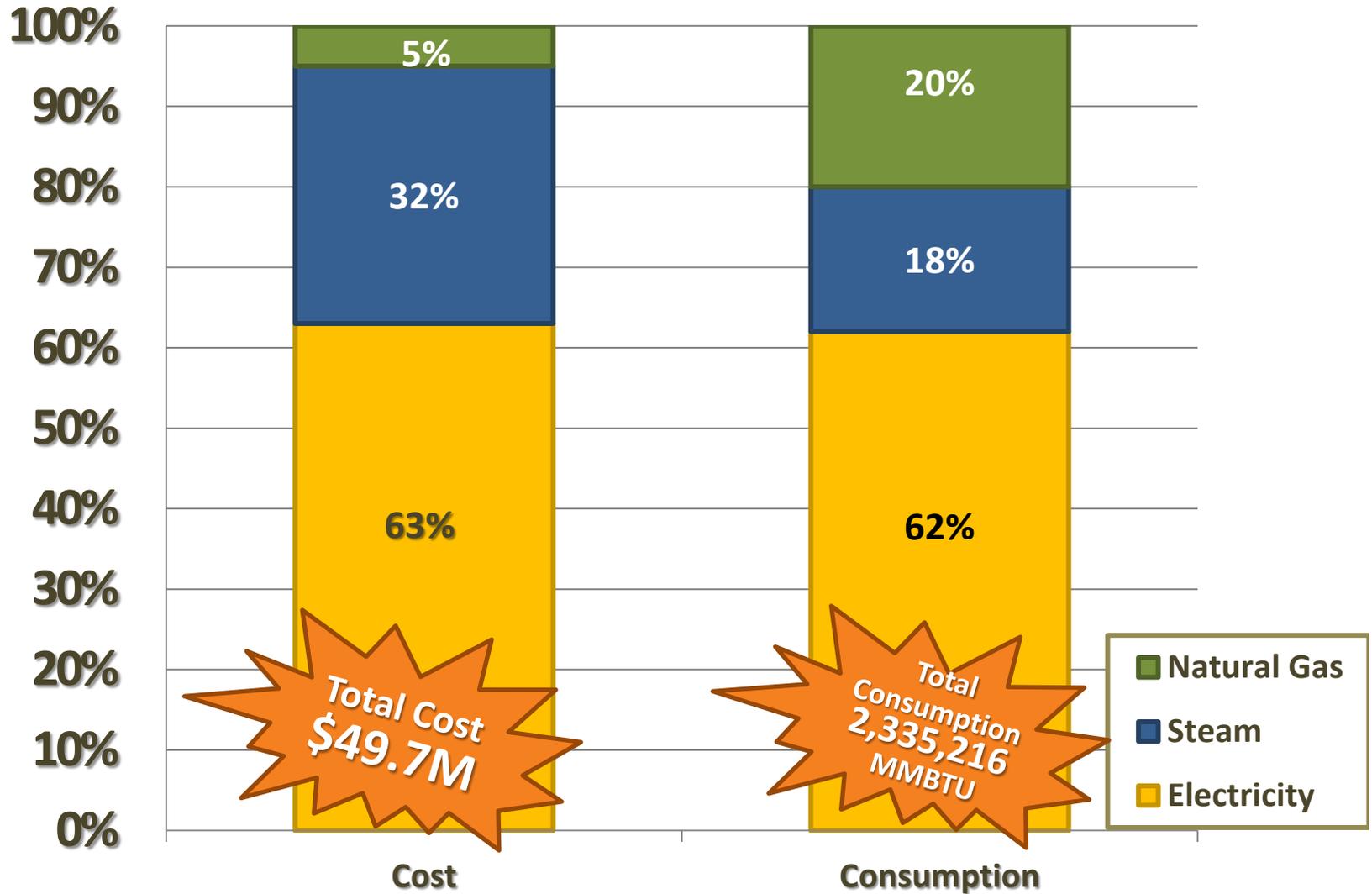
**AUG 2003**  
DOE Facility Energy Decision System (FEDS)  
Determined steam as priority for gaining efficiencies

**JUN 2005**  
DOE Steam System Options Study  
Short-term & long-term steam recommendations



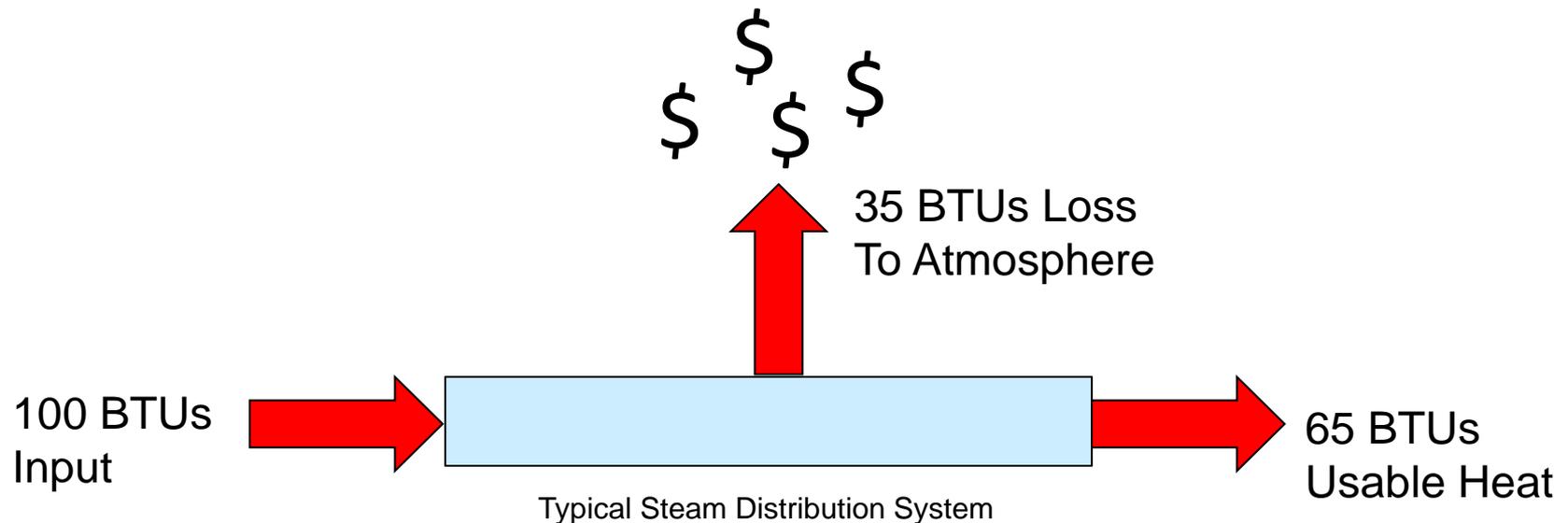
Metering, Customer Audits, & Other Programs →

# FY 17 Redstone Arsenal Total Energy

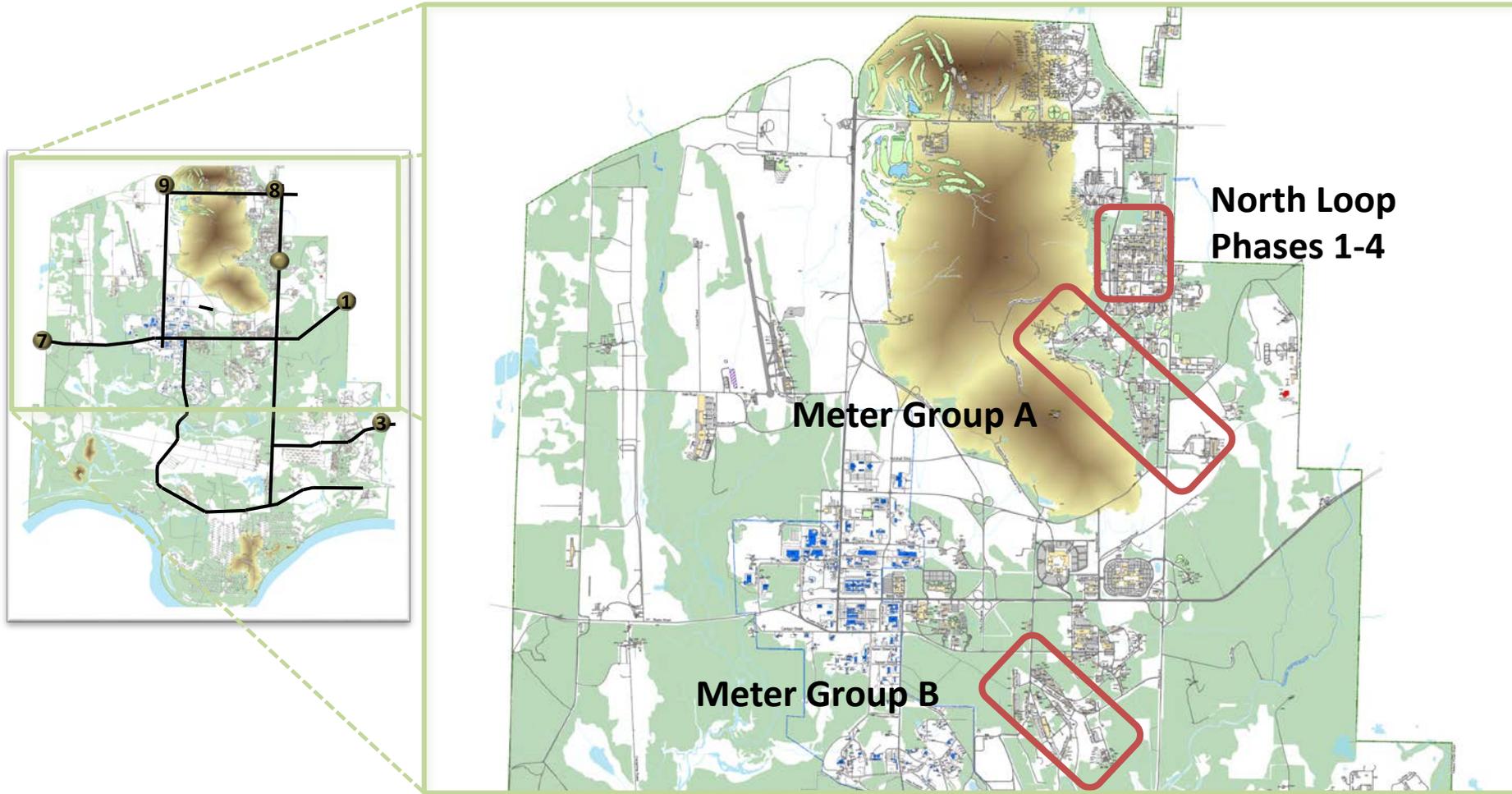


# Redstone Arsenal Energy Loss

- ✓ The Department of Energy has suggested that our steam distribution system loses about 35%, as a minimum, just from the pipe being heated.



# Utility Energy Service Contract (TVA)



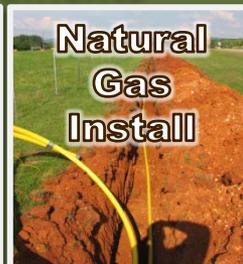
# Utility Energy Service Contract (TVA)

## Goal

- Increase efficiency & reduce energy demand and cost

## Scope to Date

- Switching from steam to natural gas or other feasible alternative source
- Lighting retrofits
- Building automation controls and metering
- Mechanical system replacement
- Building envelope improvements



## D.O. #1 Meter Group A (37 Bldgs)

- Cost \$9.8 million
- Annual savings \$1.4 million
- Payback 7 years
- Construction complete FEB 2010
- Loan closed SEP 2014

## D.O. #2 Meter Group B (28 Bldgs)

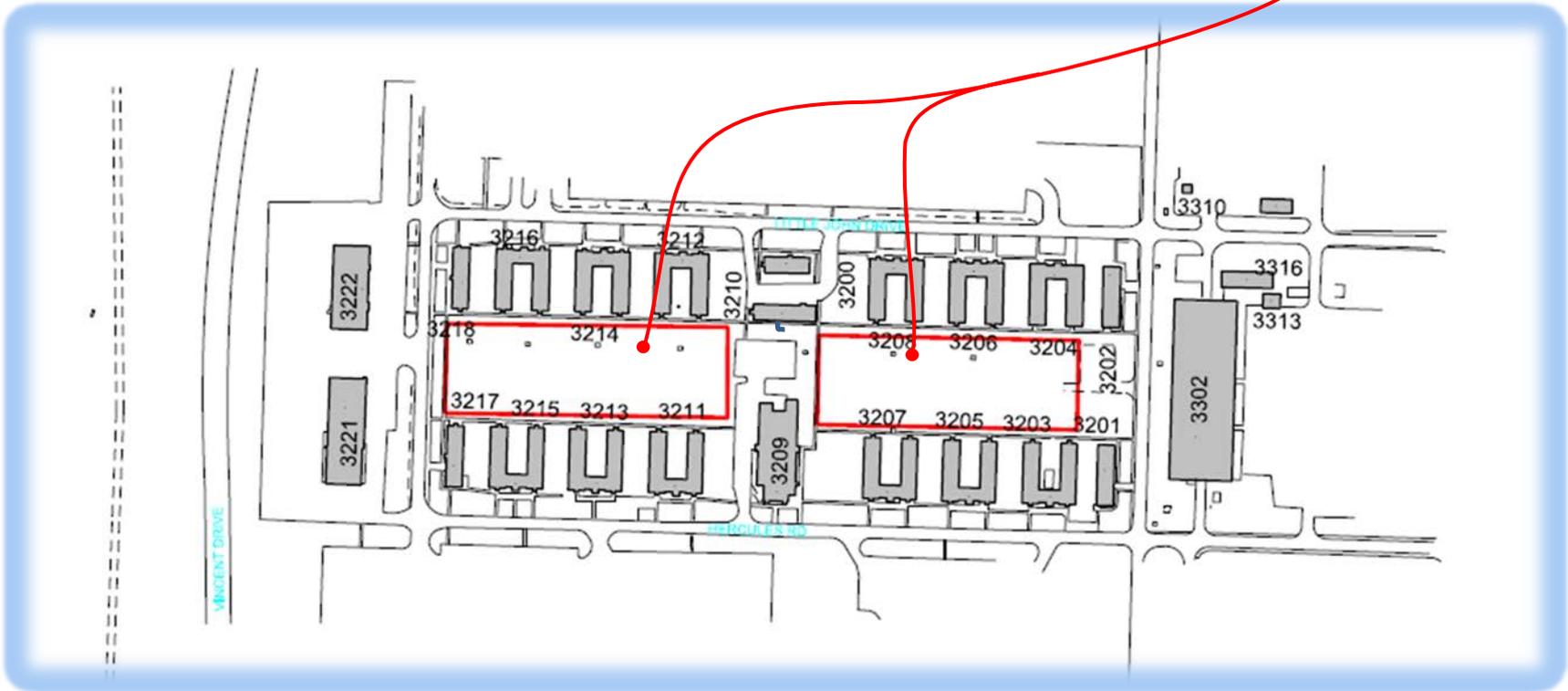
- Cost \$14.7 million
- Annual savings \$2 million
- Payback 7 years
- Construction complete FY14
- Loan closed NOV 2015

## D.O. #3 North Loop 1 (27 Bldgs)

- Cost \$9.6 million
- Annual savings \$1.4 million
- Payback 7.1 years

# Utility Energy Service Contract (TVA)

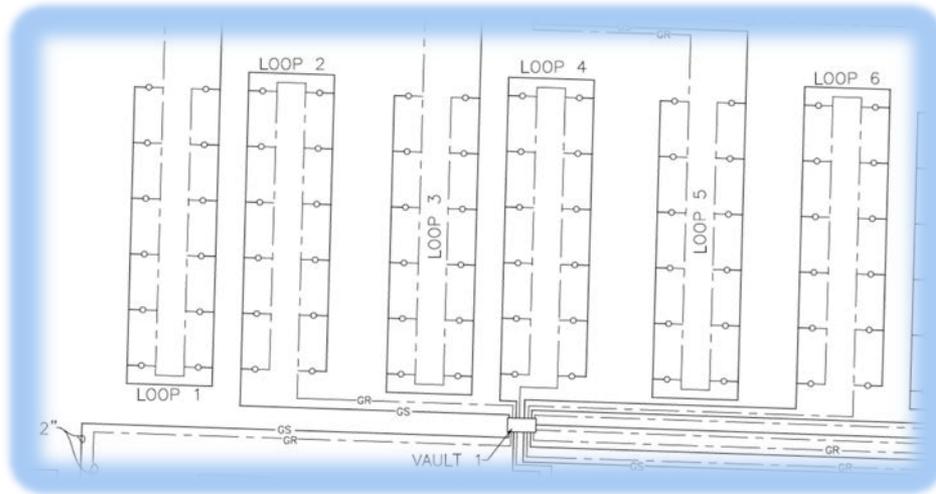
The geothermal bore field is located in grassy area between the 3200 block of buildings



# Utility Energy Service Contract (TVA)

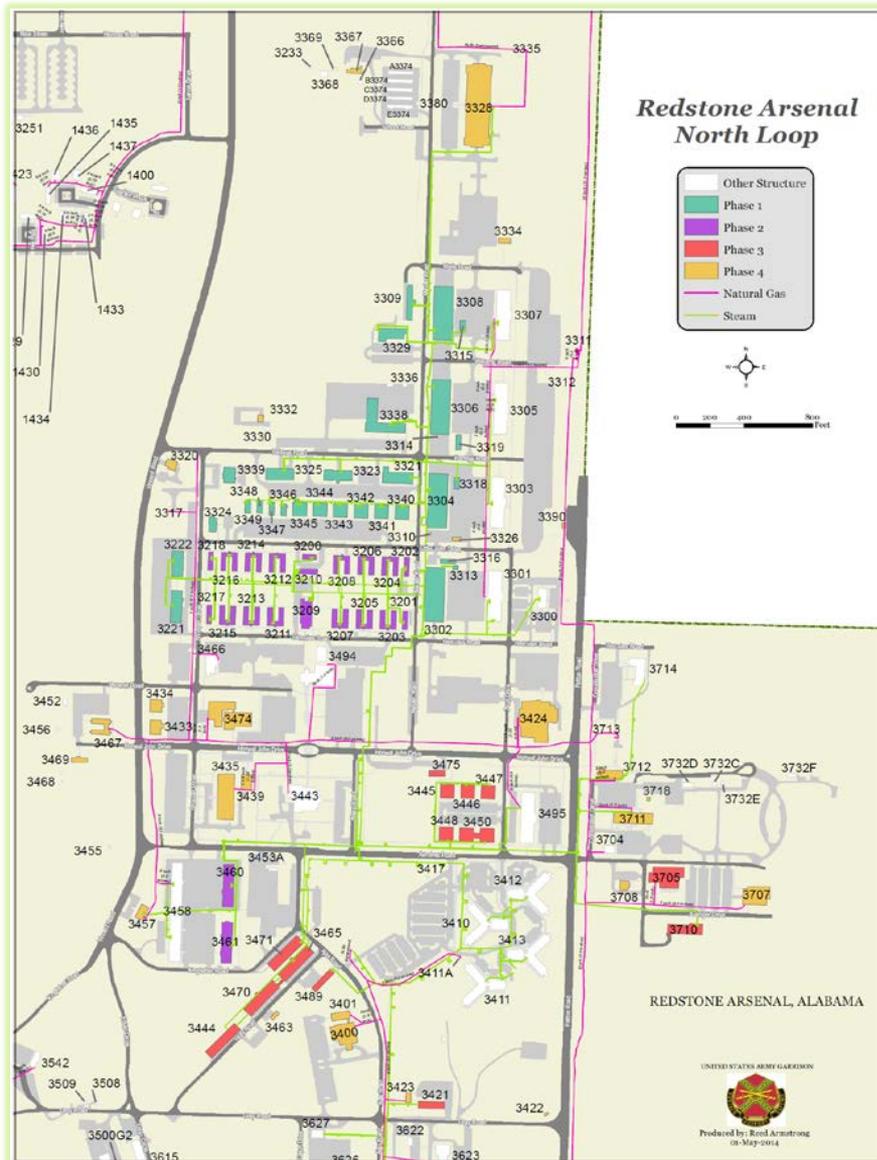


# System Design - Bore field



- 168 vertical bores
- 200 feet deep
- Heat exchange pipe loops in each bore.
- This system is estimated to use 1/3 of the Btu's per sq. ft. of the average building on RSA.
- It will provide both heating and cooling for the 19 surrounding buildings.

# Utility Energy Service Contract – Way Ahead



## D.O. # North Loop 2 (19 Bldgs)

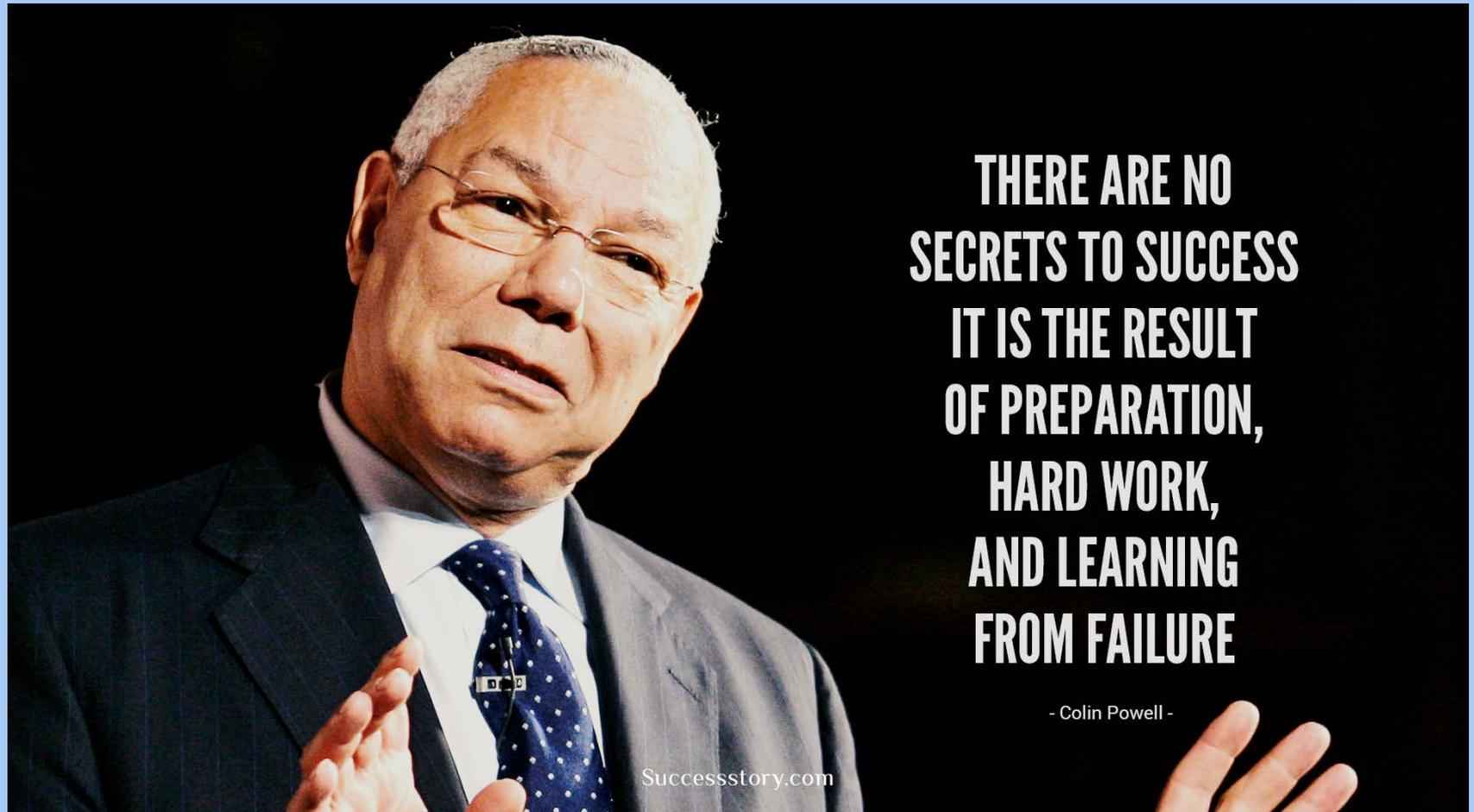
- Cost \$ 6.9 million
- Annual savings \$ 941 K
- Payback 7.4 years
- Design and submittal phase

## North Loop 3 & 4 Detailed Energy Study (29 Bldgs)

- 3 - Currently In Review
- 4 - Currently in Development

Sparkman Data Center – PNNL study  
Redstone Technical Test Center  
McMorrow Lab Bldg. 5400 Relook  
Projects from DPW Annual Work Plan

# A Successful Process – Reality



**THERE ARE NO  
SECRETS TO SUCCESS  
IT IS THE RESULT  
OF PREPARATION,  
HARD WORK,  
AND LEARNING  
FROM FAILURE**

- Colin Powell -

Successstory.com

# A Successful Process - Procurement

- ✓ Understanding of the needs and goals
- ✓ Develop a mutually desirable Basic Ordering Agreement (BOA)
- ✓ Audit plan for Detailed Energy Study (DES)
- ✓ Thorough proposal evaluation
- ✓ Thorough delivery order
- ✓ Thorough competition
- ✓ Joint contractor evaluation



# A Successful Process – Quality

- ✓ Performance Assurance Plan IAW DOE guidelines
- ✓ Commissioning Agent
- ✓ Quality Assurance Evaluator – ASQ CQI
- ✓ Measurement and Verification - 1 year
- ✓ Preventative Maintenance – 1 to 3 years
- ✓ Thorough design/submittal review
- ✓ Detailed project schedule – Minimizes impact to cost/missions
- ✓ Designer approved changes
- ✓ Designer construction oversight / inspection



# A Successful Process – Relationships

- ✓ Project Liaison
- ✓ On-site construction project manager
- ✓ Weekly progress/update meetings
- ✓ Coordination w/Base Planning and Engineering
- ✓ Coordination w/Base O & M



# A Successful Process – Benefits

- ✓ Extension for engineering support
- ✓ Option to pay off early
- ✓ Low interest financing
- ✓ Demand reduction – for both parties
- ✓ Helps stretch appropriated funds



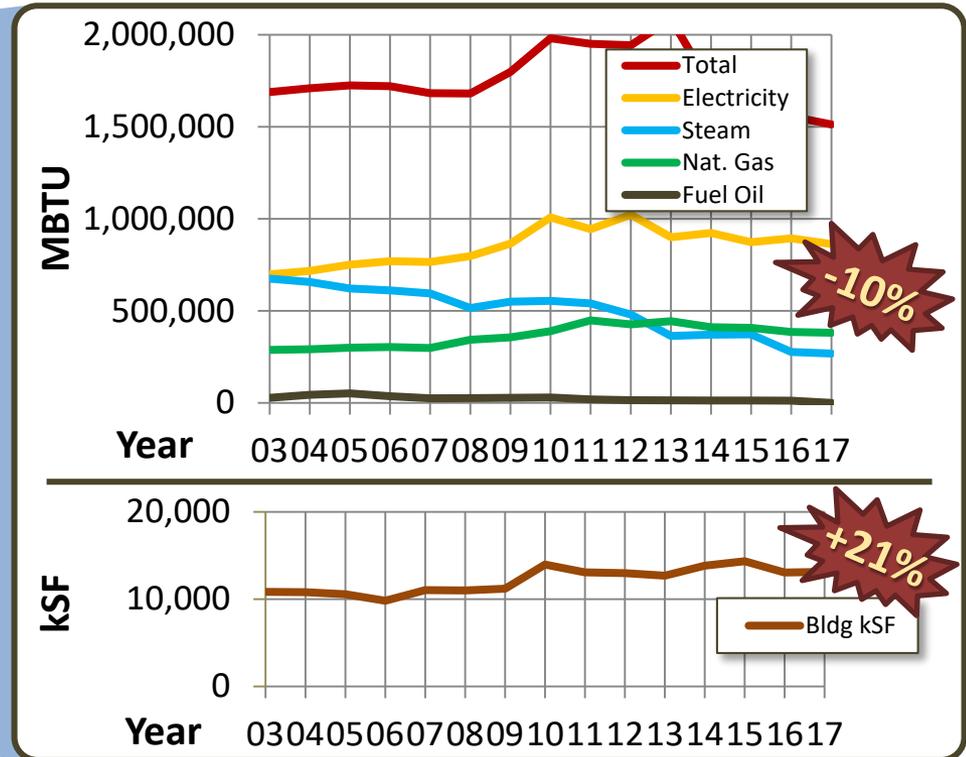
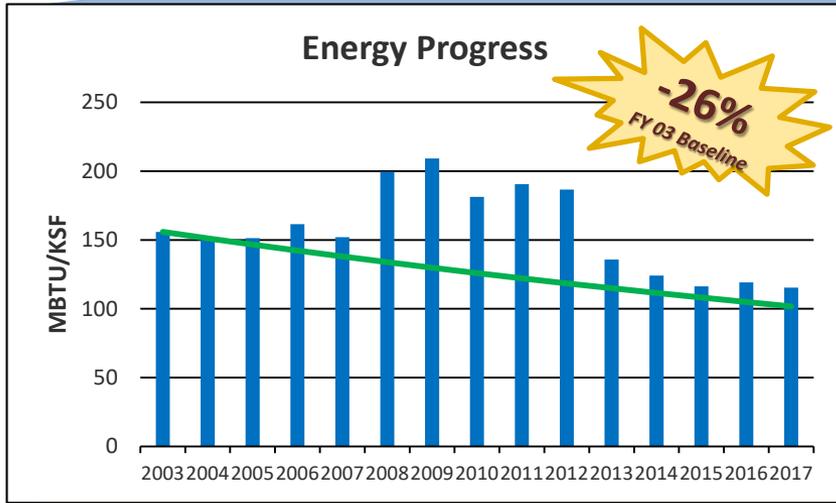
- ✓ Capital improvements
- ✓ ECM bundling
- ✓ Payment is line item on the utility bill
- ✓ Supports local economy/job creation
- ✓ Helps meet mandates

# A Successful Process – Tips to Avoid Pitfalls

- ✓ Insure Appropriate Approval Thresholds
- ✓ Education on the UESC process => Buy-in
  - Leadership
  - Resource Management
  - Contract Personnel
  - O & M Personnel => Performance Assurance
    - Warranty
    - Preventative Maintenance
- ✓ Same engineer for audit and design => Consistency
- ✓ Communicate, communicate, communicate!



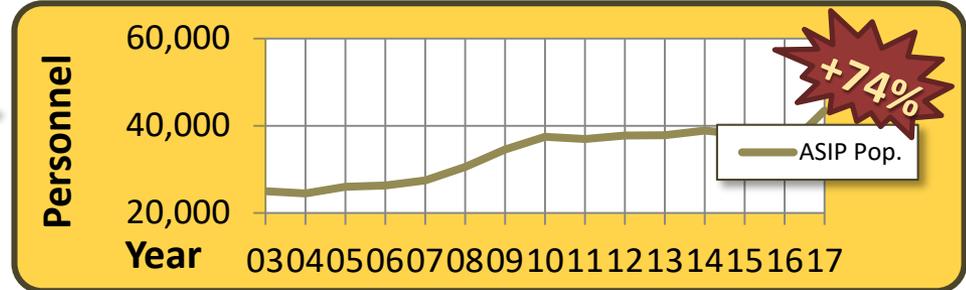
# A Successful Process – Results



## Factors Beyond the Formula



- Installation Population
- Mission Requirements
- Facility & System Efficiencies



# A Successful Process – The Team

## TVA

Gary Harris, Vice President, Industrial Marketing & Services  
Mary Jane Owens, Manager, Industrial Accounts  
Daryl Williams, Manager, Industrial Services  
Brent Powell, Sr. Program Manager, Federal Energy Services Program  
Peyton Butler, Attorney, Office of General Counsel  
Kaye Murphey, Business Support Representative  
Ashley Thrasher, Contracts Manager, Supply Chain  
Tim Campbell, Program Manager, Industrial Services  
Andrew Harris, Program Manager, Power Customer Contracts  
Rick Penter, Project Manager  
Ron Westmoreland, Project Manager  
Randy Summers, Project Manager

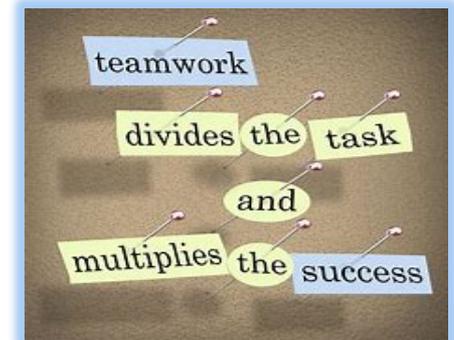
## RSA

Joe Davis, Director, Directorate of Public Works  
Craig Northridge, Chief, Master Planning Division  
Mary Dotson, Chief, Military Construction Branch, MP  
Mark Smith, Energy Manager, MP  
Patrick Holmes, Energy Manager, MP  
Tim Smith, Base Operations  
Pete Green, Base Operations  
Beverly Love, Contract Officer, Army Contracting Command  
Portia Sampson, Contract Specialist, ACC  
Genevia Fontenot, Attorney Advisor



## Contract Support

Bruce Fisackerly, Advanced Energy Consultants, Inc.  
Robert Staples, Johnson Contractors, Inc.  
Lee Palmer, Allen & Hoshall, Inc.  
Richard Crowe, REA, Inc.  
Donnie Allen, General Manager, CCI Group  
Jeff Thrower, QAE, CCI Group  
Mark Hardiman, System Admin, CCI Group  
Merlon Largen, Project Liaison, CCI Group  
Chris Hester, Wolf Creek, Base Maintenance



# Questions?