



Federal Research Center at White Oak

A Federal Case Study

August 7, 2007



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Presentation Outline

- The Need
- White Oak Project Overview
- ESPC/New Construction Concepts
- White Oak Case Study
- Program Challenges
- Program Benefits



The Need

- Capital Budget Challenges

- Limited Funding
- Lengthy Approval Process
- Functional Scope Creep
- Energy Item Vulnerability

*Congressional
Appropriations*



- Enhance energy performance of newly constructed buildings



Project Location

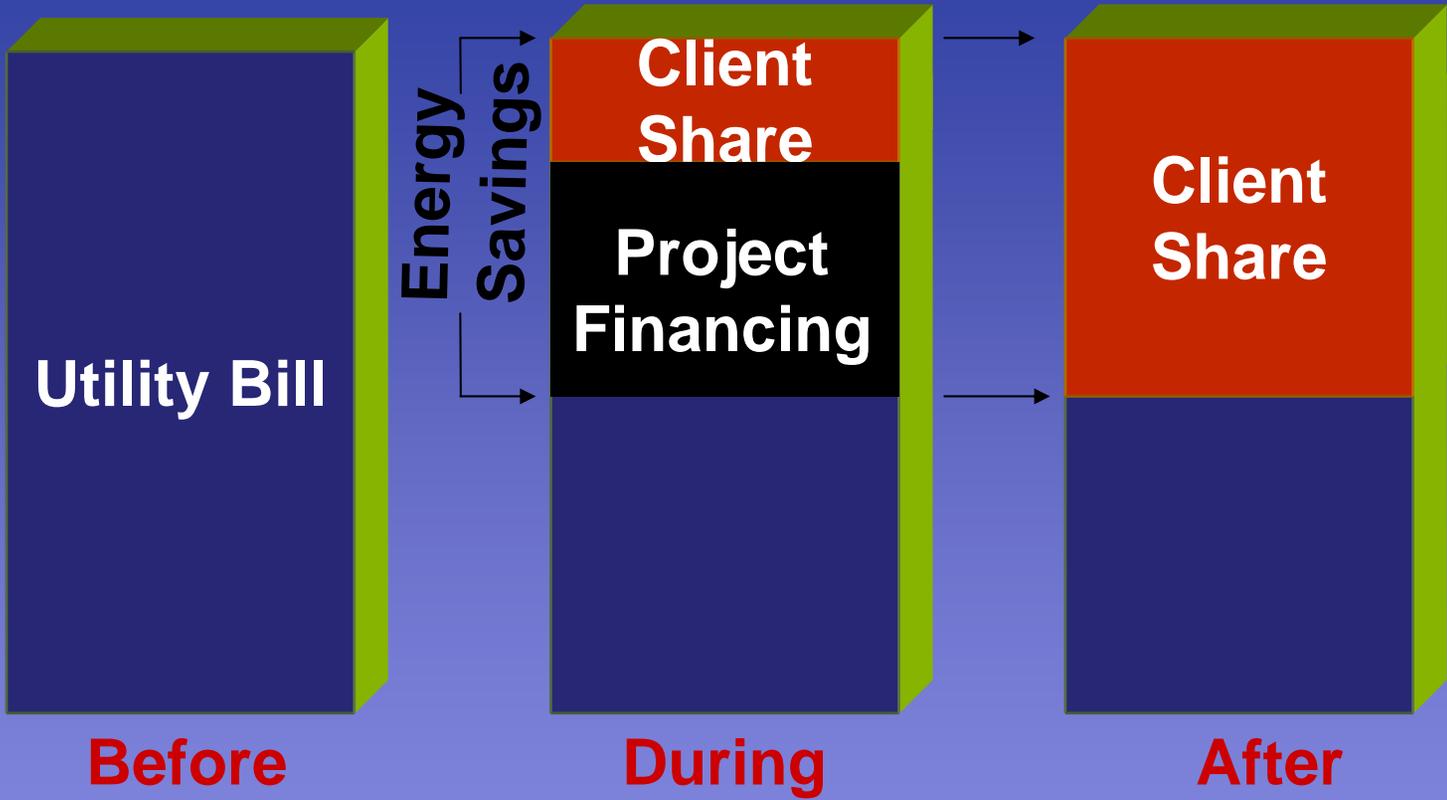


Silver Spring, MD





Energy Performance Contracting



Savings achieved via introduction of various Energy Conservation Measures (ECMs)





Savings Identification

- Model baseline condition
- Value engineer design from energy standpoint
- Model energy efficient design

Energy \$base – Energy \$eff. = Level of Alternative Financing Available



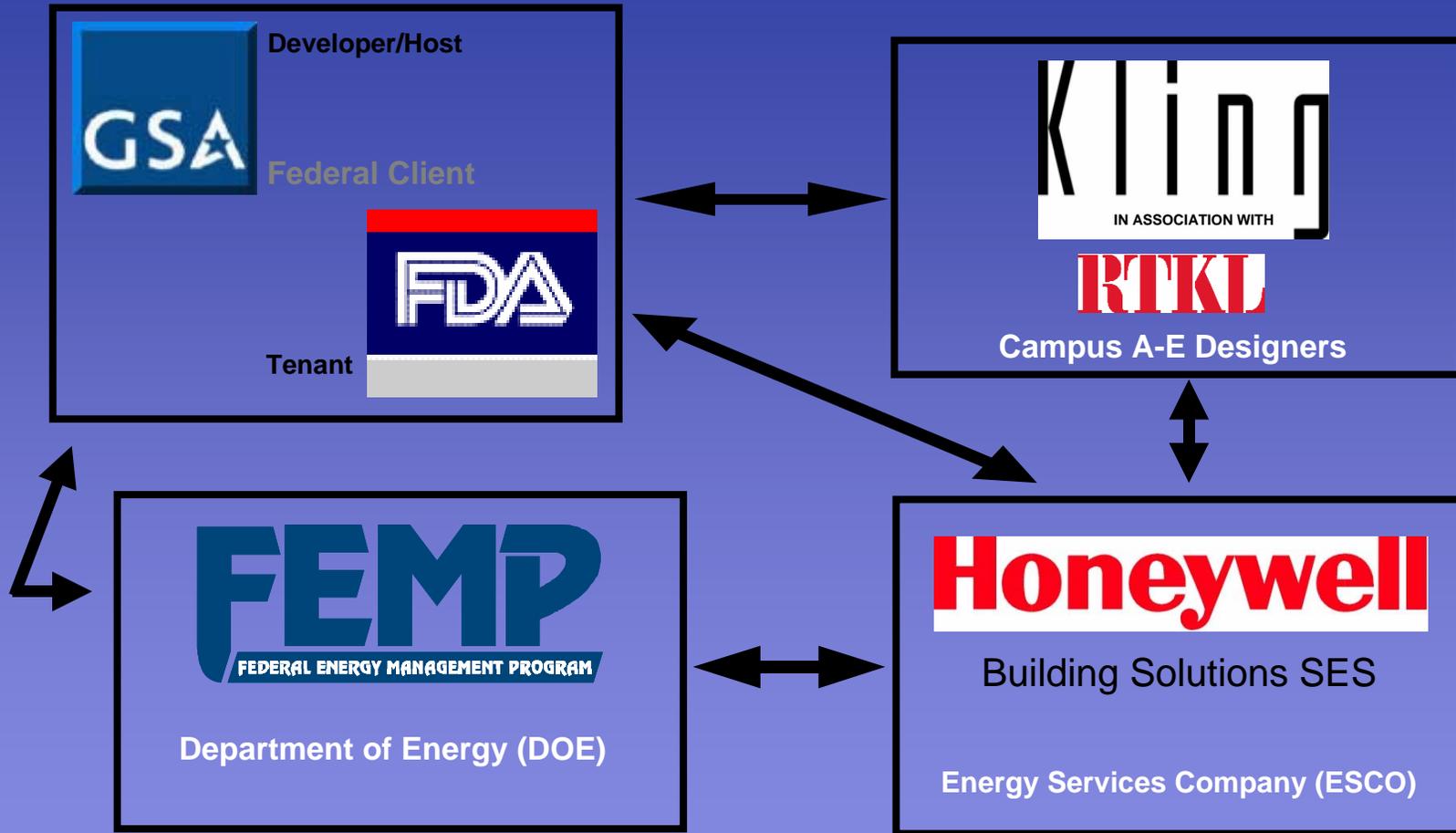
Baseline Development

- Current design for new building
- ASHRAE 90.1 standards
- Energy performance of current location
- Typical, recent experience of GSA
- Combination of above

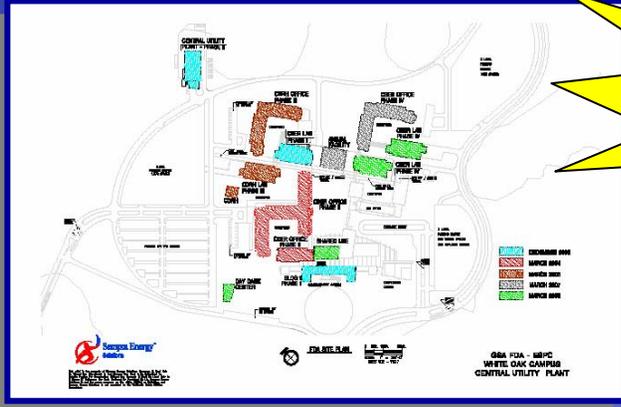
Whatever is agreeable; needs to withstand audit!



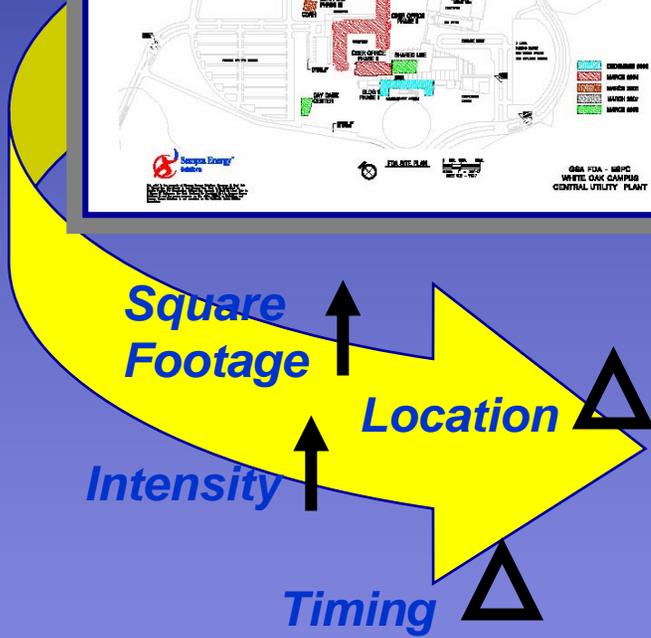
Partnership



Site Development



Dynamic Program!



FOOD AND DRUG ADMINISTRATION CONSULTATION
WHITE OAK, MD
WHITE OAK DEVELOPMENT PLAN

GENERAL SERVICES ADMINISTRATION
MAY 2003

Kling Stutman



Energy Conservation Measures

**Central Plant
Improvements
(CHP)
41%**

**Operations &
Maintenance
41%**

**Photovoltaics
.1%**

ECMs in Campus Buildings

- Lighting & glazing upgrades
- Air handling unit redesign
- VFDs on pumps
- Demand controlled ventilation
- Night setbacks

17%

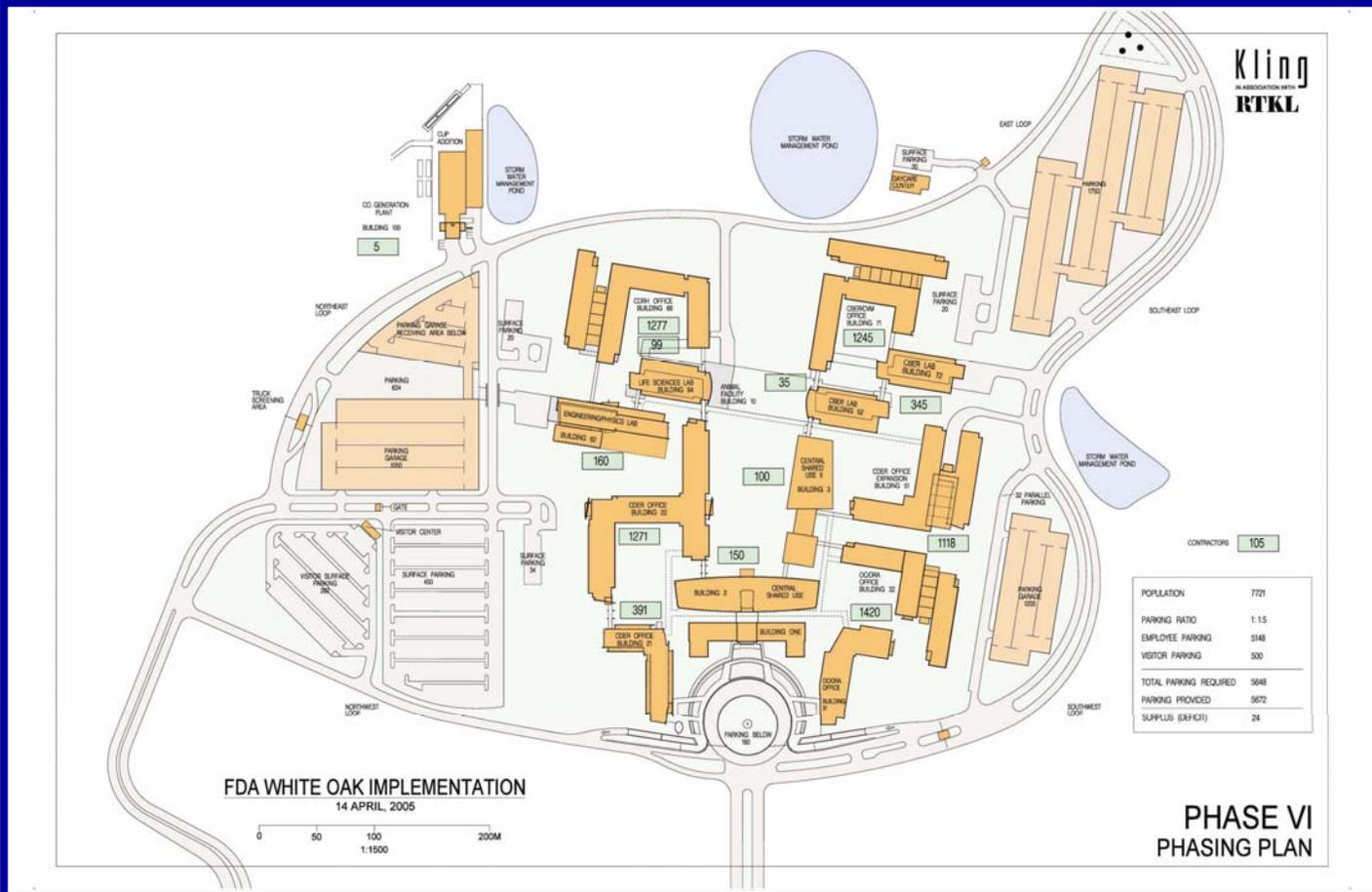
*“%” reflects
approximate savings
percentage
contribution of ECM
type to original ESPC
project*



Development Schedule

PHASE	BUILDING NAME/GROUP	GROSS SQ FT	OCCUPANCY DATE
1	CDER LAB	129,000	Oct-2003
2	CDER OFFICE	554,000	Jun-2005
3	SHARED USE (Phase 1)	122,000	Sep-2006
3	CDRH LAB	140,000	Mar-2007
3	CDER OFFICE EXPANSION	330,000	Mar-2008
3	LOGISTICS BLDG.	141,000	Jun-2009
3	SHARED USE (Phase 2)	80,000	Oct-2009
4	CDRH OFFICE	393,000	Jun-2009
4	OC & ORA	400,000	Nov-2009
4	BUILDING ONE RENOVATION	90,000	Dec-2009
5	DAY CARE	21,000	Dec-2010
5	CBER LABS	303,000	Jun-2011
5	CBER LAB EXPANSION (BT)	75,000	Jun-2011
5	CBER OFFICE	133,000	Oct-2011
5	CBER OFFICE EXPANSION (BT)	105,000	Oct-2011
6	CVM OFFICE	123,000	Oct-2011
BUILD-OUT		3,139,000	

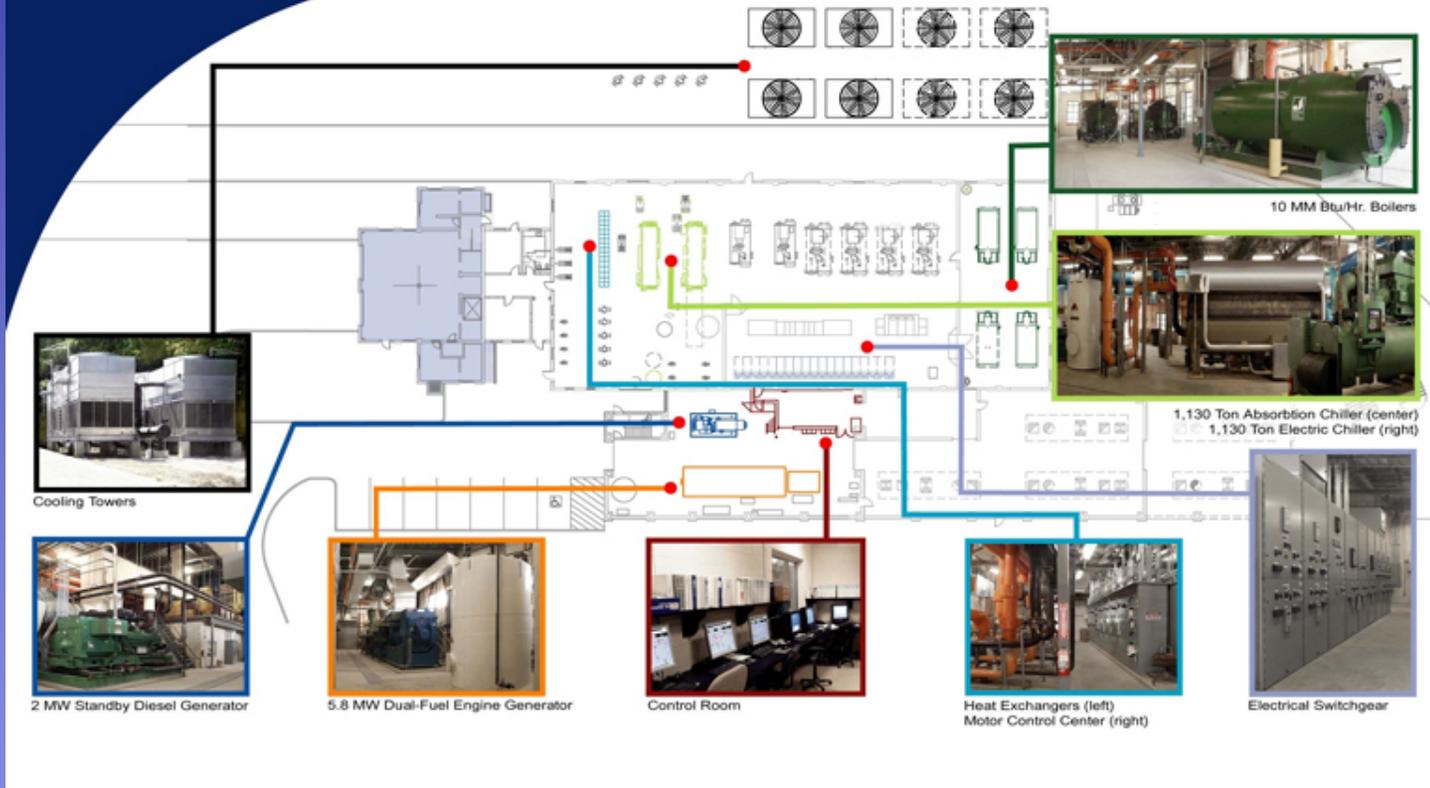
FDA Campus: Full Build-out





Central Utility Plant

FRC Federal Research Center White Oak EQUIPMENT LAYOUT

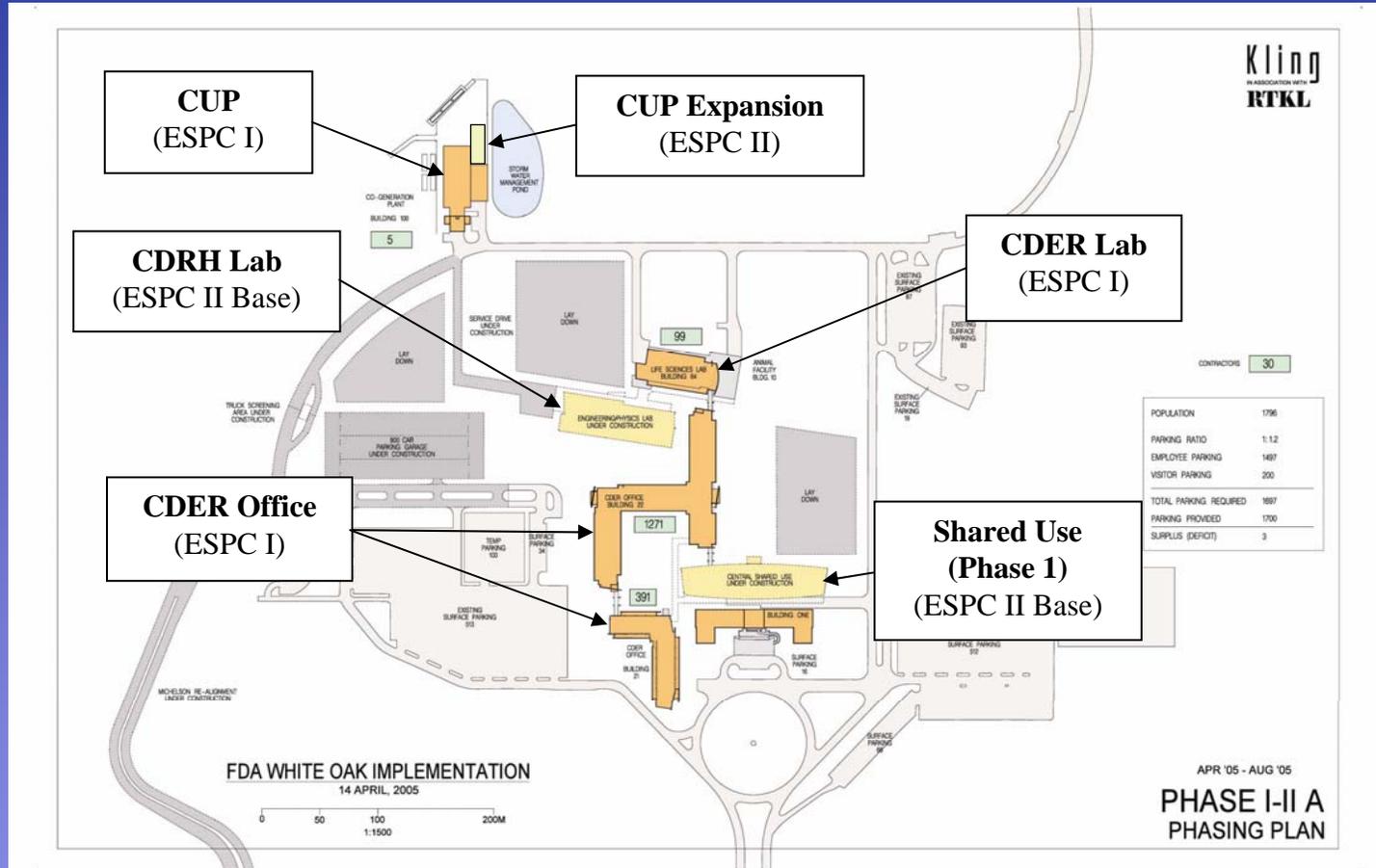




Total Savings Make-Up

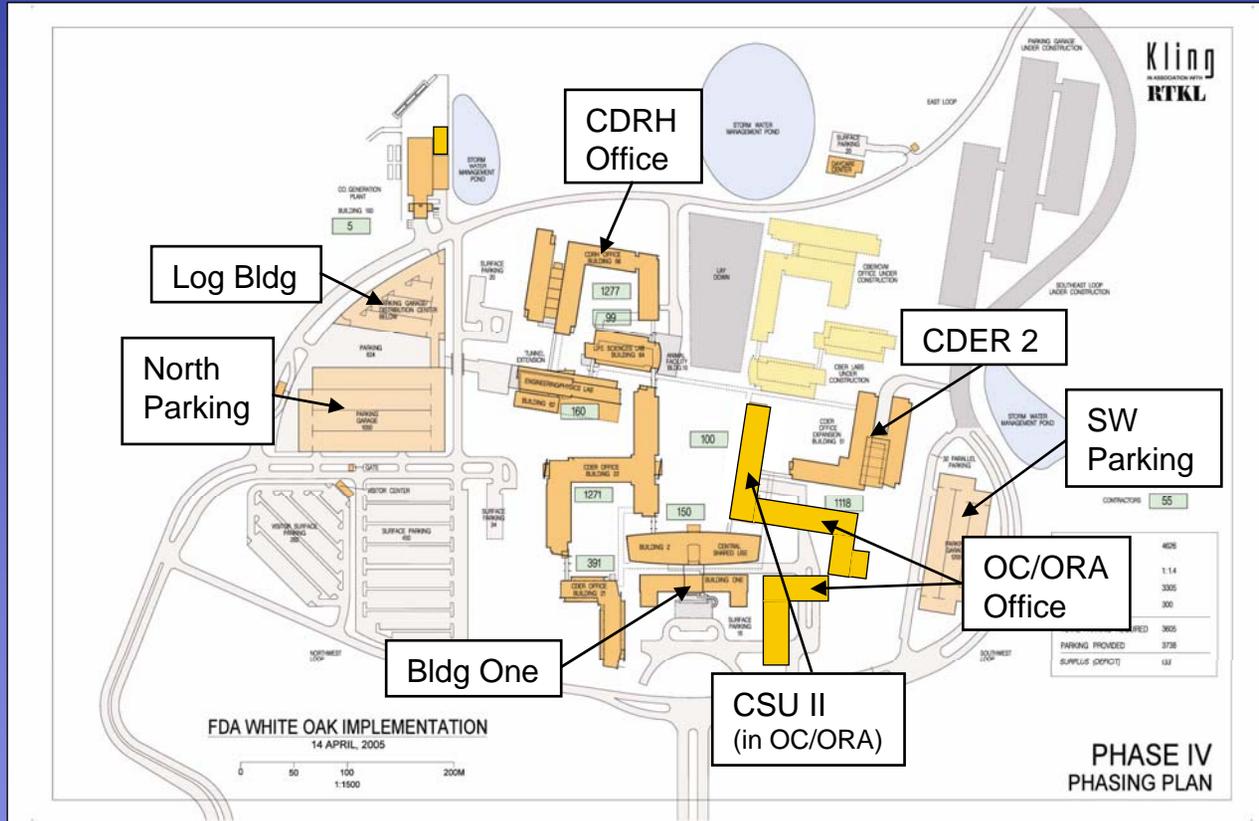
- Annual Savings
 - Energy savings (CUP improvements, building ECMs, photovoltaic system)
- One-Time Ancillary Savings
 - Avoided demolition costs
 - Avoided construction costs
 - Avoided temporary heating and cooling costs

Incremental Expansion (ESPC II Base)





Incremental Expansion (ESPC II All Options)





White Oak ESPC II Features

- ESPC II Base Delivery
 - Building Expansion for Generators
 - 1 - 4.5 MW Natural Gas Combustion Turbine
 - 1 - 1980-ton Electric Centrifugal Chiller
 - Photovoltaic Array Expansion
 - Ancillary Plant Equipment and Distribution System
- ESPC II “All Options” Modification
 - 2 - 4.5 MW Natural Gas Combustion Turbines
 - 2 - 1980-ton Electric Centrifugal Chillers
 - 1 - 1130-ton Absorption Chiller
 - Ancillary Plant Equipment and Distribution System



ESPC II Base Work





Energy Security

- 5.8 MW Engine-Generator
 - Dual Fuel/Primary Power Source during early stages of campus development
- Underground Electrical Distribution System
- Interconnection with Electric Grid
 - Two separate feeders into substation
- 2 MW Standby Diesel Generator
- 3 - 4.5 MW Turbine-Generators



Optimization

Initial Approach

Near-continuous operation of engine-generator

Current Strategy

Real-time “make or buy” decision based upon cost of natural gas, electric tariff, campus loads vs. engine & cogen efficiencies, etc.

Bottom Line

Honeywell Building Solutions SES, GSA and tenants work in partnership to operate the facility in the best interest of the Government.



ESPC Project Challenges

- Programmatic Changes
- Commodity Pricing
- Grid Interconnection
- Load Shedding Strategy
- GSA Pricing Guide Changes
- Metering & Reporting Requirements
- Optimization Automation





ESPC Project Benefits

- Reduced first-cost to Government
- Reduced recurring costs to Government
- More energy efficient campus
- Fixed accountability for systems performance
- *Enhanced Energy Security*



A Work In Progress...





Would you like to know more about this session?

- Contact:
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- Don't forget to fill out and drop off your session evaluations.



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New Orleans
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