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ENSURING LONG-TERM ENERGY SAVINGS FOR A TEXAS STATE AGENCY PERFORMANCE CONTRACTING INITIATIVE

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Background

- 10 mental health & 13 developmental disability facilities with 24 hour-7 days a week care:
 - Over 1,300 buildings with 10 million ft²
 - Current replacement value ≈ \$1.6 billion
- Special needs of clients
 - Specially designed to serve those with mental illness and developmental disabilities
 - One maximum security unit. One facility to address needs of youth
 - Aging population
- Buildings built
 - 25% constructed prior to 1951
 - 50% constructed prior to 1976

Background

- Over \$15 million in energy projects over 9 years through SECO's LoanSTAR program
 - Included lighting, air-conditioning/heating, motors, energy management control systems
- Consulting services provided
 - Owner's representative
 - Commissioning work
 - Technical expertise

Challenges

- Funding
 - 12% statewide budget cut
 - Efficiency mandates
 - Funding for repair/replacement reduced from \$72 million to \$35 million
- Liabilities
 - Deferred repairs/replacement: >\$250 million
- Organizational
 - Geographic – HHSC covers Texas
 - O&M Staffing
 - Utilities - regulated/unregulated,
 - 7 electricity,
 - 7 natural gas

Solution

- Energy Savings Performance Contract (ESPC)
 - 10 year straight line payback
 - Includes Measurement & Verification
- Procurement Process
 - Request for Qualifications
 - Detailed selection process
- Contract Development
 - Detailed utility audit contract
 - Implementation contract
 - Each phase carefully reviewed

The Plan

- Contractor Selection
 - Initial selection
 - Short list
- Preliminary Utility Audits
 - Site visits
 - Collect utility data
 - Collect deferred repair/replacement data
 - Over 10,000 repair/replacement needs have been evaluated
 - Three categories of deficiencies
- Develop Strategic Plan
 - Divide 24 sites into seven phases
 - Identify agency-wide renovations
 - Identify agency-wide standards

The Plan

- Detailed Audit
 - Texas A&M's Energy Systems Lab provides expertise
- Financing
 - Financing by the Texas Public Finance Authority
 - Additional funding from the Texas LoanSTAR Program
- Approvals
 - Reviewed by 3rd party engineer
 - Approved by Texas State Energy Conservation Office
- Implementation

Implementation

	# of sites	Completion	Cost (\$M)	Savings (\$M/yr)
Phase I	5	Construction -100%	\$13.9	\$1.5
Phase II	5	Construction - 100%	\$11.5	\$1.2
Phase III	5	Construction - 100%	\$13.1	\$1.4
Phase IV	3	Construction - 100%	\$11.4	\$1.2
Phase V	3	Construction - 100%	\$12.1	\$1.3
Phase VI	4	Construction -100%	\$5.2	\$0.6
Phase VII	3	Construction - 100%	\$7.4	\$0.8

Detailed M&V

- Measurement and Verification for Each Phase
 - Option A used for whole campus water project
 - Option B used for continuous batch washers
 - Option C used for whole campus metering
- M&V costs Averaging 5%
 - 10 to 30% of the savings decrease over time
 - 15 year guarantee period
 - Without M&V, large amount of savings may not materialize

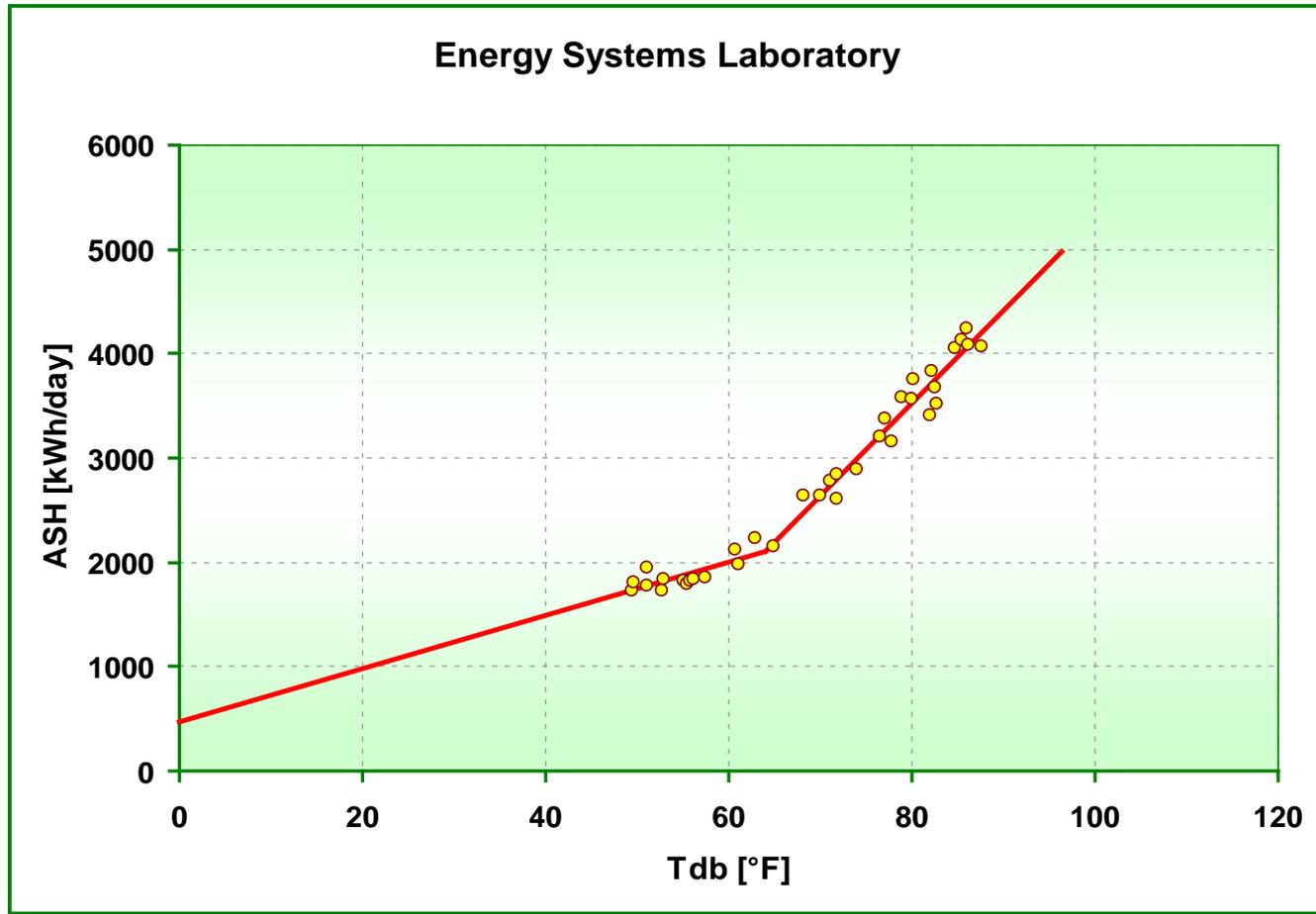
Detailed M&V

- Operations Assistance Includes
 - Regular on-site assistance
 - Periodic training
 - Operations and Maintenance consultation (24-7)
 - O&M costs under 5%
- Agency and ESCO Developed M&V
 - On-going communication
 - Worked together to achieve best possible result
 - Independently verified baseline models
 - Developed metrics to perform spot checks

Model Comparisons

- Performance Contractor Model
 - Degree-day method incorporating variable-based degree-day
- Comparison Model
 - ASHRAE's Inverse Model Toolkit
 - Change point regression model

4 Parameter Change Point



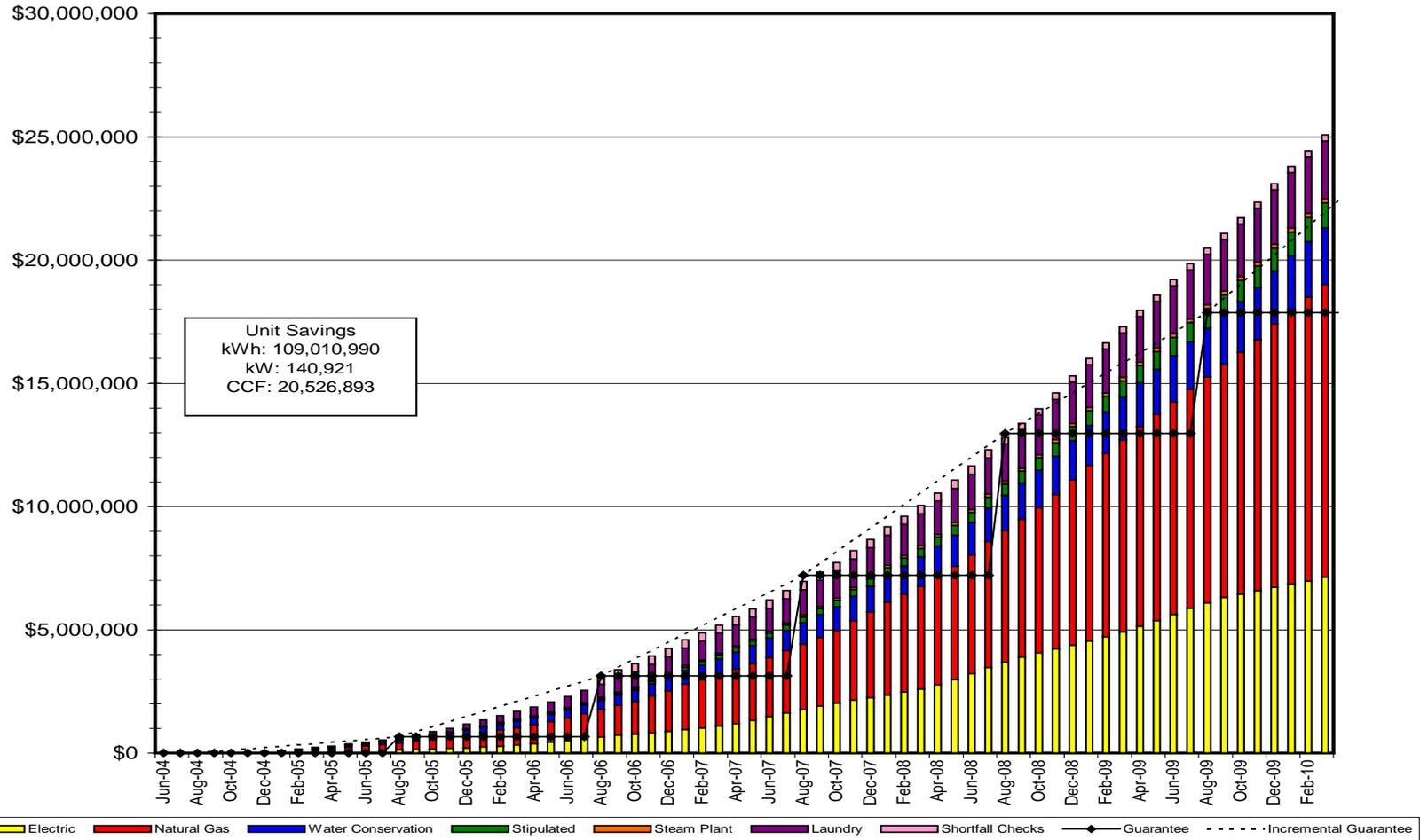
1st Year Model Summary

	Vendor Calculations	Agency Calculations	
	Savings	Savings	
Jan	12,212	10,628	kWh/mon
Feb	14,100	14,394	kWh/mon
Mar	14,426	15,250	kWh/mon
Apr	14,174	15,748	kWh/mon
May	20,989	22,045	kWh/mon
Jun	29,016	28,789	kWh/mon
Jul	29,174	28,744	kWh/mon
Aug	28,248	27,746	kWh/mon
Sep	35,142	34,813	kWh/mon
Oct	17,868	18,169	kWh/mon
Nov	19,110	13,600	kWh/mon
Dec	15,634	15,730	kWh/mon
Total	250,093	245,656	kWh/yr
% Deviation		1.8%	

2nd Year Model Summary

	Vendor Calculations	Agency Calculations	
	Savings	Savings	
Jan	9,764	13,333	kWh/mon
Feb	14,327	14,636	kWh/mon
Mar	25,640	23,356	kWh/mon
Apr	25,105	26,230	kWh/mon
May	24,739	25,513	kWh/mon
Jun	38,615	38,554	kWh/mon
Jul	42,503	41,845	kWh/mon
Aug	36,932	36,038	kWh/mon
Sep	29,095	29,890	kWh/mon
Oct	12,608	13,396	kWh/mon
Nov	12,127	9,443	kWh/mon
Dec	11,519	10,551	kWh/mon
Total	282,974	282,785	kWh/yr
% Deviation		0.1%	

Cumulative Savings



All Phases: Savings To-Date

Phase	Cumulative Measured Savings	Cumulative Guarantee	Savings Began
1	\$6.95 million	\$6.14 million	June-04
2	\$4.17 million	\$4.12 million	August-05
3	\$4.42 million	\$4.04 million	April-06
4	\$2.80 million	\$2.32 million	November-06
5	\$2.72 million	\$1.97 million	June-07
6	\$1.99 million	\$2.00 million	July-05
7	\$1.78 million	\$1.35 million	June-07
Total	\$24.83 million	\$21.94 million	

Summary

- HHSC is a large state agency with significant challenges to maintain facilities
- HHSC chose ESPC as the solution to rebuild the facility infrastructure and achieve energy efficiency
- M&V Plan requires measured performance and independent verification
- This structure provides savings and measurement based assurance that the savings will continue