

US EPA ARCHIVE DOCUMENT

Alfred Merritt Smith Water Treatment Facility Conservation Project



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EPA Presentation
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Outline

- **Overview of ARRA Funding** (Gary Wood)
 - EPA schedule to secure funding
 - State statutory requirements
 - Expediting efforts undertaken
- **Overview of the Performance Contract** (Phil Cirone)
 - Typical performance contract
 - Scope provided at the water treatment facility

ARRA Funding Overview

- Notification of Allocation from the State of Nevada Division of Environmental Protection
 - Notification that the Water Treatment Facility (WTF) will receive an allocation from the Drinking Water State Revolving Loan Fund – May 2009
 - Amount to be allocated – \$2 million
 - Proceeds must be used for renewable energy facility or conservation

Implementation Requirements

Nevada Division of Environmental Protection (NDEP)

■ ARRA Timeline Highlights

- Notification of awards in May 2009
- Fall of 2009, board for financing water projects will meet to review awardees' progress
 - NDEP agreement with awardees terminated if substantial progress is not demonstrated
- February 17, 2010, contract must be in place with provider or funding reverts

■ ARRA Requirements

- Iron, steel and manufactured goods are produced in the U.S.
- Davis–Bacon Act wage rules apply

Statutory Requirements

- NRS 332.360 – Performance Contracting Requirements for Local Governments
- Requirements
 - Secure a third-party consultant through an RFQ
 - With the consultant, prepare and issue an RFQ to a minimum of three Qualified Service Companies [QSC] (Performance Contractors)
 - QSCs must perform a preliminary audit on the facilities, develop measures and preliminary utility and operational savings
 - Submit a proposal and make a related presentation to the local government
 - The local government must make an *objective* selection of a QSC
 - Once on board, the QSC must perform a comprehensive financial grade audit of the facilities
 - Using the consultant, the local government will review the findings of the audit and select those measures they wish to have implemented, taking into account the funding requirements for those measures
 - Typically, the project will be financed with the savings from the conservation measures, paying the maintenance of the loan
 - The payback period cannot be more than 15 years

Timeline Considering the Statutory Requirements

- RFQ process for third-party consultant – 3 Months
 - Develop qualification criteria
 - Bid and make selection
 - Obtain board approval
- RFQ Process for QSC – 4 Months
 - Identify a minimum of three QSCs for the RFQ process
 - With the consultant, develop an objective/subjective criteria for the RFQ including base conservation measures
 - Period for job walk and preliminary audit development
 - Bid and make selection
- Financial Grade Audit and Contract Conformance with QSC– 6 months
 - QSC performs Financial Grade Audit of facilities
 - With consultant’s assistance, make a selection of the specific conservation measures, ensuring they fit within the project budget
 - Conform the contract with specific scope and cost
 - Obtain board approval

Expediting Efforts Undertaken

■ Funding Time Constraint

- ARRA funding criteria – May award to February contract date – 9 months
- Statutory requirements – 13 months

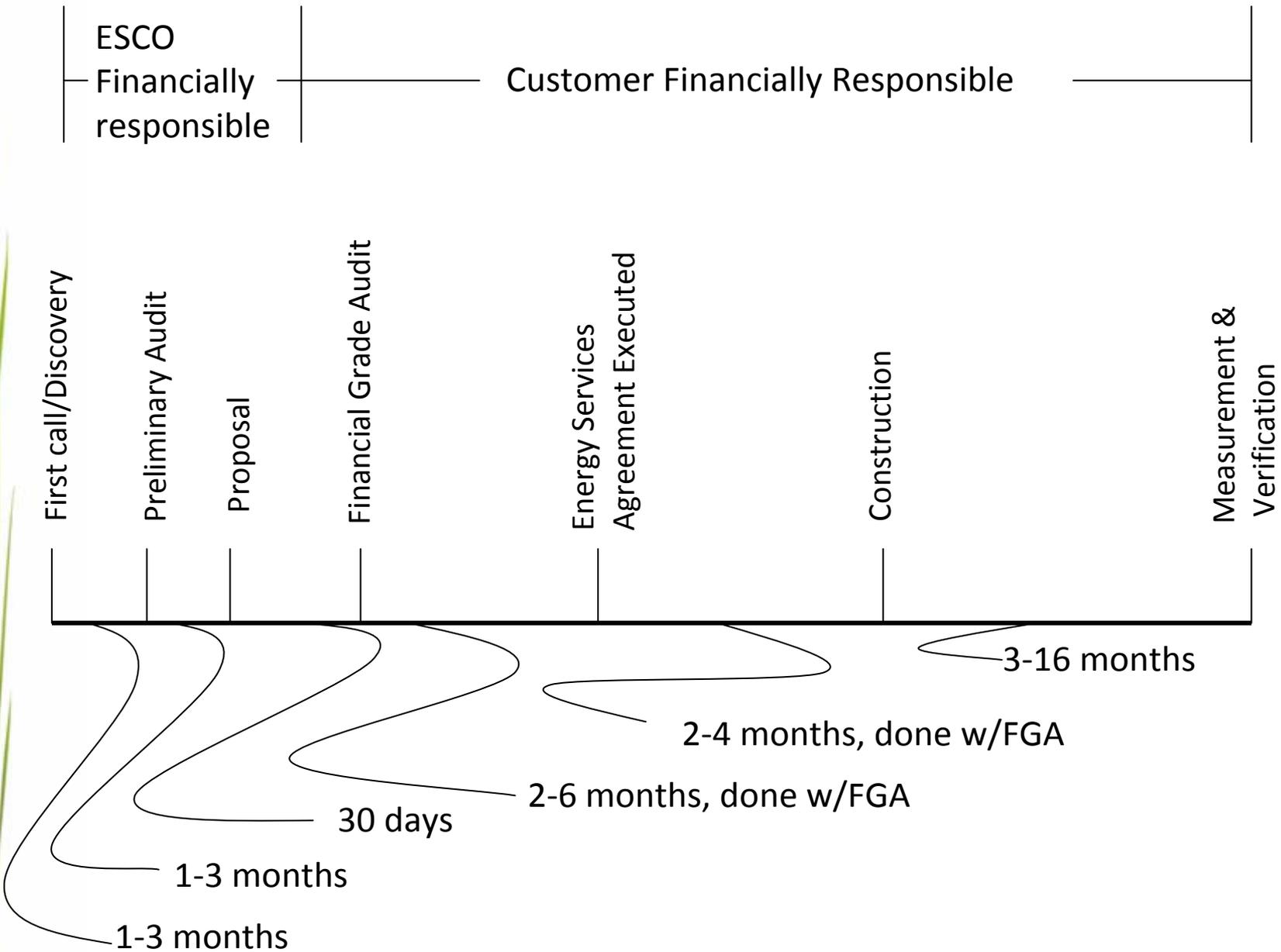
■ Streamlined Process

- City of Henderson is currently performing a Performance Contract
- Utilizing the Joinder of contracts process (NRS. 332.195)
- Able to cut out the RFQ process for the third-party consultant and the preliminary audit phase of the QSC process – saved 7 months

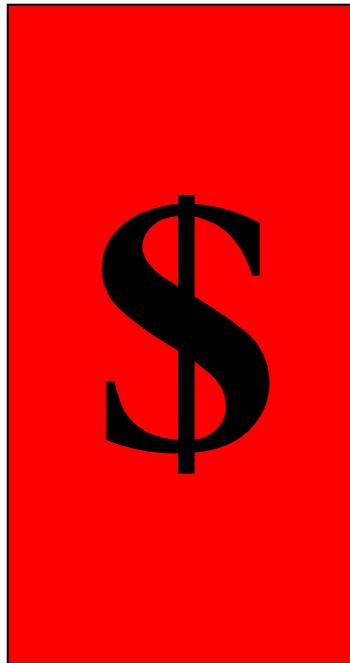
Achieving Comprehensive Energy Services through Performance Contracting

Green • Clean • Sustainable

Energy Efficiency	Energy Supply Management	Energy Infrastructure	Renewable Energy
Performance Contracting	Commodity Procurement	Asset Monetization	Landfill Gas
Demand-side Management	Rate Analysis & Negotiation	Plant Rehabilitation	Solar - PV and Thermal
Demand Response	Price Risk Mitigation	Facilities Management	Wind
Turnkey Design/Build	Billing Administration	On-site Cogeneration	Biomass
Facility Renewal	Market & Regulatory Analysis	Distributed Generation	Hydroelectric
LEED Construction			



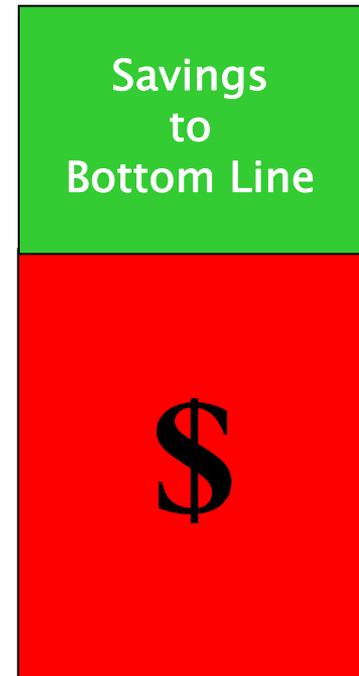
Utility Budget



Current Utility
Cost



Costs during
Performance
Contract
period



Costs after
Performance
Contract

Performance Contracting: Creating Value for Public Agency Facilities

Innovative Project Options

- ▶ Power/resource procurement
- ▶ Gray Water Use
- ▶ Rain Water Harvesting
- ▶ LEED/Energy Star
- ▶ Green Roofs
- ▶ PV System



Facility Renewal

- ▶ Reduced demand for energy, water
- ▶ State-of-the-art equipment and upgrades
- ▶ Improved facilities, longer equipment life
- ▶ Improved productivity
- ▶ Reduced emissions and carbon footprint
- ▶ Budget Neutral
- ▶ Preserved debt capacity
- ▶ Guaranteed Cost savings
- ▶ Avoided replacement costs
- ▶ Lower repair and O&M costs
- ▶ Lower supply cost/manage price risk
- ▶ Reduced waste
- ▶ Reduced disposal costs
- ▶ Efficient use of fuel, water
- ▶ Heat recovery/reuse
- ▶ Waste recovery (reusable and/or resalable waste)

Project Objectives

- Modernize and Revitalize facilities
- Increase the asset value of the Agency's holdings
- Lower the total cost of ownership by renewing infrastructure and reducing operating expenses
- Improve operational efficiency of building systems
- Address critical needs
- Transfer project operational and financial risk with written guarantees
- Reduce the Agency's carbon footprint

Typical Recommended Solutions

- HVAC upgrades
- HVAC and lighting control upgrades
- Cooling plant improvements
- Heating plant improvements
- Automation system upgrades
- Utility sub-metering
- Water and wastewater treatment plants improvements
- Water distribution and sewer collection repairs
- Renewable energy projects
- Carbon footprint calculation and reduction
- Sustainability plan
- Community outreach programs

Turnkey Project Development

- ✦ Turnkey development agreement
- ✦ Fixed cost for fully implemented project
- ✦ Fixed timeline for fully implemented project
- ✦ ESCO executes installation contracts
- ✦ ESCO acts as general contractor or project manager
- ✦ Single source contract for the Agency
- ✦ ESCO assumes implementation cost risk
- ✦ ESCO provides implementation financing
- ✦ ESCO measures performance and supports project operation and maintenance

Project Development Approach

- Develop accurate and detailed baseline modeling
- Develop project scope
- Evaluate all major equipment and systems
- Evaluate quality contractors and suppliers
- Use locally owned businesses and contractors
- Consider planned infrastructure investments, future space adjustments, and occupant comfort
- Evaluate critical operational needs in conjunction with energy savings opportunities
- Work closely with Agency throughout the project process

Project Management Approach

- Each phase managed by a designated team leader
- Key personnel stay engaged with the project from start to finish
- Close coordination and communication maintained throughout the entire project
- Dedicated on-site project management presence

Project Commissioning and Training

- Commissioning process ensures systems are optimally designed and installed, functionally tested, and capable of being operated and maintained as intended
- When project installations are completed, ESCO oversees the installing contractor to commission/test the systems at startup
- This work should always be done in conjunction with a representative of the Agency
- During this phase, ESCO will coordinate with the Agency to perform training sessions for the facility staff with a focus on O&M

Measurement and Verification Approach

- ESCO will implement agreed-upon M&V protocol that meets Agency's objectives
- Annual inspections of included property to confirm practices are maintained
- Annual report detailing savings
- This process ensures proposed savings are achieved and continuous

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- Agreed to Joinder on to our current City of Henderson Performance Contract– July 2009
 - All Terms and Conditions including pricing mark-ups in effect
 - The only difference is the Scope of Services will vary based on the WTF facility
- Commenced Financial Grade Audit in August of 2009

Energy Conservation Measures

STATUS	ECM NO.	ECM
Implemented	1	ECM 1 - EMS HVAC Scheduling and Control
Implemented	2A	ECM 2A - Chiller Replacement (First Chiller)
	2B	ECM 2B - Chiller Replacement (Second Chiller)
	3	ECM 3 - Free Cooling (water side)
	4	ECM 4 - High Efficiency Lighting
	5	ECM 5 - Lighting Controls
	6	ECM 6 - Energy Efficient Transformers
Implemented	7A	ECM 7A - VSDs on Evaporative Cooler Fans (Partial)
	7B	ECM 7B - VSDs on Evaporative Cooler Fans (Partial)
	7C	ECM 7C - VSDs on Evaporative Cooler Fans (Partial)
	8	ECM 8 - Evaporative Cooler Water-Side Upgrades (No precooling coils)
	9	ECM 9 - High Efficiency Plumbing Fixtures
	10	ECM 10 - Evaporative Cooler Water-Side Upgrades (With precooling coils)

Measures Selected

- ARRA funds Committed to Project
 - Original Allocation– \$2 Million
 - Subsequent Allocation– \$219,895
- Project Scope Selected
 - HVAC EMS System
 - Efficient Chiller
 - VSDs on Evaporative Cooler Fans

Financial Performance

ECM Name	On-peak kWh	Off-peak kWh	Water (kgal)	Energy Cost Savings	O&M Savings	Total Project Savings	Total Project Costs	SPB
ECM-1: Energy Management System	1,063,885	2,178,043	5,101	\$254,875	\$0	\$254,875	\$1,186,325	4.7
ECM-7A & 7B: VSDs on Evaporative Cooler Fans	42,090	192,866	408	\$18,972	\$0	\$18,972	\$528,635	27.9
ECM-2A: Chiller Replacement	55,196	9,819	0	\$2,896	\$40,544	\$43,440	\$445,983	10.3
Total	1,161,171	2,380,728	5,509	\$276,743	\$40,544	\$317,287	\$2,160,943	6.8

Notes:

kWh = kilowatt-hours
 kgal = thousand gallons



Questions?