Alternate Project Delivery Experience at UOSA and PWCSA

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Outline

- Common Themes
  - Some alternate delivery methods used by UOSA & PWCSA
  - Why used
  - Benefits derived
  - Things that could have gone better
  - Major lessons learned
- UOSA alternatives - DBB w/Owner Preselection, DB under ESCO and Progressive DB under PPEA
- PWCSA’s CMAR alternative
Goal

- Share how innovative project delivery methods can:
  - get the products, equipment, technical & construction services desired;
  - from the vendors, suppliers, designers & constructors that you’re confident in;
  - Using qualification based selections with competency & quality standards.
UOSA’s Historical Game Changing Delivery Methods

* DBB w/ Owner selected equipment & services as part of the bidding documents (Project 27 - DCS)
* DBB w/ Owner furnished equipment & services under a separate competitively negotiated Sole Source Declaration (Contract 54 - DCS)
* DBB w/major equipment schedule and allowable substitutions for Owner’s selected price deductions (establishes a quality standard)
* DBB w/preselected package system via competitive RFP and assignment agreement (Contract RDS)
* DB under VA ESCO procurement (Contract ESCO)
* Progressive DB under a VA PPEA procurement (Contracts S/1 & H/1)
Today’s Short List Discussion of Selected UOSA Projects

- DBB w/preselected package system via competitive RFP and assignment agreement (Contract RDS)
- DB under VA ESCO procurement (Contract ESCO)
- Progressive DB under a VA PPEA procurement (Contracts S/1 and H/1)
Primary Benefits to UOSA: selection of major eq. vendor to control quality, flexibility in early determination of vendor’s scope of supply & features, early vendor involvement during design, Engineer has better understanding of what to design around.
DBB w/Owner Preselection

**Retain Designer**
- BOA or RFP Process for Engineering Services
  - Develop Basis of Design
  - Develop Equipment Preselection RFP

**RFP**
- Request for Vendor Proposals
  - Receive, Evaluate & Rank Proposals
  - Selection of Highest Ranked Offeror
  - Negotiate Scope of Supply, Terms & Conditions

**Board of Directors**
- BOD Approval/Authorization
  - Notice of Award
  - Contract Execution with Preselected Vendor

**Complete Design & Permitting**
- Major Vendor Involvement Throughout
  - 30% Design Documents
  - 60% Design Documents
  - 90% Design Documents
  - Permits
  - Develop Assignment Agreement
  - Bidding Documents

**Assignment Agreement & Construction Contract Execution**
- Shop Submittals
- Complete Construction
- Commissioning & Testing
- Training
- Startup Support
- Post Startup
- Warranty

**DBB Procurement**
- Normal VPPA Construction Procurement
DBB w/ Vendor Preselection Delivery Method

* Design initiated by Owner
* Designer helps craft Preselection RFP
* Vendor initially serves as agent of the Owner providing pre-construction services to Engineer & Owner
  - Design Scope and Constructability Review
  - Schedule Impacts and Cost Estimating
  - Identifies Subcontractors and sub-vendors for Scope of Supply
* Major package equipment & service delivery milestones are contracted with the preselected vendor early on
* Owner/Vendor contract assigned to construction contractor using an assignment agreement within the construction contract
* Vendor becomes an assigned subcontractor to the construction contractor
Things that could have gone better

- Received only two proposals as a result of the RFP
- One of the two proposals was non-responsive
- Lengthy preselection process
  - Prepare and issue the Request for Proposals,
  - select the rotary dryer system vendor,
  - negotiate the scope of supply and cost,
  - finalize the vendor’s contract language,
  - and develop the assignment agreement language.
DBB w/ Vendor Preselection
Lessons Learned

* Clear lines of defined responsibility in drawings and specifications covered by:
  * preselected equipment vendor’s sub-contract, or
  * by the General Contractor.

* Enforceable and clear language in the General Contractor’s contract that makes it the General Contractor’s responsibility to provide any item, component, system or subsystem, service or training required by the General Contractor’s contract but that is not specifically called for in the Vendor’s assigned sub-contract.
Contract RDS Financial Summary

Vendor’s contract with UOSA for RDS, September 2011 $ 7,400,190
Engineer’s Construction Estimate prior to bid, February 2012 $12,410,000
Constructor’s low bid, February 2012 $ 9,387,000
Final Construction Cost .......................................................... $ 9,470,958
Change Order Percentage .......................................................... + 0.89%
On-Time Project Completion with zero contract time extensions July, 2014
The Primary Benefits to UOSA were rapid “shovel ready” project for ARRA Grant, transfer of risk to the DB, Performance Guarantees, Engineering fee savings, Owner flexibility for equipment selections, open book cost accounting.
UOSA chose performance contracting as an alternative to conventional project delivery.
PERFORMANCE CONTRACTING

Design/Bid/Build

RFP
- Prelim Engineering Report
- Design 30 -> 60 -> 90 -> 100%
- Bid
- Construction
- Start Up

Contracts
- Multiple Trades
- Engineer
  (Final Project Price)

Energy Savings Performance Contracting

RFP
- Project Scope Development (30% Design)
- Design 60% -> 90%
- Construction
- Start Up

Contract - ESCO (Project Development)
Final Price
Contract - ESCO (Energy Performance Contract)
DB Under Virginia ESCO Delivery Method

- Owner initiates request for “back of envelope” proposals from list of Virginia Pre-approved ESCOs
- Owner selects best ESCO & contracts for a Technical Energy Audit (TEA)
- ESCO conducts TEA and proposes Energy Conservation Measures (ECMs) and breakeven periods
- Owner selects ECMs, develops performance contract language, negotiates GMP, energy savings guarantees & executes performance contract with the ESCO
- ECMs are designed, major package equipment selected, and job proceeds as a design/build project
- After testing and commissioning a period of measurement & verification occurs to satisfy the performance guarantees
- Owner may or may not use a bridging consultant
**Things that could have gone better**

- UOSA could not negotiate an acceptable GMP with the first ESCO – ESCO demanded substantially more than originally tendered to UOSA’s Board of Directors,
- 2nd proposing ESCO stepped-in at the last minute to preserve ARRA Grant,
- ESCO’s team unfamiliar with the level of UOSA’s detailed involvement in project decision making,
- ESCO subcontracted design and construction yet procured major equipment – poorly coordinated
- ESCO’s project managers were not well versed in the ECMs chosen by UOSA & had limited experience with wastewater processes
- “revolving door” of ESCO project managers and other staff - often had to bring new folks “up to speed”
- ESCO project managers acted as “middle-men” between UOSA and designer or UOSA and constructor resulting in poor communications
DB under Virginia ESCO

Lessons Learned

* Further design completion before the GMP. A GMP on <30% design was troublesome (don’t rush getting the GMP)

* 2nd proposing ESCO’s “take over” of prior ESCO’s project development work led to significant issues later

* Risk of losing $0.8M ARRA grant compressed contract negotiations, could use more time to get solid contract documents (take the time needed to get a good contract executed)
Contract ESCO Financial Summary

1st ESCO’s Blower & Cogen ECMs to the Board, Oct 2010 .......................... $ 6,375,480
1st ESCO’s Blower & Cogen proposed GMP, April 2011 ......................... $ 7,850,224
2nd ESCO’s Blower & Cogen GMP agreed to by UOSA, June 2012 .......... $ 6,900,000
Project Close-out Payment Proposed, March 2015 .............................. $ 6,490,896
Potential Effective Change Order Rate .............................................. - 5.93%

Note: UOSA received an $800,000 ARRA Grant as principal loan forgiveness on the Cogen portion of project!
The Primary Benefits to UOSA are more flexibility in selecting contractor & major equipment; transfer of some risk to the DB; constructability issues during design; innovative solutions to complex phasing & challenging construction issues.
Stage 1

Request for Qualifications (RFQ)
- Receive and Evaluate Qualifications
- Shortlist Qualified Applicants

Request for Proposals (RFP)
- Receive and Evaluate Proposals
- Selection of Highest Ranked Offeror

Public Hearing
- 30 Day Public Comment Period

Comprehensive Agreement
- Basis of Design Report
- 30% Design Documents
- 60% Design Documents
- Guaranteed Maximum Price Proposal

Amendments

DB Under Virginia PPEA Delivery Method

Stage 2

DB Work Amendment
- Complete Design
- Complete Construction

DB Design Amendment
- Complete Design under Stage 1 Services
- Bid Completed Design

Off-Ramp
- Stop all progress
Things that could have gone better

- learning curve on pace of contractor activities such as responding to RFIs or turning around submittals
- not accustomed to having the designer work for an entity other than directly for the Owner
- delivery method brings innovation, but tendency to “bog down” design pace with requests to evaluate too many scope alternatives
- Project flexibility conflicts with solidifying the scope & “nailing down” the GMP resulting in added scope creep risk funded with contingencies & allowances
DB under Virginia PPEA
Lessons Learned

* If fast tracking required, go to single step procurement process with just an RFP (skip the RFQ)
* Further design completion before the GMP. Go beyond 60% design completion (don’t rush to get the GMP)
* Better to use Owner allowances than project contingency if scope is unclear – implication on shared savings
* Open book pricing –
  * high overhead to pay requisition review & payment processing
  * on large jobs consider lump sum if your agency will allow it
Bridge Consultant’s Concept Cost Estimate, Sep 2008 ......................... $ 2,074,729
DB’s Proposal cost, July 2011 ................................................................. $ 1,919,601
DB’s Project Cost at Basis of Design Report, Dec 2011 ....................... $ 2,031,416
DB’s Project cost at 30% Design, February 2012 ................................. $ 2,035,232
DB’s Project cost at 60% Design, May 2012 ....................................... $ 2,021,042
DB’s GMP agreed to by UOSA, July 2012 ........................................... $ 2,047,910
Final Payments to DB ........................................................................... $ 1,967,957
Effective Change Order Rate .............................................................. - 3.9%
On-Time Project Completion with zero contract disputes June 2013
Contracts H/1 Financial Summaries

Bridge Consultant’s Initial Cost Estimate, May 2010 .......................... $ 7,168,000
DB’s Proposed project cost, December 2011 ........................................ $ 6,593,000
DB’s project Cost at Basis of Design Report, July 2012 ....................... $ 6,744,000
DB’s project Cost at 30% Design, October 2012 ................................. $ 7,107,000
DB’s project Cost at 60% Design, March 2013 ............................... $ 8,278,000
PC’s GMP agreed to by UOSA, February 2014 ................................. $ 9,149,000
Outline

* What is the CMAR Delivery Method?
* What are the statutory requirements?
* Why use it at PWCSA?
* What are the different roles of the project team?
* PWCSA Process
* Project Requirements
Primary Benefits to PWCSA in using a Construction Manager at Risk (CMAR) are a more flexible basis for Contractor selections, negotiation of risk allocation between the Owner and the CMAR, and CMAR involvement during design.

- Design Errors and Omissions (CMAR)
- Evolving Design and Cost Estimate offerings
- Flexibility to Owner
- Early involvement of Constructor, Major Trades & Equipment Suppliers
- Fast-Tracking

Design-Bid-Build (DBB)
- Design Errors and Omissions (Owner)
- Fixed Scope and Design
- Variable Construction Cost until Bid Opening
- Sequential Scheduling (Finish – Start)
- Constructability Issues
CMAR Delivery Method

- Design initiated by Owner
- CMAR selected early in the design process
- CMAR initially serves as agent of the Owner providing pre-construction services
  - Design Scope and Constructability Review
  - Budget, Schedule, and Cost Monitoring
  - Identifies Subcontractors for Bidding / Self Performance
- CMAR submits Guaranteed Maximum Price (GMP) based on agreed design milestone
CMAR Delivery Method

* GMP establishes assumptions, allowances and contingencies and who controls their use.
* If GMP is accepted by Owner, relationship changes to Owner/Contractor.
CMAR Statutory Requirements

* Authorized by Virginia Public Procurement Act
* Localities adopt guidelines consistent with VA approved procedures. For SA:
  * Board of Directors based on GM recommendation approves CMAR as a project delivery method
  * 2-Step Procurement Process: prequalification and RFP (GM may opt for 1-step process)
  * RFP prepared by committee to include PE
  * Selection Method is spelled out in RFP
Why Consider CMAR For PWCSA?

- DBB projects are adversarial by nature
- Enabling legislation in Virginia
- Provides advantages to PWCSA as an agent during design (constructability, value engineering, budget, and schedule) leading to change in relationship if GMP accepted
- Advantageous delivery method given uncertainty of technology and risk allocation involved to meet new regulatory requirements
Challenges for CMAR Delivery at PWCSA

* Staff Learning Curve
* Navigating new procurement procedures
* Development of CMAR Guidelines and Contract Documents: Performance Guarantees and CMAR Liability
* How to avoid loss of control of the design?
* How to avoid loss of quality deliverables?
* How to maintain competitive pricing?
* Exit Strategy if parties cannot agree to GMP Agreement
PWCSA CMAR Process
- Request to GM for CMAR Project Delivery
- BOD approval of GM Recommendation
- GM waiver of 2-step process, directly to RFP
- Proposal Evaluation
- Selection of CMAR at 30% design milestone for pre-construction services
- GMP Agreement and General Conditions. EJCDC
- Open Book Bid Process
- Special Provision: all subcontractor/equipment supply bids/contracts assignable to PWCSA
- Explored Early Award of Equipment Packages
- Pilot Study for Alternate Technology
Project Team

- PWCSA – Owner: E&P, ESWR
- CDM Smith – Design Engineer
- CH2M HILL – Owner project representative
- Haskell - CMAR
1. Existing FBI
   a. Additional emission requirements per MACT SSI Rule
   b. Compliance deadline March 21, 2016
   c. Process capacity limited by increase in sludge BTU content

2. Emissions Impacted by MACT Limitations
   a. Mercury
   b. Cadmium
   c. NOx
   d. SO2
Air Pollution Control cont’d

3. Design of Control Technology
   a. CDM Smith responsible to produce design to meet new emission requirements.
   b. Sorbent Polymer Composite Technology
      i. Minimized head loss allows re-use of existing exhaust blower relative to competing technologies
   c. Wet Electrostatic Precipitator
   d. pH-adjusted Tray Scrubber

4. Ancillary improvements
   a. Control System Update
   b. Chemical Systems
   c. Ductwork Replacement
   d. CEMS Update
   e. Interim Treatment Facilities
Project Requirements

* Meet new regulatory requirements
* All integrated components successfully work as a system
* Temporary solids processing while FBI is out of service
* Construction coordination with Plant Operations
Owner Decision Making Throughout Process

* Extensive document review at 30%, 60% and 90%
* Alternative Technology and Suppliers for Cost Control
* Independent Cost Estimate in Conjunction with GMP
* Created owner contingency
Open Book Cost Accounting

* Complete disclosure on all pricing at each design level estimate (30%, 60%, GMP at 90%)
* Open book approach to billing & payment requisitions
Value Added

- Ability to build trust with stakeholders through design workshops and demonstrate that PWCSA had not lost control of design
- Sought input from staff throughout the design process.
- Major Decisions included Executive Management
Financial Summary

CDM Smith Construction Estimate* ........................................ $ 9,677,000
2014 Haskell 30% Estimate .................................................. $11,209,550
2014 Haskell 60% Estimate** ............................................... $14,305,286
2015 Haskell GMP ..................................................................... $ TBD

*Note: Does not include CDM Task Order or Design Costs

** Note: 60% Estimate Triggered Review of Technology and Design Approach