



Biomass Without the Mess



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2nd Annual Heat the
Midwest Conference



The VAMC explores alternative energy projects - Why would we care?

- + 13423 – 3% per year reduction required
- + EPACKT 2005
- + EISA 2007
- + 13514 – GHG – Scope 1,2,3 emissions
- + Annual utility costs > \$3 million



Opportunities for funding a biomass project arise

- + Local, State and Federal Agencies get involved. A team effort proved the viability of the project and made a compelling business case to make it happen.
- + Outcome - ARRA funding became available for project



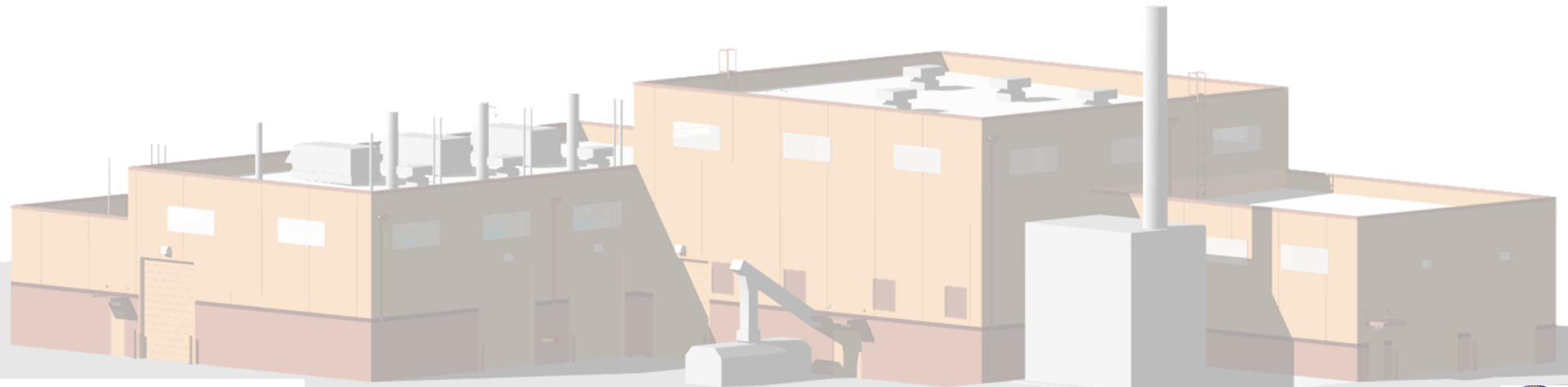
Timing of the funding matches well with a boiler plant construction project

- + At the 50% Design Stage on Base Bid, BioMass was added. Nothing short of Amazing !



Working with the COE's to establish the initial boiler plant construction project

- + Repeat Client: USACE Charleston, SC.
- + Alpha Contracting Principles: Assist the Client Develop the RFP/Scope of Work.
- + Assemble Design/Build Team: Assure Competencies of Team Match Scope Requirements.
- + Initial Introduction to End User at VAMC Chillicothe



Potential Change Order for a biomass addressed by the COE

- + Initial Design Concept: Necessary to Include Provision(s) for Future Boiler.
- + Introduced by VA/USACE During 50% Design Review Meeting.
- + Review of Feasibility Studies.
- + Conceptual Estimates for initial Budgeting Purposes.
- + Aesthetic Compatibility with Original Facility: Must look like the Additional was Part of the Original Design.



Assessing the best system type to match the client's desires- tour of NE

- + Presentation of Feasibility Study by Wilson Engineering AT VAMC Office.
- + Arrange Tour of Four Different Biomass Configurations (Wood Chip Delivery Methods) in MA and NY.
- + Introduced to Wellons at Owego, NY Plant.
- + Partnering/Client Relationship



Developing the cost estimate

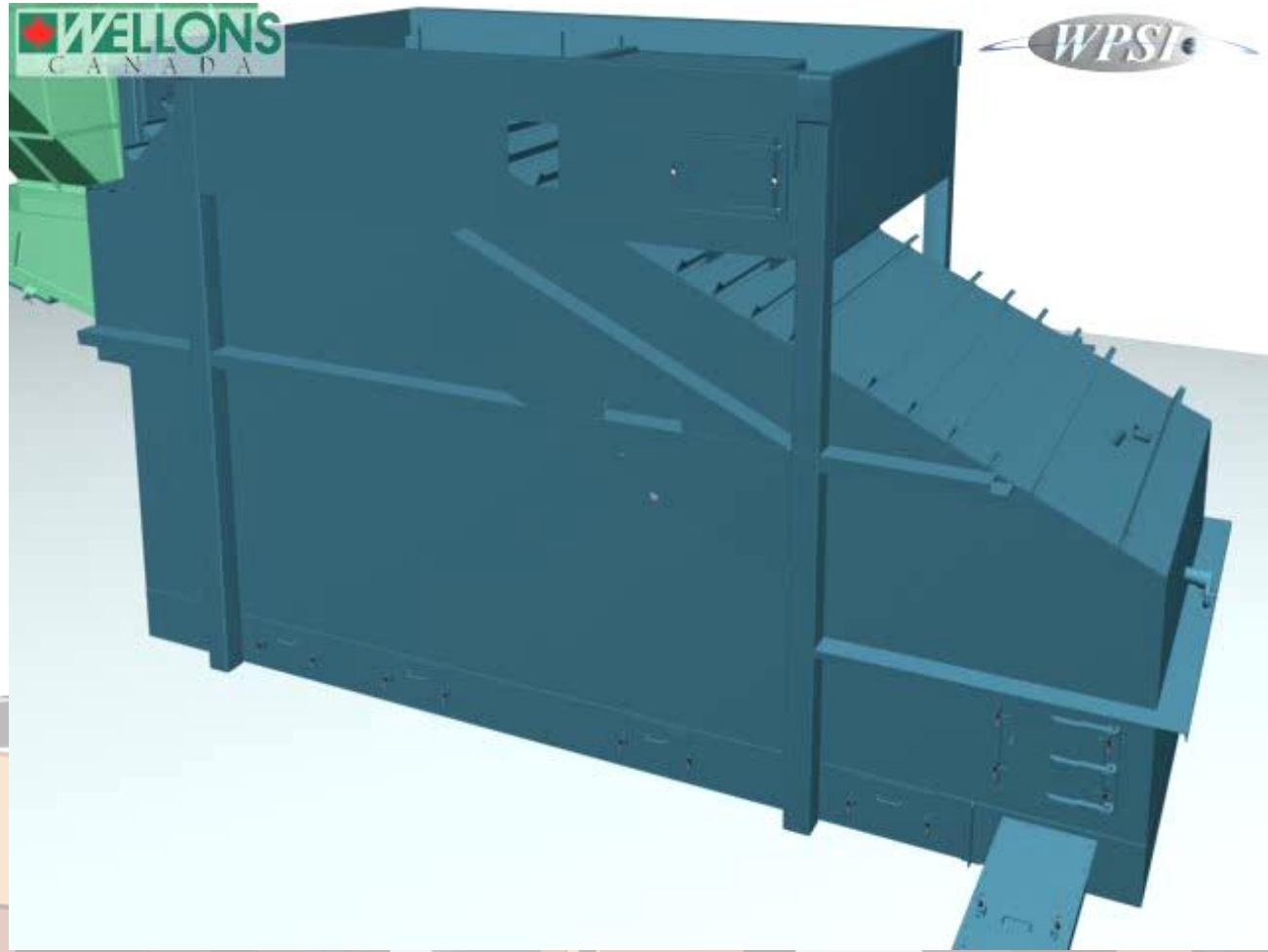
- + Facility Design/Costs Based on Original Scope of Work
- + Woolpert/Wellons Collaborate to Provide 35% Design Concept at Time of Proposal
- + Introduce Wellons to the Project's M/E Subcontractor DeBra-Kuempel of Cincinnati, OH
- + Continuous Communication with COE and VA to Ensure Costs stay within Client's Budget for the Addition



Truck delivery system that does not require a loader



Automatic ash extraction system



Totally enclosed ash bin for a roll off container



ESP and pollution control equipment to make system as clean as natural gas



Replacement Boiler Plant systems

+ PH I plant design elements:

- + 8,300 sq. ft.
- + 3- 20,000 #/hr gas-oil boilers (N+1)
- + 65 psig distribution main to VAMC
- + RO system for make-up water
- + Combined dearator, condensate recovery
- + Standby generator for all equipment



Biomass Plant Design

- + Biomass design elements:
 - + 18,000 #/hr wood chip biomass boiler
 - + 450 psig steam developed
 - + 350 kw backpressure turbine, 65 psig out
 - + Wood chip storage bunker, walking floor
 - + Electrostatic Precipitator
 - + Fuel transfer systems
 - + Ash removal



Combined Plant Design



Thank you, questions?

