



White Pine County School District Energy Retrofit and Biomass Project

Lessons Learned

Paul Johnson
Chief Financial Officer
1135 Avenue C
Ely, Nevada 89301
(775) 289-4851
(775) 289-3999 (fax)
paujohns@whitepine.k12.nv.us

June 1, 2007

Brief History

- **Nevada Division of Forestry approached district to become a pilot project and had a \$340,000 grant to install.**
 - ◆ District was excited about the project and viewed this as a positive, progressive idea
 - ◆ Agreed to pilot project and an engineering report was commissioned
- **Engineering Report indicated project will cost approximately \$590,000.**
 - ◆ District was not so excited about the project and \$340,000 grant
 - ◆ No capital funds to apply toward the construction
 - ◆ Much more expensive than traditional energy measures
 - ◆ District CFO's sanity called into question
- **U.S. Senator Harry Reid assisted with a \$250,000 grant from Department of Energy**
 - ◆ District was again excited about the project and the \$590,000 in grants
 - ◆ District made commitment to proceed with the pilot project (no turning back!)
- **Project tied into a comprehensive district-wide energy retrofit**
 - ◆ There was much rejoicing and the District's CFO keeps his job.



Public Education

- Delayed Construction
- Series of public meetings
- Public concern about emissions
- Board skepticism about concerns raised during public meetings
- Apprehension due to relatively new technology and fuel source
- Concerns about federal policy and continued fuel load reduction programs
- Longevity of fuel supply and policy
- Review and inspection of pilot project in Darby Montana

Energy Retrofit

- Performance contractor hired and energy audit commissioned including biomass pilot project.
- Reviewed power generation and heating system
- A biomass heating system was designed
 - ◆ Original estimates indicated the biomass project would cost approximately \$960,000
 - ◆ The District was **not** so excited about the pilot project and the \$590,000 in grants
 - ◆ Found out about 50/50 match requirement on DOE Grant
 - ◆ No capital funds to apply toward the project (still!)
 - ◆ Project in jeopardy
 - ◆ CFO's sanity, job and reputation in question!
- Qualified Zone Academy Bonds (QZABs)
 - ◆ Low and no-rate bonds \$677,000
 - ◆ Interest only payments with annual investments to earn interest over the term.
 - ◆ District once again excited about the pilot project, CFO keeps job, project moves forward.



Fuel Source

- Bureau of Land Management fuel load reduction at Mt. Wilson near Pioche, Nevada
- Department of Energy indicates \$250,000 grant should go toward an environmental impact study
- District CFO, develops ulcers and entire project in jeopardy AGAIN!
- District requests bids to transport fuel from Mt. Wilson
 - ◆ No responses
 - ◆ No industry
 - ◆ No market
 - ◆ No long-term commitments to secure capital investment to re-chip and transport fuel
 - ◆ No interest
- District CFO sends resume to Monster.com and eyes internal job posting for custodian.
- Nevada Division of Forestry assists with grant to pay for transportation costs and helps negotiate with local contractor.



Construction

- DOE determines \$250,000 grant can be applied toward construction
 - ◆ CFO stops job search but develops nervous twitch and drools any time someone says "biomass"
- \$677,000 QZAB funding at risk
 - ◆ 10% private match
 - ◆ Payment terms do not qualify as debt
 - ◆ Project 75% complete
 - ◆ CFO develops split personality in an attempt to shift blame and retain partial sanity.
- Project 90% complete and QZAB placed
- Construction project completed 3/21/05



Operation and Maintenance

- **Fuel storage**
 - ◆ No funding for storage facility
 - ◆ No business interested in storing wood chips
- **Inconsistent fuel source**
 - ◆ Dirt, humidity & size
- **Delivery service**
 - ◆ Inconsistent
- **Maintenance & Technical Support**
 - ◆ Inadequate
 - ◆ Relatively new industry and only one vendor in Michigan available to support project
 - ◆ Inconsistent quality and slow to respond

Steps to Assist with Development & Operation

- **Additional funding**
 - ◆ Technology is more expensive than traditional fuels so incentives must be provided to assist with development
 - ◆ Reduce matching requirement
 - ◆ Capital risk or return on investment requires greater agency investment or incentives
- **Long-term (or longer) contracts**
 - ◆ Pass legislation or policy that helps ensure the longevity of the programs
 - ◆ Enter into contracts sufficient to provide vendors/partners some reasonable degree of certainty that they will realize a return on investment.
- **Industry/Market Development**
 - ◆ Provide funding to assist with the development of businesses that will utilize woodchips
 - ◆ This may create competition for supply but should assist with concerns involving, fuel consistency, storage, suppliers and product support.
- **Work and Communicate with State & Federal Agencies to Streamline**
 - ◆ Applications and paperwork are cumbersome and extensive
 - ◆ State Public Works, Fire Marshall, Department of Energy, Rural Development, etc...
- **Public Education**

BIOMASS HEATING SYSTEM

BOILER BUILDING:



BIOMASS HEATING SYSTEM

BOILER:



BIOMASS HEATING SYSTEM

BOILER COMBUSTION CHAMBER:



BIOMASS HEATING SYSTEM

FUEL STORAGE:



BIOMASS HEATING SYSTEM

WOOD CHIP AUGER:



BIOMASS HEATING SYSTEM

WOOD CHIP CONVEYER AND METERING BIN:



BIOMASS HEATING SYSTEM

Interactions & Collaborations:

- United States Forest Service
- United States Department of Energy
- Bureau of Land Management
- United States Senator Harry Reid
- Nevada Division of Forestry
- Nevada Department of Transportation
- White Pine County School District
- Darby School District, Darby Montana
- APS Energy Services
- CTA Architects Engineers
- Country Communications
- LaSalle National Leasing Corporation (Financing)
- McLiney And Company (*Investment Banking, Municipal Bonds, Financing*)

BIOMASS HEATING SYSTEM

Worth the Effort!

- Annual fuel savings of \$36,000 + per year
- Reduced fuel oil consumption by 18,326 gallons per year
- Replaced three boilers with one
- Reduced labor costs to maintain boiler systems
- Fuel oil boiler retained as a redundant, or back-up, system
- Extended useful life of fuel oil boilers
- Consumes wood waste products from fuel reduction programs
- First United States Forest Service Fuels-for-Schools project in Nevada
- Pilot/Demonstration Project (approximately 100 visitors)
- Positive attention to local area for an innovative energy solution
- Assisted with Nevada Department of Corrections project in Carson City, Nevada
- Provides education
 - ◆ Forest health & fuel reduction programs
 - ◆ Alternative fuels
 - ◆ Energy production