MINUTES OF THE MEETING
FINANCE AND CLAIMS COMMITTEE
MONTANA STATE SENATE

March 27, 1986

The second meeting of the Finance and Claims Committee of the Montana State Senate, Special Session # 2, met on the above date in room 108 of the State Capitol.

ROLL CALL: All members present except Senator Keating who was excused.

Senator Regan called the meeting to order and since Representative Bardanouve was not present she asked if Sharole Connelly, Accounting Division, Legislative Council would present the bill.

CONSIDERATION OF HOUSE BILL 1: Sharole Connelly, Accounting Division, said she had handed out a sheet of paper as a special sessions budget comparison, and it is broken into the House and the Senate in the Council. The first 4 columns give you a history of what the last 4 special sessions cost and the last column on the right is the budget for this special session. She said there is money in for Legislator's per diem, salaries, and staff salaries for 8 days. If the special session runs into Easter the Legislators are provided with $50 per diem, but no salary. There is money for 2 round trips so that if you run into Easter there is money for the Legislators to go home. The Legislative Council budget is up this time because the Council will not be able to absorb the overtime of the staff. The $10,000 is for the print shop and gives enough money to print approximately 30 bills. The $12,000 is for the Legislative telephones, and last time all the telephones were combined into one budget so this covers the phones for the House and the Senate and the extra phones for the Council.

There were no further proponents, no opponents, and no questions from the committee.

Senator Regan said she was not going to take executive action today so--if something happened that they went more than 8 days they would have to amend this bill. I think we will set the bill aside and not take executive action and if it becomes apparent that we are going to go home early we will pass it out and then refund some money.

CONSIDERATION OF HOUSE JOINT RESOLUTION 1: Dorothy Bradley, the chief sponsor had a conflict and Senator Story, co-sponsor presented the bill.

Senator Pete Story, District 41, said the House Resolution you have before you is necessary to authorize MSU to retrofit if they decide to do so to either take advantage of the lower rate from Montana Power or to go to a wood pellet system. This is a generic bill, it doesn't favor either pellets or cheaper Montana Power rates.

Senator Regan said you have concentrated on one source of energy and I suspect there might be others who might like to speak, or

at least be recognized as being here.

PROPONENTS FOR HJR 1: Karla Gray, Montana Power Company: We are proponents of HJR 1. We also have people here from MPC if there are questions.

Representative Quilici: We had this in our House Appropriations committee. I voted for this particular measure. There are some concerns that I have with it, but I think they can be worked out. One of the concerns that I have, if you'll read it, it says "to carry out a construction project to convert its heating plant". That causes me just a little trouble, but then it says to use the most cost effective fuels. I can live with that--whatever is the most cost effective, and I would hope that before the Administration uses any funds to convert a plant that they make sure that they have all the data and all the facts concerning whether it would be wood pellet, coal, natural gas, or whatever. They should not expend funds until they have a total analysis of what is most cost effective.

Representative Menahan: I would question the wisdom of the amendment at the end of the bill. To seek all public monies--my concern is if you do that -- then what is going to happen is where the money is coming from. Tape 1, Side A, 098. Mr. Menahan explained they would be tapping the same sources that give for other causes--research, etc., and would then come to the Legislature for funds saying they had "dried up the sources."

Robert Van Der Vere, Helena, said he hoped the committee would vote for the resolution.

Tucker Hill, Wood Products Industry said they support the bill.

There were no further proponents, no opponents, Senator Regan asked if there were questions from the committee.

Senator Himsl: I have some concern about the cost of this. I see it is suggested here in the area of $25,000. Now is the proposed conversion to come from the current appropriation that the school has and from the anticipated savings for this conversion?

President Tietz, MSU, said the proposal is that the savings that will be developed by the considerations of either Montana Power Company rates or the alternative fuels that might enter into this negotiation will provide a differential in terms of the appropriation and the actual cost that would be used to amatorize the capital investment. The estimates for a conversion for propane which would be a back up source with the natural gas in part of the proposal from Montana Power is estimated to be about 170 to $200,000. The estimate for conversion to use of the wood product would be approximately $600,000. That latter figure would be the most difficult to amatorize and our consideration there was probably about a 7 year amatorization schedule. That would assume that the energy budget for MSU would continue constant over that period, being escalated by whatever factors the appropriations

process interjects on such elements of the budget. Rate changes or inflation rates. Our calculations at the present time indicate that those savings may be between $20,000 a year and $250,000 a year.

Senator Christiaens: Senator Story, can you tell me--this language that Representative Menahan talked about was something added in the House or was it originally a part of the bill. Senator Story: That was added in the House and it was because Representative Winslow was concerned that they not go to the bank for interest bearing loan until they had looked at 2 or 3 programs--I am going to ask the President Tietz to explain whatever other sources might be available.

President Tietz: 164.: The worst cost scenario that we have examined by the Legislative Auditor contained a financing system that would utilize a commercial loan for converting the current boiler to use of wood pellets. It did involve a $600,000 commercial loan at about 8½% interest which was what was on the books at that time. Any of these costs that we have been looking at are a single slice through time--the circumstances prevail at that particular moment. I believe that Representative Winslow's concern was that we not use state dollars to pay excessive loan costs.

Senator Christiaens: What is the time frame for the study to be completed before you know the actual costs? Tietz: The negotiations have been going on in terms of examining the various possibilities and facts which have to be considered since about a year ago right now. We would need to employ this facility before the weather turns in the fall. The reason we couldn't use the interruptable rates that have been proposed by Montana Power in the middle of the winter was because they were interruptable and we had no backup system and we also couldn't shut down the boilers to make the retrofit conversion during the period of time when the weather was a serious factor. So we would move as quickly as we can, and I would assume within the next 90 days.

Senator Jacobson: I think it might be helpful to the committee--there was an audit done--a request by Representative Bob Marks to look at -- we didn't have anything on coal pellets, and I think we still don't--but it might be helpful. (copies were given out by the Auditor's office) Just to give you an idea of what some of the figures are that we have been talking about and some of the comparisons that have been made up to date. She asked Scott Seacat to give an explanation.

Scott Seacatt, Legislative Auditor, Gregg Gravely, our analyst, --we were asked to take a look at all the various numbers that were out there. Montana Power had some numbers, MSU had some numbers--we were asked to take a look at the reasonableness of the numbers. The numbers are, in fact, for a one year period. On the chart on page 2 (attached as exhibit 1) of the handout you will note that the various assumptions on the bottom line are different for all the analysis, and that comes from the fact that depending on the price of the pellets, the price of

natural gas, the heating content for BTU per pound for the wood pellets--each alternative has various savings. In our analysis over a 1 year period, given the assumptions, we know that the wood pellet alternative would in fact, save approximately $81,000. We concluded that at the time we did the analysis that it was a reasonable analysis. Since that time the cost of natural gas has gone down. On page 3 of the report, in chart 2 we note that for a 1 year at present the retention rate for gas would probably be the lowest cost alternative. I should point out that the summary points to the fact that again, depending upon the assumptions, time period, the discounted cash flow, one alternative could be better than the other. The real bottom line is you won't know until you receive bids. You won't know until the actual costs come in as to the actual cost of the wood pellets. At present it is projected that a consumer council told me that the price of natural gas may, in fact, go down. There are a number of variables associated with this alternative.

Senator Regan: I guess I have a question to address to President Tietz. When you have done some analysis and you are going to call for bids, I assume then that you will write specifications and call for sealed bids then and they will be received and opened on the same day as the state would call for any bids.

President Tietz: Madam Chairman, we would follow the structure of the state bidding process to the letter. I think there are some elements here that are going to require as Mr. Quilici suggested, advance consideration by all suppliers, and it's going to be a new process in the sense of some of the factors that have to considered. There are some ripple effects to this that need to be brought into affection.

Senator Regan: Would you expand that just a little bit so that I understand what you are talking about?

President Tietz: The factors that Mr. Seacat was discussing in his analysis, the matter of changing rates on the power rates of the two rates that are being suggested at the present time. One is an interruptable industrial rate. The second one is an experimental industrial market retention rate which is yet to be approved finally by the PSC. We also have the matter of pellet conditions changing; there has been some estimates that run the pellet BTU content from about 7900 BTU per pound up to 8200. There is some projections that they can increase the concentration of that material so that it would produce a pellet of 8500 BTUs. These kinds of things which are really very very hard to nail down in the classical bidding sense. I think we are going to have to work on those things and bring them forward in what is a mutually equitable kind of situation--set of conditions.

Senator Haffey: I think that when Senator Christiaens--Representative Menahan was wanting to respond to part of this.

Representative Menehan: I would like to be able to respond to that. In view of the fact of what happened at Tech. In going out for private funds they went to the same well to get the money that they would get for grants. Now I am not opposed to this. I am

for the resolution very much. If you are going to have this, put it in that they are going to have to seek NEW funds, not going back. We all know that if University Foundations don't know who has the money, then they have been very remiss--right? We know that they know that we've got money so they'll come here and they know who has foundations, and that's where they go. There's no doubt in my mind, inorder to make things fair that what's going to happen is like what they did at Montana Tech. They went to the same well where they got people who donated to research and to graduate students, etc., and then they had to come back to the Long Range Building and say "We have dried up all our resources, now you'll have to go back to the Legislature." The public sector had donated, but on whose backs--the same thing that happened in Missoula--faculty and students are objecting because of the cost that is going to incur for the stadium. The man gave the money, but it's for a specific project, but it's going to take off of somebody else--so--that's what's going to happen in this case.

Senator Aklestad: After this retrofit for this wood pellets, how much of a job would it be to switch right back to gas? If that gas price goes down.

Senator Story: You turn on a valve. The features are right there, there is no reconversion at all. The gas remains to the valves.

Senator Regan: Well, Senator Story, wouldn't you need a back up system of some kind like propane or something then?

Senator Story: No. Natural gas becomes the backup to the wood pellets, in the event that you converted to wood pellets.

Senator Jacobson: Can the natural gas company give you a bid for a backup system?

Senator Story: I believe they are contemplating it. This bill must be passed to get any of that. If you do not pass this resolution, then the industrial retention rate winks out of existance and so does the interruptable, because the interruptable rate requires a propane backup and that costs more than $25,000. I think it is estimated at somewhere around $186,000, so inorder to even do that they need this piece of legislation, so you must pass this inorder for MSU to benefit either from the lower rates that Montana Power will offer them or from converting to wood pellets.

Senator Regan 307.: I guess I have a question for Karla, and as Chairman, I'm going to exercise the prerogative. Is this bill necessary for you to be able to offer to the University System the interruptable rate and a lower rate? Is it the threat of competition or the actual competition that triggers the mechanism?

Karls Gray, MPC: I think, Madam Chairman and members of the committee--I might stumble on this, and I am going to probably ask for an extra answer from somebody who knows. I think the reason the resolution is needed is because the projected cost of construction project for either the propane standby for the interruptable, or IMR rate, or the conversion to allow them to utilize the wood pellets--either of those conversions, if you will, would cost in excess of the $25,000 the statute requires.

Senator Smith: Just one question. We are talking about the natural gas and the wood pellets. This resolution does not preclude the use of coal, does it?

Senator Story: No sir. They would, indeed, be in the running. However, they probably aren't because it would take a different type of boiler. It would be a much more expensive retrofit. Most of the retrofit for wood pellets--half of it anyway, goes into building a building for the storage of the pellets.

Senator Smith: Why I mentioned that--because in many of our schools up there, they are converting to coal right now because of the cost of other fuel.

Senator Jacobson: There is just one thing that I think we probably ought to let the committee know, and that is--if we pass HJR 1, and I am voting for it, but I think everyone should be aware that whether we get a bid from any of these sources, it will affect MPC rate payers in that area. We don't know exactly what--I don't know if you've got any better figures than those that were floating around before, but at any rate whenever you either lower MP's cost or you take them off the rate base, there will be an increase to other customers in the area.

Senator Story: In closing I just want to answer two things. One, I don't want this taken out that was considered in the House. There was a time to talk about it over there. I don't want this to go back to the House. We've only got two days left in the session and strange things could happen to this bill.

Senator Regan: We have 3 or 4 minutes and if someone has some strong feelings I would entertain a motion in regard to this bill.

DISPOSITION OF HOUSE JOINT RESOLUTION 1: Senator Story moved HJR 1 be concurred in.

SUBSTITUTE MOTION by Senator Jacobson to remove lines 5 through 8.

Senator Regan: You have heard the motion, is there any discussion to removing the amendment put in by the House?

Senator Story: Madam Chairman, I would rather have President Tietz sign a blood oath that he not take the money out of the student fees, or something. If this goes back to the House they might do strange things to it.

Senator Regan: Is there any further discussion on the motion?

Question was called, voted, roll call vote, motion failed 6-9.

MOTION by Senator Story that the HJR be concurred to is reverted to. Voted, passed, unanimous vote.

The committee was adjourned at 10:29 a.m.

Senator Regan, Chairman

SENATE COMMITTEE FINANCE AND CLAIMS VOTING RECORD

Date 3-27-86 H & R Bill No. 1 Time 1:29 PM

Name	YES	NO	ABSENT	EXCUSED
Senator Haffey	✓			
Senator Jacobson	✓			
Senator Aklestad		✓		
Senator Hammond		✓		
Senator Lane	✓			
Senator Christiaens	✓			
Senator Gage		✓		
Senator Himsl		✓		
Senator Stimatz		✓		
Senator Boylan		✓		
Senator Story		✓		
Senator Smith		✓		
Senator Manning (Dick)		✓		
Senator Bengtson	✓			
Senator Keating				
Senator Regan	✓			
	6	9		

Sylvia Kinsey
Secretary

Senator Regan
Chairman

Motion: [illegible] 5-8

ROLL CALL

SENATE FINANCE AND CLAIMS COMMITTEE

49th LEGISLATIVE SESSION - - 185 Date 3-27-86

NAME	PRESENT	ABSENT	EXCUSED
SENATOR REGAN	✓		
SENATOR HAFFEY	✓		
SENATOR JACOBSON	✓		
SENATOR AKLESTAD	✓		
SENATOR HAMMOND	✓		
SENATOR LANE	✓		
SENATOR CHRISTIAENS	✓		
SENATOR GAGE	✓		
SENATOR HIMSL	✓		
SENATOR STIMATZ	✓		
SENATOR BOYLAN	✓		
SENATOR STORY	✓		
SENATOR SMITH	✓		
SENATOR MANNING (Dick)	✓		
SENATOR BENGTSON	✓		
SENATOR KEATING			✓

47th - Second Special Session

VISITORS' REGISTER

SENATE ~~AND HOUSE COMMITTEE~~ Finance & Claims

BILL HJR 1 and HB 1

DATE 3-27-86

SPONSOR Bradley — Bardanouve

NAME	REPRESENTING	RESIDENCE		SUPPORT	OPPOSE
CAROL KRANICH	MT. U. SYSTEM	HELENA	HJR1	X	
[illegible]	SELF	[illegible]	[illegible]	X	
Kathie Gran[illegible]	MSC	BUTTE	HJR1	X	

IF YOU CARE TO WRITE COMMENTS, ASK SECRETARY FOR LONGER FORM.

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Exhibit 1
HB1

SPECIAL SESSIONS BUDGET COMPARISON

	Nov. 1981 Expended 47th #1	June 1982 Expended 47th #2	Dec. 1983 Expended 48th #1	June 1985 Expended 49th #1	March 1986 Budget 49th #2
HOUSE					
Pre-Session					
Legislators & Staff	$39,504	$20,015	$7,423	$1,600	$1,500
Session					
Salaries & Benefits-Staff	19,889	19,921	15,651	5,181	43,600
Salaries & Benefits-Legisl.	37,627	27,716	31,879	5,552	44,255
Legislators Expense	45,000	26,460	27,000	4,320	45,000
Printing	1,330	17	372	0	500
Supplies	1,099	651	1,210	515	600
Telephone & Postage	9,410	3,856	2,745	0	200
Round-trip Mileage	15,740	10,768	7,102	7,747	15,836
Rent	992	680	1,808	0	400
Other	566	0	0	0	0
Total House	$171,157	$110,084	$95,190	$24,915	$151,891
SENATE					
Pre-Session					
Legislators & Staff	26,510	9,895	5,676	907	1,500
Session					
Salaries & Benefits-Staff	16,643	17,014	16,398	4,372	43,600
Salaries & Benefits-Legisl.	18,854	14,213	15,946	2,701	22,153
Legislators Expense	22,500	13,500	13,500	2,115	22,500
Printing	542	145	5	0	500
Supplies	192	386	449	144	500
Telephone & Postage	5,011	1,880	1,539	0	100
Round-trip Mileage	10,470	4,577	3,790	3,505	7,834
Rent	3,091	1,250	1,611	0	1,000
Maint.-Roll Call System	0	0	2,563	0	400
Other	497	0	0	0	0
Total Senate	$104,310	$62,860	$61,477	$13,744	$100,087
COUNCIL					
Salaries & Benefits	1,229	1,127	1,334	202	7,516
Printing	13,909	8,791	5,232	488	10,000
Computer Costs	0	0	0	0	2,780
Supplies	465	52	535	0	1,255
Telephone & Postage	576	0	948	0	12,893
Travel-Consultant	0	1,027	0	0	0
Contingency	0	0	22	0	0
Total Council	$16,179	$10,997	$8,071	$690	$34,444
GRAND TOTAL	$291,646	$183,941	$164,738	$39,349	$286,422
	10 days	6 days	6 days	1 day	8 days

STATE OF MONTANA

Office of the Legislative Auditor

STATE CAPITOL
HELENA, MONTANA 59620
406/444-3122

SCOTT A. SEACAT
LEGISLATIVE AUDITOR

DEPUTY LEGISLATIVE AUDITORS:
JAMES GILLETT
FINANCIAL-COMPLIANCE AUDITS
JIM PELLEGRINI
PERFORMANCE AUDITS
LEGAL COUNSEL:
JOHN W. NORTHEY

March 18, 1986

Representative Robert Marks
302 Lump Gulch
Clancy, MT 59634

Dear Representative Marks:

At your request, we reviewed Montana State University's proposal to switch part of their natural gas use to wood pellets. We also reviewed Montana Power Company proposals to have the university switch to lower industrial gas rates.

Overall, we conclude it would be cost effective for the university to stay with natural gas and switch to the Industrial Market Retention (IMR) rate. This conclusion is based upon the latest available information we received. The prices of natural gas and wood pellets, wood pellet BTU content, and continued availability of the retention rate all have an impact on future cost effectiveness of each alternative.

Attached is a memorandum that provides the details of our analysis. If you need any additional information or have any questions, please call.

Sincerely,

Scott A. Seacat
Legislative Auditor

SAS/cslb

Attachment

cc: Members, Legislative Audit Committee
Members, Legislative Finance Committee
Members, Legislative Consumer Counsel
Senator Peter Story
Dr. William Tietz, MSU
Craig Roloff, MSU
John Murphy, MPC
Loren Collins, Mountain Energy

M E M O R A N D U M

HEATING PLANT COSTS
MONTANA STATE UNIVERSITY

INTRODUCTION

Montana State University (MSU) prepared a report dated November 22, 1985, that presented a proposal to use wood pellets as a fuel to produce steam. MSU's central heating plant contains one large, and two smaller, natural-gas-fired boilers. MSU's proposal calls for converting one of the smaller boilers to wood pellet fuel.

At about this same time the Montana Power Company (MPC) suggested that MSU could save money on gas purchases if the university would switch to a lower gas rate. MPC's offer involved lower gas rates through an interruptible gas contract and even lower rates with an experimental Industrial Market Retention (IMR) rate. MPC also did their own review of the MSU wood pellet proposal.

This memorandum presents our analysis of the MSU proposal for converting to wood pellets. We also evaluated the work done by the Montana Power Company related to their projected savings with lower gas rates and their analysis of the MSU proposal.

Chart 1 is a comparison of the MSU, MPC, and Legislative Audit analysis of the wood pellet conversion. The chart includes the major assumptions that affect the projected savings. Please note that the major difference between the MSU projection and the MPC projection is the cost per MCF for natural gas. MSU projected in November that the price of natural gas would increase. In fact, the price of natural gas decreased.

Chart 2 compares the projected current total heating plant cost in each analysis with the total cost projected under an interruptible rate schedule and under an industrial market retention rate schedule.

The charts on the following two pages represent a summary of our analysis of the information available. The supporting information for the charts is presented in the body of the memorandum starting on page 3.

Overall, we conclude it would be cost effective for the university to stay with natural gas and switch to the Industrial Market Retention (IMR) rate. This conclusion is based upon the latest available information we received. The prices of natural gas and wood pellets, wood pellet BTU content, and continued availability of the retention rate all have an impact on future cost effectiveness of each alternative.

exh. - 1
H.J.R-1

Chart 1

COMPARISON OF WOOD PELLET CONVERSION ANALYSIS

Assumptions	Montana State University Original Analysis (Nov. 22, 1985)	Montana Power Company Analysis (March 3, 1986)	Legislative Auditor Analysis (March 18, 1986)
Projected Gas Cost/mcf (1)	4.274/mcf	3.83/mcf	3.83/mcf
Projected Gas Usage (2)	422,557 mcf	416,590 mcf	422,557 mcf
Rate for $600,000 loan	8.5%	8.5%	8.5%
Wood Pellet Cost/Ton	$58/Ton	$58/Ton	$55/Ton
Wood Pellet BTU (3)	8000 BTU/lb.	8000 BTU/lb.	8100 BTU/lb.
Projected costs with gas (4)	$2,067,458	$1,882,492	$1,905,345
Projected costs (wood) (4)	$1,901,725	$1,862,678	$1,824,378
Projected savings (wood)	$ 165,773	$ 19,814	$ 80,967

(1) Current Cost is 3.83/mcf

(2) Estimated by MSU. Average of last three years is 426,487 mcf. (Includes gas for other uses.)

(3) March 20, 1985 analysis indicates 8110 BTU/lb.

(4) Includes gas or wood pellet costs, operating costs, personnel services.

Exc - 1
HJR - 1

Chart 2

COMPARISON OF TOTAL HEATING PLANT COSTS
BY TYPE OF RATE SCHEDULE

Type of Rate	Montana Power Company Analysis (March 3, 1986)	Legislative Auditor Analysis (March 18, 1986)
Current Firm Rate Costs	$1,882,492	$1,905,345
Interruptible Rate Costs	$1,840,639	$1,863,892
Interruptible Rate Savings	$ 41,853	$ 41,453
Retention Rate Costs	$1,623,332	$1,651,319
Retention Rate Savings	$ 259,160	$ 254,026

BACKGROUND

The proposal by Montana State University calls for an approximate $600,000 investment for a burner system, pellet storage facility, and related equipment. The funding would be arranged through a bank loan. The annual loan payment would be made from savings generated by the new system.

The wood pellets would be delivered by truck and stored in a building abutting the present heating plant. The pellets would be conveyed to a hammer mill which would grind the pellets into fine particles. These fine particles would then be conveyed to a hopper where they could be fed into the burner system as needed. The burner system involves mixing the wood particles with air and a 5 percent mixture of gas in a suspension burning process.

Wood pellets are made from sawdust and other waste wood. The raw material is ground into small particles and later dried and forced through a die. The wood particles are bonded into solid, dense pellets about one-quarter inch in diameter and one inch in length. The pellets can be burned in a variety of applications from home stoves to large industrial boilers.

ANALYSIS OF WOOD PELLET SYSTEM

Our review of the conversion proposal included calculations that were made, and the overall reasonableness of assumptions and decisions. We verified certain overall costs, such as the total use of natural gas, by comparing MSU figures with MPC figures.

Overall, we believe MSU officials used a reasonable approach in conducting their cost analysis given the information available at the time. MPC officials told us that their review also showed that MSU's analysis was reasonable. However, projected figures for natural gas cost have changed since the initial MSU analysis.

The following is a general discussion of MSU's study and some of the main factors that effect potential savings from a wood pellet conversion.

Present System Costs

Present heating plant costs can be divided into three main categories: gas for steam, gas for other purposes, and operations and personal service costs. The heating plant is charged by MPC for all natural gas used on campus. Approximately 90 percent of the gas is used by the heating plant to produce steam. The remainder of the gas goes for other purposes such as heating family housing units and other buildings not receiving steam from the heating plant.

Gas use figures were provided by MSU officials and we verified the total with MPC records. We did not verify the percent of gas used for steam but it appears to be a reasonable estimate and was accepted by MPC in their analysis. Using the present firm natural gas rate (also paid by residental customers) of $3.83 per mcf (thousand cubic feet), MSU would pay approximately $1.46 million for one year's supply of gas for producing steam. Other gas use would total $157,275 per year. This other gas use is carried over directly when looking at the proposed system.

The remaining heating plant costs come directly from the MSU study and are used in both the present system costs and the proposed system costs. MSU's figures are $34,866 for annual operations costs and $252,086 for personal services. Total costs for the present system are shown below.

PRESENT SYSTEM TOTAL COSTS

Steam Costs	$1,461,118
Other Gas	157,275
Operating Costs	34,866
Personal Services	252,086
Total	$1,905,345

EX-1
H.JR-1

Proposed System Costs

The costs for the proposed system are divided into the following areas:

-- Steam Costs
-- Loan Costs
-- Added Maintenance and Operation Costs; and
-- Carry-Over Costs

Steam Cost

The basic assumption for the conversion is that wood pellets are a less expensive fuel than natural gas. Therefore, the more potential gas use that can be converted to wood pellets, the greater the savings in fuel costs. This is important because the savings in fuel costs must be used to cover the added costs for operations and maintenance and for the investment in the building and equipment.

MSU had a consultant study past data on the load profiles of the heating plant to determine how much steam could be produced by one of the smaller boilers. The study showed that one boiler could supply 90.6 percent of MSU's yearly steam needs. The other boilers would provide the 9.4 percent peak load assistance. MPC officials agreed with this basic calculation. The final factor that affects the amount of gas that could be converted is the use of a 5 percent gas mixture with the wood pellets. Overall MSU could produce about 86 percent of its steam with pellets and 14 percent with gas.

To replace gas with wood pellets it is necessary to consider the BTU content of each fuel. An accepted number for natural gas is 886,000 BTU per mcf (at the pressure of the firm natural gas rate). The BTU content of wood pellets is not as easily set because of the variability of the product. We identified a range of 8,000 to 8,500 BTU per pound of pellets. We were provided a March, 1985 analysis of the wood pellets (Livingston Plant) that projected approximately 8100 BTU per pound.

To find the cost of fuel to produce steam with the proposed wood pellet system, it is necessary to take the projected use of each fuel times the cost per unit. Again the cost for wood pellets is difficult to set because they could come from several manufacturers and transportation and production costs vary. We identified a projected range in costs from $50 to $60 per ton. The cost for natural gas is presently $3.83 per mcf but this cost could also change. These two factors will also be discussed under the "savings" section. Using values of 8100 BTU per pound and $55 per ton for wood pellets and $3.83 per mcf for natural gas, it would cost about $1.19 million for fuel to produce steam with the proposed system.

Ex 1
H.JR. 1

Loan Cost

The loan cost is based on the amount of funds needed for the wood pellet retrofit, the interest rate, and the length of the loan. MSU's original study determined it would take approximately $600,000 to make the retrofit. We did not specifically evaluate this aspect, but it appears MSU officials spent considerable time evaluating their needs. We believe the amount is sufficient. MSU officials assumed an 8½ percent loan over seven years. This would make the annual payment $117,221.

Added Maintenance and Operation Costs

MSU officials divided the added maintenance and operation costs into three categories: ash handling costs, electricity cost, and system maintenance cost. These costs totaled $71,710 in the MSU study. It appears that MSU officials have set these costs high to be conservative. It should be noted that MSU does not plan to increase staffing for the heating plant since a boiler operator is on duty now at all times to run the boiler.

Carry-over Costs

The remaining heating plant costs are carried over from the present system costs. These costs are: gas used for other purposes, annual operations costs, and annual personal services costs. These costs total $444,227 per year.

Potential Savings

Using the values set forth above, the wood pellet system would have an annual cost of about $1.82 million.

PROJECT WOOD PELLET SYSTEM TOTAL COSTS

Steam Costs	$1,191,220
Loan Costs	117,221
Added Operating Costs	71,710
Carry-Over Costs	444,227
	$1,824,378

On first glance this appears to be a savings of $80,967 over the present system costs. MPC estimated an approximate $20,000 savings while MSU estimated an approximate $166,000 savings. These differences can be explained by looking at how the potential savings are affected by several factors that are somewhat variable. These factors are: cost of natural gas, cost of wood pellets, BTU content of wood pellets, loan interest rate, and added maintenance and operation costs.

Ex 1
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Cost of Natural Gas

The savings figure above is based on a firm natural gas rate of $3.83 per mcf. Montana Power Company officials stated that the price could be $3.73 per mcf later this spring and even lower later in the year. A ten cent drop in the gas price (with other factors held constant) would reduce any potential savings by about $33,000. It is difficult to predict the price of natural gas out to the seven-year length of the loan.

The price of natural gas (and therefore the feasibility of the proposed system) could be significantly reduced by MPC's offer to put MSU on their interruptible rate or Industrial Market Retention (IMR) rate. MPC's cost analysis with these lower gas rates is covered in the next section.

Cost of Wood Pellets

MSU's November 1985 study used a wood pellet price of $58 per ton. Discussions with an MSU official in March 1986, indicated they were now projecting a cost at $52 per ton. The final cost will not be known until the pellet contract is let for bids. Since approximately 18,000 tons of pellets would be used per year, a one dollar drop in the projected cost per ton would increase savings by about $18,000.

BTU Content of Wood Pellets

The BTU content of the wood pellets affects the amount of pellets it would take to replace converted gas. One of the main factors affecting the BTU content is the percent of moisture in the pellets. Moisture content usually averages 4 to 8 percent. The lower the moisture content the higher the BTU rating.

Another factor affecting the BTU content is the type of wood waste that goes into the pellets. Test results vary from around 8,000 to 8,500 BTU per pound. MSU's November 1985 study used 8,000 BTUs per pound. MSU officials indicated they may raise this to 8,200 BTUs per pound.

An increase of 100 BTUs per pound of pellets reduces the amount of pellets needed by about 220 tons per year. At a price of $55 per ton, this would increase potential savings by about $12,100.

Loan Interest Rate

MSU's November 1985 study used a loan interest rate of 8.5 percent. MSU officials indicated that this rate could drop to 7.5 or 8 percent. For every 1/2 percent drop in the loan interest rate, there is a corresponding drop of about $2,000 in the annual payment. This assumes the loan is for $600,000 over seven years.

Added Maintenance and Operation Costs

MSU's study set added costs in three areas. Ash handling costs were set at about $15,000 based on expected ash content of the pellets from laboratory testing. Officials indicated that the ash may actually have some value as fertilizer or cement additive. They believe this cost could be much lower or even a positive value. In addition, MSU officials indicated a cyclone separator to remove fly ash from the flue gas is the only emission control equipment needed to meet state air quality standards.

MSU's study based electricity costs on the electrical load rating of the added equipment and the expected use time. This cost was set at $45,000. MPC officials said electrical costs could go up faster than other costs over the life of the loan.

System maintenance costs in the MSU study were figured at $1,000 per month for an annual cost of $12,000. MSU officials indicated that this was a worst case estimate. The most expensive item would be the periodic replacement of screens in the hammer mill.

MONTANA POWER COMPANY ANALYSIS

The Montana Power Company has been working with MSU on analyzing heating plant costs with wood pellets and with lower industrial gas rates. MPC officials presented these cost comparisons in a March 3, 1986, letter to the university. We made a review of the MPC cost comparisons to see if the results were reasonable. The following sections present the results of our review.

Wood Pellet System

MPC officials completed their own review of MSU's proposed wood pellet conversion. MPC officials told us they agree with the basic approach taken by MSU in analyzing their project. MPC officials' calculations include a difference in the gas use calculation and a significant difference in the predicted cost of natural gas. MSU and MPC officials recently met to discuss these and other issues.

When MPC officials made their calculations for predicted savings with the wood pellet system, they put in the present firm gas rate of $3.83 per mcf. The remaining cost factors were kept at the initial values set by MSU. MPC officials also recalculated the cost of the present system at the present gas rate. The yearly wood pellet savings predicted by MPC was approximately $20,000.

Interruptible Gas Rate

MPC officials estimated that MSU could save about $42,000 per year by signing an interruptible natural gas contract with MPC. In the proposal, MPC officials included an investment of $168,000 in a propane-air standby system to provide for gas interruptibility. To

pay for this system MPC officials used the same loan arrangement as MSU used for the wood pellet system. The annual payment would be approximately $32,700 over the seven-year life of the loan. In addition, MPC added $10,000 for added maintenance costs. We reviewed the MPC calculations and believe they used a reasonable approach to the analysis. One factor not included was the additional cost of propane used during potential interruptions.

Industrial Market Retention Rate

MPC officials indicated in their letter to MSU that MSU would be eligible for the IMR rate if they would sign an interruptible gas contract with MPC. MPC officials indicated that the annual savings on the IMR rate would be approximately $259,000. One of the factors involved in being eligible for this rate is showing a capacity for switching to an alternate fuel. Only the quantity of gas that could be converted to the alternate fuel is eligible for the reduced IMR rate. MPC calculations were based on convertible gas at the IMR rate, nonconvertible heating plant gas at the interruptible rate, and other gas used on campus at the firm natural gas rate. The same costs for the standby system that were used in the interruptible rate case were used in this case. Again, we reviewed the MPC calculations and found they used a reasonable approach to predict annual savings. MSU officials questioned the availability of the IMR rate after the first year.

INTANGIBLE FACTORS

The following are some additional factors that could affect the feasibility of the proposed wood pellet system. Many of the factors are difficult to quantity. Some of the factors were raised by the Montana Power Company.

Availability of Wood Pellets

Transportation costs can be a substantial part of the total cost of wood pellets. This tends to limit the number of manufacturers that could successfully bid on the MSU contract. The only supplier that is close to Bozeman at this time has a manufacturing plant in Livingston - a distance of about 25 miles. The Livingston supplier said his transportation costs to Bozeman would be about five dollars per ton.

MSU's study presents information that indicates there is sufficient raw material in the state to support several pellet manufacturing operations. MPC officials questioned the continued supply of materials for pellets because of competition from other users such as paper manufacturers. MPC officials contrast this to the apparent stable supply of natural gas.

Viability of Wood Pellet Use

Wood pellet use in Montana is primarily limited to home wood stoves at this time according to information provided by the Department of Natural Resources and Conservation. However, two small schools in the northwest part of the state have made the switch to wood pellets. One school was using fuel oil and the other was using coal.

The use of wood pellets is widespread in the state of Minnesota. This development was encouraged by the Governor and the Department of Energy and Economic Development. There are many schools, universities, businesses, and government organizations using densified wood fuels. An installation list from the Coen Company (a possible burner system supplier for the MSU project) shows several large companies in both the United States and Canada using wood products for at least part of their fuel supply.

Natural Gas as a Standby Fuel Source

The MSU proposal calls for the suspension burner to be gas-capable so it could switch to natural gas at any time due to mechanical problems or economics. Also, if pellets were unavailable for a period of time, gas would serve as the backup fuel. MPC officials indicated in a letter to MSU that there may be an added cost to MPC to provide this backup gas service. MPC could propose a rate to cover this type of service.

Effects of Natural Gas and Wood Pellet Sales on Montana

If a large percentage of MSU's gas purchases were converted to wood pellets, it could have an impact on Montana's economy. If the wood pellets were produced in Montana it would mean an income to the pellet supplier and pellet transporter of about $1.0 million per year. Some of this money would be passed to producers of wood waste products and plant employees. There could be an increase in employment also.

On the other hand, if MPC loses a substantial part of MSU's gas purchases it could have an impact on other gas customers in the state. MPC estimated its shortfall in fixed costs at about $500,000 which would have to be picked up by its other gas customers. In addition, MPC estimated it would not make about $700,000 in gas purchases which would have an impact on gas producers in Montana. It should be noted that if MSU went to the IMR rate it would also impact other MPC gas customers. MPC figures show it would lose about $300,000 in yearly gas income with MSU on the IRM rate.

STANDING COMMITTEE REPORT

March 27 19 86

MR. PRESIDENT

We, your committee on FINANCE AND CLAIMS

having had under consideration HOUSE JOINT RESOLUTION No. 1

third reading copy (blue color)

Bradley (Story)

CONVERT MSU HEATING PLANT TO USE COST-EFFECTIVE FUELS

Respectfully report as follows: That HOUSE JOINT RESOLUTION No. 1

BE CONCURRED IN

~~DO PASS~~

~~DO NOT PASS~~

SENATOR PAT REGAN

Chairman.