

THE MINUTES OF THE MEETING OF THE JOINT APPROPRIATIONS
SUBCOMMITTEE ON NATURAL RESOURCES
February 9, 1981

The meeting was called to order by CHRIS STOBIE, CHAIRMAN, on February 9, 1981, in Room 431 in the State Capitol Building.

Roll call was taken and all members were present but SENATOR STIMATZ.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)

Energy Division

Members of the DNRC came before the subcommittee for the purpose of hearing the energy division. Mr. Leo Berry, Director of DNRC, presented a handout to the subcommittee members.
(EXHIBIT A)

A discussion was held and it was stated that the actual FTEs were 24.5 with a modified base of 34 FTEs. With their "Set-Aside" program, they could reallocate diesel or such in case of emergencies. They are hoping to get the Governor to re-allocate this. H.B. 16 provides for putting people in touch with each other so they know where their resources are.

SENATOR BOYLAN asked if the department could go into a plant and request, or have the authority to demand, production of more diesel than gasoline. Mr. Berry said the state does not have that authority. There is no internal system within the oil and gas industry. This is what they are trying to provide.

SENATOR SMITH stated in his area people are buying retail to sell retail. The fuel is a serious problem due to the seismograph crews in that area.

MR. GOSNELL, Administrator of the Energy Division, DNRC, stated that SENATOR McCLURE is chairman of Energy. Cenex got very expensive crude that they could not market on the high line. Cenex now has fuel somewhat cheaper. The fuel assistance function is the only program involved in filling the gaps that need assistance. They are attempting to put in an expensive collective system.

SENATOR SMITH asked, outside of attempting to acquire a supply for these people, what other powers do these people have.

MR. GOSNELL stated that they are getting into a rerefined oil program which is the used oil recovery program. They are putting in a used oil collection system where all their used oil can be collected in various parts of Montana and collected then by someone in the business.

Agriculture did have high priority but that is gone now due to deregulation. Mr. Gosnell said what they are trying to do now is draw out priorities.

The primary function of this program is to provide a central point for those having a supply problem.

It was also noted that Montana is an exporter of crude and an importer of gas and diesel. Cenex, at one point, produced 40,000 barrels per day and got down to 16 barrels a day. 7,000 per day is buy-sell and there is an entitlement of 19,000 barrels a day now.

A report to the Montana Legislature called "Renewable Energy Program" (EXHIBIT B) shows projects and grants through 1980, and their modification request for FY'82 and FY'83 is in EXHIBIT C.

SENATE BILL 141 sponsored by Senator Dover authorizes the department to get into loans for commercialization.

LEO BERRY reviewed the grants and stated that the majority of grants were in solar because this was what the applications came in for and they were for larger communities.

For the past biennium, the alternate energy program has been funded at approximately \$900,000 per year. On January 1, 1980, the percentage allocated to this fund was raised to 2.50% total coal income. It has acquired quite a large surplus and recommend it be totally funded.

They believe there will be an addition to the program of \$1.6 million in 1982 and \$2 million in 1983. A copy showing the number of grants that were given was distributed to the committee members (attached).

Grant Period Seven FY'81 (EXHIBIT D) shows the requests, applications, energy category, etc. 70% came from solar and all grants must be technically sound.

There have been demonstration projects but that part of the program may be over and they will be moving on. (EXHIBITS E & F)

The committee has funded some projects out of the appropriated money. There is a total of 79 grants authorized.

Bankers will be working with the program. The Energy Program is asking for a 80% loan at no interest and the banks will have the first call loaning at regular interest rates and state charges. Service fees and money will go back into the coal fund.

This program is asking for two engineers to be sure these programs will work. One of the criticisms has been lack of follow-up on these projects after they are completed. It was suggested that most of the new loans would be to the commercial aspect. The third FTE request is for a person for monitoring and tracking money.

Facility Siting Division

There was a request by the department to retain the FTEs. BOB ROBINSON stated they retained the 7 core staff and would add others as they were needed by budget amendment.

EXHIBIT G was presented to the subcommittee showing a current FTE level of 32.25. The coordination with MHD with a generation plant. Montana Power has agreed to this project. Resource 89 would put in about \$700,000. This is a different appropriation than HB 908. The department is asking for a reappropriation of HB 908 in case the bill does not go into effect soon enough. If the federal government cuts off MHD programs, the money being asked for would not be necessary. (MHD stands for MAGNITO HYDRODYNAMICS.)

SENATOR SMITH asked if large pipeline comes under the major facility siting act. Mr. Moy said that there is a Bill introduced by Senator Brown that would include pipeline greater than 20 inches. There is no regulatory function that administers pipelines.

REPRESENTATIVE STOBIE asked why the forestry department does not sell more of their dead and dying timber. He was told that it was believed that small sales were not feasible so they concentrated on more than 100,000 board feet sales. DNRC has to get right-of-ways and has had survey problems.

Witnesses from the Department of Natural Resources were dismissed.

The subcommittee went into EXECUTIVE SESSION.

Transportation Unit

The total transaction is \$120,000 to \$125,000 in the budget. The current level of FTE would be 4 FTEs: a director, assistant director, one secretary and one new FTE that would be an agricultural researcher.

MOTION was made by REPRESENTATIVE COZZENS to accept the OBPP (Office of Budget and Program Planning) budget for Program Costs and the 4 FTEs.

The motion was voted on and PASSED.

There is still a question as to where wheat research stands. The LFA (Legislative Fiscal Analyst) recommendation was to put the whole thing into wheat research and marketing and the Executive recommendation said keep it in transportation, but fund it almost entirely.

Wheat Research indicated that they would continue contributing as they did in the past, which is \$13,900. Carolyn Doering, Office of Budget and Program Planning, said they have not fulfilled on that contract.

REPRESENTATIVE MANUEL MOVED that \$50,000 in 1982 and \$50,000 in 1983 be taken out of Wheat Research and put into Transportation and the balance taken out of general fund. MOTION PASSED with REPRESENTATIVES COZZENS, MANUEL, HEMSTAD AND STOBIE voting AYE. SENATOR STIMATZ AND SENATOR BOYLAN were excused. SENATOR SMITH voted NO.

REPRESENTATIVE MANUEL MOVED THE OBPP budget for 1982 of \$395,759 and for 1983 of \$428,682 be accepted under Wheat Research and Marketing. MOTION PASSED.

MOTION was made by REPRESENTATIVE MANUEL that \$100,000 be added to each year, 1982 and 1983 making a total of \$495,759 in 1982 and \$528,682 for 1983. MOTION PASSED.

Motion was then made to adjourn the meeting at 11:20 a.m.



CHRIS STOBIE, CHAIRMAN

Energy Division

1. The LFA recommends that the Fuel Assistance Bureau be terminated. We recommend that not only the 1.5 FTE's be retained but that an additional .5 be added per the Governor's recommendation. LFA recommended the program be eliminated for a lack of statutory authorization. The Energy Emergency Powers Act provides that authority. The federal reporting requirements will be retained by President Reagan for emergencies and strategic defense planning. That data will be used, in addition to HB 16, to help solve spot shortages and disruptions caused by decontrol.
2. Fully Funding the Alternate Energy Program. For the past biennium the program was funded at a little over \$900,000/yr. The % of funds available to program increased on January 1, 1980 but the spending authorization was never adjusted. As a result the fund has built a surplus. We propose that the programs be fully funded in accordance with the current law. As a result the modification attached should be incorporated into the budget.
3. If the program is fully funded and SB 141 passes 3 FTE's will be necessary. Two additional engineers for commercial application review and monitoring grants will be necessary. And an administrative assistant is definitely needed to keep track of the financial end of the program.

EXHIBIT B

RENEWABLE ENERGY PROGRAM - report to the Montana Leg,

See Original Book at Montana Historical Society,

State of Montana

BUDGET MODIFICATION REQUEST

REQUESTING AGENCY		NAME		REQUESTED		RECOMMENDED	
AGENCY	CODE	NAME		FY 1982	FY 1983	FY 1982	FY 1983
OBPP	5706	Department of Natural Resources and Conservation					
<p>The information contained in the attached schedules is submitted to support our request to the Forty-Seventh Legislature.</p>		PROGRAM	CODE	NAME			
			26	Energy Division			
		<p>A complete analysis must be attached for each modification category listed below.</p>					
		Funding Modifications		1,657,364	2,196,238		
		Workload Increases					
		New Services					
		TOTAL		1,657,364	2,196,238	-	
REQUESTING AGENCY		<p>I hereby certify that the information presented herein is true and correct and accurately reflects the justification for this request.</p>					
BUDGET AND PROGRAM PLANNING		<p>The following action is taken relative to this Budget Modification Request. If Disapproved, the reason therefore is attached.</p>					
		<input type="checkbox"/> APPROVED		<input type="checkbox"/> DISAPPROVED			
		Signature of Budget Director and Date Signed					

APPROVED DISAPPROVED

Signature of Budget Director and Date Signed

AGENCY BUDGET WORK SHEET

Form BPP-02
Detail of Program Activity

Agency Program Department of Natural Resources & Conservation
Energy

Code
5706
26

Page
26
of

Expend. Category	FULL TIME EQUIVALENT EMPLOYEES	1981 Authorized		REQUESTED 1982 FISCAL YEAR		REQUESTED 1983 FISCAL YEAR		(OBPP Use Only) RECOMMENDED 1983 BIENNIIUM
		(OBPP Use Only)	1981 Authorized	Total FY 1982	(OBPP Use Only)	Total FY 1983	(OBPP Use Only)	
1100	Salaries			50,819		50,819		
1200	Hourly Wages							
1300	Other Compensation							
1400	Employee Benefits			9,656		9,656		
	Total Personal Services			60,475		60,475		
2100	Contracted Services			24,750		25,000		
2200	Supplies and Materials			3,400		3,500		
2300	Communications and Transportation			2,850		2,900		
2400	Travel			10,000		11,000		
2500	Rent			7,000		7,500		
2600	Utilities							
2700	Repair and Maintenance			500		600		
2800	Other Expenses			3,500		3,500		
2900	Goods Purchased for Resale							
	Total Operating Expenses			52,000		54,000		
3100	Equipment			3,500		1,000		
	Total Equipment							
	TOTAL OPERATING COSTS			115,975		115,475		
4000	Capital Outlay							
5000	Local Assistance							
6000	Grants			1,541,389		2,080,763		
7000	Benefits and Claims							
8000	Transfers							
9000	Debt Service							
	TOTAL PROGRAM COSTS			1,657,364		2,196,238		
	SUMMARY - Accounting Entity							
	Accounting Entity							
	Expended							
	Withdrawn							
	Rest.							
	ARESP	02951		1,657,364		2,196,238		
	TOTAL FUNDING							

Lee

GRANT PERIOD SEVEN
FY 1981

<u>Energy Category</u>	<u>Number of Applications Received</u>	<u>Funds Requested</u>	<u>Number of Grants Awarded</u>	<u>Amount of Funding</u>
Solar	51	\$1,232,400	20	\$ 361,833*
Wind	34	859,342	12	265,424
Wood	7	199,432	4	34,374
<i>what is a garbage</i> → Biomass	41	2,254,777	24	1,276,202
Geothermal	7	194,130	3	118,321
Hydro	15	465,701	7	147,000
Education/ Technical Assistance	<u>20</u>	<u>536,997</u>	<u>9</u>	<u>95,834</u>
TOTALS	175	\$5,742,779	79	\$2,298,989

*This includes these major projects:

Highway Maintenance Building, Helena	\$ 80,000
Job Service Center, Bozeman	76,000
Medicine Lake High School	75,000
TOTAL	<u>\$231,000</u>

2/2/81

105/12/80 (E)

F Y 1981

GRANTS AWARDED IN FALL 1980
FROM THE
RENEWABLE ENERGY GRANTS PROGRAM

Definite Grants	\$ 480,040.00
Tentative Grants	1,818,948.00
Earmarked for Requests for Proposals (RFP's)	381,000.00
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TOTAL	\$2,679,988.00

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

January, 1981

DETAIL OF SPRING 1981 REQUESTS FOR PROPOSALS (RFP's)

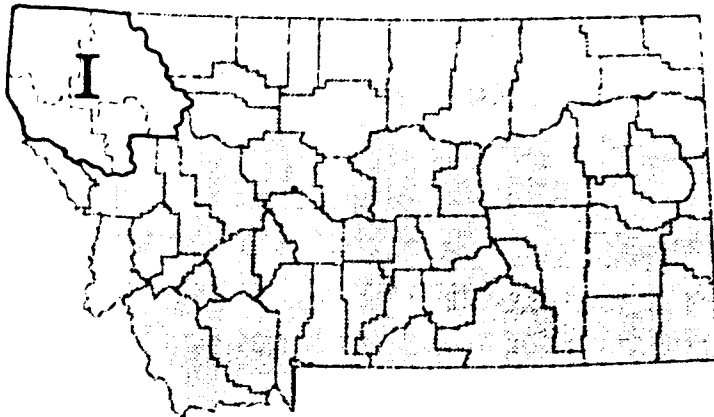
Designs for model earth-sheltered homes in Montana	\$ 10,000.00
Development of eutectic salt as solar heat storage	\$ 28,000.00
Research into solar photo-chemical energy in production of hydrogen	\$ 50,000.00
Reduction and analysis of data from Wind Monitoring Loan Program	\$ 30,000.00
Development of a wind generator and electrolysis cell to produce hydrogen	\$ 8,000.00
Wood stove test facility	\$ 90,000.00
Research and publication into building orientations and solar access in subdivisions	\$ 15,000.00
Research and publication of manual for assistance to small businesses for development of their renewable energy goods and services capability	\$ 70,000.00
Development of a home energy computer to assist homeowners in determining the feasibility of installing renewable energy systems	\$ 50,000.00
Purchase of additional wind monitoring equipment for use throughout the state	\$ 30,000.00
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TOTAL RFP's	\$ 381,000.00

FY 81 PROJECTS

AREA I

Lincoln
Flathead

Sanders
Lake



AREA I DEFINITE

Troy Schools % Wayne Fletcher Drawer 0 Troy, MT 59935	Renewable energy education program	\$ 1,333.00
Marc Carstens Route 1, Box 99 Polson, MT 59860	Alcohol and oil ex- traction from seed crops	\$ 5,000.00
Richard Wrench 115 Garland Street Kalispell, MT 59701	Prototype fireplace insert	\$ 7,500.00
Richard Wrench 115 Garland Street Kalispell, MT 59701	Two "do-it-yourself" pamphlets on renewable energy	\$ 2,000.00
William C. Black Box 138 Troy, MT 59935	Wind-powered electric system	\$ 4,500.00

AREA I TENTATIVE

Salish Kootenai Community College % Gerlad Slater Box 117 Pablo, MT 59855	Solar heating, cooling and lighting of multi- use facility	\$ 20,000.00
Matt Keane Route 3, Box 19-C Thompson Falls, MT 59873	Solar heated/earth- sheltered housing design	\$ 14,000.00
James R. Brown Quinn's Hot Springs Box 187 Paradise, MT 59857	Geothermal heating system	\$ 5,000.00
Dan Miles AGRI-Fuels Corporation Box 3371 Polson, MT 59860	Farm-scale alcohol still	\$ 50,000.00

Energy Engineering Box 1997 Kalispell, MT 59901	Major alcohol plant using geothermal heat	\$100,000.00
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Vista Lago Land- owners Assoc. Jane Pitkin, President East Lake Shore Bigfork, MT 59911	Small hydroelectric system for subdivision	\$ 60,000.00
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AREA I
TENTATIVE

Orlena Barnard 1395 Swan Highway Bigfork, MT 59911	Residential hydroelectric system	See note below
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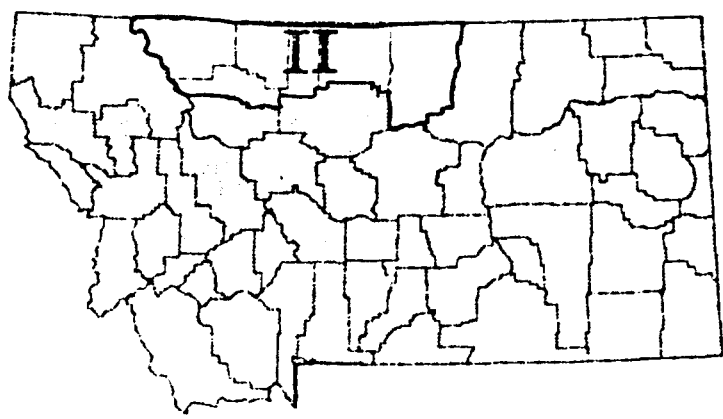
Merle Jore Route 2, Box 58A Ronan, MT 59864	Residential hydroelectric system	See note below
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NOTE: These and two hydroelectric projects in Area IX were approved contingent on hiring an engineering consultant, through a request for proposals process, to provide technical assistance to the grantees. The Department approved definite funding of \$16,000.00 for consultant service to all four projects. Also approved was definite funding of \$16,000.00 for a system at the most feasible site and tentative funding of \$50,000.00 for systems at the remaining sites.

AREA II

Glacier
Pondera
Toole

Liberty
Hill
Blaine



AREA II
DEFINITE

Patrick E. Wyse 406 South Virginia Street Conrad, MT 59425	Passive solar heating of large commercial building	\$ 15,213.00
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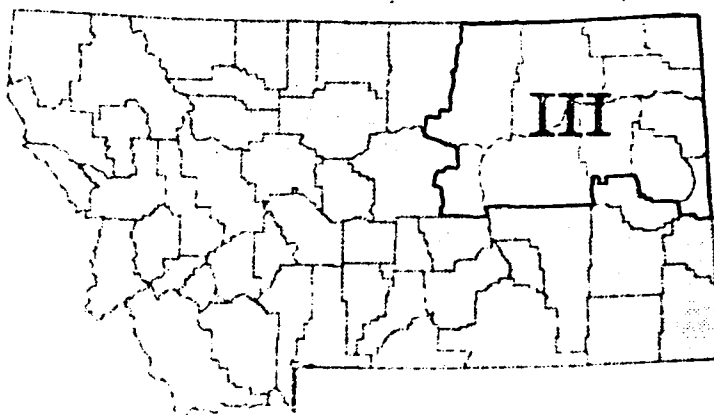
AREA II
TENTATIVE

Orville & David Oien RR 3, Box 89 Conrad, MT 59425	Farm-scale methane digester	\$ 94,045.00
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AREA III

Phillips
Valley
Daniels
Sheridan
Roosevelt
Petroleum

Garfield
McCone
Richland
Dawson
Wibaux



AREA III DEFINITE

Dwain Prellwitz Box 1408 Malta, MT 59538	Portable, homemade solar furnace	\$ 900.00	
Ron Audet Box 423 Scobey, MT 59263	Wood and solar heating system	\$ 2,500.00	
Harlow Strandlund Homestead, MT 59242	Biomass furnace	\$ 4,530.00	
Randy Holton Archer Star Rt, Box 11 Plentywood, MT 59254	Solar shop heating	\$ 1,000.00	
Medicine Lake High School Karl Fiske, Supt. Medicine Lake, MT 59247	Solar panels for space heating of school complex	\$ 12,000.00 \$ 63,000.00	D T
Ben D. Bollwitt 216 5th St. H.P. Glendive, MT 59330	Low-cost solar heating system	\$ 2,550.00	

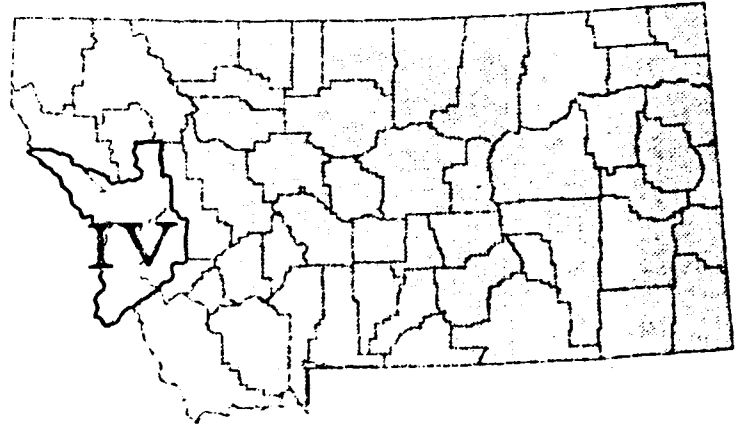
AREA III TENTATIVE

AGRI-Processors % Jim Smrcka Glasgow, MT 59230	Commercial alcohol plant	\$150,000.00	
David Erickson 735 Knapp St. Wolf Point, MT 59201	Wind-powered electric system	\$ 9,245.00	
Bruce Bannister	Wind energy study of eastern Montana (See Area IX)		

AREA IV

Mineral
Missoula

Ravalli
Granite



AREA IV DEFINITE

Carol & Mike Gauthier 1364 East Dickinson Missoula, MT 59801	Installation and monitoring of low-pollution, wood-fired boiler	\$ 9,374.00
Tom Montgomery Wextern Timber Utilization Group 2801 Russell Missoula, MT 59801	Feasibility study of using forest thinnings as fuel	\$ 15,500.00
Steve Loken 1342 Van Buren Missoula, MT 59801	Guide to passive solar housing in Montana	\$ 7,515.00

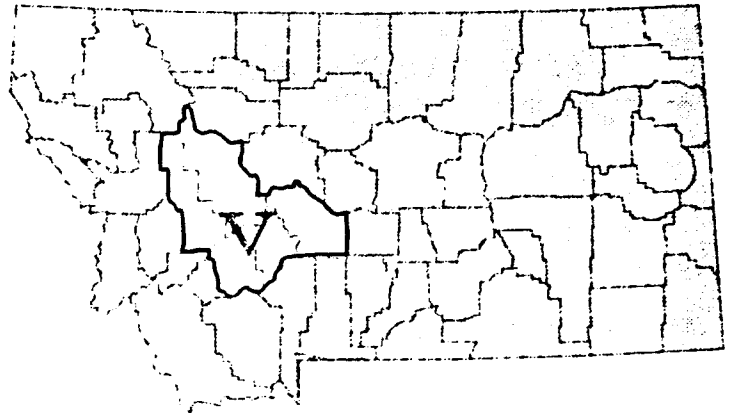
AREA IV TENTATIVE

Benjamin Stout Forestry School University of Montana Missoula, MT 59801	Solar lumber kiln	\$ 35,528.00
Charles Gividen Route 1, Box 66-B Victor, MT 59875	Solar greenhouse for for home heating	\$ 4,461.00

AREA V

Powell
Lewis & Clark

Jefferson
Meagher



AREA V
DEFINITE

Tom Harpole
Earth Energy Institute
Box 304
Avon, MT 59713

Geothermal greenhouse for
commercial use \$ 13,321.00

Lewis and Clark Library
120 S. Last Chance Gulch
Helena, MT 59601

Energy collection
development program \$ 19,994.00

AREA V
TENTATIVE

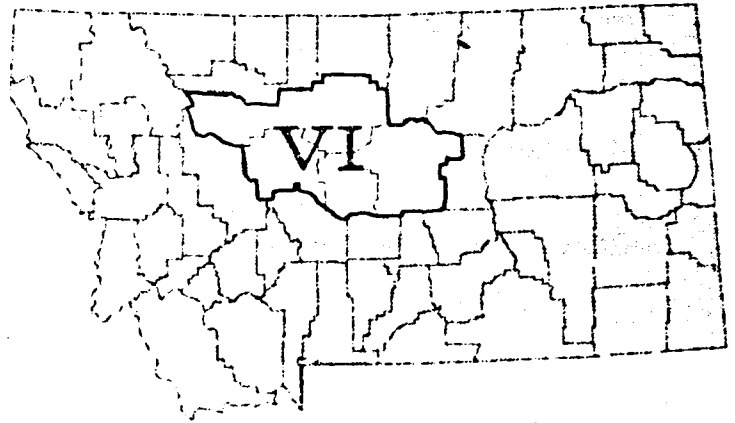
New Western Energy Show
226 Power Block
Helena, MT 59601

Energy education kit
for schools \$ 21,056.00

AREA VI

Teton
Choteau
Cascade

Judith Basin
Fergus



AREA VI DEFINITE

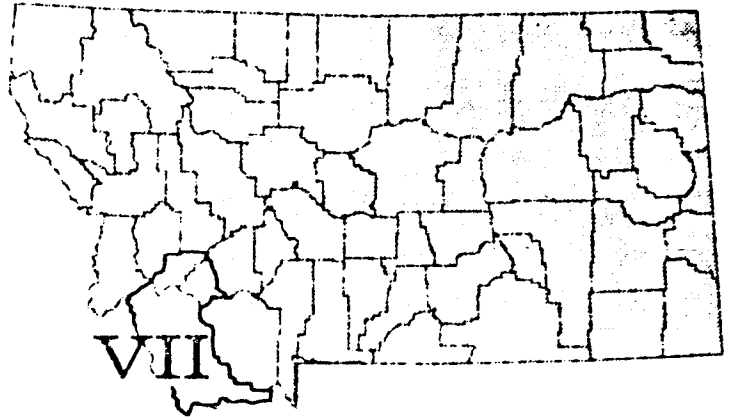
Rick McIntyre Box 686 Hobson, MT 59452	Wind monitoring study	\$ 403.00
Russell Hansen 715 West Pine Lewistown, MT 59457	Solar space and water heating retrofit	\$ 4,529.00

AREA VI TENTATIVE

AG NRG % Joe Renders Box 1243 Helena, MT 59624	Commercial alcohol facility in Great Falls	\$200,000.00
The Fagenstrom Company Box 2623 Great Falls, MT 59403	Prototype solar and earth- sheltered building	\$ 7,000.00
Sun Prairie Energy % Mary Holtz Route #1 Fairfield, MT 59436	Feasibility study of commercial alcohol plant	\$ 10,000.00
Dave & Vicki Gustafson Box 162 Simms, MT 59477	-Purchase of boiler, if feasible	\$ 60,000.00
Charles Bronec Star Route Geraldine, MT 59446	Farm-scale wind-powered generator	\$ 3,175.00
Fergus Electric Cooperative, Inc. % Dick Peck Box 58 Lewistown, MT 59547	Farm-scale alcohol plant	\$ 37,000.00
Clark Carter 101 Mountain View Lewistown, MT 59457	Wind monitoring study	\$ 51,410.00
Richard Meade 4600 10th Avenue North	Study of aspen as alcohol feedstock	\$ 32,800.00
	Energy self-sufficient village using biomass	\$ 50,000.00

AREA VII

Deer Lodge
Silverbow
Beaverhead



AREA VII DEFINITE

Western Montana College
% Thomas Briggs
Dillon, MT 59725

Feasibility study of
garbage burning generation \$ 6,000.00

AREA VII TENTATIVE

Larry & Peggy Racicot
2040 Roberts
Butte, MT 59701

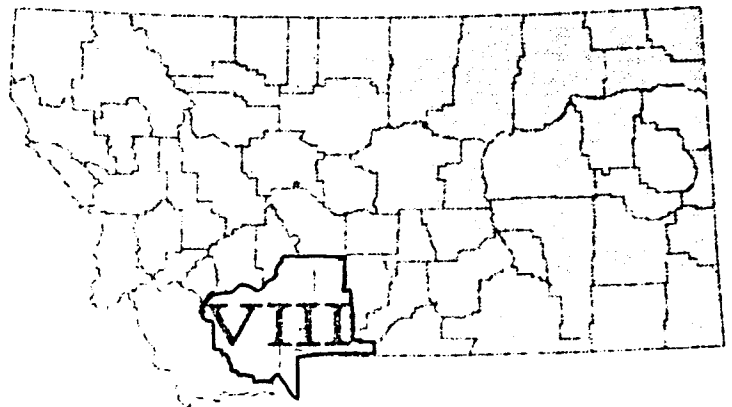
Passive solar/wood stove
residential heating system \$ 6,491.00

Montana Energy and MHD
Research and Development
Institute
Box 3809
Butte, MT 59701

Feasibility study of
commercial alcohol plant
(in Anaconda) \$100,000.00

AREA VIII

Madison
Gallatin
Park



AREA VIII DEFINITE

A. E. Montana, Inc
B. G. Kania, Pres.
717 South 14th Avenue
Bozeman, MT 59715

Commercial alcohol facility \$ 25,000.00 D
in Amsterdam \$ 50,000.00 T

Department of Admin.
A/E Division-Design Bureau
1500 East Sixth Avenue
Helena, MT 59601

Solar heating system of \$ 76,000.00
Bozeman Job Service building

D. O. Blacketter and C. R. Wimberly Dept. of Mech. Engrng. MSU Bozeman, MT 59717	Feasibility study of a garbage burning generation system	\$ 73,314.00
Richard Hodder 2479 Bear Canyon Road Bozeman, MT 59715	Compost space heater	\$ 1,200.00
Brelsford Engineering Box 1252 Bozeman, MT 59715	Alcohol distillation process using solar heat	\$ 13,135.00
Lsaren McKinsey Dept. of Political Science MSU Bozeman, MT 59715	Summer Energy Institute	\$ 3,136.00
Charless Fowlkes 31 Gardner Park Drive Bozeman, MT 59715	Solar insolation monitoring at 30 high schools	\$ 37,400.00
Community Development Office City of Livingston % Ed Stern Livingston, MT 59047	Wind-powered electric generators for municipal sewer lagoon	\$ 25,000.00 D \$ 28,250.00 T
Marcus McBeen Box 64 Gardiner, MT 59030	Solar domestic hot water system	\$ 4,837.00
Mont. St. University Roy Linn Extension Safety and Energy Specialist 409 Cobleigh Hall Bozeman, MT 59717	Biofuel and other renewable energy forum	\$ 6,025.00

AREA VIII
TENTATIVE

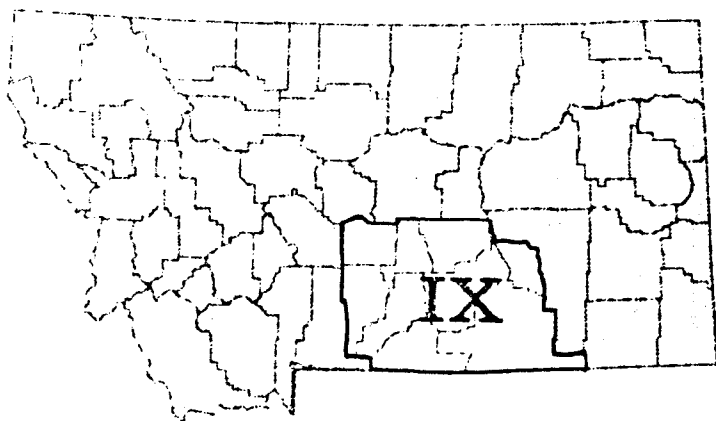
Human Resources Development Council District Nine 234 East Main Bozeman, MT 59715	Solar greenhouse renovation in Three Forks	\$ 11,304.00
Charless Fowlkes	Performance monitoring of solar heating projects	\$ 38,379.00
Brelsford Engineering Box 1252 Bozeman, MT 59715	Biomass pilot plant	\$ 32,800.00
John Robbins Chemistry Department MSU Bozeman, MT 59715	Research in anerobic digestion	\$ 23,000.00

David Ward Dept. of Microbiology MSU Bozeman, MT 59715	Research in methane conversion	\$ 14,052.00
Warren Scarrah Dept. of Chem. Engrg. MSU Bozeman, MT 59715	Testing of barley grain and straw in water absorption from hydrous alcohol	\$ 15,413.00
Bair Electric, Inc. %Richard D. Cook Box 725 Livingston, MT 59047	Wind-powered electric system	\$ 7,200.00
Harold Johnson Springdale, MT 59082	Wind-powered electric system	\$ 4,800.00
Joseph & Diana Gilliam 616 North "L" Livingston, MT 59047	Solar greenhouse for home heating	\$ 5,055.00

AREA IX

Wheatland
Golden Valley
Musselshell
Sweet Grass
Stillwater

Yellowstone
Treasure
Carbon
Big Horn



AREA IX DEFINITE

Bruce Bannister Box 795 Billings, MT 59103	- Wind monitoring at Rosebud - Electric generator, if feasible - Wind monitoring of 10 other eastern Montana sites	\$ 5,000.00 Also: \$ 50,000.00 Tent. \$ 10,000.00 Tent.
David Coles Molt, MT 59057	Wind powered electric system	\$ 5,541.00
Alternative Energy Resources Organization 424 Stapleton Building Billings, MT 59101	Community Energy Outreach Program	\$ 15,682.00
Harlowton High School % Gary Olsen Harlowton, MT 59036	Vo-ag solar energy program	\$ 6,457.00
Dan Aadland Box 549 Absarokee, MT 59001	Residential solar addition	\$ 10,000.00
Northern Plains Resource Council 419 Stapleton Building	Rural energy outreach	\$ 20,165.00

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Solar heating system for school complex

GRANTEE: Harry Erickson
Belgrade Public Schools
School District #44
Belgrade, MT 59714

GRANT AMOUNT: \$ 10,750 -- Phase I: Feasibility study
1,500 -- Phase II: Design plan
91,360 -- Phase III: Construction
\$103,610 -- Total

CONTRACT SIGNED: 11-22-76 -- Phase I
5-22-78 -- Phase II
6-19-79 -- Phase III

DESCRIPTION: A solar space and domestic hot water heating system was incorporated into the design and construction of Belgrade's new junior/senior high school. Although the system was plagued initially with high-pressure adjustment problems, it is now performing efficiently with no major maintenance problems.

ENERGY SAVINGS: 450 million BTU's per year

MONEY SAVINGS: \$1,500 per year

PERCENT OF HEATING: 48% space and domestic hot water heating

MATCHING FUNDS: \$8,960

VISITATIONS: 200, plus students

ADDITIONAL BENEFITS: - Twin Bridges school board considering similar system
- System to be built at Medicine Lake High School

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Solar hot water system for retirement apartment complex.

GRANTEE: Major Caldwell
Horizon Lodge
701 S. Wisconsin
Conrad, MT 59425

GRANT AMOUNT: \$79,013

CONTRACT SIGNED: 7-18-77

DESCRIPTION: 900 square feet of solar collectors used to heat domestic hot water in 84-unit retirement apartment building.

ENERGY SAVINGS: 400 million BTU's per year

MONEY SAVINGS: \$3,500 -- conservative figure

PERCENT OF HEATING: 65%

MATCHING FUNDS: -0-

VISITATIONS: 75-100 per year

ADDITIONAL BENEFITS: - Montana Association for the Aging is considering additional renewable energy and conservation measures.

1-28-81

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: 25 kilowatt wind generator and monitoring

GUARANTEE: Ed O'Hair
Montana Energy and MHD
Research and Development Institute
Box 3809
Butte, MT 59701

GRANT AMOUNT: \$100,000

CONTRACT SIGNED: 6-11-79

DESCRIPTION: Demonstration of wind energy tied in with major utility power grid. Wind generator is located in Livingston.

ENERGY SAVINGS: 340 million BTU's per year

MONTHLY SAVINGS: \$2,000 per year

PERCENT OF POWER: Not applicable

MATCHING FUNDS: \$25,000 from Montana Power Company

VISITATIONS: 100 at installation. Visible from Interstate 90

ADDITIONAL BENEFITS:

- U.S. Windpower, a private company, using data from project in planning \$180 million wind energy project in Livingston area.
- City of Livingston using data in EPA grant for wind energy system at municipal sewer lagoon.
- MPC used picture in recent promotional brochure.
- Generating interest among local REA's.
- U.S. DOE considering Livingston as test site.

Renewable Energy Program Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Geothermally heated bank

GUARANTEE: Michael Grove, President
First National Bank
White Sulphur Springs, MT 59645

GRANT AMOUNT: \$43,500

CONTRACT SIGNED: 7-11-77

DESCRIPTION: Geothermal space heating provided by hot water resource 1,000 feet below bank. Heat exchangers transfer heat from water to building's air heating system.

ENERGY SAVINGS: 840 million BTU's per year

MONEY SAVINGS: \$2,760 -- based on reduced electricity costs

PERCENT OF HEATING: 80% minimum

MATCHING FUNDS: \$14,000

VISITATIONS: 50-75, plus bank customers

ADDITIONAL BENEFITS:

- Town of White Sulphur Springs working with U.S. Department of Energy to convert two schools, hospital and courthouse to geothermal
- Recognized as one of the Northwest's most efficient geothermal systems
- Information on low-temperature geothermal heating being used nationally and statewide.

1-28-81

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Five kilowatt hydroelectric system

GRANTEE: Richard and Nancy Klick
K Bar L Ranch
Box 287
Augusta, MT 59410

GRANT AMOUNT: \$8,785

CONTRACT SIGNED: 4-19-79

DESCRIPTION: The five kilowatt, high-head hydro system provides electricity to a remote outfitter's ranch, including barns, corrals, cabins and lodge.

ENERGY SAVINGS: 280 million BTU's per year

MONEY SAVINGS: \$2,500 per year, including fuel transport costs

PERCENT OF POWER: 100% -- No back-up generators being used.

MATCHING FUNDS: \$3,580

VISITATIONS: 50-100 per summer

ADDITIONAL BENEFITS:

- Regional and national recognition as an excellent microhydro project
- Contacted by Panamanian officials interested in remote hydro systems
- Excellent technical assistance and information resource for current hydro projects in the area

Renewable Energy Program

Contact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Report on finished solar projects

GRANTEE: Eric Trimble
326 Clay St.
Missoula, MT 59801

GRANT AMOUNT: \$2,500

CONTRACT SIGNED: 6/16/80

DESCRIPTION: Grantee examined finished solar energy projects under the Renewable Energy Program. The resulting report includes chapters on active liquid and air collector systems, passive systems and greenhouses, as well as an overall synopsis. The report, scheduled for publication this spring, will be made available to the public through the Energy Division's statewide library network.

BENEFITS:

- Report presents pros and cons of a cross-section of systems, allowing Montanans to decide which best fit their specific circumstances
- Excerpts from report already published in Montana Magazine
- Groundwork laid for further such studies for other renewable energy sources

3/81

George Siemion
Box 484 YRS
Hardin, MT 59034

Small-scale hydroelectric project \$ 5,000.00

AREA IX
TENTATIVE

Ron Cole
670 Sapphire
Billings, MT 59101

Vertical-axis windmill design \$ 28,000.00

Virgil Jones
Klein Star Route
Roundup, MT 59072

Solar greenhouse \$ 4,670.00

Stanley Wiatr
Dept. of Biology
Eastern Montana College
Billings, MT 59101

Study of biomass potential of fodder beets and cattails \$ 28,913.00

DeVries Alcohol Fuel, Inc.
Rockvale, MT

Commercial alcohol plant \$100,000.00

Jim Dick
113 Henry Road
Billings, MT 59102

Small-scale hydroelectric system See note Area I

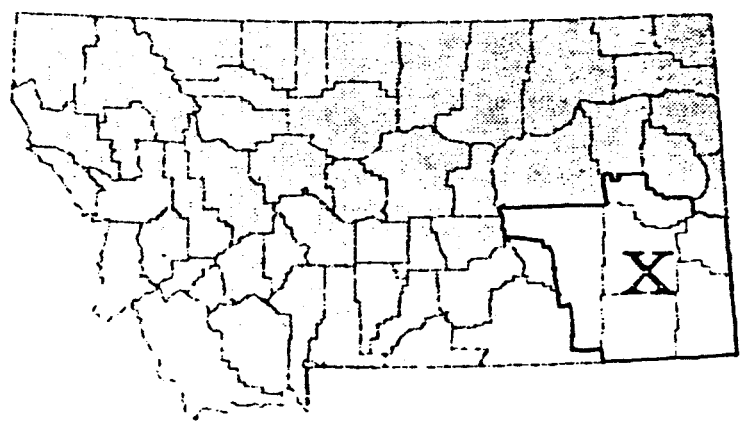
James Murnion
Box 55
Shawmut, MT 59078

Small-scale hydroelectric system See note Area I

AREA X

Rosebud
Custer
Fallon

Powder River
Carter



AREA X
DEFINITE

Bruce Bannister

Wind monitoring at Rosebud (See Area IX, definite)

AREA X
TENTATIVE

Lange Farms, Inc.
Box 1232
Miles City, MT 59301

Commercial alcohol plant \$100,000.00

Bruce Bannister

Wind monitoring of eastern

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Farm-scale fuel alcohol still

GUARANTEE: Dan Miles
Lake County Resource Recycling Company
Box 679
Polson, MT 59860

GRANT AMOUNT: \$2,500

CONTRACT SIGNED: 6-4-80

DESCRIPTION: A farm-scale still is utilized to test ethanol yields of various feedstocks, including cull potatoes, barley, cull cherries and molasses. LCRRC is considering mounting the still on a flatbed to conduct demonstrations and research on-site at several area farms.

ENERGY SAVINGS: 15 million BTU's produced
3 billion BTU's estimated capacity

MONEY SAVINGS: Not applicable

PERCENT OF POWER: Not applicable

MATCHING FUNDS: \$2,500 - Montana Dept. of Agriculture
\$5,000 - LCRRC

DISSEMINATIONS: 450 signed guest book, more have viewed project

ADDITIONAL BENEFITS: - Demonstrated portable still at University of Montana for 700 people. 200 expressed great interest.

- Seminars and tours for Polson High School.

- Plans for Salish/Kootenai tribal plant as a result of this project. Also alcohol production training course at Salish/Kootenai Community College.

CUMULATIVE MEASURABLE BENEFITS
THROUGH FY 1981

Renewable Energy Bureau staff has estimated energy savings resulting directly from demonstration projects from the first grants in 1976 through the definite grants awarded in FY 1981. This direct cumulative savings is estimated at 803 billion BTU's (British Thermal Units). This is equivalent to about 138,000 barrels of crude oil or about \$4.5 million at current prices. Significant additional BTU savings would result through the tentative grants, and indirect savings are also happening from demonstration grants and from Program-sponsored research, development and commercialization.

In addition to this significant return on investment, the approximately \$5 million in state grant money (including FY81 definite and tentative funding amounts) is bringing in more than \$62 million in federal or private matching funds and is creating more than 240 permanent, full-time jobs, as well as additional part-time employment.

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

F

PROJECT: Solar space and water heating

GRANTEE: Orville Oien
C-E Ranch, Inc.
R. R. 3, Box 89
Conrad, MT 59425

GRANT AMOUNT: \$7,276

CONTRACT SIGNED: 7/13/77

DESCRIPTION: A roof-mounted shed and reflective roof surface are used in conjunction with a 96 square foot solar collection system for space and domestic hot water heating of a 1,550 square foot home.

ENERGY SAVINGS: 34.7 million BTU's per year

MONEY SAVINGS: \$265 per year

PERCENT OF HEATING: 15-20%

WATCHING FUNDS: \$711

VISITATIONS: 300

ADDITIONAL BENEFITS:

- First solar energy system in Conrad area. Now, because of this system, there are 26 in town alone.
- Grantee's son teaches community course on renewable energy. Course in its fifth session, averaging 15 students.
- Three people employed in Conrad doing solar retrofits. Lumber sales up.

7/28/81

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Passive solar/earth sheltered house

GRANTEE: John Means
1616 34th Street
Missoula, MT 59801

GRANT AMOUNT: \$7,000

CONTRACT SIGNED: 8-23-78

DESCRIPTION: A 400 square foot Trombe wall provides primary space and domestic hot water heat for an 1,800 square foot home that is two-thirds underground. The wood back-up system uses about 1½ cords per winter.

ENERGY SAVINGS: 68.4 million BTU's per year

MONTHLY SAVINGS: \$800 per year

PERCENT OF HEATING: 80% solar
20% wood back-up

MATCHING FUNDS: \$6,900

SITUATIONS: 350-500. Will be on the University of Montana tour schedule this spring.

ADDITIONAL BENEFITS:

- Grantee has presented slide shows across Montana on passive solar/earth sheltered housing.
- Demonstration site for two earth sheltered housing seminars totaling 240 participants.
- Grantee has provided consulting on several area projects, including a major earth sheltered building to be built in Missoula this summer.

1-28-81

Renewable Energy Program Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Solar Insolation Measurement for Montana (SIMM)

GRANTEE: Charless Fowlkes
Fowlkes Engineering
31 Gardner Park Drive
Bozeman, MT 59715

GRANT AMOUNT: \$ 29,790 1977
35,490 1978
35,765 1979
37,400 1980
\$138,445 Total

DESCRIPTION: Students and science teachers at 30 locations across the state are measuring solar radiation, or insolation. This information is important for Montanans in determining what size or type solar heating system will work best in their specific areas.

NEFITS:

- Publication of Montana Solar Data Manual
- National recognition for SIMM program and data being obtained
- Incorporation of hands-on solar experimentation in high school curricula
- Grantee has produced a Solar Experiments Handbook for junior high and high school students as an outgrowth of project

/2/81

Renewable Energy Program

Fact Sheet

RENEWABLE ENERGY BUREAU
ENERGY DIVISION -- DNRC

PROJECT: Solar Heated Carpentry Shop

GRANTEE: Phillip Schmitz
Ronan, MT 59864

GRANT AMOUNT: \$4,649

CONTRACT SIGNED: 4/24/78

DESCRIPTION: A home built, 480 square foot air solar collector system with rock storage heats a carpentry shop, using wood heat as back up.

ENERGY SAVINGS: Approximately 100 million BTU's per year

MONEY SAVINGS: \$700-\$800 per year

PERCENT OF HEATING: 40%

MATCHING FUNDS: \$580, plus contributed labor

VISITATIONS: 50

ADDITIONAL BENEFITS:

- Workshop to be held at the shop in February
- Publicity has sparked local interest

2/2/81

Facility Siting Division

1. We have 32.25 current level FTE's. Those projects that we are currently working on, are going to continue through the 82-83 biennium. As the projects terminate, the funding source terminates and the individuals or those projects terminate. To accept the LFA's recommended 7 FTE, would mean that we would have to add 25.25 FTE by operational plan amendment just to get to current level. This is unnecessary paper work for both the Department and the OBPP.

2. HB 908 appropriated \$500,000 of RIT money to facilitate design and implementation of a joint MHD-coalfired generation plant. Little of the money has been spent. The Department of Energy was reluctant to commit to such a project until the national MHD objectives were finalized. We believe that an agreement with DOE will be reached this biennium and therefore the money ought to be re-appropriated.

MHD = Magneto Hydrodynamics

	Commutations Trust Fund	
Adland Crooke	Residential solar addition	\$10,000
R.O. Hlings		
oula -		
Processors, Inc. ow	Produce ethanol from gasohol (contingent on \$2 million federal loan)	100,000
n Alexander mber	Active solar-wood heated home	10,531
n Allemeier re	Solar Space Heating & DHW Preheating	6,309
e, Antonioli te	Fluorescent tube solar collector Development	5,000
e Art co Hot Springs	Use springs to heat resort lodge	10,000
n Tudet bb_y	Solar wood burner water heating sys.	2,000
Bruce Bannister ll ngs	Eastern Montana wind energy demo. proj.	5,000
lliam C. Black	Small ranch energy self-sufficiency	4,500
n Allivett endive	Solar demo. project for residential hearing	2,550
el ford Engineering eman	Solar process heat & vacuum distill. Wind Survey of Livingston Area Biofuels Assessment	13,135 17,285 25,000
na, l Breese tefish	Dev. & test 5 tracking parabolic solar collectors	5,000
n Brown cle	Solar/wind electric heated year around greenhouse	12,500
te-Silver Bow i-poverty Council te	Solar domestic hot water heating & a solar greenhouse	4,148
Panch, Inc. ral	Solar heated home retrofit	7,276
c Carstens so	Alcohol & Oil extraction project for farm gas & diesel use	5,000
rman Cook coln.	Solar Home	10,500
urter y	Fuild & test generator that provides heat & power from wood gas	5,763
sa a Clowers at Falls	Active solar domestic hot water preheater (liquid sys.)	2,800

David Coles Bozeman	Wind generation demonstration in conjunction with a power co.	5,541.40
James Coons Billings	Solar Home	11,000
Robert J. Corbett Butte	Attached Greenhouse	5,711
Gregory Cunniff Great Falls	Solar/wood home heating	16,850
Berny Driscoll Boys Home Butte	Solar/wood heat in Denny Driscoll Boys Home	30,000
Richard Dill Twin Falls	Solar/wind/wood home heating	6,361
Graves Engineering Great Falls	2 kw dunlite home wind generation sys. Wind monitoring of Site	19,375 5,093
John Duffield Missoula	Solar/wood home heating	9,640
Earth Institute Avon	Geothermal/solar hybrid greenhouse project	13,321.29
Jim & Doris Ekstrom Clinton	Greenhouse with composting heat source	3,143
John Fisher Arlee	Solar Demonstration	20,000
Alvin Fiscus Bozeman	Monitor a wood fireplace used for supplementary home heating	600
Fowlkes Engineering Bozeman	Measure availability of sunlight in 30 Mont. high schools --- Solar heating sys. Perf. Monitoring Performance Monitoring of Hamilton Swimming Pool ----- Solar Heating sys. Per. Monitoring Statewide solar insolation monitoring Active solar heated mobile home demo. Solar insolation monitoring program Solar Monitoring Solar/Wood Heat Solar insolation monitoring program	37,400 20,000 10,145 45,000 35,765 25,000 35,490 29,790 10,000 37,400
Gary Franklin Great Falls	Solar greenhouse/wood home heating	5,000
Carol & Mike Gauthier Missoula	Stick-wood boiler demo. project for residential applications	9,374
G. Falls Savings & Loan Great Falls	Install monitor for solar heating sys. in Conrad branch office	1,600
Peter Gobby Bozeman	Solar year around greenhouse	12,000
Men & Gail Goheen Hamilton	Solar Space Heating Air collectors	5,680
John Gordon Cascade	Wind monitoring at location near Cascade	2,000

nte Co. Comm. -Corp. lipsburg	Solar greenhouse for comm. education	\$ 18,000
r Groblebe l...js	Waste Heat Recovery from compost and grey water	7,173
h el Grove	Drilling Costs of Geothermal Well	15,000
s Nat. Bank	Geothermally heated bank	28,500
te Sul, Springs		
ic Gustafson	Paddlewheel-Type Windmill	4,800
bank		
sell R. Hansen	Energy self-sufficient space & water heating retrofit project	4,528
vi town		
Levi Hanson, P.E.	Attached Greenhouse	6,446
rd ord		
William Harbrecht	Solar home heating	10,000
lena		
ve Harriman	Water-air heat pump sys. using a geothermal spring & a greenhouse	4,000
. Ignatius		
ch rd Hodder	Composting space heater	1,200
zeman		
ndy Holtan	Solar panels & reservoir project for shop heat use	1,000
er ywood		
rizon Lodge	Preheating of Domestic Hot Water	29,013
u	Solar domestic hot water for 84- Apartment unit	50,000
nnis Howard	Solar heated home	6,000
er live		
rt Hughes	Passive Solar Home	5,400
les City		
stitute of Rockies	Build earth sheltered conf. center	30,000
	Study feasibility of underground wood heated conference Center	3,675
dependent Power Dev.	Wind Electric System	64,256
xon	Small scale Hydroelectric Sys.	19,885
	Low head hydroelec. sys. dev.	25,000
	Auto. high efficiency wood stove	6,968
is Johnson	Solar/wind home heating	3,000
er		
G. Kania	Demo distillery for commercial ethanol production	25,000
E. Montana, Inc.		
znan		
in Kelly	Small scale wind generation sys.	3,500
ol /		
ll... Kilby	Solar concentrating collector home heating sys.	14,100
at Falls		
and R. Kissner	4.8 KW Wind Generator	5,500
rad		

Edward Klick Bar L Ranch Casta	5 kw high head hydro elec. sys.	8,785
Edward Klinger Alena	Study legal & institutional barriers to renewable energy	10,000
Eric Kreitinger Three Forks	Solar home heating	4,315
David Leavengood Bozeman	Solar Heating	10,500
Ray Leighty Billings City	Active solar heated home	3,245
Edward Lien Point	Wind driven water pump on a stock well	1,100
F. Link & Assoc. Billings	Passive solar heating sys. for subdivision	2,000
Edward Lloyd-Jones Annis	Passive Solar Greenhouse with Thermosiphon Liquid collectors; vented into house for space heating	1,849
Steve Loken Libby	Guide for passive solar housing in Montana	7,515
Bob Mac Donald Devensville	Solar home heating	4,314
Mark MacDonald Coe Falls	Solar Home Heat	8,743.70
Marcus McBeen Bariner	Economical solar domestic hot water system	4,837
Ruce McCallum Nester	Greenhouse with liquid collectors & Wood Stove, also wind study	2,284.
Erny McGillvary Minook	Install wind generator & monitor at his home	25,940
Eric McIntyre Hobson	Wind energy availability for Hobson	402.90
John Michael Mason Lacey	Hippert Wood Furnace	510.
George Mattson Bozeman	Solar home heating	8,000
John Means Missoula	Solar Home Underground solar house & greenhouse with tromble wall -----	4,000 7,000
ERDI Billings	Center for Innovation	100,000
	Wind dev. Prog.	100,000
	Feasibility study for straw-burning central heating plant -----	38,736
	Geothermal heat survey for the Warm Spring and a greenhouse ----	9,000

Montana Conf. of the United Church Christ Billings	Solar shower & domestic hot water	1,300
Montana Research Montana Tech Alumni Billings	Active solar-heat pump office area full instrumentation & sys. analysis	13,570
Bill Morrow Billings	Active solar heated building (liquid concentrating sys.)	12,500
Mountainview Mem. Hospital Billings Sul.Springs	Drill & test a well for geothermal potential	2,000
Montana Center for Appropriate Technology Billings	Biogas Assessment	25,624
Montana Southern Plains Resource Council Billings	Mont. Rural Energy Project	20,165
Walter Orndorff Billings	Solar home heating	5,000
James Orvis Billings	Solar mobile home heating Unattached greenhouse/active solar heating sys.	3,700 616
Carl Osterg Billings	Install Hydroelectric sys. in irrigation ditch for power of home & farm	30,000
Our Redeemer Northern Church Billings	Dev. semicircular hot air solar collectors	4,000
Paul Owen Billings	Solar home	11,362
Pacific Power & Light Billings	Solar domestic hot water preheater	3,000
Charles Page Billings	Geothermal well drilling & testing	15,000
Phillip Pallister Billings	Solar heated home	8,000
W. Peterson Billings	Solar home heating	7,000
Montana Power Billings	Solar/Wind/Wood Home	12,095.96
Wanda Prelliwetz Billings	Portable home solar furnace using aluminum beverage cans	900
Rechterfertig Billings	Passive solar heated homes	1,265

rb Richards zeman	Solar heated 3-story life ins.bldg.	59,500
erry Savage blo	12 kw hydroelectric sys.	14,050
illip Schmitz	Solar/wood heated carpenter's shop	4,649
orge & Nelvette mion yrdin	Small scale hydro project for farm electric use	5,000
and Smith elena	Double wood stove heating sys.	2,837
William Spilker elena	Geothermal	15,000
tan Steadman l ndive	Attached Greenhouse	1,240
thomas Stewart elena	Provide an incentive for solar community dev.	3,000
il Stockton rass Range	Homemade wind powered air compressor	1,385
ike Stoltz lendive	Solar Home	3,805
arlow Strandlund onstead	Biomass combustion furnace for farm home	4,530
orm Sulenes l ggs	Active solar heated home (freon collector sys.)	10,760
ames Taylor elena	Solar Home	12,750
Anthony Terzo, Jr. ssoula	Solar/wood home heating	10,000
William Tomlinson eat Falls	Solar/Heat Pump Heating	7,166.50
Wence Truchot eat Falls	Solar home heating	7,500
iversal Services imited ompson Falls	Feasibility study to design ethanol plant using wood feedstock	25,000
na'd Weaver, Jr. ze an	Dev. digitized heat control & energy monitoring system	6,000
stern Analysis le a	Analysis of 5 solar homes built on earlier grants	10,000
stern Mt Timber ilization Group ssoula	Timber thinning project for utilization of wood residue	15,500
Jack Whiting	Wind powered water pump	2,000

erB & Tom Winsor elena	Feasibility of using waste wood to generate heat thru central heating plant	5,763
ria Wood om	Active solar heated church (liquid trickle-type collectors)	9,380
Edward Wrench alispell	Dev. & demonstration of a fireplace insert --	7,500
	Creation of "How To" pamphlets to promote use of renewable energy -	2,000
ohn D. Wyckoff llings	Passive Flat-Plate Liquid Space Heating & DHW - Preheating of Under- ground Home	7,000
at ick Wyse on ad	Large Commercial bldg. demonstration of passive & direct	15,213
Robert Zychek oz man	Wood Heating	1,000
Sub-total =		\$ 2,050,403.75
na onda-Deer Lodge o. Gove. naconda	Test Facility for Wood stoves	98,318
el grade School Dist. elgrade	Solar heated Junior H.S. Solar School Final solar heating design	85,636 10,750 1,500
ascade School Dist. ascade	Monitor a site for wind potential	10,000
it of Hamilton amilton	Solar Municipal Swimming Pool Heater	36,420
ar owton H.S. ar owton	Solar energy education program for Harlowton High Vo-Ag students	6,457.09
ommunity Dev. it of Livingston ivingston	Wind-farm demonstration program	25,000
edicine Lake HS edicine Lake	Solar panels for space heating in school complex	12,000
ity of Shelby he by	Solar heated enclosed swimming pool	36,800
roy Schools roy	Inf. Program of alternative tech. to Citizens of Lincoln Co.	1,133
ta e of Montana Montana Energy Office Dent. of Highways	Compile Solar Directory Eng. & Arch. Des. for Underground passively heated shop complex --	15,425 3,000
La y & Industry	Passive solar heated & lighted Job Service Bldg. in Bozeman -----	76,000
Public Instruction	Purchase Energy Env. Simulator to be used statewide energy educ. prog.--	3,000

Montana State Univ.	1981 Energy Inst.	3,316.
Bozeman	Wood Heat & Storage	4,000
Botany Dept.	Solar Heating Sys.	8,000
Chemistry Dept.	Biomass	19,480
	Biomass research	28,601
	Biomass research	56,549
	Continue research-methanol prod.	37,732
Ext. Safety & Energy	Bio-fuel & other renewable energy	6,025
Electronics Research	Solar elec. radio signal repeater	5,314
	Small Scale wind generation system	8,035
Mech. Engineering	Purchase-infrared scanner	12,000
	Dev. energy use & design course	21,005
	Energy Course Continuation	29,036
	Public Energy Educ. Prog.	5,000
	Feasibility of solid waste recovery & energy generation system ----	73,314
Microbiology	Biomass research	33,433
Political Science	Summer Inst. in Energy Dev. & Cons.	2,681
Physics	Solar Heating of Domestic Hot Water	4,000
	Synchronous inverter & ducted motor wind generator development ----	19,640
	Bench testing of Sys-Sinc Elec.Inverter	5,841
	Wind Energy/Synchronous Inverter	7,346
	Vertical solar collector efficiencies	12,990
Montana Tech. Butte	Collect & evaluate geothermal resource data -	30,000
	Solar Collector test facility	45,881
	Collector, collector fluid, sys. perf.	14,812
	Solar Home - Charles Herndon, P.E.	15,000
	Geothermal Dev. (Warm Springs)	10,265
Western Mt. Dillon	Pre. design for a combination renewable fuel system	6,000
Human Resources Council		
Missoula	Residential solar Air Sys.	26,875
	Six active solar domestic hot water preheating sys. ----	15,000
	Solar mobile home heating (20)	26,000
	Imp. efficiency of 5 solar sys.	4,705
Havre	Solar home heating for 20 homes	6,076
Ft. Belknap Agency Harlem	Wind Monitoring a 2 locations	2,000
Four separate projects (?)	Hydro projects for residential use consultation service	16,000
	One generator	16,000
	Total	\$ 3,109,794.84

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GRANTS AWARDED IN FALL 1980
FROM THE
RENEWABLE ENERGY GRANTS PROGRAM

Definite Grants	\$ 480,040.00
Tentative Grants	1,818,948.00
Earmarked for Requests for Proposals (RFP's)	381,000.00
	<hr/>
TOTAL	\$2,679,988.00

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

January, 1981

DETAIL OF SPRING 1981 REQUESTS FOR PROPOSALS (RFP's)

Designs for model earth-sheltered homes in Montana	\$ 10,000.00
Development of eutectic salt as solar heat storage	\$ 28,000.00
Research into solar photo-chemical energy in production of hydrogen	\$ 50,000.00
Reduction and analysis of data from Wind Monitoring Loan Program	\$ 30,000.00
Development of a wind generator and electrolysis cell to produce hydrogen	\$ 8,000.00
Wood stove test facility	\$ 90,000.00
Research and publication into building orientations and solar access in subdivisions	\$ 15,000.00
Research and publication of manual for assistance to small businesses for development of their renewable energy goods and services capability	\$ 70,000.00
Development of a home energy computer to assist homeowners in determining the feasibility of installing renewable energy systems	\$ 50,000.00
Purchase of additional wind monitoring equipment for use throughout the state	\$ 30,000.00
	<hr/>
TOTAL RFP's	\$ 381,000.00

<u>Montana State Univ.</u>	1981 Energy Inst.	3,316
Bozeman	Wood Heat & Storage	4,000
Botany Dept.	Solar Heating Sys.	8,000
Chemistry Dept.	Biomass	19,480
	Biomass research	28,601
	Biomass research	56,549
	Continue research-methanol prod.	37,732
Ext. Safety & Energy	Bio-fuel & other renewable energy	6,025
Electronics Research	Solar elec. radio signal repeater	5,314
	Small Scale wind generation system	8,035
Mech. Engineering	Purchase-infrared scanner	12,000
	Dev. energy use & design course	21,005
	Energy Course Continuation	29,036
	Public Energy Educ. Prog.	5,000
	Feasibility of solid waste recovery & energy generation system ----	73,314
Microbiology	Biomass research	33,433
Political Science	Summer Inst. in Energy Dev. & Cons.	2,681
Physics	Solar Heating of Domestic Hot Water	4,000
	Synchronous inverter & ducted motor wind generator development ----	19,640
	Bench testing of Sys-Sinc Elec.Inverter	5,841
	Wind Energy/Synchronous Inverter	7,346
	Vertical solar collector efficiencies	12,990
<u>Montana Tech.</u>		
Butte	Collect & evaluate geothermal resource data -	30,000
	Solar Collector test facility	45,881
	Solletor,collector fluid, sys. perf.	14,812
	Solar Home - Charles Herndon,P.E.	15,000
	Geothermal Dev. (Warm Springs)	10,265
Western Mt.	Pre. design for a combination renewable fuel system	6,000
Dillon		
<u>Human Resources Council</u>		
Missoula	Residential solar Air Sys.	26,875
	Six active solar domestic hot water preheating sys. ----	15,000
	Solar mobile home heating (20)	26,000
	Imp. efficiency of 5 solar sys.	4,705
Havre	Solar home heating for 20 homes	6,076
Ft. Belknap Agency	Wind Monitoring a 2 locations	2,000
Harlem		
Four separate projects (?)	Hydro projects for residential use consultation service	16,000
	One generator	16,000
	Total	\$ 3,109,794.84

ALTERNATIVE RENEWABLE ENERGY PROGRAM

Herb & Tom Winsor H lena	Feasibility of using waste wood to generate heat thru central heating plant	5,763
Brian Wood L ma	Active solar heated church (liquid trickle-type collectors)	9,380
Richard Wrench Kalispell	Dev. & demonstration of a fireplace insert --	7,500
	Creation of "How To" pamphlets to promote use of renewable energy -	2,000
John D. Wyckoff Billings	Passive Flat-Plate Liquid Space Heating & DHW - Preheating of Under- ground Home	7,000
Patrick Wyse Conrad	Large Commercial bldg. demonstration of passive & direct	15,213
Robert Zychek Bozeman	Wood Heating	1,000
-----		Sub-total = \$ 2,050,403.75
Anaconda-Deer Lodge Co. Gove. Anaconda	Test Facility for Wood stoves	98,318
Belgrade School Dist. Belgrade	Solar heated Junior H.S. Solar School Final solar heating design	85,636 10,750 1,500
Cascade School Dist. Cascade	Monitor a site for wind potential	10,000
City of Hamilton Hamilton	Solar Municipal Swimming Pool Heater	36,420
Harlowton H.S. Harlowton	Solar energy education program for Harlowton High Vo-Ag students	6,457.09
Community Dev. City of Livingston Livingston	Wind-farm demonstration program	25,000
Medicine Lake HS Medicine Lake	Solar panels for space heating in school complex	12,000
City of Shelby Shelby	Solar heated enclosed swimming pool	36,800
Troy Schools Troy	Inf. Program of alternative tech. to Citizens of Lincoln Co.	1,133
State of Montana Montana Energy Office Dept. of Highways	Compile Solar Directory Eng. & Arch. Des. for Underground passively heated shop complex --	15,425 3,000
Labor & Industry	Passive solar heated & lighted Job Service Bldg. in Bozeman -----	76,000
Public Instruction	Purchase Energy Env. Simulator to be used statewide energy educ. prog.--	3,000

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Montana State Univ.	1981 Energy Inst.	3,316
Bozeman	Wood Heat & Storage	4,000
Botany Dept.	Solar Heating Sys.	8,000
Chemistry Dept.	Biomass	19,480
	Biomass research	28,601
	Biomass research	56,549
	Continue research-methanol prod.	37,732
Ext. Safety & Energy	Bio-fuel & other renewable energy	6,025
Electronics Research	Solar elec. radio signal repeater	5,314
	Small Scale wind generation system	8,035
Mech. Engineering	Purchase-infrared scanner	12,000
	Dev. energy use & design course	21,005
	Energy Course Continuation	29,036
	Public Energy Educ. Prog.	5,000
	Feasibility of solid waste recovery & energy generation system ----	73,314
Microbiology	Biomass research	33,433
Political Science	Summer Inst. in Energy Dev. & Cons.	2,681
Physics	Solar Heating of Domestic Hot Water	4,000
	Synchronous inverter & ducted motor wind generator development ----	19,640
	Bench testing of Sys-Sinc Elec.Inverter	5,841
	Wind Energy/Synchronous Inverter	7,346
	Vertical solar collector efficiencies	12,990
Montana Tech.		
Butte	Collect & evaluate geothermal resource data -	30,000
	Solar Collector test facility	45,881
	Solletor,collector fluid, sys. perf.	14,812
	Solar Home - Charles Herndon,P.E.	15,000
	Geothermal Dev. (Warm Springs)	10,265
Western Mt.	Pre. design for a combination renewable fuel system	6,000
Dillon		
Human Resources Council		
Missoula	Residential solar Air Sys.	26,875
	Six active solar domestic hot water preheating sys. ----	15,000
	Solar mobile home heating (20)	26,000
	Imp. efficiency of 5 solar sys.	4,705
Havre	Solar home heating for 20 homes	6,076
Ft. Belknap Agency	Wind Monitoring a 2 locations	2,000
Harlem		
Four separate projects (?)	Hydro projects for residential use consultation service	16,000
	One generator	16,000
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VISITORS' REGISTER

HOUSE Appropriations COMMITTEE

NAT. RESOURCES

~~RE: THE~~ ENERGY FACILITY SITING PROGRAM

Date 2-9-81

SPONSOR _____

NAME	RESIDENCE	REPRESENTING	SUPPORT	OPPOS
John Armstrong	Helena	DNRC		
William Gosden	Helena	DNRC		
Leo Berry	Helena	DNRC		
Randy May	Helena	DNRC		

IF YOU CARE TO WRITE COMMENTS, ASK SECRETARY FOR LONGER FORM.
 PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.