Item 8a

GENERAL FINANCIAL CONDITION
JEFFERSON COUNTY WISCONSIN
March 1, 2014

Available Cash on Hand				
February 1, 2014	$	74,408.25		
February Receipts	$	13,045,699.12		
Total Cash			$	13,120,107.37
Disbursements				
General - February 2014	$	12,036,643.82		
Payroll - February 2014	$	1,178,055.66		
Total Disbursements			$	13,214,699.48
Total Available Cash			**$**	**(94,592.11)**
Cash on Hand (in bank) March 1, 2014	$	904,687.59		
Less Outstanding Checks	$	999,279.70		
Total Available Cash			**$**	**(94,592.11)**
Local Government Investment Pool - General			$	30,147,973.79
Institutional Capital Management			$	16,066,876.15
Local Government Investment Pool -Clerk of Courts			$	25,928.34
Local Government Investment Pool -Farmland Preservation			$	252,729.34
Local Government Investment Pool -Parks/Liddle			$	87,456.32
Local Government Investment Pool -Highway Bond			$	3,520,489.46
			$	50,101,453.40
2014 Interest - Super N.O.W. Account			$	242.84
2014 Interest - L.G.I.P. - General Funds			$	2,908.37
2014 Interest - ICM			$	33,921.53
2014 Interest - L.G.I.P. - Parks /Carol Liddle Fund			$	10.91
2014 Interest - L.G.I.P. - Farmland Preservation			$	31.52
2014 Interest - L.G.I.P. - Clerk of Courts			$	3.24
2014 Interest - L.G.I.P. - Highway Bond			$	439.14
Total 2014 Interest			$	37,557.55

JOHN E. JENSEN
JEFFERSON COUNTY TREASURER

Jefferson County
2015 Budget Calendar

Description	Date	Regular Finance	Budget Related
Employee reclassification letter sent out by Human Resources	Monday, March 24, 2014		x
New Position Request Letter sent to Department Heads by HR	Monday, March 24, 2014		x
Employee reclassification requests due to Department Heads	Tuesday, April 1, 2014		x
Employee reclassification names due to HR from Departments	Friday, April 4, 2014		x
New Position requests due from Departments to HR	Monday, April 7, 2014		x
Regular Finance meeting	Thursday, April 10, 2014	x	
Job Description Questionnaires (JDQs) distributed by HR for reclass requests	Friday, April 11, 2014		x
Employees turn in completed JDQs to department heads	Tuesday, April 22, 2014		x
MIS issues 2015 IT equipment/programming request forms to departments	Thursday, April 24, 2014		x
Department Heads turn in reviewed JDQs to Human Resources	Friday, April 25, 2014		x
Dept Heads turn in completed IT equip/Programming request forms to MIS	Friday, May 2, 2014		x
Significant reclassification changes forward to vendor	Monday, May 5, 2014		x
2015 MIS Requested Budget/programming hours reviewed with Administrator	Thursday, May 8, 2014		x
Regular Finance meeting	Thursday, May 8, 2014	x	
2015 MIS Requested Budget/programming hours submitted to Finance Director	Monday, May 12, 2014		x
MIS reviews departmental IT equipment requests with Administrator	Friday, May 16, 2014		x
GFOA National Conference (Sunday, May 18th – Wednesday, May 21th)	Sunday, May 18, 2014		
Department Heads receive budget guidelines from Administrator	Tuesday, June 3, 2014		x
Vendor returns reclassification recommendations to HR	Friday, June 6, 2014		x
Preliminary Dept Personnel Budgets available for Courthouse & Sheriff	Wednesday, June 11, 2014		x
Reclassification requests shared with Department Heads	Wednesday, June 11, 2014		x
Preliminary dental rates set	Thursday, June 12, 2014		x
Regular Finance meeting	Thursday, June 12, 2014	x	
Department Head meeting to hand out budget materials	Wednesday, June 18, 2014		x
May monthly financial reports generated	Monday, June 23, 2014		
Final dental rates set	Thursday, July 10, 2014		x
Regular Finance meeting	Thursday, July 10, 2014	x	
June monthly financial reports generated	Monday, July 21, 2014		
Budget requests due to Administrator (HS also due)	Friday, August 1, 2014		x
Regular Finance meeting	Thursday, August 7, 2014	x	

01/6/2014

Jefferson County
2015 Budget Calendar

Description	Date	Regular Finance	Budget Related
State EFT sets health ins. & retire. rates - late Aug./early Sept.	Friday, August 29, 2014		x
Regular Finance meeting	Thursday, September 11, 2014	x	
WCA Annual Conference	Sunday, September 14, 2014		
WCA Annual Conference	Monday, September 15, 2014		
WCA Annual Conference	Tuesday, September 16, 2014		
Budget hearings	Wednesday, September 17, 2014		x
Budget hearings	Monday , September 22, 2014		x
Budget hearings	Wednesday, September 24, 2014		x
Budget hearings, apply fund balance policy, set tax levy	Friday, September 26, 2014		x
WGFOA Conference	Thursday, September 18, 2014		
WGFOA Conference	Friday, September 19, 2014		
Regular Finance meeting	Thursday, October 9, 2014	x	
Present budget and Amendment Procedure to County Board	Tuesday, October 14, 2014		x
Public hearing on budget	Tuesday, October 28, 2014		x
Supervisor budget amendments due to Administration at noon	Thursday, October 30, 2014		x
Finance meeting on Supervisor budget amendments	Monday, November 3, 2014		x
Budget Adoption by County Board	Wednesday, November 12, 2014		x
Regular Finance meeting	Thursday, November 13, 2014	x	
Department Head meeting including review of budget adoption	Thursday, November 13, 2014		x
Budget must be reported to state	Thursday, November 13, 2014		x

Jefferson County Committee Meetings

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
BABCOCK, PAUL							
	12	ADMIN & RULES/ICC		660.00	74.58	734.58	
	8	ADMINISTRATOR SEARCH COMM		490.00	54.24	544.24	
	11	COUNTY BOARD	660.00	605.00	67.80	1,332.80	
	4	COUNTY FAIR		220.00	27.12	247.12	
	10	FAIR COMMITTEE		550.00	67.80	617.80	
	11	LAW ENF/EM MGMT COMM		605.00	74.58	679.58	
	1	PER DIEM DONATION			0.00	0.00	
							4,156.12
BORLAND, GLEN							
	12	COUNTY BOARD	660.00	660.00	81.36	1,401.36	
	1	EDUCATION SESSION		80.00	6.78	86.78	
	11	HIGHWAY COMMITTEE		605.00	74.58	679.58	
	5	JOINT MEETING HY/INFRASTR		275.00	0.00	275.00	
	12	PARKS COMMITTEE		660.00	88.73	748.73	
	10	UW EXTENSION EDUC COMM		575.00	67.80	642.80	
							3,834.25
BRAUGHLER, JAMES							
	11	ADMIN & RULES/ICC		605.00	180.80	785.80	
	8	ADMINISTRATOR SEARCH COMM		490.00	108.48	598.48	
	11	COUNTY BOARD	660.00	605.00	90.40	1,355.40	
	1	EDUCATION SESSION		80.00	0.00	80.00	
	18	FINANCE COMMITTEE		990.00	325.44	1,315.44	
	19	HUMAN RESOURCES COMMITTE		1,045.00	307.36	1,352.36	
	1	MILEAGE DONATION			0.00	0.00	
	1	PER DIEM DONATION			0.00	0.00	
	2	SEMINAR/CONVENTION		160.00	114.70	274.70	
							5,762.18
BREGANT, SARAH K							
	10	COUNTY BOARD	660.00	550.00	138.99	1,348.99	
	9	LAND & WATER CONSERVATION		495.00	128.82	623.82	
	2	LOWER SPRING LAKE PROJECT		110.00	24.86	134.86	
	10	UW EXTENSION EDUC COMM		575.00	145.77	720.77	
							2,828.44

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
BUCHANAN, RONALD							
	10	COUNTY BOARD	660.00	550.00	108.48	1,318.48	
	1	EDUCATION SESSION		80.00	18.08	98.08	
	12	FAIR COMMITTEE		660.00	216.96	876.96	
	11	HIGHWAY COMMITTEE		605.00	198.88	803.88	
	12	HOME CONSORTIUM		660.00	0.00	660.00	
	5	JOINT MEETING HY/INFRASTR		275.00	0.00	275.00	
	4	SEMINAR/CONVENTION		220.00	87.01	307.01	
	1	VETERANS SERVICE COMM		55.00	18.08	73.08	
							4,412.49
CHRISTENSEN, WALT							
	5	COMM ACTION COALITION		300.00	155.94	455.94	
	12	COUNTY BOARD	660.00	660.00	169.50	1,489.50	
	5	EDUCATION SESSION		300.00	170.63	470.63	
	12	LAKE RIPLEY MGMT DIST		660.00	202.27	862.27	
	11	LAND & WATER CONSERVATION		605.00	155.38	760.38	
	1	PER DIEM DONATION			0.00	0.00	
							4,038.72
COUNSELL, ALFRED C							
	10	COUNTY BOARD	660.00	550.00	180.80	1,390.80	
	6	ECONOMIC DEVELOPMENT CON		330.00	108.48	438.48	
	1	EDUCATION SESSION		80.00	18.08	98.08	
	10	HIGHWAY COMMITTEE		550.00	180.80	730.80	
	5	JOINT MEETING HY/INFRASTR		275.00	0.00	275.00	
							2,933.16
DAVID, GREG							
	12	COUNTY BOARD	660.00	660.00	174.02	1,494.02	
	13	HUMAN RESOURCES COMMITTE		715.00	205.66	920.66	
	32	PLANNING & ZONING COMM		1,760.00	506.24	2,266.24	
	6	SOLID WASTE/AIR QUALITY		330.00	94.92	424.92	
							5,105.84
FOELKER, MATTHEW J							
	10	COUNTY BOARD	660.00	550.00	101.70	1,311.70	
	5	COUNTY FAIR		275.00	56.50	331.50	
	1	EDUCATION SESSION		80.00	11.30	91.30	
	13	FAIR COMMITTEE		715.00	146.90	861.90	
	10	LAND & WATER CONSERVATION		550.00	113.00	663.00	
	8	UW EXTENSION EDUC COMM		465.00	90.40	555.40	
							3,814.80

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
HANNEMAN, JENNIFER							
	12	COUNTY BOARD	660.00	660.00	27.12	1,347.12	
	19	FINANCE COMMITTEE		1,045.00	42.94	1,087.94	
	6	HOME CONSORTIUM		330.00	0.00	330.00	
	9	UW EXTENSION EDUC COMM		520.00	4.52	524.52	
							3,289.58
JAECKEL, GEORGE							
	12	COUNTY BOARD	660.00	660.00	61.02	1,381.02	
	1	EDUCATION SESSION		80.00	5.09	85.09	
	11	HIGHWAY COMMITTEE		605.00	55.94	660.94	
	5	JOINT MEETING HY/INFRASTR		275.00	0.00	275.00	
	12	LAW ENF/EM MGMT COMM		660.00	61.02	721.02	
	1	PER DIEM DONATION			0.00	0.00	
	36	PLANNING & ZONING COMM		1,980.00	183.06	2,163.06	
							5,286.12
JONES, RICHARD C							
	7	ADMINISTRATOR SEARCH COMM		435.00	135.60	570.60	
	12	COUNTY BOARD	660.00	660.00	248.60	1,568.60	
	21	FINANCE COMMITTEE		1,155.00	429.40	1,584.40	
	13	HUMAN SERVICES BOARD		715.00	293.80	1,008.80	
	17	INFRASTRUCTURE		935.00	384.20	1,319.20	
	1	PER DIEM DONATION			0.00	0.00	
							6,051.60
KANNARD, JOHN							
	12	COUNTY BOARD	660.00	660.00	216.96	1,536.96	
	9	HOME CONSORTIUM		495.00	0.00	495.00	
	14	SOLID WASTE/AIR QUALITY		795.00	317.36	1,112.36	
							3,144.32
KELLY, MICHAEL K							
	12	COUNTY BOARD	660.00	660.00	108.48	1,428.48	
	3	INFRASTRUCTURE		165.00	27.12	192.12	
	12	PARKS COMMITTEE		660.00	81.36	741.36	
	9	UW EXTENSION EDUC COMM		520.00	54.24	574.24	
							2,936.20

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
KUTZ, RUSSELL K							
	12	COUNTY BOARD	660.00	660.00	16.95	**1,336.95**	
	1	EDUCATION SESSION		80.00	1.70	**81.70**	
	9	HOME CONSORTIUM		495.00	0.00	**495.00**	
	18	INFRASTRUCTURE		990.00	30.51	**1,020.51**	
	2	SEMINAR/CONVENTION		110.00	13.00	**123.00**	
	1	TRAFFIC SAFETY COMMISSION		55.00	-0.01	**55.00**	
							3,112.15
MODE, JIM							
	12	ADMIN & RULES/ICC		660.00	62.15	**722.15**	
	7	ADMINISTRATOR SEARCH COMM		435.00	33.90	**468.90**	
	10	AGING & DIS RESOURCE CENT			56.50	**56.50**	
	12	COUNTY BOARD	660.00	660.00	62.15	**1,382.15**	
	20	FINANCE COMMITTEE		1,100.00	101.70	**1,201.70**	
	28	HUMAN SERVICES BOARD		1,540.00	1,623.90	**3,163.90**	
	2	PLANNING & ZONING COMM		110.00	5.65	**115.65**	
	1	SEMINAR/CONVENTION		55.00	96.05	**151.05**	
							7,262.00

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
MOLINARO, JOHN							
	12	ADMIN & RULES/ICC		660.00	0.00	**660.00**	
	8	ADMINISTRATOR SEARCH COMM		490.00	0.00	**490.00**	
	1	BUDGET COMMITTEE		55.00	0.00	**55.00**	
	12	COUNTY BOARD	6,600.00	660.00	0.00	**7,260.00**	
	6	COUNTY BOARD OF HEALTH		330.00	0.00	**330.00**	
	5	COUNTY FAIR		275.00	0.00	**275.00**	
	8	ECONOMIC DEVELOPMENT CON		440.00	15.26	**455.26**	
	10	EDUCATION SESSION		575.00	24.30	**599.30**	
	2	EMERGENCY MGMT/PARKS		110.00	0.00	**110.00**	
	11	FAIR COMMITTEE		605.00	0.00	**605.00**	
	10	FARMLAND CONSERV EASEMEN		550.00	0.00	**550.00**	
	1	FARMLAND PRESER STEERING		55.00	0.00	**55.00**	
	20	FINANCE COMMITTEE		1,100.00	0.00	**1,100.00**	
	8	HIGHWAY COMMITTEE		440.00	0.00	**440.00**	
	20	HUMAN RESOURCES COMMITTE		1,100.00	0.00	**1,100.00**	
	11	HUMAN SERVICES BOARD		605.00	0.00	**605.00**	
	11	INFRASTRUCTURE		605.00	0.00	**605.00**	
	8	INTER-COUNTY COORD COMM		440.00	86.45	**526.45**	
	5	JOINT MEETING HY/INFRASTR		300.00	0.00	**300.00**	
	9	LAND & WATER CONSERVATION		495.00	0.00	**495.00**	
	9	LAW ENF/EM MGMT COMM		495.00	0.00	**495.00**	
	14	MEET W/ LOCAL GOVT/ASSOC		770.00	25.43	**795.43**	
	4	MEET WITH DEPARTMENT HEAD		220.00	0.00	**220.00**	
	1	MEET WITH STATE EMPLOYEE		80.00	0.00	**80.00**	
	12	PARKS COMMITTEE		660.00	0.00	**660.00**	
	5	PER DIEM DONATION			0.00	**0.00**	
	12	PLANNING & ZONING COMM		660.00	0.00	**660.00**	
	3	SECURITY & FACILITIES		165.00	0.00	**165.00**	
	4	SEMINAR/CONVENTION		295.00	84.19	**379.19**	
	6	SOLID WASTE/AIR QUALITY		330.00	0.00	**330.00**	
	9	UW EXTENSION EDUC COMM		520.00	0.00	**520.00**	
	1	WAUK CO VTAE DIST BOARD		55.00	40.68	**95.68**	
							21,016.29

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
MORRIS, DWAYNE							
	11	COUNTY BOARD	660.00	605.00	198.88	1,463.88	
	2	JEFFERSON CO LIBRARY CNCL		110.00	44.07	154.07	
	10	LAW ENF/EM MGMT COMM		550.00	180.80	730.80	
	1	PER DIEM DONATION			0.00	0.00	
							2,348.75
MORSE, EDWIN W							
	11	COUNTY BOARD	660.00	605.00	105.66	1,370.66	
	7	COUNTY BOARD OF HEALTH		385.00	67.24	452.24	
	12	LAW ENF/EM MGMT COMM		660.00	115.26	775.26	
	4	PARKS COMMITTEE		220.00	38.42	258.42	
							2,856.57
NASS, STEVEN							
	12	COUNTY BOARD	660.00	660.00	162.72	1,482.72	
	12	FARMLAND CONSERV EASEMEN		660.00	162.72	822.72	
	1	LAND INFORMATION COUNCIL		55.00	12.43	67.43	
	1	MILEAGE DONATION			0.00	0.00	
	11	PARKS COMMITTEE		605.00	149.16	754.16	
	1	PER DIEM DONATION			0.00	0.00	
	32	PLANNING & ZONING COMM		1,760.00	433.92	2,193.92	
							5,320.95
POULSON, BLANE							
	12	COUNTY BOARD	660.00	660.00	211.31	1,531.31	
	5	COUNTY FAIR		400.00	96.05	496.05	
	13	FAIR COMMITTEE		715.00	249.73	964.73	
	13	FARMLAND CONSERV EASEMEN		715.00	248.60	963.60	
	9	HIGHWAY COMMITTEE		495.00	172.89	667.89	
	4	JOINT MEETING HY/INFRASTR		220.00	0.00	220.00	
							4,843.58
REESE, DONALD							
	8	ADMINISTRATOR SEARCH COMM		490.00	108.48	598.48	
	12	COUNTY BOARD	660.00	660.00	135.60	1,455.60	
	1	EDUCATION SESSION		80.00	13.56	93.56	
	18	INFRASTRUCTURE		990.00	244.08	1,234.08	
	36	PLANNING & ZONING COMM		1,980.00	488.16	2,468.16	
	3	SEMINAR/CONVENTION		165.00	145.77	310.77	
	14	SOLID WASTE/AIR QUALITY		770.00	189.84	959.84	
							7,120.49

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
RINARD, AMY R							
	8	ADMINISTRATOR SEARCH COMM		490.00	216.96	706.96	
	12	COUNTY BOARD	660.00	660.00	325.44	1,645.44	
	11	FARMLAND CONSERV EASEMEN		605.00	298.32	903.32	
	33	PLANNING & ZONING COMM		1,815.00	894.96	2,709.96	
	1	UTILITY TAX CO		55.00	57.63	112.63	
							6,078.31
ROGERS, PAMELA							
	7	ADMINISTRATOR SEARCH COMM		435.00	48.03	483.03	
	11	COUNTY BOARD	660.00	605.00	86.45	1,351.45	
	12	HUMAN RESOURCES COMMITTE		660.00	115.26	775.26	
	14	HUMAN SERVICES BOARD		770.00	142.38	912.38	
	12	LAW ENF/EM MGMT COMM		660.00	105.66	765.66	
	1	PER DIEM DONATION			0.00	0.00	
							4,287.77
SCHROEDER, JAMES R							
	10	COUNTY BOARD	660.00	550.00	0.00	1,210.00	
	9	ECONOMIC DEVELOPMENT CON		495.00	0.00	495.00	
	13	HUMAN RESOURCES COMMITTE		715.00	0.00	715.00	
							2,420.00
SCHULTZ, RICHARD R							
	11	COUNTY BOARD	660.00	605.00	55.37	1,320.37	
	7	COUNTY BOARD OF HEALTH		385.00	55.37	440.37	
	1	EDUCATION SESSION		80.00	7.91	87.91	
	14	HUMAN RESOURCES COMMITTE		770.00	110.74	880.74	
	18	INFRASTRUCTURE		990.00	142.38	1,132.38	
							3,861.77
TIETZ, RICHARD A							
	11	COUNTY BOARD	660.00	605.00	108.48	1,373.48	
	11	ECONOMIC DEVELOPMENT CON		605.00	162.72	767.72	
	1	EDUCATION SESSION		55.00	18.08	73.08	
	12	HUMAN SERVICES BOARD		660.00	216.96	876.96	
	1	MILEAGE DONATION			0.00	0.00	
	14	PARKS COMMITTEE		770.00	246.34	1,016.34	
							4,107.58

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
TORRES, GREGORY M							
	12	COUNTY BOARD	660.00	660.00	144.64	1,464.64	
	10	FAIR COMMITTEE		550.00	68.93	618.93	
	5	FAIR WEEK		350.00	33.90	383.90	
	1	MILEAGE DONATION			0.00	0.00	
	11	SOLID WASTE/AIR QUALITY		605.00	69.50	674.50	
							3,141.96
ZENTNER, CARLTON							
	10	COUNTY BOARD	660.00	550.00	0.00	1,210.00	
	1	EDUCATION SESSION		80.00	6.78	86.78	
	10	LAND & WATER CONSERVATION		550.00	67.80	617.80	
	1	PER DIEM DONATION			0.00	0.00	
	1	SEMINAR/CONVENTION		80.00	152.55	232.55	
	6	SOLID WASTE/AIR QUALITY		330.00	0.00	330.00	
							2,477.13
County Board Members' Totals		1713	25,080.00	93,975.00	18,794.11	137,849.11	137,849.11
	2	JEFFERSON CO LIBRARY CNCL		110.00	41.81	151.81	
							151.81
BATTENBERG, CAROL							
	9	AGING & DIS RESOURCE CENT			101.70	101.70	
							101.70
BOCKMANN, HAROLD							
	1	TRAFFIC SAFETY COMMISSION		55.00	8.48	63.48	
							63.48
BRANTMEIER, BENNETT							
	2	SHERIFF'S CIVIL SERVICE		135.00	18.08	153.08	
							153.08
BURLINGHAM, MARGARET							
	15	FARMLAND CONSERV EASEMEN		825.00	361.13	1,186.13	
							1,186.13
CARROLL, DONALD							
	1	MILEAGE DONATION			0.00	0.00	
	10	ZONING/BD OF ADJ		575.00	189.99	764.99	
							764.99
CLISH, MICHAEL							
	1	VETERANS SERVICE COMM		55.00	11.30	66.30	
							66.30

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
DELZER, DONALD							
	4	TRAFFIC SAFETY COMMISSION		220.00	33.90	253.90	253.90
FINN, TIMOTHY							
	1	VETERANS SERVICE COMM		55.00	11.30	66.30	66.30
FROELICH, LEIGH							
	2	JEFFERSON CO LIBRARY CNCL		110.00	0.00	110.00	110.00
GAUGERT, WILLIAM							
	5	SHERIFF'S CIVIL SERVICE		300.00	39.55	339.55	339.55
GERBIG, JANET							
	1	NUTRITION			20.91	20.91	20.91
HADLER, MARIAH							
	12	FARMLAND CONSERV EASEMEN		660.00	40.68	700.68	700.68
HARTWICK, SUE							
	1	JEFFERSON CO LIBRARY CNCL		55.00	0.00	55.00	55.00
HINZMANN, DONNA							
	1	TRAFFIC SAFETY COMMISSION		55.00	0.00	55.00	55.00
HOEFT, JANET SAYRE							
	2	JEFFERSON CO LIBRARY CNCL		110.00	16.95	126.95	
	7	ZONING/BD OF ADJ		410.00	63.60	473.60	600.55
HYNEK, PAUL							
	1	ZONING/BD OF ADJ		55.00	14.46	69.46	69.46
INGERSOLL, HOLLY							
	3	NUTRITION			32.77	32.77	32.77
KANNENBERG, RITA							
	1	NUTRITION			24.86	24.86	24.86

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
KRAUSE, DAN							
	4	AGING & DIS RESOURCE CENT			24.86	24.86	
							24.86
KUHLMAN, RICK							
	8	ADMIN & RULES/ICC		440.00	126.56	566.56	
	8	ADMINISTRATOR SEARCH COMM		490.00	144.64	634.64	
	6	COUNTY BOARD	495.00	330.00	90.40	915.40	
	12	INFRASTRUCTURE		660.00	216.96	876.96	
	7	PARKS COMMITTEE		385.00	126.56	511.56	
							3,505.12
KUTZ, RONALD							
	2	TRAFFIC SAFETY COMMISSION		110.00	9.04	119.04	
							119.04
LARSON, JOANNE							
	1	LAND INFORMATION COUNCIL		55.00	9.04	64.04	
							64.04
LAUDENSLAGER, RODNEY							
	5	SHERIFF'S CIVIL SERVICE		300.00	96.05	396.05	
							396.05
MC KENZIE, JOHN							
	7	COUNTY BOARD OF HEALTH		385.00	55.37	440.37	
	13	HUMAN SERVICES BOARD		715.00	94.92	809.92	
	1	SEMINAR/CONVENTION		55.00	101.70	156.70	
							1,406.99
MERRITT, JULIE							
	10	HUMAN SERVICES BOARD		550.00	180.80	730.80	
	3	SEMINAR/CONVENTION		165.00	98.88	263.88	
							994.68
MORAN, MARIAN							
	2	AGING & DIS RESOURCE CENT			33.90	33.90	
							33.90
MORTENSEN, GEORGANNE							
	8	AGING & DIS RESOURCE CENT			185.32	185.32	
							185.32
NATROP, BARBARA							
	3	NUTRITION			74.58	74.58	
							74.58

* Other Expense include mileage, parking, meals and registration fees

Name		Committee	Salary	Meeting Fees	Other Expenses	Total	Grand Total
NEUPERT, JOHN							
	5	SHERIFF'S CIVIL SERVICE		300.00	56.50	356.50	
	2	TRAFFIC SAFETY COMMISSION		110.00	22.60	132.60	
							489.10
PANTELY, EMILY							
	4	NUTRITION			54.24	54.24	
							54.24
SANDERS, DEAN							
	2	JEFFERSON CO LIBRARY CNCL		110.00	28.25	138.25	
							138.25
SCHULTZ, JAMES							
	10	HUMAN SERVICES BOARD		550.00	310.75	860.75	
							860.75
SPANGLER, CHRISTINE							
	5	SHERIFF'S CIVIL SERVICE		300.00	56.50	356.50	
							356.50
STEPPKE, MARYANN							
	3	AGING & DIS RESOURCE CENT			27.12	27.12	
							27.12
STOFFEL, ELIZABETH							
	1	JEFFERSON CO LIBRARY CNCL		55.00	11.30	66.30	
							66.30
WEIS, DALE							
	5	ZONING/BD OF ADJ		300.00	47.59	347.59	
							347.59
WIESMANN, MARIE							
	6	COUNTY BOARD OF HEALTH		330.00	40.68	370.68	
							370.68
WILLIAMS, DONALD							
	6	COUNTY BOARD OF HEALTH		330.00	40.68	370.68	
							370.68
ZASTROW, LLOYD							
	4	ZONING/BD OF ADJ		220.00	110.19	330.19	
							330.19
ZIMMERMAN, SCOTT							
	10	LAND & WATER CONSERVATION		550.00	180.80	730.80	
							730.80
		Non Board Members' Totals 233	495.00	11,580.00	3,688.23	15,763.23	15,763.23

Other Expense include mileage, parking, meals and registration fees

Name	*Committee*		*Salary*	*Meeting Fees*	*Other Expenses*	*Total*	*Grand Total*
	Grand Totals	1946	25,575.00	105,555.00	22,482.34	153,612.34	153,612.34

* Other Expense include mileage, parking, meals and registration fees

Good evening, 3-11-14

The choice energy we choose to use to heat and power the new Hwy shop is an opportunity for our community. **Heating with biomass is practical and cost effective** with today's new pellet and chip boilers. It produces clean energy, local jobs and security of supply. It could be a good source of energy to heat and/or power the Hwy shop. Let's explore this and other alternatives and learn about our options.

Making electricity from biomass is also possible, but requires greater investment in equipment and has a longer payback at today's energy prices. The use of biomass for thermal needs is both practical and prudent right here and now. I/we think **biomass is the answer for heating the Hwy shop because of the multiple benefits outlined below.**

It's Good Economically

- Competitive with other forms of energy, even Natural gas (or close to it),
- Creates local jobs,
- Initiates a energy industry model for private sector to build on.
- Keeps energy expenditures local which triggers the 'local multiplayer effect',
- Local sovereignty of resource (Homegrown biomass does not have to be imported thru middlemen from elsewhere, which is costly and vulnerable to interruption and cost spikes. Local adds stability and sustainability to the energy equation,
- Biomass resource will become more productive and available as crops mature, more land is planted, and infrastructure develops in our community. This will cause our biomass costs to drop, as fossil fuel prices continue to rise.

It's Good Ecologically

- It is restorative in nature - Biomass is one of the only energy sources that can be in a way that is actually *good* for the environment. Most others are either destructive (fracking, deep water, tar-sands) or neutral (wind, solar),
- Utilizes perennial agriculture - Perennial agriculture never exposes land to erosion, requires very little input and captures solar energy nearly year round, giving it a *huge advantage* over annual agriculture,
- Is carbon negative - Perennial crops, especially coppiced woody plants, sequester carbon from the atmosphere and can be gasified to retain charcoal for soil enhancement and/or carbon credits,
- Retains water - Perennial agriculture slows water down and allows for and infiltration desedimentation, thereby, mitigates flooding,
- Creates water infiltration zones thru deep rooted roots systems caused by sluff-off after coppice. This creates a very porous and friable soil structure that acts like a sponge to absorb water,
- Becomes a nutrient storage battery (phosphorus, nitrogen, potassium, carbon become tied up in growing perennial environment),
- Creates organic matter. Organic matter is the basis for many symbiotic, relationships that occur in healthy soil, storing water and eliminating the need for expensive and toxic inputs,
- Creates habitat and food source for animals, including bees and other beneficials,
- Remediates pollution - thru the filtration and mycological (mushrooms) actions,
- Compliments wildlife corridors - Could be used in the GHA conservation lands and corridors, for buffer strips and cover,
- And has no or low sulfur and heavy metal emissions

It's Good Socially

- ✦ Creates local resilience,
- ✦ Creates local energy security,
- ✦ Supports local economy,
- ✦ Provides open space for recreation,
- ✦ Provide buffers to traffic noise and pollution,
- ✦ Distributed power reduces transmission costs, and is
- ✦ A new model for restorative energy.

Wouldn't it be best to **invest our energy dollars in farmers** right here in Jefferson County, producing local biomass crops that clean the air, sequester carbon, and provide a clean renewable, reliable fuel we can use to produce heat and electricity?

Keeping energy dollars local, creating local jobs, having a secure and renewable energy source, and farming in a way that is restorative and good for the environment... these are things we should want to do, not only if it is the cheapest current method, but because it is an investment into the fiber of our communities; creating jobs, resilience, security, health, and community.

So let's take a step back and **assess the whole energy picture** of the new Hwy shop. The cost of energy to run the Hwy facility throughout its long lifetime, pales in comparison of the up-front cost of a biomass installation. Future energy costs, will inevitably climb, especially fossil fuels, as they get used up and become harder and more expensive to extract and process. New fossil fuel production techniques (fraking, tar sands, deepwater) are proving to be disastrous to the health of the people and environment.

Biomass has the potential to capture solar energy, store it convenient form for our use, build ecological productivity and add the security to our energy future.

Let's invest in **local jobs**, a **healthier environment** and a more **stable energy future**.
Let's take a serious, in-depth look at **biomass energy** in the new Hwy shop.

For more information, please call me at: 920-988-5629
Or check out any of the links below.

Sincerely,
Greg David

For more information:

http://www.biomassthermal.org/resource/presentations.asp
A condensed, authoritative overview of Biomass's potential - 10 MB .ppt

This place: https://www.biomassthermal.org/ is a wealth of info

And this is the index to their resources list. It has a lot of fact sheets and case studies.
http://www.biomassthermal.org/resource/index.asp

Why use biomass for heating?

BTEC
Biomass Thermal Energy Council

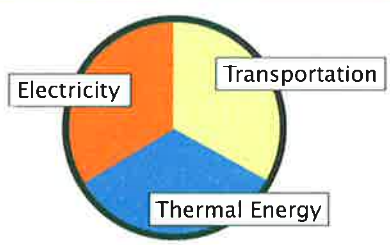
There are numerous benefits to using biomass instead of fossil fuels like oil, coal, and gas for providing heat for homes, commercial users, and industrial processes.

For the majority of human history, biomass was the fuel of choice for producing thermal energy (heat). Whether for space heating, cooking, or manufacturing, we have long used biomass resources to meet energy demands. However, with the Industrial Revolution came the rise of fossil fuels and the corresponding decline of biomass as an energy source. Now, biomass is regaining attention for its role as a reliable source of renewable heat.

In addition to utilizing a locally available renewable energy resource, the use of biomass for thermal energy meets many contemporary environmental and economic goals. Biomass heating and combined heat and power (CHP) can stimulate regional economies, create jobs, offset fossil fuel imports, and promote the sustainable use of our natural resources.

The types of biomass most commonly used for energy include waste wood from the timber and wood products industries, as well as agricultural residues. These fuels can either be directly combusted, or they can undergo a variety of refining processes such as chipping or pelletization for use in a variety of applications. Through combustion, the chemical energy locked in these fuels is efficiently converted to thermal energy (heat) that can be used for space, water, and industrial process heating.

Thermal energy is used daily by homes, businesses, and industrial facilities across the country. These thermal energy demands account for roughly one-third of the total energy consumption in the United States, and are mostly being met with fossil fuels[1]. As a widely available sustainable source of renewable energy, biomass is uniquely poised to meet these heating needs while at the same time displacing fossil fuels.



U.S. Energy Consumption

Biomass: Abundant and Diverse

The Energy Information Administration estimates there are currently 419 million dry tons of biomass available annually for energy use in the United States[1]. The abundance of biomass feedstocks in the United States means that biomass fuels can be harvested and delivered locally in most regions. Currently, biomass for heating accounts for 32% of the renewable energy consumed in the United States, and nearly all of the renewable energy consumed in the residential, commercial, and industrial sectors.

Biomass heating can be achieved with a wide variety of fuels. Woody biomass in the form of chips or pellets is the most common type of fuel. However, agricultural residues, herbaceous crops, municipal waste, and potentially algae can also be utilized.

The applications of biomass thermal energy are just as diverse. Whether to heat homes in the Northeast, commercial buildings in the Pacific Northwest, or factories in the Great Plains, biomass is used to meet thermal needs across the country.

The Advantages of Using Biomass for Heating

Highly Efficient

Using biomass to produce electricity or serve as transportation fuel requires a series of conversion processes, all of which are subject to energy loss. The final result is that the overall efficiency of these end uses is often quite low. The conversion process of distilling 100 BTUs of corn ethanol requires an input of 60 BTUs of energy[2]. Electricity production requires that the thermal energy from combustion be converted first to mechanical energy, and then to electrical energy, with the majority of the potential energy being lost along the way. On the other hand, biomass for heating can be upwards of 85% efficient[3], allowing for the user to utilize the majority of energy stored in the fuel.

Scalable

In addition to being efficient, biomass thermal is a very scaleable technology. Pellet stoves can be used to heat single homes, while biomass boilers can provide space and water heating for commercial buildings, institutions, or even entire communities. Biomass is also well suited to combined heat and power (CHP); a process in which the waste heat created from electricity generation is utilized for thermal applications like industrial process heat. The CHP process can greatly increase the efficiency of the operation.

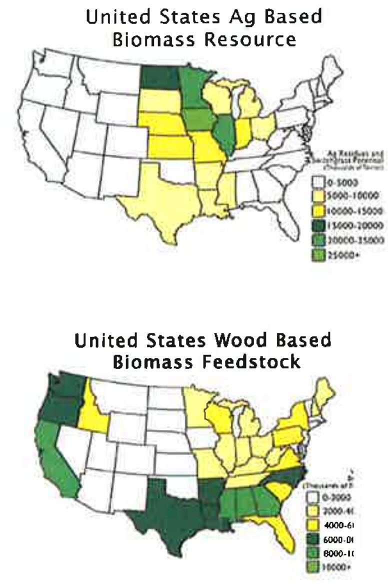


Figure 1. Regional biomass fuel sources with in the United States.
(Source: NREL A Geographic Perspective on the Current Biomass Resource Availability in the United States)

Utilizes Byproducts and Waste Streams

One common characteristic that most biomass fuels share is that they are derived from the waste stream and residuals of other local industries. Materials are often sourced from by-products of lumber mills, furniture producers, or logging sites. Use of these byproducts can create the dual effect of providing revenue to these industries while also securing a renewable source of fuel for thermal energy needs.

A Renewable Baseload

It is important to note that biomass is currently one of the few types of renewable energy that is dispatchable; meaning that it can be stored and used when needed. Solar energy, for instance, is not available when the sun is not shining, often when the demand for heat is higher. Biomass, however, fulfills the heating needs for homes as well as industries at all times.

Creates Local Jobs and Economic Development

The supply chain necessary to produce

[1] EIA Renewable Energy Annual (2008). Renewable Energy Consumption for Nonelectric Use by Energy Use Sector and Energy Source.
[2] USDA, (2002). The Energy Balance of Corn Ethanol: An Update.
[3] US DOE, (2010). Energy Efficiency and Renewable Energy: Wood and Pellet Heating.

biomass fuel involves: transporters, loggers, farmers, pellet mill operators, vendors, and others. All of these participants are typically located within a radius of less than 200 miles[4]. The consumer's purchase of biomass fuel supports the entire biomass supply chain, with fuel dollars circulating locally. Furthermore, the use of biomass fuel creates an additional market for forest products, giving an incentive to maintain forestlands. This leads to forestry jobs, prevents sprawl, and increases land values of timberland.

Reduces Fuel Costs

In the future, a number of factors will likely contribute to price shocks and increased cost of conventional heating fuels such as carbon legislation, further reaching renewable portfolio standards, and inherent supply/demand relationships of these finite resources. However, biomass is more resiliant against these problems and will retain a more stable fuel price in the future. Paying $200 for a ton of wood pellets is equivalent to paying $1.67 per gallon of heating oil[5]. With the 2010 residential heating oil cost of $2.97 per gallon and a projected 2012 cost of $3.55[6], the savings can be substantial. The Northeastern United States—an area which is heavily reliant upon high cost heating oil—is especially well suited to find deep savings in converting to biomass heating.

> **Wind, solar, and biomass are experiencing strong market growth, but of these renewable energy sources, only biomass can be used to efficiently produce both heat and power.**
>
> **– EPA CHP Partnership**

Case Study: Lower Cost Heating for Schools

While the initial capital investment in biomass heating systems is often greater than fossil-fuel based alternatives, the lower cost of fuel can hasten the payback period. In recent years schools across the country, from the Northeast (where 30% of schools in Vermont are heated by wood[7]) to the Mountain West, are experiencing firsthand the benefits and savings that switching to locally sourced biomass can create.

Case Study: Reducing Heating Oil Consumption in the Northeastern U.S.

Currently, 6.4 million residents in the Northeast rely on fuel oil to heat their homes[8]. This oil is derived from petroleum, which means that it is vulnerable to the same types of price fluctuations that are experienced at the gas pump. The local sourcing of biomass fuel will prevent the flow of capital out of local economies; 78 cents of every dollar spent on heating oil leaves the regional economy[9].

Under these circumstances, switching to regionally sourced biomass for heating would have a substantial impact in terms of job growth and economic development.

Reducing Heating Oil Consumption in the Northeastern U.S.

- $4.5 billion new dollars per year injected into the regional economy
- 140,000 permanent jobs created
- $1.6 billion dollars retained annually within the economy

Source: *Heating the Northeast with Renewable Biomass: A Bold Vision for 2025.* Scenario: Steady increase in the use of renewable energy for heating until 25% is reached, 75% of which is achieved with biomass.

One study found that shifting roughly 18.5% of Northeastern thermal energy demand to biomass by 2025 would inject $4.5 billion annually into the regional economy, retain $1.6 billion dollars, and create 140,000 permanent jobs[9].

Conclusion

Biomass heating and combined heat and power can stimulate economies, create jobs, offset imported fossil fuels, and promote the sustainable use of natural resources. Thermal energy is the most efficient energy pathway for biomass compared to electricity generation or transportation fuel. With the fossil fuel dominated thermal energy sector comprising about 1/3 of the energy use in the United States, biomass can meet the challenge of moving to a sustainable energy future by directly displacing the use these fuels.

Many European nations are already realizing the full potential of biomass heating with the support of a robust framework of incentives, regulations, and education. The abundant and diverse sources of biomass in the United States ensure that all regions of this country can utilize this sustainable resource for our thermal energy needs as well.

Lower Cost Heating for Schools

School	Switch	Savings
Council, Idaho Public Schools	Electric heating system and diesel boiler to a wood chip heating system	$50,000 annually
Leavitt Area High School, Maine	Fuel oil boiler to a woodchip system with a backup oil boiler	$53,000 for the 2006-07 school year
Darby, Montana Public Schools	Three individual oil boilers for a woodchip system	$200,000 for the 2008-2009 school year
Townsend, Montana Public Schools	Two oil boilers for a wood pellet system	Projected $25,000 annually, $12,400 payment collection for carbon offsetting

Source: Biomass Energy at Work: Case Studies of Community-Scale Systems in the US, Canada &Europe. BERC

WERC
WOOD EDUCATION AND RESOURCE CENTER

The work upon which this publication is based was funded in whole or in part through a grant awarded by the Wood Education and Resource Center, Northeastern Area State and Private Forestry, U.S. Forest Service. This institution is an equal opportunity provider.

This fact sheet is available online at www.biomassthermal.org.

[4] University of Wisconsin, (2006). Heating Fuels Lifecycle Assessment.
[5] Biomass Energy Resource Center, (2007). Wood Pellet Heating.
[6] EIA, (2011). Short-Term Energy Outlook
[7] Frederick, P. (2007). Woody Fuel Survey Results for the 2006-2007 Heating Season. *Vermont Department of Forests, Parks, and Recreation.*
[8] Census.gov, (2010). American Community Survey.
[9] BTEC, (2010).Heating the Northeast with Renewable Biomass: A Bold Vision for 2025

Large Scale Heating with Biomass

BTEC
Biomass Thermal Energy Council

There are numerous benefits to using biomass instead of fossil fuels such as oil, coal, and gas for providing heat for homes, commercial users, and industrial processes.

The Commercial and Industrial Sector

The primary factor that differentiates commercial and industrial biomass thermal applications from residential heating is the heat requirement that they serve. Industrial and commercial applications have a larger area to heat and must often maintain a constant temperature. In order to deliver this much energy, these systems naturally require a much higher volume of feedstock. They are also much more sophisticated, incorporating automatic fuel delivery, advanced combustion techniques, and additional emission control technology.

The distinguishing feature between commercial and industrial systems is the end use of the heat that they generate. Commercial systems provide space and water heating to a building, or a network of buildings. In many cases, a single large boiler can provide heat for an entire community. Accordingly, these systems must be sized in order to accommodate variable seasonal heating needs.

As for the industrial sector, biomass systems supply large amounts of process heat for year round use in manufacturing, agriculture, and other industries. Both types of systems require low cost, locally sourced biomass in order to be economical. Many industries use the biomass byproducts that are generated onsite for use in their boilers. This strategy can realize deep cost savings by reducing the need for purchased energy as well as avoiding fees associated with disposing of these byproducts. Manufacturing plants within the forest products sector, for example, can generate more that half of their required energy just from onsite woody waste materials.[1]

Components

Regardless of the end user being served, large scale biomass systems generally require a similar integrated network of components, the complexity of which will vary according to the heat output and the type of fuel. The overall function is similar to conventional heating units, but with some adaptations in order to support the unique properties of biomass fuel. The following is a brief description of these components [2,4].

Storage Bin

The storage bin needs to be sized in order to ensure an adequate supply of fuel during peak demand and designed to function in sync with delivery vehicles. Most larger facilities will opt for an underground concrete bin which allows for easier, gravity assisted fuel unloading. This also avoids the requirement for mechanical conveyance into an above ground bin or silo.

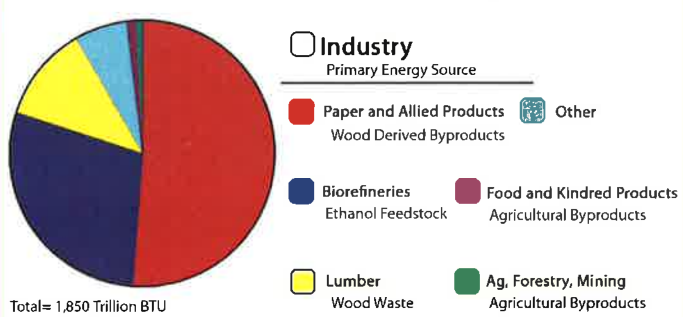
Delivery System

Typically the fuel is fed from the bottom of the storage bin to the combustion unit with the assistance of conveyors, augurs, and other mechanical devices. Prior to entering the combustion chamber, the fuel usually passes through a metering bin which is responsible for feeding the fuel into the chamber at a particular rate dictated by the control systems and the required heat output.

Combustion

As the fuel enters the combustion zone, it is met with a series of controlled injections of air that are designed to optimize the amount of oxygen available for the fuel to thoroughly ignite. There are a number of configurations by which the fuel is moved through the combustion chamber and the ash deposited--each with its own specific attributes. Some of the more common configurations involve a sloped or moving grate transporting the fuel through the combustion chamber while exposing it to injections of air. In this way the volatile compounds in the biomass release and ignite while the remaining solid material burns through as the ash deposits into a collection bin.

Industrial Thermal Biomass Consumption



In a more complex configuration known as fluidized-bed, the injection air constantly stirs a bed of sand until it is suspended in a fluid-like state. As the fuel is fed into combustor under these conditions it becomes well mixed, which results in more complete combustion and a high rate of heat transfer. Although these systems can accommodate a range of fuels, they are generally more costly to purchase and operate.

Gasification is another emerging technology in which the biomass is combusted in two stages. The biomass is first heated in a low oxygen environment which causes volatile gasses to be released. In a different section of the boiler these gasses are mixed with oxygen and combusted. Although this operation is more complex, the result is a cleaner and more efficient, combustion process.

Heat Exchange and Delivery

The heat exchanger provides the means by which the hot flue gas transfers its heat to another medium responsible for delivering the heat to the end user. This medium is typically hot water or steam, which can be uses for space and water heating as well as to process heat.

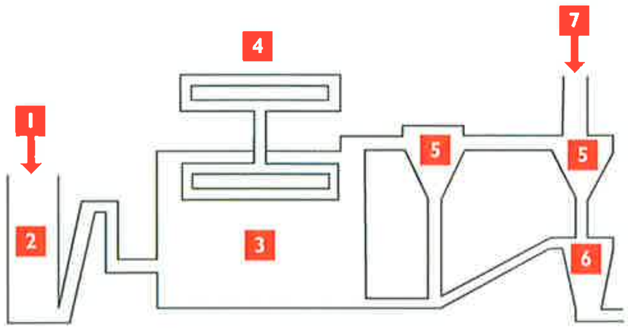
Pollution Control

Although potential pollutants can be mitigated by good combustion practices , most larger operations will require the use of some type of pollution control device in order to remove pollutants from the exhaust gas before it exits the stack. Of primary concern is the removal of particulate matter, which can be achieved with a variety of commercial technologies such as cyclonic separators, electrostatic precipitators, or baghouses. These technologies can be used in conjunction in order to achieve the desired removal rate, and scrubbers can also be employed to remove sulfur emission, if necessary.

Other Technologies

Beyond the combustion system--which is responsible for converting biomass into heat--there are a number of strategies which can be utilized in order to take full advantage of the energy being produced.

[1] Energy and Environmental Analysis Inc. and Eastern Research Power Group, (2007). Biomass Combined Heat and Power Catalog of Technologies. Report prepared for the EPA Combined Heat and Power Partnership.
[2] Sjaak, VL., and J. Koppejan, (2008).The Handbook of Biomass Combustion and Co-firing. Earthscan
[3] Khan, A. et al., (2009). Biomass Combustion in Fluidized Bed Boilers: Potential Problems and Remedies. Fuel Processing Technology. 90:1.
[4] Demirbas A., (2007).Combustion Systems for Biomass Fuel. Energy Sources. 29: 303-312.



Layout of a biomass combustion system

1. Fuel delivery 2. Fuel storage 3. Combustor
4. Heat exchanger 5. Pollution control device(s)
6. Ash removal 7. Stack

District Heating

District heating is the practice of heating a series of buildings by delivering thermal energy from a central plant through a network of insulated pipes via hot water or steam. District heating can confer a number of benefits by replacing multiple heating systems within a campus, community, or business park. Among these are better emissions control and dispersal since a single point source is easier and more cost effective to manage than numerous dispersed sources. This also allows for a large group of users to share the unit cost savings from bulk fuel purchasing agreements that a larger plant can secure.

The city of St. Paul, Minnesota offers a compelling example of how a district heating system can benefit its residents. Although the city is situated in one of the coldest regions of the United States, a centrally located boiler is able to heat 80% of the buildings downtown--including the capitol building, office buildings, and residences--primarily with urban recycled wood. As a result, 150 smokestacks and 300 chimneys have been eliminated from individual buildings and customers enjoy district energy rates below the cost of natural gas.5

Combined Heat and Power

Biomass combustion systems can be used to drive steam turbines in order to produce electricity, but the conversion efficiency is often quite low due do the excess heat created. In the case of electricity only systems, this excess heat is simply disposed of by being exhausted into the environment. However, a combined heat and power (CHP) systems capture this waste heat for its use in commercial and industrial purposes. Not only does this greatly increase the overall efficiency of the operation, but it also allows for both renewable heat and electricity to be generated and used onsite.

Cost Effectiveness and Other Benefits

Although large scale biomass projects are usually more capital intensive to install, they can realize significant cost savings through reduced fuel cost. Economic assessments suggest that the most important factors that enable the economic feasibility of a biomass project are the cost of fuel as well as the efficiency of the boiler 6. This means that an efficient biomass boiler that replaces a high volume fossil fuel boiler is the most desirable. Switching to a biomass boiler and securing a local supply of fuel can also hedge against the inevitable increase and uncertain fluctuations of fossil fuel prices.

Beyond fuel cost savings, there many other benefits associated with replacing fossil fuels with biomass. Probably the most significant of these is the reduction of greenhouse gas emissions due to the low carbon profile of biomass. Directly combusting biomass for heating or CHP is a far more efficient energy pathway than standalone electricity or ethanol production, meaning that more units of energy are extracted from each unit of fuel. Accordingly, utilizing biomass in this manner affords a high degree of fossil fuel reduction. A recent study exploring this issue in the Northeast confirmed that Combined Heat and Power has the greatest potential for replacing fossil fuels and avoiding emissions when compared to other uses of biomass such as ethanol production.7

Typical Commercial Heating Applications

- Government Buildings
- Office Buildings
- Shopping Centers
- Sports Complexes
- Hospitals
- Communities
- Greenhouses
- Universities
- Housing Complexes

Middlebury College

The biomass boiler recently installed at the Middlebury College Campus in Vermont serves as a useful example of how these technologies can be integrated and the number of benefits that can be achieved. Below is a list of some of the highlights from the project.

- **Large belowground woodchip bunker**
- **Gasification boiler**
- **Heat delivery throughout campus via district heating network**
- **20% electricity demand met with CHP**
- **Annual fuel oil reduction of 1,000,000 gallons**
- **$2 million annual cost savings at 2008 fuel oil price**
- **12,500 tons annual greenhouse gas reduction**

Conclusion

Biomass thermal energy is renewable, carbon neutral, domestic and technologically mature. It can be applied on a variety of scales, including district heating plants, combined heat and power plants and localized heating combustion facilities. Improvements in technology have reduced the amount of emitted particulate matter dramatically. Additionally, the lower price per BTU of wood pellets and chips vs. fossil fuels make biomass an attractive option to consumers seeking large scale heating facilities. With so many benefits and range of implementation options, biomass thermal is poised to heat our future.

WERC
Wood Education and Resource Center

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Biomass and Rural Economies

BTEC
Biomass Thermal Energy Council

Provides an overview of the positive economic impact of biomass thermal energy on rural communities. Highlights the many components of the economic value chain- landowners, foresters, loggers, pellet manufactures, etc – and their impact on local economies.

Introduction

Biomass thermal energy is the combustion of organic materials, originating at or above the earth's surface, for the purpose of generating heat. This heat can be applied to maintain warmth in a building. It can also be used to heat multiple buildings, or even a whole town, in a process known as district heating. Biomass can be combusted to create electricity, such as a biomass combined heat and power (CHP) plant. Biomass is renewable, as it is derived from plant material, which will grow back. Like all renewable energies and materials, it is only renewable if harvested sustainably, which is to say that the harvest rates should not exceed the rate of regrowth.

Biomass thermal is also a carbon-neutral energy source, when used in a sustainable manner. There is a finite amount of carbon in the global system that exists in non-permanent storage. While some carbon is permanently fixed in the slow formation of rocks and minerals, and some carbon is added through volcanic activity, the primary input of carbon into the system is the extraction and combustion of fossil fuels that originate beneath the earth's surface. When biomass is combusted, it does release carbon into the atmosphere, however, when harvested sustainably, the amount of plant growth will equal the amount of biomass combusted, creating a net-zero gain in atmospheric carbon. Biomass does not comprise a new input into the carbon cycle.

Economic Overview

Biomass has increased as a percentage of total energy used domestically 20% between 2000 and 2007, representing growth from 3% to 3.6% of total domestic energy use in the same period.[1] As costs of many fossil fuels rise, the demand for affordable energy will continue to grow. Biomass, when compared to oil, is already economically favorable in terms of fuel price per British Thermal Unit (BTU) of energy, a trend that is likely to increase. Furthermore, biomass is produced domestically, so it can help to maintain and create jobs in the United States, as well as prevent money from leaving the local economy in the form of purchases of imported energy.

The biomass industry is projected to have rapid growth in the next decade. Between 2010-2020, the biomass industry (including solid biomass as well as biofuels) is expected to grow by 7.4% yearly in terms of BTU's of energy and heat produced. Of this growth, 84.3% is expected from solid fuel biomass, such as wood and agricultural pellets and chips[2].

As the demand for woody biomass increases in response to a growing biomass energy, the value of forested property suited for biomass production is also likely to increase.[3] An increase in property value of forested landscapes will benefit rural communities in a variety of ways, including an increased tax base for local schools, more business options for forest owners, and an incentive to keep land forested.

Furthermore, the growth of a biomass energy will create local jobs in a variety of sectors along the entire supply chain of biomass fuel. Feedstock for biomass facilities, must be produced locally, thereby ensuring local job creation. A rule-of-thumb for maintaining economic and ecological benefits is that the feedstock should originate within a 50-mile radius of the end-use or of a pellet manufacturing plant.[4] This radius may be expanded in certain situations, such as where the costs of fossil fuel alternatives are higher, or in situations when transportation companies have developed cheaper transportation methods, such as more fuel efficient delivery trucks or the use of rail. However, most of the supply chain occurs locally, keeping money spent on biomass energy in the community.

Market Overview

Greater demand for timber has been shown to increase the area of forested landscape in domestic forests.[5] Demand for timber and biomass has been identified as a driver of deforestation in Haiti[6], and in some parts of sub-saharan Africa. This trend has not occurred in the United States, where forestry is practiced in a manner that is closer to sustainable principles than in the aforementioned regions.

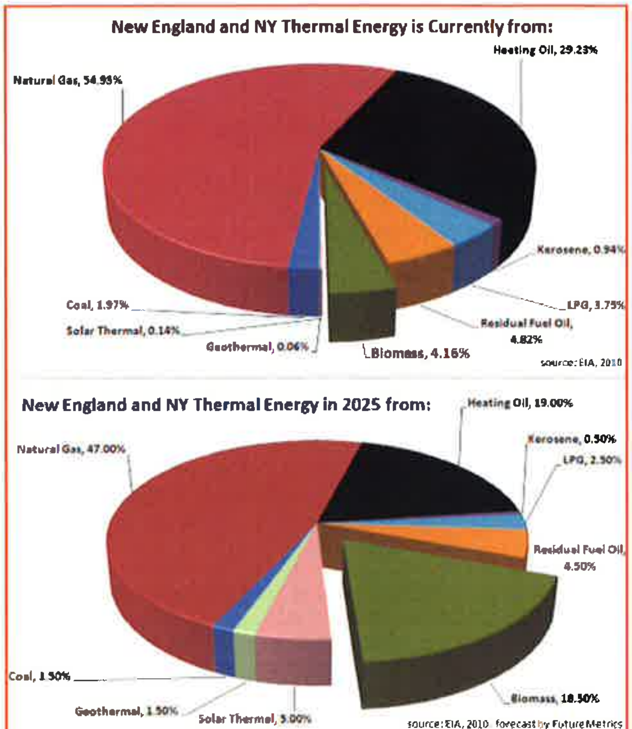
It may be intuitive to think that an increased demand for wood materials will lead to increased harvesting of trees, and thus a decreased supply of trees. In fact, the opposite occurs in most developed nations. Timberland investors should not be defined exclusively as producers of wood-products, but instead as land owners who choose to employ their property for profit through the harvesting of timber. The land-use decisions of a landowner are driven by market conditions for what their land can produce. In the United States, the risk of deforestation is not driven by demand for wood products, but instead is driven by land-use change pressures. If it is more profitable to convert forested land into agricultural land or into residential development, many forest owners will do so. If it is more profitable to use land as forests, more landowners will take this route. Therefore, the development of markets for wood-products will increase the forested area, not lead to deforestation.[7]

A result of new markets for forest residuals, forested property land values have skyrocketed in Britain. Britain has a much larger share of its energy coming from biomass sources than the United States. Among other factors, the increased demand for biomass in Britain has led to a 138% increase in the value of forested land consisting of 25 hectacres or more of contiguous property between 2002 and 2009.[8] While real estate is never driven by a single factor, it is likely that an increased commercial potential for forested land will increase the value of forested land in the United States as well.

The *Heating the Northeast with Renewable Biomass* report includes several key projections about the economic benefits of biomass thermal. The report suggests a change in the energy sourcing for the region consisting of the New England plus New York. The proposed change would increase the portion of energy from renewable sources from 4.3% to 25% by 2025. As part of this, 18.5% of total energy sourcing would come from biomass.

If these changes are made, the report projects that the region would displace over 1.14 billion gallons of oil annually and gain 140,200 permanent jobs, mostly middle class positions in rural regions. It would also inject $4.5 billion dollars per year into the local economy,

[1] Kimball et al. 2010. How Do Taxes Affect America's Private Forestland Owners? Journal of Forestry. 108(2): 93-97
[2] Global Data. 2011. Biopower - Global Market Size, Feedstock Analysis, Regulations and Investment Analysis to 2020. Executive Summary.
[3] Strauss, W. 2009. Futuremetrics/BTEC. An Analysis of the Expected Demand for Wood Pellets Fueled Residential Boilers.
[4] Tefteller, E. et al. 2011. Biomass Sourcing Project Final Report, Jon Finley. University of Iowa - Office of Utilities & Energy Management, Office of Sustainability.
[5] Wear, D.; Greis, J. Southern Forest Futures Project. USDA.
[6] Razafindrazay L. at al. 2011. Haiti: A Spatial Analysis of Deforestation, Earth Institute, Columbia University.
[7] Wear, D.; Greis, J. Southern Forest Futures Project. USDA.
[8] The Biofore Company. 2010.UPM Tilhill and Savills Forest Market Report 2010.



Current and 2025 Forecast of Thermal Energy Consumption in New England and New York. Source: Futuremetrics/BTEC

and retain an additional $1.6 billion dollars in annual income as the majority of the money would stay in the region and not sent abroad. It would greatly reduce mercury and sulfur emissions that cause acid rain damage to forests, and decrease greenhouse gas emissions that contribute to climate change.[9]

Job Creation

The biomass industry significantly benefits the national economy, and particularly benefits local economies. The United States has an abundance of forested land, totaling 747 million acres[10]. Sustainable management has kept domestic forest size growing or stable in the lower 48 states. The forestry and logging industries directly employ 98,800 jobs. Support industries to the forestry, such as logging, add up to another 141,300 jobs[11].

Biomass is an additional market for forest products, ensuring the forest resource industry can continue to grow and continue to provide Americans with skilled and well-paid jobs.

In the region of the New England and New York State, it has been estimated that for every 100,000 tons of pellets manufactured, 342 direct jobs are generated. These jobs include logging, chipping and trucking.

The economic multiplier for biomass energy varies regionally, based on fuel source, scope of the energy project, population density and other factors. However, one study found an economic multiplier of 3.2 for the entire supply chain. That means that for every job created directly in the industry, another 2.2 jobs are created in other industries as a result. Examples of indirect jobs include a deli near a logging site that hires an additional cook as a result of increased business. Another effect may be the hiring of new teachers at a public school supported by tax dollars from a local biomass district energy plant.[12]

The Stakeholders

Landowners

Landowners own the capital. They own the forests. Management decisions, such as if to harvest, are ultimately up to them.

Foresters

Foresters are skilled professionals who make decisions or recommendations about forest management based on the goals of the landowner.

Loggers

If a forest is being thinned or harvested, loggers are the individuals who physical perform these actions. They are instructed by the forester.

Transportation

After timber is felled, it must be transported out of the timber site and to a destination for processing. Most operations use trucks to transport their product out of the harvest site. Some timber companies will use helicopters or boats, but these methods are more appropriate for large logs, not the smaller products associated with biomass.

Mills and Pellet Manufacturers

Historically there have been two primary industrial uses for timber: wood products and paper. Biomass allows for a third use, energy. While paper mills use virtually all the wood cut, wood product mills use only a portion of the total wood felled. Curved areas, portions with cavities, branches and very small trees are not used for the making of saw logs. The resultant waste can be compressed into pellets or chipped. The pellets and chips can be sold to biomass facility to produce heat energy. This creates a market for timber mill waste, a win-win scenario for environmentalists and business owners.

Boilers/CHP Construction and Operators

From 40 megawatt combined heat and power (CHP) plants to residential biomass boiler systems, there are skilled individuals who manufacture, maintain and operate this machinery. A full CHP power plant may employ dozens of individuals, including engineers, human resource professionals, secretaries, laborers, and maintenance workers. Smaller biomass projects have a smaller economic impact per unit sold, although the potential to sell more units of this manufactured product and may effect the economy in the consideration of scale.

End Users

The end users are the ultimate drivers of demand for the industry. They receive a final product, be it pellets, cords, or chips, and consume this product for their heating needs.

Case Study: Fuel for Schools Program

How has this technology been applied in the real world? Consider Darby, Montana, and the conversion of their public school's oil heating system to biomass. Darby is a small community located in rural western Montana, surrounded on three sides by the Bitterroot National Forest. Like most communities, the funding for the public school system is based on local taxes. To reduce costs, the Darby Central District partnered with the National Park Service to create a biomass thermal boiler that would provide heat for their school buildings. As a result, they were able to replace their oil-fired steam heating plant, with a biomass thermal system that operates on wood chips purchased from the US Forest Service. While not all communities will be located next to a National Forest that can provide a steady supply of low-cost chips resulting from thinning, most cities and almost all rural communities have access to affordable chips or pellets through commercial distribution or as a result of residues from forest or agricultural management.

The Darby School District was able to heat 82,001 square feet total over three schools; the elementary school, the junior high school, and the high school. While reliably and effectively heating this space, the school district replaced 47,600 gallons of oil with 633

[9] Strauss, W. 2009. Futuremetrics/BTEC. An Analysis of the Expected Demand for Wood Pellets Fueled Residential Boilers.
[10] Forest Resources in the United States. 2011. The National Atlas. http://www.nationalatlas.gov/articles/biology/a_forest.html
[11] Bureau of Labor Statistics. Career Guide to Industries, 2010-11 Edition. http://www.bls.gov/oco/cg/cgs001.htm
[12] Strauss, W. 2009. Futuremetrics/BTEC. An Analysis of the Expected Demand for Wood Pellets Fueled Residential Boilers.

Darby Schools Fuel and Cost Savings for Heating System						
	Oil Use (gal)	Oil Cost	Wood Use (Ton)	Wood Cost	Liquid Petroleum	Total Cost
2003-2004 Estimate - Heating System with Oil	47,600	$51,844	0	$0	$2,080	$53,924
2003-2004 Actual Cost with Wood Boiler	10,165	$11,080	633	$18,357	$0	$29,437
Savings						$24,487
2004-2005 Estimate - Heating System with Oil	47,600	$88,060	0	$0	$2,500	$90,560
2004-2005 Actual Cost with Wood Boiler	1,900	$2,451	755	$26,660	$0	$29,111
Savings						$61,449
Total Savings over 2 Years						$85,936

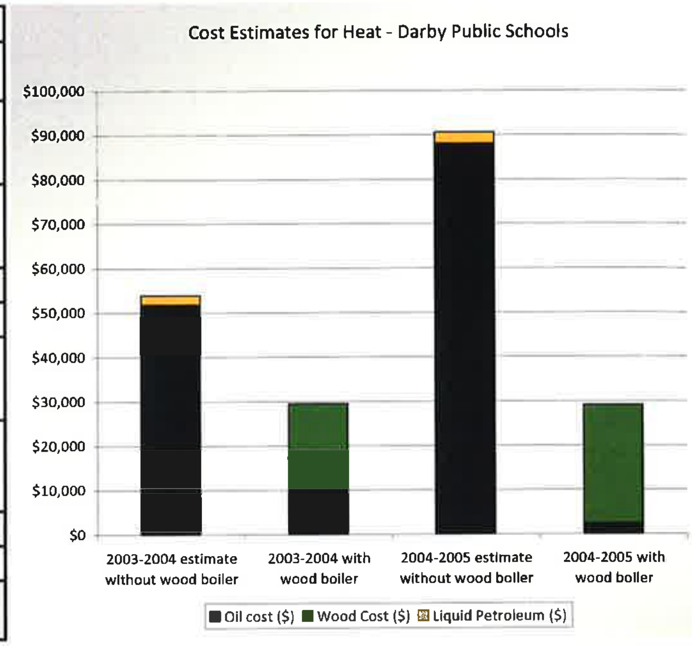


Chart and Graph created with Data from Bergman et al.

tons of wood and 10,165 gallons of oil. This resulted in a yearly saving of $24,527 in the '03 to '04 school year. The next year, when the price of oil spiked, their realized savings was even greater, with a total of $61,509[13].

Changes in Forest Management

Forest thinning in timberland managed for commercial harvest is a well-established practice that is akin to weeding a garden. Smaller and less merchantable trees are often removed to prevent them from using resources (water, soil nutrition, space etc.) that larger and more merchantable trees need to grow quickly. Just as plants in a garden that are not desired are taken out by a gardener to allow the planted species to thrive, a forester often removes non-merchantable timber to encourage growth of their desired trees. Typically, thinned woody material is left on the forest floor. The biomass industry creates a market for this material. Thinned material can then be taken out of the forest, chipped or compressed into pellets, and sold as a fuel.

Public land and private land is also thinned to prevent forest fires. To this end, the woody slash must be removed from the forest to prevent accumulating dry fuel loads on the forest floor. Again, this material can be sold as fuel. Thus, increased incentive to thin forests may result in reduced risk and severity of forest fires[14] and better yields for hardwood forests managed for timber.

A typical problem in land management in the United States is that timberland taxation is based on the ad valorem principle, meaning that the tax is based on the actual value of the land and the components of the land thereof, such as the value of standing timber. Since the tax rate for timberland is based in part on the value of the timber standing on the land, this can create a "time-lag" effect, where yearly taxes are imposed, but revenues are not generated yearly[15]. Although many states and local communities have exemption plans that timberland owners can apply for, the basis of land taxation lies in the ad valorem principle. This creates an incentive for landowners to harvest their timber before it is fully mature, since mature forest stands will be taxed at a higher rate than immature stands. This is contradictory to the often cited policy goal of fostering mature or "old-growth" forests. The creation of a market for residual woody products from a forested location, including wood derived downed woody debris, thinning residuals, and sustainable selection cutting, can generate yearly additional income to offset the tax burden for a landowner seeking to maintain a mature forest stand. While any biomass sold would be taxed as income, it would not significantly raise the land tax rate, particularly in hardwood stands, as this is primarily a function of the standing timber on site.

Agricultural Communities

The potential for additional revenue for farmers through biomass is a tremendous boon for agricultural communities. Like corn ethanol (the most commonly produced ethanol in the United States), biomass uses agricultural products to generate a compustable fuel product. However, biomass differs from ethanol in several key ways. Biomass involves the harnessing of energy from solid materials and is not a biofuel like corn ethanol. Secondly, biomass thermal power is designed with a local manufacturing and distribution network, which is different than a centralized national-scale distribution network. Thirdly, biomass thermal energy is designed as a source of heat and power for buildings, not as a transportation fuel. Fourthly, corn ethanol production is mutually exclusive from food production, which is to say that corn used for ethanol is not also used for food, while residual plant waste used for biomass can be harvested in addition to a successful food harvest. Finally, the energy ratio of domestic corn ethanol has mixed data in the literature, ranging from a low 1.17:1 ratio[16] to negative[17]. The energy ratio of biomass varies based on the source of the biomass, the distance shipped during the supply chain and the efficiency of the boiler. One study found that biomass had a 10.41:1 ratio, when considering the harvest of naturally growing small diameter ponderosa pines in Arizona

[13] Bergman, R; Maker,T.M. 2007. Fuels for Schools: Case Study in Darby, Montana. USDA Forest Service. General Technical Report FPL–GTR-173.
[14] Demchik, M.C.; et al. 2009. Combining Biomass Harvest and Forest Fuel Reduction in the Superior National Forest, Minnesota. Journal of Forestry, p 245-242.
[15] Kimball et al. 2010. How Do Taxes Affect America's Private Forestland Owners? Journal of Forestry. 108(2): 93-97
[16] Elbheri, A. 2008. The Economics of Biomass Feedstocks in the United States: A Review of the Literature. Occasional Paper No. 1. Biomass Research and Development
[17] Pimental, D. Ethanol Fuels: Energy Balance, Economics, and Environmental Impacts Are Negative Natural Resources Research, Vol. 12, No. 2, 127-134.
[18] Pan, F. et al.;. 2008. Net energy output from harvesting small-diameter trees using a mechanized system. Forest Products Journal. Vol. 58 No.1/2

with forty miles of total transportation along the supply chain[18].

Farms produce waste. Very few farm products encompass the entire product, instead an element of the plant is harvested, leaving the rest as a waste material. There are already some uses for these waste materials, such as natural fertilizers and mulch. However, the biomass industry develops a tangible market for this material. Animal manure, corn stover and agricultural tree prunnings will have a viable market in the future, assuming the biomass industry continues its current rate of growth.

Corn stover should be of particular interest to individuals in the agricultural community. Corn is the second most commonly grown agricultural product in the United States, after soybeans[19]. Corn stover, or the non-edible parts of the corn plant, is currently used in the making of ethanol. A leading pellet manufacturer has recently developed and patented a process to make biomass fuel pellets from corn stover[20]. The benefit to farmers seeking to profit in the emerging biofuels industry is that they do not need to make any significant changes in the composition of the products they are producing; they are able to continue to produce corn, and have an additional market to sell that product.

The growth of the biomass industry will have positive effects for the nation's farmers. One major study concluded that "net farm income would increase by a cumulative total of $181billion compared with USDA baseline projections, including $37 billion in 2025 alone."[21]

Conclusion

The growth of the biomass industry domestically should substantially help America's farmers, foresters and individuals living in rural communities in the United States. Biomass use for heating and CHP will reduce reliance on foreign oil and prevent negative environmental impacts that are associated with dominant fossil fuels. It is carbon-neutral and supports the local tax base. It may reduce the severity and tendency of forest fires, increase timber productivity, and provide affordable heat and electricity to a variety of communities. Biomass is a domestic, renewable, carbon neutral source of energy that can help America's rural communities and the economy as a whole.

WERC
Wood Education and Resource Center

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Fuel The Biomass Facility at the Public School - Photo From Bergman et al.

[19] Perlack, R.D. et al.; Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply. USDA/DOE Study DOE: GO-102005-2135

[20] Bevill, K. 2011. Ethanol Producer Magazine. Pellet Technology targets cellulosic ethanol producers. http://www.ethanolproducer.com/articles/7820/pellet-technology-targets-cellulosic-ethanol-producers

[21] Smith, R.J.. et al. 2007. 25x'25 Action Plan: Charting America's Energy Future. 25 by '25. Organization.