APPENDIX A: NAICS Industry Breakdown[1]

		Big Stone			Chippewa			Douglas			Grant			Kandiyohi			Lac Qui Parle		
		Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)		
Industry Code	Industry Code Description	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments
------	Total	5,998	27,229	204	24,971	108,347	467	83,520	358,523	1,313	7,822	34,199	243	106,324	450,107	1351	9,337	44,979	225
11----	Forestry, fishing, hunting, and ag support	0	0	1	0	0	3	0	0	2	0	0	2	0	0	2	0	0	0
21----	Mining	0	0	0	0	0	0	21	470	4	0	0	0	0	0	1	0	0	2
22----	Utilities	0	0	0	0	0	3	0	0	4	0	0	1	808	3097	3	0	0	0
23----	Construction	276	4,134	20	2,480	14,103	61	6,256	38,990	182	543	3555	31	8764	48271	159	313	4586	24
31----	Manufacturing	54	282	6	5,508	23,651	22	22,594	88,109	89	435	1,989	14	18896	79,304	63	2222	10,184	11
42----	Wholesale trade	670	2,834	12	1,302	5,731	21	4,854	21,414	50	986	5,335	16	9361	37,749	72	1070	5,002	15
44----	Retail trade	884	3,748	35	3,039	12,707	77	11,022	48,119	246	1268	5,459	47	11735	50,108	248	813	3,623	47
48----	Transportation & warehousing	153	856	13	1,277	4,865	34	1,269	5,648	54	51	245	6	1362	5874	54	0	0	11
51----	Information	0	0	2	402	1,672	11	5,124	18371	20	0	0	2	2309	9673	26	133	615	5
52----	Finance & insurance	528	2,113	13	1,536	6,129	34	3,430	14,570	75	778	3,009	27	4703	19,418	72	786	2,847	17
53----	Real estate & rental & leasing	29	143	7	158	708	17	676	3260	57	0	0	7	1121	4438	50	174	786	9
54----	Professional, scientific & technical services	169	769	12	985	4,055	24	4,211	16635	72	337	1508	12	2817	12245	81	66	226	10
55----	Management of companies & enterprises	0	0	0	0	0	0	327	1197	3	0	0	1	2123	9694	9	0	0	0
56----	Admin/support, waste mgt, remediation services	0	0	4	486	2,619	14	1,296	7536	46	0	0	6	2907	1260	57	0	0	2
61----	Educational services	0	0	0	0	0	2	303	1479	7	0	0	0	272	1066	6	0	0	0
62----	Health care and social assistance	2,240	9,858	17	4,514	17,921	42	14,813	59,968	104	1,822	7,553	23	32,262	125,536	168	2,801	11,776	17
71----	Arts, entertainment & recreation	0	0	3	0	0	7	358	2169	32	0	0	6	399	2148	21	0	0	5
72----	Accommodation & food services	159	761	22	604	2,560	32	3,664	16053	100	105	661	11	2909	13102	89	133	609	13
81----	Other services (except public administration)	226	954	37	974	4,167	62	2,570	11281	161	272	1160	30	3251	14254	161	259	1197	37
95----	Auxiliaries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
99----	Unclassified establishments	0	0	0	0	0	1	0	31	5	0	0	1	0	82	6	0	0	0

[1] US Census Bureau. 2005. *2002 County Business Patterns (NAICS).* Retrieved on March 29, 2005 from http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl.

		McLeod			Meeker			Nicollet			Pope			Renville			Sibley		
		Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)		
Industry Code	Industry Code Description	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments
------	Total	118,024	502,508	998	35,733	160,165	618	72,667	314,687	617	25,806	10,852	357	30,279	131,691	556	16,262	68,260	389
11----	Forestry, fishing, hunting, and ag support	501	2153	5	0	0	2	0	0	1	0	0	0	113	807	8	0	0	0
21----	Mining	0	0	1	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0
22----	Utilities	0	0	2	0	0	1	0	0	0	0	0	1	0	0	2	0	0	0
23----	Construction	4882	23205	134	6814	34464	96	1927	10345	75	455	4342	53	699	5066	63	1675	7125	68
31----	Manufacturing	65391	275,696	68	10616	45,566	52	27783	116,729	39	6014	23,290	30	8647	36,047	33	6114	25,739	24
42----	Wholesale trade	4982	22,610	41	1254	5,985	24	3176	14,129	35	8258	33,687	25	2518	11,558	29	1247	4,909	9
44----	Retail trade	9949	41,796	187	3671	16,610	110	3521	16,249	82	1488	6,413	49	2597	11,066	98	1372	5,796	65
48----	Transportation & warehousing	1393	6483	37	600	2486	32	1185	5266	19	208	964	12	1248	5978	46	539	2406	22
51----	Information	2589	8211	18	372	1634	8	1145	4906	16	103	435	5	465	2050	9	296	1215	7
52----	Finance & insurance	3317	13,670	74	1356	5,597	38	1614	6,759	51	774	3,652	17	1671	7,120	39	715	3,121	24
53----	Real estate& rental & leasing	288	1413	27	118	551	21	481	1938	20	0	0	7	92	388	10	0	0	8
54----	Professional, scientific & technical services	1496	5985	62	980	4878	35	2019	8590	36	1773	6919	16	1646	6648	26	393	1645	18
55----	Management of companies & enterprises	0	0	1	962	4861	3	0	0	3	0	0	1	0	0	1	0	0	1
56----	Admin/support, waste mgt, remediation services	1658	7763	35	900	3297	27	1926	8461	25	0	0	13	280	1144	19	781	3348	16
61----	Educational services	710	2895	7	0	0	1	0	0	6	0	0	1	940	3607	4	0	0	4
62----	Health care and social assistance	13,498	58,940	92	5,245	21,704	43	12,206	49,618	59	3,246	13,395	24	3,626	15,826	42	1,760	7,624	28
71----	Arts, entertainment & recreation	266	1657	18	77	353	10	453	2068	15	0	0	7	50	354	10	26	143	6
72----	Accommodation & food services	2074	8844	66	913	3712	38	1671	7343	43	441	2148	29	4322	17850	30	203	866	23
81----	Other services (except public administration)	3241	13507	118	839	3529	68	2816	11850	88	631	2537	60	829	3473	81	423	1805	63
95----	Auxiliaries	0	0	2	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0
99----	Unclassified establishments	0	33	3	0	0	5	0	0	2	0	54	7	0	0	2	12	78	3

		Stearns			Stevens			Swift			Traverse			Yellow Medicine			SUMMARY - TOTALS		
		Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)			Payroll ($1,000)		
Industry Code	Industry Code Description	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments	1st Quarter	Annual	Total Establishments
------	Total	470,769	2,005,032	4121	18,701	87,365	357	14,947	63,272	316	3,495	15,826	134	22,973	103,214	355	536,743	2,211,547	7,338
11----	Forestry, fishing, hunting, and ag support	0	0	12	94	427	4	85	555	4	0	0	0	0	0	5	614	2,960	26
21----	Mining	743	3905	8	0	0	2	0	0	1	0	0	0	0	0	2	21	470	13
22----	Utilities	0	0	5	0	0	1	0	0	0	0	0	1	0	0	2	808	3,097	17
23----	Construction	31075	159836	520	750	9887	47	516	3075	31	0	0	8	8212	43283	30	35,084	198,186	966
31----	Manufacturing	105890	438,924	247	3772	16,410	13	2362	8,007	12	372	1,723	7	2070	7,435	23	174,274	726,586	451
42----	Wholesale trade	39845	162,709	216	820	3,671	18	2287	10,445	26	449	2,288	8	930	4,536	19	39,678	170,943	349
44----	Retail trade	60685	243,571	702	2441	11,199	61	1412	6,389	59	637	2,664	32	1997	8,169	64	51,359	221,694	1,291
48----	Transportation & warehousing	21912	88893	170	60	278	16	315	1436	16	45	285	7	510	2131	21	9,285	41,071	340
51----	Information	8165	32526	57	582	2680	10	279	1152	6	163	527	5	200	783	7	12,938	48,782	129
52----	Finance & insurance	24076	97,258	275	938	3,869	31	782	3,585	27	0	0	11	806	3,386	30	21,208	88,005	481
53----	Real estate & rental & leasing	3483	16500	147	0	0	9	0	0	3	0	0	3	25	105	5	3,137	13,625	240
54----	Professional, scientific & technical services	14900	69216	280	1053	4573	21	424	1864	18	0	0	3	437	1769	19	16,892	70,103	404
55----	Management of companies & enterprises	11407	45190	17	0	0	2	0	0	0	0	0	1	0	0	2	3,412	15,752	23
56----	Admin/support, waste mgt, remediation services	12831	57147	154	0	0	16	0	0	7	0	0	5	0	0	9	10,234	35,428	264
61----	Educational services	12795	52810	36	0	0	3	0	0	1	0	0	0	0	0	1	2,225	9,047	38
62----	Health care and social assistance	89,326	393,435	351	5,236	22,080	25	2,613	11,446	20	904	3,896	13	4,897	18,969	28	98,033	399,719	659
71----	Arts, entertainment & recreation	1968	10176	99	34	183	4	0	0	8	0	0	2	0	0	8	1,629	8,892	140
72----	Accommodation & food services	14414	59866	314	685	3003	26	345	1642	24	54	222	8	311	1432	23	17,198	74,509	496
81----	Other services (except public administration)	14713	62332	500	681	2913	48	595	2612	51	144	554	20	957	3909	56	16,331	69,714	966
95----	Auxiliaries	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	8
99----	Unclassified establishments	4	74	10	0	0	0	0	0	1	0	0	0	0	0	1	12	278	35

APPENDIX B: WEST CENTRAL CERT MEMBERS

Name	Affiliation
Al Boonstra	Kandiyohi Power
Al Haman	Star Energy Services (Elect. Engineer)
Alver Schlangen	farmer
Amanda Bilek	MN Project
Becky West	League of Women Voters
Bev Ahlquist	KDJS Radio and Kerkhoven Banner
Bill Klyve	
Bill Moser	Retired
Bill Rois	citzen
Bob Nicklaus	citizen
Bob Swanberg	Stearns County Econ. Development
Bonita Kallestad	League of Women Voters
Brent Olson	
Brian Gieseke	Retired electrian
Bruce Mulvaney	Citizen
Bryan Morlock	
Bunny Iverson	League of Women Voters
Carla Lagersteds	Sierra Club
Chris Hettig	Renville Co HRA/EDA
Clark McDonald	Agralite Elect. Coop
Clinton Schuerman	Prairie Country RC&D Council
Colin Peterson	Willmar Municipal
Curt Kreklau	MN Agro Forestry Coop
Dan Benson	CVAC board
Dan Tepfer	Kandiyohi Power
Dave Aronson	U of M Morris Facilities
Dave Brown	Heavy equipment operator
Dave Opsahl	Willmar Municipal
Dave Pederson	Prairie Woods Env. Learning Center
Dave Lonergan	Stevens Co. SWCD

Name	Affiliation
Dean Current	UM - CINRAM
Dean Schmidt	WesMin RC&D
Dean Shuck	Kandiyohi Co. Commissioner
Dennis Gibson	MN AgroForestry Coop
Dennis Williams	Runestone Electric Assn.
Denny Jarosch	
DeWayne Albright	Prairie Country RC&D
Dick Hagen	The Land Magazine
Don Reicosky	ARS Soil Scientist
Dorothy Rosemeier	WCRSDP
Doug Rasmusson	Stevens Co. SWCD
Duaine Flanders	Greenwood Resources Innovative Ventures
Earl Knutson	Jennie-O Foods, turkey producer
Gary Kubly	MN State Senate
Gary Lagersteds	Sierra Club
Glenn Arfstrom	Kandiyohi Co. Ag Business Dev.
Greg Russell	RC&D/DNR
Jayne Koranda	Alexandria Light & Power
Jeff Rice	
Jeffrey Lopez	Chippewa Co. Commissioner
Jerry Wright	UM Extension Service
Jim Hultman	Runestone Electric Assn.
Jim Larson	Kandiyohi Co. Ag Business Dev.
John Barmgartner	Barmgartner Environics Inc.
John Duevel	Three Seasons and More, furnace
John Shosted	farmer
John White	Clara City Harold
Julie Joplin	Ridgewater College
Karen Baalson	Bookkeeper
Kathy Howard	City of Maynard

Name	Affiliation
Keith Naig	Pope County Commissioner
Kelly Martin	City of Sacred Heart
Kevin VanderMeg	land owner
Kim Larson	Kandiyohi Co. Ag Business Dev.
Larry J Paulson	Citizen
LeRoy Cluever	Agralite Elect. Coop
Lissa Pawlisch	UM RSDP
Lowell Rasmussen	UMM
Luverne Forbord	
Mark Lindquist	MN Project
Mark Rathbun	Great River Energy
Marta Coursy	CURE
Marvin Brown	Retired Farmer
Marvin Rothfusz	citizen
Mary Ann Scharf	WCRSDP/Stevens SWCD
Michael Sparby	AURI
Mike Haefner	American Energy Systems
Mike Reese	WC Research/Outreach Center
Myrna Lorentson	City of Maynard
Norris Peterson	RCD/SWCD
Orville Meints	City of Clara City
Orvin M Gronseth	Agralite board
Pat Bergin	
Pete & Karen Baalson	Fabricator
Randy Nelson	Prairie Country RC&D
Ray Millett	Agralite
Rebecca West	League of Women Voters
Renae Shields	
Rep. Al Juhnke	MN House

Name	Affiliation
Rep. Bud Heingerken	13A
Robert A Nicklaus	Attorney
Robert Meyerson	Kandiyohi County Agri-Business Committee
Roger Isdahl	Pope County resident, ethanol plant board
Ryan Krosch	Region 6W RDC
Sarah Libbon	SW MN Foundation
Sharon Arfstrom	
Sheila Barness	RC&D
Sherm Schueler	
Stan Simom	SL Simon Engineer
Steve Dudding	citizen
Steve Harms	Citizen
Steve Kosbab	Great River Energy
Steve Wagner	USDA - ARS
Sue Meyerson	
Sue Pawelk	McLoed Coop
Tom Burr	MS&W RC&D
Tom Cherveny	WC Tribune
Tom Meium	Congressman Collin Peterson Willmar Office
Wendell Bonnemo	
Wesley Hompe	Willmar Municipal
Willis Wieberdink	
Wilt Croonquist	consultant

APPENDIX C: CERT MEETING – AGENDAS AND SUMMARIES

West Central CERTs Team Meeting Agenda
November 25th, 2003
Sunberg Community Center

Goals for Meeting Participants:

- Gain knowledge and understanding of the CERTS purpose and process
- Share and hear about renewable and clean energy initiatives and projects in the region
- Generate potential outcomes from the CERTS process
- Understand expectations and timelines of serving on the CERTS team
- Indicate interest level in participating in CERTS

1:30 Welcome
Purpose of Meeting

1:35 Introductions of citizens present
- Who are you?
- Where are you from?
- What is your background?
- Why are you interested in energy issues?
- Do you have any particular experience with energy projects? Are there ongoing projects in your community?
- What are your key interests in terms of conservation/renewables? A particular technology? Environmental benefits? Economic opportunities? Energy security?

2:15 What is CERTS?

2:30 Small Group Discussions: How do you think CERTS should work and what do you think its outcomes should be?
Questions to Consider:
- Do you have any expectations about what CERTS will accomplish or how the process will work? What do you hope will be accomplished? How do you think these goals are best achieved?
- Are there any particular projects or resources you feel should be included? Do you know about existing opportunities? Do you have ideas about new opportunities or things that might make interesting projects?
- How do you think CERTS can provide value to the West Central Region?
- How do you see CERTS fitting in with other community-based/regional efforts?

2:50 Break – 10 Minutes

3:00 Small Group Reporting

3:15 Expectations of CERTS and Potential Timeline
- West Central CERTS team to meet quarterly
- Smaller groups to meet more frequently according to interest
- Core group
- Start by assessing regional energy use, look at conservation opportunities, explore the best bets for renewables
- Develop a strategic plan based on assessment and existing activity in region
- Develop/continue pilot projects

3:30 Tying it Together from a Local Perspective: How do local energy projects fit in with a broader regional plan?

3:45 Evaluation of Interest

3:55 Closing Remarks

4:00 Meeting Ends

* Handouts will include:
  - Agenda for Meeting
  - Nuts n' Bolts handout
  - CERTs One-Pager
  - CERTs Map
  - CERTs Manual

Summary of West Central CERTs Meeting
Tuesday, November 25th, 2003
Sunburg Community Center

During participant introductions, many individuals shared why they chose to attend the first CERTs meeting and why they were interested in renewable energy and conservation. The reasons expressed include the following:

- Renewables are the right way to go
- Wind – landowners seeking to put up wind towers
- Wind – municipalities seeking to install wind towers
- Environmental issues
- Clean water, clean air and quality soil
- Energy savings
- Conservation in buildings
- Looking for alternative resources to power a home
- Economic development opportunities
- Possible new careers/job opportunities that could come with a shift toward renewables
- Desire to avoid drilling for more oil
- Using resources more wisely
- Exploring alternative ways to generate electricity and working with neighbors to do so
- Alternative fuels
- Need for conservation
- Possibilities for local counties
- Opportunities for farm products (like switchgrass)
- Hydrogen and fuel cells
- Turkey processing
- Transmission and interconnection
- Self-sufficiency
- Concerned about financial feasibility of renewables
- Science opportunities related to new technologies
- Could give West Central region an edge on other parts of the county

After presenting a brief introduction to the CERTs concept, the room was divided into six small groups and asked to discuss the following four questions:

1. *What do you hope CERTs will accomplish?*
2. *Are there any particular resources you feel should be included or ideas or opportunities you already know about?*
3. *How do you think CERTs can provide value to the West Central Region?*
4. *How do you see CERTs fitting in with other community-based/regional efforts?*

Responses to these questions include the following:

Question 1: What do you hope CERTs will accomplish?

- ✓ Give direction to the process of developing renewables.
- ✓ Provide guidance on how to get financial assistance.
- ✓ Aid in developing public awareness about renewable energy project and highlight those projects that have had success.
- ✓ Provide solid information to the group.
- ✓ Help figure out which questions need answering.
- ✓ Provide a way to share what is going on within the region and in other regions.
- ✓ Develop demonstration projects.
- ✓ Conduct an economic assessment of different renewables.
- ✓ Assess which policy issues need to be addressed to further greater renewable energy development.
- ✓ Look at both the consumer and electric cooperative sides of the policy issues at the same time.
- ✓ Provide a consistent approach to alternative energy development.
- ✓ Provide development guidelines/samples to follow so each project doesn't need to reinvent the wheel.
- ✓ Assist with marketing renewable energy to utilities.
- ✓ Assist with providing incentives to rural cooperatives to include renewable energy resources.
- ✓ Develop a better-defined statewide energy policy.
- ✓ Provide lists of resources and means of networking.
- ✓ Be a unified voice on energy development in the region.
- ✓ Develop a grant-writing assistance program.
- ✓ Help keep the energy generation local.
- ✓ Bring people and organizations together.
- ✓ Help bridge the differences between entities.
- ✓ Point people to relevant resources.
- ✓ Build a think-tank that others can access for information.
- ✓ Bring in individuals and organizations that specialize in conservation and renewables that can share their experiences and expertise.
- ✓ Give an overview of what's been done, what has worked, what hasn't.
- ✓ Tap local legislators to find resource people to address state and federal funding for renewable energy
- ✓ Provide a forum for utilities and citizens to interact and better understand how the electric system works

Question 2: Are there particular renewable or energy conservation resources that should be included?

- ✓ Wind
- ✓ Biomass, biogas, biofuels
- ✓ Hydrogen
- ✓ Energy Assessment
- ✓ Assessment of transmission and distribution lines – where are they and how do you get energy from the source to the consumer
- ✓ Manure digesters – how to connect and economics
- ✓ How to tap into utility companies
- ✓ Wind into hydrogen
- ✓ Biomass – stover, straw, switchgrass, ethanol, short rotation woody crops
- ✓ Identify types of biomass and potential
- ✓ Assess where the strengths are within the region
- ✓ Keep diverse set of options from hydroelectric to wind to others
- ✓ Research and development
- ✓ Chemical processes into plastics
- ✓ Don't assume finite resources

Question 3: How can CERTs provide value to the West Central Region?

- ✓ Technical and financial resources
- ✓ Give united voice
- ✓ Provide information to lobby elected officials to develop sound renewable energy policy and energy future
- ✓ Provide leadership in identifying projects in the area

- ✓ Get people working together to attract greater attention to the region's efforts
- ✓ Coordinate between various project
- ✓ Promote the idea that there is great energy potential in rural areas
- ✓ Get project done
- ✓ Keep dollars local
- ✓ Consider and highlight the potential for job development from renewable energy and energy efficiency projects in the energy inventory

Question 4: How should CERTs fit in with other community-based/regional efforts?

- ✓ Coordinate efforts to prevent overlap
- ✓ Be clearinghouse of information
- ✓ Stimulate cooperation, not competition
- ✓ Perhaps be a legislative effort
- ✓ Be a steering committee
- ✓ Provide connections to Department of Commerce
- ✓ Provide access to energy companies
- ✓ Connect communities with university
- ✓ Provide on-farm demonstrations
- ✓ Make people aware of other projects underway in the region- both community-based and private

Clean Energy Resource Teams
Energy Stakeholders Workshop and Meeting

Friday, March 5, 2004
1:00 p.m. to 3:30 p.m.
Sunburg Community Center, Sunburg, MN

Workshop and Meeting Goals:

- *Gain knowledge and understanding of the current energy system*
- *Hear from utilities (private and public) on how they are addressing conservation and renewable energy opportunities and challenges*
- *Hear from renewable energy project leaders on their opportunities and challenges in addressing new technologies and the current energy system*
- *Address next steps in the CERTS planning process and projects development*

1:00 **Welcome, Introductions and Overview of the Agenda –** *Dean Schmidt, WesMin RC&D Council*

1:10 **The Current Energy System** (Electricity and Heating Systems)
Bryan Morlock, Manager Resource Planner, Otter Tail Power Company
Tim Seck, VP Environmental Services, Great River Energy
Melissa Pawlisch, CERTS Coordinator, U of M Sustainable Regional Development Partnerships

2:10 **Linking the Current System to Renewable Energy Panel Discussion**
Utilities Perspective:
Al Haman, Star Energy
Dan Tepfer, Kandiyohi Power
DeWayne Albright, Meeker County Cooperative
Agralite Cooperative (Clark McDonald or Ray Millet)
Renewable Energy Projects Perspective:
Lowell Rassmussen, University of Minnesota Morris
Cecil Massie, Little Falls Ethanol Plant

3:10 **Where do we go from here?**
November 25 Survey Results
Future Meetings Schedule
Next Workshop on Wind Energy Projects

3:20 **Work Groups Selection and Action Steps**
Assessment and Planning
Education, Policy, Outreach
Resource Projects

3:30 **Adjourn**

Summary of West Central CERTs Meeting
Friday, March 5, 2004
Sunburg Community Center

Meeting began with a welcome and introduction from Dean Schmidt. Dean quickly reviewed the agenda, we went around the room and gave introductions, and then we jumped right in.

Meeting Participants included:
Rebecca West, League of Women Voters
Pat Bergin, citizen
Mike Reese, WC Research/Outreach Center
Steve Wagner, USDA ARS

Marta Coursy, CURE
Curt Kreklau, MN AgroForestry Coop
John Barmgartner, Barmgartner Environics Inc.
Bryan Morlock, Ottertail Power Company
Keith Naig, Pope County Commissioner
Dorothy Rosemeier, WCRSDP
Lowell Rasmussen, University of Minnesota Morris
Mark Lindquist, MN Project
Bev Alquist, River radio and Kerkhoven Banner News
Bill Klyve, citizen
Mike Haefner, American Energy Systems
Bill Rois, citizen
Luverne Forbord, farmer
Ray Millett, Agralite
Al Haman, Star Energy
Brian Gieseke, retired electrician
Tom Cherveny, WC Tribune
Sherman Schueler, citizen
Tom Meium, Congressman Collin Peterson Willmar Office
Jeff Rice, citizen
Duaine Flanders, consultant
Dan Tepfer, Kandiyohi Power
Tim Seck, Great River Energy
Bonita Kallestad, League of Women Voters
Halls Farms, citizen
Jeffrey Lopez, Chippewa County Commissioner
Cecil Massie, Sebesta Bloomberg
Stan Simon, Engan Associates
Dennis Gibson, MN AgroForestry Coop
Pete & Karen Baalson, citizens
Sharon Arfstrom, Kandiyohi Power Cooperative board
Orvin M Gronseth, Agralite board
Clinton Schuerman, Prairie Country RC&D Council
Lissa Pawlisch, Regional Sustainable Development Partnerships

Presentations

Bryan Morlock, Ottertail Power Company

Bryan gave an overview of the transmission system, how it works, how utilities and the transmission system is regulated, and laid out the interconnection process. Bryan also described Ottertail's power system, who it serves, and what Ottertail is doing with regard to renewable energy. Bryan's presentation was sent to West Central list-serve participants following the meeting.

Tim Seck, Great River Energy

Tim described Great River Energy, who it serves, where Great River Energy gets its energy, what it's doing with regard to renewables and conservation, and how it sees demand growing. Tim also announced GRE's new Request for Proposal that includes a request for 200 MW of new generation from renewables. Lastly, Tim discussed barriers to distributed generation and potential solutions. Tim's presentation was also sent out the list-serve.

Lissa Pawlisch, U of MN's Regional Sustainable Development Partnerships

Lissa gave an overview Minnesota's heating resources, with a focus on natural gas. She gave a general overview of how the natural gas distribution system works, discussed the concerns regarding natural gas pricing, described some of the other fuels Minnesota's use for heating, and highlighted some of the options for utilizing other heating resources as substitutes for natural gas.

Panel Discussion

Al Haman of Star Energy, Dan Tepfer of Kandiyohi Power, Ray Millet of Agrilite, Lowell Rassmussen of University of Minnesota Morris, and Cecil Massie of Sebesta (working for Little Falls Ethanol Plant) were all invited to join Bryan and Tim as panelists to field questions from the larger group. First they gave a brief overview of their organization and described why there were interested in the energy system and how conservation and renewables related to it.

As part of the introductions the panelists provided the following comments:
Ray Millet: The energy system is really designed for one-way flow from a point of central generation to the customer. The big concerns with distributed generation are safety and costs (who pays for interconnection).
Lowell Rassmussen: Morris is looking to develop research that describes what is practical in terms of using biomass/biofuels in boiler. They have a 15,000-ton boiler that they are hoping to use to provide on-site heat via biomass. The problem is getting the fuels – they can't burn solid agricultural waste right now, so they looking into waste wood. Long term, they foresee putting out a request for proposal for a biofuels aggregator that collects, processes, and then resells solid fuels – they think their pilot project will help assess what is practical in assembling biomass in this fashion.
Dan Tepfer: If there isn't an economic incentive to something, it won't get done. There are certainly safety issues, but it's also economic issues. Our dependence of fossil fuels isn't likely to go way, it will still be part of the system, but we need to expand our options.
Al Haman: Star Energy provides engineering services to Meeker, Agrilite, Todd Wadena, and Runestone. It's important for energy to be provided safely, reliably, and efficiently.
Cecil Massie: Sebesta is working with Little Falls ethanol to use biomass as a heating fuel instead of natural gas.

Discussion ensued, starting with perspectives on the various renewable energy resources. Lissa did a poor job of recording questions, and mostly just recorded answers (sorry).

(Ray) Distribution companies deal with 40 kW and less, over that an interconnection requests go to GRE. Have filed a rate that is equal to the retail rate minus fixed costs, so it can be high because it does not incorporate line maintenance.
Digesters generally tend to make them nervous because if they have to run 6 miles of new line to a farmer, and he/she ends up pumping the electricity back into the system instead of drawing from it, it really messes up who pays for what (i.e., the utility and all it's customers paid to build a line that now is providing payback to one customer).
Agrilite buys power from GRE at 3.5 cents delivered to the substation.

(Bryan) Ottertail looking at 1% load growth – very low so don't really need a lot of new generation. In discussing renewables, Bryan mentioned that turbines don't operate at less than -24^{o}F as it pushes the stress fatigue of the blades up (most windy in winter but can get real cold in WC). Ottertail really wants more biomass, but continually has to ask at what cost. They can get coal at $1.00 per million BTUs, so this is the cost biomass must compete against. Could increase the cost of biomass fuels if public utility commissions in all three states agreed they could pay extra/pass on higher rates to customers.

(Tim) GRE has a grant program for digesters. Biogas is though, in the best of circumstances, at least $2.00/million BUTs, and that's twice as much as coal. You could look at the value of energy credits (green tags), which range from $0.00 to about $1.00, but the price varies across the country. We don't really have a market within the state right now; the PUC is looking at creating a market in the state, but then it would be a pretty limited market.

(Cecil) Principle pitfall is that although we have other fuels, like biomass and agricultural residues, we need a substitute for natural gas – we have to provide basically the same things that customers are already using.

(Lowell) It's also a problem on the procurement side. Sixty percent of natural gas is purchased by individuals who cannot use it. They purchase natural gas on the commodity market, causing the natural gas prices to fluctuate for reasons other than pure demand.

(Cecil) Farmers can offer a fixed price for natural gas by supplying natural gas from biomass. The volatility of the natural gas market and high natural gas prices create opportunities for biomass to enter the market as a fixed price fuel.
Energy storage is still one of the major issues. We have lead-acid batteries and fly-wheels, but neither last all that long. A pioneering project is underway in the Pacific Northwest to develop flow batteries that are reportedly capable of storing 10 MWh of energy.

(Duaine) Why are we still subsidizing coal and natural gas? They are the threshold and yet it's difficult for new technologies to compete cause these fuels are priced so low. We send $7-$9 billion out of the state every year for electricity, what do we have to do to keep these dollars at home.
We need to know how much these fuels really cost. People don't want pollution, but it's unclear how much they are willing to pay to reduce it.

(Cecil) Ethanol plan will draw 3-5 MW of electricity and 50 million BTU/hrs of thermal load (8x more than electric). Ethanol really comes form natural gas (cause that's what is used to run the plant, in fertilizers for crops, etc.). The plant wants to reduce the cost of its inputs. If they were to run on wood chips it would cost about $2/million BTU, but they have to convert the boiler to use wood chips instead of natural gas. By switching they will avoid sending $3.5 million in natural gas payments to Texas and instead put that money into the Little Falls area by collecting biomass (could be $7-8 million impact on community).
Need to do things that are good business – improve competitiveness.
Processing of natural gas would be same for biogas, but have to scale the processing down to a farm-scale level. While it isn't a technical hurdle to scale it down, it is an efficiency/reliability issue.

Wrap Up
After the question and answer session Lissa made a couple of quick announcements. First, future meetings will be structured with a workshop of sorts at the beginning followed by small group break out sessions and small group reporting. The next meeting workshop will discuss wind projects. Second, we proposed that the team divide into three work groups to ensure that all the CERTs goals are accomplished:

- Assessment and Planning (also to serve as Steering Committee)
- Education, Policy, Outreach (to communities and citizens in the region, would also work on group mission/vision)
- Action: Projects (may break into smaller groups according to resource interest)

We invited people to meet in these small groups after the meeting. Many people stayed around to ask questions and discuss.

Meeting adjourned officially at 3:30.

Small Groups
Individuals who signed up include the following:
Assessment and Planning: Lissa Pawlisch, Dorothy Rosemeier, Curt Kreklau, Dean Schmidt, Randy Nelson, Mike Reese, Duaine Flanders, and Dan Tepfer

Education/Policy: William Rois, Bonita Kallestad, Brian Gieseke, and Mark Lindquist

Projects: Jeffrey Lopez, Luverne Forbord, Stan Simon (self-appointed contact person for the group), Sherman Schuler, Lowell Rasmussen, Steve Wagner, Dean Schmidt, Pete and Karen Baalson. Stan's contact info is ssimon@engan.com and office phone is 320.235.0860.

The projects group laid out a number of priorities.
The feel that the key things that should be accomplished include looking at the economics of projects – making sure people know what pays before they do it and how to get project funding (grants, agencies. They also want to make sure people know where to get technical assistance and help build partnerships for projects. We need assistance at low costs.

Regarding guiding principles, the group suggested finding examples or pilot projects to use as "boiler plates" to start projects. The project group would help with brainstorming and technology transfer to ensure that no one has to reinvent the wheel.

Tasks to complete:

- Identify renewable projects needing assistance and barriers to completion of projects
- Identify some way to fund or complete feasibility studies

They set their next meeting date for the end of April.

REVISED SCHEDULE FOR WEST CENTRAL CERTs WORKSHOP

Next CERTs Meeting scheduled for June 16th (morning/early afternoon).
Tour/Workshop: "Options for Getting Started with Renewables"
(targeting wind and biomass)

Timing
8:30 am Meet at CVAC (in Benson)
9:00 am Welcome and Tour of Plant
9:45 am Question and Answer with Bill Lee
10:00 am FibroMinn (at site, displays and speaker)
11:00 am Bus leaves for Lac Qui Parle
11:30 am Stop at Dennis Gibson's farm for visit and short presentation
12:00 pm Leave for Lac Qui Parle School
Distribute goals piece, committee reports and any other handouts on bus
12:30 pm Lunch at Environmental Resource Center adjacent to Lac Qui Parle
Discussion of Team Goals
1:30 pm Tour and Meeting with Superintendent
1:50 pm Other Wind People present
3:00 pm Head home

Summary West Central CERTs Tour and Workshop –
"Options for Getting Started with Renewables"
June 16, 2004
West Central Minnesota, multiple locations

Stop 1: CVAC Ethanol Plant in Benson, Minnesota – speaker Bill Lee, Operations Manager of CVAC.
Dorothy Rosemeier of the West Central Regional Sustainable Development Partnerships kicked off the day with a brief introduction and overview of the day's activities.

Bill Lee then gave an overview of the ethanol plants history and operations. The idea for the ethanol plant began coming together in 1992 as farmers joined up with the local electric utility, Agrilite, to discuss the possibilities and benefits of a local operation. The plant began operating in 1996 as a 15 million gallon/year facility and has since expanded to a 45 million gallon/year facility. The facility currently employs 44 people and has made a significant impact on local economic development. In addition to producing ethanol for vehicle fuel, CVEC also produces its own Vodka (for more on the history see: http://www.cvec.com/about_cvec.htm).

Bill then continued by putting a little context on the ethanol industry and on renewable fuels in general. When CVEC went on line in 1996 the nation was producing less than 2 billion gallons of ethanol a year. Since then, production has grown to over 3 billion gallons/year nationwide. While ethanol has thus far proven to be the most successful renewable fuel, there are also other opportunities for biomass on the horizon. Right now ethanol plants utilize tremendous amounts of natural gas which is continually becoming more and more expensive. Commercializing biomass for use as an alternative fuel to natural gas could help significantly reduce plant costs and would provide a significant market to local biomass resources.

With regard to "options for getting started with renewables", Bill felt that the best ways to get involved in the ethanol business were for farmers to invest in new projects at the facility and/or to supply biomass and for utilities to give good deals on biomass generation. With regard to CERTs goals, Bill felt the best opportunities for West Central Minnesota over the next 10-20 years were to be a leader in ethanol and to strive to be a lead in wind or biodiesel. He suggested that all it would take is a vision and little willingness to take risks.

After the introduction, Bill described the process used for making ethanol at CVEC and led the group on a tour of the facility. In brief, the process for making ethanol begins with # 2 yellow corn. The corn is ground and slurried into a mash. Enzymes are added to convert the starches to sugars. Yeast is added to the sugars to begin fermentation. Yeast converts the sugar to ethanol and CO2 resulting in a "beer" that is then distilled and blended with 5% gasoline for denaturing (for a better description and flow chart see

http://www.cvec.com/making_ethanol.htm). The ethanol is sold to make E-10 (standard MN fuel) and E-85 blends. CVEC sells some of its ethanol directly to E-85 stations in town (it supplies 25 station directly from the plant). The distillers grains (DDGS) by-products are sold for animal feed.

The tour led the group through the laboratory and control room, past the tanks, the scrubber, and fermenters. We walked through the distillation building (2 parallel systems) and then outside past the steam plant, the thermal oxidizer and in to see the dryer and distillers grains. T'was delightful!

Stop 2: Benson City Council Chambers – speaker Greg Langmo, Langmo Farms Companies regarding the Fibrominn Project.
Greg began by explaining that the idea for the Fibrominn project was launched out of the poultry litter issue with winter spreading. The board of commissioners said, "do something", so a local turkey farmer contacted Fibrowatt. Fibrowatt is a British company with an 11-year operating record that has burned 5 million tons of agricultural biomass (for more on the history see http://www.bensonmn.org/fibrominn/milestones.htm).

The planned Fibrominn facility will be similar to the Thetford Power Plant in England which is a 38.5 MW plant that burns 500,000 tons of turkey manure per year (although this plant will have a 50 MW capacity and is likely to burn ~600,000 tons/year). The process begins at the farm with farmers signing a contract that guarantees a long-term, firm outlet for their poultry litter. The plant coordinates with farmers regarding removal and timing and sends covered conveyors and track to load, transfer and then unload the manure (the whole system is designed to keep dust to a minimum and reduce any transfer of pathogens). Once delivered the fuel is burned to generate electricity and an ash by-product that can be used as either fertilizer or feed.

Fibrominn is slated to come online in late 2006. Fibrominn currently has a signed 50 MW power purchase agreement with Xcel (part of Xcel's biomass mandate, expect price of electricity to fall over time), and an 84-acre site in Benson ready for construction. The turkey manure supply is signed up and available and all of the permits are filed and approved. Greg sees the benefits of the project as three fold. First, it will provide economic support to turkey farmers. Second, it will enhance biosecurity (improves and expedites clean-out process, improves disease control). Third, it will provide economic benefits to Benson by providing 300 construction jobs, 120 permanent jobs, and an additional $8-$10 million dollars flowing through the community. It will also reduce odor complaints and potential winter runoff that becomes a bigger problem as turkey farming becomes more concentrated.

In terms of fuel, in addition to turkey manure, the plant can also burn urban wood waste, stumpage, corn stalks and other residues, although they will strive for a steady mix. The haul area for the manure is primarily with a 50-60 mile radius although a certain % will come from other locations to reduce risks from localized natural disasters. With regard to whether or not the plant will compete with agricultural uses for the manure, Greg says he hopes so, because it will add value to the manure and increase farmers' revenues.

Stop 3: Hybrid Poplar stand at Dennis Gibson's Farm – speaker Dennis Gibson
While on the bus, Dennis gave an overview of all his landscaping projects. He also discussed the value of the poplar and other agroforestry projects (including his Badgersett Hazels) he has going on his land. At our stop we looked at an example "log bundle". A 10-foot long version of this would have an energy equivalent of the barrel of oil. The log bundle is a demonstration of the infrastructure and processing required for biomass feedstocks. Dennis discussed that right now the infrastructure to consumer biomass energy is difficult.

Dennis pointed out his hybrid poplar (cottonwood). All the trees were planted in 1995; this is their 7th growing season and they average about 6 feet/year. Poplars are sewn by planting a branch by hand (10-inch stick) with just one bud above ground. That becomes the tree and the buds below ground become the roots. One can plant around 100 trees/acre and after about 10 years they are worth a couple thousand dollars/acre (or around a couple of dollars per tree). The economics is still touch. Currently selling the trees to the paper company makes the most economic sense – poplar as a fuel for electricity is still a stretch economically speaking.

Dennis feels that there are many opportunities in Chippewa County for an agroforestry industry, but there is a lot of competition for the land base in the area. Agroforestry would probably work better in parts of the state that don't have quite as much farming. It also takes community planning to make these non-food crops viable (need to combine multiple benefits like wind block in winter and fuel).

Stop 4: Lac Qui Parle Valley High School/Environmental Learning Center –
We started by having a delicious lunch of wonderful local foods.

Speaker 1: Lissa Pawlisch, Regional Sustainable Development Partnerships
Lissa presented a summary of the information that the two research assistants, Libby and Laura, gathered about the region's demographics, current energy use, and renewable energy resource potential. Lissa then reviewed the mission statement that several team members had worked to develop.
We had a bit of time for comments to the mission. They were:

- ✓ Look to the example provided by the Apollo Initiative Project (website: http://www.apolloalliance.org/strategy_center/index.cfm). There may be ways for us to participate and they may also provide examples of how to present/imagine a vision and commitment to the future.
- ✓ As a possible scenario (looking to small communities as possible testing grounds): use wind when available, tie it with a sewage digester for back up, keep options open for hydrogen as a back up, look at the possibility of utilitizing DC instead of AC currents, and look at materials that aren't used for others (to help keep prices stable)
- ✓ Utilize more solar PV – generates energy at peak demand times
- ✓ Don't forget conservation – it the cheapest option; compact fluorescent lights and energy-efficient appliances alone could make a huge difference
- ✓ Need to do something about promoting/accepting energy star appliances/products as a way of life

Speaker 2: Terry Swenson, Lac Qui Parle Valley High School
Terry is the Director of Operations and Maintenance at Lac Qui Parle Valley High School. Terry gave an overview of the Lac Qui Parle project and provided a number of handouts.

- ✓ Project's financing: $189,000 in loans and $60,000 in grants
- ✓ Construction details: 250kW NEG Micon turbine, tower height at 152 feet, weight approximately 55,000 pounds, resting on a 30.5 feet square, 2.5-foot think foundation built with approximately 140 yards of concrete and 12 tons of steel rebar.
- ✓ Turbine's operating history: it's been great with almost no maintenance problems, operating efficiency at about 25%, averaging 36,000 kWh/month, with $20,000/year in revenue/savings based on their electric usage savings (use their own, don't have to purchase), state incentive on kW sold and federal incentive based on kWh generated.
- ✓ Payback: 10 years

Of course, Terry really stole the show when he took everyone out to actually climb inside the wind turbine.

Speaker 3: Mark Rathbun, Great River Energy
Mark started by reviewing some general information about Great River Energy (1.5 million customers, covering over 65% of the state, and their strong growth especially around the Twin Cities metro area). Then Mark walked the group through some of the options for getting started with wind projects. Mark mentioned the basic rules of thumb for wind costs - $1000/kW or $1,000,000/MW, and that developers can achieve economies of scale by installing several turbines at once. Mark outlined the following mechanisms for becoming engaged in wind projects:

1) Build your own (cost is around $1.5 million for a 1.5 MW machine)
2) Pair with a wind developer to develop the wind resource on your land with a wind lease (term is usually around 30 years, payments ranging between $2000-$5000 per year to land owner)
3) Install a small wind system and net meter with your local utility (cost is around $30,000-$40,000 for a 10kW machine, not a quick pay-back)
4) Subscribe to your utility's green pricing program. Every utility in Minnesota has a program and offers its customers the opportunity to buy wind energy is certain kWh blocks. Generally utilities have very low system-wide participation in green pricing programs (<1%). Perhaps there is an opportunity for CERTs members to educate their neighbors about these programs in a non-utility specific way.

Speaker 4: Jim Nichols, Lincoln County Commissioner
Jim is a farmer in Lake Benton. Jim manages 33 turbines in Southwest Minnesota in Lake Benton and is also part of 60 MW project in the Southwest (on the board of directors). Jim mentioned the importance of the production tax credit to further wind development. He also talked about the economics of current wind technology, how big is

really better from a financial stand point, how turbines can be expected to run for 25 years with minor repairs (and with new blades and a new nacelle could then run for another 25).
In addition to these general figures, Jim also walked the team through the cost-flow spreadsheet for his own 1.5-megawatt wind project. Jim showed how, over a twenty-year life span, the payback cycle would evolve and grow.

The meeting ended with everyone piling back onto the bus to complete their evaluations. Results will be shared at the next meeting.

Thanks for terrific day!

West Central CERTs Meeting Agenda
Friday, September 17, 2004
9:30 am – 12:30 pm
Sunburg Community Center, Sunburg, Minnesota

PURPOSE OF THE MEETING:

- Move forward - create an understanding of what we have left to accomplish and figure out how to do it
- Agree on Vision/Mission/Objectives for WC CERTs
- Set regional project priorities and develop a plan for moving these projects toward implementation
- Set a plan for engaging citizens and organizations throughout the WC Region and gathering their input about the Strategic Energy Plan and the proposal regional project priorities

AGENDA:

9:30 am Welcome and Introductions
9:40 am Review Organizational Chart and Timeline/Flow chart
9:50 am Review Mission
10:10 am Identify Best Bets – Small Groups
10:50 am Feedback from Small Groups
11:10 am Plan for Outreach and Engagement
11:40 am Lunch and Presentation regarding Hibbing/Virginia Biomass Cogeneration Project – two municipalities are forming the Laurentian Energy Authority LLC.
12:30 pm Adjourn

SMALL GROUP EXERCISE:
Today the WC CERTs team is tasked with laying out projects that the region could target and promote as its best bet regional project ideas and IMPLEMENT.

We will break into small groups according to the topics listed below to come up with 1-3 project ideas within each topic that the WC CERTs team could move toward implementation to achieve its vision, mission, and team goals. Many of you are interested in more than one topic; selecting a particular resource will not limit to discussing or working on ONLY that resource. The topics are to serve as a guidepost for your discussion so that each group is able to come up with a few targeted project ideas. Within each group participants may decide to discuss multiple resource that would work in an area or discuss how a couple of the resources might work well paired together.

Topics:

- Biomass (woody crops, agricultural residues, waste wood)
- Biogas (manure digesters, community digesters, digesters at food processing facilities or wastewater treatment plants)
- Biofuels (ethanol, biodiesel)
- Wind (small-scale or utility-scale)
- Solar (PV or solar thermal)
- Geothermal
- Hydrogen
- Conservation/Energy Efficiency

I your group, we would like you to:

- Come up with project ideas (1-3) that can be implemented in the region (and included in the plan)
- Flush out each of these ideas enough to share with group
- Come up with at least 5 ideas/suggestions regarding how these project ideas could be moved forward.

Summary West Central CERTs Meeting
September 17, 2004
Sunburg Community Center, Sunburg Minnesota

Meeting began with a welcome from Dorothy Rosemeier and announcement of a few schedule changes from Lissa Pawlisch. Then we went around the room with introductions.

Meeting participants included:

Dorothy Rosemeier, WC Regional Partnership
Marvin Rothfusz, citizen
Bill Rois, citizen
Dennis Gibson, MN Agro-Forestry Cooperative
Brian Gieseke, Electrician
Duaine Flanders, Greenwood Resources Innovative Ventures
Bev Ahlquist, KDJS and Kerkhoven Banner
Sue Meyerson, citizen
Robert Meyerson, Kandiyohi County Agri-Business Committee
LeRoy Cluever, Agralite Electric Coop
Lowell Rasmussen, UMM
Mike Reese, WCROC
Lissa Pawlisch, UM Regional Partnerships
Dean Shuck, Kandiyohi County Commissioner
Jayne Koranda, Alexandria Light & Power
Dan Tepfer, Kandiyohi Power
Wilt Croonquist, citizen
Dave Opsahl, Willmar Municipal
Stan Simon, SL Simon Engineering
Randy Nelson, Prairie Country RC&D
Jeffrey Lopez, Chippewa County Commissioner
William Moser, citizen
Douglas Rasmussen, SWCD
Mary Ann Scharf, WCRP
Al Haman, Star Energy Services
Dan Benson, CVAC board
Brent Olson, citizen
Steve Wagner, USDA-ARS Morris
Tom Meium, Congressman Collin Peterson
Kim Larson, Kandiyohi Co. Ag Business Dev.
Jim Larson, Kandiyohi Co. Ag Business Dev.
Glenn Arfstrom, Kandiyohi Co. Ag Business Dev.
Sherm Schueler, Kandiyohi Co. Ag Business Dev.
Bud Heingerken, State Representative

After introductions Lissa quickly reviewed the flow chart handout and the organizational chart handout. These charts were to serve as reference points for the team. The flow chart outlined what the team needs to accomplish by when and should help all involved better understand what we're working toward. Please let Lissa know if you did not receive a copy.

Mission Discussion

We spent about 20 minutes discussing the team's mission, what was missing, what should be taken out, etc. Highlights from the discussion included the following:

- Primary rationale for renewable should be articulated along with the like carbon sequestration & nutrient management. We need to give credit to the other/alternative facets of biomass (as they are hard to quantify in the market).
- Need to express a sense of urgency re: global warming/climate change
- Economic development tools should be priority
- Dollars are key → profit
- Must include social/natural benefits
- Consider local community benefits
- Regarding urgency: should add the word "today"
- What are talking about with regard to the environment: Local? Global?
- Consider: political and social acceptability
- Consider: Economic stability
- Need to think about sustainability toward legacy (longer time horizon)
- Need education and Re-education
- Question asked: do today's conservation programs suppress opportunities?
- Response: More cooperation and education about conservation could really cut fuel use
    - Use wisely

- Cheaper to conserve than produce
- Conservation benefits all facets

Identification of Best Bet Project Ideas – Small Group Reporting
We split into 5 small groups to brainstorm project ideas the WC CERTs team could pursue or assist. The following is a summary of the ideas presented by each group.

Biogas/ Biofuels
Group participants included: Mike Reese, Bill Moser, Mary Ann Scharf, Stan Simon, Glenn Arfstrom, Sherman Schueler, Jeff Lopez

Projects:
1. Community digesters
   - Willmar
   - Morris
   - Education
2. Soy diesel plant
3. Small-scale slaughter plant digesters

Willmar and Morris Community Digesters:
1. Feasibility, Research of Technology, Economics, Collaboration
2. Develop seed money – organic support base
3. Education and outreach (links to organic support base)
4. Pre-design/conceptual
5. Business structure?
   - Finance plan – grants, loans, government incentives

Small-scale slaughter plant(s):
1. Utilize waste/offal for a digester
2. Research regulation requirements

Hydrogen/Geothermal/Solar
Group participants included: Steve Wagner, Doug Rasmussen, Bob Meyerson, Jim Larson, Marvin Rothfusz

Hydrogen:
Ethanol into Hydrogen (Lanny Schmidt)
Hydrogen through fuel cell to heat homes, to power cars
Tough to get a project in soon for Hydrogen

Ideas for projects:
- CERTs facilitate spreading the word
- Economics is important
- Need to educate and tour in our region
- Geothermal – educate contractors and maybe architectural firms for larger scale facilities – target public buildings
- Do several zero-energy buildings in region. Marvin mentioned the "Big Back Yard" at the Minnesota science Museum that also has a zero energy building, but needs to get more publicity. Zero energy homes offer an opportunity to see everything: geothermal, solar, efficiency, etc.
- Link to Kandiyohi Projects and Prairie Wood – get University to study

Kandiyohi County Agri-Business Development (Dean Shuck gave a quick synopsis):
Commission signed resolution to become renewable energy resource community, $ available for grant writing; Tim Larson, Kim Larson, and Glenn Arfstrom, Sherm Schueler, Bob Meyerson all involved in effort
Will be hosting on conference on January 13th – encourage other commissioners to attend – could be a mutual learning session

Wind
Group participants included: Dan Tepfer, Dean Shuck, Brent Olson, Al Haman, Tom Meium, Randy Nelson

- Utility involvement
- Wind energy displaces other energy generated
- Wind projects developed by whom? Do we care? Yes, local is 1st choice
- Assist with obtaining technical assistance
- Information/education gets the ball rolling
- Expertise/resources for differing projects (private, independently owned, public, etc)
- Cost of answers
- Economies of scale
- Manuals of how-to: beginning education, elementary age education, current system pros and cons
- Wind energy availability tied to conserving or higher cost energy based generation energy
- Should target location information:
    1. Encourage development based on infrastructure availability
    2. Encourage infrastructure development in high resource availability areas

Biomass
Group participants included: Duaine Flanders, Dennis Gibson, Dan Benson, Lowell Rasmussen, Wilt Croonquist, and Kim Larson

Co-gen Process:
1. Combustion
2. Gasification
3. Chemical/mechanical cellulosic conversion
4. Plasma

Feedstock (corresponding to processes above):
1. Residues – wastes solids
2. Cornstalk/wood/alfalfa stems
3. Plants
4. Any residues

Move Forward:
1. Demonstration/Pilot Project
2. Policy Modification
3. Education
4. Funding

The whole Biomass Energy Cycle must address issues of supply by working with agricultural producers.

Conservation/Energy Efficiency
Group participants included: LeRoy Cluever, Brian Gieseke, Dave Opsahl, Bill Rois, Jayne Koranda, Lissa Pawlisch

Brainstorming…
Need to think about all aspects of project:
- Costs- dirty vs. clean energy
- Biomass- have cost to haul
- If you use other "bads" to lead to "goods", does it help?

Education:
- What we're using, what we can change
- Energy Auditing – cost return on investment; links to education (show people what they are really using)
- Audit at schools – education regarding energy vs. demand
- Push education in schools with stickers, posters, etc. It's easier to reach kids than teachers or parents
- Target higher education: facilities, employees and students – may be more opportunity for facility upgrades than teaching opportunities, but maybe get student organizations involved
- Biggest push: get rid of incandescent light bulbs. Technology is there.

Economics:

- Can conserve w/o extra costs
- Need to help people understand real economic benefits
- Conservation in industry gives the biggest bang, but those facilities are harder to reach; residential programs get more reaction

Incentives:

- Charge a low rate for the first "x" number of watts, then charge more for extra use
- Rebates versus long-term economic benefits
- Right now, the more you use, the cheaper it gets – backwards, we're giving an incentive for use, not savings
- Should try to shift off of peak use
- Need to reduce baseload and peakload through conservation incentives
- Seasonal rates - more expensive in the summer
- Need conservation measures with short-term payback, up-front cost is a barrier

Project Ideas…

Identify 3 targets for conservation/energy efficiency and educate around those 3 targets.

- Lighting
- Weatherization (heating and cooling)
- New construction
- Energy star/manufacturing purchasing agents

Need to develop pilot projects/demonstrations/showcases around these targets. Demonstrations need to demonstrate savings in $$ and in energy (need to do baseline survey and follow-up). Could do exhibits at statewide meetings. Would need to publicize demonstration and results.

Outreach Discussion

***Outreach Stakeholders*:**

- Environment learning centers
- Students, young – educational component – 4-H project & Scouts (badge for energy), science fairs
- Schools – social science/economics classes/earth sciences
- Economic benefit – bankers, people investors
- General populace – benefit from the development, community/social benefits
- Small groups – coffee groups, church, clubs, coffee shops
- City/County economic development authorities – city councils and mayors
- Sector associations (like commodity groups) – target regional/annual meetings and communications people
- WC Ag Sells Association
- MN Society of Profession Engineers
- Civic groups: Business and Profession Women, League of Women Voters, Lions, Kiwanis, etc.

***Activities/Mechanisms for Outreach*:**

- County fairs – use as an opportunity for demonstrations
- Color overheads – use names of real people from towns in the region
- Power points: could be blends of multiple presentations
    a. CERTs Process
    b. Nuts and Bolts of Energy and Projects (including data on home and commercial consumption, averaging cost and what would be different if… (ex. Energy efficiency, renewable energy)
    c. Big Picture Facts (see section below)
    d. Bullets of major questions for various audiences
- Brochures
- Renewable Energy annual tour; take people back to projects that exist
- CERTs Website – have presentations available on website as well as links to projects (make it easy to use and access)
- "Ask CERTs" question and answer section on website

***Big Picture facts*:**

1. 60% of crude oil comes from middle east

2. Haven't built a new electrical plant since 70's
3. Refineries are at 98% of capacity
4. Global education – talk about how other countries use energy – "don't use more than you really need"
5. How many BTU hit MN daily vs. How many BTUs we consume (quantify in terms of solar, biomass, etc)
6. Key Point: Engage your audience; challenge their thinking; leave them with information they explore further (like handouts)

Lunch Speaker – Gary Cerkvenik, Laurentian Energy Authority

Gary Cerkvenik, who is assisting with the Laurentian Energy Authority project, came to tell the WC CERTs team more about the Renewable Biomass Combined Heat and Power Energy Production Project the Hibbing and Virginia Public Utilities are currently undertaking. A modified version of Gary's presentation is now available on the CERTs website.

Agenda West Central CERTs Meeting
Monday, November 22, 2004
Sunbury Community Center, Sunburg, Minnesota
12:00 PM – 3:00 PM

Goals:

- Narrow ideas into a doable CERTs effort/project
- Outline the tasks necessary to get this effort/project in place
- Identify the materials and resource needed to make this happen
- Assign tasks to individuals and set a deadline for completion
- Set a meeting time for small groups to reconvene

Schedule:

12:00 Introductions and Lunch
12:10 Overview of meeting goals and process
Sharing success stories/examples
12:30 Break into small groups to focus our efforts
What specific project should the group target?
What will be needed to make this project work?
What resources will we need?
1:20 Hammer out the details
Who can take the lead of different tasks?
By when should we accomplish these tasks?
Who else do we need to contact to get the materials we need?
When can we get back together?
2:10 Reconvene as a large group to share our ideas
3:00 Adjourn

West Central CERTs Meeting Summary
November 22nd, 2004
Sunburg Community Center, Sunburg, Minnesota

Introductions

We began the meeting with a Welcome and brief review of the agenda and the process for small group discussions. We then went around the room and did introductions.

Present at the meeting included:
Al Haman, Star Energy Services (Elect. Engineer)
Becky West, League of Women Voters
Bev Ahlquist, KDJS Radio and Kerkhoven Banner
Bob Nicklaus, citizen
Brian Gieseke, Retired electrian
Bud Heidgerken, State Representative
Dan Tepfer, Kandiyohi Power
Dave Opsahl, Willmar Municipal
Dave Pederson, Prairie Woods Env. Learning Center
Dorothy Rosemeier, WCRSDP
Duaine Flanders, Greenwood Resources Innovative Ventures
Greg Russell, RC&D/DNR
Jim Larson, Kandiyohi Co. Ag Business Dev.
LeRoy Cluever, Agralite Elect. Coop
Lissa Pawlisch, UM RSDP
Lowell Rasmussen, UMM
Marvin Rothfusz, citizen
Mike Reese, WC Research/Outreach Center
Randy Nelson, Prairie Country RC&D
Robert Meyerson, Kandiyohi County Agri-Business Committee
Stan Simon, SL Simon Engineer
Steve Wagner, USDA - ARS
Tom Meium, Congressman Collin Peterson Willmar Office
Jim Hultman, Runestone Electric Assn.
Chris Hettig, Renville Co HRA/EDA
Bunny Iverson, League of Women Voters
John Velin, LCMR

Project Updates
Dorothy Rosemeier gave an update on the Maynard, Clara City, Sacred Heart wind projects. Right now it's a bit stalled. Farmers in the area are looking at forming a coop.

Mike Reese from the U of M Morris talked about their community-scale renewable energy center. The four main projects include:

1. Hybrid wind with biodiesel (& wind tied to hydrogen). Installing a 1.65 MW Vestas turbine that will produce roughly ½ of UMM electrical needs. WCROC broke ground on the wind project November 10th.
2. Biomass—Using agricultural residues, co-generation/district heating, with more hard data available after January.
3. Anaerobic Digester—AURI is currently contracting out the feasibility stage of this project to determine where the gas should go/what it should be used for. Methane gas could be used by the city of Morris, the local ethanol plant, etc.
4. Education – Designing a renewable energy smart building. They are currently in the Pre-design stage.

Small Group Presentations
After the updates, the CERTs members divided into five groups: Conservation, Biomass, Biogas, Wind, and Hydrogen/Geothermal/Solar. These small groups were intended to give each of the 5 working groups formed at the last meeting a bit more time to really develop their ideas. Each group was to develop a set of objectives and then a detailed task list that would allow the group to accomplish thes e objectives. The summaries below reflect each small group's discussion and the tasks they set out for themselves.

Conservation
Goal: Get conservation back into people's conscience.
Tasks: Educate! The Group focused on two prongs for education.

1) They discussed wanting to work with Dave Pederson and the Prairie Woods Environmental Learning Center as a potential location to reach many students from multiple schools with demos and energy audits.
2) They discussed focusing on the 4th-6th graders at the Willmar Public Schools with energy audits used as homework assignments that they could do at home with their parents.

Other items they discussed included:

- Providing incentives for students. Allow them to save enough energy to buy an X-box, pizza party competitions, sell CFLs as a fundraiser.
- Could also teach about water use (washing machine's efficiency, low-flow showerheads).
- Could also teach about fuel consumption in transportation (Hummers/Hybrids, E85…)
- Group wanted to explore existing energy efficiency curriculum.

Compact Fluorescent Light Bulbs – Dave Opsahl, Willmar Public Utilities
When the group finished their overview Dave gave a presentation about CFLs. Dave had a whole display equipped with all sorts of different light bulbs to demonstrate that the quality of light from CFLs is now equivalent with that of the standard lights. He also showed that CFLs now come in different color variations as well as 3-way lamps, dimmable, outdoor floods, etc. They even have CFLs with glass globes that make them look like the standard light bulb.

Dave (and Wes) had a handout that described the average savings you could see from one CFL.

After the presentation there were a few questions. Quick answers:
Regarding CFL disposal: Dave said that CFLs contain a small amount of mercury and need to be disposed of at a hazardous waste facility. He also suggested contacting your local utility as many have arrangements for disposal or recycling.
Regarding wattage restrictions in lamps: A 60-watt light fixture limit means that you shouldn't use a light bulb that draws over 60 watts — now with CFLs you can use a 15-watt bulb that has the equivalent light output of 60-watt bulb.
Regarding what kind of light bulbs to buy: Dave suggested for the best quality buy the name brands and not blister packs. ACE Hardware now has a Change-A-Light, Change-the-World program every fall that discounts CLFs.

Biomass
Goal: Education, for both the general public as well as those interested in economic development.
- General public will need to learn about/understand: 1) energy costs, 2) environmental issues, and 3) the economics of alternatives. The public should be equipped/empowered to MOVE AHEAD with renewables.
- Economic developers will need to understand the technology and how to transfer the technology to the commercial sector.

Objective: To hold a Renewable Energy Conference/ Symposium on January 13th, 2005. They want to pick up on the Kandiyohi County Commission policy to have a renewable energy economy by 2015. They will target this event to the general public.

Tasks: To accomplish they will develop an agenda, speaker's list, sponsor list, audience list, political constituents list (suggest press list as well). Sponsors will be Kandiyohi County, Renville County, West Central Research and Outreach Center, and CERTs (among others).

This team met again on December 2nd to complete all these tasks and did so in a mere 1 hour. The conference will be help on January 13th, 2005 from 9:00 am – 3:00 pm at the Willmar Conference Center. Details and an agenda will be sent out later in December.

Biogas
Goal: Community financing models
They are starting with the Morris Community Digester feasibility study that is currently underway and will try to include some of their questions into this feasibility study. Then they will focus on the Willmar Community Digester feasibility. The idea is to have a better understanding of the value of the fuel for either gas or electricity (which would be better).

Tasks:
- Explore more options for business models – municipal financing, production tax credits, grants (9006), rural equity model, utilities (rate payers), rural develop loans, etc.
- Proof the various models – with IRS, SEC, etc.

Resource needs: Attorney, Accountant, Engineer, Community Organizer, Grant Writer

Wind
Goal: Help get a turbine on the ground.
Discussed several approaches ranging from developing an LLC and educating the public about wind.
Developed a list of 10 Areas for Education (and a task to gather these materials – in general a tremendous resource is http://www.awea.org/pubs/complimentary.html#Fact%20Sheets%A0 There are a TON of resource available here including on things like bird and bat kills, teaching tools, etc.).

1) Financing and grants (http://www.elpc.org/energy/windhandbook2004.pdf)
2) Electricity 101 (http://www.cleanenergyresourceteams.org/pdf/The%20Primer.pdf)
3) Wind Potential (maps) (http://www.undeerc.org/wind/states/MN/Images/MNwind_70m.jpg)
4) Why choose wind? Benefits…
5) Wind 101
6) Myths (dispelling them)
7) Existing data sources gathered into one place (http://www.undeerc.org/wind/winddb/MNwindsites.asp and a recent paper http://www.state.mn.us/mn/externalDocs/Commerce/Characterization_of_Wind_Resources_in_Upper_Midwest_092804023227_WindResource-UpperMidwest.pdf)
8) What can government do to help?
9) Data sources must be trust worthy
10) Production at existing facilities – how does production compare with prediction

Tasks:

- Develop an interactive wind energy potential map – something that could be transformed into a map for you specific locale (develop estimates in something understandable like kWh or $)
- Gather information on existing systems in the WC Region (8-10 in the region) – find out what they have produced.
- Put the list for areas of education into electronic format (done above) and continue to expand upon it.
- Add appropriate information/resources to the list (see resources added as examples?)
- League of Women Voters symposium in March – put a presentation together for that group regarding the potential benefits of wind, dispelling the myths of wind – then use this presentation to share with other civic groups like Rotary, Chambers, Kiwanis, etc.

Hydrogen/Geothermal/Solar
Decided to drop hydrogen for now.
Goal: Focus on geothermal and air source heat pumps.

Short-term tasks:

- Comparative cost/benefit analysis for heating systems to assess payback (Steve is currently looking at two worksheets on this)
- Checklist regarding heating systems – facts you should know (have a warranty, etc).
- Updates to CERTs website (will be creating a geothermal section)
- Educating contractors – plan to attend Builder's shows
- CERTs sponsored tours (Bob Meyerson is working on this)
- Assist Prairie Woods with their air source heat pump evaluation
- Look at Morris as an option for a Zero-energy building (could develop a model and work with students)

Long-term tasks:

- Put cost/benefit tool on-line
- Get systems installed at Prairie Wood and Morris
- Get interpretive signage up at existing facilities that already have geothermal

We wrapped up right after the presentations. It was a great meeting with terrific progress. One last suggestion was to have Ride Share options for future meetings. Lissa will post something about this before the next meeting. Lists of participants in each group will be distributed shortly.

Summary 2005 Renewable Energy "Update" Conference
West Central CERTs Meeting
January 13, 2005
Holiday Inn/Willmar Conference Center, Willmar, Minnesota

Introductions and Welcome – Kim Larson, Agribusiness/Renewable Energy Development Committee Kandiyohi County and City of Willmar Economic Development Commission

- Kim's introduction highlighted the many reasons we should be thinking about energy issues from American's disproportional over consumption, to the energy dollars shipped out of Minnesota and environmental concerns.

Strategic Overview – Michael Noble, Minnesotan's for an Energy Efficiency Economy (ME3)

- Michael's presentation was entitled "Healthy Economies and Healthy Environment: National Security, Climate Stability, and Rural Community Health"
- *Major national security points included*:
- ✓ Majority of oil reserves are located in Saudi Arabia, Canada (although harder to recover from their oil sands), Iraq, and Iran
- ✓ Major proven natural gas reserves are located in the Soviet Union and Middle East (will require shipping of LNG)
- ✓ Even if we double our biofuels production in America, and then double it again, it still won't meet our demand – Farm Senators and Representatives ought to champion fuel efficiency standards so that ethanol and biofuels could support a great share of our needs
- *Major climate change points included*:
- ✓ DOE has identified ~100 new coal plants in the planning stages
- ✓ Climate change stabilization will cost 1-4% of global GDP according to 4 Intergovernmental Panel on Climate Change scenarios. The British Secretary of State compared this to 50 years of economic expansion in 50 years and 6 months, instead.
- *Major renewable energy potential for rural areas points included*:
- ✓ US DOE has estimated that renewable energy could meet 20% of US electricity by 2020 with a decreased cost to consumers (and could help slow the rate of natural gas cost increases)
- ✓ Community wind energy has tremendous potential to really bring local equity to projects
- ✓ Wind jobs are high paying jobs (~$15-$20/hour) and while the US sits on the sidelines the German wind companies are moving ahead (and consuming more steel that any other industry except car manufacturing)

University of Minnesota-Morris Renewable Energy and Demonstration Center – Greg Cuomo, West Central Research and Outreach Center (WCROC)

- Morris will have a 1.65 MW wind turbine installed by March
- Turbine will supply roughly half of UMM's electric needs – the project gets a better rate selling to Morris and it costs the campus less that their standard retail rate
- Will have a wind to hydrogen demo and dual-fuel demo to explore options of making day-to-day decisions about which fuel to use given fluctuating prices
- Are planning a "Solar Smart" building addition and a UMM biomass/district heating facility
- Aim is to attract students, researchers, and faculty to Morris and to provide a roadmap for other communities that want to do something similar

Panel Discussion – Renewable Energy Review

Each panelist gave a general overview of his topic and then all panelists fielded all sorts of questions from the audience. The following lists the panelists, who they are, a link for more information, and a little bit about the key issues each addressed.

- Anaerobic Digesters – John Baumgartner, Baumgartner Environics, Inc. (www.bei-ec.com)
  - ✓ Key message: Vision for future is a worldwide conversion from oil to renewables, especially as the price of biomass-derived fuels becomes cost-competitive with oil.
- Biodiesel – Mike Youngerberg, Minnesota Soybean Growers Association (http://www.mnsoybean.org/)
  - ✓ Key message: In 2004 US consumed 32 million gallons of biodiesel (a big jump) and demand will continue to grow at a tremendous rate with the B2 mandate, B20 in school buses, and biodiesel in

utility generator sets (possibility of a B100 CAT generator) and biodiesel instead of diesel as a backup fuel for utility turbines.

- Biomass – Greg Cuomo, WCROC (http://wcroc.coafes.umn.edu/)
  - ✓ Key message: There are many types of biomass available, but we have yet to answer the fundamental questions about how the logistics of collecting, storing and processing them. We also need to keep the environmental concerns in mind when evaluating resources.
- Ethanol – Michael Sparby, Agricultural Research Utilization Institute (AURI) (www.auri.org)
  - ✓ Key message: Demand for ethanol continues and will continue to grow, particularly if the Governor's proposal for E20 becomes law and more consumers start using E85. Minnesota currently has 15 ethanol plants and three more plants are under construction. Energy costs are an increasing concern for ethanol plants, and the industry is likely to undergo changes to become more efficient (with fluidized beds that would allow them to heat their facilities with their syrup waste) and use more renewable fuels (like biomass instead of natural gas).
- Solar – Mike Taylor, State Energy Office, Minnesota Department of Commerce (www.commerce.state.mn.us)
  - ✓ Minnesota has a solar resource similar to that of Houston, Texas and Jacksonville, Florida. The most cost effective technologies today are building integrated (like passive solar), but there are myriad options include using solar to preheat ventilation air, solar thermal/water heating, and PV.
- Wind – David Kolsrud, Minnesota Wind and Rick Lancaster, Great River Energy
  - ✓ Key message from David: Keep it local! The MinWind project are based solely on local equity – the projects are set up as LLCs but operate on strict coop principles.
  - ✓ Key message from Rick: GRE will have 118 MW of wind energy by the end of 2005. GRE's green pricing program, Wellspring, will be targeted toward community-owned projects moving forward. Currently only 4,000 of their 56,000 customers are signed up for the program.

Energy Efficiency Lunch Address – David Opsahl, Energy Services Representative, Willmar Municipal Utilities

- Dave did his outstanding demonstration with the different kinds of compact fluorescent light bulbs. He also showed the LED exit signs and traffic lights and all sorts of other fancy and efficient ways to do lighting better.

BECON – From Research to Development – Norman K. Olson, Program Manager, BECON Labs, Iowa Energy Center (www.energy.iastate.edu)

- BECON stands fro Biomass Energy Conversion Facility (http://www.energy.iastate.edu/becon/).
- BECON is striving to bridge the gap between the test tube and commercial development – they want to help shift power from the Middle East to the Midwest.
- The facility is working on converting agricultural-related biomass into fuels and chemicals, as well as how they can be used to generate electricity, heat and other by-products.

Helping Communities Develop Their Energy Future – Melissa Pawlisch, Regional Sustainable Development Partnership's CERTs Coordinator

- Presentation gave an overview of the project ideas all of the CERT teams are working on across the state with a more in-depth focus on what the WC team is doing (will be posted at www.cleanenergyresourceteams.org).

Kandiyohi County Renewable Energy Development Center Plans and Goals – Jim Larson, Agribusiness/Renewable Energy Development Committee Kandiyohi County and City of Willmar Economic Development Commission

- Jim led a group discussion about the Mission, Plans and Goals of the Renewable Energy Development Center, who they should include in their network, and what they should be working toward. Jim engaged several students from Ridgewater College to get their feedback as well as numerous other community members.

Closing Remarks – Renewable Energy, Economic Impact to Rural Minnesota – Steve Renquist, Executive Director, Kandiyohi County and City of Willmar EDC

- Steve closed the meeting by addressing the huge economic potential that renewables could have on the region.

After the meeting those CERTs folks that were still around quickly got together to touch base and review the materials that Lissa and Joel brought along, including updated resource lists (derived from the binders we handed out at the last meeting). We'll send these out electronically so that everyone has them.

It was great day! Thanks to everyone who was able to attend, and to those of you who weren't able to, I hope these notes give you a little flavor of what the day entailed.

Agenda West Central CERTs Meeting
Monday, March 14, 2005
Sunbury Community Center, Sunburg, Minnesota
12:00 PM – 3:00 PM

Agenda
12:00 Introductions and Lunch
12:10 Overview and Discussion of Recent Events
- Renewable Energy Update Conference in Willmar, January 13, 2005
- CERTs Conference in St. Cloud, February 28, 2005

12:40 Large Group Discussion of Project Priorities – Conservation/Energy Efficiency, Biomass, Biogas, Wind, Geothermal/Solar/Hydrogen
- Review each group's task list, share reactions, ideas & information
- Discuss barriers and opportunities that exist for each project priority area

2:10 Small Group Discussions
- Review and update task lists
- Add tasks to address relevant barriers and opportunities

2:40 Wrap-up discussion (around the team's Future Vision, reactions from CERTs conference, email responses, notecards – see notes below)
3:00 Adjourn

Barriers and Opportunities
As part of the meeting we would like the team to discuss barriers and opportunities that will hinder/help the region achieve its project priorities. We will discuss the barriers and opportunities for each of the five project priority areas the team is exploring, so we would ask each of you to think about what might be needed to make these projects happens, what could move them forward and what would hold them back. These could range from technical issues, knowledge/awareness issues, interconnection issues, economic issues, policy issues, etc.

Vision
At previous meetings we discussed the team's vision, mission, and goals. As part of the Regional Strategic Energy Plan that each of the CERTs regions is pulling together we also hope to end each Plan with a statement about each team's vision of the future. To facilitate this discussion, we would like each WC CERTs team member to let us know what the WC CERTs vision, "Build a resource base to make West Central Minnesota and the state energy self-sufficient," means to you.

West Central CERTs Meeting
Monday, March 14, 2005
Sunbury Community Center, Sunburg, Minnesota
12:00 PM – 3:00 PM

Participants: Al Haman, Al Peterson, Landon Peterson, Sara Peterson, Grant Peterson, Becky West, Bev Ahlquist, Bill Moser, Brian Gieseke, Carolyn Lange, Dan Benson, Dan Tepfer, Dave Opsahl, Dean Schmidt, Dean Shuck, Dorothy Rosemeier, Duaine Flanders, Earl O Knutson, Glenn Arfstrom, Greg Langmo, Greg Russell, Jim Larson, Joel Haskard, Kevin Johnson, Kim Larson, Lorna Koestner, Ed Fasula, Lowell Rasmussen, Marvin Rothfusz, Mary Ann Scharf, Mike Reese, Renae Shields, Stan Simom, Steve Revquist, Steve Wagner, Tom Meium, Al Boonstra

12:00 Introductions and Lunch

12:10 Overview and Discussion of Recent Events

- Renewable Energy Update Conference in Willmar, January 13, 2005. Jim and Kim Larson gave an update of the conference. The participant evaluations were very positive and the conference room was filled to capacity with around 160 people in total attendance. They are planning to have another Renewable Energy Conference in July, 2005. Kandiyohi County is still committed to being energy neutral by 2015.
- CERTs Conference in St. Cloud, February 28, 2005. People were happy with the CERTs conference and several people stated they came away empowered and inspired. It was also noted that the red tape of permitting for various renewable energy projects sounded very daunting.

12:40 Large Group Discussion of Project Priorities – The group as a whole reviewed each group's task list and shared reactions, ideas & information. A stress was put on discussing barriers and opportunities that exist for each project priority area. Some of the comments included:

Conservation/Energy Efficiency

Willmar schools / Honeywell contract expired and they are now working on one with Schools for Energy Efficiency/ Hallberg Engineering (for more information, visit http://www.hallbergengineering.com/SEE/SEE.pdf). First 2 years will focus on behavior modification in conservation via the kids.

Utilities have rebate programs for businesses to help them lower their lighting costs and people agreed that lighting is a good start.

The group is looking into ways to best educate building contractors. One easy program to take advantage of is Energy Star Homes—a program that is not being utilized by many builders (for more information, visit http://www.energystarhomesamerica.com/).

Barriers—How do you get people to care?

An eco-sphere presentation by Lorna Koestner introduced the concept of a geodesic dome with several layers/membranes. For more information go to www.solaroof.org –Maybe Prairie Woods would be interested…

Biomass

The U of M-Morris Biomass project is being considered in the bonding bill. Agricultural fuels substituting for natural gas are looking more and more attractive as natural gas prices continue to rise. Permitting for corn stover is very slow—MPCA needs to establish a process for this so it will be easier for other future projects. Permitting is a BIG barrier.

Eventually entrepreneurs will create businesses to collect/haul fuel. Also incentives for farmers to grow the biomass fuels need to be put into place. Also facilities will be different sizes and burning different fuels--biomass will have diverse facilities, no constant design.

Emissions are cleaner with biomass (close as we can get to natural gas is syngas).

Opportunities exist like the Central MN Ethanol Co-op that is converting natural gas to biomass, as well as solar combined with biomass projects. Also people are connecting biomass supplies with water cleanup. If farmers plant woody crops by the rivers and then use wood residue for energy it will create a sustainable perennial crop that provides income and keeps water sources healthy (for more information, please see http://www.greenlandsbluewaters.org/). If the 20% ethanol legislation goes through, Minnesota will need something besides corn to use as fuel (switch grass etc.).

Biogas

Feasibility study is underway for community digester system for Morris (and Willmar)

Financing models --- challenge for individuals , the payback is a long ways out. It may be feasible to use the ethanol plants' investment approach to finance projects (also the SW wind farms approach).

Barriers—power purchasing agreements and cost. But as fossil fuels go up…

April 22 U of M Morris will commission the wind turbine

Methane compression and storing methane to fuel cells is a hopeful technology.

An existing challenge is to scale down the technology. How can the gas be used on the farm so it doesn't need to be transported?

Wind
Transforming wind data, maybe with student intern from Steve Wagner, to enhance it to be more specific for specific townships. UMD—graphs and specific data at towers across the state.
Idea—purchase wind monitoring systems to test several sites-Dept of Commerce monitors are used up. It was mentioned that $20,000 for one-year of data to wind monitor but an alternative that banks will accept is the $5,000 model supplied by Windlogics.
Can we get data from wind turbines that are already up?
Local utilities / coop may be collecting data—need to report to the dept of commerce (summary only, not specific).
Dan and Becky have a presentation tonight at the League of Women Voters.
Barriers in brief: Permitting, site evaluations, tax credit is not stable.

Geothermal/Solar/Hydrogen
Heat pumps-barriers- initial investment (need incentives like tax credits as well as easy-to-understand cost comparisons on upgrades for homeowners to educate themselves.
Solar demo at Prairie Woods.
PV systems get a state rebate, but not for thermal heating.
Need to create a display of educational information on a public building using geothermal. Also it was noted that Econair is a Minnesota-based company manufacturing geothermal heat pumps.
The jury is still out whether West Central wants to use the Bog Frog radio spots for education.
Barrier-Need LONG term incentives to increase—use and help improve technology/ lowering cost, ie. 70's incentives—had they continued would we be in the present situation?

2:10 Small Group Discussions

- Review and update task lists. The various groups reconvened and updated their task lists, adding some of the information generated from the large group discussion.
- Add tasks to address relevant barriers and opportunities. CERTs members were provided note cards to add additional barriers and opportunities as they came to mind.

2:40 Wrap-up discussion (around the team's Future Vision, reactions from CERTs conference, email responses, notecards) The CERTs conference, email responses and note cards were already discussed earlier in the meeting. People seemed generally to feel that the vision, mission and goals for the West Central region remained the same. There was not much specific verbal input on future projects, although the note cards touched on some of these issues. Here is an example of some of the notes people submitted:

CERTs could create a booth at community "Home and Garden Show" that shows existing technologies that homeowners can incorporate that can help conserve energy. Display will have concise information on money saved for the investment.

Opportunity for biomass—Develop a strategy with the Lamberton Garbage Burning Group (17 county commissioners) to help provide co-generation with ag products (corn stover).

Biomass opportunity—1.Utilize wood from community brush disposal sites for energy production. Cost savings for community and stress fire hazard reduction.
2. Use wood from road construction projects, power line maintenance etc.
3. Most of this wood is piled and burned with no economic or energy recovery.

St. Cloud is an area where very few people seem to have knowledge of CERTs. There is an opportunity here to spread the word. Any ideas how to make this occur?

Opportunities for Wind: Education of requirements of power companies to provide wind selection for electricity. Wind turbine operating at school campus. Focus on the excitement of renewable energy vocations. Good paying jobs and the potential short payback time.

3:00 Adjourn

APPENDIX D: CERTs PRESENTATIONS

Links to pdf versions of the presentations are provided below. If you require the original PowerPoint versions of the presentations, please email us (calendar@cleanenergyresourceteams.org) with your request and include your address and the version of PowerPoint that you are using. Also, please note that some of the files below are large and may take considerable time to download without a high-speed connection. Please contact us if you require that we mail you the presentation on a CD.

1. Laurentian Energy Authority: Renewable Biomass, Combined Heat and Power Energy Production from the Hibbing and Virginia Public Utilities, 1.8mb pdf
2. Great River Energy Overview, 144kb pdf — Tim Seck
3. Otter Tail Power Company, 2mb pdf — Brian Morlock
4. Natural Gas and Heating, 263kb pdf – Melissa Pawlisch
5. West Central CERTs Update, 1mb pdf – Melissa Pawlisch

APPENDIX E: METHODS USED TO COLLECT UTILITY DATA

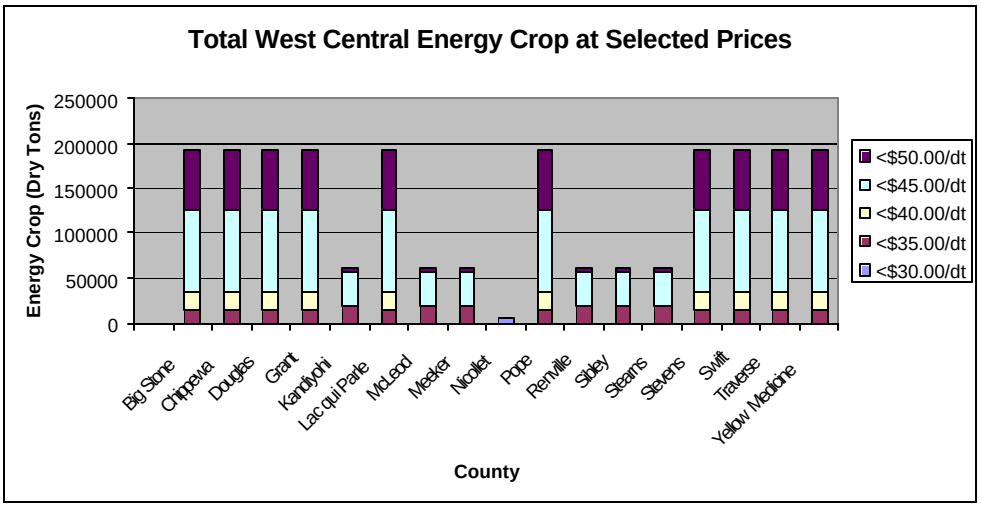
As part of the current energy usage assessment several data sources were used. Initially data was compiled from the Department of Commerce's *Utility Data Book*. This data is broken down in several tables. The West Central CERTs team drew on four primary tables from the *Utility Data Book*. These included "Table 4: Minnesota Electric Consumption in 2000 (Megawatt Hours)", "Table 5: Number of Minnesota Electric Customers in 2000", "Table 8: Minnesota Electric Consumption in 2000 by County", and "Table 9: Electric Generating Plants Serving Minnesota in Calendar Year 2000". In addition to these tables, data was collected directly from utility websites, personnel, and documents.

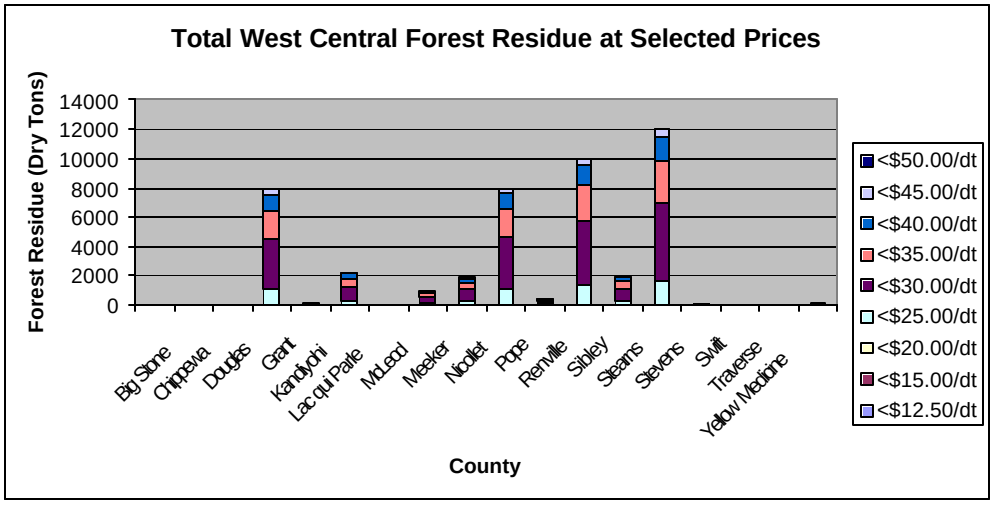
To gather information directly from regional utilities several different methods were pursued. First, student researchers used the Internet to find contact information for utilities. Contact information was easily found for investor-owned utilities and cooperatives. It was more difficult to find contact information for municipals. To find municipal utility information, students often relied upon previously gathered contact information including the Energy Administration Information website, which had a link to utility contact information for all utilities in the United States (although somewhat dated, it did provide some additional contact information).

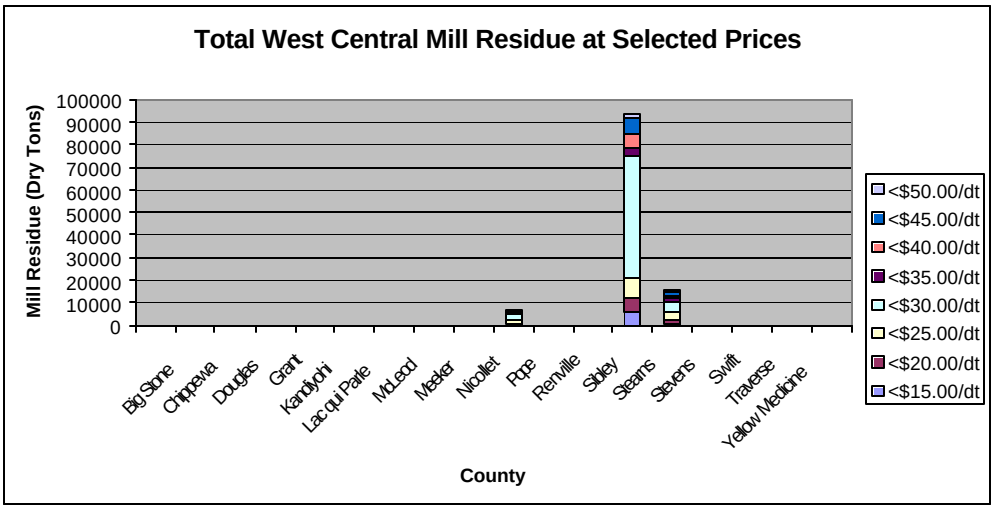
After gathering contact information, students then contacted those utilities with email addresses, via email. This worked well for many of the utilities however if no information was received, students then called the utilities. Most utilities were able to direct students to the right person to gather the information needed. Many of the utilities contacted were happy to give out the information that the students were requesting as they understood the importance of community involvement.

The primary obstacles in gathering utility information related to collecting data from Municipal utilities. Many cities with municipal utilities don't have a full-time person for electricity or those that do have full-time staff for utilities are also in charge of other tasks such as water and Internet. These individuals are therefore profoundly busy and difficult to contact.

APPENDIX F: BIOMASS RESOURCE GRAPHS







APPENDIX G: FLEXIBLE FUEL VEHICLES

The following E85 vehicles are available from your local auto dealer:

Daimler Chrysler

- Selected 2005 3.3L Dodge Caravan, Chrysler Voyager & Town and Country minivans (Fall 2004 production)
- Selected 2004 4.7L Dodge Ram 1500 trucks
- Selected 2003-2004 2.7L Chrysler Sebring Sedans
- Selected 2003-2004 2.7L Dodge Stratus Sedans
- Selected 2003-2004 3.3L Caravan Cargo vans
- All 1998-2003 3.3L Caravan minivans
- All 1998-2003 3.3L Voyager minivans
- All 1998-2003 3.3L Town & Country minivans

Ford Motor Company

- Selected 2002-2005 4.0L Explorers
- Selected 2004-2005 4.0L Explorer Sport Trac
- Selected 1999-2003 3.0L Ranger trucks
- Selected 2000-2005 3.0L Taurus sedans and wagons
- Selected 1995-1999 3.0L Taurus sedans

General Motors

- All 2002-2004 5.3L Suburbans, Tahoes, Yukons, Yukon XLs
- Selected 2002-2004 5.3L Sierra and Silverado trucks (code 5E5 for ordering)
- All 2000-2002 2.2L Chevy S-10 trucks (after 12/99)
- All 2000-2002 2.2L Sonoma trucks (after 12/99)

Isuzu

- All 2000-2002 Isuzu 2.2L Hombre trucks (after 12/99)

Mazda

- Selected 1999-2002 Mazda 3.0L B3000 trucks

Mercedes

- Selected 2003-04 3.2L C320 Serie

Mercury

- Selected 2002-2004 4.0L Mountaineer
- Selected 2001, 2003-2004 3.0L Sables

** Verify E85-compatibility by looking underneath the vehicle's fuel lid.*

These vehicles can use gasoline or the standard 10 percent ethanol blend whenever E85 is not convenient or available. Ask your dealer for more details, or contact Mike Taylor at 651-296-6830 or mike.taylor@state.mn.us .

Source: www.commerce.state.mn.us > Energy Info Center > E85 > E85 Vehicle Directory