APPENDIX A: INDUSTRY CLASSIFICATION DATA[1]

		Beltrami			Clay			Clearwater			Kittson			Lake of the Woods			Mahnomen			Marshall		
		Payroll ($1,000)			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 Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments
------	Total	75,948	326,715	1,142	67,807	288,022	1,161	11,448	58,412	208	5,189	21,543	163	44,682	156,847	155	3,605	16,334	115	8,564	43,626	277
11----	Forestry, fishing, hunting, and ag. support	598	1,875	21	0	0	6	0	0	6	0	0	2	0	0	1	0	0	2	151	774	9
21----	Mining	0	0	2	0	0	2				0	0	1	0	0	0	0	0	0	0	0	1
22----	Utilities	1,310	5,061	4	0	0	1	0	0	1	0	0	2	0	0	1	0	0	1	0	0	1
23----	Construction	5,268	31,778	150	7,898	37,568	141	3,303	23,777	33	109	502	12	0	0	14	0	0	10	632	7,337	37
31----	Manufacturing	11,474	46,183	46	6,920	27,108	41	3,751	15,690	16	298	1,223	7	2601	10,240	11	0	0	2	1,707	7,662	15
42----	Wholesale trade	3,093	13,505	53	4,503	17,106	65	220	1,007	9	859	3,251	18	0	0	9	137	678	5	1526	6,448	28
44----	Retail trade	13,168	54,844	218	10,517	45,736	187	871	3,669	37	804	3,333	34	620	2,543	28	696	3,046	27	1161	5,959	43
48----	Transportation & warehousing	2,689	11,650	44	1,699	7,043	60	328	1,526	15	0	0	5	0	0	5	294	1415	9	152	1514	12
51----	Information	3,033	12,866	22	550	1,839	12	0	0	2	0	0	3	0	0	0	0	0	1	187	808	6
52----	Finance & insurance	2,679	11,350	60	4,085	15,615	83	390	1,620	9	397	1,665	16	0	0	4	0	0	1	836	3,384	21
53----	Real estate & rental & leasing	909	4,131	27	567	2,331	40	0	0	1	0	0	6	0	0	3	0	0	2	0	0	1
54----	Professional, scientific & technical services	2,080	9,487	72	1,959	8,976	61	0	0	10	138	893	4	0	0	5	0	0	4	0	0	9
55----	Management of companies & enterprises	0	0	3	3,573	15,249	8	0	0	1				0	0	1	0	0	0	0	0	0
56----	Admin/support, waste mgt, remediation services	1,328	4,997	44	1,305	5,836	42	0	0	4	0	0	2	0	0	2	0	0	2	0	0	4
61----	Educational services	536	2,188	11	0	0	7	0	0	1				0	0	0	0	0	2	0	0	0
62----	Health care and social assistance	19,484	79,830	106	9,654	40,899	120	1,372	5,862	15	1,434	5,616	14	0	0	10	0	0	10	1,212	5,050	13
71----	Arts, entertainment & recreation	1,002	4,414	30	487	2,146	22	0	0	3	7	55	3	180	691	8	0	0	1	0	0	3
72----	Accommodation & food services	3,566	16,155	103	2,928	12,374	92	133	636	18	0	0	9	0	0	0	115	591	12	189	785	20
81----	Other services (except public administration)	2,947	12,813	123	4,295	18,002	165	217	930	26	214	866	25	109	458	17	94	392	14	346	1382	53
95----	Auxiliaries	0	0	1	0	0	2							0	0	0	0	0	1	0	0	0
99----	Unclassified establishments	0	0	2	0	0	4	0	0	1				0	0	1	0	0	2	0	0	1

[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.

		Norman			Pennington			Polk			Red Lake			Roseau			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 Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments	1st Quarter	Annual	Total Establish-ments
------	Total	7,375	32,594	206	35,027	184,839	415	46,405	202,507	815	3,848	18,297	114	52,966	196,065	402	362,864	1,545,801	5,173
11----	Forestry, fishing, hunting, and ag. support	0	0	2	0	0	2	0	0	7	0	0	1	40	195	5	789	2,844	64
21----	Mining	0	0	2	0	0	0	48	460	4	0	0	0	0	0	0	48	460	12
22----	Utilities	0	0	1	0	0	1	508	1902	3	0	0	1	0	0	2	1,818	6,963	19
23----	Construction	292	1564	25	612	4472	38	2392	15070	70	342	1819	19	322	1785	38	21,170	125,672	587
31----	Manufacturing	0	0	1	7662	65,519	24	12896	49,521	36	0	0	5	38961	135,296	22	86,270	358,442	226
42----	Wholesale trade	974	4,378	17	9136	35,865	26	3183	13,453	60	0	0	3	1172	5,586	15	24,803	101,277	308
44----	Retail trade	933	3,958	32	4046	17,631	85	5613	22,972	139	654	2,968	24	2527	10,651	88	41,610	177,310	942
48----	Transportation & warehousing	0	0	9	584	2604	19	1286	4951	38	0	0	5	774	3884	16	7,806	34,587	237
51----	Information	797	3516	10	526	2676	7	1287	5654	11	0	0	2	257	1048	7	6,637	28,407	83
52----	Finance & insurance	678	2,648	23	1075	5,085	36	2038	8,207	52	0	0	9	1280	5,500	18	13,458	55,074	332
53----	Real estate & rental & leasing	0	0	3	0	0	10	257	1135	17	0	0	2	0	0	15	1,733	7,597	127
54----	Professional, scientific & technical services	524	2961	10	424	2024	21	1581	7419	40	0	0	6	394	1537	22	7,100	33,297	264
55----	Management of companies & enterprises	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	3,573	15,249	16
56----	Admin/support, waste mgt, remediation services	0	0	3	226	1005	11	372	1974	25	0	0	1	425	2587	13	3,656	16,399	153
61----	Educational services	0	0	0	0	0	1	399	1542	7	0	0	1	0	0	1	935	3,730	31
62----	Health care and social assistance	2,348	10,065	19	6,641	30,241	38	9,673	45,251	98	0	0	5	3,985	15,746	30	55,803	238,560	478
71----	Arts, entertainment & recreation	8	63	4	45	261	8	0	0	12	0	0	3	0	0	11	1,729	7,630	108
72----	Accommodation & food services	0	0	12	2756	12053	30	2288	9800	69	81	285	10	1632	7097	43	13,688	59,776	418
81----	Other services (except public administration)	274	1116	33	903	3671	53	2116	10096	123	146	738	18	736	2963	53	12,397	53,427	703
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	8
99----	Unclassified establishments	0	0	1	0	0	1	0	0	1	0	0	0	0	49	3	0	49	17

APPENDIX B: NORTHWEST CERT MEMBERS

First Name	Last Name	Organization
Arlo	Rude	Director of Public Works
Brad	Stevens	Energy & Environmental Research Center
Cam	Fanfulik	Northwest Regional Development Commission
Colleen	Oestriech	Giziibi RC&D
Mike	Moore	Thief River Falls Community Development
Chuck	Reisen	PKM Electric
Dragoljub	Bilanovic	Bemidji State University
Dan	Boyce	East Grand Forks Utilities
David	DeMuth	University of Minnesota Crookston
Dave	Hoff	University of Minnesota Crookston
Duane	Cariveau	Cariveau Consulting
Darren	Schmidt	Energy & Environmental Research Center
Joe	Czapiewski	Headwaters Regional Development Commission
Jim	Steenerson	Northwest Minnesota Foundation
Jerry	Noel	Red River Rural Electric Coop
John	Schmidt	Pembina Trail RC&D
Linda	Kingery	Northwest Partnership
Mike	Adams	Roseau Rural Electric Coop
Mike	Hiemenz	Mahube Opportunity Council
Mike	Tripplett	White Earth Tribal Council Planning Office
Mike	Troy	Pembina Trail RC&D Council
Martin	Lundell	University of Minnesota Crookston
Mike	Monsrud	Clearwater/Polk Rural Electric Coop
Michael	Sparby	AURI
Darryl	Tvietbakk	Northern Municipal Power Assn
Pam	Marshall	Energy Cents Coalition - working with Red Lake Tribe
Paul	Stolen	MN DNR
Lissa	Pawlisch	U of M RSDP
Howard	Person	University of Minnesota Extension
Pete	Aube	Potlatch
Pete	Wasberg	Otter Tail Power Co
Roger	Spiry	Beltrami Rural Electric Coop
Stephen	Davis	Northwest Partnership
Steve	Spigerelli	Center for Environmental Studies
Ruth	Trask	Giziibi RC&D
Todd	Johnson	Johnson Oil Company
David	Bahr	Bemidji State University, Physics
Vicki	Severson	Otter Tail Power Co

APPENDIX C: CERT MEETINGS – AGENDAS AND SUMMARIES

Northwest CERTs Team Meeting Agenda
October 21, 2003
Thief River Falls, MN

2:30 Welcome
Brief Introduction to CERTs Concept and Objectives

2:55Introductions of citizens present
Objective: get to know who has a stake in energy planning in the region
- Name?
- Where are you from?
- What do you do? Your background?
- Why are you interested in energy issues?
- What are your key interests in terms of conservation/renewables? A particular technology? Environmental benefits? Economic opportunities? Energy security?

3:25 What are some opportunities in the NW Region? A technical and case study perspective
Objective: familiarize the group with basic background information
- Lissa Pawlisch: "Designing a Clean Energy Future: A Resource Manual" (5 Minutes)
- Brad Stevens: Wind (15 minutes)
- Darren Schmidt: Biomass (15 minutes)

4:05 Break – 10 Minutes

4:15 Small Group Discussions
Objective: create a list of 'desired outcomes', ongoing projects, new ideas, partners
Questions to Consider: What ideas do you bring to the table? Do you have ideas about what sort of resources are available? Where opportunities exist? Expectations about how the process will work? What types of projects might be interesting? What outcomes we should expect from CERTs?

4:40 Group Reporting

5:00 How the process might work – Tie in CERTs Objectives and Set up a Timeline
- NW CERTS team meets about quarterly.
- Group(s) of people to meet 1-2x per month?
- Start by assessing regional energy use – consumption by sector, where does energy come from, who are big consumers
- What can we learn about opportunities for conservation – working with local utilities, private consumers, public entities
- What are our best bets for renewables – review the literature, engage your fellow community members, talk with "experts", etc.

5:20 Are you willing to participate? Are there people we've missed?

5:25 Closing and Thank you

5:30 Meeting Ends

Northwest CERTs Meeting Summary
October 21, 2003

Lissa provided a brief introduction to Clean Energy Resource Teams (CERTs) concept and origins.

All meeting participants introduced themselves and shared why they were interested in energy issues/why they were attending the meeting.

Meeting participants included:
Delores Adkins, Pembina Trail RC&D
John Anderson, Northern Municipal Power Agency
Dragoljub Bilanovic, Bemidji State University
Duane Cariveau, Cariveau Consulting
Stephen Davis, Northwest Partnership
David DeMuth, University of Minnesota Crookston
Cam Fanfulik, Northwest Regional Development Commission
Scott Gravseth, East Grand Forks Water and Light
Mike Heimenz, Mahube Opportunity Council
Les Hoffstad, Pembina Trail RC&D
Todd Johnson, Johnson Oil Company
Linda Kingery, Northwest Partnership
Bernie Lieder, State Representative
Martin Lundell, University of Minnesota Crookston
Mike Monsrud, Clearwater/Polk Rural Electric Coop
Mike Moore, TRF community development
Jerry Noel, Red River Rural Electric Coop
Colleen Oestriech, Giziibi RC&D
Lissa Pawlisch, U of M RSDP
Howard Person, University of Minnesota Extension
April Schienoha, Thief River Falls Times
Darren Schmidt, Energy & Environmental Research Center
John Schmidt, Pembina Trail RC&D
Michael Sparby, AURI
Steve Spigerelli, Bemidji State Center for Environmental Studies
Jim Steenerson, Northwest Minnesota Foundation
Brad Stevens, Energy & Environmental Research Center
Ruth Trask, Giziibi RC&D
Mike Tripplett, White Earth Tribal Council Planning Office
Mike Troy, Pembina Trail RC&D Council
Darryl Tvietbakk, Northern Municipal Power Assn
Edward Wene, AURI

Lissa reviewed the Nuts n' Bolts handout which summarizes the CERTs milestones.
Lissa introduced the CERTs Manual. This manual can also be found on the web at www.mnproject.org.

Brad Stevens presented an overview of wind turbine technology, Minnesota's wind resources, wind resource economics, and renewable energy policy.

Darren Schmidt presented an overview of Minnesota's biomass resources, biomass technologies, biomass economics/feasibility, and emerging trends. Darren referenced two websites that should provide useful biomass information: www.undeerc.org/pdf/ds_smallbiomass.pdf and www.undeerc.org/pdf/wildfire.pdf.

Linda suggested we divide into 5 small groups for discussion:

- Value-added agriculture – biodiesel and ethanol
- Research/Education in alternative fuels
- Conservation

- Policy Issues
- Residential/Farm-scale/Small Business-scale projects

Discussion questions included: Do you have ideas about what sort of resources are available? Where opportunities exist? What types of projects might be interesting? What projects are currently in place? What outcomes we should expect from CERTs? Expectations about how the process will work?

Small group discussions were summarized as follows:

Value-added Agriculture Group
Goal: Establish at least two viable value-added ag/energy projects with 5 years

Existing projects in the works:
Methane digester in Fosston treating process water carrot processing plant
American Crystal Sugar investigating alternative uses for beet tailings and pulp – possibly combine beet tailings with DOG's from ethanol plant to improve feed product
Wind turbine ideas are only in concept stage

New ideas:
Develop small district heating systems – using biomass as fuel source in communities
Use biomass as heat source for industrial facilities
Develop producer owned wind farm in region
Develop methane digesters on industrial and community lagoons (for heat)
Nutricueticals: pulling out medicinal or chemical components from ag product

Resources: Imagine tapping a number of resources including higher education institutions (to help develop, test and improve technologies for all projects in region), entrepreneurs, utilities, research and marketing groups, economic developers, trade agencies, and government agencies

The expectations about the process are that it will require time, it will take a collective will, will require a willingness to take some risks and money from private and government sources.

They see CERTs as a source of information and a mechanism to tie all the pieces (from within and across regions) together.

Conservation Group
See opportunities for public information campaign to drive conservation. Two key educational pieces are the bigger picture US energy/transmission issues that could impact Minnesota down the road and the use of off peak loads. There is a great need to increase public awareness to allow citizens to make informed choices.

Need to emphasize those items that provide the biggest energy savings per dollar.

Ideas included building an energy library that targets key conservation opportunities and then providing citizens with a way to request that information by topic – this would allow citizens to make informed decisions about their energy use. Also discussed publicizing conservation issues on closed circuit television and in local organizations.

Research and Education Group
Desired outcomes:
- Sequester carbon, reduce greenhouse gases
- 50% carbonless energy sources (20 years)
    - ✓ wind
    - ✓ conservation (insulation, fuel efficiency, use waste heat)
    - ✓ solar (decentralized, incentives)

Demonstrations in public buildings, universities for new technologies – BSU "green building" projects

Educate public – garner political support
Use full-cost pricing to make choices
UM IREE to expand partnership and cooperation, include MNSCU schools

Ongoing Projects: a few wood-burning plants
Issues: transportation of biomass is expensive (need to capitalize on decentralized uses)

Policy Group
Key issues: Maintain integrity and reliability of region system.
Key questions to consider with regard to integrity and reliability include:

- Who is conducting the monitoring?
- What are the standards?
- Who sets the standards?
- Are there both state and federal standards?
- Do they match?

Coal is biggest supplier (energy resource) for region and it's a very cheap competitor. What role does that play in determining what other options might work for the region?

Residential/Farm Scale/Small Business Group
What is needed to tap renewable energy options? Why aren't these groups already taking advantage of these options? What are the barriers?

- Need resources
- Can show profitability – connection with local issues, value beyond simply the value of an investment
- Need additional expertise on things like accounting, business planning, liability issues
- Need "Early Adapters" in region – people who can get projects on the ground so that people can see them and touch them; also need new projects as a means to overcome past failures

The next stages in the CERTs process will be to contact meeting participants with a survey to further assess interest in smaller working groups. These small groups would meet more frequently and then provide feedback to one another at the quarterly CERTs meetings (full team).

The enclosed survey will help organize the small groups – please complete it at your earliest convenience and return to Linda Kingery (lkingery@polarcomm.com). Her address is 262 Owen, 2900 University Ave, Crookston, MN 56716.

Calendar of Upcoming Events:
November 13th, 2003
Biomass Energy II for Heat and Power Workshop
Energy and Environmental Research Center, Grand Forks, ND
http://www.undeerc.org/biomassII/

December 4th-5th, 2003
Renewable Energy Symposium
Wind and Biofuel Resources for the Northern Great Plains
Doublewood Inn, Bismark ND
http://www.ndswcs.org

Notes from Northwest Conference Call – call to prepare next CERTs meeting agenda
Wednesday, November 26th, 2003

We set the meeting date as January 7th, 2004. It is scheduled to begin at 1:30 pm in McIntosh.
We will plan to review the results of the survey (we will soon have the survey available on-line and send out a reminder to the list serve).

We are going to try to pull together a group of utility representatives to provide the NW CERTs team with an understanding of the current electrical system and allow each utility to share what it's already doing in terms of energy conservation and renewable energy.

To accomplish this we thought that:

1) A representative of the distribution coop (either Minnkota or the Northern Municipal Power Association?) could give an overview of how the transmission system works, how it's managed, how the energy moves around, how each of the players fits into the system, where the major transmission lines are in the region (general background information without too many specifics).
2) Representatives from the utilities present would present:
    a. Current supply
    b. Obligation to existing sources
    c. Current energy demand and forecasting for this demand
    d. Conservation efforts and/or opportunities (load management and CIP plans)
    e. Renewable energy resource development efforts and/or opportunities (in light of state objective)
    f. How conservation and renewables impact the existing system
3) We could have a panel discussion that would allow the CERTs team and utilities to engage in a conversation about:
    a. How the CERTs team and Utilities can work together
    b. How CERTs can help the Utilities meet their needs
    c. How the Utilities can help CERTs meet its needs
    d. How CERTs can help Utilities engage community members to ensure a smooth transition to greater conservation and renewables and make sure things are done right from the utility's perspective
    e. Others?

The suggestions I've had so far for potential panel participants include:
Darryl Tvietbakk, Northern Municipal Power Assn (attended first meeting)
Al Tschepen, Minnkota Power (suggestion from Mike Triplett)
Mike Monsrud, Clearwater/Polk Rural Electric Coop (attended first meeting)
Jerry Noel, Red River Rural Electric Coop (attended first meeting)
Dan Boyce, East Grand Forks Utilities (interested but could not attend first meeting)
Tom Ryan, Wild Rice Rural Electric Coop (interested but could not attend first meeting)
Pete Wasberg, Otter Tail Power Co (interested but could not attend first meeting)
Brad Howland, Division Manager, Otter Tail Power Co. (suggestion from Mike T.)
Ron Kennedy, Red Lake REC (on CERTs list as someone to keep in the loop)
Chuck Reisen, PKM Electric (on CERTs list as someone to keep in the loop)
Roger Spiry, Beltrami Rural Electric Coop (on CERTs list as someone to keep in the loop)

Maybe someone from Thief River Falls Municipal Utility – working with Northern Municipal Power Assn to offer Infinity Wind Energy Program (greenpricing). Maybe someone from Moorhead, Shelly and Aida? Thanks to Brad I now have the phone numbers of all of the Minnkota member coops.

We also discussed getting people together in their smaller working groups to get organized. The things we would like this group to discuss are:

1) a structure for their group (setting a point of contact and a communication pattern)
2) the resources they think they'll need to get going (both written and human)

3) the Resource Assessment Tables – as a means of creating a “to-do” list and set of expectations/outcomes, assign tasks

Northwest CERTs Team Meeting Agenda
Wednesday, January 7, 2004
McIntosh, Minnesota

1:30 Welcome & Introductions

1:40 Review Survey Responses

1:50 Introduction to presentations – rationale for the topics for this meeting.

2:00 The Current Electrical Energy System in the Region

- We will have an overview of how the transmission system works, how it's managed, how the energy moves around, how each of the players fits into the system, and where the major transmission lines are in the region (20 minutes).

- A few representatives from different utilities will present information about their current supply, obligation to existing sources, current energy demand (and forecast), conservation efforts and/or opportunities, renewable energy resource development efforts and/or opportunities, and how conservation and renewables impact the existing system (30 minutes).

2:50 Panel Discussion
- How can the NW CERTs team and its local Utilities be partners?
- How can the NW CERTs team assist the utilities and vice-versa?

3:20 Break

3:30 Small groups –
- Determine a point of contact, establish communications network
- Identify needs – bibliography, resource people, etc.
- Use the Resource Assessment Tables to define the expectations and outputs of the teams

4:15 Reports from small groups

4:30 Adjourn

Northwest CERTs Meeting Summary
January 7, 2004

The meeting began with introductions. Participants included:
Gene Bisek, Mahnomen Farmer
David Bahr, Bemidji State University (BSU)
Dragoljub Bilanovic, BSU
Curt Borchert, Norman County Soil, Water Conservation District
Dan Boyce, East Grand Forks Utilities
Stephen Davis, Northwest Partnership & University of Minnesota Crookston
David DeMuth, University of Minnesota Crookston
Mike Hiemenz, Mahube Opportunity Council
Les Hoffstad, Pembina Trail RC&D
Sarah Jackson, BSU grad student
Linda Kingery, Northwest Partnership
Martin Lundell, University of Minnesota Crookston
Pam Marshall, Energy Cents Coalition - working with Red Lake Tribe
Pam May, Red Lake DNR, Giziibbii RC&D Board
Dalene Monsebroten, NMPA
Mike Moore, Thief River Falls community development

Lissa Pawlisch, U of M RSDP
Darin Ramey, City of Ada
Bill Smith, BSU student
Steve Spigerelli, BSU Center for Environmental Studies
Jim Steenerson, Northwest Minnesota Foundation
Paul Stolen, MN Dept of Natural Resources
Ruth Trask, Giziibi RC&D
Mike Tripplett, White Earth Tribal Council Planning Office
Darryl Tvietbakk, Northern Municipal Power Assn
Pete Wasberg, Otter Tail Power Co
Ron Weiss, County Commissioner and Pembina Trail RC&D

Take note of Bill Smith and Sarah Jackson, both BSU students, who will be working on the current energy use inventory and renewable resource inventory, respectively. If you have information that you think would be useful, please do not hesitate to contact them at besmith@paulbunyan.net (Bill) or drenalia@care2.com (Sarah).

Linda presented a summary of the survey results. Nineteen of 32 people responded.
Based on the responses Linda calculated weighted averages to look at why NW CERTs team members thought renewable energy should be promoted. The most frequently cited reason was "economic development", followed by "utilize regional resources" and then "conserve fossil fuels".

Lissa introduced the presentation line-up and rationale. Many survey respondents indicated that they were interested in knowing more about the current electric energy system, how it worked in the Northwest, who was part of it, and how conservation and renewables fit into that picture. With that in mind, we invited several of our partnering utilities to come and present their perspective on how the transmission and distribution system works in the Northwest, and then to be a part of a panel discussion/question and answer session with the team.

Presentations
(Please see attachments including Darryl's power point, a link to East Grand Forks website, and Pete Wasberg's CIP Notes)

Darryl Tviettbakk, Northern Municipal Power Agency "The Region's Power System"
Not too much detail here as Darryl provided his presentation, but generally speaking, Darryl reviewed some electricity basics and then gave an overview of the Northwest Region, including how NMPA (serving muni's) works with Minnkota (serving coops), where their generation comes from, which lines run where, and how transmission ownership works. Darryl also fielded a number of questions about the difference between entities (off-peak prices and green-pricing), the future of superconductors, and the major bottlenecks and transmission headaches impacting the regions.

Dan Boyce, East Grand Forks
East Grand Forks is a municipal utility that buys most of its power via long-term contracts with WAPA, although it does some buying on the spot market and has some customer owned distributed generation and some of its own backup. They have found some conflict between different state agencies regarding distributed generation; one encourages distributed generation while the other says don't run it too much. Currently East Grand Forks is out shopping for new power supplies and transmission services as its long-term contracts are expiring.

As a municipal utility they are nervous about big changes; they are reticent to make significant capital investments, as these sorts of investments can be tough and risky for a municipal utility.

Dan shared a number of handouts, one that depicted the various components of East Grand Forks system and some excerpts from the American Public Power Association publication "Electric Utility Basics". If anyone is interested in purchasing this, please let me know. Dan may be able to get a discounted rate.

Otherwise, I can provide a few copies of Dan's select pages to individuals who were unable to make the meeting (we have to watch out for copyright concerns).

Dan also spent quite a bit of time explaining base-load and peak-load, how that works with their customers, how it might impact rates if certain businesses had to pay the going rate for the energy they used (McDonalds example of always have to buy during high-demand periods). To get a better feel for how the daily load works for East Grand Forks, please visit their website at www.ci.east-grand-forks.mn.us.

Pete Wasberg, Ottertail Power
Ottertail Power is an investor owned utility with around 127,000 customers located primarily in Western Minnesota and North Dakota. They have many transmission lines connecting all of these customers and own and operate three coal plans, five hydro plants (each <1MW) and three combustion turbines. There generation mix breaks down as 80% coal, 1% solid waste, 9% purchases on open market, 7% from hydro (mostly Manitoba Hydro), 2% from wind, and 1% from biomass (including waste, Potlach, corn, and waste seed). Ottertail has saved 114,000,000 kWh through conservation.

Panel Discussion
In the panel discussion all three discussed that they thought there would eventually be some sort of renewable energy standard that would require utilities to do more with renewables. Right now they see low transmission capacity, particularly the lack of needed transmission along certain corridors, as their main obstacles. With regard to renewables, they feel that the production tax credit is of crucial importance (as is some way to transfer this to munis and coops). Generally speaking smaller renewable applications are easier to bring on-line that big ones, but most look at it from a regional level.

They feel the strength of the region is that the utilities work well together. Often deregulation is seen as putting the different utilities at odds with each other, but the strong working relationship between the regional utilities bodes well moving forward.

Each utility is seeing a 2 percent rate increase for energy demand every year. This has been a fairly steady trend.

Small Group Discussions

Education and Research
Brainstormed topics for LCMR largely related to the economics of choices:

- Looking at uncertainties (in regulation, structure of industry)
- Exploring range of uncertainties/eliminate aspects of uncertainties
- Optimizing a DG Model in a conceptual way for regions
  - ✓ Like Biomass
  - ✓ Economic diversity of options
  - ✓ Feedback systems and controls – small scale combining users and producers (how to integrate the two)

Policy
Discuss a variety of things including:

- Transmission – stability to rules → How do you get bulk transmission built?
- Kinds of power plants that could replace existing ones
- DG – safety of workers
- Look at local resources available when do transmission planning

Alternative Energy
After reviewing the Resource Assessment Tables, this group decided that their key points of focus, particularly for Sarah's upcoming research, would include:

- Biomass – also heat applications
- Biodiesel – not just diesel but other bio-oils
- Projects

- Wind
- Hydrogen

Conservation
After reviewing the Resource Assessment Tables, the group decided that although the listed sectors offered some opportunities for conservation, it was really an education issue. The cited many examples about cost-effective weatherization programs for low-income housing units, best cost-savings at commercial and industrial facilities, but noted that in each case there were hurdles that were difficult to overcome due to lack of education/motivation.
As a group they decided that one goal could be to develop an education program that's easy to use for all different sizes of utilities (pool our resources to develop something for whole region). The group felt that kids were the prime excitement factor to target. There are many programs out there that already target efficiency and conservation, just need to tailor these resources.
Goals include:

- Gathering information that we already know about
- Gathering existing program resources
- Potentially meeting with teachers from different districts during summer months to prepare for upcoming year
- Partnering with existing utility programs that reach out to teachers and schools
- Provide some sort of videotape and booklet that teachers could easily access

We adjourned after summarizing all these small group meetings.

For the next meeting we would like to have a workshop of sorts that will build on these discussions and feed into action steps for the group moving forward.

A quick note from Lissa:
I will contact you within the next few weeks to make a few requests for the next meeting. Some of you already have expertise in areas that would inform the group and we'd like to have you share that information at the workshop. I think the model of drawing on regional resources for information worked quite well this last meeting and we'd like to continue this trend. I'll also send out an agenda when I send out these requests so you know where your piece fits in.

NEXT MEETING:
McIntosh Community Center
March 25, 2004
1:30 – 4:30 pm

NW CERTs Workshop Agenda
March 25, 2004
1:00 pm – 4:30 pm
McIntosh Municipal Building, McIntosh, Minnesota

I. CERTS Process

- Regional Decision Making: CERTs has a few overall goals, but there are a number of places where the region needs to set its own priorities to accomplish these goals. What is the team's vision for the region? Where should the strategic plan focus? What are key issues that stimulate interest?
- Discussion of Regional Strengths: From your perspective, what can we draw upon?
- Inventory and Assessment: Bill Smith and Sarah Jackson

II. Making Renewable Energy Projects Happen – Elements with Impact and How They Have Shaped Projects in the Region

- Renewable Energy Production Tax Credit – Cam Fanfulik
- State Production Incentives – Cam Fanfulik
- Planning and Zoning at city, township, county levels – Cam Fanfulik
- Distributed Generation Safety issues – Chris Reed
- Net metering and interconnection standards – Chris Reed

Projects to be highlighted in this discussion include:

- Bio diesel project in Hallock, Cam Fanfulik
- Wind energy in Moorhead, Chris Reed
- Tribal energy at White Earth, Mike Tripplett

III. Regional Goals

Key questions to consider include:

- Drawing on the regional strengths, the current information from the inventory and the elements that are required to make projects happen, where can we come to agreement?
- Are there themes that could help structure regional goals?
- Is there an overall mission emerging?
- How do these goals shape action?

Northwest CERTs Workshop Summary
March 25, 2004
McIntosh, MN

The meeting began at 1:20 (in between 1:00 and 1:30….).
Linda gave a quick overview of what we'd try to accomplish.
We quickly went around the room and did introductions.

Participants included:
John Schmidt, Pembina Trail RC&D
Pam May, Red Lake DNR, Gizibii RD&D, Red Lake Energy task Force
Dan Boyce, East Grand Forks Water and Light
Jim Steenerson, Northwest Minnesota Foundation
Charles Naplin, Pembina Trail RC&D
Michael Moore, City of Thief River Falls
Stephen Davis, University of Minnesota Crookston
Michael Sparby, AURI
David Rein, Rein and Associates

Mike Triplett, White Earth Tribe
Linda Kingery, Northwest Regional Partnership
David Bahr, Bemidji State University
Darryl Tveitbakk, Northern Municipal Power Agency
Jim Noyes, MDV
Arlo Rude, City of Thief River Falls
Marty Sieve, Northern Minnesota Foundation
Delores Wilkins, Pembina Trial RC&D
Mike Troy, Pembina Train RC&D
Bill Smith, BSU, CERTs Researcher
Sarah Jackson, BSU, CERTs Researcher
Steve Spigarelli, BSU
Cam Fanfulik, Northwest Regional Development Commission
Lissa Pawlisch, Regional Sustainable Development Partnerships
Chris Reed, Nemadji Energy

I. SETTING THE STAGE

Regional Strengths/Attributes

We had a brief brainstorming session to share ideas about what regional strengths we could draw upon for CERTs. Ideas shared included:

- Utilities working together well
- Strong electric coop system
- CIP funds → promote renewables (small scale projects)
- Biomass – crops and land prices
- Wind resource
- Plan for evaluation of DG energy system in cooperation with utilities
- Community action agencies have strong capabilities
- Human resources at community, universities and utilities
- Small emerging biomass-burning businesses, example: MDV plan in Fosston (methane)
- Incentives available because of economic and employment hardships
- Entrepreneurial sprit in manufacturing
- Low population density allows citing of facilities
- Close to population center of southern Manitoba

Presentations: A Picture of the Region

Bill Smith: Demographics and Regional Energy Use

Please see Bill's Power Point presentation.

Key questions still remaining: Need to identify places that offer transmission benefits – can the utilities identify these? Does Dept of Commerce may have information on the home heating fuels providers – fuel assistance vendors.

Sarah Jackson: Renewable Energy Resources in Northwest Minnesota

Please see Sarah's Power Point presentation.

Question still remaining: Can we get better biomass numbers? What about biogas at industrial and processing facilities? How could hydrogen fit into the discussion (could be supplied by any number of these renewables)?

II. ELEMENTS THAT IMPACT ENERGY PROJECTS

Chris Reed: Interconnection and Distributed Generation Safety

Please see Chris's Power Point presentation.

Responses to a few questions included:

Where does a 40 kw system connect? maybe at the amp service, maybe at the transformer

ALWAYS, talk to the utility first.

Rebates from the state – none at the present time in MN. CA has a tax credit at the state.

Contemplating renewable energy – first concentrate on conservation - $1 spent on conservation, yields savings of $3 or $4 dollar savings on the renewable energy system.

Cam Fanfulik: Zoning and Incentives
In 7 counties – Polk is the only one that implements it zoning ordinances.
Cam is working with ethanol and biodiesel – need to site large industrial facilities.
NWRDC helps communities with siting problems. MN has not been business friendly.

MPCA has the responsibility to protect the environment.
Use ethanol or biodiesel as an example.
Coal – 18 month permitting process
Natural Gas – 12 month permitting process

PZ – feedlot siting, odors, noise, traffic, road use are local use issues; regulatory issues address water and air quality. Air flow, population density,

JOBZones – 12 year period for tax exemption – started Jan 1, 2004
Initiative by the Gov – aimed at stopping job loss, and encourage business growth. 29,000 acres eligible for tax free benefits. 2710 acres in NW MN.
Manufacturing base and valued-added agriculture.

- Manufacturers depend on small manufacturers
- Designed to stimulate economic activity
- Tax exemptions – corporate tax, income tax for operators and investors – goods and services, taxes on improvements, but no reduction of the land or existing buildings, referenda or assessments.
- The tax benefits can provide incentives as well as make up for loss of production credit.

DEED has a target wage.

Approach in NW MN is employer-driven. Many communities point out there amenities – businesses need to grow in ways that are good for them.

Renewable fuels production plant.

Project Perspectives
Chris Reed – Moorhead

- Moorhead owned the turbines and the utility – no need for an interconnection agreement
- Moorhead has an "all services" arrangement – because of bonding with Missouri Energy Systems. It became difficult for Moorhead to own and producer the energy. Moorhead sells the electricity to Missouri Energy, the buys it back.

Mike Triplett – White Earth

- Lots of interest in wind, not so much interest in creating a utility.
- Looking at siting a turbine (13 mi/hr) decent wind resource. Size the generation for you own use, may have excess to sell.

Cam Fanfulik – Hallock Biodiesel Project

- Good example of cooperation and partnership.
- Fuel blender needed an additive to add to petro fuel.
- JOBZone will be able to help the project- there is a site that is dedicated to the project.
- Fuels blender and Elevator applied for USDA value added grant
- AURI – Michael Sparby providing technical assistance
- NWMF has provided matching funds for the project.
- Private consultant has managed the search for a feasibility study – steering committee selected a company. By mid-June, the project will move to business planning stage.
- Produce 100% biodiesel, and provide the 2% amount to be blended with diesel; soybean and canola as feedstocks –works via a chemical process (not as high a need for energy)
- Federal energy bill – includes provisions for lower interest rates for construction

- Energy tax legislation looks shaky – discussed moving biodiesel and ethanol legislation into transportation bills, won't work

David Rein – Minnesota Dehydrated Vegetables
- Converting biogas from process water
- Should be operation by summer – have it ready by fall
- 3 cell system –
    - 1st cell – low pH – may be able to create hydrogen
    - 2nd cell – create methane – complete mix suspended system
    - 3rd cell – clean up the water for discharge

- Low-rate methane system - not necessarily a digester.
- Similar to American Crystal facilities use similar systems

Highlights from Last Meeting
Research and Education:
Optimizing DG system –
Demo small DG plants to test the flexibility of current transmission

Policy:
- Transmission – stability to rules → How do you get bulk transmission built?
- Kinds of power plants that could replace existing ones
- DG – safety of workers
- Look at local resources available when do transmission planning

Renewable Fuels:
Targeted resources to include biomass (including heat applications), biodiesel, wind, also hydrogen and how it relates
Focus on projects

Conservation:
As a group they decided that one goal could be to develop an education program that's easy to use for all different sizes of utilities (pool our resources to develop something for whole region). The group felt that kids were the prime excitement factor to target. Need to figure out what already exists, decide what will be most useful for the region and then establish targets and goals.

III. REGIONAL GOALS DISCUSSION
1. If the transmission is stressed – we need to focus on energy off-set, on conservation activities. Off-set current use. Recover wasted energy, from manufacturing processes. Also look at demonstration DG plants, again looking at DG to avoid taxing the system.

2. Transmission concern is echoed – need more transmission lines built, heavy lifting, needs to happen. Regulatory and bureaucratic constraints for generation – including MISO (MISO.org – Midwest Independent System Operator).
East Grand Forks has just put out a power supply RFP. Can people get power to EGF? Physical impediments; market and economic impediments.

3. Alternative Fuels (E85 and biodiesel) – Station in East Grand Forks closed down so now there is no service in the region. Now there is actually a market for useful vehicles (like trucks, etc.) that can run on E85. How do we get another station? Need to have a facility to serve this region. Can an undergrad work on the demand and trends and market opportunity for E85 – especially in the current pricing cycle. Concern about biodiesel from trucking groups – concerned about the use of the biodiesel motor, what damage will biodiesel do to my motor. Most of this concern has been related to misinformation (rumors) that new fuels would be harmful. Need publicity and education for consumers to share the research that is already available and make sure that people are informed.

4. DG pilot projects – what is the economics of the facility. How competitive is it going to be.
We need to consider how to evolve toward a more sustainable energy. Moorhead is an example of DG – clean energy source; people are willing to make the investment for cleaner fuels. Explore feasibility study for wind and biomass at the community scale – focus on these cause wind and biomass/biogas/biofuels because are most readily available. Look at biomass in terms of methane production (not just electricity). Region has plenty of waste biomass in eastern forest region and set aside lands in western agricultural regions.

5. Cost concerns:
Energy is lower cost here (Minnesota in general); coal keeps the cost down.
Consider the imbedded subsidies in the industry – need to take these into account when we are making decisions. Direct and indirect subsidies to coal industries, ethanol, defense spending….
Environmental costs
Avoided costs – avoiding new power lines, new plant construction that could come from DG
How are these economic considerations be addressed at a variety of scales – can be different for each community.

6. Be more targeted. Select communities.
Take into account the local projects that are already underway –
Fosston – methane production – it is city owned. Can the model be replicated. Hydrogen production research – is the university able to assist?
Ada – wind monitoring
White Earth – in planning stages
Red Lake – in planning stages
BSU – green building
Co-gen at EGF and Crookston – American Crystal, Potlatch
Should look at the specific up these projects and efforts and see what else needs to happen to move things forward.

7. An important role for CERTS –
There are a number of groups that have ideas for there own areas. CERTS can convene the community groups – form a critical mass and help provide a catalyst. Provide the networking opportunity (e.g., David Bahr and Pam Marshall).
Being involved with the political system: have local governments provide benefits for extra energy saved.

8. Big picture:
NW Minnesota is now a consumer of energy, we are working toward being not only a consumer, but a provider.
Are you going to use it where you produce it, or are you going to move it. If you move it, you need to provide transmission. Transmission rules are changing and challenging. You're not the only player. Similarly, when looking at biomass and biodiesel, you have to think about who else is in the game (can it be exported, who else is producing,etc).

9. Research:
County level vs. smaller level
NWMF funds feasibility study – could be community-based, could be for demonstration size projects to see if concept works
Need someone to pull all of the information together from multiple sources.
At BSU – Bahr has a group of students that are anxious to do research – either on-site, or with a small budget. Model of distributed generation based on various sizes and locations of fuel cells.

10. We need to come up with some goals – consider all energy sectors in these goals.

- Set a goal for conservation – energy off-set. SMART goals
- Set a goal for energy production from the region.

- By 2015 – achieve a 25% reduction in peak energy use, and 25% production of energy (look for possibilities across sectors, not just electricity).
- The waste can be turned to energy, recapture the energy – 10% reduction in energy use.
- Focus on targeted areas or communities, (compare, competition, governor's recognition)
- Promote, fund or support projects in each these areas: these are the how-to – do a demonstration, use the demonstration for education. Use existing work for on-going work. These are all part of an overall strategy to achieve savings and shifts in supply.
    Conservation – residential, industrial (high users), commercial
    Cogeneration
    Education
    Get the word out – answer the questions.

Education is essential to inform policy – while we are trying to get an acceptable energy bill, we need an educated constituency. Need to understand the benefits of sustainable energy and get everyone involved from the very beginning.

1. Publicity about the CERTS project
2. Set goals for conservation and energy off-set
3. Set goals for energy production

**Get a press release to follow the meetings summarizing the meeting. Also ahead of next meeting. Localize! Press release is a good first step. Get it to the listserv. Some folks might make some changes and take it to the local newspaper. Tell people how to
Copy to township and city - by email if possible.

** UND-EERC engaged in the process

Website: www.cleanenergyresourceteams.org

Notes from NW CERTs call
Monday, April 26th, 2004

Present on call: Colleen, John, Brad, Lissa, Dan, Linda, Jim, Stephen, Mike T, Mike M.
Next Meeting Scheduled for June 29th, 1 pm, in McIntosh

Energy Use Pies
As a way to provide something that's easy to understand we talked about using pie-charts as a visual aid to discuss regional goals.

Start with a pie that reflects the current situation – electrical energy use now and sources

Three possible energy futures:

- 'Business as Usual' – what if the demand grows at 2.5% annually. What will the energy pie look like in 2015? Which sources grow, which shrink? How much bigger will the pie get?
- State goal – 10% provided from renewables – what opportunities exist for communities? How do the utilities plan to achieve this goal? How can CERTs help them achieve these goals?
- Northwest goal – develop consensus about the 2015 energy pie for NW MN with regard to size (conservation and energy efficiency) and make up (incorporating renewable resources)

Conservation – what is possible? What are the best practices? Who are the experts? How do we address peak load reduction?

Renewables – a percent of new growth? Be specific about sources, don't just say renewables as that has different meanings to different people (want to take out politically laden language). Does the CERTs team have requirements about where the renewables come from (more local renewables for economic development)?

Community-based pilot projects

Couple of reality checks from community-based projects. What is the real potential for filling demand with local renewables? Examine real possibilities:

- Ada – wind data (Mike T. said that Ada had applied for the one of the Department of Commerce Community Wind grants, and that although they didn't get it, were still interested in the project, particularly if the federal and state incentives are reintroduced).
- East Grand Forks – report on proposals to provide power = how can community projects respond to such an RFP in the future?

This should again help build toward targeting local communities and drawing on projects that are already underway as models for other communities.

Jim Steenerson had a similar idea to share with the group: We could find one community in the region, and bring to bear a lot of collective resources to address the many issues we have been discussing. The community could end up being a kind of "poster child" for Clean Energy in the region, with several different ideas showcased and/or implemented. On another tack, we could make a list of various projects that might be achievable, and then pick out various communities to implement each technology and/or project.

We could do an exercise that lists the various projects that might achievable, see where these match up with existing community-based project ideas, and see where we still have gaps. This might be a good way to start setting priorities for the Regional Plan as well.

Education and Sharing the Message

- Let people know up front that outreach is an "assignment", then provide easy to share information - handouts, press releases, etc.
- Get feedback about what information they would like to share

- Develop a list of people/organizations to contact
- Develop a list of existing events where we could share information/take demonstrations (like County Fairs)
- Link with legislators via the LCMR Citizen Advisory Committee; how has energy become a priority for LCMR?

Tentative Meeting Agenda

1:00 Introductions
1:10 Meeting purpose and a little background (review from last meeting, set the stage)
1:20 State Renewable Energy Objectives – where did they come from and why
1:30 Pies, and overview of their make up, the future scenarios, and what to consider when envisioning a new pie
1:50 Small Group Discussions – Describing the NW Pie
2:20 Regroup, Share, Debate, and Consensus
3:00 Targeting Communities for Projects (could be conservation or renewables)
Ada
East Grand Forks
Other possibilities and matches?
How to play matchmaker with other resources and communities (feed into next item)
3:40 Outreach – Who knows who? What materials should be shared with community members and other organizations? Are there demonstrations we should focus on? Existing events to target? Material we could provide at demos/events? Existing materials we should draw on? How do we make sure we're not recreating the wheel?
4:10 Progress Report (a questionnaire about how CERTs is going)
4:30 Adjourn

Northwest CERTs Team Meeting Agenda
June 29, 2004
McIntosh, Minnesota

1:00 Introductions

1:10 Meeting purpose

1:20 State Renewable Energy Objective

1:30 Energy Pies (a description of current energy use and projected energy use in the region)

1:50 Small Group Discussions – Describing the NW Pie (what *should* the pie look like in 10 years?)

2:20 Regroup, Share, Debate, and Consensus (hopefully)

3:00 Targeting Communities for Projects (Conservation/Energy Efficiency or Renewables)

3:40 Outreach (how to reach out to our friends and neighbors throughout communities in the NW)

4:10 Progress Report (a questionnaire about how CERTs is going)

4:30 Adjourn

Reminder Tool for June meeting - Brief Summary of Highlights from March 25, 2004 Meeting
At the last meeting we spent quite a bit of time discussing what sort of goals/mission were "right" for the region. We decided that that we needed to come up with some goals and consider all energy sectors in these goals. Some of the suggestions we heard were:

- Set a goal for conservation – energy off-set. SMART goals
- Set a goal for energy production from the region.
- By 2015 – achieve a 25% reduction in peak energy use, and 25% production of energy (look for possibilities across sectors, not just electricity).
- The waste can be turned to energy, recapture the energy – 10% reduction in energy use.
- Focus on targeted areas or communities, (compare, competition, governor's recognition)
- Promote, fund or support projects in each these areas: these are the how-to – do a demonstration, use the demonstration for education. Use existing work for on-going work. These are all part of an overall strategy to achieve savings and shifts in supply.
  - ✓ Conservation – residential, industrial (high users), commercial
  - ✓ Cogeneration
  - ✓ Education
  - ✓ Get the word out – answer the questions.

Education is essential to inform policy – while we are trying to get an acceptable energy bill, we need an educated constituency. Need to understand the benefits of sustainable energy and get everyone involved from the very beginning.

1. Publicity about the CERTS project
2. Set goals for conservation and energy off-set
3. Set goals for energy production

Summary Northwest CERTs Meeting
McIntosh, Minnesota
June 29, 2004 - 1:00 pm to 4:00 pm

In attendance:
Mike Troy, Hallock
Mike Moore, Thief River Falls
John Schmidt, Pembina Trails RC&D
Jim Steenerson, Northwest Minnesota Foundation
Mike Heimenz – Mahube Opportunity Council
Mike Triplett – White Earth Tribal Council
Colleen Oestreich, Giziibi RC&D
Ruth Trask, Beltrami Co SCD
Michael Sparby, Agricultural Utilization Research Institute
Arlo Ruud, Thief River Fall Municipal Utility
Dan Boyce, East Grand Forks Municipal Utility
Cam Fanfulik, NW Regional Development Commission
Linda Kingery – Northwest Minnesota Regional Sustainable Development Partnerships
Brad Stevens – Energy & Environmental Research Center
Lissa Pawlisch – CERTS coordinator

Purpose of the meeting: Get specific about goals, and have a way to get to the public for comment. Summary of March meeting was included on the back of the agenda (if you'd like another copy of this, let Lissa know).

State Renewable Energy Objective, description from Brad Stevens

The Renewable Energy Objective (REO) applies to all electrical utilities serving Minnesota. MN legislature passed language that all utilities must meet, or must make a good faith effort to meet the REO. Goals are 1% of retail sales by 2005, up to minimum requirement of 10% by 2015 (increasing at 1% per year between 2005 and 2015).

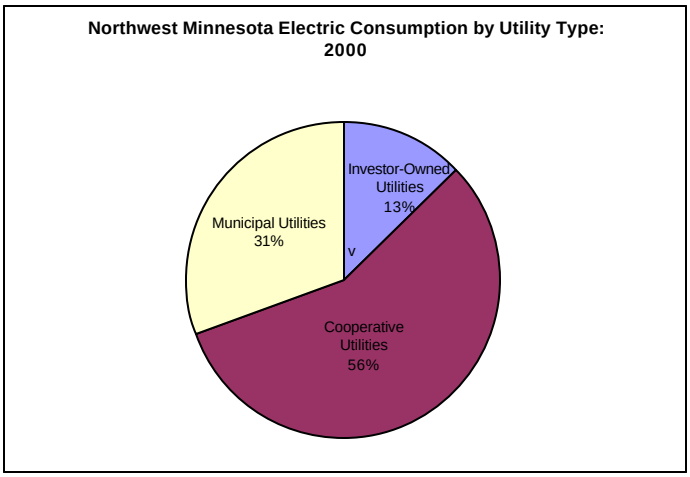
PUC determines what is a good faith effort and generally looks to see that the fulfilling the REOs is part of utility resource planning. An additional requirement is that biomass must be at least 0.5% of the renewable mix by 2010 and 1% by 2015. The rule applies to all generators, not just to investor owned, but also includes municipal utilities and rural electric cooperatives.

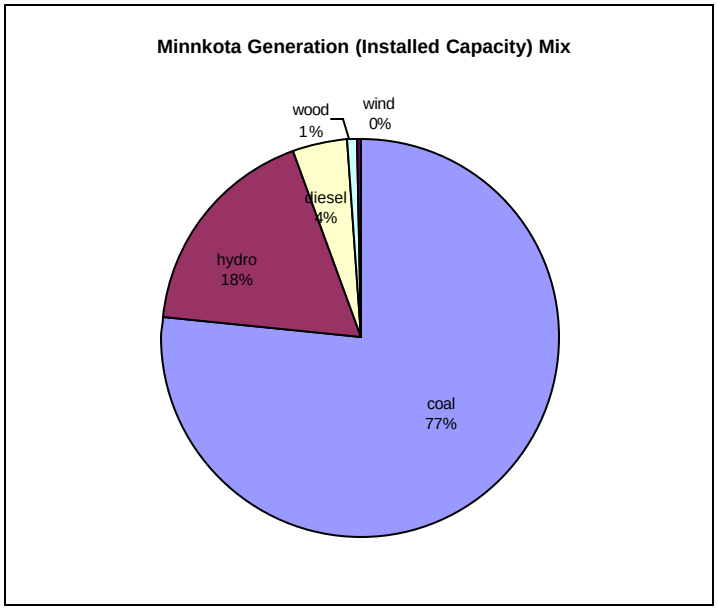
The definition of Renewable under the REO currently includes: Hydroelectric (less than 60 MW), Solar, Wind, Biomass (including municipal solid waste), and Hydrogen (after January 1, 2010 the hydrogen must be generated from the eligible renewable resources).

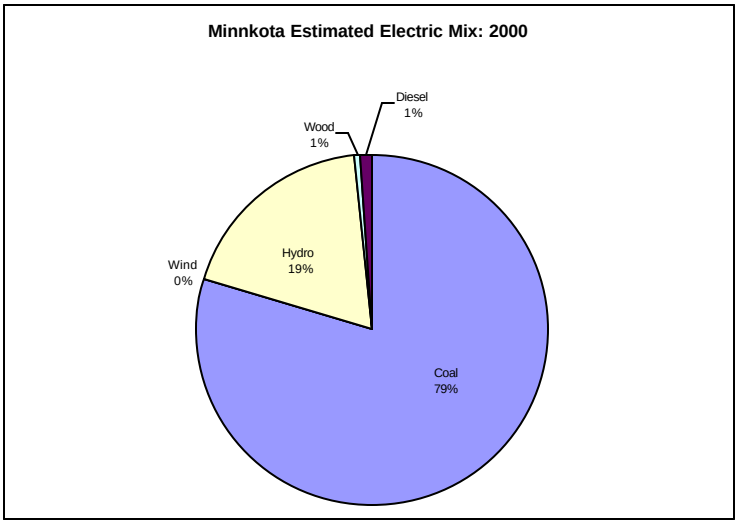
The legislature is currently considering the possibility that utilities could use green tags to meet their REO. Green tags, also know as renewable energy certificates or tradable renewable certificates, represent the environmental attributes of the power produced from a renewable energy project and are typically sold in one MWh equivalents. Basically whoever owns the renewable generation facility documents benefits in the 'off-set' of fossil fuel savings and the offset is the environmental attribute of the renewable energy or the "green tag". If the attributes are separated from the electricity and sold separately, then that electricity cannot be marketed as green energy.

Under the REO, renewable energy development can occur as an owned and operated generation facility, could be a sufficient purchase of green tags, or could be development elsewhere that is then sold to the Minnesota Utility (could buy wind energy from Florida Power and Light to fulfill requirement).

Energy Pies***, description from Lissa Pawlisch***


Northwest Minnesota Electric Consumption by Utility Type: 2000
Investor-Owned Utilities 13%
Municipal Utilities 31%
Cooperative Utilities 56%


Minnkota Generation (Installed Capacity) Mix
wood 1%
wind 0%
diesel 4%
hydro 18%
coal 77%


Minnkota Estimated Electric Mix: 2000
Diesel 1%
Wood 1%
Hydro 19%
Wind 0%
Coal 79%

Reviewed a series of energy pie chars to show the types of energy, as well as fuel sources for utilities serving NW MN. Please see power point presentation posted on website for details (didn't include them here cause it made the file VERY big).

Goals Discussion, group discussion
How should this region's goals be considered and stated given the state renewable energy objective? Considering the Energy Pies? Looking to energy generation for 2015, what makes sense?

Renewables

- With the standard growth rate (2%) electric demand would increase by over 100,000 MWh by 2015
- Base load energy is what we need to think about (today it's mostly coal)
- Conservation may reduce the natural gas piece more than the others – the most volatile prices, an agile energy source.
- If you are able to get the renewable sources for a price that is acceptable to the market they will happen. Cost considerations favor coal as the basis for baseload generation, if other resources could achieve same pricing, via incentives, policy, changing depreciation etc., utilities would buy them.

- What are all the policy based incentives for wind development?
  - ✓ Excel's mandate – state policy / state mandate
  - ✓ Production incentive payment
  - ✓ Renewable Energy objective provides another policy-based incentive (and an instantaneous market)
  - ✓ Transmission issues relate to the SW

- How might Minnkota go about meeting the objective?
  - ✓ it would make sense for Minnkota to develop wind in the Pembina Escarpment area
  - ✓ How can communities market themselves to the utilities to attract project development here rather than in ND or elsewhere.
  - ✓ Utilities like to be in the community, but will also make decisions based on the economics of the decision. Small difference may be overcome, but larger differences will be hard to justify.
  - ✓ Utilities will be looking for local community support. – community needs to show that it has leadership capacity.

- Wind is the major renewable resource that people focus on today, but what about others?
- Fuel Cells – this technology will get more and more emphasis, especially in environment of volatile prices. Biggest impact will likely be on transportation for the near term. Could run off of ethanol or methanol as well.
- Are there duel uses? Like wind for electrical generation and hydrogen? Yes, if you had a market for hydrogen, but these ideas are really only on paper
- AURI has wind/biodiesel co-generation study – right now the economics won't work; biodiesel is not a very efficient source of energy and it's expensive (one gallon of biodiesel is about $3.60-$3.80 whereas a gallon of diesel is about $1.80). The advantage of a wind/biodiesel-paired system is that is could get a higher price in a power purchase agreement because could provide baseload.
- People want a generator warranty for biodiesel to actually utilize a blend, should be sufficient to utilize the ASTM biodiesel fuel standard

Conservation

- In 2000, NW consumed 2,680,255 MWh of electric energy
- 25% conservation is a very high goal
- Weatherization can reach 15 to 18% for single family on the average, really impacts BTUs for heating
- In industrial setting savings are different – related to cost; residential improvements are based on multiple factors

- Could get 36% savings on the worst of the worst, but it also depends on behavior and savings are limited by how much you can spend on a given customer
- CAP installations must pay for themselves within 10 years
- How far are we from the ideal? Will there come a time when every house in the NW is weatherized enough that we can't do more?
- Efficient appliances – Pumps, Water softeners, Front loading washer – use less water, Refrigeration, Lighting – 9% of total electric use
- Ground source heat pump program (for whole region) – could easily result in 25% reduction in heating fuels and electric, technology exists, but expensive. What are the policy and financing tools that would be needed?

- Target bigger users –like university or big government building.
- Performance contracting – target entities that are large enough to attract contractors for retrofit. Minnesota State University Moorhead (MSUM), Bemidji State University (BSU), University of Minnesota Crookston (UMC) are three universities in 3 of the larger electric-use counties. These are simple, straight-forward targets.
- Campuses typically run less efficiently. Could install motion sensors that save money in the end by lowering electric bills.
- Target other big energy users, like Polaris, Warroad, processors, manufacturers.

- USDA has a program to cost share energy efficiency cost share – 25% cost share.
  - ✓ Rural Development? Energy title.
  - ✓ Talking about a training in the fall – prepare for next july round.
  - ✓ Rural businesses and independent producers
  - ✓ Need to schedule the training, invite David Gaffney
  - Value-added grant can be used for market evaluation, for wind, ethanol

  - What is the conservation goal? 25% is too high
  - How does the conservation goal relate to growth and economic development? Will cutting consumption also halt economic development?

CONSERVATION GOAL – 1% per year for 10 years

- Ambitious and optimistic
- Get energy efficiency and energy conservation in the public dialog.
- How will we reach this goal? X percent of homes have Energy efficiency appliances …
- Regional energy plan will include goals as well as objectives at a more local level.
  - ✓ target large users – use performance contracting at large facilities.
  - ✓ Goals – strategies – action steps.
  - CIP mandates were stronger in past decades. Energy audits provided as a service by utilities.
  - Audit can establish baseline.

RENEWABLE ENERGY GOAL – same as State Renewable Energy Objective 1% per year, to 10% by 2015

- Is there a benefit to setting a higher goal? Can this be adjusted later? Yes.
- How do we get the message to the broader community? Press releases, meet with target audiences, attend events? Example: March 2005 Event – Sportsman Lodge in Northern Minnesota – CERTs presentation? – check with Mike Heimenz

How we might target communities for projects?

- Communities already have an interest in renewable energy and/or conservation efforts underway; examples: Moorhead – putting in 3rd turbine, White Earth - two wind turbines, Ada – wind monitoring.
- Human and financial capital
- To identify communities: CERTS could solicit information from communities in the NW –
- Develop a prospectus – gather information
- We may need to select larger users, like college campuses.

What is our role?

- Clearinghouse?
- What do we have to offer?
- What would make the CERTs team useful to these communities?
- Can we link communities to the technical resources to help them?
- Matching up technical resources to address various questions
- Provide training on how to get USDA RD funding.

- Do the CERTS regions connect to legislative funding for projects?
  - ✓ The CERTS projects informs the legislature and state energy policy
  - ✓ By showcasing projects, we use them as examples to show how progress can be made.
  - ✓ Part of the goal is to make renewable energy sources more economically viable.

- Lissa to post link to IREE website: www.iree.umn.edu

Outreach

- Ways to spread the news: a list of ideas from meeting and discussion - Outreach
  - ✓ CERTS newsletter
  - ✓ Regular press releases
  - ✓ Involvement in annual meetings of rural electric coops
  - ✓ Municipal utilities
  - ✓ Case studies – adding to the CERTS manual; include more examples on the CERTS website (some have recently been added, www.cleanenergyresourceteams.org)
  - ✓ Home study curriculum about energy efficiency and renewable energy?
  - ✓ CAP and Opportunity Council meetings
  - ✓ Going to county fairs - biomass gasifier demonstration
  - ✓ Tour of renewable projects in the region.

New Idea

Deliberative Polling – (TX, NE) it's a more in-depth, educational process, more Q and A, measure before and after. Utilities perceive their customers in one way, advocacy groups perceive them another way; some customers are ill-informed or misinformed.

Process can be relatively lengthy and expensive. Involves initial survey using questionnaire. Then a workshop opportunity – large group and small group presentations, panel discussions. Last part is an Exit survey. Results are compiled into document as a thorough cross section of consumer base.

The utility learns what the customers really want. Process is trademarked by researcher in Texas. May be something that MN would like to try. Brad Stevens and others are trying to make it happen in ND. Texas did it in 1999. Nebraska's information is available on www.nppd.org (largest public utility survey, largest percentage of rural participants). Numbers were surprising to utilities – indicated an acceptable cost increase, but when you embark on the process, you don't really know what you'll find. The process may select a biased population – have to have ability to take 2 days off to attend.

Lissa to ask Dept of Commerce about interest in deliberative polling at the meeting next week; she asked, they seemed intrigued, but non-committal.

NEXT MEETING – Sept 23rd at EERC at UND campus – starting at 1:00pm, be there by 12:00 for a tour of the facility.

Notes from Northwest CERTs Steering Committee Conference Call
Tuesday, August 17, 2004

Call participants included: Brad Stevens, Mike Triplett, John Schmidt, Jim Steenerson, Linda Kingery, and Lissa Pawlisch

We discussed the agenda for the September 23rd meeting.

We determined that the goals for the meeting were to:

1) Come up with 3 priorities in terms of projects
2) Identify the barriers and opportunities with regard to those projects
3) Develop strategies to overcome those barriers and/or take advantage of those opportunities

Agenda

10:30 am Tour of EERC

11:30 am Introductions and Quick summary of Meeting Goals

11:45 am Lunch

- Quick synopsis of Biomass Gasifier demonstrations at County Fairs
- Brief Review of what is happening in other region
- Review what data we have: Presentation of Draft Strategic Energy Plan highlights and flowchart with timeline (these materials could then be used by others going to present NW CERTs team goals to others)

1:00 pm Discussion

- Review Mission Statement developed at last meeting (10 – 20 minutes)
- Assess what the region's 3 priority projects should be (1 hour)
- Identify barriers and opportunities (45 minutes)
- Divide into task forces to develop strategies to overcome the barriers/provide outreach regarding plan and priorities (1 hour)

4:00 pm Adjourn

Lissa will post the agenda after everyone on the Steering Committee has had a chance to review it and make revisions (target date Wednesday, August 25th). We will also ask that everyone RSVP so we can get a head count for lunch.

Several people voiced the need to have broad representation and input at the next meeting so as to include as many people in the process as possible. Toward that end we made a list of other people that we felt should be more involved and assigned individuals to contact these groups. If these individuals are unable to attend, contact people should ask if he/she has a particular opinion that should be shared with the group on their behalf (or perhaps ask if he/she could send a representative).

Contact List

Minnkota Cooperative representatives – Brad Stevens and Darryl Tvietbakk (Lissa to ask) to contact Al Tschepen; Lissa to send an email to all coop reps that we currently have addresses for and to follow up with Minnkota representative that attended MREA meeting
CAP agencies – Mike Heimenz to contact (Lissa to ask)
Ottertail Power – Lissa to contact Brad Howland, Linda to contact Vicki Severson
Headwaters – Jim to contact Joe Tschepeski
Thief River Falls School District – Mike Moore to contact someone (Lissa to ask)
Clean Water Action – Lissa to contact Erin
Sierra Club – Lissa to contact Michelle Rosier
Business community/advocates – Linda to contact David Rein
American Crystal Sugar – Dan Boyce to contact Joel Smith (Lissa to ask)

Let me know if I've missed anyone, or if you have had other ideas about stakeholders to contact since our call. Tks!

Northwest CERTs Meeting Agenda
September 23rd, 2004
Tour 10:30-11:30
Meeting 11:30-4:00
University of North Dakota Energy and Environmental Resource Center

Goals for the meeting are to:

4) Come up with 3 project priorities
5) Identify the barriers and opportunities with regard to those projects
6) Develop strategies to overcome those barriers and/or take advantage of those opportunities

Agenda

10:30 am Tour of EERC

11:30 am Introductions and Quick summary of Meeting Goals

11:45 am Lunch

- Quick synopsis of Biomass Gasifier demonstrations at County Fairs
- Brief Review of what is happening in other region
- Review of data we have: Presentation of Draft Strategic Energy Plan highlights and flowchart with timeline (these materials could then be used by others going to present NW CERTs team goals to others)

1:00 pm Discussion

- Review Mission Statement developed at last meeting (10 – 20 minutes)
- Assess what the region's 3 priority projects should be (1 hour)
- Identify barriers and opportunities (45 minutes)
- Divide into task forces to develop strategies to overcome the barriers/provide outreach regarding plan and priorities (1 hour)

4:00 pm Adjourn

Mission Statement:
The Northwest CERTs team has set two primary goals:

1) Conservation/energy efficiency: 1% savings per year for the next 10 years

2) Renewable energy resources: 10% by 2015 (same as the State Renewable Energy Objective). The Northwest CERTs team seeks to identify and promote ways to have the renewable energy development to achieve this objective take place within the region.

Northwest CERTs Meeting Summary
September 23rd, 2004
University of North Dakota Energy and Environmental Resource Center

Tour
We began the day with an hour-long tour of the Energy and Environmental Resource Center. Chris Zygarlicke, Senior Research Manager at the EERC was our guide. We learned about the energy efficiency measures installed in their new facility including day lighting and the extensive geothermal heating system. We then stopped at several displays that explained the research efforts underway at the EERC including the research done by the Center for Biomass Utilization, the Plains Organization for Wind Energy Resources, and on hydrogen fuel cell technologies. The also team stopped to see the wind database the EERC manages (www.undeerc.org/wind).

After these few stops inside the building, we went outside to see the biomass gasifier. This is a larger version of the one that went to a few county fairs in the region. It was quite a sight and was a tremendous opportunity for the CERTs participants to get a sense for what was really possible with biomass fuels. Please see pictures on the CERTs website (www.cleanenergyresourceteams.org/northwest).

Meeting

Goals for the meeting were to:

7) Come up with 3 project priorities
8) Identify the barriers and opportunities with regard to those projects
9) Develop strategies to overcome those barriers and/or take advantage of those opportunities

Introductions

We began the meeting with introductions. Those present at the meeting included:
Mike Triplett, White Earth
Mike Heimenz, Mahube Community Council
Ruth Trask, Giziibii RC&D
Jim Steenersen, Northwest Minnesota Foundation
Arlo Rude, City of Thief River Falls
John Schmidt, Pembina Trail RC&D
Brad Stevens, UND EERC
Dan Boyce, East Grand Forks Water and Light
Chuck Riesen, PKM Electric Cooperative
Darryl Tveitbakk, Northern Municipal Power Agency
Dalene Monsebroten, Northern Municipal Power Agency
Al Tschepen, Minnkota Power
Stephen Davis, University of Minnesota Crookston
Linda Kingery, Northwest Regional Sustainable Development Partnerships
Lissa Pawlisch, U of MN Regional Sustainable Development Partnerships
Lola Schoenrich, MN Project
Darren Schmidt, UND EERC

John Schmidt and Darren Schmidt gave a quick overview of the three, biomass gasifier demonstrations held at County Fairs in Fertile (Polk Co.), Thief River Falls (Pennington Co.), and Bemidji (Beltrami Co.) during July 2004. John also shared a handout that gave an overview of the demonstrations.

Data Overview

Lissa gave a quick overview of the data collected for the Regional Strategic Energy Plan via a brief power point presentation that could be modified as a mechanism to share the teams priorities with others in the region. Highlights focused on the strong biomass resource in the region, including from agricultural processing facilities, the potential for wind, and the potential for a wide variety of energy efficiency measures including combined heat and power and geothermal heat pumps. The power point will be available on the CERTs website (www.cleanenergyresourceteams.org/northwest).

Goal Discussion

At the previous meeting we set two goals.

3) Conservation/energy efficiency: 1% savings per year for the next 10 years

4) Renewable energy resources: 10% by 2015 (same as the State Renewable Energy Objective). The Northwest CERTs team seeks to identify and promote ways to have the renewable energy development to achieve this objective take place within the region.

We wanted to spend a few minutes discussing whether or not everyone was satisfied with these goals and whether or not they felt these were sufficient to drive the activities of the group.

With regard to conservation, the discussion revolved around how hard it is to measure and the fact that some of the cities and utilities have a growing load.

The group generally felt that the approach to seeking more renewable development in the region so as to harness the economic benefits was the right approach.

As a group, the team felt that action was far more important than creating an overarching vision or mission for the team. They felt that the goals were plenty to guide the team's activities that were really to focus on action.

Project Ideas

Biomass

- Demonstration biomass gasifier to gather data and test various fuels. Darren is currently working on this idea and hopes to get funding from the NW Foundation. This could be at the EERC or could be located closer to a fuel source needing testing.
- Small biomass power plant in Minnesota 50kW to 500 kW. Darren proposed this idea to the Renewable Development Fund, but it wasn't funded.
- Ottertail facility in Solway runs on natural gas, but it run on biomass (per Darren, technically yes, but it's not likely).
- School in Mahnomen uses biomass – wood chips – as heating already. The tribe does have a small wood industry. There may be some biomass opportunities there, but more assessment of the resource is needed. Many trees were lost in the storms several years ago.
- White Earth has a small wood industry. They are working on biomass assessment; could be an opportunity for substituting heating fuel.

Community Wind Energy

- Perhaps at White Earth, funding could come from DOE. Timeline would have to be based on DOE funding availability. White Earth is funding a new school, community center, new tribal college and perhaps rehabbing the existing tribal offices. There is a possibility to tie wind and biomass into the new college facility. Earliest construction would be next year, and the rest in the next two years. They could also integrate energy efficiency; they are looking at geothermal and other efficiency measures as well.
- Possibility of tying outlying facilities on the reservation to small wind systems (60-100kW).
- Tribal College is also creating sustainable development programs that could tie to wind and biomass projects.

Biofuels

- An ethanol plant is in the early stages in Crookston. They may be looking at biomass as a part of the heating mix.
- Sta-Mart E85 station in Grand Forks closed recently. Dan Boyce wishes that there was one close by. They would like to buy E85, but more customers would be needed. UND doesn't have any E85 vehicles (although Grand Forks is part of the Clean Cities program). The agricultural energy group in ND is pushing for more stations in ND. What about CENEX? It's really up to the independent station. Could push this idea with the American Lung Association.
- Johnson Oil's biodiesel project in Hallock. They are at the feasibility study stage; the study is done, but has yet to be delivered. We should keep this on the radar. Possible markets → Canada, school buses to reduce emissions. Potential issue is with blending the biodiesel with diesel in an extremely cold climate. They are planning to bring in the soybeans, but have the benefit of being close to a refinery that can do the blending. Hallock is planning to take advantage of the JOBZ status.

Biogas

- Fosston biogas digesters. The digester is installed, but there are some operational problems. The project is at a vegetable dehydrator plant with a biological oxygen demand (BOD) problem with the municipal wastewater treatment plant. The product of the digester will be gas for use at the plant. They are talking to Cummings about a generator. If it goes well, the model could be applied to other sites.
- Minnkota is also looking at a landfill gas project in Fargo.
- American Crystal Sugar has a RDF funded project to look at digester technology at East Grand Forks.
- CERTS could work with both to track success and share results with others and help to spread the technology to other food processing plants in the region.

Conservation

- Conservation side: potential to replicate weatherization program now done for low-income households on a more comprehensive scale. It would have to start with an education campaign. Propane prices and fuel prices are going up, so it would be easier to get people excited about conserving for heating loads.
- Conservation options include replacing heating systems, then increasing R-values in attics, walls and windows.
- Audits and education are key.
- Neighborhood Energy Workshop model is one that offers education, some conservation materials, an energy audit, with financing and insulation.
- Fuel oil and propane firms also have CIP-like requirements.

Ground Source Heat Pumps

- For cities that offer free city lots – require that the new homes put in ground source heat pumps (incentive).
- Chuck Riesen's utility, PKM, offers up to $6000 no interest, 5 or 6 years.
- Thief River Falls has a $2000 rebate with a 5% loan over 5 years, up to $8000 for ground source heat pumps.
- Ground source heat pumps effectiveness varies depending on soil, septic system and others.
- Jim Steenersen suggested working with a number of homes and getting one contractor to drill the wells for a number of homes – a neighborhood system that could serve as a model.
- To make geothermal work, you need contractors who are willing to do the work. There are only one or two in Thief River Falls willing to do it. Contractors make more money on selling an air conditioner and a furnace; contractors are not willing to do the work. They'd have to add a crew.
- Cold climate heat pump: two compressors, dual stage, maybe only viable for a large home (4000 square foot home). Another utilities suggest that the cold climate heat pumps are viable in 1500 sq ft homes.

District Heating and Cogeneration

- Virginia and Hibbing are about ready to convert to biomass.
- Grand Forks used to have district heating. It's decommissioned.
- Detroit Lakes had one until the 1970's. There were enough leaks under the streets that they didn't have to plow. Excavation costs is one of the barriers (could they do directional boring?).
- The Grand Forks Air Force base just abandoned their district heating.
- American Crystal Sugar generates steam and electricity in all of their 5 ND and MN plants. Potlatch also generates steam and electricity at its facilities. Would American Crystal link up with a greenhouse that could use its waste heat (or something similar)?
- Morris is looking at district heating with mixed fuels.
- Some other businesses that use heat could be paired with these plants, but it's business dealing with business.
- With rising natural gas prices, district heating may become more attractive.

Prioritizing projects

Discussion of what types of projects that CERTs could do. Helping to connect people with projects with technical resources and with grant writers and funding.

We identified the following projects to vote on…

Conservation

- Education (3)
- **Ground Source Heat pumps (10)**
- District Heating (1)

Renewables

- White Earth wind projects (4)

- **Biomass power plant (9)**
- E85 station (4)
- **Biogas digesters at ag processors (6)**
- Biodiesel plant and applications (1)

Please see the next three pages for more detailed information on the discussion around the top three choices.

Barriers and Opportunities Discussion

Ground Source Heat Pumps

Opportunities	**Barriers**
Could promote those few contractors that do install geothermal systems	Not many contractor willing to do it
Systems are quite a bit better now	High initial costs
Paybacks are better now (need to educate)	Consumers don't know much
New construction	For retrofits space limitations
Some utility incentives	It's not an ideal load profile for utilities
Big energy savings opportunity (60%)	
There could be one system for many homes	
In planned developments, the infrastructure could be put in place before building begins	
Most utilities offer rebates or loans (except East Grand Forks)	
Costs are narrowing, especially with increasing fuel costs	
Educate developers (usable BTU's/dollar)	
Education on available loans	
Education for project planners	
Education for contractors (many had said that contractors make less on this type of system), example: Grand Forks has a trade association of contractors	
The savings numbers are so low that customers don't believe them	

Ground Source Heat Pumps idea distillation and focus…

- ✓ Educate contractors and offer to promote them (free advertising)
- ✓ Educate consumers re: comparative systems
- ✓ Education for developers and neighborhood project planners, and Home Builders Associations
- ✓ Present data on real $ on existing systems
- ✓ Collect data on all utility programs/offerings in the region

Biomass Power Plant

Opportunity	**Barrier**
Funding – there are various grants available	Funding – not yet ready for private investment
No previous example is barrier to private funding but could be an opportunity once proven	Level of acceptance; past experience isn't so good with pellet burning system
Facilities with waste streams, like sawmills could be opportunities	Cost would be an issue if had to pay for fuel
Generate to offset	Would need wholesaler to sign off? Transmission issues/relationship with utility
If this could meet an REO, utilities might be more eager to work with the customer than if the customer is simply going to disappear from the system	Regulatory issues regarding customer generated renewables offsetting fossil fuel load – will the PUC accept this as meeting the REO?
Production of equipment	Production of equipment
	Air quality permitting

Biomass Power Plant idea distillation and focus…

Funding:

- ✓ Start with existing grants through EERC and leverage additional
- ✓ AURI funding might help
- ✓ NW Foundation
- ✓ USDA value added grant
- ✓ Forest Service is investing in this type of technology

No Previous example:

- ✓ Find businesses with a waste stream. Those most interested are those already using waste for heat, but they still have more waste left.
- ✓ Target places that fulfill criteria that their waste material (fuel) is sufficient to meet their load, such as sawmills
- ✓ Work with legislators and regulators to discuss the "but for" examples that might keep a utility from helping one of its customers offset its load with renewable fuels

Biogas digesters @ ag-processors

Opportunities	**Barriers**
Driven by waste and costs (and power purchase agreement)	Technical operation/hurdles/mishaps
Picking the right low-hanging fruit – places that have a waste or regulatory problem	Uncertainty about the REO rules regarding customer-owned distributed generation (who benefits/who pays)
Potential to offset natural gas loads (particularly important with rising fuel prices)	Cost of installing system
Expansion of large livestock facilities under discussion in the region. Digesters might help to alleviate the environmental concerns.	Environmental issues with large animal/feedlot facilities (putting one in to do biogas is a barrier, using digester to solve problem is an opportunity)
Opportunity to share stories about project successes and failures, especially at non-farm facilities	

Biogas Digester idea distillation and focus…

- ✓ Find other examples, share the stories of successes and failures
- ✓ Maybe there needs to be a study of opportunities within the region at non-farm facilities
- ✓ Invite legislators to discuss opportunities to offset loads in fulfillment of REO

Going forward:

- Lissa asks the utilities in the room to write up their experiences with ground source heat pumps. Concluded that we should write a letter to all the utilities in the region asking for info on their heat pump program. Lissa will contact Lee Sundberg of MREA to see what data they have on ground source heat pumps used by their rural coop members.
- Minnesota Project intern could write up some case studies of examples of ground source heat pumps in the region
- Reach out to Dept of Commerce and others about the REO issue
- Invite legislators to discuss opportunities and barriers to achieving the plan
- Work with folks at the University to find someone who wants to do the needed study

Meeting adjourned after we picked our next meeting date:
Thursday, November 4th, scheduled to begin at 10 AM in McIntosh, MN

Northwest CERTs Meeting Agenda
November 4th, 2004
10 AM – 12:30 PM
McIntosh Municipal Building, McIntosh, MN

Goals:
Develop a specific set of tasks to accomplish for each of the three project priorities identified at the last meeting.
Assign tasks and set deadlines for completing these tasks.

Agenda:
10:00 Introductions and Miscellaneous announcements
10:10 Updates on materials gathered to further project priorities
10:20 Develop Task Lists, Make Assignments, Set Deadlines
- Geothermal (40 minutes)
- Biomass (40 minutes)
- Biogas (40 minutes)

12:20 Recap
12:30 Adjourn

Summary Northwest CERTs Team Meeting
November 6th, 2004
McIntosh Municipal Building, McIntosh, Minnesota

Introductions
We kicked off the meeting with introductions. Meeting attendees included:
John Schmidt, Pembina Trail RC&D
Darrell Tveitbakk, NMPA
Dalene Monsebraten, NMPA
Dan Boyce, East Grant Forks Water and Light
Mike Moore, City of Thief River Falls
Jim Steenerson, Northwest Minnesota Foundation
Ruth Trask, Beltrami Co SCD
Colleen Oestreich, Giziibi RC&D
Pam May, Red Lake Energy Task Force
Linda Kingery, Northwest Regional Partnership
Mike Hemeinz, Mahube Opportunity Council
Dan Stepan, University of North Dakota EERC
Lissa Pawlisch, UMN Regional Sustainable Development Partnerships

Updates
Before getting into the task lists, we briefly discussed a few updates on each project:

1) Ground source heat pumps – Based on the current energy use data it appears that ground source heat pumps are a good target as so many homes have electric heat. Several utilities are already working with CERTs to gather data about ground source heat pumps in their systems, and we'll review the task list to see what other data should be collected.

2) Biomass gasification systems – Darren Schmidt (EERC) wrote up a fact sheet about the gasification system (previously sent to list serve and handed out during the meeting). Pembina Trail RC&D and Giziibi RC&D are working with Darren and local facilities to develop a proposal to the Northwest Minnesota Foundation for testing different fuels in the gasifier.

3) Biogas digesters – Gathered the information about agricultural processors located in the region. This data was compiled during the summer in preparation for a proposed meeting of agricultural processors to discuss digesters as a water quality treatment option.

Task Lists
GROUND SOURCE HEAT PUMPS:
Reviewing the task list, it seems like we're asking the right questions, now it's just a matter of getting the data. Some questions that should be added include:

- In what type of facility was the system installed (residential, commercial, etc.)?
- Was the system for a new home/facility or was a retrofit?

Discussion of who would have this data:
In NMPA communities the utilities can provide the information, but city officials may know better as installers do not have to inform the utilities. Some of NMPA's ground source heat pumps are on new installations, so are on conversions.

It seems that the real opportunity is at the time of upgrade/addition. Need to focus on converting small commercial users – if they can see the payoff at the time of upgrade they might make a change, but if they don't have the information in a timely fashion, or don't have someone who can interpret it, they won't make a change. Many commercial users simply lack the right information.

Seems that heat pumps are not part of the common vernacular. We could do a series of definitions – a *Glossary*. Define: Heat pump, Ground source heat pump, Geothermal, Cold climate air source heat pump, Hydronic systems, etc.

Also, could do a *Fact Sheet* that lists options for a 'typical' home. Comparison of different heating options based on: Initial installation, Cost of heating, Payback period. Darryl mentioned that he has a database that can make this customizable. Dan thinks the DOE site has this calculator – lots of stuff is available on the Internet.

Several people mentioned that their coop provided good information about heat pumps and had good heat pump programs. Several that were mentioned included Wild Rice Electric Coop, Ottertail Power, Minnesota Power.

Question: *What is the audience we're trying to reach?*

- Residential home owners
- Commercial, light commercial, institutions (churches, schools)
- Retrofit

➢ Note: Need to think about space concerns – downtown areas can be a hurdle. May need to focus instead on businesses at the edge of communities. Some schools have put systems under areas that later became playgrounds. Can also put systems under future parking lots (for churches, hospitals, government buildings, etc.). Could use Ground source heat pumps on off-peak.

Question: *How do we target people/get information to the right people?*
Utilize existing communications – via utilities, permitting offices, contractors. Often by the time the utility knows a customer, it is too late. We also need to reach:

- Designers/ architects, engineers
- Contractors
- Lenders are earlier on in the process. – Fanny Mae, banks
- Rural Development low interest loans for home improvements for low-income households.
- Many communities us MNCDC for builders and funders; bank in Ogema

➢ Note: Building permit process is separate from utilities – and each city requires different details. Generally speaking, for Ground source heat pumps, the well driller gets the permits; for slinky systems, no permit is required.

Assignments: See task list. Trying to gather information by mid-December. Major needs: create a list of resources (website, calculators, etc.), gather information from utilities, etc.

For January meeting: Plan/Assess/Discuss how to the outreach.

Note: Utilities are interested in learning how to best provide information to the customer, but have limited staff time. What would happen if someone else made a brochure? Perhaps a one pager could be included in bills, put on the CERTs website, put in the library, at the city planning office, etc.

Resources: Is there a state association that deals with geothermal? There are national ones. Ottertail power sponsored an 'installers seminar" with CEU's. Minnkota also participates. Some sources include: Geothermal Heat pump consortium, www.geoexchange.org, www.igshpa.okstate.edu, www.earthenergy.ca. Darryl will get brochures from national organizations; Dalene will contact international and national organizations.

Question: *What is the state's stand?*

- State policy should be provided (for government, residential, commercial, and industrial)
- Sales tax exemption for ground source heat pump equipment
- State housing finance agency to provide incentives
- Governor's press release about energy conservation in government buildings – need to get a hold of this press release
- Lack of appreciation of GSHP as a legitimate use of CIP funds. Also seem to look less at conservation and more at load management.

BIOGAS DIGESTERS

First, we started with the policy concerns from last meeting: What fulfills the renewable energy objective? Can commercial/industrial offset be counted?

Question: If, for instance, American Crystal Sugar in East Grand Forks captured methane and used it to generate electricity (thereby offsetting it's load); could East Grand Forks count it toward meeting its REO? *Answer*: Cynthia Fang (DOC) thought that it could and suggested that East Grand Forks Municipal would have to contact it's Generation and Transmission wholesaler and ask that this production be included in their Integrated Resource Plan. They would need to set up an appropriate system to verify the generation and consumption (it would need to be included in the numerator (renewables) and denominator (total consumption). Per Lissa, it also seems that it would be appropriate for East Grand Fork Municipal, or perhaps MMUA, to comment on this issue during the REO Comment period.

A follow up comment indicated that is seems the Renewable Energy Objective applies only to replaced generation of electrical supply. It should also account for saved energy, for off-set energy – via heat pumps, biogas recovery. The spirit of the law should drive the decision making process.

We then moved on.

Discussion about Appropriate Facilities/Getting a Handle of Source Availability:

To make an Anaerobic Digester System work you need a high-energy system – sucrose is a terrific, ready source. If the waste stream has complex carbohydrates, the first step is to break them down. American Crystal Sugar really has an ideal waste stream, but they don't use this at all their facilities. Many consider digesters a pain – anaerobic systems are living systems, and it's a bit of an art in keeping them managed. The energy savings are secondary to the production orientation.

There may be an opportunity for a small business or community digester. If there were a management group that could manage digesters at multiple facilities it might encourage their development. This could work at feedlots (example in Bathgate, ND), dairies (many examples in WI), or community digester systems. There are only 3 dairies with over 1000 cows, so a community approach would likely work best.

AURI is currently working with Crookston to do an Ethanol facility (just did feasibility study) – this would have a waste stream that could be digested. Al-chem in Grafton – one of the Northern Municipal Power Administration members – would also be a good candidate for an anaerobic digester. EERC looked at potato waste from Simplot. Digest the raw potatoes – starch to simple sugars then to methane. It's easier to manage in 2 units – acid forming operation and methane forming operation.

Feedstock is the driver – aerobic process is better for treating water, but high strength waste stream require so much oxygen that is simply is not possible to create aerobic systems. Dan Stepan (EERC) could ask Mike Rijawski to call the facilities we currently know about to characterize the waste streams and assess whether they would be good candidates.

- Note: Lissa has also found a list of all the agricultural processors in the state (dairy, grain, fruit and vegetable, meat and animal fat). Joel Haskard, the new CERTs Assistant Coordinator, is pulling this data together for the NW and will then send it to Dan and the whole Team.

Idea: Could submit a proposal to develop a snap shot of fuel available in the region – do capacity of the various sources and use this a spring board to future develop. These could lead into case studies.

- Other Notes: AURI has a task list for considering community digesters (www.auri.org). Should consider the agricultural waste streams are available by reviewing the census of agriculture to better understand the livestock operations in the region. Amanda Bilek of the Minnesota Project is gathering information on funding for digester projects.

BIOMASS

Very quick discussion – planning to do a feasibility study of biomass fuels.

1. Consider what fuel sources are available
2. Characterize fuels in the gasification process
3. Identify the best candidates for a commercial scale or community scale facility

Several groups are already working on this, including Giziibi and Pembina Trail RC&Ds. Lissa will work with Colleen to get the list they are currently working from for potential facilities. Team members should provide additional thoughts/feedback. Team members will contact economic development people and government people in each city/county to assess other potential businesses with usable waste streams.

NEXT MEETING: TUESDAY, JANUARY 18, 2005 at 10 AM

Northwest CERTs Meeting Agenda
January 18, 2005
10 AM – 12:30 PM
McIntosh Municipal Building, McIntosh, MN

Goals:

- Review task lists and set priorities for the next 6 months of the project
- Review the Strategic Energy Plan and develop a task list to get it finalized

Agenda:

10:00 Introductions
10:10 Announcements (Upcoming EERC Conference, Upcoming CERTs Conference)
10:20 Review Task Lists and Establish What's Next
- Accomplishments
- Share new information gathered since last meeting
- Outline remaining tasks
- Determine next Tasks
- Establish work schedule for the next six months (end of Phase I of CERTs)

11:40 Review the Draft Northwest Strategic Energy Plan and a develop a task list to get this in its final form
12:20 Set next meeting date and location
12:30 Adjourn

Northwest CERTs Meeting Summary
January 18, 2004
10 AM – 12:30 PM
McIntosh Municipal Building, McIntosh, MN

Introductions
We began the meeting with introductions. Present included:
Mike Hiemenz, Mahube Council
Michael Triplett, White Earth Tribe
Dave Bahr, Bemidji State University
Jim Steenerson, Northwest Minnesota Foundations
Joel Haskard, Regional Sustainable Development Partnerships/CERTs
Kevin Olson, Mid-Valley Geo-thermal
John Schmidt, Pembina Trail RC&D
Colleen Oestreich, Giziibii RC&D
Ruth Trask, Giziibii RC&D and Beltrami SWCD
Linda Kingery, Northwest Partnership
Dan Boyce, East Grand Forks Water and Light
Lissa Pawlisch, Regional Sustainable Development Partnerships/CERTs

Announcements/Events

- 2005 Electric Technologies Workshop and Trade Show, February 23rd, 2005, 8 am - 4:30 pm, Shooting Star Event Center, Highway 59, Mahnomen, sponsored by Ottertail Power Company, Lake Region Electric Cooperative, and Minnkota Power Cooperative (for more information see www.otpco.com or www.minnkota.com)
- UND EERC Renewable Energy Conference – February 23rd – 24th, 2005, Alerus Center – Grand Forks, ND (for more information please see http://www.undeerc.org/reconference/)
- CERTs Statewide Conference – February 28th, 2005, St. Cloud Civic Center (for more information please see http://www.cleanenergyresourceteams.org/conference-frommainsite.html)

Presentation from Kevin Olson, Mid-Valley Geo-thermal
Mid-Valley Geo-thermal's service territory is generally from Fargo east into Central Minnesota although they have also worked in other states. Mid-Valley is a distributor of ECONAR, Cold Climate GeoSource Heat Pumps which are built right here in Minnesota (http://www.econar.com/econar.html - good website with helpful links and diagrams).

Mechanics:
Kevin started out by walking us through a few diagrams that explained how ground source heat pumps worked to provide us with both heating and cooling. There are several types of ground source heat pumps, including vertical loop systems, horizontal/slinky systems, and "pump and dump" systems that discharge to lakes. Vertical systems consist of 150' deep bore holes; horizontal slinkys consist of an 800 feet of coiled pipe that span 100' by 3' in the ground. Each 150' bore hole or in ground section of 100' slinky provides 1 ton of heating/12,000 BTUs.

For heating, the systems work by passing air through the heat exchanger and then through a compressor where it is compressed and condensed transforming it from lower temperature, lower pressure air to high temperature, high pressure air that then heats the home. For cooling you just turn the system around to work backwards.

Costs:
- Vertical = $900-$1200/ton (not including exchanger)
- Horizontal = $550/ton with excavation (not including exchanger)
- A typical house required 5-14 tons of heat
- Price for a horizontal boring (as opposed to vertical boring or horizontal excavation) is somewhere in the middle
- Geothermal costs roughly 5.5 cents/kWh (depending upon your electric rate). This is equivalent to propane @ 38 cents/gallon, but the current cost of propane is closer to $1.30-$1.80/gallon. Geothermal is clearly more cost effective.

Efficiency:
- Systems are 350%-400% efficient
- Example: for every $1 spent of electricity to power the pump, you get $3.50 back in heat
- Pump and dump system are more efficient
- Pumping costs are about the same for all systems
- Difference between ground source vs. air source pumps is efficiency – air source heat pumps are less efficient for heating (particularly in Minnesota because they start with colder air to begin with)

Retrofits vs. New Construction:
- Mid-Valley does about 30% retrofits and 70% new construction
- As natural gas prices continue to climb, they get more interest
- Installation costs are the same except for some landscaping, but it can be tough to justify removing one heating system for another unless you need to replace it anyway

Environmental Impacts:
- **In comparison to natural gas or propane, the impacts from geothermal are minimal**
- One would have to think about permitting with open loop systems (generally only an issue with larger facilities)

Where?
- More in rural areas than in urban areas
- Lots in St. Cloud
- Bemidji they work with a log homebuilder to do installations
- Many installations from Grand Forks to Thief River
- Fosston bank has a system
- Dairy Queen in Grand Forks has one that also operates all of its indoor refrigeration equipment

- Many churches are switching to ground source

Stumbling Blocks:

1) Understanding of BTU equivalents
2) Up front costs
   - Need affordable financing, shouldn't be a barrier with current low-interest rates
   - Should be a no-brainers in new homes because you can integrate into a mortgage
   - Could do something where you pay for the system via the difference in operational costs
   - Maybe a market for a lending product that would just target new energy installations? Secondary market for loan notes? Carbon credit market?
   - Need income tax energy credit
   - Need fixed utility rate/rate incentive for ground source heat pumps (adds consumption w/o demand)
3) Contractor hurdle as much as a consumer hurdle (not enough contractors do it)

Where to reach people:

- Home shows!
- City auditor's office is too late
- Bank is too late

Review of Task Lists

Geothermal Task List

- We're making progress but need to continue trying to contact our assigned utilities.
- We did develop a glossary of terms and have some calculator templates. We are going to work with a few students from University of Minnesota Crookston to make this a web-based device. There were suggestions at the meeting that we would want to include some way to calculate heat loss from a building (ECONAR website provides an average calculation).
- Continue to gather case studies – Kevin has some information he could share with us.
- It seems that many of our tasks fit under a broader umbrella of education – need to think about education for both consumers and contractors.

Biomass Task List

We discussed the current status of the project, the different fuels that might be testing and possible funding options. It sounds like the next step if for Colleen and John to develop a letter/questionnaire to possible/likely participants to get more people involved. They plan to do this by March.

Biogas Task List

- Lissa needs to follow up with Dan Stepan to get a sense for which wastes hold the most promise.
- There may be some options to pursue USDA 9006 funding for some of these facilities.

CERTs Strategic Energy Plan Task List

We have an updated presentation that highlights the major finding of the strategic energy plan along the team's three project priority areas. We would like to share this information with key decision makers in the region to get their feedback – ideas include: city councils, regional planning boards, regional development commissions, RC&Ds, county commissioners, utility boards, etc. We would like to get feedback from people between now and our next meeting in April (April 11th).

General tasks:

- Deliver the presentation/share the information with key decision makers (see assignments below)
- Lissa needs to create a one-page summary of the report to hand out
- Lissa is working to get the presentation posted to the CERTs website

Contact Assignments

Group to Contact	CERTs team member
Bemidji State University	Dave Bahr (lecture series for faculty, students, and community)
Clay County Commissioners	Linda Kingery
Mahnomen County Board, Beltrami County Board, Hubbard County Board, Clearwater County Board, Lake of the Wood County Board	Colleen Oestreich
Headwaters Regional Development Commission	Colleen Oestreich
Northwest Lakes Regional Development Commission	Linda Kingery
Roseau County Board, Kittson County Board, Pennington County Board, Marshall County Board, Red Lake County Board, Polk County Board, and Norman County Board	John Schmidt
White Earth Tribal Council	Mike Triplett
Red Lake Tribal Council	Pam May?
Northwest MN Foundation	Jim Steenerson
Minnesota Municipal Utility Association	Dan Boyce will discuss with Steve Downer
Minnkota and NMPA	Darryl and Dalene to update?

Next Meeting Date
April 11th, 2005, 1:30PM to 4:30PM in McIntosh

Northwest CERTs Meeting Agenda
April 11, 2005
1:30 PM – 4:30 PM
McIntosh Municipal Building, McIntosh, MN

Goals

- Assess where we stand on our task lists and how to get these project up and running
- Finalize the Strategic Energy Plan
- Set out priorities for Phase II of CERTs

Agenda

1:30 Introductions
1:40 Announcements
1:50 Updates on the task lists
2:30 Update on Strategic Energy Plan feedback from stakeholders
2:50 Finalizing the Strategic Energy Plan and strategizing about Phase II of CERTs
- ✓ Case study highlights – examples of successes and failures (to include throughout the report)
- ✓ Barriers and Opportunities to getting our projects implemented (Section 8)
- ✓ Emerging/Future Opportunities (Section 9)
- ✓ Opportunities for tours and other meeting topics/presenters for the coming year
- ✓ Measuring Success – what's worked well, what hasn't and what do we want out of Phase II

4:10 Wrap Up
4:30 Adjourn

NW CERTs Meeting Summary
April 11, 2005
McIntosh Municipal Building

1. Introductions:
John Schmidt, Mike Triplett, Stephen Davis, Fabien, Andrew Sheppard, Colleen Oestreich, Ruth Trask, Mike Heimenz, David DeMuth, Dan Boyce, Linda Kingery, Jim Steenerson, Chuck Reisen, Arlo Rudd, Dalene Monsebraten, Darryl Tveitbakk, Joel Haskard

2. **Announcements** – Great American Solar Challenge – http://www.americansolarchallenge.org/ We will try to have our next meeting in the Moorhead area, **Thursday, July 21st.** Hopefully we will be able to check out a few wind turbines and see some of the Solar Challenge cars that day. Details about location and specifics will be coming soon.

   Also, the West Central Research & Outreach Center at the U of M Morris will have their Wind Turbine Commissioning on Earth Day, **Friday April 22nd**. Please go to http://www.coafes.umn.edu/Open_House.html for more information.

3. **Conference Reflections** – about 7 team members attended the CERTs conference in St. Cloud. Many were pleased with the conference – it was a good gathering. It was a little light on the 'utility perspective'. From a utility perspective, one of the key features is to deliver product and service for a reasonable rate. The legislature entertains a number of bills about incentives for 'clean energy', new changes in the MISO market. May need to gain experience in how the market works. (This can be addressed in barriers). It was suggested to add more of the nuts and bolts economics of renewable energy and more input from the utilities for the next conference.

   What is MISO? It stands for 'Midwest Independent System Operator,' a not-for-profit transmission market – commissioned by FERC. MISO is controlling the generation within the region – ramp it up and ramp it down to avoid transmission bottlenecks. See www.midwestmarket.org for more information – may evolve into a 'futures market'. The group agreed we would like a presentation from MISO to get a better understanding of how it works – also need to understand the role that a state or community can have vs FERC. There was some question about who could give a concise and understandable presentation about MISO.

4. **Task Lists** – Biogas – need a first-hand report from the folk at MVD – what has worked, what have they learned.

   Biomass: John and Colleen have sent a letter to several businesses. Joel pointed out the questions on the back of the task list.

   Heat Pumps – Chuck handed out the information for Cold Climate and Ground source heat pump. Can be added to the calculator. Andrew will be putting together the website calculator.

Energy efficient mortgages –some national lenders have products to offer. Joel will check on models. He has found these lenders who offer energy efficient mortgages:

- Chase Manhattan 1-800-242-7382
- Countrywide Home Loans 1-800-669-6607
- Fannie Mae 1-800732-6643
- Freddie Mac 1-800-373-3343

This information was taken from the Innovative Power System's website, under "Financing Your Project," http://www.ips-solar.com/getstarted/financing.htm.

5. **Updates on Strategic Energy Plans**:
   John has spoken to several counties – interest in Polk county about the MVD
   Colleen – reviewed the demo at the fairs, spin-off with biomass research, CERTS conference.
   Jim Steenerson – what is the best way to intervene in commercial buildings going up. It was suggested that people learn about their region's capital improvement plans. Check on bonding projects in the region – highlight the best practices used by public projects that utilize B3. Please see the homepage for the State of Minnesota Sustainable Building Guidelines at: http://www.csbr.umn.edu/b3/.

6. **Finalizing the Strategic Energy Plan**

As Lissa and Joel finalize the Strategic Energy Plans for each region, it is crucial to list the specific energy conservation and renewable energy projects happening in your area. Projects that people mentioned as interesting case studies:

Fosston MDV – biogas
Moorhead wind turbines – new turbine for MSUM
Geothermal case studies
Potlatch/Ainsworth – co-generation facility
Biodiesel plant in Hallock - Hallock Coop and Johnson Oil Company
E-85 stations – Fisher, Beltrami, Moorhead, East Grand Forks - grant from American Lung Association - Tim Gerlach
Ethanol plant feasibility in Erskine – article in today's Herald – corn plant.
Check with UMC, BSU and MSUM re: institutional energy audit, energy policy ideas.

The Northwest has already done excellent work finding Barriers and Opportunities. Additional ideas that people brought up included:

GSHP – check economics of twin homes or 4-plex
- add cold climate heat pump as an alternative opportunity. We have focused on ground source heat pumps, but need to learn more about the cold climate heat pumps as well.

Biomass – residential use of pellet or corn burners.
Biogas – additional barrier – regulations/permitting.

7. **Tours and meetings** : As mentioned earlier, we will try to have a combined tour/ meeting in the Moorhead area July 21st. More ideas for interesting places to tour in the future include:
Fosston – MVD, Waste-to-Energy, Bagley School
Moorhead – Moorhead and Xcel turbines, Hawley church – wind tower manufacturer
TRF – dairy with digester – in the future sometime

Presenters – (people or projects we would like to hear more from)
E-85: Tim Gerlach or new RRV Clean Cities coordinator. (Note: For those people who mentioned interest in getting an E-85 station in your area, here is Tim's contact information (he has a GREAT packet of information) :
Tim Gerlach, American Lung Association Director of Outdoor Air Programs
P: 651-223-9577
P: 1-800-586-4872
F: 651-227-5459
Tim.Gerlach@alamn.org
CleanAirChoice.org
ALAMN.org

Wind Power at White Earth –
Turbine blade maker in Grand Forks

Manufacturers of renewable energy technology and components –
- Wood fired boilers: Central boilers, Heatmor, _____
- Blade manufacturing - LM Glasfiber - Blade manufacturer in Grand Forks
- Wind turbine tower manufacturer

8. **What has worked well, what has not** –

As we move toward phase II, which will officially start on July 1st, it is good to look back on what we have accomplished and where we want to go. People mentioned that as a group, the NW region has been realistic – involvement of utilities and MUNIs has kept us based more in what is doable and not just making a "pie in the sky" wish list. We have had good participation from municipals – poor participation from rural

electric coops. Everyone agreed that we will do more demonstrations in phase II – or have planning for demos completed.

How might CERTs be carried forward – ingenuity frontier – the Center for Sustainable Development at UMC could play a role. – supported by NWMF, UMC, Regional Partnership. Other possible funding sources could include the USDA, DOE.

Engineering expertise exists in the region – need some assurance for tax credits.
Need to provide leadership to create policy.

Need to keep CERTS continuing after the next 2 years. Additionally need to provide regional staffing. If we start thinking now about growing our local capacity, we should be able to keep a projects moving forward well into the future.

9. **Emerging and Future Opportunities**

Besides many of the projects that have been named already, the group was asked to imagine what projects they can try to accomplish in the next five years (2010), and the next ten years (2015). These were posted on the wall for everyone to see. (forgive any Misspelling).

Doable by 2010

- ✓ *Minnesota mandates may mean more emphasis on alternative fuels.*
- ✓ *Public transportation switches to biodiesel (RRV Clean Cities)*
- ✓ *Hydrogen golf carts*
- ✓ *Find local banks to participate in energy efficient loans and mortgages*
- ✓ *Small hydro on north branch of Wild Rice River (HWY 32 north of Twin Valley. It was washed out in a flood, but the dam is still there.*
- ✓ *One large wind turbine in the area in addition to the two in Moorhead and the three Xcel Energy Turbines.*
- ✓ *More E85 fuel stations and cars in the area.*
- ✓ *Increase usage of biodiesel.*
- ✓ *Biomass—develop a plan or logical uses of biomass such as switch grass, wood waste, and/or willow and alder. Learn how we handle the material –pellets etc.*
- ✓ *New ethanol plant*
- ✓ *Expansion of ethanol production spurred by the 20% ethanol mandate and other states dropping the ETBE as a fuel oxygentator in favor of ethanol. Increase the efficiencies of ethanol by using biomass for production rather than natural gas.*
- ✓ *Education by way of case studies, to get the average Minnesotan to embrace renewable solutions.*
- ✓ *Internships for university students to assist with spreading the message.*
- ✓ *Transition to hybrid vehicles could result in a net reduction of petroleum.(By 2015)*
- ✓ *One E85 station in each NW county.*
- ✓ *Demonstrate sustainable B3 Building practices.*
- ✓ *CCHP demo sites*
- ✓ *Raise awareness about energy efficiency and conservation.*
- ✓ *Develop energy efficient Affordable housing.*
- ✓ *Gain Experience with MISO (not the soup).*
- ✓ *Install a wind turbine at White Earth*
- ✓ *Educate the children who will then educate their parents*
- ✓ *Co-fire combined turbine cycle with biodiesel as long as it counts for REO.*
- ✓ *Help asses value of bio-produced energy in capacity / KW value.*
- ✓ *Demonstration project and website for consumer use.*
- ✓ *Get a 3rd and 4th wind generator up at Moorhead. (By 2015)*
- ✓ *Rail connection between Twin Cities and Fargo. (By 2015)*
- ✓ *Conversion of CRP lands to produce energy crops. (By 2020)*
- ✓ *A facility that uses locally produced biomass—switch grass, willow, alder, timber slash etc. (By 2020)*

Next meeting scheduled for Thursday, July 21st in the Moorhead area!

APPENDIX D: CERT MEETING 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. The Region's Power System, 1.75mb pdf — Darryl Tveitbakk, Northern Municipal Power Agency
2. Ottertail Power, 1.98mb pdf — Bryan D. Morlock, Ottertail Power
3. Distributed Generation: Interconnection and Safety, 448kb pdf — Christopher Reed, Reed Energy
4. Northwest CERTs Outreach, 864kb pdf – Lissa Pawlisch, RSDP

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 Northwest 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.

APPENDIX F: 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