

## APPENDIX A: NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM REGIONAL BREAKDOWN

Industry Code	Industry Code Description	Aitkin			Carlton			Cook			Itasca			Kanabec		
		Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments
		1st Quarter	Annual		1st Quarter	Annual		1st Quarter	Annual		1st Quarter	Annual		1st Quarter	Annual	
-----	Total	15,029	69,206	419	53,396	260,446	750	9,582	44,040	259	81,625	346,846	1,189	18,883	82,872	334
11----	Forestry, fishing, hunting, and agriculture support	114	386	8	96	299	3	57	196	3	1,251	3,548	27	0	0	5
21----	Mining	0	0	1	0	0	5				0	0	4			
22----	Utilities	0	0	1	1,787	5,652	4	0	0	2	7,270	24,206	10			
23----	Construction	1,163	8,052	87	3,099	22,851	95	544	3,533	37	3,911	24,168	161	1,694	12,988	63
31----	Manufacturing	2,783	11,722	34	8,765	64,287	36	500	1,949	3	18,212	74,924	51	4,893	19,910	17
42----	Wholesale trade	1,183	5,589	12	9,903	40,337	32	0	0	1	2,812	11,548	50	0	0	6
44----	Retail trade	1,922	8,968	61	6,023	25,861	145	1,182	5,941	48	10,140	43,868	241	2,800	11,760	63
48----	Transportation & warehousing	0	0	10	1,029	4,300	23	44	223	6	1,731	7,456	37	133	517	12
51----	Information	441	1,780	8	347	1,512	9	471	2,092	5	1,076	4,520	17	0	0	3
52----	Finance & insurance	594	2,658	18	3,053	12,338	42	0	0	4	2,846	11,997	70	983	4,111	15
53----	Real estate & rental & leasing	0	0	10	266	1,374	21	122	589	13	380	1,796	30	168	836	11
54----	Professional, scientific & technical services	194	1,534	18	953	4,359	42	95	452	13	3,080	14,883	65	607	2,298	20
55----	Management of companies & enterprises	0	0	1	3,332	12,240	3				0	0	3	0	0	1
56----	Admin/support, waste mgt, remediation services	329	1,800	13	614	3,111	24	0	0	4	2,267	9,802	37	0	0	13
61----	Educational services	0	0	2	0	0	6	0	0	4	0	0	9			
62----	Health care and social assistance	3,813	14,925	16	9,672	42,119	66	1,415	6,155	11	13,570	57,130	112	5,246	20,445	23
71----	Arts, entertainment & recreation	0	0	13	129	1,227	19	1,260	4,604	12	1,261	5,952	25	52	312	5
72----	Accommodation & food services	920	4,551	55	2,072	9,178	72	2,751	13,599	76	2,752	13,596	111	745	3,224	31
81----	Other services (except public administration)	521	2,388	49	1,233	5,171	101	106	489	17	2,628	11,185	128	488	1,992	42
95----	Auxiliaries				0	0	2							0	0	1
99----	Unclassified establishments	0	0	2							0	0	1	2	10	3

Industry Code	Industry Code Description	Koochiching			Lake			Pine			St. Louis			Summary - Totals		
		Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments	Payroll (\$1,000)		Total Establishments
		1st Quarter	Annual		1st Quarter	Annual		1st Quarter	Annual		1st Quarter	Annual		1st Quarter	Annual	
-----	Total	31,277	126,821	455	21,038	93,927	302	30,171	131,970	614	526,728	2,173,969	5,539	714,229	3,330,097	9,861
11----	Forestry, fishing, hunting, and agriculture support	0	0	31	0	0	1	0	0	8	2,123	6,771	51	3,641	11,200	137
21----	Mining				0	0	1	0	0	1	51,721	167,340	17	51,721	167,340	29
22----	Utilities	0	0	4	0	0	4	888	3,071	5	24,915	72,551	20	34,860	10,480	50
23----	Construction	1,500	8,320	35	527	2,493	35	2,292	15,857	106	25,755	136,632	510	40,485	234,894	1,129
31----	Manufacturing	13,847	55,359	19	3,968	19,088	14	2,157	8,381	27	39,597	161,154	221	94,722	416,774	422
42----	Wholesale trade	272	1,663	14	225	921	6	908	3,697	20	21,218	88,237	272	36,521	151,992	413
44----	Retail trade	3,459	12,190	91	1,872	8,241	50	4,195	18,157	119	55,425	230,189	1,028	87,018	365,175	1,846
48----	Transportation & warehousing	1,455	5,801	29	31	184	4	253	1,204	15	22,055	99,634	152	26,731	119,319	3,951
51----	Information	681	2,652	6	403	1,597	4	843	3,351	12	14,656	59,911	116	18,918	77,415	180
52----	Finance & insurance	0	0	19	874	3,134	14	1,491	6,148	30	27,380	106,452	349	37,220	146,838	561
53----	Real estate & rental & leasing	0	0	12	0	0	8	132	599	26	3,953	17,372	177	5,021	22,566	308
54----	Professional, scientific & technical services	284	1,175	20	684	3,027	16	494	2,286	31	27,524	121,846	391	33,915	151,860	616
55----	Management of companies & enterprises	0	0	1							13,236	51,994	31	16,568	64,234	40
56----	Admin/support, waste mgt, remediation services	311	1,299	15	0	0	10	443	1,940	19	13,974	57,668	201	17,938	75,620	336
61----	Educational services	0	0	1	0	0	2	337	1,363	5	7,465	32,266	47	337	1,363	29
62----	Health care and social assistance	3,531	14,692	46	3,167	13,384	28	4,457	19,138	49	133,649	579,515	564	178,520	767,503	915
71----	Arts, entertainment & recreation	138	575	14	81	650	7	0	0	8	2,062	9,933	106	4,983	23,253	209
72----	Accommodation & food services	1,007	5,086	51	1,283	7,190	59	10,423	42,154	65	22,125	99,862	589	44,078	198,440	1,109
81----	Other services (except public administration)	640	2,684	45	700	3,365	39	614	3,173	67	17,378	72,497	679	24,308	102,944	1,167
95----	Auxiliaries										493	1,932	6	493	1,932	9
99----	Unclassified establishments	0	0	2				0	0	1	24	213	12	24	223	21

## **APPENDIX B: NORTHEAST CERT MEMBERS**

George Agriesti, Minnesota Power  
Felix Amenumey, University of Minnesota Duluth  
Victor Aubid, Grand Portage  
Caroline Clement, WLSSD  
Kelly Cornett, Midwest Renewable Energy Association  
Craig Dietrich, MinnFuels, Inc.  
Wade Gordon, FDLTCC  
Dan Green, City of Duluth, Facilities  
John Gustafson, FDLTCC  
Jim Hall, NE Partnership  
Sue Hankner, Laurentian Environmental Learning Center  
Peter Harris, Wolf Ridge  
Bill Hilty, MN Legislature (District 8A)  
Lauri Isaacson, Citizen  
Jamie Juenemann, Two Harbors  
Steve Kluess, Laurentian RC&D  
Tom Koehler, MN Renewable Energy  
BJ Kohlstedt, North Shore Community School  
Marty Kramer, East Central Energy  
Thomas Kurhajetz, Electrician  
Lisa Larson, Dean, Lake Superior College  
Bob Leibfried, MN DNR  
Mike Mageau, Institute for Sustainable Future, University of Minnesota Duluth  
Bill Maier, Hartley Nature Center  
Tony Mancuso, St. Louis County - Property Mgmt.  
Don Martens, East Central Energy and Great River Energy  
Larry Nelson, Onanegozie RC&D  
Scott Norr, University of Minnesota Duluth  
Derek Parendo, Proctor Public Schools  
Melissa Pawlisch, University of Minnesota's Regional Sustainable Development Partnership  
Diane Rauschenfels, Proctor Public Schools  
Chris Reed, Reed Energy  
Tom Romundstad, St. Louis County - Property Mgmt.  
Jeff Schiltz, Johnson Controls  
Eric Schlacks, Duluth Public Works and Utilities  
Bob Shaw, National Energy Foundation  
Sandy Sweeney, City of Duluth, Cities for Climate Protection Program  
Dean Talbott, Minnesota Power  
Mark Thell, Onanegozie RC&D  
Okey Ukaga, NMSDP  
Leo Wilenius, Lake Country Power Coop  
David Williams, LHB engineering group  
Bruno Zagar, Fond du Lac Reservation

## **APPENDIX C: CERTS MEETINGS – AGENDAS AND SUMMARIES**

### **Northeast CERTS Preparatory Meeting Summary**

**October 24, 2003**

**Cloquet Forestry Center**

Lissa opened meeting at 9:20 and gave quick introduction.

All attendees introduced themselves. Those present at the meeting included:

Mark Thell, Resource Conservation and Development Council

Larry Nelson, Onanogzie Resource Conservation and Development Council

Carin Skoog, Cities for Climate Protection, City of Duluth

Dean Talbott, Minnesota Power

Dan Green, City of Duluth

Marty Kramer, East Central Energy

Jim Hall, Northeast Minnesota Sustainable Development Partnership

Wade Gordon, Fond du Lac College

George Agriest, Minnesota Power

Craig Kedrowski, Minnesota Power

Okey Ukaga, Northeast Minnesota Sustainable Development Partnership

Lissa Pawlisch, Regional Sustainable Development Partnerships

Lissa introduced the CERTS concept and background. Lissa reviewed the two CERTS handouts and discussed the “desired results” from the CERTS process. As a group we discussed that this process mimics the process Duluth has been going through as part of the ICLEI program. There were a number of questions regarding how the process will work and we discussed the fluid nature of the process and how it will depend upon community input.

Reviewed existing/ongoing projects and project ideas in the region.

Biomass to alcohol project – Rick Vanhuber

30kW microturbine and PV on Fond du Lac College

WLSSD, Fond du Lac 7-10 MW biomass plant

Kennebec County Hospital in Moira – microturbine interest, previously submitted proposal for assistance

Willow River School Principal also interested in energy projects

Idea to pursue RENEW Northfield concept in NE Region

Zoo project includes PV, passive solar for cleaning the barn, geothermal heat exchangers for the polar bear pools, solar cars

2.4kW PV on Library

Energy Resource Center to be built for the Duluth Public Library

Additional wind monitoring project in NE – 2 tip-ups and also some monitoring devices that can be attached to existing towers

Wolf Ridge’s Peter Harris interested in energy issues and has an onsite wind turbine

Silver Bay and Two Harbors: school wind project

Demonstration house – Millennium Star home (energy efficient home, passive solar design) – highlights consumer education piece that’s important in the region

Hartley Nature Center – interpretive center, 11.8 kW PV, ground source heat pump, PV tracker

Lake Superior College – 1 kW turbine

Stowe Elementary

Woodland Middle School

Haubenschild Farms - looking to add a fuel cell and perhaps a sterling engine to use excess methane being produced

Grand Portage - starting with 1 MW, but want to add more – feasibility study – they may look at turbines that have “sails” to capture wind as a way to stem objections regarding the visual landscape

Discussed additional stakeholders that would fall into additional stakeholder groups.

- See the attached excel spreadsheet for results of this discussion and please fill in contact information where missing.
- There are also a few places where we listed organizations, but didn’t know who the contact would be. If you could please fill in these names as well, I’d appreciate it.

**Northeast/North Central CERTs Team Meeting Agenda**  
**Hartley Nature Center, Duluth, MN**  
**February 24<sup>th</sup>, 2004, 9:00 am until 12:30 pm**

- 9:00 Welcome and Introductions
- 9:10 Speakers  
Wade Gordon – Fond du Lac Case Study  
Dan Green – City of Duluth Case Study
- 9:50 Group Discussion: What is our mission?
- 10:30 Other Business
- Updates from Felix (15 minutes)
  - Projects list (additions)
  - Duluth Energy Design Conference (flyer)
  - Website (demo)
  - Workshop and Training Session collaboration
  - Next meeting date
- 11:05 Survey Results
- 11:10 Small Group Overview and Questions  
*Groups include:*
- ✓ **Policy Group:** Work to refine mission statement, look at other groups to help foresee and address policy barriers, help target efforts, guide process; this group will form the foundation of the Steering Committee along with a member from each of the other groups to ensure that all groups are communicating.
  - ✓ **Current Energy Use/Inventory and Planning:** Work with Felix to get a handle on what's already happening in the region and coordinate between groups to incorporate elements of the strategic plan.
  - ✓ **Education and Outreach Group:** This group has already set out a few ideas from last meeting – they want to connect resources and make sure all the pieces come together, then work on outreach and education. Some of their priorities may also serve as priorities for the larger group.
  - ✓ **Project Group:** Work to get projects completed and identify barriers to project implementation. This group may decide to break out according to resource or according to project scale, but the whole group will still work toward finishing projects that are stuck in the planning stages and targeting the best-bet new projects.

Note: **Conservation** will be addressed by all groups.

- 11:25 Working Lunch with Small Groups  
Tasks include:
- 1) Setting priorities and determining a group focus
  - 2) Determining what tasks will accomplish these goals and assign WHO, WHAT, WHEN
  - 3) Discussing ideas for future workshops.
  - 4) Choosing someone to serve on Steering Committee
- 12:15 Feedback from Small Groups
- 12:30 Adjourn

**Northeast/North Central CERTs Team Meeting Summary**  
**Hartley Nature Center, Duluth, MN**  
**February 24<sup>th</sup>, 2004, 9:00 am until 12:30 pm**

At a few minutes after nine Lissa started the meeting with a quick welcome and a few changes to the agenda. We then moved directly into introductions.

**Introductions**

Meeting participants included:

Steve Kluess, Laurentian RC&D  
Dean Talbott, MN Power  
Ralph Loomis, St. Scholastica  
Mark Thell, Onanegozie RC&D  
Larry Nelson, Onanegozie RC&D  
Bill Maier, Hartley Nature Center  
Jamie Juenemann, Lake Superior School District  
Steve Johnson, WLSSD  
Peter Harris, Wolf Ridge  
Tom Koehler, MN Renewable Energy Society  
Mike Mageau, University of Minnesota Duluth  
Kelly Cornett, Midwest Renewable Energy Association  
Sandy Sweeney, City of Duluth  
Victor Aubid, Grand Portage  
Dan Green, City of Duluth  
Michael LeBeau, Conservation Technologies  
Robert Ostby, Northshore Mining Co.  
Don Martens, GRE-East Central Energy  
Leo Wilenius, Lake Country Power  
Eric Schlacks, Duluth Public Works and Utilities  
Felix Amenumey, University of Minnesota Duluth  
Okey Ukaga, Northeast Regional Sustainable Development Partnerships  
George Agriesti, MN Power  
Cindy McLean, MN Power  
Tom Romundstad, St. Louis Co.

**Project Highlights**

*City of Duluth Case Study presented by Dan Green*

The City of Duluth has a number of projects underway. Duluth Zoo project is a three-phase project; they are nearly finished with the 2<sup>nd</sup> Phase and are looking for funding for the 3<sup>rd</sup>. Highlights include:

- 2.4 kW photovoltaic (PV) array on the storage building/garage. The garage will have room for 2 electric cars (the zoo already has 1). The project is meant as a demonstration.
- Installed a solar water collector on an animal barn where they previously had no hot water; this collector solved a problem for them and now allows them to clean the building during the winter (it was up and running on February 23<sup>rd</sup>).
- Planning for a geothermal heating/cooling for polar exhibit that awaits complete funding.
- The third phase will also include the educational components for all three phases.

Duluth also has PV on the Duluth Library. As part of the library project Duluth has installed a kiosk inside the library to display real-time data and educational materials. Both the library and zoo projects highlight the city's ability to find sites that are true "natural fits" for education and outreach.

Duluth is also working on the Cities for Climate Protection program aimed at energy management that will lower greenhouse gas emissions.

City of Duluth focuses on PROCESS and PARTNERSHIP. They've targeted low-hanging fruit. They continue to work with a Task Force to establish a list of potential projects that they rank based on a set of criteria that includes education, cost, etc. The criteria assign a certain number of points to each project that allows the Task Force to evaluate which projects would have the biggest impact.

**Mission Discussion**

The proposed mission that was presented read as follows:

**The purpose of the Northeast Clean Energy Resource Team (CERT) is to increase the public's awareness of and the contributions of alternative and renewable energy for building a sustainable future. The CERT will focus on issues relating to the formation of public policy, conservation, efficient use of energy, alternative and renewable energy sources, protection of environmental resources, and the dissemination of technical information to users and providers interested in the application of local and regional sustainable energy strategies.**

The CERT will aggressively promote and support the use of locally owned and operated alternative and renewable energy systems. CERT has outlined the following objectives:

- Provide cooperation and liaison with private individuals, organizations and institutions having an interest in the utilization of alternative and renewable energy.
- Assist in and contribute towards the enhancement of widespread understanding of the various applications of renewable energy through the integration of the technical and social resources of energy options.
- Engage in activities which will enhance the opportunity to increase the information of efficient and economic practices of alternative and renewable energy and share in the knowledge gained, empowering local solutions for energy needs.
- Cooperate with such private or governmental bodies, corporations, associations, institutions, societies, agencies, or persons interested in supporting the transition from a dependence on nonrenewable energy systems.

*Comments to the mission include:*

The paragraph before the first bullet should be a component of the mission.

Should be clear and short

2<sup>nd</sup> paragraph too narrow for a mission, should be more broad

Conservation should be spelled out in bullets – first bullet

Reference point is cheap, abundant, dirty energy – that defines the context, so conservation should always be the first step

Can't get renewables until will change consumption patterns

Should rewrite with 1<sup>st</sup> sentence as mission and the rest as bullets, add conservation into first sentence

Combine 2<sup>nd</sup> paragraph with first sentence for mission – education and energy systems, they tie together education and action

Vision – conservation and renewables, must promote both sides; includes sustainable dev.

Alternative energy? Renewable energy? Clean energy? Bio-friendly energy?

Sustainable energy? = renewable and conservation

2<sup>nd</sup> sentence is redundant – compare with bullets to see if we miss anything. Could reduce it to one sentence with four pieces: education, conservation, renewable energy, locally-owned

Should include mission statement at the top of each Agenda, all materials

What's the vision statewide? To get communities involved

Vision for the region? Designing a clean energy future

Look at MREA vision for ideas

Look at the energy pie → envision a different size and make up; why do we want to change? Create a vision based on what the consequence of change will be – vision is to bring about the new pie chart

Discussed a handout (tri-fold) with vision and mission on the left, a visual (new pie chart?) in the middle and bullets (goals/strategies on right)

Larry and Mark will be making modifications to the mission statement based on the group discussion and sending those out to everyone.

### **Felix's Update**

Felix presented the data he has collected thus far and reviewing the Resource Assessment Tables he has filled out based on his data collection. These tables will be sent out the list serve for everyone to review more thoroughly. Felix's information fueled a lot of conversation – just as intended. Felix has been gathering information but really needs feedback from CERT's members. Some of the comments from the meeting included that there are opportunities at a wide-array of backup generators in the region to replace diesel with biodiesel. There was a bit of debate regarding the definition of distributed generation. Under "Top Prospects" Felix listed a number of existing

projects, which should be very useful to the team, but we need to gather more information about project on the horizon.

### **Funding Opportunities**

*Energy Investment Loan Fund.* A handout was provided at the meeting; anyone interested can request an electronic copy. The funds target conservation improvements.

*Solar Electric Rebate Program.* As part of MN Power's 2004-2005 CIP Filing, customers of any class may apply to the state program for a maximum \$4000 rebate for a 2 kW system. MN Power requires the installation be done by a trained/approved installer and will do site assessments at each site. It wants to ensure an infrastructure develops to do these sorts of installation and therefore will require trained professionals.

### **Solar/PV Workshops and Training Sessions**

MN Power is offering a number of training sessions this spring and is looking to CERTs to co-sponsor these sessions. In brief, they are sponsoring:

- Advanced Photovoltaic Installer Training on April 20<sup>th</sup> and 21<sup>st</sup>, 8:30 am to 5:00 pm at the Hartley Nature Center.
- Photovoltaic Electric Systems: A Primer for Code Officials on May 5, 2004, 9:00 am to 1:00 pm at Hartley Nature Center and on May 6, 2004 from 9:00 am to 1:00 pm at Cragun's Resort in Brainerd.
- Introduction to Renewable Energy Systems on May 19<sup>th</sup>, 2004 from 7:00 to 9:00 pm at the Hartley Nature Center.

For more information contact Dean Talbott at dtalbott@mnpower.com.

### **Northern Minnesota Renewable Energy Website**

George and Cindy gave an overview of the Northern Minnesota Renewable Energy Website.

This website is designed to enhance the utilization of renewable energy, to educate residents and key stakeholders in northern Minnesota on the various sources of renewable energy and its successful application in the NE region and to help build the infrastructure necessary to develop, install and maintain renewable energy applications.

MN Power would like CERTs to be a partner in this website, as well as the individual CERTs member's organizations. Toward that end Project and Partner Profiles were recently sent out to the list serve.

### **Small Group Breakouts** (next time we promise to have more time for these!!!)

#### *Current Energy Use/Inventory/Planning Group*

Members include Don Martens, Sandy Sweeney, Leo Wilenius (Steering committee liason), Okey Ukaga, and Felix Amenumey.

Want to focus on making data more accurate and complete. Think one thing to focus on may be peak shaving, then marketing that information. Need to look for resources that are economically competitive, but green.

#### *Policy Group*

Members include those on steering committee (Mark, Larry, Steve, Leo, Okey, Wade & George), with Mark and Larry as principle participants.

Want to engage other participants like fuel providers and coops, also want to look for more participants from industry, schools, foundations, community action agencies and economic developers, as well as more from the NW side of the region.

This group also wants to look at how the CERTs group should work, in terms of having an open process, how to make decisions, etc.

#### *Projects Group*

Members include Victor Aubid, Dan Green, Mike Mageau, Ralph Loomis, Dean Talbott (moving to education), Jamie Juneman, Eric Schlacks, and Chris Reed. Want to facilitate getting information about projects and the process of doing projects, how to get them going, how to find contractors, how to CONNECT THE DOTS. If the members of this group don't have the right information, they will direct them to other resource. They want to form partnerships to get projects done by helping connect people.

Thought it might be nice to provide a catalog/index of resources within the CERTs team on the website.

#### *Education/Outreach Group*

Members include Steve Kluess (Steering committee rep.), Wade Gordon, Kelley Cornett, Tom Koehler, Tom Romundstad, and Peter Harris



Their summary stated:

We discussed a number of opportunities, but here are four action items

- 1) Meet with elected officials to explain CERTSA and other issues. County Commissioners, city councilors, township and state representatives as examples of elected officials.
- 2) Create and deliver various workshops in the area
- 3) Provide backing and support for existing educational i.e. residential environmental living centers programs and institutions e.g. Wolf Ridge, Hartley Nature Center
- 4) Support existing and soon to be online websites

### **Wrap Up**

We set the next meeting date for **May 12<sup>th</sup>, 2004**. We have tentatively planned to have the meeting at the Duluth Library. We plan to begin at 9:00 am and allow much more time for the small groups to meet and work.

Lastly, if you would still like to turn in your survey, I would welcome your responses. I will tally everything I have by April 1<sup>st</sup> and send out the result to the group by email. Please send any other survey responses before April 1<sup>st</sup>.

Adjourned at 1:00 pm.

**Agenda for NE CERTs Steering Committee Meeting  
April 20<sup>th</sup>, 2004  
Cloquet Forestry Center**

- Agenda for the May 19th meeting
  - Timing (9:00 am until ?)
  - Vision/Mission exercise (see notes from Bill Maier)
  - Small Groups (need to allow plenty of time)
- How do we best move forward in the small groups? (see notes from last meeting)
- Review the revised vision/mission statement
- Discuss decision-making
  - Web page (funding, on-grid/off-grid)
  - Solar PV training funding
  - Other workshops? MREA, Community Wind workshop, other ideas?
- Other Items
  - Budget
  - Technical assistance
  - Anything else?

*Bill's Comments re: exercise for Mission/Vision*

Regarding the agenda for the next CERTS meeting (NE MN), are you thinking of trying that exercise we talked about at the last meeting? I think that will help us define our vision - looking at what our current energy source pie chart looks like, describing the positive and negative consequences of that, and then envisioning a new pie chart (perhaps smaller in size - due to increased efficiencies and better conservation - and with more renewable sources), and spelling out the more positive set of consequences that underlie the new chart. Then, our vision can basically be described by this new pie chart, and our mission is to help our region get there (through various educational, political and investment strategies).

One idea for facilitating a group doing this task is to break into small groups, give each group the current pie chart and then have them brainstorm the problems involved with these sources. Then they should draw up a new chart, with consideration of our region's energy potential and write up a new set of consequences. After the small group work, we can report back and try to settle in on a group vision for the next chart. It may have to be a bit rough in its estimates, giving ranges rather than an agreed upon percentage. But a discussion of the various charts will also draw out what biases individual members have, which could tell us all more about what our CERTS group is really made of.

Of course, it'll be obvious that we can't move from one chart to the next in a year or two. Significant movement will take a long time. Perhaps that's another step in our process: what are the barriers to getting from one chart to the next?

**Summary from NE CERTs Steering Committee Meeting  
April 20<sup>th</sup>, 2004  
Cloquet Forestry Center**

Present: Lissa Pawlisch, Lola Schoenrich, Okey Ukaga, Leo Wilenius, Larry Nelson, Mark Thell, Wade Gordon.  
By phone: Steve Kluess and George Agriesti.

We started talking about the "pie exercise". Everyone agreed that we needed to get started with small group exercises earlier in the day so they could target more concrete ideas. Thought that the pie chart concept might help each group flush out what they have to contribute toward achieving the goals outlined in the pie. All agreed that the pie was a good of discussing what we want to achieve and a good of communicating with the general public.

Everyone felt that we needed to remain positive – frame it in terms of opportunities, what is right today, what can be right tomorrow.

For the exercise, we decided that we should do a “historic pie” (i.e., energy use from around 1980), a “current pie” and projected “Business-as-Usual future pie” (I believe we agreed to 2020). The historic pie will be statewide and a local utility (discussed using MN Power as an example as they had something about this in their recent newsletter; we assume trends are fairly similar within the region). For standard projections we could discuss conservative industry projections for how much demand will grow, why it has grown so much). Based on these pies, each of the small groups will envision their own Future Pie. We decided that the small group future pies would be used as a brainstorming exercise; we can refine the future pie it to make it more realistic in the fall meeting as people develop more information that feeds back into the pie (it can be a work in progress).

We will provide a one-pager that summarizes previous group discussions and helps provide a context for the day’s activities (reminds people where we’ve been). After the pie exercise, we will again break into our small groups and ask each group to think about their role with the pie chart (what it contributes to the pie and what it might do to help the CERTs team reach that goal). For instance, the education group might think about how to educate people about the pie chart, the policy group about the barriers to achieving it, etc.

A number of people also mentioned ideas about how CERTs could be a “one-stop shop for information”. At the time I wasn’t really sure how this quite fit into the agenda. The first mention was from Mark about how NE/NC Minnesota is remote from products and needed information exchange/demonstrations (recall our discussion about the MN Power solar rebate projects). Then someone (maybe Leo) brought up the idea of discussing where conservation and renewables have gone wrong and educating people about this. Toward the end of the meeting we discussed wanting a tool that could help people get the right application/technology sooner, how to channel people in the first place (recall the example of AURI’s digester screening tool). Now that I’ve thought about this for a while, maybe this is what the project group could target as their part of the pie. They have outlined a role for themselves as facilitators/dot connectors - maybe all these ideas fit in with that. They can try to channel people toward the right stuff, make sure that the CERTs team has a good understanding of previous failures/successes and then work with the education group about sharing this information more broadly. This will help make sure that the “right” projects get done the “right” way.

In terms of outreach we discussed working with the education committee to decide about how additional workshop funds could be spent (need to figure out what money is really available). We also discussed doing a display (\$700). Larry suggested that the Onanegozie RC&D might be willing to donate their old display to CERTs for a few years. The Education Committee could work with Melody (MN Project) to develop content.

We discussed having the meeting from 9-12, then allowing people to stay after to have further small group discussions over lunch (or later) and then possibly a tour of the zoo at 1 pm. I have one change; I would like to give all of the participants to complete a questionnaire that will help track CERTs progress. I suspect it will take about 20 minutes to fill out (so from 12:00 to 12:30 to be safe). Lissa will confirm with Sandy the option for a tour and possibility for small groups to meet later in the day.

We agreed that we want to share the budget with the group, but we need it in a format that everyone can understand. Lissa will send a budget sheet later this week for your review. Once we share this with the whole CERTs team we can 1) confirm that people want to fund the off-grid portion of the NMN Renewable website, and 2) confirm with the whole team that the steering committee can make decisions about spending and report back to broader team for rejection (steering committee to remain open to new members).

Lastly, just to summarize what we decided for the CERTs website and the NMN Website, we will link them together from the NE CERTs webpage. Within the NE CERTs website we’ll also share information about the working groups and how people can get involved, examples of what they are working on, etc.

**Agenda for Northeast/North Central CERTs Team Meeting  
May 19<sup>th</sup>, 2004  
Duluth Zoo, Duluth, MN**

*Meeting purpose:*

- 1) Discuss regional conservation and renewable energy goals.
- 2) Set priorities for small groups.

- 9:00 am Welcome and Introductions - this is your opportunity to make any quick announcements
- 9:10 am Set the stage – tying the last meeting together with today’s activities
- 9:15 am Review Energy Pies (historic, current, and business-as-usual future)
- 9:30 am The Pie Exercise
- 10:00 am Group Review of Pies/Discussion
- 10:30 am Small Group Meeting time
- 11:30 am Review of Small Group discussions
- 11:50 am Quick other items: Budget, Webpage, Decision-making
- 12:00 pm CERTs Progress Report
- 12:30 pm Lunch  
Speaker: Bob Leibfried of MN DNR, Northeastern Region: Discussing the potential for a wind project in Bovey, MN
- 1:00 pm Tour of the Zoo with Leslie Gibson
- 2:00 pm Meeting place available for anyone who want to continue meeting

**Northeast/North Central CERTs Team Meeting Summary  
May 19<sup>th</sup>, 2004 - Duluth Zoo, Duluth, MN**

We began with a brief welcome from Mark Thell and went around the room with introductions.

Those present at the meeting included:

Mark Thell  
Lauri Isaacson  
Larry Nelson  
Bill Hilty  
Okey Ukaga  
Lissa Pawlisch  
Felix Amenumey  
Sandy Sweeney  
Leo Wilenius  
Marty Kramer  
Don Martens  
Steve Hoffman  
Jim Hall  
David Williams  
Dean Talbott  
Tom Koehler  
Bill Maier  
Chris Reed  
Peter Harris

Lissa quickly set the stage for today's meeting and referenced the 1-page summary on the back of the agenda that described how the last meeting (in February) fed into today's meeting.

Felix presented a look at the Northeast's current energy production (what energy resources are used to generate electricity within the Northeast Region). There were a few questions about the data and what data we really needed. The Inventory/Planning group will work with Felix and Lissa to update the numbers and ensure we have an accurate picture of the region's electric use.

### **Pie Exercise**

Bill Maier then introduced the Pie Chart Exercise. The exercise was designed to have the CERTs small groups take a moment to envision beyond what's immediately possible in the region's energy mix, to what the team would like to see long-term.

Bill started the discussion by broadening the energy picture to look at overall energy mix in Minnesota (covering fuels used for electricity, transportation and non-electric heating). The Minnesota 1999 Fuel Mix Pie Chart shows that in 1999 petroleum (40%), coal (20%) and natural gas (21%) were the primary fuels used in Minnesota. With the current energy pie chart as a starting point, Bill asked people to break into their small groups to consider three questions. *Questions:*

- 1) What are the potential consequences of continuing along our current energy mix path?
- 2) What should the future pie chart look like?
- 3) Why would the consequences of the new pie be?

### *Group Review of Pies Discussion*

We had three groups, the Current Energy Use/Inventory/Planning Group, the Policy Group, and the Project and Education groups combined into one for the day as neither had quite enough people to work alone.

*Responses* to the first question included the following:

- Rising fuel prices and costs
- Increasing demand on fuel supplies
- Climate change
- Increasing environmental degradation (including mercury, smog, particulates, and groundwater)
- Increasing health impacts from emissions
- More problems with energy security
- More problems with national security/unrest world-wide over energy costs/availability
- Social impacts such as an increased gap between the haves and have-nots
- Increasing imports of fuels
- Falling quality of life
- Simply not achievable to continue operating under current scenario – not sustainable

This also raised some questions regarding what sort of standard of living we anticipate in the future and what our definitions of quality of life and sustainability might be.

*Responses* to the second question included:

- Should be adjusted to account for the room for efficiency in every sector
- Could see around 20% wind (under current distribution/grid system)
- Coal, gas, nuclear likely to continue – may need to look at better technologies, may have to look elsewhere due to supply constraints (mentioned experiments to gasify coal in-ground)
- Greatly increased wind, solar and other renewables
- Increased reliance on existing fuels in short term
- Increased use of “waste streams” - biological, etc.
- One group developed an actual alternative energy pie – please see the excel spreadsheet

Responses also included a number of questions such as, what about petroleum? How long will we have it, and what will we substitute it with? We also asked about Hydrogen. Should hydrogen be used as an energy carrier or an energy source (burned)? Where should we get the hydrogen from – wind or biomass? What will hydrogen replace – transportation fuels? Electric?

Due to time constraints, we skipped discussion of the third question and went directly into small group discussions.

Some consequences of modified energy use that people submitted in notes were:

- More sustainable energy future
- Decreased pressure on all energy sources
- Smaller individual homes due to conservation

- Lower emissions
- Less foreign energy dependence

#### *Small Group Discussions*

Question: What sorts of issues and ideas does this changing energy future elicit?

##### *From the Education/Project Group:*

- 1) Political/societal will: we will need a political/societal commitment to energy independence and sustainability
- 2) Consumer awareness: need to increase consumers awareness of issues related to sustainability and energy alternatives, ethanol is an example
- 3) Holistic cost processing/thought process: we all need to be responsible for our own stuff (get past the NIMBY attitude) and also think about a greater/collective good – what is the present economic impact vs. environmental impact
- 4) Partnerships – need to create and broaden our partnerships to form an expanded sustainable network
- 5) Need to demonstrate the value of Stewardship
- 6) Need to create models for the transition to new fuels – both successes and failures (separate fact from fiction)
- 7) Price signals and education – need to figure out how to motivate people

##### *From the Inventory/Planning Group:*

- 1) Energy usage – how much do we consume, by sector, potential for efficiencies
- 2) Potential Resources – what's there? (inventory)
- 3) How do we transition? – centralized power, mix of decentralized, grid as a storage area?
- 4) Forecasted usage – transportation, industrial, electrical sectors
- 5) What is viable – how do we deliver to new systems?

##### *From the Policy Group:*

- 1) Community driven choices for Minnesota
- 2) Influence consumer demand via:
  - Level playing field – including the hidden costs
  - What's possible with efficiency? Minnesota has offered leadership in ethanol and wind – should do something similar with efficiency
  - Should evaluate the energy balance of fuel sources
  - Become an energy exporter?
  - Should look into existing resources regarding the environmental, social, and economic costs of energy resources
  - How do we quantify quality of life?
- 3) Should gather broader representation for CERTs team
- 4) How do we influence communities? Specific projects? Media? (Media ideas discussed included: Perhaps send out press releases immediately after meeting and announcements to media before meetings? Perhaps a press conference once we nail down the future pie that includes a concise focused statement and a line up particular people to be interviewed? Invite media representatives to team meetings? Broadcast the meetings on public access?)

#### *Other Items*

Following group discussion we took 20 minutes to fill out the CERTs Progress Report. This was a questionnaire to gauge how people feel CERTs is going. Those of you who were unable to attend the meeting will be getting a copy of the Progress Report to complete via the US Postal Service.

We didn't get to the other items looming on our agenda, but promise to address them next time. It sounds as though all of the small groups are planning to meet sometime in June. I will send out a schedule of meeting times as I have more information. Anyone is welcome to attend these small group meetings (not just the people in the group at the last meeting). The policy group is meeting on June 15<sup>th</sup> at 10:00 am in the restaurant at Banning Junction.

We scheduled our **next whole team CERTs meeting for July 14<sup>th</sup>, 2004**. The meeting is scheduled to begin at 10am and will likely run until around 1:30pm. We are hoping to have it at the Fond du Lac Tribal and Community College, but Lissa still needs to confirm this with Wade.

### *Canisteo Pit Project*

Over lunch we heard from Bob Leibfried of the Minnesota Department of Natural Resources, Northeastern Region: Discussing the potential for a wind project in Bovey, MN. Bob had a great presentation. Lissa will look into getting a copy for the group. Generally speaking Bob talked about the possibility of putting up a wind turbine that would power a pump to control water levels in the Canisteo Pit (avoid overflow). This project could be the first of its kind on the Iron Range and would provide a innovative solution to a tough problem.

### *Tour of the Zoo*

Leslie Gibson, Environmental Educator with the zoo, gave CERTs participants a tour of the zoo's facilities and the renewable energy projects now underway. CERTs team members saw the new solar panel on the electric vehicle storage facility and saw the solar hot water installation outside the animal barn (along with a bunch of really cute animals!). *Thanks to everyone from the City of Duluth and the Zoo for hosting us at such a neat location!*

**Agenda for Northeast/North Central CERTs Team Meeting  
July 14<sup>th</sup>, 2004  
Fond du Lac Tribal and Community College**

- 10:00 am        Introductions
- 10:10 am        Policy Small Group Report: Revised Mission Presentation and Discussion
- 11:00 am        Conclusion of Mission Discussion – Consensus
- 11:15 am        Inventory Small Group Report
- 11:30 am        Education Small Group Report
- 11:45 am        Projects Small Group Report
- 12:00 pm        Miscellaneous Administrative Issues
- 12:15 pm        Lunch and Lunch Speaker (looking for someone on Biofuels)
- 1:00 pm Time for small groups to set next meeting date and agenda
- 1:30 pm        Meeting Adjourns

\*\* Tour of Fond du Lac Tribal and Community College renewable and energy efficiency projects will begin soon after the meeting ends. \*\*

**Summary Northeast CERTs Meeting  
Fond du Lac Tribal and Community College (FDLTCC)  
July 14<sup>th</sup>, 2004**

*In attendance*

Leo Wilenius, Lake Country Power  
George Agriesti, Minnesota Power  
Christopher Reed, Nemadji Energy  
Sandy Sweeney, City of Duluth  
James Hall, Northeast Minnesota Sustainable Development Partnerships  
Don Martens, Great River Energy/East Central Energy  
Bob Shaw, National Energy Foundation  
Tom Koehler, MN Renewable Energy Society  
Michael Sparby, AURI  
Mike Braun, University of Minnesota Duluth  
Erica Bleck, University of Minnesota Duluth  
Janelle Stauff, University of Minnesota Duluth  
Nicole Hynum, University of Minnesota Duluth  
Mike Mageau, University of Minnesota Duluth  
Lauri Isaacson, Pine County  
Bill Maier, Citizen  
Bill Hilty, State Representative  
Okey Ukaga, Northeast Minnesota Sustainable Development Partnerships  
John Gustafson, FDLTCC  
Caroline Clement, Western Lake Superior Sanitary District  
Bob Leibfried, MN Department of Natural Resources  
Felix A menumey, University of Minnesota Duluth  
Lissa Pawlisch, Regional Sustainable Development Partnerships



### *Mission/Pie Discussion (notes from the Flip Chart)*

- Minnesota-based?
- Pie chart needs more research and study – what are resources available? What is best guess? Need to understand research pie is based on...
- Desired pie – what you're shooting for... moving target
- Keep pie general or it will invite criticism; there is a difference between goals and feasibility
- Maybe pie should just have a chunk labeled renewable and then we define which resources are renewable (but with specific labels in the pie)
- There are other forms of hydro, like wave and small-scale – we could stimulate a discussion about new technologies/political debate
- Don't be bashful about the dream
- Need to have something that can lead to further discussion, not turn off utility engineers from the outset
- Fossil fuels → Renewables (pie to show renewable/non-renewables) vs. Imports → Local generation (pie with imports and local generation)
- Vision – what you're working toward
- 3 pie charts: 1) where we are, 2) standard prediction, 3) envisioned pie chart
- 2 pies feeding to one, 1) MN based resources (largely made up of renewables), 2) imported resource (mostly non-renewables, but could also include a few renewables), 3) what they would reflect combined into one
- Ramifications are that you'll have a percentage increase in MN-based energy as you transition to renewables
- Generally transitioning to renewables = transitioning to MN-based
- Petroleum out, new slide for hydrogen or make other sections bigger and clearly state that they can be used to capture hydrogen
- What are economic impacts of local fuels?
- Synergies with local development of resource, could cost a bit more, but you also get local economic development benefits
- Want to be cutting edge in the US
- Does MN-based isolate us? Does it matter if we use renewables from elsewhere?
- Model could be replicated with other places looking at local generation
- Add sentence – providing an example/model
- Remove word Minnesota and say local
- Local requires infrastructure, and that is achievable
- Could take out efficiency gains – some consider it limiting
- Could take out MN-based to make it more inclusive
- Efficiency/Conservation can be reflected in three ways that all have a little different meaning, 1) don't turn on light bulbs (or turn it off when you leave the room), 2) use more efficient light bulbs, 3) have fewer light bulbs to turn on (kind of conservation, also lifestyle change)
- Change away from a consumption-based economy
- Symbolic action
- Do people act because they CAN or because the NEED to?
- No mandate – show alternatives
- Make same price and educate
- Look toward recycling as an example, why do people do it?
- Education – HOW TO vs. WHY (environmental costs, economic benefits)

### *Revised Vision/Mission Statement*

Seems we came to agreement on at least the Vision and Mission parts, but weren't quite at consensus for the Objectives part. The following reflects the revisions based on what we last discussed. I think we can revisit, hopefully briefly, the objectives section at the next meeting. Thank you all for such a great discussion about this.

**Vision Statement:** Designing a Minnesota Clean Energy Future while providing a positive economic impact on the region.

**Mission Statement:** The mission of the Northeast Region's Clean Energy Resource Team (CERT) is to build a sustainable future by increasing the public's awareness of and active adoption of energy conservation, energy efficiency and local renewable energy resources.

**CERT has outlined the following objectives:**

**Promoting conservation and energy efficiency practices:**

- CERT will aggressively promote and support energy conservation practices, efficient energy production and use.
- Encourage broader implementation of energy conservation and efficiency measures

**Transitioning towards sustainable energy systems:**

- CERT will aggressively promote energy systems based on sustainable Minnesota resources by supporting locally owned and operated alternative and renewable energy systems.
- CERT will collaborate with other interested parties seeking a similar transition to sustainable energy technology practices.
- Cooperate with and serve as liaison to private individuals, organizations and institutions having an interest in energy conservation and utilization of alternative and renewable energy sources.
- Cooperate with private or governmental bodies, corporations, associations, institutions, communities, agencies or persons interested in supporting the transitions toward independent renewable energy systems.
- Promote the availability of unbiased information available for implementing efficient and economic use of renewable energy to empower local energy solutions.
- Facilitating development of new technologies:
  - CERT will communicate with energy users and producers, focusing on strategies relating to the formation and development of public policy by disseminating information to users and providers interested in the application of local and regional sustainable energy strategies.
  - Develop a wider understanding of renewable energy applications by integrating technical knowledge and social resources.

Edited 7-14-04

*Utility Data Presentation from Felix Amenumey*

Please see Felix's powerpoint presentation on the CERTs webpage ([www.cleanenergyresourceteams.org](http://www.cleanenergyresourceteams.org), look under "presentations").

*Couple of Quick Business Items*

- Discussion about how to get conservation moving:
  - ✓ Perhaps there are opportunities to get more municipal utilities involved with CERTs; municipal utilities need to spend CIP dollars, could be useful to get involved with CERTs and help outline ways to get the most benefits from their conservation and renewable dollars.
  - ✓ Chris Reed wrote a manual for MMUA on municipal utility conservation – available at [www.me3.org](http://www.me3.org)
- Saw a brief overview of the NE CERTs budget.
- Northern Minnesota Renewables website ([www.mnrenewables.org](http://www.mnrenewables.org)) – We've talked about the website and seen a demonstration of it before. If CERTs were to become an affiliate of the site it would be an opportunity to highlight off-grid applications, look at what other folk sand doing and highlight other ideas than those currently presented. There are both hosting fees and design fees associated with being an affiliate. Given that the team feels like it would be a worthwhile venture, the steering committee will review the costs, compare them to the CERTs budget, and make a decision.
- Regarding decision-making, we decided that pressing issues would be presented to the group via the list serve with a subject line entitled ACTION. Everyone on the list serve will have the option of responding with Yes, No, or Hold till next meeting. We will then tally the votes (within a specified time period) and go with that decision. Lissa clarified that she did not want to make decisions on behalf of the team, and this seemed like the best way to go about it. Small issues could be decided upon by the steering committee.

*Biofuels Presentation from Michael Sparby*

Please see Michael's powerpoint presentation on the CERTs webpage ([www.cleanenergyresourceteams.org](http://www.cleanenergyresourceteams.org), look under "presentations").

**Northeast CERTs Conference Call Notes**  
**Monday, August 16<sup>th</sup>, 2004**

Next meeting: September 29<sup>th</sup>, 2004

Time: 10 am – 2 pm

Location: Washburn Hall, UMD

*Purpose of Meeting*

- Understand the purpose of and craft the NE Regional Strategic Energy Plan
- Determine where we want to be in terms of renewables and energy efficiency/conservation (perhaps revisit the pie discussion)
- Discuss the barriers and opportunities to renewables and energy efficiency
- Discuss how we plan to overcome the barriers and take advantage of the opportunities
- Decide what are the best bet projects the NE CERTs team want to move forward (how to fill the gap between where we are today and where we want to be)
- Develop a plan to build broad community consensus around NE Regional Strategic Energy Plan

*Agenda*

10:00 am Introductions and Review of Meeting Purpose

10:10 – 10:40 am Finalize Mission Statement – Focus on Statements of Objectives

10:45 – 11:20 am Presentations from Small Groups

- Education Group – Highlight the Upcoming Solar Tour on October 2<sup>nd</sup>
- Inventory and Assessment Group – Updates from Felix on transportation and heating data

11:20 – 12:00 pm Presentation: Where are we today (A Review of Plan Highlights – what we know), Start with discussion of where we want to be (Pie charts)

12:00 – 12:45 pm Lunch and Presentation from Mike Mageau, UMD (Lissa is confirming this with Mike)

12:45 – 2:00 pm Discussion Session

- Start with barriers and opportunities (what are they and how to we overcome/take advantage of them)
- What are best bet projects where to we want to be; how are we going to get there...
- How do we share this plan with others and get broad community buy-in? (what information do we want back, who will go where, what needs to be modified in the presentation, assignments to deliver presentation)

*QUESTIONS to CONSIDER BEFORE POSTING TO THE LIST SERVE:*

Is this what you all had in mind?

Is this enough time?

Should we make it another hour to allow more time for discussion?

Should we weave Felix's new information into the "Where are we now presentation" to save time and allow more discussion of "where we want to be" before lunch?

**Northeast CERTs Meeting Agenda**  
**September 29<sup>th</sup>, 2004**  
**Time: 9:30 am – 2 pm**  
**Location: Washburn Hall, UMD**

*Purpose of Meeting*

- Understand the purpose of and craft the NE Regional Strategic Energy Plan
- Determine where we want to be in terms of renewables and energy efficiency/conservation (perhaps revisit the pie discussion)
- Discuss the barriers and opportunities to renewables and energy efficiency
- Discuss how we plan to overcome the barriers and take advantage of the opportunities
- Decide what are the best bet projects the NE CERTs team want to move forward (how to fill the gap between where we are today and where we want to be)
- Develop a plan to build broad community consensus around NE Regional Strategic Energy Plan

**Agenda**

- 9:30 am Introductions and Review of Meeting Purpose
- 9:40 – 10:10 am Finalize Mission Statement (Policy Group) – Focus on Statements of Objectives
- 10:10 – 10:25 am Presentation from the Education Group: Highlights for the upcoming Solar Tour on October 2<sup>nd</sup>
- 10:25 – 11:30 pm Presentation: Where are we today?
- A Review of the NE CERTs Strategic Energy Plan Highlights, including more updates from Felix (Inventory and Assessment Group)
  - A continuation of the pie chart discussion – determining what the desired future chart should look like
- 11:30 – 12:15 pm Lunch and Presentation from Mike Mageau, UMD
- 12:15 – 2:00 pm Discussion Session
- Start with barriers and opportunities (what are they and how to we overcome/take advantage of them)
  - What are best bet projects where to we want to be; how are we going to get there...
  - How do we share this plan with others and get broad community buy-in? (what information do we want back, who will go where, what needs to be modified in the presentation, assignments to deliver presentation)

**Northeast CERTs Meeting Summary**  
**September 29<sup>th</sup>, 2004**  
**Washburn Hall, University of Minnesota Duluth**

We kicked off the meeting at 9:30 by quickly reviewing the purpose of the meeting as outlined in the agenda.

Then we did introductions. Those present at the meeting included:

Okey Ukaga, Northeast Sustainable Development Partnership  
Felix Amenumey, University of Minnesota Duluth  
Jim Hall, Cook County and Northeast Sustainable Development Partnership  
Larry Nelson, Onanegozie RC&D  
Carrie Clement, WLSSD  
Jamie Juenemann, Two Harbors  
Laurie Isaacson, engaged citizen  
Dean Talbott, MN Power  
Chris Reed, Nemadji Energy  
Lola Schoenrich, Minnesota Project  
Margaret Broeren, Minnesota Project  
Mark Thell, Onanegozie RC&D  
Bill Hilty, State Representative  
Nancy Brown, graduate student UMD  
Sandy Sweeney, City of Duluth  
Steve Kluess, Laurentian RC&D  
Bill Maier, engaged citizen

Bob Shaw, National Energy Foundation  
Tom Koehler, Minnesota Renewable Energy Society  
Tom Kurhajetz, Kurhajetz Electric  
John Kurhajetz, Kurhajetz Electric  
Leo Wilenius, Lake Country Cooperative  
David Schimpf, UMD (biomass guy)  
Mike Mageau, UMD  
Lissa Pawlisch, University of Minnesota's Regional Sustainable Development Partnerships

### ***Finalize Vision, Mission, and Objectives***

Vision statement and mission statement were agreed on at previous meetings, but the team was unable to finalize the objectives statements. The final vision and mission read as follows:

Vision statement: Designing a Minnesota Clean Energy Future while providing a positive economic impact on the region.

Mission statement: The mission of the Northeast Region's Clean Energy Resource Team (CERT) is to build a sustainable future by increasing the public's awareness of and active adoption of energy conservation, energy efficiency, and local renewable resources.

### *Discussion of conservation and energy efficiency objectives:*

- Conservation and energy efficiency are two different things. Include efficiency in the first bullet.
  - **Agreement** on revising the energy efficiency objectives to read: CERTs will aggressively promote and support energy conservation practices, efficient technologies, efficient energy production and use.

### ***Discussion of objectives regarding transition to sustainable energy systems:***

- Pleased to see a statement on discussion of values.
- Discussion of combining 2, 3 and 4.
  - **Agreement**: Collaborate with all parties supporting, interested in, and implementing energy conservation and utilization of sustainable energy resources.
- Discussion of 6: Need to talk about both production and consumption patterns. It talks about the how but not the why. Suggestion to incorporate why into the statements.
- Others discussed that keeping the statements simple by eliminating the why is important.
- Questions whether the "need for lifestyle change" raises too many flags, from a marketing perspective.
  - **Agreement** to leave number 6 as is.
  - **Agreement** to preface all of the objectives with the following sentence: CERTs has outlined the following objectives, which will lead to economic, social and environmental benefits.

### Highlights of the Upcoming Solar Tour

Check out [www.nmnrenewables.org](http://www.nmnrenewables.org) for more info. Two tours are scheduled for the NE Region, one in Duluth on Sat 10/2 (starts at 10AM, mayoral proclamation @ Zoo); the other is Sunday, 10/3 in Lake County (starts at 10:30, departing from Wolf Ridge). Press release handed out.

### Strategic Energy Plan Highlights and Continuation of Pie Chart Discussion

See website for copy of the presentation by Felix and Lissa (this summarized the data collected to date for the current energy use inventory and renewable energy resource inventory).

### *Pie and Renewable Energy Goal Discussion*

Handed out copies of the pies discussed at the Duluth Zoo meeting and pies presented by Felix at the Fond du Lac Community College meeting.

- This is similar to Cities for Climate Protection. Duluth is a part of it. Cities that are a part of the program could reduce CO2 emissions by 8% by 2020.
- How long a timeframe should we look at? Suggestion to go 20 years or less. Longer timelines lack the needed sense of urgency.

- Do we have consumption data from the past going forward? Duluth CO2 emissions would increase 36% over xx years, if nothing were done.
- Education helps. How many people know that there are ethanol gas stations in Duluth?
- Four largest heating users in the region already use wood waste. Some businesses are looking at the potential of gasifying black liquor, which paper plants now burn. Some DOE funding is going to this research. If paper plants adopt this technology, they may be able to actually export energy and move them in the direction of becoming biorefineries.
- One idea is to have a residential pie chart and one for industrial. Or break into sectors, industry, transportation, residential heating, etc.
- What about the water pumping from mines? Is there hydropower potential there?
- Steve Kluess – there is national data about this. Shouldn't we do the research on what's possible?
- Mike – it's hard to put percentages on it, the technologies might change. Larry agrees.
- Okey: One option is to do a visual presentation, another is to have our objectives and keep working. He likes having measurable objectives.
- Lissa – maybe we can use the projects as a measure rather than setting an exact % for renewables.

Discussion closes with agreement that we will move forward on setting project goals and not worry about setting a precise percentage renewable energy goal for now.

*Lunch from "Cocos-to-Go"*, a strong supporter of local and organic foods. T'was delicious.

Discussion of Projects – Project Brainstorm

To gather project ideas we went around the room and all were invited to make project suggestions.

- Lake Superior School District Project – trying to do PV installations and educational materials, but encountering hurdles
- CFL's – getting more in use. How about school fundraisers selling them?
- Ethanol – is it really a good thing? It means more corn monoculture. There are lots of environmental problems with that.
- Lifestyle change – increasing the number of hybrid cars on the road
- Grand Portage wind project. Help them to get the project up and running as a catalyst for the region. They may well be the first community in the region to do a wind project.
- Continuation of the wind studies
- Biorefineries – working with the paper plants on that. Georgia Pacific plant burns wood waste, could recapture steam for electricity.
- Biodiesel plant in the region. All of the buses in Duluth can use it, so could trucks.
- Run the Duluth steam plant on biomass. NREL feasibility plant in the works. Hibbard steam plant is run on waste wood.
- Wind turbine in Duluth
- Wind turbine (small) is being built at Central High in Duluth.
- Work with Solar Minnesota (Million Solar Roofs). Get a couple of large solar projects in Duluth. Do PV installations on new low-income housing.
- Hawk Ridge home development being built. Work with builders to put PV projects on market rate development and then compare/contrast the benefits.
- MN Power will kick off a program looking for community facilities including schools interested in putting up small wind. Includes education. Will be funded starting the first of the year. Dec 1 (approximately) RFP on the streets.
- Mobile wind monitoring device – to aid in more "micro wind" studies. (possible LCMR proposal)
- Education program for kids on energy conservation (mimic the Firefighters program). Active participation of kids in the school building can save hundreds or thousands of dollars per month. Schools for Energy Efficiency program has some good materials (4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> graders). Could get students to do energy monitoring in building and then carry the message home.
- At least one significant demonstration project in each school in the region. Conservation, renewable energy generation (hands on project) combined with education.
- Suppose we took a community and tried to get 80 or 90% replacement of light bulbs with CFL's.
- Come to parent teacher conferences, hand out CFL's, brochures, etc.
- Westbrook Elementary (Elk River) – students educate the parents about the energy saving measures in the school building.

- Search for and nurture highly innovative technologies that have a local impact.
- Solar thermal and heat pumps are a good option.
- US Forest Service is building a new building in Ely. They want to be green. They have a low budget. They are asking for help from the Lake Country Cooperative. They get a lot of people (30,000) through the facility every year. CERTS could link them with John Carmody, Sustainable Design Center at the U of MN, Twin Cities. CERTs could be listed as a partner and it may not actually cost anything.
- Wintergreen Apparel shop in Ely is putting up a PV system, facilitated by MP's outreach to electricians. DOC and MP's outreach is very helpful. Another training is on 10/5<sup>th</sup> and 6<sup>th</sup> in the Twin Cities.
- Ely Municipal Utility is interested in some kind of solar rebate program as well.
- Look for ways to increase use of biomass in existing coal plants over the remaining life of the plants
- Education for the public on conservation. Advertise on TV, hit them many times with the message (repetition, repetition, repetition). Line CERTs up with a marketer.
- Litchfield Municipal utility advertised on the radio asking people to cut use at times of peak demand. Very successful program; could be replicated.
- People to invest in wind and other applications – larger applications in good locations, where people don't own it themselves, but instead it's like a stock options program (invest in turbine that could be put on someone else's property with a better wind resource)
- Get additional wind towers to locate around the region to get better wind data. SW Regional Development Commission had a similar project years ago; NREL has monitoring sites on several reservations. Maybe we could push to making monitoring stations on cell towers mandatory.
- Energy Star Community label. With perhaps a percentage of renewables or a certain level of conservation – could do educational programs along with it.
- TDP – to make clean diesel from waste. Thermal Depolymerization. Find out more about these and get a pilot plant. Work with WLSSD to convert MSW to bio diesel. There is pilot project underway in Carthage, Missouri using Butterball turkey carcasses.
- Find a way for small investors to invest in wind projects. For example, 550 people invest \$3000 each to get a 20-year supply of clean power.
- Work to educate lenders about renewable energy.
- Office of Environmental Assistance has a 0% interest loan program. DOC has a low-interest rate loan program for energy conservation or efficiency in public buildings.
- What about education about conservation at second homes. They are heated year round at great energy cost.

#### Prioritization

All attendees voted on projects by checking their top three choices (each idea was posted on butcher paper around the room). The winners were:

- One demonstration project at each school in the region – 14 votes
- Funding for monitoring wind towers in the region – 16 votes
- Conversion of steam plant to biomass – 6 votes
- Energy Star communities – 6 votes (Could be integrated with the school project). There is an energy star representative in St. Paul. Chris Reed has his name and number. This is a national program and it might be hard to get another aspect to it.
- Grand Portage wind projects – 5 votes
- Education – lots of different ideas, lots of votes

Mike – What would CERTs really want to do? A pilot project, an education project...

#### Synthesis

- **Agreement** that the central project idea is demonstration projects at every school/ every community in the region. The priority of the next year (or so) will be to get at least one in each Northeast County. Grand Portage would be one. MP school wind projects would be additional.

Other ideas for schools and communities:

- Envirothon SWCD (Willow River and Two Harbors). School kids get together to discuss environmental issues. Perhaps a topic could be energy. Jamie's wife leads this project.
- SEEK solar kit – Tom Koehler interested in the solar demonstration kit, possibly for Wolf Ridge.
- School science fairs could focus on energy conservation – CERTs could provide an award.

- CERTs could identify resources, incentives, state, federal, etc. DOC and DSIRE (Data base for state renewable energy) both track this data. We could do a link.
- Duluth Steam Plant (conversion to biomass)
- Grand Portage (wind)
- Ely (Forest Center and/or solar program)
- Education in school districts
- Energy Star Community
- More wind monitoring in the region

*Ideas for Implementing Projects in Schools and Communities around the Region*

- Float the idea to the schools and let them decide.
- Maybe there's a way to get CERTs folks involved in the selection project.
- Maybe we could invite school folks to the next meeting to talk about the ideas and help us to identify the barriers and opportunities. We could put together info on school resources in advance of the meeting.
- North Shore School, a charter school, has environmental stewardship as part of its mission. It's in Clover Valley, big open site, on a ridge. Should meet with their board of directors to get something moving. Chris Reed, Bob Shaw and Jamie Juenemann, Steve Kluess will go to meet with the charter school.
- UMD is collecting fees (\$10,000/year) for wind or renewable energy, because of a student organizing effort.
- Over the next month, we could have the presentation ready, and could have several meetings with schools and communities. Idea would be to present the ideas that CERTs team is coming up with and ask for their help in identifying barriers and opportunities, and identify where there might be good interest. Steve Kluess and Bob Shaw will review the draft presentation.
- We could also identify some of the opportunities of what's already going on and where there is funding or other resources.

Next Meeting: Steve – forge ahead, develop an action plan – meet sooner rather than later.

Meet again in October, look at the presentation, get SEEK involved.

**Next meeting Monday, October 25<sup>th</sup>, 10 AM. Meeting at Jamie's house in Two Harbors.**



## **Northeast CERTs Team Meeting Summary**

*“Working Meeting”*

*Silver Creek Institute's Sustainable Living Resource Center, Two Harbors*

*Monday, October 25, 2004*

**11:00 am – 2:00 pm-ish**

This summary is bit different than others in that we had lots of lots of wonderful conversation, but I'm keeping the summary to the key outcomes just to help move forward more quickly. I will right up a summary of important ideas/thoughts/concerns that came out of the meeting, but those will likely come later and be a tool for discussion at our next CERTs meeting – more on that later.

*Present at meeting:*

Bob Shaw, National Energy Foundation

Dean Talbott, Minnesota Power

BJ Kohlstedt, Curriculum Director, North Shore Community School

Uwe Kausch, North Shore Community School Board Member

Chris Reed, Nemadji Energy

Jamie Juenemann, Two Harbors

Steve Kluess, Laurentian Resource Conservation and Development Council

Okey Ukaga, Northeast Minnesota Sustainable Development Partnership

Jim Hall, Northeast Minnesota Sustainable Development Partnership

Mike Mageau, University of Minnesota Duluth

Mike Kennedy, Minnesota Office of Environmental Assistance, SEEK Coordinator

Tom Koehler, Minnesota Renewable Energy Society

Peter Harris, Wolf Ridge

David Williams, LHB Engineering Group

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

Erica and Mike – Silver Creek Environmental Learning Center

*Presentation for North Shore Community School:*

Presentation delivered to the North Shore Community School Board on November 16, 2004, at around 6:00 or 6:30 pm. We will have roughly 10 minutes for the presentation. Jamie will deliver the presentation but would like as many folks as possible to attend as collaborators.

Goals for the School Board Presentation:

- Get approval to do a renewable energy system tied with a strong educational component (perhaps vote to appropriate a certain \$ amount and make the project contingent on additional funding).
- Get approval to present the idea to the Duluth Township Board.

Generally the presentation will mimic what Jamie previously put together for the Lake Superior School District. We will provide copies of the presentation along with a packet of information for each school board member (8 individuals).

The general presentation outline and key points, along with assignments, are as follows:

- 1) Mission Statement of the School and relationship between energy efficiency and renewable energy projects and their mission and educational standards
  - BJ Kohlstedt is gathering school specific information and general info about standards.
- 2) Energy baseline – \$/year and \$/month on electrical and heat, recent history of energy use at the school – put in terms of kWh per student over the past 2-3 years, talk about what efficiency upgrades have already been done.
  - Dean, David, and Jeff Schiltz of Johnson Controls to pull this information together.
- 3) Conservation Potential – review recent audit, look at what has and hasn't been done from those recommendations. What else is possible? What loan programs are available? How can behavior and leadership from students help?

- Dean, David, and Jeff Schiltz of Johnson Controls, Lissa has information about loan programs.
- 4) Wind – \$/kWh, discussion of MP RFP, possible size of turbine – sounds like they would like to compare the Vestas V-15 based on cost per kWh productivity with the Bergey 10kW, Jacobs 20kW and Whisper 175.
  - Chris Reed and Mike Mageau are going to work on the economics. Jamie passed along the request to compare these systems and would like to send it to Uwe and BJ before it's added to the proposal.
- 5) Solar – including Solar thermal, PV, PV Windows, Solar water panels for the greenhouse. Lissa is following up with DOC about any restriction in PV Windows qualifying for the rebate.
  - Jamie and David are going to work on the section and the \$/kWh information.
- 6) Summary of how this will help meeting the 6<sup>th</sup> grade State Science Standards.
  - Mike Kennedy and Bob Shaw to fill in gaps here.
- 7) Close with what benefits this offers the school – innovation, recognition, value to the community it's serving.

We will provide a packet of information including a “Frequently asked questions” sheet and some general materials about wind and solar. BJ was reviewing one of the packets that Chris Reed has put together to see what's missing and what information would be the most useful. This could also include an overall matrix showing costs of system and possible sources of funding.

We will need to have copies for 8 school board members.

As I gather this information I will begin plugging it into the presentation. If you have any questions or concerns about your assignment, please let me know. Otherwise, please get your materials to me ASAP. Thanks!

**Agenda Northeast CERTs Meeting**  
**Tuesday, November 23, 2004**  
**Cloquet Forestry Center, Cloquet, Minnesota**  
**10:00 AM – 12:30 PM**

*Goals:*

- Bring everyone up to speed on recent activities
- Strategize future efforts
- Develop project teams to advance these efforts

*Schedule:*

- 10:00 Introductions and any brief announcements
- 10:10 Quick review of decisions from last meeting
- 10:20 Update/Discussion re: Presentation to North Shore Community School
- Review of presentation
  - Reactions from those who were there
  - Follow-up items
- 10:50 Where do we go/What do we do next around school-based projects?
- Are there other schools we should approach?
  - What should we/do we need to change about the presentation?
  - Can we develop project teams around these targets?
- 11:30 Updates on Community Projects
- 11:45 Brainstorming about community project approach
- 12:20 Planning for the next meeting
- Topic ideas?
  - Date and time
  - Location
- 12:30 Adjourn

*Handouts:*

Updated Vision/Mission statement  
Decisions from NE CERTs meeting on September 29<sup>th</sup>  
Presentation to North Shore Community School Board

**Northeast CERTs Team**

**Vision Statement:** Designing a Minnesota Clean Energy Future while providing a positive economic impact on the region.

**Mission Statement:** The mission of the Northeast Region's Clean Energy Resource Team (CERT) is to build a sustainable future by increasing the public's awareness of and active adoption of energy conservation, energy efficiency and local renewable energy resources.

**CERTs has outlined the following objectives, which will lead to economic, social and environmental benefits:**

**CERTs will aggressively promote and support energy conservation practices, energy efficient technologies, and efficient energy production and use.**

**CERTs will aggressively promote and support a transition towards sustainable energy systems:**

- Promote energy systems based on sustainable Minnesota resources by supporting locally owned and operated alternative and renewable energy systems.
- Collaborate with all parties supporting, interested in, and implementing energy conservation and utilization of sustainable energy resources.

- Promote the availability of unbiased information available for implementing efficient and economic use of renewable energy to empower local energy solutions.
- Encourage discussion on the human values reflected in present energy consumption patterns and the need for lifestyle change.
- Facilitate development of new technologies:
  - CERT will communicate with energy users and producers, focusing on strategies relating to the formation and development of public policy by disseminating information to users and providers interested in the application of local and regional sustainable energy strategies.
  - Develop a wider understanding of renewable energy applications by integrating technical knowledge and social resources.

Edited 9/29/04

Northeast/North central CERTs

Results from Prioritization at September 29<sup>th</sup>, 2004 Meeting

**Voting:** All attendees voted on projects by checking their top three choices (each idea was posted on butcher paper around the room). The winners were:

- One demonstration project at each school in the region – 14 votes
- Funding for monitoring wind towers in the region – 16 votes
- Conversion of steam plant to biomass – 6 votes
- Energy Star communities – 6 votes (Could be integrated with the school project). There is an energy star representative in St. Paul. Chris Reed has his name and number. This is a national program and it might be hard to get another aspect to it.
- Grand Portage wind projects – 5 votes
- Education – lots of different ideas, lots of votes

**Agreement:** Team agreed that its central project idea is to: *complete demonstration projects at every school/ every community in the region.* The priority for the next year (or so) will be to get at least one in each Northeast County.

Ideas for schools and communities:

- North Shore Community School
- Grand Portage
- Minnesota Power School Wind Projects
- Envirothon SWCD (Willow River and Two Harbors). School kids get together to discuss environmental issues. Perhaps a topic could be energy. Jamie's wife leads this project.
- SEEK solar kit – Tom Koehler interested in the solar demonstration kit, possibly for Wolf Ridge.
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- Float the idea to the schools and let them decide.
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- Over the next month, we could have the presentation ready, and could have several meetings with schools and communities. Idea would be to present the ideas that CERTs team is coming up with and ask for their help in identifying barriers and opportunities, and identify where there might be good interest. Steve Kluess and Bob Shaw will review the draft presentation.
- We could also identify some of the opportunities of what's already going on and where there is funding or other resources.

#### *Ideas for Implementing Projects in Communities around the Region*

At the last meeting we listed a few community project ideas, like the Duluth Steam Plant (conversion to biomass), Grand Portage (wind), Ely (Forest Center and/or solar program), Energy Star Community, more wind monitoring in the region (example Iron Range Project near Bovey, several other monitoring sites and even a portable monitor). We did not, however, come up with ideas for implementing these sorts of projects. Ideas? Thoughts? Suggestions?

### **Northeast CERTs Meeting Summary**

**Tuesday, November 23rd, 2004**

**10 AM – 12:30 PM**

**Cloquet Forestry Center, Cloquet, Minnesota**

#### **Introductions**

We began the meeting with introductions. Present at the meeting included:

Derek Parendo, Proctor Public Schools

Don Martens, Great River Energy

Bill Hilty, State Representative

Okey Ukaga, UMN-NMSDP

Leo Wilenius, Lake Country Power

Felix Amenumey, UMD

Chris Reed, Nemadji Energy

Mark Thell, RC&D

Tom Koehler, MRES

Lauri Isaacson, resident, Pine County

Larry Nelson, Onanegozie RC&D council

Jamie Juenemann, Silver Creek Institute

Steph Love, Positive Energy for Youth

Mike Mageau, UMD

Jim Hall, NMSDP

Bob Leibfried, MN DNR

Boby Shaw, NEF

Dean Talbott, MN Power

Sandy Sweeney, City of Duluth

Diane Rauschefels, Proctor Public Schools

Jack Johnson, Proctor Public Schools

Joel Haskard, CERTs

Lissa Pawlisch, UMN RSDP and CERTs

#### *Reviewing our Progress*

After introduction we quickly reviewed a handout that summarized the decisions made at the last meeting. Included in that summary was a plan to work with schools in the region. This effort got off to a tremendous start with an effort at the North Shore Community School (NSCS), a charter school in Duluth Township that has a partnership with Wolf Ridge. The CERTs collaboration with the NSCS was highlighted by a presentation from Jamie Juenemann at a school board meeting on November 16<sup>th</sup>.

#### *Reviewing the School Board Presentation*

This presentation was intended to both kick off an effort at the NSCC and to serve as a template for future presentations. After reviewing a bit of this history, Jamie went through the powerpoint presentation so that everyone could have a chance to give their feedback. In leading to the presentation Jamie mentioned that it was very helpful to have a group of supporters in the audience on the 16<sup>th</sup> to give further information (about technical questions, etc.) if needed.

Reactions to the presentation:

- Tone down the numbers so people aren't overwhelmed.
- Ditch the acronyms.
- Get easy-to-understand preparation materials to school boards before presentation so they are familiar with the basic concepts.
- When figuring the Energy Baseline of a school, don't forget transportation costs.
- Liked the comparison of energy use to kWh/student, gallons of propane/student. Should make same comparison with transportation.
- North Shore burned coal until around 2000, but is now moving forward on energy conservation. Other options might be solar thermal hot water heating (food preparation, locker rooms, etc.). Good to highlight the positive things they are already doing.
- People have questions about things like bird kills and noise. Need answers to these questions ready in advance (maybe in pre-presentation materials).
- Update the presentation to include 4<sup>th</sup> as well as 6<sup>th</sup> grade.
- Might want to better describe how many other systems (and what types of systems) are already operating around the region/state so that people feel more comfortable with the concept.

Questions and ideas the group worked through:

- Do you present costs or do you target the project based on what they can spend?
- Return on investment—for wind it might be better to have site-specific monitoring data to get the actual wind speed. Administrators look at the bottom line –it boils down to cost and they may not be thrilled by the length of payback for the smaller wind turbines, for example. However, if you frame it for its social, educational and environmental worth, they may be swayed. Use the example of a gym. Gyms are expensive to build but have a tremendous impact for the health of young people. Taking a strong stand against greenhouse gases will have a great impact on the health of young people as well.
- We should emphasize future job potential in renewable energy development.
- The seasonality of PV output could be an interesting student project. Also, have students debate the pros and cons of wind energy, or solar, or anything else, is an excellent lesson plan idea – they could play the school board debating the topics.
- For small wind turbines, is it more cost effective for the schools to hire a private developer? He/she will get the tax credits back with the lease agreement. This means less money for the school to spend up front, and for a developer who bunches several schools/projects together, it might be a more attractive deal. Note: The schools could also pool for service work and therefore drop their maintenance costs.
- Approaching schools:
  - ✓ In first approaching schools and communities, we need to make the case that it is possible to have a renewable energy project with the right subsidy/grant/tax credit combination.
  - ✓ Then, we must work with a smaller, dedicated group from the school as the details become more complex. We can help them sift through the opportunities. It won't work unless you have a dedicated staff person (superintendent, principal, teacher) in the school who can spearhead the project.

Three guests from the Proctor Public Schools were in attendance and voiced their excitement about sustainable energy projects. Their science teacher, Derek Parendo, noted how expensive football fields are, or ordering new computers every few years. There are simply tremendous opportunities for education opportunities and value – it's worth the cost. The operations and facilities manager, Jack Johnson, mentioned not only the cost savings in smart building technologies, but also the educational impact it will make on students. It was noted that 4 superintendents (Waseca, Pipestone-Jasper and Lac Qui Parle) plus the super from Lake Superior were conference calling to discuss wind energy.

#### *What's Next*

We then began discussing what to do next. The process AWARENESS → INTEREST → TRIAL → ADOPTION was given as an example to describe the process that any school might go through in deciding to do a renewable energy project. To address the Awareness and Interest steps many felt we needed to get into contact with more schools, perhaps invite schools to meeting/information session or perhaps to give presentations at events that would attract individuals from schools. People brought up several possible venues for presentations: Minnesota Superintendents group (conference in January), MN Environmental Education Association (meeting in March), MN Science Teachers Association (also in March), MN School Board Association (in January).

It was noted that we must keep all the utilities and coops as well as the media posted as well. We would hate to get people excited only to have them hit a major project-stopping roadblock. Resource packets and DVD production were mentioned as possible educational materials (Note: CERTs is hoping to tape all of the session at our CERTs Conference on February 28<sup>th</sup> and get those materials assembled into DVDs). It was also suggested that we develop a checklist of steps a school would need work through if they were interested (a draft of that was sent out separately for comment).

There were also discussion about how to get the Trial and Adoption portion of the process going – continue to work with NSCS, try to help Proctor, continue working with Lake Superior School District, etc. We will plan to discuss this further at our next meeting.

### *Duluth Energy Design Conference*

In the end, we decided to not try and go each of the above mentioned groups but to instead focus on the March 15-16 Energy Design Conference in Duluth. Notes about ideas for the conference were sent out separately. In brief we discussed:

#### **3-4 Tracks? Ideas include:**

- Wind as Schools – maybe a superintendent to talk about case studies; maybe an installer/developer?
- Geothermal at Schools – Henry Fischer (GRE), maybe Jack DiEnna of the Geothermal Heat Pump Consortium
- Energy Efficiency at Schools – Maybe someone from Johnson Control and someone from Halberg Engineering (both doing efficiency at projects at schools that are tied with educational curriculum)
- Uncertain... some ideas include:
  - ✓ Solar at Schools?
  - ✓ Tying renewable energy and energy efficiency to science/math/social studies curriculum? Could get Bob Shaw from NEF, or some teachers who are doing this sort of curriculum develop, or Peter Harris (or someone else) from the Wolf Ridge Environmental Learning, or Sue Hanker from the Laurentian Environmental Center...

**Mailing List:** Conference will send out notices, should CERTs help with language? Conference already has a list of schools included in the mailing; Peter Harris also has a list of schools from the NE he could provide.

#### **Materials:**

- FAQ materials for each track- one-page, two-sided handout?
- CERTs Website and [nmnrenewables.org](http://nmnrenewables.org) – Link to conference notes and presentations along with the FAQ

If we have good attendance at these presentations, CERTs will help these schools get a good overview and then hopefully hook them up with the utilities/developers/investors/grants that they will need to keep the momentum going.

Chris Reed, Joel and Lissa are currently working together to pull together speakers for three sessions: Case Studies on Energy Efficiency in Schools, Successful School Solar and Wind Projects – Case Studies, and Having your Renewable Cake and Eating it too – how to incorporate renewable and energy efficiency projects into classroom learning.

### **Bob Leibfried, Minnesota DNR**

Bob came to give the team an update on what's happening in Bovey. As many of heard back in June Bob has been working with a number of stakeholders to determine how to address the potential overflow from Canisteo Pit that would cover the streets of Bovey in water. One of the options Bob has pushed them to consider is installing a wind turbine to power a pump that would divert this water from the pit to other nearby lakes. This past August an RFP was issued to do a feasibility study on this option (wind/pump). In September, Wenk Engineering was selected as the consultant to perform the feasibility study. Funding has been raised from a variety of sources to get this work completed, but as of yet the Western Mesabi Mine Planning Board has not signed a contract with Wenk Engineering to do the work. Bob addressed a concern that came up quite a bit during our meeting: Having a champion. He referenced how difficult it can be to get a project off the ground with so many stakeholders involved and none truly taking the lead.

CERTs hopes to continue to support Bob in his efforts with this wind project and hopes to learn from this very interesting case study. We discussed having our next meeting in Grand Rapids. Lissa needs to follow up with Bob to discuss this further.

## **Closing Thoughts**

Don Martens brought up the desire to continue thinking about energy efficiency – particularly to think about Ground Source Heat Pumps. There are many installations, such as at the hotel at Grand Casino, that utilize GSHP and waste heat for all their heating needs.

Jim Hall mentioned that Steve Kluess was hoping to give a presentation at our next meeting regarding a biomass project.

## **Agenda Northeast CERTs Meeting**

**Friday, January 28, 2004**

**Audubon Center – Sandstone, Minnesota**

**10:00 AM – 2:00 PM**

### *Schedule:*

- 10:00 Introductions and Review of Agenda
- 10:10 Announcements
  - Update on the CERTs Conference – February 28<sup>th</sup>, 2004
  - Update on the Duluth Energy Design Educational tracks
  - Update on the Duluth Energy Design CCP track
  - Update on the Minnesota Power Solar Rebate Program
- 10:40 Review/Get updates on North Shore Community School and Proctor Public Schools projects
- 11:00 Next Steps for School Projects
  - How do we help the NSCS and Proctor Public Schools move forward
  - Distribute the modified presentation for schools
  - Review the "To Do List for Schools" for edits
  - There are proposals on the table for UMD students to work with schools
  - Educational display project
  - Others?
- 12:30 Lunch and Presentation from Mike Link of the Audubon Center
- 1:10 Presentation about the Laurentian Project
- 1:50 Steering Committee – Volunteers?
- 2:00 Adjourn

## **Summary Northeast CERTs Meeting**

**Audubon Center, Sandstone, Minnesota**

**January 28, 2005**

### **Introductions**

Present at the meeting included: Joel Haskard, Don Martens, Tom Romunstad, Tony Mancuso, Lauri Isaacson, Jack Johnson, Derek Parendo, Thomas Kurhajetz, Okey Ukaga, Lissa Pawlisch, Jamie Juenemann, Felix Amenumey, Jim Hall, Joan Hall, Dean Talbott, Chris Reed, Sandy Sweeney, Steve Kluess, Bill Hilty, Marty Kramer, Terry Grabau, Janelle Stauff, Nicole Hynum, Mike Mageau (with presentations from John Howard and Mike Link – thank you both!).

### **Announcements:**

1. CERTs Conference: It's time to register. Please go to <http://www.cleanenergyresourceteams.org/conference-registration.html> to sign yourself up.
2. Duluth Energy Design Conference is scheduled for March 15<sup>th</sup> and 16<sup>th</sup> (details are at [www.duluthenergydesign.com](http://www.duluthenergydesign.com)). CERTs helped pull together two tracks for schools:
  - Energy and Efficiency in Schools, which features case studies on Elk River and Brainerd (10:30 am – 12 noon)
  - Renewable Energy in Schools, which features both renewable energy projects and ways to connect them to the curriculum (1:00 pm – 2:30 pm)
3. Cities for Climate Protection is also hosting 4 tracks about global warming at the Energy Design Conference. The tracks include:



- Science of Climate Change – Susan Ode, ICLEI
  - Cities for Climate Protection – Dave Konkel
  - Green Case Studies – City case studies including St. Paul’s re-commissioning of a building where they reused 87% of materials.
  - Panel – local examples of what communities are doing to reduce green house gas emissions.
4. Minnesota Power Solar Rebate Program
- Initial plan was to do 7-10 systems, but they ended up doing 15.
  - Initially there were many issues with interconnection, safety, billing, etc., but they are working out the bugs. They think they are about 90% there.
  - Also includes a training component. They wanted to build the infrastructure for installations with electricians, installers, and code officials. They had 33 attendees at their first training and plan to do a few more in 2005.
  - As a general rule, it is always best to cut loads first (increase energy efficiency and conservation), and then look to renewables.
  - MN Power may redo their solar power CIP filing next time around to look at adding some wind and maybe solar thermal.
  - The NUMBERS:
- ✓ Costs: \$8,000-\$11,000 per kilowatt
  - ✓ 300 kWh is an average monthly output from solar = \$20 to \$24/month
  - ✓ Annual production = 34,000 kWh or around \$250 to \$300/year
  - ✓ Consumer uses the bulk of the energy produced rather than selling it back to the grid
  - ✓ It’s not a good return on investment, most people are doing for environmental reasons

Solar System Costs (2 kW system)
\$16,000 to \$22,500
- \$4,000 from MP
- \$4,000 from state
= \$8,000 to \$14,500 out of pocket

- Demand for solar has really gone up – not sure if it’s due to consumer perception, the recent media attention on solar and climate change, what, but MN Power rebate really helps
    - MAINTENANCE? There have been some problems with the trackers. Panels and inverters seem fine. MP engineers are feeling very comfortable with the equipment. The maintenance is generally minimal as solar systems have a 20-30 years life span & inverters have a 5-year warrantee. Saw Mill Lodge has PV and lightening strikes have burned out their system twice, but they just need better surge protection and grounding.
    - Emission Avoidance: the Energy Resource Center at the Duluth Library shows reductions from their solar system (Sandy provided the link to Duluth’s website where their monitoring of their PV system on the Main Library’s roof is in place: <http://209.240.239.134/library>.) Per the presentation Jamie gave at the NSCS meeting, a 4.32 kW system would avoid 200 tons of CO2, 553 lbs of NOx, and 1200 lbs of SO2 over 30 years of operation.
5. Minnesota Power Community Wind Request for Proposal
- Notice sent out to all schools
  - Want good connections with education and visibility
  - There will be some assessment of wind potential as part of the ranking, but many other factors are important as well
  - US fish and wildlife service site guidelines will be included

**Updates from North Shore Community School and Proctor Public Schools**

*Proctor Public Schools Update - Derek Parendo and Jack Johnson*

- Right now they are working through to-do list
- Hope to involve the Outdoor Science class next fall to look at sites for wind – looking at 3-4 sites to research (seeking equipment)
- Gathering teams to work on issues & work on grant opportunities (lots of offerings). They have a good grant writer and will give a few to her. Have teams to break down the information they already have.
- Jack is working on what efficiency improvements they’ve done.
- Have done lighting upgrades.

- High school did lighting upgrades six years ago. Also integrated a management system with variable feed drives. This reduced consumption and resulted in a 25% saving in energy. Johnson Controls monitors have been very helpful.
  - They are talking with teachers about how to incorporate efficiency and renewables into classes like shop, marketing, construction, and outdoor education.
  - For shop or construction classes want think about how to include PV in home – build into construction of new home. Want to get kids to make that a natural fit: develop future.
  - Brainstorming a “Green Space Development” south of football field. City is on board; private developer and school district will share costs.
  - To involve students in all aspects is such a learning process; want to create wetlands to involve kids.
  - Proctor wants to take a lead role, to be an example.
  - Getting a tipup through commerce.
  - Could do inventory of land holdings.
  - Currently served by Proctor Utilities, not getting enthusiastic support.
  - Per Derek: if board sees it as educational they will buy, but it has to be reasonable. Board has been very supportive of energy issues.
  - Have been looking at Midway Township as possible site for their turbine. School owns land there, and Jack on their planning board.

#### *Update from North Shore Community School*

They are concentrating on getting the installation of the solar panels implemented along with developing the accompanying curriculum unit for sixth graders. They submitted a grant application to EPA Environmental Education in November and should hear about that in June. It would help cover their costs for a 2.67 kW solar system and for developing their curriculum unit. Long-term, they would like to expand their solar system and also include wind and other technologies.

#### **Next Steps for School Projects**

- Lissa passed out a CD with the modified presentation for schools along with a draft of the Region’s Strategic Energy Plan and a few other presentations. If you didn’t get a copy, but would like one, please let Lissa know.
- We briefly reviewed the draft “To Do Task List for Schools”. There were a few additions.
- We discussed Mike Mageau’s proposal for the University’s Initiative for Renewable Energy and the Environment (IREE) to engage UMD students to work with schools on evaluating what kind of renewable energy system would work best. The team thought this was a great idea. Lissa submitted the proposal in early February.
- Lissa mentioned a meeting to discuss education displays for renewable energy systems that will take place at Wolf Ridge on February 11<sup>th</sup>.

#### **What can we do to move this forward? What do we want to accomplish?**

- Longevity: Dean says it’s a way to discredit systems if things don’t work, if they don’t monitor. There is a 28 kW gas microturbine at Fond Du Lac that isn’t working. We should be thinking about who will do maintenance? Is there someone who can keep this going? Need to think about continuity.
- Due Diligence on projects – make sure we have realistic expectations. Really estimate challenges, don’t downplay them.
- Take advantage of lessons learned
- Could we rescue Northland College’s project? Need to do follow-up.
- If you hook things up to the web, you could then check on it remotely. Could be a way to babysit a system – monitoring equipment would help and is also good to have for data collection.
- Get general info out to newspapers, *teachable moments*.
- Bill Hilty brought “The End of Suburbia” a movie about the impending energy crisis. We need to think about implications of this. Can get it online. Petroleum and net gas production has peaked.
- Maybe we could make additional resources available – an Energy Library.
- We could do a movie series – pair CERTs and CCP to do showings. We could do a screening at the Energy Design Conference.
- Mark would be willing to entertain a group to look for funding from private funds, a way to help fund projects

- Duluth Energy Program gets half of the money back from its energy program. A natural way to fund these efforts is through their savings.

### **Steering Committee Volunteers**

The NE CERTs team is currently looking for a few new volunteers for its steering committee. Being part of the Steering Committee requires monthly conference calls to help plan meeting agendas and track projects and opportunities. It also requires helping lead discussions at meetings. Steering Committee members may also be called upon to help make decisions on behalf of the team.

- New volunteers included: Bill Hilty and Chris Reed. THANK YOU BOTH!
- If others are interested in being involved in the Steering Committee, they should contact Lissa. She will be setting up a conference call for the Steering Committee in early March.

### **Lunch and Presentation from Mike Link**

We then adjourned to the main Audubon Center Building for a delicious lunch and a presentation from Mike Link about what the Audubon Center is doing. They recently installed a ground source heat pump system for their two main buildings (although they've had a few glitches getting both hooked up). They are also interested in installing a solar system.

### **Biomass and Renewable Energy Presentation**

Steve Kluess, Laurentian RC&D and John Howard, Distributed Generation Solutions

Steve began by providing a brief overview about RC&Ds, agroforestry crops and agroforestry harvesting.

- RC&Ds are federally funded 501C3s and can therefore be fiscal agents. Staff activities are directed by an annual plan developed by citizens – a rare occurrence for federal employees.
- Laurentian RC&D paired with Fond du Lac to get away from casinos as an economic engine and get into business and marketplace instead.
- Looking for a hybrid poplar/short rotation woody crops as well as wood slash, sawdust and waste. Biomass doesn't require one to cut down trees. There is plenty of other stuff available.
- Part of the problem though is recovering these materials, so several groups got together to get the John Deere Bundler, the only one of it's kind in US, to come to MN for 3 meetings/demonstrations.
  - Bundler goes into the forest to harvest. It takes 40% of available biomass on the floor, cut and winds into a bail equivalent to 28 gallons of oil.
  - Typically dry the materials in bail to reduce its weight (better for shipping) and can easily store the material in bail form.
- Bails then ship to a plant; they can be transported 90 miles before you lose economic viability.

### *Indigenous Energy Partners LLC*

- Indigenous Energy Partners LLC hopes to address 4 issues: education (connecting with university), economics (attract businesses), jobs (help unemployment), and technology.
- Co-generation is key. The current equation for energy production and delivery (from centralized power plants) wastes energy. We could use same fuels and do it on-site with better efficiency (cause could produce both heat and electric). Next step is to get cogeneration powered by renewables.
- Distributed energy resource management tested 4 generators and figured out how to connect with the grid and a facility – how the integration would work.
- Distributed energy resource management is really a suite of controls that takes a systems perspective to resource management.
- BCHP – Building Cooling Heating Power – take engineering out of combining these technologies to engage a smaller business
- Has been deployed as a 5MW system with a 1,150-ton absorption chiller at Fort Bragg (1,000,000 people). Since initial installation it has expanded to a 50 MW energy, steam and cooling source.
- It's a District Energy type of solution.

### *Plasma Technology*

- Plasma technology has been around for 50 years, but in different venues
- Phoenix Solutions is the leader in plasma torch technology
- What is plasma? Electrically conductive ionized gas, exists at extreme temperatures (>10,000 K), it doesn't involve burning, but rather gasifying

- In Japan they have systems use municipal solid waste (MSW) – first they burn the MSW, then they put the ash in a plasma torch which reduces the volume 10:1 and allows the ash to be converted into other products like tile and road fill
- This allows a facility to take biomass (for a tipping fee), then produce electricity and create a product, instead of a waste
- Why aren't we doing this more in the US? We didn't sign on to Kyoto, so we don't get green credits
- Plasma vs. Traditional Gasification has lower capital costs, out performs, and produces gases that can then be used to power a turbine, along with extracting hydrogen (a fuel) and carbon monoxide that can be used in a refinery to make ethanol.
- It's both a controllable and flexible solution - 1 MW solution requires 1.5 tons/hr of materials and costs \$4-6 million. It can sit on a flat bed trailer (and is therefore mobile).
- Phoenix Solutions currently has a test facility in Hutchinson that is being used to test different types of fuels to see what will work.
- Currently they see a 75-mile radius as the break-even point for transporting fuel.
- It required about 200-300 kW to fuel a 1.2 MW system (500 kW to run the torch and 800 kW embodied in the syngas that comes out the other end).

**Meeting adjourned at 2:10**, but a few stayed to ask John Howard more questions. T'was a great meeting in a marvelous location.

**Education Display Meeting Agenda  
February 11, 2005  
Wolf Ridge Environmental Learning Center**

**Goals:**

- Better understand what display systems already exist
- Learn about/develop an inventory of programs that could utilize this display template
- Develop a schematic for what the display template should look like and include
- Develop a list of equipment necessary for such a display
- Come up with a list of possible funding sources

**Agenda:**

12:00 PM	Introductions (including a bit about your own program, why you are here, etc.)
12:30 PM	Brainstorming about existing systems/programs
1:00 PM	Brainstorming about how the system should look (general screen view, additional data screens, friendly units of comparison)
1:45 PM	Discussion: What equipment would be needed (and costs)
2:00 PM	Brainstorming about possible funding sources
2:30 PM	Decisions/Consensus Building
3:00 PM	Adjourn

**Other Nuts and Bolts to keep in mind:**

- Where to host the information
- How to distribute the template
- How to depict different technologies
- How to modify a template for specific sites
- How to link the various users/sites together

**Education Display Project Meeting Summary  
February 11, 2005  
Wolf Ridge Environmental Learning Center**

Present included: Jamie Juenemann, Silver Creek Institute; Mario Monesterio, IPS; Barbara Reed, Reed Energy; Christopher Reed, Reed Energy; Michael Le Beau, Conservation Technologies; Peter Harris, Wolf Ridge; Peter Berger, Brimson Laboratories; David Abazs, Round River Alternatives; Kerry Haglund, U of MN; John Carmody, U of MN; Okey Ukaga, NMSDP; Peter Smerud, Wolf Ridge; Lissa Pawlisch, U of MN RSDP/CERTs

We initially got together to:

1. Better understand what systems for education about energy efficiency, conservation and renewables already exist,
2. Develop inventory of programs that could utilize this display template,
3. Develop a schematic of the process and components involved in,
4. Discuss potential funding sources.

These topics led us to discuss everything from equipment available to collect data to manufacturer incompatibility to what sort of units we would use in a display. As part of this, we developed a general flow chart that seemed to describe the various aspects of a project that need to be thought out (see figure). Although the initial diagram included education as one of the blocks in the middle, we eventually seemed to agree that perhaps educational tools/electronic displays underlay all of these components (and could be made to work with any system that had an ability to record and transmit data – acknowledging that it would take a different level of \$\$ depending upon the system and its components).

After a very broad discussion we basically decided that what we really need to do is figure out what all the myriad stakeholders are thinking about in terms of projects and displays. Once we have this information, we can do some scenario-based planning to think about a few different “skins” that could be used to tell a story for a few different project types.

During the last 15 minutes or so of the meeting an interesting idea came up about having a centralized server for data collection. All of the data and sites could be monitored from the same place, and yet duplicated/branded to each organizations website. This would cut down on maintenance costs for installations around the state and would ensure that at least one person was monitoring all installations to make sure they were working, the website was working, database was working, etc.

It seems that at the end of the day, we arrived at a better understanding of both the need for and the process involved in developing display templates and agreed to meet again to further explore alternative templates based on potential needs (scenarios) identified.

## **Northeast CERTs Meeting Agenda**

**April 15<sup>th</sup>, 2005**

**10:00 am – 2:00 pm**

**Proctor Area Community Center, Proctor, MN**

- 10:00 Introductions
- 10:10 Announcements (Solar installer training sessions)
- 10:20 Discussion of the CERTs Conference and the Duluth Energy Design Conference
  - 10:40 Updates on School-Energy Projects and Initiatives
    - Proctor Public Schools
    - North Shore Community School
    - Barnum Public Schools
    - Chris Reed on the MN Power SOA
    - Mike Mageau, Janelle Stauff, & Nicole Hynum – UMDs work with schools
    - Educational Display meeting at Wolf Ridge
    - Discussion of the Barriers and Opportunities to/for school projects
  - 12:10 Lunch session: Transportation Discussion with Tim Gerlach, American Lung Association of Minnesota
    - Why is transportation an important issue
    - How does it relate to what we're doing
    - What do biofuels offer? How do we get the word out to use them and get more fueling stations in the NE?
- 1:00 Strategic Energy Plan – Future Vision
- 1:30 Regional Coordinator – Roles and Responsibilities, Funding
- 1:50 Social Time – Movie nights and traveling library
- 2:00 Adjourn

## **Summary NE CERTs Meeting**

**Proctor Area Community Center**

**April 15, 2005**

### **Introductions**

Present included: Jim Hall, Larry Nelson, Mark Thell, Lauri Isaacson, Derek Kynell, Derek Parendo, Jeff Schiltz, Jack Johnson, BJ Kohlstedt, Okey Ukaga, Bob Leibfried, Chris Reed, Tom Koehler, Bill Hilty, Nicole Hynum, Janelle Stauff, Anna Carlson, Steve Kluess, Diane Rauschenfels, Tom Lambrecht, Lissa Pawlisch

### *Announcements*

- MREA Energy Fair – June 17, 18, 19<sup>th</sup> in Custer WI ([http://www.the-mrea.org/energy\\_fair.php](http://www.the-mrea.org/energy_fair.php)) Farmers' Union is thinking about taking a bus.
- Windy River Renewable Energy Fair, July 27-30<sup>th</sup> @ Morrison County Fair Grounds in Little Falls
- Photovoltaic Electric Systems: A Primer for Code Officials, May 3<sup>rd</sup>, 8:30 am – 1:00 pm @ Hartley Nature Center
- Photovoltaic Electric Systems: Issues for Architects and Engineers, May 3<sup>rd</sup>, 12:30 pm – 4:30 pm @ Hartley Nature Center
- Advanced Photovoltaic Installer Training, May 4<sup>th</sup> and 5<sup>th</sup>, 8:30 am – 4:30 pm @ the Hartley Nature Center

### *CERTS Conference Feedback*

- Variety of people and positions – would be nice to get a few more people with a different vision of the future of energy
- Good First start
- Good networking opportunity
- Good way to spread the word about good initiatives and other regions.
- Well planned, like specificity that speakers offered
- Maybe more handouts

### *Energy Design Conference Education Tracks*

- The only problem with them was that everyone wasn't there to hear the good information.
- Both session received positive evaluations

### *End of Suburbia*

We had a showing of “End of Suburbia” during the Energy Design Conference. We watched the movie and then had a discussion. The key theme of the movie is that if we are to deal with this problem (peak oil), we need to do it now. There isn't a perfect substitute available, so we need to start cutting back now. For more information on the movie check out <http://www.postcarbon.org/eos/>.

Bill suggested “The Corporation” for our next DVD. It about how our economic structure is unsustainable.

### *Update on Proctor*

- Have submitted their grant for the MN Power Wind SOA.
- School Board has given an unofficial OK to help fund
- UMD (Nicole, Janelle & Anna) are helping with grants for other opportunities including curriculum education and building hardware.
  - Sitting down with science teacher to plan for other ideas. If they get a wind generator they have 40 acres over by the school that they'd like to use to develop a one-room classroom. It would be designed to have the least environmental impact, would be powered by the turbine, would have a hot house/green house along the south side and would be available for all sorts of classes to use. They would like to link it to Project Reconnect.
- ✓ Construction class would build the classroom and get experience with both green construction and installation of solar panels
- ✓ Marketing class would do a market analysis on the building with cost/benefit information and would develop ways to target both environmental and money-based consumers
- Are EXCITED about getting community ideas.
- Green space development – 80 acres in size. The school district, city, and private developer all own part of the land and are forming a public-private partnership to develop this area.

To stay up to date on what's happening with Proctor's wind project, please visit Derek Parendo's website at: <http://pages.mhlearningnetwork.com/virg/proctorpowerwindpower/> or go to [www.proctor.k12.mn.us](http://www.proctor.k12.mn.us), click on Staff, click on Derek Parendo, and click on the wind turbine.

### *Update on North Shore Community School*

- Mission of school is environmental integration and community involvement
- Have an EPA grant for \$10,000 (\$6,000 for solar, \$4,000 for education). Now they are on a timeline to install it this summer – need help.
- Applied to install a 2.67 kW system – they need help figuring out where to site it; it could go on the roof or on the ground. Chris Reed mentioned using a solar pathfinder to help with this process.
- One of their matching grants is from Johnson Controls. Zoo has come to give presentations on solar and will also come on Earth Day for a program.
- They are developing a 6<sup>th</sup> grade curriculum and new program for kids on solar. Bob Shaw has been helping them.
- 6<sup>th</sup> graders would go to Hartley Nature Center.
- More funding for solar – have some from Duluth Township and some from the School.

- School population is expanding. They want to make this new building a sustainable energy model. Would like to get kids involved in the planning. Perhaps could have a CERTS meeting in the classroom and get feedback from the kids.

*Nicole, Janelle and Anna update on UMD's Activities*

Have developed rough drafts of grants for Proctor and will be meeting with their grant writer to finalize it. They would also like to connect with high school students.

**Barnum Public Schools**

They are interested in putting up a 1 MW turbine. Steve Brandt, a science teacher at the high school has been championing their efforts. They are interested in pursuing a commercial turbine, but need to assess their wind resources.

Someone asked how much a 1 MW turbine would produce. A few quick calculations suggested that it would produce ~2.1 million kWh/year or upwards of 3 million kWh/year. Moorhead is at 14 mph at hub height

*Minnesota Power Wind SOA*

Minnesota Power received 4 applications for the school wind projects. Right now they are working on clarifying a few details on each of the proposals, but hope to announce the awards by the end of April.

*Wind Resource Monitoring*

Minnesota Department of Commerce, Minnesota Power, City of Duluth and others have been working together to install new monitoring stations in the Northeast part of the state. They currently have anemometers and wind vanes collecting data on the following sites for a period of 24 months:

- Brimson - 50 meter tip up, began Nov 2003
- Sandstone - 40 meter tip up, began fall 2004
- Pequayam/Lost Lake - 100 meter communication tower - just beginning to collect
- Barnum - 100 meter communication tower - just beginning to collect
- Coleraine - 90m - 130m? communication tower - just beginning to collect.

Two additional sites that are soon to come on line include:

- Erie Pier, St. Louis Bay - 40 m tip up
- Central High School - 1 KW turbine on 64' tower with collection equipment

The Department of Commerce is also investigating the possibility of doing a satellite-based wind resource-mapping program. This could provide accurate wind information for the whole state based on atmospheric monitoring techniques rather than extrapolating from individual monitoring points. They will likely know more about this later this summer.

Wind resource monitoring is critical as bankers want minimum of 12 months of information, and some comparison with long-term data (which could even be a 10m airport monitoring station) before they give out any loans.

*Display work*

We had a meeting on February 11<sup>th</sup> up at Wolf Ridge to talk about what might be needed for a “freeware” display system that could be used by anyone to convey what their energy efficiency system and/or renewable energy system was doing (in real time). It was a productive meeting; we’re now working on a brief survey to get a better sense for what all participants really need in the freeware.

Lissa also met with some people from Fat Spaniel ([www.fatspaniel.com](http://www.fatspaniel.com)) to discuss the sort of monitoring/display systems they currently put together. It seems like they might be good partners – and their systems seem affordable.

A possible linkage is the “Metasys system” that Johnson Controls uses. It already monitors the energy usage and handling systems. It also has a graphical function built in, but lots of places don’t have that as it’s expensive.



## **Presentation from Tim Gerlach, American Lung Association and Tim Morse, State Fleet Manager for Minnesota about E85 and Biodiesel**

### **E85**

E-85 is 85% alcohol and 15% diesel. It is designed for use in flexible fuel vehicles (FFVs). You can get more information about E85 from [www.cleanairchoice.org](http://www.cleanairchoice.org) - including information about current E85 pricing – which is currently about 45 cents less than a gallon of gasoline. This site also includes information for stations that would like to add an E85 pump, for fleets that want to convert to E85, etc. One can also access the National Ethanol Vehicle Coalition, an organization that helps stations across the country convert to ethanol, via their website at <http://e85fuel.com/>.

*Currently the NE has 4 stations offering E85:*

- Proctor has E85 at Holiday Station (Spirit Mtn Exit)
- Toby's in Hinckley has E85 – today it had E85 at 85 cents below gasoline.
- International Falls has E85 at the Holiday Station off of Hwy 53
- Duluth has one on London Road

Funds are available to help convert local stations. Dept of Energy provides information about converting on their website: <http://www.eere.energy.gov/afdc/e85toolkit/>.

To get more stations, we really need to get more education. Many vehicles are flexible fuel vehicles but their owners don't even know it. You can verify whether or not your car can run on E85 by simply checking under the fuel lid. A listing of FFVs is provided below, but includes Ford F150 pickup, Impala and Monte Carlo. One way everyone can help get more vehicles running on E85 is by talking to their local car dealership that offers FFVs. Convince the dealer to get sales people to talk about the benefits of FFVs – or at least mention that the cars they sell run on E85.

*Ethanol facts:*

- Energy balance of **Ethanol** (including full life fuel cycle analysis) is around 1.6:1
- Much talk currently about cellulosic conversion for ethanol. Future of ethanol isn't corn; eventually we'll need to make it from other stuff. Ethanol and biodiesel are transitional fuels – they won't be able to make up for all the gasoline and diesel we currently use, but it's a start.
- State Transportation tax: road tax based on energy content of fuels, 20 cents a gallon gasoline, E85 is at 14.5 cents a gallon.
- Miles per gallon: typically expect to lose 15-20% on a tank not optimized to burn E85. Saab is starting to change how they optimize 2L turbos so they are optimized for ethanol.

### **Biodiesel**

Right now a lot of talk is about the Minnesota Biodiesel Mandate. It requires that all diesel fuels contain a 2% biodiesel blend. Right now they are targeting educational efforts towards fuel stations and dealerships. Form more information on the mandate see: [www.revisor.leg.state.mn.us/stats/239/77.html](http://www.revisor.leg.state.mn.us/stats/239/77.html)

*Biodiesel Info:*

- Biodiesel benefits: it's a move away from petroleum – it is made from renewable, domestic, cleaner fuels (like soybeans, waste fat, peanuts, canola oil)
- Energy balance of **Biodiesel** ranges from 3.2:1 or 3.8:1
- Good opportunities for B20 in school buses (helps with emissions) – Bird Island school district buses all run B20
- New tax credits give a slight price advantage for biodiesel
- Typically up to B20 you don't have to worry about engine modification.
- Other examples: Brooklyn Park uses B20, Hennepin County and Minneapolis use B5.
- To buy biodiesel, you may want to contact a few suppliers. Some examples are Andy Swanson ([aswanson@netins.net](mailto:aswanson@netins.net), 507-236-4628) or Larry Sullivan of World Energy ([larrys@worldenergy.net](mailto:larrys@worldenergy.net), 651-631-0084)
- Cooperative buying of biodiesel (to get a better price): Hennepin County has a cooperative bid, and in theory other people could sign on to that deal. One of the problems is that while cities don't pay federal bus tax, school does, so can't buy together. Looking to MNDOT to create a long term contract through political subdivisions.

*A few other suggestions about transportation:* Walk, bike, bus or carpool. Conservation is critical. A “no-idling” policy citywide in Duluth – or any city – would save on emissions and fuel prices.

The following E85 vehicles are available from your local auto dealer (from MN Department of Commerce):

<p><i>Ford Motor Company</i></p> <ul style="list-style-type: none"> <li>▪ Selected 2002-2005 4.0L Explorers</li> <li>▪ Selected 2004-2005 4.0L Explorer Sport Tracs</li> <li>▪ Selected 1999-2003 3.0L Ranger trucks</li> <li>▪ Selected 2000-2005 3.0L Taurus sedans and wagons</li> <li>▪ Selected 1995-1999 3.0L Taurus sedans</li> </ul>	<p><i>Daimler Chrysler</i></p> <ul style="list-style-type: none"> <li>▪ Selected 2004-2005 4.7L Dodge Ram 1500 trucks</li> <li>▪ Selected 2003-2005 2.7L Chrysler Sebring Sedans</li> <li>▪ Selected 2003-2005 2.7L Dodge Stratus Sedans</li> <li>▪ Selected 2003-2005 3.3L Caravan Cargo vans</li> <li>▪ All 1998-2003 3.3L Caravan minivans</li> <li>▪ All 1998-2003 3.3L Voyager minivans</li> <li>▪ All 1998-2003 3.3L Town &amp; Country minivans</li> </ul>
<p><i>General Motors</i></p> <ul style="list-style-type: none"> <li>▪ Selected 2005 5.3L Chevrolet Avalanche SUVs</li> <li>▪ Selected 2002-2005 5.3L Suburbans, Tahoes, Yukons, Yukon XLs</li> <li>▪ Selected 2002-2005 5.3L Sierra and Silverado trucks (code 5E5 for ordering)</li> <li>▪ All 2000-2002 2.2L Chevy S-10 trucks (after 12/99)</li> <li>▪ All 2000-2002 2.2L Sonoma trucks (after 12/99)</li> </ul>	<p><i>Isuzu</i></p> <ul style="list-style-type: none"> <li>▪ <b>All 2000-2002 Isuzu 2.2L Hombre trucks (after 12/99)</b></li> </ul> <p><i>Mercedes</i></p> <ul style="list-style-type: none"> <li>▪ All 2wd 2003-05 3.2L Mercedes C320 Series</li> <li>▪ All 2wd 2005 2.6L Mercedes C240 Series</li> </ul> <p><i>Mazda</i></p> <ul style="list-style-type: none"> <li>▪ Selected 1999-2002 Mazda 3.0L B3000 trucks</li> </ul> <p><i>Nissan</i></p> <ul style="list-style-type: none"> <li>▪ Selected 2005 5.6L Titan trucks</li> </ul> <p><i>Mercury</i></p> <ul style="list-style-type: none"> <li>▪ Selected 2002-2005 4.0L Mountaineer</li> <li>▪ Selected 2001, 2003-2005 3.0L Sables</li> </ul>

*Brainstorming about Regional CERTs Coordinator & Possible Roles and Responsibilities (and possible funding sources)*

- Central location for info gathered
- Have a local person as a “database”, know local regulations and be able to troubleshoot
- Need local person for hand-holding and facilitation
- To help championing projects and getting projects running
- Work with UMD, econ director, county folks, IRRRB, Northland Foundation, hire a regional coordinator
- Help find money for local projects – could use RC&Ds as non-profit, some project might be able to go through The Minnesota Project
- Could have a graduate student team (like Nicole, Janelle and Anna)
- RC&Ds can also take on projects if their council’s adopt a motion. Do some overlap to create teams, spread workload but have leader.
- Someone who’s in the energy field and can help with technical questions
- McKnight and Blandin as possible funders
- UMD engineering program, city approached UMD with a design project – could be a less expensive way to do projects. Should look at other colleges as well. It’s a good way for students to get work experience.
- Electrical Coops have money – could aggregate funding from several coops to get a regional person. Have donations possibilities, could target individual projects, or could apply to CIP \$.
- GRE might be an option to help with statewide funding

*Parting Thoughts*

Lissa will be sending out Section 8 and 9 from the Strategic Energy Plan, based on your comments at the meeting, for review. PLEASE read these and comment. You will also likely be getting individual sections to review. Lissa will limit these to a few pages so that no one feels particularly burdened. We will need comments back by the middle of May.

*Other things to think about include:*

Traveling Library: please send Lissa ([paw10048@umn.edu](mailto:paw10048@umn.edu)), Okey ([ukaga001@tc.umn.edu](mailto:ukaga001@tc.umn.edu)) or Joel ([haska004@umn.edu](mailto:haska004@umn.edu)) your suggestions for books and movies that should be available to team members.

Should do an inventory of ground source heat pump and energy efficiency projects in the region. If you have ideas, email Lissa or Joel.

Someone also suggested creating a list of 10 things you can do in your community to conserve/be more efficient/use more renewables. There are some lists like that out there. Lissa will work to pull together some materials for the next meeting.

**OUR NEXT MEETING IS: FRIDAY, JUNE 24<sup>th</sup> from 10-2pm.**

## **APPENDIX D: 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 Northeast 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. 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 and sent letters by standard mail. Most utilities were able to direct the student researcher to the right person to gather the information needed. Many of the utilities contacted were happy to give out the information that the researcher requested, although there were a few exceptions for those utilities that were more cautious due to the heightened security climate.

## APPENDIX E: NORTHEAST MINNESOTA ELECTRIC CONSUMPTION IN 2000 (MEGAWATT-HOURS)<sup>1</sup>

### NE Minnesota Electric Consumption for Investor-Owned Utilities

	Farm	Non-Farm Residential	Commercial	Industrial	Total
<b>Investor-Owned Utilities</b>					
Minnesota Power	36034	864814	1154012	6851991	8906851
<b>Total: Investor-Owned Utilities - NE<sup>2</sup></b>	<b>27776</b>	<b>666629</b>	<b>889553</b>	<b>5281753.336</b>	<b>6865711</b>

### NE Minnesota Electric Consumption for Cooperative Utilities

	Farm	Non-Farm Residential	Commercial	Industrial	Total
<b>Great River Energy</b>					
Arrowhead Electric Coop	0	25236	27279	0	52515
Coop Lt&Pwr Assoc of Lake Co	0	37965	*	*	75746
Crow Wing Coop Pwr&Light	51745	233697	83231	0	368673
East Central Energy	7613	399026	191502	87280	685421
Itasca-Mantrap Coop Elec	16165	65239	*	*	172237
Lake Country Power	0	353705	95206	52480	501391
Mille Lacs Elec Coop	64659	24724	42300	17265	148948
North Itasca Elec Coop	0	26871	8380	665	35916
<b>Total: Great River Energy - NE</b>	<b>140182</b>	<b>1166463</b>	<b>447898</b>	<b>157690</b>	<b>2040847</b>

### NE Minnesota Electric Consumption for Municipal Utilities

	Farm	Non-Farm Residential	Commercial	Industrial	Total
Aitkin Pub Utilities	0	12048	6566	12579	31193
Biwabik Water Light&Power	0	4165	3550	0	7715
Buhl Pub Utilities	0	2870	2034	0	4904
Ely Water & Light Dept	0	10357	15410	0	25767
Gilbert Water&Light	0	5363	3898	0	9261
Grand Rapids Pub Utilities	0	40150	*	*	143687
Hibbing Public Utilities	0	47083	68099	6948	122130
Keewatin Public Utilities	0	5362	530	0	5892
Moose Lake Water&Light	0	4691	11527	9935	26153
Mountain Iron Water&Light	0	5986	6287	1563	13836
Nashwauk Pub Utilities	0	3960	3359	0	7319
Proctor Pub Utilities	0	10340	*	*	22761
Two Harbors Water&Light	0	9428	16825	297	26550
Virginia Pub Utilities	0	32037	68240	0	100277
Grand Marais Utilities	0	6776	12620	0	19396
<b>Total: Municipal Utilities - NE</b>	<b>0</b>	<b>200616</b>	<b>218945</b>	<b>31322</b>	<b>566841</b>
<b>TOTAL: NORTHEAST MINNESOTA</b>	<b>167,958</b>	<b>2,033,708</b>	<b>1,556,396</b>	<b>5,470,765</b>	<b>9,473,399</b>

<sup>1</sup> Source: Table 4, Minnesota Department of Commerce, *The 2000 Minnesota Utility Data Book*, June 2002

<sup>2</sup> Investor Owned Utility Total reflects Minnesota Power total consumption (statewide) multiplied by 77% as an estimate of the Northeast's fraction of Minnesota Power's overall consumption figures.

\* - Indicates data withheld to avoid disclosure of individual company data. Data not included in regional totals.

## 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](mailto:mike.taylor@state.mn.us).

Source: [www.commerce.state.mn.us](http://www.commerce.state.mn.us) > Energy Info Center > E85 > E85 Vehicle Directory

**APPENDIX G: RENEWABLE ENERGY IN SCHOOLS PRESENTATION  
TEMPLATE**

## **APPENDIX H: RENEWABLE ENERGY TO DO LIST FOR SCHOOLS**

- 1) Get an energy baseline for your school
  - kWh per month, per year, per student
  - BTUs of heat, or gallons of heating fuel per month, per year, per student
  - Gallons of transportation fuels
- 2) Assess what has already been done in terms of energy efficiency
- 3) Describe how renewable energy fits in with the schools mission
- 4) Describe classes that would benefit from an on-site installation/project
- 5) Describe how this installation would help meet curriculum standards
- 6) Engage players at your school
  - Administrators
  - School board
  - Superintendents and principals
  - Teachers
  - Students
- 7) Establish/find a school champion
- 8) Engage people at township/city and county
  - Township board/city council
  - County board
  - Administrators/officials
  - Investigate local and county zoning restrictions
- 9) Engage local utility – discuss your ideas, options, and interconnection (do you have 3-phase or 1-phase?)
- 10) Evaluate your site (a quick overview to start) –
  - General: topography, land use around the school (other structures), open access areas, access roads, location of power lines
  - Solar: sunny spots, southern orientation
  - Wind: look at topography, flag poles, wind maps, data from local airport or NOAA Weather Office
- 11) Discuss/Investigate financing options
  - Bankers
  - Sponsors/fundraisers
  - Bonding
  - Grants
  - Low-interest loans



- 12) Survey our school district's land holding in the area (the district may have another property with a better wind profile)
- 13) Investigate manufacturers
  - Where to buy your equipment
  - How much does it cost
  - What kind of warranties are available
  - What kind of operation and maintenance plans are available