

**Expanded Horizons:
Alternative Routes & Environmental
Considerations
for the
Proposed Chisago Electric Transmission
Line Project**

A Report to the
Minnesota Environmental Quality Board
by the
Route Advisory Task Force

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I. INTRODUCTION

A. CHARGE

The Route Advisory Task Force is comprised of nineteen EQB appointed members (Appendix A) and one non-voting member chosen by the Task Force itself. In response to its charge, the Task Force performed the bulk of its work as a committee of the whole. However, two subcommittees were appointed: one subcommittee met three times to develop criteria and a process for evaluating river crossings and a suggested scope for alternative routes and another subcommittee met once to structure an outline for this report.

This report responds to the following parts of the charge to the Task Force:

Identify and recommend to the Board any additional routes or route segments which should be included for consideration by the Board in its public hearings.

Identify and recommend to the Board significant environmental issues associated with the project design and route alternatives to be included in the scope of the Environmental Impact Assessment.

B. DELIBERATIVE PROCESS AND PUBLIC PARTICIPATION

On December 5, 1996 the MEQB accepted an application by NSP/DPC for a route designation and a construction permit for a transmission line project. The Task Force was not appointed and convened until February 11, 1997. All meetings were public and notices of same were mailed to an interested parties list which was expanded to include all Minnesota landowners within the proposed one half mile wide alternative routes included in the application. A letter from the task force was sent to all the landowners directly affected inviting them to attend the task force meetings. (Appendix J.) Task Force procedures were adopted which defined requirements for making decisions.

II: FINDINGS AND ISSUES

A. FINDINGS OF THE TASK FORCE

1. The Task Force finds that the applicants failed to establish clearly the public benefits that would result from the proposed transmission project. Moreover, they did not adequately apply available methods such as Target Area Planning (TAP) for exploring alternative ways to meet alleged power needs. The Task Force therefore suggests that all proposed powerline routes and all recommended alternative routes be considered only after need has been clearly demonstrated by completion of a TAP study. Wisconsin's State Senator Alice Clausing (10th District) and State Representative Robert Dueholm (28th Assembly District) have asked the Wisconsin Public Service Commission to complete a TAP study for the portion of their state served by any proposed transmission project. Similarly, Minnesota Senator Janet Johnson (Senate District 18) and Representative Loren Jennings (House District 18B) introduced legislation to require a certificate of need before any permit would be allowed in Minnesota. Thus, in both Minnesota and Wisconsin there is legislative concern that institutional momentum could lead to a major decision that is not justifiable on economic, social or environmental grounds. The Task Force concurs with this concern.

2. The Task Force finds that cost data presented for various alternative routes are not comparable and are incomplete. Direct construction cost, while calculated for some viable

alternatives, does not include certain costs which the Task Force and other regulatory agencies feel will be inevitable costs such as undergrounding crossings of the St. Croix River. Moreover, discussion of cost has been limited to utility costs while costs accruing to communities and households on the proposed and alternative routes have been ignored.

3. The Task Force finds that the St. Croix River and Sunrise River corridors are important ecological characteristics of Chisago County. They contain agricultural and recreational areas, provide environmental services, and contribute to the life-styles and economies of the area. These corridors are also fragile, already whittled to the brink of critical mass, and in danger of being reduced to dysfunctional levels of landscape coverage. Additionally, the Wild and Scenic Rivers Act strongly articulates avoidance of the St. Croix River and requires extreme caution when proposing any alteration of the river and its valley.

4. The Task Force finds, after review of recorded land deeds adjacent to the St. Croix River in both Minnesota and Wisconsin, that some utility-proposed river crossings might encounter fatal legal and jurisdictional difficulties. It was discovered that easements related to one proposed crossing may specifically disallow transmission line crossings and that another might be limited to a specified 300 foot corridor.

5. The Task Force finds that the proposed project does not adequately consider routes which deviate from a narrow range of alternative pathways and river crossings.

6. The Task Force further finds that the five findings above argue in favor of expanding the scope of alternative routes, which is recommended by the Task Force.

B. GUIDING PRINCIPLES FOR ASSESSING ALTERNATIVES

The Task Force began its deliberations by recognizing that it was being asked to report on what is essentially a Wisconsin project which just happens to begin in Minnesota and that the scope of its review of alternative routes had been identified in planning documents included in the Wisconsin Public Service Commission's Advance Plan 7 record. That record lists nine (9) alternative routes. Although the record of these nine viable alternatives was broader in geographic scope than the project proposed in the NSP/DPC application, it was clear that the additional alternative plans were each documented to solve the electrical need in northwestern Wisconsin and should be considered. The north-south geographic range of these alternatives were the Arrowhead options near Duluth on the north and the Spring Creek to Alma option on the south.

Since the St. Croix River was considered an important routing issue, the Task Force determined that it was reasonable to begin our alternative recommendation process by creating an inventory of existing crossings with an analysis of potential for combined crossings. Initially, all known linear structures across the St. Croix River (27 total) were reviewed, including electric lines, petroleum pipelines, road bridges, railroads, and dams (Appendix H). After brief discussion, all non-functioning structures, such as the Nevers Dam and several abandoned railroad bridges, were eliminated because their status was expected to remain inactive and they would likely be removed or allowed to deteriorate. The active railroad bridge south of Osceola and the Highway 36/64 bridge at Stillwater were concluded to be both structurally incompatible for attachment of a pipe system and having difficult approaches for an underground application. It was further determined that the remaining railroad bridges would also be removed from consideration for combined crossings. The remaining options then comprised the universe of possible existing crossings. The Task Force also reviewed in detail five bridge crossings for their transmission line carrying capacity (Grantsburg, Taylors Falls, Osceola, proposed Stillwater and I-94 at Hudson). A synopsis of advantages and disadvantages for each bridge is included (Appendix E).

The Grantsburg bridge was included because it was recently rebuilt with the engineered capacity to carry a high voltage transmission line within the bridge structure. For purposes of discussion the proposed Stillwater bridge was included, not because the Task Force endorses any new crossings of any type, but because it was recognized that if a decision to build the bridge was unavoidable, that it would then be considered a pre-existing crossing appropriate for sharing a transmission line. Since many members of the task force would like to see the total number of corridor crossings reduced below the present level, this proposed bridge would also be envisioned as an alternative crossing to that which exists at the NSP Allen S. King power plant at Bayport, MN.

There are, additionally, some principles that the Task Force supports. These principles represent what we consider to be reasonable applications of what has come to be called the “**precautionary principle**.” That is, they recognize the connection between human communities and their natural surroundings and they place the **burden of proof** for the need to alter that connection **on those who would disturb natural and cultural systems**.

The precautionary principle plus the recognition of the importance of the St. Croix-Sunrise watersheds suggests that the burden of proof for justifying a crossing of these resources must lie with those advocating the crossing. Indeed, the standard operating guideline should be “**no new crossings**.” This should be the Standard Operating Procedure for EQB. When a crossing is absolutely necessary, it should be located so that it causes as little physical and aesthetic intrusion as possible. Additionally, following this principle, all new cross-country lines/routes should follow existing routes as much as possible to prevent fragmentation of agricultural lands and community resources.

Aesthetic concerns are often dismissed as peripheral, subjective and unimportant. But in an area where tourism-based business is the backbone of the community, aesthetics mean livelihood. And when people come from neighborhoods where power distribution lines are underground and unseen, a scenic view is not defined by pylons, wires and clear-cut rights-of-way. Such intrusions are simply visual pollution -- litter that does not blow away. And when power transmission lines are prominent in a photograph, the value of the backdrop as an advertising message is destroyed.

Since broad ecological and aesthetic concerns should override narrow financial considerations, the Task Force adheres to another guiding principle in its recommendations. That principle would be to “**make any intrusions as unobtrusive as possible**” -- increased construction costs pale against lost livelihood and such costs merely represent one part of the true cost of electricity use. The social cost of losing places where one may find peace of mind is far greater than the few cents a month more on an electric bill.¹

C. REVIEW OF WISCONSIN SYSTEM PLAN

The following review is directed toward alternatives which are not in the application, and any comparisons are with existing crossing options, not with new crossings. Of the remaining nine options evaluated in Wisconsin's Advance Plan 7 Technical Support Document D23w, several were combined based on information provided to the Task Force by NSP and DPC.

Plans 3a (Hwy. 70 - Apple River 161 kV), 3b (Hwy. 70 - Washco 161 kV), 4a (Sandstone - Washco 161 kV), 4b (Sandstone - Stone Lake 161 kV) and 4c (Sandstone - Washco 230 kV) were combined as Rock Creek - Washco (or Apple River) 230 or 161 kV, based on utility choices and value engineering decisions.

¹ An estimate was presented to the Task Force of eighteen cents per month per typical household per \$20,000,000 of additional investment. (Appendix G)

Plans 6a and 6b both originate at Arrowhead substation near Duluth and after presentations by NSP and Minnesota Power, we include an Arrowhead 230 kV option and an Arrowhead hybrid 230 kV alternative that combines elements of the former while utilizing an existing transmission line corridor for 100% of its distance.

Plan 1 which remains in strong contention is the King - Pine Lake, Red Rock - Crystal Cave 115 kV Conversion to 161 kV. Plans 5a - 5e are already combined as the proposed Chisago Project in the NSP/DPC application

Plan 2 (Spring Creek - Alma 161 kV - Pine Lake - Apple River double circuit 161 kV) was reviewed and rejected. It is documented to meet Wisconsin electrical needs and also meets the Task Force established criteria for consideration, however, further review indicated that the environmental impact was unacceptable and did not offer any unique advantage.

The four remaining plans were then reviewed and additional rationale to justify inclusion were developed for each.

III: RECOMMENDATIONS

The Citizens Advisory Task Force makes six recommendations to the Minnesota Environmental Quality Board. They are:

FIRST, the Task Force recommends that the following four routes be accepted by the EQB for consideration in the EIA and the permit hearings. Each of the four alternatives have in common the proposed transmission line from Hayward, WI, to Ashland, WI, and the upgrade of the existing transmission lines supporting the distribution systems in Chisago County and Polk County, WI.

1. King Plant Substation at Bayport, MN, to the Pine Lake Substation near Baldwin, WI, and the Red Rock Substation in Newport, MN, to the Crystal Cave Substation near Martel, WI, and from Pine Lake Substation to the Apple River Substation near Amery, WI (any proposed Stillwater bridge would be an alternative route segment for the King crossing);

2. Rock Creek Substation in MN to Grantsburg, WI, then either to the Apple River Substation near Amery, WI, or to the Washco Substation near Shell Lake, WI;

3. Arrowhead Substation, near Duluth, MN, to the Stone Lake Substation near Hayward, WI, to the Arpin Substation near Arpin, WI;

4. Arrowhead Substation, near Duluth, MN, to the Stone Lake Substation near Hayward, WI, to the Washco Substation, near Shell Lake, WI, to the Barron Substation near Barron, WI, then to Eau Claire Substation near EAU Claire, WI.

Details of the alternatives are considered later in the body of the report. Physical designs, full-cost proposals and Environmental Impact Analyses are needed for all alternative routes.

SECOND, the Task Force recommends fifty-five (55) factors to be included in the Environmental Impact Analysis for all potential routes. They are contained later in the body of the report.

THIRD, the Task Force recommends that utilities **not** be permitted to build any new crossings of the St. Croix and Sunrise River corridor for purposes of electric transmission.

FOURTH, the Task Force recommends that comparable cost data be developed for all alternatives, including the original proposal, and that those data go beyond narrow financial projections to include the cost of environmental degradation and its effect on the natural, social, economic and aesthetic dimensions of the surrounding area.

FIFTH, the Task Force recommends that the utilities be required to conduct Target Area Planning (TAP) analyses using the most up-to-date TAP methods in each of the four geographic areas of need described in the application.

SIXTH, the Task Force recommends that when future route advisory task forces are established to consider routing alternatives that those task forces be given adequate time and an adequate expense budget to retain consultants, experts and advisors to assist in the inquiry.

A: RATIONALE AND ALTERNATIVE ROUTES TO BE CONSIDERED

The Route Advisory Task Force recommends the following four Minnesota routings and crossings of the Wisconsin/Minnesota border to be accepted by the EQB for consideration in the EIA and the permit hearings. Each of the alternatives suggests possible routings in Wisconsin.

Common to all the routes are the proposed 161 kV transmission line from the Stone Lake Substation near Hayward, WI to the Bayfront Substation in Ashland, WI, and the upgrade of the 69 kV transmission lines supporting the distribution system in Chisago County and Polk County, WI. The upgrade could be either increasing the size of the conductors or increasing the voltage to a maximum of 115 kV. NSP confirmed that the Chisago County upgrades could entirely follow the existing transmission line corridors as consistent with the intent of all Route Advisory Task Force recommendations.

The alternatives and rationale are listed by location of state border crossing starting with the southernmost crossing.

1. **King crossing.** An upgrade to 161 kV of the existing 115 kV transmission line from the King Plant Substation in Bayport, MN, crossing the St. Croix River either at the King Plant or associated with the proposed Stillwater Bridge, to the Pine Lake Substation near Baldwin, WI; a new 161 kV line from the Pine Lake Substation to the Apple River Substation, north of Amery, WI; and an upgrade of the 115 kV line from the Red Rock Substation in Newport, MN to the Crystal Cave Substation near Martell, WI.

1. Existing transmission lines cross the St. Croix at both locations
2. Lines have the potential to use existing rights of way
3. The King Plant Substation is a strong power source
4. Crossing is located in a developed industrial area
5. Potential to minimize adverse environmental impacts
6. Potential to be included with the proposed St. Croix bridge at Stillwater.
7. This is shown as a viable alternative in Advance Plan 7, Technical Support Document D23w.

2. **Rock Creek crossing.** A new 161 kV or 230 kV transmission line from the Rock Creek Substation, MN, crossing the St. Croix River near the Highway 70 bridge to Grantsburg WI. In Wisconsin, the line could connect to either the Apple River Substation, near Amery, WI, or the Washco Substation, near Shell Lake, WI.

1. Existing bridge across the St. Croix River was built to carry 161 kV conductors.
2. An approved 69 kV line is routed in this corridor.
3. This is shown as a viable alternative in Advance Plan 7, Technical Support Document D23w.
4. Line has the potential to share right of way with TH 70
5. Line has the potential to connect 161 kV with the existing 161 kV system either at Apple River or Washco.
6. Line has the potential to share right of way for the majority of its length to Apple River.

3. **Arrowhead to Arpin.** A new 230 kV transmission line from the Arrowhead Substation near Duluth, MN, crossing the St. Louis River to the Stinson Substation near Superior, WI, to the Stone Lake Substation near Hayward, WI to the Arpin Substation near Arpin, WI.

1. Provides a large power transfer capability from MAPP to MAINS-WUMS interface (1100 MW using advance plan 6 reliability criteria).
2. Dual source at Arrowhead substation including a 250 kV DC line originating in North Dakota and a 500 kV line originating in Manitoba.
3. This project is shown as a viable alternative in Advance Plan 7, Technical Support Document D23w.
4. Potential to share right-of-way 100% of distance.
5. High potential to minimize environmental risks.
6. Reduces total system transmission losses by 24.1 MW (at 100 MW transfer) to 91 MW (at 1300 MW transfer).
7. Dollar value of projected loss savings is \$24.1 -- \$364.1 million (at \$1 -- 4 per watt value assumption) and environmental benefits associated with loss reduction are CO₂, SO₂ and NO_X reductions assuming fossil fuel replacement power.
8. Provides an additional Minnesota-Wisconsin interconnection which will reduce loading and dependence on the King-Eau Claire 345 kV line.
9. Reduces Twin Cities Export (TCEX) flows at high transfer levels and lowers need for MAPP transmission loading relief procedures.
10. West to east transfer capability little effected by MAPP bulk transfer sales to the south (e.g., Iowa, Nebraska). Without Arrowhead, transfer capability to area of need in Wisconsin is decreased by 2 MW for every 5 MW scheduled by MAPP to the south.

4. **Arrowhead to Eau Claire.** A new 230 kV transmission line from the Arrowhead Substation near Duluth, MN crossing the St. Louis River to the Stinson Substation near Superior, WI, to the Stone Lake Substation near Hayward, WI to the Washco Substation near Shell Lake, WI to the Barron Substation near Barron WI, to the Eau Claire Substation near Eau Claire, WI.

1. The Arrowhead-Eau Claire line would be serviced by two strong power sources, one on either end of the line. (Arrowhead substation on the north end and the King-Eau Claire 345 kV line on the south end.)
2. It could reduce dependency on the Twin Cities export circuits thus reducing the flow of power over these circuits for the same transfer level. Transfer levels across the interface could be maintained even if the King-Eau Claire 115 kV line trips.
3. Dual source at Arrowhead substation including a 250 kV DC line originating in North Dakota and a 500 kV line originating in Manitoba.
4. Uses existing transmission line rights of way the entire length. Thus, no additional forests or wetland would be fragmented, and no additional crossings by powerlines would go over a National Scenic Riverway.
5. By double circuiting the system north of the Stone Lake substation, hundreds of acres of right of way can actually be reverted back to its adjacent non right of way condition. (Pg. 24., section B, AP-7D23x).
6. Using the conceptual powerline design described in AP7-D23x can create a low profile design that reduces present flight obstructions to wildlife, minimizes impacts on view sheds, results in narrower right of way requirements, and creates lower EMF measurements compared to other designs. (pg. 24, section B, AP7-D23w).

B: CONSIDERATIONS FOR THE EIS/EIA

The task force is charged with identifying key factors to be included in the environmental impact statement/assessment that must be undertaken for each potential transmission route. Fifty-five of these factors are noted below, grouped into the eleven categories contained in the MN Rule 4400.1310. These factors are not all inclusive but are considered of primary importance.

A. effects on human settlement, including but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;

Noise disturbance

Evaluate the effects of audible sound (buzzing, humming etc) emanating from the HVTL on plants, animals and people 300 meters on either side of the line and relate it to pre-existing background sounds (or lack thereof).

Reception for radios and tv's

Measure the level of interference and/or disruption in reception up to 1 mile on either side of the HVTL. This should cover the entire radio frequency spectrum to determine effects on devices using a broad range of frequencies (e.g., cordless telephones, cellular telephones, remote control garage door openers, AM and FM radios, televisions, baby room monitors, wireless intercom systems). Effects on citizen's band short-wave radio operation and local public service monitoring (scanners) should also be assessed. The cost of interference and disruption of routine and emergency communications and operations should be assessed.

Psychological impacts

Many people living in village, rural, or agricultural settings have chosen to live there to obtain aesthetic and lifestyle benefits. An HVTL could increase stress and accompanying symptoms of higher blood pressure, irritability, sleeplessness, inability to concentrate, etc. The dollar cost of treatment of such symptoms should be determined.

Aviation concerns - Barnes airfield

Pride of Place

B. effects on public health and safety;

EMF/Stray voltage

EMF avoidance standards should be established.

The probability of stray voltage and the cost of potential damages should be assessed.

Transmission line and gas pipeline compatibility should be documented.

C. effects on land-based economies, including but not limited to, agriculture, forestry, tourism, and mining;

Dollar values and levels of magnitude need to be determined for each of the following:

Visual impacts of clear cutting

Agricultural land disturbance

Visual impact on St. Croix Valley and Sunrise Watershed

Impacts on local economies - e.g. tourism, artists, leaf watching
Fishery impact

D. *archaeological and historic resources;*

Archeological and historical - known and unknown - sites need to be determined and avoided.

E. *effects on the natural environment;*

All of the following should be measured and dollar values should be attached to the impacts:

Fragmented forests, agriculture fields, waterways, biological niches
Proximity of migration routes (avian and ground)
Protect remaining natural and managed areas that are left - 6% natural areas in
Chisago County
Impact of spreading exotic species
Impact on green corridor(Washington and Chisago County)
Increased predation
Other effects due to increased edges
Impact on Bald Eagle nestings sites (Little Lake, Sunrise Lake, Vibo Lake, St Croix
River and Loftman) and decline of endemic, threatened and endangered species and biotic
communities
Impact on large birds, small birds through collision
Proximity of local flyways (non-migration)
Ozone production increased in EMF
Oxygen production decreased by decreasing canopy
Change in Earth's albedo - reflection of sun's rays due to clear cutting
Impact on Lawrence Creek
Impact on vegetative production
Impacts of undergrounding
Impact on Bryant School Lab

F. *rare and unique natural resources;*

The following need to be cataloged for each alternative route:

Endemic flora and fauna (e.g. mussels)
Threatened flora and fauna (e.g. bald eagle)
Endangered flora and fauna (e.g. mussels)
Locally-rare flora and fauna (e.g., tamarack, white pine)

And then the cost of avoidance measures must be identified, such as
Prohibiting any new crossings of St. Croix and Sunrise Watershed areas by utilities
and Avoidance of Federally protected areas.

G. *application of design options which maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission capacity;*

Examples include power pole design/color/spacing/underground placement, Cost of undergrounding river - underground vs above ground costs

H. *use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries; such as*

- Expansion of gas pipeline corridor
- Impact on hwy corridor and future upgrading
- Common river crossings, shared infrastructure
- Common corridors (electric, etc.)

I. *electrical system reliability;*

- Implication of centralized power (local production impact)
- Power marketing

J. *costs of constructing, operating, and maintaining the HVTL which are dependent on design and route;*

These include :

- above ground versus underground installation
- cost of potential litigation as project cost, e.g. Inadequate disclosure
- civil disobedience costs / disruption of business, cost of police action, etc.
- assembly by helicopter in fragile areas
- inspection and maintenance cost in fragile areas
- cost of environmental mitigation, for example, tree cutting and replanting

K. *adverse human and natural environmental effects which cannot be avoided.*

- Altered real estate values
- Loss of aesthetic value to residents

The task force recommends that all of the impacts noted above be included in the environmental assessments for all routes accepted by the EQB for further consideration.

C: NO NEW CROSSINGS

The eastern boundary of Chisago County is the scenic St. Croix river, and all of the county is in the St. Croix watershed. The county is transected by the Carlos Avery Wildlife Management Area and the Sunrise river and its lakes, wetlands and tributaries, all of which flow northward into the St. Croix. Thus the Sunrise - St. Croix riverine system is a defining characteristic of Chisago County.

The St. Croix shoreline is mostly wooded with sparse development. Many varieties of native birds, mammals, amphibians and reptiles, fish and shellfish live in the valley and its environs. Some are mega-fauna such as the timber wolf and black bear. Many non-native species pass through the valley on their annual migrations because the St. Croix is part of the Mississippi flyway -- a major international route for migratory birds and mammals. The valley also includes local historic areas, including Taylors Falls, MN, St. Croix Falls, WI, Franconia, MN, Osceola, WI, Marine on St. Croix, MN, Hudson, WI, Stillwater, MN, Prescott, WI, and Afton, MN.

The St. Croix has National Scenic Riverway status. The upper St. Croix National Scenic Riverway from the power dam in Taylors Falls, MN / St. Croix Falls, WI, north to the dam near Gordon, WI, and the St. Croix River's major tributary, the Namekagon River, from its confluence at Riverside, WI, to the Namekagon dam at Lake Namekagon, was included as one of the eight original rivers in the National Wild and Scenic Rivers act of 1968. The Lower St. Croix National Scenic Riverway, from the Taylors Falls dam to the Mississippi river was added to the system as a scenic and recreational river in 1972. The donation of land by NSP and the National Park Service's purchase of fee title and scenic easements has helped to protect the river from encroachment and despoliation. The establishment of state parks on both the Minnesota and Wisconsin shores have further protected the St. Croix. Wisconsin state parks on the St. Croix include Interstate Park, Willow River State Park and Kinnickinnic State Park. Minnesota parkland includes Interstate Park, William O'Brien State Park, Afton State Park, and Wild River State Park (which contains the mouth of the Sunrise river as it empties into the St. Croix). The investment of public and private funds to protect the St. Croix river valley shows the high value placed on this resource. The people of the United States, as well as residents of Wisconsin and Minnesota, perceive this river as a jewel to be preserved and protected for future generations.

The Sunrise complex is home to threatened and endangered species and it functions as a water purification system protecting a large part of the St. Croix watershed from the effects of human activity as well as natural calamities. The natural beauty of these areas is a source of pride, appreciation, enjoyment and income for the residents of Chisago County, and the proximity of the Twin Cities to the areas allows them to be enjoyed by many who reside outside the county's borders.

But this location near the cities is one of the factors contributing to the fragility of the Sunrise - St. Croix watershed. And, although the beauty of both rivers appears natural, both are managed waterways with dams and impoundments altering the natural flow of water. This loss of wildness makes it easier to contemplate further inroads into the system.

Since the Sunrise flows northward to the St. Croix its beginnings lay to the south near the concentration of human population in the Twin Cities metropolitan area. This makes the filtering function of the Sunrise even more crucial to water quality in the St. Croix. And the Sunrise corridor is a major migration, nesting, staging and local travel area for birds and other wildlife that encounter an increasingly fragmented landscape. Indeed, it needs to be kept intact and vigorously defended and protected as both a local and international resource. But it has already been whittled away to the brink of critical mass -- further fragmentation could degrade it to the point of becoming a sink instead of a source of wild creatures. Loss of scale could turn a production area into a predation trap with both habitat and fauna disappearing. This would have a major impact on the diversity of life in the area and could initiate a downward spiral in environmental quality, which, in turn, would

decrease the quality of human experiences in the area. Enough is enough, and both rivers have already been wounded and scarred far too many times. What remains must be kept intact.

For these reasons (more specific concerns are addressed above in the sub-section on environmental impact dimensions) the task force is opposed to any new locations for powerline crossings of the St. Croix river or adjacent scenic and wildlife areas, and we are equally opposed to establishing any new crossings² of the Sunrise river or adjacent scenic and wildlife areas, including (but not limited to) unnamed and named wetlands, bogs, creeks and marshes, Sunrise Lake, Vibo Lake, Long Lake, Little Lake, Lawrence Creek and the entire Carlos Avery wildlife management area. We strongly recommend that any proposed crossings of these corridors follow and make use of existing crossings.

Likewise, Chisago County contains large tracts of agricultural land, including numerous family farms that have been handed down through the generations. The county relies greatly on agriculture and tourism for its economy, and the wildlife corridors noted above help drain and protect the agricultural land as well as providing many recreational and scenic areas. And the agricultural spaces themselves are among the scenic areas that attract tourism. They, too, need to be preserved.

In the future, any and all new encroachments on the St. Croix river valley and Sunrise river corridor should be avoided. This includes, but is not limited to, the installation and upgrading of powerlines, pipelines, roads, radio towers and any other transportation, communication or power transmission or distribution infrastructure. When infrastructure projects are demonstrated to be unavoidable because of threat to life or for some other paramount reason, then they should be implemented with special sensitivity to Wild and Scenic Rivers Act(s).

The St. Croix and Sunrise rivers deserve protection from powerlines as well as other human - induced wounds and scars that degrade these national treasures. It may be inconvenient for utilities, private enterprises and government departments to plan around these natural features, but it is by no means impossible or prohibitively expensive³. Indeed, it is only by ignoring the full costs of such actions that encroachment can be (incorrectly) justified. It should also be emphasized that the entire watershed -- not just the rivers, riverbanks, or bluffs comprise the scenic and lifestyle packages that attract tourists and residents. And the residents also invest time, finances and labor to maintain and enhance the natural beauty and character of the area. Their responsible and ecologically sensitive citizenship contributes to both the quality of human community and its relationship to natural communities.

Although NSP may retain the legal right to an additional St. Croix river crossing, we do not consider the exercise of that right to be prudent, responsible, or an example of good corporate citizenship. We are unalterably opposed to any new crossings of the Sunrise or St. Croix rivers and we recommend that the Minnesota Environmental Quality Board reject any transmission line proposals that require new crossings of either the St. Croix or Sunrise -- Carlos Avery corridors. Compromise now on this issue constitutes theft of wealth from both present and future generations of humans and wildlife and does not make good aesthetic, economic, social or scientific sense.

D: FULL-COST ACCOUNTING FOR ASSESSING ALL ALTERNATIVES

The economic consequences of building a power line are not limited to the employment generated by construction or the cost to the utility of putting the physical infrastructure in place.

² A new crossing is defined as the installation of new infrastructure where previous infrastructure of that type (overhead, underground, surface etc.) does not exist.

³ An estimate presented to the Task Force was eighteen cents per month per typical household per \$20,000,000 of additional investment. (Appendix G)

Indeed, these may be very minor components of the true cost. In an area dependent on nature-based tourism for its livelihood, the insertion of landscape-dominating transmission towers can precipitate a serious decline in the local economy. Such costs are integral to the transmission project and cannot be separated from it.

Likewise, environmental degradation that is less visible can also have dire consequences. Clear-cutting along a right-of-way through woodland can increase predation of nesting and migrating birds well into the woods to a distance of approximately 300 meters. The decline in bird life is not only aesthetic -- it too has economic consequences. Consumption of insects that bother humans and planted crops can be affected, the resilience of the natural ecosystem due to complexity and species diversity can be diluted, impact on distant localities that receive migratory songbirds during winter months may be introduced, and scarce large birds may collide with the lines and die. A cost is attached to all of these occurrences.

This is recognized by the Minnesota Department of Natural Resources (DNR). When someone kills a bird or protected animal illegally, that person not only pays a fine as punishment but he or she also must pay restitution to the State of Minnesota. That restitution is based partly on the cost of raising an individual of the subject species to adulthood. For example, restitution cost for a mallard duck is \$50, for a canvasback duck it is \$200, and for a trumpeter swan it is \$3,000 (Appendix F). This is direct recognition that there is an economic dimension to loss of wildlife that is independent of its impact on tourism. And the method of measuring the cost provides a precedent applicable to transmission line impact.

Some impact, however, may not be so direct. Clear cutting may increase wind speed in a particular area, leading to increased soil erosion. The clear cut also creates more "edge" which favors certain species over others. And some of those species, like buckthorn, may be invaders that displace local flora and lead to new biological communities that detract from the variety and uniqueness of pre-existing communities. This takes away the characteristics of a natural area just as much as downing an individual animal, but it is far less dramatic and it happens much more slowly. And the cost of cleaning out the invader species, both in the right-of-way and in other affected areas, is a cost of powerline construction and maintenance.

Other costs are more difficult to value. For example, loss of pride in one's place of residence is a true devaluation of well-being, but it is also more elusive to measure. And this is not just an individual or family loss -- commitment to removing litter or keeping buildings well-maintained can be eroded in a community that sees its locale turned into a corridor for high metal towers, layers of wires and fear of electric and magnetic fields.

These are among the costs of a transmission line. When alternatives are discussed, they should all include the full costs to allow an accurate comparison. Thus, the task force recommends that comparable cost data be developed for all alternative routes and that those data go beyond narrow financial projections to include the cost of environmental degradation and its effect on the natural, social, economic and aesthetic dimensions of the surrounding areas.

E: TARGET AREA PLANNING

Target Area Planning is based on the premise that local electrical needs can often be met with small, local generation and/or demand-side management techniques, such as, conservation, load shifting, and reduction of energy use, in a more cost-effective and environmentally friendly manner than with large central power plant and/or transmission facilities.

NSP should be required to perform a TAP analysis of the East Central Minnesota and Western and Northern Wisconsin areas presumably benefited by the proposed NSP/DPC transmission line project. NSP may claim that it has already conducted a TAP analysis of the

project as part of its activities with the Wisconsin PSC Targeted Area Planning Collaborative. However, the TAP report is insufficient for two reasons:

1. NSP's TAP analysis only considered the Stone Lake to Bayfront transmission line area (the Northern Wisconsin area). The Western Wisconsin and East Central Minnesota area was not included. Therefore, NSP has not engaged in a serious TAP study of the entire project;
2. The NSP TAP study was performed with the TAP Collaborative as part of the initial round of TAP activity in the state. As such, this was the first experience with TAP for each utility Collaborative member. The TAP requirements for the first round were specifically organized to allow the utilities a great deal of latitude in their analysis. The emphasis was on the TAP process - not the underlying technical assumptions. Within the Collaborative, there was significant disagreement as to NSP's assumptions and willingness to actively seek out alternatives to the transmission line. The commitment of Collaborative members - particularly the intervenors - was to develop a viable framework to institutionalize TAP in the PSCW, and not to get bogged down in the technical details in this early stage.

Given the inadequacies of this study, the task force recommends that the NSP/DPC be required to conduct Target Area Planning analyses using the latest methods and considerations, including conservation and other demand-side management practices, local decentralized generation, cogeneration, upgrading existing transmission lines, and utilizing renewable energy resources. The TAP area should include the East Central Minnesota and Western and Northern Wisconsin areas presumably benefited by the proposed NSP/DPC transmission line project.

F: ADVISORY PROCESS REQUIREMENTS

When the EQB chooses to seek the assistance of a route advisory task force of interested citizens, and appoints such a task force under Minnesota Rules 4400.0800, then Minnesota Rules 4400.1100 Subpart 3 should be amended to give that task force enough time to do its job thoughtfully and with adequate deliberation. Not only will some task force members have to learn some new technology and engineering concepts, but also the very breadth of the subject they are asked to address -- the environment, present and future -- means the task force's own thinking and decision-making processes will likely be complex and involve the balancing of many variables.

Subpart 3 currently requires that route proposals -- including alternate routes outside the application -- from the task force to the board "be made no later than 105 days after acceptance of the application by the board." In the case of this task force, the board accepted NSP's application December 5, 1996. The task force was appointed 57 days later, on January 31, 1997, and held its first meeting 11 days later on February 11, 1997; thus leaving only 37 days for our work. The task force passed a resolution at that first meeting asking that the deadline be moved to June 15 at least to restore the 68 days of working time already lost. A snow storm canceled one of our weekly meetings. Eventually we were granted an extension of 39 or 46 days.

If the board takes seriously the role of a route advisory task force -- more than window dressing -- and wishes to attract good people to serve, then the board should provide that task force with adequate time, a secretary to prepare succinct minutes of each meeting, and an expense budget which the task force may use to hire such consultants and other experts or advisors, if any, as the task force feels might be useful to its education and deliberations. The EQB staff, especially John Hynes and Bob Cupit, have thus far served this task force very well; but neither they, nor anyone, can be expected to know everything or advocate everything the task force, in its ignorance or vision, might wish to consider. Nor can we expect citizens available for task force service to have adequate technical expertise in the wide range of areas encompassed by the issues surrounding the task. Thus, the budget is a necessary component of an effective empowerment process. And it can

have the effect of saving much larger amounts of public funds by identifying and developing alternative approaches to major problems that would otherwise remain unanticipated.