

Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Dear Honorable Commissioners,

Friends of the Headwaters

May 12, 2015

Comments on the completeness of the applications of Enbridge Energy for a
Certificate of Need (CN, PUC Docket Number: PL-9/CN-14-916)
Pipeline Route Permit (PRP, PL-9/PPL-15-137)

INTRODUCTION

With its initial filing, Enbridge presumes and expects the Commission to assume that this is business as usual. That, really, the Commission and the public will consider Line 3 as just a housekeeping detail, will find the application to be complete and will treat it as a simple administrative matter. Under business as usual, a couple of weeks to scan thousands of pages of application material, is just fine. That's how it has always been done, after all.

For Enbridge, business as usual, has worked well. Until Sandpiper, it received the approvals it wanted when it wanted them. And Enbridge has continued to make public statements full of confidence that, even with the minor inconveniences of the Commission's actions in Sandpiper, things will of course go their way in the end. Business as usual has allowed Enbridge to construct pipelines in Minnesota without having to obey the environmental law or policy that other companies obey, because such laws didn't exist when the original Line 3 was built. Enbridge built facilities associated with the pipelines where they wanted to, and then snapped a chalk line (with minor deviations) to get the shortest distance between those facilities in Clearbrook and Superior – a perfectly reasonable corporate cost containment strategy, but terrible environmental policy.

The real world and the Commission's experience with the Sandpiper request tell us that business as usual leaves Minnesota exposed to unreasonable environmental risks, bad environmental policy and, perhaps, a ruinous financial burden if there is a substantial pipeline failure, like that of Kalamazoo, Michigan. But real world also tells us that the Bakken oil fields and Alberta tar sands happened, that modern environmental policy and laws happened, and that public participation happened – people who want to be involved in government processes and decisions that will intimately affect their lives and their property for decades.

At this very preliminary stage, the Commission can inform Enbridge that it, like all the other companies doing business in Minnesota, must enter the modern era of accountability, good corporate citizenship and responsible environmental stewardship.

I. OBJECTION TO THE PORTRAYAL OF THE PROJECT IN THE PUBLIC NOTICE.

The public notice states that the topics open for comment are whether the CN and PRP contains information required by the CN and PRP rules, and whether there are contested issues of fact with respect to the representations made in the applications.

Enbridge has named this project the "Line 3 Pipeline Replacement Project," and describes it as being a "safety and integrity project" that would minimize "impacts to landowners and the environment." Such language is misleading since Line 3 simply is not just being "replaced."

In fact, this project is a new pipeline in a largely new location that is over 10 percent larger than the existing pipeline—which Enbridge proposes to leave in the ground instead of replacing it.

II. THE MINNESOTA ENVIRONMENTAL POLICY ACT (MEPA) APPLIES TO THE PROPOSED PROJECT

MEPA applies to large projects proposed in environmentally sensitive areas "where there is potential for significant environmental effects." (116D.04, Subd. 2a).

II. A. The Minnesota Environmental Policy Act (MEPA).

There is only one topic in the pipeline laws and regulations that specifically concern superseding some MEPA requirements. That topic involves the Comparative Environmental Assessment in the route permit process. Law and rule say that this document suffices for an Environmental Impact Statement. Content regarding impact analysis, scope of the analysis, need for objective review, purpose of the environmental review, applicability of Subd. 6 of MEPA and so forth is not affected. Nothing in the pipeline law and rules says that the quality and depth of the environmental analysis for a large pipeline project should be anything less than for any other large project. State agencies must also analyze the need for and impacts of large projects independent of the applicant's analysis.

In other words, pipeline law and regulation do not trump other environmental review laws and regulations; rather, they work in tandem. Therefore, the specific requirements for content of applications for a CNA and PRP regarding environmental topics must be read in light of MEPA requirements.

MEPA fully applies to the CNA. Therefore, FOH recommends an EIS be accomplished for this project for the CNA and that the route permit be held in abeyance until it is completed. This recommendation is based on the large size of the project, the potential for significant impacts identified during the Sandpiper review process by the DNR, PCA, and other environmental experts, the problematic location of the project, and the proposed location next to the Sandpiper.

The applications should be either deemed incomplete or put on hold pending progress on the EIS. As noted in Section III, an option for the PUC is to re-notice the filing of the applications with an added request for provide scoping comments in preparation of an EIS for the project.

II.B. The proposed Line 3 project is a new pipeline.

In both the CNA and PRP, Enbridge prominently refers to a "replacement... and integrity and maintenance" project. Such statements are immaterial with respect to potential impacts of the project, which are dependent on project size and location. Most of Line 3's proposed route is a new location in Minnesota. It is also larger than the current pipeline.

Furthermore, as noted below in VI.A., the project has two more purposes beyond being an "integrity and maintenance" project. Enbridge is attempting to downplay the project by using labels such as "maintenance" which suggest less rigorous review than would be applied to new projects.

II.C. Project size, location, and potential consequences guide the depth, quality, and independence of environmental analysis.

The larger the project the more intense scrutiny it must receive, according to MEPA, MEQB guidance documents, agency practices, and a long history of applying the law to large, complex and potentially damaging projects. Unfortunately, specific pipeline regulations have not caught up with this long and well established body of policy and law. However, silence in the rules cannot mean that very large projects—such as the Line 3 proposal—are treated as if they are small projects. This is a \$2.1 billion project in Minnesota, potentially affecting thousands of acres, that is proposed to be located in a sensitive and controversial location. Pipeline leaks and catastrophic failure would wreck further major damage on the environment.

II.D. Cumulative impact and cumulative potential effects

Sandpiper and Line 3 must be considered together by the PUC under MEPA, its regulations, and MEQB guidance documents for two reasons. 1. Sandpiper and Line 3 are connected actions under MEPA. 2. Because of their close proximity and size the impacts of both need to be addressed together in any environmental review documents.

Cumulative impacts as described in MEQB/MEPA rules and guidance documents are especially important because of the large size of these projects, and because rights of way can become wider than interstate freeways as more linear projects are added.

The regulatory definitions of "cumulative impact" and "cumulative potential effects" clearly spell out the responsibility of the PUC to thoroughly address impacts of both projects together.

"Subp. 11. Cumulative impact. "Cumulative impact" means the impact on the environment that results from incremental effects of the project in addition to other past, present, and reasonably foreseeable future projects regardless of what person undertakes the other projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (emphasis added.)

"Subp. 11a. Cumulative potential effects. "Cumulative potential effects" means the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis

of expectation has been laid,.... In determining if a basis of expectation has been laid, . . . the RGU must consider: whether any applications for permits have been filed with any units of government; whether detailed plans and specifications have been prepared for the project; whether future development is indicated by adopted comprehensive plans or zoning or other ordinances; whether future development is indicated by historic or forecasted trends; and any other factors determined to be relevant by the RGU." (emphasis added.)

Minnesota has a policy of following existing corridors when new linear projects are sited when possible and feasible. However, FOH submitted extensive comments on "corridor fatigue" on the Sandpiper project. We noted this issue has never been properly addressed during the decision process on pipelines.

We recommend that the PUC re-notice the filing of the applications with an added request for provide scoping comments regarding cumulative impacts on existing and proposed corridors, regarding past and proposed projects.

III. THE APRIL 22, 2015 PUBLIC NOTICE REQUESTING COMMENTS ON THE COMPLETENESS OF THE APPLICATIONS IS TOO RESTRICTIVE AND, THEREFORE, INADEQUATE.

It is possible that there is a legal clause somewhere that allows the PUC staff to so narrowly interpret state law and regulations that they can restrict public comment to the a narrow set of pipeline regulations to the exclusion of the most of Minnesota's other laws and regulations. And it is possible there is another legal clause somewhere that allows the public notice to be silent on another Enbridge project that is controversial, not yet permitted, and is proposed to be right next to the proposed pipeline. Perhaps it is legally possible to ignore the fact that each of these projects are huge and could well be in an environmentally inappropriate location for 50 years or more.

Finally, the notice does not even state the important fact that Enbridge has requested that the CN and PRP be processed together—in spite of the fact that on the Sandpiper project, the PUC split the proceedings.

FOH believes such a public notice does not comply with the intent or specific clauses of MEPA or of pipeline regulations, and does not comply with good public policy and current 'best practices' for meaningful public participation.

116D.03 ACTION BY STATE AGENCIES.

Subdivision 1. Requirement.

The legislature authorizes and directs that, to the fullest extent practicable the policies, rules and public laws of the state shall be interpreted and administered in accordance with the policies set forth in sections 116D.01 to 116D.06.

Subd. 2. Duties.

All departments and agencies of the state government shall:

(1) on a continuous basis, seek to strengthen relationships between state, regional, local and federal-state environmental planning, development and management programs;

- (2) utilize a systematic, interdisciplinary approach that will insure the integrated use of the natural and social sciences and the environmental arts in planning and in decision making which may have an impact on the environment; as an aid in accomplishing this purpose there shall be established advisory councils or other forums for consultation with persons in appropriate fields of specialization so as to ensure that the latest and most authoritative findings will be considered in administrative and regulatory decision making as quickly and as amply as possible;*
- (3) identify and develop methods and procedures that will ensure that environmental amenities and values, whether quantified or not, will be given at least equal consideration in decision making along with economic and technical considerations;*
- (4) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;*
- (5) recognize the worldwide and long range character of environmental problems and, where consistent with the policy of the state, lend appropriate support to initiatives, resolutions, and programs designed to maximize interstate, national and international cooperation in anticipating and preventing a decline in the quality of the world environment;*
- (6) make available to the federal government, counties, municipalities, institutions and individuals, information useful in restoring, maintaining, and enhancing the quality of the environment, and in meeting the policies of the state as set forth in Laws 1973, chapter 412;*
- (7) initiate the gathering and utilization of ecological information in the planning and development of resource oriented projects; and*
- (8) undertake, contract for or fund such research as is needed in order to determine and clarify effects by known or suspected pollutants which may be detrimental to human health or to the environment, as well as to evaluate the feasibility, safety and environmental effects of various methods of dealing with pollutants.*

The PUC has the authority to recognize and respond innovatively to the unique situation of these huge pipelines proposed to be built together for 67% of the 337 mile route in Minnesota. Furthermore, MEPA requires such innovation.

Yet the public notice does not appear to recognize this authority to respond to unique situations. For example, Rule 7853.0100, "*CRITERIA FOR ASSESSMENT OF NEED*", lists obviously relevant criteria to the environmental decisions that need to be made for these projects. It states "*The factors listed under each of the criteria set forth in part 7853.0130 shall be evaluated to the extent that the commission deems them.*" This gives the PUC clear authority to do whatever is necessary to address the unique of these two projects.

The environmental impact of this very large project must be carefully examined under Minnesota law and rules, along with its sister project, Sandpiper. Yet the public notice does not list rule 7852.1900, which contains decision criteria on the applications. (However, rule 7852.1900 and therefore the criteria themselves are open for public comment because of this reference.)

With respect to the PRP, the rules are flexible enough to respond to this unique situation of two large pipelines proposed together. Rule 7852.2700 says: "*ENVIRONMENTAL IMPACT*

OF PREFERRED ROUTE. The applicant must also submit to the commission along with the application an analysis of the potential human and environmental impacts that may be expected from pipeline right-of-way preparation and construction practices and operation and maintenance procedures. These impacts include but are not limited to the impacts for which criteria are specified in part . . . 7852.1900. " (emphasis added.)

III. A. Reasons for expanding public notice.

It is entirely appropriate that the PUC ask for input on more topics than in this restrictive public notice. MEPA applies directly to both projects, and the problems with the proposed Sandpiper route expressed by the DNR, PCA, and other environmental experts indicate an obvious need to expand the notice. Consider the following:

III.A.1. Cumulative effects and related actions.

The fact that two pipeline projects are proposed to be located generally within 25 feet of each other across hundreds of miles of environmentally sensitive landscape of Minnesota is a unique situation that cries out against "business as usual" by Minnesota's state agencies. It is also an affront to the public to give them two weeks to look at the most recent of Enbridge's application, which consists of thousands of pages and has the effect of excluding the public from this critical part of the process.

III.A.2. Narrowing the scope of review affects outcomes.

The scope of review of the applications will greatly influence the outcomes of the permitting process in favor of Enbridge, a private company pursuing its own interest.

III.A.3. Great weight given applications during the review process.

An assertion of the PUC staff that such issues can be addressed during the contested case hearings and subsequent permitting is illogical, given the great weight placed on the Enbridge applications during those proceedings. Starting the review process on such a large project based on defective and incomplete applications compromises the integrity of the entire process that will follow.

III.B. Recommendation and examples of topics that should be open for comment on the applications:

FOH recommends that the PUC itself rather than the staff make a decision on the scope of topics open for public comment.

Examples of additional topics that should be open for discussion, based on MEPA and other requirements include, but are not limited to:

III.B.1.

Requesting scoping comments for the environmental review that is required by MEPA—and EIS in this case—with specific attention to deficiencies in the applications.

III.B.2.

Requesting comments on whether the applications provide sufficient information for the PUC to make the decisions regarding the 14 decision criteria in the CNA rule (7853.1300) and the 11 decision criteria in the PRP 7852.1900.

III.B.3.

Requesting comments regarding compliance with the phrase in Rule 7852.2700 as to whether the impacts related to the criteria in 7852.1900 are sufficient or whether there are other potentially significant impacts not mentioned in the criteria list, according to the phrase in the rule that "*These impacts include but are not limited to the impacts for which criteria are specified in part7852.1900*" (emphasis added.)

III.B.4.

Requesting comments regarding cumulative impacts and effects on existing and proposed corridors.

IV. SPECIFIC DEFICIENCIES IN THE CNA APPLICATION ITSELF AS SUBMITTED.

IV.A. 7853.0540 requires a discussion of alternatives.

Alternatives that are included in the PRP are not included in the CNA. In the PRP, Enbridge describes two alternatives that follow its mainline route to Superior, both of which are shorter than the proposed route. These are: a) digging up current Line #3 and actually putting a new Line 3 in the same place, and b.) Following the mainline corridor with a new Line 3. These need to be addressed in the CNA.

IV.B. 7853.0250 (C) Effects of the facility on inducing future development.

The CNA is deficient in recognizing that opening up a new "greenfield" route will induce the development of other pipelines in the same corridor. And, of course, the Sandpiper pipeline has not yet been approved. Locating Line 3 in this corridor will enhance the likelihood of Sandpiper being in this corridor.

IV.C. 7853.0250 (D) Subp 1 maximum number of pumping stations

This rule states that the CNA application must describe the ultimate design capacity and maximum number of pumping stations in Minnesota. Page 8-3 of the CNA states a higher ultimate design capacity of 915,000 b/day, but says only that further engineering designs are need to determine pumping stations. This is insufficient in meeting the rule, and meeting the requirements of MEPA regarding cumulative impacts.

IV.D. 7853.0640, Subp. 1, induced development, utilities.

This rule, as well as MEPA, requires a description of induced development caused by the project. This includes electrical transmission lines for powering the pumping stations, as well as future additional pipelines. The CNA only recognizes that such power is needed, and

doesn't describe the additional facilities. (See page 9-23) Enbridge knows where the pump stations are to be located, and needs to calculate where the future stations will be located when the line reaches its maximum capacity. Enbridge also knows the power requirements. Therefore, they must include the approximate location of such lines.

Note: This rule itself refers to "expanded utilities." A pipeline is defined as a "utility" in some Minnesota laws, and, in fact, Enbridge is seeking a utility exemption for its application under Minnesota's Wetland Conservation Act requirements. Therefore, it cannot be said that this rule only applies to *electrical* utilities.

IV.E. 7853.0640, Subp. 4, agriculture.

Enbridge has now conceded that there is potential for excavation in hilly terrain in order to construct the flat workspace needed to safely build the pipeline. (See pg 4-10 of the Route Permit application.) Such excavation can be substantial in hilly terrain, including hilly terrain that is farmland. The CNA does not contain such estimates, nor does the PRP.

IV.F. 7853.0640, Subp. 5, displacement of people.

This is a major topic, and the CNA contains no estimate—it merely reads displacement "could" happen. In fact, during its pursuit of easements on the Sandpiper route—the same route proposed for much of Line 3—people have been displaced already. Furthermore, according to the PRP, the offset of the pipeline from electrical transmission lines requires a wider ROW than from other types of linear facilities.

Additionally, pages 4-10 of the PRP application indicate that Enbridge used an offset of 250 feet from existing pipeline or transmission line corridors in its calculation of extent of "greenfield" on its proposed route. Table 4-6.6.1 indicates that there are about 5 miles of greenfield route between Clearbrook and the point where the proposed route turns east just south of Park Rapids. Yet this section of the proposed route is supposed to be following existing pipelines. Therefore, there are 5 miles where Line 3 is more than 250 feet from the existing lines. Adding Sandpiper to this mix raises the question: just how wide will this corridor become, and what about houses between these pipelines—would people become bracketed by large pipelines on either side of them?

This example illustrates how important this number is to making the public interest decisions regarding the CNA decision criteria.

V. DEFICIENCIES IN THE ROUTE PERMIT APPLICATION

V.A. THE APPLICATION IGNORES THE NECESSITY OF RISK ASSESSMENT

Rules 7852.1900 and 7852.2700 require that oil releases must be addressed in the applications. Furthermore, risk assessment is the proper vehicle for addressing this topic.

These rules, along with MEPA requirements, are sufficient to conclude that the potential impacts of oil leaks and releases, whatever the cause, must be addressed in the environmental review. The application is inadequate on this topic. The following points support this contention.

V.A.1. Necessity of risk assessment.

The DNR, PCA, FOH, and others established during the review of Sandpiper that the potential impacts of these releases must be considered during route comparisons, and with respect to environmental impacts

V.A.2. Risk assessment principles.

The principle of risk assessment employed throughout industry is that if the potential consequences are very high, even low probability events must be considered. It is incontrovertible that these two factors are present, given the large quantity of oil in these two lines, the 50+ years of project operation, and the landscape. This was established during the hearing on Sandpiper, where Enbridge did not challenge the need for a risk assessment.

V.A.3. Enbridge does in fact assess some of the risk of oil releases.

During the Sandpiper hearing, Enbridge indicated that it is required by federal regulations to do a "worst-case" estimate of oil releases that might affect High Consequence Areas. Yet they would not release this information. FOH is aware that on the Keystone Project, two risk assessments were done for that project for use in the federal EIS. One was prepared for Keystone, and later another independent review was done. (See Attachment 2 below.) In both cases, the information became public, with the agreement of the pipeline company. Therefore, it is entirely within Enbridge's ability to supply information on this and must be required to do so before the application can be deemed complete.

V.A.4. Enbridge's statement in the route application about oil release risks is inaccurate, dismissive, and not up to industry practices on risk assessment.

Enbridge discusses the risk of an oil spill in a mere three paragraphs in Section 7-1 of its PRP. It is an inaccurate portrayal of the major discussion that took place regarding this topic during the contested case hearing on Sandpiper. This topic, we believe, must be a major decision topic for the PUC on both pipelines. If it can be said that leaving out highly significant information could be regarded as a factual defect of the applications, then Enbridge has committed such a breach: FOH and other parties contributed major information on oil releases and risk assessment during the Sandpiper hearings. Enbridge ignored this testimony and continues to do so in its application for Line 3.

V.A.5 Enbridge cites estimates of the risk of oil releases on the Keystone pipeline that are simply wrong.

The numbers Enbridge uses come from an earlier risk assessment done for the Keystone pipeline. Attachment 2 below provides detailed quotes first from the outdated 2009 Keystone assessment (used by Enbridge in the PRP), then also quotes from the authoritative 2013 risk assessment done by Battelle Labs. Some of the key findings of the Battelle assessment are underlined in Attachment 1, and summarized here:

V.A.5.a. The 2009 risk assessment substantially underestimated risks and potential volumes of releases;

V.A.5.b. Overall averages of risks as well as risk volumes are not appropriate for protecting sensitive areas or for characterizing risk,

V.A.5.c. Location-specific risks should be assessed;

V.A.5.d. The Battelle risk assessment notes that a burial depth of 48 inches is a measure that reduces risk, and recommends it for the Keystone project as a whole. Enbridge, on Line 3, says it will generally use a burial depth of 30 inches. Therefore, they are not using a technique that will reduce risks from third-party damage, one of the major causes of pipeline oil releases.

V.A.5.e. The Battelle risk assessment provides helpful discussion of the role of PHSMA in approving the project, and notes problems with this role.

V.A.5.f. A number of the findings are entirely relevant for addressing site-specific sensitive environments found in Minnesota.

V.B. Section 4.6.2, page 4-10. Extra Work Space. (PRP application).

Understanding the actual construction of the pipeline is key to understanding impact potential. When topsoil is lost due to deep excavation, long-term impacts result. These include chronic erosion because of poor re-vegetation, invasion of exotic species, and loss of plant or forest productivity. Deep excavation can occur on side slopes when the level work pad—often 50 feet in width—is constructed. Enbridge resisted accepting this during the review of Sandpiper, but now they admit that it can occur. However, Enbridge erroneously call this a "limited" issue, and refuse to discuss the acreage where it can potentially occur, and the whether they intend to mitigate it by topsoil separation. This defect must be rectified.

V.C. Section 4.6.6, right-of-way sharing.

This section discusses following existing pipelines, utility lines, or transportation corridors. There are two deficiencies in the application regarding this topic:

V.C.1. Sharing rights of way.

The application indicates that Enbridge considers that it meets the criteria of corridor sharing—an important topic in locating linear facilities because of Minnesota policy—as long as the pipeline is within 250 feet of an existing linear facility. Use of this number means that corridors can become very wide. Conceivably, if both Sandpiper and Line 3 were built along an existing corridor of some kind, this figure results in two pipelines up to 500 feet wide plus whatever the width of the existing facility—and still be regarded as a good thing as far as following state policy. This has significant environmental and social consequences, because of the potentially wide swath, and impacts to nearby residences. It seems very reasonable that more residents will be forced to relocate under such conditions. What is the justification for using such a figure when it seems to be a perversion of the state policy on following existing corridors?

V.C.2. Compatibility with HVTL.

The application needs to address compatibility of the pipeline with high voltage transmission lines. Proximity of these facilities to each other results in complications since there are induced currents in pipelines from the earth's magnetic field, which are also increased by the electromagnetic field around high voltage transmission lines. These effects are site specific, and have increased with the increasing success of pipeline coatings. Pipeline companies take countermeasures to deal with this, but these need to be described in the application. A discussion of corridor compatibility because of this phenomenon also is needed, including whether a standard offset can be used, or are there site-specific factors that increase the offset distance. This section needs expansion so that cumulative impacts and "corridor fatigue" can be properly assessed.

V.D. Enbridge pipeline safety and control center operation.

The PRP contains extensive discussion of Enbridge's programs for preventing pipeline oil releases. A major part of this program is a sophisticated and newly updated control center that monitors Enbridge's entire system via satellite and other communication systems.

The PRP needs to be expanded to include a discussion of the consequences to control systems such as that used by Enbridge, which uses satellites and GPS systems. According to a recent advisory from the Department of Homeland Security, solar storms can disrupt such control systems. "*The purpose of this Advisory is to inform the industrial control systems (ICS) community of the possible impacts of solar magnetic storms on critical infrastructure control systems. . . . (Such storms) can also affect global positioning system (GPS) satellite signals, interfering with the GPS timing reference used by navigation systems and many control systems.(including those used in the oil and gas industry.)*" (ICS-CERT ADVISORY ICSA-11-084-01—SOLAR MAGNETIC STORM IMPACT ON CONTROL SYSTEMS, March 25, 2011) Enbridge also needs to explain whether such events have the potential to increase malfunctions of the control system that could lead to pressure spikes that result in oil releases.

There apparently are some measures that can be taken to reduce such effects. Enbridge needs to describe how its control center could potentially be affected—such as false pipeline pressure readings that some publications indicate as a possibility from GPS systems—as well as whether or not such affects have been factored into risk assessments. .

VI. PROJECT ALTERNATIVES

VI. A. Background.

As noted in the April 22 PUC notice, Enbridge has described two other project purposes besides the need to fix an aging pipeline: the project is intended to "reduce ongoing apportionment, and optimize the pipeline system." These purposes are highly significant with respect to the necessity of studying alternatives under Minnesota and federal laws. Alternatives chosen for study during federal and state environmental review, as well as permitting under the Clean Water Act, must be able to accomplish the project's purpose. Alternatives are then examined to determine whether there is a reasonable alternative that will have less impact than the one proposed.

In fact, under the federal National Environmental Policy Act, in the experience of FOH technical advisers, even more attention is given to dissecting a project's purported purpose than under Minnesota law and regulation. Broad purpose statements such as "reduce ongoing apportionment" and "optimizing the pipeline system" open the door to many possible alternatives, as well as necessitating objective examination of Enbridge's system beyond Minnesota borders. Furthermore, since the PCA administers Clean Water Act permits in Minnesota, federal law is pertinent to the PUC decisions that must be made with respect to which alternatives to study.

Yet Enbridge has proposed extremely limited options for alternatives. And both follow the Enbridge mainline system, one actually digging up old line and putting another in its place, and the other adding a new pipeline along that corridor. Enbridge rejects the first in part on the grounds that they couldn't deliver product to customers while this line was out of service. This claim ignores the availability of alternative ways to deliver oil.

Enbridge's very broad statement of purpose of "optimizing its pipeline system" opens the door to many different options and many different alternatives. It also opens the door for the PUC to examine the entire Enbridge system to look for less damaging alternative routes in Minnesota, even though it does not have regulatory authority beyond Minnesota's borders. It does, however, have clear authority to deny a CN when it finds a less damaging alternative.

Enbridge's pipeline system extends south and east of Minnesota. Routes proposed by FOH for the Sandpiper project avoid going to Superior, WI. Given Enbridge's expansive project purpose, routes with endpoints other than Superior must be addressed. Although Enbridge has tried to mock, dismiss and ignore those routes, they have been taken seriously by both the state's environmental agencies, the MPCA and DNR, and have emerged from the pipeline proceeding as very viable alternatives.

VI.B. Recommended additional alternatives.

The following alternatives must to be addressed in the CNA.

VI.B.1.

All alternatives routes recommended for Sandpiper as described in the Testimony of Richard Smith, Public comments to DOC EERA 4/4/14 & 5/30/14, Direct Testimony 11/19/14.

VI.B.2.

A Line 3 connection to an enlarged Sandpiper pipeline west of Clearbrook, and on Sandpiper alternative SA-04 that follows mostly an existing pipeline to the Enbridge Flanagan Terminal in Illinois would be coupled with the shutting down of the existing Line 3 while it is dug up and replaced. The Sandpiper pipeline would be somewhat larger than proposed in order to carry additional product from Canada from the point where a new line intersected Sandpiper. This would allow Enbridge to meet existing commitments for Line 3 while it was out of service. It would also provide additional benefits to Enbridge by the having the interconnection in place.

VI.B.3.

Enbridge has a 48 inch pipeline in its mainline corridor. An alternative needs to be examined that combines Sandpiper and Line 3 and follows the unmodified SA-03 PCA route to Superior.

VII. FOH COMMENTS ON SANDPIPER INCORPORATED BY REFERENCE AS COMMENTS ON THE LINE 3 PUC APRIL 22 PUBLIC NOTICE

FOH incorporates by reference the following comments that were entered into the contested case hearing record for the Sandpiper project.

VII.A. Direct Testimony of Richard Smith, November 19, 2014, describing alternative routes for Sandpiper.

VII.B. Direct Testimony of Paul Stolen, for FOH, November 19, 2014

VII.C. Comments on CEA Richard Smith, Public Comments, DOC EERA, 4/4/14 & 5/30/14

VII.D. Surrebuttal testimony of Paul Stolen, January 21, 2015

VII.E. Cross examination testimony of Richard Smith, January 29, 2015

ATTACHMENT 1

INADEQUACY OF ENBRIDGE LINE 3 STATEMENTS ABOUT RISK OF OIL RELEASES

This attachment is quotes from the Keystone Pipeline environmental review. Section I contains quotes from the original risk assessment done for this pipeline in 2009 and submitted by the company to the US State Department. This 2009 assessment provides estimates of incidents per mile (0.00035), and also for the whole project over a 10 year time span (2.2 spills over a 10 year period.)

Page 7-2 of the Enbridge's route permit application for Line 3 uses these figures as a basis for its calculation.

Section II of this attachment uses an independent risk assessment completed at the end of 2013 by the authoritative Battelle labs. It found the earlier risk assessment flawed in a number of important ways, and that it underestimated event frequency as well as amounts of oil releases. Furthermore, it recommended much more useful techniques, and found that using overall project averages to be an unacceptable approach. FOH notes that its testimony on Sandpiper indicated that significant pipeline accidents and ruptures occurred after 2009 that likely resulted in modifications of the assessment of risk (See November 19 testimony of Paul Stolen.)

1. link to the Battelle report:

<http://keystonepipeline-xl.state.gov/documents/organization/221277.pdf>

2. link to the 2009 outdated assessment:

<http://keystonepipeline-xl.state.gov/documents/organization/205569.pdf>

SECTION 1. EXCERPTS FROM 2009 RISK ASSESSMENT SUBMITTED BY KEYSTONE TO THE US STATE DEPARTMENT

. Appendix Q of US State Department EIS 2009, Keystone XL Project Pipeline Risk Assessment and Environmental Consequence Analysis July 6 2009

PAGE 3-2: "While future events cannot be known with absolute certainty, historic incident frequencies can be used to estimate the number of events that might occur over a period of time. Based on available PHMSA data, the spill frequency analysis produced a conservative incident frequency of 0.000135 incident per mile per year, equivalent to no more than 2.2 spills in 10 years for the 1,672 miles of the Project, including the Keystone Cushing Extension. For any 1-mile segment, this probability is equivalent to 1 spill every 7,400 years. Table 3-1 shows the number of spills that might occur along the entire Project during 10 years of service." (Emphasis added.)

SECTION II. EXCERPTS FROM 2013 RISK ASSESSMENT BY BATTELLE LABS

(Note: FOH has added underling and bold to emphasize transitions from one section to another. No changes have been made in the text.)

Keystone XL Pipeline: Independent Engineering Assessment – Final Report

31 December 2013

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PAGE 45 excerpt: (Note: The underlining below is FOH emphasis)

"2.2.4 Incident and Spill Frequency

"2.2.4.5 Summary, Conclusions, and Recommendations

The incident frequencies for the major threats to the pipeline considered by Keystone were assessed. It is noted here (as was pointed out in regard to Table 4 and Section 2.1.2) that a quantitative rationale should be presented for causes that have not been recognized as threats. This should be done with the realization that a pipeline system is much more than the lineal portion traversing the RoW. In addition, Keystone should detail their data screening process and the method(s) to deal with nulls, so that a simple query could replicate the baseline frequencies on a threat-specific basis."(FOH note: "nulls" means items for which data is absent, such as causes of an oil release.) "While currently restricted to use by government agencies and selectively by operators, a better approach would capitalize on the PHMSA National Pipeline Mapping System website to geo-locate the historic spill records as the means to better quantify localized threats. "

"A related observation is that sensitivity analysis apparently was not used to understand underlying drivers for incidents by Keystone when estimating spill frequencies. Such analysis could help to identify localized threats. Further, although Keystone might have relied on SMEs to help quantify infrequent events like flash floods, general flooding, landslides, and so on, the scope and results of such activity are not clearly evident.

Finally, in regard to expressions of average risk, care should be taken when stating a US threat rate or a state-level incident rate because this downplays the absolute importance of potentially large localized and/or periodic events. This practice does not help focus preventive, protective, or mitigative actions at specific locations along the pipeline, so an alternative risk assessment approach should be adopted if the PHMSA approves construction. At that time, Keystone should assess incident likelihood considering the benefits of alternative, preventive, protective, and mitigative features in place. Recognizing that Appendix C of 49 CFR 195 requires assessment of both the need for and the effectiveness of preventive and mitigative safety features, changes to deal with any shortfall at that time could be very expensive. Thus, although not typically considered nor required by the regulations at this time, prudence suggests that sufficient detail be considered if and when the Project moves forward."

PAGE 46 excerpt:

"2.2.5 Total Spill Volume

2.2.5.1 Introduction

The spill volume is an essential input to fate and transport and environmental consequence modeling because larger spills are more likely to affect sensitive areas and cause greater environmental damage. Thus, an accurate understanding of spill volume and its likelihood as a

function of the threats is an important consideration. Because the Keystone assessment apparently focused on spills along the RoW, this subsection retains that focus. Keystone quantified spill volume in regard to the PHMSA database. They also quantified spill volume using a numerical model that simulated the pipeline, including the valves and the effects of elevation over the length of the pipeline segment considered. This subsection addresses outcomes in regard to the PHMSA database. "

PAGE 50-51, excerpt (FOH note: MLV stands for "main line valve." The underlining below is FOH emphasis)

"2.2.5.5 Summary, Conclusions, and Recommendations

Adopting the All Spills outcomes relative to those for other choices based on the General Cause categories in the PHMSA database (as done by Keystone) significantly underestimates the median spill volume relative to the environmental exposure along the pipeline RoW.

Trending of the cumulative distributions of spill volumes shows that the Keystone benchmark under-predicts the likelihood of larger spills except at the higher percentiles, where all trends converge. The results indicate that parsing on the Incorrect Operations, Natural Forces/TPD, and Pipeline/MLV General Cause categories leads to larger values ^{for the median spill and at the 90th} percentile. Accordingly, there is the potential for much larger spills than has been considered relative to the All Spills benchmark case. Because such trends represent a system-level analysis of historic incidents that typically involve much smaller-diameter line pipe as compared to the Project, there is the potential for still larger spills where unique site-specific threats exist along the RoW. Thus, if Project construction is approved by PHMSA, consideration should be given to a broader assessment of the environmental consequences relative to the probability of occurrence and spill volume, including the potential implications of pipe diameter.

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2.2.6 Conclusions and Recommendations

Adopting the All Spills outcomes relative to those for other choices based on the General Cause categories in the PHMSA database, as was done by Keystone, significantly underestimates the median spill volume relative to the environmental exposure along the pipeline RoW. Trending of the cumulative distributions of spill volumes shows that the Keystone benchmark under-predicts the likelihood of larger spills except at the higher percentiles, where these trends converge. The results indicate that parsing on the Incorrect Operations, Natural Forces/TPD, and Pipeline/MLV General Cause categories leads to order-of-magnitude or larger values for the median spill, and a ^{factor of 5 or larger values at the 90th} percentile. Likewise, it appears that Keystone has ignored the nulls, which indicates a higher spill frequency than has been estimated. If the historical data are relevant to the Project, there is the potential for more frequent spills as well as for larger spills than was considered in regard to the All Spills benchmark. In addition, because such trends represent a system-level analysis of historic incidents that typically involve much smaller-diameter line pipe compared to the Project, there is the potential for still larger spills where unique site-specific threats exist along the RoW.

PAGE 54 START excerpts (FOH note: The Exponent Report cited below was effectively used in FOH comments on the Sandpiper Project contested case hearing; see November 19 FOH testimony of Paul Stolen. The underlining below is FOH emphasis.)

"2.4 Fate and Transport

2.4.1 Introduction

The previous sections established criteria to assess the Keystone Risk Assessment and evaluated the methodology used and the threats, spill frequencies, and spill volumes. The next logical step is to consider the fate and transport of crude oil from an engineering perspective in the event of a release. The analysis and discussion regarding fate and transport develops in reference to the related assessment done for the Project^(7e).

Because environmental transport and fate of petroleum products depend on many factors, modeling transport and fate is a complex exercise. In addition to work presented in the Risk Assessment, evidence of the complexity involved with fate and transport specific to the Project can be found in Exponent's report⁽²⁾ and in Annex F of Battelle's original third-party review (January 2012). Major factors affecting the behavior and fate of crude oil in the environment are: (1) the nature of product spilled; (2) the volume and rate of the spill; (3) the physical, chemical, and biological characteristics of the receiving environment; (4) the weather conditions at the time of the spill; (5) the amount of time elapsed until detection; and (6) the adequacy and timing of response activities. Once a spill occurs, the focus turns to consequences and mitigation, with consequences being dictated by the amount spilled, the timing and extent of the spilled product (transport and fate), and the adequacy of the response capabilities. Of particular importance is the receiving environment (e.g., water and soil attributes, slope, gradient, topography, underlying geology, and weather and climate), which in turn impacts the dispersion, fate, plume size, and transport. Fate and transport in this context can be viewed as the bridge between the prior spill frequency and volume discussion and the consequences as impacted by environmental transport and fate of the spilled product."

PAGE 74, EXCERPT (FOH Note: The underlining below is FOH emphasis)

"2.6.2 Preventive Actions

Preventive actions in the context of an oil spill are directed at avoiding a release. They focus on keeping the product within the line-pipe and the system components. As noted above, Parts 194 and 195 (and appendices) of Title 49 of the CFR establish the minimum requirements for any hazardous liquid pipeline. The eventual implementation of these requirements is under the oversight of the PHMSA. Accordingly, details associated with the PHMSA approval that comprise preventive actions are not well defined at this stage of the Federal process.

Considering for present purposes that the preventive actions implicit in PHMSA approval are "existing," this section focuses on additional actions over and above minimum that either are known or otherwise merit consideration for the Project. Key actions include the following:

0. At present, discussions and documentation⁽⁷⁾ indicate that the following actions are over and above the Code minimum: the entire pipeline is being designed as if it transits an HCA; greater than the required depth of cover will be provided for usual trenched construction (4 feet in general, locally deeper for select sites); and horizontal directional drills (HDDs) will be used for select crossings."

PAGE 90 SUMMARY AND CONCLUSIONS EXCERPTS (FOH Note: underlining is our emphasis.)

"3.3 Risk Assessment

The fundamental source of spill data is the PHMSA Liquid Hydrocarbon Incident Database. The risk assessments performed for the FEIS and the SEIS were reviewed and the database

was also used to provide histograms and cumulative probability distributions for spill volumes as a function of pipe diameter and age. The historical distribution of failure causes was also developed to show the effect of improvements in the material of construction and in welding and coating technologies over the last several decades. The analysis of the data clearly showed that the time to recover from a spill was longer and the amount of material recovered was smaller along the mainline pipe RoW. This indicates the difficulty in recovering from spills in more remote areas, as opposed to fixed facilities such as pumping stations.

PAGE 91 EXCERPTS (FOH Note: underlining is our emphasis.)

"Additional results from the queries of the database are as follows:

0. The flow rate and diameter (and so the transported volume) of this pipeline are among the largest for hazardous liquid pipelines in service in the US. a. Accordingly, the time over which a spill is controlled (noted as 12 minutes) corresponds to a minimum release close to 90 barrels (for the worst-case full-bore rupture).
0. b. This volume excludes outflow through drain-down (the loss that occurs while the leak remains undetected) such that 90 barrels is a lower bound to the worst-case spill volume.
0. c. Based on simulations of system response, an estimate of the upper-bound worst-case spill is about 20,000 barrels, with this value reduced significantly by planned valve placement. Based on responses to Battelle's inquiries, valves will cut this level by a factor of two to four, depending on the scenario considered.
0.
0. Because of the pipeline's flow rate and diameter, if a leak develops, the Project has the potential for a very large spill well in excess of those quantified for the existing history tabulated in the PHMSA database (and other databases as well). a. Response plans matched to the product, threats, and potential consequences should be developed if this Project is sanctioned.

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Significant spills do occur, as was evident more than once during 2011. a. The projected historic risk rate per mile-year (adjusted for application to this pipeline) points to a spill every several years.

.....

The engineering evaluation of spill frequency in Section 3.2 states the importance of breaking the system down so that components with very different failure rates are treated separately. The 2013 Battelle risk analysis shows that a breakout of the system elements results in a much better estimate of the median spill volume for mainline pipe and recommends, for planning purposes, a median spill volume of 100 barrels."

PAGE 101 BEGIN (FOH Note: underlining is our emphasis.)

"4. High-Level Recommendations

The proposed Keystone XL Project, as described in the DoS 2013 SEIS⁽¹⁾, consists of a crude oil pipeline and related facilities to transport WCSB crude oil from an oil supply hub near Hardisty, Alberta, Canada, to existing pipeline facilities near Steele City, Nebraska, for delivery to Cushing, Oklahoma, and the Gulf Coast area. The US portion of the transboundary Project consists of approximately 875 miles of new, 36-inch-diameter pipeline across portions of Montana, South Dakota, and Nebraska.

The DoS released the FEIS for the Project in August 2011. Following its release, the DoS,

PHMSA, and the EPA jointly concluded that it would be beneficial to have a third-party review of the Risk Assessment prepared by AECOM and Dynamic Risk Assessment Systems, Inc., on behalf of TransCanada Keystone Pipeline, LP. As part of this third-party review, Battelle was charged to evaluate the following engineering components of the pipeline and original Risk Assessment: (1) failure frequency (2) risk assessment, (3) outflow analysis and placement of valves; (4) fate and transport; (5) detection of leaks; (6) prevention of leaks, and (7) mitigative and protective measures in the event of a spill.

The recommendations that follow are based on (1) our review of the Risk Assessment commissioned by Keystone (Appendix P of the FEIS and Appendix Q of the SEIS); (2) analysis of the historical record of crude oil pipeline performance from the PHMSA database; (3) the regulatory requirements currently in place and overseen by PHMSA; (4) implementation of the 57 Regulatory Conditions imposed by PHMSA; and (5) our best engineering and risk assessment judgment.

Failure Frequency: The PHMSA Liquid Hydrocarbon Incident Database should continue to be used, but the analysis should be limited to crude oil spills and should consider the very different spill performance data for major systems (i.e., mainline pipe). The results should be presented without the use of engineering adjustment factors. Until there is enough modern pipeline performance data to negate the need for adjustment factors, data from other sources, such as performance data on the more modern Australian pipeline system, should be used to show that the results presented are conservative. Appendix K of the SEIS should be used as the starting point for such an updated analysis. Until that re-evaluation is performed, it is recommended that, for planning purposes, a medium spill volume of 100 barrels be used. A larger volume may have to be used in locations where the terrain produces a hydraulic gradient.

Risk Assessment: Future risk assessments for this pipeline should divide the pipeline system into component parts, assess the risk for each component, and then calculate the system risk from its components. The risk analysis performed by Battelle used Total Incident (Damage) Cost as a measure of the consequences. The risk analysis shows that the subsystems that generate almost all the risk are the mainline pipe and the fixed facilities such as the pumping stations. Thus, when developing preventive, protective, and mitigative programs, equal focus should be on the mainline pipe and the fixed facilities.

Outflow Analysis and Valve Placement: It is essential that the pipeline design protect the environment by controlling a spill through valves located to minimize both the potential spill volume and its consequences. The model and the process that were used by Keystone to ensure that valves are placed to minimize the total outflow from a breach appear to be correct and should continue to be used. It is recommended that portions of the outflow analysis be redone to reflect the new route and thereby ensure that the results are not significantly different from the results presented at the time the FEIS was published.

Fate and Transport: Exponent developed and applied criteria to identify potentially sensitive environments downstream of small stream crossings, with a number of such environments identified along the pipeline route. From an engineering perspective, concern for small streams could and should be managed proactively during construction via micro-bore or such techniques. During construction, and continuing into the operational phase, further analysis should be done to assess overland flow (spreading) and transport for specific pipeline sections that intersect identified sensitive habitats, including the four streams identified by Exponent. This modeling exercise could then be used to inform ERPs. Well depth and depth of release should also be assessed relative to the water table to screen / identify sensitive groundwater resources that may be more vulnerable to exposure to a hydrocarbon plume in the event of an oil spill. Finally, it is recommended that the presence of PAHs and naphthenic acids be better

quantified for the products that are actually transported in the pipeline to better inform environmental remediation and response planning.

Leak Detection: No matter how effectively pipeline systems are designed and constructed, there will always be a finite chance that a leak will occur. Therefore, leak detection is essential across the range of potential release components of the pipeline. Because facility risks are significant, it is recommended that leak detection efforts be placed on both the mainline pipe sections and facilities (including tanks). As new leak detection technologies emerge and start to be deployed in the field, Keystone should continue to evaluate these technologies and consider them for implementation if they represent a significant increase in leak detection sensitivity. In-line leak detectors should also be deployed as part of the pig trains run under the integrity management programs. Leaks are not expected to be frequent; however, because many of the failures are the result of human activities, it is recommended that aerial surveys and/or ground patrol frequency be increased to once a week.

Leak Prevention: The objective of this task was to quantify the effectiveness of the current design, construction, and operation practices in preventing leaks. Along the mainline pipe, leak prevention focuses on detection of defects in the pipe itself, on the longitudinal welds made during fabrication, and on the girth welds that connect the line pipe across the RoW. Battelle's evaluation of leak prevention considered the effectiveness of wall thickness, controls for steel and longitudinal seams, and the external coating placed on the pipe and on the girth welds, as well as on the CP system. It is recommended that ILI be performed proactively prior to the start of operations. These inspections are capable of detecting major defects in welds and in the pipe wall, as well as defects caused by placement of the pipe in the ground. Any detected defects can be repaired before the start of operations and thereby reduce the probability that a leak will occur soon after the start of operations. It is understood that Keystone has committed to these ILIs prior to the start of operations.

Mitigative and Protective Measures: The information provided to Battelle was quite limited and did not address any spills in sensitive areas. Additional spreading analyses should be performed in areas where sensitive environmental receptors are found to demonstrate that these areas are being adequately protected and that additional valves would not have a net benefit. Since it is very expensive to move the placement of valves after all the construction details have been developed, the greatest utility of these calculations would be to have preliminary results available early in the process with the formal validation of their placement, demonstrating that the placement does minimize spill volumes.

During the construction phase, response team and equipment needs should be identified based on the scope of transported products and their potential interaction with the ecosystems that the pipeline traverses. Keystone has recently stated concurrence with this action and has indicated that they will (1) target response plans to the ecosystems and resources traversed, and (2) reduce the response time to two hours in such cases as compared to the minimum 12 hours of 49 CFR 194. Response teams and packages should be selectively located at ecosystems and resources deemed high-value, at a level more refined than the current narrow PHMSA definitions of an HCA or USA.

Since areas along the pipeline where seals and seats are present (e.g., on equipment and pumps) have a higher potential for spills, Keystone should be diligent about the material selection for seals and seats, from both the design and maintenance perspectives, over the life-cycle of the equipment. They should also consider more frequent scheduled maintenance for valves and other equipment, at least initially, and utilize pre-service offsite leak checks and equipment shakedown where plausible.

Depending on need dictated by the nature of the terrain, aspects of the water table, and other factors, Keystone should consider the selective use of concrete coated line pipe (or an

equivalent or better approach). For location-specific elements, like facilities, which are currently sited in sensitive ecosystems or resources, Keystone should also consider unique approaches to protect those sites, such as containment of facility leaks through the use of concrete pads and berms.

Although analysis of anomaly response and trending of the incident causes as a function of the diameter clearly show that the lineal portion of the Keystone XL Project is robust from a preventive perspective in regard to axially oriented anomalies, care should be taken to ensure that similar analyses are considered in the context of the girth welds, and that related defect tolerance is assessed and achieved, subject to the PHMSA process.

Although analysis of anomaly response and trending of the incident causes as a function of the diameter clearly show that the lineal portion of the Keystone XL Project is robust from a preventive perspective in regard to axially oriented anomalies, care should be taken to ensure that similar analyses are considered in the context of the girth welds, and that related defect tolerance is assessed and achieved, subject to the PHMSA process. "