

ENBRIDGE ENERGY, LIMITED PARTNERSHIP

MINNESOTA PUBLIC UTILITIES COMMISSION

MPUC DOCKET NO. PL9/CN-14-916 and PPL-15-137  
OAH Docket No. 65-2500-32764 and 65-2500-33377

TESTIMONY OF PAUL EBERTH  
January 31, 2017

1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 **Q. Please state your name and business address.**

4 A. My name is Paul Eberth. I am employed by Enbridge Employee Services, Inc., and my  
5 business address is 26 East Superior Street, Suite 309, Duluth, Minnesota 55802. Enbridge  
6 Employee Services, Inc. provides personnel to United States affiliates of Enbridge Inc.,  
7 including Enbridge Energy, Limited Partnership (the "Applicant"). Enbridge Energy, Limited  
8 Partnership will construct and operate the Line 3 Replacement Project (the "Project"). In my  
9 testimony, I will refer to Enbridge Inc. and its affiliates collectively as "Enbridge".

10

11 **Q. What is your position with Enbridge?**

12 A. I am the Project Director for the Line 3 Replacement in the U.S. I am responsible for the  
13 oversight and execution of the Project.

14

15 **Q. Briefly describe your educational and professional background and your current  
16 duties.**

17 A. I have a Bachelor's of Science in Industrial Engineering from the University of Minnesota in  
18 Duluth, Minnesota, and I am a licensed professional engineer in the State of Minnesota. I  
19 have approximately 14 years of experience in the energy industry, including ten years  
20 working for Enbridge on various pipeline and wind farm projects. I have worked on Enbridge  
21 pipeline projects in Minnesota including Line 67, Southern Lights and the Light Sour  
22 pipeline. In addition to my role as Project Director for the Project, I also served as a pipeline  
23 operator representative on the committee that was responsible for writing the new standard  
24 for pipeline safety ("API RP 1173"). The API RP 1173 committee included representation  
25 from state and federal regulators, the National Transportation Safety Board, the public, and  
26 industry. A copy of my statement of qualifications is attached as **Schedule 1**.

27

28 **Q. What is the purpose of your testimony?**

29 A. The purpose of my testimony is to:

- 30
- 31 • describe the Project;
  - 32 • summarize the need for the Project;
  - 33 • introduce other Enbridge witnesses and provide an overview of issues they address in  
direct testimony;

- 34 • provide information on Enbridge;  
35 • discuss alternatives considered but rejected for the Project;  
36 • describe Enbridge's routing process;  
37 • discuss Enbridge's consideration of route alternatives;  
38 • sponsor Enbridge's Safety Report; and  
39 • provide draft language that Enbridge requests be included in a pipeline route permit for  
40 the Project.

41

42 **Q. Please identify which sections of the Certificate of Need Application (“CN**  
43 **Application”) you are sponsoring for the record.**

44 A. I am sponsoring the following sections of Enbridge's CN Application:

- 45 • Section 1.0 Introduction;  
46 • Section 2.0 Subpart 1: General Information;  
47 • Section 3.1 Replacing Line 3 is the Optimal Maintenance Alternative to Ensure Safe  
48 Operation;  
49 • Section 3.3 Federal Requirements for Integrity Management Programs;  
50 • Section 4.0 C: Project's Effects on Future Development;  
51 • Section 5.0 Enbridge's Conservation Programs;  
52 • Section 10.0 Project Alternatives;  
53 • Section 11.2 Public and Stakeholder Outreach Efforts;  
54 • Appendix A Project Overview Map;  
55 • Appendix B Pipeline Safety Report; and  
56 • Appendix O Public Outreach Materials.

57

58 **Q. Please identify which sections of the Route Permit Application (“Route Permit**  
59 **Application”) you are sponsoring for the record.**

60 A. I am sponsoring the following sections of Enbridge's Route Permit Application:

- 61 • Section 1.0 Introduction;  
62 • Section 2.0 Background Information;  
63 • Section 3.0 Purpose and Need;  
64 • Section 4.7 Pipeline Estimated Costs and Accessibility;  
65 • Section 4.8 Project Schedule;  
66 • Section 4.9 Project Expansion;

- 67 • Section 5.3 Operation and Maintenance;
- 68 • Section 6.1 Line 3 Route Development Process;
- 69 • Section 6.2 Development and Application of Routing Criteria;
- 70 • Section 6.6 Evaluation of Replacement Options and Route Variations;
- 71 • Section 8.0 Permanent Removal of Existing Line 3 from Service;
- 72 • Section 9.0 Public and Stakeholder Outreach Efforts;
- 73 • Appendix A 1991 Line 3 Presidential Permit;
- 74 • Appendix D Pipeline Safety Report;
- 75 • Appendix E Environmental Protection Plan;
- 76 • Appendix H Agricultural Protection Plan; and
- 77 • Appendix Q Public Outreach Materials.

78

79 **Q. Do you have any updates to these sections of the Applications?**

80 A. Numerous Enbridge witnesses provide additional information or clarifications to the  
81 Applications in their testimonies based on information that has become available since  
82 Enbridge filed the Applications in April 2015. As it relates to the Route Permit Application  
83 and Appendices, Enbridge has attempted to consolidate these updates using the same  
84 format as provided in the Environmental Assessment Worksheet (“EAW”) published on April  
85 12, 2016. The Preferred Route reflected in this updated January 2017 EAW is the same  
86 route that the Commission accepted for study as “Line 3 Applicant’s Proposed Route” or  
87 “APR” in the December 2016 Final Scoping Decision Document. The information is simply  
88 consolidated in the EAW format for ease of reference. Updates include, for example, the  
89 results of Enbridge’s 2016 field surveys. I am sponsoring Sections 1 through 6 of the  
90 updated January 2017 EAW, which is attached as **Schedule 2** to my testimony. Mr. Barry  
91 Simonson and Ms. Britta Bergland sponsor various other sections of that updated EAW.

92

93 In addition, I am providing an updated version of Enbridge’s Safety Report (Appendices B  
94 and D of the CN and Route Permit Applications, respectively) as **Schedule 3** to my  
95 testimony.

96

97 **Q. What schedules are attached to your direct testimony?**

98 A. Schedule 1 – Statement of Qualifications

99 Schedule 2 – Updated EAW, January 2017

100 Schedule 3 – Updated Enbridge Pipeline Safety Report

- 101 Schedule 4 – Proposed Consent Decree
- 102 Schedule 5 – Summary Table of Preferred Route Modifications
- 103 Schedule 6 – Letters from Leech Lake Band of Ojibwe to Minnesota Public Utilities
- 104 Commission dated January 2, 2017 and October 25, 2013
- 105 Schedule 7 – Requested Draft Pipeline Route Permit

106

## 107 **II. LINE 3 REPLACEMENT PROGRAM AND PROJECT DESCRIPTION**

108

### 109 **Q. Please describe the Line 3 Replacement Program.**

110 A. The Line 3 Replacement Program is a pipeline integrity and maintenance driven program  
111 designed to address identified mechanical integrity deficiencies on the existing Line 3  
112 pipeline and return the pipeline to the operating capabilities for which it was designed. The  
113 Line 3 Replacement Program will replace the existing Line 3 pipeline from Alberta, Canada,  
114 to Superior, Wisconsin. The proposed replacement pipeline will serve the same purpose and  
115 need as the existing Line 3, which is the transportation of crude oil from the U.S. and  
116 Canada to Enbridge’s Clearbrook Terminal near Clearbrook, Minnesota, and to the Superior  
117 Terminal Facility near Superior, Wisconsin. The replacement pipeline serves the same  
118 markets and transports the same products as the existing Line 3 has done throughout its  
119 operating history.

120

### 121 **Q. Please provide a brief description of the Project.**

122 A. The Project is a major component of the Line 3 Replacement Program. The Project is the  
123 Minnesota portion of the Line 3 Replacement Program and includes the replacement of  
124 approximately 282 miles of the existing 34-inch diameter Line 3 pipeline with approximately  
125 340 miles of 36-inch diameter pipeline and associated facilities between the North  
126 Dakota/Minnesota border and the Minnesota/Wisconsin border. The Project will cross  
127 Kittson, Marshall, Pennington, Polk, Red Lake, Clearwater, Hubbard, Wadena, Cass, Crow  
128 Wing, Aitkin, and Carlton counties.

129

### 130 **Q. What is the capacity of the Project in Minnesota?**

131 A. The Project will have approximately an annual average capacity of 760,000 barrels per day  
132 (“bpd”).

133

### 134 **Q. Please summarize Line 3’s role within Enbridge’s Mainline System.**

135 A. The existing Line 3 is a 34-inch outside diameter, 1,097 mile pipeline that extends from  
136 Alberta, Canada, to Superior, Wisconsin. Line 3 has been in-service since the 1960s and  
137 has transported a variety of types of crude oil since that time. Due to its geographic  
138 location, Line 3 continues to play an important and integral role in delivering crude oil to  
139 Minnesota refineries through Enbridge's Clearbrook Terminal, as well as continued  
140 deliveries to various Midwest and Gulf Coast refineries through the Enbridge Superior  
141 Terminal. The Project will serve the same markets and transport the same products as the  
142 existing Line 3 has done throughout its operating history.

143

144 **Q. What is the estimated cost of the Project?**

145 A. The total estimated cost of the Line 3 Replacement Program is approximately \$7.5 billion, of  
146 which \$2.1 billion represents the cost of the Project in Minnesota.

147

148 **Q. When does Enbridge plan to begin construction?**

149 A. Enbridge plans to start construction of the Project as soon as it has received all necessary  
150 permits and regulatory approvals. Enbridge forecasts to begin construction in 2018 and  
151 complete construction, testing and commissioning of the new pipeline and associated  
152 facilities and place the Project in-service in 2019.

153

154 **Q. Why is Enbridge proposing to replace the existing Line 3?**

155 A. Enbridge is committed to replacing Line 3 because it is the best choice to ensure the  
156 continued safe and reliable operation of Enbridge's Mainline System.

157

158 As Ms. Kennett explains in greater detail, Enbridge continuously monitors and evaluates its  
159 pipelines to ensure they are operating safely. Through these ongoing evaluations, Enbridge  
160 identified a combination of integrity conditions on Line 3 that, absent replacement, will make  
161 safely maintaining the existing Line 3 an extraordinary challenge in the coming years.  
162 Specifically, the pipe materials, coating, installation method, operating history, and  
163 surrounding environment – together – resulted in the largest external corrosion anomaly  
164 density on the Enbridge Mainline System to occur on Line 3. And, while Enbridge's  
165 proactive steps to voluntarily reduce the operating pressure on the pipeline have slowed the  
166 growth of known stress corrosion cracking and long-seam cracking, and helped avoid  
167 releases on Line 3 since 2008, the extensive corrosion, coupled with known stress corrosion  
168 cracking and long seam cracking, would require approximately 7,000 integrity dig and

169 repairs to be executed along existing Line 3 over the next 15 years. The cost of such an  
170 extensive dig and repair program is nearly equal to that of replacement and results in year-  
171 over-year impacts to landowners and the environment. Yet, even if the dig and repair  
172 program were to continue, it cannot comprehensively address the pervasive integrity issues  
173 present on Line 3, nor can it restore the pipeline capacity needed to reliably serve refiners.

174  
175 As Mr. Simonson, Ms. Kennett, Mr. Glanzer, and Mr. Baumgartner describe in more detail,  
176 replacing Line 3 also provides numerous benefits to the Enbridge Mainline System,  
177 customers and the public. The Project will be constructed using modern pipeline design,  
178 manufacturing, coating, and installation techniques and the knowledge of the human,  
179 environmental and routing factors that Enbridge has acquired over its more than 65 years of  
180 operating history in this area. As examples, the Project will be constructed with thicker  
181 walled pipe with higher yield strength and will be installed with upgraded instrumentation to  
182 feed even more information into Enbridge's leak detection system. Its design also reduces  
183 per barrel energy usage across the Enbridge Mainline System, and its mixed service design  
184 will restore capacity and flexibility needed to meet ever changing crude oil demand.

185  
186 Accordingly, Enbridge has proposed the Project to ensure the continued safe operation of  
187 the Enbridge Mainline System, to restore the capacity needed to meet current and  
188 forecasted demands from shippers, and to ensure continued reliable crude oil transportation  
189 to refiners, in Minnesota, other Midwestern states, Eastern Canada, and the Gulf Coast.

190

191 **Q. Please describe the process Enbridge undertook to evaluate replacing Line 3.**

192 A. Enbridge engaged in a multi-year evaluation to determine the most appropriate long-term  
193 strategy for addressing Line 3's integrity issues. Ms. Kennett describes the numerous in-line  
194 inspections that were conducted to gather data regarding the condition of Line 3, as well as  
195 Enbridge's evaluation of its operation history, and the cost analysis of ongoing dig and repair  
196 versus replacement. These evaluations increasingly pointed to the challenges Enbridge  
197 would face operating Line 3, even with close monitoring and a vigorous dig and repair  
198 program.

199  
200 As Mr. Fleeton discusses, Enbridge then approached shippers using the Enbridge Mainline  
201 System and began negotiating a rate increase that would allow Enbridge to make the \$7.5  
202 billion investment necessary to replace Line 3 from Alberta, Canada, to Superior, Wisconsin,

203 knowing it had support from the affected shippers. This agreement was reached on  
204 February 26, 2014. Enbridge then began more extensive stakeholder outreach and applied  
205 for the regulatory approvals it needed in the U.S. and Canada to replace Line 3.

206

207 **Q. Is Enbridge under any legal or regulatory obligation to replace Line 3?**

208 A. Yes. After Enbridge submitted its Applications to the Commission, and as the result of a  
209 settlement of litigation that followed the unintentional releases of crude oil from Enbridge's  
210 Line 6B near Marshall, Michigan in July 2010 and from Enbridge's Line 6A near Romeoville,  
211 Illinois in September 2010, Enbridge agreed to a proposed Consent Decree that requires  
212 Enbridge to replace Line 3 and take existing Line 3 out of service as expeditiously as  
213 practicable after receipt of approvals for the Line 3 Replacement Project. The Consent  
214 Decree imposes a deadline for Line 3 to be taken out of service by December 31, 2017, or  
215 substantial additional requirements will be imposed on its continued operation. **Schedule 4**  
216 to my testimony contains a copy of the proposed final Consent Decree, which was revised  
217 following public comment and further negotiation between Enbridge and the United States  
218 Department of Justice, as filed in the United States District Court for the Western District of  
219 Michigan Southern Division on January 19, 2017.

220

221 **Q. Are there other provisions of the proposed Consent Decree that relate to operation of**  
222 **Line 3?**

223 A. Yes, in the event Line 3 is not replaced by December 31, 2017, Enbridge must complete and  
224 validate in-line inspections annually for crack, corrosion and geometry threats (Enbridge  
225 currently inspects every 12 to 18 months). Ms. Kennett further discusses the increased  
226 operating costs associated with complying with these provisions. Additionally, Mr. Art  
227 Haskins discusses the additional emergency response drills required to be completed under  
228 the proposed Consent Decree.

229

230 **Q. What is the status of the required approvals for the Line 3 Replacement Program in**  
231 **Canada, North Dakota and Wisconsin?**

232

233 A. In Canada, the Federal Government announced that it was approving the project in  
234 November 2016, and the National Energy Board issued a Certificate approving the  
235 construction and operation of the Line 3 Replacement Program on December 1, 2016.  
236 Enbridge anticipates starting the detailed route approval process in Q1 2017, with approval



237 likely to follow in Q2 2017. Once the standard pre-construction conditions have been met,  
238 Enbridge anticipates starting construction in August 2017.

239  
240 A permit is not required from the North Dakota Public Service Commission. A notice of the  
241 replacement will be submitted to the North Dakota Public Service Commission prior to the  
242 start of construction.

243  
244 In Wisconsin, no permit is required from the Public Service Commission of Wisconsin  
245 because Enbridge is not seeking the right of eminent domain. An EIS and the  
246 wetland/waterbody permit for the Wisconsin portion of L3R were issued on August 30, 2016.  
247 There was no appeal of the issued permit. Enbridge anticipates the Army Corps of  
248 Engineers will issue its approval in Q1 2017.

249

### 250 **III. NEED SUMMARY**

251

#### 252 **Q. Please summarize the need for the Project.**

253 A. The Project is needed to address the following:

254

- 255 • First, safety is at the core of Enbridge's operation. The Project was identified through  
256 Enbridge's ongoing assessment of its operating assets, which is a key component of  
257 Enbridge's safety plan. The Project will improve public safety and protection of the  
258 environment by replacing the existing Line 3, a pipeline with a large number of  
259 identified pipe defects and anomalies, with a new pipeline constructed with the latest  
260 construction practices, technology and materials. The repair of pipe anomalies is  
261 addressed through Enbridge's Integrity Management Program. The Project will avoid  
262 the large and increasing number of repairs currently forecasted to be required on  
263 Line 3 over the next 15 years, thereby reducing the re-occurring impacts to  
264 landowners and the environment. Line 3's current condition is described further by  
265 Ms. Laura Kennett. As I discuss further below, Enbridge's commitment to replace  
266 Line 3 is reflected in a proposed Consent Decree filed by the United States  
267 Department of Justice in a proceeding arising from a 2010 oil spill on the Enbridge  
268 Mainline System in Michigan.

269           • Second, as described by John Glanzer, the Project will enable Enbridge to better  
270 meet the demand for crude oil in PADD II, including Minnesota, as well as Eastern  
271 Canada and the U.S. Gulf Coast by allowing Enbridge to more reliably and efficiently  
272 transport an economical and secure supply of crude oil. As Mr. Glanzer explains, the  
273 Project will reduce on-going and forecasted apportionment to the refining industry in  
274 PADD II, including Flint Hills and Northern Tier Energy in Minnesota, Eastern  
275 Canada, and the Gulf Coast, by restoring the capacity of the pipeline to its original  
276 operating capacity of 760,000 bpd.

277           • Third, as Mr. Glanzer further explains, the restored operational flexibility will allow  
278 Enbridge to more efficiently operate the Enbridge Mainline System, optimize its  
279 pipeline system, and reduce power utilization on a per barrel basis.

280 These benefits will help to ensure the future adequacy, reliability, and efficiency of energy  
281 supply to Enbridge’s customers, and, as a result, to the people of Minnesota and  
282 neighboring states. If the Project is not approved, Enbridge will continue to operate Line 3 in  
283 a safe and reliable manner; however, the worsening condition of the pipeline is causing an  
284 increasing amount of maintenance and repair that would not only inconvenience landowners  
285 and impact the environment, but would also be economically inefficient. Further, ongoing  
286 maintenance will not restore the operating capabilities of Line 3, leaving Enbridge’s  
287 customers without adequate, reliable, and efficient transportation capacity to reduce  
288 apportionment.

289  
290 As described further by Mr. Jack Fleeton, commercial support and evidence of need for the  
291 Project was confirmed by Enbridge’s Representative Shipper Group’s agreement to  
292 increase rates to recover the costs of replacing Line 3.

293  
294 **Q. Please summarize the Project’s benefits to consumers in Minnesota and neighboring**  
295 **states.**

296 A. The Project will help to ensure the continued stable, reliable, and efficient delivery of North  
297 American crude oil to refineries in Minnesota, other Midwestern states, Eastern Canada,  
298 and the Gulf Coast. These refineries convert the crude oil into a variety of products for use  
299 in Minnesota and the surrounding regions, including gasoline, diesel, jet fuel, asphalt, and  
300 many other useful petroleum products. Refineries in Minnesota and neighboring states do  
301 not produce all of the petroleum products consumed within their borders; demand for refined

302 products in Minnesota's immediate region significantly exceeds refinery production within  
303 the region. As discussed by Mr. Neil Earnest, refineries located in other Midwestern states  
304 act as key suppliers to the region, and the security, adequacy, and reliability of crude oil  
305 supplies to these refineries has a direct bearing on meeting the overall energy needs of  
306 Minnesota and neighboring states. Today, nearly all crude oil refined in Minnesota and its  
307 neighboring states is from either the U.S. or Canada. By providing access to abundant  
308 North American crude oil supply, the Project provides significant benefits to the Midwest,  
309 including Minnesota, by ensuring that the region continues to realize the benefits of access  
310 to affordable energy and a wide range of useful refined products.

311  
312 As discussed further in Dr. Richard Lichty's testimony, the Project will also provide  
313 significant economic benefits to Minnesota. Not only will the Project provide construction  
314 and operations jobs and associated income, it will also have positive direct and indirect  
315 economic impacts on other local industries.

316  
317 Finally, as I described above, a critical benefit of replacing Line 3 is that it will significantly  
318 reduce apportionment, which will ensure the necessary capacity is available to the refineries  
319 in the Midwest, including the two Minnesota refineries.

320  
321 **Q. What other Enbridge witnesses are providing direct testimony in support of**  
322 **Enbridge's CN Application?**

323 A. The following witnesses are providing testimony in support of Enbridge's CN Application:

324  
325 **Ms. Laura Kennett**, Supervisor of Asset Integrity Projects, testifies regarding Enbridge's  
326 integrity management program, the unique characteristics of Line 3 that led to a  
327 replacement analysis and the key drivers and analyses prompting replacement.

328  
329 **Mr. John Glanzer**, Director of Infrastructure Planning & Lifecycle Effectiveness, describes  
330 how the Project will operate as an integral part of the Enbridge Mainline System, the need  
331 for additional capacity on the Enbridge Mainline System, and the benefits of operating the  
332 Project in mixed service.

333  
334 **Mr. Neil Earnest**, President of Muse, Stancil & Co., testifies on the forecasted supply of  
335 crude oil produced in Western Canada; the need for the Project to ensure the future

336 adequacy, reliability, and efficiency of energy supply to Enbridge's customers and the  
337 people of Minnesota and neighboring states; the benefits of the Project to Minnesota and  
338 surrounding states.

339  
340 **Mr. Jack Fleeton**, Director of Business Development Mainline and Downstream, testifies  
341 regarding the commercial negotiations and support for the Project and the applicable tariff  
342 provisions and commercial agreements.

343  
344 **Mr. Barry Simonson**, Manager of Engineering and Construction, describes the design and  
345 construction information for the Project as presented in the Applications; discusses  
346 Enbridge's engineering analysis for the accepted alternatives; and describes Enbridge's  
347 plans to permanently deactivate the existing Line 3 pipeline once the Project is permitted,  
348 constructed and placed into service.

349  
350 **Mr. Art Haskins**, Supervisor of Emergency Response, sponsors sections of the Applications  
351 addressing emergency response, explains the federal oversight of pipeline emergency  
352 response plans, and discusses Enbridge's development of an emergency response plan  
353 and how it is implemented.

354  
355 **Mr. Allan Baumgartner**, Director of Control Center Operations, testifies regarding  
356 Enbridge's Control Center's operational processes; explains what the Control Center's role  
357 will be in monitoring "real time" pipeline operations for the Project after it is actively in  
358 service; describes the Control Center's roles and responsibilities in emergency response  
359 situations; and discusses improvements to pipeline monitoring technology that will be  
360 employed for the Project.

361  
362 **Ms. Stacey Gerard**, Consultant, discusses federal oversight of pipeline safety, federal  
363 pipeline integrity management requirements and the role of replacement in pipeline integrity  
364 management. Ms. Gerard also discusses how Enbridge's decision to replace Line 3 is  
365 appropriate given the pipeline's condition and time-dependent integrity challenges, and  
366 aligns with what PHMSA has been encouraging and the federal government expects with  
367 respect to Enbridge's integrity management of its pipeline system.

368

369 **Mr. William Rennie**, Partner with Oliver Wyman, Inc. describes the impact that denial of  
370 the Project would have on rail services in the State of Minnesota and the impact of using rail  
371 to transport crude oil through Minnesota; and assesses the implications of new Federal rail  
372 regulations on crude oil transportation.

373  
374 **Dr. Richard Lichty**, Professor Emeritus of the University of Minnesota, Duluth, testifies as  
375 to the economic benefits to Minnesota resulting from construction and operation of the  
376 Project.

377  
378 **Ms. Britta Bergland**, Senior Analyst at Merjent, Inc., describes the environmental analyses,  
379 studies, and surveys that have been conducted for the Project; outlines the potential  
380 environmental impacts of alternatives to the Project; describes the environmental impacts of  
381 deactivation of the existing Line 3 Pipeline; explains the mitigation measures developed for  
382 the Project; and provides updates regarding other federal, state, and local permits and  
383 approvals Enbridge is seeking for the Project.

384  
385 **Mr. John McKay**, Manager, Land Services for U.S. Major Projects and Liquids Pipelines,  
386 describes the land rights that Enbridge needs to construct the Project, how Enbridge works  
387 with landowners to acquire those rights, and provides information regarding the programs  
388 and efforts that Enbridge makes to have positive, long-term relationships with landowners  
389 along the Project route.

390  
391 **Dr. Christopher Bergman**, Cultural Resources Management Practice Lead for the Oil, Gas  
392 & Pipeline Business Line at AECOM, provides an overview and peer-review of the process,  
393 methods, and results of Enbridge's cultural resources investigations related to the Project.

394  
395 **Mr. Ray Woulo**, P.E., P.G., Vice President and Principal Hydrogeologist at Barr Engineering  
396 Co., describes the studies conducted by Barr Engineering on behalf of Enbridge to assess  
397 the potential for the operations of the Project to affect lakes and groundwater in Minnesota.

398  
399 **Mr. Jeff Lee**, Vice President and Senior Ecologist for Barr Engineering Co., describes the  
400 study conducted by Barr Engineering on behalf of Enbridge to assess the potential for the  
401 operations of the Project to affect wild rice waters in Minnesota.

402

403 **Q. Which Enbridge witnesses are providing direct testimony in support of Enbridge's**  
404 **Route Permit Application?**

405 A. Mr. Simonson, Ms. Bergland, Mr. Haskins, Mr. McKay, Dr. Bergman, Mr. Wuolo, Mr. Lee  
406 and I provide testimony regarding the CN and Route Permit Applications.

407

#### 408 **IV. COMPANY INFORMATION**

409

410 **Q. Who is the Applicant in this proceeding?**

411 A. The Applicant is Enbridge Energy, Limited Partnership, a Delaware limited partnership and a  
412 wholly-owned subsidiary of Enbridge Energy Partners, L.P ("EEP"). Both entities, along with  
413 other affiliates, are direct or indirect subsidiaries of Enbridge Inc. (collectively, "Enbridge").  
414 Enbridge owns and operates liquids and natural gas pipelines, wind farms, solar plants, and  
415 a large local gas distribution company. In particular, Enbridge owns and operates a system  
416 of liquids pipelines collectively referred to as the Enbridge Mainline System. The Enbridge  
417 Mainline System transports crude oil from Western Canadian and the Bakken Formation to  
418 refineries in the United States and Eastern Canada. The Enbridge Mainline System is made  
419 up of the Canadian mainline system, which transports crude oil from Western Canada and  
420 the Bakken formation to the international border near Neche, North Dakota, and the  
421 Lakehead System. The Applicant is the primary owner and operator of the Lakehead  
422 System, which is the United States portion of the Enbridge Mainline System and consists of  
423 pipelines in North Dakota, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and New York.  
424 Enbridge also owns and operates several market extension pipelines that serve various  
425 refinery markets in the Midwest and Gulf Coast.

426

427 **Q. Have there been any significant changes to Enbridge's corporate structure since the**  
428 **Applications were filed?**

429 A. No. On September 6, 2016, Enbridge Inc. and Spectra Energy Corp ("Spectra Energy")  
430 announced they had entered into a definitive merger agreement under which Enbridge Inc.  
431 and Spectra Energy will combine in a stock-for-stock merger transaction. While the  
432 transaction will diversify the energy infrastructure holdings of Enbridge Inc., post-closing it is  
433 not anticipated that the transaction will affect the company structure of Enbridge Energy  
434 Partnership, L.P. or the operation of the Project.

435

436 **Q. Please describe Enbridge's experience in crude oil transportation.**

437 A. Enbridge is an industry leader in the transportation and distribution of energy in North  
438 America. Enbridge has been operating crude oil pipelines in North America, including in  
439 Minnesota, for over 65 years. Enbridge's pipelines can move – directly or via  
440 interconnections – approximately 2.4 million barrels of crude oil every day to North American  
441 markets. Together, the Enbridge Mainline System and Enbridge's market extension  
442 pipelines comprise approximately 15,795 miles of liquid petroleum pipelines and constitute  
443 the world's longest crude petroleum and petroleum liquids pipeline network.

444

445 **Q. Please discuss Enbridge's commitment to safe operations.**

446 A. Safety is at the core of Enbridge's operation. Enbridge is committed to safely operating and  
447 maintaining its assets and ensuring that everyone returns home safely at the end of each  
448 and every day. This commitment to safety is based on caring for employees, our  
449 contractors, the communities in which we operate and the environment. Enbridge  
450 proactively works to identify and prevent potential safety issues; responds immediately when  
451 a safety issue is identified; and continually seeks ways to improve safety performance.

452

453 Enbridge's goal is zero safety incidents. The decisions it makes and the actions it takes in  
454 pursuit of that goal are guided by several foundational principles. Specifically, Enbridge  
455 believes that: management is accountable for safety performance; all incidents, injuries and  
456 occupational illnesses can be prevented; all employees and contractors are responsible for  
457 safety; uncontrolled releases can be prevented, and ongoing assessment and improvement  
458 are a must. These principles create a culture in which safety is everyone's responsibility,  
459 leadership is accountable for safety performance, continuous improvement is required, and  
460 hazards are controlled. By maintaining a constant focus on safety management, fostering a  
461 culture that values safety, learning from prior incidents, and addressing sources of potential  
462 future incidents, Enbridge enhances its ability to prevent incidents and unintentional  
463 releases that can have an impact on people, the environment, Enbridge's assets, and its  
464 reputation.

465

466 Enbridge has developed a Safety Management System Framework to provide all parts of its  
467 business with common guidance and structure. This Framework ensures that Enbridge's  
468 efforts to deliver industry-leading safety and reliability performance are thoroughly and  
469 expertly planned, executed, monitored, and continually improved upon using a shared  
470 approach. Safety and operational reliability is a process of continuous improvement for

471 Enbridge. For example, we meticulously investigate past incidents in order to learn and  
472 generate corrective and preventative actions with a goal of eliminating reoccurrence.

473  
474 In 2012 and 2013, Enbridge invested a total of \$4.4 billion in programs and initiatives to  
475 maintain and further enhance our pipelines and facilities. As an example, Enbridge replaced  
476 Line 6B in Michigan. In addition, since 2008, Enbridge has inspected 100 percent of the  
477 pipelines on our Liquids Pipelines system that can be inspected using inline inspection tools.  
478 That's a total of 14,205 miles of pipelines.

479  
480 Enbridge's Major Projects unit, the group responsible for construction of the Project, is  
481 driving safety improvements by having established a United States and Canadian Pipeline  
482 Construction Roundtable that includes construction contractors and pipeline owners who  
483 gather to address challenges and discuss opportunities to improve safety performance.

484  
485 Further, in partnership with other industry leaders, Enbridge is continuously researching and  
486 deploying new and improved pipeline safety and inspection technologies including methods  
487 of leak detection.

488

489 **Q. How does Enbridge make sure new projects are safe and reliable?**

490 A. Enbridge's focus on safety and operational reliability begins well in advance of construction  
491 and operations. We carefully select pipeline routes and maintain rigorous standards for  
492 engineering and design, including special design requirements for areas such as road,  
493 railroad, and water crossings. We take the same rigorous approach with our other facilities,  
494 such as pump stations and terminals.

495  
496 We then set special design and engineering standards for materials procurement, including  
497 selection of pipeline materials, corrosion-inhibiting coatings, and cathodic protection.

498  
499 Finally, a rigorous inspection program is deployed during material manufacturing, pipeline  
500 construction, and project start-up.

501

502 **Q. How does Enbridge keep pipelines safe once they are in service?**



503 A. Enbridge utilizes its Integrity Management Program to ensure pipelines can be safely  
504 operated for their intended purpose. Enbridge identifies integrity threats, monitors threats,  
505 mitigates threats and then verifies the effectiveness of its programs.

506  
507 We also heavily invest in the most advanced leak detection, damage prevention, and  
508 pipeline integrity management technologies.

509  
510 Enbridge works to operate each pipeline in a way that protects its quality. For example, we  
511 strive to manage and minimize pressure cycling on our pipelines, which is the fluctuations  
512 that occur when pumps start and stop, injection and delivery points change, and transitions  
513 occur between oil with different densities and viscosities. Minimizing pressure cycling  
514 reduces stresses that can lead to wear on our pipelines.

515  
516 Additionally, we inspect our system from the inside out, using the most sophisticated inline  
517 inspection tools available to us. We strive to prevent any dents, scrapes and other damage  
518 to our pipes and facilities during construction and operation or by third parties. Given that  
519 third party damage is a leading cause of pipeline leaks, public awareness is a vital element  
520 of pipeline safety. Enbridge has a comprehensive public awareness program in place to  
521 engage landowners, community members, and first responders to ensure that they are  
522 aware of our pipelines and related facilities.

523

524 **Q. How does Enbridge protect the environment?**

525 A. Enbridge is committed to identifying, mitigating, and proactively managing potential  
526 construction project effects on the environment. For example, Enbridge:

- 527 • studies and then selects a route that avoids or minimizes impacts on the  
528 environment;
- 529 • adheres to its environmental permit requirements;
- 530 • employs best management practices to reduce our impact in sensitive areas; and
- 531 • conserves valuable energy resources.

532

533 As described in Section 5 of the CN Application, Enbridge also invests in technology to  
534 develop equipment that will minimize the use of energy. Enbridge's use of a larger pipeline  
535 diameter reduces fluid velocities, resulting in reduced hydraulic line loss due to friction,  
536 which translates into lower energy consumption by the pumps. Enbridge also utilizes high-

537 efficiency pumps and motors to minimize power requirements over the long-term. Further,  
538 Enbridge's Pipeline Control Center operators are trained to operate the pipeline at an  
539 optimum flow rate using the most efficient combinations of pumps, thereby minimizing  
540 energy consumption.

541  
542 In addition to the Project-specific design to conserve energy, Enbridge has a growing  
543 presence in renewable energy, including solar, wind, waste-heat recovery, geothermal, and  
544 fuel cell technologies. To date, Enbridge's investments in renewable energy systems in  
545 North America exceed \$4 billion, and it has acquired (out-right or through partnerships)  
546 more than 2,200 MW of renewable energy generation. In addition, Enbridge is investing in  
547 alternative and emerging technologies related to energy efficiency and renewable energy.  
548 For additional information about Enbridge's commitment to energy efficiency and  
549 conservation, see Section 5 of the CN Application.

550

## 551 **V. ALTERNATIVES TO THE PROJECT**

552

### 553 **Q. Prior to submitting the CN Application, did the Applicant examine other alternatives to** 554 **the proposed Project?**

555 A. Yes. Enbridge examined the following as alternatives to the Project: no-action; rail; truck;  
556 and existing or planned pipelines. While I will summarize Enbridge's evaluation of these  
557 alternatives, the alternatives are discussed in detail in Section 10 of the CN Application.

558

### 559 **Q. What limiting factors did Enbridge consider when examining alternatives to the** 560 **Project?**

561 A. The Project's purpose is to replace the Minnesota portion of the existing Line 3 to address  
562 integrity issues and restore its original operating capabilities to provide shippers with reliable  
563 and efficient crude oil transportation. In order to do this, the Project must connect to other  
564 portions of Line 3 being replaced in adjacent states and connect at Enbridge's facility at  
565 Clearbrook, Minnesota. To align with the remaining Line 3 replacement segments and  
566 continue to meet the needs of shippers served by Line 3, the Project must: (1) cross into  
567 Minnesota in Kittson County to connect with the segment of Line 3 being replaced in North  
568 Dakota; (2) connect to the existing Enbridge Clearbrook Terminal in Clearbrook, Minnesota,  
569 so that crude oil can be delivered to Minnesota Pipe Line Company's system and other  
570 Enbridge pipelines; and (3) exit Minnesota in Carlton County to connect with the segment of

571 Line 3 being replaced in Wisconsin, which then connects to existing Enbridge facilities at  
572 Superior, Wisconsin. An alternative that does not meet these requirements would not meet  
573 the primary purpose of the Project. With these requirements in mind, Enbridge considered  
574 and rejected the transportation methods discussed below as alternatives to the Project.

575

576 **Q. Please explain why Enbridge determined that no action is not an alternative to the**  
577 **Project.**

578 A. Under no action, Enbridge considered continuing to conduct integrity digs and repairs as  
579 needed to safely operate the existing Line 3, albeit under self-imposed pressure restrictions.  
580 Enbridge determined that the Project as proposed is less intrusive to landowners and the  
581 environment over the long-term than not replacing it.

582

583 At some point, it becomes economically infeasible to continue to operate the existing Line 3  
584 due to the increasing frequency and density of maintenance activities required to keep the  
585 existing pipeline operational. Removing the existing Line 3 from service is not a reasonable  
586 option where no available alternate mode of transportation exists. This would result in  
587 significant impacts to Enbridge's shippers, including the Minnesota refineries, who would  
588 have to obtain crude oil via other means. Furthermore, ongoing maintenance efforts will not  
589 restore the operating capability of Line 3, which is a necessary outcome of the Project.  
590 Accordingly, Enbridge rejected no action as an alternative to the Project.

591

592 **Q. Please explain why Enbridge determined that rail is not an alternative to the Project.**

593 A. In the event Line 3 is taken out of service because it has become infeasible to operate, the  
594 760,000 bpd to be transported by the Project would likely be shipped via rail. However,  
595 there is no existing rail system in place to transport an additional 760,000 bpd to Line 3's  
596 delivery points. Although rail tanker cars are a vital part of the short-haul distribution network  
597 for crude oil, the related infrastructure for loading and unloading crude does not exist. Nor is  
598 it clear that there are sufficient rail cars available to transport 760,000 barrels each and  
599 every day across Minnesota. Further, as trucks are required to deliver crude oil to rail  
600 facilities, the reliability of crude by rail in northern climates is compromised by restrictions in  
601 truck traffic due to winter storms and spring road restrictions or other weather-related or road  
602 capacity restrictions. For these reasons, Enbridge determined that rail is not an alternative  
603 to the Project.

604

605 In his direct testimony, Mr. Rennie provides an additional analysis regarding the impacts  
606 of the no action alternative on rail transportation.

607

608 **Q. Please explain why Enbridge determined that trucking is not an alternative to the**  
609 **Project.**

610 A. Enbridge rejected trucking as an alternative to the Project because there is simply  
611 insufficient tanker trailer truck capacity to transport the 760,000 barrels of crude oil each and  
612 every day across Minnesota that would otherwise be moved by the Project, and the creation  
613 of such a trucking system is infeasible. In addition, truck transportation is less reliable than  
614 the Project because truck traffic is affected by weather conditions, mechanical failures,  
615 manpower shortages, and road maintenance or closures. Trucks also have a significantly  
616 higher rate of accidents than pipelines. Because it would not be possible to transport  
617 760,000 bpd of crude oil via truck, Enbridge concluded that trucking is not an alternative to  
618 the Project.

619

620 **Q. Please explain why Enbridge determined that other planned pipeline projects are not**  
621 **alternatives to the Project.**

622 A. In the CN Application, Enbridge identified the following pipeline projects that had been  
623 proposed to transport crude oil from the Western Canadian Sedimentary Basin: Northern  
624 Gateway Project; Trans Mountain Pipeline Expansion; Energy East Pipeline Project; and  
625 Keystone XL Pipeline. None of these projects would deliver crude oil to Clearbrook,  
626 Minnesota, or Superior, Wisconsin. Specifically, the Northern Gateway, Trans Mountain  
627 Pipeline Expansion, and the Energy East Pipeline projects do not enter the United States.  
628 Similarly, the Keystone XL Pipeline does not cross Minnesota and would not provide needed  
629 pipeline capacity to refineries in Minnesota, Wisconsin, the greater Chicago area, or other  
630 Midwest refineries. Accordingly, Enbridge determined that these planned pipeline projects  
631 are not alternatives to the Project.

632

633 Schedule 2 to Mr. Neil Earnest's testimony provides additional updates regarding the status  
634 of these pipeline projects, further underscoring that they are not viable alternatives to the  
635 Project.

636

637 **Q. Please explain why Enbridge determined that the expansion of an existing Enbridge**  
638 **pipeline is not an alternative to the Project.**

639 A. Enbridge cannot expand the capacity of one or more of the existing pipelines on the  
640 Enbridge Mainline System from Western Canada to Superior, Wisconsin to accommodate  
641 the transportation of Line 3 oil shipments. The Minnesota Public Utilities Commission issued  
642 a Certificate of Need to Enbridge for the Line 67 Phase 2 Project on November 7, 2014,  
643 allowing Line 67 to operate at its full annual average capacity. Line 67 is now fully utilized  
644 and cannot transport the additional volumes that would be required if Line 3 were taken out  
645 of service. The remaining pipelines in Enbridge's Mainline System cannot be expanded to  
646 accommodate the transportation of Line 3 oil shipments. Accordingly, expansion of an  
647 existing pipeline on the Enbridge Mainline System is not a viable alternative to the Project.  
648

649 **Q. Did Enbridge also evaluate the alternative SA-04-L3 from the Final Scoping Decision**  
650 **Document?**

651 A. Yes. Following the Commission's inclusion of SA-04-L3, Enbridge evaluated this system  
652 alternative.  
653

654 **Q. What were the results of Enbridge's evaluation of SA-04-L3?**

655 A. SA-04-L3 does not meet the purpose and need of the Project. It cannot serve as a  
656 replacement to the existing Line 3, because it does not connect to existing Enbridge  
657 pipelines or facilities at Clearbrook or Superior.  
658

659 Further, SA-04-L3 has significantly more impacts to landowners and the environment than  
660 the Project. For example, it would add approximately 400 miles of pipe, two more pump  
661 stations, and an entirely new terminal, including seven new crude oil tanks, somewhere in  
662 the congested vicinity of Joliet, Illinois. It would cross five states and cost an estimated \$5.5  
663 billion, which is more than twice the cost of the Preferred Route. The additional construction  
664 disturbance significantly increases the potential for human and environmental impacts, both  
665 from construction and operation of this alternative. Moreover, because it would deliver  
666 directly to Illinois, with no opportunity for deliveries in Minnesota or Wisconsin, it would serve  
667 fewer potential shippers, while increasing costs for all Enbridge Mainline shippers. For  
668 example, the Minnesota refiners would lose a substantial portion of the available shipping  
669 capacity on the Enbridge Mainline System if SA-04-L3 were constructed, but would still bear  
670 the increased cost of the alternative. More detailed analysis of SA-04-L3 is included in the  
671 Enbridge Alternatives Analysis included as Schedule 7 to Mr. Simonson's testimony, as well  
672 as in the testimonies of Mr. Glanzer and Mr. Fleeton.

673 **VI. ROUTING CONSIDERATIONS**

674

675 **Q. What general principles were used to guide the selection of Enbridge's Preferred**  
676 **Route?**

677 A. In developing a preferred route, Enbridge sought to develop a route that satisfied the Project  
678 need, while balancing four main objectives:

- 679 1. Avoid and minimize long-term impacts, to the extent feasible, to environmentally  
680 sensitive areas such as lakes, rivers, wetlands, wildlife habitats, and forest lands;
- 681 2. Avoid and minimize impacts to human settlements such as farmsteads, residences,  
682 and residential developments to the extent possible;
- 683 3. Select a route that parallels or utilizes existing, previously disturbed utility corridors or  
684 rights-of-way ("ROW") to minimize human and environmental impacts; and
- 685 4. Select a route width that provides sufficient additional temporary work space and the  
686 flexibility needed to accommodate unforeseen impediments encountered during  
687 construction.

688

689 These principles are applied to the routing process through the following steps:

690

- 691 1. Establish the necessary end points and identify the shortest most efficient route  
692 available;
- 693 2. Maximize the use of existing facilities within the identified area of the route;
- 694 3. Co-locate with existing utilities where possible; and
- 695 4. Identify areas of potential high consequence and environmental impacts and apply  
696 reroutes or site-specific engineering to minimize impacts to people and the  
697 environment.

698

699 In addition, Enbridge analyzed potential routes in compliance with the Pipeline Routing  
700 Permit requirements under Minnesota Statutes Chapter 216G and Minnesota Rules Chapter  
701 7852. As part of this analysis, Enbridge considered the impacts on land use, terrain and  
702 geology, soils, vegetation, wildlife, fisheries, groundwater resources, surface water  
703 resources, wetlands, roads, forest lands, cultural resources and federal, state or county  
704 recreational areas, as well as socioeconomic impacts.

705

706 Once an initial route was identified, extensive civil and environmental field surveys were  
707 conducted (with landowner permission) to assist in the refinement of the preferred route.  
708 Finally, through consultation with landowners, communities, environmental agencies, and  
709 other stakeholders, a preferred route was developed.

710

711 **Q. Did Enbridge consider input from landowners, agencies, and local government**  
712 **officials when developing its Preferred Route?**

713 A. Yes. Enbridge solicited feedback from landowners, agencies, and local government officials  
714 through early coordination letters and open houses. In addition, Enbridge carefully  
715 considered comments received by the Minnesota Department of Commerce, Energy  
716 Environmental Review and Analysis (“DOC-EERA”) during the public comment periods open  
717 in 2015 and 2016. As a result of this public and stakeholder input, Enbridge made over 50  
718 changes to the proposed centerline of its Preferred Route and incorporated 23 proposed  
719 route alternatives.

720

721 **Q. What route is Enbridge requesting the Commission approve as part of this routing**  
722 **permit proceeding?**

723 A. Enbridge is requesting that the Commission grant a route permit for the Preferred Route,  
724 with the inclusion of RSA-05-L3. The Preferred Route generally follows the existing Line 3  
725 pipeline along the Enbridge Mainline System right-of-way (“ROW”) from the North  
726 Dakota/Minnesota border in Kittson County to and including the Clearbrook Terminal in  
727 Clearwater County (referred to as the “West of Clearbrook” portion of the route). Next, the  
728 Preferred Route turns south from Clearbrook to generally follow an existing third-party  
729 pipeline ROW to Hubbard County and then turns east to generally follow existing electric  
730 transmission lines to the Minnesota/Wisconsin border in Carlton County (referred to as the  
731 “East of Clearbrook” portion of the route). The Preferred Route traverses Polk, Red Lake,  
732 Clearwater, Hubbard, Wadena, Cass, Crow Wing, Aitkin, and Carlton Counties in  
733 Minnesota.

734 RSA-05-L3 deviates from the Preferred Route at approximate MP 926.9, approximately 5  
735 miles southeast of Bagley in Clearwater County. RSA-05-L3 then travels east through forest  
736 and agricultural fields for 4 miles until it turns south through forest and agricultural fields for  
737 9 miles. It rejoins the Preferred Route at approximate MP 936.7, all within Clearwater  
738 County.

739 Enbridge is requesting a 750 foot wide route, 375 feet on either side of the pipeline  
740 centerline.

741

## 742 **VII. ROUTE ALTERNATIVES ANALYSIS**

743

### 744 **Q. Did Enbridge consider other routes as it developed its Preferred Route?**

745 A. Yes. As described in Section 6.6 of the Route Permit Application, Enbridge considered a  
746 number of route alternatives when it developed the Application. A discussion of each  
747 alternative and the reasons each was ultimately rejected is included in Section 6.6 of the  
748 Route Permit Application.

749

### 750 **Q. Did Enbridge analyze the route alternatives accepted by the Commission for 751 evaluation at the public hearings and in the Environmental Impact Statement (“EIS”)?**

752 A. Yes. Enbridge analyzed each of the system, route and route segment alternatives accepted  
753 by the Commission. Enbridge’s Alternatives Analysis (Schedule 7 of Mr. Barry Simonson’s  
754 direct testimony) includes a description and analysis of each alternative, using the naming  
755 convention provided by DOC-EERA in the December 5, 2016 Final Scoping Decision  
756 Document. I am sponsoring the recommendations portions of Enbridge’s Alternatives  
757 Analysis. Enbridge recommends that the Commission issue a Route Permit for the  
758 Preferred Route, with the inclusion of RSA-05-L3. RSA-05-L3 avoids connectivity and  
759 potential impacts to the Eastern Wild Rice Watershed, which contains Upper Rice Lake and  
760 Lower Rice Lakes, two rice lakes noted as important resources to the White Earth Band of  
761 Ojibwe.

762

### 763 **Q. Has Enbridge modified its Preferred Route based on public comments received as 764 part of the MPUC permitting process?**

765 A. Yes. **Schedule 5** of my testimony contains a table summarizing the route changes  
766 Enbridge has made in response to public comments as well as the minor centerline  
767 alignment shifts (i.e., straightening bends, etc.) along the Preferred Route that have been  
768 identified as part of Enbridge’s continuing stakeholder engagement and engineering  
769 refinement processes. These changes were described in Enbridge’s May 26, 2016 Scoping  
770 Comments and accepted by the Commission as part of the Applicant’s Proposed Route in  
771 the December 2016 Final Scoping Decision Document.

772



773 **Q. Why didn't Enbridge propose routing the Project along the existing Enbridge Mainline**  
774 **System Corridor (the "Enbridge Mainline System")?**

775 A. Enbridge's routing analysis started with a robust evaluation of a route that followed the  
776 existing Enbridge Mainline System (referred to as the "Northern Route" in the Route Permit  
777 Application) because of Minnesota's strong preference for utilizing existing utility corridors  
778 and Enbridge's own internal efficiencies related to routing along existing Enbridge ROW.  
779 However, Enbridge soon identified three major obstacles to routing the Project along the  
780 Enbridge Mainline System.

781  
782 **Q. Please describe the obstacles preventing Enbridge from routing the Project along the**  
783 **Northern Route.**

784 A. The major obstacles include:  
785 1) Objections from Leech Lake Band of Ojibwe ("LLBO") to routing another pipeline through  
786 the Leech Lake Reservation. Early in the regulatory process for the Sandpiper Pipeline  
787 Project, LLBO stated that North Dakota Pipeline Company did not have legal or regulatory  
788 approval to expand the Enbridge Mainline System through the Leech Lake Indian  
789 Reservation ("Reservation"). (See **Schedule 6** to my testimony.) The inability to secure  
790 agreement and approvals with LLBO makes it impossible for Enbridge to construct a  
791 pipeline through the Reservation, including areas of the existing Enbridge Mainline System  
792 that cross the Reservation. As recently as January 19, 2017, LLBO has again reiterated its  
793 objection to constructing the Project through the Leech Lake Reservation. LLBO's most  
794 recent letter to the Commission is also included in Schedule 6 to my testimony.

795  
796 2) The existing Enbridge Mainline System from Clearbrook to Superior is heavily congested  
797 with significant obstacles to construction and operation. In addition to Enbridge's six  
798 pipelines in the ROW, US Hwy 2, a rail corridor, and the newly constructed CapX Bemidji to  
799 Grand Rapids 230 kV transmission all lie adjacent to the existing pipelines. The significant  
800 congestion along this corridor would require several unique pipeline installations that can be  
801 avoided by utilizing the Preferred Route. Examples of unique pipeline installations along the  
802 Enbridge Mainline System that occurred due to the congestion and complexity of the ROW  
803 include:

- 804 • Two pipelines which cross Cass Lake;
- 805 • Two pipelines installed down the center of a road (Railroad Avenue) in the town of  
806 Cass Lake, MN;

- 807 • Routing immediately adjacent to a superfund site with four pipelines near Cass Lake,  
808 MN;
- 809 • Four pipelines in an active gravel mining operation in Grand Rapids, MN;
- 810 • Two pipelines through the college yard and grounds in Grand Rapids, MN; and
- 811 • A general increase in the population density along the corridor (e.g., the corridor  
812 crosses the grounds of the Bemidji High School and residential developments in  
813 Bemidji, Cohasset, and Grand Rapids).

814 Several of these congested areas are described further in Schedule 7 of Mr. Simonson's  
815 testimony within the analysis of RA-07-L3. Installing another pipeline in these areas will only  
816 create additional constructability issues and impacts to the public and the environment.

817

818 3) Finally, construction along the Northern Route would require further expansion of the  
819 utility corridor through the Chippewa National Forest ("CNF").

820

821 **Q. How did the obstacles along the Northern Route influence development of Enbridge's**  
822 **Preferred Route?**

823 A. Once it became apparent that Enbridge would need to develop a route that avoided the  
824 increasing populations, the LLBO Reservation and forest land within the Chippewa National  
825 Forest. Enbridge looked for other existing utility corridors that provided an efficient means of  
826 connecting the pipeline between Clearbrook, Minnesota, and Superior, Wisconsin. The  
827 Minnesota Pipe Line Company ROW south of Clearbrook, coupled with electric ROWs  
828 provided opportunities for co-location with existing linear features including utility  
829 infrastructure and road ROW for approximately 75 percent of the Preferred Route.

830

831 **Q. Would these obstacles along the Northern Route be eliminated if Enbridge removed**  
832 **the existing Line 3 and constructed the Project in the existing Line 3 trench?**

833 A. No. All of the obstacles discussed above would continue, and additional complications  
834 would be added by in-trench replacement. Enbridge analyzed in-trench replacement  
835 extensively as described in Section 6.6.1 of the Route Permit Application and further  
836 examined it in the context of RA-07-L3 as accepted by the Commission in the Final Scoping  
837 Decision Document. As discussed in greater detail in Schedule 7 of Mr. Simonson's  
838 testimony, in-trench replacement raises significant safety risks, as it requires construction  
839 over active pipelines, requires greater area of disturbance than construction on the outer  
840 edge of an existing pipeline right-of-way, and still has the potential to impact LLBO, CNF,  
841 the Superfund site and all of the population centers discussed for the Northern Route. In

842 addition, in-trench replacement will require that existing Line 3 be removed from service for  
843 approximately 16 months, negatively impacting the reliability of crude oil transportation to  
844 refineries in Minnesota and its neighboring states.

845  
846 **Q. Why does Enbridge support its Preferred Route over the other route alternatives**  
847 **being evaluated in this proceeding?**

848 A. Enbridge has spent tens of thousands of hours developing and evaluating the Preferred  
849 Route. It provides the most efficient and practicable means of meeting the stated need of  
850 the Project. It balances Minnesota's routing criteria and maximizes the use of existing  
851 infrastructure through the existing connections at Clearbrook and Superior. It avoids routing  
852 through areas of significant population density. Through minor reroutes along the Preferred  
853 Route, it further avoids or minimizes potential impacts to people and the environment. It also  
854 addresses concerns of landowners living along the route, as evidenced by the fact that  
855 Enbridge has entered into voluntary easements with approximately 95 percent of the private  
856 landowners on the Preferred Route.

857  
858 **VIII. PERMANENT DEACTIVATION OF EXISTING LINE 3**

859  
860 **Q. Please describe the existing Line 3 pipeline.**

861 A. Line 3 is a 1,097 mile, 34-inch diameter pipeline that has been in operation since the 1960s.  
862 Of the 1,097 miles, 282 miles are located in Minnesota. The existing Line 3 pipeline is  
863 located among multiple other operating pipelines within the Enbridge Mainline System. The  
864 Enbridge Mainline System originates in Canada and crosses the U.S./Canada border near  
865 Neche, North Dakota. It continues through North Dakota to the Clearbrook Terminal near  
866 Clearbrook, Minnesota and terminates at the Enbridge Superior Terminal near Superior,  
867 Wisconsin.

868 **Q. What does "permanent deactivation" mean?**

869 A. In these proceedings, Enbridge uses the term "permanent deactivation" to describe its plans  
870 to permanently remove existing Line 3 from service after the Project becomes operational.  
871 Federal regulations (49 Code of Federal Regulations ("C.F.R.") Part 192.3) use the term  
872 "abandoned" to describe pipelines "permanently removed from service." The only other  
873 category of pipeline operations recognized under federal regulations is "active" pipelines.  
874 Under federal regulations, Enbridge will "abandon" existing Line 3 and follow all

875 requirements of 49 C.F.R. Parts 195.59 and 195.402 once the Project has been placed into  
876 service. However, as Mr. Barry Simonson describes in more detail, Enbridge will also go  
877 beyond the requirements of federal regulations for abandoned pipelines and continue to  
878 monitor the deactivated Line 3 pipeline even though the pipeline will be purged, cleaned and  
879 disconnected from the active pipeline system. Because the common understanding of  
880 “abandoned” suggests no further monitoring will take place, Enbridge has chosen to refer to  
881 its activities related to existing Line 3 as “permanent deactivation.”

882

883 **Q. Please describe the steps Enbridge will take to deactivate the existing Line 3 pipeline.**

884 A. Enbridge’s Permanent Deactivation Plan is provided as Schedule 6 of Mr. Simonson’s  
885 testimony. In summary, Enbridge will: purge the pipeline of oil; clean the pipeline; isolate  
886 the pipeline from specific infrastructure which is actively transporting oil; further segment the  
887 pipeline, as needed, including completing all required remediation at roads, railroads,  
888 waterbodies, or any other permitted crossing in consultation and coordination with that  
889 crossing’s authority; and continue to monitor the existing right-of-way (ROW) to identify,  
890 assess, and appropriately mitigate apparent or emerging risk to public safety, the  
891 environment, or current land use caused by the Permanently Deactivated pipeline. As part  
892 of the ongoing maintenance and monitoring, Enbridge will continue to apply cathodic  
893 protection (CP) until such time that it is ineffective or otherwise detrimental.

894

895 **Q. Will Enbridge continue to monitor the existing Line 3 pipeline once it is deactivated?**

896 A. Yes. To ensure the protection of the public, the environment, current land uses, adjacent  
897 Enbridge pipelines, and third-party utilities, the right-of-way for the Line 3 will continue to be  
898 maintained after the line is taken out of service. This includes patrolling and monitoring  
899 surface conditions, accessing impacts of any exposed pipe, mowing brush, inspecting  
900 crossings, maintaining signage, and inclusion in the Gopher State One Call system.

901

902 **Q. Will the existing Line 3 pipeline be permanently removed from service?**

903 A. Yes. The existing Line 3 pipeline in Minnesota will be permanently removed from service  
904 after the Project has received all regulatory approvals and is constructed, tested, and placed  
905 into service.

906

907 **IX. PIPELINE ROUTE PERMIT**

908

909 **Q. Have you reviewed the Pipeline Route Permit template that Commission Staff filed in**  
910 **this docket?**

911 A. Yes. I have reviewed the generic template pipeline route permit posted February 1, 2016  
912 and available on eDockets as Document No. 20162-117889-01.

913

914 **Q. Does Enbridge have any requested changes to the generic template pipeline route**  
915 **permit for the Project?**

916 A. Yes. Enbridge has provided draft language in **Schedule 7** of my testimony. As an initial  
917 matter, Enbridge has made a number of revisions to the Template to provide Project-specific  
918 information and to describe the route Enbridge is requesting for approval. The suggested  
919 language is consistent with the updated EAW provided in Schedule 2 of my testimony.

920

921 Specifically, the revisions in the following sections were made to provide Project-specific  
922 information: Section 1.0 (Route Permit); Section 2.0 (Project Description); Section 2.1  
923 (Associated Facilities); Section 2.2 (Project Location); Section 3.0 (Designated Route);  
924 Section 3.1 (Permanent Right-of-Way); Section 3.2 (Temporary Right-of-Way); and Section  
925 5.5 (Construction Practices).

926

927 In addition, Enbridge proposes further revisions to facilitate the efficient construction of the  
928 Project and minimize or avoid Project impacts. Specifically:

929

Section	Description of Change
Section 3.0 Designated Route	Enbridge has proposed additional language similar to the language the Commission included in the pipeline route permit granted to Enbridge Energy, Limited Partnership and Enbridge Pipelines (Southern Lights) L.L.C for the Alberta Clipper Pipeline and the Southern Lights Diluent Pipeline in Docket No. PL-9/PPL-07-361. This language provides for alignment modifications within the designated route. It also provides for route width variations to overcome potential site-specific constraints, including unforeseen circumstances encountered during the detailed engineering and design process, federal or

	<p>state agency requirements, and existing infrastructure within the pipeline route. The proposed language requires any alignment modifications resulting from these site-specific constraints not result in significant changes to human or environmental impacts relative to the criteria set forth in Minnesota Rule 7852.1900. The proposed language also requires the alignment modifications to be specifically identified in and approved as part of the Plan and Profile required by Section 10.1 of the pipeline route permit.</p>
Section 3.4 Additional Temporary Workspace	<p>Enbridge proposes this new section to allow for additional temporary workspaces in those areas where it is needed to avoid or mitigate impacts to the environment and facilitate safe and efficient construction.</p>
Section 4.0 State and Federal Minimum Depth of Cover Requirements	<p>Enbridge proposes these revisions to provide for construction flexibility in the event areas of difficult excavation are encountered while still maintaining compliance with federal regulations.</p>
Section 5.2 Environmental Protection Plan	<p>The proposed revision simply indicates that Enbridge’s plan is titled “Environmental Protection Plan.”</p>
Section 5.5.7 Noise	<p>Enbridge proposes these revisions to allow for necessary flexibility. Although Enbridge generally intends to limit construction to daytime working hours, nighttime construction may be necessary in some instances, such as where horizontal directional drilling is used, to ensure efficient construction practices and mitigate impacts.</p>
Section 5.5.8 Site Sediment and Erosion Control	<p>Enbridge proposes these changes to clarify that, in addition to complying with the practices recommended by the Minnesota Pollution Control Agency Construction Stormwater Program, Enbridge’s erosion prevent and sediment control practices will be conducted consistently with the Environmental Protection Plan.</p>
Section 5.5.12 Vegetation Removal and Protection	<p>The proposed revisions are intended to better align this section with the Environmental Protection Plan.</p>

Section 5.5.16 Wetlands and Water Resources	The proposed revisions are intended to maintain needed construction flexibility and better align this section with the Environmental Protection Plan.
Section 5.5.19 Archaeological and Historic Resources	The proposed revisions are intended to incorporate the provisions of Enbridge's Unanticipated Discoveries Plan into this section.
Section 5.5.20 Restoration	Enbridge proposes these revisions to clarify when restoration will be determined to be complete.
Section 6.0 Special Conditions	The special conditions proposed by Enbridge are consistent with commitments made in the Application and the updated EAW.
Section 10.4 As-Builts	Enbridge proposes revising this section to require as-builts within one calendar year, rather than 60 days, after completion of construction. Enbridge anticipates it will take longer than 60 days to gather this data and believes that one year is a more reasonable timeframe for a project of this length.
Section 10.5 GPS Data	Enbridge proposes revising this section to require GPS data one calendar year, rather than 60 days, after completion of construction. Enbridge anticipates it will take longer than 60 days to gather this data and believes that one year is a more reasonable timeframe for a project of this length.

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931 **X. CONCLUSION**

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933 **Q. Is Enbridge requesting that the Minnesota Public Utilities Commission approve the**  
 934 **Line 3 Replacement Project and issue a certificate of need and route permit for the**  
 935 **Project?**

936 A. Yes.

937

938 **Q. Does this conclude your direct testimony?**

939 A. Yes, it does.