



ENVIRONMENTAL LAW & POLICY CENTER

Protecting the Midwest's Environment and Natural Heritage

February 18, 2022

Ms. Lisa Felice
Michigan Public Service Commission
7109 W. Saginaw Hwy.
P. O. Box 30221
Lansing, MI 48909

RE: MPSC Case No. U-20763

Dear Ms. Felice:

The following is attached for paperless electronic filing:

**Opening Brief on Behalf of the Environmental Law and Policy Center
and Michigan Climate Action Network**

Proof of Service

Sincerely,

Margrethe Kearney
Environmental Law & Policy Center
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cc: Service List, Case No. U-20763

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**STATE OF MICHIGAN
MICHIGAN PUBLIC SERVICE COMMISSION**

In the matter of ENBRIDGE ENERGY,)	
LIMITED PARTNERSHIP application for)	
the Authority to Replace and Relocate the)	Case No. U-20763
Segment of Line 5 Crossing the Straits of)	
Mackinac into a Tunnel Beneath the Straits)	
of Mackinac, if Approval is Required)	
Pursuant to 1929 PA 16; MCL 483.1 et seq.)	
and Rule 447 of the Michigan Public Service)	
Commission's Rules of Practice and)	
Procedure, R 792.10447, or the Grant of)	
other Appropriate Relief)	

OPENING BRIEF

ON BEHALF OF

**THE ENVIRONMENTAL LAW & POLICY CENTER AND
THE MICHIGAN CLIMATE ACTION NETWORK**

February 18, 2022

Table of Contents

I. INTRODUCTION AND SUMMARY OF ARGUMENT	1
II. FACTUAL AND PROCEDURAL HISTORY	3
III. UNDER MEPA, THE COMMISSION MAY NOT APPROVE CONDUCT THAT HAS OR IS LIKELY TO POLLUTE, IMPAIR, OR DESTROY AIR, WATER, OR OTHER NATURAL RESOURCES, AND ENBRIDGE HAS THE BURDEN OF PROVING THERE IS NO FEASIBLE ALTERNATIVE.....	6
IV. THE COMMISSION MUST DENY ENBRIDGE’S ACT 16 APPLICATION UNDER MEPA	8
A. The Proposed Project will result in increased GHG emissions, which are a pollutant 9	
1) Expert Peter Erickson employed sound methodology in estimating GHG emissions	9
2) Building and operating the tunnel will result in emissions of 87,000 metric tons CO ₂ e	12
3) It is undisputed that the Proposed Project will handle and transport petroleum that results in the emission of 87,000,000 metric tons CO ₂ e annually	17
4) Expert Peter Erickson estimated incremental emissions of 27,000,000 metric tons CO ₂ e annually from the Proposed Project, compared to a scenario where Line 5 no longer operates	19
i. A no-pipeline scenario would result in higher rail costs	22
ii. Higher rail costs would result in some oil fields in Western Canada not being developed	27
iii. If the Proposed Project is built, changes in global oil price and oil consumption will lead to a net increase in annual global oil consumption of 150,000 barrels per day, equivalent to 27,000,000 metric tons CO ₂ e per year from burning and producing that oil.....	32
1. Mr. Erickson uses an appropriate long-run supply elasticity.....	33
2. Mr. Erickson uses an appropriate long-run demand elasticity	34
5) The Proposed Project’s impact on global oil consumption can and should be considered	37
B. Greenhouse Gas Emissions from the Project pollute, impair, and destroy Michigan’s air, water, and other natural resources	38

1) GHG emissions cause climate change	38
2) Climate change is harming Michigan’s natural resources.....	40
3) Increases in GHG emissions will exacerbate climate change.....	41
4) GHG emissions from the Proposed Project will result in \$41 billion in damages	44
C. Shutting down the existing pipeline and not building the Proposed Project is a feasible and prudent alternative	47
1) MEPA requires consideration of a no-pipeline alternative.....	49
2) A no-pipeline alternative is feasible.....	52
3) A no-pipeline alternative is prudent.....	57
V. CONCLUSION	58

The Environmental Law & Policy Center (“ELPC”) and the Michigan Climate Action Network (“MiCAN”) (collectively, “Climate Organizations”) submit this Opening Brief in opposition to the Application of Enbridge Limited Partnership (“Enbridge” or the “Company”) to the Michigan Public Service Commission (“MPSC” or “Commission”) under Act 16 for authority to build a tunnel underneath the Straits of Mackinac in which it will place an oil pipeline connecting two on-land segments of its Line 5 pipeline (“Proposed Project”).

I. INTRODUCTION AND SUMMARY OF ARGUMENT

Enbridge has a four-mile environmental problem in the Straits. The Company’s 69-year old Dual Pipelines resting on the lakebed of the Straits of Mackinac pose an immediate risk of catastrophic harm to the Great Lakes from an oil spill. The Governor has terminated and revoked the Easement allowing Enbridge to operate the Dual Pipelines, citing the potential for irreversible environmental harm and Enbridge’s own failure to abide by the terms of the Easement. (Ex. ELP-18). Numerous studies have been undertaken under the auspices of the Michigan Petroleum Pipeline Task Force, as well as by experts unaffiliated with the State, documenting the dangers the Dual Pipelines pose and the alternatives to their operation.

Enbridge’s solution to the risk of an oil spill from the Dual Pipelines only creates another environmental problem: greenhouse gas emissions and exacerbation of climate change. Enbridge tries to eliminate the risk of an oil spill by constructing an underground tunnel deep below the bedrock of the Straits, through which the Company can run a new pipeline and transport oil. The Company’s Application states a magnanimous purpose—to alleviate an environmental concern to the Great Lakes—but it places before the Commission a false choice: eliminate the risk of an oil spill by letting us transport our oil through a tunnel, or we will continue to play Russian roulette with the Dual Pipelines. But those are not the only two options here. Enbridge makes no effort to

genuinely consider alternative methods of accomplishing its stated purpose of eliminating the risk of an oil spill in the Great Lakes. Despite previously being found a feasible alternative, Enbridge does not consider eliminating the risk of an oil spill by shutting down the Dual Pipelines and decommissioning Line 5. Instead Enbridge proposes investment in new fossil fuel infrastructure that will result in significant greenhouse gas emissions, exacerbating climate change and harming Michigan's natural resources by worsening precipitation, flooding, and extreme weather events—while also increasing temperatures, leading to hot droughts, warmer water, and diminished air quality. When monetized, the cost to society of the climate impacts caused by Enbridge's Proposed Project exceeds \$41 billion.

When such harm to natural resources results from this Commission's approval of an action, Michigan law requires Enbridge to demonstrate that there is no feasible or prudent alternative. Enbridge failed to carry its burden of demonstrating that no feasible or prudent alternative exists, and could not rebut the Climate Organization's testimony that shutting down the Dual Pipelines is a feasible and prudent alternative that will accomplish the Company's stated purpose of alleviating an environmental concern to the Great Lakes. In fact, building the Proposed Project will undermine any environmental goals Enbridge claims, by emitting significant greenhouse gases that contribute to climate change and threaten Michigan's air, water and natural resources. Not only is the Proposed Project unnecessary to meet the Company's purpose of environmental protection, it is antithetical to that purpose because investment in new fossil fuel infrastructure exacerbates climate change.

II. FACTUAL AND PROCEDURAL HISTORY

Almost 70 years ago, the Commission approved an application for Enbridge Limited Partnership’s parent company, Enbridge, Inc.¹ to locate and construct the Michigan portion of a 30-inch-diameter pipeline carrying crude oil and petroleum stretching from Superior, Wisconsin, through the Straits of Mackinac, to Sarnia, Ontario (“Line 5”). (March 31, 1953, Opinion and Order, D-3903-53.1; Exhibit A-3). When it crosses the four miles of lakebed in the Straits of Mackinac, Line 5 splits into two pipelines referred to as the Dual Pipelines. The Commission’s 1953 Opinion and Order approving the application for Line 5 was followed by a map that specified the pipeline’s exact location. The Order required a design “in accordance with conservative pipe line practices”—the practices of the 1950s. (*Id.* at 6).

Since its construction on the lakebed, the Dual Pipelines have been subjected to numerous anchor strikes in addition to the wear and tear that comes with an almost septuagenarian pipeline. (Ex. ELP-18). The Dual Pipelines raise concerns about a catastrophic spill in the Great Lakes—damaging not only Michigan’s natural environment, but also its drinking water and economy that relies on Michigan’s natural resources. (Exs. ELP-18, ELP-24). In 2015, Governor Snyder established the Michigan Pipeline Safety Advisory Board. This Board was able to seek information from Enbridge regarding the Dual Pipelines, and also oversaw an analysis of alternatives to Dual Pipelines, Dynamic Risk’s 2017 *Alternatives Analysis for the Straits Pipelines*. (Ex. ELP-24). The Alternatives Analysis considered six alternatives, one of which was decommissioning the pipeline.

Enbridge filed this Application for the Authority to Replace and Relocate the Segment of Line 5 Crossing the Straits of Mackinac into a Tunnel Beneath the Straits of Mackinac on April 17, 2020 (“Application”). Enbridge states in its Application that the purpose of the Application is

¹ This was initially conveyed to Lakehead Pipeline Company, Inc., apparent predecessor to Enbridge, Inc.

“to alleviate an environmental concern to the Great Lakes raised by the State of Michigan relating to the approximate four miles of Enbridge’s Line 5 that currently crosses the Straits.” (Application at 1).

When Enbridge first filed its Application, it requested a declaratory ruling that the Commission’s approval was unnecessary. Enbridge argued that the Commission’s 1953 Order approving the construction, operation, and maintenance of Line 5 embraces approval of “replacing” the 4-mile segment. On April 22, 2020, the Commission issued an order in this case seeking additional input on the threshold issue presented in the declaratory ruling request. The Commission ultimately found that the Proposed Project was not mere maintenance. (June 30, 2020, Order at 67). Rather, Enbridge proposes new construction to replace the existing 20-inch-diameter Dual Pipelines with a new, 30-inch-diameter single pipeline housed in a tunnel under the Straits. (See Application at 67; June 30, 2020, Order at 67). The Commission accordingly opened this contested case. Climate Organizations were granted intervention on August 12, 2020.

Administrative Law Judge Mack adopted a schedule for this contested case including filing motions *in limine* on the scope of the case. In its motions, Enbridge sought to limit what the Commission could review. Enbridge requested that the Commission exclude the following issues as legally irrelevant: (1) the construction of the utility tunnel, (2) the environmental impact of the tunnel construction, (3) the public need for and continued operation of Line 5, (4) the current operational safety of Line 5, (5) whether Line 5 has an adverse impact on climate change, and (6) the intervening parties’ “climate change agendas.” (Enbridge Motion *in Limine* and Supporting Brief, at 1). Climate Organizations, in particular, argued that the Proposed Project’s impact on the climate is relevant to whether the Proposed Project would violate the Michigan Environmental Protection Act (“MEPA”). On October 23, 2020, the ALJ granted Enbridge’s motion in part, and

denied it in part. The ALJ found that (1) the Commission had jurisdiction over the tunnel under Act 16; (2) there need not be review of the operation of, and need for, Line 5 in its entirety; and (3) MEPA does not allow for consideration of climate change in examining the impact of the Proposed Project. Climate Organizations and other intervenors appealed.

On November 13, 2020, the state of Michigan notified Enbridge that it was in violation of its 1953 Easement, and that the Easement itself was void. The Governor's Notice explained that "the Easement is being revoked for violation of the public trust doctrine, and is being terminated based on Enbridge's longstanding, persistent, and incurable violations of the Easement's conditions and standard of due care." (Ex. ELP-18). In light of the Governor's Notice, the Commission issued an order remanding the motion *in limine* to the ALJ. Parties briefed the issue in January 2021 and the ALJ held a hearing in February 2021. The ALJ issued another ruling consistent with the initial ruling, and the same parties appealed.

On April 21, 2021, the Commission reversed in part the ALJ's ruling, finding that the Proposed Projects GHG emissions are relevant. The April 2021 Order concluded: "Nothing in MEPA limits the types of 'pollution' that can be asserted by an intervenor as resulting from the 'conduct,' and, as the history of both environmental degradation and regulation show, new pollutants continue to be identified." (April 21, 2021, Order at 66). The Commission explained that both the statutory language of MEPA and the language of MEPA case law support a broad interpretation of whether "conduct . . . has or is likely to have the effect of pollution, impairment, or destruction." (*See id.*). The Commission also noted that GHGs are "widely recognized as pollutants that . . . contribute to climate change, thereby polluting, impairing, and destroying natural resources." (*Id.* at 65). Accordingly, the Commission found that the parties are "free to introduce evidence addressing the issue of GHG emissions and any pollution, impairment, or

destruction arising from the activity proposed in the application. (*See id.* at 66 (citing Mich. Comp. Laws Ann. § 324.1705(2); Mich. Comp. Laws Ann. § 24.272)).

With the Commissions’ Order guiding the scope of the case for the parties, intervenors and applicants engaged in discovery and presented testimony. Climate Organizations offered the testimony of four expert witnesses: Mr. Pete Erickson, Dr. Peter A. Howard, Dr. Jonathan Overpeck, and Dr. Elizabeth Stanton. On January 14, 2022, parties began cross examination of witnesses and the record closed on January 24, 2022.

There is continued public concern about Line 5 and the Proposed Project. The Commission has received thousands of public comments concerned about the Project’s long-term safety, durability, and potential environmental, health, and community impacts, as well as concerns that the Proposed Project conflicts with efforts to reduce Michigan’s dependence on fossil fuels.

III. UNDER MEPA, THE COMMISSION MAY NOT APPROVE CONDUCT THAT HAS OR IS LIKELY TO POLLUTE, IMPAIR, OR DESTROY AIR, WATER, OR OTHER NATURAL RESOURCES, AND ENBRIDGE HAS THE BURDEN OF PROVING THERE IS NO FEASIBLE ALTERNATIVE

Article 4, § 52 of the Michigan Constitution directed the Legislature “to provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction.” Article 4, § 52 provides that this mandate serves the “paramount concern in the interest of the health, safety and general welfare of the people” specifically with respect to “the conservation and development of the natural resources of the state.” Employing the precise words of art. 4, § 52, in 1970 the Legislature enacted MEPA in fulfillment of art. 4, § 52’s mandate. *See Ray v. Mason County Drain Comm’r*, 224 N.W.2d 883, 887 n.4 (Mich. 1975). It has since been repealed and reenacted, substantially unchanged, as part of the National Resources and Environmental Protection Act (“NREPA”). Mich. Comp. Laws § 324.1701 *et seq.*

Courts have found that state agencies have an obligation to apply the requirements of MEPA to their decisions, including in Commission pipeline siting cases. *State Hwy Comm v. Vanderkloot*, 392 Mich. 159, 185; 220 N.W.2d 416 (1974); *Buggs v. Mich. Pub Serv Comm*, unpublished *per curiam* opinion of the Court of Appeals, issued January 13, 2015 (Docket Nos. 315058 and 315064) p. 8; *Buggs v. Mich. Pub Serv Comm*, unpublished *per curiam* opinion of the Court of Appeals, issued May 16, 2017 (Docket Nos. 329781 and 329909). The Commission has recognized these decisions and acknowledged its obligation to apply the requirements of MEPA under the following provision:

In administrative, licensing, or other proceedings, and in any judicial review of such a proceeding, the alleged pollution, impairment, or destruction of the air, water, or other natural resources, or the public trust in these resources, shall be determined, and conduct shall not be authorized or approved that has or is likely to have such an effect if there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare.

Mich. Comp. Laws § 324.1705(2). The Commission has interpreted this section not to require the Commission to independently investigate whether an action complies with MEPA, but rather to make a determination based on the record presented in the case. (April 21, 2021, Order at 56, 64). In that way, this administrative hearing has taken on the posture of a MEPA claim brought in state court under MCL 324.1703(1).

The basic framework of MEPA was established in *Ray*, 224 N.W.2d at 883. *See also Nemeth v. Abonmarche Development, Inc.*, 576 N.W.2d 641, 646 (Mich. 1998) (“The basic import of *Ray* has not changed.”). *Ray* explains that MEPA “does more than give standing to the public and grant equitable powers to the Circuit Courts, it also imposes a duty on individuals and organizations both in the public and private sectors to prevent or minimize degradation of the environment which is caused or is likely to be caused by their activities.” *Ray*, 224 N.W.2d at 888. MEPA does not impose standards as to what constitutes pollution, impairment, or destruction of a

natural resource; this is left to judges, “allow[ing] the courts to fashion standards in the context of actual problems as they arise in individual cases. . . .” *Ray*, 224 N.W.2d at 888. First, the Commission must conclude that the record evidence is sufficient to determine that the action at issue will or is likely to pollute, impair, or destroy the air, water, or other natural resources, or the public trust in those resources. Once this conclusion is reached, the Commission may not approve the action if there is a feasible and prudent alternative.

The Commission has also been clear that its MEPA review should not be artificially narrowed to the actual construction of the Proposed Project, but should extend to the environmental impact of the products whose transport the Proposed Project allows. The Commission stated that:

While some would narrowly constrain the review of pollution to the construction of the tunnel and pipeline, such an interpretation is untenable. It seems clear the Legislature intended for Act 16 to cover not just the construction of pipelines for the sake of building pipelines, but also that their purpose and the products flowing through them were inherently part of the regulatory framework established in Act 16. It defies both well accepted principles of statutory interpretation as well as common sense to apply MEPA to a pipeline but not to the products being transported through it. As the Commission finds that conduct at issue in constructing the Replacement Project is indistinguishable from the purpose behind it or its result, the Commission’s obligations under MEPA must also extend to the products being shipped through the Replacement Project.

(April 21, 2021, Order at 64).

IV. THE COMMISSION MUST DENY ENBRIDGE’S ACT 16 APPLICATION UNDER MEPA

The Commission must deny Enbridge’s Act 16 Application because the Proposed Project will pollute, impair, and destroy Michigan’s air, water, and other natural resources, and there is a feasible alternative. Enbridge can achieve its stated purpose to “alleviate an environmental concern to the Great Lakes raised by the State of Michigan relating to the approximate four miles of Enbridge’s Line 5 that currently crosses the Straits of Mackinac” with the no-pipeline alternative, where the existing Dual Pipelines simply discontinue operations. (Pastoor Direct, 7 TR 555:25-

556:2). Enbridge considered only “alternatives for replacing the dual pipelines within the Straits of Mackinac.” (Pastoor Cross, 7 TR 585:7-19). A no-pipeline alternative is reasonable and prudent, but was not considered by Enbridge in its alternatives analysis.

The Climate Organizations presented testimony from expert witnesses Peter Erickson, who used a well-known and peer-reviewed methodology to estimate greenhouse gas emissions from the Proposed Project as compared to the feasible and prudent no-pipeline alternative. Mr. Erickson concludes that the Proposed Project will result in emission of 27,000,000 metric tons of carbon dioxide equivalents (CO₂e). Expert Dr. Peter Howard explains how to understand those GHG estimates in the context of the social cost of GHGs, calculating that the social cost of the GHG emissions from the Proposed Project is at least \$41 billion. Dr. Jonathan Overpeck, Dean of the School for Environment and Sustainability at the University of Michigan, explains that GHG emissions exacerbate climate change, and that climate change is already impairing Michigan’s air, water, and natural resources. Dr. Elizabeth Stanton testifies that consideration of a no-pipeline alternative should have been undertaken by Enbridge, and that in her opinion, shutting down the Dual Pipelines without constructing the Proposed Project is a reasonable and prudent alternative.

A. The Proposed Project will result in increased GHG emissions, which are a pollutant²

1) Expert Peter Erickson employed sound methodology in estimating GHG emissions

Peter Erickson is a Senior Scientist and the Climate Policy Program Director at Stockholm Environment Institute—U.S., a 501(c)(3) organization affiliated with Tufts University. (Erickson Direct, 9 TR 1038:3-6). He has worked in environmental research and consulting for over twenty

² The Commission has already found that “GHGs are pollutants within the scope of the clear language of MEPA.” April 21, 2021, Order at 66. No party has appealed this finding or submitted evidence to the record contesting this finding.

years, and during the past thirteen years has focused on GHG emissions accounting. (Erickson Direct, 9 TR 1039:11-14). Mr. Erickson's work on GHG accounting is independent, robust, diverse, and peer-reviewed. (Erickson Direct, 9 TR 1039:11-1039:5). Mr. Erickson's expertise in GHG accounting has informed government decision-makers at the local, state, national and global level. (Erickson Direct, 9 TR 1039:11-1039:5). He is an invited reviewer to the GHG emission reduction chapters in Working Group III of the Intergovernmental Panel on Climate Change's ("IPCC") upcoming Sixth Assessment Report. (Erickson Direct, 9 TR 1039:3-5).

In stark contrast to Mr. Erickson's credentials, Enbridge witness Neil Earnest has focused his 35-year career on serving oil refiners, oil producers, oil pipeline companies, and industries that support the oil industry. (Earnest Direct, 7 TR 656:8-16; Earnest Cross, 7 TR 692:17-694:7). While his CV is rife with examples of his support of pipeline development and expansion, he has never filed testimony opposing a pipeline project. (Earnest CV, 7 TR 678-689; Earnest Cross, 7 TR 703:5-7). Of the forty-three publications and presentations Mr. Earnest lists in his CV, only one is a journal article. (Earnest Cross, 7 TR 685-689; 700:5-24). The other forty-two are presentations, most of which were at conferences hosted by players in the oil industry, that were geared towards the oil industry and the professionals that support it, and that provided, in part, networking opportunities for Mr. Earnest. (Earnest Cross, 7 TR 700:21-702:5). Mr. Earnest has testified as an expert witness on behalf of long-term client Enbridge sixteen times since 2006. (Earnest Direct, 7 TR 680-684; Earnest Cross, 7 TR 702:13-21).

While Mr. Erickson is a scientist and researcher, not a career expert witness, he has testified before the United States Congress, administrative agencies in the states of Washington and Oregon, and submitted an expert letter to the District Court of the Hague, Netherlands. (Erickson Direct, 9 TR 1040:10-16). Mr. Erickson's methodology has been cited by the United States District

Court for the District of Columbia, the Ninth Circuit Court of Appeals, and the United States District Court of Alaska. *Friends of the Earth v. Haaland*, No. CV 21-2317 (RC), 2022 WL 254526, at *14 (D.D.C. Jan. 27, 2022); *Ctr. For Biological Diversity v. Bernhardt*, 982 F.3d 723, 738 (9th Cir. 2020); *Sovereign Inupiat for a Living Arctic v. Bureau of Land Mgmt.*, No. 3:20-CV-00290-SLG, 2021 WL 3667986, at *20 n. 201 (D. Alaska Aug. 18, 2021)).

Mr. Erickson estimates, quantifies, and explains the level of greenhouse gas emissions associated with Enbridge's Proposed Project. First, he estimates the greenhouse gas emissions resulting from the construction and operation of the Proposed Project, as well as the greenhouse gases contained in or associated with the oil and natural gas liquids ("NGL") fuel carried by the pipeline. Second, he estimates the change in global greenhouse gas emissions that would arise as a consequence of the Proposed Project, as measured relative to a no-pipeline scenario, where Enbridge discontinues use of the existing pipeline in the Straits of Mackinac, but does not construct the Proposed Project. (Erickson Direct, 7 TR 1041:13-22).

The methodology Mr. Erickson uses in this second analysis evaluates likely differences in global oil supply and consumption when comparing the no-pipeline scenario to the Proposed Project being built. (Erickson Direct, 7 TR 1041:13-22). Mr. Erickson's methodology is explained in his testimony and in Exhibit ELP-7, a 2021 article published in the Peer Reviewed Journal *Environmental Research Letters*, titled "Effect of subsidies and regulatory exemptions on 2020–2030 oil and gas production and profits in the United States." Mr. Erickson uses standard greenhouse gas emissions accounting practices, consistent with those laid out in guidance by the Greenhouse Gas Protocol initiative. (Erickson Direct, 7 TR 1042:11-12)

There are two primary ways in which the Proposed Project will result in GHG emissions. First, GHG emissions will be released by the equipment used to build and operate the tunnel.

Second, the Proposed Project will handle and transport petroleum that, once combusted, releases even greater quantities of GHG emissions than from Project construction or operation.

2) Building and operating the tunnel will result in emissions of 87,000 metric tons CO₂e

Mr. Erickson uses standard GHG accounting practices to estimate GHG emissions from building and operating the tunnel, using information provided by Enbridge about the Proposed Project, and by relying on other published information about how much energy is used to carry out the proposed activities. (Erickson Direct, 9 TR 1049:9-23). Mr. Erickson evaluated the use of a tunnel-boring machine, operation of other construction equipment, and the making and installation of key construction materials, including steel and concrete. (Erickson Direct, 9 TR 1049:9-23). He then used published estimates about similar equipment, machinery, and materials to estimate how much energy is used for each activity. Finally, he gathered data about how much GHG emissions are released from each unit of activity or energy. (Erickson Direct, 9 TR 1049:9-23).

Mr. Erickson's method for estimating GHG from construction of the Proposed Project is to identify the activities that will occur in association with the Proposed Project (for example, the use of a machine to bore the tunnel under the Straits of Mackinac), how much energy is used by each activity (for example, how much electricity is used by the tunnel-boring machine), and how much greenhouse gas emissions are associated with each unit of energy used by the activity (for example, how much carbon dioxide is released by the power plants that make the electricity for the tunnel boring machine). (Erickson Direct, 9 TR 1042:14-20). No party disputes the propriety of this methodology, though Staff inappropriately narrows the scope of the methodology when it is undertaken by Staff experts. Mr. Erickson's methods are consistent with those used in other greenhouse gas assessments of oil pipelines, and he checks his methods regularly against other

assessments, peer-reviewed scientific literature, and standards for life-cycle assessment and oil market analysis. (Erickson Direct, 9 TR 1042:5-8).

Mr. Erickson uses estimates of electricity usage for the tunnel boring and other machines from information provided by Enbridge. (Erickson Direct, 9 TR 1052:3-21). For vehicles he uses estimates of how much diesel fuel would be used by those vehicles. (Erickson Direct, 9 TR 1052:16-21). Mr. Erickson estimated the GHG emissions associated with construction of the pipeline to be about 87,000 metric tons carbon dioxide equivalent (CO₂e). Mr. Erickson estimates that operation of the pipeline will result in about 520 metric tons CO₂e annually. (Erickson Direct, 9 TR 1048:16-18). The results of Mr. Erickson's analysis are summarized in Table 1 below:

**TABLE 1. EMISSIONS ASSOCIATED WITH
CONSTRUCTION OF THE PROJECT**

Source of construction-related emissions	Emissions (metric tons CO₂e)²²	Method notes and assumptions
Equipment: tunnel boring machine (TBM) and related tunneling equipment (using electricity)	56,000	Based on electricity consumption during construction estimated by Enbridge for south side of the Straits
Equipment: other (electricity)	2,300	Based on electricity consumption during construction estimated by Enbridge for north side of the Straits
Equipment: other vehicles (diesel)	5,100	Includes excavators, grading equipment, loaders, dump trucks, and other vehicles
Materials: concrete for tunnel liner and roadway	19,000	Based on estimated cement content of Enbridge's estimated concrete usage
Materials: steel for pipeline	3,300	Based on 0.625-inch thick steel, 30-inch outer diameter pipeline, and average CO ₂ -intensity of US steel
Land-clearing	570	Estimated by Enbridge ²³
Estimated total construction emissions	87,000	(Individual figures may not add to total due to rounding) ²²

²² All estimates here are rounded to two significant digits. As a result, the individual figures may not add to the total due to rounding.

²³ Enbridge Response to Michigan Public Service Commission Staff Discovery Request 6(8).

Enbridge provided no testimony rebutting Mr. Erickson's estimates of greenhouse gases related to the construction or operation of the tunnel project. (Earnest Cross, 7 TR 707:16-21). Staff's outside consultant, Philip Ponebshek of Weston Solutions, also estimated GHG emissions resulting from the construction and operation of the proposed project. Mr. Ponebshek testified on rebuttal that Weston's estimates were much lower than Mr. Erickson's not due to the calculations themselves, but rather due to the types of emissions that are included in the analysis. (Ponebshek Rebuttal, 12 TR 1877:2-16). Mr. Ponebshek included only direct emissions (termed Scope 1) as defined by the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard and the Carbon Trust. (Ponebshek Rebuttal, 12 TR 1877:8-16). Mr. Ponebshek did not find any significant differences between his and Mr. Erickson's direct (Scope 1) emissions, nor did he take issue with Mr. Erickson's methodology for determining Scope 1 emissions. (Ponebshek Rebuttal, 12 TR 1878:9-17). Mr. Erickson's analysis includes a wider set of emissions associated with the Proposed Project, including indirect emissions associated with electricity consumed by the project and with the oil carried by the project, which is consistent with the Greenhouse Gas Protocol's Corporate Accounting and Reporting Standard, their Project Accounting Standard, and their Policy and Action Standard. (Erickson Rebuttal, 9 TR 1098, n. 10). Mr. Ponebshek opined that only the narrowest scope of GHG emissions should be considered by the Commission.

The Commission has already concluded that it is appropriate to include indirect emissions in evaluation of the GHG emissions from construction and operation of the Proposed Project. In allowing evidence of GHG emissions into the record, the Commission ruled the Legislature intended for Act 16 to cover not just the construction of pipelines, but also the products flowing through them. (April 21, 2021, Order at 64). "It defies both well accepted principles of statutory

interpretation as well as common sense to apply MEPA to a pipeline but not to the products being transported through it.” *Id.* The Commission’s MEPA analysis must “extend to the products being shipped through the Replacement Project.” *Id.* The Commission’s interpretation of MEPA is now supported by a well-developed record. Mr. Erickson explains that for oil infrastructure projects, indirect emissions are generally the largest source of GHG emissions. (Erickson Rebuttal, 9 TR 11-16). With respect to oil pipelines, it is the pipeline itself that enables significant GHG emitting activities “since it is the pipeline infrastructure that allows the oil to be transported from where it is extracted to where it is burned.” (Erickson Rebuttal, 9 TR 1097:13-16). Mr. Erickson explains that it is a longstanding practice in the GHG emissions accounting field to quantify all sources of GHG emissions associated with a project or action. (Erickson Rebuttal, 9 TR 1097:17-1098:1). Notably, legal sources discussing GHG emissions inventories in project evaluation do not use the Scope 1/2/3 construct that Mr. Penobshek proposes. *See, e.g.,* Burger, M., & Wentz, J. (2020). *Evaluating the Effects of Fossil Fuel Supply Projects on Greenhouse Gas Emissions and Climate Change under NEPA*. William & Mary Environmental Law and Policy Review, 44(2), 423–530.

Mr. Penobshek’s assertion that he did not include Scope 3 emissions in his evaluation because of the “levels of uncertainty involved” should be dismissed by the Commission. (Ex. ELP-27). Mr. Erickson explains that methods to calculate the significant indirect emissions from an infrastructure project are readily available. (Erickson Rebuttal, 9 TR 1099:3-16). Mr. Erickson cites reputable academic and government sources for reputable information on indirect GHG emissions. (Erickson Rebuttal, 9 TR 1099:3-16). A recent article in the Michigan Journal of Environmental and Administrative Law discussed federal courts’ inclusion of downstream emissions when evaluating GHG emissions in the NEPA context, noting that “[c]ourts have repeatedly found that downstream emissions are foreseeable indirect effects of leases for fossil

fuel production and approval of pipelines or railroads.” Jayni F. Hein & Natalie Jacewicz, *Implementing NEPA in the Age of Climate Change*, 10 Mich. J. Env’tl. & Admin. L. 1 (2020). Uncertainty cannot be used as an excuse to avoid quantifying the considerable indirect emissions associated with the Proposed Project.

With respect to what Mr. Ponebshek classifies as “Scope 2” emissions that Mr. Erickson estimated, Mr. Ponebshek disagrees with Mr. Erickson’s use of EPA emissions factors for non-baseload electricity. (Ponebshek Rebuttal, 12 TR 1878:18-1879:17). But the EPA footnote Mr. Ponebshek relies upon clearly indicates that the non-baseload emission factor is the appropriate factor to use for estimating changes in GHG emissions. (Ponebshek Rebuttal, 12 TR 1878:5-9). While the EPA describes the non-baseload emission factor as inappropriate for use when “developing a carbon footprint or emissions inventory” it goes on to say that it “can be used to estimate GHG emissions reductions from reductions in electricity use.” (Ponebshek Rebuttal, 12 TR 1878:5-9). In other words, the baseload emissions factor should be used when establishing the status quo GHG emissions in an emissions inventory. But for evaluating the impact of changes in electricity use – such as reductions or increases in electricity use – the non-baseload emissions factor is appropriate. As the report Mr. Ponebshek cites explains: “The nonbaseload emission rates are sometimes used as an estimate to determine the emissions that could be avoided through projects that displace marginal fossil fuel generation, such as energy efficiency and/or renewable energy.” Mr. Erickson’s use of the non-baseload emissions factor therefore makes sense here, as it would measure the emissions that would be generated by increasing marginal fossil fuel generation.

Weston does not dispute Mr. Erickson’s calculation of emissions attributed to the concrete and steel materials for the construction of the project. (Ponebshek Rebuttal, 12 TR 1879:18-23).

Mr. Ponebshek simply thinks that Scope 3 emissions should not be included at all and explains that he did not take into account Scope 3 emissions in any of his analyses. (Ponebshek Rebuttal, 12 TR 1879:23-1880:11).

3) It is undisputed that the Proposed Project will handle and transport petroleum that results in the emission of 87,000,000 metric tons CO₂e annually

Mr. Erickson's estimates of GHG emissions from the transport of petroleum are undisputed in the record. (Earnest Cross, 7 TR 706:6-707:21; Morese Rebuttal, 12 TR 1801-1808 (responding only to Mr. Erickson's incremental analysis)). The Proposed Project will handle and transport petroleum that, once combusted, releases even greater quantities of GHG emissions than from Project construction or operation. Enbridge asserts that it will continue to transport the same amount of product through the tunnel pipeline as it did through the Dual Pipelines. (Erickson Direct, 9 TR 1057:7-10; Ex. A-7 at 1). Based on this assertion, Mr. Erickson assumes that the Proposed Project is expected to handle 540,000 barrels per day (b/d) of liquid, comprising about 450,000 b/d of crude oil, and 90,000 b/d of natural gas liquids, chiefly propane and butane, for an indeterminate number of years. (Erickson Direct, 9 TR 1057:5-13). GHG emissions are released at each stage of producing, processing, and combusting petroleum. (Erickson Direct, 9 TR 1057:5-13). Mr. Erickson splits the "life cycle" of a barrel of crude oil or NGL into stages, which are typically referred to in this type of analysis as the "upstream" and "downstream" stages. (Erickson Direct, 9 TR 1057:5-13). For purposes of this analysis, upstream stages are all stages that happen before, or upstream, of final combustion, including the initial extraction and processing of petroleum, operation of oil wells and any other equipment needed to process or handle the oil, and oil refining. (Erickson Direct, 9 TR 1057:5-13). The downstream stage refers to combustion at the point of end use. (Erickson Direct, 9 TR 1058:13-14).

For the upstream stage, Mr. Erickson relies on research estimating the amount of GHG emissions released for production and processing of petroleum from Western Canada and the Bakken formation, since these regions would be the source of the petroleum carried by the pipeline. (Erickson Direct, 9 TR 1058:1-12). Producing and refining oil from these regions releases an average of 73 kg CO₂e per barrel. (Erickson Direct, 9 TR 1058:1-12). No party disputes Mr. Erickson's calculation of GHG upstream emissions.

For the downstream stage, Mr. Erickson relies on emissions estimates from the United States Environmental Protection Agency to determine that a barrel of crude oil (or its derivatives) releases an average of 432 kg CO₂ once combusted or oxidized. (Erickson Direct, 9 TR 1058:15-1059:2). A barrel of propane and butane releases 236 and 282 kg CO₂, respectively. (Erickson Direct, 9 TR 1058:15-1059:2). Mr. Erickson recognizes that some of the petroleum handled would not ultimately be combusted or oxidized, because it could end up underground in what is essentially long-term storage – such as plastics buried in landfills. (Erickson Direct, 9 TR 1059:3-10). Mr. Erickson estimates that 8% of the petroleum handled by the Proposed Project would not be combusted or oxidized, and reduces per-barrel emissions estimates for the downstream stage by 8%. (Erickson Direct, 9 TR 1059:3-10). No party disputes Mr. Erickson's estimate of downstream emissions.

Because the emissions from construction of the tunnel are measured as a single occurrence, rather than on a yearly basis, Mr. Erickson amortizes the emissions from tunnel construction over the time period of Enbridge's proposed tunnel lease—99 years—so that emissions from construction, operation, and petroleum handled can be compared in one table. (Erickson Direct, 9 TR 1060:4-13).

**TABLE 2. SUMMARY OF GREENHOUSE GAS EMISSIONS
ASSOCIATED WITH THE PROPOSED PROJECT**

GHG emissions category	Average annual emissions (metric tons CO₂e)	Notes
Tunnel construction	870	Amortized over 99 year lifetime
Tunnel operation	520	
Liquids (crude oil and NGL) handled	87,000,000	

(Erickson Direct, 9 TR 1060:14-16). The 87,000,000 metric tons CO₂e Mr. Erickson estimates is the total annual direct and indirect emissions from the transport of 540,000 barrels per day of crude oil and natural gas liquids through Line 5. However, if the Proposed Project were not constructed, it is not necessarily the case that the entire 87,000,000 metric tons CO₂e would be avoided. This is because some of the oil that would have been transported through the Proposed Project could find its way to market through other means of transport. Mr. Erickson conducts an additional analysis, described in the next section, that analyzes how the absence of Line 5 would affect crude oil production and consumption. This allows Mr. Erickson to estimate the net amount of CO₂e that is caused by construction of the Proposed Project.

4) Expert Peter Erickson estimated incremental emissions of 27,000,000 metric tons CO₂e annually from the Proposed Project, compared to a scenario where Line 5 no longer operates

Although the transport of oil and natural gas liquids through the Proposed Project is associated with 87,000,000 metric tons CO₂e each year, Mr. Erickson estimates that a smaller amount, 27,000,000 metric tons CO₂e each year are *caused by* the Proposed Project, in the sense that the construction of the Project will cause global greenhouse gas emissions to increase by 27,000,000 metric tons CO₂e annually compared to if the Project was not built. Mr. Erickson's analysis above attributes 87,000 metric tons CO₂e to the on-site construction and operation of the

Project, and three orders of magnitude more—87,000,000 metric tons CO₂e annually—to the transport of liquid petroleum through the pipeline. Still he clarifies that this analysis does not explain “what emissions are caused by, or a consequence of, the Project – what could be termed the ‘net’ or ‘incremental’ emissions.” (Erickson Direct, 9 TR 1061:18-24). Mr. Erickson determines that some of the oil that would be transported through the Proposed Project will be transported through other methods, and will result in GHG emissions. However, if the Proposed Project is *not built*, emissions of 27,000,000 metric tons of CO₂e annually will be avoided, because fewer oil fields in Western Canada and the Bakken region will be developed and less oil will be ultimately consumed around the world. This analysis is important here because it allows the Commission to evaluate how the Proposed Project will incrementally increase GHG emissions. (Erickson Direct, 9 TR 1061:18–1062:3). Determining incremental emissions requires comparison of the project to an appropriate alternative scenario.

Mr. Erickson explained that comparison to the no-pipeline scenario described in the Climate Organization’s testimony—where the Proposed Project does not go forward, and Line 5 no longer operates—is appropriate in light of the Governor’s Order, but that it also would be appropriate to consider this scenario if the Governor had not revoked and terminated the 1953 Easement. (Erickson Direct, 9 TR 1061:7-10). Mr. Erickson, who has conducted dozens of these types of analyses, testifies that, even if the Governor had not revoked the 1953 Easement, it would still make sense to consider a no-pipeline scenario:

Enbridge’s stated purpose for the Proposed Project is to remove an environmental threat to the Straits of Mackinac caused by the location of the existing pipeline. Irrespective of the Governor’s actions, it would be appropriate to consider whether Enbridge could achieve its stated purpose by shutting down the existing pipeline without constructing the Proposed Project. (Erickson Direct, 9 TR 1061:12-17).

The emissions caused by the Proposed Project include the full 87,000 metric tons CO₂e from construction and operation, but they do not include the full 87,000,000 metric tons CO₂e emitted annually from the transport of the oil and NGL (together, “liquids”) through the pipeline. (Erickson Direct, 9 TR 1062:4-11). This is because, even in the no-pipeline scenario, some of the liquids that would have been transported through the Proposed Project would still be transported by other methods, and ultimately consumed. (Erickson Direct, 9 TR 1062:4-11). The net emissions caused by the Proposed Project are 27,000,000 metric tons CO₂e annually. Mr. Erickson employs a common methodology that has been previously employed by the U.S. State Department, has been discussed in stakeholder-developed standards, such as the GHG Protocol’s Policy and Action Standard, and is the subject of peer-reviewed articles on GHG emissions estimation methods that are often relied upon in the field of life-cycle GHG assessment. (Erickson Direct, 9 TR 1062:12-21).

Consistent with this accepted methodology, Mr. Erickson looks to how the Proposed Project will change the energy market and concludes that the Proposed Project will result in emissions of 27,000,000 metric tons of CO₂e annually. (Erickson Direct, 9 TR 1063:7-21). The typical peer-reviewed methodology in this field evaluates dynamics influencing the availability of oil pipelines. (Erickson Direct, 9 TR 1063:7-21, Ex. ELP-4 (providing an overview of approaches in Section IV)). The availability of oil pipelines affects global GHG emissions because pipelines help increase the supply of oil. (Erickson Direct, 9 TR 1063:7-21). There is no dispute in this case that the oil market is a global market. What is in dispute is the degree to which the unavailability of oil from the Proposed Project will impact the global price of oil, and how much the global price of oil will influence consumption. Mr. Erickson explains the straight-forward connection between oil supply and oil consumption—the more low-cost oil is available, the lower the global price of

oil, the more oil is consumed, and the higher are GHG emissions from producing and burning oil. (Erickson Direct, 9 TR 1603:7-21). Enbridge witness Mr. Earnest fails in his attempts to minimize these fundamental relationships.

i. A no-pipeline scenario would result in higher rail costs

The primary difference between a scenario in which the Proposed Project is approved and a scenario without the Project is the cost and availability of transporting oil out of certain regions of North America. Staff and Enbridge do not dispute Mr. Erickson's assumption that if the Line 5 pipeline does not operate, rail would be the likely alternative form of transport. (Erickson Direct, 9 TR 1065:4-12). Nor do Staff or Enbridge disagree that rail is generally more expensive than pipelines for transporting petroleum. (Erickson Direct, 9 TR 1065:4-12; Morese Rebuttal, 12 TR 1802:3-9; Earnest Cross, 7 TR 734:11-15).

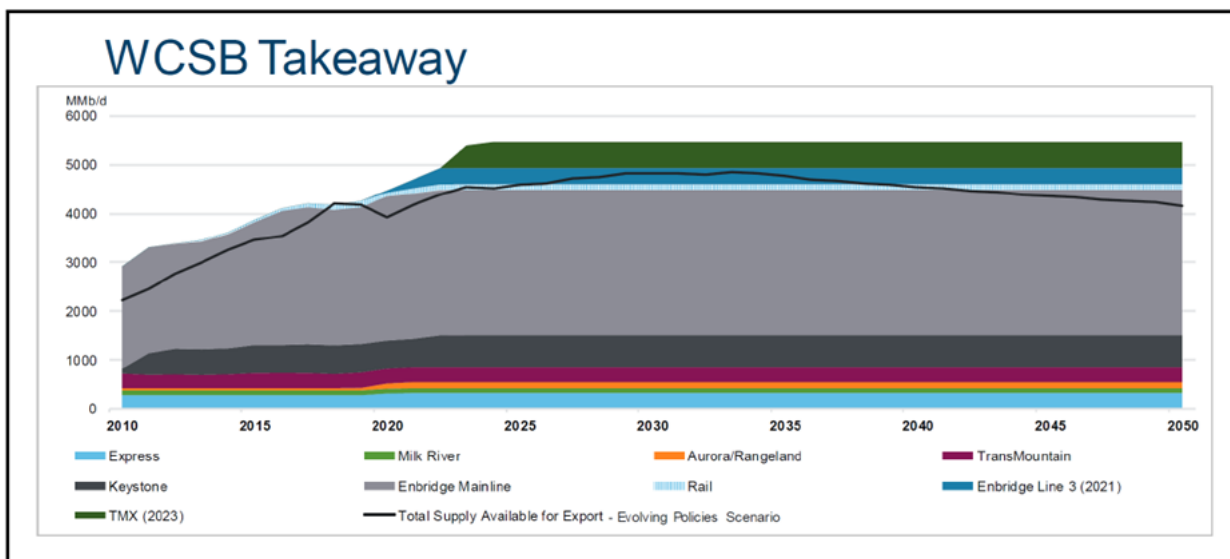
The cost of transporting oil from Montana, North Dakota, and Western Canada³ that would have flowed through Line 5 will increase if it is transported by rail. Mr. Erickson looked to a variety of studies and information on the cost of rail transport and determined that moving light crude oil like that transported by Line 5 is about \$6 per barrel more expensive than pipelines. (Erickson Direct, 9 TR 1065:13-19). Mr. Erickson also explores situations in which the \$6 per barrel assumption could be too low, or too high, and concludes that \$6 per barrel is the most reasonable estimate for the price difference between transporting light oil through Line 5 and transporting that same light oil by rail. (Erickson Direct, 9 TR 1066:1-1067:4). Staff witness Mr. Morese also arrived at a very similar estimate of \$6 per barrel as the additional cost of transporting crude oil by rail, and Mr. Earnest acknowledged on cross that it generally costs more to transport

³ Mr. Earnest makes much of Mr. Erickson's use of the term Williston Basin to refer to the geographical area that includes the oil fields of Western Canada and the Bakken. On cross examination Mr. Earnest agreed that he understood the Williston Basin to refer to the Bakken and Western Canada, where the oil transported on Line 5 originates. (Earnest Cross, 7 TR 709:9-710:4).

oil by rail than by pipeline. (Morese Rebuttal, 12 TR 1802:3-9; Earnest Rebuttal, 7 TR 733:14-734:15).

Enbridge witness Mr. Earnest’s primary critique of Mr. Erickson’s methodology rests on a figure cited in a footnote by Mr. Erickson that is used to bolster his conclusion that 290,000 barrels of oil from the Greater Williston Basin is at risk if Line 5 is no longer operating. (Erickson Direct, 9 TR 1070:8-17). This figure is reproduced here for convenience and referred to as “Earnest Figure 1.”

Figure 1



(Earnest Direct, 7 TR 662:5). Mr. Erickson cites this figure in a footnote to support his conclusion that pipeline takeaway capacity for crude oil is likely to be constrained in the coming years, further increasing costs of transporting oil and affirming the likelihood that a no-pipeline scenario will strand oil in Western Canada. (Erickson Direct, 9 TR 1068 at n. 50, 1070:8-17). Mr. Earnest disputes Mr. Erickson’s interpretation of the figure that Western Canada will only have about 100,000 barrels per day of spare capacity by 2030, and argues that there is therefore no basis to

believe that a no-pipeline scenario will increase costs of transporting oil. (Earnest Rebuttal, 7 TR 622).

To be clear, and contrary to Mr. Earnest's assertions, this estimate of spare capacity is not the sole basis on which Mr. Erickson forms his opinion that the no-pipeline scenario will result in stranded production in Western Canada. It is but one of many salient pieces of evidence demonstrating that lack of pipeline capacity may push rail prices higher than even the \$6 per barrel Mr. Erickson uses.

Regardless, Mr. Earnest's interpretation of Earnest Figure 1 is inaccurate. The Canada Energy Regulator is a source Mr. Earnest himself has relied upon for information about pipeline capacity. (Earnest Cross, 7 TR 697:5-17). Pipeline takeaway capacity, in this context, is the aggregate capacity of crude oil pipelines to transport crude oil from Western Canada to other markets. (Earnest Cross, 7 TR 711:11-14). If there is insufficient capacity to transport crude oil, the oil is referred to as stranded or shut-in. (Earnest Cross, 7 TR 711:15-19). Without performing any calculations, Mr. Earnest eyeballs that the Canada Energy Regulator's figure indicates that there will be 500,000 barrels per day of spare capacity in 2030. (Earnest Direct, 7 TR 661:16-662:1; Earnest Cross, 718:22-719:4; Ex. ELP-31).

Mr. Earnest describes this figure as the Canada Energy Regulator's assessment of both historic and forecast Western Canadian takeaway capacity. (Earnest Cross, 7, TR 713:1-8). Mr. Earnest testified that the gray portion represented Enbridge's Mainline system, but that it did not include capacity for Line 5 because it only includes lines that cross the Canadian border. (Earnest Cross, 7 TR 713:1-16). But Mr. Earnest also testifies that Line 5 is part of the Enbridge Mainline System, and that the oil that enters Line 5 is from two locations—the Bakken and Western Canada—and that almost all of the oil that enters Line 5 is from Western Canada. (Earnest Cross,

7 TR 709:3-5, 713:1-16). According to Mr. Earnest, most of the 450,000 barrels per day of oil that enters Line 5 at Superior originates as oil crossing the Canadian border in Enbridge's Mainline system. Subtracting "most of" 450,000 barrels per day of Line 5 capacity from Mr. Earnest's estimate of 500,000 barrels per day of spare capacity lands at Mr. Erickson's estimate that the loss of Line 5 capacity would result in about 100,000 barrels per day of spare capacity from Western Canada by 2030.

Had Mr. Earnest taken a look at the types of sources he typically relies upon, he would have found that Mr. Erickson's conclusions about Earnest Figure 1 are consistent with information presented by those sources. Mr. Earnest was aware that there had been testimony in front of the Canadian Parliament about Line 5 shutdown impacts, but he did not review testimony by Alberta Energy Minister Sonya Savage that a shutdown of Line 5 would limit the flow of up to 400,000 barrels a day of Alberta oil that would have to find alternate routes. (Earnest Cross, 721:8-725:17).⁴ And although he was generally aware of federal court litigation surrounding the closure of Line 5, Mr. Earnest had no knowledge that the government of Canada formally submitted an amicus brief to the Honorable Judge Neff stating that the loss of Line 5 would strand up to 400,000 barrels per day of oil originating from Western Canada.⁵ (Earnest Cross, 726:22-727:13).

Nor did Mr. Earnest's testimony discuss the possibility of a bottleneck, which Mr. Earnest explained is the most restrictive point in a distribution network, such as the Enbridge Mainline

⁴ Canada House of Commons, *Special Committee on the Economic Relationship between Canada and the United States*, 43rd Parliament, 2nd Session (30 March 2021), Testimony of the Honorable Sonya Savage, Alberta Energy Minister, p 1. ("I can tell you it certainly would devastate Alberta. A shutdown would create a bottleneck in the Midwest, negatively impacting oil prices. It would limit the flow of up to 400,000 barrels a day of Alberta oil that would have to find alternate routes.") (Accessible online at <https://www.ourcommons.ca/Content/Committee/432/CAAM/Evidence/EV11215666/CAAMEV06-E.PDF>)

⁵ Brief for the Government of Canada as Amicus Curiae, p. 10, *Michigan v. Enbridge Energy, Ltd. P'ship*, No. 1:20-CV-1142, W.D. Mich., ECF No. 45 (June 1, 2021) ("In western Canada, the loss of Line 5 would have a devastating impact on the industry and economy. In the context of an already full pipeline system, it would strand up to 400,000 barrels per day of oil originating from western Canada (much of it destined for the United States).")

System. (Earnest Cross, 7 TR 713:17-23). Mr. Earnest agrees that a downstream bottleneck could reduce available capacity in a system. (Earnest Cross, 7 TR 720:10-721:7). But Mr. Earnest was unaware of testimony by Alberta Energy Minister Sonya Savage that a shutdown of Line 5 “would create a bottleneck in the Midwest, negatively impacting oil prices.” (Earnest Cross, 7 TR 725:7-17). A bottleneck could put further increased price pressure on rail alternatives, suggesting that Mr. Erickson’s assumed \$6 per barrel increase in rail costs is conservative.

Mr. Earnest oversimplifies and misunderstands Mr. Erickson’s methodology by suggesting that Earnest Figure 1 could—even if misinterpreted as he suggests—completely undermine Mr. Erickson’s conclusion that a no-pipeline scenario would increase Canadian crude oil supply costs. Mr. Earnest’s misunderstanding is again evident when he refers to Mr. Erickson’s parenthetical about the Trans-Mountain Pipeline project included in Earnest Figure 1. (Earnest Rebuttal, 662:5-663:2). Mr. Erickson’s testimony simply points out that further constraints to capacity in other pipelines in Earnest Figure 1 could result in even greater rail costs than assumed in his core analysis. (Erickson Direct, 9 TR 1070:8-17).

Mr. Erickson properly reflected the \$6 increase from rail transport as an increase in the marginal cost facing all potential oil producers in Western Canada and the Bakken. Mr. Earnest maintains that a \$6 increase in rail to transport the oil that would flow through Line 5 should be averaged over the entire production from Western Canada. (Earnest Rebuttal, 7 TR 667). Mr. Earnest provides no basis for this critique, and his conclusion is contradicted by historical examples. Mr. Erickson explains that when the capacity to move oil from oil fields to markets is constrained, firms that operate pipelines and rail lines exert market power and increase their transportation charges or tariffs to capture additional profit. (Erickson Direct, 9 TR 1070:1-7). Mr. Erickson cites a peer reviewed academic journal to support his conclusion that increases in

marginal transport costs can actually result in even higher average overall costs per barrel of oil. (Erickson Direct, 9 TR 1070:1-7 and n. 52). Namely, this peer-reviewed paper concludes that:

Without new pipeline capacity, it is widely expected that oil sands production will be lower than would otherwise be the case, because net revenues will be lower if incremental production must rely on shipments by rail. For example, National Energy Board (2016b) estimates that a scenario with no new pipelines constructed would lead to an 8 percent reduction in total Canadian oil output and a 13 percent (400,000 barrels per day) reduction in peak oil sands output. These findings are driven by an estimated reduction of \$9.20 in the price of diluted bitumen at the Hardisty, Alberta, hub. The U.S. Department of State (2014) found similar results concerning oil price levels in their analysis of the Keystone XL pipeline.

(Ex. ELP-5 at 248). Furthermore, an additional paper supporting that conclusion, by Canadian bank Scotiabank, was made available in discovery. Mr. Earnest does not address either paper in his rebuttal.

ii. Higher rail costs would result in some oil fields in Western Canada not being developed

Mr. Erickson cites peer-reviewed work, including his own, demonstrating that pipelines increase the supply of oil by providing transport of oil to market when other options do not exist or are higher cost. (Erickson Direct, 9 TR 1064:1-11). Based on forecasted oil prices, anticipated transport capacity availability from Western Canada, and prior history on market responses to constraints in oil transport capacity, Mr. Erickson concludes that in the absence of the Line 5 pipeline, some oil fields in Western Canada may not be able to afford an added cost of \$6 per barrel for transporting their oil by rail, those oil fields may not be developed, and less oil would be supplied to the global oil market compared to the scenario where the Proposed Project is constructed. (Erickson Direct, 9 TR 1067:14-19).

Mr. Erickson's methodology is consistent with other experts in the field. His results are reflected in Erickson Figure 1, reproduced below. To develop Erickson Figure 1, Mr. Erickson looks to the forecast of the Canada Energy Regulator that crude oil prices will gradually drift down

towards \$53 per barrel by 2030. (Erickson Direct, 9 TR 1067:20-1068:1). Taking into account the increased cost of \$6 per barrel for rail transport discussed above, Mr. Erickson concludes that only fields that would be viable for development at a price of \$47 per barrel (\$53 forecasted price of oil, less \$6 per barrel cost of rail transport) would be developed. Mr. Erickson uses data from Rystad Energy, a Norwegian consultancy that specializes in the provision of independent energy research and business intelligence, to develop a supply cost curve for oil fields in Western Canada and the Bakken. (Erickson Direct, 9 TR 1069:1-3; Earnest Rebuttal, 7 TR 666, n. 22). Erickson Figure 1⁶ below, *Crude Oil Cost Curve for Greater Williston Basin Light Crude*, shows the sources of light crude oil production in the Canadian provinces of Alberta, British Columbia, Manitoba, and Saskatchewan, and U.S. States of Montana and North Dakota that could potentially feed into the Enbridge mainline pipeline system, including Line 5. (Erickson Direct, 1068:7-10).

⁶ Because both Mr. Erickson and Mr. Earnest refer to a “Figure 1” in their testimony, this brief refers to “Erickson Figure 1” and “Earnest Figure 1.”

The chart displays the breakeven oil price for various Canadian oil fields, categorized by their risk level relative to a government forecast of \$53/bbl. The x-axis represents cumulative crude oil production in 2030 (thousand barrels per day), and the y-axis represents the breakeven oil price (USD per barrel, Brent basis).

Legend:

- Oil field low-cost enough to be relatively robust to takeaway constraints (Lightest blue)
- Oil field could be at risk with transport cost premium of \$9/bbl (Medium blue)
- Oil field could be at risk with transport cost premium of \$6/bbl (Darkest blue)
- Oil field less likely to be developed given current price outlook of \$53/bbl (Grey)

Key Data Points:

- Government of Canada oil price forecast:** \$53 per barrel (indicated by a red horizontal line).
- Fields below \$53/bbl:** Most fields, including North Dakota (Bakken), Alberta (Duvernay), and Saskatchewan (Lower Bakken), are in the low-risk category.
- Fields at risk:** Some fields, including North Dakota (Bakken), Alberta (Duvernay), and Saskatchewan (Lower Bakken), are in the medium-risk category.
- Fields less likely to be developed:** Fields with breakeven prices above \$53/bbl, including North Dakota (Bakken), Alberta (Duvernay), and Saskatchewan (Lower Bakken), are in the grey category.

Mr. Erickson next analyzes costs and volumes of world oil supply from Rystad Energy to determine that crude oil from Western Canada and the Bakken are expected to comprise at least 7% of the marginal, new sources of oil in years to come. (Erickson Direct, 9 TR 1073:6-17). Mr. Erickson uses this analysis to do exactly what Enbridge witness Mr. Earnest accuses him of not doing. Mr. Earnest describes the “proper method” to “estimate the impact of closing Line 5 on the global marginal crude oil supply cost” would be “to adjust the production costs for the affected U.S. and Canadian crude oil volumes at the field level (assuming that the production costs have been demonstrated to actually change), re-sort the global crude oil supply cost curve, and then

determine how much the cost curve has shifted for a given global crude oil demand volume.” (Earnest Rebuttal, 7 TR 670:4-11). But this is just what Mr. Erickson did.

First, Mr. Earnest describes the need “to adjust the production costs for the affected U.S. and Canadian crude oil volumes at the field level (assuming that the production costs have been demonstrated to actually change).” (Earnest Rebuttal, 7 TR 670:4-11). This is exactly what Mr. Erickson did in Erickson Figure 1, where each colored block represents a specific oil field, and where the production costs (or, equivalently, revenue not received) of \$6/barrel are thereby adjusted. (Erickson Direct, 9 TR 1069:1-3, Erickson Figure 1, *supra*). To demonstrate that costs of production would “actually change,” Mr. Erickson relied on the peer-reviewed literature, Canadian bank briefings, and Canadian government assessments to demonstrate that an increase in shipping costs, especially when coupled with constraints on oil transport capacity, have and will actually change oil economics at the field level in the Greater Williston Basin. Mr. Earnest’s assertion that increased transport costs have “no bearing whatsoever” on whether crude oil in Western Canada will be produced has no basis. (Earnest Rebuttal, 7 TR 670:19-671:12). Mr. Earnest acknowledged on cross that it generally costs more to transport oil by rail than by pipeline, especially from an area with a great deal of production, such as Western Canada, to an area with a great deal of demand. (Earnest Cross, 7 TR 733:14-734:15). This increased cost for transport is relevant to whether and how much oil will be produced in Western Canada.

Second, Mr. Earnest describes the need to “re-sort the global crude oil supply cost curve, and then determine how much the cost curve has shifted for a given global crude oil demand volume.” (Earnest Rebuttal, 7 TR 670:4-11). Again, this is exactly what Mr. Erickson did, using a simplified method based on the finding that Western Canada and Bakken oil represent 7% of the marginal, new sources of oil in the years to come. (Erickson Direct, 9 TR 1073:6-17). Specifically,

Mr. Erickson situated this oil in the global crude oil supply cost curve assuming a given global crude oil demand volume, adjusted it by \$6 per barrel (equivalent to the premium for rail transport), and used the relative quantity of oil in this portion of the cost curve (7%) to calculate the average change in oil price that would result from a re-sorting of the cost curve, (\$0.40 per barrel). (Erickson Direct, 9 TR 1069:1-3). This is equivalent to the “re-sort” that Mr. Earnest suggested. The fact that Mr. Erickson used arithmetic to conduct this calculation, rather than doing a visual re-sorting of the cost curve, is immaterial.

Furthermore, in contrast to Mr. Earnest’s assertion, Mr. Erickson’s 7% assumption is by no means “almost totally arbitrary.” (Earnest Rebuttal, 7 TR 670:19-671:1). Mr. Earnest asserts that “Mr. Erickson assumes that the global marginal supply volume is *just* the global supply that has a production cost between \$47.00/bbl and \$53.00/bbl,” but that is not accurate. (Earnest Rebuttal, 7 TR 671:1-3, emphasis added). Rather, 7% is a reasonable and conservative estimate of the global marginal supply volume of a much larger price range. Had Mr. Earnest looked more carefully at Mr. Erickson’s workpapers provided during discovery, he would have seen clearly stated that the 7% value applies down to \$47 per barrel. (Erickson Direct, 9 TR 1073:6-17). This exact method used by Mr. Erickson for doing this re-sorting calculation has been peer-reviewed twice in major scientific journals, once in one of the most selective scientific journals in the world, Nature. Erickson, P., et al., (2020). *Why fossil fuel producer subsidies matter*. Nature, 578(7793), E1–E4. (<https://doi.org/10.1038/s41586-019-1920-x>, see also, ELP-7).

Mr. Earnest’s argument that Mr. Erickson should have used a higher oil forecast is also misplaced. Likewise, Staff’s argument that Mr. Erickson’s choice of the \$53 oil price forecast was a “singular decision underpin[ning] Mr. Erickson’s argument that future oil projects would go undeveloped” is also misplaced. (Morese Rebuttal, 12 TR 1801:20-23). Mr. Erickson recognizes

that a higher oil price forecast could impact the number of barrels put at risk if Line 5 does not operate. (Erickson Direct, 9 TR 1071:6-1072:4). Mr. Erickson explicitly recognized the United States Energy Information Administration price forecast of \$73 per barrel in 2030, but concluded that the \$53 per barrel forecast from the Canada Energy Regulator was more reasonable. (Erickson Direct, 9 TR 1071:6-1072:4). Mr. Erickson noted that the Rystad Energy forecast estimates oil prices at around \$50 per barrel in the late 2020s, and that the Canadian forecast was more relevant to the Western Canadian location of the oil fields than the United States forecast. (Erickson Direct, 9 TR 1071:6-1072:4). Mr. Erickson also notes that while a price outlook of \$73 per barrel would impact which oil fields are at risk (moving up the red line in Erickson Figure 1 to \$73 instead of \$53), the same number of barrels would be at risk. This is because, as displayed in Erickson Figure 1, shifting the red line in Erickson Figure 1 up from \$53/barrel to \$73/barrel would mean that other, higher-cost oil fields (and about the same quantity) would then be put at risk to a cost premium of \$6 to \$9 per barrel, even as the oil previously at risk (and shaded in blue) would then be robust to the cost premium. (Erickson Direct, 9 TR 1071:6-1072:4).

iii. If the Proposed Project is built, changes in global oil price and oil consumption will lead to a net increase in annual global oil consumption of 150,000 barrels per day, equivalent to 27,000,000 metric tons CO_{2e} per year from burning and producing that oil

Mr. Erickson concludes that building the Proposed Project instead of pursuing a no-pipeline alternative would avoid the \$0.29 per barrel increase in global oil prices, increase annual global oil consumption by about 150,000 barrels per day, and result in 27,000,000 metric tons of CO_{2e} annually from burning and producing that oil. (Erickson Direct, 9 TR 1073:16-17, 1074:6-14). To reach this conclusion, Mr. Erickson uses a simple oil market model, parameterized by elasticities, described in detail in his peer-reviewed, scientific work. (*See* Ex. ELP-7). Mr. Erickson

uses long-run elasticities to gauge effects over a period of time in which producers and consumers have time to make changes in their equipment or investment decisions. (Erickson Direct, 9 TR 1075:5-14). The flexibility of decisions is greater in the long run than in the short run, and as a result the effects of a change in price are greater in the long run. (Erickson Direct, 9 TR 1075:5-14). The long-run elasticities of supply (0.6) and demand (-0.3) that Mr. Erickson uses are the same as in his most recent peer-reviewed research. (Erickson Direct, 9 TR 1075:5-14).

1. Mr. Erickson uses an appropriate long-run supply elasticity

Mr. Erickson's source for the elasticity of oil supply of 0.6 is taken directly from the slope of the oil supply curve, as assembled by oil industry consultancy Rystad Energy, for prices in the \$50 per barrel to \$70 per barrel range. (Erickson Direct, 9 TR 1075:20-1076:2). These are the same values Mr. Erickson has used in peer-reviewed work, and they represent mid-range values that are well within the ranges of supply elasticity used in other studies. (Erickson Direct, 1076:3-9).

Enbridge witness Mr. Earnest testifies that Mr. Erickson should have determined elasticity of supply using the 2021 Rystad Energy data set, rather than the 2016 Rystad Energy data set. Mr. Erickson opted to use the 2016 data because it was the source of the supply elasticity that had been presented in peer-reviewed papers, and therefore had been subject to review and critique by professionals in his field, as well as because it yielded an elasticity of supply that was in alignment with a separate review conducted by the Organization for Economic Cooperation and Development. This rationale is documented in Erickson et al. 2020, "*Why fossil fuel producer subsidies matter.*" (9 TR 1075:21-1076:1, 1089 n. 1., 7 TR 673 n. 35). Furthermore, that cost curve, from 2016, is more robust to alternative future oil price outlooks, because it was assembled at a time when the outlook for longer-term oil prices was higher than it is today, and therefore the cost curve contains more usable information. By contrast, using a global cost curve from 2021, when

Rystad's oil price forecast was for around \$50/barrel, would contain relatively little information about the potential global supply of oil at costs well above \$50/barrel, and thus is incompatible with high oil price outlooks. Therefore, it is inappropriate for Mr. Earnest to use a 2021 cost curve, generated when the oil price outlook was \$50/barrel, to assess the elasticity of supply at his much higher preferred price forecast of \$73/barrel. (Earnest Rebuttal, 7 TR 675:7-15). Mr. Erickson conducted a sensitivity analysis, to evaluate how GHG emissions would look using different assumptions about supply and demand elasticities. This sensitivity analysis shows that even under unrealistic assumptions that approximate Mr. Earnest's critiques, the Proposed Project results in GHG emissions. (Erickson Direct, 9 TR 1076:10-1077:3).

2. Mr. Erickson uses an appropriate long-run demand elasticity

Mr. Erickson uses long-run elasticity of demand from multiple peer-reviewed sources.⁷ (Erickson Direct, 9 TR 1074-1076). Staff witness Mr. Morese disagrees with the elasticity of demand used by Mr. Erickson. The elasticity of demand describes how much the quantity demanded of a product changes when there is a change in price. (Erickson Rebuttal, 9 TR 1088:10-16). Mr. Morese assumes—and directed Staff's outside consultant to assume—that oil consumption would be unaffected by price. This is equivalent to assuming an elasticity of demand for oil of zero (perfectly inelastic), an assumption that is directly contradicted by Mr. Morese's own findings about the elasticity of demand being non-zero. Mr. Morese agrees that transportation by rail or truck would be more expensive than transporting oil through the Proposed Project, leading to higher prices for products that utilize the oil transported by Line 5. (Morese Direct, 12 TR 1777:8-13). But Mr. Morese assumes that, no matter how much the price of oil changes, people

⁷ Including Hamilton, J. D. (2009). *Understanding crude oil prices*. The Energy Journal, 30(2), 179–206, and subject to additional peer-review in Mr. Erickson's subsequent work, including Achakulwisut, Erickson, and Koplow (2021) in Environmental Research Letters, and Erickson et al (2020) in Nature.

will continue to consume the same amount. (Morese Rebuttal, 12 TR 1807). Mr. Morese is incorrect and internally inconsistent. It is generally accepted that oil consumption does change with price, especially in the long run. (Erickson Rebuttal, 9 TR 1088:10-16). Oddly enough, Mr. Morese acknowledges this in his testimony, where he provides a table of short-run demand elasticity for oil clearly showing that elasticity of demand for oil is not zero. (Morese Direct, 12 TR 1779:8-11).⁸

Mr. Morese's table of short-run demand elasticities is contradictory to his fundamental assumption that demand for oil is perfectly inelastic. It is also not comparable to Mr. Erickson's appropriate use of long-run demand elasticities. Mr. Erickson explains that a short-run elasticity usually represents a change over a year or less. (Erickson Rebuttal, 9 TR 1092:1-5). Long-run elasticities are generally higher in magnitude than short-run elasticities. (Erickson Rebuttal, 9 TR 1092:1-5). Dr. Stanton explains that over longer time frames, consumers react to fuel price increases by changing behavior and/or purchasing equipment that runs on a different power source. In Dr. Stanton's view, an assumption of perfect inelasticity would only apply in a very, very short time period—such as days or weeks—where customers have no alternative choices. (Stanton Rebuttal, 9 TR 974:1-15). Because the Proposed Project is designed to run for many decades—as Enbridge appears to assume it will—it is more appropriate to use long-run elasticities. (Erickson Rebuttal, 9 TR 1092:1-5). Another reason to take a long-run perspective with respect to oil is that alternatives to oil in the transport sector are emerging and becoming more price-competitive. (Erickson Rebuttal, 9 TR 1092:9-13). This suggests that the long-run elasticity of demand may be even greater in the future than elasticities relying on historical data. (Erickson Rebuttal, 9 TR 1092:9-13).

⁸ See also Table A.6 in the document cited at n. 19 at 12 TR 1780, including Hughes and Lin in a table of studies that excludes studies estimating long-run elasticities.

Mr. Morese directs Mr. Ponebshek of Weston Solutions to assume that demand for oil is perfectly inelastic (an elasticity of zero) and model GHG emissions assuming that there will be no change in the quantity of oil produced or consumed in the no-pipeline scenario. (Erickson Rebuttal, 9 TR 1091:1-7; Stanton Rebuttal, 9 TR 972:8-973:2). Mr. Ponebshek, pursuant to this direction, assumes that the current capacity of 540,000 barrels per day of liquids would continue to be transported by the same producers to the same consumers in the no-pipeline scenario. (Ex. S-24 at 2). He models a scenario in which the same 440,000 barrels per day of oil that would have entered Line 5 at Superior is instead shipped to Marysville by rail. (Ex. S-24 at 2, 4). It is no surprise that under these assumptions, GHG emissions increase in Mr. Ponebshek's no-pipeline scenario. Both Mr. Erickson and Mr. Morese recognize that GHG emissions from rail transport are higher than those from pipeline transport. (Morese Rebuttal, 12 TR 1801:8-9).

Mr. Ponebshek's conclusions are not relevant here, because the assumptions provided to him by Mr. Morese are unreasonable, unjustified, and contradicted by Mr. Morese's own testimony. As economist Dr. Elizabeth Stanton so clearly testifies: "The sources cited by Mr. Erickson and Mr. Morese both establish that there is a reasonable range of existing estimates from which to choose, all of which find some elasticity of demand from changes in the price of fossil fuels." (Stanton Rebuttal, 9 TR 973:3-10).

Mr. Morese's approach embraces the type of fatalistic thinking that ensures the environmental impacts of GHG emissions on climate change will never be fairly considered by regulators. Over the next three decades, the IPCC finds that to attain a 1.5° C limit to warming, all three major fossil fuels must decline, with oil use declining by an average of 3% annually, for a total of a 65% reduction. (Erickson Direct, 9 TR 1047:12-1048:2). If the underlying assumption used by decisionmakers is that oil supply is infinite and demand unaffected by price, then we may

as well throw in the towel right now. But that assumption is wrong. Analysis by courts and administrative bodies throughout the U.S. have recognized that infrastructure projects do have global oil market impacts, and that those impacts can be quantified with relatively straight-forward methods. Mr. Erickson uses clear and accessible methods to quantify market effects on GHG emissions, and cites to a number of instances in which just such quantification has been done. Unlike Mr. Erickson, Mr. Morese makes no effort to actually model the market impacts of a no-pipeline scenario.

5) The Proposed Project’s impact on global oil consumption can and should be considered

It would be clear error for the Commission not to consider the Proposed Project’s impact on global oil consumption. Staff witness Mr. Morese argues that the Commission should ignore any global impacts of the Proposed Project, because global oil markets are too complicated and speculative to model. (Morese Rebuttal, 12 TR 1802:10-1803:5). This argument has been dismissed by courts, including the Ninth Circuit Court of Appeals in *Ctr. for Biological Diversity v. Bernhardt*, 982 F.3d 723 (9th Cir. 2020). In that case, the Bureau of Ocean Energy Management (“BOEM”) of the United States Department of Interior failed to analyze the increase in global oil consumption resulting from the proposed Liberty project in Alaska because BOEM believed that “any change in foreign oil consumption resulting from the pending decision . . . would be very small” and “could only have a negligible impact on worldwide oil prices and, as a result only a negligible impact on foreign consumption and emissions levels.” *Id.* at 738. The Ninth Circuit found that this oversight was arbitrary and capricious, noting that methods for estimating the change in oil consumption and resulting emissions exist. *Id.* The Ninth Circuit found that “The record belies BOEM’s contention that it could not have summarized or estimated foreign emissions with accurate or credible scientific evidence.” *Id.* The court cited Mr. Erickson’s work for how

this calculation can be done, noting that various studies, including Mr. Erickson’s “provided by CBD in the administrative record confirm the effect of increasing domestic oil supply on foreign consumption and the feasibility of its estimation.” *Id.*

B. Greenhouse Gas Emissions from the Project pollute, impair, and destroy Michigan’s air, water, and other natural resources

1) GHG emissions cause climate change

Greenhouse gases, such as carbon dioxide, methane, and nitrous oxide, trap heat and maintain the Earth’s temperature above what the Sun’s radiation alone provides. This heat-trapping, or greenhouse effect, creates conditions that change precipitation and temperature patterns. (Overpeck Direct, 9 TR 1142:11-1143:5). The Commission has acknowledged that “GHGs are widely recognized as pollutants that trap heat in the atmosphere and contribute to climate change, thereby polluting, impairing, and destroying natural resources.” (April 21, 2021, Order at 65). Continuing to add greenhouse gases to the atmosphere will worsen climate change impacts in Michigan, the Great Lakes, and the region. (Overpeck Direct, 9 TR 1138:18-19).

MPSC Staff witness, Alexander Morese, who testified on behalf of Staff about the GHG emissions associated with the Proposed Project and alternatives, agreed with this premise. He testifies that “Staff acknowledges that the burning of fossil fuels is a major source of GHGs in the atmosphere, thus contributing to global climate change. Staff also acknowledges that global climate change may have a deleterious effect on the Great Lakes ecosystem.” (Morese Direct, 12 TR 1769:17-19).

Climate Organizations’ expert witness, Dr. Jonathan Overpeck provides testimony to explain how GHGs cause climate change and thereby impact Michigan’s natural resources. Dr. Overpeck is an interdisciplinary climate scientist and the Samuel A. Graham Dean of the School for Environment and Sustainability at the University of Michigan. Dr. Overpeck has written and

published over 220 works on climate and environmental science, including serving as a Working Group 1 Coordinating Lead Author for the Nobel Prize-winning IPCC 4th Assessment in 2007 and a Working Group 2 Lead Author for the IPCC 5th Assessment in 2014. (Overpeck Direct, 9 TR 1139:21-1140:1). Dozens of Dr. Overpeck's published papers focus on the relationship between climate and vegetation, the prevalence and risks of drought, and the impacts of climate change on freshwater resources and ecosystems. (Overpeck Direct, 9 TR 1140:15-17). In addition to his deanship at the University of Michigan, Dr. Overpeck continues to serve the state of Michigan as a member of the University of Michigan's President's Commission on Carbon Neutrality, and through his current service on the State of Michigan's Council on Climate Solutions and on Ann Arbor's Energy Commission, focused largely on sustainable energy solutions. (Overpeck Direct, 9 TR 1140:6-8).

Dr. Overpeck explains that greenhouse effect is tied to human activity. Rising greenhouse gas concentrations are well documented from sites around the world, with the concentration of carbon dioxide rising sharply from 280 to 415 parts per million since the Industrial Revolution with the increase in burning fossil fuels. (Overpeck Direct, 9 TR 1142:17-18). Carbon dioxide in the atmosphere carries a "chemical fingerprint" of fossil fuels. Scientists have seen that the known combustion of fossil fuels—over 18 trillion barrels of oil, 390 billion tonnes of coal, and 155 trillion cubic meters of natural gas over the past century—is reflective of the sharp increase in the chemical fingerprint. (Overpeck Direct, 9 TR 1142:19 - 1143:1). The climate has already warmed by just over 1 degree Celsius and will continue to warm several more degrees Celsius unless action is taken to reduce emissions quickly. (Overpeck Direct, 9 TR 1143:7-9).

As human activity leads to the warming of the climate, more moisture is held in the air. (Overpeck Direct, 9 TR 1144:10). This moisture comes from the land and vegetation, leading to

droughts. With more moisture in the air, storms are stronger and there can be changes in precipitation. Ultimately, we have and will see more intense rainfall along with longer dry spells. (Overpeck Direct, 9 TR 1144:15). While scientists have predicted these impacts, most are surprised by the rapidity at which the predictions are occurring. (Overpeck Direct, 9 TR 1157:18-1158:2).

2) Climate change is harming Michigan's natural resources

Dr. Overpeck testified that climate change is manifesting both as changes in average climate, and in terms of increasing frequency and severity of extremes around the planet. (Overpeck Direct, 9 TR 1138:3-4). But, climate change is not just a global issue, it affects the region, the state, and the individual. Staff does not disagree that the climate change may have a deleterious effect on the Great Lakes ecosystem. (Morese Direct, 12 TR 1789:18-19). In Michigan, there are higher temperatures, greater average precipitation, and more intense precipitation (Overpeck Direct, 9 TR, 1138:4-5). These changes are linked to human-driven climate change and are impacting Michigan and the Great Lakes because warming has accelerated since 1980 as the magnitude of greenhouse gases has accelerated. (Overpeck Direct, 9 TR 1147:13-20).

Climate change is causing increased flooding in Michigan. As rainfall intensifies because the warming atmosphere can hold and release growing amounts of water vapor, there are record high water levels in the Great Lakes and more flooding across the region. (Overpeck Direct, 9 TR 1148:12-1149:2). With annual and seasonal mean temperatures increasing, there will still be extreme cold temperatures associated with “polar vortex” events because research has shown the link between climate change-caused rapid Arctic warming and winter-time cold air outbreaks. (Overpeck Direct, 9 TR 1148:4-7).

Increased GHGs threaten Michigan's farms. Warming both worsens drought, putting stress on crops, and also leads to flooding that prevents the planting, harvesting, or management of crops. (Overpeck Direct, 9 TR 1155:6-12). There is also "a clear trend towards warmer conditions and greater farm runoff that are combining to yield increased occurrence and risk of algal blooms in lakes" creating a public health risk to drinking water and the local ecology. (Overpeck Direct, 9 TR 1138:7-8; 1155:12-1156:4; 1162:11-20). Farmers in Michigan are seeing increased average amounts of rain, increased intensity of rainfall, yet also more frequent and severe dry conditions that can reduce crop yield. Farmers also face threats of crop disease because warming conditions allow insects (including disease-bearing ones carrying tropical ailments) to thrive—adding to the public health risk. (Overpeck Direct, 9 TR 1145:13-16).

Greenhouse gases also impact Michigan's air quality, and consequentially Michigan's natural resources and public health. GHGs derive from the burning of fossil fuels, which pollute the air Michiganders breathe. (Overpeck Direct, 9 TR 1164:6-16). The warming atmosphere exacerbates the health impacts of polluted air, creating smog that makes it even harder for Michiganders, especially in communities overburdened with industry, to breath. (*Id.*).

3) Increases in GHG emissions will exacerbate climate change

Conduct that exacerbates climate change by increasing GHG emissions is conduct that pollutes, impairs, and destroys the air, water, and natural resources. (April 21, 2021, Order at 65-66 (citing *Massachusetts v Environmental Protection Agency*, 549 US 497, 528-535 (2007); and Greenhouse Gas Emissions: Sources of Greenhouse Gas Emissions, U.S. Environmental Protection Agency, available at <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>). The Commission has articulated that "both the statutory language of MEPA and the language of MEPA

case law support a broad interpretation of whether ‘conduct . . . has or is likely to have’ the effect of pollution, impairment, or destruction.” (April 21, 2021, Order at 66).

Dr. Overpeck explains that increasing GHG emissions will exacerbate climate change and without intervention, there will be devastating impacts on the world, including on Michigan and the Great Lakes. (Overpeck Direct, 9 TR 1141:12-13). This happens because the impacts of climate change become stronger as the scale of the warming grows, which intensifies fires, heat waves, and storms.

With GHGs creating the conditions to cause and exacerbate climate change, climate change will in turn impact Michigan’s natural resources. Climate and weather extremes can lead to greater tree mortality through disturbances like fire and windthrow. (Overpeck Direct, 9 TR 1154:9-1155:4). Hot droughts will only worsen the stress on vegetation from invasive species, insect-pests, and disease. (*Id.*). This ultimately harms the health of the forest, and the ecosystem it provides for wildlife. (*Id.*).

According to Dr. Overpeck, if global warming is limited to 1.5 to 2.0°C above pre-industrial levels (about 0.5 to 1.0°C above present-day), then the changes the state and region are already seeing will likely worsen to a limited degree. (Overpeck Direct, 9 TR 1158:10-15). This is known as the low-emissions scenario. There is considerable literature that makes clear that our region will experience more moderate and more manageable climate change if greenhouse gas emissions are rapidly reduced. (Overpeck Direct, 9 TR 1141:17-19). Thus, to avoid massive costs in human suffering, economic resources, and ecological devastation, Michigan needs to address the root cause of climate change—the burning of fossil fuels. (Overpeck Direct, 9 TR 1146:19 - 1147:2).

But, if we allow the current trajectory of climate change to continue, with heavy usage of fossil fuels into the future (such as the Proposed Project), and we postpone meaningful greenhouse gas emissions reductions, there will be a much more substantial impact on the climate of Michigan and the Great Lakes. (Overpeck Direct, 9 TR 1158:10-15; 1159:1-3).

According to Dr. Overpeck, Michigan will see more extreme heat, hotter nights, warmer winter temperatures and diminished snow cover (despite still having “polar vortex” events), even as the state experiences increased intensity and frequency of extreme precipitation. (Overpeck Direct, 9 TR 1148:4-8; 1152:11-1153:5). Worse yet, Michigan could see increased wildfire weather similar to that in the West. (Overpeck Direct, 9 TR 1160:20-1161:3). Water levels in the Great Lakes will become more variable with more high and low record levels because of the fluctuation in increased evaporation and precipitation—oscillations we are already seeing in Michigan. (Overpeck Direct, 9 TR 1161:4-15).

In addition to the already-present damage from algal blooms, Michigan’s aquatic ecosystems can become weaker from the warmth and unable to support its natural ecosystem. (Overpeck Direct, 9 TR 1162:11-1163:3). This could lead to additional invasive species. (Overpeck Direct, 9 TR 1162:18-1163:1). Meanwhile Michigan’s coastal ecosystem is threatened by increase in flooding, more variable water levels, greater risk of erosion, and reduction in lake ice in the winter. (Overpeck Direct, 9 TR 1163:4-13).

Michigan’s human population will also suffer from a warming atmosphere. Michiganders would be subject to more disease carrying insects, increased flooding that worsens water quality and infrastructure, extreme temperatures that lead to pre-mature death. (Overpeck Direct, 9 TR 1163:15-1164:5). The existing poor air quality which is already a public health hazard, is worsened by a warming atmosphere intensifying smog. (Overpeck Direct, 9 TR 1164:6-16). Michiganders

cannot afford the added climate hazards that will spawn from the Proposed Project's GHG emissions.

The Proposed Project contributes to this destruction of Michigan's natural resources. As Mr. Erickson's testimony explains the Proposed Project will emit a significant amount of GHGs. The Proposed Project could result in an annual emissions of 27,000,000 metric tons of CO₂e. This conduct will increase GHG emissions in Michigan, and thereby exacerbate climate change.

4) GHG emissions from the Proposed Project will result in \$41 billion in damages

Under MEPA, the Commission must consider whether there is any pollution, impairment, or destruction as a result of the Proposed Project. This includes comparing the Proposed Project to a no-pipeline alternative. The Commission must also consider whether any pollution, impairment, or destruction is consistent with the protection of Michigan's natural resources; and whether there are feasible and prudent alternatives to any pollution, impairment, or destruction that is found as a result of the Replacement Project. (April 2021, Order at 69).

Climate Organizations' witness, Dr. Peter Howard testifies to the polluting impact of the Proposed Project—\$41 billion in damages to Michigan's natural resources—as related to the prudent and feasible alternative of this pollution. Dr. Howard is the Economics Director at the Institute for Policy Integrity at the New York University School of Law. Dr. Howard's research primarily focuses on the social cost of carbon and related economic issues, but his work also includes resource extraction. Dr. Howard's work has been published in various prestigious environmental economics, legal, and policy journals, and has been cited by the federal government and researchers, such as the National Academy of Sciences. (Howard Direct, 9 TR 1106:13-21, 1107:1). Dr. Howard has testified about the value of using the social cost of greenhouse cases

before other state legislature and agencies, and federal agencies and entities. (Howard Direct, 1107:9-14).

Dr. Howard explains that the social cost of greenhouse gases, also known as the social cost of carbon (“SCC”) is a globally-accepted metric used at the state and federal level to demonstrate the effect of GHGs on the environment. (Howard Direct, 9 TR 1105:9-15; 1116:19-1118:11; 1123:9-1127:14). Here, Dr. Howard applies the social cost of greenhouse gases, to monetize the incremental climate costs from the emissions from construction and operation of the Proposed Project, as well as the life cycle emissions from the oil and natural gas products that would be transported by the Proposed Project. (Howard Direct, 9 TR 1108:2-8; 1116:7-18).

The likely cost of \$41 billion is a conservative estimate. Dr. Howard explains that the cost is calculated by applying the Proposed Project’s 27,000,000 metric tons per year of greenhouse gas emissions into quantitative estimates over specific calendar years and then discounts the future damage estimates back to the present-day value for the year 2021. (Howard Direct, 9 TR 1128:5-1130:7). Assuming that construction will be completed between 2027 and 2028, the 87,000 metric tons of CO₂e of estimated the GHG emissions associated with construction of the pipeline apply to these years. (Howard Direct, 9 TR 1130:8-1131:4). Dr. Howard’s calculations focus on the years from 2027 to 2070 (despite Enbridge’s plans to utilize the pipeline for 99 more years—the year 2127). Dr. Howard takes only the net present value of the Proposed Project until 2070 because the federal government’s estimates of the SCC that help guide Dr. Howard’s central calculations end in 2070. (Howard Direct, 9 TR 1108:16-1109:3). For the additional oil and gas products transported by the Proposed Project (the 87,000 metric tons of CO₂e), Dr. Howard relied upon the federal Interagency Working Group’s estimates of the social cost of carbon calculated at a 3% discount rate, and extended by EPA through year 2070. (Howard Direct, 9 TR 1131:16 -1132:11).

However, Dr. Howard predicts that if the damages were extrapolated through 2127 (using a 2% discount rate), the conservative estimated climate cost would be over \$160 billion. (Howard Direct, 9 TR 1109:1-8; 1133:14 24-26). This price tag is based on a more conservative model and does not include the unquantifiable costs pollution brings to human health and the environment. (Howard Direct, 9 TR 1105:18; 30-31; 1133:15-1135:13).

This means at least \$41 billion of damage to Michigan, the United States, and globally, manifesting as energy system disruptions, air quality impacts, extreme temperatures, water quality and water scarcity impacts, agricultural productivity losses, property damage, biodiversity losses, and costs to other climate-vulnerable market sectors and natural resources important to Michiganders. (Howard Direct, 9 TR 1105:19-22; 1133:18-1134:12). These are the impacts described by Dr. Overpeck when fossil fuel continues to burn causing and exacerbating climate change. (*See generally* Overpeck Direct, 9 TR 1138-1168). It does not include the other impacts mentioned by Dr. Overpeck, such as wildfires, flooding, and mortality from inland extreme weather, groundwater overexploitation, habitat modifications, and invasive species are not currently quantified. Therefore, this \$41 billion cost to natural resources is only a conservative estimate.

Pollution from the Proposed Project that likely leads to at least \$41 billion of costs to the climate is inconsistent with the protection of Michigan's natural resources. Probable as well as actual degradation of the environment may be considered in deciding whether plaintiff has made a *prima facie* showing of pollution. *Wayne County Dept. of Health, Air Pollution Control Div. v. Olsonite Corp.*, 79 Mich. App. 668, 694-95, 263 N.W.2d 778, 792 (1977) (citing *Ray*, 224 N.W.2d at 890. In *Olsonite*, the trial court found that the plaintiff made a *prima facie* case based on complaints from citizens about odors from the plant, inspection reports noting odors, tests showing

the plant exceeded standards, and that existing tactics to mitigate odor pollution were insufficient. *Olsonite Corp.*, 79 Mich. App. 668, 695, 263 N.W.2d 778, 792 (1977). Here, Climate Organizations demonstrate through the record that the Proposed Project will lead to pollution of Michigan's natural resources.

The record evidence is sufficient to determine that the action at issue pollutes, impairs, or destroys the air, water, or other natural resources, or the public trust in those resources.

C. Shutting down the existing pipeline and not building the Proposed Project is a feasible and prudent alternative

The purpose of Enbridge's Proposed Project is to alleviate environmental concerns raised by the State of Michigan through both Governor Snyder's Michigan Pipeline Safety Advisory Board and Governor Whitmer's Notice of Revocation and Termination of the 1953 Easement. (Stanton Direct, 9 TR 943:3-944:9). But while Enbridge considers environmental impacts to the Straits from a spill from Line 5, the Company does not fully consider the environmental impacts of its proposed alleviation of the risk of an oil spill. (Stanton Direct, 9 TR 943:20-944:27). Specifically, Enbridge fails to consider the impact of greenhouse gases from the Proposed Project on the environment. (Stanton Direct, 9 TR 944:28-945:4).

Enbridge narrowed the scope of its alternatives analysis by limiting alternatives to the three specified in a November 2017 Agreement with the State of Michigan. (Pastoor Cross, 7 TR 586:10-587:2, Ex. A-8). Enbridge misreads the meaning of the November 2017 Agreement and misconstrues the agreement as relevant to a MEPA analysis. First, in asking Enbridge to evaluate alternatives to replace the Dual Pipelines, the November 2017 Agreement identifies three alternatives as the "minimum" alternatives to be assessed. (Ex. A-8 at 5, ¶ F). Furthermore, Enbridge cannot enter into an agreement to avoid MEPA review. *See, e.g., Bloomfield Ests. Improvement Ass'n, Inc. v. City of Birmingham*, 479 Mich. 206, 212, 737 N.W.2d 670, 674 (2007)

(explaining that contracts will not be enforced if they violate law or public policy); *PolyOne Corp. v. Westlake Vinyls, Inc.*, 937 F.3d 692, 701 (6th Cir. 2019) (finding it “a basic principle of contract law” that a court may refuse to enforce a contract where the contract has a direct objective or purpose that violates the federal or a state Constitution, a statute, an ordinance, or the common law).

Enbridge’s purpose is relevant to determining the proper scope of an alternatives analysis under MEPA. In the context of a wetlands permit, the Michigan Natural Resources Commission, a Michigan administrative agency, considered the role of an applicant’s purpose when considering feasible and prudent alternatives. *In Re: Wetlands Act Appeal of Kuras Properties, Inc.*, 1990 WL 299409, at *5. In *Kuras*, the Natural Resources Commission found that “[i]n determining what is a feasible and prudent alternative it is legitimate to give some deference to an applicants’ purpose. This does not mean that the applicants’ purpose is the only standard to be applied. An applicant may not define alternatives in a manner so as to exclude feasible alternatives.” *Id.* Yet that is exactly what Enbridge has done here. Enbridge does not look to its own stated purpose of alleviating an environmental risk to the Great Lakes in identifying alternatives to analyze. Instead, Enbridge defines the alternatives analysis to exclude any alternative that does not include the flow of oil across the Straits of Mackinac.

The Climate Organizations asked expert witness Dr. Elizabeth Stanton to review Enbridge’s alternatives analysis in this case and to opine on the scope of alternatives that should be considered. Dr. Stanton is a PhD economist with over two decades of professional experience as a political and environmental economist. She has authored more than 155 reports, policy studies, white papers, peer-reviewed journal articles, and book chapters as well as more than 45 expert comments and oral and written testimony in public proceedings on topics related to energy, the

economy, the environment, and equity. (Stanton Direct, 9 TR 939:1-940:19). Dr. Stanton has experience and expertise in conducting alternatives analyses, and applied her understanding of the appropriate methodology for conducting alternatives analyses to this case. (Stanton Redirect, 9 TR 1021:14-1022:17).

1) MEPA requires consideration of a no-pipeline alternative

Continuing to operate the existing pipelines would not achieve Enbridge's stated purpose, and therefore cannot be considered as a component of an alternative here. (Stanton Direct, 9 TR 946:22-24). Dr. Stanton describes how, by refusing to comply with the Governor's Notice of Revocation and Termination of the Easement, Enbridge attempts to set up a false choice for the Commission. Enbridge was clear that the purpose of the Proposed Project is to alleviate environmental harm by shutting down the existing pipeline. Enbridge must consider alternatives that serve this same purpose – including the possibility that oil will no longer be transported across the Straits. (Stanton Direct, 9 TR 947:4-18); *see Kuras*, 1990 WL 299409, at *5 “An applicant may not define alternatives in a manner so as to exclude feasible alternatives.”).

Staff falls for Enbridge's false choice hook, line, and sinker. Staff witness Mr. Warner frames a “no action” alternative as one where (1) the Proposed Project is not completed, and (2) the Dual Pipelines continue to operate “unless and until Enbridge determines to voluntarily cease operations or a legal or regulatory action forces Enbridge to cease operations.” (Warner Direct, 12 TR 1728:3-10). Mr. Warner refers to this in rebuttal as an alternative that “assumes that the status quo would be maintained if the Replacement Project was not completed.” (Warner Rebuttal, 12 TR 1742:12-14). Mr. Warner's development of this “no action” scenario is improper for at least two reasons.⁹

⁹ Dr. Stanton explains the importance of considering “no-action” alternative, referred to in this brief as a “no-pipeline” alternative to distinguish it from the somewhat misleading alternative Staff witness Warner refers to as the

First, Mr. Warner’s assumption that a no-pipeline alternative should only be considered if the existing pipeline is shut down is incorrect. Dr. Stanton explains that when alternatives analyses are undertaken, it is important to consider “what would happen if the proposed action were not to be undertaken.” (Stanton Direct, 9 TR 946:8-17). In this case, it would be irrational to consider an alternative where the proposed action is not undertaken, but the existing pipeline continues to operate; the very purpose of the application is to eliminate the risk of an oil spill from the existing pipeline. Dr. Stanton explains that:

Here, the proposed action is the construction of a tunnel. Enbridge should have included in its alternatives analysis an alternative in which the existing pipeline no longer operates, but is not replaced with a new pipeline. In short, the “no-action” alternative is to eliminate the environmental risk to the Great Lakes by shutting down the existing pipeline, but take “no action” to construct a new pipeline segment through the Straits.

Second, Mr. Warner’s interpretation of the “status quo” would require the Commission to make inappropriate legal assumptions about the validity of the Governor’s Notice of Revocation and Termination. In its April 21, 2021, Order, the Commission agreed with Administrative Law Judge Mack that “the only definitive point is that as of May 13, 2021, the State will consider the easement withdrawn and revoked and Enbridge will consider the easement valid.” (April 21, 2021, Order at 36, citing Ruling on Remand, p. 14). During motion hearings, counsel for Enbridge agreed that Governor Whitmer has not withdrawn her notice, and that the notice still remains. (6 TR 492:2-5). Yet Staff asks the Commission to assume that the Notice is not valid. By characterizing the status quo as a state of the world in which Enbridge continues to operate the Dual Pipelines, Staff requires the Commission to conclude, *sua sponte*, that an official action undertaken by the head of another Michigan Agency—Dan Eichinger, Director of the Michigan Department of Natural

“no-action” alternative. (Stanton Direct, 9 TR 946:8-17). Because Staff has mischaracterized the concept of a “no action” scenario, the Climate Organizations refer to the proper “no action” scenario discussed in the testimony of Mr. Erickson, Dr. Howard, and Dr. Stanton as the “no-pipeline” scenario to avoid confusion in briefing.

Resources—and the head of Michigan’s executive branch—Governor Gretchen Whitmer—is invalid.

The impropriety of the Commission making this assumption about the “status quo” is underscored by the Attorney General’s efforts to enforce the 1953 Easement and shut down Line 5. In fact, when dismissing the federal court case regarding the Notice, the Attorney General made clear that the purpose of the dismissal was to “instead focus on our ongoing litigation in state court. The state court case is the quickest and most viable path to permanently decommission Line 5.”¹⁰ *See e.g., Traverse City School Dist. v. Attorney General (In re Proposal C)*, 384 Mich. 390, 407 n. 2, 185 N.W.2d 9 (1971) (holding that Attorney General opinions on questions of law posed by state officers are not binding on the courts but “command the allegiance of state agencies.”)

Enbridge clearly could have analyzed the no-pipeline alternative here, but directed its experts not to. Although Mr. Earnest could have modeled how a shutdown of Linen 5 would impact the transport of the oil currently shipped through Line 5, he was not asked to do so by Enbridge in this case. (Earnest Cross, 7 TR 729:4-9). In past testimony for Enbridge in support of the expansion of Enbridge Line 3, Mr. Earnest used a model called the Crude Oil Market Optimization Model because it is well-suited for assessing the market implications of changes in logistical infrastructure that enables Western Canadian crude oil to reach the market. (Earnest Cross, 7 TR 729:10-732:17). Mr. Earnest disclosed in discovery that he has actually undertaken an analysis of how costs to refiners and their customers will be impacted in a no-pipeline alternative, but did not provide that analysis in this case because it was deemed “irrelevant.” (Ex. ELP-33). Staff does make some effort to analyze a no-pipeline alternative but, as described above, provides outside consultant Mr.

¹⁰ https://www.michigan.gov/ag/0,4534,7-359-92297_47203-573159--,00.html

Ponebshek with flawed assumptions that render his conclusions irrelevant. (Warner Direct, 33:11-19, 36:20-37:15).

2) A no-pipeline alternative is feasible

Because feasible and prudent are not defined in MEPA, Dr. Stanton looks to dictionary definitions in evaluating whether a no-pipeline alternative is feasible and prudent. (Stanton Direct, 9 TR 948:1-5). This is consistent with Michigan courts' treatment of these undefined terms. *Nelson v. Grays*, 209 Mich. App. 661, 664, 531 N.W.2d 826 (1995). Based on Funk and Wagnall definitions, Dr. Stanton defines a feasible alternative as one that is "capable of being put into effect or accomplished; practicable" or "capable of being successfully utilized; suitable." (Stanton Direct, 9 TR 948:1-5).

Dr. Stanton concludes that the no-pipeline scenario is a feasible alternative to the Proposed Project. In the no-pipeline scenario, customers of propane and related products would either purchase fuels transported in a different way (other pipelines, road and rail) or would switch to non-hydrocarbon fuels, likely electrification via modern heat pumps. (Stanton Direct, 9 TR 948:10-17). In short, Michiganders would still have access to the energy they need to heat their homes. (Stanton Direct, 9 TR 948:10-17). In the 1977 *Olsonite* case, the Michigan Court of Appeals interpreted "feasible" as excluding alternatives which were practically or economically impossible, but not those which were merely costly and burdensome, even if a given defendant could not meet those costs or bear that burden. *Wayne County Dep't of Health, Air Pollution Control Div. v. Olsonite Corp.*, 263 N.W.2d 778, 796 (Mich. Ct. App. 1977). No party provides evidence that the no-pipeline alternative is practically or economically impossible. For its part, Enbridge provides no evidence related to the costs or burdens to the Company of a no-pipeline alternative. The only evidence Enbridge provides, through its joint rebuttal witness with the Michigan and National Propane Associations, is potential price impacts on some residents of the

Northern Lower Peninsula and Upper Peninsula who use propane and concerns about the ability of heat pumps to serve customers in cold-weather climates.

Dr. Stanton concludes that “while the closure of Line 5 (and the greater project of Michigan decarbonization) will cause some shift in consumer expenditures I see no reason to believe that it will be a detriment to consumers or the economy as a whole.” (Stanton Direct, 9 TR 958:15-17). Dr. Stanton’s conclusion is consistent with the findings of the Dynamic Risk Analysis and the London Economics’ analysis finding that under a no-pipeline alternative, losses to Michigan refineries would be limited to 15 percent of supply and that the related increase in gasoline prices would be lower than 1 cent per gallon. (Ex. ELP-24 at ES-2; Stanton Direct, 9 TR 959:4-8). Dr. Stanton estimates that, at propane price increases estimated by Dynamic Risk and London Economics, the continued use of the same amount of propane in a no-pipeline scenario would cost the average Michigan household \$55 to \$209 per year. (Stanton Direct, 9 TR 968:3-7).

Dr. Stanton’s analysis does not assume, as Mr. Sloan and Mr. Morese would have the Commission believe, that in the no-pipeline alternative all households are essentially forced to switch to electricity immediately. (Stanton Direct, 9 TR 3-13). Many households would electrify over time, but others may continue to purchase less propane, or the same amount of propane at higher cost. (Stanton Direct, 9 TR 3-13). Dr. Stanton explained in her testimony that:

Some people in the Upper Peninsula heat their homes with propane, some of those people are getting their propane from a source that relies on Line 5. Of those people that would be affected if Line 5 were to shut down, I think that different households will make different choices, and that those choices will change over time. I think that over time, that the option of electrifying, using some form of heat pump, will become more viable for more households. It may be that it’s viable today for some households, it really depends on the particular situation. Some households may instead choose to pay a little more on their propane and continue to use propane, or may choose to, for some reason, change to one of the many other fuels that you just listed. Each household will make its own choice. Over time, it’s

my testimony that electrification through heat pumps will become a more viable choice for a larger share of that subset of people that we just defined.

Staff Witness Morese and Propane Associations witness Sloan agree with Dr. Stanton that switching from propane heating to electric heat pumps is technically feasible, but argue that the cost is too high. Mr. Morese testifies that “Staff agrees with Dr. Stanton that modern electric heat pumps are technically feasible for Michigan residents, however ‘practical and economic’ is highly reliant on an individual’s interpretation.” (Morese Rebuttal, 12 TR 1795:19-21). Yet none of Mr. Morese’s testimony suggests that a no-pipeline alternative is practically or economically impossible. Mr. Morese’s testimony is that switching to heat pumps will be more expensive than continuing to use propane at current prices (Morese Rebuttal, 12 TR 1796).

Dr. Stanton explains electric heat pumps are increasingly affordable and feasible in cold-weather states like Michigan. (Stanton Direct, 9 TR 952:6-17). Dr. Stanton cites a recent study published in the journal *Energy & Buildings*, entitled *Decarbonizing rural residential buildings in cold climates: a techno-economic analysis of heating electrification*. (Ex. ELP-29). The authors, one of whom is a professor in the Department of Material Science & Engineering and Department of Electrical & Computer Engineering at Michigan Technological University in Houghton, recognize that Michigan is the largest Midwest user of propane, and recognizes that “a pipeline crossing the Great Lakes between Upper and Lower Michigan is under consideration for closure due to the risk of failure, making propane supply for the state an acute environmental and political concern.” (Ex. ELP-29 at 2). The authors state that in recent years air source heat pump technology has “improved to be a viable alternative in cold climates.” (Ex. ELP-29 at 3). Recognizing that “the technical performance of heat pumps in cold climates is well described in the literature,” the article analyzes the economic performance of heat pumps for rural customers who rely on fuel oil or propane. (Ex. ELP-29 at 4). The study’s conclusions are unequivocal for cold-weather climates:

It is clear from the results that [heat pump] technology has already matured such that the total life cycle cost favors heating electrification in all cases. Stated simply: no one in the region should be continuing to use propane for heating based on economics alone.

(Ex. ELP-29 at 8). Dr. Stanton also cites a study of air source heat pumps in the cold-weather state of Minnesota, showing that they had better, more efficient performance than propane at heating homes. (Stanton Direct, 9 TR 953:7-12, n. 28).

Dr. Stanton's conclusions about the feasibility of the no-pipeline alternative are consistent with independent Michigan studies. The Upper Peninsula Energy Task Force Committee ("UP Energy Task Force") identifies a number of alternatives to achieving propane via Line 5. (Stanton Direct, 9 TR 950:10-951:13). The Task Force was composed of a diverse set of members representing a variety of interests, including residents, local government, industry, tribes, environmental groups, and state government. The current Chair of this Commission participated on the Task Force. (Ex. ELP-23.1 at 5). Public Sector Consultants developed a report for the Task Force evaluating the impact of disruptions to propane supply in the Upper Peninsula. (Ex. ELP-23). Public Sector Consultants concluded that "[t]he increasing use of rail to move propane supplies is also evidence of limited pipeline capacity to bring product to market and suggests that rail can be a feasible supply option for propane." (Ex. ELP-23 at 52).

The Dynamic Risk Assessment Alternatives Analysis commissioned and overseen by the State of Michigan considered many alternatives to the Dual Pipelines, including Alternative 6:

Eliminate the transportation of all petroleum products and natural gas liquids (NGLs) through the Straits of Mackinac segment of Enbridge's Line 5 and then decommission that segment. This alternative would also reflect potential viability of continued NGL deliveries to the Upper Peninsula at Rapid River, and the continued receipt of Michigan light oil production at Lewiston.

(Ex. ELP-24 at 5). The Dynamic Risk Analysis concluded that:

All alternatives with the exception of Alternative 2 (utilization of existing pipeline infrastructure to transport Line 5 products) were found to be feasible, although of the alternative transportation methods evaluated in Alternative 3, only rail was characterized as being feasible and fully developed within the analysis.

(Ex. ELP-24 at 13). Staff witness Travis Warner testified about the Dynamic Risk Analysis and quotes the Analysis for the proposition that building a tunnel would be a “feasible alternative to Line 5’s current configuration.” (Warner Direct, 22:7-10). Mr. Warner does not discuss another alternative Dynamic Risk found to be feasible: the alternative of Line 5 not operating at all. This no-pipeline alternative, which the Dynamic Risk Analysis found to be feasible, would also serve to “negate the dominant threat to the Dual Pipelines” because oil would no longer flow through the Dual Pipelines in the Straits. (Warner Direct, 22:10-12).

For his part, Propane Association witness Mr. Sloan recognizes that transitions from one energy source to another can occur, but the transition takes time. (Sloan Rebuttal, 8 TR 915:4-916:20). Mr. Sloan notes that a transition away from Propane would take time, but that government mandates and incentives could speed that transition. (Sloan Rebuttal, 8 TR 915:4-916:20; 919:9-16). To this point, Dr. Stanton references existing rebates for installation of heat pumps by Michigan’s two largest utilities – DTE and Consumers – and the policy transition the State of Michigan is making towards a lower carbon future. Dr. Stanton explains that there is a “logical consistency” between the State of Michigan’s carbon goals and discontinuing use of fossil fuels, such as propane. (Stanton Redirect, 9 TR 1023:23-1024:24).

Mr. Sloan recognizes that electric heat pumps are available in Michigan, but argues that they are not widely used and face challenges in cold climates. (Sloan Rebuttal, 8 TR 914:3-915:3). Mr. Sloan’s reference to the Department of Energy Cold Climate Heat Pump Challenge only

illustrates that this technology is rapidly developing to serve customers in cold climates, and will become increasingly affordable as the technology improves. (Sloan Rebuttal, 8 TR 914:3-915:3).

3) A no-pipeline alternative is prudent

Prudent is defined as “exercising sound judgment.” (Stanton Direct, 9 TR 948:1-5). Dr. Stanton concludes that shutting down the existing line and taking no action to replace it is practicable and represents the exercise of sound judgment. (Stanton Direct, 9 TR 948:8-9). The *Olsonite* court interpreted prudent so as to reject a balancing of competing interests. *Id.* at 797. Only if the cost of alternatives approach “extraordinary magnitude” or present “truly unusual factors” may an alternative be rejected as imprudent. *Id.* at 797 (quoting *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402 (1971)).

As described above, the magnitude of the cost of the no-pipeline alternative is small for Michigan customers. Nor is a shift from fossil-based fuel to electric heat pumps truly unusual. The no-pipeline alternative is also prudent because it is consistent with the climate forecasts and policies being undertaken in the State of Michigan. (Stanton Direct, 9 TR 960:1-14). Michigan is deep in development and implementation of the Governor’s MI Healthy Climate Plan “which will serve as the action plan for this state to reduce greenhouse gas emissions and transition towards economywide carbon neutrality.” (Stanton Direct, 9 TR 960:4-14). The Biden Administration has promised to achieve nationwide carbon neutrality by 2050, and Biden’s National Climate Task Force is in the process of setting a new 2030 emission target and develop a detailed plan for lower emissions. (Stanton Direct, 9 TR 961:1-6). Taking no action to build a tunnel for Line 5 would accomplish the purpose of the Proposed Project while simultaneously advancing climate change goals established by the State of Michigan. (Stanton Direct, 9 TR 948:17-949:6).

V. CONCLUSION

The risk of an oil spill in the Great Lakes from the Dual Pipelines is real, and the consequences would be disastrous. Enbridge and Staff unfairly place before the Commission a Hobson's choice: eliminate the risk with a tunnel, or allow the risk to remain. Through this false framing, Enbridge, supported at every turn by Staff, seeks to avoid the analysis MEPA demands. Enbridge simply ignores the clearest path to alleviating the risk of an oil spill in the Straits: no pipeline at all.

Enbridge's experts could analyze the no-pipeline alternative, and possibly even have done so already. But rather than attempting to meet its burden on feasible alternatives, Enbridge employs its industry analyst in an effort to poke holes in a well-established, well-reviewed, and well-accepted methodology for estimating GHG emissions from infrastructure projects. Both Enbridge and Staff fail at this mutual endeavor. It is more expensive to transport oil by rail than by pipeline. The increased cost of transportation results in fewer oil fields in Western Canada and the Bakken being developed, higher oil prices, and less oil consumption. Enbridge's efforts to pick apart the magnitude of this market dynamic fall flat. Staff's assumptions that oil supply is limitless and consumers' insatiable appetite for oil is unaffected by price are unrealistic. Arguments that the analysis is too complicated or speculative have been dismissed by courts throughout the country.

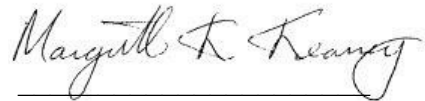
If the Proposed Project is built, it will emit 27,000,000 CO₂e annually, exacerbating climate change and harming Michigan's air, water, and natural resources. The Commission cannot allow that to happen, because there is a feasible and prudent alternative. Enbridge could decommission the Dual Pipelines and not build the tunnel. The risk of an oil spill in the Great Lakes would be eliminated. Michigan propane users may face some increases in costs of propane, but most would eventually transition to cost-effective electric heat pumps that are more in line with state and

national climate goals. Greenhouse gas emissions that make it even harder to limit warming to a manageable level would be avoided.

The Commission has a duty to prevent degradation of the environment resulting from actions it approves, unless there is no feasible and prudent alternative. Enbridge has made no effort to consider the feasible and prudent no-pipeline alternative, and has failed to rebut testimony supporting it. The Commission must reject Enbridge's Application because the Proposed Project causes substantial greenhouse gas emissions that contribute to climate change that destroys and impairs Michigan's air, water and natural resources, and the no-pipeline alternative is feasible and prudent.

February 18, 2022

Respectfully Submitted,

A handwritten signature in cursive script, reading "Margrethe K. Kearney", written in dark ink. The signature is positioned above a thin horizontal line.

Margrethe Kearney

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**STATE OF MICHIGAN
MICHIGAN PUBLIC SERVICE COMMISSION**

In the matter of Enbridge Energy, Limited Partnership's declaratory request that it has the requisite authority needed from the Commission for the proposed Line 5 pipeline Project.)))))	Case No. U-20763
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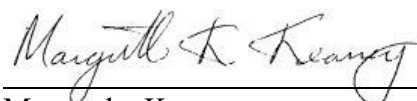
PROOF OF SERVICE

I hereby certify that a true copy of the foregoing **Opening Brief on Behalf of the Environmental Law and Policy Center and Michigan Climate Action Network** was served by electronic mail upon the following Parties of Record, this 18th day of February, 2022.

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