

THE PERMANENT PEOPLES' TRIBUNAL

In the Matter of:)
Session on Human Rights, Fracking and)
Climate Change)
_____)

AMICUS BRIEF

Electronically Filed by:

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March 30, 2018

RE: A Citizen Environmental and Human Rights Assessment of Exporting Hydraulic Fractured Natural Gas

Please accept the following data and information into your special session on Human Rights, Fracking and Climate Change. The following information and exhibits should assist the Tribunal in addressing the following questions:

1. Under what circumstances do fracking and other unconventional oil and gas extraction techniques warrant the issuance of either provisional measures, a judgment enjoining further activity, remediation relief, or damages for causing environmental harm?
2. What is the extent of responsibility and liability of States and non-state actors for violations of human rights and for environmental and climate harm caused by these oil and gas extraction techniques?

CLIMATE ISSUES

On December 12, 2015, 195 Nations, including the United States, approved a global warming pact at the COP21 Climate Conference in Paris in which among other things the Nations agreed: (*See Exhibit 1*)

- To limit global warming to "well below" 2C, aiming for 1.5C. (COP21 Article 2)
- To aim for Greenhouse gas emissions to peak "as soon as possible," followed by rapid reduction. (COP21 Article 4)
- To strive to formulate and communicate long-term low greenhouse gas emission development strategies.
- To promote universal access to sustainable energy in developing countries through the enhanced deployment of renewable energy.
- To have developed countries provide USD 100 billion per year, from 2020 to help developing nations.

The COP21 Agreement recognizes *that climate change represents an urgent and potentially irreversible threat to human societies and the planet and thus requires the widest possible cooperation by all countries, and their participation in an effective and appropriate international response, with a view to accelerating the reduction of global greenhouse gas emissions.*

Unfortunately the United States under President Donald Trump announced in June of 2017 the withdrawal of the U.S. from the Paris agreement on climate change, stating he wanted to "renegotiate" a fairer deal that would not disadvantage U.S. businesses and workers.¹ Despite his withdrawal, U.S. cities, states and businesses representing more than half the U.S. economy and population have declared their support for the Paris Agreement, including more than 2,300 signatories to the "We Are Still In" declaration.²

On November 6, 2017, Oregon Governor Kate Brown signed Executive Order No. 17-20 *Accelerating Efficiency in Oregon's Built Environment to reduce greenhouse gas emissions and address climate change.* (See **Exhibit 2**)

Previously on May 19, 2015, Oregon Governor Brown along with a group of 12 sub-national governments collectively representing more than \$4.5 trillion in GDP and 100 million people signed a *Memorandum of Understanding on Subnational Global Climate Leadership*³ (Under 2 MOU) that commits them to take leadership on climate action at their level of jurisdiction. (See **Exhibit 3**) Each signatory committed to pursuing emission reductions consistent with a trajectory of 80 to 95 percent below 1990 levels, or below two metric tons per capita, by 2050 – which is a level of emission reductions believed to be necessary to limit global warming to less than 2°C by the end of this century.⁴

On October 28, 2013, former Oregon Governor John Kitzhaber along with Governor Edmund G. Brown Jr. of California, Governor Jay Inslee of Washington and Premier Christy Clark of British Columbia, signed a *Pacific Coast Action Plan on Climate*⁵ in order to jointly attack climate change by reducing greenhouse-gas emissions. (See **Exhibit 4**)

While we citizens support this gallant effort on behalf of our Governor and others, we have had to continue fighting the proposed Jordan Cove liquefied natural gas (LNG) export project. As shown in more detail further below, the proposed Jordan Cove project would increase instead of decrease greenhouse gas emissions. **This proves that more must be done in order for real changes to occur and greenhouse gas levels and climate impacts to be reduced.**

¹ <https://www.independent.co.uk/news/world/americas/us-politics/trump-paris-agreement-climate-change-withdrawal-latest-news-updates-global-warming-deal-a7768116.html> ; Jun 1, 2017

² <http://under2mou.org/governor-brown-reaffirms-u-s-commitment-to-paris-agreement-with-michael-bloomberg-at-cop23-were-here-were-in-and-were-not-going-away/> ; Saturday, November 11, 2017

³ *Global Climate Leadership Memorandum Of Understanding (MOU)* May 19, 2015
https://www.gov.ca.gov/docs/Under_2_MOU.pdf

⁴ <http://newsroom.unfccc.int/unfccc-newsroom/under-2-mou-a-subnational-global-climate-leadership/>

⁵ "*Pacific Coast Action Plan on Climate and Energy*"- Signed at San Francisco, California, on the occasion of the Fourth Annual Leaders Forum of the Pacific Coast Collaborative , October 28th 2013
<http://blogs.seattletimes.com/politicsnorthwest/files/2013/10/PCC-climate-and-energy-agreement.pdf>

ENVIRONMENTAL AND ECONOMIC COSTS OF CLIMATE CHANGE

On the 26th of September 2012 – the most comprehensive assessment ever of the current global impact of climate change was released by DARA.⁶ (See *Exhibits 5 to 7*) Twenty (20) governments commissioned the independent report, the first of its kind to show that tackling the global climate crisis **would reap significant economic benefits for world, major economies and poor nations alike**. The DARA press release states:

“Climate Vulnerability Monitor” study’s findings point to unprecedented harm to human society and current economic development that will increasingly hold back growth, on the basis of an important updating and revision of previous estimates of losses linked to climate change. (Emphasis added)

The “Climate Vulnerability Monitor” Executive Summary states:

This report estimates that climate change causes 400,000 deaths on average each year today, mainly due to hunger and communicable diseases that affect above all children in developing countries. Our present carbon-intensive energy system and related activities cause an estimated 4.5 million deaths each year linked to air pollution, hazardous occupations and cancer.

Climate change caused economic losses estimated close to 1% of global GDP for the year 2010, or 700 billion dollars (2010 PPP). The carbon-intensive economy cost the world another 0.7% of GDP in that year, independent of any climate change losses. Together, carbon economy-and climate change related losses amounted to over 1.2 trillion dollars in 2010.

The world is already committed to the substantial increase in global temperatures - at least another 0.5% C (1°F) due to a combination of the inertia of the world’s oceans, the slow response of the carbon cycle to reduced CO2 emission and limitations on how fast emissions can actually be reduced. The world economy therefore faces an increase in pressures that are estimated to lead to more than a doubling in the costs of climate change by 2030 to an estimated 2.5% of global GDP. Carbon economy costs also increase over this same period so that global GDP in 2030 is estimated to be well over 3% lower than it would have been in the absence of climate change and harmful carbon-intensive energy practices.

⁶ Ignore climate change and 100m people will die by 2030, shocking new report claims”; By DAILY MAIL REPORTER, PUBLISHED: 26 September 2012 <http://www.dailymail.co.uk/sciencetech/article-2208953/Shock-report-claims-100m-people-die-economic-growth-drop-3-2-2030-climate-change-ignored.html>

Dara Press Release:

http://daraint.org/wp-content/uploads/2012/09/CVM_RELEASE_FINAL_ENGLISH.pdf

Dara Report Published - September 26, 2012:

<http://www.daraint.org/wp-content/uploads/2012/09/EXECUTIVE-AND-TECHNICAL-SUMMARY.pdf>

2nd Edition - Climate Vulnerability Monitor - A guide to the cold calculus of a Hot Planet - Executive Summary

Continuing today's patterns of carbon-intensive energy use is estimated, together with climate change, to cause 6 million deaths per year by 2030, close to 700,000 of which would be due to climate change. This implies that a combined climate-carbon crisis is estimated to claim 100 million lives between now and the end of the next decade...
(Emphasis added)

Report Panel member, DARA Trustee and Former President of Costa Rica, José María Figueres stated in the DARA press release:

"1.3 billion people are still fighting their way out of the most extreme forms of poverty while major economies are today fighting their way out of crippling financial and economic crises. We simply cannot afford to part with more growth. The prospect of economic losses that rise with every decade could destabilize the world economy far before the worst impacts of climate change set in. Governments and international policy makers must act decisively to combat the spiraling costs to national and global GDP resulting from inaction on climate change. The Monitor shows how failure to do so has already caused unprecedented damage to the world economy and threatens human life across the globe. With the investment required to solve climate change already far below the estimated costs of inaction, no doubt remains as to the path worth taking."
(Emphasis added)

IMPACTS FROM HYDRAULIC FRACTURING OF SHALE BEDS

On March 13, 2018 the Concerned Health Professionals of New York and the Physicians for Social Responsibility released the **5th edition of their Compendium on the risks and harms of fracking**.⁸ Drawing on news investigations, government assessments and **more than 1,200 peer-reviewed research articles**, the study finds that fracking – shooting chemical-laden fluid into deep rock layers to release oil and gas – is poisoning the air, contaminating the water and imperiling the health of Americans across the country. (*See Exhibit 8*)

Many Countries, States, Regions and Cities have already imposed an outright ban on the hydraulic fracturing process due to pollution impacts. See: <http://keeptapwatersafe.org/global-bans-on-fracking/>

A special report that was released in October 2013 entitled, "*Fracking by the Numbers – Key Impacts of Dirty Drilling at the State and National Level*," explains in detail the environmental, public health and safety implications of hydraulic fracturing of shale beds.⁹ The Report's Executive Summary states: (*See Exhibit 9*)

⁷ Dara Press Release:

http://daraint.org/wp-content/uploads/2012/09/CVM_RELEASE_FINAL_ENGLISH.pdf

⁸ <http://concernedhealthny.org/compendium/> and <http://www.psr.org/resources/fracking-compendium.html>

⁹ "*Fracking by the Numbers – Key Impacts of Dirty Drilling at the State and National Level*" by Elizabeth Ridlington – Frontier Group and John Rumpler – Environment America Research & Policy Center; Environment America; Oct 2013;

http://www.environmentamerica.org/sites/environment/files/reports/EA_FrackingNumbers_scrn.pdf

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Air pollution: Fracking-related activities release thousands of tons of health-threatening air pollution.

- Nationally, fracking released 450,000 tons of pollutants into the air that can have immediate health impacts.
- Air pollution from fracking contributes to the formation of ozone “smog,” which reduces lung function among healthy people, triggers asthma attacks, and has been linked to increases in school absences, hospital visits and premature death. Other air pollutants from fracking and the fossil-fuel-fired machinery used in fracking have been linked to cancer and other serious health effects.

Global warming pollution: Fracking produces significant volumes of global warming pollution.

- Methane, which is a global warming pollutant 25 times more powerful than carbon dioxide, is released at multiple steps during fracking, including during hydraulic fracturing and well completion, and in the processing and transport of gas to end users.
- Global warming emissions from completion of fracking wells since 2005 total an estimated 100 million metric tons of carbon dioxide equivalent. (Emphasis added)

A study that was published by Cornell University on April 12, 2011, entitled, “Methane and the greenhouse-gas footprint of natural gas from shale formations”¹⁰ found that:

- Between 3.6-7.9% of the methane escapes into the atmosphere during shale-gas production due to venting and well leaks; this level is at least 30% higher than that released during conventional natural gas production.
- On a 20-year time horizon, the GHG footprint for shale gas is up to 43% higher than conventional natural gas, 50% greater than oil and 20% higher than coal for the same amount of energy produced by each of those other sources.

A November 2015 report out of Australia entitled, “Be careful of what you wish for - The economic impacts of Queensland’s unconventional gas experiment and the implications for Northern Territory policy makers,”¹¹ states: (See **Exhibit 10**)

Gas companies routinely exaggerate the economic and jobs benefits of their projects. Policy makers often accept these claims unquestioningly.

*The Northern Territory is fortunate to have the Queensland unconventional gas experiment to reflect upon. **The Queensland experience is that most of the economic benefits do not materialise, and serious collateral damage is done to existing industries and local communities.*** (Emphasis added)

¹⁰ “Methane and the greenhouse-gas footprint of natural gas from shale formations”

A letter – Robert W. Howarth, Renee Santoro and Anthony Ingraffea – Published April 12, 2011 <http://journalistsresource.org/studies/environment/energy/natural-gas-hydrofracking-greenhouse/>

¹¹ *Be careful of what you wish for The economic impacts of Queensland’s unconventional gas experiment and the Implications for Northern Territory policy makers*; Discussion paper by Mark Ogge; November 2015 http://www.tai.org.au/sites/default/files/Be%20careful%20what%20you%20wish%20for%20FINAL_0.pdf

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If policy makers in the Northern Territory naively accept the economic claims of speculative gas companies and use taxpayer money to support this industry, Territorians will live the consequences for decades to come.

LNG EXPORTS INCREASE FRACKING / GREENHOUSE GASES

Fracking and other unconventional oil and gas extraction techniques require infrastructure to move the hydraulic fracked extracted gas to markets.

While the gas industry looks to reap huge profits, local communities are left to deal with the consequences such as poisoned drinking water, devastated coasts, and extreme air pollution. Many of these rural communities have limited resources and are not able to address these critical issues. Both the gas liquefaction and fracking process contribute to an increase in greenhouse gasses emissions, thus contributing to climate-disrupting global warming pollution and more violent weather and storms. In addition, the massive super-cooling process needed to create the liquefied natural gas (LNG) for export uses an incredible amount of energy. That is energy that could have been used here domestically.

The main component of LNG is methane. Methane is a potent greenhouse gas that can come from many sources, both natural and manmade. The largest source of industrial emissions is the oil and gas industry. While methane doesn't linger as long in the atmosphere as carbon dioxide, it is initially far more devastating to the climate because of how effectively it absorbs heat. In the first two decades after its release, methane is 84 times more potent than carbon dioxide. **Both types of emissions must be addressed if we want to effectively reduce the impact of climate change.** The oil and gas industry loses enough methane every year through leaks and intentional venting and flaring to meet the heating and cooking needs of over 5 million homes.¹²

Exporting hydraulic fracked gas coming from shale formations is a very polluting process that leaks methane into the atmosphere which increases lifecycle greenhouse gas (GHG) emissions. A 2007 Carnegie Mellon University study entitled, “*Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*,”¹³ found that upstream Green House Gas emissions of Natural Gas and LNG have a higher impact in the total life cycle emissions than upstream coal emissions. This is a significant point when considering a carbon-constrained future in which combustion emissions are reduced.

¹²New Federal Rules Target Methane Leaks, Flaring and Venting - As Aliso Canyon disaster continues, the Obama administration wants equipment updated and flaring of excess gas reduced.; By Katherine Bagley, InsideClimate News ; Jan 22, 2016 <https://insideclimatenews.org/news/22012016/new-federal-methane-rules-aim-reduce-leaks-flaring-oil-and-gas-industry>

¹³ “Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation”- Paulina Jaramillo; W. Michael Griffin; and H. Scott Matthews – Civil and Environmental Engineering Department, Tepper School of Business, and Department of Engineering and Public Policy, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, Pennsylvania 15213-3890 – July 25, 2007 <https://pubs.acs.org/doi/abs/10.1021/es063031o>

In January 2014 an article that appeared in Politico written by Bill McKibben and Mike Tidwell stated the following:

*...The industry bombards the public with ads saying natural gas is 50 percent cleaner than coal. **But the claim is totally false.** Gas is cleaner only at the point of combustion. If you calculate the greenhouse gas pollution emitted at every stage of the production process—drilling, piping, compression—it's essentially just coal by another name. Indeed, the methane (the key ingredient in natural gas) that constantly and inevitably leaks from wells and pipelines is **84 times more powerful at trapping heat in the atmosphere than CO2 over a 20-year period**, according to the Intergovernmental Panel on Climate Change...*

*...When you add it all up, using numbers from the EPA, the International Energy Agency and the U.S. gas industry itself, **the final climate impact of fracked-and-liquified-and-exported Appalachian gas is basically as bad as burning coal in Asia.** And that's using really conservative pollution estimates. More realistic projections (i.e. assuming India's pipeline leakage rate is higher than the United States') **would make our gas worse than coal. Worse!** And Europe's not much better. If we shipped our gas to France, for example, where the leakage rate of gas pipelines is confirmed at 3 percent, **then our gas would—from day one—be worse than if the French just burned coal.***

Why in the world, then, would we frack our mountains, lay disruptive pipelines across America, build gigantic, spewing liquefaction plants like Cove Point [or Jordan Cove] and inflict economic pain on U.S. consumers, farmers, and manufacturers—all for something tantamount to coal? The plan is radical and absurd on its face, benefits no one in the long run but the super-rich fossil-fuel industry and does real harm to an already ailing global climate....¹⁴ (Emphasis added)

JORDAN COVE'S LNG GREENHOUSE GAS IMPACTS

Since 2004¹⁵ out-of-state energy speculators have been trying to permit the Jordan Cove liquefied natural gas (LNG) terminal in Coos Bay, Oregon, along with their Pacific Connector Gas Pipeline (PCGP). The proposed PCGP pipeline would cross public and private lands and negatively impact some 400 waterbodies in southern Oregon, many of which are salmon bearing. The proposed project if permitted would transport some 1.2 billion cubic feet of hydraulic fracked gas per year from Canada and the Rockies to Coos Bay, where it would be processed into liquefied natural gas (LNG) and shipped overseas from the giant new terminal. **The project is directly related to increases in the use of fracking and other unconventional oil and gas extraction techniques because without fracking there would be no gas to export.**

¹⁴ A Big Fracking Lie - President Obama isn't just not fixing climate change—he's making it worse - January 21, 2014 - By Bill McKibben and Mike Tidwell
http://www.politico.com/magazine/story/2014/01/fracking-natural-gas-exports-climate-change-102452.html?ml=lb_9

¹⁵ <http://citizensagainstlng.com/wp/sample-page/>

The Jordan Cove LNG terminal is proposed to be built on dredging spoils that are located on a sand spit (an unstable sand dune area), directly across the narrow Coos Bay from an airport runway, in the flight path of the runway, in an extreme tsunami inundation zone, in an earthquake subduction zone, in an area known for high winds and ship disasters, less than a mile from the City of North Bend. **Pembina, a Canadian energy company that has 100 percent ownership of Jordan Cove, would make massive profits while the rest of us would pay the price.**

Exporting LNG from Jordan Cove would create acute security and public safety risks for Southern Oregon and a major new source of climate pollution. LNG greenhouse gas emissions are 30 percent higher than conventional natural gas due to refrigeration, venting, leaks, and flaring, used to control pressure during regasification. The need to strip volatile impurities from the gas prior to chilling it also makes LNG liquefaction facilities a source of toxic air pollutants.

Analysis Briefing determines Jordan Cove would be largest Oregon GHG polluter

In January 2018, **Oil Change International did a greenhouse gas emission briefing¹⁶ on the Jordan Cove LNG Project** and found that the project would add significantly to greenhouse gas emissions both globally and within the state of Oregon. (See Exhibit 11) The Oil Change briefing determined that the proposed Pacific Connector Gas Pipeline and Jordan Cove Energy Project would transport and process into liquefied natural gas (LNG) around 430 billion cubic feet of fossil gas annually. Annual emissions in the Oil Change Reference Case are 36.8 million metric tons. **This is equivalent to over 15 times the 2016 emissions from Oregon's only remaining coal plant, the Boardman coal plant, which is scheduled to close in 2020 because of climate and air pollution concerns.** Emissions in the high case are 52 million metric tons annually. The Briefing paper found no evidence to support an assumption that gas supplied by the project would replace coal in global markets.

On November 18, 2014, the Oregonian had stated the following in an article by Ted Sickinger entitled, "*Jordan Cove LNG in Coos Bay could quickly become one of the largest greenhouse gas emitters in Oregon*":¹⁷

A proposed liquefied natural gas terminal in Coos Bay could quickly become one of the largest, if not the largest emitter, of greenhouse gases in Oregon, federal data shows.

Jordan Cove Energy Project is seeking state permission to release 2.1 million metric tons of carbon dioxide and equivalents annually, equal to 3 percent of the state's greenhouse emissions during 2013....

¹⁶ *Jordan Cove LNG and Pacific Connector Pipeline Greenhouse Gas Emissions Briefing*; Oil Change International; Jan 2018; <http://priceofoil.org/2018/01/11/jordan-cove-lng-and-pacific-connector-pipeline-greenhouse-gas-emissions/>

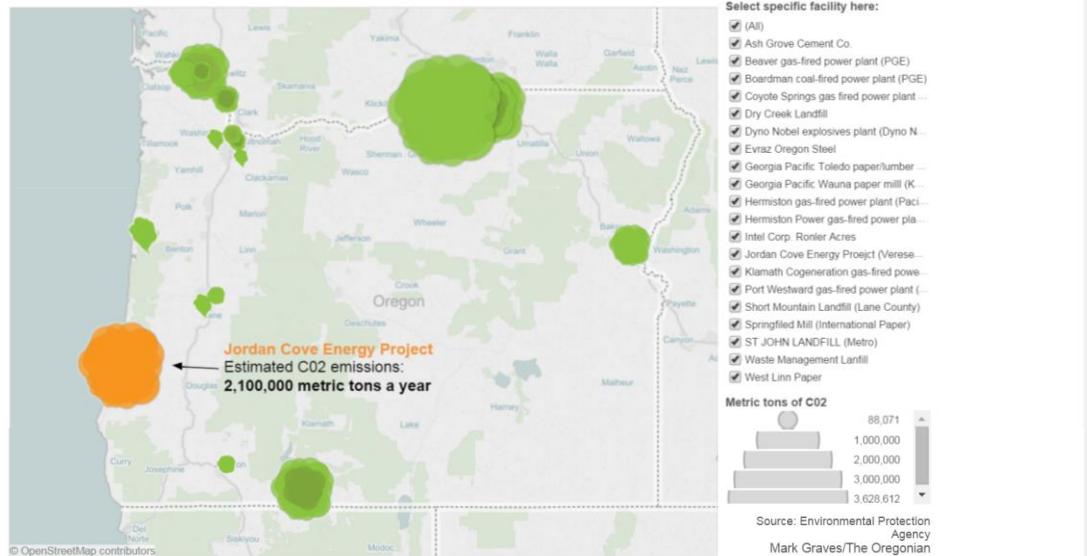
¹⁷ "*Jordan Cove LNG in Coos Bay could quickly become one of the largest greenhouse gas emitters in Oregon*" By Ted Sickinger| The Oregonian/OregonLive ; November 18, 2014 http://www.oregonlive.com/business/index.ssf/2014/11/jordan_cove_lng_in_coos_bay_co.html

...Carbon emissions from a competing LNG export proposal in Warrenton could be comparable.

Either plant would cloud state efforts to meet carbon reduction goals established by the Legislature in 2007. And both spotlight the contrast between environmental rhetoric and economic realities when it comes to carbon reduction and energy exports...
(Emphasis added)

The top 20 carbon emitters in Oregon

Oregon's lone coal-fired power plant in Boardman had the biggest carbon footprint in the state during 2013, and a collection of gas-fired power plants were close behind. The Jordan Cove LNG terminal in Coos Bay, which has its own 420 megawatt power plant to liquefy gas, could quickly become one of, if not the largest emitter of carbon in Oregon when it opens.



Huge backward step on Climate

According to the U.S. Department of Energy, exporting natural gas from the U.S. to Asia could end up being worse from a greenhouse gas perspective than if China simply built a new power plant and burned its own coal supplies.¹⁸ In addition, Oil Change International found that due to wind and solar now being cheaper than coal and gas in many regions, new gas capacity often displaces new wind and solar rather than old coal.¹⁹ (See *Exhibit 12*)

The fact that the Jordan Cove LNG terminal would become one of the largest sources of climate pollution in Oregon clearly shows that the project would directly conflict with Oregon's Renewable Portfolio Standards passed by the Oregon legislature in 2007 and the *COP21 Climate Conference in Paris agreement* signed by former President Obama; *the Memorandum of*

¹⁸ https://www.washingtonpost.com/news/wonk/wp/2014/06/09/exporting-u-s-natural-gas-isnt-as-clean-as-you-think/?utm_term=.6abe89578728

¹⁹ *BURNING THE GAS 'BRIDGE FUEL' MYTH*; Oil Change International; November 2017; This analysis provides five clear reasons why fossil gas is not a "bridge fuel." It shows that even with zero methane leakage, gas is not a climate change solution.;

Understanding on Subnational Global Climate Leadership signed by Oregon Governor Brown; and the *Pacific Coast Action Plan on Climate and Energy* signed by former Oregon Governor John Kitzhaber.

Jordan Cove's Ship Pollution not included in Air Permit Totals

DEQ representatives stated at a February 18, 2015 public meeting held in Coos Bay, Oregon, that the **LNG ships were not a part of their permit analysis.**²⁰ Despite this statement, Jordan Cove's LNG ships and all their necessary support vessels would contribute to a significant additional air pollution impact on local residents in the North Bend/Coos Bay area. Many people have moved here to get away from such impacts. The cumulative air pollution impacts should be included in DEQ's analysis utilizing the worst case scenarios that would occur and including a full analysis of various vessel sizes used, number of shipments (which would exceed 90), and all the additional support safety and security measures that would be needed to safely transport LNG ships in and out of the Coos Bay harbor at full operational levels of the Jordan Cove facility.

Transoceanic transport and regasification of LNG is an energy intensive process. According to a life-cycle assessment comparing coal and LNG prepared by researchers with the Tepper School of Business, and Department of Engineering and Public Policy, Carnegie Mellon University:

"The rated power of the LNG tankers ranges between 20 and 30 MW, and they operate under this capacity around 75% of the time during a trip (24, 25). The energy required to power this engine is 11.6MMBtu/MWh(26). As previously mentioned, some of this energy is provided by BOG and the rest is provided by fuel oil. A loaded tanker with a rated power of 20MW, and 0.12% daily boil-off rate would consume 3.88 million cubic feet of gas per day and 4.4 tons of fuel oil per day. The same tanker would consume 115 tons of fuel oil per day on they way back to the exporting country operating under ballast conditions. A loaded tanker with a rated power of 30 MW, and a 0.25% daily boil-off rate would get all its energy from the BOG, with some excess gas being combusted to reduce risks of explosion (22). Under ballast conditions, the same tanker would consume 172 tons of fuel oil per day.

"For LNG imported in 2003 the average travel distance to the Everett, MA LNG terminal was 2700 nautical miles (13, 27). In the future LNG could travel as far as far as 11,700 nautical miles (the distance between Australia and the Lake Charles, LA LNG terminal (27)). This range of distances is representative of distances from LNG countries to U.S. terminals that could be located on either the East or West coasts. To estimate the number of days LNG would travel (at a tanker speed of 20 knots (22)), these distances were used. This trip length can then be multiplied by the fuel consumption of the tanker to estimate total trip fuel consumption and emissions, and these can then be divided by the average tanker capacity to obtain a range of emission factors for LNG tanker transport between 2 and 17 lb CO₂ equiv/MMBtu.

²⁰ Oregon DEQ: Jordan Cove pollution estimates not accepted on blind faith - LNG opponents urge DEQ to consider impact of Jordan Cove's projected greenhouse gas emissions; Chelsea Davis ; The World ; Feb 18, 2015
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“Regasification emissions were reported by Tamura et al. to be 0.85 lb CO₂ equiv/MMBtu (21). Ruether et al. report an emission factor of 3.75 lb of CO₂ equiv/MMBtu for this stage of the LNG life-cycle by assuming that 3% of the gas is used to run the regasification equipment (28). The emission reported by Tamura et al. differs because they assumed only 0.15% of the gas is used to run the regasification terminal, while electricity, which maybe generated with cleaner energy sources, provides the additional energy requirements. These values were used as lower and upper bounds of the range of emissions from regasification of LNG.”²¹

These researchers with Carnegie Mellon University concluded.

“In addition to LNG, SNG has been proposed as an alternative source to add to the natural gas mix. The decision to follow the path of increased LNG imports or SNG production should be examined in light of more than just economic considerations. In this paper, we analyzed the effects of the additional air emissions from the LNG/SNG life-cycle on the overall emissions from electricity generation in the United States. We found that with current electricity generation technologies, natural gas life-cycle GHG emissions are generally lower than coal life-cycle emissions, even when increased LNG imports are included. However LNG imports decrease the difference between GHG emissions from coal and natural gas... ..It is also important to note that upstream GHG emissions of NG/LNG/SNG have a higher impact in the total life-cycle emissions than upstream coal emissions. This is a significant point when considering a carbon-constrained future in which combustion emissions are reduced.”²²

As ships get bigger, the pollution gets worse. The most staggering statistic of all is that just 16 of the world's largest ships can produce as much lung-clogging sulphur pollution as all the world's cars.²³ Because of their colossal engines, each as heavy as a small ship, these super-vessels use as much fuel as small power stations. The magnitude of the environmental benefits of natural gas fade away when natural gas is liquefied for export and importation. In general, natural gas supplies should be consumed on the continent they are produced, without liquefaction.

Jordan Cove Particulate Pollutants

Jordan Cove has totally downplayed these impacts and the information found in the Oil Change International report, despite the fact that particulate pollutants from the life cycle impact of the Jordan Cove LNG export project would increase respiratory and immune health problems in the local community. Children and elders are especially at risk.²⁴ A local (now retired) medical

²¹ Jaramillo, P., et al (Sep 2007) “Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation, Environ. Sci. Technol., 41(17): pp 6290-6296.
<https://pdfs.semanticscholar.org/6858/c9f55ee74c97646624f3d5f3ae66618f65a8.pdf>

²² Ibid., at page 6294.

²³ *How 16 ships create as much pollution as all the cars in the world*; By Fred Pearce ; 21 November 2009
<http://www.dailymail.co.uk/sciencetech/article-1229857/How-16-ships-create-pollution-cars-world.html>

²⁴ ● Dr. Joseph T Morgan Oct 9, 2012, testimony concerning pollutants and the JCEP project:
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20121018-5150

● “An Exploratory Study of Air Quality near Natural Gas Operations” - Peer-reviewed and accepted for publication by Human and Ecological Risk Assessment (November 9, 2012).

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doctor who specialized in allergies has submitted several letters over the years expressing his concerns with Jordan Cove's air particulates and the affect it would have on the local population here. (*See Exhibit 13*) Many people have moved here to get away from these types of problems. The health and health care cost of this project on our local rural population seems to take a backseat to all the dollars being pumped by Jordan Cove into the Cities of North Bend and Coos Bay, the County and the Port of Coos Bay.

Local Impacts on Shellfish and Food Production

Increasing greenhouse gases contributes to planet warming, increased droughts and ocean acidification. Droughts have already negatively impacted our U.S. west coast states and our food production.²⁵ **Ocean Acidification has already cost the Oregon and Washington shellfish industries \$110 million, and endangered some 3,200 jobs.**²⁶ (*See Exhibits 14 and 15*)

George Waldbusser, an Oregon State University marine ecologist and biogeochemist, said the spreading impact of ocean acidification is due primarily to increases in greenhouse gases. Waldbusser recently led a study that documented how larval oysters are sensitive to a change in the "saturation state" of ocean water - which ultimately is triggered by an increase in carbon dioxide. The inability of ecosystems to provide enough alkalinity to buffer the increase in CO₂ is what kills young oysters in the environment.

"This clearly illustrates the vulnerability of communities dependent on shellfish to ocean acidification," said Waldbusser, a researcher in OSU's College of Earth, Ocean, and Atmospheric Sciences and co-author on the paper. "We are still finding ways to increase the adaptive capacity of these communities and industries to cope, and refining our understanding of various species' specific responses to acidification."

"Ultimately, however, **without curbing carbon emissions, we will eventually run out of tools to address the short-term and we will be stuck with a much larger long-term problem,**" Waldbusser added.²⁶ (Emphasis added)

Researchers and fishermen worry ocean acidification *could* be impacting Dungeness crab life cycles already. Dungeness crab represents the most valuable fishery on the West Coast, generating \$167 million²⁷ in ex-vessel value in California in 2011. Like oysters, Dungeness crabs are a key driver of the fishing industry, so lucrative that many fishermen rely on them to

Theo Colborn, Kim Schultz, Lucille Herrick, and Carol Kwiatkowski

<http://www.endocrinedisruption.com/files/HERA12-137NGAirQualityManuscriptforwebwithfigures.pdf>

²⁵ • "Drought prompts cuts to farm irrigation in California, Oregon" Portland, Ore. | By Courtney Sherwood

<http://www.reuters.com/article/2015/05/15/us-usa-drought-farming-idUSKBN0O02BL20150515>

• Oregon Governor Expands Drought Declaration - Reuters 04/06/2015 By Courtney Sherwood

http://www.huffingtonpost.com/2015/04/06/oregon-drought_n_7014406.html

• Kitzhaber declares drought emergency for four southern Oregon counties, opens up assistance
By Bruce Hammond; Feb 14, 2014;

http://www.oregonlive.com/environment/index.ssf/2014/02/kitzhaber_declares_drought_eme.html

²⁶ Study outlines threat of ocean acidification to coastal communities in the U.S.; Feb 23, 2015

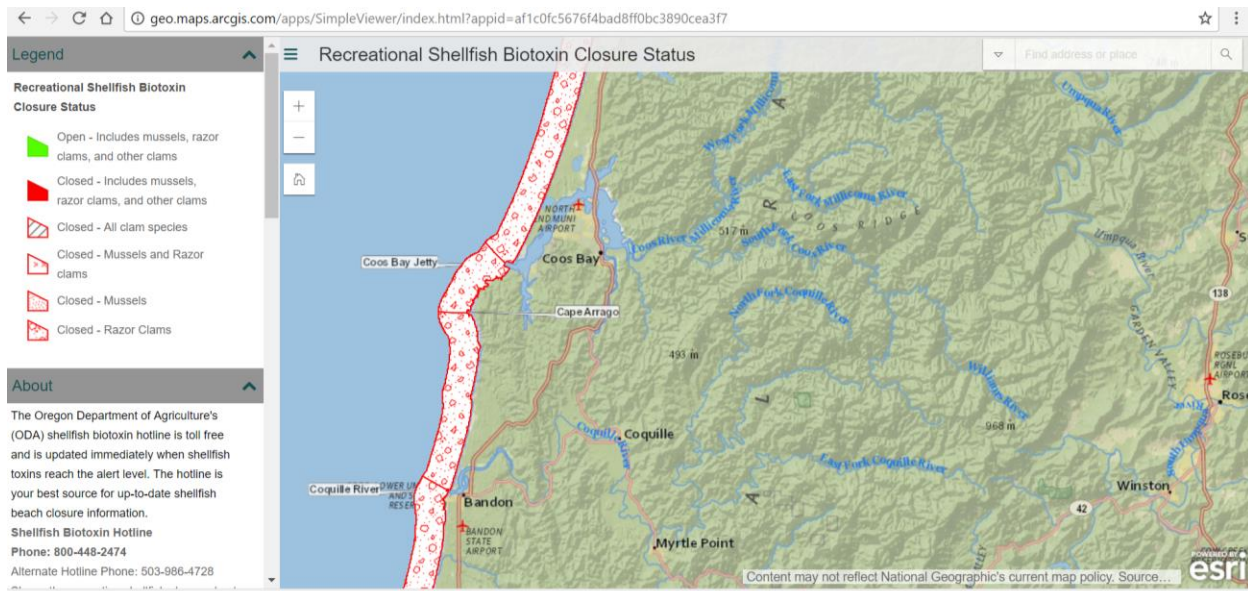
<http://today.oregonstate.edu/archives/2015/feb/study-outlines-threat-ocean-acidification-coastal-communities-us>

²⁷ https://www.psmfc.org/crab/2014-2015_files/DUNGENESS_CRAB_REPORT_2012.pdf

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guarantee an annual income. Fishermen have seen increased closures due to elevated levels of domoic acid, directly linked to lower ocean Ph levels as temperatures rise.²⁸ (*See Exhibit 16*) These closures have been devastating to the fishing industry. As reported on Feb 19, 2018,²⁹ the industry was already in a volatile state due to the latest start to a crab season most Oregon fishermen have ever remembered. These problems are likely to get worse in the coming decades.

On-line interactive maps for recreational shellfish biotoxin show many areas currently remain closed:³⁰



JORDAN COVE LNG LOCAL HUMAN RIGHTS ISSUES

Our rural community depends on oyster harvesting, fishing, clamming and crabbing. All these industries would be harmed by the proposed Jordan Cove LNG project from either the proposed dredging in the estuary, the negative impacts to 400 waterbodies from pipeline construction or from the negative impacts of climate change and ocean acidification. Both our fishing and crabbing industries have been hit hard by declining numbers and reduced seasons already.³¹ Each year it seems to only get worse as federally listed threatened, endangered, proposed, candidate species and species of concern in Coos County increases. We also have had issues with increased forest fires in the west due to summers being hotter and dryer as conditions change and climate temperatures continue to rise.³²

²⁸ <https://newfoodeconomy.org/ocean-acidification-oysters-dungeness-crabs/>

²⁹ http://theworldlink.com/news/local/new-legislation-to-localize-domoic-acid-closures/article_6933a960-59bd-5949-a9cc-c6191ae31de8.html

³⁰ <http://geo.maps.arcgis.com/apps/SimpleViewer/index.html?appid=af1c0fc5676f4bad8ff0bc3890cea3f7>

³¹ *Ocean salmon seasons in jeopardy off southern Oregon*; The Associated Press; March 5, 2018;

<https://www.seattletimes.com/nation-world/ocean-salmon-seasons-off-southern-oregon-coast-in-jeopardy/>

³² *Fast-moving Flames Force People to Flee on a Moment's Notice*; The Associated Press (Julie Watson and Elliot Spagat); December 8, 2017;

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Trampling of Landowner Rights

If landowners along the pipeline route don't accept a small, one-time payment for permanent use of their land for the proposed Pacific Connector pipeline, the government could grant Pembina, Jordan Cove's parent company, the power of eminent domain to force them to anyway. After 13 years, Pembina still has less than 35% of contracts with landowners.³³

Threats to Traditional Tribal Territories

Cultural resources, traditional tribal territories and burial grounds are threatened by both the pipeline route and the export facility. The Karuk, Yurok,³⁴ and Klamath Tribes³⁵ have openly opposed the fracked gas project. The Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians,³⁶ and the Confederated Tribes of the Grand Ronde Community of Oregon³⁷ have expressed serious concerns about the project to the Federal Energy Regulatory Commission (FERC).

Extreme Natural Hazard Risks

The Jordan Cove terminal would be built in a region vulnerable to tsunamis and the predicted Cascadia Subduction earthquake,^{38/39} while the pipeline, full of high-pressure gas, would pass through forest and timber areas with a high risk of wild fires.⁴⁰

On December 4, 2017, in an Oregon Department of Justice FERC filing, the Oregon Department of Geology and Mineral Industries (DOGAMI) raised serious concerns with Jordan Cove's analysis of earthquake and tsunami risks in their pipeline and terminal application, spelling out 50+ reasons why the Jordan Cove / Pacific Connector analysis was severely flawed and inadequate.⁴¹

<https://www.bloomberg.com/news/articles/2017-12-08/homes-horses-burn-in-newest-california-wildfire>

³³ *Medford hotel cancels dueling gas pipeline meetings*; By Vickie Aldous – Mail Tribune; Mar 10, 2017;

<http://www.mailtribune.com/news/20170310/medford-hotel-cancels-dueling-gas-pipeline-meetings>

³⁴ *Local tribes voice opposition to pipeline*; By Natalya Estrada – Times-Standard ; 11/19/16 ;

<http://www.times-standard.com/article/NJ/20161119/NEWS/161119810>

³⁵ http://www.heraldandnews.com/news/local_news/tribes-voice-opposition-to-lng-pipeline/article_3f9a28b1-82a3-50ba-91b4-672cc341409d.html and;

<https://www.nytimes.com/2018/03/08/opinion/standing-rock-pipeline-oregon.html>

³⁶ http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20180122-5124 and;

• http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20180129-5420

³⁷ http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20180129-0026

³⁸ *13-year Cascadia study complete - and earthquake risk looms large*; Oregon State University; July 30, 2012

<http://today.oregonstate.edu/archives/2012/jul/13-year-cascadia-study-complete-%E2%80%93-and-earthquake-risk-looms-large>

³⁹ *The Really Big One - An earthquake will destroy a sizable portion of the coastal Northwest. The question is when.* By Kathryn Schulz; The New Yorker; July 20, 2015;

<http://www.newyorker.com/magazine/2015/07/20/the-really-big-one>

⁴⁰ <http://projects.registerguard.com/rg/opinion/33436654-79/fires-offer-fresh-reason-to-oppose-gas-pipeline.html.csp>

⁴¹ http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20171204-5022

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Jordan Cove Dollars have Disadvantaged Locals, Increased Hazard Risks

It has been most difficult to stand up to the enormous amount of money Jordan Cove has dumped into our area and into our local government entities for various things. This constant flow of dollars has essentially high-jacked any chance we locals have had of there being fair local public processes. After years of our attempts to try and get the Coos County Planning Department to update local codes to include known natural hazards, once they finally did attempt to do this, they made sure the updated hazard maps did not apply to the coastal shoreland areas where the Jordan Cove project is being proposed and where tsunamis and earthquake hazards are more likely to occur. Coos County also would not adopt earthquake fault maps that had faults that would be detrimental to Jordan Cove or their pipeline in any way. I have written hundreds of pages and provided ample documentation of these discrepancies, many of which can be found under Coos County File Nos. AM-15-04 and AM-16-01.⁴² It has all been for nothing as my legitimate concerns about these issues have all but been ignored or disregarded by our local public officials. Several of our County Commissioners instead continue to write letters of support for the Jordan Cove Project with no regard for these hazards.^{43/44}

In 2016 Jordan Cove donated an unprecedented \$600,000⁴⁵ on a campaign to defeat a ballot measure that might have been harmful to them, blanketing the county with television, radio and newspaper ads against the initiative in an effort to win over the counties 41,000 registered voters. They spent 50 times as much as the ballot measure yes campaign's \$12,000. They have done the same thing when it has come to getting the people they want elected. **Locals don't stand a chance.**

Every month since September 2007 Jordan Cove has paid Coos County \$25,000 a month for pre-use of the Coos County Natural Gas Pipeline that they have no plans whatsoever to use.⁴⁶ On Sept 9, 2016 it was reported⁴⁷ that Jordan Cove had given roughly \$300,000 to the Coos County sheriff's department to cover additional costs and to help compensate for the potential crime increase its project would incur, as well as for new equipment. (*See Exhibit 17*) In March of 2018 it was reported⁴⁸ at preliminary budget hearings, the Coos County sheriff's office purposed LNG division budget, which is just over \$3 million for the 2018-2019 fiscal year. The division is completely funded through Jordan Cove LNG. (*See Exhibit 18*) And this really is just the tip of the iceberg of things that have gone on here.

⁴² <http://www.co.coos.or.us/Departments/Planning/PlanningDepartment-Applications2016.aspx> and;
• <http://www.co.coos.or.us/Departments/Planning/2015Applications.aspx>

⁴³ *Guest Opinion: Jordan Cove means opportunity, jobs*; By County Commissioners Derrick DeGroot, Tim Freeman and John Sweet ; December 8, 2017;

<http://www.mailtribune.com/opinion/20171208/guest-opinion-jordan-cove-means-opportunity-jobs>

⁴⁴ Commissioner John Sweet April 11, 2016 letter to the FERC;

http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20160420-4005

⁴⁵ http://www.oregonlive.com/politics/index.ssf/2017/05/coos_county_voters_reject_ban.html

⁴⁶ Coos County/Jordan Cove Interruptible Transportation Purchase Agreement 8-31-2007 ; Item 2.3, page 4

⁴⁷ http://theworldlink.com/news/local/crime-and-courts/sheriff-talks-jail-levy-staffing-drone-use-in-thursday-presser/article_91545d92-1600-5ae6-a0d8-5adc792db025.html

⁴⁸ http://theworldlink.com/news/local/jordan-cove-has-its-own-division-in-the-sheriff-s/article_fd7cddb2-fb52-527a-8f8d-d3507922c06a.html

Not one local law enforcement personnel or fire personnel has publicly expressed any concerns with the Jordan Cove project despite the fact that several international hazard experts have expressed concerns that the Jordan Cove project was underestimating their potential fire hazards.^{49/50} (*See Exhibit 19*) This is of great concern to citizens due to the project's close proximity to the population here. Jordan Cove's LNG tanker ships would come within 6/10th's of a mile from hundreds of children attending Sunset and Madison schools in Coos Bay. They would also come within feet of our active airport runway. Over 16,000 local residents would live in Jordan Cove's documented hazardous burn zones. (*See Exhibit 20*) There have been no concerns expressed by those in power who should be doing so.

Serious Public Safety Risks

LNG facilities and natural gas pipelines are highly flammable and explosive. For example, in 2014, there was an explosion at the Plymouth LNG facility in Washington that injured workers and forced hundreds of residents to evacuate their homes.⁵¹

It is all spelled out in the scientific literature that if a LNG tanker ship was to be breached and only 1/2 of one of the (4 to 5) LNG tanks (or 3 to 4 million gallons of LNG) was to leak out into the water and a pool fire was to develop, people up to a mile away would be at risk of receiving 2nd degree burns in 30 seconds. **This is because heat flux levels of 5kW/m2 would go out as far as a mile away from the fire.** If the Jordan Cove LNG Export Project was to actually make it through permitting and be built, 16,922 people would live in the Jordan Cove LNG hazard zones of concern according to the Jordan Cove former FERC Import EIS (Page 4.7-3) and also the former Export Draft EIS (Page 4-980). (*See Exhibit 20*) The Jordan Cove former Export Draft EIS page 4-7 stated:

The waterway for LNG vessel marine traffic would traverse 7.5 miles of the existing navigation channel within Coos Bay. The navigation channel is zoned "Deep-Draft Navigation Channel." in the CBEMP. The navigation channel, which is generally 300-foot-wide and 37-foot-deep, is maintained by the COE on behalf of the Port.

LNG tankers with a 40 foot draft would exit our narrow Bay carrying around 39 million gallons of LNG but there is little concern given for our safety by local officials. Both the cities of North Bend and Coos Bay have signed agreements indemnifying Jordan Cove should there be an LNG accident. (*See Exhibit 21*) The City of North Bend has also passed a Resolution and written letters of support for the Project prior to the completion of the FERC National Environmental Policy Act (NEPA) process and also prior to Final Decisions being made on Jordan Cove's Land Use Permits. (*See Exhibits 22 and 23*)

⁴⁹ http://www.oregonlive.com/business/index.ssf/2015/01/scientists_say_public_safety_h.html

⁵⁰ http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20150114-5038 and;
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20150206-5040

⁵¹ <http://www.sightline.org/2016/02/08/how-industry-and-regulators-kept-public-in-the-dark-after-2014-lng-explosion-in-washington/> and;

• http://www.oregonlive.com/business/index.ssf/2014/04/gas_explosion_at_lng_facility.html ; April 1, 2014

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Jordan Cove's FERC Draft EIS Page 2-76 states:

*LNG to be exported from the Jordan Cove terminal to overseas markets would be transported in vessels specially designed and built for that task. Jordan Cove expects that its terminal would be visited by about 90 LNG vessels per year. These vessels would be loaded with LNG at the terminal and deliver the cargo to customers, most likely around the Pacific Rim. **LNG vessels would be under the ownership and control of third-parties, not Jordan Cove, and would not be regulated by the FERC.** (Emphasis added)*

This is not acceptable as it places our entire area at an extreme hazard risk and liability.

Structures close to an LNG pool fire, should one develop, could actually self-ignite from the high heat flux levels. This is not my words but comes directly from the December 2004 Sandia Report, "Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water."⁵² The large hazardous burn zones associated with these LNG facilities are also confirmed by other Government and independent studies as well.⁵³ In 2005 the Port of Long Beach and the California Public Utilities Commission had an analysis done entitled, "An Assessment of the Potential Hazards to the Public Associated with Siting an LNG Import Terminal in the Port of Long Beach."⁵⁴ The analysis resulted in the Port of Long Beach no longer approving the proposed LNG facility.

Higher Energy Prices

Exporting liquefied natural gas (LNG) "puts pressure on prices and that wouldn't be good for consumers,"⁵⁵ according to Avista Senior V.P. Jason Thackston in 2014. The Industrial Energy Consumers of America, a lobby group for U.S. Manufacturers, has stated publicly that the LNG export project would harm manufacturing jobs in the U.S.⁵⁶ DOW Chemical has also made similar statements.⁵⁷

⁵² "Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water"; Sandia Report; Dec 2004; <http://prod.sandia.gov/techlib/access-control.cgi/2004/046258.pdf>

⁵³ United States Government Accountability Office, Report to Congressional Requesters, Maritime Security; "Public Safety Consequences of a Terrorist Attack on a Tanker Carrying Liquefied Natural Gas Need Clarification", February 2007; GAO-07-316: <http://www.gao.gov/new.items/d07316.pdf>

U.S. Department of Energy report to Congress, "Liquefied Natural Gas Safety Research" ; May 2012 : http://energy.gov/sites/prod/files/2013/03/f0/DOE_LNG_Safety_Research_Report_To_Congre.pdf [NOTE: Based on the data collected from the large-scale LNG pool fire tests conducted, thermal (fire) hazard distances to the public from a large LNG pool fire will decrease by at least 2 to 7 percent compared to results obtained from previous studies. In spite of this slight decrease, people up to a mile away are still at risk of receiving 2nd degree burns in 30 seconds should a LNG pool fire develop due to a medium to large scale LNG breach event.]

⁵⁴ "An Assessment of the Potential Hazards to the Public Associated with Siting an LNG Import Terminal in the Port of Long Beach" By Dr. Jerry Havens, September 14, 2005 -

http://www.ecosakh.ru/data/im_docs_62_ocenka_ugroz_v_svyazi_s_razmescheniem_SPG%28angl.yaz.%29.pdf

⁵⁵ Demand from LNG terminals would likely boost natural gas prices; By Greg Stiles / Mail Tribune ; Nov 18, 2014; <http://www.mailtribune.com/article/20141118/News/141119639>

⁵⁶ IECA Motion to U.S. Dept of Energy re Jordan Cove LNG Export Project; March 23, 2016 : https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2012/applications/March_23_2016_12-32-LNG/2Cicio_IECA_03_23_16.pdf

⁵⁷ <https://www.dow.com/en-us/news/press-releases/dow-statement-on-us-department-of-energy-jordan-cove-lng-export-decision>

Threats to Existing Jobs and Businesses

The Jordan Cove project is also proposing immense dredging and harbor disruptions in the Coos Estuary. This would negatively impact existing jobs in fishing, oyster farming, crabbing, clamming, tourism and recreation. The 229 mile pipeline would negatively affect timberlands, farms and fishing and some 400 waterbodies, many of which are spawning grounds for salmon and steelhead. Safety and security zones around LNG tankerships entering the Coos harbor would restrict movement of vessels in and out of Coos Bay which would have a negative impact on other bay users and also on airport operations. Thermal plumes coming from the proposed LNG terminal would put at risk flights coming in and out of the Southwest Oregon Regional Airport in North Bend.^{58/59}

“Horizontal Directional Drilling” would happen under the Coos, Klamath, Rogue, Umpqua, and Coquille Rivers, threatening our rivers with pipeline drilling accidents called “frack outs”. This drilling technique has led to major spills and water contamination in Ohio⁶⁰ and Pennsylvania⁶¹ and previously occurred during the construction of the 12-inch Coos County natural gas pipeline.

Negative Local Impacts, Few Local Jobs and High Unemployment following Temporary Employment in Jordan Cove’s Large-Scale Construction Works

Construction for the LNG terminal is expected to employ 1,996 workers in the peak month and 1,023 workers in an average month. This is the same figure Jordan Cove predicts will descend on average to the regional population base during the LNG terminal construction.⁶² In addition, the pipeline construction workforce is predicted to peak at 4,131 workers in August 2021. The pipeline construction workers would be distributed across five (or more) construction spreads in the pipeline project area. Pipeline construction is expected to peak with 976 workers in Coos County, 1,389 workers in Douglas County, 1,484 workers in Jackson County and 356 workers in Klamath County.⁶³ Corporate CEOs promise that dozens of jobs will remain after construction, but Jordan Cove’s application to the FERC predicts the project would create only approximately 200 permanent jobs from the terminal (180 in Coos Bay and 20 in Portland)⁶⁴ along with 15 jobs for the pipeline (6 workers in Coos County, 5 workers in Jackson County, and 4 workers in Klamath County.)

⁵⁸ *FAA Technical Guidance and Assessment Tool for Evaluation of Thermal Exhaust Plume Impact on Airport Operations* https://www.faa.gov/airports/environmental/land_use/media/technical-guidance-assessment-tool-thermal-exhaust-plume-impact.pdf

⁵⁹ *Hot Air - Pilots say the Port of Portland’s plans to sell land for a power plant next to the Troutdale Airport include a fatal flaw*; April 21, 2015; <http://www.wweek.com/portland/article-24594-hot-air.html>

⁶⁰ <http://radio.wosu.org/post/ohio-epa-reports-new-rover-pipeline-spill-federal-regulators#stream/0>

⁶¹ <https://stateimpact.npr.org/pennsylvania/2018/01/03/dep-suspends-all-construction-on-mariner-east-2-pipeline/>

⁶² JCEP Resource Report #5 page 11: https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170921-5142

⁶³ PCGP Resource Report #5 page 31-32; https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170921-5139

⁶⁴ JCEP RR #5; *Jordan Cove Energy Project and Pacific Connector Gas Pipeline: An Economic Impact Analysis for Operations* Sept 2017; ECONorthwest; Page 4

In other words, of the 2,972 (1,996 + 976) construction workers expected to descend on Coos County for both the terminal and the pipeline, only 186 permanent jobs would be created in in the end in the County. This would mean that some 2,786 workers in Coos County would be unemployed looking for work after the construction phase of the LNG project is over-with. There is no way that a rural area such as ours would be able to handle or absorb that large amount of unemployed workers.

The City of North Bend also does not have the infrastructure or the resources to be able to handle the 20% increase in population that would occur along with increases in living expenses and increased public services needs as a direct result of the construction phase of the Jordan Cove LNG terminal project. As seen in Exhibits 21 through 23, the City has shown support for the project and has expressed no concerns whatsoever with infrastructure and safety needs.

Increased Costs in Rent, Housing, Healthcare and Crime along with the Need for Additional Public Services

In 2007 when Royal Dutch Shell built an LNG export terminal on Russia's Sakhalin Island an article in Fortune magazine entitled, "*Shell Shakedown*," about the Gazprom takeover of the project, stated the following with respect to what happened to the locals in that area:

...Many people in Korsakov earn less than \$300 a month - a sharp contrast to the wealth of Sakhalin Energy employees, many of whom, especially those who come from other countries, make more than \$1,000 a day....

...Elena Lopukhina, director of a Korsakov advocacy group and an assistant to a regional government official, who says that is just one of the emotional issues in the community that have swayed people against Sakhalin Energy. "The company did everything that was good for them and not good for us."...

... there are the small things - the \$4 pencils and \$500 space heaters a customs officer says she saw listed on a Sakhalin import form, the flaunting of money by expatriate staff in downtown nightclubs, the waxed and polished Land Cruiser fleet lined up in an island parking lot - that give Sakhaliners a feeling of watching a party in their living room to which they haven't been invite. (Emphasis added)

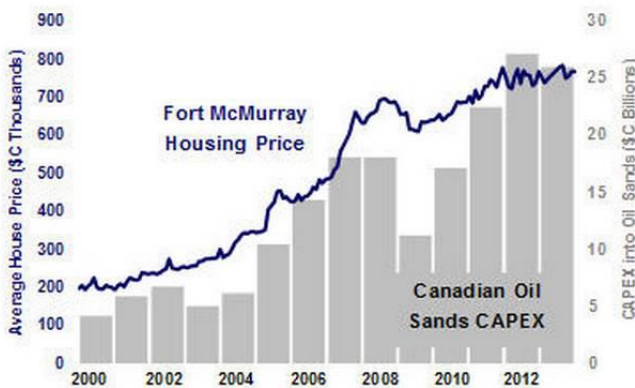
If Sakhaliners think spending is out of control, that could explain why prices in Yuzhno also seem divorced from reality... ...houses can cost nearly \$1 million, while a one-bedroom apartment can rent for \$3,000 a month, comparable to New York City prices. A five-minute taxi ride costs \$12, and lunch at a casual Indian restaurant starts at about \$40 per person.⁶⁵

Housing and rent prices in the North Bend/Coos Bay area would most definitely go up as they have done in other areas with similar constructions projects. (**See Exhibit 24**) This would only

⁶⁵ *Shell shakedown - Fortune's Abrahm Lustgarten reports how the world's second-largest oil company lost control of its \$22 billion project on Russia's Sakhalin Island.* By Abrahm Lustgarten; Fortune; February 1, 2007 http://archive.fortune.com/magazines/fortune/fortune_archive/2007/02/05/8399125/index.htm

make the housing availability problem worse in Coos County which currently is operating at a 1% vacancy rate.⁶⁶ The following graph published in the Globe and Mail on Feb 24, 2014⁶⁷ shows the increases that have occurred in other areas to housing prices when similar gas and oil type projects have occurred:

Fig 1: Fort McMurray Housing Prices vs Oil Sands CAPEX
Average Price for a Single Family Dwelling; 2000 to 2013



Source: Fort McMurray Real Estate Board, CAPP, ARC Financial Research

We can also expect to see increases in drugs and crime in our area along with negative impacts to our roads, housing, health care and law enforcement; all of which would be stretched to the limit.⁶⁸ (See Exhibits 25 and 26)

The photo below was taken on August 4, 2015 at the intersection of Ferry Road and Hwy 101. This is where Hwy 101 comes into our town after it crosses the historic (2 lane) North Bend Conde B. McCullough Memorial Bridge. What do you think the traffic results would be at this intersection with 2,000+ additional workers descending on our area?:

⁶⁶ *I want to live* - This is the story of the working homeless ; By Jullian Ward – The World; December 9, 2017; http://theworldlink.com/news/local/i-want-to-live/article_e24afe97-3e6c-5d14-af21-be7d5fe5f9c0.html#tracking-source=home-featured

⁶⁷ *Fort McMurray's house prices vs. capital spending in the oil sands*
Special to The Globe and Mail; Published Monday, Feb. 24 2014
<http://www.theglobeandmail.com/report-on-business/fort-mcmurrays-house-prices-vs-capital-spending-in-the-oil-sands/article17066573/?from=17066648>

⁶⁸ *Dark side of the boom – North Dakota's oil rush brings cash and promise to reservation , along with drug-fueled crime*; By Sari Horwitz - The Washington Post; Sept 28, 2014;
<http://www.washingtonpost.com/sf/national/2014/09/28/dark-side-of-the-boom/> and;
• *Northwest B.C.'s LNG boom is already a bust for some - Heated economy drives up prices and drives out tenants*
By Gordon Hoekstra, Vancouver Sun November 5, 2014
http://www.vancouversun.com/business/energy/Northwest+boom+already+bust+some/10326811/story.html?_lsa=0882-6c5e and;

• *Inside Fracking's 'Man Camps', Where Sex, Drugs, and Gonorrhea Run Rampant*; Written by Peter Rugh; October 18, 2013; <http://motherboard.vice.com/blog/inside-frackings-man-camps-where-sex-drugs-and-gonorrhea-run-rampant>



North Bay Urban Renewal District gives Jordan Cove LNG huge Tax Breaks

The Jordan Cove project would be located in the Coos County Urban Renewal District and also in an Enterprise Zone (EZ). The EZ allows a new company to avoid paying taxes for three or more years. Jordan Cove is seeking a 15-year tax abatement in an attempt **to pay far less than they would normally have to pay in property taxes**.⁶⁹ They are promising to pay money instead into two non-profits, one which would benefit local schools in the area. They call it their *Community Enhancement Plan*. This plan would severely limit the amount of money that would flow into the State's Education fund that benefits schools across the State.

A May 16, 2014 Oregonian article entitled, "*Controversial plan to divvy up windfall from Coos Bay's proposed LNG terminal raises questions*"⁶⁹ spilled the beans about the plan stating:

The plan plays a kind of financial shell game with the state, transforming property taxes into community service fees, then funneling them into private non-profits whose non-elected board members would have final say over how the cash is used....

⁶⁹ • *Controversial plan to divvy up windfall from Coos Bay's proposed LNG terminal raises questions*

By Ted Sickinger - The Oregonian - May 16, 2014

http://www.oregonlive.com/business/index.ssf/2014/05/controversial_plan_to_divvy_up.html

• The World - *What is plan B if Jordan Cove backs out of Community Enhancement Plan?*

Dissolution of urban renewal agency, enterprise zone would more evenly spread out Jordan Cove property tax dollars By Chelsea Davis, Jul 31, 2014

http://theworldlink.com/news/local/govt-and-politics/what-is-plan-b-if-jordan-cove-backs-out-of/article_a0c35f68-17fe-11e4-bb94-0019bb2963f4.html

• The World - *MONEY STARTS FLOWING - Jordan Cove parent company looks at financing, ownership options, expansion* By Chelsea Davis, March 28, 2014

http://theworldlink.com/news/local/govt-and-politics/jordan-cove-parent-company-looks-at-financing-ownership-options-expansion/article_5fe9f9ec-b521-11e3-9421-001a4bcf887a.html

• *Veresen's Jordan Cove Community Fund – Plan or Scam?*

March 31, 2014 – By Jody McCaffree

<http://citizensagainstlng.com/wp/2014/06/20/veresens-jordan-cove-community-fund-plan-or-scam/>

...Finally, there's the tax break question.

Jordan Cove officials have been saying for years that they don't need one, and have suggested they would pay the full freight associated with the investment. Yet the existing plan shows Jordan Cove getting the full value of the standard enterprise zone – some \$200 million in tax breaks – as well as discounts on its community service fees as compensation for paying more of them up front....

Jordan Cove's *Community Enhancement Plan* has been a source of much contention in our area along with this whole Urban Renewal District that is currently on the North Spit where Jordan Cove is proposing to build their LNG terminal. The current Urban Renewal District Plan was set to sunset in 2018 but that did not happen despite all the testimony that came from local citizens about problems with the plan.

JCEP FERC Application on page 3 states:

Construction spending alone for the Project is estimated at \$9.8 billion in Oregon

PCGP FERC Application on page 4 states:

...Operation of the Project will directly employ 215 workers (200 for the LNG Terminal and 15 for the Pipeline)

215 jobs / 9,800,000,000 project cost = \$45,581,395.35 cost per job. **A 45 million dollar cost per each permanent job is nothing short of insanity.**

It is obvious to see that the amount Jordan Cove would pay as part of *their Community Enhancement Plan* would be FAR LESS than what the company would pay on a \$9.8 billion dollar project if they were paying the same tax rate as is normally paid in the county. If that were the case they would be paying more on the order of \$98 million a year in taxes. Jordan Cove's FERC application claims it will be paying \$40 million annually in lieu of property taxes, but projected revenues under their Community Enhancement Plan start out at only \$12 million a year. While those projections are only estimates, they show Jordan Cove getting a tax break of more than \$200 million. Any tax the company does end up paying would not go into the county general fund, but into the Coos County Urban Renewal District for the North Spit which is administered for the most part by the Oregon International Port of Coos Bay. Hence, none of this money would directly fund local public services such as sheriffs, schools, roads, etc., unless the Port's Coos County Urban Renewal Agency and/or Jordan Cove's Community Enhancement Plan chose to allow it.

The Pacific Connector Gas Pipeline's FERC application on page 16 states:

Property taxes for the Pipeline are anticipated to average \$20 million per year of operations for school districts and other local districts to be shared among Coos, Douglas, Jackson, and Klamath counties.

The pipelines proposed ad valorem tax seems to go up with every new filing and is now more than double what was projected only a few years ago. No matter what the amount it would not compensate for the losses suffered by property owners forced by eminent domain to accommodate the pipeline. Those property owners would not be allowed to build or develop anything in the easement area, thus lowering their property values and decreasing the amount of property tax collected by the counties.

A 2003 Congressional Research Report estimated that the “public” cost of security for an LNG tanker shipment to the Everett terminal in Boston Harbor was on the order of \$80,000 per shipment, excluding costs incurred by the terminal owner. **So the safety and security measures imposed by this terminal would not be a job benefit to us, but a job expense on our public services.** In addition, a glaring omission in Jordan Cove’s jobs forecast is the decline in local and national jobs that would be caused by its operation and presence. We would have all the risk, pollution impacts, bay closures and restrictions, while a Canadian energy company received all the benefits and profits.

The Port’s website states that modification of the Coos Bay navigation channel is anticipated to cost approximately \$350-\$400 million and that the project would be funded through a combination of public and private investments. Since the channel modification project is currently being driven by the Jordan Cove Project, it leaves one to wonder just how much exactly the proposed LNG project would end up costing tax payers in the end both in monetary costs and in loss of estuarine habitat and jobs.

Clean Energy Development Creates Far More Jobs Than Fracked Gas Developments.

Each dollar invested in clean energy creates two to seven times as many jobs as spending that dollar on fossil fuels.⁷⁰ Businesses, elected officials, and community residents in Oregon have been working together to speed our transition to cleaner energy like solar and to greater energy efficiency. The export of fracked gas threatens all the progress we are making.

Dated this 30th day of March 2018

/s/ Jody McCaffree

Jody McCaffree

⁷⁰<http://www.sightline.org/2016/02/16/why-oregon-needs-the-healthy-climate-act/>