
APPENDIX R

Comments on the Draft EIS and Responses

(continued)

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Furthermore, the DEIS assumes – without supporting evidence – that project activities in riparian areas will “minimize” their impacts and thereby apparently sufficiently mitigate changes in water temperature, runoff, and sediment delivery. The DEIS does not explain what “minimized” impacts means, nor does the DEIS factor in any explanation of available scientific data corroborating the limited effectiveness of BMPs in preventing impacts to aquatic resources and salmonids from stormwater runoff, vegetation removal, and elevated erosion.

CO28-286
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Thus, if the Project is approved, additional mitigation is necessary. We suggest that Pacific Connector file with the Secretary a commitment to acquire conservation easements on a substantial number of private land stream miles that are occupied critical habitat for coho salmon. These conservation easements along coho salmon spawning streams would be assigned to FWS for administration.

CO28-287

We dispute the implied or stated assertion that sediment effects of the proposed action can be fully mitigated on-site. Once pipeline associated sediment is delivered to stream channels it cannot be mitigated. The use of log placement to mitigate increased sediment is not a proven technique because of the transient nature of sediment and the finite ability of log placement to retain very much sediment. We believe that conservation easements on private lands would best secure coho habitat well into the future and help compensate for despoiled stream miles from pipeline construction.

A particular problem with mitigation is mitigation or avoidance of impacts on private lands. The DEIS has numerous instances and whole sections documenting a suite of protective standards for NFS and BLM lands. Much lower protective standards for private lands are explicitly stated or implied.

The DEIS fails to discuss quantitatively the higher risk or higher expected impacts to stream miles on private lands due to lower and scientifically inadequate protection standards. The tradeoffs of reduced environmental protection on private lands versus increased costs are not made explicit as required by NEPA.

CO28-288

We know that FERC would not allow lesser engineering or safety standards for pipeline construction on private lands. We assert that the FERC must insist that the same protective standards for public lands be implemented on adjacent private lands. Implementation, contracting, EI monitoring, impact assessment, legality, etc. would be simplified by using the same standards for all land ownerships where practical, rather than reducing environmental standards on private lands to reduce short term construction costs while burdening everybody else with conflicting standards and inevitable stream degradation.

KK. Public Safety.

We continue to object to weaker Pipeline Safety standards for rural areas. Most of southern Oregon is in a “Class 1” location because there are 10 or fewer buildings on a one-mile length of pipeline. This could put rural Oregonians in greater danger than people in urban areas. Examples of how southern Oregon would be treated differently than urban areas include:

CO28-289

CO28-287 See response to comment CO28-273.

CO28-288 There is no legal nexus or NEPA stipulation to require the same mitigation measures related to streams on private lands compared to what the BLM and Forest Service are requiring on federally managed lands.

CO28-289 As disclosed in section 4.13 of the EIS, the pipeline would be buried to depths required by the USDOT. We note your disagreement with the USDOT's safety standards.

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- Fewer welds are required to be inspected or tested, 10% verses. 100% in urban areas.
- Thinner pipes are permitted.
- No internal inspections are required on the pipeline once it is in the ground.
- Pipelines are buried 6" higher.
- Maximum distance to block valves is greater.
- Hydrostatic test pressures are weaker.
- Maximum allowable operating pressure is greater.
- Frequency of pipeline patrols and leak surveys are less often.

CO28-289
cont.

At minimum, stricter standards ought to be considered as a reasonable alternative, so that the effects of the difference can be meaningfully evaluated. The Draft EIS says that this consideration can't be done because FERC lacks jurisdiction to require it. DEIS, 4-771. But jurisdiction is no reason not to consider impacts. Additionally, the applicant here is voluntarily exceeding those standards, so the implications need to be explored and revealed.

Even if the possibility of better mitigation is ignored, the DEIS still needs to consider and disclose the ways that safety risks *increase* as a result. The PHMSA risk-based systems put priority on populations, so many of the rural areas passed by the pipeline will not receive much attention. We noted too that the PHMSA safety standard metrics are geared to permanent residences and year-round occupied structures, so many of the important populated areas passed by the pipeline will not receive any attention. Camps for example, which are not occupied much of the year, but can house hundreds for periods of time, as well as highways and rivers, will be at heightened risk in light of these safety standards.

CO28-290

The discussion of PHMSA safety standards is fine as far as it goes, but does not achieve NEPA's mandate to disclose and consider effects. This section comes a long way from justifying FERC's later conclusion that, given the existence of PHMSA regulatory regime, there is no significant safety impact of the pipeline. Pipeline safety standards are always controversial, and major pipeline incidents are routine.

The Draft EIS never explains the risks associated with this pipeline. It generally says only that "pipeline system emergencies can include gas leaks, fire or explosion, and/or damage to the pipeline and aboveground facilities." DEIS, 4-773. That is a very dry and uninformative way of describing the potential for huge fires and explosions created by the proposed action.

CO28-291

The Draft EIS presentation of pipeline accident data is biased and misleading. Apparently calibrated to offer assurance, it fails to meet NEPA's duty to provide high-quality information taking a hard look at impacts.

Some of the details presented are perplexing. Why is it helpful to know, to the tenth of a percentage point, what percentage of pipeline incidents in the country are caused by corrosion and pipeline material, weld or equipment failure? DEIS, 4-776. Or the distribution of causes of outside force incidents? This sort of false-precision gives the appearance of a hard look, while actually obfuscating the real picture.

CO28-290 The Pacific Connector pipeline would be designed and constructed per the in accordance with the minimum safety standards of 44CFR part 192. These regulations are designed to ensure adequate protection of the public and to prevent natural gas accidents and failures. Public safety is also addressed in section 4.13.

CO28-291 See response to similar comments from the League of Women Voters.

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Fundamentally the approach taken by the DEIS is wrong. The duty here is not to look at this project from the perspective of the national pipeline system, but to look at it on its own terms. NEPA requires consideration of the impacts *on the human environment*, not on national pipeline statistics. The public here don't care how this pipe compares with the hazards posed by all pipelines, but the alternatives compare in the risk they present. From the point of view of a person living along the route, the change in risk is massive—going from zero to ... whatever it is.

This leads to the further problem that, while accident data is presented in a few unhelpful ways, the DEIS never does crunch the numbers and tell us what the relative risk of accidents is on the proposed pipeline. How often, based on past experience, do pipelines such as this result in accidents?

The Draft EIS does not offer any analysis whatever regarding the relative safety of this pipeline compared with others. The risks here appear to be larger than usual in light of (1) the complex project, (2) inexperience of the region with gas transmission lines, and especially (3) dynamic instability of the pipeline route.

The gas pipeline explosion hazard is significant and alarming. We find this risk to public safety unacceptable, and a powerful weight against the project being in the public interest. It is outrageous that the Draft EIS fails to confront this risk in a realistic way.

The Draft EIS relies entirely on a generalized statistical presentation. DEIS, 4-778 – 4-780. Because the overall number of injuries and fatalities on natural gas transmission lines in the last five years is a relatively "small" number (is three deaths really a small number!?), we are assured that pipeline failures are "rare." DEIS, 4-779.

First, the statistical method here is unsupported. Why are only gas transmission lines considered, and why only the last five years? Why are only releases resulting in fatalities or serious injuries revealed, when there are a much higher number of accidents and releases that just miss? Revealing the truly absurd and biased nature of the Draft EIS statistics, it actually goes to the trouble to make a table of accidental deaths all-in-all, to make the point that the "fatality rate" for gas pipelines is "much lower" than fatalities from lightning. This information serves no useful purpose except to fill space with meaningless numbers, and bias reviewers against considering pipeline risks to public safety.

Second, the purely generalized and statistical method entirely fails to address the many important site-specific risks and hazards associated with the pipeline. This is an especially egregious error because the present review is the last and only chance to make any siting determinations or explore alternative pipeline routes that might be safer. Landslides and soil movement in particular are a serious threat to pipeline safety, as is recognized by recent PHMSA guidance. The pipeline here is unstable in many specific areas, and each of those is at risk of a pipeline breach and release.

Wildland Fires are a major compounding risk that the Draft EIS does not address. See comments on this docket of Firefighters United for Safety, Ethics and Ecology (FUSEE). Overlays show

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CO28-293

CO28-292 See response to comment CO28-290.

CO28-293 Fire risks as well as how the Project would be affected by fires and affect the likelihood of fires is addressed in sections 4.4 and 4.13.

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that a large portion of this pipeline route is through areas that are at high risk of high-intensity wildfires. Wildfire needs to be considered reasonably foreseeable and site-specific risks considered.

CO28-293
cont.

That approach also hides reasonable alternatives that would result in a safer pipeline. Higher-quality leak detection which is available (See e.g. Shaw et al. (Sept. 28, 2012), PHMSA, *Leak Detection Study – DTPH156-11-D-1*.) ought to be required along the pipeline, with priority for detection at:

CO28-294

- Private properties;
- Wild-fire risk areas (e.g. high risk fire stands; firebreaks);
- Roads;
- Major river crossings;
- Recreational facilities (e.g. boat ramp, picnic spots).

Third, the information provided, even with its bias, does not support the conclusion that this pipeline will be “a safe, reliable means” of transportation. DEIS, 4-780. Three dead and nine injured each year is significant. The pipe will not be “safe,” but will be one of the biggest hazards in the region, and will present risks of entirely new character. The casual treatment of this issue in the Draft EIS suggests complacency, which further increases our alarm.

CO28-295

LL. Geological Hazards.

The DEIS notes that the pipeline will cross areas of high liquefaction and/or lateral spreading as well as rapidly moving landslides. In these areas, the applicant proposes to monitor conditions and possibly implement additional mitigation measures at these locations. DEIS at 5-4.

According to FEMA, “Large, permanent ground movements in the form of surface faulting, soil liquefaction, and landslides, are the most troublesome sources of damage to gas and liquid fuel pipelines (O’Rourke, 1987).” See FEMA, *Earthquake Resistant Construction of Gas and Liquid Fuel Pipeline Systems Serving, or Regulated by, the Federal Government*, at 1 (FEMA-233, July 1992).

Therefore, a primary concern for buried pipelines is their ability to accommodate abrupt ground distortions or differential displacements. (ASCE, 1984). The amount and type of ground displacement across a fault or fault zone is one of the most important factors to be considered in seismic design of pipelines crossing active faults (ASCE, 1983). Since ground displacements are in most cases difficult to predict, it is also difficult to develop designs which will protect pipelines against their effects. The most common forms of ground displacements are faulting, lateral spreading caused by liquefaction, and slope failures (landslides).

In addition to these severe direct effects on pipelines, secondary effects from earthquakes can also damage pipelines. For example, flooding, hazards from fallen power lines, and explosion hazards when gas lines are ruptured can all result as secondary effects of an earthquake. The proposed monitoring outlined in the DEIS does not adequately address these risks or explain how the pipeline itself, including choice of pipe material, type of

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CO28-294 See response to comment CO28-290.

CO28-295 See response to comment CO28-290.

CO28-296 The quoted statement regarding lateral spreading is not included in EIS sections 4.1 or 4.13. Earthquake hazards including earthquakes, landslides, and liquefaction and lateral spreading, as well as mitigation measures in association with the proposed pipeline have been addressed in sections 4.1.2.3 and 4.1.2.4 of the EIS.

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joints, arrangement of the network, length of segments, location and details of fittings and accessories are made. In addition, there is no evidence that where the pipeline is proposed in the vicinity of active landslides and liquefaction zones that any proposed measures can adequately protect against pipeline damage and disturbance to protect the environment and communities of Southern Oregon. The DEIS acknowledges as much, stating that "it is not possible to completely mitigate the risk of pipeline damage in Coos Bay resulting from lateral spreading during a megathrust seismic event."

CO28-296
cont.

The DEIS recognizes "that the consequences of a pipeline failure may be catastrophic and involve fire and/or explosion." Nevertheless, the DEIS fails to take a hard look at alternatives that would avoid locating the pipeline in areas of seismic activity that pose a risk to the safety of the pipeline and the communities around it.

CO28-297

The DEIS is clear, and based on our experience it is true, that the Pacific Connector pipeline will cross very unstable and steep slopes, as well as other areas that are geologically unpredictable. Where these areas exist on public lands, the Northwest Forest Plan requires that unstable and potentially unstable areas be designated as riparian reserves and put off limits to management. NFP S&Gs, C-31. There is no indication that FERC or the project proponent has complied with this requirement. 5 U.S.C. § 706(2)(A).

CO28-298

MM. Use of Eminent Domain Is Inappropriate For This Pipeline, Because It Will Not Serve A Public Purpose.

I. The Project Does Not Benefit The American Public

Many of the undersigned previously protested the application, explaining that the project was contrary to the public interest. FERC has not responded to those protests. We reiterate those concerns herein.

FERC asserts that the public benefit determination is entirely within the hands of the Department of Energy (DOE), and the DOE has already made a determination that exporting LNG would have a public benefit. DOE's evaluation is only conditional, and DOE has explicitly committed to revisiting this evaluation. In particular, DOE has not yet considered how the numerous and severe environmental impacts of the project influence DOE's public interest analysis. Even on purely non-environmental issues, however, we contend that DOE's conditional assessment is flawed, for reasons stated in our prior comments to DOE and FERC. Because DOE's conditional authorization is not final, is flawed, and is subject to future challenge, FERC cannot rely on it here.

CO28-299

Moreover, FERC has an independent duty to assess the public interest as part of its Natural Gas Act and NEPA analyses.

The DEIS adopts the IMPLAN-based economic projections offered by Jordan Cove. The problems with this modeling were discussed in Sierra Club's protest of the application. We reiterate those concerns here, and incorporate that argument by reference.

CO28-300

CO28-297 The entire Project region is an area known to have seismic activity. In fact, the entire pipeline route is located in an area mapped by the U.S. Geological Survey as having high to moderate earthquake hazard based on ground motion predictions. Therefore, no pipeline route alternatives would avoid the seismic related hazards. Section 4.1.2.3 of the EIS describes design and mitigation measures that would be implemented to address seismic-related hazards along the pipeline.

CO28-298 The NWFP directed that during watershed analysis unstable areas including earthflows be considered in determining the widths of Riparian Reserves. The amount of area to be included in riparian reserves is based on several factors and the NWFP provided guidance on this analysis (see NWFP pages B-20 through B-30). All of the watersheds crossed by the proposed PCGP within the NWFP have completed WAs and the riparian reserves generated from these WAs are included in the draft EIS analysis. Subsequently, the Forest Service worked closely with the Applicant to identify and avoid areas of slope instability. Where locations could not be avoided additional design features were developed to address site-specific conditions and ensure consistency with the Riparian Reserve Standard and Guidelines (see draft EIS sections 4.7.3.5 and Appendix F.4).

CO28-299 This statement is incorrect. The DOE has authority over determining if natural gas can be exported, and this is outside the jurisdiction of the FERC or this EIS. The "public need" for the project is not determined by the DOE. As described in section 1 of the draft EIS, FERC staff do not make a final determination regarding the Project's need. The decision regarding the Project's need is made by the Commission in the Project Order.

CO28-300 It is not clear what Sierra Club protest this comment is referring to or what the argument is that the comment wishes to incorporate by reference. The Sierra Club is, however, listed as one of the parties providing this comment (see the beginning of this letter). ECONorthwest (2017c, 2017d) prepared two separate IMPLAN analyses that assessed the regional economic impacts of construction and operation of the LNG terminal and Pipeline projects, as discussed in section 4.9 of the draft EIS. IMPLAN is a commercially available economic modeling package widely used to assess the economic impacts of many different types of projects and proposals. IMPLAN is an input-output model and subject to the assumptions and limitations of this type modeling, which are well documented.

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CO28-301 Comment noted.

We can see the effects of a dynamic world on Coos County by looking at the last four decades. In 1970, Coos County had about 60,000 residents and lots of them were engaged in primary jobs such as timber cutting and commercial fishing. Today, most of the timber and fishing jobs are gone, so you might think the number of residents would have declined. In fact, it still has about 60,000 residents, partly because something else replaced those jobs, largely retirement money. The LNG terminal might create some new primary jobs, but it also might kill some primary jobs since some potential retirees may decide they don't want to live in a county with an LNG terminal.

CO28-300
cont.

The Jordan Cove EIS relies on ECONorthwest to use and interpret IMPLAN results. But ECONorthwest itself has challenged the use of IMPLAN to estimate the employment effects of another project. In a March, 2013 Critique of Substitute Environmental Document: "IMPLAN overestimates the true employment and economic impacts of alternatives" partly because economics "are not static."⁴⁸⁷

FERC should find that United States citizens do not benefit from the profits of a corporation in a foreign country. Little of the profits made by Veresen in Canada on this project will trickle down to Oregonians. Landowners stretched across the southern part of the state will be made poorer as a result of land condemnations, lowered property values, and unjust and unequal compensatory remuneration. Taxes and payments offered to local counties are miniscule compared to their budgets and will likely not even cover the actual expenses of increasing emergency services to address increased hazards in rural Oregon.

CO28-301

Eminent domain was established for, and is useful for, projects that have a public use, like highways and electric lines. But a pipeline whose main purpose is to export gas to Asia does not have any benefit to U.S. citizens.

Likewise, Oregon does not substantially benefit from the approximately 200 permanent jobs this project is expected to produce, of which only a small percentge will be local hires. There are robust alternatives to producing these local jobs. For instance, there is a drastic shortage of solar-panel installers in southern Oregon. A recent report found that we could create 2,500 permanent jobs through renewable energy development in Oregon.

More than 90% of the private landowners along the 229-mile long pipeline rejected the initial offers made by PCGP in the summer of 2013. Many of the landowners do not want a high-pressure, 36" unodorized gas pipeline near their homes, especially as we hear about pipeline explosions on the nightly news. Many landowners scoffed at the very low offers being made.

At one public meeting landowners asked a representative of PCGP if they would pay an annual payment, similar to royalties, for the annual landowner expenses, such as having to pay property taxes on the PCGP right-of-way. The response was a quick "No. You can take your one-time payment and invest it, and the interest will be like royalties." Later, when landowners received their very low-ball offers, this statement appeared to be a joke.

⁴⁸⁷ "Critique of Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay- Sacramento/San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality," prepared by ECONorthwest for Michael Jackson, March, 2013.

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Veresen Inc. will be making billions and billions of dollars by using private land in southern Oregon. They have an unfair advantage over families to start with, because they have well-paid staff trained to justify low payments and get our land for the cheapest price possible. Landowners are even more crippled when they have the threat of eminent domain hanging over the negotiations for property.

CO-301 cont.

To help U.S. citizens gain an equal footing with Veresen, the Commission should not find that this project has a public benefit and should not allow eminent domain. The DEIS 1-12 points out that under section 3 of the NGA, the Commission considers "all factors" bearing on the public interest. This should include how the threat of eminent domain interferes with fair negotiations for using private property.

2. Purpose of Pipeline.

One of the purposes of the pipeline is "to supply additional volumes of natural gas to markets in southern Oregon...Pacific Connector intends to deliver about 40 million cubic feet of natural gas per day to Northwest's existing Grants Pass Lateral through an interconnection with the proposed Clarks Branch Meter Station." What the DEIS failed to disclose is how much natural gas will be withdrawn from the Grants Pass Lateral, through the Coos Bay 12" line that is north of the proposed Clarks Branch Meter Station. If Jordan Cove uses 40 million cubic feet from the Grants Pass Lateral through the 12" Coos Bay line, and then puts 40 million cubic feet back in at Clarks Branch, that equals *no* extra gas for Oregon, which does not meet the stated purpose of the Pacific Connector Pipeline.

CO28-302

At the FERC public hearings at Canyonville, John Clark testified and presented paperwork showing Jordan Cove had a contract to remove as much natural gas from the Grants Pass Lateral (via the Coos Bay 12" line) as they claim they will put back in.

FERC must fully disclose the net amount of gas that would be supplied to Oregon to determine if the purpose of the PCGP is being met and if there is a true public benefit for Oregon.

3. Blanket Certificate.

The Commission cannot issue a blanket certificate to allow unknown impacts to landowners along the pipeline. Because the DEIS did not define the scope of a "blanket certificate", it could allow PCGP to do anything to private land that PCGP considered a "minor action", like construction of buildings, new roads, etc. What PCGP might consider "minor", the landowner might not. "Minor" should have been, but was not, well defined.

CO38-303

The DEIS says that future actions allowed under this blanket certificate is "subject to individual environmental reviews by FERC staff..." However, the DEIS failed to clarify if this would be a review in compliance with the National Environmental Policy Act (NEPA), or if it would simply be an internal review not subject to public input. We have asked Paul Friedman this question twice, in writing, and have received no answer. FERC should clarify that any action taken under the "blanket certificate" is subject to NEPA review, allowing full public and scientific input.

CO28-302 The commenter is apparently commenting on the 2015 EIS, and not the current NEPA document. There is no Clarks Branch Meter Station associated with the current proposal or in the EIS. This comment is therefore, not applicable to the current NEPA document.

CO28-303 The purpose of the blanket certificate program pursuant to section 7(c) of the Natural Gas Act, is to allow natural gas companies to undertake a restricted array of routine future activities that are not yet known at the time of issuance of the blanket certificate. Given that Pacific Connector has not yet proposed to conduct any specific activity under a blanket certificate, it would be premature for Commission staff to assess in the EIS the environmental impacts of such potential activities. Commission staff has no information regarding the location, scope, or timing of any potential activity on which to base its environmental review.

The blanket certificate program requires that each activity complies with defined constraints on costs and environmental impacts as set forth in the Commission's regulations. The activities covered under the blanket certificate program are defined in §157.208(d). In addition, Pacific Connector would need to notify potentially affected landowners of the planned activities at least 45 days in advance, describing the planned activity and how a landowner can contact the company. The notification must also include an explanation of the Commission's Landowner Helpline procedures and the Landowner Helpline phone number. See further discussion on the Commission's website at: <https://www.ferc.gov/industries/gas/indus-act/blank-cert.asp>.

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A “blanket certificate” allowing unknown impacts is not allowed by NEPA. “NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality.” The DEIS violates this requirement.

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NN. Rural Emergency Services.

The DEIS failed to consider that rural areas in Oregon are not prepared to deal with the emergencies that a high-pressure gas pipeline could cause. There are going to be only 17 mainline block valves on the entire 229 miles of the pipeline. Therefore, if there is an accident or natural disaster, there could be significant damage done before a person can drive to one of the valves to turn it off and then let the gas burn out of 1/17th of the pipeline.

CO28-304

The taxes PCGP is providing the counties is not nearly enough to upgrade the needed rural emergency services to address potential problems.

The DEIS has underestimated the difficulty in road-building and trenching on Oregon’s steep, unstable, landslide prone, earthquake susceptible mountain slopes. This puts rural Oregonians in additional peril from accidents that occur due to heavy rain or geologic events, especially since the pipes are thinner in rural areas, and we have inadequate emergency response capabilities.

Increased fire-fighting expenses are also not covered by PCGP. Because of the short vegetation maintained in the right-of-way, forest fires will be able to travel across the landscape quicker than without a clear path of short, dry brush. The money given to local governments does not cover the extra forest-fire fighting costs, thus endangering rural residents even more.

OO. Bonding.

The DEIS states that the “bond or letter of credit” posted by Jordan Cove “to cover the amount in the estimate to retire the facility.” FERC should also require Jordan Cove and PCGP to post a bond to cover damages from the pipeline while it is service, not just at retirement. For instance, if the pipeline blows up and starts a forest fire, impacted families should be assured that PCGP can pay for the damages they cause.

CO28-305

PP. Forest Plan Amendments.

1. Forest Service Amendments.

a. Plan amendments generally.

The proposed pipeline construction across federal public forestlands involves numerous actions that are inconsistent with the planning documents and management intent for those lands. The proposed violations of the underlying land use plans are significant, irreversible and irretrievable, and may retard and prevent accomplishments of the goals and objectives of the land management plans (Resource Management Plans, RMPs on BLM lands; Land and Resource Management

CO28-306

CO28-304 Law enforcement and fire protection, including emergency response, are discussed with respect to the Pipeline in section 4.9.2.6 of the draft EIS. As discussed in this section, Pacific Connector has developed an Emergency Response Plan Concept Paper, a Fire Prevention and Suppression Plan, and a Safety and Security Plan, which were provided as part of Appendix F.10 to the draft EIS. Section 4.9.2.6 also notes that: “Pacific Connector has indicated that in the event of a pipeline accident, the party deemed responsible for the accident would ultimately be responsible for paying all costs for emergency response, containment, damages, remediation, and repairs for the public and private property affected. In the event of an accident, Pacific Connector would provide emergency support to completely respond to the accident.”

CO28-305 The Commission does not require companies to post bonds. In the unlikely case of an accident the company would be liable, and covered by insurance.

CO28-306 The replacement standards or guidelines being proposed are concise, measurable, and time-specific to actions being proposed. The Plan of Development (POD) sections are organized by topic and are a requirement of the Mineral Leasing Act. The Compensatory Mitigation Plan is also incorporated into the POD and will be enforceable. Inspectors and project monitors will use these documents to ensure compliance during construction and remediation of the temporary and permanent right-of-way. All documents referenced for replacement standards (i.e. project design requirements, POD sections, and compensatory mitigation) relevant to LRMP amendments will be included in the MLA Right-of-Way Grant as an integrated attachment for implementation, as well as in the planning record for plan amendment purposes.

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Plans, LRMPs on Forest Service lands). Reliance on site-specific forest plan amendments violates NFMA's requirement that forest plans "form one integrated plan for each unit of the National Forest System, incorporating in one document or one set of documents, available to the public at convenient locations, all of the features required by this section." 16 U.S.C. § 1604(f)(1).

NFMA imposes substantive constraints on management of forest lands, such as a requirement to insure biological diversity. *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 898 (9th Cir. 2002). NFMA and its implementing regulations subject forest management to two stages of administrative decision making. At the first stage, the Forest Service is required to develop a Land and Resource Management Plan, also known as a Forest Plan, which sets forth a broad, long-term planning document for an entire national forest. At the second stage, the Forest Service must approve or deny individual, site-specific projects. These individual projects must be consistent with the Forest Plan. *Great Old Broads for Wilderness v. Kimbell*, 709 F.3d 836, 851 (9th Cir. 2013) ("the NFMA prohibits site-specific activities that are inconsistent with the governing Forest Plan"); see also *Neighbors of Cuddy Mtn. v. Alexander*, 303 F.3d 1059, 1062 (9th Cir. 2002) ("[s]pecific projects ... must be analyzed by the Forest Service and the analysis must show that each project is consistent with the plan"). The Forest Service's "interpretation and implementation of its own forest plan is entitled to substantial deference." *Great Old Broads*, 709 F.3d at 850 (9th Cir. 2013) (internal quotation marks omitted).

In 2012, the Forest Service finalized new planning regulations that are relevant to forest plan amendments. 36 C.F.R. Part 219 (2012). In 2016, the agency amended the 2012 Planning Rule to more specifically address forest plan amendments. The preamble to the 2016 Amendments to the 2012 Rule explain:

Under the 2012 rule, "[p]lan amendments may be broad or narrow, depending on the need for change" (36 CFR 219.13(a)); and amendments "could range from project specific amendments or amendments of one plan component, to the amendment of multiple plan components." (77 FR 21161, 21237 (April 9, 2012)). Unlike for a plan revision, the 2012 rule does not require an environmental impact statement for every amendment; such a requirement would be burdensome and unnecessary for amendments without significant environmental effect, and "would also inhibit the more frequent use of amendments as a tool for adaptive management to keep plans relevant, current and effective between plan revisions." (Preamble to final rule, 77 FR 21161, 21239 (April 9, 2012)).

The Department's position is that the 2012 planning rule gives responsible officials the discretion, within the framework of the 2012 planning rule's requirements, to tailor the scope and scale of an amendment to a need to change the plan. This position means that, while the 2012 planning rule sets forth a series of substantive requirements for land management plans within §§ 219.8 through 219.11, not every section or requirement within those sections will be directly related to the scope and scale of a given amendment.

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However, a plan amendment must be done “under the requirements of” the 2012 rule (36 CFR 219.17(b)(2)). Therefore the responsible official’s discretion is not unbounded. An amendment cannot be tailored so that the amendment fails to meet directly related substantive requirements or is contrary to any substantive requirement. Rather, when responsible officials identify a need to change a plan, they must determine which substantive requirements within §§ 219.8 through 219.11 of the 2012 rule are directly related to such a change, and propose an amendment that would meet those requirements and not contradict other requirements.

81 Fed. Reg. 70,375 (Oct. 12, 2016). The preamble goes on to explain that

During the Department and Agency’s conversations with the [Planning Rule Federal Advisory] Committee about the Agency’s early efforts to use the 2012 rule to amend 1982 rule plans, the Committee advised that some members of the public have suggested interpretations of the 2012 rule that conflict with the Department’s position. For example, some members of the public suggested that because the 2012 rule recognizes that resources and uses are connected, changes to any one resource or use will impact other resources and uses, and therefore all of the substantive provisions in §§ 219.8 through 219.11 must be applied to every amendment.

Other members of the public suggested an opposite view. They believe that the 2012 rule gives the responsible official discretion to selectively pick and choose which, if any, provisions of the rule to apply, allowing the responsible official to avoid 2012 rule requirements or even propose amendments that would contradict the 2012 rule. *Under this second interpretation, members of the public hypothesized that a responsible official could amend a 1982 plan to remove plan direction that was required by the 1982 rule without applying relevant requirements in the 2012 rule.*

The Department intends in this preamble and proposed amendment to the rule to clarify that neither of these interpretations is correct.

...the 2012 rule does not give a responsible official the discretion to amend a plan in a manner contrary to the 2012 rule by selectively applying, or avoiding altogether, substantive requirements within §§ 219.8 through 219.11 that are directly related to the changes being proposed. Similarly, an interpretation that the 2012 rule gives responsible officials discretion to propose amendments “under the requirements” of the 2012 rule that actually are contrary to those requirements, or to use the amendment process to avoid both 1982 and 2012 rule requirements, is in opposition with the Department’s position described earlier in this discussion that the responsible official’s discretion to tailor the scope and scale of an amendment is not unbounded.

Id. at 70,376 (emphasis added).

The requirements of the 2016 Amendments have been interpreted by the Fourth Circuit Court of Appeals in the same factual situation present here, e.g. a natural gas pipeline across national

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forestlands necessitating forest plan amendments. The Court in *Sierra Club v. Forest Service* explained these requirements:

Specifically, the 2016 Revisions provide that the Forest Service “shall ... [d]etermine which specific substantive requirement(s) within §§ 219.8 through 219.11 are directly related to the plan direction being added, modified, or removed by the amendment,” and then “apply such requirement(s) within the scope and scale of the amendment.” 36 C.F.R. § 219.13(b)(5) (emphasis supplied). Conversely, “[t]he responsible official is not required to apply any substantive requirements within §§ 219.8 through 219.11 that are not directly related to the amendment.” *Id.* (emphasis supplied).

Thus, the issue we consider here turns on whether the requirements in the 2012 Planning Rule are directly related to the instant Forest Service amendments to the Jefferson Forest Plan.

Sierra Club, Inc. v. United States Forest Serv., 897 F.3d 582, 601 (4th Cir.), *reh’g granted in part*, 739 F. App’x 185 (4th Cir. 2018). In examining the “purpose” of the proposed amendments, the Court went on to explain that

The Forest Service admittedly needed to change the Forest Plan because the MVP project could not meet its requirements otherwise. See J.A. 1280 (“The amendment [to the Forest Plan] is needed because the MVP Project cannot achieve several Forest Plan standards that are intended to protect soil, water, [and] riparian ... resources.” (emphasis supplied)). Of note, elsewhere in the ROD, the Forest Service characterizes the purpose of the amendment as “ensur[ing] consistency between provisions of the Forest Plan and the proposal to construct, operate, and maintain [the pipeline] on National Forest System land.” J.A. 1284. But there would be no need to “ensure consistency” if the Forest Plan need not be amended in the first place. Thus, the clear purpose of the amendment is to lessen requirements protecting soil and riparian resources so that the pipeline project could meet those requirements.

Having determined the purpose of the amendment, it is clear the Planning Rule sets forth substantive requirements directly related to that purpose: “soil and soil productivity” (36 C.F.R. § 219.8(a)(2)(ii)); “water resources” (36 C.F.R. § 219.8(a)(2)(iv)); “the ecological integrity of riparian areas” (36 C.F.R. § 219.8(a)(3)(i)). Therefore, there is no question that the 2012 Planning Rule requirements for soil, water, and riparian resources are directly related to the purpose of the Forest Plan amendment. The Forest Service acted arbitrarily and capriciously in concluding otherwise.

Id. at 603.

In a substantially similar Fourth Circuit case that relied on *Sierra Club* for its reasoning, the Court further explained in *Cowpasture River Pres. Ass’n v. Forest Service* that

If the substantive requirement is directly related to the amendment, then the responsible official must “apply such requirement(s) within the scope and scale of the amendment.”

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Sierra Club, 897 F.3d at 601 (quoting 36 C.F.R. § 219.13(b)(5)). Conversely, if the substantive requirement from the 2012 Planning Rule is not directly related to the amendment, the responsible official is not required to apply it to the amended Forest Plan. *See id.* Thus, Petitioners' arguments on this point turn on whether the requirements in the 2012 Planning Rule are directly related to the Forest Service's amendments to the GWNF and MNF Plans.

A substantive requirement is directly related to the amendment when the requirement "is associated with either the purpose for the amendment or the effects (beneficial or adverse) of the amendment." *Sierra Club*, 897 F.3d at 602 (quoting 2016 Amendment to 2012 Rule, 81 Fed. Reg. 90,723, 90,731 (U.S. Dep't of Agric. Dec. 15, 2016)); see also 36 C.F.R. § 219.13(b)(5)(i) ("The responsible official's determination must be based on the purpose for the amendment and the effects (beneficial or adverse) of the amendment, and informed by the best available scientific information, scoping, effects analysis, monitoring data or other rationale."). Further, regarding the adverse effects of an amendment, "[t]he responsible official must determine that a specific substantive requirement is directly related to the amendment when scoping or NEPA effects analysis for the proposed amendment reveals substantial adverse effects associated with that requirement, or when the proposed amendment would substantially lessen protections for a specific resource or use." 36 C.F.R. § 219.13(b)(5)(ii).

Cowpasture River Pres. Ass'n v. Forest Serv., 911 F.3d 150, 161–62 (4th Cir. 2018). The Fourth Circuit then analyzed whether the Forest Service had conducted the requisite analysis.

In its ROD, the Forest Service decided to apply project-specific amendments to a total of 13 standards in the GWNF and MNF Plans for the purpose of construction and operation of the ACP. The amendments exempt the ACP project from four MNF Plan standards and nine GWNF Plan standards that relate to soil, water, riparian, threatened and endangered species, and recreational and visual resources.

Petitioners assert that the Forest Service violated the NFMA and the 2012 Planning Rule because it skipped the "purpose" prong of the "directly related" analysis. Consistent with our decision in *Sierra Club*, we conclude that Petitioners are correct.

Id. at 162 (also explaining that "Faced with a nearly identical situation in *Sierra Club v. Forest Service*, we concluded that the Forest Service acted arbitrarily and capriciously by failing to analyze the *purpose* of the amendment in its ROD (and instead focusing on only the effects) when "the clear purpose of the amendment [was] to lessen requirements protecting soil and riparian resources so that the pipeline project could meet those requirements." *Sierra Club*, 897 F.3d at 603."). The Court concluded that

There would be no need to amend the Forest Plans to "ensure consistency" if the ACP project could meet the Forest Plan standards in the first place. In other words, the ROD makes clear that the purpose of the amendments was to lessen certain environmental requirements in the GWNF and MNF Plans because the ACP project could not meet those Plans' existing requirements." *Id.* In failing to "apply the substantive provisions of

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the 2012 Rule,” the Forest Service violated NFMA. *Id.* at 163 (“This failure is significant, because it is clear that the amendments (intended to lessen protections for soils, riparian areas, and threatened and endangered species in the GWNF and MNF Plans) are directly related to the 2012 Planning Rule’s substantive requirements for these same categories: “soil and soil productivity” (36 C.F.R. § 219.8(a)(2)(ii)); “water resources” (id. § 219.8(a)(2)(iv)); “ecological integrity of riparian areas” (id. § 219.8(a)(3)(i)); “ecological integrity of terrestrial ... ecosystems” (id. § 219.8(a)(1)); “appropriate placement and sustainable management of ... utility corridors” (id. § 219.10(a)(3)); and “recovery of federally listed ... species” (id. § 219.9(b)).”).

CO28-306 cont.

Taken together, it is clear that the 2016 Amendments to the 2012 Rule do not permit forest plan amendments that simply eliminate forest plan requirements. Instead, site-specific forest plan amendments – such as those at issue in *Sierra Club, Cowpasture*, and the present project – must: 1) analyze the scope and scale of a project’s effects necessitating a forest plan amendment (i.e., analyze “the purpose for the amendment and the effects (beneficial or adverse) of the amendment, and informed by the best available scientific information, scoping, effects analysis, monitoring data or other rationale”); 2) determine whether the proposed amendment is “directly related” to the substantive provisions of the 2012 Rule, e.g. 36 C.F.R. §§ 219.8 – 219.11; 3) apply those substantive provisions of the Rule to the amendment; and 4) create new forest plan components that address the same resource protection needs of the forest plan components that the proposed project cannot meet.

Turning to the JCEP, it is clear that the DEIS fails to comply with the 2012 Rule. All of the proposed forest plan amendments propose to exempt the Pacific Connector pipeline from numerous forest plan requirements that serve to protect wildlife, soil, water, riparian areas, Late-Successional Reserves, and visual resources including recreational resources. *See*, Appendix F2 Forest Service Proposed Amendments and CMP. Because the “effect” of the amendments is to lessen environmental protections for numerous natural resources, and the amendments are “directly related” to substantive provisions of the 2012 planning rule,⁴⁸⁸ the Forest Service (and FERC) should have proposed new plan components that apply the substantive provisions of the 2012 Rule to the proposed amendments and created new plan components that meet the resource protection needs of the forest plan components that the Pacific Connector pipeline project cannot meet.

CO28-307

Instead of following the requirements of the 2012 Rule, the DEIS specifically exempts the pipeline from forest plan requirements (i.e., “with the exception of the operational right-of-way and the construction zone for the Pacific Connector Pipeline”) and instead relies on “applicable mitigation measures identified in the POD and Pacific Connector project design requirements.” DEIS, 4-462, 4-452, 4-457, 4-462, 4-463, 4-467, 4-468, 4-473, 4-477, 4-482. However, this

CO28-308

⁴⁸⁸ For example, including but not limited to: 36 C.F.R. § 219.8(a)(2) Air, soil, and water; 36 C.F.R. § 219.8(a)(3) Riparian Areas; 36 C.F.R. § 219.9 Diversity of plant and animal communities; 36 C.F.R. § 219.10(a)(1) (a) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses; and 36 C.F.R. § 219.11(c) Timber harvest for purposes other than timber production.

CO28-307 Commenter is correct in that the 2012 Planning Rule requires the Forest Service to include replacement standards or guidelines when amending LRMPs (36 CFR 219.8(a)). Appendix F.2 provides an exhaustive list of replacement standards. These replacement standards are specific, measurable, and developed through scientific analysis at multiple scales to ensure sustainability is maintained for affected substantive requirements. These replacement standards are enforceable and will be included as part of the Right-of-Way Grant to ensure implementation (appendix F.10).

CO28-308 The replacement standards or guidelines being proposed are concise, measurable, and time-specific to actions being proposed. The Plan of Development (POD) sections are organized by topic and are a requirement of the Mineral Leasing Act. The Compensatory Mitigation Plan is also incorporated into the POD and will be enforceable. Inspectors and project monitors will use these documents to ensure compliance during construction and remediation of the temporary and permanent right-of-way. All documents referenced for replacement standards (i.e. project design requirements, POD sections, and compensatory mitigation) relevant to LRMP amendments will be included in the MLA Right-of-Way Grant as an integrated attachment for implementation, as well as in the planning record for plan amendment purposes.

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vague reference to the POD⁴⁸⁹ – no specific provisions in the POD are referenced, or tied to specific amendments – fails to comport with the 2012 Rule’s definition of plan content and plan components, which generally requires plan content and components to be concise, measurable, and time-specific. 36 C.F.R. §§ 219.7(e)(1)(i) – (v). This approach also violates NFMA’s requirement that each national forest land and resource management plan “form one integrated plan for each unit of the National Forest System,” because the “requirements” of the LRMPs for the Umpqua, Rogue River, and Winema National Forests will be scattered across several documents including the PODs, CMPs, and other documents. 16 U.S.C. § 1604(f)(1).

CO28-308 cont.

The DEIS fails to comply with the 2012 Planning Rule and NFMA because the Forest Service and FERC have attempted to exempt the Pacific Connector pipeline from the requires of the Umpqua, Rogue River, and Winema National Forest Land and Resource Management Plans. This is a decision expressly precluded by the 2016 Amendments to the 2012 Rule. 81 Fed. Reg. 70,376 (“the 2012 rule does not give a responsible official the discretion to amend a plan in a manner contrary to the 2012 rule by selectively applying, or avoiding altogether, substantive requirements within §§ 219.8 through 219.11 that are directly related to the changes being proposed”); *Sierra Club*, 897 at 601, 603 (4th Cir.), *Cowpasture River Pres. Ass’n*, 911 F.3d at 161–63 (4th Cir. 2018).

CO28-309

b. Additional forest plan amendments are required.

In addition to the 18 forest plan amendments recognized and proposed by FERC and the Forest Service in the DEIS, there are numerous additional amendments that should have been proposed and analyzed in the DEIS. For example, the pipeline will cross numerous waterways on national forestlands that will require permanent removal of vegetation over the centerline of the pipeline right-of-way. However, the Northwest Forest Plan Aquatic Conservation Strategy (NFP ACS) precludes permanent removal of vegetation within Riparian Reserves. Northwest Forest Plan Standards and Guidelines, B-11. Therefore, forest plan amendments are required that adequately substitute for the aquatic protections afforded by the NFP ACS.

CO28-310

Additional necessary forest plan amendments include:

- Transferring Matrix land use allocation lands to the Late-Successional Reserve land use allocation as proposed by the CMP implicates 36 C.F.R. § 219.11 (Timber requirements based on the NFMA), because timber harvest in LSRs is restricted, whereas timber harvest in the Matrix is much less so;
- Amendments exempting the pipeline from Survey and Manage requirements implicate 36 C.F.R. § 219.8(a) because the Survey and Manage program was intended to address upland wildlife connectivity requirements. Current proposed amendments do not address wildlife connectivity that will be compromised by the pipeline;
- The proposed soil, water quality, and riparian area amendments fail to acknowledge that the Northwest Forest Plan, which amended the Umpqua, Rogue River-Siskiyou,

CO28-311

CO28-312

⁴⁸⁹ Some PODs, such as that for plants, have not yet been developed. Other analysis, such as that for sensitive soils, has yet to be undertaken and may result in the requirement of additional forest plan amendments.

CO28-309 The responsible official has discretion to determine whether and how to amend the plan. Here, the responsible official identified the substantive requirements from the 2012 Planning Rule that are directly related to the proposed amendments and that therefore must be applied within the scope and scope of the amendments (36 CFR 219.13). The Forest Service reviewed all of the substantive requirements in the 2012 Planning Rule and determined which ones were directly related to the plan amendments. The Forest Service provided commenters during the scoping process (FR Vol 82 No.121 June 26, 2017) and during the draft EIS comment period (FR Vol 84 No.71) opportunities to bring forward additional planning rule requirements. No comments were received requesting additional rule requirements. Without specific requests, the Forest Service deems the current list of substantive requirements adequate for analysis and consistent with direction contained at 36 CFR § 219.13.

CO28-310 Proposed amendments to the Survey and Manage Standards and Guidelines are disclosed and analyzed in the draft EIS (see sections 2.1.3.2, 4.7.3.4 and Appendix F.2). Compliance with the ACS Standards and Guidelines is also disclosed and analyzed in the draft EIS (see sections 4.7.3.5 and Appendices F.1 and F.4).

CO28-311 The draft EIS did consider impacts to timber requirements based on the NFMA. Because the proposed reallocations are such a small percentage of the Umpqua and Rogue River NF matrix land base they would not affect the ability of the Forests to meet their respective Probable Sale Quantities under their LRMPs. Also the reallocation would not prohibit all timber harvest. Commercial thinning in younger stands to promote development of late successional habitat is allowed in LSR (see draft EIS pages 4-450, 4-461 and Appendix F.2).

CO28-312 The analysis in section 4.6.4 the draft EIS and supported by the analysis in appendix F.5 determined that the species persistence objectives of the Survey and Manage program would be met thereby meeting sustainability objectives in 36 CFR 219.8 The draft EIS addressed impacts to wildlife including wildlife connectivity (see sections 4.5.1.2 and 4.5.1.3).

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<p>and Winema National Forest land and resource management plans, contains additional requirements related to soil, water quality, and riparian areas that are additive to similar – but different – provisions in individual forest plans. See generally, NFP S&Gs, C-1 – C-61. Additional amendments that address the soil, water quality, and riparian area provisions of the NFP are required.</p>	<p>CO28-313</p>
<ul style="list-style-type: none"> • For pipeline sections that cross steep, unstable, or other geologically insecure slopes and areas, the NFP requires these areas to be designed as Riparian Reserves and for management actions to comply with the ACS. NFP S&Gs, C-31. Because the DEIS failed to designate such areas as Riparian Reserves, either the FEIS must do so, or forest plan amendments are required to address this resource concern. 	<p>CO28-314</p>
<ul style="list-style-type: none"> • The DEIS indicates that construction of the pipeline would be required during seasonal closure periods to protect deer and elk habitat. DEIS, 4-227. A forest plan amendment is therefore required to address the effects of project construction activities during this critical biological period. 	<p>CO28-315</p>
<ul style="list-style-type: none"> • Water withdrawals from waterways on federal lands must comply with the ACS, and any changes in the timing, quality, etc. of water quality require a forest plan amendment. 	<p>CO28-316</p>
<ul style="list-style-type: none"> • Temperature changes caused by the permanent clearing of vegetation at water crossings violate the NFP ACS, and therefore require a forest plan amendment. 	<p>CO28-317</p>
<ul style="list-style-type: none"> • Within Riparian Reserves, the NFP states “Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.” NFP S&Gs, C-37. Therefore, any use of mitigation measures – for example, the CMP – requires a forest plan amendment. 	<p>CO28-318</p>
<ul style="list-style-type: none"> • The DEIS states that turbidity will be increased at the stream- and watershed-level, DEIS, 4-280, but the ACS prohibits this change in water quality. <i>Pac. Coast Fed’n of Fishermen’s Ass’n, Inc. v. Nat’l Marine Fisheries Serv.</i>, 265 F.3d 1028 (9th Cir. 2001). Therefore, a forest plan amendment is required to address this inconsistency. 	<p>CO28-319</p>
<p>c. Proposed compensatory mitigation measures are inadequate.</p>	
<p>As compensatory mitigation for irreparable adverse impacts on national forestlands, the applicant proposes to conduct timber harvest that it describes as “restorative” in nature. The DEIS fails to demonstrate that logging will compensate for the permanent loss of old growth forests and other wildlife habitat: indeed, there is no scientific information cited for this premise. Similarly, there is no information provided in the DEIS demonstrating the effectiveness of any of the compensatory (or other) mitigation measures.⁴⁹⁰ And, because subsequent environmental review</p>	<p>CO28-320</p>

⁴⁹⁰ For example, the DEIS acknowledges that pipeline construction and ROW maintenance is likely to result in the increase in illegal off-road vehicle trespass. DEIS, 4-630. However, the DEIS also defers until some point in the future the development of mitigation measures to address illegal trespass, and therefore does not analyze how effective these mitigation measures may be. DEIS, 4-544. Similarly, a public lands public safety POD has yet to be

CO28-313 Compliance with the ACS Standards and Guidelines in the NWFP is disclosed and analyzed in the draft EIS (see sections 4.7.3.5 and Appendices F.1 and F.4).

CO28-314 The NWFP directed that during watershed analysis unstable areas including earthflows be considered in determining the widths of Riparian Reserves. The amount of area to be included in Riparian Reserves is based on several factors and the NWFP provided guidance on this analysis (see NWFP pages B-20 through B-30). All of the watersheds crossed by the proposed PCGP subject to the NWFP have completed WAs and the Riparian Reserves generated from these WAs are included in the draft EIS analysis. Subsequently, the FS worked closely with the Applicant to identify and avoid areas of slope instability. Where locations could not be avoided additional design features were developed to address site-specific conditions and ensure consistency with the Riparian Reserve Standard and Guidelines (see draft EIS section 4.7.3.5 and appendix F.4).

CO28-315 A forest plan amendment is not required for waiving seasonal restrictions for deer and elk. The draft EIS addressed impacts to wildlife from construction activities including times recommended for big game seasonal closures (e.g. see draft EIS section 4.5.1.3).

CO28-316 No water withdrawals are proposed for the Pacific Connector project on NFS lands.

CO28-317 Compliance with the ACS Standards and Guidelines is disclosed and analyzed in the draft EIS including turbidity that would result from stream crossings (see section 4.7.3.5 and appendices F.1 and F.4).

CO28-318 On page C-37 of the NFP under the heading “Watershed and Habitat Restoration”, Standard and Guideline WR-3 states “Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.” The Forest Service has not proposed compensatory mitigation as a substitute for preventing habitat degradation. The compensatory mitigation plans address unavoidable adverse impacts of the proposed pipeline and have been designed to meet objectives in the Forest Service LRMPS. The steps the Forest Service has taken to avoid or reduce impacts on public lands is documented in sections 2 and 3 of the draft EIS. The required project design features are described in the Plans of Development. The compensatory mitigation plans included in section 2.1.5 and evaluated in section 4.7.3 and Appendices F.2, F.3, and F.4 of the draft EIS have been developed and proposed by the Forest Service consistent with the goals in the LRMPS. Compensatory mitigation is consistent with NEPA and the NWFP and does not require forest plan amendments.

CO28-319 Compliance with the ACS Standards and Guidelines is disclosed and analyzed in the draft EIS including turbidity that would result from stream crossings (see sections 4.7.3.5 and appendices F.1 and F.4).

CO28-320 The proposed compensatory mitigation developed by the Forest Service would not be conducted by the Applicant and the Forest Service has not asserted that logging would compensate for the permanent loss of old growth forest. The proposed Forest Service CMP is summarized in the draft EIS in section 2.1.5 with more detailed analysis contained in appendix F.2 including citations to relevant studies (see also responses to CO-262, 263, 268, 269, and 270).

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will be required for implementation of these logging compensatory mitigation, there is no guarantee that these projects will in fact be implemented. Therefore, it is impossible to know whether the proposed timber harvest will in fact compensate for the permanent loss of this natural resource.

CO28-320
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2. Bureau of Land Management.

The BLM has proposed to make the pipeline right-of-way a “district reserve” that exempts the pipeline from the otherwise applicable Resource Management Plan requirements for the various BLM Districts. The BLM has failed to demonstrate that this approach complies with FLPMA, for the same reasons discussed above with respect to amendments proposed for national forestlands.

CO28-321

QQ. Compliance with the Northwest Forest Plan.

Across the Pacific Northwest within the range of the northern spotted owl, the land management agencies and the consulting agencies have relied on the NFP as the basis for listed species conservation and conservation of regional biodiversity, water quality, and other public land amenities. Exempting a single linear project from compliance with NFP requirements undermines the regional framework, and casts into doubt the legality of any historic and subsequent projects. For example, FWS and NMFS rely on the inviolable nature of the ACS and Riparian Reserve standards and guidelines when assessing the effects of timber harvest and other land management decisions on listed species and their habitat. However, if the requirements of the ACS and the NFP are no longer assured, then the agencies cannot rely on the conservation benefit from these requirements, and will be required to create a new framework against which to gauge environmental impacts.

The FEIS must fully analyze the pipeline’s compliance with the many provisions of the Northwest Forest Plan.

The DEIS 4-508 states “No Project-related impacts that would retard or prevent attainment of ACS objectives have been identified (appendix F.4, table 2-44). Impacts, as they relate to relevant ecological processes, are within the range of natural variability for watersheds in the Western Cascade and Klamath- Siskiyou Provinces, although some of these processes have been altered from their natural condition (appendix F.4, p. 2-105-109, table 2-40).”

The DEIS is in error because the project will inevitably have impacts that would retard or prevent attainment of ACS objectives. We specifically identify ACS Objective 5. “*Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*”

CO28-322

First, we assert the project has failed to make spatially explicit identification of riparian reserves as required in the NW Forest Plan 1994. NW Forest Plan B-17 states: “Riparian Reserves

developed. DEIS, 4-774. NEPA requires this analysis, and public review and comment, prior to authorizing a project.

CO28-321 Amendments to BLM RMPs is a well-established procedure outlined in 43 CFR 1610.5-5. While the proposed District Designated Reserve would maintain resource conditions necessary for operation, maintenance and decommissioning of the proposed pipeline many applicable Resource Management Plan requirements and Best Management Practices have been incorporated as project design standards throughout the Plan of Development (Appendix F.10).

CO28-322 The NWFP directed that during watershed analysis (WA) unstable areas including earthflows be considered in determining the widths of riparian reserves. The amount of area to be included in riparian reserves is based on several factors and the NWFP provided guidance on this analysis (see NWFP pages B-20 through B-30). Riparian reserves are not put off limits to management but are managed under a set of standards and guidelines in the NWFP. All of the watersheds crossed by the proposed PCGP within the NWFP have completed WAs and the riparian reserves generated from these WAs are included in the draft EIS analysis. Subsequently, the Forest Service worked closely with the Applicant to identify and avoid areas of slope instability. Where locations could not be avoided (e.g. East Fork Cow Creek) additional design features were developed to address site-specific conditions and ensure consistency with LMPs (including the ACS objectives and standards and guidelines). Those additional design features are incorporated into Section 4.03 and Appendix F.4 of the final EIS. In particular, project effects on Riparian Reserves in Days Creek and associated aquatic and riparian-dependent resources are minimal considering the number of miles of the project right-of-way in the watershed. There are no stream channel crossings on NFS lands in the Days Creek–South Umpqua River watershed. Two ridge top wetland seeps (CW056 and CW057) would be crossed at MP 102.18 and 102.24, respectively. See appendix F.4 at page 2-14 in the draft EIS.

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include the body of water, inner gorges, all riparian vegetation, 100-year floodplain, landslides and landslide prone areas.”

The NW Forest Plan C-31 states:

“Seasonally flowing or intermittent streams, wetlands less than 1 acre, and unstable and potentially unstable areas - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the Riparian Reserves must include: The extent of unstable and potentially unstable areas (including earthflows).”

The DEIS 4-25 states “Six moderate risk, deep-seated landslides [i.e. earthflows] were identified for additional surface inspection; the landslides are identified in Pacific Connector’s Resource Report 652 (as #AM, #126, #127, #AV, #AW, and #AU) and are located at MPs 14.3-14.4, 23.8-24.2, 24.4-24.6, 65.2-65.5, 65.3-65.5, and 72.7-72.9. These areas represent approximately 1.2 miles of the pipeline route.” The DEIS violates the Northwest Forest Plan because it failed to map these deep-seated landslides as “Riparian Reserves”. Consistency with ACS objectives cannot be assured when Riparian Reserves are not mapped where the project is currently proposed.

The DEIS 4-22 states: “All of the moderate- and high-hazard deep-seated landslides identified along the alignment were avoided where feasible during final route selection.” Thus the DEIS failed to identify deep-seated landslides as Riparian Reserves where it was not feasible to avoid them as well as six deep-seated landslides where “additional surface inspection” is needed.

The DEIS 4-20 states: “Pacific Connector identified moderate and high risk RML [rapidly moving landslide, i.e. debris flows] sites along the proposed route” and “Based on the risk assessment, approximately 128 of these sites were considered to be a potentially moderate or high risk and were selected for further study.” The DEQ 2019:37 identifies potentially unstable headwalls in Figure 9. The DEIS violates the Northwest Forest Plan because it failed to identify “unstable and potentially unstable areas” as Riparian Reserves. In addition, the DEIS failed to identify as Riparian Reserves all “unstable and potentially unstable areas (including earthflows)” associated with all connected actions such as construction of new roads, TEWAs, and the vast system of existing access roads.

The DEIS failed to assess the damage to Forest Service streams from landslides associated with the project during its construction and its 30 years of operation. Assertions that “Impacts, as they relate to relevant ecological processes, are within the range of natural variability for watersheds in the Western Cascade and Klamath- Siskiyou Provinces.” cannot be demonstrated with anticipated sediment from landslides during construction and the 30 year operation period. In addition, analysis at the 5th field watershed scale is inadequate because it dilutes the impacts of any single landslide that would have significant impact at the 6th or 7th field scale of analysis. Coho salmon typically spawn and rear in these smaller catchments and would be adversely impacted due to the volume and frequency of landslide sediment. Attainment of ACS objective 5 would not be met due to high risk of landslides and excessive sediment deposition. The linear nature of the project means numerous headwalls will be encountered (estimated 128 moderate

CO28-32
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and high risk) and there will be debris flows that will impact streams with coho and retard attainment of ACS objective #5,

Watershed analyses in Appendix F provides numerous statements about increased landsliding in watershed due to ground disturbances, forest removal and road construction as proposed in the DEIS.

The DEIS Appendix F4 p.2-21 falsely states for Days Creek- South Umpqua 5th field watershed "Landslide prone areas have been avoided in routing of the project right-of-way. All areas crossed by the project are classified as having a very low to low risk due to the low probability of mass wasting movement and having no significant consequences (Geoengineers 2009)." The DEIS fails to identify unstable and potentially unstable areas as Riparian Reserves in relation to routing, TEWAs, proposed access roads and existing access roads within the Days Creek-South Umpqua River 5th field watershed. The analysis in Geoengineering 2009 and the DEIS is about risk of mass wasting to the integrity of the pipeline and does not consider the broader scope of connected actions and the risk of landsliding impacts on Riparian Reserves. The DEIS Appendix F p. 2-24 states: "No landslides have been identified that pose a threat to the project." The analysis is deceptive in that landslides associated with the project and connected actions do pose a threat to Riparian Reserves. The DEIS Appendix F p. 2-24 states "The project does not cross earthflow (a type of landslide) terrains in the watershed." but the project and connected actions will cross RML terrain which is unstable or potentially unstable.

CO28-322 cont.

Similar errors and deficiencies are repeated for Project Effects and Relevant Ecological Processes Described in the Elk Creek-South Umpqua River Fifth-Field Watershed Assessment (DEIS Appendix F4 p.2-40), Upper Cow Creek Fifth-Field Watershed Analysis (DEIS Appendix F5 p. 2-79, Trail Creek Fifth-Field Watershed Assessment (DEIS Appendix F4 p.2-104), and Little Butte Creek Fifth-Field Watershed Assessment (DEIS Appendix F4 p.2-137).

The DEIS 4-22 states "Because the pipeline would cross a predominance of rugged terrain within BLM and NFS lands, there is potential for previously unidentified landslides or new landslides to affect the pipeline after it is installed." Similarly there are previously unidentified locations "where the Project, if constructed, would likely become a chronic source of sediment." Despite these scientific uncertainties, the DEIS takes the indefensible position that since no others sediment sites have been identified by third parties, then no others exist. The best available science would certainly indicate that there are other known (but undisclosed) or unknown sites where "the Project, if constructed, would likely become a chronic source of sediment". The DEIS fails to discuss the significance of this scientific uncertainty with respect to sediment impacts to stream reaches of critical coho salmon habitat.

CO28-323

RR. Compliance with the Oregon and California Lands Act.

The Pacific Connector pipeline will cross approximately 40 miles of BLM lands. On those lands, the Oregon and California Lands Act (O&C Act) proscribes the purposes for which those lands may be utilized. The O&C Act states that the O&C lands

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CO28-323 Commenter's quoted text is taken out of context. BLM and Forest Service are not referenced in the section addressing chronic sources of sediment. The Forest Service worked with the Applicant during pre-filing to avoid unstable slopes. The use of GeoEngineers (2017a), LiDAR, USGS mapping tools and Forest soil resource inventories informed the routing across NFS lands. In addition, a careful reading of the preceding paragraphs, describes the following: All known hazardous landslides thought to pose a risk to the pipeline have been avoided through routing. At this time, no sites have been identified (through the use of LiDAR interpretation, helicopter-based reconnaissance, and ground-based reconnaissance) as requiring additional monitoring beyond the standard monitoring protocols for the entire pipeline. However, as a contingency, the Applicant working with the lead agency and cooperating agencies have requested adaptive management strategies be in place to respond to landslide events, should they occur due to a variety of environmental conditions that could not be addressed through mapping, geological testing or other methods before construction and operation occurs. Refer to appendix F.10 POD section on Erosion Control or FERC's general construction procedures for a list of actions that will be taken in the event of an unanticipated landslide. These measures are also summarized in the draft EIS, Section 4 at pages 4-22 to 4-25.

CO28-324 As explained in 43 CFR 2812.0-3, Sections 303 and 310 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1732, 1733, and 1740), and the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act of August 28, 1937 (43 U.S.C. 1181a and 1181b), provide for the conservation and management of the Oregon and California Railroad lands and the Coos Bay Wagon Road lands and authorize the Secretary of the Interior to issue regulations providing for the use, occupancy, and development of the public lands through permits and rights-of-way. This project, including the proposed reclassification of lands into a District-Designated Reserve, is consistent with these statutes and regulations.

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...shall be managed...for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal [principle] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities: Provided, That nothing herein shall be construed to interfere with the use and development of power sites as may be authorized by law.

CO28-324
cont.

43 U.S.C. § 1181a. The case law interpreting the O&C Act indicates that the O&C lands must be managed for “permanent forest production.” *Headwaters v. BLM*, 914 F.2d 1174 (9th Cir. 1990). In *Headwaters*, the Ninth Circuit held that “There is no indication that Congress intended “forest” to mean anything beyond an aggregation of timber resources.” *Id.* at 1183.

The DEIS acknowledges that the pipeline right-of-way will be managed to be free of vegetation over a 15 feet in height, which will preclude the reforestation of the cleared right-of-way. DEIS, 4-22, 4-77. The right-of-way will no longer produce trees for “forest production” as required by the O&C Act. Consequently, these acres will be permanently lost to forest production, in violation of the Act. 43 U.S.C. § 1181a; 5 U.S.C. § 706(2)(A).

III. ENVIRONMENTAL CONSEQUENCES OF THE COMPRESSOR STATION.

Compressor stations provide the force which propels gas through pipelines. They emit significant amounts of air pollution, both from the operation of the engine which powers the pump as well as from venting. When the pressure in the pipeline exceeds levels meant to ensure safety (by not creating dangerous pressure on the pipeline), the contents of the pipeline are vented intentionally and directly into the ambient air. Fugitive leaks may occur as well. Compressor stations and meter stations, which also vent methane, VOCs and PM, are often located every 40 to 100 miles along fracked gas pipelines. A meter station is proposed for Coos County as part of the Jordan Cove LNG project. The Klamath Compressor Station for the Pacific Connector Gas Pipeline would be located in a rural area with 16 homes in the vicinity. Two compressor stations related to existing large pipelines are already located near this proposed compressor station.

In New York State a study on the health effects of the emissions from 18 fracked gas compressor stations found that, collectively, these sites released 40 million pounds of 70 different contaminants over a 7-year period (the seventh largest point source of air pollution in the state for that time period). The largest emissions (by volume) were nitrogen oxides, carbon monoxide, volatile organic compounds (VOC), formaldehyde and particulate matter.⁴⁹¹

Studies of gas compressor stations in Pennsylvania and New York demonstrated that compressors emitted highly variable plumes of methane that spread downwind and were measurable a full mile away at levels that could expose nearby residents, especially during temperature inversions.⁴⁹² High levels of methane, especially in an enclosed space, can cause suffocation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, and loss of coordination.

⁴⁹¹ (Russo, 2017) https://www.albany.edu/about/assets/Complete_report.pdf

⁴⁹² (Payne, 2017) doi: 10.1016/j.scitotenv.2016.12.082

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High levels of formaldehyde were found near compressor stations in Arkansas, Pennsylvania, and Wyoming. Formaldehyde is a byproduct of incomplete combustion from the gas-fired engines. It is also created when fugitive methane, which escapes from compressor stations, is exposed to sunlight. Other hazardous air pollutants detected near compressor stations in this study were benzene and hexane. One air sample collected near a compressor station in Arkansas contained 17 different volatile compounds.⁴⁹³

According to the JCEP Resource Report 9, monitoring stations in proximity to the proposed route focus primarily on monitoring of PM10 and PM2.5 (related to particulate matter emissions from wood heating in the region). No stations monitor for SO2 and NO2 in the multi-county area of southern/southwestern Oregon and northern California. Monitoring for CO was performed in Medford through 2010, after which the monitor site was closed. Per this report, NAAQS are met at the Klamath Compressor Station and along the path of the PCGP with the exception that approximately 4.3 miles of pipeline would be located within the Klamath Falls PM2.5 nonattainment area (out of compliance with NAAQ standards) and approximately 300 feet of pipeline would be located within the PM10 maintenance area (formerly out of compliance). Hazardous air pollutants (HAPs) are also generated both with construction and operation of the Compressor Station and Pipeline, primarily formaldehyde. The JCEP Resource Report 9 states that these levels meet current standards, although no safe levels have been established.

During 2014 and 2015, Klamath Falls experienced elevated PM2.5 ambient concentrations due to wildfires in southern Oregon.⁴⁹⁴ During the 2018 fire season the highest concentration of wildfires in the state was in Southern Oregon and air quality alerts were issued to residents of Klamath Falls.⁴⁹⁵ However, the DEIS for Jordan Cove does not consider cumulative effects of toxic pollution from fires with ongoing toxic emissions, particularly from compressor stations.⁴⁹⁶ **CO28-325**

IV. ENVIRONMENTAL JUSTICE CONSIDERATIONS.

Adult and child mortality are higher in nearly every locale. Infant mortality is particularly high in Klamath County. Over all death rates are higher in targeted counties, sometimes strikingly so, and especially for cancer, heart and lung disease, and suicide (a marker for community socio-economic stress).

These are locales that are already experiencing the deadly intersections of depressed economies, environmental degradation, and ill health. Fracked gas infrastructure will not bring the hoped-for economic prosperity necessary for healthy communities. It will only further degrade living conditions.

⁴⁹³ (Macey, 2014) doi: 10.1186/1476-069X-13-82

⁴⁹⁴ (Jordan Cove LNG, 2017)

⁴⁹⁵ (Linares, 2018)

⁴⁹⁶ (Office of Energy Projects: Federal Energy Regulatory Commission, 2019)

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Race, Ethnicity, Language ^{497*}							
	% Non-Hispanic African American alone	% American Indian and Alaskan Native alone	% Asian alone	% Native Hawaiian/ Other Pacific Islander alone	% Hispanic or Latino	% Non-Hispanic White alone	% Who Do Not Speak English at Home
Oregon State	2.2%	1.8%	4.7%	0.4%	13.1%	75.8%	15.2%
Coos	0.8%	2.9%	1.3%	0.3%	6.5%	85.2%	5.1%
Douglas	0.5%	2.1%	1.1%	0.2%	5.9%	87.8%	3.8%
Jackson	0.9%	1.6%	1.5%	0.4%	12.9%	80.9%	9.5%
Klamath	1.0%	4.9%	1.2%	0.2%	13.1%	77.8%	8.3%

*2017 Population Estimates

Social and Economic Factors				
	Unemployment*	Median Household Income**	Persons in Poverty ***	High School Graduation****
Oregon State	3.9%	\$56,119	13.2%	75%
Columbia	4.9%	\$57,449	12.3%	73%
Coos	5.3%	\$40,848	19.9%	58%
Douglas	5.2%	\$44,023	14.9%	64%
Jackson	4.8%	\$48,688	14.3%	75%
Klamath	6.3%	\$42,531	19.2%	72%

*Oregon Unemployment, 11/2018⁴⁹⁸;

** 2013-2017, in 2017 dollars⁴⁹⁹

*** Percentage of persons living in poverty from the Small Area Income and Poverty Estimates⁵⁰⁰

**** Percentage of ninth-grade cohort that graduates in 4 years, 2014-2015⁵⁰¹

⁴⁹⁷ (U. S. Census Bureau, n.d.)

⁴⁹⁸ (State of Oregon Employment Department, n.d.)

⁴⁹⁹ (U. S. Census Bureau, n.d.)

⁵⁰⁰ (U. S. Census Bureau, n.d.)

⁵⁰¹ (Robert Wood Johnson Foundation, n.d.)

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Mortality			
	Premature Age-adjusted Mortality*	Child mortality**	Infant Mortality***
Oregon State	310	40	5
Coos	420	50	#
Douglas	390	60	6
Jackson	330	40	4
Klamath	390	60	9

*Number of deaths among residents under age 75 per 100,000 population (age-adjusted) 2010-2013.

**Number of deaths among children under age 18 per 100,000, 2010-2013.

***Number of all infant deaths (within 1 year), per 1,000 live births. 2006-2012

no data available

Age-adjusted Death Rate per 100,000⁵⁰² *								
	All Causes	All Cancer	Heart Disease	Stroke	Chronic Lung Disease	Diabetes	Homicide	Suicide
Oregon State	834.1	198.4	191.8	68.8	49.1	66.6	3.3	15.0
Coos	949.9**	224.1**	226.3**	66.4	59.9**	78.8**	4.7	22.6**
Douglas	905.5**	209.5	203.0	63.0	62.4**	78.5**	3.4	16.7
Jackson	830.8	199.0	186.4	71.5	51.4	61.3	3.3	20.4**
Klamath	947.3**	204.8	217.6**	56.4**	70.5**	79.1**	4.6	23.3**

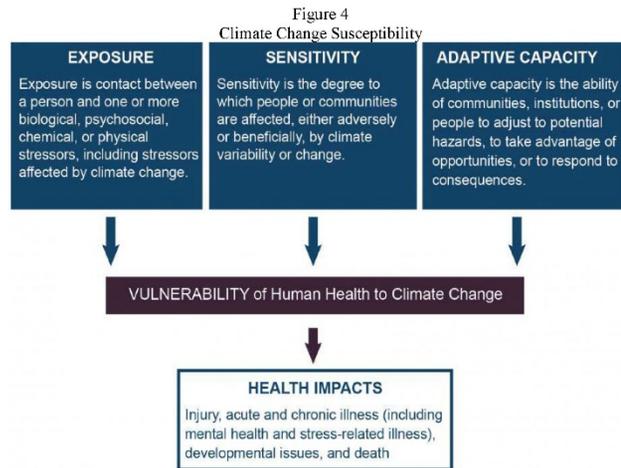
* Age-adjusted death rate per 100,000 population, 2017

** Statistically significant difference

The U.S. Global Change Research Program is a federal program mandated by Congress to conduct scientific assessments of the global environment. They determined that vulnerability to the adverse health effects of climate change depend on three factors: exposure, sensitivity, and adaptive capacity, which are illustrated in Figure 4.⁵⁰³ All three factors are at play in the cities, towns, and rural locales that would host new fracked gas infrastructure.

⁵⁰² (Oregon Health Authority, n.d.)

⁵⁰³ (Crimmins, 2016)



Researchers at Portland State University combined demographic variables of income, race, education, employment, and age with exposure variables to toxic air pollution.⁵⁰⁴ The resulting index score identifies communities by census tract in Oregon that are most at risk to the effects of climate change. In Figure 5 the vulnerability index score is given as a percentage; a higher percentage reflects greater vulnerability.

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⁵⁰⁴ (Zapata, 2017)

Figure 5
Census Tracts Most Vulnerable to Climate Change in Oregon

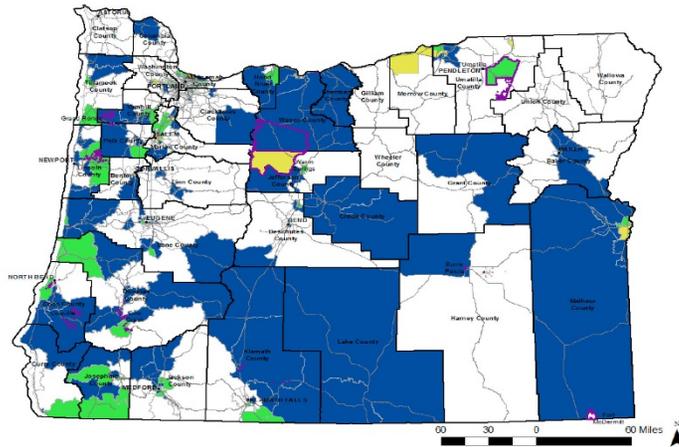


Figure 5: Top 10%, 25%, and 50% of Census Tracts Most Vulnerable to Climate Change in Oregon. GIS data source: US Census Bureau and State of Oregon. Index scores are based on data from: U.S. Census American Community Survey (ACS) 2011-2015 5-year estimates and the National Air Toxics Assessments (NATA) 2011. Purple indicates Indian reservations, village, and towns.

Yellow	Green	Blue
Top 10%	Top 25%	Top 50%

Figure 6 identifies economically distressed areas and the top 50% of Census Tracts Based on the Vulnerability Index. Figure 7 overlays this map with the location of already existing greenhouse gas emitting facilities.

Figure 6
Economically Distressed Areas of Oregon

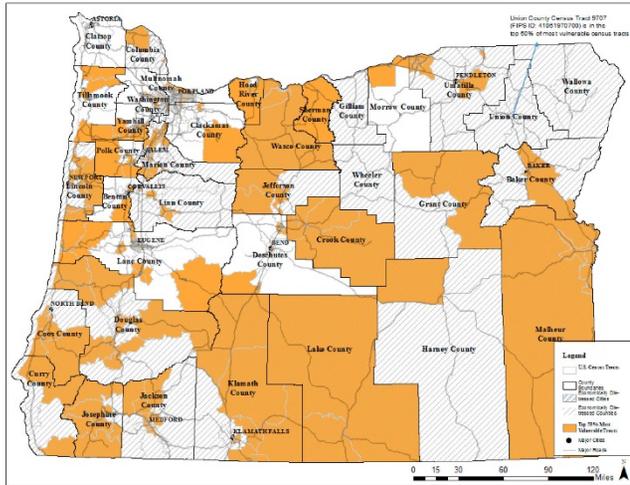


Figure 6: Economically Distressed Areas and Top 50% of Census Tracts Based on Vulnerability Index. GIS data source: US Census Bureau and State of Oregon. Index scores are based on data from: U.S. Census American Community Survey (ACS) 2011-2015 5-year estimates and the National Air Toxics Assessments (NATA) 2011.

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CO28-326 Climate change is discussed in section 4.14 of the draft EIS. See also the response to comments SA2-3, CO26-60, and SA2-4.

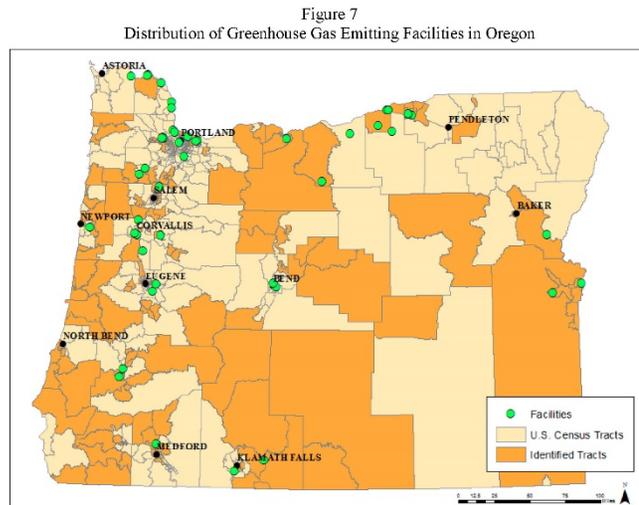


Figure 7: Distribution of Greenhouse Gas Emitting Facilities in Relationship to U.S. Census Tracts Identified as Most Vulnerable to Climate Change. All facilities with Air Quality Permits from the Oregon Department of Environmental Quality that produced over 25,000 metric tons of CO₂e emissions in 2015. Data source: Oregon Department of Environmental Quality 2015 Greenhouse Gas Facility Emissions (2017b). Most vulnerable to climate change census tracts include the top 50% of census tracts with the highest vulnerability index score.

V. The DEIS Fails to Adequately Address Climate Change

The DEIS fails to take the required hard look at greenhouse gas emissions and climate change for multiple reasons. As noted above, the DEIS improperly excludes reasonably foreseeable indirect effects relating to the LNG lifecycle, including emissions of greenhouse gases resulting from the upstream and downstream production, transportation, processing, and use of gas. The DEIS uses outdated global warming potentials for greenhouse gases other than carbon dioxide, causing the DEIS to understate the impact of total emissions. And the DEIS fails to properly address the significance or impacts of greenhouse gas emissions: as the Ninth Circuit has recognized, merely identifying the tonnage of direct emissions and comparing with existing inventories does no

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CO28-327 See response to comment CO26-60.

more than reveal that climate change is a cumulative impact problem, and fails to meaningfully inform the public and decisionmakers regarding the climate impacts of a particular project. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1201 (9th Cir. 2008)

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cont.

A. The DEIS Uses Outdated Global Warming Potentials, Understating the Impact of Short-Lived Climate Pollutants

The figures provided in the DEIS underestimate emissions by using outdated estimates of the potency of greenhouse gases (GHGs) other than carbon dioxide. The DEIS addresses these other GHGs by converting them to CO₂e. *E.g.*, DEIS 4-666. However, the conversion factors (global warming potential or GWP) used for methane and nitrous oxide, the predominant non-carbon-dioxide greenhouse gas at issue here, is sorely outdated, and fails to account for short- and medium-term impacts. The DEIS uses a GWP value of 25 for methane and 298 for nitrous oxide, which it adopts “because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements.” *Id.* However, as EPA explained when it adopted the reporting rule that uses these values, EPA selected these *for the GHG reporting program* because of that program’s need to conform to specific internationally agreed reporting protocols. 78 Fed. Reg. 19,802, 19,808 (Apr. 2, 2013). Specifically, EPA’s reporting rule, revised in 2013, conforms to a 2012 United Nations protocol, which at the time of the rule revision had not been updated to reflect more recent climate science. *Id.* However, even at the time EPA adopted this revised reporting rule, EPA explained that the best available science indicated that the ‘true’ global warming potentials of these pollutants were much higher. *Id.* EPA specifically endorsed the Intergovernmental Panel on Climate Change’s 2013 Fifth Assessment report, *id.*, which presents 100-year and 20-year global warming potentials for fossil methane (such as is emitted by the project here) of 36 and 87, respectively.⁵⁰⁵ The Department of Energy⁵⁰⁶ and Environmental Protection Agency⁵⁰⁷ have also endorsed these estimates as presenting the best available science. More broadly, EPA has recognized that “each successive [IPCC] assessment provides more accurate GWP estimates as experiments and improved computational methods lead to more accurate estimates of the radiative efficiencies, atmospheric lifetimes, and indirect effects of the various gases.” 78 Fed. Reg. at 71,911.

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⁵⁰⁵ Myhre, G. et al., *Climate Change 2013: The Physical Science Basis Chapter 8: Anthropogenic and Natural Radiative Forcing* (2013), available at: http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf at Table 8.7.

⁵⁰⁶ See Department of Energy Order 3357-C at 30 (Dec. 4, 2015) (“We agree with Sierra Club that using 20- and 100-year methane GWPs of 87 and 36 is most appropriate for use today and that climate carbon feedbacks should be captured in the GWP values for methane.”) available at https://fossil.energy.gov/na_regulation/sites/default/files/programs/ensregulation/authorizations/2011/applications/or_d3357c.pdf; see also Bradbury, et al., Dep’t of Energy, Office of Energy Policy and Systems Analysis, *Greenhouse Gas Emissions and Fuel Use within the Natural Gas Supply Chain – Sankey Diagram Methodology* (July 2015), at 10, available at https://www.energy.gov/sites/prod/files/2015/07/f24/OER%20Analysis%20-%20Fuel%20Use%20and%20GHG%20Emissions%20from%20the%20Natural%20Gas%20System%2C%20Sankey%20Diagram%20Methodology_0.pdf.

⁵⁰⁷ Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1-9 to 1-10* (Apr. 11, 2019), available at <https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf>; https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf; *id.* Annex 6, A-419 to A-421, available at <https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-annex-6-additional-information.pdf>.

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CO28-328 Comment noted. See response to comment SA2-4.

The 20-year GWP for methane is particularly relevant because it corresponds much more closely to the average time that methane actually remains in the atmosphere before decaying into CO₂, which is 12.4 years.⁵⁰⁸ There is no dispute that the Fifth Assessment Report values represent a more accurate estimate of the impact of each ton of methane emissions.

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More broadly, courts have consistently recognized that the IPCC summaries represent the scientific consensus.⁵⁰⁹ Here, the DEIS violates NEPA's obligation to use "high quality information," 40 C.F.R. § 1500.1(b) and provide "full and fair discussion of significant environmental impacts," 40 C.F.R. § 1502.1, by relying on an estimate of methane's impacts that was known to be outdated and an understatement of the true potency of this pollutant, by failing to disclose that the analysis it provided only considered long term (100-year) impacts, and by failing to use available tools, such as the estimate of methane's 20-year GWP, to address more near-term impacts. Each of these failures violates NEPA. See *W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *16 (D. Mont. Mar. 26, 2018) (holding that agency violated NEPA by estimating emissions solely on the basis of methane GWP of 25).

B. The DEIS Fails to Take A Hard Look at the Impact of GHG Emissions

Finally, the DEIS fails to take a hard look at the impact or significance of greenhouse gas emissions. Ultimately, a key purpose of NEPA analysis is enable decisionmakers and the public to make an informed decision about whether a proposal's environmental impacts warrant modification or rejection of the proposal. The DEIS falls short of this.

Here, the DEIS estimates that "Direct emissions from the Jordan Cove LNG and Pacific Connector Pipeline Projects would result in annual CO_{2e} emissions of about 2.14 million metric tons of CO_{2e}." DEIS 4-807. But the DEIS provides no discussion of the consequences that will result from these emissions, no analysis of whether this emission increase would render the projects contrary to the public interest, and not even an opinion on whether this increase would be "significant." *Id.* The *only* discussion of the context or severity of these emissions is the general acknowledgement that they these emissions, like *all* greenhouse gas emissions, "would contribute incrementally to future climate change impacts," DEIS 4-806, and the statement that these emission increases "would represent 4.2 percent and 15.3 percent of Oregon's 2020 and 2050 GHG [reduction] goals, respectively," DEIS 4-807.

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⁵⁰⁸ See Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, *Anthropogenic and Natural Radiative Forcing*. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, at 731, Appendix 8.A, available at https://www.ipcc.ch/site/assets/uploads/2018/02/WGIAR5_Chapter08_FINAL.pdf

⁵⁰⁹ *Massachusetts v. E.P.A.*, 549 U.S. 497, 508-512 (2007) (The IPCC is recognized as "a multinational scientific body ... [d]rawing on expert opinions from across the globe); *Coal. for Responsible Regulation, Inc. v. E.P.A.*, 684 F.3d 102, 119 (D.C. Cir. 2012), *aff'd in part, rev'd on other grounds in part sub nom. Util. Air Regulatory Grp. v. E.P.A.*, 134 S. Ct. 2427 (2014), and amended sub nom. *Coal. for Responsible Regulation, Inc. v. Evtl. Prot. Agency*, 606 F. App'x 6 (D.C. Cir. 2015) (IPCC's "peer-reviewed assessments synthesized thousands of individual studies on various aspects of greenhouse gases and climate change and drew 'overarching conclusions' about the state of the science in this field.").

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FERC can, and therefore must, do more. *Sierra Club v. FERC*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (“*Sabal Trail*”). *Cir. for Biological Diversity v. Nat’l Highway Traffic Safety Adm.*, 538 F.3d 1172, 1201 (9th Cir. 2008). The DEIS mistakenly claims that FERC cannot provide any further analysis because “Currently, there is no universally accepted methodology to attribute discrete, quantifiable, physical effects on the environment to the Project’s incremental contribution to GHGs.” DEIS 4-806. This misstates both the relevant facts and the legal standard.

Factually, it is possible to meaningfully discuss the *incremental* impact of the emissions. The tools used to assess current and future impacts of climate change respond to different emission scenarios, *i.e.*, they provide forecasts of the physical impacts that will result from different emission totals. For example, in 2017, the U.S. Global Change Research Project again confirmed and quantified a broad range of environmental impacts resulting from greenhouse gas emissions,⁵¹⁰ including discussing how changes in temperature, rainfall, and flood risk from sea level rise will vary for individual regions in the United States.⁵¹¹ In predicting future impacts, this report considered several future emission scenarios, defined as different emission volumes.⁵¹² Comparison of these broad scenarios can be used to estimate the impact of an individual project’s emissions because greenhouse gas emissions are largely interchangeable—an additional million tons of carbon dioxide emitted in 2030, for example, will have the same impact regardless of whether it is emitted as a result of the Jordan Cove Project or as a result of some other activity elsewhere in the world. Thus, the physical impacts of a ton of emissions can be as a proportion of the impacts that result from moving from one emission scenario to another. This approach was similarly used in developing estimates of the social cost of greenhouse gas emissions.⁵¹³ Although Executive Order 13,783 disbanded the Interagency Working Group on the Social Cost of Greenhouse Gases and stated that many of the group’s publications would be “withdrawn as no longer representative of governmental policy,” the Executive Order provides no disagreement with the underlying technical analysis.⁵¹⁴ Similarly, although the Council on Environmental Quality’s June 26, 2019 “Draft National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions” provides that “an agency need not weigh the effects of the various alternatives in NEPA in a monetary cost-benefit analysis using any monetized Social Cost of Carbon (SCC) estimates and related documents (collectively referred to

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⁵¹⁰ U.S. Global Change Research Program, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume 1, doi: 10.7930/J01964J6 (Nov. 3, 2017), available at https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf. In late 2018, this same federal project discussed impacts that are *already occurring* in communities around the country. U.S. Global Change Research Program, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, doi: 10.7930/NCA4.2018 (Nov. 2018), available at https://nca2018.globalchange.gov/downloads/NCA4_Report-in-Brief.pdf.

⁵¹¹ See, e.g., U.S. Global Change Research Program, 2017 at 334.

⁵¹² *Id.* at 19, 138.

⁵¹³ Social Cost of Carbon 2010, <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>, at 24-25; U.S. Interagency Working Group on the Social Cost of Greenhouse Gases (IWG), “Technical support document: Technical update of the social cost of carbon for regulatory impact analysis under executive order 12866 & Addendum: Application of the methodology to estimate the social cost of methane and the social cost of nitrous oxide” (August 26, 2016), available at https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf.

⁵¹⁴ Exec. Order. No. 13,783 § 5(b), 82 Fed. Reg. 16,093 (Mar. 28, 2017).

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as ‘SCC estimates’),”⁵¹⁵ the only basis provided for this assertion is a concern over monetization of impacts, not with assessment of the impacts themselves. Thus, FERC has not shown that available tools are insufficient to provide a meaningful discussion of incremental physical impacts.

Legally, the DEIS errs insofar as it contends that NEPA only requires agencies to use methodologies that have been “*universally* accepted.” DEIS 4-806. Where, as here, a project will have reasonably foreseeable impacts but it is impossible to forecast the precise contours of those impacts, FERC must use methods that are “*generally*” accepted “*in the scientific community*.” 40 C.F.R. 1502.22(b)(4). Criticism of a tool or methodology from outside the scientific community, or from a few isolated voices within that community, does not relieve FERC of the obligation to use that methodology.

A further legal error is the DEIS’s conclusion that “Without the ability to determine discrete resource impacts, we are unable to determine the significance of the Project’s contribution to climate change.” DEIS 4-807. The DEIS juxtaposes the Project’s emission *increases* with Oregon’s greenhouse gas *reduction* targets. *Id.* Facially, it appears that the Project would flatly preclude attainment of those targets. The DEIS provides no analysis whatsoever of whether this is the case, or of whether the impact on Oregon’s policy goals renders the impact significant. However, NEPA requires such analysis.

Thus, it is clear that FERC can do more to illustrate the impact of the project’s greenhouse gas emissions than to simply juxtapose these emissions with Oregon’s greenhouse gas reduction targets, and the DEIS fails to justify this failure to provide additional analysis. *See Sabal Trail*, 867 F.3d at 1374. The undersigned contend that the most effective form of additional analysis would be to both address Oregon’s emission reduction targets and to illustrate the impact greenhouse gas emission increases using the Interagency Working Group’s social cost of carbon protocol and related tools.⁵¹⁶ Use of this tool remains appropriate notwithstanding Executive Order 13,783 and the Council on Environmental Quality’s recent draft greenhouse gas guidance. CEQ, in discussing the social cost of carbon, notes that NEPA does not generally require cost benefit analysis. 84 Fed. Reg. at 30098 (citing 40 C.F.R. § 1502.23).

But use of the social cost of carbon protocol does not require a full cost-benefit analysis. NEPA requires FERC to take a hard look at the “ecological . . . , aesthetic, historic, cultural, economic, social, [and] health,” effects of its actions, “whether direct, indirect, or cumulative.” 40 C.F.R. § 1508.8. In some cases, the only way to do effectively is to monetize impacts. *Columbia Basin Land Prot. Ass’n v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981) (explaining that monetization of costs may be required where available “alternative mode[s] of [NEPA] evaluation [are] insufficiently detailed to aid the decision-makers in deciding whether to proceed, or to provide the information the public needs to evaluate the project effectively.”) Just as the public and decisionmakers “cannot be expected to convert curies or mrems into such costs as cancer deaths,” the EIS’s readership cannot be expected to understand whether an individual project’s marginal contribution to increased temperature, sea levels, *etc.* is cause for concern. *Natural Res.*

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⁵¹⁵ 84 Fed. Reg. 30097, 30098-99.

⁵¹⁶ Social Cost of Carbon 2010, <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>, at 24-25.

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Def. Council, Inc. v. U. S. Nuclear Regulatory Comm'n, 685 F.2d 459, 487 n.149 (D.C. Cir. 1982) *rev'd on other grounds sub nom. Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 106-107 (1983). Because individual contributions to climate change are so small, but the cumulative problem is so large, meaningfully disclosing the impact of greenhouse gas emissions requires some tool beyond merely identifying physical changes in the environment attributable to an individual project's emissions.

Nor does Executive Order 13,783 provide a rational basis for failing to use the Social Cost of Carbon protocol. That Executive Order did not find fault with any component of the IWG's analysis. To the contrary, it encourages agencies to "monetiz[e] the value of changes in greenhouse gas emissions" and instructs agencies to ensure such estimates are "consistent with the guidance contained in OMB Circular A-4."⁵¹⁷ The IWG tool, however, is itself a tool for doing exactly this: OMB participated in the IWG and did not object to the group's conclusions. As agencies follow the Circular's standards for using the best available data and methodologies, they will necessarily choose similar data, methodologies, and estimates as the IWG, since the IWG's work continues to represent the best estimates presently available.⁵¹⁸ Thus, the IWG's 2016 update to the estimates of the social costs of greenhouse gases remains the best available and generally accepted tool for assessing the impact of greenhouse gas emissions, notwithstanding the fact that this document has formally been withdrawn.⁵¹⁹ Similarly, the IWG's protocols use of a central a 3% discount rate is consistent with Circular A-4.⁵²⁰

In other proceedings, FERC has offered various other arguments against using the social cost of carbon protocol that all seriously misunderstand the tool. The estimates of social cost are based on reasonable forecasts of the actual physical effects greenhouse gas emissions will have on the environment, including temperature, sea level rise, ecosystem services, and other physical impacts, together with assessments of how these physical changes will impact agriculture, human health, *etc.* The social cost protocol identifies the social cost imposed by a ton of emissions' pro rata contribution to these environmental problems. As explained above, this either amounts to an assessment of physical impacts or the best available generally accepted alternative to such an assessment; either way, the tool is appropriate for use under NEPA. 40 C.F.R. § 1502.22(b)(4).

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⁵¹⁷ Exec. Order No. 13,783 § 5(b), 82 Fed. Reg. 16,093 (Mar. 28, 2017).

⁵¹⁸ Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 SCIENCE 6352 (2017) (explaining that, even after Trump's Executive Order, the social cost of greenhouse gas estimate of around \$50 per ton of carbon dioxide is still the best estimate), available at http://policy.integrity.org/files/publications/Science_SCC_Letter.pdf.

⁵¹⁹ U.S. Interagency Working Group on the Social Cost of Greenhouse Gases (IWG), "Technical support document: Technical update of the social cost of carbon for regulatory impact analysis under executive order 12866 & Addendum: Application of the methodology to estimate the social cost of methane and the social cost of nitrous oxide" (August 26, 2016), available at https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf.

⁵²⁰ The Circular itself provides a general recommendation for a 3 percent rate; and while it also identifies 7 percent rate as appropriate for use in other circumstances, the Circular itself states that the 7 percent figure should not be used when assessing impacts that, like climate change, will affect the public as a whole. Furthermore, OMB, together with the rest of the Interagency Working Group, has explicitly affirmed that the 7 percent rate is inappropriate when addressing climate change. Interagency Working Group on the Social Cost of Carbon, *Response to Comments: Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12,866* at 36 (July 2015), available at <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc-response-to-comments-final-july-2015.pdf>.

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Nor is lack of consensus as to a single most appropriate intergenerational discount rate a reason for refusing to use the social cost protocols. As the 2010 Technical Support Document explained, a range of three discount rates—2.5, 3, and 5 percent—“reflect reasonable judgments” and “span a plausible range” of appropriate discount rates, and are consistent with OMB Circular A-4.⁵²¹ (The IWG also recommended use of a 3 percent rate at the 9th percentile to model climate “tipping points”).

If anything, the IWG’s social cost of carbon protocol understates impacts. For example, some analysts assert that any analysis of multi-generational, potentially catastrophic problem such as climate change merits a *lower* discount rate than this range reflects.⁵²² Nonetheless, the IWG’s “central” value of 3 percent falls within the range supported by a majority of economists. Thus, as explained by the IWG, uncertainty as to the most appropriate discount rate is a reason to provide social cost estimates using the range of plausible rates—which FERC and other agencies have done in other proceedings⁵²³—but it is not a reason for ignoring the social cost of greenhouse gas emissions entirely. *Center for Biological Diversity*, 538 F.3d at 1200 (disagreement over cost of carbon emissions does not allow agency to forgo estimating cost where, “while the record shows ... a range of values, the value of carbon emissions reduction is certainly not zero.”).

Failure to grapple with the importance and consequences of greenhouse gas emissions undermines other aspects of the Project analysis. For example, had FERC concluded that the climate impacts were significant, this would have supported more meaningful evaluation of alternatives that could potentially reduce these impacts. More broadly, estimating social cost of greenhouse gas emissions will help the public and FERC understand whether the adverse consequences of the Project’s emissions are severe enough to warrant consideration in the public interest/public convenience and necessity analyses, and, indeed, whether these emissions tip the balance toward the conclusion that the project is contrary to, and not required by, the public convenience and necessity. The current DEIS provides no information to use in answering these questions; it is indisputable that estimating the impacts of emissions using the social cost protocols would speak to these issues, regardless of whether FERC concludes that the monetized impact is or is not significant. Although FERC has discretion to choose among reliable methodologies for evaluating impacts, that discretion does not allow FERC to provide *no* evaluation whatsoever when a generally accepted methodology is available. 40 C.F.R. § 1502.22(b)(4), *see also N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011) (holding that agency decision not to survey for wildlife prior to approving project was not a valid exercise of discretion as to assessment methodology).

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⁵²¹ IWG 2010 Social Cost of Carbon TSD at 17-18, 23.

⁵²² *See* Peter Howard & Derek Sylvan, *The Economic Climate: Establishing Expert Consensus on the Economics of Climate Change* (Inst. Policy Integrity Working Paper 2015/1); M.A. Drupp, et al., *Discounting Disentangled: An Expert Survey on the Determinants of the Long-Term Social Discount Rate* (London School of Economics and Political Science Working Paper, May 2015) (finding consensus on social discount rates between 1-3%).

⁵²³ *See, e.g.,* FERC, Final EIS, Constitution Pipeline and Wright Interconnect Projects, CP13-499 (Oct. 2014), Accession No. 20141024-4001, at 4-256 to 4-257 (“For 2015, the first year of project operation, ... the project’s social cost of carbon for 2015 would be \$1,638,708 at a discount rate of 5 percent, \$5,325,802 at 3 percent, and \$8,330,100 at 2.5 percent.”).

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Thus, the DEIS's assertion that it is impossible to discuss the impact or significance of the Project's greenhouse gas emissions is arbitrary. DEIS 4-807. FERC must use available generally accepted tools to address the impact of these emissions, 40 C.F.R. 1502.22, and employ reasonable forecasting in its analysis. FERC's refusal to use available modeling tools, such as the estimates of the social cost of carbon and other greenhouse gases, violates NEPA.

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Climate change also has the following health effects on susceptible populations in the Pacific Northwest:

Climate Change Health Effects and Susceptible Populations: Pacific Northwest		
	Outcomes	Susceptible Populations
Heat related illness	Heat rash, heat cramps, heat exhaustion, heat stroke	Very young and very old, pregnant women, people with chronic disease, socially isolated, houseless, outdoor workers
Heat related death	Heart attack, stroke, renal failure, heat stroke, respiratory failure	Very young and very old, people with chronic disease, socially isolated, houseless, outdoor workers
Heat related violence	Homicide and intentional injury	Children and young adults especially in communities with pre-existing higher rates of interpersonal violence
Heat related air pollution and ozone formation	Chest pain, coughing, throat irritation, exacerbation of emphysema, bronchitis and asthma, cancer and cardiopulmonary death	Children, those living in areas with pre-existing air pollution, persons with pre-existing cardiac and respiratory conditions
Drought related food insecurity	Hunger and malnutrition	Low income, communities of color, pregnant women, children
Smoke pollution from wildfires	Asthma, bronchitis, pneumonia, cardiopulmonary disease, motor vehicle crash, injuries, death	Very young and very old, those with pre-existing respiratory and cardiac disease, vehicle operators, passengers
Drought and heat related harmful algal blooms	Toxic contamination of drinking water affecting liver, skin, gastrointestinal tract, nervous system	Residents dependent on affected water systems
Wildfires	Accidental injury and death	Those who live or work in fire-prone areas
Heavy rains	Accidental injury and death	Those who live, work or attend school near or on unstable slopes, including houseless
Flooding	Accidental injury and death, water borne disease, exposure to toxins	Those who live, work or attend school in low lying areas, including houseless

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Weather related increase in mold, pollens and other allergens	Exacerbation of asthma and allergic rhinitis	Those with pre-existing allergic disorders
Infectious disease	Vector borne disease, food and water borne disease, fungal disease	Low income, those with pre-existing chronic disease, very young and very old, immune-compromised
Stress related to extreme weather events	Anxiety, depression, suicide, substance abuse, violence	Those with pre-existing mental health disorders and pre-existing socioeconomic stressors
Stress from weather-related displacement	Anxiety, depression, suicide, substance abuse, violence	Low income, residents of flood- and fire-prone areas, coastal communities

CO28-329 There is no evidence that the Project would induce additional natural gas exploration and production. The U.S. Department of Energy (DOE) report did not say that exporting LNG would induce domestic natural gas production. Instead what that report said was: “Fundamental uncertainties constrain the ability to predict what, if any, domestic natural gas production would be induced....The current rapid development of unconventional natural gas resources would likely continue, with or without the export of natural gas” (DOE, Addendum to Environmental Review Documents Concerning Export of Natural Gas from the United States, 29 May 2014).

VI. THE DEIS FAILS TO ADEQUATELY ADDRESS CONNECTED, INDIRECT, AND CUMULATIVE ACTIONS, INCLUDING PRODUCTION AND USE OF THE EXPORTED GAS

NEPA requires consideration of “indirect effects,” which are “caused by the action” but:

are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effect on air and water and other natural systems, including ecosystems.

40 C.F.R. § 1508.8(b).

The Pacific Connector Gas Pipeline and Jordan Cove Energy Project will increase North American gas production, increase North American coal use (principally in the electric sector), and increase global gas use. These impacts are reasonably foreseeable indirect effects which must be considered in the NEPA analysis. 40 C.F.R. § 1508.8(b). Indirect effects are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” *Id.* An effect is reasonably foreseeable if it is “sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision.” *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549 (8th Cir. 2003) (quotations omitted). Indirect effects encompass both “growth inducing” and “economic” effects, including “induced changes in the pattern of land use, population density or growth rate.” 40 C.F.R. § 1508.8(b). The indirect effects inquiry is therefore wide-ranging in its scope.

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Although the DEIS recognizes that FERC received scoping comments calling for analysis of the effects of “induced production of natural gas; ‘life-cycle’ cumulative environmental impacts associated with the entire LNG export process; [and] downstream greenhouse gas emissions resulting from the combustion of exported gas;” the DEIS stated, without explanation, that “These issues are not addressed in this EIS.” DEIS, 1-18. This omission violates NEPA.

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A. FERC's Approval Is A "Legally Relevant Cause" of Impacts on Energy Markets, Gas Production, and Use

In other proceedings, FERC has routinely argued that FERC's approval is not the "legally relevant cause" of impacts on gas production or use, or the environmental effects thereof, in attempted reliance on *Department of Transportation v. Public Citizen*, 541 U.S. 752 (2004). See, e.g., *Birckhead v. FERC*, No. 18-1218, 2019 WL 2344836, at *5 (D.C. Cir. June 4, 2019), *Sierra Club v. FERC*, 867 F.3d 1357, 1372 (D.C. Cir. 2017) ("*Sabal Trail*"). This argument has been squarely rejected as applied to FERC's approval of pipelines under section 7 of the Natural Gas Act:

Congress broadly instructed the [Commission] to consider "the public convenience and necessity" when evaluating applications to construct and operate interstate pipelines." ... Because the Commission may therefore "deny a pipeline certificate on the ground that the pipeline would be too harmful to the environment, the agency is a 'legally relevant cause' of the direct and indirect environmental effects of pipelines it approves"—even where it lacks jurisdiction over the producer or distributor of the gas transported by the pipeline. ... Accordingly, the Commission is "not excuse[d] ... from considering these indirect effects" in its NEPA analysis.

Birckhead, 2019 WL 2344836, at *5 (D.C. Cir. June 4, 2019) (quoting *Sabal Trail*, 867 F.3d at 1373) (internal citations omitted).

The fact that other agencies *also* have authority over, and therefore may be deemed to "cause," gas production and use does not remove these impacts from the scope of FERC's required analysis. NEPA would "wither away in disuse, [if] applied only to those environmental issues wholly unregulated by any other federal, state or regional body." *Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n*, 449 F.2d 1109, 1122-23 (D.C. Cir. 1971).

Commenters recognize that the D.C. Circuit, in *Sierra Club v. FERC*, 827 F.3d 36, 47-49 (D.C. Cir. 2016) ("*Freeport I*"), held that FERC's approval of LNG export infrastructure under Natural Gas Act section 3, 15 U.S.C. § 717b(e)(1), was not a legally relevant cause of export-induced gas production and use. *Freeport I* and related cases held that the Department of Energy, in delegating section 717b(e)(1) authority over export infrastructure to FERC, had retained exclusive authority over exports themselves, such that FERC had "had no legal authority to consider" the environmental impacts of gas production and use. *Sabal Trail*, 867 F.3d at 1372 (summarizing *Freeport I*, 827 F.3d at 47, *Sabine Pass*, 827 F.3d at 68-69; *EarthReports*, 828 F.3d at 956). Because, as the DC Circuit has recognized, FERC's section 7 authority over pipelines is broader than FERC's section 3 authority over LNG infrastructure, *Id.* at 1373, *Freeport I* does not narrow the scope of FERC's review of the Pacific Connector Gas Pipeline.

Moreover, the D.C. Circuit's *Freeport I* holdings on this issue have not been followed by any court outside the D.C. Circuit, and lie in tension with—at least—the holdings of other circuits. For example, the Ninth Circuit has explained that *Public Citizen* only applies to *statutory* limits on agency authority. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1213 (9th Cir. 2008) (quoting *Sierra Club v. Mamella*, 459 F.Supp.2d 76, 105

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(D.D.C. 2006)). Here, nothing in the text of the Natural Gas Act prohibits consideration of indirect effects as part of the section 717b(e)(1) LNG facility determination. Nor does the statute require a division of authority between FERC and the Department of Energy; this division arises entirely out of the Department's discretionary decision to delegate 717b(e)(1) authority to FERC. See *Freeport I*, 827 F.3d at 41 (quoting U.S. Department of Energy, Delegation Order No. 00-004.00A, § 1.21.A (May 16, 2006)).⁵²¹ Thus, the lack of authority underlying the D.C. Circuit's decision in *Freeport I* is the type of self-imposed limit that the Ninth Circuit explained was insufficient to support invocation of *Public Citizen in Ctr. for Biological Diversity*.

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B. Even If Neither FERC's Natural Gas Act Section 3 nor Section 7 Approval Is a "Legally Relevant Cause" of Impacts On Gas Production, Use, and Energy Markets, DOE's Approval Is, and Is Also a "Connected Action" that Must Be Evaluated Here

Freeport I explicitly declined to address "the interplay between the Commission and the Department of Energy when the former is acting as the 'lead agency' in reviewing the environmental effects of a natural gas export operation under NEPA," whether FERC's decision to exclude gas production from its EIS "impermissibly 'segmented' its review of the [terminal] Projects from the larger inter-agency export authorization process," or whether "Commission's construction authorizations and the Department's export authorizations qualified as 'connected actions' for purposes of NEPA review." *Id.* at 45-46. The Court could not have been clearer about the fact that *Freeport I* did not resolve these issues: "Before addressing the merits of the Associations' NEPA claim, we pause to underscore what we are not deciding in this case." *Id.* at 45 (emphasis added). No subsequent case addressing LNG exports has discussed these issues.

Consideration of these issues left undecided by *Freeport I* and its progeny plainly demonstrates that the Department's authorization of exports is a "connected action," which must be fully analyzed in the terminal EIS. 40 C.F.R. § 1508.25(a)(1). According to NEPA's binding regulations, "actions are connected if they:

- Automatically trigger other actions which may require environmental impact statements.
- Cannot or will not proceed unless other actions are taken previously or simultaneously.
- Are interdependent parts of a larger action and depend on the larger action for their justification.

⁵²¹ Moreover, neither the Natural Gas Act nor DOE's delegation order compel the conclusion, adopted by *Freeport I*, that DOE and FERC's authorities are mutually exclusive. As DOE explained in conditionally authorizing the exports at issue here, it is DOE's position that DOE and FERC have "overlapping environmental review responsibilities." United States of America Department of Energy Office of Fossil Energy, *Order Conditionally Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas By Vessel From the Jordan Cove LNG Terminal in Coos Bay, Oregon to Non-Free Trade Agreement Nations*, DOE/FE Order No. 3413, at 152, (March 24, 2014). https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2014/orders/ord3413.pdf

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Id. “The point of the connected actions doctrine is to prevent the government from ‘segmenting’ its own ‘federal actions into separate projects and thereby failing to address the true scope and impact of the activities that should be under consideration.’” *Big Bend Conservation All. v. FERC*, 896 F.3d 418, 423–24 (D.C. Cir. 2018) (quoting *Sierra Club v. U.S. Army Corps of Eng’ys*, 803 F.3d 31, 49–50 (D.C. Cir. 2015) and *Delaware Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014)).

It is clear that the decisions of cooperating agencies identified in part 1.3 of the DEIS, and the Department of Energy’s anticipated completion of review of contingent non-free trade agreement export application in particular, *are* connected actions, the consequences of which must be fully considered in *this* EIS. 40 C.F.R. § 1508.25(a)(1). By refusing to consider the impacts of connected actions, FERC impermissibly segments NEPA review. *Delaware Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014). The proposed exports cannot proceed without construction and operation of the terminal and pipeline, and the various projects depend on one another for their justifications. 40 C.F.R. § 1508.25(a)(1)(ii)-(iii). The Department’s evaluation of the expected application to export LNG to non-free-trade-agreement countries is an action that “may require [an] environmental impact statement[.]” *Id.* § 1508.25(a)(1)(i); indeed, the Department has already concluded that “[a]pprovals or disapprovals of authorizations to import or export natural gas” involving construction or significant modification of export facilities, or even a “major increase in the quantity of [LNG] imported or exported” from existing facilities, will “normally require [an] EIS.” 10 C.F.R. Pt. 1021 Subpt., D Appendix D, D8-D9.

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The connection between FERC’s decision and the Department’s is made particularly clear by the Energy Policy Act of 2005, which, in FERC’s own words, “amended the Natural Gas Act to require [FERC] to coordinate the environmental review and the processing of all federal authorizations relating to proposals for natural gas infrastructure under FERC’s jurisdiction.”⁵²⁵ *See also Freeport I*, 827 F.3d at 41 (discussing 15 U.S.C. § 717n(b)(1), 42 U.S.C. § 7172(a)(2)(B)). Because Congress has instructed FERC to prepare the EIS the Department of Energy and other cooperating agencies will use in satisfying their NEPA obligations, FERC cannot reasonably contend that this EIS need not include the effects of these other agencies’ actions.

C. The Projects Will Have Reasonably Foreseeable Impacts Relating to Effects on Gas Production and Use

The proposed projects will result in an increase in gas production, processing, and transportation, because the exported gas will have to come from somewhere. It is likely that FERC can foresee where, on at least a regional basis, this additional production will occur. Many of the impacts of additional gas production and associated activity can be evaluated at such a regional level. But even if the site of induced activity was entirely unknowable, FERC would still be able to meaningfully discuss the extent of climate impacts and the nature of non-climate effects. We discuss these issues in turn below.

⁵²⁵ Federal Energy Regulatory Commission, *Guidance for Federal and State Agencies for the Processing of Federal Authorizations in Cooperation with the FERC*, at 1 (August 30, 2007). Available at <https://www.ferc.gov/industries/gas/enviro/epact-gas-guidance.pdf>.

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D. FERC Can Reasonably Foresee the Amount and Region of Additional Gas Production That Will Be Caused by the Projects

Generally available tools FERC to meaningfully estimate the amount and region(s) of additional gas production; moreover, FERC can and should supplement these tools by requiring the applicants to provide additional information on these issues.

The Energy Information Administration, Environmental Protection Agency, Department of Energy, and numerous private consultants have concluded that increasing LNG exports will lead to increased gas production. These entities have provided predictions of the amount by which a given volume of exports, from a specific location or locations, will increase gas production in an individual state or gas basin. *See, e.g.*, ICF International, U.S. LNG Exports: Impacts on Energy Markets and the Economy at 18 (May 15, 2013) (explaining that ICF's model predicts production in individual basins).⁵²⁶ *Id.* at 14 (explaining that ICF's model addresses North American markets, not just the United States); ICF International, U.S. LNG Exports: State-Level Impacts on Energy Markets and the Economy, at 15 (Nov. 13, 2013) (showing state-level increases in gas production in response to specific export volumes).⁵²⁷ ICF International, Impact of LNG Exports on the U.S. Economy: A Brief Update, at 15, 27 (Sept. 11, 2017) (updating these analyses and further explaining that ICF models integrated North American markets).⁵²⁸ Another consultant has modeled how gas production in individual shale plays will respond to exports from an individual facility.⁵²⁹

Similarly, the Energy Information Administration has repeatedly studied how U.S. energy markets will respond to LNG exports, predicting the amount by which gas production is expected to increase in response to a given volume of exports in various scenarios.⁵³⁰ In preparing this report, EIA predicted how different export scenarios would increase gas production in individual subregions (*e.g.*, Gulf Coast, Southwest).⁵³¹ Moreover, the tool EIA

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CO28-330 There is no evidence that the Project would induce additional natural gas exploration and production. The U.S. Department of Energy (DOE) report did not say that exporting LNG would induce domestic natural gas production. Instead what that report said was: "Fundamental uncertainties constrain the ability to predict what, if any, domestic natural gas production would be induced....The current rapid development of unconventional natural gas resources would likely continue, with or without the export of natural gas" (DOE, Addendum to Environmental Review Documents Concerning Export of Natural Gas from the United States, 29 May 2014).

⁵²⁶ ICF International, *U.S. LNG Exports: Impacts on Energy Markets and the Economy* (May 15, 2013). Available at <https://www.eia.doe.gov/media/Policy/LNG-Exports/API-LNG-Export-Report-by-ICF.pdf>

⁵²⁷ ICF International, *U.S. LNG Exports: Impacts on Energy Markets and the Economy* (November 13, 2013). Available at <https://www.eia.doe.gov/media/Policy/LNG-Exports/API-State-Level-LNG-Export-Report-by-ICF.pdf>

⁵²⁸ ICF, *Impact of LNG Exports on the U.S. Economy: A Brief Update* (September 2017). Please find this available at <https://www.eia.doe.gov/media/Policy/LNG-Exports/API-LNG-Update-Report-20171003.pdf>

⁵²⁹ Deloitte MarketPoint, *Analysis of the Economic Impact of LNG Exports from the United States*, at 8, 14.

Available at <https://fossil.energy.gov/app/DocketIndex/docket/DownloadFile/137>. This was initially filed as *Excellerate Liquefaction Solutions I, LLC, FF, Docket 12-146-LNG, Application for Long-Term, Multi-contract Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Countries*, Appendix F (Oct. 5, 2012). Please find this available at https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2012/applications/12_146_lng_nfta.pdf.

Like ICF, Deloitte has since published updated analyses. Please see *Deloitte Center for Energy Solutions, Five years on: The outlook and impact of American LNG Exports* (2016). Please find this available at <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/energy-resources/us-cr-five-years-on-the-outlook-and-impact-of-american-lng-exports.pdf>

⁵³⁰ U.S. Energy Information Administration, *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets*, 12 (October 2014). Available at <https://www.eia.gov/analysis/requests/fe/pdf/lng.pdf>

⁵³¹ U.S. Energy Information Administration, *Annual Energy Outlook 2019, Table: Total Energy Supply, Disposition, and Price Summary* (2019). Please find this available online at <https://www.eia.gov/outlooks/aeo/data/browser/>

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used to prepare this analysis—the National Energy Modeling System—is routinely used to provide more fine-grained analysis, estimating changes in production in individual gas plays. See Energy Information Administration, *Annual Energy Outlook 2018*, at 68 (Feb. 6, 2018)⁵³² (discussing individual predictions regarding gas production Eagle Ford, Haynesville, Permian, Utica, and Marcellus plays); Energy Information Administration, Oil and Gas Supply Module of the National Energy Modeling System: Model Documentation 2018, at 9 (June 2018) (explaining that NEMS is a “play-level model”).⁵³³ No agency has ever disputed that EIA’s tools can be used to provide reasonable forecasts of how LNG exports from particular sites will increase gas production in individual gas plays.

Insofar as the record does not already provide information about where the gas transported by the project is (or is likely to be) produced, FERC and other agencies seeking to rely on the EIS must use their respective investigatory authorities to develop this information. See *Birckhead*, 2019 WL 2344836, at *5-6 (criticizing FERC for failing to “further develop the record,” by, for example, asking the applicant to seek out and provide information about gas supplies).

E. The Environmental Impacts of Increased Gas Production, Processing, and Transport are Reasonably Foreseeable

As explained above, the proposed projects will foreseeably increase gas production, processing, and transportation. The environmental impacts of these activities are also reasonably foreseeable.

First, at the most general level, as the Department of Energy has recognized, FERC can meaningfully estimate the climate impacts of additional gas production, *etc.*⁵³⁴ These impacts are reasonably foreseeable even if FERC concludes—wrongly—that the location and manner of additional production are unforeseeable. Although knowing these particulars can provide with more sophisticated analysis, as emission rates vary across basins and production methods, if this information is unavailable, FERC can still meaningfully inform decision makers and the public by providing estimated based on general, average emission rates.

Second, several other impacts occur at the regional level, and can be meaningfully forecast on the basis of basin- or play-level predictions of gas production, precisely the types of forecasts that FERC can develop using the tools discussed in the previous section. Most importantly, FERC can foresee how regional increases in gas production will impact regional ozone levels (both in the region where the increase occurs *and in surrounding regions*). Ground-level ozone is formed by the interaction of volatile organic chemicals and nitrogen oxides, and has serious

(select Publication: “Effect of Increased Natural Gas Exports on Domestic Energy Markets” and Table: “Lower 48 Natural Gas Production and Wellhead Prices by Supply Region”).

⁵³² U.S. Energy Information Administration, *Annual Energy Outlook 2018, with projections to 2050* (February 6, 2018). Please find this available at <https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf>.

⁵³³ U.S. Energy Information Administration, Oil and Gas Supply Module of the National Energy Modeling System: Model Documentation 2018 (June 2018). Please find this available at [https://www.eia.gov/outlooks/aeo/news/documentation/ogsm/pdf/m063\(2018\).pdf](https://www.eia.gov/outlooks/aeo/news/documentation/ogsm/pdf/m063(2018).pdf).

⁵³⁴ U.S. Department of Energy, *Addendum to Environmental Review Documents Concerning Exports of Natural Gas from the United States*, at 2 (August 15, 2014). (“With the exception of greenhouse gases (GHG) and climate change, potential impacts of expanded natural gas production and transport would be on a local or regional level.”) (emphasis added). Available at <https://www.energy.gov/sites/prod/files/2014/08/f18/Addendum.pdf>.

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CO28-331 There is no evidence that the Project would induce additional natural gas exploration and production. The U.S. Department of Energy (DOE) report did not say that exporting LNG would induce domestic natural gas production. Instead what that report said was: “Fundamental uncertainties constrain the ability to predict what, if any, domestic natural gas production would be induced....The current rapid development of unconventional natural gas resources would likely continue, with or without the export of natural gas” (DOE, Addendum to Environmental Review Documents Concerning Export of Natural Gas from the United States, 29 May 2014).

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impacts on human health and the environment. EPA has explained that ozone formation and impacts often occur “on a regional scale (*i.e.*, thousands of kilometers).” 76 Fed. Reg. 48,208, 48,222 (Aug. 8, 2011). In some regions, gas production is the primary contributor to ozone levels that violate EPA’s national ambient air quality standards.⁵³⁵

Available models, including the Comprehensive Air-quality Model with extensions (“CAMx”), can predict how an increase in gas production in an individual gas play will affect ozone levels in neighboring regions. One study used this tool to predict that increasing gas development in the Haynesville Shale would significantly impact ozone throughout east Texas/west Louisiana region.⁵³⁶ Nothing indicates that it would be infeasible or exorbitantly expensive to perform similar modeling here. 40 C.F.R. § 1502.22(a). To the contrary, the Bureau of Land Management has performed a similar CAMx analysis to evaluate how gas development on federal land would affect ozone in surrounding regions, as part of NEPA review for a land management plan revision.⁵³⁷ Similarly, EPA demonstrated that it was feasible to model the impact a new rule regarding major sources of air pollution would have on individual ozone regions nationwide. U.S. EPA Office of Air and Radiation, *Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States; Correction of SIP Approvals for 22 States*, at 60-61 (June 2011).⁵³⁸

Third, even for impacts that are local in nature, uncertainty as to the specific locations where incremental gas production will occur does not permit FERC to ignore the impact entirely. Even if the precise “*extent*” of these effects is not reasonably foreseeable, the “*nature*” of these effects is, and as such, FERC “may not simply ignore the effect.”⁵³⁹ For example, in *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549 (8th Cir. 2003), the court ruled that an agency must address the foreseeable possibility of an increase in coal consumption and the effects thereof, due to the construction of a railway reducing the cost of delivered coal.⁵⁴⁰ An agency may not ignore “the construction of additional [coal-fired] power plants” that may result merely because the agency does not “know where those plants will be built, and how much coal these new unnamed power plants would use.”⁵⁴¹ Thus, FERC must disclose, *in the EIS*, the fact and nature of these foreseeable effects of gas production that will be induced by the Project.

CO28-331
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⁵³⁵ U.S. Department of Energy, *Addendum to Environmental Review Documents Concerning Exports of Natural Gas from the United States*, at 28 (August 15, 2014). (“With the exception of greenhouse gases (GHG) and climate change, potential impacts of expanded natural gas production and transport would be on a local or regional level.”) (emphasis added). Available at <https://www.energy.gov/sites/prod/files/2014/08/118/Addendum.pdf>.

⁵³⁶ Susan Kemball-Cook, *et al.*, *Ozone Impacts of Natural Gas Development in the Haynesville Shale*, 44 *Environmental Science & Technology*, 9357, 9360-61 (2010). DOI: 10.1021/es1021137.

⁵³⁷ Bureau of Land Management, *Continental Divide-Creston (CD-C) Natural Gas Project*, FEIS, Air Quality Technical Support Document (Apr. 15, 2016). Available at <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=77531>.

⁵³⁸ U.S. EPA Office of Air and Radiation, *Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States; Correction of SIP Approvals for 22 States*, at 60-61 (June 2011). Please find this available at https://www3.epa.gov/ttn/ceas/docs/ria/transport_ria_final_cspr_2011-06.pdf.

⁵³⁹ *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d at 549 (8th Cir. 2003).

⁵⁴⁰ *Id.*

⁵⁴¹ *Id.*

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F. Increasing LNG Exports Will Increase Overseas Gas Use

The Project will also have foreseeable indirect effects resulting from the shipping, regasification, and use of exported LNG. Each of these activities will emit foreseeable amounts of greenhouse gases. The Department of Energy has already demonstrated that it is possible to quantitatively estimate emissions from use of LNG for electricity generation, and other published literature estimates emissions from other foreseeable uses of LNG.⁵⁴²

These emissions are foreseeable, and must be disclosed, even if FERC is unsure as to how foreign energy markets as a whole will balance in response to exported LNG. In prior LNG facility proceedings, and in proceedings regarding non-export-related pipelines, FERC has argued that even if FERC can foresee the emissions that will result from use of gas made transported by the FERC-jurisdictional project, FERC cannot predict whether and to what extent the FERC project will displace other fossil fuel use, such as use of gas from other sources or coal use. But FERC cannot justify its failure to take a hard look at foreseeable emissions resulting from burning LNG exported via the Projects by speculating that other, more attenuated fuel substitution, might provide an unknown degree of mitigation. As the DC Circuit recently explained:

the Commission is wrong to suggest that downstream emissions are not reasonably foreseeable simply because the gas transported by the Project may displace existing natural gas supplies or higher-emitting fuels. Indeed, that position is a total non-sequitur: as we explained in [*Sabal Trail*], if downstream greenhouse-gas emissions otherwise qualify as an indirect effect, the mere possibility that a project's overall emissions calculation will be favorable because of an "offset . . . elsewhere" does not "excuse[]" the Commission "from making emissions estimates" in the first place.

Birckhead, 2019 WL 2344836, at *4 (D.C. Cir. June 4, 2019) (quoting *Sabal Trail*, 867 F.3d at 1374–75).

Recent peer reviewed research concludes that US LNG exports are likely to play only a limited role in displacing foreign use of coal, and such that US LNG exports are likely to increase net global GHG emissions.⁵⁴³ Although the D.C. Circuit previously upheld the Department of Energy's reliance on assumption that U.S. LNG exports would principally displace other fossil fuels and therefore have a negligible impact on global greenhouse gas emissions, this recent research was not before the agency in those cases. See, e.g., *Sierra Club v. United States Dep't of Energy*, 867 F.3d 189, 202 (D.C. Cir. 2017) ("*Freeport II*"). More recent research demonstrates that there are now tools to perform a more careful and informative analysis than was done in that case.

⁵⁴² Gilbert, A. Q. & Sovacool, B. K., *US liquefied natural gas (LNG) exports: Boom or bust for the global climate?*, Energy, Volume 141, at 1671-1680 (December 15, 2017). Available at <https://doi.org/10.1016/j.energy.2017.11.098>.

⁵⁴³ Gilbert, A. Q. & Sovacool, B. K., *US liquefied natural gas (LNG) exports: Boom or bust for the global climate?*, Energy, at *supra* note 20 (December 15, 2017). Available at <https://doi.org/10.1016/j.energy.2017.11.098>.

CO28-332 "Life-cycle" emissions from upstream and downstream sources not regulated by the FERC are beyond the scope of this Project-specific analysis, because the sources of natural gas upstream and the customers for the LNG downstream are unknown.

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And as *Sabal Trail* further demonstrated, sometimes the facts of a particular project will simplify the question of whether and if so how the project will displace other fossil fuel use. *Sabal Trail*, 867 F.3d at 1374 (explaining that the pipeline at issue there would deliver gas to known specific proposed and existing power plants with foreseeable emission characteristics). Here, FERC, the Department of Energy, and any other agency seeking to rely on the EIS must use their respective investigatory authorities to determine where the gas exported by the project would be likely to be used, and how.

CO28-332
cont.

G. The Projects Are Likely to Increase U.S. Coal Use

EIA studies indicate that LNG exports also increase domestic coal use. Although EIA predicts that the majority of the supply for exports will come from new production, EIA predicts that the next largest source of supply will be gas made available by gas-to-coal shifting among would-be gas consumers, who will curtail their gas use in response to export-driven increases in gas prices.⁵⁴⁴ EIA predicts that exports will increase coal use even if policy measures are implemented to accelerate curtailment of coal.⁵⁴⁵ This increase in coal use is foreseeable, and will have foreseeable environmental effects.

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Other agencies have used modeling tools to predict both how agency action will affect coal use in individual regions across the country and the resulting impacts on air quality. *See Mayo Found.*, 472 F.3d at 555 (explaining that EIA’s modeling tools “not only forecast[] coal supply and demand but also quantif[y] environmental impacts” of coal use); U.S. EPA Office of Air and Radiation, *Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States; Correction of SIP Approvals for 22 States*, at 60-61 (June 2011).

Increasing exports will foreseeably increase U.S. coal use, with foreseeable environmental impacts. NEPA required analysis of these impacts.

H. DOE’s Prior Analyses of Indirect Effects Are Insufficient

FERC cannot provide the missing analysis of indirect effects by adopting, incorporating, or simply copying from the “Addendum” and related reports DOE published in 2014. [cite]. These reports discussed the general environmental impacts of natural gas production and the life-cycle greenhouse gas impact of U.S. LNG exports. However, they are untethered to the volume, location, or other details of any particular project. In addition, these studies are both incomplete and out of date. They do not provide the hard look at indirect impacts NEPA requires here.

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First of all, NEPA, requires that discussion of environmental impacts be provided in the EIS. Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. 18026, 18034 (Mar. 23, 1981). The propriety of DOE’s past reliance on these non-NEPA materials is another issue that the D.C. Circuit has explicitly declined to uphold, instead concluding that the issue was not before it. *Freeport II*, 867 F.3d at 197.

⁵⁴⁴ 2014 Export Study at 18.

⁵⁴⁵ 2014 Export Study Table B5.

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Moreover, these materials are out of date, and do not reflect the enormous amount of research regarding the impacts of gas production that has been published since they were issued. Physicians, Scientists, and Engineers for Healthy Energy maintains a database of peer-reviewed literature regarding the environmental and public health impacts of shale and tight gas production, the Repository for Oil and Gas Energy Research.⁵⁴⁶ This database identifies 1,548 publications dated after August, 2014.⁵⁴⁷ FERC cannot rely on material DOE published in 2014, years before the pending applications were even submitted, without taking a hard look at whether that material continues to constitute “high quality information,” 40 C.F.R. § 1500.1(b) and provide “full and fair discussion of significant environmental impacts,” 40 C.F.R. § 1502.1.

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One example of how DOE’s 2014 materials no longer represent the scientific consensus is that recent data indicates much higher greenhouse gas emission rates for gas production. These materials assert that 1.3 and 1.4 percent of extracted gas is released as methane between the well and liquefaction facility. This estimate was based on “bottom-up” methodology, which aggregated measurements of emissions from individual components—e.g., measurement of an individual pneumatic controller. Even at the time these reports were published, “top-down” studies, which measure total changes in atmospheric methane concentrations around gas production sites, indicated that these figures were a gross underestimate of total emissions.⁵⁴⁸ More recent and more thorough bottom up studies have affirmed that the DOE’s 2014 estimates were too low, and has generally supported the estimates provided by earlier top-down analyses, estimating that roughly 2.3% of extracted natural gas leaks to the atmosphere.⁵⁴⁹

VII. ALTERNATIVES.

The alternatives analysis is “the heart of the environmental impact statement,” designed to offer a “clear basis for choice among options by the decisionmaker and the public.” 40 C.F.R. § 1502.14. Fundamentally, an agency must “to the fullest extent possible . . . consider alternatives to its action which would reduce environmental damage.” *Calvert Cliffs’ Coordinating Comm. v. U. S. Atomic Energy Comm’n*, 449 F.2d 1109, 1128 (D.C. Cir. 1971) (emphasis in original). Absent this comparative analysis, decisionmakers and the public can neither assess environmental trade-offs nor avoid environmental harms. *See id.* at 1114.

The alternatives analysis must include an adequate range of alternatives. This includes “reasonable alternatives not within the jurisdiction of the lead agency,” as well as “appropriate mitigation measures not already included in the proposed action or alternatives.” 40 C.F.R. §

⁵⁴⁶ Physicians, Scientists, and Engineers for Health Energy, *The ROGER Citation Database, PSE’s Repository for Oil and Gas Energy Research (ROGER), PSE’s ever-growing resource*. Please find this available at <https://www.psehealthenergy.org/our-work/shale-gas-research-library/>.

⁵⁴⁷ Physicians, Scientists, and Engineers for Health Energy, *The ROGER Citation Database, PSE’s Repository for Oil and Gas Energy Research (ROGER), PSE’s ever-growing resource*. Access ROGER at https://www.zotero.org/groups/248773/pse_study_citation_database/items/order/dateModified/sort/desc (last visited Nov. 30, 2018).

⁵⁴⁸ Brandt, A.R., et al., *Methane Leaks from North American Natural Gas Systems*, *Science*, Vol. 343, no. 6172 at 733-735 (Feb. 14, 2014).

⁵⁴⁹ Alvarez et al., *Assessment of methane emissions from the U.S. oil and gas supply chain*, *Science* 361, 186-188 DOI: 10.1126/science.aar7204. (July 13, 2018), available at <http://science.sciencemag.org/content/early/2018/06/20/science.aar7204>.

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1502.14. One way in which this requirement can be violated is where an agency defines the purpose and need of the project so narrowly as to preclude alternatives other than the preferred project.

The alternatives analysis must be deep as well as broad. Alternatives must be “rigorously explore[d].” 40 C.F.R. § 1502.14(a). Rigorous exploration requires that the degree of analysis devoted to each alternative must be substantially similar to the degree of analysis devoted to the proposed action.⁵⁵⁰ Because alternatives are so central to decisionmaking and mitigation, “the existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” *Oregon Natural Desert Ass’n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1100 (9th Cir. 2010) (internal alterations and citations omitted).

A. The DEIS Fails to Consider Reasonable Alternatives to the LNG Terminal Design.

The DEIS violates NEPA by failing to consider reasonable design alternatives. The only alternatives considered in the DEIS are no action, use of entirely different sites, and “system alternatives” that would consist of other LNG export projects. The DEIS provides no analysis whatsoever of alternative designs for a facility at the proposed Jordan Cove site that would potentially have lower environmental impacts. Failure to take a hard look at these alternatives is unlawful. An EIS must include a robust analysis of alternatives to the proposed action: this discussion is “the heart of the [EIS]” and must “provid[e] a clear basis for choice among options.” 40 C.F.R. § 1502.14. The Clean Water Act also requires evaluation of alternatives that would reduce wetland impacts. 40 C.F.R. § 230.10(a). Although these two requirements are similar, *id.* § 230.10(a)(4), the Clean Water Act goes beyond NEPA’s procedural requirements and imposes substantive obligations to actually adopt reasonable less damaging alternatives. 40 C.F.R. § 230.10(a).

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1. Electric Compressors with Grid Tie In and/or a Dedicated Power Plant.

One alternative that should have been considered is the terminal design that was proposed and evaluated in the prior application: namely, use of electrically driven liquefaction trains in lieu of liquefaction trains powered by combustion terminals incorporated into the terminal site.

The DEIS offers no explanation for the change in proposed facility design. Although the project applicant has presumably determined that the new design better suits its current needs, NEPA requires a searching analysis of whether alternatives would have lower environmental impacts, or of the tradeoffs inherent in the choice of one design over another. In review of other facilities, FERC has concluded, for example, that using electrical power to drive liquefaction equipment can result in lower net air emissions than the gas-fired liquefaction trains Jordan Cove currently proposes here.⁵⁵¹

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Although not a substitute for providing a comparison of alternatives in the DEIS, here, we attempted a cursory comparison of the air emissions of the current proposed design, as forecast

⁵⁵⁰ Council on Environmental Quality, “Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations,” 46 Fed. Reg. 18026, 18027, 18028 (1981), Question 5.

⁵⁵¹ See, e.g., Final EIS for the Texas LNG project, Docket No. CP16-116, at 3-12 (March 2019).

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CO28-337 See response to comment SA2-389.

in the DEIS at 4-670, with the emissions expected from the prior design, as forecast in the 2015 FEIS, at 4-921. The two documents do not enable an apples-to-apples comparison, as the two group emissions into different categories. Moreover, it is unclear whether the current DEIS and prior FEIS used the same methodology for estimating emissions, or to what extent differences in the estimates arise from factors other than differences in facility design or capacity. NEPA requires FERC to clarify these issues by providing a clear comparison between using electrically and mechanically driven liquefaction equipment designs to meet a specific capacity. This comparison must consider air emissions, facility footprint, wetlands fill, obstruction to aviation, etc.

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FERC must also re-examine the question of whether an electrically-driven design can acquire some or all of its electricity from the existing grid, eliminating or reducing the South Dunes Power Plant that was proposed for the prior design. Although FERC must consider the indirect impacts of generating electricity taken from the grid, it is likely that those impacts are lower than the impacts on-site power generation, given the amount of renewables in Oregon's generation mix. FERC's analysis must consider not only Oregon's current generation mix, but how that mix is expected to change over the life of the Jordan Cove project. We suspect that an electrically driven facility that acquires as much energy as possible from the grid will have a lower environmental impact than other design alternatives.

2. Marine Slip Design and Foreseeable Future Uses.

FERC must consider a smaller marine slip, which omits the proposed "emergency lay berth." DEIS 2-14. In addition, insofar as FERC further considers alternatives incorporating the western berth that Jordan Cove now labels an emergency lay berth, FERC must address whether it is reasonably foreseeable that this berth will be used for other purposes, and the consequences of such use.

CO28-337

We are not aware of any US LNG facility that incorporates a lay berth into its design; most, if not all, LNG export facilities operate without any berths beyond those used for active loading and/or unloading. Moreover, LNG proponents have previously concluded that a west coast LNG facility can successfully operate with only a single berth. The now-abandoned Oregon LNG proposal included only a single vessel berth.⁵⁵² From 2007 through at least November 2014, Jordan Cove expected that it would operate an LNG import or export facility with only a single vessel berth; although Jordan Cove expected that a second berth would be constructed, Jordan Cove consistently stated that this second berth would be put to other uses, rather than available for a disabled LNG tanker.⁵⁵³ Neither FERC nor Jordan Cove have shown that a design that omits what is now labeled an "emergency lay berth" would be infeasible or otherwise unreasonable. Accordingly, NEPA requires analysis of an alternative that omits this berth.

⁵⁵² Oregon LNG DEIS at Appendix D (August 5, 2015), Accession 20150805-4003

⁵⁵³ See, e.g., Jordan Cove Energy Project, L.P., Application for Authority to Site, Construct and Operate a Liquefied Natural Gas Import Terminal, Dkt. CP07-444, at 14 (Sept. 4, 2007), available at <https://elibrary.ferc.gov/IDMWS/common/OpenNat.asp?fileID=11442927>; Jordan Cove, Dkt. CP13-483, Draft EIS at 2-81, 3-14 to 3-15 (Nov. 5, 2014).

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Because few, if any, other LNG facilities incorporate an emergency lay berth, and in light of the long history in which the western berth here was described as being built to serve additional purposes (according to the 2014 draft EIS, “a proposed dry bulk cargo terminal, a coal export terminal, an intermodal container terminal, a sea wind turbine assembly area at Henderson Marsh, using the western berth of the Jordan Cove slip, all considered under the general rubric of the Port’s ‘Oregon Gateway Marine Complex.’” DEIS 3-15), it appears that designating this berth as an emergency lay berth is merely pretextual. If FERC concludes that this berth really is needed as a lay berth, FERC must impose conditions on the project that ensure that it is used *only* for that purpose.

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Similarly, FERC must fully analyze an alternative that would reduce the size of the LNG vessel slip to the minimum needed to accommodate the vessels Jordan Cove actually plans to use. The DEIS states that the “slip and berth would be designed to accommodate LNG carriers as large as 217,000 m³ in capacity.” DEIS 2-14 n.25, 2-37. However, it appears that the Coos shipping channel is restricted to carriers of smaller size. Insofar as Jordan Cove appears to have no plans to use carriers of this size, FERC should consider an alternative design that reduces the slip dimensions, and thus the environmental impacts, to the minimum needed.

CO28-338

Insofar as FERC also considers a slip designed to accommodate larger carriers, FERC must treat expansion or modification of the shipping channel, etc., that would be needed to enable Jordan Cove to use such larger carriers as reasonably foreseeable, and thus consider the effects of such future actions in this EIS.

B. Alternatives Relocating Terrestrial Activities to Reduce Disturbance of Aquatic Sites.

Multiple alternatives exist that satisfy the basic project purpose while reducing disturbance of special aquatic sites. A proposed activity is not water dependent if it does not require access or proximity to or siting within a special aquatic site in order to fulfill its basic purpose. 40 C.F.R. § 230.10(a)(3). While the LNG terminal itself may be water-dependent, many other activities proposed in the DEIS are not.

For example, the proposed North Bend worker’s camp, the Southwest Oregon Regional Safety Center, and the South Dunes Power Plant all involve discharge of fill material to special aquatic sites, but do not require access or proximity to or siting within the special aquatic sites that will be impacted.

For non-water dependent activities, practicable alternatives that do not involve special aquatic sites are presumed to be available. *Id.* In other words, a non-water dependent activity necessitates a more persuasive showing than otherwise concerning the lack of alternatives. Here, the DEIS fails to “clearly demonstrate” that practicable alternatives for non-water dependent activities are not available to overcome this presumption. The workers’ camp proposal includes construction of a 3-span, 235 feet long and 43 feet wide bridge to span a tidal mudflat in Coos Bay. The bridge will require placement of fill in two wetlands and impacts to tidal waters of Coos Bay. The DEIS does not include a discussion of any alternatives to this alignment, let alone analysis clearly demonstrating that no practicable alternatives to these impacts are available.

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CO28-338 See response to comment SA2-389.

CO28-339 The current Project does not include the South Dunes Power Plant or the North Point Housing Complex Bridge which were components of the project reviewed in the 2015 FERC final EIS but are not part of the current proposal and are not evaluated in the current EIS.

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C. Alternatives to Size and Design of Key Project Elements.

The alternatives analysis presented in the DEIS fail to assess important project design alternatives. For instance, the application should evaluate in detail a terminal design that involves a much smaller footprint, rather than assuming that the project must be sized for 1bcf/d and very large LNG tankers. Additionally, the FERC should evaluate an alternative in detail that uses only the 12-inch Coos County pipeline (which would entail reducing the scale of the LNG project).

CO28-340

The DEIS does not evaluate offshore design alternatives. The applicants should evaluate an offshore design in detail and describe why areas that regularly face harsh weather, such as hurricanes, are successfully sited and built. NMFS argues in its previous comments that the analysis, and rejection of an offshore proposal as an alternative is inadequate “[g]iven existing or proposed terminals or other similar structures located in harsh environmental conditions elsewhere (e.g. Calypso LNG terminal off the eastern coast of Florida, Troll Natural Gas Fields in the North Sea with depths of 1,100 feet).” The applicants should explain further why the placement of terminals offshore is not feasible. Proposals currently exist to site wind and wave energy structures off the coast of Oregon and Washington. In fact, an offshore wind project is proposed for location 3 miles offshore from Coos Bay. The DEIS acknowledges and describes this Principle Power project. DEIS at 3-17. The DEIS does not adequately address this potential alternative and fails to weigh the significant reduction in public safety risks and disturbance to the Coos Bay Estuary against potential added costs.

The DEIS does not provide an adequate analysis of dredging method alternatives and a clear indication of why the proposed methods will minimize impacts. The DEIS indicates that both mechanical and hydraulic dredging may be used. Hydraulic pipeline dredging has the potential to impact aquatic species through entrainment and impingement. Additionally, other dredge methods will result in significant turbidity in Coos Bay. Although some specially designed hydraulic cutterhead dredges may reach 0.5 percent spillage, the DEIS fails to disclose what kind of cutterhead dredge will be used for dredging. This is vitally important information for the public and the agencies to assess the veracity of the applicant’s statements, because without knowing what type of cutterhead dredge will be used, the public cannot begin to evaluate what kind of sedimentation dredging activities will cause. Furthermore, any modeling conducted on behalf of the Project is suspect until a spillage rate can be determined. All cutterhead dredges are not the same. Studies indicate that conventional cutterhead dredging “can liberate considerable amounts of turbidity and associated contaminants to overlying water.” Cooke, 2005.

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Selection of the proper cutterhead for the type of sediment, in addition to correct rotational speed and hydraulic suction, to obtain reduced suspension rates of sediments is rarely achieved. Herbich, 2000. Therefore, knowing not just the type of dredge used but also the anticipated methods of using the dredging equipment are important factors that must be disclosed for the public and agencies to properly analyze the effects of dredging at the proposed project. The FERC must make specific findings on the types of dredging equipment. The DEIS should present an analysis of alternative methods in order for the FERC to fully analyze the impacts dredging will have on turbidity and overall pollution. In addition the DEIS does not discuss alternative locations for the disposal of dredged material.

CO28-342

CO28-340 The reference to draft EIS at 3-17 is referencing the 2015 FERC final EIS.

CO28-341 The final EIS has been revised to include additional analysis of turbidity and sedimentation impacts that would occur from the use of different dredge equipment. See section 4.3.2.1.

CO28-342 See response to comment SA2-388.

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The DEIS does not evaluate alternatives to avoid impacts to estuarine oysters. The pipeline route across Haynes Inlet between MP 1.7 and 4.1 has the potential to significantly impact both native Olympia oysters and commercially grown Pacific oysters. The proposed route would be directly adjacent to commercial oyster beds. The use of the open cut pipeline installation method in this area and the associated plumes in turbidity, as well as release of any existing contaminants in the bay muds, could have significant impacts on these oysters and the economic values they produce to the Coos Bay community. While Jordan Cove proposes to utilize turbidity curtains as practicable to prevent sediment transport, these measures cannot control release of bacteria or other contaminants that may be present. The DEIS does not discuss alternatives to avoid impacting these oyster species or the economic impacts that could result from these activities.

CO28-343

The DEIS fails to present a comprehensive description of alternative fish screen designs and their impacts. The current proposal appears to dismiss fish screening, totally ignoring ODFW's prior comments stating, the "Coast Guard's concerns should not be interpreted to mean that ballast and cooling water screening cannot occur. Screening can and should occur to reduce negative impacts to fish as a result of this project. Additional marine industry review and permitting may be necessary, but this has not eliminated the opportunity to develop and use fish screens." State of Oregon 2009 FEIS comments at 37. The DEIS should evaluate clearly fish screen alternatives and the impacts of the proposed screening alternative, which would negatively impact ESA protected Coho salmon.

CO28-344

The application does not adequately evaluate alternatives in timing of construction activities. The DEIS states that "in general" construction of the pipeline would be timed to avoid periods of major juvenile or adult anadromous salmonid migrations in freshwater based on allowed in-water work periods, but notes that there may be modifications to the timing of construction. DEIS at 4-596. The application fails to justify why certain crossings will be constructed outside of in-water work windows.

CO28-345

The DEIS also fails to provide adequate information regarding alternatives for stream crossings. The application does not justify the widespread use of open-cut crossings. Additionally, the application fails to adequately evaluate alternatives that will be necessary if HDD crossings fail. Mitigation measures for HDD failures are completely inadequate, and the Williams pipeline company's own data show that HDDs for 36-inch pipelines fail unacceptably often. See FLOW 2008 DEIS Comments at 102-103. In its own experience, recent HDDs for this size of pipeline have failed one out of every three attempts – that's a full 33% of the time. See Williams Sept. 2007 Presentation, Williams Sept. 2007 documentation of its HDD Experience. The DEIS does not include adequate information on alternative measures that will be used if the proposed crossing methods are unsuccessful.

CO28-346

CO28-347

The HDD failure issue is particularly critical for the Rogue River HDD. The ODFW has repeatedly commented that the HDD contingency plan for the Rogue River crossing is inadequate, and that a wet open-cut crossing of the Rogue River is not currently permissible. The ODFW commented: "ODFW does not consider a wet open-cut to be an acceptable alternative due to the impacts to fish, fish habitat, the river, as well as impacts to the sport fishery and the

CO28-343 The pipeline would not cross Haynes Inlet. This comment appears to be commenting on the pipeline route that was proposed during the previous iteration of the project as reviewed in the 2015 FERC final EIS.

CO28-344 The impacts on aquatic resources from LNG carrier cooling water intakes is evaluated in the EIS.

CO28-345 The reference to draft EIS at 4-596 is referencing the 2015 FERC final EIS.

CO28-346 See response to comment CO28-235.

CO28-347 As described in section 5.1.3.2 of the EIS, Pacific Connector prepared an *HDD Contingency Plan and Failure Procedures* that describes measures to deal with HDD failure and contain an inadvertent release of drilling mud during the HDD process. The plan is attached as Appendix H.2 to Resource Report 2 as part of Pacific Connector's 2017 application to the FERC and is available for public review. We have reviewed this plan and find it acceptable.

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economy of upper river communities. ODFW strongly disagrees with the wet open-cut as an alternative crossing method on the Rogue River.” State of Oregon 2009 FEIS comments at 40.

The DEIS fails to provide an adequate analysis of mitigation alternatives. For instance, proposed mitigation measures to avoid and minimize sedimentation and erosion in stream crossings are inadequately site-specific and are generally outlined in the ECRP. FERC’s analysis and the DEIS indicate that details of mitigation would depend on the source of the problem. According to the State of Oregon’s 2008 DEIS comments, the lack of detailed mitigation measures and alternatives is inadequate. “In order to be effective, a mitigation measure must be supported by analytical data demonstrating why it will constitute an adequate buffer against the negative impacts that may result from the authorized activity. The DEIS’s reliance on future modifications does not provide enough protection under this standard. The public must be able to review, in advance, how specific measures will bring projects into compliance with environmental standards.” State of Oregon 2008 DEIS comments at 32. The DEIS does not resolve this outstanding issue.

CO28-348

Given the lack of analysis on the efficacy of mitigation measures, it is also unclear whether the pipeline should have been rerouted or altered to avoid key resources. For instance, proposed measures may be inadequate to avoid increased turbidity, temperature discharges, erosion and sedimentation in the proposed crossing of the Coquille River and other streams and rivers. The DEIS does not show that riparian clearing has been avoided and minimized in all areas. The ECRP includes general methods, but does not justify why limitations on construction activities in riparian areas cannot be increased. The State of Oregon noted that the 2008 DEIS did not include adequate analysis of avoiding impacts to waterbodies. “At some crossings, PC would reduce the construction ROW width to 75 feet at the crossing of forested and scrub shrub wetlands to minimize impacts to these resources. Alternative methods of crossings with less or no impact must be explored and presented. Boring underneath the forested wetlands could avoid impacts to high functioning wetlands.” State of Oregon 2008 DEIS comments at 95. These issues remained unresolved in the current DEIS, and have not been adequately addressed in the alternatives analysis for stream crossings and mitigation measures in the DEIS.

CO28-349

The DEIS application does not provide adequate information to justify its route selection through Coos Bay. The selection of the route through Coos Bay unduly impacts the Coos Bay Estuary and Haynes Inlet, a sensitive area for both shellfish and fish habitat, as well as the economies that rely on those areas (such as oyster growers). The State of Oregon recommended, “Find another (upland) route to avoid impacts to the Coos Bay estuary to the maximum extent possible. This proposal maximizes impacts to waters of the state. More thorough alternatives analysis is required.” State of Oregon 2008 DEIS comments at 94. The current proposal does not minimize impacts to the estuary. It also does not explain why an alternative involving a significantly reduced construction impact area would not be practicable.

CO28-350

In summary, the applicants do not provide sufficient reasoning or detail to justify its dismissal of many design and project alternatives that could have a less adverse impact on the aquatic ecosystem. In particular, little consideration of the relative costs, technologies, and logistics is present in the alternatives rejected or disregarded by the project proponents. The applicants provide cursory and inaccurate analysis of the impacts of its dredge/fill activities, and the FERC

CO28-348 Comment noted. An analysis of mitigation alternatives is not required.

CO28-349 NEPA does not require that all riparian areas be avoided. The COE (under the clean water act) does include statues regarding the avoidance of wetland areas. It is the COE's responsibility to ensure that impacts to waters of the U.S. are mitigated. Any approval from Commission would be conditioned on the Applicant meeting COE requirements. The COE's and ODSL are currently working with the Applicant on wetland mitigation requirements. Per the requirements of the Clean Water Act, the Applicant would have to demonstrate that all impacts to wetlands are avoided or minimized to the extent practical as part of the 404 and 401 permitting process. These agencies can then require mitigation to compensate for any permanent impacts.

CO28-350 The proposed route through Coos Bay would be accomplished through an HDD, which would significantly reduce the impacts to resources in the bay (see section 3 of the EIS). An alternative that would not cross through Coos Bay would result in an approximately 15 mile longer route compared to the proposed route, would likely impact more landowners, affect more waterbodies, and would impact the Oregon Dunes National Recreation Area.

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must find that practicable alternatives exist to severely degrading the Coos Bay Estuary, wetlands and rivers impacted by the terminal and pipeline. "An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. § 320.10(a)(2). The alternatives analysis fails to address many alternatives, and some alternatives are given such cursory consideration that it is impossible to realistically conclude they are not practicable. This includes changes to terminal design, turning basin size and design, alternative LNG sites, and both major and minor route variations on the pipeline route.

VIII. INCOMPLETE AND MISSING INFORMATION.

There are many instances of missing information in the DEIS that make public review and comment impossible. For example, the biological assessment, which is referenced dozens of times in the DEIS, was not available to the public for review prior to the close of the public comment period. The regulations implementing the National Environmental Policy Act (NEPA) state that

If an agency prepares an appendix to an environmental impact statement the appendix shall:

- (a) Consist of material prepared in connection with an environmental impact statement (as distinct from material which is not so prepared and which is incorporated by reference (§ 1502.21)).
- (b) Normally consist of material which substantiates any analysis fundamental to the impact statement.
- (c) Normally be analytic and relevant to the decision to be made.
- (d) Be circulated with the environmental impact statement or be readily available on request.

CO28-351

40 C.F.R. § 1502.18. The NEPA regulations also stated that if the agency elects to incorporate by reference material relevant to the environmental impact statement (EIS):

Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference.

40 C.F.R. § 1502.21 (emphasis added). Taken together, these provisions require FERC to make available, during the public comment process, information that is referenced in the EIS and is material to the public's understanding of the environmental consequences of the proposed action.

The failure to provide information relevant to the public's review of an EIS, and is referenced in – and has been incorporated by reference by – the EIS, violates the National Environmental Policy Act. The Oregon Federal District Court recently held based on similar facts that the

CO28-351 There is no legal requirement for a Biological Assessment (under the jurisdiction of the Endangered Species Act) to be open to public review or comment. However, the Biological Assessment has been prepared and is available for public review. While some information was still pending at the time of the issuance of the draft EIS, the lack of final plans does not deprive the public of a meaningful opportunity to comment on draft plans. The courts have held that final plans are not required at the NEPA stage (see *Robertson v Methow Valley Citizens Council*).

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failure to provide specialist reports – similar to the biological assessment for the Jordan Cove/Pacific Connector project – violates the law. *League of Wilderness Defenders v. Connaughton*, No. 12-2271-HZ (D. Or. Dec. 9, 2014). Failure to make this information available to the public is arbitrary, capricious, and not in accordance with law. 5 U.S.C. § 706(2)(A).

CO28-351
cont.

To be clear, commentors are not arguing that biological assessments *per se* are subject to notice and comment. Instead, based on NEPA case law, if the DEIS relies on information for its conclusions and analysis, then that material must also be available to the public. In this case, the BA is not even complete, much less made available for public review, even though FERC relies on it for the vast majority of its effects analysis and conclusions. Not only does this violate 40 C.F.R. § 1502.18 and 40 C.F.R. § 1502.21, but also suggests that FERC has made a pre-determined conclusion without adequate support in the record. 5 U.S.C. § 706(2)(A).

Another example of missing information is the incomplete draft Hydrostatic Testing Plan. The DEIS states that the plan, “includes measures to prevent the transfer of aquatic invasive species and pathogens from one watershed to another.” However, this draft Hydrostatic Testing Plan has not been provided to the public. Further, it does not appear from this brief description, that the draft plan includes the information related to discharge locations and dissipation measures necessary to evaluate the potential effects on water quality standards.

CO28-352

Other information was also omitted from the DEIS. For example, the DEIS notes that a great deal of information was lacking or not yet available, and provides several recommendations regarding providing FERC with that information. We request that that information be made publicly available as well, particularly submissions filed with the Secretary per recommendations 14 through 26, and 48 through 52, should be subject to a minimum of a 30 day public comment period with public comments taken into account before issuance of the Final EIS and any approval of the project by FERC. Please note that the numbering of Recommendations is incorrect. There are two separate Recommendations listed for numbers 17, 18 and 19.

CO28-353

CO28-354

We also note that on February 12th 2015, one day before the end of the comment period, the applicant filed additional information associated with recommendations (pertaining to missing information) 15, 16, and 45. Commentors are unable to review this information before the close of the comment period, and again reiterate that NEPA requires that any information relied upon by the agency must be available for public review before a decision is made. 40 C.F.R. § 1502.21. We therefore renew our request for an extension of the comment period for this DEIS, even though such a request is futile.

CO28-355

The DEIS 4-68 falsely states

Some surface erosion is likely to occur, however, 85 to 95 percent of surface erosion can be prevented or trapped on-site by application of measures in the ECRP. Any surface erosion that does occur is expected to be minor, and within the range of natural variability for watersheds in southwest Oregon (see appendix F.4)”

CO28-356

CO28-352 We acknowledged in the draft EIS that some plans, such as the Hydrostatic Test Plan, have not yet been finalized. While some information was still pending at the time of the issuance of the draft EIS, the lack of final plans does not deprive the public of a meaningful opportunity to comment on draft plans. The courts have held that final plans are not required at the NEPA stage (see *Robertson v Methow Valley Citizens Council*).

CO28-353 We acknowledged in the draft EIS that some information and plans have not yet been finalized. While some information was still pending at the time of the issuance of the draft EIS, the lack of final plans does not deprive the public of a meaningful opportunity to comment on draft plans.

CO28-354 This discrepancy has been corrected in the final EIS.

CO28-355 We acknowledged in the draft EIS that some information and plans have not yet been finalized. While some information was still pending at the time of the issuance of the draft EIS, the lack of final plans does not deprive the public of a meaningful opportunity to comment on draft plans.

CO28-356 See response to comment CO28-355.

CO28 continued, page 291 of 302

The reference to “the range of natural variability” is in the context of compliance with the NW Forest Plan Aquatic Conservation Strategy (ACS) and BLM RMPs. Assertions of compliance with the ACS does not exempt the DEIS from disclosing in plain English what the sediment impacts to tens of miles of stream actually are. Furthermore, the best available science strongly suggests that the watersheds and stream channels traversed by the pipeline west of the Cascades are already degraded to a condition outside the “the range of natural variability” due to previous and ongoing logging, road building and gas pipeline construction (see Columbaroli and Gavin 2010, Anlauf 2011 attached). Since the 1950s sedimentation of streams has increased 5 fold due to logging and road building which is far greater than any sediment episode in the past 2,000 years. This means that any further human related deposition of sediment (e.g., pipeline construction) will cause an undisclosed number of stream reaches to be further outside the “the range of natural variability”. The watersheds and critical coho salmon habitat impacted by the pipeline have no buffering capacity for additional sediment from pipeline construction due to historic and ongoing logging. Furthermore, the DEIS 4-95 states: “Pacific Connector proposes to cross 26 impaired waterbodies using dry/diverted open-cut crossing techniques. Conventional boring, DP, or HDD methods would be used to cross 5 of the impaired waterbodies.” Several of these streams are 303(d) listed for sediment which means new sources of sediment from pipeline construction are not allowed.

CO28-356 cont.

The DEIS 4-114 states that “Blasting could alter the in-channel characteristics and hydrology of the stream, potentially decreasing flows due to increased infiltration where bedrock would be fractured.” Stream flow in sandstone geology may be very sensitive to blasting. Since summer flows in sandstone streams are naturally very low, all flow could be lost. The DEIS fails to provide for flow measurements above and below the crossing site to establish baseline conditions. The lack of pre- project flow measurements would allow flow reductions from pipeline installation to go undetected. The DEIS fails to provide mitigations should blasting cause flows to decrease or be lost entirely. How will Pacific Connector restore flows lost due to pipeline crossings? The DEIS does not discuss or analyze that decreased or lost surface flow would decrease juvenile salmonid production. The lack of pre- project flow measurements would allow flow reductions from pipeline installation to go undetected.

CO28-357

The DEIS 4-297 states: “Blasting in stream channels can have adverse effects on fish, especially for fish with swim bladders. Explosives detonated near water produce shock waves that can be lethal to fish, eggs, and larvae by rupturing swim bladders and adling egg sacs (British Columbia Ministry of Transportation 2000).” and further states on p. 4-298 that “Currently, about 37 crossings have known bedrock, some of which may require blasting (table 4.5.2.3-2). Fish would be removed from the crossing area, in accordance with Pacific Connector’s *Fish Salvage Plan*. Where blasting would occur near a crossing, fish would be excluded an additional 25 feet upstream and downstream from the crossing area by use of barrier nets.” The DEIS is defective because it fails to state that if blasting is found to be killing or injuring fish then the exclusion area would have to be enlarged beyond 25ft. The DEIS fails to disclose that blasting could kill fish beyond the 25ft exclusion barrier and provide for monitoring by a biologist.

CO28-358

The DEIS is not based on the best available science because it has not established pre-project quantitative baseline upland erosion rates, baseline stream sedimentation rates, baseline stream

CO28-359

CO28-357 The Applicant has developed monitoring plans for the crossing sites as well to identify where specific crossing issues may arise post construction, and have committed to taking remedial actions if needed based on permit requirements. Where blasting would occur in stream channels the Applicant would need to obtain a blasting permit requiring approval of ODFW. ODFW may issue in-water blasting permits only if they contain conditions for preventing injury to fish and wildlife and their habitat. The State during their permitting process can make additional requirements as they determine are needed to meet their State permit standards.

CO28-358 See response to comment CO28-57. Also, designated would be removed of all fish prior to blasting. As noted above ODFW could add requirements to the blasting permit application to address any potential concerns including specific monitoring if deemed necessary by ODFW.

CO28-359 Analyses in the EIS are based on the best available data. Currently, the baselines identified in the comment are not known and therefore cannot be modeled as suggested. The EIS provides an analysis adequate to meet the requirements of NEPA. The analysis presented in section 4.3.2 and 4.5.2 includes the types and levels of effects, considers the proportionality of these effects, as well as the BMPs and mitigative actions that would be implemented. Cumulative effects are addressed in section 4.14.

CO28 continued, page 292 of 302

temperature, baseline dissolved oxygen, baseline salmonid densities, baseline riparian vegetation, baseline stream shade and baseline data for other aquatic parameters for the stream reaches that could be impacted. Baseline data for the “no action” alternative has not been established from actual pipeline crossing sites. Interpretation of post-pipeline monitoring will be difficult in the absence of pre-construction data.

Pacific Connector has not surveyed stream channels at stream crossings for physical and biological parameters to establish required baseline “no action” data for this DEIS. Baseline data for fishes and fish habitat appears limited to “proposed” pre-construction surveys at stream crossings (DEIS 4-101). DEIS 4-286,287 states “Substrate characteristics and physical habitat features would be determined through pre-construction surveys, and the upper 1 foot of existing substrate would be replaced with clean cobble or gravel (not derived from crushed gravel), or a combination of both, or in some cases matching existing substrate during reconstruction after pipe installation.” The Pacific Connector is purposely not surveying affected stream reaches in a timely manner that would inform the DEIS. While we agree the surveys identified are needed prior to construction, these surveys are inadequate to fully establish baseline (pre-construction) stream conditions above and below stream crossings. Basic stream survey data must be considered “available” for NEPA purposes but Pacific Connector has chosen not to collect stream data until just prior to construction. For example, spawning surveys are needed to detect fish spawning sites below stream crossings that would be subjected to elevated sedimentation. Stream survey techniques are available from ODFW, EPA and USFS to document habitat conditions for stream reaches that could be affected from cumulative sediment effects during the life of the project but Pacific Connector has not done any stream surveys to inform the NEPA decision process. In the absence of baseline stream inventories, monitoring of sediment would be limited to anecdotal observations of EIS and not be based on the best available science. We assert that all stream reaches within 6th or 7th field watersheds that will have pipeline construction be stream surveyed with an emphasis on fine sediment deposition, pebble counts, quality/quantity of spawning and rearing habitat. See Anlauf et al 2011 and Firman et al. 2011 for the kinds of data needed.

In addition to stream surveys some watersheds would need cumulative effects analysis with regard to sediment and temperature. The East Fork Cow Creek is one example of a smaller stream needing its own watershed analysis due to multiple pipeline crossings. Anecdotal observations of EIS about erosion and turbidity, while necessary, are not sufficient with respect to “best available science”. Protocols for establishing baseline conditions for streams are available for NEPA purposes from ODFW, USFS and EPA. The DEIS fails to disclose expected increases of erosion/sedimentation because it has not established baseline conditions for streams and stream reaches at pipeline crossings. For example, the percent fines at the stream reach affected can be determined pre-construction and then monitored post-construction. The DEIS fails to estimate the range of increase that is likely to occur such that effective monitoring can be conducted. The DEIS fails to report the erosion rates/sedimentation rates for coho occupied stream reaches for “no action” and the proposed actions.

Scientific monitoring during the life of the project cannot document adverse impacts if baseline conditions are not established prior to disturbance. The DEIS is defective because it equates “no data” to mean “no sediment impact”. At a minimum, habitat conditions for critical coho

CO28-359
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CO28 continued, page 293 of 302

salmon habitat must be surveyed prior to construction to agency protocol standards that would allow for future scientific monitoring.

The DEIS is not based on the best available science because its sediment analysis appears to be limited to 5th field watershed scale (DEIS 4-587). This scale of analysis is not appropriate for a linear project that would adversely affect coho salmon and other fishes that spawn in much smaller 6th and 7th field watersheds. The science issue is that pipeline construction across, upstream, or upslope of spawning and rearing fish (e.g. coho salmon) will be impacted due to large scale disturbance on steep slopes that will deliver sediment to stream channels located below them. Currently, there is ongoing erosion and sedimentation from the forested areas associated with fish bearing streams. Deforestation and pipeline construction is certain to increase erosion rates and increase sedimentation. The DEIS fails to model or estimate how much sediment will be funneled into smaller 6th field and 7th field watersheds where coho salmon and other fishes spawn and rear. Repeated sediment denial in the DEIS with reference to “minor” or “not detectable” sediment impacts and repeated statements about reliance on anecdotal observations of EI’s are not “best available science” when establishing ongoing and post-project sediment impacts to streams occupied by fish, especially the federally listed coho salmon. Pre- and post- stream surveys are a science based approach to monitor sediment impacts and the effectiveness of a suite of mitigations for this very large project but none seem to have been identified in the DEIS except for pebble counts prior to construction.

The DEIS 4-105 provides data and discussion about expected suspended sediment from studies of the dry open-cut method.

For Project area streams, average watershed suspended sediment values within 50 meters downstream of the stream crossings were modeled. During a standard crossing using dam-and pump or flumed crossing methods, when water diversion and sediment control methods are in place, values would range from 27 to 153 mg/l for flumed crossing and 7 to 35 mg/l with dam-and-pump crossings for the affected watersheds. These values are similar to those found by Reid et al. (2004) noted above. However, values would be much higher should the crossing sediment control method fail, with modeled suspended sediment values ranging from 712 to 4,102 mg/l if wet open cut methods were used during crossing failure. Duration of elevated values from failure would likely be short, less than about 2 to 4 hours for small streams and possibly up to about 6 hours for large stream crossings. While failures of diversion control systems during crossings are uncommon (Reid et al. 2004), they would likely occur at some crossings during construction. Suspended sediment concentrations from any crossing method would decrease to background levels (about 2 mg/l) within about 0.6 to 19 km (approximately 0.4 to 11.8 miles) downstream of a crossing, among the 14 watersheds.

The DEIS admits that there would be some failures of the dry open-cut method and suspended sediment discharge could range up to 4,102 mg/l. The DEIS fails to acknowledge that this is a significant impact even if temporary. The DEIS 4: 273-284 provides detailed quantitative modeling of expected suspended sediment intensities and its effect on rearing salmonids. The

CO28-359
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CO28-360

CO28-360 The statement regarding the likelihood of effects on fish is not inconsistent. As noted some failures of complete diversion of flow around trenching areas during dry channel crossing is likely to occur when over 300 stream crossing would be made along the whole route. However the chance that they would occur where the highest potential modeled elevated suspended sediment levels would be, that of these elevated levels would occur for a duration level that would cause the level of impact noted, and that fish would be present in close proximity to this event levels is unlikely.

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DEIS 4-282 states: "In the unlikely event that dry crossing methods fail completely and wet open-cut methods must be implemented to complete the crossing, if suspended sediment conditions are high, the longer duration of elevated levels could result in the potential for severity levels to be higher (e.g., SEV 9, reduced fish density) over a limited stream area."

CO28-360
cont.

"Reduced fish density" means fish such as listed coho salmon will perish. The assertion of "unlikely" is contradicted by DEIS: 105 which states "While failures of diversion control systems during crossings are uncommon (Reid et al. 2004), they would likely occur at some crossings during construction."

The DEIS fails to take a hard look at the adverse impacts of deposition of fine sediment from elevated suspended sediment. DEIS: 4-280 (TABLE 4.5.2.3-3) indicates that elevated suspended sediment would affect streams for 595 ft to 15,577 ft. below the crossing. This is significant because as the suspended fine sediment settles into the streambed, the fine sediment percent of the stream will be increased. This increase of fine sediment is significant because most stream fish bearing stream channels in coastal areas suffer from elevated fine sediment that is detrimental to salmonid production (Anlauf 2011). We assert that the DEIS has failed to take a hard look at the project's cumulative effect for increasing fine sediment in streams which has already been greatly elevated by logging and road building. The DEIS:4-283 falsely states: "Sediment releases would affect primarily short-term stream habitat conditions. Sediment from stream crossings could affect spawning habitat below crossings as Project-generated sediment could increase gravel embeddedness downstream, although elevated fall and winter flows following crossing would likely flush fines from any local spawning sites." This statement is conjectural and not supported by any data relevant to the streams being impacted. Even if some of the fine sediment is flushed, it will simply move the adverse impact further downstream. We again reiterate that the streams affected are already suffering from elevated percent fines in the streambed and any additional fine sediment must be considered significant (see Anlauf 2011). The DEIS fails to adequately consider "context" as per NEPA with impact analysis.

CO28-361

The DEIS is not based on the best available science because it does not require systematic suspended sediment monitoring, turbidity monitoring, streambed percent fines monitoring and fish density monitoring during the first phase of construction in the coast range and Umpqua watershed where impacts are known to be the greatest due to the high amounts of fine sediments at these stream crossings due to ongoing and previous logging and road building. While anecdotal observations by EI's are certainly necessary, we assert that scientific monitoring of suspended sediment, turbidity, percent fine sediment in streambeds and salmonid densities is warranted for at least the first phase of construction where coho salmon are at most risk due to existing high amounts of fine sediment.

CO28-362

The DEIS is not based on the best available science because it fails to adequately disclose, analyze or monitor fine sediment deposition subsequent to construction at stream crossings. Increased fine sediment deposition below the stream crossing is likely to despoil fish spawning and rearing habitat. Assertions of minor or temporary impacts are speculative and not science based.

CO28-363

CO28-361 The assessment presented in section 4.5.2 adequately describes the levels of effects to aquatic resources from sediment from the proposed actions.

CO28-362 See response to comment CO28-361.

CO28-363 See response to comment CO28-361.

CO28 continued, page 295 of 302

The DEIS is not based on best available science because it has not established baseline physical and biological conditions at and below stream crossings. The DEIS cannot assert “minor” impacts if it has not established baseline conditions. A project of this size must establish baseline stream conditions for each stream reach of stream habitat (generally 1,000 ft below crossing) because of the numerous and variable stream conditions along the pipeline route.

CO28-364

CO28-364 See response to comment CO28-361.

Stream habitat is linear and needs to be analyzed as a linear phenomenon. The DEIS is not based on the best available science because it has not analyzed and reported possible impacts to linear stream reaches of fish habitat (e.g. 1,000 ft below each pipeline crossing).

CO28-365

CO28-365 See response to comment CO28-361.

DEIS 4-21 states “Risks associated with landslides include both the risk that installation of the pipeline may adversely affect slope stability, and that post-construction land movements could damage the pipeline. Pacific Connector selected its proposed route to avoid existing landslides and areas susceptible to landslides (i.e., unstable slopes where construction-induced landslides could occur).” DEIS 4-22 states “All of the moderate- and high-hazard deep-seated landslides identified along the alignment were avoided where feasible during final route selection.” The DEIS fails to disclose the number and location of moderate and high-hazard deep seated landslides that could not be feasibly avoided. Similarly the DEIS does not disclose the number and location of moderate and high risk for shallow rapid landslides (i.e. debris flows) which are very common in the Tyee geology in the western 60 miles of the pipeline. While the new alignments reduced some of the risk for landslides induced by construction it did not eliminate all landslide risk. Alignment maps indicate that the pipeline route is located on ridges where it will be located close or on highly landslide prone headwalls of first order drainages. It is well documented that logging roads in similar locations have been associated with increased landsliding that can run out for miles and adversely affect coho salmon spawning and rearing habitat.

CO28-366

CO28-366 The EIS identifies six landslides that pose a moderate to high risk that were further evaluated in the field. Steep slopes in the area of the Tyee geology have been avoided and mitigation measures and BMPs would address hazards for lesser slopes. Also see response to Comment SA2-43.

CO28-367 Mitigation measures and BMPs for erosion control are discussed included in sections 4.2 and 4.3 of the EIS, as well as the POD and ECRP.

CO28-368 See response to comment CO28-361.

The DEIS is defective because it fails to estimate the amounts of sediment generated from erosion during intense winter storms where several inches of rain can occur in a few hours. Sediment generated from forest clearing (i.e. logging) for the pipeline on steep topography is well documented even with the sediment control measures identified.

CO28-367

CO28-369 Landslides along the pipeline route are discussed and evaluated in section 4.1.2.4 of the EIS including BMPs and specific mitigation for high-risk landslide areas. Also see response to Comment SA2-43.

The DEIS is not based on the best available science because it fails to identify linear stream reaches that could be affected with elevated sediment deposition post-construction. Except for stream crossings during construction (DEIS 4 273-284), the DEIS fails to estimate the increase in turbidity (NTUs), the amount of suspended sediment (mg/ml), or the duration of sediment laden water that could affect many stream miles located downstream or down slope of pipeline construction.

CO28-368

The DEIS fails to acknowledge severe post construction sedimentation of streams caused by the construction of a much smaller gas pipeline from Roseburg to Coos Bay. (See attached Register Guard Article dated 7/25/2004 “Enterprise goes Sour”). The DEIS fails to discuss scientific uncertainty and scientific controversy regarding the effectiveness of sediment control measures identified in the DEIS for coastal areas with known potential for catastrophic erosion/sedimentation. Since sediment control measures failed catastrophically during the construction of a previous gas pipeline, similar sediment discharges are possible for this gas

CO28-369

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pipeline because this pipeline traverses the same unstable steep terrain, this pipe is much larger, and the area of disturbance is much larger. The DEIS fails to address the credibility issue surrounding gas pipeline construction in southwest Oregon and associated severe sediment impacts to coho salmon streams from a previous gas pipeline. Assertions of "minor" sediment impacts for this pipeline are not scientifically or empirically substantiated. Data from pipelines constructed in Washington are not directly applicable to the Oregon Coast Range geology.

CO28-369
cont.

The DEIS fails to acknowledge likely (during the life of the project) catastrophic sedimentation from landsliding that is associated with pipeline construction or sedimentation that is greatly exacerbated due to the presence of the pipeline (e.g., explosions, fire, loss of stabilizing tree roots and forest cover along pipeline corridor, need to relocate pipeline). See for example: Seismically Induced Landslides and Rockfalls (DEIS 4-21); Landslide Hazards (DEIS 4-21); Rapidly Moving Landslide Risk Assessment (DEIS 4-19); Deep-seated Landslide Risk Assessment (DEIS 4-20).

CO28-370

We are not asserting that the installation of the pipeline will "cause" landslides, although it certainly could. The DEIS has inadequate analysis about how pipeline construction and connected actions induced landslides would affect coho salmon habitat. What is certain is that the pipeline will exacerbate sedimentation of streams when landslides of unknown causes entrain the pipeline corridor and landslide debris proceeds downslope to enter stream channels. The DEIS fails to discuss how the pipeline will exacerbate sedimentation of coho stream habitat from landslides certain to occur over the next 30 years. DEIS monitoring of pipeline strains caused by slow deep seated land movement will not be an effective deterrent for shallow rapid slides (debris flows).

The DEIS discussion (DEIS 4:11-25) is from the perspective of maintaining the pipeline infrastructure, avoiding damage to private property and public safety. The DEIS 4:21 states: "For the purposes of landslide hazard evaluation in this report, a distinction is made between the hazard associated with a landslide and the risk associated with that hazard. In the following discussions, statements of risk apply to the potential for damage or failure of the pipeline from earth movements. It is recognized that the consequences of a pipeline failure may be catastrophic and involve fire and/or explosion."

The almost certain delivery of large amounts of sediment to coho stream systems from pipeline ROW and access roads associated landsliding during the 30 year life of the project is not discussed or quantified. High risk coho stream reaches for landslides are not spatially identified. The DEIS discussion of landslides is incomplete because it focuses on the threat to the pipeline and ignores the threat to water quality, coho salmon and critical fish habitat from these geologic phenomena.

The DEIS contains no site specific erosion control structures that could ameliorate sedimentation of streams from large landslides. The DEIS fails to state that erosion control structures intended for surface erosion in the ECRP would likely be ineffective in preventing large landslide sediment from reaching stream channels (e.g. sediment fences). In fact, such erosion control structures could exacerbate the effects of landslides by funneling stormwater runoff on to landslide prone steep headwalls and steep zero order basin.

CO28-370 Fires and explosions, as well as other emergency incidents in relation to pipeline reliability and safety are addressed in Sections 4.13.2.1, 4.13.2.2, and 4.13.2.3 of the EIS. Erosion BMPs and mitigation measures are described in the ECRP and POD that include monitoring in areas that might be most susceptible to landslides and unstable slopes. It is acknowledged that catastrophic landslide events could impact streams and aquatic habitat in the area of the Project. However, the Project that includes mitigation measures and BMPs, is not expected to exacerbate existing risks and hazards with the implementation of BMPs and mitigation measures. In addition, as described in the response to Comment SA2-43, additional assessment of landslides along the pipeline route would be completed prior to construction.

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The DEIS 4.114-116 temperature analysis fails to consider pipeline ROW and access road related landslides (e.g. debris flows, aka rapid moving landslides) that would destroy large swaths of shade producing riparian vegetation. Debris flows would destroy shade for stream segments for up to a mile or more of perennial stream and would adversely affect stream temperatures of coho salmon rearing below the affected channels. The DEIS temperature analysis is not based on the best available science because it does not discuss how debris flows associated with pipeline construction/access roads would greatly increase stream temperature because large amounts of shade would be destroyed. Although the timing and location of debris flows that would destroy riparian vegetation cannot be predicted, there is high probability that these debris flows will occur during the life of the project (i.e. 30 years). Due to the severity of the impact (i.e. significant) the temperature impacts need to be discussed at least in general terms and a commitment made for restoration.

CO28-371

Similarly, the DEIS and BA are defective because they failed to discuss that the project is likely to adversely affect critical habitat for coho salmon because debris flows, either caused or exacerbated by pipeline construction and associated access roads, could seriously degrade significant linear reaches of coho critical habitat over the life of the project. The DEIS 4-288 limits discussion of unstable slopes to stream crossings when it is well known that debris flows originate at headwalls and zero order basins well upslope from actual stream channels. The DEIS and BA are not based on the best available scientific information.

CO28-372

The DEIS fails to quantify sediment from road construction and use and take site specific corrective action. Heavy vehicle use of unpaved access roads during construction will create large amounts of fines on the road surface that will be washed into streams during subsequent intense rainfall. This fine sediment delivery is likely to be substantial and will significantly add to baseline stream sediment that already exceed standards desirable for coho salmon (Anlauf 2011). The DEIS appears to lack any site specific mitigations for roads that would disconnect the sediment laden road surface runoff from entering streams and subsequently adversely affecting critical coho salmon habitat. Even with BMPs roads are known to be a major fine sediment sources impacting small coho streams because not all fine sediment can be contained. Even with watering, large amounts of dust is likely to enter streams as fine sediment. Dust has been found to be substantial source of fine sediment in heavy use areas.

CO28-373

Dismissing road related sediment impacts as "minor" or "undetectable" due to implementing BMPs is not credible when the DEIS/Pacific Connector fails to identify specific BMPs to disconnect the road sediment from streams at specific locations. Furthermore, the DEIS/Pacific Connector has failed to conduct a scientific road inventory of the vast access road system to identify specific locations where sediment laden water from the road surface will enter streams. Assuming the road surface generating sediment laden flow to streams is a mere 200 ft is not scientifically defensible in the very steep areas of identified access roads. Some roads may have no sediment controls for many hundreds of feet as they descend on steep slopes and cross stream channels. Rills and gullies for several hundred feet are likely present in some access roads that shunt sediment from the road surface directly into the stream. Merely grading these roads is not going to correct the underlying lack of erosion control structures on the road. Regardless of ownership, since Pacific Connector is using these roads with heavy equipment, logging

CO28-371 The project considered routes that would mostly avoid high risk landslide areas (see section 4.1). Areas with lower more moderate risk would have additional BMPs in place to further reduce this risk. Some areas with higher potential would be evaluated when the project obtains access and appropriate actions taken relative to the project risk of landslides. Therefore while some landslide could naturally occur along the route project induced landslides that affect riparian areas are not likely due to routing and additional BMPs and therefore are not considered to affect stream temperature.

CO28-372 See response to comment CO28-371.

CO28-373 See response to comments CO28-164, CO28-190, and CO28-336.

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equipment etc., they are responsible for preventing the pollution caused by vehicle activity on the roads. Access roads are a connected action whose sediment impact to coho salmon and water quality has not been fully addressed in the DEIS.

The DEIS is not based on best available science because it does not disclose the length of stream reaches (e.g. critical coho stream miles) that could be impacted by road construction and heavy road use. The DEIS is not based on best available science because it fails to identify pre-project surveys to establish baseline conditions for stream miles that could be affected by increased road related sediment caused by this project. For example, road inventory methods are available to estimate the percent of the road system connected to the stream system (baseline condition). The DEIS fails to explicitly state the extent to which this connectivity would be decreased, if any.

DEIS 4-23 states: Pacific Connector would install barriers at locations along its pipeline route to discourage unauthorized public access to the right-of-way. These barriers may include boulders, dirt berms, log barriers, signs, and locked gates. Slash from clearing operations would be redistributed on the right-of-way, to improve habitat and to make OHV travel difficult. These barriers should minimize OHV access to the right-of-way and reduce unauthorized hunting or poaching of game animals (see section 4.10.2.5 of this EIS for a further discussion about OHV traffic). The barriers identified are necessary but not sufficient to prevent significant damage by 4WD vehicles, ATVs and motorcycles. We have observed repeatedly that similar barriers are not effective in SW Oregon due to the determination of OHV vandals and poachers. We suggest that an alternative will be developed with adjacent private land owners to gate access roads at strategic locations where it is impossible to get around the barrier and Pacific Connector will fund the construction and maintenance of these gates. Merely putting barriers where the ROW begins is not going to be effective. This is common knowledge among land owners and land managing agencies.

The DEIS fails to acknowledge that portions of the pipeline corridor will be used by OHV despite barriers. The impact will be cumulative because OHV vandals will compromise barriers in the long term. Determined OHV users, especially hunters and loosely organized OHV groups, will find access around boulders placed to prevent OHV use. Motorized use will damage erosion prevention measures and newly planted vegetation. Vehicle ruts will funnel winter flows. Ruts will become gullies delivering more than "minor" amounts of sediment to stream channels. The DEIS fails to disclose that effective control of OHV will be very difficult due to the remoteness of the pipeline corridor and numerous points of access. The DEIS fails to establish baseline monitoring protocols to quantitatively and spatially assess OHV damage with some type of GIS system. The DEIS has failed to develop a coordinated plan with NFS, BLM and private land owners to prevent OHV. We assert that expected erosion control cannot be met if OHV access destroys newly planted vegetation, damages erosion control structures and create ruts, rills and gullies. Inevitable OHV use will be accompanied with the high risk of introducing POC root disease to critical stream habitat. The DEIS fails to disclose that introduction of the POC root disease would decrease shade along streams far more than stream crossings. Assuming effectiveness of mere boulders to prevent OHV use in SW Oregon is naive to say the least.

CO28-373
cont.

CO28-374

CO28-374 OHV controls and measure to limit access to the Pipeline right-of-way are discussed in section 4.8.1.2 of the draft EIS. As stated in this section: "Various natural and constructed control measures would be installed at appropriate locations in coordination with the appropriate land management agencies or landowner." Potential constructed control measures identified in the text include fencing and locked gates. The section continues: "Pacific Connector would coordinate with landowners during construction and restoration to finalize site-specific OHV control measures. In addition, following construction, the effectiveness of the site-specific measures would be assessed on a periodic basis, generally in conjunction with revegetation monitoring and in response to identified problems. Pacific Connector would be responsible for monitoring and managing unauthorized OHV use during the full life of the pipeline project and would implement additional measures as necessary."

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CO28-375 Comment noted. The concerns expressed are outside the scope of this EIS; however, the Commission may address this in any Order it may issue.

IX. THE ECONOMIC ASSUMPTIONS OF THE PROJECT ARE FLAWED.

Independent economic analysis of the JCEP suggests that the economic premise of the Project is flawed. In May 2019, McCullough Research analyzed the project and concluded that

However, there are a number of good reasons to question whether this is a good location and a good project design. First, the supplies for Jordan Cove are taken from the Malin hub in southern Oregon. This puts the terminal at a six-hundred-mile disadvantage in transportation costs. Second, the announced costs of the terminal are high by market standards – significantly higher than its competitors. Third, the technology of Jordan Cove – using natural gas as opposed to electricity for compression – makes it less efficient than its competitors in British Columbia or the Gulf Coast.

Our analysis indicates that Jordan Cove will have a significant cost disadvantage compared to its competitors – approximately 25%. We also calculate the chance of Jordan Cove reaching operation is only one third.

McCullough Research, *The Questionable Economics of Jordan Cove LNG Terminal* (May 6, 2019). The FEIS should review this analysis and address how its conclusions are incorporated into FERC's FEIS for the Project.

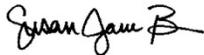
CO28-375

X. CONCLUSION

For the reasons set forth above, the DEIS fails to take a hard look at the impacts of the proposed projects. The DEIS fails to support its conclusions that the projects would have only "some limited adverse environmental impacts," that "most of impacts would be reduced to less-than-significant levels," or that the projects "would be an environmentally acceptable action." DEIS 5-1. FERC therefore cannot proceed without revising its analysis. Because of the extent of revisions necessary, any revised analysis must be made available for further public comment prior to any FERC decision to grant the pending applications. More broadly, the undersigned continue to contend that the adverse environmental and other impacts of these projects demonstrate that the projects are contrary to the public interest and should be denied.

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Sincerely,



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