

## **Testimony, Millennium Bulk Coal Export Terminal Proposal**

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### **The Coal-Oil-Gas Intersection:**

#### **Catastrophic Derailment Risk & Four Anniversaries**

- **Two Years: Williams Natural Gas Pipeline Explosion & LNG Near-Miss**
- **Three Years: Bakken Crude-by-Rail Destruction of Lac-Mégantic, Quebec**
- **Ten Days: Union Pacific Derailment, Explosion, Fire, & Spill in Mosier**
- **Three Centuries: Cascadia Subduction Zone Earthquake & Tsunami**

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Note: An earlier version of this testimony was presented to the Department of Ecology / Cowlitz County on the Millennium Bulk Coal Export Terminal Proposal public hearing in Pasco, Washington, on June 2, including two minutes of verbal amplification.

This was the day before the Mosier Union Pacific derailment, explosion, fire, and spill.

I have updated this discussion of theoretical Columbia Gorge derailment risk to include a little commentary on that actual derailment.

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- **Two Years: Williams Natural Gas Pipeline Explosion & LNG Near-Miss**

Two years ago, on March 31, 2014, at 8:22 a.m., a natural gas pipeline management and transmission station blew up. The explosion and fire were just down the road from Pasco, Washington, in Plymouth, on the Columbia River.

Many people involved in examining and commenting on the Millennium Bulk Coal Export Terminal Proposal will remember this catastrophe, and I'm sure that some worked on aspects of incident command, causation analysis, repairs, and lessons learned for emergency preparedness and future management of explosive fossil fuels.

What most people don't know, however, is that the Columbia Gorge rail line adjacent to this Williams Companies natural gas and liquefied natural gas (LNG) facility was so badly damaged by shrapnel from the explosion that, had a coal train or crude-by-rail train been on that tracks at that moment, it would have derailed.

One of the rails on this BNSF main line was struck by a large piece of shrapnel from a 50,000-pound piece of natural gas equipment that was completely shattered by the gas explosion. This rail was pushed out of alignment by three inches when the shrapnel hit it. That little deviation – only three inches – was more than enough to have derailed any train then on those tracks, according to Chief Lonnie Click of the Benton County, Washington, Fire Department, Incident Commander.

The 2014 Plymouth incident is now officially known as the Williams Pipeline LNG Plant Explosion. Chief Click presented the history of that incident to PHMSA, the Pipeline &

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Hazardous Materials Safety Administration, in Washington, D.C., on May 19. Afterwards, Chief Click told me that – had a Bakken oil train derailed and exploded because of the Williams shrapnel distortion of the BNSF main line rail, “we could have an incident for the ages.”

The chief was not just talking solely about how bad catastrophe could have been if the shrapnel impact on the BNSF main had caused a unit train filled with Bakken crude to derail, explode, and burn. That would have been horrible; see below. But there was another component to the situation, which could have massively compounded the damage, regardless of the rail-line loss of function: an LNG explosion.

March 31, 2014, could also have gone down in history as one of the worst incidents in U.S. fossil-fuel damage because there are the two 40-year-old LNG “peak shaver” storage tanks within the Williams natural gas pipeline and distribution management facility. Another piece of shrapnel from the gas pipeline explosion pierced one of these tanks, and initially there were fears that LNG was leaking from that tank and would likely encounter the raging fire in the gas management plant and pipeline – and then itself ignite.

The concentrated nature of LNG, 600 times less in volume than atmospheric methane, is one of the reasons that LNG facilities are known as potential “terrorism magnets.” That risk of ultra-catastrophic LNG explosion is why everyone in a two-mile radius was evacuated while the fire continued to rage.

Luckily, it turned out that only the outer wall of this old LNG tank had been pierced. Although the inner wall was dented by the shrapnel, it did not crack or rupture. But these two ancient LNG tanks are still there, and still part of Williams’ daily gas pipeline management.

- **Three Years: Bakken Crude-by-Rail Destruction of Lac-Mégantic, Quebec**

You are well aware, I’m sure, of how dangerous and explosive Bakken crude oil is, because of its unusual high-volatility mixture of gaseous and liquid hydrocarbons. We have already seen the worst case.

We are approaching the third anniversary of the Lac-Mégantic catastrophe in Quebec, July 6, 2013. In the middle of that night, a train carrying Bakken crude derailed and exploded in the middle of the downtown in that small city.

The explosion and fire destroyed the entire downtown and incinerated 47 people – only 42 bodies were found; five people who disappeared but were known to have been in the area are believed to have been completely consumed by the fire.

There have also been several Bakken crude-by-rail derailments, explosions, and fires in the U.S. – and now we’ve had one in the Columbia Gorge, on the Union Pacific line on the south side, in Oregon, ten days ago.

- **Ten Days: Union Pacific Derailment, Explosion, Fire, & Spill in Mosier**

The little town of Mosier was lucky, too, ten days ago.

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- There was no wind in the Columbia Gorge when the Union Pacific train derailed and caught fire – very rare slice of meteorological good fortune.
- Although eleven of the 96 cars on this unit train of Bakken crude derailed – because of a single broken bolt fastening a rail to a tie! – only four burned.
- The oil that leaked out before burning soaked into the ground and nearby Rock Creek – not a good thing for the ecosystems or the Columbia, but that prevented the oil from pooling and igniting more cars.

But you can't always count on luck.

- **Three Centuries: Cascadia Subduction Zone Earthquake & Tsunami**

This brings me to the fourth anniversary, and the risks to coal trains. At about 9 p.m. on January 26, 1700, the last rupture of the Cascadia Subduction Zone occurred. As you know, the Pacific Northwest is the largest guaranteed earthquake zone in North America, and it ruptures at level calculated to range from Magnitude 8.0 to Magnitude 9.2, on an average of every 243 years.

We are 316 years into that cycle – more than three centuries! – and we all know that it is not a question of if, but only a question of when. Statistically, there is better than one chance in three that it will occur during the planned lifespan of the proposed Millennium coal export terminal – and the rail lines necessary to feed it.

Everyone involved in any way in emergency preparedness has received at least preliminary training about our coming earthquake, and those here from the coastal areas of Washington and Oregon also know that the resultant tsunami will completely devastate those regions. The official position of the State of Oregon is that the Pacific Northwest coast will be “uninhabitable” for at least 18 months.

The earthquake damage throughout the region will be the worst catastrophe in US history. Portland, my home, is expected to be without water and electricity for three to six months. By the time the Cascadia shock waves reach Longview and then move on to the Tri-Cities area and through the Columbia Gorge, they will still deal out destruction in a Magnitude 7-plus range.

The BNSF main line on the Columbia's north bank, and the Union Pacific main line on the south bank, will essentially turn into scrap metal. Every bridge on either line will crumble and collapse. If there is a Bakken crude train on either line, it will fracture completely.

In addition, the LNG tanks at the Williams pipeline facility, built in the 1970s when we didn't even know about the Cascadia Subduction Zone and its history, were also not built to withstand these stresses.

But what about the coal trains? Coal can burn too; burning it is, in fact, the plan. In addition to all the many direct and indirect health impacts from coal dust and detritus, there is some risk that a coal train could be caught in a situation where it is subject to ignition and combustion. The risk of non-ignition derailment is significant enough, but now we have to also consider the very worst case, unlikely though it is.

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The first three events I've cited -- the two-year anniversary of the Williams Pipeline LNG Plant Explosion; the three-year anniversary of the destruction of the downtown of Lac-Mégantic, Quebec, and 47 of its residents; and the ten-day anniversary of the Mosier Union Pacific derailment and fire – were the result of human error and corporate mismanagement.

The three-hundred-sixteenth anniversary of the Cascadia earthquake memorializes a natural fault that is completely beyond the control of humanity. All we can do about the certainty of the next rupture of the Cascadia subduction zone is work diligently for mitigation and adaptation – and do nothing to increase our risks.

Can we guarantee that no more human error will occur in our management of dangerous fossil fuels and inadequately maintained – even obsolete – infrastructure? Of course not.

Can we guarantee that the Cascadia earthquake will occur only when it is convenient? The question is so absurd as to be outrageous: we are nowhere close to prepared for an event that could occur completely without warning at any moment.

What are the odds that more mismanagement by Williams, or BNSF, or Union Pacific, could derail a coal train? Relatively slim, perhaps, but they are nowhere close to zero.

Imagine that the Cascadia earthquake does hit at a time when a coal train is passing by the Williams facility, with its antique LNG tanks and gas pipeline infrastructure – and Bakken crude train is right on its heels.

What are the odds that the derailment of a coal train could occur at a time and place that allow it to burn? Very slim, to be sure – but they are not zero.

**The Responsibility of the State of Washington & Cowlitz County**

Your responsibility, in caring for the people of Washington and your neighbors across the Columbia, is a modern version of the first clause of the Hippocratic oath:

**First, Do No More Harm**

Do not make the risks we already face worse.

Do not permit a deadly and dangerous coal export terminal and the coal trains needed to feed it to invade a region that is not even prepared to deal with what we already know we must confront.

That would be wrong in many ways, which many people have shared with you over the course of these hearings. Corporate profits are no substitute for public safety.

Thank you for your work and your consideration.