

POSSIBLE NORTH AMERICAN WEST COAST SOURCES OF BULK LIQUID NATURAL GAS (LNG) FOR HAWAII

Hawaii Shippers' Council, September 5, 2012

LOAD PORT	LNG TERMINAL	GAS PIPELINE	GAS FIELD	TRANSPORT TO HAWAII
<p>NIKISKI Kenai Peninsula, Alaska, USA (Cook Inlet)</p>	<p>Nikiski Export Terminal Startup: 1969 ConocoPhillips Company</p>	<p>Local within Cook Inlet</p>	<p>Cook Inlet, Alaska Field is depleting; exports only in Summer</p>	<p>JONES ACT</p>
<p>VALDEZ Alaska, USA (Prince William Sound) Alter. Nikiski</p>	<p>Proposed Valdez LNG Option Cost: \$40 bil (including pipeline) Startup: 2020 Partners: BP, ExxonMobil & ConocoPhillips</p>	<p>Proposed 860 miles paralleling the existing Trans Alaska Pipeline System (TAPS) for crude petroleum oil from Prudhoe Bay to Valdez with an additional 60 mile section to Point Thompson</p>	<p>Point Thompson, Alaska North Slope 60 miles E. Prudhoe Bay Reserves: proven 35tn cf Est. 236 tn cf</p>	<p>JONES ACT</p>
<p>KITIMAT British Columbia Canada</p>	<p>Bish Cove Terminal KM LNG Operation General Partnership Cost: \$4.5 bil Capacity: 5 mil tonnes/yr Startup: 2016 Partners: Apache Canada 40%; EDG Resources 30%; Encana Corp. 30%</p>	<p>Kitimat-Summit Lake Natural Gas Pipeline Looping Project Operator: Pacific Trails Pipeline Length: 280 miles Provides North American tie-in at Summit Lake, BC, with Spectra Energy Transmission (SET) Pipeline System.</p>	<p>Western Canadian Sedimentary Basin Reserves est. 148 tn cf Covers: SW Manitoba Southern Saskatchewan Alberta NE British Columbia SW Northern Territories</p>	<p>FOREIGN FLAG</p>
	<p>LNG Canada Cost: \$12 bil Capacity: 12 mil tonnes/yr Startup: 2020 Partners: Shell Oil Co. 40%; Mitsubishi 20%; KOGAS 20%; PetroChina 20%</p>	<p>Not Available</p>		
	<p>Douglas Pass Energy Partnership (LNG BC Project Ltd.) Capacity: 700 mil tonnes /yr Startup 2014 50/50 Joint venture: LNG Partners LLC Haisla First Nation</p>	<p>Pacific Northern Gas Ltd. Existing gas pipeline from Summit Lake, BC, to Prince Rupert, BC., with new section to Douglas Pass.</p>		

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<p>COOS BAY Oregon, USA</p>	<p>Jordan Cove Export Terminal Capacity: 6 mil tonnes/yr Cost: \$5 bil. Startup: 2020 Operator: Jordan Cove Energy Project LP</p>	<p>TransCanada Pipeline From Alberta through Washington, Oregon and to Northern California</p> <p>Ruby Pipeline 680 miles Opal, WY to Malin, OR Startup: July 2011 Cost: \$3.7 mil Operator: El Paso Corp Currently proving 30% of N. California's requirements.</p> <p>Williams Northwest Pipeline Length: 4,000 miles Capacity: 3.8 bil cf/day WA, OR, ID, WY, CO Operator: The Williams Companies Inc.</p> <p>Pacific Connector Gas Pipeline Project Length: 230 miles – from junction hub of Ruby, TransCanada, Williams NW pipelines at Malin, OR, to Coos Bay, OR Joint Venture Partners: Williams Co. & Vereson US Power Inc.</p>	<p>Western Canada Sedimentary Basin</p> <p>Rocky Mountain Basin Fields WY, CO, UT & MT</p> <p>Rocky Mountain Basin San Juan Sedimentary Basin New Mexico, SW Colorado</p> <p>Western Canada Sedimentary Basin Via SET Pipeline System</p>	<p>JONES ACT</p>
<p>ENSENADA Baja California, Mexico</p>	<p>Energia Costa Azul LNG Receiving Terminal Capacity: 1 bil cf/d nat gas Cost: \$1.2 bil Startup: May 2008 Sempra LNG / Sempra Energy</p>	<p>Connector pipeline to Northern Mexico pipeline systems</p>	<p>Imports from Pacific Rim countries by sea.</p> <p>Can re-export to Hawaii.</p>	<p>FOREIGN FLAG</p>