Alaska Airlines-Port of Seattle-The Boeing Company

Biofuel Infrastructure Study - Turning Goals into Reality

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Carol Sim
Director, Environmental Affairs

Alaska AIRLINES

Why?

Execution on Sustainable Aviation Fuels Northwest (SAFN)

- Alaska, Boeing and Seattle-Tacoma International Airport (SeaTac) all key stakeholders and members of Washington Aviation Biofuels Workgroup

Alignment on corporate goals to reduce aviation-related emissions and facilitate use of sustainable alternative jet fuels

Send market signal to attract fuel producers to the Pacific Northwest

Goal Alignment Alaska Airlines- Reducing Aircraft Emissions

20%

2020 Goal: Decrease fuel consumption and associated emissions for mainline operations by 20%, over 2012.

2020 Goal: Use sustainable aviation biofuel at one ore more of our airport locations by 2020.

SeaTac Environmental Goals and Directives

"Reduce aircraft-related carbon emissions at Seattle-Tacoma International Airport by 25%"

"Lead US airport industry in environmental innovation and minimize the airport's environmental impacts"

The Boeing Company

Boeing is the largest private employer in the State of Washington

Commitment to promoting the commercialization of aviation biofuel in Puget Sound area and around the world.

Challenges

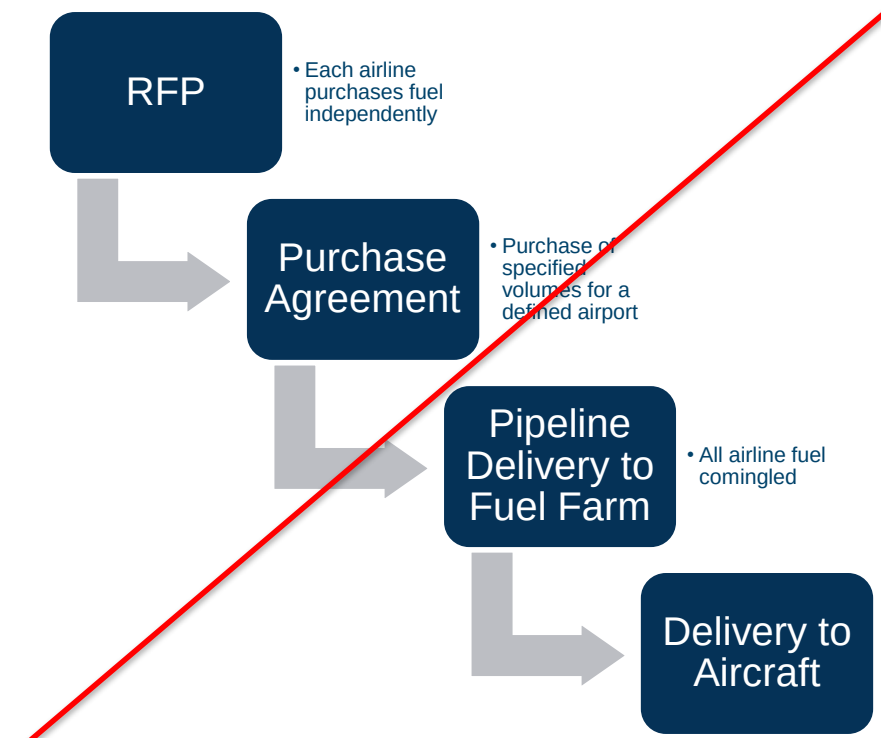
Biofuel Conformance to ASTM Standards and timeline for approval

Fuel Availability- Demonstration scale to Commercialization

Cost
- Lack of Low Carbon Fuel Standard or other economic incentives in the PNW

Delivery Infrastructure

Petroleum Jet Procurement



What?

Evaluate fuel transportation options from PNW, Midwest and Gulf state production facilities

Delivery and storage locations for multi-modal transportation including pipeline, barge, rail and truck

Identify potential properties for storage and blending including land use restrictions, permitting, environmental concerns

Determine financing options for infrastructure enhancement using various Port mechanicms

Ability to purchase fuel but blending and delivery infrastructure near airport does not exist. Cost prohibitive until in pipeline

- Largest carrier but cannot purchase amount airport wants to see
- Goal drop in fuel- short term evaluation in the event fuel cannot be introduced into the pipeline

SeaTac Roadmap – Exploring Airport's Role

Incremental Cost of Fuel

Airport role in covering incremental cost of biofuel

Airport role in corporate partnership program

Financing & In-state Production Incentives

Airport role in bonds, low interest financing

Airport support/access to unused or brownfield sites

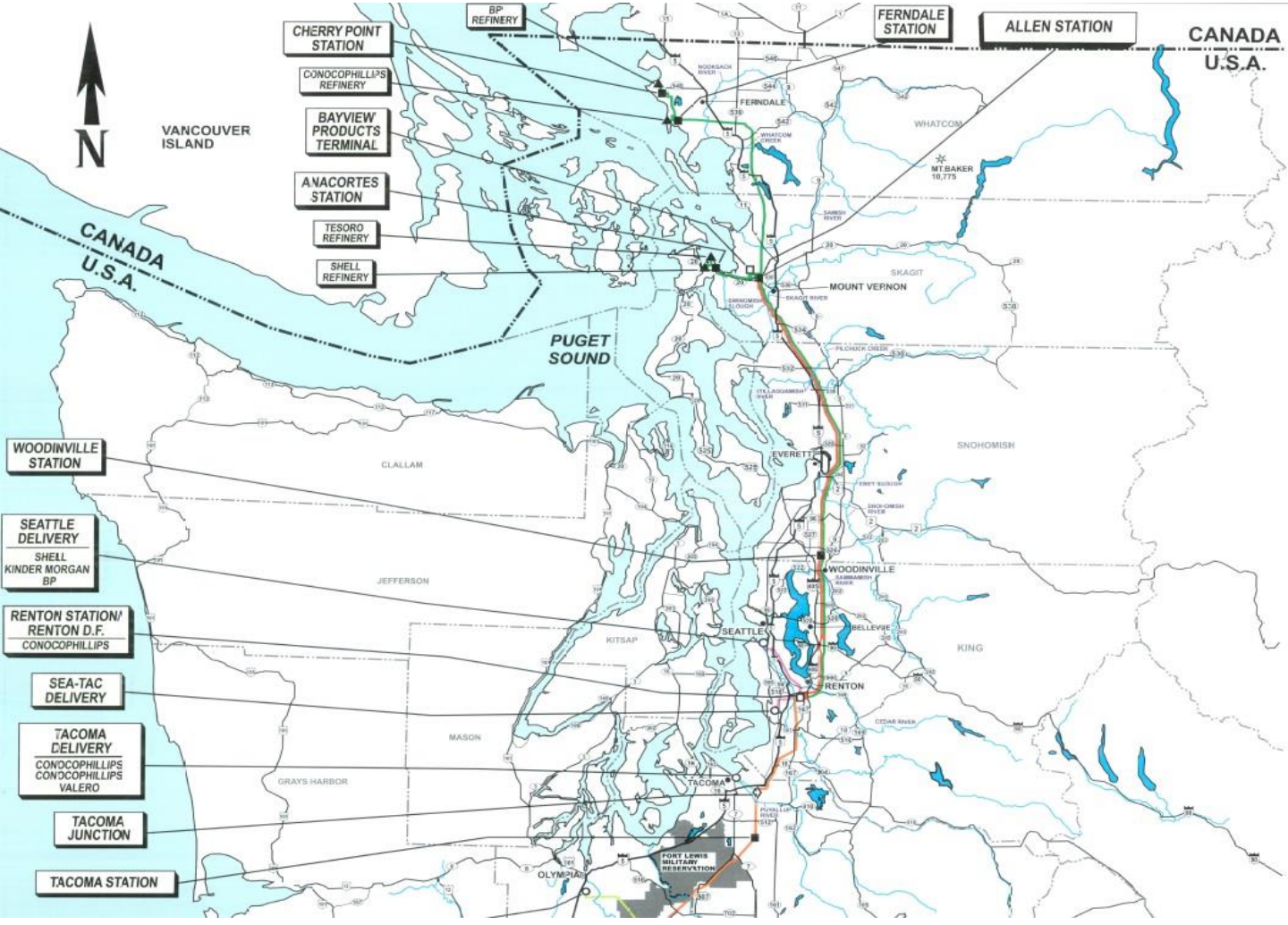
Infrastructure Integration

Airport role in providing receiving, storing & blending facilities for biofuel at Sea-Tac

Infrastructure Integration

Short-term: Delivery from out-of-state

Requires flexible receiving, storing, & blending facilities with fuel farm integration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CONOCOPHILLIPS
SEA-TAC DELIVERY
TACOMA DELIVERY
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VALERO
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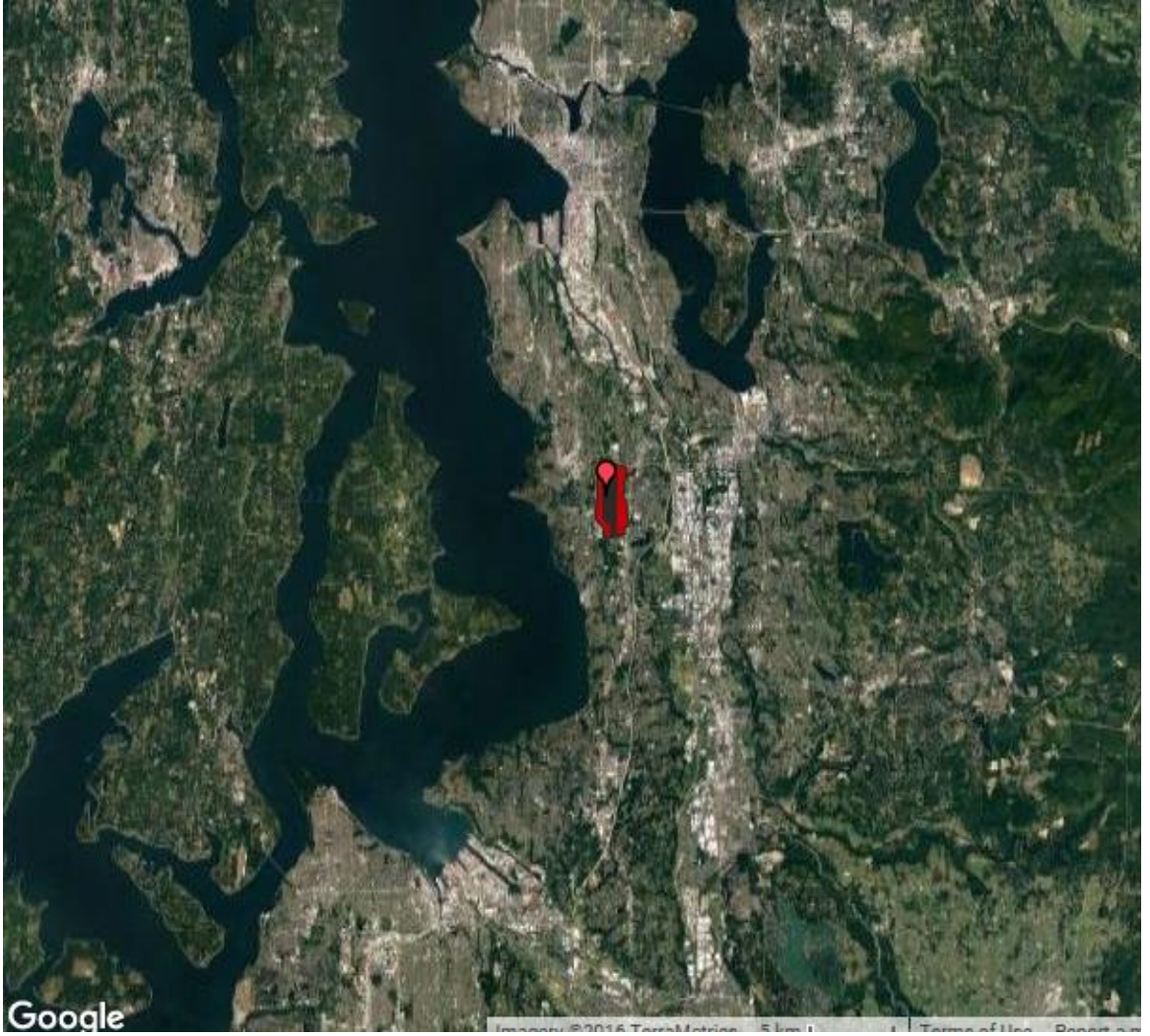
TACOMA STATION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Harbor Island

Where we are headed

Complete Infrastructure Feasibility Study by Nov 30 2016

Examine airport role in covering incremental cost of biojet in US context

Continue to support regional research and development initiatives

Stated goal: 50 million gallons of biojet delivered annually

THANK YOU!

Carol Sim
Director, Environmental Affairs
503-384-4480
carol.sim@alaskaair.com

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