

Sustainable Aviation Fuel (SAF) Study Session

April 27, 2021



What is Sustainable Aviation Fuel (SAF)?

- Drop-in fuel made from sustainable sources that can be blended with fossil jet fuel
- Produced from waste oils from a biological origin, agriculture or forest residues, municipal waste, etc.
- SAF sustainability standards set by International Civil Aviation Organization (ICAO)



Volumes & Availability



Image courtesy: Fulcrum Bioenergy website










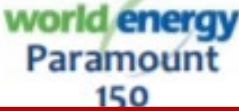









- Still only one production facility (World Energy) in the US
- More volume imported via Neste
- Facility in Nevada nearing completion
- Facility in Oregon under construction
- Worldwide volumes ~ 5 million gal

Impact of California's Low Carbon Fuel Standard

- Sustainable aviation fuel can generate credits under the LCFS as of Jan 1, 2019
- Credit value is \$1.25-\$1.50 per gallon
- Since 2019, more SAF volume at LAX and SFO
- Incentives remain higher for on-road fuels (e.g., renewable diesel), so fuel producers focus on highest revenue-generating fuels

Worldwide SAF production capacity forecast

Announced intentions*

Year-end Production Levels (M gpy)	2020	2021	2022	2023	2024	2025
	 25  34  Demo quant's  ?	 7  6	 480  33  10  150	 10  29  21  24	 290?  56  ~70  90	 16
	~59+M	~72+M	~746+M	~830+M	~990 – 1336 M	1 B +
	2020	2021	2022	2023	2024	2025

* Not comprehensive; CAAFI estimates (based on technology used & public reports) where production slates are not specified

Strategic Plan
Review:
Progress toward
10% SAF Goal



Commission SAF Goal (Dec 2017)

- By 2028, 10 percent of jet fuel available at Sea-Tac will be produced locally from sustainable sources
 - Equivalent to 75 million gallons of “neat” SAF
- By 2035, 25 percent
- By 2050, 50 percent +

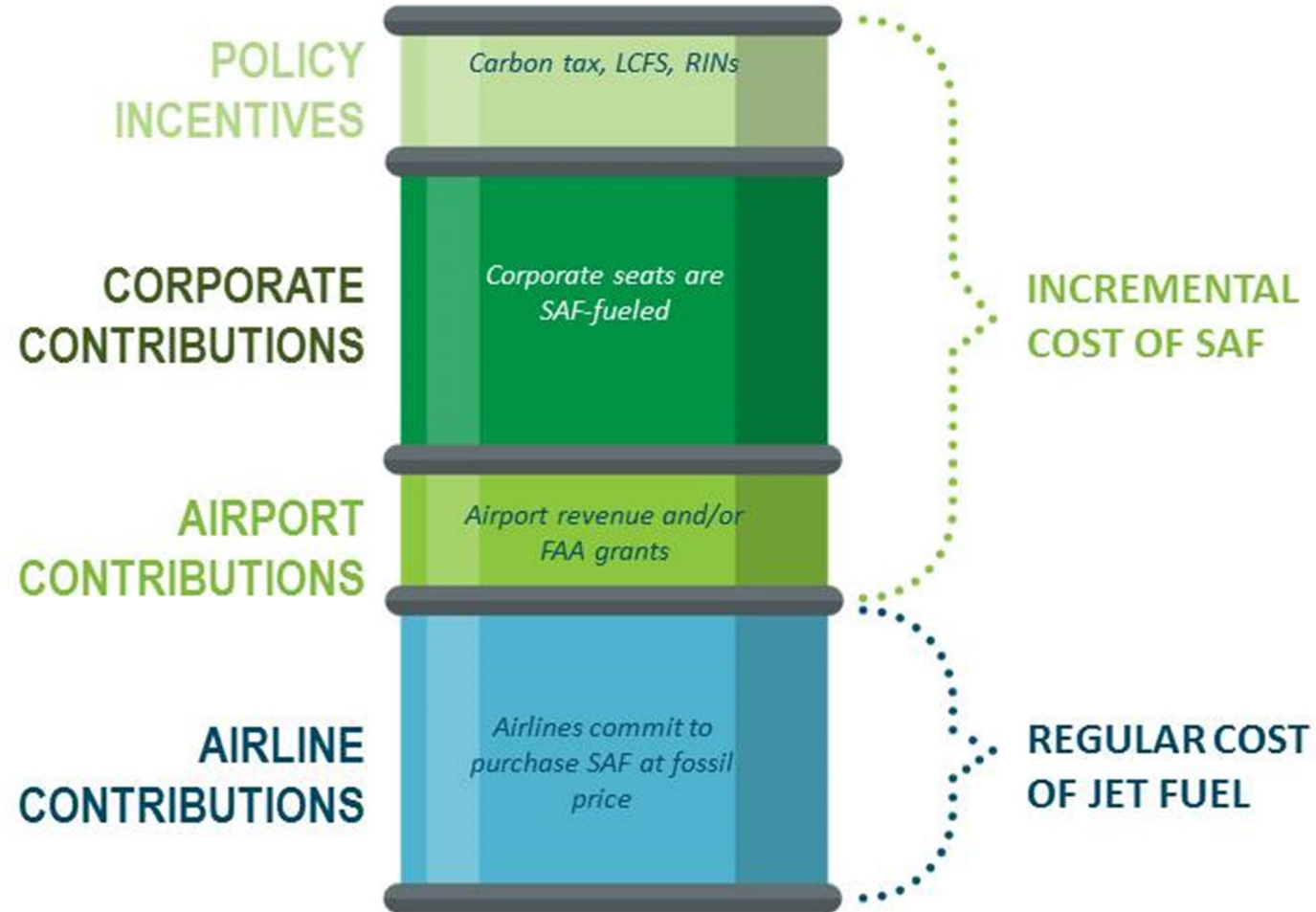


SAF Strategic Plan (2018)

Four Key Strategies

1. Airline-Airport Cooperative Model (aka “the MOU Group”)
2. Support local, state, federal policy to incentivize SAF use and in-state production
3. Obtain FAA approval to use airport funds/grants for SAF co-benefits or infrastructure
4. Enhance awareness of, and support for SAF use

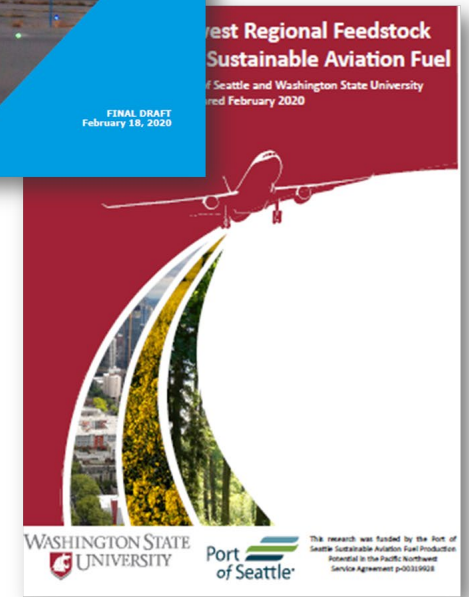
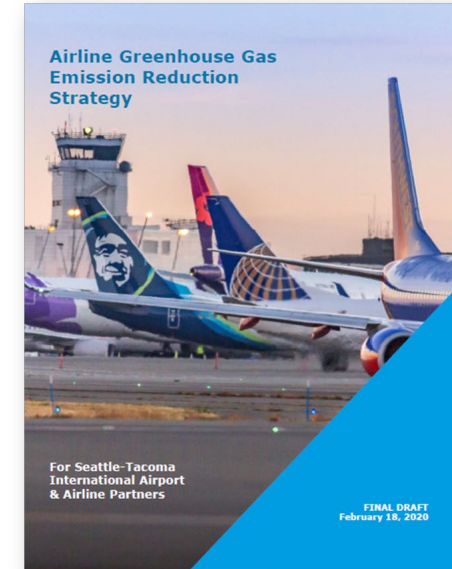
SAF Strategic Plan (2018)

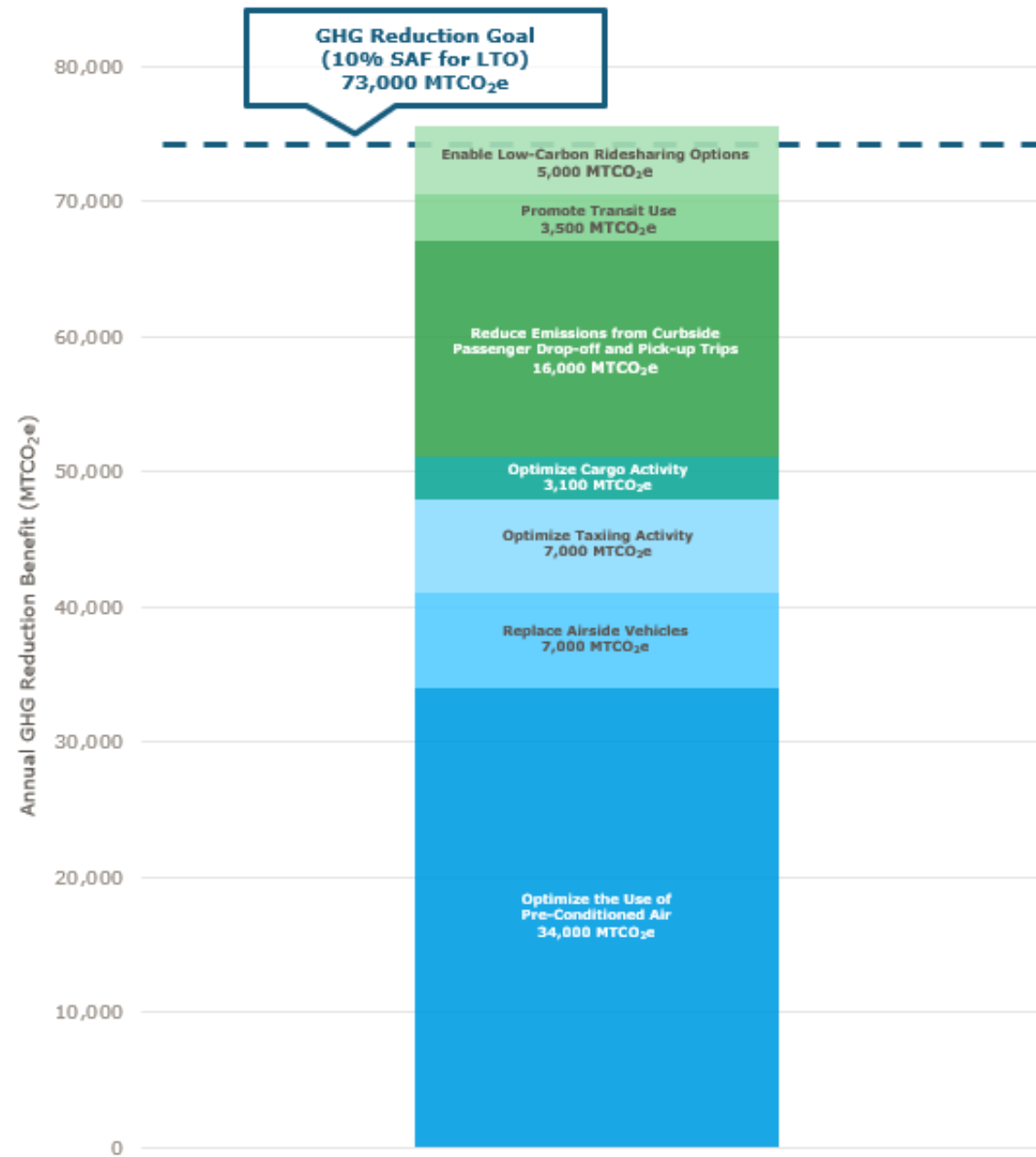


Note: illustrative and not specific to any true program or policy

Airline-Airport Cooperative Model - Update

- Developed a SAF-emission-reduction equivalent strategy with airlines
- Evaluated ability to meet local/regional fuel goal - WSU Study





SAF Policy Update



- Powerful advocate for passing LCFS in WA
 - Bill passed House and out of Senate Ways/Means Committee [future unclear].
- Continue to work with WA Commerce to identify legislation that promotes SAF production and use
- New opportunities at federal level with Biden Administration and focus on clean energy infrastructure

Meeting the 10% SAF Goal

- Requires near-parity or better than incentives offered in California and on-road fuels
 - Airlines at SEA also operate in California and will favor CA prices if trying to meet a SAF target
- Requires dedicated production facility being brought on-line quickly
 - Incentives to speed permitting
 - Incentives to bring down capital and operational costs

Developments Since 2018

- Private business aviation interests
- Corporate “SAFc” (corporate SAF-seat on commercial jet) concept
- European nations setting SAF percentage targets

