

Implementing Performance Based Navigation Procedures at US Airports: Improving Community Noise Exposure

Inter-Noise 2013

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Federal Aviation Administration

NextGEN

Integrated Flight Planning

Operators and traffic managers have immediate access to identical weather information through one data source.

Streamlined Departure Management

RNAV and RNP precision allow multiple departure paths from each runway. Departure capacity increased.

Efficient Cruise

RNAV, RNP and RVSM utilize reduced separation requirements increasing airspace capacity. Aircraft fly most optimal path using trajectory-based operations considering wind, destination, weather and traffic. Re-routes determined with weather fused into decision-making tools are tailored to each aircraft. **Data Communications** reduce frequency congestion and errors. **ADS-B** supported routes available for equipped aircraft.

Streamlined Arrival Management

Arrival sequence planned hundreds of miles in advance. RNAV and RNP allow multiple precision paths to runway. Equipped aircraft fly precise horizontal and vertical paths at reduced power from descent point to final approach in almost all types of weather. Time and fuel are saved. Emissions and holding are reduced.



Flight Planning

Push Back / Taxi / Takeoff

Domestic / Oceanic Cruise

Descent / Final Approach / Landing

Surface Traffic Management

Automation optimizes taxi routing. Provides controllers and pilots all equipped aircraft and vehicle positions on airport. Real-time surface traffic picture visible to airlines, controllers, equipped aircraft, ramp operators and airports. Surface movement management linked to departure and arrival sequencing. **ADS-B** and **ASDE-X** contribute to this function. Taxi times reduced and safety enhanced.

Enhanced Surface Traffic Operations

Pilots and controllers talk less by radio. **Data Communications** expedite clearances, reduce communication errors. Pilot and controller workloads reduced.

Enhanced Surface Traffic Management

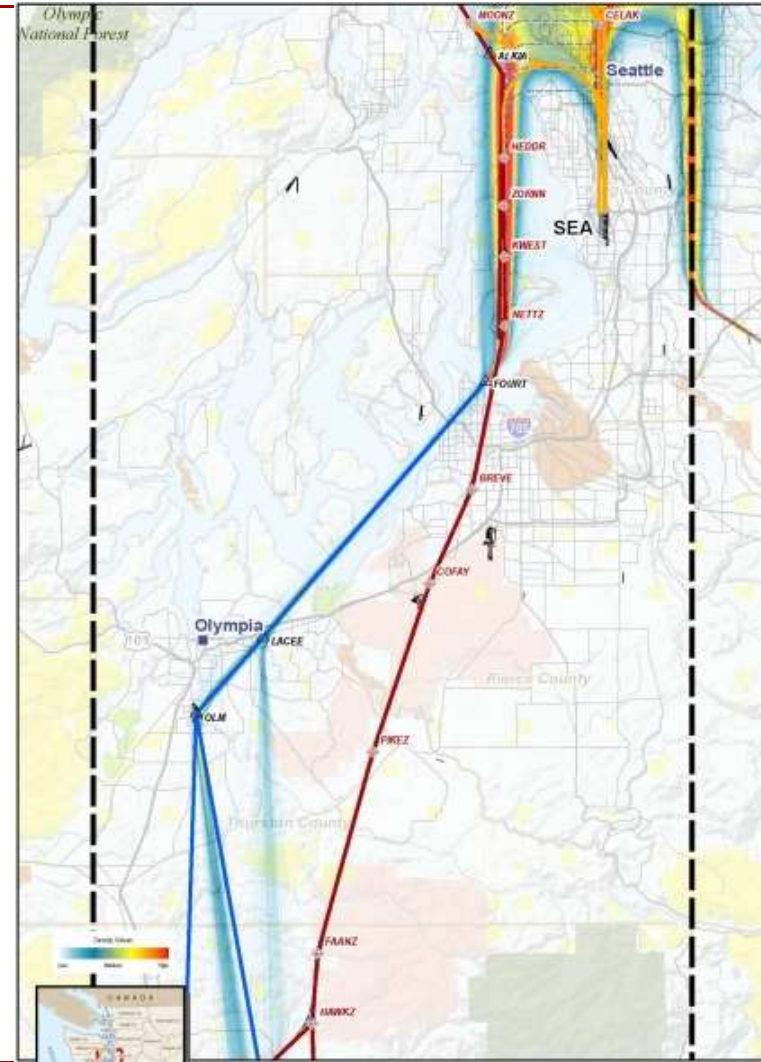
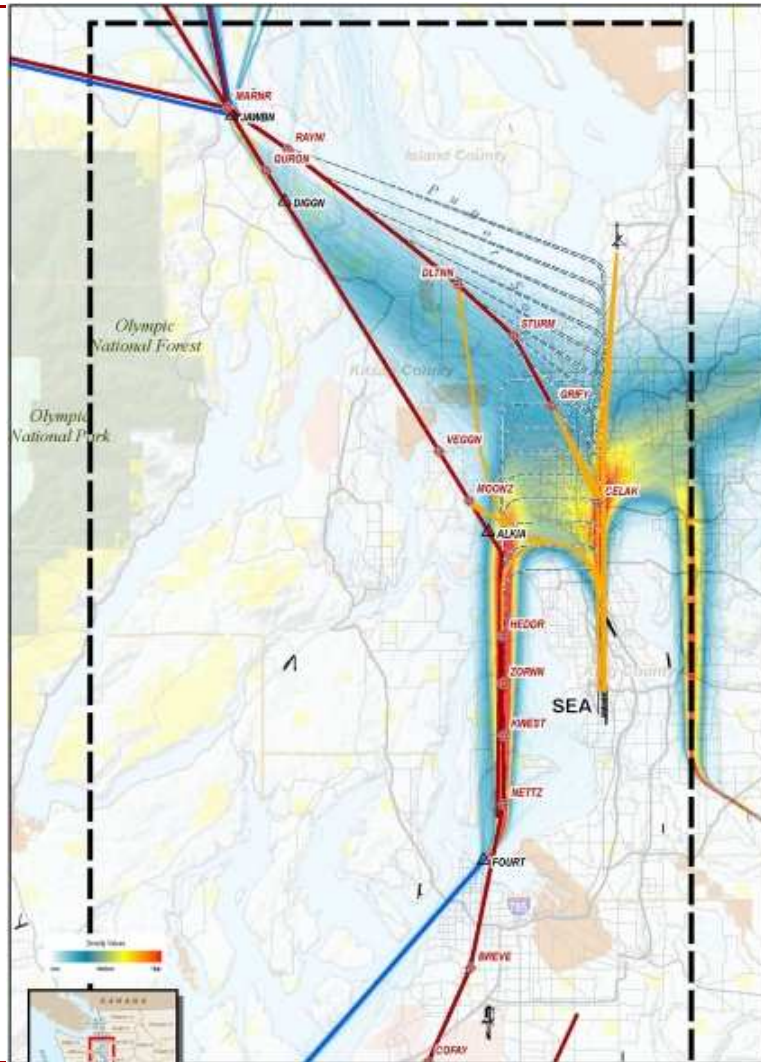
Runway exit point, assigned gate and taxi route sent by **Data Communications** to pilots prior to approach. Pilot and controller workload reduced and safety improved.

Basis for Characterization of Changes in Noise

DNL Exposure Interval	Change in DNL	Characterization of Change
Greater than or equal to 65dB	1.5 dB or more	Significant impact
60 to less than 65dB	3 dB or more	Can receive consideration for mitigation, if there is a significant noise impact, i.e., 1.5 dB or more increase in DNL greater than or equal to 65 dB
45 to less than 60dB	5 dB or more	Requires disclosure

Source: FAA Order 1050.1E

Greener Skies Proposed Arrival Procedures



Greener Skies
Environmental Assessment

Future South Flow Arrival Procedures Over Current Flight Track Density, North of Airport (Eggs-4.2)

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<ul style="list-style-type: none"> Proposed Arrival Proposed EFB Proposed IFR Procedure 	<ul style="list-style-type: none"> Existing EFB Existing IFR Procedure Proposed IFR Procedure 	<ul style="list-style-type: none"> Public Area Boundary County Boundary Highway/Trunk 	<ul style="list-style-type: none"> National Forest National Wildlife Refuge National Park Service 	<ul style="list-style-type: none"> Clearwood of Release State Land DMW Managed Land
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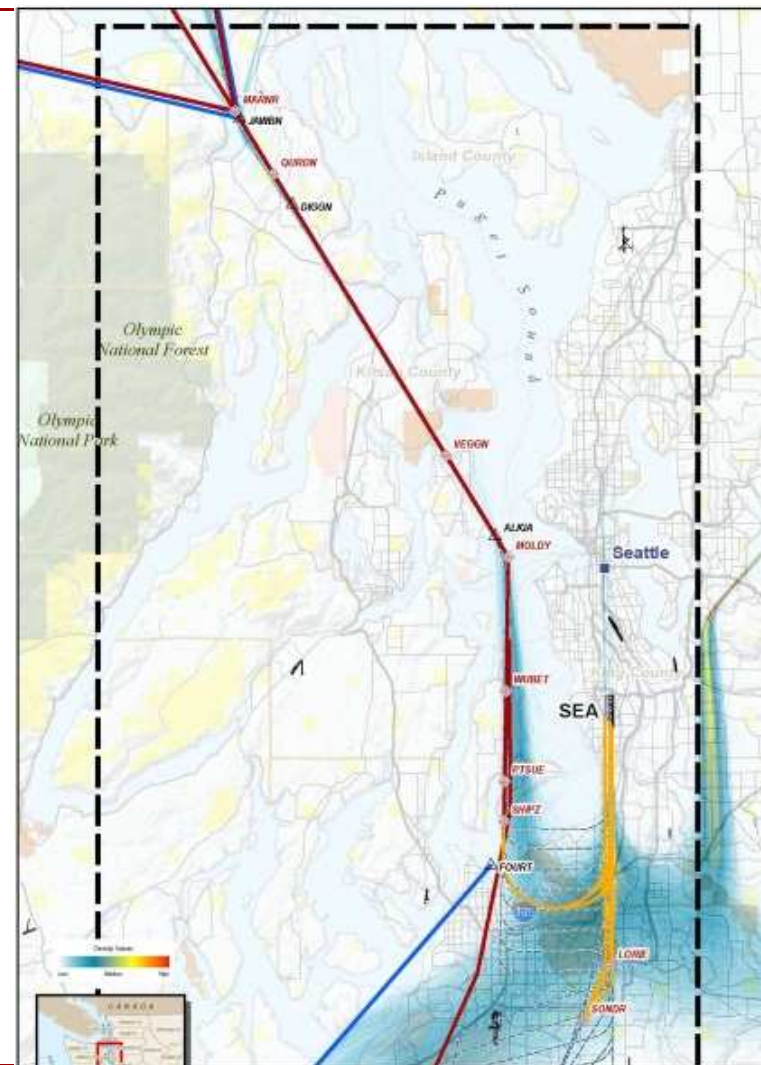
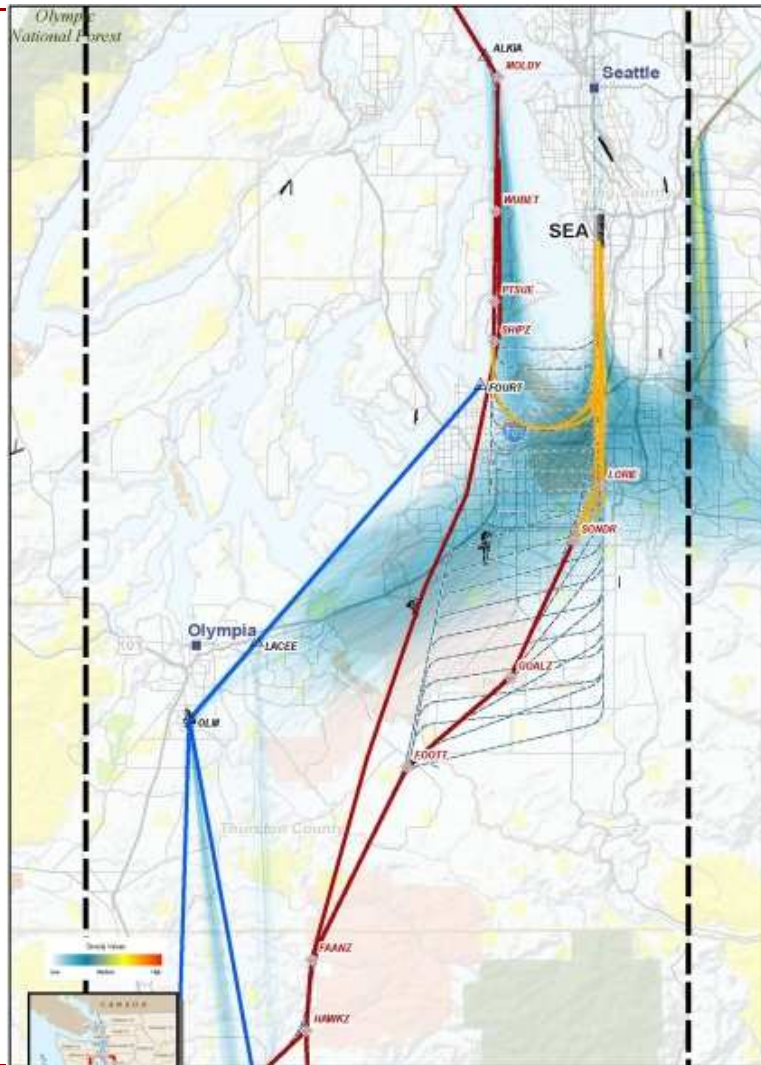
Greener Skies
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Future South Flow Arrival Procedures Over Current Flight Track Density, South of Airport (Eggs-4.2)

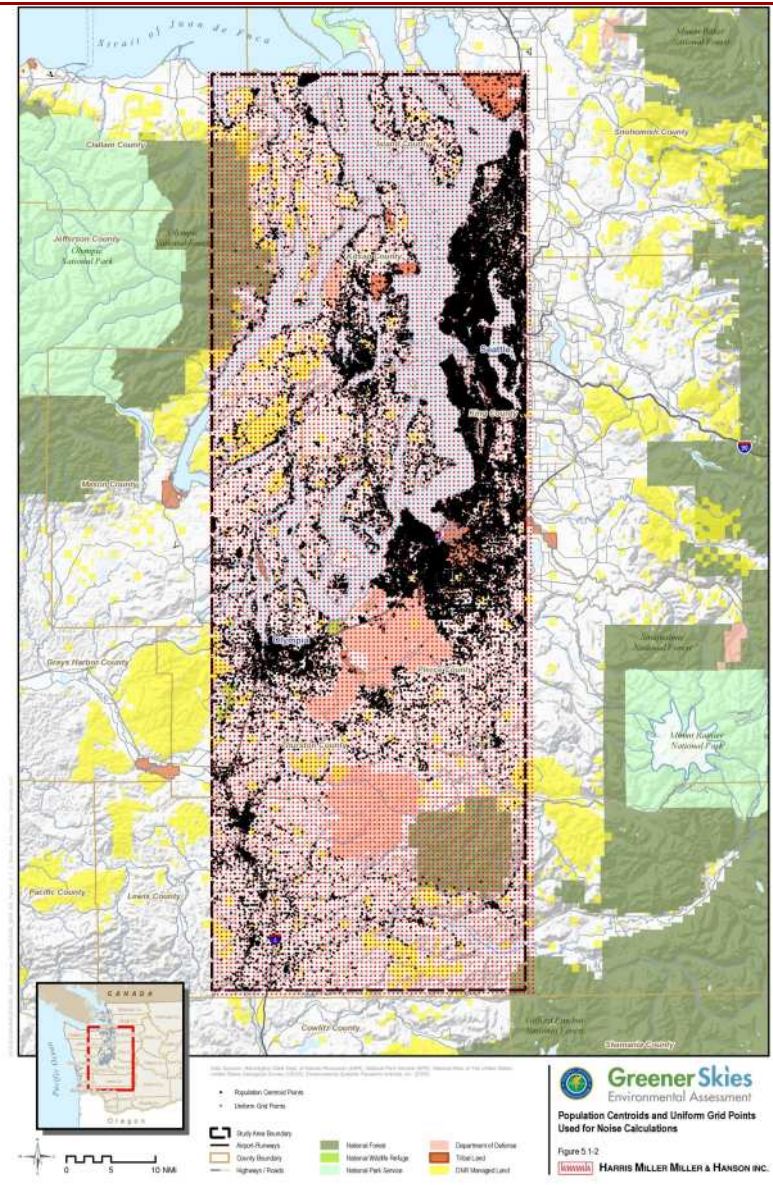
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Greener Skies Proposed Arrival Procedures



Population Centroids and Uniform Grid Points Used for Noise Calculations

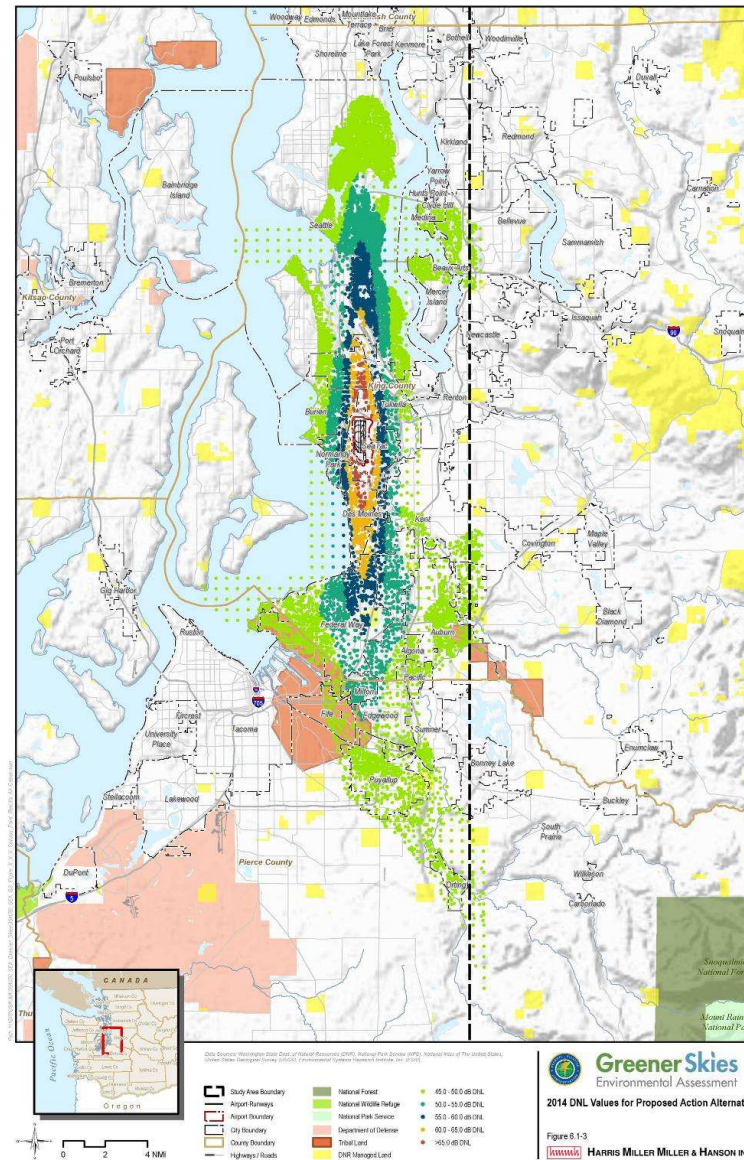


Summary Results for Greener Skies Proposed Action



Study Year	Greatest Change in DNL Relative to No Action		Population Experiencing Change		Population Exceeding FAA Order 1050.1E Criteria			Population Newly Exposed to DNL 65 or above
	Increase	Decrease	Increase	Decrease	>1.5dB, DNL 65 or above	>3dB from DNL 60 - 65	>5dB from DNL 45 - 60	
2014	0.9dB	-0.8dB	120,386	277,754	0	0	0	396
2018	0.9dB	-0.8dB	123,081	290,391	0	0	0	43
2023	1.1dB	-0.7dB	132,484	311,122	0	0	0	214

2014 DNL Values for the Proposed Action



Change in DNL for 2014 Proposed Action, North of SEA

