IN THE SUPREME COURT OF THE STATE OF OREGON

JOSEPH SCHAEFER, CITY OF AURORA, CITY OF WILSONVILLE, 1000 FRIENDS OF OREGON, and FRIENDS OF FRENCH PRAIRIE,
Petitioners, Respondents on Review,

and

CLACKAMAS COUNTY,
Intervenor-Petitioner below,

v.

OREGON AVIATION BOARD and OREGON DEPARTMENT OF AVIATION,
Respondents, Petitioners on Review,

and

AURORA AIRPORT IMPROVEMENT ASSOCIATION; BRUCE BENNETT; WILSON CONSTRUCTION COMPANY, INC.; TED MILLAR; TLM HOLDINGS LLC; ANTHONY ALAN HELBLING; and WILSONVILLE CHAMBER OF COMMERCE
Respondents.

Land Use Board of Appeals
2019123, 2019127, 2019129, 2019130

A175219

S068944

Respondents on Review 1000 Friends of Oregon and Friends of French Prairie's Response to the Petition for Review

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Petitioners on Review Oregon Aviation Board and Oregon Department of Aviation's arguments for review are myopic. Their arguments are based on an overly narrow, incomplete, and incorrect presentation of the facts and law. The Petition contains numerous errors, some of them consequential. Ultimately, the agencies seek review for the underwhelming reason that the law is not what they thought it was. This Court should not be swayed.

Petitioners' newfound interest in legal certainty is particularly galling, considering the amount of uncertainty the agencies have created in their shambolic attempts to shield their airport master plan from judicial review. In reality, the agencies' concept of what the law is or how it applied has been in apparent flux since it initiated the challenged proceedings over 10 years ago. At various points, the agencies have explained the process for adopting an airport master plan and findings, told the public they intended to comply by issuing a final decision, asked the public to participate in its proceedings, and then changed course, sometimes at the last minute. Described in more detail below, the latest about-face occurred just weeks before the challenged decision in this case.

Respondents on Review 1000 Friends of Oregon and Friends of French Prairie use the inaccuracies in the Petition as a framework to explain why this Court should decline review. In their attempts to adopt an airport master plan for the Aurora State Airport, the agencies have wasted an inordinate amount of their own time and resources as well as the public's time and resources. The agencies have done so in the service of a handful of businesses that cater to elite clientele who use private jets to travel halfway around the world. The irony is that the proposed runway extension in this case is not even necessary for that service. The businesses have been operating successfully since the agencies first proposed the option more than 10 years ago. It has been so long in fact, that the FAA's funding rules require the agencies to complete a new master plan. Even if they wanted to, Petitioners can no longer rely on the version airport master plan at issue in this case to obtain FAA funding for their proposed runway extension.

The agencies' request to overturn *Schaefer v. Oregon Aviation Board* is simply the latest in a long line of misguided attempts to avoid judicial review. 312 Or App 316 (2021) *modified* 313 Or App 725 (2021). The agencies would rather point out inconsistencies in the language of two provisions of their own regulations than engage in a good faith attempt to comply with the underlying statute. ORS 197.180(1) (requiring that agency actions comply with the statewide land use planning goals and be consistent with comprehensive plans). As a result, Petitioners' proposed rule of law would undermine the purpose of ORS 197.180(1) and undermine the integrity of Oregon's land use planning laws.

Respondents respectfully request that this Court decline the agencies' latest, and hopefully last, invitation to waste the public's time and money on this effort. The decision in *Schaefer* ensures that the agencies' newly initiated proceedings to adopt a new airport master plan will result in a timely final decision and findings. The Court of Appeals' decision will also ensure that the agency's actions comply with ORS 197.180(1).

Petitioners' first question presented does not warrant this Court's review.

Petitioners' make their first misstatement of fact in the first sentence of the petition. Petitioners assert that the Oregon Aviation Board "adopted a 2012 master plan for the Aurora airport." Pet at 1. That statement is factually incorrect and not supported by any evidence in the record. If fact, the opposite is true. The agencies went to great lengths to avoid adopting the draft 2012 master plan that appears in the record.

In 2019, the ODA issued notice that it and the OAB would, after many years of waiting, provide a public hearing on a 2012 draft airport master plan for the Aurora State Airport. The purpose was to finalize and adopt the 2012 airport master plan together with findings that demonstrated the plan's compatibility with affected jurisdictions' comprehensive plans and the statewide land use planning goals:

> "The Oregon Department of Aviation (ODA) is in the process of gathering information on the compatibility of the Federal Aviation Administration approved 2012 Aurora State Airport Master Plan Update with applicable land use plans and statewide planning goals. The Department will prepare findings of compatibility and present the Master Plan and these findings to the Oregon Aviation Board on October 31, 2019, for adoption."

Rec-433. The ODA set a public hearing for September 24, 2019 to consider comments on the 2012 airport master plan in advance of the October 31, 2019 hearing. *Id.*

But after issuing that notice, the agencies backtracked. Instead of seeking to adopt the 2012 airport master plan and findings of compatibility, the agencies explained that they would adopt findings for an earlier, 2011 version of the airport master plan. While the 2012 version included an FAA approved airport layout plan for the airport, the 2011 version did not. *See* OAR 738-005-0010(20) (explaining role of ALP in master planning process). The FAA approved the layout plan for the runway extension in October 2012. Rec-4258.

In any case, the agency's challenged decision in this case explicitly found that the OAB "adopted the Aurora State Airport Master Plan on October 27, 2011." Rec-158; Pet'rs' App-72. Therefore, the Petition's claim that the agencies adopted a 2012 airport master plan is simply not accurate. Pet at 1. Although the agencies set out to adopt the 2012 airport master plan, they did not follow through. The agencies' apparent scheme was to avoid judicial review of the 2012 airport master plan itself. They sought to shield the airport's FAA approved layout plan from judicial review, which included the proposed runway extension onto farmland. By finding that the OAB adopted a version of the airport master plan in 2011, the agencies could argue that the decision to extend the runway was final and could not be challenged.

Ultimately, the court in *Schaefer* determined that the agency lacked support of any evidence in the record for its finding that the OAB adopted an airport master plan in 2011. *Schaefer*, 312 Or App 316, 324-325. The court also determined that agencies could not bifurcate adoption of the master plan and adoption of findings as a means of evading review. *Id.* (Under OAR 738-130-0055(6), "the board's adoption of a final facility plan and its land-use compatibility findings are two parts of the same proceeding. That remains the case here, notwithstanding the delay between the adoption of the Master Plan and the findings of land-use compatibility."). Petitioners do not disagree with those holdings, and have not challenged those aspects of the decision. On remand, the agencies must provide a copy of the 2011 version of the airport master plan for LUBA's review. *Id.* at 326.

All of this goes to show that the agencies cannot seriously claim that Court of Appeals made a "critical error" that was "contrary to how the Aviation Board has understood its rules." Pet at 11. The agencies' own notice in this case undermines their argument. The 2019 notice states that "the Department will prepare findings of compatibility and present the Master Plan and these findings to the Oregon Aviation Board on October 31, 2019, for adoption." The notice explains that the findings would address the airport master plan's compatibility "with applicable land use plans and statewide planning goals." In other words, in the not so distant past, the agencies' recognized that the OAB had an "obligation to adopt findings of compatibility" with comprehensive plans of affected jurisdictions and the statewide planning goals. Pet at 13 (quoting *Schaefer*, 312 Or App 316, 326).

Of course, an astute reader can claim that the agency's 2019 notice does not state one way or the other whether the OAB could simply adopt findings of compatibility based on ODA's decision to deem a facility plan compliant because an affected county never submitted any information. But that overlooks the fact that the agency's proposed scheme is absurd. The agencies fail to explain how their proposed interpretation of OAR 738-130-0055(2) and OAR 738-130-0055(6) complies with ORS 197.180(1) or (13).

ORS 197.180(1) requires that agency's actions comply with the statewide land use planning goals *and* comprehensive plans. A state agency's actions must be "in compliance with the goals" and must be made "[i]n a manner compatible with acknowledged comprehensive plans." ORS 197.180(1)(a), (b). The statute goes on to explain what types of actions are *not* compatible with a comprehensive plan. "State agency rules, plans or programs affecting land use are not compatible with an acknowledged comprehensive plan if the state agency takes or approves an action that is not allowed under an acknowledged comprehensive plan." ORS 197.180(13).

The Petition claims that the ODA is allowed simply declare an airport master plan compliant with a comprehensive plan and that the OAB can blindly adopt that finding. The agency's proposed rule would turn the complete lack of any legal analysis into evidence of compliance with local comprehensive plans and the statewide planning goals. In other words, at no point would either agency need to (1) refer to or review the applicable provisions of the comprehensive plan, or (2) actually determine whether their proposal complies with the comprehensive plan.

Such a scheme would allow the agencies to approve actions that are in fact not allowed under an acknowledged comprehensive plan, which violates ORS 197.180(1)(b). ORS 197.180(13). To the extent that an agency can rely on its compliance with ORS 197.180(1)(b) to demonstrate compliance with ORS 197.180(1)(a), the agency's prosed interpretation of OAR 738-130-0055(6) also violates the requirement that agencies take actions consistent with the goals. Under the agency's proposed rule of law, so long as a county does not make the ODA aware that the OAB's actions would not comply with its comprehensive plan, the ODA and OAB are free to violate a county's comprehensive plan and the statewide land use planning goals. That interpretation fails to demonstrate that the agencies coordination program rules and procedures "*assure* that the agency's land use programs are compatible with acknowledged comprehensive plans." OAR 660-030-0070(1).

Petitioners overlook the plain language of OAR 738-130-0055(6), which states "[t]he Aviation Board shall adopt findings of compatibility with the acknowledged comprehensive plans of affected cities and counties[.]" More importantly, Petitioners overlook the fact that ORS 197.180(1) requires actual compliance with the goals and local comprehensive plans. In that context, Respondents fail to see how the Court of Appeals misinterpreted OAR 738-130-0055(6), or why this Court should take review to impose the agency's proposed interpretation. Petitioners' interpretation would allow the ODA and OAB to take actions that conflict with local comprehensive plans so long as the counties went along with or did not respond to the ODA's request for input. Petitioners' proposed rule of law violates ORS 197.180.

Petitioners' second question presented does not warrant this Court's review

The agencies claim that the Court of Appeals' interpretation of OAR 660-012-0065(3)(n) in *Schaefer* is "contrary to the plain meaning of the rule and will be difficult to implement." Pet at 2. That concern is simply not borne out by the facts. Once again, Petitioners fail to provide the Court with complete information. In doing so, Petitioners provide the Court with an incomplete and inaccurate understanding of the facts.

The Court of Appeals concluded that the term “larger class of planes” used in OAR 660-012-0065(3)(n) included planes with heavier Maximum Take Off Weights (MTOW), in addition to planes with greater tail heights and wingspans. Planes with greater MTOWs are larger in that they have greater capacity to carry, fuel, passengers, and/or cargo. Contrary to the agency’s claim determining whether an “expansion” or “alteration” of a public use airport does or does not permit service to planes with greater MTOWs does not require the agency to consider “how planes are flying.” Pet at 17.

The agency fails to provide the Court with the context in which airport expansions or alterations are made. First, an airport’s ARC and an airplanes’ MTOW do not determine whether a plane can use a particular runway or airport. Rec-4115 (“an airport’s design is based on the characteristics of the critical aircraft which is the most demanding aircraft that uses the airport ‘regularly’ or ‘substantially.’”). The record shows that airplanes rated above C-II and with MTOWs that require longer than 5,000 feet for takeoff regularly use the Aurora Airport. Rec-955. In fact, the FAA’s circulars for airport design expect and anticipate that airplanes rated for a higher ARC and airplanes with a greater MTOW will both land

and take off at any given airport. When itinerant aircraft with larger ARCs and MTOWs use an airport with sufficient frequency (500 itinerant operations a year), the FAA will consider providing funding for the airport to change its design to accommodate the larger aircraft. Rec-4115, Rec-4203. For that reason, the use of an airport by larger aircraft will always be a leading indicator of whether the FAA will approve funds for an airport expansion or alteration to accommodate those larger planes.

As explained in the 2012 airport master plan and the FAA's advisory circulars, the FAA uses the ARC for specific design components of an airport. The ARC allows airport designers to determine the distance needed between the runway centerline and clearance needed for taxiways. Rec-4115 (The ARC determines "FAA airport design standards for dimensions such as runway and shoulder widths; separations of runways, taxiways, and taxilanes; and cleared areas.") Planes with larger wingspans need more room to land, as do planes with greater landing speeds. Planes with larger wingspans also need more room to taxi.

Notably, the ARC does not determine runway length. Rec-4129. The FAA uses a completely different advisory circular to determine runway length, which depends on the maximum takeoff weight of a reference aircraft. FAA Advisory Circular 150/5325-4B § 102.a.(2), (8), b.(2), (3). Takeoff weight not landing weight determines the design length of a runway. This is because airplanes taking off must have sufficient runway length to abort during a takeoff. For that reason, takeoff requires more runway length than landing. In other words, MTOW is the limiting factor for runway length. Although MTOW does ultimately play a role in an aircraft's landing speed—the letter component of the ARC—the FAA uses MTOW, not ARC, to determine runway length.

Because of the importance of the ARC and MTOW for FAA funding, the agencies track the ARC and MTOWs of based and itinerant aircraft that use their airports. Rec-955. The information in the 2012 airport master plan belies the agencies' claim that using MTOW of aircraft to determine whether a proposed expansion or alteration will permit service to a larger class of airplane will be difficult. Pet at 17. The agencies already track this information as part of the master planning process. Rec-955. In this case, the agencies have already determined that the runway expansion from

5,000 to 6,000 feet will in allow aircraft with larger maximum takeoff weights to operate at their full capacity. *Id.*

Airplanes with MTOWs that require more than 5,000 feet of runway regularly use the Aurora airport. Rec-4130-31. However, they have to takeoff at less than the aircraft's MTOW. *Id.* Again, the FAA's airport design circulars expect and anticipate that this will occur. In the argot of the airport master plan, planes that operate at less than their MTOW at the airport are "constrained." Rec-4129 ("A constrained operation is one that must reduce payload for takeoff, or stop en route for fuel, for example"). The runway expansion in this case will allow more planes to operate unconstrained an at their maximum weight. In other words, the runway expansion will permit service to a larger class of airplanes.

If the OAR 660-012-0065(3)(n) did not consider planes with greater MTOWs to be a "larger class of airplanes," then the provision could potentially ignore runway expansions. Petitioners do not explain why that should be the case or why OAR 660-012-0065(3)(n) should be interpreted to apply to only one aspect of airport design (runway and taxiway separation). Even if the Court does not consider planes with greater payload capacities to be "larger," C-II planes are in fact larger as a group than B-II planes in terms of wingspan and tail height. *See* Respondent on Review Schaefer's Response at 15-17. The Petition fails to justify the Court of Appeal's interpretation of OAR 660-012-0065(3)(n) is incorrect or requires this Court's review.

DATED: October 29, 2021.

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CERTIFICATE OF COMPLIANCE

I certify that this response brief complies with the word count limitation in ORAP 5.05(1)(d)(i) and (2) and the word-count of this brief is 2,754 words.

DATED: October 29, 2021.

/s/ Andrew Mulkey
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CERTIFICATE OF FILING AND SERVICE

I certify that on the date indicated below, I filed the foregoing Response to the Petition for Review with the Appellate Court Administrator using the Appellate Court's eFiling system. I further certify that on the date indicated below, I filed a copy of foregoing documents by e-Service on the parties listed below who are registered users of the Appellate Court's eFiling System and by email.

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Table 3N. Peak Operations Forecast

Year	2010	2015	2020	2030
Annual	90,909	98,321	106,338	124,386
Peak Month	10,000	10,815	11,697	13,682
Design Day	328	355	384	449
Design Hour	36	39	42	49

Source: WHPacific, Inc.

CRITICAL AIRCRAFT AND AIRPORT REFERENCE CODE

According to FAA criteria, an airport's design is based on the characteristics of the critical aircraft, which is the most demanding aircraft that uses the airport "regularly" or "substantially." The FAA defines regular or substantial use as at least 500 annual itinerant operations. The Airport Reference Code (ARC) is the main criterion for determining applicable FAA airport design standards for dimensions such as runway and shoulder widths; separations of runways, taxiways, and taxilanes; and cleared areas. The Aircraft Approach Category and the Airplane Design Group of the critical aircraft define the ARC. The Aircraft Approach Category is determined by the approach speed, or 1.3 times the stall speed of the aircraft in its landing configuration at its maximum landing weight. The letters A, B, C, D, and E. represent the Aircraft Approach Category. The Airplane Design Group of the aircraft is based on the wingspan or tail height, and is defined by Roman numerals I, II, III, IV, V and VI. **Table 3O** shows the ARC component definitions and typical aircraft that meet these definitions.

According to the 2000 Airport Master Plan, the planned ARC was B-II, exemplified by the King Air turboprop and the Cessna Citation jet. At that time, ODA decided to constrain the forecast by keeping the airfield ARC at B-II. A runway designed for ARC B-II is adequate for about 45% of the business jets manufactured.[27]

[27] Central Region FAA Newsletter, October 2001.

Further analysis of the Aurora State Airport TFMSC data by select jet aircraft with a maximum certificated takeoff weight of more than 12,500 pounds and other select aircraft over 60,000 pounds is presented on the table below and provides additional understanding of the frequency of larger more demanding jet aircraft operating at the Airport.

In summary, on average over the past 9 years, there have been 803 annual operations by aircraft requiring 5,723 feet or more runway length. Furthermore, there have been 599 average annual operations by aircraft requiring 5,901 feet or more of runway length. The majority of these operations (69%) are conducted by aircraft that require 6,000 feet or more of runway during given conditions. On average there are 415 annual operations per year by aircraft that require 6,000 feet or more of runway. Based on the FAA threshold of 500 annual operations, this data suggests a minimum runway length of 5,901 is justified based on available existing Airport activity data.

TFMSC IFR Data - Select Jet Aircraft Operations Table

	Aircraft Design Group	Aircraft Based at UAO	Aircraft Designator	Maximum Takeoff Weight (MTOW)	Takeoff Distance (at MTOW)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average Annual Operations
Embraer ERJ 135	**C-II**		E135	41,887	6,177	92	56	12	0	4	6	0	2	2	0	17
Phenom 300	**B-II**	**x**	E55P	17,968	3,625	0	0	0	14	102	96	92	86	122	56	57
Challenger 300	**C-II**	**x**	CL30	38,850	5,538	8	6	4	32	90	64	72	78	104	88	55
Challenger 600	**C-II**	**x**	CL60	45,100	6,544	4	10	42	126	122	36	12	64	80	58	55
Cessna 550 Citation	**B-II**	**x**	C550	13,300	4,133	192	194	154	210	134	162	224	260	158	212	190
Cessna 560 Citation	**B-II**	**x**	C560	20,000	4,121	248	238	344	362	496	460	580	688	772	704	489
Cessna 650 Citation	**C-II**		C650	22,000	5,912	152	132	158	90	90	118	144	118	114	98	121
Cessna 680 Citation	**B-II**	**x**	C680	30,775	4,200	6	12	32	64	52	68	72	64	90	138	60
Cessna 750 Citation	**B-II**	**x**	C750	36,600	5,901	4	6	8	60	74	90	94	90	94	104	62
Falcon 20	**B-II**	**x**	FA20	28,650	5,853	12	48	104	90	84	28	14	98	74	76	63
Falcon 50	**B-II**	**x**	FA50	37,480	5,413	18	6	8	10	18	96	220	310	316	276	128
Falcon 900	**B-II**	**x**	F900	45,503	5,723	168	214	254	180	144	48	8	54	80	68	122
Falcon 2000	**B-II**	**x**	F2TH	41,000	6,016	0	4	2	2	14	6	4	6	4	34	8
Astra 1125 - 2012 AMP Design Aircraft	**C-II**	**x**	ASTR	24,650	6,084	182	210	230	178	152	164	114	160	162	96	165
Galaxy 1126	**C-II**		GALX	35,450	6,314	2	2	14	8	10	16	0	2	4	0	6
Lear 31	**C-I**		LJ31	15,500	3,915	0	8	2	4	2	0	0	6	54	92	17
Lear 35	**D-I**		LJ35	18,000	5,740	8	20	20	2	8	16	0	4	6	8	9
Lear 45	**C-I**	**x**	LJ45	20,500	4,845	36	126	138	110	148	180	236	240	208	110	153
Lear 55	**C-I**		LJ55	21,500	6,096	0	0	2	0	2	0	0	2	0	4	1
Lear 60	**C-I**		LJ60	23,500	6,153	4	0	8	2	4	10	82	36	14	30	19
Lear 75	**C-II**		LJ75	21,500	5,114	0	0	0	0	0	0	0	4	10	12	3
Hawker Horizon	**C-II**		HA4T	39,500	6,027	0	0	0	2	2	2	0	0	0	0	1
Hawker 800	**C-II**	**x**	H25B	28,000	6,176	56	84	124	224	210	310	118	42	28	34	123
Gulfstream 150	**C-II**	**x**	G150	26,100	5,770	0	4	8	2	0	0	2	2	6	80	10
Gulfstream IV/G400*	**C-II**		GLF4	73,200	6,257	10	0	4	4	0	4	0	2	6	2	3
Gulfstream V/G500*	**D-III**		GLF5	76,850	6,877	4	2	18	6	10	4	2	0	4	2	5
Gulfstream VI/G600*	**D-III**		GLF6	91,600	6,785	0	0	0	0	0	0	0	6	4	2	1
Bombardier Global Express*	**B-III**	**x**	GLEX	92,500	7,232	0	2	4	18	10	4	8	0	14	50	11
Total						**1206**	**1384**	**1694**	**1800**	**1982**	**1988**	**2098**	**2424**	**2530**	**2434**	**1954**
Annual operations by aircraft requiring 5,000' or more runway length						724	806	1024	1036	1048	1022	894	1080	1126	1122	988
Aircraft Identified in Table 3-2 of AC 150/5325-4B - Figure 3-2 Recommended Runway Length 5,500'						410	460	620	756	732	820	640	584	590	596	621
Annual operations by aircraft requiring 5,500' or more runway length						706	800	1016	1026	1030	926	674	766	800	834	858
Annual operations by aircraft requiring 5,723' or more runway length						698	794	1012	994	940	862	602	688	696	746	803
Annual operations by aircraft requiring 5,901' or more runway length						510	508	626	720	704	770	578	530	530	514	599
Annual operations by aircraft requiring 6,000' or more runway length						354	370	460	570	540	562	340	322	322	312	415

Notes:
1. * MTOW exceeds 60,000
2. Aircraft Identified in Table 3-2 in AC 150/5325-4B Justifying Runway Length Analysis with Figure 3-2: 100 Percent of Fleet at 60 or 90 Percent Useful Load Identified by blue highlight
3. Aircraft requiring 6,000' or more of runway length identified by green highlight
4. Takeoff Distance Calculations utilized previous data and methodology provided in 2012 Airport Master Plan

Table 4D. Runway Length Requirements

Airport and Runway Data	
Airport elevation	200 feet
Mean daily maximum temperature of the hottest month	84° F
Maximum difference in runway centerline elevation	2 feet
Wet and slippery runways	
Runway Lengths Recommended for Airport Design	
Small airplanes with less than 10 passenger seats	
To accommodate 75 percent of these small airplanes	2,510 feet
To accommodate 95 percent of these small airplanes	3,060 feet
To accommodate 100 percent of these small airplanes	3,630 feet
Small airplanes with 10 or more passenger seats	4,190 feet
Large airplanes of 60,000 pounds or less	
75% of these large airplanes at 60% useful load	5,330 feet
75% of these large airplanes at 90% useful load	7,000 feet
100% of these large airplanes at 60% useful load	5,500 feet
100% of these large airplanes at 90% useful load	7,850 feet

Source: FAA's Airport Design Computer Program, Version 4.2D, AC 150/5325-4B, Runway Length Requirements for Airport Design.

Runway Length Justification Process

FAA guidance states that to justify funding a runway extension, at least 500 annual itinerant aircraft operations must exhibit a need for an extension now or within the next five years. Determining the particular aircraft model(s) critical for runway length is much easier at a commercial service airport than at a general aviation airport because at a commercial service airport individual airlines mostly use the same type of airplanes and they publish flight schedules that facilitate quantifying numbers of operations and stage lengths. Gathering such data for a general aviation airport is more difficult. In addition, the FAA requires rigorous justification for extending runways at general aviation airports, including documentation from the operators of airplanes needing a longer runway with the individual N numbers of their airplanes and number of constrained operations. A constrained operation is one that must reduce payload for takeoff, or stop en route for fuel, for example.

To quantify constrained operations at Aurora State Airport, questionnaires were distributed to the operators of larger aircraft that use the Airport frequently. Transient aircraft operators were identified from IFR flight plan records. The questionnaires received are in **Appendix I** and the operators who identified constrained operations are listed in **Table 4E**.

Table 4E contains a list of business jets that have operated at the Airport in recent years, as documented by IFR flight plans. The table also indicates which airplane models are based at the Airport and gives the number of constrained operations reported by based and transient users of the Airport. The table lists airplane models in the order of runway length required at maximum takeoff weight, from shortest to longest. Many models listed in the table need a longer runway at maximum takeoff weight than Aurora State Airport's 5,004 feet; these airplanes can use the Airport because they are operating at less than their maximum takeoff weights and/or the temperature is lower than 84 degrees. Usually, airplanes are constrained for takeoff due to high summer temperatures; however, for some airplanes operating under air taxi or fractional jet regulations, the constrained operation is landing on a wet or slippery runway. In addition, the lengths in Table 4E are based solely on aircraft performance requirements. Some operators may have additional requirements based on company operations specifications or insurance.

Table 4E. Business Jet Runway Length Requirements at Aurora State Airport

TYPE	ARC	Max. Takeoff Weight (lbs)	Takeoff Distance (MTOW)	Based at UAO	Constrained Operations Reported
CESSNA 551 CITATION II/SP	B-II	12,500	3,042	No	
CESSNA 501 CITATION I/SP	B-I	11,850	3,249	Yes	
CESSNA 500 CITATION	B-I	11,850	3,364	No	
CESSNA 550 CITATION II	B-II	13,300	3,433	No	
CESSNA 525 CITATION (CJ-1)	B-I	10,400	3,536	Yes	
CESSNA 525B CITATIONJET III (CJ-3)	B-II	13,870	3,651	Yes	JHRD Investment
CESSNA 560 CITATION V ULTRA	B-II	16,300	3,651	Yes	
LEARJET 31	C-I	16,500	3,915	No	
CESSNA 525A CITATIONJET II (CJ-2)	B-II	12,500	3,926	Yes	
CESSNA 560 CITATION ENCORE	B-II	16,830	4,087	Yes	
CESSNA 560 CITATION EXCEL	B-II	20,000	4,121	Yes	Management West
CESSNA 550 CITATION BRAVO	B-II	14,800	4,133	No	
RAYTHEON 390 PREMIER	B-1	12,500	4,353	No	
BEECHJET 400A/T/ T-1A JAYHAWK	C-I	16,100	4,786	No	
LEARJET 45	C-I	20,200	4,845	Yes	Premier Air
MITSUBISHI MU-300	B-I	14,630	4,936	No	
DASSAULT FALCON 900	B-II	45,500	5,373	No	
DASSAULT FALCON 50	B-II	37,480	5,413	No	
CESSNA 650 CITATION VII	C-II	23,000	5,568	Yes	
DASSAULT FALCON 7X	B-II	69,000	5,586	Yes	
DASSAULT FALCON 900 EX	C-II	48,300	5,723	Yes	CSIM
LEARJET 35/36	C-I	18,300	5,740	No	
CESSNA 750 CITATION X	C-II	36,100	5,901	No*	RJ2/DB Aviation
CESSNA 650 CITATION III/VI	C-II	21,000	5,912	Yes*	RJ2/DB Aviation
DASSAULT FALCON 2000	B-II	35,800	6,016	No	
RAYTHEON/HAWKER 125-1000 HORIZON	C-II	36,000	6,027	Yes	

**RJ2/DB Aviation plans to replace the Cessna 650 Citation III/VI with the Cessna 750 Citation X in the near future.*

Table 4E. Business Jet Runway Length Requirements at Aurora State Airport (cont.)

TYPE	ARC	Max. Takeoff Weight (lbs)	Takeoff Distance (MTOW)	Based at UAO	Constrained Operations Reported
IAI - ASTRA 1125	C-II	23,500	6,084	Yes	Novellus, American Medical Concepts, Transcendent Investments
LEARJET 55	C-I	21,500	6,096	No	
LEARJET 60	D-I	23,500	6,153	No	
RAYTHEON/HAWKER 125-800	B-I	28,000	6,176	Yes	WAC Charter
EMBRAER 135	C-II	41,887	6,177	No	Aero Air
GULFSTREAM IV	D-II	71,780	6,257	No	
IAI - GALAXY 1126/Gulfstream G200	C-II	34,850	6,314	No	Anonymous
BOMBARDIER CL-601	C-II	41,250	6,544	No	Anonymous, Aero Air
BOMBARDIER CL-604	C-II	47,600	6,544	No	Anonymous
GULFSTREAM V	D-III	89,000	6,877	No	Vulcan Flight
BOMBARDIER BD-700 GLOBAL EXPRESS	C-III	93,500	7,232	No	Vulcan Flight, Y2K Aviation

Source: WHPacific, 2010, using business jet characteristics published by the Central Region FAA in 2001, manufacturers' specifications, based aircraft from Oregon Department of Aviation aircraft registration records, constrained operators from runway length survey conducted in 2009 and 2010. List includes only business jet models that have documented operations at the Airport according to IFR flight plan records or an operator who wants to use the Airport. Takeoff distances are based only on aircraft performance; federal aviation regulations, company policies, or insurance requirements may require more length. Takeoff distances for standard conditions were adjusted (+14.8%) to account for design conditions at Aurora state Airport.

The runway lengths listed in Table 4E use the manufacturers' takeoff distance for standard conditions (sea level and 59 degrees F). These lengths were increased 14.8% to account for the higher elevation (200 feet MSL), higher design temperature (84 degrees), and runway gradient (2 feet of difference between runway high and low points). The formula for determining the amount of increase is:

Altitude Correction
(7% per 1,000' above sea level)

L = Takeoff length @ sea level
L1 = Length corrected for altitude
L1 = (.07 * E / 1000) * L + L

Temperature Correction
(0.5% per degree above standard temperature in hottest month)

T1 = Adjusted Standard Temperature
T = Mean Max High Temperature
L2 = Length corrected for altitude & temperature

(Std Temp adjusted to Sea Level)

T1 = 59 - (3.566 * E / 1000)
L2 = (.005*(T - T1)) * L1 + L1

Supplemental Data:

Excerpt from Chapter Four, Runway Length Calculation

Runway Length Justification Process

FAA guidance states that to justify funding a runway extension, at least 500 annual itinerant aircraft operations must exhibit a need for an extension now or within the next five years. Determining the particular aircraft model(s) critical for runway length is much easier at a commercial service airport than at a general aviation airport because at a commercial service airport individual airlines mostly use the same type of airplanes and they publish flight schedules that facilitate quantifying numbers of operations and stage lengths. Gathering such data for a general aviation airport is more difficult. In addition, the FAA requires rigorous justification for extending runways at general aviation airports, including documentation from the operators of airplanes needing a longer runway with the individual N numbers of their airplanes and number of constrained operations. A constrained operation is one that must reduce payload for takeoff, or stop en route for fuel, for example.

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Northwest Mountain Region
Seattle Airports District Office
1601 Lind Avenue S.W., Suite 250
Renton, Washington 98057-3356

October 19, 2012

Mr. Mitch Swecker, Director
Oregon Dept. of Aviation
3040 25th Street, SE
Salem, OR 97302

Dear Mr. Swecker,

The Aurora State Airport Layout Plan (ALP) dated March, 2012 and submitted by WH Pacific, Inc., is hereby approved. A signed copy of the ALP is enclosed.

This approval considers only the safety, utility, and efficiency of the Aurora State Airport, and is conditioned on acknowledgment that any development on airport property requiring federal environmental approval must receive such written approval from the Federal Aviation Administration (FAA) prior to commencement of the subject development. This ALP approval is also conditioned on acceptance of the plan under local land use laws. We encourage appropriate agencies to adopt land use and height restrictive zoning based on the plan since action toward this end is a prerequisite of the Airport Improvement Program (AIP). Grant Assurance 21, Compatible Land Use, requires airport sponsors to take appropriate action, including the adoption of zoning laws to restrict the use of land adjacent to, or in the immediate vicinity of the airport, to activities and purposes compatible with normal airport operations including the arrival and departure of aircraft. The FAA recognizes residential development adjacent to the airport property as an incompatible land use.

Approval of the plan does not indicate that the United States will participate in the cost of any development proposed. When airport construction, alteration, or deactivation is undertaken, such action requires notification and review in accordance with the provisions of Part 77 and Part 157 of the Federal Aviation Regulations.

Please attach this letter to the approved Airport Layout Plan and retain it in the airport files for future use under the Airport Improvement Program.

Sincerely,

Carol A. Suomi

Carol A. Suomi
Manager, Seattle Airports District Office

Encl: Aurora ALP dtd Mar 2012

cc:
Ms. Heather Peck, ODA
Mr. Rainse Anderson, WHP

U.S. Department
of Transportation

Federal Aviation Administration

Advisory Circular

Subject: RUNWAY LENGTH REQUIREMENTS FOR AIRPORT DESIGN

Date: 7/1/2005
Initiated by: AAS-100

AC No: 150/5325-4B
Change:

1. PURPOSE. This Advisory Circular (AC) provides guidelines for airport designers and planners to determine recommended runway lengths for new runways or extensions to existing runways.

2. CANCELLATION. This AC cancels AC 150/5325-4A.

3. APPLICATION. The standards and guidelines contained in this AC are recommended by the Federal Aviation Administration strictly for use in the design of civil airports. The guidelines, the airplane performance data curves and tables, and the referenced airplane manufacturer manuals *are not to be used* as a substitute for flight planning calculations as required by airplane operating rules. For airport projects receiving Federal funding, the use of this AC is mandatory.

David L. Bennett
Director, Office of Airport Safety and Standards

CHAPTER 1. INTRODUCTION

101. BACKGROUND. Airplanes today operate on a wide range of *available* runway lengths. Various factors, in turn, govern the *suitability* of those available runway lengths, most notably airport elevation above mean sea level, temperature, wind velocity, airplane operating weights, takeoff and landing flap settings, runway surface condition (dry or wet), effective runway gradient, presence of obstructions in the vicinity of the airport, and, if any, locally imposed noise abatement restrictions or other prohibitions. Of these factors, certain ones have an operational impact on available runway lengths. That is, for a given runway the usable length made available by the airport authority may not be entirely *suitable* for all types of airplane operations. Fortunately, airport authorities, airport designers, and planners are able to mitigate some of these factors. For example, runways designed with longitudinal profiles equaling zero slope avoid required runway length adjustments. Independently, airport authorities working with their local lawmakers can establish zoning laws to prohibit the introduction of natural growth and man-made structural obstructions that penetrate existing or planned runway approach and departure surfaces. Effective zoning laws avoid the displacement of runway thresholds or reduction of takeoff runway lengths thereby providing airplanes with sufficient clearances over obstructions during climb outs. Airport authorities working with airport designers and planners should validate future runway demand by identifying the critical design airplanes. In particular, it is recommended that the evaluation process assess and verify the airport's ultimate development plan for realistic changes that could result in future operational limitations to customers. In summary, the goal is to construct an available runway length for new runways or extensions to existing runways that is suitable for the forecasted critical design airplanes.

102. DETERMINING RECOMMENDED RUNWAY LENGTHS.

a. Assumptions and Definitions.

(1) Design Assumptions. The assumptions used by this AC are approaches and departures with no obstructions, zero wind, dry runway surfaces, and zero effective runway gradient. Assumptions relative to airplane characteristics are described within the applicable chapter of this AC.

(2) Critical Design Airplanes. The listing of airplanes (or a single airplane) that results in the longest recommended runway length. The listed airplanes will be evaluated either individually or as a single family grouping to obtain a recommended runway length.

(3) Small Airplane. An airplane of 12,500 pounds (5,670 kg) or less maximum certificated takeoff weight.

(4) Large Airplane. An airplane of more than 12,500 pounds (5,670 kg) maximum certificated takeoff weight.

(5) Maximum Certificated Takeoff Weight (MTOW). The maximum certificated weight for the airplane at takeoff, i.e., the airplane's weight at the start of the takeoff run.

(6) Regional Jets. Although there is no regulatory definition for a regional jet (RJ), an RJ for this advisory circular is a commercial jet airplane that carries fewer than 100 passengers.

(7) Crosswind Runway. An additional runway built to compensate primary runways that provide less than the recommended 95 percent wind coverage for the airplanes forecasted to use the airport.

(8) Substantial Use Threshold. Federally funded projects require that critical design airplanes have at least 500 or more annual itinerant operations at the airport (landings and takeoffs are considered as separate operations) for an individual airplane or a family grouping of airplanes. Under unusual circumstances, adjustments may be made to the 500 total annual itinerant operations threshold after considering the circumstances of a particular airport. Two examples are airports with demonstrated seasonal traffic variations, or airports situated in isolated or remote areas that have special needs.

(9) Itinerant Operation. Takeoff or landing operations of airplanes going from one airport to another airport that involves a trip of at least 20 miles. Local operations are excluded.

(10) Effective Runway Gradient. The difference between the highest and lowest elevations of the runway centerline divided by the runway length.

b. Procedure and Rationale for Determining Recommended Runway Lengths. This AC uses a five-step procedure to determine recommended runway lengths for a selected list of critical design airplanes. As previously stated, the information derived from this five-step procedure is for airport design and is not to be used for flight operations. Flight operations must be conducted per the applicable flight manual. The five steps and their rationale are as follows:

(1) Step #1. Identify the list of critical design airplanes that will make regular use of the proposed runway for an established planning period of at least five years. For Federally funded projects, the definition of the term "*substantial use*" quantifies the term "regular use" (see paragraph 102a(8).)

(2) Step #2. Identify the airplanes that will require the longest runway lengths at maximum certificated takeoff weight (MTOW). This will be used to determine the method for establishing the recommended runway length. Except for regional jets, when the MTOW of listed airplanes is 60,000 pounds (27,200 kg) or less, the recommended runway length is determined according to a *family grouping of airplanes* having similar performance characteristics and operating weights. Although a number of regional jets have an MTOW less than 60,000 pounds (27,200 kg), the exception acknowledges the long range capability of the regional jets and the necessity to offer regional jet operators the flexibility to interchange regional jet models according to passenger demand without suffering operating weight restrictions. When the MTOW of listed airplanes is over 60,000 pounds (27,200 kg), the recommended runway length is determined according to *individual airplanes*. The recommended runway length in the latter case is a function of the most critical individual airplane's takeoff and landing operating weights, which depend on wing flap settings, airport elevation and temperature, runway surface conditions (dry or wet), and effective runway gradient. The procedure assumes that there are no obstructions that would preclude the use of the full length of the runway.

(3) Step #3. Use table 1-1 and the airplanes identified in step #2 to determine the method that will be used for establishing the recommended runway length. Table 1-1 categorizes *potential design airplanes* according to their MTOWs. MTOW is used because of the significant role played by airplane operating weights in determining runway lengths. As seen from table 1-1, the first column separates the various airplanes into one of three weight categories. Small airplanes, defined as airplanes with MTOW of 12,500 pounds (5,670 kg) or less, are further subdivided according to approach speeds and passenger seating as explained in chapter 2. Regional jets are assigned to the same category as airplanes with a MTOW over 60,000 pounds (27,200 kg). The second column identifies the applicable airport design approach (by airplane family group or by individual airplanes) as noted previously in step #2. The third column directs the airport designer to the appropriate chapter for design guidelines and whether to use the referenced tables contained in the AC or to obtain airplane manufacturers' airport planning manuals (APM) for each individual airplane under evaluation. In the later case, APMs provide the takeoff and landing runway lengths that an airport designer will in turn apply to the associated guidelines set forth by this AC to obtain runway lengths. The airport designer should be aware that APMs go by a variety of names. For example, Airbus, the Boeing Company, and Bombardier respectively title their APMs as "Airplane Characteristics for Airport Planning," "Airplane Characteristics for Airport Planning," and "Airport Planning Manuals." For the purpose of this AC, the variously titled documents will be referred to as APM. Appendix 1 lists the websites of the various airplane manufacturers to provide individuals a starting point to retrieve an APM or a point of contact for further consultation.

(4) Step #4. Select the recommended runway length from among the various runway lengths generated by step #3 per the process identified in chapters 2, 3, or 4, as applicable.

(5) Step #5. Apply any necessary adjustment to the obtained runway length, when instructed by the applicable chapter of this AC, to the runway length generated by step #4 to obtain a final recommended runway length. For instance, an adjustment to the length may be necessary for runways with non-zero effective gradients. Chapter 5 provides the rationale for these length adjustments.