

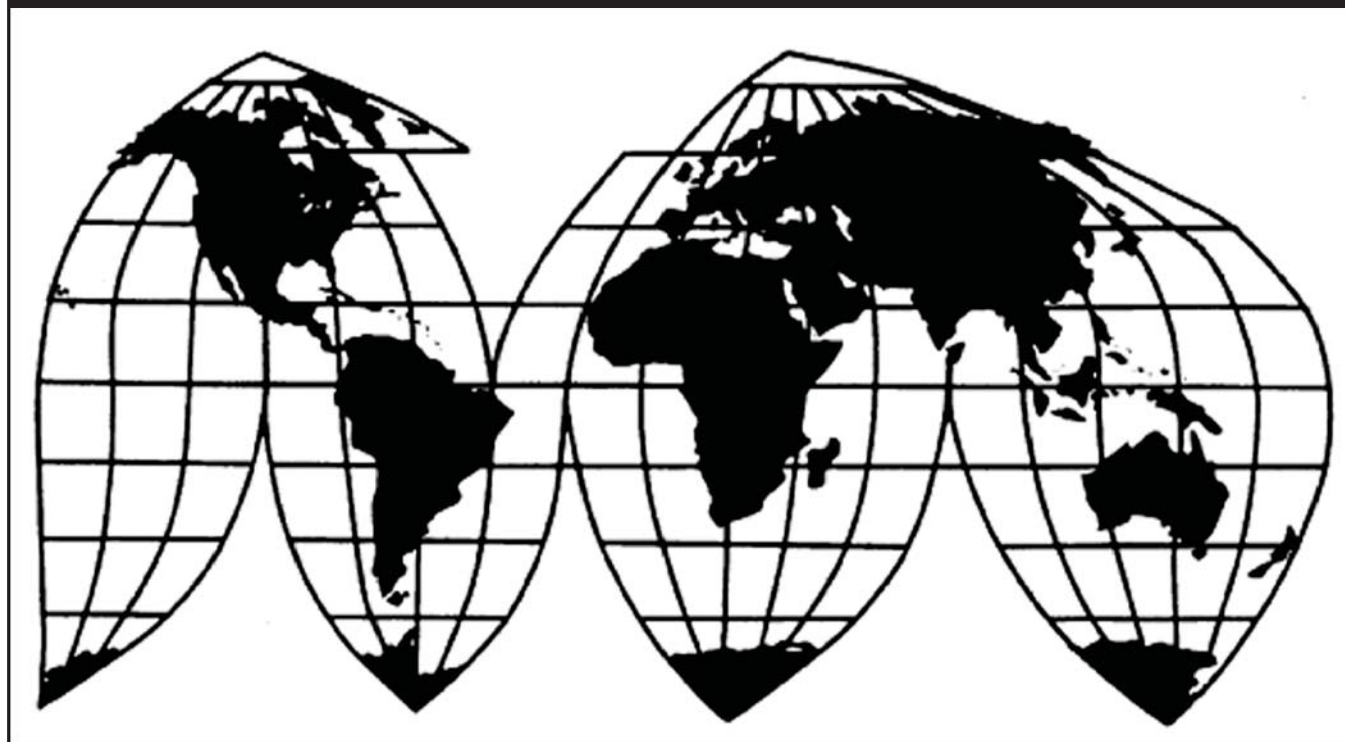
# 100- to 150-Seat Large Civil Aircraft from Canada

Investigation Nos. 701-TA-578 and 731-TA-1368 (Final)

Publication 4759

February 2018

**U.S. International Trade Commission**



Washington, DC 20436

# U.S. International Trade Commission

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## UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-578 and 731-TA-1368 (Final)  
100- to 150-Seat Large Civil Aircraft from Canada

### DETERMINATIONS

On the basis of the record<sup>1</sup> developed in the subject investigations, the United States International Trade Commission (“Commission”) determines, pursuant to the Tariff Act of 1930 (“the Act”), that an industry in the United States is not materially injured or threatened with material injury, and the establishment of an industry in the United States is not materially retarded, by reason of imports of 100- to 150-seat large civil aircraft from Canada, provided for in subheading 8802.40.00 of the Harmonized Tariff Schedule of the United States, that have been found by the U.S. Department of Commerce (“Commerce”) to be sold in the United States at less than fair value (“LTFV”) and to be subsidized by the government of Canada.

### BACKGROUND

The Commission, pursuant to sections 705(b) and 735(b) of the Act (19 U.S.C. 1671d(b) and 19 U.S.C. 1673d(b)), instituted these investigations effective April 27, 2017, following receipt of a petition filed with the Commission and Commerce by The Boeing Company, Chicago, Illinois. The final phase of the investigations was scheduled by the Commission following notification of preliminary determinations by Commerce that imports of 100- to 150-seat large civil aircraft from Canada were subsidized within the meaning of section 703(b) of the Act (19 U.S.C. 1671b(b)) and sold at LTFV within the meaning of 733(b) of the Act (19 U.S.C. 1673b(b)). Notice of the scheduling of the final phase of the Commission’s investigations and of a public hearing to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* on October 27, 2017 (82 FR 49850).<sup>2</sup> The hearing was held in Washington, DC, on December 18, 2017, and all persons who requested the opportunity were permitted to appear in person or by counsel.

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<sup>1</sup> The record is defined in sec. 207.2(f) of the Commission’s Rules of Practice and Procedure (19 CFR 207.2(f)).

<sup>2</sup> Due to the lapse in appropriations and ensuing cessation of Commission operations, these investigations conducted under authority of Title VII of the Tariff Act of 1930 accordingly have been tolled pursuant to 19 U.S.C. §§ 1671d(b)(2), 1673d(b)(2).



## Views of the Commission

Based on the record in the final phase of these investigations, we determine that an industry in the United States is not threatened with material injury by reason of imports of 100- to 150-seat large civil aircraft (“LCA”) from Canada that are sold in the United States at less than fair value and that are subsidized by the government of Canada.<sup>1</sup>

### I. Background

The Boeing Company (“Boeing”), a domestic producer of 100- to 150-seat LCA, filed the petitions in these investigations on April 27, 2017. Petitioner appeared at the hearing accompanied by counsel and submitted prehearing and posthearing briefs and final comments.

Several respondent entities participated in these investigations, including Bombardier Inc., a Canadian producer of subject merchandise, and C Series Aircraft Limited Partnership (“CSALP”) (collectively, “Bombardier”), a partnership between Bombardier and Airbus SAS (“Airbus”);<sup>2</sup> Delta Air Lines, Inc. (“Delta”), a potential importer of subject merchandise from Canada; the Government of Canada (“GOC”); the Government of the United Kingdom (“GOUK”); and the European Commission (“EC”). Bombardier, Delta, and the GOC appeared at the hearing accompanied by counsel and individually submitted prehearing and posthearing briefs and final comments.<sup>3</sup> The GOUK appeared at the hearing and submitted a posthearing brief, and the EC submitted prehearing and posthearing briefs. In addition, the American Aviation Institute, JetBlue, and Spirit Airlines submitted non-party statements.

U.S. industry data are based on the questionnaire response of Boeing, accounting for all U.S. production of 100- to 150-seat LCA in 2016.<sup>4</sup> U.S. import data are based on questionnaire responses from 13 U.S. importer/purchasers, accounting for all purchases, imports, and sales for importation of 100- to 150-seat LCA in 2016.<sup>5</sup> The Commission received a response to its foreign producers’ questionnaire from Bombardier, which accounted for all production of subject merchandise in Canada in 2016.<sup>6</sup>

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<sup>1</sup> Petitioner has not alleged that there is present material injury, or that the establishment of an industry in the United States is materially retarded, by reason of subject imports.

<sup>2</sup> Confidential Staff Report (“CR”) at I-6 n.13; Public Staff Report (“PR”) at I-4 n.13.

<sup>3</sup> We have disregarded new factual information in the first full sentence on page 12 of the final comments filed by Bombardier pursuant to the statute and our regulations. 19 U.S.C. § 1677m(g); 19 C.F.R. § 207.30(b).

<sup>4</sup> CR at I-5; PR at I-4.

<sup>5</sup> CR at I-6; PR at I-4-5. There were no subject imports during the January 2014-September 2017 period of investigation. *See id.* at Table IV-15. As discussed below, Delta ordered 75 CS100 LCA from Bombardier (with an option for 50 more planes) in April 2016, CR at I-4 & n.9; PR at I-3 & n.9, with deliveries currently scheduled to begin in 2018. CR at IV-26; PR at IV-8; CR/PR at Table VII-5.

<sup>6</sup> CR at I-6; PR at I-5. \*\*\*. CR at I-6 n.15; PR at I-5 n.15.

## II. Domestic Like Product

### A. In General

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of subject merchandise, the Commission first defines the “domestic like product” and the “industry.”<sup>7</sup> Section 771(4)(A) of the Tariff Act of 1930, as amended (“the Tariff Act”), defines the relevant domestic industry as the “producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product.”<sup>8</sup> In turn, the Tariff Act defines “domestic like product” as “a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation.”<sup>9</sup>

The decision regarding the appropriate domestic like product in an investigation is a factual determination, and the Commission has applied the statutory standard of “like” or “most similar in characteristics and uses” on a case-by-case basis.<sup>10</sup> No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.<sup>11</sup> The Commission looks for clear dividing lines among possible like products and disregards minor variations.<sup>12</sup> Although the Commission must accept Commerce’s determination as to the scope of the imported merchandise that is subsidized or sold at less than fair value,<sup>13</sup> the Commission determines what domestic product is like the imported articles Commerce has identified.<sup>14</sup>

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<sup>7</sup> 19 U.S.C. § 1677(4)(A).

<sup>8</sup> 19 U.S.C. § 1677(4)(A).

<sup>9</sup> 19 U.S.C. § 1677(10).

<sup>10</sup> See, e.g., *Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int’l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Torrington Co. v. United States*, 747 F. Supp. 744, 749 n.3 (Ct. Int’l Trade 1990), *aff’d*, 938 F.2d 1278 (Fed. Cir. 1991) (“every like product determination ‘must be made on the particular record at issue’ and the ‘unique facts of each case’”). The Commission generally considers a number of factors, including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. See *Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int’l Trade 1996).

<sup>11</sup> See, e.g., S. Rep. No. 96-249 at 90-91 (1979).

<sup>12</sup> *Nippon*, 19 CIT at 455; *Torrington*, 747 F. Supp. at 748-49; see also S. Rep. No. 96-249 at 90-91 (Congress has indicated that the like product standard should not be interpreted in “such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not ‘like’ each other, nor should the definition of ‘like product’ be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.”).

<sup>13</sup> See, e.g., *USEC, Inc. v. United States*, 34 Fed. Appx. 725, 730 (Fed. Cir. 2002) (“The ITC may not modify the class or kind of imported merchandise examined by Commerce.”); *Algoma Steel Corp. v.* (Continued...)

## B. Product Description

In its final determinations, Commerce defined the imported merchandise within the scope of these investigations as follows:

{A}ircraft, regardless of seating configuration, that have a standard 100- to 150-seat two-class seating capacity and a minimum 2,900 nautical mile range, as these terms are defined below. “Standard 100- to 150-seat two-class seating capacity” refers to the capacity to accommodate 100 to 150 passengers, when eight passenger seats are configured for a 36- inch pitch, and the remaining passenger seats are configured for a 32-inch pitch. “Pitch” is the distance between a point on one seat and the same point on the seat in front of it. “Standard 100- to 150-seat two-class seating capacity” does not delineate the number of seats actually in a subject aircraft or the actual seating configuration of a subject aircraft. Thus, the number of seats actually in a subject aircraft may be below 100 or exceed 150. A “minimum 2,900 nautical mile range” means: (i) able to transport between 100 and 150 passengers and their luggage on routes equal to or longer than 2,900 nautical miles; or (ii) covered by a U.S. Federal Aviation Administration (FAA) type certificate or supplemental type certificate that also covers other aircraft with a minimum 2,900 nautical mile range. The scope includes all aircraft covered by the description above, regardless of whether they enter the United States fully or partially assembled, and regardless of whether, at the time of entry into the United States, they are approved for use by the FAA. The merchandise covered by this investigation is currently classifiable under Harmonized Tariff Schedule of the United States (HTSUS) subheading 8802.40.0040. The merchandise may alternatively be classifiable under HTSUS subheading 8802.40.0090. Although these HTSUS subheadings are provided for convenience and customs purposes, the written description of the scope of the investigation is dispositive.<sup>15</sup>

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(...Continued)

*United States*, 688 F. Supp. 639, 644 (Ct. Int’l Trade 1988), *aff’d*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

<sup>14</sup> *Hosiden Corp. v. Advanced Display Mfrs.*, 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Cleo*, 501 F.3d at 1298 n.1 (“Commerce’s {scope} finding does not control the Commission’s {like product} determination.”); *Torrington*, 747 F. Supp. at 748-52 (affirming the Commission’s determination defining six like products in investigations in which Commerce found five classes or kinds).

<sup>15</sup> 100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Countervailing Duty Determination, 82 Fed. Reg. 61525 (Dec. 27, 2017); 100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Determination of Sales at Less-Than-Fair-Value, 82 Fed. Reg. 61255 (Dec. 27, 2017).

100- to 150-seat LCA, the smallest single-aisle LCA,<sup>16</sup> are used to transport passengers and cargo on short- to medium-range routes, including transcontinental routes between the west and east coasts of the United States.<sup>17</sup> Such LCA consist of the following elements: an airframe, which provides the basic structure of the aircraft; a fuselage consisting of a pressurized tube; two wings; a tail; a turbofan engine under each wing; aircraft systems, including flight controls, communications equipment, an environmental control system, and frequently in-flight entertainment; and an interior, including ceilings, walls, seats, lavatories, and crew rests.<sup>18</sup> All 100- to 150-seat LCA within the scope possess a standard two-class 100- to 150-seat capacity, a minimum 2,900 nautical mile range, a two-person flight crew to pilot the aircraft, and a cabin crew of at least three.<sup>19</sup>

There are only three producers of 100- to 150-seat LCA globally.<sup>20</sup> The only 100- to 150-seat LCA produced domestically during the period of investigation was the Boeing 737-700 (126 seats in a standard two-class configuration).<sup>21</sup> Boeing has developed a successor to the 737-700 called the 737 MAX 7 (138 seats), which is scheduled to enter service in 2019.<sup>22</sup> The only 100- to 150-seat LCA produced in Canada are the Bombardier CS100 (108 seats) and CS300 (130 seats), collectively known as the “C Series.”<sup>23</sup> Bombardier launched (*i.e.*, officially announced) the C Series program in 2008 and delivered the first C Series LCA to a customer, SWISS International Airlines AG (“SWISS”) (a fully owned subsidiary of Lufthansa), in June 2016.<sup>24</sup> The only 100- to 150-seat LCA produced in nonsubject countries are the Airbus A319ceo (124 seats) and the A319neo (140 seats), which are produced in the European Union and China.<sup>25</sup> The A319neo is a successor to the A319ceo and is scheduled to enter service in 2018.<sup>26</sup> In October

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<sup>16</sup> Regional civil aircraft include aircraft either (a) with seat counts less than 100 seats intended for civil uses or (b) aircraft with seat counts between 100 and 150 seats that do not possess the minimum nautical mile range required of aircraft within the scope. CR/PR at Table II-4, note. Regional civil aircraft are produced in Brazil by Embraer (*e.g.*, the Embraer E190-E2 and E195-E2) and in Canada by Bombardier (*e.g.*, the Bombardier CRJ 700, 900, and 1000). CR at VII-22-23; PR at VII-12; CR/PR at Table II-2, note.

<sup>17</sup> CR at I-13-14; PR at I-9-10; Petition at 34-36.

<sup>18</sup> CR at I-21-22; PR at I-14-15; Petition at 35.

<sup>19</sup> CR at I-12-13; PR at I-9; Petition at 35. Standard seating capacity refers to a typical, two-class arrangement used on commercial airline routes where the first class comprises eight passenger seats with a 36-inch “pitch” (the distance between a singular point on one seat and the same point on the seat in an adjacent row) and the second class comprises the remaining seats with a 32-inch pitch. CR at I-12-13; PR at I-9.

<sup>20</sup> CR at I-17; PR at I-12.

<sup>21</sup> CR at I-15-17; PR at I-11-12; CR/PR at Table I-1.

<sup>22</sup> CR at I-15 n.43; PR at I-11 n.43. Boeing began producing the first 737 MAX 7 wing spar in October 2017. CR at I-18; PR at I-13.

<sup>23</sup> CR at I-17; PR at I-12; CR/PR at Table I-1.

<sup>24</sup> CR at II-12; PR at II-7; Conference Tr. at 237 (Mitchell).

<sup>25</sup> CR at I-17; PR at I-12; CR/PR at Table I-1. Airbus Americas Inc. began production of out-of-scope single-aisle LCA at a facility in Mobile, Alabama in July 2015, which is currently equipped to build A320 and A321 models. CR at I-6 n.12; PR at I-4 n.12.

<sup>26</sup> CR at II-15; PR at II-9.



2017, Bombardier and Airbus signed what they characterize as a definitive investment agreement that would give Airbus a majority stake (50.01 percent) in CSALP.<sup>27</sup> Under the agreement, Airbus would become the entity that manufactures and sells the CS100 and CS300, and the companies would establish a C Series final assembly line (“FAL”) for U.S. customers next to Airbus Americas’ plant in Mobile, Alabama.<sup>28</sup>

### C. Arguments of the Parties

Boeing argues that the Commission should define the domestic like product as coextensive with the scope because a clear dividing line separates domestically produced LCA described by the scope from larger domestically produced single-aisle LCA outside the scope. In this regard, Boeing argues that the smaller size of in-scope LCA as compared to out-of-scope single-aisle LCA dictates a lower two-class seating capacity and a lower maximum takeoff weight, which makes in-scope LCA ideal for airports with shorter runways, higher temperatures, and higher altitudes.<sup>29</sup> The lower seat count of in-scope LCA also limits their interchangeability with larger out-of-scope LCA, Boeing argues, because airlines seek to minimize empty seats by using LCA that are no larger than necessary on particular routes.<sup>30</sup> While acknowledging that all single-aisle LCA are produced by the same employees in the same production facilities, Boeing stresses that in-scope LCA utilize different tooling than out-of-scope LCA, and that long production runs of in-scope LCA are optimal because shifting to production of a different 737 variant is “very disruptive.”<sup>31</sup> Boeing also claims that governments, LCA producers, airlines, and industry experts all perceive 100- to 150-seat LCA as a distinct market segment,<sup>32</sup> and that the list and actual prices of the 737-700 and MAX 7 are lower than those for larger single aisle LCA.<sup>33</sup>

Respondents argue that the Commission should define the domestic like product as “all single-aisle LCA with capacity for at least 100 seats,” encompassing Boeing’s entire “737 family,” because, in their view, the 737 family is a continuum of LCA with no clear dividing line at 150 seats.<sup>34</sup> They claim that all members of the 737 family are based on the same design with varying lengths of fuselage, share the same FAA certificate, and have a range exceeding 2,900 nautical miles,<sup>35</sup> and that in-scope 737 MAX 7 LCA and out-of-scope 737-800 LCA can be

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<sup>27</sup> CR at I-6 n.13; PR at I-4 n.13.

<sup>28</sup> CR at I-6 n.13; PR at I-4 n.13; Bombardier’s Prehearing Brief at 5.

<sup>29</sup> Petitioner’s Prehearing Brief at 25-26, 28; Petitioner’s Responses to Commissioner Questions at 66-68; Hearing Tr. at 147 (Nickelsburg).

<sup>30</sup> Petitioner’s Prehearing Brief at 26, 29-30 (citing *100- to 150-Seat Large Civil Aircraft from Canada*, Inv. Nos. 701-TA-578 and 731-TA-1368 (Preliminary), USITC Pub. 4702 (June 2017) at 8, 10).

<sup>31</sup> Petitioner’s Prehearing Brief at 35-37 (citing Petitioner’s Postconference Brief at Appendix A-7).

<sup>32</sup> Petitioner’s Prehearing Brief at 33.

<sup>33</sup> Petitioner’s Prehearing Brief at 38 (citing Petitioner’s Postconference Brief at Exhibit 13).

<sup>34</sup> Bombardier’s Prehearing Brief at 19-20; *see also* Delta’s Prehearing Brief at 10-12.

<sup>35</sup> Bombardier’s Prehearing Brief at 20-22; Delta’s Prehearing Brief at 12-14.

configured with a similar number of seats.<sup>36</sup> Respondents further argue that in-scope LCA are interchangeable with out-of-scope LCA because airlines regularly substitute larger single-aisle LCA for 100- to 150-seat LCA on the same routes as demand fluctuates depending on the time, day of the week, or season.<sup>37</sup> They emphasize that all single-aisle LCA are produced by Boeing in the same facilities using the same employees, and that all single-aisle LCA are sold through the same channels of distribution.<sup>38</sup> They also observe that Boeing markets all 737 variants as a family, stressing the benefits of their commonalities, and claim that customers perceive the 737 family as a continuum, choosing those models that are the right size for a given route.<sup>39</sup> While conceding that larger out-of-scope LCA are priced higher than the smaller in-scope LCA, respondents assert that the Commission should not consider price to be a determinative factor given the great variability of prices across LCA models and segments, the alleged opacity of prices to market participants, and the high rate at which 737-700 and MAX 7 orders have been converted to larger and more expensive aircraft.<sup>40</sup>

#### D. Analysis

In the preliminary determinations, the Commission defined the domestic like product as coextensive with in-scope LCA, limited to the Boeing 737-700 and MAX 7, but indicated that it would investigate further the appropriate definition of the domestic like product in any final phase investigations.<sup>41</sup> Based on the record of the final phase of these investigations, we again define a single domestic like product consisting of 100- to 150-seat LCA coextensive with the scope.

*Physical Characteristics and Uses.* All types of domestically produced single-aisle LCA, including 100- to 150-seat LCA, possess the same general physical characteristics and uses. In terms of physical characteristics, all single-aisle LCA consist of an airframe, fuselage, wings, a tail, two turbofan engines, and accommodations for passenger, crew, and cargo.<sup>42</sup> All can be configured to transport 100 or more passengers and cargo for least 2,900 nautical miles.<sup>43</sup>

There is also evidence that airlines have some flexibility in terms of the seat count on single-aisle LCA. American Airlines has reportedly configured the next-larger Boeing 737 variant, the out-of-scope Boeing 737-800, with 150 to 160 seats, and the in-scope 737 MAX 7 may be configured with up to 172 seats in one class.<sup>44</sup> A Boeing 737-800 configured with more than 150 seats would not fall within the scope of the investigations, however, which is limited

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<sup>36</sup> Bombardier's Prehearing Brief at 22-23; Bombardier's Posthearing Brief at 12.

<sup>37</sup> Bombardier's Prehearing Brief at 25-27; Delta's Prehearing Brief at 17-18.

<sup>38</sup> Bombardier's Prehearing Brief at 28-30; Delta's Prehearing Brief at 19-21.

<sup>39</sup> Bombardier's Prehearing Brief at 30-33; Bombardier's Posthearing Brief at 11; Delta's Prehearing Brief at 19-20.

<sup>40</sup> Bombardier's Prehearing Brief at 33-36.

<sup>41</sup> 100- to 150-Seat LCA from Canada, USITC Pub. 4702 at 13.

<sup>42</sup> CR at I-21-22; PR at I-14-15.

<sup>43</sup> CR at I-14; PR at I-11-12.

<sup>44</sup> Bombardier's Prehearing Brief at 6, Exhibits 12, 15; Bombardier's Posthearing Brief at 12, Exhibit 12.

to LCA with a “{s}tandard 100- to 150-seat two-class seating capacity” meaning “the capacity to accommodate 100 to 150 passengers, when eight passenger seats are configured for a 36-inch pitch, and the remaining passenger seats are configured for a 32-inch pitch.”<sup>45</sup>

The record also indicates that 100- to 150-seat LCA differ from other single-aisle LCA in certain respects in terms of their physical characteristics and uses. In particular, 100- to 150-seat LCA are \*\*\*.<sup>46</sup> Due to their smaller size, 100- to 150-seat LCA have a lower standard two-class seat count, 126 seats for the 737-700 and 138 seats for the 737 MAX 7, than larger single-aisle LCA, the next-larger being the 737-800 and 737 MAX 8 with 162 and 178 seats, respectively.<sup>47</sup> Southwest, Boeing’s launch customer for the 737 MAX 7, has configured the 30 737 MAX 7s it has ordered with \*\*\* seats.<sup>48</sup> Although all members of the 737 family are covered by the same FAA certification, \*\*\*.<sup>49</sup>

All parties agree that seat count is a critical characteristic of single-aisle LCA because airlines seek to minimize empty seats by using LCA that are no larger than necessary on particular routes.<sup>50</sup> When determining the size of the aircraft to assign to a particular flight, Delta seeks to “match the right size aircraft to the anticipated passenger demand for the flight . . . to have seats available for our customers when we want them” while minimizing “empty seats,” which result in “a higher {per seat} cost which means a poor return for our shareholders or an increased ticket price for our customers.”<sup>51</sup> Moreover, the FAA requires an additional flight attendant for passenger-carrying aircraft with over 150 seats.<sup>52</sup> Given these economic considerations, airlines would generally use 737-700s and 737 MAX 7s on flights with a commensurate level of seat demand and larger single-aisle LCA on flights with greater demand.<sup>53</sup>

Both sides agree that the Boeing 737-700 and MAX 7 differ from larger single-aisle LCA in that the 737-700 and MAX 7 are ideally suited for takeoff and landing at airports characterized by shorter runways, higher temperatures, and higher altitudes, due to their high

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<sup>45</sup> CR at I-11; PR at I-8. The standard, two-class seating capacity of the 737-800 is 162. CR at I-16; PR at I-11-12.

<sup>46</sup> CR at I-28; PR at I-20.

<sup>47</sup> CR at I-16-17; PR at I-11-12.

<sup>48</sup> Petitioner’s Responses to Commissioner Questions at 69.

<sup>49</sup> Delta’s Prehearing Brief at 13; Domestic Producers’ Questionnaire Response of Boeing at Question V-1(a).

<sup>50</sup> Petitioner’s Prehearing Brief at 26; Bombardier’s Prehearing Brief at 27; Delta’s Prehearing Brief at 17-18.

<sup>51</sup> Hearing Tr. at 205-07 (Esposito); *see also* Delta’s Prehearing Brief at 25-26. Delta “develop{s} a passenger demand profile for each flight and that profile may vary even from the same route depending on the time of day, day of week or time of year.” Hearing Tr. at 206 (Esposito).

<sup>52</sup> CR at I-29 n.83; PR at I-20 n.83.

<sup>53</sup> *See* Hearing Tr. at 90 (Anderson), 169-74 (Esposito); *see also* Nickelsburg Report, para. 10, attached to Petitioner’s Postconference Brief as Exhibit 8 (stating that 100- to 150-seat LCA “are designed to serve short to medium-range routes where the demand for air travel is low, or short to medium-range routes that require frequent flights due to high, but time-sensitive, demand for air travel.”); Delta’s Prehearing Brief at 25-27.

performance.<sup>54</sup> There are at least 16 such airports in the United States according to Boeing,<sup>55</sup> and six of Delta's routes may only be served by 737-700s.<sup>56</sup>

Boeing reported that 100- to 150-seat LCA were \*\*\* comparable to the next larger LCA, the 737-800 and MAX 8, in terms of physical characteristics and uses.<sup>57</sup> \*\*\*, a majority of responding U.S. importers/purchasers reported that 100- to 150-seat LCA were somewhat comparable to the 737-800 and MAX 8 in terms of this factor.<sup>58</sup>

*Manufacturing Facilities, Production Processes, and Employees.* Boeing assembles all single-aisle LCA, including 100- to 150-seat LCA, on the same production lines in Renton, Washington, with fuselages produced in Wichita, Kansas, and additional fabrication and production processes performed at eight other facilities across the country.<sup>59</sup> Boeing also cross-trains its employees at the Renton facility to produce all variants of the 737.<sup>60</sup>

According to Boeing, employees must be cross-trained to produce different variants of the 737 because each variant requires some specialized tooling and modifications to the fuselage, wiring lengths, and landing gear requirements.<sup>61</sup> In 2016, \*\*\* percent of the fixed assets that Boeing utilized in the production of the 737-700 and MAX 7 were dedicated solely to the production of these aircraft, including 15 pieces of specialized tooling for production of the 737 MAX 7.<sup>62</sup> Due to the manufacturing differences between different LCA models produced on the shared production lines, switching between aircraft models during manufacturing may disrupt and cause inefficiencies within the production system.<sup>63</sup> Furthermore, production costs decline as a producer gains experience and goes down the "learning curve," which means that \*\*\*.<sup>64</sup> To minimize such inefficiencies, Boeing prefers to produce the 737-700 and MAX 7, as well as other 737 variants, in blocks of five or ten planes.<sup>65</sup> Boeing's ability to switch from producing larger single-aisle LCA to the 737-700 and MAX 7 is also constrained by \*\*\*.<sup>66</sup>

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<sup>54</sup> Petitioner's Prehearing Brief at 28; Bombardier's Prehearing Brief at 60; Hearing Tr. at 147 (Nickelsburg), 153-54 (McAllister), 198-99 (May), 208 (Esposito).

<sup>55</sup> Hearing Tr. at 153 (McAllister); Petitioner's Postconference Brief at 12.

<sup>56</sup> Hearing Tr. at 206 (Esposito).

<sup>57</sup> CR at I-24; PR at I-16; CR/PR at Table I-2.

<sup>58</sup> CR at I-24; PR at I-16; CR/PR at Table I-2.

<sup>59</sup> CR at I-18; PR at I-13.

<sup>60</sup> CR at III-36 n.49; PR at III-13 n.49; Conference Tr. at 149 (Conner).

<sup>61</sup> CR at I-20-21; PR at I-14.

<sup>62</sup> Domestic Producers' Questionnaire of Boeing at Question II-3b; Petitioner's Postconference Brief at Appendix A-7. At least some of the model-specific tooling \*\*\*. *Id.*; see also Bombardier's Prehearing Brief at 28.

<sup>63</sup> CR at I-20-21; PR at I-14.

<sup>64</sup> CR at I-20; PR at I-14. The parties describe the process of lowering the marginal production cost of a particular LCA model through the experience of building multiple copies of the model (*i.e.*, "learning by doing") as moving down the "learning curve." *100- to 150-Seat Large Civil Aircraft from Canada*, USITC Pub. 4702 at 10 n.54.

<sup>65</sup> Conference Tr. at 61-62 (Conner).

<sup>66</sup> CR at I-30; PR at I-21; Petitioner's Prehearing Brief at 36; Domestic Producers' Questionnaire Response of Boeing at Question V-1(c).

Boeing reported that 100- to 150-seat LCA were \*\*\* manufactured in the same facilities with the same production processes and employees as the 737-800 and MAX 8.<sup>67</sup> When asked about the extent to which 100- to 150-seat LCA are manufactured in the same facilities with the same production processes and employees as the 737-800 and MAX 8, six responding U.S. importers/purchasers reported “fully” and one reported “mostly.”<sup>68</sup>

*Channels of Distribution.* All parties agree that all domestically produced single-aisle LCA are sold through the same channels of distribution, from Boeing and Airbus Americas to airlines and leasing companies.<sup>69</sup>

*Interchangeability.* There are economic limitations on the interchangeability of domestically produced 100- to 150-seat LCA and larger single-aisle LCA on the same flights between the same airports, particularly at the same time of day, day of the week, and season.<sup>70</sup> As discussed above, airlines allocate planes to specific flights based on anticipated seat demand, maximizing revenues by satisfying demand fully and minimizing empty seats by utilizing planes no larger than necessary to accommodate seat demand.<sup>71</sup> Empty seats reduce the profitability of a flight by increasing the flight’s per-seat cost.<sup>72</sup> Flying a 737-800 or 737 MAX 8 on a route with demand for only a 737-700 or 737 MAX 7 would inflate per-seat costs due to the higher operating costs of the larger aircraft relative to the smaller aircraft, including higher fuel costs, higher pilot costs, the cost of the additional flight attendant required on LCA with over 150 seats, and higher landing and navigation fees.<sup>73</sup> For these reasons, it would be uneconomical for airlines to use a larger single-aisle LCA on flights with seat demand commensurate with a 100- to 150-seat LCA because doing so would result in empty seats, higher costs per seat, and lower profits.<sup>74</sup> Conversely, it would be uneconomical for airlines to use a 737-700 or 737 MAX 7 on flights where seat demand exceeds their limited seating capacity because doing so would forego revenue and risk frustrating customers.<sup>75</sup>

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<sup>67</sup> CR/PR at Table I-2.

<sup>68</sup> CR/PR at Table I-2.

<sup>69</sup> Petitioner’s Prehearing Brief at 33; Bombardier’s Prehearing Brief at 30; Delta’s Prehearing Brief at 19; *see also* CR at I-31; PR at I-21; CR/PR at Table I-4.

<sup>70</sup> Seat demand on a given route between airports will vary based on the time of day, day of the week, and season. Hearing Tr. at 204 (Esposito).

<sup>71</sup> Petitioner’s Prehearing Brief at 29; Bombardier’s Prehearing Brief at 41-42; Delta’s Prehearing Brief at 25-26.

<sup>72</sup> Hearing Tr. at 207 (Esposito); Delta’s Prehearing Brief at 25-26.

<sup>73</sup> Petitioner’s Prehearing Brief at 30-31. A pilot’s compensation is partly based on the size of the aircraft. CR at I-29 n.83; PR at I-20 n.83.

<sup>74</sup> Hearing Tr. at 207 (Esposito) (“But if the plane’s capacity exceeds passenger demand we will have empty seats. Flying with empty seats means a higher {per seat} cost which means a poor return for our shareholders or an increased ticket price for our customers.”).

<sup>75</sup> Hearing Tr. at 206 (Esposito) (“Ideally, we want to have seats available for our customers when we want them so we try to ensure that the aircraft assigned to that particular mission of the early evening flight, for example, is large enough to accommodate expected demand. This of course goes to our bottom line. More seats we sell generally speaking, the better our revenues but also meet the needs of our customers.”).

For example, Delta subdivides its fleet into six categories based on seat count; it classifies a subset of 100- to 150-seat LCA into the category of “small-gauge mainline aircraft,” which seat 110-130 passengers.<sup>76</sup> Delta seeks to have “the right sized aircraft for each flight,” reserving larger single-aisle aircraft for flights “between two large markets . . . more likely to draw passenger demand sufficient to require a larger aircraft.”<sup>77</sup> Similarly, \*\*\*.<sup>78</sup> The ability of the 737-700 and MAX 7 to serve airports characterized by shorter runways, higher temperatures, and higher altitudes, as discussed above, further limits the ability to use larger single-aisle LCA in place of the 737-700 and MAX 7.

Respondents stress that larger single-aisle LCA are often flown on the same routes as domestically produced 100- to 150-seat LCA, as seat demand fluctuates with the time of day, day of the week, and season.<sup>79</sup> To avoid empty seats and the higher operating cost of larger single-aisle LCA, however, an airline would generally utilize a larger single-aisle LCA on a route also served by smaller in-scope LCA only during periods of increased seat demand.<sup>80</sup> According to Delta, a larger single-aisle LCA is substitutable for a 100- to 150-seat LCA only if “\*\*\*.”<sup>81</sup> \*\*\* reported that an airline may also substitute a larger single-aisle LCA for a 100- to 150-seat LCA when the larger aircraft takes over a route with high demand and reduces the number of trip frequencies.<sup>82</sup> In either case, an airline’s ability to substitute a larger single-aisle LCA for a domestically produced 100- to 150-seat LCA is constrained by seat demand.

\*\*\* seven of nine responding importer/purchasers reported that 100- to 150-seat LCA were somewhat interchangeable with the 737-800 and MAX 8.<sup>83</sup>

*Producer and Customer Perceptions.* Consistent with the limited interchangeability of domestically produced 100- to 150-seat LCA with larger single-aisle LCA on the same flights, the record indicates that producers and customers perceive differences between domestically produced 100- to 150-seat LCA and larger single-aisle LCA. Boeing perceives 100- to 150-seat LCA as distinct from larger single-aisle LCA, and emphasizes that it would not have invested in the development of the 737 MAX 7 if it believed that demand for 100- to 150-seat LCA could be

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<sup>76</sup> Delta’s Prehearing Brief at 26-27.

<sup>77</sup> Delta’s Prehearing Brief at 25-26; Hearing Tr. at 203-08 (Esposito).

<sup>78</sup> Importer/Purchasers’ Questionnaire of \*\*\* at Question IV-1(b). Although \*\*\*. See Importer/Purchaser Questionnaire Response of \*\*\* at 27.

<sup>79</sup> See Bombardier’s Prehearing Brief at 25-27; Delta’s Prehearing Brief at 17-18; CR at II-32-33; PR at II-18-19. Three of four responding importer/purchasers (\*\*\*) reported that most of their routes served by 100- to 150-seat LCA were also served by larger single-aisle LCA. CR at II-32-33; PR at II-18-19.

<sup>80</sup> See Hearing Tr. at 204-05 (Esposito) (“Part of network planning is trying to assess how much passenger demand there will be on every one of those flights over the next three hundred and thirty-one days. This demand will vary for each flight by time of day, day of week and season. We will fly different types of aircraft on the same routes at different times of day or different times of year. A morning flight might be made using a smaller aircraft while an evening flight to accommodate higher demand might use a significantly larger aircraft.”).

<sup>81</sup> Importer/Purchaser’s Questionnaire Response of Delta at Question IV-1(a).

<sup>82</sup> CR at II-31; PR at II-17.

<sup>83</sup> CR/PR at Table I-2.

satisfied with larger single-aisle LCA.<sup>84</sup> An internal Boeing presentation unrelated to these investigations stated that the CS100 and CS300 compete directly with the 737-700, 737 MAX 7, and A319.<sup>85</sup> Since announcing its proposed partnership with Bombardier in October 2017, Airbus has made several statements indicating that the C Series competes in the 100- to 150-seat market segment.<sup>86</sup>

There is also evidence that customer perceptions differ as between 100- to 150-seat LCA and larger single-aisle LCA. Delta divides single-aisle LCA into 110- to 130-seat “small-gauge narrowbody mainline aircraft,” distinct from “medium narrowbody mainline aircraft” (150-160 seats) and “large gauge narrowbody mainline aircraft” (over 180 seats) categories.<sup>87</sup> Delta uses these categories for purposes of allocating aircraft to specific missions or routes, seeking to match seat capacity with seat demand as closely as possible. The much higher level of outstanding orders for larger single-aisle LCA, such as the 737 MAX 8, than for 100- to 150-seat LCA such as the 737 MAX 7, despite the higher acquisition price and operating cost of larger single-aisle LCA, also suggests that customers do not perceive 100- to 150-seat LCA as the same or similar to larger single-aisle LCA.<sup>88</sup>

The record also shows some similarities in producer and customer perceptions as between 100- to 150-seat LCA and larger single-aisle LCA. For example, on its website and in marketing materials, Boeing defines a unitary “single aisle market” and presents the 737-700 and MAX 7 with other 737 variants as the “737 family,” emphasizing the benefits of the commonalities between 737 variants.<sup>89</sup> Five of eight responding importer/purchasers reported that customer and producer perceptions of 100- to 150-seat LCA are fully or mostly comparable to their perceptions of the 737-800 and MAX 8.<sup>90</sup>

*Price.* Both sides agree that larger single-aisle LCA are priced higher than 100- to 150-seat LCA.<sup>91</sup> There is no overlap between Boeing’s list prices for 100- to 150-seat LCA and larger single-aisle LCA, with the list prices for the 737-700 and MAX 7 ranging from \$82.4 million to \$92.2 million and the list prices for larger single-aisle LCA ranging from \$98.1 million to \$119.2 million.<sup>92</sup> With respect to sales prices, there has historically been a \*\*\* percent gap between

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<sup>84</sup> CR/PR at Table I-2; Hearing Tr. at 45-46 (McAllister), 59 (Anderson); Domestic Producers’ Questionnaire Response of Boeing at Question V-1(e).

<sup>85</sup> Petition at Exhibit 96.

<sup>86</sup> CR at I-17; PR at I-12.

<sup>87</sup> Importer/Purchaser’s Questionnaire Response of Delta at Question II-10; Delta’s Prehearing Brief at 26-27.

<sup>88</sup> Hearing Tr. at 60-61 (Anderson), 263 (Mitchell); Petitioner’s Hearing Exhibit 17.

<sup>89</sup> Bombardier’s Prehearing Brief at 31, Exhibits 19-23.

<sup>90</sup> CR/PR at Table I-2. These responses appear to conflict with the responses of seven of nine responding importer/purchasers that 100- to 150-seat LCA are only somewhat interchangeable with the 737-800 and MAX 8. *Id.* For example, \*\*\*.” Importer/Purchaser’s Questionnaire Response of \*\*\* at Questions IV-1(b) and (e).

<sup>91</sup> See Petitioner’s Prehearing Brief at 38-39; Bombardier’s Prehearing Brief at 33; Delta’s Prehearing Brief at 21-22.

<sup>92</sup> CR at I-33-34; PR at I-22. Published list prices are usually higher than actual sales prices because the latter exclude factors such as order volume and ancillary items. CR/PR at Table D-1; CR at I- (Continued...)

Boeing's prices on sales of 100- to 150-seat LCA and its prices on sales of larger single-aisle LCA.<sup>93</sup>

Boeing reported that the prices of 100- to 150-seat LCA are \*\*\* comparable to the prices of the 737-800 and MAX 8.<sup>94</sup> \*\*\*, five of nine responding importer/purchasers reported that the prices of 100- to 150-seat LCA are not at all comparable to the prices of the 737-800 and MAX 8, with the balance reporting that the prices are somewhat comparable.<sup>95</sup>

*Conclusion.* When considering whether to include certain out-of-scope domestic merchandise in the definition of the domestic like product, the Commission starts with the domestically produced merchandise corresponding to the scope and compares it to the domestically produced merchandise outside of the scope, using its six like product factors to determine if a clear dividing line separates the in-scope merchandise from the out-of-scope merchandise.<sup>96</sup> The record of the final phase of these investigations indicates that domestically produced 100- to 150-seat LCA, the Boeing 737-700 and MAX 7, differ at least in some respects from other domestically produced single-aisle LCA in terms of all domestic like product factors, except channels of distribution. Although all single-aisle LCA share the same general physical characteristics and uses, Boeing's 737-700 and MAX 7 possess \*\*\* than other single-aisle LCA.<sup>97</sup> These characteristics limit their standard two-class seat capacity to 126 seats and 138 seats, respectively, as compared to the standard 162 seats found on the next larger single-aisle LCA produced by Boeing, the 737-800.<sup>98</sup> Because airlines seek to match seating capacity to seating demand when allocating particular types of LCA to specific flights, the smaller size of 100- to 150-seat LCA limits their economical use to flights with lower seat demand relative to the flights served by larger single-aisle LCA.<sup>99</sup> The physical differences between 100- and 150-seat LCA and other single-aisle LCA are also reflected in differences in production processes, producer and customer perceptions, and price. Based on the preponderance of differences between 100- to 150-seat LCA and other single-aisle LCA, we define the domestic like product to include

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(...Continued)

35; PR at I-23. Although the list price for the 737 MAX 7 (\$92.2 million) is closer in value to the list price for the Boeing 737-800 (\$98.1 million) than it is to the 737-700 (\$82.4 million), the 737-700 and 737-800 have been superseded by the 737 MAX 7 and 737 MAX 8, and the list price for the 737 MAX 8 (\$112.4 million) is over \$20 million higher than that of the 737 MAX 7. Delta's Prehearing Brief, Exhibit 19.

<sup>93</sup> Petitioner's Postconference Brief at Exhibit 13. Boeing's shipments of 100- to 150-seat LCA during the period of investigation were limited to \*\*\*, and were therefore not comparable to its U.S. shipments of larger single-aisle LCA during the period. CR at I-31; PR at I-23.

<sup>94</sup> CR at I-26; PR at I-16.

<sup>95</sup> CR at Table I-2.

<sup>96</sup> See *Large Residential Washers from China*, Inv. No. 731-TA-1306, USITC Pub. 4591 (Feb. 2016) at 9-10 & n.48; *Large Residential Washers from Korea and Mexico*, Inv. Nos. 701-TA-488, 731-TA-1199-1200 (Final) USITC Pub. 4378 (Feb. 2013) at 6, 8.

<sup>97</sup> CR at I-28; PR at I-20.

<sup>98</sup> CR/PR at Table I-2.

<sup>99</sup> Petitioner's Prehearing Brief at 29; Bombardier's Prehearing Brief at 41-42; Delta's Prehearing Brief at 25-26; Hearing Tr. at 206-07 (Esposito).



all domestically produced 100- to 150-seat LCA coextensive with the scope: the Boeing 737-700 and 737 MAX 7.

### III. Domestic Industry

The domestic industry is defined as the domestic “producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product.”<sup>100</sup> In defining the domestic industry, the Commission’s general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

There are no domestic industry issues in these investigations.<sup>101</sup> Accordingly, we define the domestic industry as the only domestic producer of the domestic like product, 100- to 150-seat LCA: Boeing.

### IV. Negligible Imports

Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall be deemed negligible.<sup>102</sup> The statute also provides that, even if subject imports are found to be negligible for purposes of present material injury, they shall not be treated as negligible for purposes of a threat analysis should the Commission determine that there is a potential that subject imports from the country concerned will imminently account for more than 3 percent of all such merchandise imported into the United States.<sup>103</sup>

#### A. Arguments of the Parties

While conceding that subject imports are negligible for purposes of present material injury,<sup>104</sup> Boeing argues that there is a clear “potential” for subject imports to exceed the negligibility threshold imminently because Delta remains obligated to accept CS100s imported

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<sup>100</sup> 19 U.S.C. § 1677(4)(A).

<sup>101</sup> No domestic producer is currently related to an exporter or importer of the subject merchandise, *see* CR/PR at III-1 nn.1 & 2, Table III-1, and no domestic producer reported any imports or purchases of imports of 100- to 150-seat LCA from Canada. CR at III-35; PR at III-13. Accordingly, there are no related party issues in these investigations.

<sup>102</sup> 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24)(A)(i), 1677(24)(B); *see also* 15 C.F.R. § 2013.1 (developing countries for purposes of 19 U.S.C. § 1677(36)).

<sup>103</sup> 19 U.S.C. 1677 § (24)(A)(iv).

<sup>104</sup> Hearing Tr. at 159 (Novick).

from Canada in 2018 and Bombardier \*\*\*.<sup>105</sup> Bombardier has also confirmed that the CS100s scheduled for delivery to Delta in 2018 are in production or completed.<sup>106</sup> Given that \*\*\* deliveries of 100- to 150-seat LCA from nonsubject countries are projected for 2018, Boeing argues that the Commission should find subject imports from Canada non-negligible for purposes of our threat analysis because there is a potential for such imports to imminently exceed 3 percent of total imports of 100- to 150-seat LCA.<sup>107</sup>

Respondents argue that there is no potential that subject imports will imminently account for more than 3 percent of the volume of all imports of 100- to 150-seat LCA because CSALP plans to produce all C Series LCA for U.S. customers at a new U.S. FAL and Delta intends to defer delivery of its order for CS100s until they can be delivered from the U.S. production facility.<sup>108</sup> As Bombardier explains, on October 16, 2017, Bombardier and Airbus entered into a partnership agreement that would give Airbus a majority stake in CSALP and create a new U.S. FAL for the assembly of C Series LCA for U.S. customers.<sup>109</sup> Bombardier claims that the agreement was motivated by its desire for the C Series program to benefit from the expertise and resources of Airbus, including the potential cost savings from access to Airbus's global supply chain, and Airbus's desire to access a "breakthrough technology" that complements its existing single-aisle offerings.<sup>110</sup> Bombardier also contends that CSALP will proceed with the U.S. FAL regardless of the outcome of these investigations because Delta will not accept delivery of CS100s from Canada, and other U.S. purchasers will not place orders for C Series LCA when confronted with either 300 percent tariffs or the risk of new petitions.<sup>111</sup>

Due to these same factors, Delta states that it "does not currently anticipate" importing CS100s from Canada, and that it has entered into negotiations with Bombardier to defer delivery of the CS100s it has ordered until they can be delivered from the U.S. FAL in \*\*\*.<sup>112</sup> Bombardier officials have stated that the CS100s currently in production for Delta "will be delivered now to non-U.S. customers" and that "\*\*\*."<sup>113</sup> In light of these developments,

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<sup>105</sup> Petitioner's Prehearing Brief at 69-70, Exhibit 9; Petitioner's Posthearing Brief at 10-11; CR at VII-10, 19 n.25; PR at VII-5-6, 10 n.25; CR/PR at Table VII-5.

<sup>106</sup> Petitioner's Posthearing Brief at 11; see Hearing Tr. at 252, 298 (Dewar).

<sup>107</sup> CR at IV-26; PR at IV-8; CR/PR at Table IV-16.

<sup>108</sup> See Bombardier's Prehearing Brief at 4-16; Bombardier's Posthearing Brief at 14-15; GOC's Prehearing Brief at 11-18; GOC's Posthearing Brief at 2-4; Delta's Prehearing Brief at 40.

<sup>109</sup> Bombardier's Prehearing Brief at 4-7.

<sup>110</sup> Bombardier's Prehearing Brief at 5-6, 11. Bombardier claims that partnership talks with Airbus began in 2015, before the pending investigations. *Id.* at 11.

<sup>111</sup> Bombardier's Prehearing Brief at 12-14.

<sup>112</sup> Bombardier's Prehearing Brief at 12-13, 15; Bombardier's Responses to Commissioner Questions at 20-22, Attachment C; Delta's Prehearing Brief at 3; Delta's Posthearing Brief at 9-11; Hearing Tr. at 201 (May), 297 (McClain); Importer/Purchasers' Questionnaire Response of Delta at Question II-8. At the hearing, a Delta official conceded that "we do not have a current commercial right to refuse" delivery of CS100s from Canada beginning in 2018 "but we've made it clear what our desires are and it is an open negotiation." Hearing Tr. at 262 (May).

<sup>113</sup> Bombardier's Responses to Commissioner Questions at 21-22 (quoting Hearing Tr. at 298 (Dewar); Statement of Fred Cromer, para. 1, appended as Attachment C); CR at VII-13; PR at VII-6.

respondents argue that there is no longer any factual basis for the Commission to find subject imports non-negligible for threat purposes, mandating termination of the investigations.<sup>114</sup>

## B. Analysis

In the final phase of these investigations, there were no subject imports during the period of investigation, including the most recent 12-month period preceding the filing of the petition for which data are available.<sup>115</sup> Consequently, we find that subject imports are negligible for purposes of present material injury.<sup>116</sup>

We next assess whether subject imports have the potential to imminently exceed the 3 percent statutory threshold for purposes of our threat analysis. To assess this potential, the Commission typically has examined the subject imports' share of total imports, especially toward the latter portion of the negligibility period, as well as foreign production capacity, capacity utilization, and inventories in the subject country.<sup>117</sup>

The statute and the Statement of Administrative Action ("SAA") for the Uruguay Round Agreements Act ("URAA") do not preclude the Commission from finding that subject imports will imminently exceed 3 percent of total imports where there were no subject imports during the most recent 12-month period preceding the petition for which data are available, and where the first subject imports are scheduled for delivery after the filing of a petition. The statute makes clear that the Commission may base an affirmative threat determination on "sales (or the likelihood of sales) of {subject} merchandise" or "sales for importation," which refer to sales of subject imports for importation in the future.<sup>118</sup> Indeed, the Commission has previously found subject imports from a country non-negligible for threat purposes based

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<sup>114</sup> Bombardier's Prehearing Brief at 15; Delta's Prehearing Brief at 39; GOC's Prehearing Brief at 11-18.

<sup>115</sup> CR at IV-25; PR at IV-7; CR/PR at Table IV-15.

<sup>116</sup> Uruguay Round Agreements Act ("URAA") Statement of Administrative Action ("SAA"), H.R. Rep. No. 103-316, vol. I at 856 (1994) ("The Commission will not make a material injury determination concerning . . . imports {that} are currently negligible.").

<sup>117</sup> See *Certain Steel Concrete Reinforcing Bars from Belarus, China, Korea, Latvia, and Moldova*, Inv. Nos. 731-873-874 and 877-879 (Final), USITC Pub. 3440 (July 2001); *Certain Stainless Steel Butt-Weld Pipe Fittings from Germany*, Inv. No. 731-TA-864 (Final), USITC Pub. 3372 (November 2000); *Certain Cold-Rolled Steel Products from Argentina, Brazil, China, Indonesia, Japan, Russia, Slovakia, South Africa, Taiwan, Thailand, Turkey, and Venezuela*, Inv. Nos. 701-TA-393-396 and 731-TA-829-840 (Preliminary), USITC Pub. 3214 (July 1999).

<sup>118</sup> 19 U.S.C. §§ 1671(a)(2), 1673(2), 1677(7)(F)(i). In the legislative history accompanying the statute that amended 19 U.S.C. § 1671 to include this language, Congress explained that the amendment was "intended to eliminate uncertainties about the authority of the Department of Commerce and the ITC to initiate countervailing duty cases and to render determinations in situations where actual importation has not yet occurred but a sale for importation has been completed or is imminent," where antidumping law applied to such situations from its inception. H.R. Rep. No. 98-725, 98<sup>th</sup> Cong. 2<sup>nd</sup> Sess., at 11 (1984), 1984 USCCAN 4910, 5137.

exclusively on sales for future importation.<sup>119</sup> However, the Commission can only find subject imports non-negligible for threat on the basis of a sale for importation if it also finds that the sale or likely sale creates the potential for subject imports to imminently exceed three percent of total imports.

In its preliminary determinations, the Commission found subject imports negligible for present material injury purposes but non-negligible for threat purposes because Delta's scheduled imports of CS100s from Canada in 2018 were likely to represent \*\*\* percent of all imports of 100- to 150-seat LCA that year, pursuant to its binding order for 75 CS100s.<sup>120</sup> On October 16, 2017, however, Bombardier and Airbus entered into a partnership agreement that would give Airbus a majority stake in CSALP and create a new U.S. FAL for the assembly of C Series LCA for U.S. customers.<sup>121</sup> To avoid the risk of duties, Delta has stated that it no longer intends to import CS100s from Canada and has entered negotiations with Bombardier to defer delivery of the CS100s it has ordered until they can be delivered from the U.S. FAL in \*\*\*.<sup>122</sup> Bombardier has also stated that the companies intend for Delta's planes to be produced at the U.S. FAL.<sup>123</sup> Bombardier has stated that it is seeking to sell the \*\*\* CS100s currently in production for Delta to non-U.S. purchasers, and that \*\*\*.<sup>124</sup>

Nevertheless, Delta's plans to replace subject imports of CS100s with domestically produced CS100s remain indefinite. Bombardier reported in its questionnaire response, filed after the announcement of its proposed partnership with Airbus, \*\*\*, and a non-U.S. purchaser for the \*\*\* CS100s currently in production for Delta has not been secured.<sup>125</sup> Delta remains contractually obligated to accept delivery of CS100s from Canada in 2018 pending the renegotiation of its purchase agreement with Bombardier, which \*\*\*.<sup>126</sup> Bombardier \*\*\*.<sup>127</sup> Similarly, \*\*\*.<sup>128</sup> Bombardier does not expect its transaction with Airbus to close until \*\*\*.<sup>129</sup>

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<sup>119</sup> *Engineered Process Gas Turbo-Compressor Systems from Japan*, Inv. No. 731-TA-748 (Preliminary), USITC Pub. 2976 (July 1996) at 13.

<sup>120</sup> 100- to 150-Seat LCA from Canada, USITC Pub. 4702 at 14-15.

<sup>121</sup> CR/PR at Table III-2.

<sup>122</sup> CR at IV-26; PR at IV-8; *see also* Delta's Posthearing Brief at 9-11; Hearing Tr. at 201 (May), 297 (McClain); Importer/Purchasers' Questionnaire Response of Delta at Question II-8.

<sup>123</sup> Bombardier's Responses to Commissioner Questions at 21.

<sup>124</sup> CR at VII-13; PR at VII-6; Hearing Tr. at 298 (Dewar).

<sup>125</sup> CR/PR at Table VII-5; Bombardier's Responses to Commissioner Questions, Attachment C at para. 1. Bombardier has provided no information on the production status of the other \*\*\* aircraft that would need to be in production for Bombardier to export the originally planned \*\*\* 100- to 150-seat LCA to Delta in the United States in 2018. CR/PR at Table VII-5.

<sup>126</sup> Hearing Tr. at 262 (May); Bombardier's Response to Commission's Request for Updated Information at 7.

<sup>127</sup> Bombardier's Response to Commission's Request for Updated Information at 4; CR/PR at Table VII-2, n.1; Hearing Tr. at 262 (May).

<sup>128</sup> Bombardier's Response to Commission's Request for Updated Information at 2, Exhibit 1. Bombardier has drawn up plans for the U.S. FAL, including the \*\*\*, and \*\*\*. Hearing Tr. at 194 (Levesque); Bombardier's Response to Commission's Request for Updated Information at 2-3, 6. \*\*\*. *Id.* at 5. Bombardier will not begin "the active recruitment of U.S. employees" until \*\*\*. *Id.* at 5.

Given the indefinite timing of both Delta’s renegotiation of its contract with Bombardier and the establishment of Bombardier’s U.S. FAL, we find that there is a potential for Delta to import at least \*\*\*, in 2018. Based on \*\*\* projected deliveries of nonsubject imports, subject imports would account for \*\*\* percent of total imports of 100- to 150-seat LCA that year.<sup>130</sup> Consequently, we find that subject imports from Canada are not negligible for threat purposes because there is a potential for such imports to imminently exceed 3 percent of all imports of 100- to 150-seat LCA.

## V. Threat of Material Injury by Reason of Subject Imports

### A. Legal Standard

#### 1. In General

In the final phase of antidumping and countervailing duty investigations, the Commission determines whether an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.<sup>131</sup> In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.<sup>132</sup> The statute defines “material injury” as “harm which is not inconsequential, immaterial, or unimportant.”<sup>133</sup> In assessing whether the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.<sup>134</sup> No single factor is dispositive, and all relevant factors are considered “within the context of the business cycle and conditions of competition that are distinctive to the affected industry.”<sup>135</sup>

Although the statute requires the Commission to determine whether the domestic industry is “materially injured or threatened with material injury by reason of” unfairly traded

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<sup>129</sup> Bombardier’s Response to Commission’s Request for Updated Information at 2, 4; CR/PR at Table VII-2, n.1; Hearing Tr. at 262 (May).

<sup>130</sup> CR/PR at Table IV-16.

<sup>131</sup> 19 U.S.C. §§ 1671d(b), 1673d(b). The Trade Preferences Extension Act of 2015, Pub. L. 114-27, amended the provisions of the Tariff Act pertaining to Commission determinations of material injury and threat of material injury by reason of subject imports in certain respects. We have applied these amendments here.

<sup>132</sup> 19 U.S.C. § 1677(7)(B). The Commission “may consider such other economic factors as are relevant to the determination” but shall “identify each {such} factor ... and explain in full its relevance to the determination.” 19 U.S.C. § 1677(7)(B).

<sup>133</sup> 19 U.S.C. § 1677(7)(A).

<sup>134</sup> 19 U.S.C. § 1677(7)(C)(iii).

<sup>135</sup> 19 U.S.C. § 1677(7)(C)(iii).

imports,<sup>136</sup> it does not define the phrase “by reason of,” indicating that this aspect of the injury analysis is left to the Commission’s reasonable exercise of its discretion.<sup>137</sup> In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the “by reason of” standard must ensure that subject imports are more than a minimal or tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.<sup>138</sup>

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.<sup>139</sup> In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.<sup>140</sup> Nor does

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<sup>136</sup> 19 U.S.C. §§ 1671d(a), 1673d(a).

<sup>137</sup> *Angus Chemical Co. v. United States*, 140 F.3d 1478, 1484-85 (Fed. Cir. 1998) (“{T}he statute does not ‘compel the commissioners’ to employ {a particular methodology}.”), *aff’g*, 944 F. Supp. 943, 951 (Ct. Int’l Trade 1996).

<sup>138</sup> The Federal Circuit, in addressing the causation standard of the statute, observed that “{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement.” *Nippon Steel Corp. v. USITC*, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was further ratified in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), where the Federal Circuit, quoting *Gerald Metals, Inc. v. United States*, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that “this court requires evidence in the record ‘to show that the harm occurred ‘by reason of’ the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.’” *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass’n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

<sup>139</sup> SAA at 851-52 (“{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports.”); S. Rep. 96-249 at 75 (1979) (the Commission “will consider information which indicates that harm is caused by factors other than less-than-fair-value imports.”); H.R. Rep. 96-317 at 47 (1979) (“in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;” those factors include “the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry”); *accord Mittal Steel*, 542 F.3d at 877.

<sup>140</sup> SAA at 851-52 (“{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports.”); *Taiwan Semiconductor Industry Ass’n*, 266 F.3d at 1345 (“{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports ... . (Continued...)

the “by reason of” standard require that unfairly traded imports be the “principal” cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.<sup>141</sup> It is clear that the existence of injury caused by other factors does not compel a negative determination.<sup>142</sup>

Assessment of whether material injury to the domestic industry is “by reason of” subject imports “does not require the Commission to address the causation issue in any particular way” as long as “the injury to the domestic industry can reasonably be attributed to the subject imports” and the Commission “ensure{s} that it is not attributing injury from other sources to the subject imports.”<sup>143</sup> Indeed, the Federal Circuit has examined and affirmed various Commission methodologies and has disavowed “rigid adherence to a specific formula.”<sup>144</sup>

The Federal Circuit’s decisions in *Gerald Metals*, *Bratsk*, and *Mittal Steel* all involved cases where the relevant “other factor” was the presence in the market of significant volumes of price-competitive nonsubject imports. The Commission interpreted the Federal Circuit’s guidance in *Bratsk* as requiring it to apply a particular additional methodology following its finding of material injury in cases involving commodity products and a significant market

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Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports.” (emphasis in original)); *Asociacion de Productores de Salmon y Trucha de Chile AG v. United States*, 180 F. Supp. 2d 1360, 1375 (Ct. Int’l Trade 2002) (“{t}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury” or make “bright-line distinctions” between the effects of subject imports and other causes.); see also *Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 and 731-TA-928 (Remand), USITC Pub. 3658 at 100-01 (Dec. 2003) (Commission recognized that “{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, *i.e.*, it is not an ‘other causal factor,’ then there is nothing to further examine regarding attribution to injury”), citing *Gerald Metals*, 132 F.3d at 722 (the statute “does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.”).

<sup>141</sup> S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

<sup>142</sup> See *Nippon Steel Corp.*, 345 F.3d at 1381 (“an affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the ‘dumping’ need not be the sole or principal cause of injury.”).

<sup>143</sup> *Mittal Steel*, 542 F.3d at 877-78; see also *id.* at 873 (“While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured ‘by reason of’ subject imports, the Commission is not required to follow a single methodology for making that determination ... {and has} broad discretion with respect to its choice of methodology.”) citing *United States Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75. In its decision in *Swift-Train v. United States*, 793 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission’s causation analysis as comports with the Court’s guidance in *Mittal*.

<sup>144</sup> *Nucor Corp. v. United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); see also *Mittal Steel*, 542 F.3d at 879 (“*Bratsk* did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was ‘by reason’ of subject imports.”).

presence of price-competitive nonsubject imports.<sup>145</sup> The additional “replacement/benefit” test looked at whether nonsubject imports might have replaced subject imports without any benefit to the U.S. industry. The Commission applied that specific additional test in subsequent cases, including the *Carbon and Certain Alloy Steel Wire Rod from Trinidad and Tobago* determination that underlies the *Mittal Steel* litigation.

*Mittal Steel* clarifies that the Commission’s interpretation of *Bratsk* was too rigid and makes clear that the Federal Circuit does not require the Commission to apply an additional test nor any one specific methodology; instead, the court requires the Commission to have “evidence in the record” to “show that the harm occurred ‘by reason of’ the LTFV imports,” and requires that the Commission not attribute injury from nonsubject imports or other factors to subject imports.<sup>146</sup> Accordingly, we do not consider ourselves required to apply the replacement/benefit test that was included in Commission opinions subsequent to *Bratsk*.

The progression of *Gerald Metals*, *Bratsk*, and *Mittal Steel* clarifies that, in cases involving commodity products where price-competitive nonsubject imports are a significant factor in the U.S. market, the Court will require the Commission to give full consideration, with adequate explanation, to non-attribution issues when it performs its causation analysis.<sup>147</sup>

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial evidence standard.<sup>148</sup> Congress has delegated this factual finding to the Commission because of the agency’s institutional expertise in resolving injury issues.<sup>149</sup>

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<sup>145</sup> *Mittal Steel*, 542 F.3d at 875-79.

<sup>146</sup> *Mittal Steel*, 542 F.3d at 873 (quoting from *Gerald Metals*, 132 F.3d at 722), 875-79 & n.2 (recognizing the Commission’s alternative interpretation of *Bratsk* as a reminder to conduct a non-attribution analysis).

<sup>147</sup> To that end, after the Federal Circuit issued its decision in *Bratsk*, the Commission began to present published information or send out information requests in the final phase of investigations to producers in nonsubject countries that accounted for substantial shares of U.S. imports of subject merchandise (if, in fact, there were large nonsubject import suppliers). In order to provide a more complete record for the Commission’s causation analysis, these requests typically seek information on capacity, production, and shipments of the product under investigation in the major source countries that export to the United States. The Commission plans to continue utilizing published or requested information in the final phase of investigations in which there are substantial levels of nonsubject imports.

<sup>148</sup> We provide in our respective discussions of likely volume, likely price effects, and likely impact a full analysis of other factors alleged to have caused any threat of material injury to the domestic industry.

<sup>149</sup> *Mittal Steel*, 542 F.3d at 873; *Nippon Steel Corp.*, 458 F.3d at 1350, citing *U.S. Steel Group*, 96 F.3d at 1357; S. Rep. 96-249 at 75 (“The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.”).



## 2. Threat of Material Injury Standard<sup>150</sup>

Section 771(7)(F) of the Tariff Act directs the Commission to determine whether the U.S. industry is threatened with material injury by reason of the subject imports by analyzing whether “further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted.”<sup>151</sup> The Commission may not make such a determination “on the basis of mere conjecture or supposition,” and considers the threat factors “as a whole” in making its determination whether dumped or subsidized imports are imminent and whether material injury by reason of subject imports would occur unless an order is issued.<sup>152</sup> In making our determination, we consider all statutory threat factors that are relevant to these investigations.<sup>153</sup>

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<sup>150</sup> Petitioner has not alleged that there is present material injury by reason of subject imports. *See, generally*, Petition at 16-25, 52-78.

<sup>151</sup> 19 U.S.C. § 1677(7)(F)(ii).

<sup>152</sup> 19 U.S.C. § 1677(7)(F)(ii).

<sup>153</sup> These factors are as follows:

(I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement) and whether imports of the subject merchandise are likely to increase,

(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,

(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,

(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices and are likely to increase demand for further imports,

(V) inventories of the subject merchandise,

(VI) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,

...

(VIII) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and

(IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).

19 U.S.C. § 1677(7)(F)(i). To organize our analysis, we discuss the applicable statutory threat factors using the same volume/price/impact framework that applies to our material injury analysis. Statutory threat factors (I), (II), (III), (V), and (VI) are discussed in the analysis of subject import volume. Statutory threat factor (IV) is discussed in the analysis of subject import price effects. Statutory factors (Continued...)

These investigations present a unique set of facts under the legal standard for threat determinations in that there were no \*\*\* subject imports of 100- to 150-seat LCA during the period of investigation.<sup>154</sup> Thus, trends in subject import volume and prices during the period of investigation that normally guide our analysis of the threat factors, and how subject imports are likely to impact the domestic industry in the imminent future, are absent from the record. We recognize that the statute expressly provides that the Commission may predicate an affirmative threat determination on sales (or the likelihood of sales) of subject imports.<sup>155</sup> Indeed, Congress has explained that consideration of sales and likely sales of subject imports is “particularly important in cases involving large capital equipment, where loss of a single sale can cause immediate economic harm and where it may be impossible to offer meaningful relief if the investigation is not initiated until after importation takes place.”<sup>156</sup> At the same time, we are mindful of the statutory requirement that a threat determination “may not be made on the basis of mere conjecture or supposition.”<sup>157</sup> Congress and our reviewing courts have recognized that “{b}ecause of the predictive nature of a threat determination, and to avoid speculation and conjecture, the Commission will continue using special care in making such determinations.”<sup>158</sup> In considering sales and likely sales for importation in these investigations, we are cognizant of the tension between the statute’s contemplation of affirmative threat determinations based upon such sales and its caution against basing threat determinations on mere conjecture or supposition.<sup>159</sup>

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(VIII) and (IX) are discussed in the analysis of impact. Statutory factor (VII) concerning agricultural products is inapplicable to this investigation.

<sup>154</sup> CR at IV-25; PR at IV-7; CR/PR at Tables III-10, IV-15.

<sup>155</sup> See 19 U.S.C. §§ 1671(a), 1673, 1677(7)(F)(i), 1677(7)(F)(i)(IX).

<sup>156</sup> H.R. Rep. No. 98-725, 98<sup>th</sup> Cong. 2<sup>nd</sup> Sess., at 11 (1984), 1984 USCCAN 4910, 5137.

<sup>157</sup> 19 U.S.C. § 1677(7)(F)(ii).

<sup>158</sup> SAA at 855; see also *Matsushita Elec. Indus. Co., Ltd. v. United States*, 750 F.2d 927, 933 (Fed. Cir. 1984) (noting that predictive determinations by the Commission are by nature not “verifiable,” but rather are “based on currently available evidence and on logical assumptions and extrapolations flowing from the evidence.”); *Suramerica de Alaaciones Laminadas, C.A. v. United States*, 818 F. Supp. 348, 353 (Ct. Int’l Trade 1993) (“This Court must be especially vigilant of the threat of material injury determination mechanism because the Commission’s inquiry by its very nature endeavors to predict events that have not yet occurred.”).

<sup>159</sup> In the preliminary phase of these investigations, we discussed the appropriate time period for purposes of considering whether there was an imminent threat of material injury to a domestic industry by reason of subject imports, in the context of the conditions of competition distinctive to the 100- to 150-seat LCA market. *100- to 150-Seat Large Civil Aircraft from Canada*, USITC Pub. 4702 at 20. Based on similar considerations, and the conditions of competition discussed below, we adopt the same approach here. We note, however, that the dynamics specific to this market make it particularly challenging to predict likely purchasing behavior too far into the future. Purchasers are continually evaluating market conditions and they may modify their purchasing behavior in order to accommodate changing conditions, such as by deferring sales campaigns, changing the scope of their campaigns, or converting existing orders to different size aircraft. See CR at III-29-30, V-5-7, 20, 31-32, VII-10-11; PR at III-11, V-3-4, 8, 11-12, VII-5-6; CR/PR at Tables V-1-2.

## B. Conditions of Competition and the Business Cycle

The following conditions of competition inform our analysis of whether there is a threat of material injury by reason of subject imports.

### 1. Demand Conditions

During the period of investigation, apparent U.S. consumption of 100- to 150-seat LCA was \*\*\* units in 2014, \*\*\* units in 2015, \*\*\* in 2016, and \*\*\* units in January-September 2017 as compared to \*\*\* in January-September 2016.<sup>160</sup> Projected apparent U.S. consumption, based on current firm orders reported by responding importer/purchasers, is \*\*\* units in 2017, \*\*\* units in 2018, \*\*\* units in 2019, \*\*\* units in 2020, \*\*\* units in 2021, and \*\*\* units in 2022.<sup>161</sup>

Demand for 100- to 150-seat LCA is driven by airline and airplane leasing companies, which are influenced by demand for passenger air travel.<sup>162</sup> Overall passenger air travel is largely affected by growth in gross domestic product (“GDP”), consumer confidence, and disposable income.<sup>163</sup> Real disposable income, real GDP, and consumer confidence increased during the period of investigation, and economists forecast a further increase in real disposable income and GDP in 2018.<sup>164</sup>

Demand for 100- to 150-seat LCA also depends upon the fleet strategies of U.S. airlines.<sup>165</sup> Airlines plan their fleets so as to optimize the profitability of their routes, generally acquiring aircraft in a variety of sizes that enable them to match seat capacity to seat demand on specific routes at specific times.<sup>166</sup> Different airlines take different approaches to fleet composition and aircraft sourcing preferences.<sup>167</sup> Alaska Air and Southwest have built their fleets around the Boeing 737 family.<sup>168</sup> By contrast, American and Delta each possess a diverse aircraft fleet of various sizes from every major manufacturer, including Airbus, Boeing, Bombardier, and Embraer.<sup>169</sup> As discussed above, Delta categorizes its fleet into six categories

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<sup>160</sup> CR/PR at Table IV-17.

<sup>161</sup> CR/PR at Table VII-8. In reporting its projected purchases of CS100s from Bombardier, Delta \*\*\*. *Id.* at n.1. As noted above, \*\*\*. *Id.* at Table VII-5.

<sup>162</sup> CR at II-17; PR at II-10.

<sup>163</sup> CR at II-17; PR at II-11.

<sup>164</sup> CR at II-17-18; PR at II-11; CR/PR at Figure II-1.

<sup>165</sup> CR at II-17, 38; PR at II-10, 23. Two industry analysts explained the importance of an airline’s fleet strategy as follows: “Fleet composition choice is one of the most important strategic decisions that airlines have to face, not only because of the huge investment deriving from a new aircraft purchase and the long payback period, but also because this choice affects their operating costs and their strategy in selecting which routes to serve. The challenge in fleet planning is to balance the benefits of a uniform fleet (in terms of same aircraft model and same engine type) and the choice of different aircrafts for different routes.” CR at II-38 n.73; PR at II-23 n.73.

<sup>166</sup> CR at I-29; PR at I-20.

<sup>167</sup> CR at II-6; PR at II-4.

<sup>168</sup> CR at II-6; PR at II-4.

<sup>169</sup> CR at II-6, IV-10; PR at II-4, IV-4.

based on seat capacity, including a 110-130 seat category that includes the 737-700, and allocates aircraft from each category to specific routes so that the aircraft flying on each route have no more seats than necessary to accommodate anticipated seat demand.<sup>170</sup> According to Delta, flying with empty seats increases per seat costs, reduces profitability, and may result in higher fares.<sup>171</sup> As part of a fleet optimization strategy, Delta has been replacing regional jets with larger single-aisle “mainline aircraft.”<sup>172</sup>

Demand for 100- to 150-seat LCA is driven by replacement demand, which is the need to replace aging aircraft, and growth demand, which is the need to grow fleet size.<sup>173</sup> \*\*\*.<sup>174</sup> Airlines also have the option of acquiring used and reconditioned 100- to 150-seat LCA, which cost less to purchase but more to operate.<sup>175</sup> During the period of investigation, there were \*\*\* sales of used/refurbished 100- to 150-seat LCA than deliveries of new 100- to 150-seat LCA.<sup>176</sup>

Another option for airlines considering the purchase of 100- to 150-seat LCA is the purchase of regional jets made by Embraer, including the E195, which offer a standard two-class seating capacity of 112 to 120 seats.<sup>177</sup> Although the Embraer E195’s range of 2,450 to 2,850 nautical miles excludes the aircraft from the scope of these investigations,<sup>178</sup> a majority

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<sup>170</sup> CR at IV-10-11; PR at IV-4; Hearing Tr. at 204-05 (Esposito); *see also* Section III.D. above. Delta uses a “step function” to organize its fleet of single aisle aircraft into five “categories” according to seating capacity, including (1) “single-class regional jets” with 50 seats; (2) “two-class regional jets” with up to 76 seats; (3) “small-gauge mainline aircraft” with 110-130 seats, including the A319; (4) “medium gauge mainline aircraft” with 150-160 seats, including the 737-800; and (5) “large-gauge mainline aircraft” with 180 seats or more. Delta’s Prehearing Brief at 26-27. Delta allocates planes from the appropriate category to a particular route “to ‘closely match’ the size of the aircraft to the anticipated passenger loads” to “maximize revenues and meet their customers’ needs” and “{a}void flying with empty seats {which} means a higher per-seat cost.” *Id.* at 25. Delta’s “small-gauge narrowbody mainline aircraft” category corresponds to the scope of the investigations. *See* Hearing Tr. at 196 (May); Delta’s Prehearing Brief at 30. \*\*\* also categorizes the 737-700s in its fleet as small gauge narrowbody mainline aircraft. Importer/Purchaser’s Questionnaire Response of \*\*\* at Question II-10.

<sup>171</sup> Delta’s Prehearing Brief at 25-26; Hearing Tr. at 207 (Esposito); *see also* Petitioner’s Prehearing Brief at 29; Bombardier’s Prehearing Brief at 41-42.

<sup>172</sup> CR at IV-10; PR at IV-4; Hearing Tr. at 215 (Esposito).

<sup>173</sup> CR at II-16; PR at II-10.

<sup>174</sup> CR at III-18; PR at III-7.

<sup>175</sup> CR at II-3, 33; PR at II-2, 19. In the sales campaign that ultimately resulted in Delta’s purchase of CS100s from Bombardier, Delta also considered used Embraer E190s and Boeing 717s, and initially purchased 19 used E190s from Boeing. Hearing Tr. at 197 (May); *see also* CR at \*\*\*; PR at \*\*\*. Delta subsequently resold the used E190s. CR at V-32; PR at V-12. \*\*\*. Importer/Purchasers’ Questionnaire Response of Delta at Question III-3b. Low fuel prices have reportedly made older, less efficient used aircraft more economical to operate. CR at II-4 n.15; PR at II-2 n.15.

<sup>176</sup> CR/PR at Table IV-15.

<sup>177</sup> Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief, at 11.

<sup>178</sup> The scope of these investigations is limited to aircraft with a minimum 2,900 nautical mile range. CR at I-11; PR at I-8.

of the routes flown by 100- to 150-seat LCA are between 500 to 1,000 nautical miles long.<sup>179</sup> Routes between New York City or Washington, DC and the West Coast of the United States are no more than 2,550 nautical miles long.<sup>180</sup> In seeking to acquire aircraft with 100 to 110 seats, Delta considered both in-scope Bombardier CS100s configured with 109 seats, which it ultimately purchased, and out-of-scope Embraer E195s configured with 100 seats.<sup>181</sup>

Demand in the U.S. market is highly concentrated due to the consolidation of airlines and leasing companies into a few large purchasers.<sup>182</sup> For this reason, purchases of 100- to 150-seat LCA tend to be large, infrequent, and “lumpy,” with individual orders generally being made in blocks of over 50 aircraft to capitalize on volume discounts.<sup>183</sup> According to Boeing, customers generally make purchase decisions at the conclusion of \*\*\*.<sup>184</sup> Bombardier reported conducting sales efforts through \*\*\*.<sup>185</sup> Responding purchaser/importers reported purchase processes ranging from formal requests for proposals and bids, to informal discussions or direct negotiations with one or more suppliers, to single sourcing of aircraft.<sup>186</sup>

Another factor influencing demand for 100- to 150-seat LCA in the U.S. market is the general trend among U.S. airlines to “up-gauge” their fleets, replacing smaller aircraft with larger aircraft over time.<sup>187</sup> During the period of investigation, \*\*\*.<sup>188</sup> \*\*\* responding importer/purchasers (\*\*\*) reported a declining ratio of 100- to 150-seat LCA to other (*i.e.*, larger) single-aisle LCA during the period of investigation, compared to \*\*\* that reported an increasing ratio.<sup>189</sup> Delta stated that its up-gauging strategy has been driven by the need to

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<sup>179</sup> Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief, at 11, 15; CR at II-32 n.70, VII-23; PR at II-18 n.70, VII-12.

<sup>180</sup> Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief, at 11, 15; Hearing Tr. at 264-65 (Mitchell) (“New York to Los Angeles is roughly about 2200 nautical miles. And if you look at Washington, D.C., you can see there 2550 nautical miles gets you anywhere you want in North America and beyond.”); CR at II-32 n.70, VII-23; PR at II-18 n.70, VII-12.

<sup>181</sup> Hearing Tr. at 196 (May); *see also* CR at \*\*\*; PR at \*\*\*. Delta also considered used Embraer E190s with 96 seats and used Boeing 717s with 110 seats. Hearing Tr. at 196 (May).

<sup>182</sup> Petitioner’s Prehearing Brief at 44; CR at II-1, 5; PR at II-1, 3.

<sup>183</sup> Petitioner’s Prehearing Brief at 45; Hearing Tr. at 108 (Novick); CR at III-22; PR at III-8.

<sup>184</sup> CR at V-8; PR at V-4; Petition at 49.

<sup>185</sup> CR at V-9; PR at V-4.

<sup>186</sup> CR at V-7, 9-10; PR at V-4-5.

<sup>187</sup> *See* Hearing Tr. at 207 (Esposito) (“In recent years, Delta has been pursuing the strategy of up-gauging its fleet . . .”), 210-11 (Dimitroff) (“{T}here is also a new trend toward up-gauging. This refers to airlines shifting the composition of their fleet over time towards larger models. Up-gauging brings several benefits, the most obvious being that the larger aircraft with more seats have a lower seat/mile cost, basic economies of scale. We at Flight Ascent have seen up-gauging occur throughout the market.”); Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief at 34-35; CR at II-16-17 n.44; PR at II-10 n.44 (“Small narrow-bodies with a seat count ranging between 100 and 150 seats currently make up 23% of the passenger narrow-body fleet. Only 11% of narrow-bodies are forecast to be in this size in 2027.”).

<sup>188</sup> CR at V-20; PR at V-8. In addition, in January 2018, Southwest delayed delivery of 737 MAX 7s, instead converting options to firm orders for 40 737 MAX 8s. CR at III-30 n.38; PR at III-11 n.38.

<sup>189</sup> *See* CR/PR at Tables IV-2, 4, 5, 9, 10, 12.

reduce per seat costs, the demographic shift from small to large cities, airport constraints that required fewer flights with more passengers per flight, and customer preference for larger aircraft.<sup>190</sup> Consistent with the trend towards up-gauging, orders for larger single-aisle LCA such as the Boeing 737 MAX 8 and the Airbus A320 far outstrip orders for 100- to 150-seat LCA such as the Boeing 737 MAX 7, the Airbus A319neo, and the Bombardier CS100 and CS300.<sup>191</sup>

Finally, there is evidence that positive sales feedback cycles known as “commercial momentum” can influence demand for specific models of 100- to 150-seat LCA for certain U.S. purchasers. According to Boeing, a 100- to 150-seat LCA model gains commercial momentum from a major order in that such orders make additional orders more likely, as airlines tend to imitate one another and increased sales of the model contribute to higher residual values, more favorable financing terms, enhanced lifetime support, and reduced likelihood that the model will be discontinued prematurely.<sup>192</sup> Bombardier stated that commercial momentum, to the extent it exists in this market, reflects increased acceptance of new aircraft models, generated when a new aircraft has met metrics for production, certification, and entry into service.<sup>193</sup> Six of eleven responding importer/purchasers reported that commercial momentum played a role in their decisions to purchase 100- to 150-seat LCA.<sup>194</sup> \*\*\* described performance assurance as a reason commercial momentum played a role in its purchasing decisions.<sup>195</sup> \*\*\*, which did not identify commercial momentum as playing a role in its purchasing decisions, stated that commercial momentum is more relevant for lessors, because it may be more difficult to finance an aircraft that is selling poorly.<sup>196</sup> Delta stated that LCA producers offer discounts (“launch pricing”) to secure orders from large U.S. airlines (“marque customers”) in order to make additional orders from other airlines more likely.<sup>197</sup>

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<sup>190</sup> Delta’s Prehearing Brief at 30.

<sup>191</sup> Hearing Tr. at 60-61 (Anderson), 263 (Mitchell); Petitioner’s Hearing Exhibit 17.

<sup>192</sup> CR at II-23, V-12; PR at II-13-14, V-5; Petition at 50-51.

<sup>193</sup> Bombardier Prehearing Brief at 57.

<sup>194</sup> CR at II-24; PR at II-14. Similarly, seven of ten responding importer/purchasers considered prior domestic sales very or somewhat important to their purchasing decisions, when considering a new or an existing 100- to 150-seat LCA model. CR/PR at Table II-6.

<sup>195</sup> CR at II-24; PR at II-14.

<sup>196</sup> CR at II-24; PR at II-14. Four of the six importer/purchasers that indicated that commercial momentum played a role in the purchasing decisions were lessors. *Id.*

<sup>197</sup> Delta’s Prehearing Brief at 35 (“{M}any smaller airlines will give significant weight to the decision of a large airline like Delta before placing an order for a new design.”); Hearing Tr. at 202 (May). While recognizing that major sales of a new LCA design can spur additional sales of the model, Delta claims that it “has never previously encountered the concept of ‘commercial momentum,’” and also contends that an order for a particular type of LCA does not make additional orders for that type of LCA more likely. Delta’s Prehearing Brief at 36. To the contrary, \*\*\* stated that it pursues a strategy of \*\*\*. CR at V-13; PR at V-6.

## 2. Supply Conditions

There are three suppliers of 100- to 150-seat LCA to the U.S. market: Airbus, Boeing, and Bombardier. During the period of investigation, the only commercial U.S. shipments of new 100- to 150-seat LCA consisted of nonsubject imports from \*\*\*, accounting for \*\*\* percent of apparent U.S. consumption.<sup>198</sup> Based on current firm orders reported by responding importer/purchasers, Boeing's projected share of the 100- to 150-seat LCA market will be \*\*\* percent in 2017 and 2018, \*\*\* percent in 2019, \*\*\* percent in 2020, \*\*\* percent in 2021, and \*\*\* percent in 2022; Bombardier's projected share will be \*\*\* percent in 2017, 2018, and 2019, \*\*\* percent in 2020, \*\*\* percent in 2021, and \*\*\* percent in 2022; and \*\*\* projected share will be \*\*\*.<sup>199</sup>

The Boeing model 737 series first went into service in 1968.<sup>200</sup> Boeing launched the 737 "Next Generation" ("NG") series in 1993, including the 737-600, -700, -800, and -900 models, with greater fuel efficiency and range than the "Classic 737."<sup>201</sup> The 737-700 entered service in 1997, and remains in production.<sup>202</sup> Boeing launched the 737 MAX program in 2011; it includes the 737 MAX 7, MAX 8, MAX 9, and MAX 10 which have greater fuel efficiency than the 737 NG series.<sup>203</sup> The 737 MAX 7 design is reportedly derived from the 737 MAX 8, with various modifications to accommodate a longer length than the 737-700.<sup>204</sup> Boeing \*\*\*.<sup>205</sup> The 737 MAX 7 is scheduled to enter service in January 2019 and is being produced on the same assembly lines as other 737 variants, including the 737-700, in Renton, Washington.<sup>206</sup> As of September 30, 2017, Boeing's backlog for all variants of the 737 family was 4,431 planes, representing a seven to eight year order backlog.<sup>207</sup>

Bombardier is a relatively new entrant in the 100- to 150-seat LCA market. Bombardier conceived of the C Series in 2004, completed an initial design in 2006, officially launched the C

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<sup>198</sup> CR/PR at Table IV-15; CR at VII-21; PR at VII-11. \*\*\*. *Id.* at Table III-10.

<sup>199</sup> CR/PR at Table VII-8. \*\*\*. *Id.* at footnote 1. In light of the indefiniteness of Bombardier's plans to produce the C Series domestically, discussed in section IV above, we did not include Delta's projected purchases of domestically produced CS100s within our projections for deliveries of U.S.-produced 100- to 150-seat LCA during the 2017-22 period. We also note that importer/purchasers' projections for U.S. deliveries are likely overstated because Southwest delayed delivery of its order for in-scope aircraft in January 2018, after the questionnaire responses were received. CR at III-30 n.38; PR at III-11 n.38.

<sup>200</sup> CR/PR at VI-1.

<sup>201</sup> CR/PR at VI-1.

<sup>202</sup> CR/PR at VI-1.

<sup>203</sup> CR at VI-1; PR at VI-1.

<sup>204</sup> CR at VI-2; PR at VI-1; Flight Ascend Report, appended as Attachment A to Bombardier's Prehearing Brief, at 10-11.

<sup>205</sup> CR at III-30; PR at III-11; CR/PR at Table VI-8; Petitioner's Prehearing Brief at 107. In January 2018, Southwest delayed delivery of 737 MAX 7s, instead converting options to firm orders for 40 737 MAX 8s. CR at III-30 n.38; PR at III-11 n.38.

<sup>206</sup> CR at I-18, VI-2; PR at I-13, VI-1. Boeing began producing the first 737 MAX 7 wing spar at its Renton, Washington facility in October 2017. CR at I-18; PR at I-13.

<sup>207</sup> CR at II-11; PR at II-7.

Series with a revised design in 2008, received its first order from Lufthansa in 2009, received FAA certification in 2016, and delivered the first C Series LCA to SWISS in the EU in June 2016.<sup>208</sup> Bombardier had orders for 360 C Series LCA as of September 30, 2017, \*\*\*.<sup>209</sup> Based on Bombardier's current orders and projected capacity increases over the 2018-2022 period, Bombardier's rate of capacity utilization will decline from \*\*\* percent in 2018 to \*\*\* percent in 2019, \*\*\* percent in 2020, \*\*\* percent in 2021, and \*\*\* percent in 2022.<sup>210</sup> Bombardier's projected capacity increases through 2022 roughly correspond to the annual production targets in a production ramp-up schedule issued in 2016, which a Bombardier official characterized as "very important" for Bombardier to achieve.<sup>211</sup> Due to supplier difficulties, Bombardier has thus far missed its production targets, delayed many deliveries, and made slower than expected progress down the learning curve for C Series production.<sup>212</sup>

In October 2017, Bombardier and Airbus signed a definitive investment agreement that would give Airbus a majority stake (50.01 percent) in CSALP, the entity that manufactures and sells the CS100 and CS300, and establish a C Series FAL for U.S. customers next to Airbus Americas' plant in Mobile, Alabama.<sup>213</sup> As discussed in section IV above, \*\*\*.<sup>214</sup>

The record indicates that 100- to 150-seat LCA are low-volume, high-value products that require billions of dollars in capital to develop and produce.<sup>215</sup> Bombardier developed the C Series as a "clean sheet" design, meaning that it was not derived from an existing model.<sup>216</sup> Although Bombardier initially estimated that development of the C Series would cost \$2.1 billion, the program ultimately cost \$5.4 billion due to cost overruns, and reportedly drove Bombardier to the brink of bankruptcy.<sup>217</sup> Because the 737 MAX family is derived from the 737 NG family, and the 737 MAX 7 is derived from the 737 MAX 8, Boeing's cost to develop the 737

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<sup>208</sup> CR at II-2, 12; PR at II-1-2, 7; Hearing Tr. at 179 (Dewar); Bombardier's Postconference Brief at 20.

<sup>209</sup> CR at VII-12, 15-16; PR at VII-6-7; Foreign Producers' Questionnaire of Bombardier at Question II-12g; Boeing's Final Comments at 12 (citing Petition Exhibit 44).

<sup>210</sup> CR/PR at Table VII-5.

<sup>211</sup> Compare Petition at Exhibit 108 to CR/PR at Table VII-5. When asked at the preliminary phase conference if it is "important that Bombardier adhere to this {production ramp up} schedule to make this program a financial success," a Bombardier official responded "it is very important" and "we are forced to achieve that rate." Conference Tr. at 214 (Mullot). In explaining why achieving Bombardier's "production ramp up" goals during the 2017-20 period is "very important" financially, the Bombardier official stated that "{i}t's numbers that we guide for the markets," indicating that the rate at which Bombardier is able to increase production of the C Series will influence the producer's financial performance. *Id.*; see also Hearing Tr. at 276 (Dewar).

<sup>212</sup> Hearing Tr. at 182-83 (Dewar), 191 (Levesque); CR at VII-5; PR at VII-4.

<sup>213</sup> CR at I-6 n.13; PR at I-4 n.13; Bombardier's Prehearing Brief at 5.

<sup>214</sup> Bombardier's Response to Commission's Request for Updated Information at 2, 4; CR at Table VII-2, footnote 1; Hearing Tr. at 262 (May).

<sup>215</sup> CR at II-1; PR at II-1.

<sup>216</sup> CR at II-2; PR at II-1.

<sup>217</sup> Petition at 8, Exhibits 15-16, 23, 25 (newspaper article quoting Bombardier's CEO as stating that Bombardier "was on the brink of bankruptcy in 2015" and "in a very precarious position"); CR at II-12; PR at II-7.



MAX 7 was much less than the cost to develop a clean sheet design.<sup>218</sup> Boeing reported \$\*\*\* in research and development expenses related to the 737 MAX 7 during the 2007-16 period, and expects to incur additional research and development expenses of \$\*\*\* in 2017 and \$\*\*\* in 2018.<sup>219</sup>

Because the lead time between order and delivery of 100- to 150-seat LCA is at least 18 to 24 months, \*\*\*, producers seek orders for new 100- to 150-seat LCA designs years in advance of the first deliveries.<sup>220</sup> Producers also schedule production of 100- to 150-seat LCA years in advance based on backlogs of existing orders.<sup>221</sup> Long order lead times are also reflected in contract provisions allowing importer/purchasers to defer delivery of their orders or to convert their orders into different aircraft models if warranted by changing market demands.<sup>222</sup> Most responding importer/purchasers reported that contracts for 100- to 150-seat LCA sometimes include such provisions, although Boeing reported that \*\*\* to \*\*\* percent of its 737 aircraft are delivered as originally ordered.<sup>223</sup>

### 3. Substitutability and Other Conditions

Based on the record of the final phase of the investigations, we find that there is, in general, at least a moderate degree of substitutability between subject imports and domestically produced 100- to 150-seat LCA; the degree of substitutability can vary depending on the purchaser and the models compared.<sup>224</sup> When asked how often subject imports and domestically produced 100- to 150-seat LCA can be used interchangeably, three responding importer/purchasers reported “always,” one reported “frequently,” three reported “sometimes,” and one reported “never,” while \*\*\* reported “\*\*\*.”<sup>225</sup> Consistent with these

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<sup>218</sup> CR at VI-2; PR at VI-1; *compare* Petition at 10 and Domestic Producer’s Questionnaire Response of Boeing at Question III-16 with CR/PR at Table VI-5; Hearing Tr. at 117-18 (Anderson). Changes from the 737 NG included the use of more efficient CFM International LEAP-1B engines, said to have a 14 percent lower fuel burn compared with the 737 NG, split-tip winglets, and modifications to the airframe and landing gear. *Id.* According to Boeing, the 737 MAX 7’s enhancements allow it to fly 400 to 500 nautical miles further while burning 20 percent less fuel than the 737-700. Petitioner’s Postconference Brief at A-19.

<sup>219</sup> CR/PR at Table VI-5.

<sup>220</sup> CR at I-15, III-31, VII-15; PR at I-10, III-11, VII-7. The record also indicates that orders for 100- to 150-seat LCA typically schedule aircraft deliveries over a period of years. CR at III-32, VII-12-13; PR at III-12, VII-6-7.

<sup>221</sup> See CR at II-8 n.25, III-9, 12, VII-10; PR at II-6 n.25, III-5-6, VII-5.

<sup>222</sup> CR at V-5-7; PR at V-2-4; Hearing Tr. at 253-54 (May).

<sup>223</sup> CR at V-6; PR at V-3; CR/PR at Table V-1. Bombardier stated that until 18 to 24 months before delivery, manufacturers and purchasers are free to alter any term of their agreement, including which aircraft will be purchased. Bombardier’s Prehearing Brief at 72-73. When asked how often airlines change their original order, a Delta official responded “[i]n my experience, change is the rule not the exception.” Hearing Tr. at 254 (May). By contrast, Boeing stated that the key purchase items are set at the time of order and formalized in contractually binding obligations. CR at V-3; PR at V-2.

<sup>224</sup> CR at II-33; PR at II-19.

<sup>225</sup> CR/PR at Table II-9. Bombardier reported “\*\*\*.” *Id.*

questionnaire responses, Bombardier has acknowledged that purchasers “cross shop among the C Series, Embraer models, the A319, and Boeing’s 737-700 or MAX 7 . . . as an initial step in the path to purchase,” and its marketing materials include the 737-700 and MAX 7 within the same “100- to 150-seat market” as the C Series.<sup>226</sup> Boeing and respondents agree that the 737-700 and 737 MAX 7 have similar seating capacity to the CS300, and therefore are usable on the same routes.<sup>227</sup> Furthermore, during the period of investigation, \*\*\*.<sup>228</sup>

Nevertheless, the record also shows that the higher standard seating capacity of the 737-700 and 737 MAX 7 limits competition between those models and the CS100 for some purchasers.<sup>229</sup> Boeing has emphasized that airlines have a strong economic incentive to minimize empty seats by using LCA that are no larger than necessary on particular flights because using an LCA with more seats than required would result in unfilled seats, higher costs per seat, and lower profits.<sup>230</sup> Respondents agree.<sup>231</sup> In a standard two-class configuration, the seat count differential between the CS100 and the 737 MAX 7 is 30 seats, which is greater than the 24 seat differential between the 737 MAX 7 and the 737-800 that Boeing characterizes as significant “for airlines that try to fill every seat on every flight they operate.”<sup>232</sup> Given this, there can be limited competition between the CS100 and the 737-700 and MAX 7 for sales to a purchaser seeking 100- to 150-seat LCA with a seat count toward the low end of the subject range.

The record shows that differences in seat count precluded competition between subject imports and the domestic like product for the only firm order for C Series LCA by a U.S. purchaser.<sup>233</sup> As part of its up-gauging strategy, Delta launched a campaign towards the end of 2015 to replace regional aircraft serving particular routes with “small mainline aircraft”

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<sup>226</sup> Bombardier’s Prehearing Brief at 62; Petitioner’s Postconference Brief at Exhibit 1; Petition at Exhibit 48; *see also* Hearing Tr. at 236 (Mitchell) (“it is not unusual for an A319 or a MAX 7 to be in the discussion”).

<sup>227</sup> *See* Bombardier’s Prehearing Brief at 59; Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief, at 9, 17, 33; Hearing Tr. at 170 (Novick).

<sup>228</sup> CR at V-27-28, 30-31; PR at V-10-11; Importer/Purchasers’ Questionnaire Response of \*\*\* at Questions III-3a, 6, 8.

<sup>229</sup> CR at V-33-34; PR at V-11-12.

<sup>230</sup> Petitioner’s Prehearing Brief at 26, 29-31.

<sup>231</sup> *See* Bombardier’s Prehearing Brief at 41-42; Delta’s Prehearing Brief at 25-26; Hearing Tr. at 207 (Esposito).

<sup>232</sup> CR/PR at Table I-1; CR at I-16; PR at I-11-12. At the hearing, Boeing’s economist stated as follows: “I simply can’t see how Bombardier can find, and I quote ‘no logical dividing line’ between one next generation airplane that carries 138 passengers and one that carries 162 passengers. The jump from 138 to 162 is not minute. Certainly for airlines that try to fill every seat on every flight they operate, the differences between these two aircraft are significant.” Hearing Tr. at 58 (Anderson).

<sup>233</sup> Although Republic Airlines placed an order for 40 CS300s in \*\*\*, the airline’s bankruptcy has made it unclear whether the order will ever result in deliveries. CR at VII-12 & n.16; PR at VII-6 & n.16; Foreign Producers’ Questionnaire Response of Bombardier at Question II-12a. Bombardier and Republic have agreed to defer the first delivery of CS300s \*\*\*. CR at VII-12 n.16; PR at VII-6 n.16. Boeing does not allege that Bombardier’s sale of CS300s to Republic was at an unfair price. Conference Tr. at 129 (McLain).

possessing 100 to 110 seats.<sup>234</sup> Consistent with the requisite seat count for this mission profile, Delta considered new CS100s with 109 seats, new E195s with 100 seats, used 717s with 110 seats, and used E190s with 96 seats.<sup>235</sup> Delta initially purchased 19 used E190s from Boeing \*\*\*, which it subsequently resold.<sup>236</sup> In April 2016, Delta placed a firm order for 75 CS100s (with an option to substitute CS300s \*\*\*) and an option for 50 additional CS100s (with an option to substitute CS300s).<sup>237</sup> Delta did not consider any new 100- to 150-seat LCA from Boeing because the 126-seat 737-700 and the 138-seat 737 MAX 7 were unsuitable for the mission profile in question.<sup>238</sup> Had the CS100 not been available, Delta contends it would have satisfied its needs with used 717s and E190s.<sup>239</sup>

The importance of fleet commonality to certain airlines with fleets sourced from a single producer is another factor that may limit competition between subject imports and the domestic like product for purchases by such airlines. Airlines can derive significant operational cost benefits from fleets consisting of one or more models of aircraft from the same producer, and sharing certain features such as cockpit controls.<sup>240</sup> Smaller airlines in particular can benefit from fleet commonality where the cost of multiple types of aircraft can be uneconomical, although fleet commonality can be less important to large airlines with complex fleets developed through mergers and acquisitions.<sup>241</sup> Six of nine responding importer/purchasers ranked fleet commonality as a “very” or “somewhat” important purchase factor.<sup>242</sup> Alaska Air and Southwest have built their fleets around Boeing 737 models and Spirit Airlines has an all-Airbus fleet, while American and Delta have purchased aircraft from a range of suppliers.<sup>243</sup>

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<sup>234</sup> Hearing Tr. at 196 (May), 207-08 (Esposito); Delta’s Prehearing Brief at 30.

<sup>235</sup> Hearing Tr. at 196 (May); CR at \*\*\*; PR at \*\*\*.

<sup>236</sup> Hearing Tr. at 197 (May); Importer/Purchasers’ Questionnaire Response of Delta at Question II-10; CR at V-32; PR at V-12.

<sup>237</sup> CR at I-4 & n.9, \*\*\*, VII-13; PR at I-3 n.9, \*\*\*, VII-7; CR/PR at Table V-3b; Petitioner’s Prehearing Brief at 82. Given that Delta \*\*\*, Delta’s potential future conversions to the CS300 are not a factor in our threat analysis. Further, Delta claims to not be interested in the CS300 and that its presence in the contract terms is a standard industry practice allowing for upgrades. Hearing Tr. at 253-54 (May).

<sup>238</sup> Hearing Tr. at 196-97 (May) (“Boeing no longer produces an aircraft in this market space and hasn’t for more than a decade. The closest Boeing comes is the 126-seat 737-700, the MAX 7 which isn’t in production yet is even bigger at 138 seats. Those aircraft don’t meet Delta’s need for a 100 to 110-seat aircraft. We did not need and we were not looking to purchase additional 126 to 138-seat aircraft.”); CR at \*\*\*, V-33-34; PR at \*\*\*, V- 12.

<sup>239</sup> Hearing Tr. at 199 (May). \*\*\*. Importer/Purchasers’ Questionnaire Response of \*\*\* at Question II-10.

<sup>240</sup> Hearing Tr. at 61 (Anderson).

<sup>241</sup> CR at II-39; PR at II-23-24.

<sup>242</sup> CR/PR at Table II-5.

<sup>243</sup> CR at II-6; PR at II-4; Letter from Spirit Airlines to Chairman Schmidlein, dated August 8, 2017 (EDIS Doc. No. 621648) at 1. \*\*\*. See Domestic Producers’ Questionnaire Response of \*\*\* at Questions III-2a, III-4b, III-6, and III-13a.

Certain other non-price factors also influence purchasing decisions for 100- to 150-seat LCA. When asked to rank the importance of specific purchase factors, six of nine responding importer/purchasers reported that “very important” purchase factors included availability/backlog, lifetime operating costs (seat and trip), maintenance costs, performance (landing, takeoff, range), reduced fuel requirements, and seat capacity.<sup>244</sup> Due to Boeing’s large order backlog for the 737 family and Bombardier’s \*\*\* spare capacity through 2022, subject imports would have greater availability than the domestic like product, and four of six responding importer/purchasers ranked domestically produced 100- to 150-seat LCA inferior to subject imports in terms of availability/backlog.<sup>245</sup> Most responding importer/purchasers also ranked domestically produced 100- to 150-seat as inferior to subject imports in terms of lifetime operating costs, maintenance costs, and reduced fuel requirements.<sup>246</sup> The record shows that the CS300 is more fuel efficient than the 737-700 and MAX 7 on a per seat basis, and that the CS100 offers lower direct operating costs than the 737-700 and MAX 7.<sup>247</sup> Boeing has acknowledged that the “fuel efficiencies and other operational cost benefits of the C Series . . . are attractive to airlines.”<sup>248</sup>

Notwithstanding the importance of the preceding non-price factors, we find that price is also an important factor in purchasing decisions for 100- to 150-seat LCA. More responding importer/purchasers reported that price was a very important factor in their purchasing decisions (seven of nine) than any other factor, although all five responding U.S. importer/purchasers reported that differences other than price are always or frequently significant in sales of 100- to 150-seat LCA.<sup>249</sup>

Purchasers generally weigh competing offers from suppliers of 100- to 150-seat LCA by calculating the net present value (“NPV”) of each offer, taking into account both price and non-price factors.<sup>250</sup> The NPV of an aircraft model represents the model’s “lifecycle” costs, including the ownership cost (*i.e.*, acquisition price), fuel cost, maintenance cost, crew costs, landing/navigation fees, passenger costs, and payment terms, over the expected life of the model.<sup>251</sup> Different purchasers attach different weights to price and various non-price factors in their NPV calculations.<sup>252</sup> When asked to provide the weights given to the top five factors in their respective NPV calculations, \*\*\*.<sup>253</sup>

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<sup>244</sup> CR/PR at Table II-5.

<sup>245</sup> CR at II-11; PR at II-7; CR/PR at Tables II-8, VII-5.

<sup>246</sup> CR/PR at Table II-8. A plurality of responding importer/purchasers ranked domestically produced 100- to 150-seat LCA as superior to subject imports in terms of performance (landing, take-off, range) and seat capacity. *Id.*

<sup>247</sup> CR/PR at Table I-1; Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief, at 16.

<sup>248</sup> Hearing Tr. at 62-63 (Anderson).

<sup>249</sup> CR/PR at Tables II-5, 10.

<sup>250</sup> CR at II-45, V-2; PR at II-28, V-1; CR/PR at Table II-2; Hearing Tr. at 62 (Anderson), 241, 289 (May); Petitioner’s Prehearing Brief at 64.

<sup>251</sup> Petitioner’s Prehearing Brief at 64.

<sup>252</sup> See CR at II-25; PR at II-14-15; CR/PR at Table II-2.

<sup>253</sup> CR/PR at Table II-2.

### C. Likely Volume of the Subject Imports

We find that there is a likelihood of substantially increased subject import volume and market share in the imminent future, but not at the domestic industry's expense. Although there were no subject imports during the period of investigation,<sup>254</sup> Delta placed a firm order with Bombardier for 75 CS100s in April 2016, with plans to import CS100s from Canada beginning in April 2018 and continuing through \*\*\*.<sup>255</sup> Due to the risk of either duties or new petitions filed by Boeing, however, Delta states that it "now does not intend to take delivery of any Canadian-manufactured CS100{s}."<sup>256</sup> Instead, Delta has entered into negotiations with Bombardier to defer delivery of the CS100s it has ordered until they can be delivered from the announced U.S. FAL that Bombardier plans to construct in Alabama through its partnership with Airbus.<sup>257</sup>

On balance, based on the record, we cannot conclude that Delta will not import subject CS100s from Canada in accordance with the delivery schedule set forth in its original contract with Bombardier, which remains binding until it is renegotiated between the two companies. As discussed in section IV.B above, Bombardier reported in its questionnaire response \*\*\*, and Delta remains contractually obligated to accept delivery of CS100s from Canada.<sup>258</sup> \*\*\*.<sup>259</sup> Bombardier states that the transaction will close \*\*\*.<sup>260</sup> \*\*\*.<sup>261</sup> Additionally, any potential production in the United States would not begin until \*\*\*, and Bombardier currently has \*\*\* aircraft in production in Canada for Delta.<sup>262</sup> For all of these reasons, we find that Delta might indeed import at least some, if not all, of the CS100s due to be delivered pending any renegotiation of the terms of its contract with Bombardier. Under the current contract, Bombardier will deliver \*\*\* CS100s in 2018 and \*\*\* CS100s in 2019, which would give subject

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<sup>254</sup> CR at IV-25; PR at IV-7; CR/PR at Table IV-15.

<sup>255</sup> CR at IV-26, VII-12-13; PR at IV-8, VII-6-7.

<sup>256</sup> Hearing Tr. at 201 (May); *see also* Delta's Prehearing Brief at 51 (quoting Importer/Purchasers' Questionnaire Response of Delta at Question II-8); Hearing Tr. at 297 (McClain) ("... Delta will not import any of these aircraft into the United States."); Delta's Posthearing Brief at 10-11.

<sup>257</sup> CR at IV-26; PR at IV-8; *see also* Delta's Posthearing Brief at 9-11; Hearing Tr. at 201 (May), 297 (McClain); Importer/Purchasers' Questionnaire Response of Delta at Question II-8.

<sup>258</sup> CR/PR at Table VII-5; Bombardier's Responses to Commissioner Questions, Attachment C at para. 1; Hearing Tr. at 262 (May).

<sup>259</sup> Bombardier has stated that the renegotiation of its purchase agreement with Delta for delivery of CS100s from the planned U.S. FAL \*\*\*. Hearing Tr. at 262 (May); Bombardier's Response to Commission's Request for Updated Information at 7. Bombardier \*\*\*. Bombardier's Response to Commission's Request for Updated Information at 4; CR/PR at Table VII-2, n.1. Similarly, \*\*\*. Bombardier's Response to Commission's Request for Updated Information at 2, Exhibit 1.

<sup>260</sup> Bombardier's Response to Commission's Request for Updated Information at 2. In contrast, Bombardier \*\*\*. *Id.*

<sup>261</sup> Domestic Producers' Questionnaire Response of Bombardier, Exhibit A at 2.

<sup>262</sup> Bombardier's Response to Commission's Request for Updated Information at 2; CR at VII-13; PR at VII-6; Hearing Tr. at 261 (Levesque).

imports a projected share of apparent U.S. consumption of \*\*\* percent in 2018 and \*\*\* percent in 2019.<sup>263</sup>

We do not find, however, that Delta's imports of CS100s from Canada will come at the domestic industry's expense. As discussed in section V.B.3 above, Delta ordered 75 CS100s pursuant to a campaign to acquire 100- to 110-seat aircraft, and considered Boeing's 126-seat 737-700 and the 138-seat 737 MAX 7 unsuitable for the mission profile in question.<sup>264</sup> Had the CS100 not been available, Delta contends it would have satisfied its needs with used 717s and E190s.<sup>265</sup> Because Boeing did not lose this sale to Delta, Delta's imports of CS100s will not displace domestically produced 100- to 150-seat LCA from the U.S. market.

Based on the record of the final phase of these investigations, we cannot conclude that Bombardier is likely to make additional sales in the imminent future at Boeing's expense. We recognize that Bombardier has the ability and the incentive to make additional sales to U.S. purchasers.<sup>266</sup> Bombardier's projected excess capacity over the 2018-22 period gives it the ability to make sales to U.S. purchasers, with projected unfilled capacity of \*\*\* units in 2018, \*\*\* units in 2019, \*\*\* units in 2020, \*\*\* units in 2021, and \*\*\* units in 2022.<sup>267</sup> Because Bombardier's current orders fall \*\*\* short of its projected capacity, which reflects "very important" production ramp-up targets, Bombardier has the incentive to seek additional orders in the U.S. market in the imminent future.<sup>268</sup> We also recognize that the United States is an attractive market due to its size and Bombardier's familiarity with the market.<sup>269</sup>

Nevertheless, we find insufficient evidence to conclude that Bombardier is likely to secure additional sales for importation of 100- to 150-seat LCA in the imminent future, or that

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<sup>263</sup> See CR/PR at Tables VII-5, VII-8. Taking into account Southwest's deferral of eight of 15 737 MAX 7s that were to be delivered in 2019, subject imports from Bombardier would have a projected share of apparent U.S. consumption of \*\*\* percent in 2019. CR at III-29-30; PR at III-11; CR/PR at Table VII-5, VII-8.

<sup>264</sup> Hearing Tr. at 196-97 (May) ("Boeing no longer produces an aircraft in this market space and hasn't for more than a decade. The closest Boeing comes is the 126-seat 737-700, the MAX 7 which isn't in production yet is even bigger at 138 seats. Those aircraft don't meet Delta's need for a 100 to 110-seat aircraft. We did not need and we were not looking to purchase additional 126 to 138-seat aircraft."); CR at \*\*\*; PR at \*\*\*.

<sup>265</sup> Hearing Tr. at 199 (May). Consistent with the requisite seat count for this mission profile, Delta considered new CS100s with 109 seats, new E195s with 100 seats, used 717s with 110 seats, and used E190s with 96 seats. *Id.* at 196 (May); CR at V-28; PR at V-10.

<sup>266</sup> See Bombardier's Prehearing Brief at 82.

<sup>267</sup> CR/PR at Table VII-5.

<sup>268</sup> Compare Petition at Exhibit 108 to CR/PR at Table VII-5; CR at VII-10; PR at VII-5-6; see also Conference Tr. at 214 (Mullot); Hearing Tr. at 276 (Dewar).

<sup>269</sup> CR at II-16, VII-12; PR at II-10, VII-6; Conference Tr. at 196 (Mitchell). The United States is the world's largest market for 100- to 150-seat LCA, and Boeing projects that the United States will account for \*\*\* percent of global demand for such aircraft over the next 20 years (\$\*\*\* of \$\*\*\*). Petitioner's Prehearing Brief at 41 & n.183; CR at II-16; PR at II-10. Bombardier considers the U.S. and Canadian markets as "one market not two," and Delta accounted for the largest share of its orders for C Series LCA. *Id.* Bombardier reported recent, current, and likely future sales efforts with \*\*\*. Foreign Producers' Questionnaire Response of Bombardier at Question II-13.

any purchases of subject imports in the imminent future would likely be at Boeing's expense. Contrary to Boeing's claim that Bombardier derived commercial momentum in the U.S. market from its sale to Delta, Bombardier made no sales to U.S. purchasers between April 2016, when it made the sale to Delta, and April 2017, when Boeing filed the petitions, or thereafter.<sup>270</sup> Indeed, the only offer made by Bombardier to a U.S. purchaser after its sale to Delta, \*\*\*, was rejected.<sup>271</sup> \*\*\*.<sup>272</sup>

Nor does the record show that any firms reportedly contemplating a purchase of 100- to 150-seat LCA will likely make a purchase in the imminent future. In its questionnaire response, Boeing reported its belief that \*\*\* will either purchase or launch campaigns to purchase 100- to 150-seat LCA within the next year or two.<sup>273</sup> The record, however, does not establish that any of these airlines are likely to purchase 100- to 150-seat LCA in the imminent future. Because purchases of 100- to 150-seat LCA tend to be large and infrequent, as evidenced by \*\*\*, we cannot assume that these airlines will purchase 100- to 150-seat LCA in the imminent future in the absence of positive evidence that they are likely to do so.<sup>274</sup>

Contrary to Boeing's belief that \*\*\*, \*\*\*, reports that it plans to replace \*\*\* percent of its existing 100- to 150-seat LCA in five to ten years and \*\*\* percent in \*\*\*, by acquiring \*\*\*.<sup>275</sup> Bombardier reported \*\*\*.<sup>276</sup> Even if \*\*\* were to begin a new purchase campaign for 100- to 150-seat LCA in the next \*\*\*, there is no evidence that such a campaign would conclude with a sale in the imminent future, \*\*\*.<sup>277</sup>

Similarly, Boeing's belief that \*\*\* does not establish that \*\*\* will imminently issue an RFP soliciting bids for 100- to 150-seat LCA.<sup>278</sup> Boeing opined that "\*\*\*\*," and responded to \*\*\*, indicating that the request was not focused on 100- to 150-seat LCA alone.<sup>279</sup> Bombardier reported \*\*\*.<sup>280</sup> Nor would an RFP issued by \*\*\* necessarily result in a sale of 100- to 150-seat LCA within the imminent future.

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<sup>270</sup> CR/PR at Table V-3b; CR at VII-12-13; PR at VII-6-7.

<sup>271</sup> CR at V-30-31; PR at V-11.

<sup>272</sup> CR at IV-3, V-31; PR at IV-2, V-11; Importer/Purchasers' Questionnaire Response of \*\*\* at Questions III-3a, 6, 8.

<sup>273</sup> CR at III-25-27; PR at III-9-10. Boeing provided no evidence that any other U.S. purchaser is likely to purchase or launch a campaign to purchase 100- to 150-seat LCA within the next two years. *Id.* \*\*\* of the major airlines or leasing companies reported plans to replace existing aircraft with new 100- to 150-seat LCA within the next two years. CR at II-21-22; PR at II-13; Importer/Purchaser Questionnaire Responses of \*\*\* at Questions III-2d, 2e.

<sup>274</sup> Petitioner's Prehearing Brief at 45; Hearing Tr. at 108 (Novick); CR at III-22, \*\*\*; PR at III-8, V-11; CR/PR at Table V-4.

<sup>275</sup> CR at II-21, III-25; PR at II-13, III-9-10; *see also* Flight Ascend Report, appended as Attachment A to Bombardier's Prehearing Brief at 39-40.

<sup>276</sup> Foreign Producers' Questionnaire Response of Bombardier at Question II-13.

<sup>277</sup> CR at V-8; PR at V-4.

<sup>278</sup> CR at III-26; PR at III-9-10.

<sup>279</sup> CR at III-26; PR at III-9-10.

<sup>280</sup> Foreign Producers' Questionnaire Response of Bombardier at Question II-13.

Boeing also reported that “\*\*\*,” but did not explain the nature of the “\*\*\*.”<sup>281</sup> Indeed, Boeing provided no evidence that \*\*\* in the imminent future, other than to note that \*\*\*.<sup>282</sup> Bombardier reported \*\*\*.<sup>283</sup>

Finally, Boeing reported that “\*\*\*.”<sup>284</sup> Boeing provided no evidence, however, \*\*\*. On the contrary, Boeing’s recognition that \*\*\* and that \*\*\* suggests that \*\*\* may not even concern 100- to 150-seat LCA.<sup>285</sup> Although “\*\*\*,” it reports \*\*\*.<sup>286</sup>

Even if one or more of these airlines were to purchase 100- to 150-seat LCA from Bombardier in the imminent future, there is no evidence that such purchases would likely be at Boeing’s expense.<sup>287</sup> Specific airlines engaged in purchasing campaigns may not consider C Series aircraft to be substitutable with the 737-700 or 737 MAX 7, particularly if they are seeking to acquire aircraft for mission profiles that require fewer seats. For this reason, as discussed above, the only order that Bombardier received in the U.S. market during the period of investigation, from Delta, did not occur at Boeing’s expense. Similarly, Spirit and JetBlue stated that they do not consider the C Series aircraft to directly compete with the 737-700 or the 737 MAX 7.<sup>288</sup> Should \*\*\* initiate a sales campaign or informal discussions to purchase 100- to 150-seat LCA, both Bombardier and Boeing are likely to submit bids since they each have strong incentives to secure additional sales and have held sales discussions with all four airlines, but we simply do not know if these purchasers would consider both suppliers as viable options to fit their needs.<sup>289</sup>

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<sup>281</sup> CR at III-27; PR at III-9-10.

<sup>282</sup> CR at III-27; PR at III-9-10. Boeing also \*\*\*. *Id.*

<sup>283</sup> Foreign Producers’ Questionnaire Response of Bombardier at Question II-13.

<sup>284</sup> CR at III-27; PR at III-9-10.

<sup>285</sup> CR at III-27; PR at III-9-10; *see also* Flight Ascend Report, appended as Attachment A to Bombardier’s Prehearing Brief at \*\*\* (“\*\*\*”).

<sup>286</sup> Hearing Tr. at \*\*\*; Foreign Producers’ Questionnaire Response of Bombardier at Question II-13.

<sup>287</sup> We note that if Bombardier’s partnership agreement with Airbus closes, and CSALP goes forward with construction of a U.S. FAL, U.S. purchases of 100- to 150-seat LCA from Bombardier may ultimately be supplied from the U.S. FAL instead of from Canada. *See* Hearing Tr. at 193-94 (Levesque). Depending on whether CSALP engages in sufficient production-related activities in the United States, the 100- to 150-seat LCA produced at the U.S. FAL might qualify as domestically produced 100- to 150-seat LCA. *See* CR/PR at Table III-2. Thus, there is at least a possibility that any U.S. orders for 100- to 150-seat LCA secured by Bombardier in the imminent future would not result in additional volumes of subject imports. We do not rely on this possibility in analyzing likely subject import volume, however, because both Bombardier’s partnership agreement with Airbus and CSALP’s plans for a U.S. FAL remain indefinite and, as explained above, we are cognizant of the statute’s requirement that threat determinations be based on more than mere conjecture and supposition. *See* section IV.B above.

<sup>288</sup> Letter from JetBlue to Chairman Schmidlein, dated September 24, 2017 (EDIS Doc. No. 623698) at 1; Letter from Spirit to Chairman Schmidlein, dated August 8, 2017 (EDIS Doc. No. 621648) at 2.

<sup>289</sup> *See* CR at III-30, VII-5; PR at III-11, VII-4; Bombardier’s Prehearing Brief at 82; Petitioner’s Prehearing Brief at 92.



Moreover, in addition to Bombardier and Boeing, purchasers would likely consider aircraft from other sources as well. \*\*\*.<sup>290</sup> Similarly, Spirit's fleet consists entirely of Airbus LCA, including A319s, making it likely that Spirit would consider offers for 100- to 150-seat LCA from Airbus.<sup>291</sup> JetBlue's fleet consists of aircraft from Airbus and Embraer, making it likely that JetBlue would consider offers from both producers in any campaign to acquire 100- to 150-seat aircraft.<sup>292</sup> \*\*\*, and United has also considered used A319s.<sup>293</sup> If United were to seek an aircraft with 100 seats, \*\*\*, then United may also consider regional aircraft from Embraer, and Boeing's ability to compete for such sales would likely be limited by the higher seat count of the 737 MAX 7.<sup>294</sup> Thus, the record does not show that these airlines would likely purchase 100- to 150-seat LCA from Boeing instead of nonsubject aircraft in the absence of competition from Bombardier. Similarly, given the likely competition from nonsubject aircraft for any purchases of 100- to 150-seat LCA by \*\*\*, it would be merely speculative to conclude that Bombardier is likely to succeed in selling subject merchandise to these airlines in the imminent future or that any such sales for importation by Bombardier to these airlines would likely come at Boeing's expense.

In sum, we find that there is a likelihood of substantially increased subject import volume and market share based on Bombardier's single sale for importation of subject planes during the period of investigation. Given that Boeing's 100- to 150-seat LCA did not meet the purchaser's requirements for this sale, however, and Boeing did not offer any new aircraft for this sale, we do not find that Bombardier secured this sale at Boeing's expense. There is also insufficient evidence for us to conclude that Bombardier is likely to secure additional sales for importation of subject 100- to 150-seat LCA in the imminent future, or that any purchases of subject imports in the imminent future would likely be at the domestic industry's expense.<sup>295</sup>

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<sup>290</sup> CR/PR at Table IV-4; Importer/Purchasers' Questionnaire Response of \*\*\* at Question III-13a.

<sup>291</sup> Letter from Spirit to Chairman Schmidlein, dated August 8, 2017 (EDIS Doc. No. 621648) at 1.

<sup>292</sup> Letter from JetBlue to Chairman Schmidlein, dated September 24, 2017 (EDIS Doc. No. 623698) at 1.

<sup>293</sup> CR/PR at Table IV-13; Hearing Tr. at 259 (May).

<sup>294</sup> CR/PR at Table V-3b; Foreign Producers' Questionnaire Response of Bombardier at Question II-13; Hearing Tr. at 260 (Mitchell); Bombardier's Posthearing Brief at Exhibit 5.

<sup>295</sup> We have also considered several other factors pertinent to our analysis of likely subject import volume. Bombardier, like other aircraft manufacturers, \*\*\* inventories of LCA. CR at VII-19; PR at VII-10. Bombardier does not produce out-of-scope aircraft in the same production facility as C Series LCA, and has \*\*\* to shift between production of C Series LCA and out-of-scope aircraft. CR at VII-5; PR at VII-4. 100- to 150-seat LCA from Canada are not subject to trade remedy investigations or orders in any other country. CR at VII-21; PR at VII-10. In its final determination, Commerce determined a countervailing duty rate of 212.39 percent for 100- to 150-seat LCA imported from Canada from Bombardier and other companies. *100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Countervailing Duty Determination*, 82 Fed. Reg. 61252 (December 27, 2017). It found the following programs to be countervailable: (1) Equity Infusion by *Investissement Québec*; (2) Launch aid by Canadian Federal Government; (3) Launch aid by Québec Provincial Government; (4) Launch aid by U.K. Government; (5) Tax Incentives and Other Support Provided by the City of Mirabel; (6) PR@M Tax Credit; (7) Tax Credit from the Government of Quebec for the C Series; (8) U.K. R&D Tax Credits; (9) Technology Demonstration Program; (10) *Emploi-Québec*; (11) Invest Northern Ireland Grant for the C (Continued...)

#### D. Likely Price Effects

We have found at least a moderate degree of substitutability between subject imports and domestically produced 100- to 150-seat LCA, with more limited competition between subject imports and the domestic like product at the low end of the seat count range.<sup>296</sup> We have also found that price is an important factor in purchasing decisions, although non-price factors are also important.<sup>297</sup> Due to the complexity of 100- to 150-seat LCA and the numerous non-price factors that influence purchasing decisions, purchasers typically compare the NPV of competing offers from aircraft suppliers, which includes non-price factors such as fuel efficiency and maintenance costs, rather than the up-front cost for competing aircraft.<sup>298</sup> For this reason, it is not possible or instructive simply to consider the differential between the sales price of subject imported 100- to 150-seat LCA and the sales price of comparable domestically produced 100- to 150-seat LCA. For example, Boeing itself believes that the 737-700 is worth \*\*\* than the CS100 on an NPV basis, and would therefore normally \*\*\*.<sup>299</sup> Instead, we base our analysis of the likely price effects of subject imports on two sales campaigns, to Delta and United, that concluded during the period of investigation, in which Boeing and Bombardier participated.

United launched a campaign to purchase \*\*\*.<sup>300</sup> \*\*\*.<sup>301</sup> \*\*\*.<sup>302</sup> \*\*\*.<sup>303</sup> \*\*\*.<sup>304</sup> \*\*\*.<sup>305</sup> Accordingly, \*\*\*.<sup>306</sup> \*\*\*.<sup>307</sup> However, in November 2016, United exercised its right to convert these orders for 737-700s to firm orders for \*\*\* 737-800s and \*\*\* 737 MAX 9s \*\*\*.<sup>308</sup>

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(...Continued)

Series - Selective Financial Assistance (SFA). *100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Countervailing Duty Determination*, 82 Fed. Reg. 61252 (December 27, 2017); Issues and Decision Memorandum for the Final Determination in the Countervailing Duty Investigation of 100- to 150-Seat Large Civil Aircraft from Canada (Dec. 18, 2017).

<sup>296</sup> See Section V.B.3, above.

<sup>297</sup> See Section V.B.3, above.

<sup>298</sup> See Section V.B.3, above.

<sup>299</sup> CR at II-26 n.62; PR at II-15 n.62.

<sup>300</sup> Petition at Exhibit 101 (\*\*\* Affidavit), para. 6.

<sup>301</sup> CR/PR at Table V-4.

<sup>302</sup> CR/PR at Table V-4.

<sup>303</sup> CR/PR at Table V-4. According to Bombardier, United found the CS100 too big for its needs, so Bombardier created a smaller version with only 100 seats, known as the CS100 Lite. Bombardier's Responses to Commissioner Questions at 23, Attachment E and Exhibit 5; Importer/Purchasers' Questionnaire Response of Bombardier at Question II-13; see also Conference Tr. at 163 (Mitchell).

<sup>304</sup> Petition at Exhibit 101 (\*\*\* Affidavit), para. 8.

<sup>305</sup> Petition at Exhibit 101 (\*\*\* Affidavit), para. 8.

<sup>306</sup> CR/PR at Table V-4.

<sup>307</sup> CR/PR at Table V-4; Petition at Exhibit 101 (\*\*\* Affidavit), para. 5.

<sup>308</sup> CR at III-22 n.27, III-30; PR at III-9 n.27, III-30; CR/PR at Table III-12 n.1. \*\*\*. Boeing's Posthearing Brief at 8; Boeing's Responses to Commissioner Questions at 1; CR at III-30; PR at III-11. Although the 737-800 is larger than the 737-700 and carries a higher list price, \*\*\*. CR at I-28, 33; PR at I-20, 22; CR/PR at Table V-3a. Given this, \*\*\*. CR/PR at Table V-3a.

As discussed above, Delta launched a campaign in late 2015 to purchase 100- to 110-seat mainline aircraft, during which it considered new CS100s and E195s, and used 717s and E190s.<sup>309</sup> \*\*\*,<sup>310</sup> \*\*\*, and purchased 19 used E190s from Boeing \*\*\*,<sup>311</sup> \*\*\*, and subsequently resold the E190s it had purchased from Boeing.<sup>312</sup> Having rejected \*\*\*, Delta ultimately accepted \*\*\* in April 2016; Delta placed a firm order for 75 CS100s (with an option to substitute CS300s after the first \*\*\* deliveries) and an option for 50 additional CS100s (with an option to substitute CS300s).<sup>313</sup> Delta did not consider any new 100- to 150-seat LCA from Boeing because the 126-seat 737-700 or the 138-seat 737 MAX 7 were unsuitable for the mission profile in question.<sup>314</sup>

Based on the record of the final phase of these investigations, we find that subject import prices are not likely to have a significant depressing or suppressing effect on domestic prices or to increase demand for further imports. As explained above, we cannot conclude that there are likely to be additional sales of 100- to 150-seat LCA in the imminent future or that Boeing and Bombardier will be competing head-to-head on any such sales campaigns that may occur. This finding necessarily limits the ability of subject imports to have adverse price effects. Moreover, Boeing lost no sales or revenues in either the United or Delta sales campaigns during the period of investigation. \*\*\*, the evidence concerning whether Boeing's 737-700 competed with the CS100 in United's sales campaign is mixed, given that \*\*\*.<sup>315</sup> Furthermore, Boeing's reduced price on 737-700s to United resulted in no lost revenues because United quickly converted its order for 737-700s into orders for 737-800s and 737 MAX 9s \*\*\*.<sup>316</sup> As discussed in section V.C above, Delta's purchase of CS100s did not represent a lost sale to Boeing because Delta did not consider the 126-seat 737-700 or the 138-seat 737 MAX 7 as viable options for the

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<sup>309</sup> Hearing Tr. at 196 (May); CR at \*\*\*; PR at \*\*\*.

<sup>310</sup> Hearing Tr. at 196-97 (May); Importer/Purchasers' Questionnaire Response of Delta at Question II-10.

<sup>311</sup> Hearing Tr. at 197 (May); Importer/Purchasers' Questionnaire Response of Delta at Question II-10.

<sup>312</sup> CR at V-32; PR at V-12; Importer/Purchasers' Questionnaire Response of Delta at Question II-10.

<sup>313</sup> CR at I-4 & n.9, \*\*\*, VII-13; PR at I-3 & n.9, \*\*\*, VII-6-7; CR/PR at Tables V-3b, 4. Under the terms of the order, Delta agreed to pay \$\*\*\*. CR/PR at Table V-3b.

<sup>314</sup> Hearing Tr. at 196-97 (May) ("Boeing no longer produces an aircraft in this market space and hasn't for more than a decade. The closest Boeing comes is the 126-seat 737-700, the MAX 7 which isn't in production yet is even bigger at 138 seats. Those aircraft don't meet Delta's need for a 100 to 110-seat aircraft. We did not need and we were not looking to purchase additional 126 to 138-seat aircraft."); CR at \*\*\*, V-33-34; PR at \*\*\*, V-11-12.

<sup>315</sup> Petition at Exhibit 101 (\*\*\*) Affidavit), paras. 5-9 Bombardier's Responses to Commissioner Questions at 23, Attachment E and Exhibit 5; Importer/Purchasers' Questionnaire Response of Bombardier at Question II-13; *see also* Conference Tr. at 163 (Mitchell). Boeing did not provide a witness at the hearing that could shed light on the United transaction. *See* Hearing Tr. at 38 (Boeing's sole witness, Kevin McAllister, stated that he worked at GE Aviation Services until November 2016, when he was named President and Chief Operating Officer of Boeing Commercial Airplanes).

<sup>316</sup> Petition at Exhibit 101 (\*\*\*) Affidavit), para. 8; CR at III-30; PR at III-11.

100- to 110-seat aircraft it was seeking to acquire. Had the CS100 not been available, Delta would likely have satisfied its needs with used 717s and E190s.<sup>317</sup>

We also find little evidence of price transmission effects from the United and Delta sales sufficient for us to conclude that subject imports are likely to have significant depressing or suppressing effects on domestic like product prices in the imminent future. Boeing argues that the 100- to 150-seat LCA market is subject to price transmission effects, whereby the small number of sophisticated purchasers in the market are able to ascertain the prices at which their competitors acquire 100- to 150-seat LCA and use them to demand comparably low prices for similar aircraft.<sup>318</sup> The record as a whole does not support Boeing's claim. There is some degree of price transparency in the market for 100- to 150-seat LCA, given that Boeing and other market participants \*\*\* estimated that Delta's purchase price for the CS100 was around \$23 million per aircraft.<sup>319</sup> Yet, purchase orders between aircraft producers and purchasers are commercially confidential and parties to such contracts have strong economic incentives to maintain the confidentiality of contract terms and prices.<sup>320</sup> Ten of ten responding importer/purchasers reported that, in general, they were not aware of prices paid by other purchasers of 100- to 150-seat LCA, and most reported that the effect of prior sales of 100- to 150-seat LCA on their price expectations is small because prior sale prices are unknown.<sup>321</sup> \*\*\*, \*\*\*, and Delta stated that they are sometimes aware of rumored prices paid by competitors, but \*\*\* uses such rumors as only one data point among many in purchase negotiations and Delta discounts them entirely.<sup>322</sup> Flight Ascend stated that it is impossible to ascertain the price of prior sales accurately, as evidenced by the prevalence of different rumored prices for the same transaction, and that purchasers consequently do not view rumored prices as factual or expected prices.<sup>323</sup>

Additionally, contrary to Boeing's claim that \*\*\* requested pricing similar to the level they believed that United received or that they believed to be necessary to compete with Delta,

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<sup>317</sup> Hearing Tr. at 199 (May). \*\*\*. Importer/Purchasers' Questionnaire Response of \*\*\* at Question II-10.

<sup>318</sup> Petitioner's Prehearing Brief at 46, 49-51; CR at V-20-21; PR at V-8-9.

<sup>319</sup> See Petition at Exhibits 23 (Reuters article stating that rival jetmakers and analysts quickly calculated Delta had paid \$22-23 million per plane), 101 (\*\*\*) Affidavit), para. 16 (estimating Delta's price per plane at \$19.6 million, and \$23.3 million including ancillary items); CR/PR at Table V-3b (\*\*\*). Market participants are also aware that Bombardier recognized a loss of \$516 million under the "onerous contracts provisions" on the closing of firm orders for C Series LCA during the second quarter of 2016, which included Delta's order for CS100s, indicating that the cost of satisfying the contract exceeded the economic benefits expected to be received under the contract. CR at VII-9; PR at VII-5; see also Petition at Exhibit 36.

<sup>320</sup> See Flight Ascend Report, appended as Attachment A to Bombardier's Prehearing Brief, at 45.

<sup>321</sup> CR at V-22; PR at V-9.

<sup>322</sup> CR at V-22; PR at V-9; Hearing Tr. at 239-40 (May).

<sup>323</sup> Hearing Tr. at 286-87 (Dimitroff). In its report for Bombardier, Flight Ascend provided "full life base values" for the 737-700, -800, and -900ER, which are "representative of typical delivery prices," but not price estimates for specific sales transactions. See Flight Ascend Report, appended as Attachment A to Bombardier's Prehearing Brief, at 44.

\*\*\*,<sup>324</sup> and \*\*\* during the period of investigation.<sup>325</sup> Moreover, \*\*\*.<sup>326</sup> Thus, \*\*\* took place \*\*\* after both the Delta and United sales, yet resulted in option and purchase prices unaffected by any alleged price transmission effects from the Delta and United sales.

Not only is there little evidence that Delta's purchase price for CS100s influenced price expectations in the U.S. market for 100- to 150-seat LCA, but the record also shows that Delta received a "launch discount" on its order for CS100s that other purchasers would not expect to receive in the imminent future. Both Boeing and Bombardier agree that purchasers of new models of 100- to 150-seat LCA, whether clean sheet or derivative, typically receive "launch pricing" as compensation for the risks inherent to such models.<sup>327</sup> For example, the record shows that Boeing offered substantial discounts on many orders for out-of-scope 787 LCA during the years following the new model's launch in 2004, but then secured substantially higher prices on subsequent orders.<sup>328</sup> Although Bombardier launched the CS100 in 2008, the model had a lengthy development period and only received FAA certification and entered service in Europe in June 2016.<sup>329</sup> Given this, and Bombardier's desire for a marquee customer in the U.S. market, Delta would have expected a substantial discount when negotiating its large order for CS100s in April 2016.<sup>330</sup> Prospective purchasers of the CS100 in the U.S. market would have little to no basis to expect such a discount now that the CS100 has been certified by the FAA, entered service, and performed well.<sup>331</sup> We therefore find it unlikely that Bombardier would offer prospective U.S. purchasers of the CS100 in the imminent future a discount comparable to the discount provided to Delta.<sup>332</sup> As discussed above, the record does not indicate any future sales campaigns for which Bombardier will compete in the imminent future.

Boeing also claims that the United and Delta sales will adversely affect \*\*\*.<sup>333</sup> \*\*\*.<sup>334</sup> In response, \*\*\*.<sup>335</sup> Although Boeing \*\*\*, the record as a whole contains little evidence to

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<sup>324</sup> Petitioner's Prehearing Brief at 47-48; Petitioner's Posthearing Brief at 13 (citing Prehearing Brief at Exhibit 2 (\*\*\*) Affidavit) at paras. 8-14); CR/PR at Table V-3a.

<sup>325</sup> CR at III-27; PR at III-9-10. It is unclear why \*\*\* would ask for a discount on Boeing's 737-700 or MAX 7 when \*\*\*. \*\*\*.

<sup>326</sup> CR at V-30-31; PR at V-11; Importer/Purchasers' Questionnaire Response of \*\*\* at Questions III-3a, 6, 8.

<sup>327</sup> CR at V-15-16; PR at V-6-7; Hearing Tr. at 132-33 (Nickelsburg); Bjorn Fehrm, *How Boeing Pays Back the 787 Debts*, Leeham News and Comment (July 27, 2017), appended as Exhibit 35 to Bombardier's Prehearing Brief ("To create a critical mass of customers early in the program, launch pricing is employed. The first customers get very high discounts from list price. The larger the order and the newer the market for the OEM, the higher the discount. The low net price is compensation for taking early units (which are less mature) and for betting on a program before it's a slam dunk.").

<sup>328</sup> See Bombardier's Hearing Exhibit 9.

<sup>329</sup> Bombardier's Prehearing Brief at 63 n.249.

<sup>330</sup> See Hearing Tr. at 202 (May), 278-79 (Mitchell).

<sup>331</sup> Bombardier's Posthearing Brief at 9-10, Attachment F, Exhibits 9-10.

<sup>332</sup> See, e.g., CR at \*\*\*; PR at \*\*\*.

<sup>333</sup> See Petitioner's Prehearing Brief at 100-02, Exhibits 2 and 3.

<sup>334</sup> Petitioner's Prehearing Brief at 100-01, Exhibit 2 (\*\*\*) Affidavit).

<sup>335</sup> Petitioner's Prehearing Brief at 108-09, Exhibit 2 (\*\*\*) Affidavit) at para. 10. \*\*\*.

support Boeing's belief.<sup>336</sup> In an affidavit, \*\*\*.<sup>337</sup> We cannot base our findings on mere conjecture, \*\*\*.

Moreover, other evidence suggests that \*\*\* were motivated by factors other than subject imports. \*\*\*.<sup>338</sup> Furthermore, \*\*\*.<sup>339</sup> \*\*\*.<sup>340</sup> \*\*\*.<sup>341</sup> Based on the evidence on the record, we cannot conclude that any \*\*\* is by reason of subject imports.<sup>342</sup>

As further evidence of adverse price effects, Boeing provided a declaration from \*\*\*.<sup>343</sup> We find this declaration inconsistent with \*\*\*.<sup>344</sup> Moreover, the declaration states only that \*\*\*."<sup>345</sup> \*\*\*.<sup>346</sup> Consequently, there is no evidence showing how \*\*\*.

In sum, we find that subject import prices are not likely to have a significant depressing or suppressing effect on domestic prices or to increase demand for further imports. Boeing lost no sales or revenues in either the United or Delta sales campaigns. We also find little evidence of any imminent purchases of 100- to 150-seat LCA by U.S. purchasers that likely would result in sales by Boeing at depressed or suppressed prices, as discussed in section V.C above.

### E. Likely Impact

As an initial matter, we have considered the performance indicators of the domestic industry during the period of investigation. Boeing's production of 100- to 150-seat LCA was \*\*\* units in 2014, \*\*\* units in 2015, \*\*\* units in 2016, and \*\*\* units in January-September 2017, compared to \*\*\* units in January-September 2016.<sup>347</sup> Because Boeing plans its capacity to match projected production based on orders, its rate of capacity utilization was \*\*\* percent during the 2014-16 period.<sup>348</sup> Based on current orders, Boeing projects production of \*\*\* units in 2017, \*\*\* units in 2018, \*\*\* units in 2019, \*\*\* units in 2020, \*\*\* units in 2021, and \*\*\* units in 2022, with capacity utilization of \*\*\* percent in each year.<sup>349</sup>

Boeing's shipments from 2014 to 2016 totaled \*\*\* aircraft.<sup>350</sup> Of these, \*\*\* were exported.<sup>351</sup> Boeing had U.S. shipments of \*\*\*.<sup>352</sup> Boeing reported \*\*\* U.S. shipments in

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<sup>336</sup> Petitioner's Prehearing Brief at 108-09, Exhibit 2 (\*\*\* Affidavit) at para. 9.

<sup>337</sup> Petitioner's Prehearing Brief at 108-09, Exhibit 2 (\*\*\* Affidavit) at para. 9. \*\*\*. *Id.*

<sup>338</sup> See CR/PR at Tables V-3a, V-3b. Further weakening any causal link to C Series pricing, \*\*\*.  
Moreover, \*\*\*. Importer/Purchasers' Questionnaire Response of \*\*\* at Question III-5a.

<sup>339</sup> CR at III-27; PR at III-9-10.

<sup>340</sup> Importer/Purchasers' Questionnaire Response of \*\*\* at Questions III-2a, III-4b, III-6, III-13a (\*\*\*\*). \*\*\*.

<sup>341</sup> Importer/Purchasers' Questionnaire Response of \*\*\* at Question III-2d. \*\*\*. CR at \*\*\*; PR at \*\*\*.

<sup>342</sup> CR at V-5; PR at V-3.

<sup>343</sup> Petitioner's Prehearing Brief at 102, Exhibit 3 (\*\*\* Declaration).

<sup>344</sup> CR/PR at Table V-3a.

<sup>345</sup> Petitioner's Prehearing Brief at 102, Exhibit 3 (\*\*\* Declaration).

<sup>346</sup> Importer/Purchasers' Questionnaire Response of \*\*\* at Questions III-2d, III-2e. \*\*\*.

<sup>347</sup> CR/PR at Table III-5.

<sup>348</sup> CR/PR at Table III-5; CR at III-9; PR at III-5.

<sup>349</sup> CR/PR at Table III-8; CR at III-9; PR at III-5.

<sup>350</sup> CR/PR at Table III-10.

January-September 2017, compared to U.S. shipments of \*\*\* in January-September 2016.<sup>353</sup> It had export shipments of \*\*\* in January-September 2017, compared to \*\*\* in January-September 2016.<sup>354</sup>

The number of production related workers (“PRWs”) that Boeing engaged in the production of 100- to 150-seat LCA was \*\*\* in 2014, \*\*\* in 2015, \*\*\* in 2016, and \*\*\* in January-September 2017, compared to \*\*\* in January-September 2016.<sup>355</sup> Hours worked were \*\*\* hours in 2014, \*\*\* hours in 2015, \*\*\* hours in 2016, and \*\*\* hours in January-September 2017, compared to \*\*\* hours in January-September 2016.<sup>356</sup> Wages paid were \$\*\*\* in 2014, \$\*\*\* in 2015, \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016.<sup>357</sup>

Boeing’s commercial sales revenues on sales of 100- to 150-seat LCA were \$\*\*\* in 2014, \$\*\*\* in 2015, \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016.<sup>358</sup> Its gross profit was \$\*\*\* in 2014, \$\*\*\* in 2015, \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016.<sup>359</sup> Its operating income was \$\*\*\* in 2014, \$\*\*\* in 2015, and \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016.<sup>360</sup> As a share of net sales, operating income was \*\*\* percent in 2014, \*\*\* percent in 2015, \*\*\* percent in 2016, and \*\*\* percent in January-September 2017, compared to \*\*\* percent in January-September 2016.<sup>361</sup> Its average operating return on assets was \*\*\* percent in 2014, \*\*\* percent in 2015, and \*\*\* percent in 2016.<sup>362</sup>

Boeing’s capital expenditures were \$\*\*\* in 2014, \$\*\*\* in 2015, \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016.<sup>363</sup> Its research and development expenses, devoted \*\*\*, were \$\*\*\* in 2014, \$\*\*\* in 2015, \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016.<sup>364</sup>

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(...Continued)

<sup>351</sup> CR/PR at Table III-10.

<sup>352</sup> CR at III-19; PR at III-7-8; CR/PR at Table III-10 & n.1.

<sup>353</sup> CR/PR at Table III-10.

<sup>354</sup> CR/PR at Table III-10.

<sup>355</sup> CR/PR at Table III-14.

<sup>356</sup> CR/PR at Table III-14.

<sup>357</sup> CR/PR at Table III-14.

<sup>358</sup> CR/PR at Table VI-1.

<sup>359</sup> CR/PR at Table VI-1.

<sup>360</sup> CR/PR at Table VI-1. Boeing’s net income was \$\*\*\* in 2014, \$\*\*\* in 2015, \$\*\*\* in 2016, and \$\*\*\* in January-September 2017, compared to \$\*\*\* in January-September 2016. *Id.*

<sup>361</sup> CR/PR at Table VI-1. As a share of net sales, net income was \*\*\* percent in 2014, \*\*\* percent in 2015, \*\*\* percent in 2016, and \*\*\* percent in January-September 2017, compared to \*\*\* percent in January-September 2016. *Id.*

<sup>362</sup> CR/PR at Table VI-6.

<sup>363</sup> CR/PR at Table VI-5.

<sup>364</sup> CR/PR at Table VI-5.

In considering the domestic industry's condition in the imminent future, we note that Boeing's backlog for future deliveries of 100- to 150-seat LCA declined during the period of investigation.<sup>365</sup> Based on current orders, Boeing projects limited U.S. shipments of single-aisle LCA in the imminent future.<sup>366</sup> This future level of domestic commercial shipments is consistent with longer-term trends, as Boeing made \*\*\* U.S. commercial delivery in the two years prior to the period of investigation.<sup>367</sup> It appears from the record that Boeing's \*\*\* U.S. shipments and backlog level of 100- to 150-seat LCA are substantially due to purchasers' decisions to up-gauge their aircraft. Between 2014 and interim 2017, U.S. purchasers decided to convert new and existing orders for a total of \*\*\* 737-700s into orders for larger 737s.<sup>368</sup> In addition, some industry analysts expect airlines' future demand for single-aisle aircraft to focus on planes larger than the 737-700 and 737 MAX 7.<sup>369</sup>

The corresponding additional sales of alternative 737 aircraft resulting from these conversions have only benefited Boeing's overall operations in producing 737s. As discussed earlier, all 737s share the same production facility, and the vast majority of fixed assets used to produce 100- to 150-seat LCA can be economically repurposed to produce other aircraft.<sup>370</sup> In addition, workers at the Renton facility are cross-trained to produce all varieties of 737 aircraft.<sup>371</sup> Boeing has an order backlog of 4,431 aircraft for the 737 family, equivalent to seven to eight years of production at the Renton facility that produces all variants of the 737.<sup>372</sup> Boeing's scheduled production of 737s is projected to increase in each year between 2018 and 2022, the last year for which the Commission collected such data.<sup>373</sup> Boeing's healthy operating income margins in its 100- to 150-seat LCA operations are consistent with \*\*\* profitable operations for its larger 737 variants, including the 737-800 and MAX 8, the 737-900 and MAX 9, and the 737 MAX 10.<sup>374</sup>

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<sup>365</sup> CR/PR at Tables III-10-11.

<sup>366</sup> CR/PR at Table F-1.

<sup>367</sup> CR/PR at Table III-9.

<sup>368</sup> Boeing received relatively substantial orders for \*\*\*. CR/PR at Table V-4; Petition at Exhibit 101 (\*\*\* Affidavit), para. 5; CR at III-22 n.27, III-30; PR at III-9 n.27, III-30; CR/PR at Table III-12 n.1. Likewise, Boeing reported that \*\*\*. CR at V-20; PR at V-8; CR/PR at Tables V-3a, VI-8; Hearing Tr. at 66 (Anderson).

In addition to the \*\*\* converted orders that were identified by Boeing, in January 2018, Southwest delayed delivery of 737 MAX 7s, instead converting options to firm orders for 40 737 MAX 8s. CR at III-30 n.38; PR at III-11 n.38.

<sup>369</sup> Flight Ascend Report, appended as Attachment A to Bombardier's Prehearing Brief, at 34-36; Leeham News, *History undermines Boeing claim of C Series impact: analysis* (Dec. 22, 2017), appended as Exhibit 6 to Bombardier's Posthearing Brief; Avolon Report, appended as Exhibit 11 to GOC's Prehearing Brief, at 3, 14-16, 22; Hearing Tr. at 210-12 (Dimitroff).

<sup>370</sup> CR at I-18; PR at I-13; CR/PR at Table III-7.

<sup>371</sup> CR at III-36 n.49; PR at III-13 n.49; Conference Tr. at 149 (Conner).

<sup>372</sup> CR at I-18, II-11, III-22 n.24; PR at I-13, II-7, III-8 n.24; *see also* Flight Ascend Report, appended as Attachment A to Bombardier's Prehearing Brief, at 41-42.

<sup>373</sup> CR/PR at Table III-8.

<sup>374</sup> *Compare* CR/PR at Table VI-1 *with id.* at Tables C-2-3; Petitioner's Hearing Exhibit 17. There was no production of the 737 MAX 10 during the period of investigation. CR/PR at Table C-3, note.

(Continued...)



We have found that the likely significant increase in subject import volume and market share in the imminent future is unlikely to have an adverse impact on Boeing. All subject imports projected for 2018 and 2019 are for Delta, which ordered CS100s pursuant to a need for 100- to 110-seat aircraft that Boeing could not satisfy.<sup>375</sup> Contrary to Boeing's argument that subject imports have gained "commercial momentum" as a result of the Delta sale, Bombardier was unsuccessful at gaining any subsequent sales in the U.S. market. Although Bombardier has the ability and the incentive to secure additional orders, we have also found insufficient evidence on the record to conclude that additional orders for 100- to 150-seat LCA are imminent, or that any orders secured by Bombardier in the imminent future would be at Boeing's expense.<sup>376</sup> Because any firm that seeks to purchase 100- to 150-seat LCA in the imminent future will likely consider nonsubject aircraft, including some combination of used aircraft and aircraft from Airbus and Embraer, Boeing would not necessarily win an order from such a purchaser even in the absence of competition from Bombardier.<sup>377</sup>

We have also found that subject import prices are not likely to have a significant depressing or suppressing effect on domestic prices or to increase demand for further imports. Boeing lost no revenues through its sale of 737-700s to United because United subsequently converted the orders to larger LCA \*\*\*.<sup>378</sup> The evidence concerning whether Boeing's 737-700 competed with the CS100 in United's sales campaign is also mixed. Boeing also lost no sales to Delta because Delta's purchase of CS100s was for a specific need for 100- to 110-seat aircraft that Boeing could not satisfy.<sup>379</sup>

Moreover, the record as a whole shows that price transmission effects from prior sales are generally weak or nonexistent in the market for 100- to 150-seat LCA.<sup>380</sup> After the United and Delta sales, \*\*\*.<sup>381</sup> Given the evidence that Delta's discount on its order for CS100s reflected its assumption of risk and position as a marquee customer, U.S. purchasers are unlikely to expect a similar price on future purchases of CS100s.<sup>382</sup> Furthermore, the record does not establish that \*\*\* resulted from subject import competition, or that \*\*\*.<sup>383</sup> Nor is

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(...Continued)

Boeing's production of 737 family aircraft increased from \*\*\* units in 2014 to \*\*\* units in 2016, or by \*\*\* percent, and was \*\*\* units in January-September 2017, up from \*\*\* units in January-September 2016. CR/PR at Table C-3. Boeing's U.S. shipments of 737 family aircraft increased from \*\*\* units in 2014 to \*\*\* units in 2016, or by \*\*\* percent, and were \*\*\* units in January-September 2017, up from \*\*\* units in January-September 2016. *Id.* Boeing's operating income to net sales ratio for 737 family aircraft was \*\*\* percent in 2014, \*\*\* percent in 2015, \*\*\* percent in 2016, and \*\*\* percent in January-September 2017, compared to \*\*\* percent in January-September 2016. *Id.*

<sup>375</sup> Hearing Tr. at 196-97, 199 (May); CR at \*\*\*, V-33-34; PR at \*\*\*, V-11-12.

<sup>376</sup> See section V.C above.

<sup>377</sup> See sections V.B.1 and V.C.

<sup>378</sup> CR at III-30; PR at III-11; CR/PR at Table V-4.

<sup>379</sup> Hearing Tr. at 196-97, 199 (May); CR at \*\*\*, V-33-34; PR at \*\*\*, V-11-12.

<sup>380</sup> CR at V-22; PR at V-9; see also section V.F above.

<sup>381</sup> CR at V-30-31; PR at V-11; CR/PR at Tables V-3a, V-4.

<sup>382</sup> See section V.D above.

<sup>383</sup> See section V.D above.

there evidence of any imminent purchases of 100- to 150-seat LCA by firms that likely would result in sales by Boeing at significantly depressed or suppressed prices.<sup>384</sup>

Finally, we find that subject imports are unlikely to have significant negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product. Boeing had largely completed its development of the 737 MAX 7 by the end of the period of investigation, as evidenced by its \*\*\* lower research and development expenses on the program in January-September 2017 relative to January-September 2016.<sup>385</sup> The first 737 MAX 7 went into production in October 2017.<sup>386</sup>

Although Boeing claims that the 737 MAX 7 program is imperiled, with only \*\*\* orders outstanding and none received since 2013, the program's commercial performance largely reflects the up-gauging trend among U.S. airlines and Boeing's success at selling larger, more profitable single-aisle LCA.<sup>387</sup> Based on our finding that Bombardier is unlikely to secure additional orders for subject imports at Boeing's expense in the imminent future, we find that subject imports are not likely to further weaken the commercial momentum of the 737 MAX 7 program.

Based on the preceding considerations, we conclude that subject imports are not likely to have a significant adverse impact on the domestic industry in the imminent future. It is likely that any subject imports that enter in the imminent future would be the result of Bombardier's single U.S. sale during the period of investigation for which Boeing was not directly competitive. Bombardier has not made any additional sales in the United States. There is insufficient evidence for us to conclude that additional orders for 100- to 150-seat LCA are imminent, that Bombardier would secure these orders, or that any orders secured by Bombardier would come at Boeing's expense. We are mindful of the statutory requirement that a threat determination may not be made on the basis of mere conjecture or supposition, and thus do not find threat of material injury by reason of subject imports.

## **VI. Conclusion**

For the reasons stated above, we determine that an industry in the United States is not threatened with material injury by reason of imports of 100- to 150-seat LCA from Canada that are sold in the United States at less than fair value and that are subsidized by the GOC.

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<sup>384</sup> See section V.C above.

<sup>385</sup> CR/PR at Table VI-5. \*\*\*. CR at VI-14; PR at VI-5.

<sup>386</sup> CR at I-18; PR at I-13.

<sup>387</sup> Hearing Tr. at 66 (Anderson).

## PART I: INTRODUCTION

### BACKGROUND

These investigations result from petitions filed with the U.S. Department of Commerce (“Commerce”) and the U.S. International Trade Commission (“USITC” or “Commission”) by The Boeing Company (“Boeing”), Chicago, Illinois, on April 27, 2017, alleging that an industry in the United States is threatened with material injury by reason of subsidized and less-than-fair-value (“LTFV”) imports of 100- to 150-seat large civil aircraft (“100- to 150-seat LCA”)<sup>1</sup> from Canada. The following tabulation provides information relating to the background of these investigations.<sup>2 3</sup>

Effective date	Action
April 27, 2017	Petitions filed with Commerce and the Commission; institution of Commission investigations (82 FR 20634, May 3, 2017)
May 17, 2017	Commerce’s notices of initiation of countervailing duty investigation (82 FR 24292, May 26, 2017) and antidumping duty investigation (82 FR 24296, May 26, 2017)
June 15, 2017	Commission’s preliminary determination (82 FR 27524)
October 2, 2017	Commerce’s preliminary countervailing duty determination (82 FR 45807)
October 13, 2017	Commerce’s preliminary antidumping duty determination (82 FR 47697)
October 13, 2017	Scheduling of final phase of Commission investigation (82 FR 49850, October 27, 2017)
December 18, 2017	Commission’s hearing
December 27, 2017	Commerce’s final antidumping duty determination (82 FR 61252); Commerce’s final countervailing duty determination (82 FR 61255)
January 26, 2018	Commission’s vote
February 13, 2018	Commission’s determinations and views

### STATUTORY CRITERIA AND ORGANIZATION OF THE REPORT

#### Statutory criteria<sup>4</sup>

Section 771(7)(B) of the Tariff Act of 1930 (the “Act”) (19 U.S.C. § 1677(7)(B)) provides that in making its determinations of injury to an industry in the United States, the Commission--

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<sup>1</sup> See the section entitled “The Subject Merchandise” in *Part I* of this report for a complete description of the merchandise subject in this proceeding.

<sup>2</sup> Pertinent *Federal Register* notices are referenced in app. A, and may be found at the Commission’s website ([www.usitc.gov](http://www.usitc.gov)).

<sup>3</sup> A list of witnesses appearing at the Commission’s hearing is presented in app. B of the staff report.

<sup>4</sup> For information regarding the statutory criteria for threat of material injury, see *Part VII*.

*shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.*

Section 771(7)(C) of the Act (19 U.S.C. § 1677(7)(C)) further provides that--<sup>5</sup>

*In evaluating the volume of imports of merchandise, the Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States is significant.. . .In evaluating the effect of imports of such merchandise on prices, the Commission shall consider whether. . .(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.. . . In examining the impact required to be considered under subparagraph (B)(i)(III), the Commission shall evaluate (within the context of the business cycle and conditions of competition that are distinctive to the affected industry) all relevant economic factors which have a bearing on the state of the industry in the United States, including, but not limited to. . . (I) actual and potential decline in output, sales, market share, gross profits, operating profits, net profits, ability to service debt, productivity, return on investments, return on assets, and utilization of capacity, (II) factors affecting domestic prices, (III) actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, (IV) actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.*

In addition, Section 771(7)(J) of the Act (19 U.S.C. § 1677(7)(J)) provides that—<sup>6</sup>

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<sup>5</sup> Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

<sup>6</sup> Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

*(J) EFFECT OF PROFITABILITY.—The Commission may not determine that there is no material injury or threat of material injury to an industry in the United States merely because that industry is profitable or because the performance of that industry has recently improved.*

### **Organization of report**

*Part I* of this report presents information on the subject merchandise, subsidy and dumping margins, and domestic like product. *Part II* of this report presents information on conditions of competition and other relevant economic factors. *Part III* presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. *Parts IV* and *V* present the volume of subject imports and pricing of domestic and imported products, respectively. *Part VI* presents information on the financial experience of U.S. producers. *Part VII* presents the statutory requirements and information obtained for use in the Commission’s consideration of the question of threat of material injury as well as information regarding nonsubject countries.

### **MARKET SUMMARY**

100- to 150-seat LCA generally transport passengers, their baggage, and, at times, other cargo. They are used on short- to medium-range routes, including trans-continental service between the east and west coasts of the United States. These 100- to 150-seat LCA are able to service routes that are longer and subject to higher passenger traffic levels than those served by regional jets, as well as routes where there is insufficient demand to fill larger single aisle LCA adequately.<sup>7</sup> Boeing is the sole U.S. producer of 100- to 150-seat LCA, while Bombardier Inc. (“Bombardier”) is the sole producer of 100- to 150-seat LCA in Canada.<sup>8</sup> While no firm imported 100- to 150-seat LCA from Canada in 2016 (or at any time as of the date of this report), Delta Air Lines, Inc. (“Delta”) placed an order for purchase of seventy-five 100- to 150-seat LCA from Bombardier (CS100s), with the option to purchase up to an additional fifty CS100s, as well as the option to convert its order to CS300s \*\*\*.<sup>9 10</sup> The largest U.S. airlines by overall fleet size (including larger LCA) are American Airlines (“American”), Delta, JetBlue

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<sup>7</sup> Petition, pp. 35-36. 100- to 150-seat LCA are not used on long-haul routes, such as between Asia and the United States, which are served by twin-aisle LCA. *Ibid.*, p. 36.

<sup>8</sup> Airbus SAS (“Airbus”) also produces 100- to 150-seat LCA in facilities located in nonsubject countries Germany and China. Airbus Americas Inc.’s (“Airbus Americas”) produces other single aisle LCA in the United States.

<sup>9</sup> Hearing transcript, pp. 74-75 (Novick) and Delta’s posthearing brief, p. 9. \*\*\*. \*\*\*.

<sup>10</sup> \*\*\* Delta stated that it expects that Bombardier will produce the 100- to 150-seat LCA that Delta ordered at Airbus Americas’ facility in Mobile, Alabama, \*\*\*. Hearing transcript, pp. 200-201 (May) and \*\*\*. Nevertheless, a Delta official stated that “we do not have a current commercial right to refuse” delivery of CS100s from Canada \*\*\* “but we’ve made it clear what our desires are and it is an open negotiation.” Hearing transcript, p. 262 (May).

Airways Corporation (“JetBlue”), Southwest Airlines (“Southwest”), and United Airlines (“United”). These airlines account for the bulk of likely demand for 100- to 150-seat LCA in the U.S. market. The largest aircraft leasing/financing companies by overall fleet size are Air Lease Corporation (“Air Lease”); Bank of America Corporation (“BofA Leasing”) and GE Capital Aviation Services LLC (“GECAS”).

Apparent U.S. consumption of 100- to 150-seat LCA totaled \*\*\* (\$\*\*\*) in 2016. Currently, Boeing is the only producer of 100- to 150-seat LCA in the United States. Boeing’s U.S. shipments of 100- to 150-seat LCA totaled \*\*\* (\$\*\*\*) in 2016, and accounted for all apparent U.S. consumption by quantity and value. There were no U.S. imports/purchases of 100- to 150-seat LCA from subject sources in 2016, nor were there U.S. imports/purchases of 100- to 150-seat LCA from nonsubject sources in 2016.

### SUMMARY DATA AND DATA SOURCES

A summary of data collected in the investigations is presented in appendix C;<sup>11</sup> comments on the comparability of 100- to 150-seat LCA vs. other single aisle LCA are presented in appendix D; data concerning imports of 100- to 150-seat LCA, including parts, are presented in appendix E; and data concerning U.S. producers’ production skyline (i.e. planned production schedule) for all single aisle LCA are presented in appendix F. Except as noted, U.S. industry data are based on the questionnaire response of one firm, Boeing, which accounted for all U.S. production of 100- to 150-seat LCA during 2016.<sup>12 13</sup> U.S. imports and sales for importation are based on questionnaire responses of 13 firms that have purchased, ordered, accepted delivery of, received offers for sale for, and/or entered into a lease arrangement for 100- to 150-seat

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<sup>11</sup> Table C-1 includes only 100- to 150-seat LCA; Table C-2 includes 100- to 150-seat LCA and 737-800, MAX 8 and equivalent aircraft; and Table C-3 includes all of the foregoing and 737-900, MAX 9, MAX 10 and equivalent aircraft.

<sup>12</sup> Airbus Americas’ U.S. manufacturing facility in Mobile, Alabama began production in July 2015 and is equipped to build A320 and A321 models. “Airbus Begins Production of First U.S.-Built A320 in Mobile,” <http://www.airbus.com/company/americas/newsroom/newsroom-single/detail/airbus-begins-production-of-first-us-built-a320-in-mobile/.html>, May 8, 2017. A U.S. producers’ questionnaire was received from Airbus Americas \*\*\*. Airbus Americas \*\*\*. Airbus Americas’ U.S. producers’ questionnaire response, V-2a and V-2b.

<sup>13</sup> The C Series Aircraft Limited Partnership (“CSALP”) submitted a U.S. producers’ questionnaire response with data regarding planned production of 100- to 150-seat LCA in the United States. CSALP is a definitive investment agreement (signed in October 2017) between Bombardier and Airbus involving establishment of a C Series assembly line for U.S. customers at the currently-existing Airbus Americas’ plant in Mobile, Alabama. Airbus will have a majority (50.01 percent) stake in CSALP. Finalization of the agreement is pending regulatory approval \*\*\*. Press Release, *Airbus and Bombardier Announce C Series Partnership*, Retrieved November 24, 2017 at <http://www.airbus.com/newsroom/press-releases/en/2017/10/airbus-bombardier-cseries-agreement.html> (also see, *Part III* under “Production-related activities”); Bombardier’s postconference brief, p. 14.

LCA or certain other single aisle LCA<sup>14</sup> since January 1, 2014. These U.S. importer/purchasers are believed to have accounted for all imported 100- to 150-seat LCA and other single aisle LCA during 2016. Foreign industry data and related information are based on the questionnaire response of Bombardier, the producer of 100- to 150-seat LCA in Canada.<sup>15</sup>

In their comments on draft questionnaires, no party requested that the Commission collect data on imports of aircraft parts.<sup>16</sup> Accordingly, the Commission collected data for imports of fully assembled aircraft through its questionnaires. However, the Commission also requested and received supplemental data \*\*\* on the value of 100- to 150-seat LCA parts imported into the United States from Canada and all other sources. For more information on these data, see appendix E.

## PREVIOUS AND RELATED INVESTIGATIONS

On May 27, 1982, countervailing duty petitions were filed with Commerce and the Commission on behalf of Commuter Aircraft Corporation of Youngstown, Ohio alleging that certain commuter airplanes imported from France and Italy were being subsidized by the governments of France and Italy. In the preliminary phase of the proceeding, the Commission determined that there was no reasonable indication that an industry in the United States was materially injured or was threatened with material injury, or that the establishment of an industry in the United States was materially retarded by reason of certain commuter airplanes from France and Italy.<sup>17</sup>

On August 13, 1982, a countervailing duty petition was filed with Commerce and the Commission on behalf of Fairchild Swearingen Corporation of San Antonio, Texas alleging that certain commuter airplanes imported from Brazil were being subsidized by the government of Brazil. In the preliminary phase of the proceeding, the Commission again determined that there was no reasonable indication that an industry in the United States was materially injured or was

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<sup>14</sup> “Other single aisle LCA” include large civil aircraft with a single aisle that do not meet the definition of 100- to 150-seat LCA as defined on page 2 or regional civil aircraft as defined above (e.g., Boeing 737-800/737 MAX 8, 737-900/737 MAX 9, 737 MAX 10, and Airbus A320 and A321).

<sup>15</sup> Although a foreign producer questionnaire was issued to \*\*\*.

<sup>16</sup> Commerce’s scope includes aircraft that are “fully or partially assembled.” However, in its final determinations, Commerce did “not find it appropriate to make a scope or circumvention determination about whether activity conducted pursuant to the planned partnership, which has yet to be finalized, may render merchandise outside the scope of an order, should this investigation result in an order.” *Enforcement and Compliance Office of AD/CVD Operations, Issues and Decision Memorandum for the Final Determination in the Countervailing Duty Investigation of 100- to 150-Seat Large Civil Aircraft from Canada*, December 18, 2017, p. 87; *Enforcement and Compliance Office of AD/CVD Operations, Issues and Decision Memorandum for the Final Determination in the Antidumping Duty Investigation of 100- to 150-Seat Large Civil Aircraft from Canada*, December 18, 2017, p. 47.

<sup>17</sup> *Certain Commuter Airplanes from France and Italy: Investigation Nos. 701-TA-174 and 175 (Preliminary)*, USITC Publication 1269, July 1982, pp. 1-2.

threatened with material injury, or that the establishment of an industry in the United States was materially retarded by reason of imports of certain commuter airplanes from Brazil.<sup>18</sup>

The Commission has also conducted research studies on related aircraft at the request of the United States House of Representatives Committee on Ways and Means. The first study was published in November 1998 concerning the changing structure of the global LCA industry and market and its implication for the competitiveness of the U.S. industry.<sup>19</sup> In June 2001, the Commission published another study concerning the competitive assessment of the U.S. LCA aerostructures industry.<sup>20</sup> The Commission completed its third study in April 2012 concerning structures and factors affecting competitiveness in the business jet aircraft industry.<sup>21</sup>

## NATURE AND EXTENT OF SUBSIDIES AND SALES AT LTFV

### Subsidies

On December 27, 2017, Commerce published notice of its final determination of countervailing subsidies. Commerce calculated a final countervailing duty margin of 212.39 percent for 100- to 150-seat LCA from Canada from Bombardier as well as for all other companies.<sup>22</sup> Commerce determined the following programs to be countervailable:<sup>23</sup>

1. Equity Infusion by *Investissement Québec*
2. Launch aid by Canadian Federal Government
3. Launch aid by Québec Provincial Government
4. Launch aid by U.K. Government
5. Tax Incentives and Other Support Provided by the City of Mirabel
6. PR@M Tax Credit
7. Tax Credit from the Government of Quebec for the C Series
8. U.K. R&D Tax Credits
9. Technology Demonstration Program

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<sup>18</sup> *Certain Commuter Airplanes from Brazil: Investigation Nos. 701-TA-188 (Preliminary)*, USITC Publication 1291, September 1982, p. 1.

<sup>19</sup> *The Changing Structure of the Global Large Civil Aircraft Industry and Market: Implications for the Competitiveness of the U.S. Industry: Investigation No. 332-384*, USITC Publication 3143, November 1998.

<sup>20</sup> *Competitive Assessment of the U.S. Large Civil Aircraft Aerostructures Industry: Investigation No. 332-414*, USITC Publication 3433, June 2001.

<sup>21</sup> *Business Jet Aircraft Industry: Structure and Factors Affecting Competitiveness: Investigation No. 332-526*, USITC Publication 4314, April 2012.

<sup>22</sup> *100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Countervailing Duty Determination*, 82 FR 61252, December 27, 2017.

<sup>23</sup> *Enforcement and Compliance Office of AD/CVD Operations, Issues and Decision Memorandum for the Final Determination in the Countervailing Duty Investigation of 100- to 150-Seat Large Civil Aircraft from Canada*, December 18, 2017.



10. *Emploi-Québec*

11. Invest Northern Ireland Grant for the C Series - Selective Financial Assistance (SFA)

Commerce determined that the following programs did not confer a benefit from April 1, 2016 through March 31, 2017:<sup>24</sup>

1. Equity Infusion by Caisse de Dépôt et Placement du Québec (CDPQ)
2. Government Provision of Production Facilities and Land at Mirabel for Less Than Adequate Remuneration
3. Tax Credits from the Government of Canada for the C Series
4. Other Programs Conferring No Measurable Benefit During the POI

Commerce determined that the following programs were not used from April 1, 2016 through March 31, 2017:<sup>25</sup>

1. CDPQ Line of Credit
2. Innovation, Science, and Economic Development Canada Support for Aerospace R&D
3. Technology Partnerships Canada Program

Commerce determined the following programs not to be countervailable:<sup>26</sup>

1. Tax Credit for On-the-Job Training Period (CR 9)
2. Skills Growth
3. Apprenticeships
4. Resource Efficiency Grants
5. Innovate U.K. and ATI Grants

### **Sales at LTFV**

On December 27, 2017, Commerce published notice of its final determination of sales at LTFV. In its final determination, Commerce determined an antidumping duty margin of 79.82 percent for 100- to 150-seat LCA from Canada from Bombardier as well as for all other companies.<sup>27</sup>

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<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Ibid.

<sup>27</sup> *100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Determination of Sales at Less Than Fair Value*, 82 FR 61255, December 27, 2017.

## THE SUBJECT MERCHANDISE

### Commerce's scope

Commerce has defined the scope of these investigations as follows:<sup>28</sup>

{A}ircraft, regardless of seating configuration, that have a standard 100- to 150-seat two-class seating capacity and a minimum 2,900 nautical mile range, as these terms are defined below.

“Standard 100- to 150-seat two-class seating capacity” refers to the capacity to accommodate 100 to 150 passengers, when eight passenger seats are configured for a 36-inch pitch, and the remaining passenger seats are configured for a 32-inch pitch.

“Pitch” is the distance between a point on one seat and the same point on the seat in front of it.

“Standard 100- to 150-seat two-class seating capacity” does not delineate the number of seats actually in a subject aircraft or the actual seating configuration of a subject aircraft. Thus, the number of seats actually in a subject aircraft may be below 100 or exceed 150.

A “minimum 2,900 nautical mile range” means:

- (i) able to transport between 100 and 150 passengers and their luggage on routes equal to or longer than 2,900 nautical miles; or
- (ii) covered by a U.S. Federal Aviation Administration (“FAA”) type certificate or supplemental type certificate that also covers other aircraft with a minimum 2,900 nautical mile range.

The scope includes all aircraft covered by the description above, regardless of whether they enter the United States fully or partially assembled, and regardless of whether, at the time of entry into the United States, they are approved for use by the FAA.

The merchandise covered by this investigation is currently classifiable under Harmonized Tariff Schedule of the United States (“HTSUS”) subheading 8802.40.0040. The merchandise may alternatively be classifiable under HTSUS subheading

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<sup>28</sup> *100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Countervailing Duty Determination*, 82 FR 61252, December 27, 2017; *100- to 150-Seat Large Civil Aircraft from Canada: Final Affirmative Determination of Sales at Less Than Fair Value*, 82 FR 61255, December 27, 2017.

8802.40.0090. Although these HTSUS subheadings are provided for convenience and customs purposes, the written description of the scope of the investigation is dispositive.

### **Tariff treatment**

Based upon the scope set forth by Commerce, information available to the Commission indicates that the merchandise subject to these investigations is classified in HTS subheading 8802.40.00 (statistical reporting number 8802.40.0040, covering new passenger transport airplanes, or 8802.40.0090, covering such transports if used or rebuilt, all of which are of an unladen weight exceeding 15,000 kg).<sup>29</sup> The Column 1-General rate of duty is “Free.”

## **THE PRODUCT**

### **Description and applications**

100- to 150-seat large civil aircraft, for the purposes of this proceeding, are defined as aircraft having a standard two-class seating capacity between 100 and 150 seats and a minimum range of 2,900 nautical miles.<sup>30</sup> Standard seating capacity refers to a typical, two-class arrangement used on commercial airline routes where the first class comprises eight passenger seats with a 36-inch pitch and the second class comprises the remaining seats with a 32-inch pitch.<sup>31</sup> Aircraft with the capacity for 100- to 150-seats as described above, but currently configured in a non-compliant manner are still considered to be within the scope of these investigations.<sup>32</sup> For example, an aircraft designed for a single, business class containing fewer than 100 seats would still be classified as being within the scope if a two-class seating arrangement for this aircraft would accommodate 100 to 150 seats.

Subject aircraft must be capable of transporting 100 to 150 passengers with accompanying luggage on routes greater than or equal to 2,900 nautical miles. Aircraft with ranges below 2,900 nautical miles but still covered by a relevant FAA-type certificate or supplemental certificate are considered to be within the scope of these investigations. This provision allows for the inclusion of aircraft eligible for certifications that have been

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<sup>29</sup> Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

<sup>30</sup> There is no official definition for large civil aircraft that incorporates a seating requirement. The Commission has previously followed the traditional definition of large civil aircraft of having more than 100 seats and weighing over 33,000 pounds. *Competitive Assessment of the U.S. Large Civil Aircraft Aerostructures Industry: Investigation No. 332-414*, USITC Publication 3433, June 2001.

<sup>31</sup> Pitch is the distance between a singular point on one seat and the same point on the seat in an adjacent row. *100- to 150-Seat Large Civil Aircraft from Canada: Initiation of Less-Than-Fair-Value Investigation*, 82 FR 24296, May 26, 2017.

<sup>32</sup> *Ibid.*

subsequently modified for sub-2,900 nautical mile ranges but would otherwise be capable of traveling a greater distance.<sup>33</sup>

100- to 150-seat LCA are designed primarily for use in commercial passenger transport as opposed to military, private business, or freight purposes. In contrast to commercial aircraft, business jets are primarily designed for fewer passengers and longer distances. For example, the Boeing BBJ MAX 7, the business variant of the Boeing MAX 7, supports eight passengers and has a range of 7,000 nautical miles because of the addition of auxiliary fuel tanks.<sup>34</sup> In comparison, the Boeing MAX 7 is designed for a two-class seating capacity of 138 passengers and a maximum range of 3,850 nautical miles.<sup>35</sup> The subject aircraft are used by airlines on routes dependent on higher passenger demand than smaller, regional jets would be capable of serving as well as routes where there is insufficient demand for higher-capacity civil aircraft.<sup>36</sup> Given a minimum 2,900 nautical mile range, 100- to 150-seat LCA are suited for short- and medium-ranged routes including transcontinental U.S. travel. Transoceanic routes are greater in distance and are instead serviced by larger, two-aisled civil aircraft.<sup>37</sup> The 737 Next Generation and 737 MAX families of aircraft are the only single aisle LCA that Boeing currently produces. The current 737 Next Generation aircraft include the 737-700, 737-800, and 737-900. The current 737 MAX aircraft include the 737 MAX 7, 737 MAX 8, 737 MAX 9, and 737 MAX 10. The other LCA that Boeing produces, the 747, 767, 777, and 787 families of aircraft, all have dual aisles and seat counts ranging from 242 to 475.<sup>38</sup>

Airlines are the primary purchasers of 100- to 150-seat LCA and negotiate binding contracts with producers, which specify contract details including model types, quantity of aircraft, prices, delivery dates, and payment terms regarding future deliveries of the aircraft.<sup>39</sup> Purchasing decisions usually occur after a lengthy sales campaign and multiple competing bids from several producers.<sup>40</sup> These arrangements typically stipulate an initial payment and periodic pre-delivery payments that ensure a revenue stream to producers while they are manufacturing the aircraft. Upon delivery of the aircraft, a final payment is made and the aircraft is then transferred to the purchaser.<sup>41</sup> Frequently, the time between an order and delivery of domestically produced, 100- to 150-seat LCA is \*\*\*.<sup>42</sup>

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<sup>33</sup> Ibid.

<sup>34</sup> Boeing, "Introducing the BBJ MAX 7, BBJ MAX 7 Specs," <http://www.boeing.com/commercial/bbj/#/aircraft/bbj-737max/characteristics/bbj-max-7/> (accessed on November 20, 2017)

<sup>35</sup> Petition, p. 36.

<sup>36</sup> *100- to 150-Seat Large Civil Aircraft from Canada: Initiation of Less-Than-Fair-Value Investigation*, 82 FR 24296, May 26, 2017.

<sup>37</sup> Petition, p. 36.

<sup>38</sup> Boeing, "777 Design Highlights," <http://www.boeing.com/commercial/777/#/design-highlights/unmatched-capabilities/family-flexibility/capacity/>.

<sup>39</sup> Petition, p. 47.

<sup>40</sup> Ibid., p. 49.

<sup>41</sup> Ibid., p. 48.

<sup>42</sup> Boeing's postconference brief, p. 19.

As defined, there are two domestically produced aircraft meeting the definition of 100- to 150-seat LCA: the Boeing 737-700 and the 737 MAX 7.<sup>43</sup> The Boeing 737-700 is capable of transporting 126 passengers in a typical two-class seating arrangement at a maximum range of 3,365 nautical miles. The Boeing 737 MAX 7 is capable of transporting 138 passengers in a typical, two-class seating arrangement a maximum range of 3,850 nautical miles.<sup>44</sup> Boeing claims that increasing the seating capacity for the Boeing 737 Max 7 \*\*\* to compete against the C Series aircraft and the A319neo. Boeing also cites \*\*\* as a reason for increasing the Boeing 737 MAX 7's seating capacity.<sup>45</sup> The additional range and fuel efficiency of the Boeing 737 MAX 7 is possible due to its use of the larger Leap-1B engine, as opposed to the CFM56-7 engine normally used by the Boeing 737-700.<sup>46</sup> Other variants of the Boeing 737-700 include the Boeing 737-700C and the Boeing 737-700W. The Boeing 737-700C is a derivative of the Boeing 737-700, which is capable of converting between an all-passenger setup and an all-cargo setup. The Boeing 737-700C has reinforced wings as well as a main cargo door on the fuselage.<sup>47</sup> The Boeing 737-700W is the typical Boeing 737-700 design with added winglets. Winglets are carbon-fiber composite extensions which are retrofitted onto the wings of a Boeing 737-700 to increase fuel efficiency.<sup>48</sup>

In addition to the 737-700 and 737 MAX 7, Boeing currently offers larger 737 models including the 737-800, 737-900, MAX 8, MAX 9, and MAX 10. Every Boeing 737 model is single aisle and meets the range requirement; however, only the 737-700 and MAX 7 meet the seating capacity requirement specified by Commerce's scope. The Boeing 737-800 and 737-900 are the larger 737 next-generation models currently produced and have 162 and 178 two-class

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<sup>43</sup> The Boeing 737 MAX 7 is the planned successor to the Boeing 737-700 and is expected to enter into service in 2019. Petition, p. 26. Two previously manufactured aircraft, the Boeing 717 and the Boeing 737-600 models, were capable of transporting 106 and 110 passengers respectively in a typical, two-class seating arrangement at a range of 2,055 nautical miles for the Boeing 717 and 3,235 nautical miles for the Boeing 737-600. Boeing produced 156 Boeing 717 and 69 Boeing 737-600 units between 1998 and 2006 after which production was ceased. Boeing, "The 717 is a Full-Size Airplane for the Regional Market," Boeing Presentation, 2005, [http://www.boeing.com/resources/boeingdotcom/company/about\\_bca/startup/pdf/historical/717\\_passenger.pdf](http://www.boeing.com/resources/boeingdotcom/company/about_bca/startup/pdf/historical/717_passenger.pdf); Boeing, "Historical Snapshot," <http://www.boeing.com/history/products/717-md-95.page>; Boeing, "The Boeing Next-Generation 737 Family – Productive, Progressive, Flexible, Familiar," Backgrounder, February, 2015, [http://www.boeing.com/resources/boeingdotcom/media/paris2015/pdf/Backgrounders/bkg\\_NG\\_737\\_family.pdf](http://www.boeing.com/resources/boeingdotcom/media/paris2015/pdf/Backgrounders/bkg_NG_737_family.pdf).

<sup>44</sup> Petition, p. 36.

<sup>45</sup> Boeing's postconference brief, p. 80.

<sup>46</sup> Boeing, "LEAP-1B: 737 MAX vs Next-Generation 737," <http://www.boeing.com/commercial/737max/by-design/#/leap-1b-737ng-737max>.

<sup>47</sup> Boeing, "FAA Certifies Boeing Next-Generation 737-700 Convertible," Boeing News Release, <http://boeing.mediaroom.com/2000-09-07-FAA-Certifies-Boeing-Next-Generation-737-700-Convertible>.

<sup>48</sup> Boeing, "Blended Winglets Improve Performance," Aero, Qtr 3, 2009, [http://www.boeing.com/commercial/aeromagazine/articles/qtr\\_03\\_09/article\\_03\\_1.html](http://www.boeing.com/commercial/aeromagazine/articles/qtr_03_09/article_03_1.html).

seating capacities respectively.<sup>49</sup> The Boeing 737 MAX 8, 737 MAX 9, and 737 MAX 10 are designed to replace their corresponding next-generation models and have two-class seating capacities of 178, 193, and 204, respectively.<sup>50</sup>

Globally, there are six aircraft models that meet the definition of 100- to 150-seat LCA for this proceeding. The Boeing 737-700 and 737 MAX 7 models are produced in the United States, the Bombardier CS100 and CS300 models are produced in Canada, and the Airbus A319ceo and A319neo models are produced in the European Union and China.<sup>51</sup> Table I-1 compares the physical similarities between the six aircraft models.

**Table I-1**  
**100- to 150-seat LCA: Design characteristics of 100- to 150-seat LCA**

Model	Wingspan (m)	Length (m)	Height (m)	Seating (two-class)	Range (nm)	MTOW (tons)	Fuel Efficiency (L/100km per seat)
Boeing 737-700	35.8	33.6	12.5	126	3,365	77.3	2.79
Boeing 737 MAX 7	35.9	35.6	12.3	138	3,850	88.5	1.94
Bombardier CS100	35.1	35.0	11.5	108	3,100	67.0	2.28
Bombardier CS300	35.1	38.7	11.5	130	3,300	74.5	1.85
Airbus A319ceo	35.8	33.8	11.8	124	3,750	70.6	2.95
Airbus A319neo	35.8	33.8	11.8	140	3,750	70.6	1.93

Note.--MTOW is maximum take-off weight. Fuel efficiency assumes a 1,000nm trip with the following passenger loads per model: 737-700 (126), 737 MAX 7 (140), CS100 (125), CS300 (135), A319ceo (124), A319new (136).

Source: Petition, p. 36; Boeing, "Next-Generation 737 Design Highlights: 737-700," <http://www.boeing.com/commercial/737ng/#/design-highlights/characteristics/737-700/>; Boeing, "Excellent Range Flexibility to Access New Markets – London," <http://www.boeing.com/commercial/737ng/#/design-highlights/proven-performance/performance/range-london/>; Boeing, "737 Max 7 Characteristics," <http://www.boeing.com/commercial/737max/by-design/#/737max-7-characteristics>; Boeing, "The 737 MAX offers Greatest Range Capability," <http://www.boeing.com/commercial/737max/by-design/#/range-charts>; Bombardier, "C Series: CS100," [http://commercialaircraft.bombardier.com/content/dam/Websites/bca/literature/cseries/C%20Series\\_CS100\\_Factsheet201607\\_EN.pdf](http://commercialaircraft.bombardier.com/content/dam/Websites/bca/literature/cseries/C%20Series_CS100_Factsheet201607_EN.pdf); Bombardier, "C Series: CS300," [http://commercialaircraft.bombardier.com/content/dam/Websites/bca/literature/cseries/C%20Series\\_CS300\\_Factsheet\\_201607\\_EN.pdf](http://commercialaircraft.bombardier.com/content/dam/Websites/bca/literature/cseries/C%20Series_CS300_Factsheet_201607_EN.pdf); Airbus, "A319ceo Key Figures," <http://www.airbus.com/aircraft/passenger-aircraft/a320-family/a319ceo.html#details>; Airbus, "A319new Key Figures," <http://www.airbus.com/aircraft/passenger-aircraft/a320-family/a319neo.html#details>; Wikipedia, "Fuel Economy in Aircraft," [https://en.wikipedia.org/wiki/Fuel\\_economy\\_in\\_aircraft](https://en.wikipedia.org/wiki/Fuel_economy_in_aircraft)

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<sup>49</sup> Boeing, "Boeing Next-Generation 737 Technical Specs," <http://www.boeing.com/commercial/737ng/#/technical-specs> (accessed on November 20, 2017)

<sup>50</sup> Boeing, "Introducing the 737 MAX 10 Technical Specs," <http://www.boeing.com/commercial/737max/#/features> (accessed on November 20, 2017)

<sup>51</sup> Petition, p. 32. The term "neo" stands for new engine option, and the term "ceo" stands for current engine option. Petition, p. 30.

## Manufacturing processes

Domestic production of 100- to 150-seat LCA occurs primarily at Boeing's production facility in Renton, Washington, where wing manufacturing, final assembly, and pre-flight preparation of the Boeing 737-700 occur. When the Boeing 737 MAX 7 fully enters production, it will also occur at Boeing's Renton facility and follow a similar production process to that of the Boeing 737-700, using much of the same equipment.<sup>52</sup> Boeing began producing the first 737 MAX 7 wing spar in its Renton facility in October 2017.<sup>53</sup> The Renton facility operates \*\*\* production lines, \*\*\* of which are capable of producing \*\*\* aircraft per month while \*\*\* is capable of producing \*\*\* aircraft per month. Boeing anticipates that the Boeing MAX 7 will be initially produced \*\*\*.<sup>54</sup> The fuselages of the aircraft are produced in Wichita, Kansas by Spirit Aerosystems before being shipped to the Renton facility for assembly.<sup>55</sup> Aft tail sections, including vertical fins and horizontal stabilizers originate from China for Next Generation 737 aircraft. China also supplies the rudders for Boeing 737 MAX aircraft.<sup>56</sup> Additional fabrication and production facilities involved with the manufacturing processes of the Boeing 737-700 and Boeing 737 MAX 7 are located in Ladson, South Carolina; Auburn, Washington; Salt Lake City, Utah; Gresham, Washington; Helena, Montana; Everett, Washington; Puyallup, Washington; and Tukwila, Washington. Approximately \*\*\* percent of Boeing 737-700 and MAX 7 airframes are sourced from within the United States.<sup>57</sup>

Airbus operates a final aircraft assembly facility in Mobile, Alabama in which it assembles the A320 family of aircraft. Aircraft components are produced in other Airbus facilities around the world before being shipped to Mobile to undergo final assembly.<sup>58</sup> The facility began assembling the larger, A321 model in 2015 and delivered its first A320 in 2017.<sup>59</sup>

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<sup>52</sup> Petition, p. 41.

<sup>53</sup> A wing spar is the main structural component of the wing. Merida, Elizabeth. "Production on 737 MAX 7, the Newest MAX Airplane, Gets Underway," Boeing, October 5, 2017. <http://www.boeing.com/company/about-bca/washington/737-max7-production-10-05-17.page>.

<sup>54</sup> Commission plant tour with Boeing, November 2-3, 2017, Renton Washington.

<sup>55</sup> Conference transcript, p. 60 (Conner).

<sup>56</sup> Boeing, "Boeing in China," November 2017, p. 2.

[http://www.boeing.com/resources/boeingdotcom/company/key\\_orgs/boeing-international/pdf/chinabackgrounder.pdf](http://www.boeing.com/resources/boeingdotcom/company/key_orgs/boeing-international/pdf/chinabackgrounder.pdf).

<sup>57</sup> Commission plant tour with Boeing, November 2-3, 2017, Renton, Washington.

<sup>58</sup> In reference to supplying Airbus' Mobile, Alabama plant with parts: "The major component assemblies (MCAs) consist of the wings produced in the UK, the rear fuselage section produced in Germany including the tail cone (produced in Spain), and the forward fuselage section, including the cockpit produced in France, all of which contain parts from all over the world. The horizontal (from Spain) and vertical (from Germany) stabilizers are also on board." Boeing preconference brief, exhibit 35. <https://www.nytimes.com/2017/05/03/magazine/a-look-inside-airbuss-epic-assembly-line.html>

<sup>59</sup> Tucker, Kristi. "Airbus Delivers First U.S. Produced A320 to Spirit Airlines," Airbus, August 28, 2017. <http://www.airbus.com/newsroom/press-releases/en/2017/08/airbus-delivers-first-u-s--produced-a320-to-spirit-airlines.html>

Based on projected delivery data, the facility will begin assembling A319 aircraft in 2019.<sup>60</sup> However, according to Airbus CEO Tom Enders, Airbus will prioritize the Bombardier C series over the A319 if the deal for Airbus to receive 50.01 percent of CSALP is completed. Also upon completion of the deal, Airbus is planning on expanding assembly in its Mobile facility to include C Series aircraft – which could delay any A319 production plans at the facility.<sup>61</sup> Bombardier also sources C Series aircraft parts from multiple countries. Bombardier notes \*\*\*.<sup>62</sup>

Aircraft manufacturing is a complex process involving many parts, suppliers, and facilities. Production rates, including supply chain requirements, are typically planned two or more years in advance due to the complicated nature of producing aircraft.<sup>63</sup> In addition to the length of time required in producing aircraft, the expense involved with design and development, as well as the capital intensive nature of the production equipment, highlight the high costs associated with aircraft manufacturing.<sup>64</sup> While economies of scale can be achieved through producing multiple aircraft models at the same facility with the same employees, there are still unique production tools required in the assembly of each individual model variant, which further adds to the cost and complexity of production.<sup>65</sup> Additionally, \*\*\*.<sup>66</sup>

Boeing \*\*\*. 100- to 150-seat LCA are produced \*\*\*.<sup>67</sup> Switching between aircraft models during manufacturing, even within the same family of aircraft, may disrupt and cause inefficiencies within the production system.<sup>68</sup> Manufacturing differences between different LCA models produced on the shared production lines include modifications to the fuselage, wiring lengths, and landing gear requirements, which have ramifications throughout the entire supply chain.<sup>69</sup>

All modern aircraft, including 100- to 150-seat LCA, consist of four main components: an airframe, engines, electronic and mechanical systems, and the interior.<sup>70</sup> First, an airframe encompasses the physical structure of an aircraft and includes the fuselage (main body of the aircraft), the wings, and the tail (the aft-most section of the aircraft, including all fins and stabilizers). Aluminum, aluminum alloys, and carbon fiber reinforced plastic composite are the

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<sup>60</sup> Petition, p. 45.

<sup>61</sup> Katz, Benjamin. “Airbus Pledges to Put C Series Ahead of A319 in Sales Push,” Bloomberg, October 18, 2017. <https://www.bloomberg.com/news/articles/2017-10-18/airbus-pledges-to-put-c-series-ahead-of-own-a319-in-sales-push>

<sup>62</sup> Bombardier’s posthearing brief, “Responses to Commission Questions,” p. 32; Bombardier’s response to Commission’s January 4, 2018 question regarding imported parts (EDIS document 633199).

<sup>63</sup> Conference transcript, p. 28 (Conner).

<sup>64</sup> Ibid., p. 36 (Nickelsburg).

<sup>65</sup> Ibid., p. 45, 62 (Anderson, Conner); Boeing’s postconference brief, p. 13.

<sup>66</sup> Commission plant tour with Boeing, November 2-3, 2017, Renton Washington.

<sup>67</sup> Commission plant tour with Boeing, November 2-3, 2017, Renton Washington.

<sup>68</sup> Conference transcript, p. 61 (Conner).

<sup>69</sup> Ibid., p. 62 (Conner).

<sup>70</sup> Petition, p. 35.



main materials used in the construction of airframes.<sup>71</sup> Second, 100- to 150-seat aircraft use two turbofan engines to power the taxiing, take-off, and flight of the aircraft. All six 100- to 150-seat aircraft models in this proceeding have one engine installed beneath each of the wings.<sup>72</sup> Third, aircraft systems include all electronic and mechanical systems used for “flight controls; communications; navigation; weather; collision-avoidance; aircraft health monitoring; fuel; in-flight entertainment; and the environmental control system that regulates cabin air supply, temperature, and pressurization.”<sup>73</sup> Lastly, an aircraft’s interior includes all surface structures, seating, restrooms, and other passenger and crew accommodations. The interior of an aircraft also includes all storage and cargo hold areas.<sup>74</sup>

### DOMESTIC LIKE PRODUCT ISSUES

In the preliminary phase of these investigations, the petitioner proposed that the Commission define the domestic like product as all domestically produced 100- to 150-seat LCA, currently produced or marketed, that satisfy the criteria in the scope description.<sup>75</sup> Respondents countered that the “domestic like product should be the 737 family of aircraft, which represent a continuum of sizes, ranges, operating costs, and other features,” claiming that “there is no clear dividing line at 150 seats or elsewhere.”<sup>76</sup> They also argued that the Commission should define the domestic like product as all single aisle LCA with the ability to hold at least 100 seats.<sup>77</sup> In its preliminary determinations, the Commission defined the domestic like product to be coextensive with in-scope LCA, but noted its intention to

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<sup>71</sup> Ibid.

<sup>72</sup> Ibid.

<sup>73</sup> Ibid.

<sup>74</sup> Ibid.

<sup>75</sup> Ibid., p. 36. According to Boeing, only two such aircraft models currently exist in the United States, which are the Boeing 737-700 and its successor, the 737 MAX 7, which Boeing actively markets and is scheduled to enter into service in 2019. These models are designed to accommodate 126 to 138 passengers, respectively, in a standard two-class cabin configuration. Carrying full passenger loads, the maximum ranges for each model are 3,365 and 3,850 nautical miles, respectively. Boeing contends that there are clear dividing lines between 100- to 150-seat LCA from other single aisle LCA. Ibid; conference transcript, p. 47 (Anderson); Boeing’s postconference brief, p. 5.

<sup>76</sup> Conference transcript, p. 15 (Lichtenbaum); Delta’s postconference brief, pp. 8-9, 14; Bombardier’s postconference brief, p. 3.

<sup>77</sup> Conference transcript, p. 184 (Aranoff); Bombardier’s postconference brief, p. 4. Petitioner’s proposed like product definition would include only Boeing’s 737-700 and MAX 7 aircraft, whereas respondents’ proposed like product definition would include the aforementioned aircraft, plus Boeing’s 737-800, MAX 8, 737-900, MAX 9, and MAX 10 aircraft, as well as Airbus Americas’ A320ceo, A320neo, A321ceo, and A321neo aircraft.

investigate further the appropriate definition of the domestic like product in any final phase of the investigations.<sup>78</sup>

In the final phase of these investigations, the petitioner argues that the Commission should continue to define the domestic like product as it did in its preliminary determinations, while respondents continue to argue that the domestic like product is a continuum consisting of all single aisle LCA with the ability to hold at least 100 seats.<sup>79</sup>

In the final phase of these investigations, staff collected data from U.S. producers and importer/purchasers regarding the comparability of Boeing's 100- to 150-seat LCA to other single aisle LCA (e.g., other Boeing 737 models). Airbus Americas reported that it \*\*\* with the Boeing 737 model aircraft; however, its parent company, Airbus, which plans to have a controlling stake in CSALP, did respond to the Commission's U.S. producers' questionnaire regarding comparability of these aircraft based on CSALP's anticipated U.S. operations.<sup>80</sup>

The Commission's decision regarding the appropriate domestic product(s) that are "like" the subject imported product is based on a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) common manufacturing facilities, production processes, and production employees; (4) channels of distribution; (5) customer and producer perceptions; and (6) price. Information regarding these factors is discussed below.

Table I-2 presents a summary of Boeing, CSALP, and U.S. importer/purchasers' comparisons of 100- to 150-seat LCA (i.e., Boeing's 737 MAX 7 or 737-700) to Boeing's other 737 models (all of which fall under the "other single aisle LCA" category), by factor. The majority of U.S. importer/purchasers indicated that manufacturing facilities, channels of distribution, and market perceptions of 100- to 150-seat LCA were fully comparable to all other single aisle LCA. The majority of U.S. importer/purchasers viewed the physical characteristics and uses and interchangeability of 100- to 150-seat LCA as somewhat comparable to other single aisle LCA. Boeing reported that channels of distribution are \*\*\* comparable; interchangeability and physical characteristics are \*\*\* comparable; and price and customer and producer perceptions are \*\*\* comparable with respect to comparisons of 100- to 150-seat LCA to all other single aisle LCA.

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<sup>78</sup> *100- to 150-Seat Large Civil Aircraft from Canada: Investigation Nos. 701-TA-578 and 731-TA-1368 (Preliminary)*, USITC Publication 4702, June 2017, p.13.

<sup>79</sup> Boeing's prehearing brief, p. 20; Bombardier's prehearing brief, p. 16; and Delta's prehearing brief, p. 10.

<sup>80</sup> Narrative descriptions from Boeing, CSALP, and U.S. importer/purchasers concerning the six factors considered for the domestic like product analysis are presented in app. D.

**Table I-2**

**100- to 150-seat LCA: Ratings of the comparability of 100- to 150-seat LCA to all other single aisle LCA by Boeing, U.S. importer/purchasers, and CSALP**

Product pair / factor	U.S. producer Boeing				U.S. importer / purchasers				CSALP (Bombardier)			
	Fully	Mostly	Somewhat	Not at all	Fully	Mostly	Somewhat	Not at all	Fully	Mostly	Somewhat	Not at all
	Number of firms (count)				Number of firms (count)				Number of firms (count)			
<b>100- to 150-seat LCA vs. 737-800 / MAX 8.-</b> Physical characteristics and uses	***	***	***	***	---	4	5	---	***	***	***	***
Interchangeability	***	***	***	***	---	2	7	---	***	***	***	***
Manufacturing facilities, processes, and employees	***	***	***	***	6	1	---	---	***	***	***	***
Channels of distribution	***	***	***	***	8	1	---	---	***	***	***	***
Customer and producer perceptions	***	***	***	***	4	1	2	1	***	***	***	***
Price	***	***	***	***	---	---	4	5	***	***	***	***
<b>100- to 150-seat LCA vs. 737-900 / MAX 9.-</b> Physical characteristics and uses	***	***	***	***	---	3	5	1	***	***	***	***
Interchangeability	***	***	***	***	---	1	8	---	***	***	***	***
Manufacturing facilities, processes, and employees	***	***	***	***	6	1	---	---	***	***	***	***
Channels of distribution	***	***	***	***	8	1	---	---	***	***	***	***
Customer and producer perceptions	***	***	***	***	3	1	3	1	***	***	***	***
Price	***	***	***	***	---	---	4	5	***	***	***	***
<b>100- to 150-seat LCA vs. MAX 10.--</b> Physical characteristics and uses	***	***	***	***	---	3	3	1	***	***	***	***
Interchangeability	***	***	***	***	---	1	5	1	***	***	***	***
Manufacturing facilities, processes, and employees	***	***	***	***	6	1	---	---	***	***	***	***
Channels of distribution	***	***	***	***	8	1	---	---	***	***	***	***
Customer and producer perceptions	***	***	***	***	3	1	2	2	***	***	***	***
Price	***	***	***	***	---	---	2	5	***	***	***	***

Note.-- CSLAP, the proposed joint venture between Bombardier and Airbus, completed a U.S. producers' questionnaire based on its plans to assemble 100- to 150-seat LCA at Airbus Americas' facility in Alabama, but has yet to begin operations.

Source: Compiled from data submitted in response to Commission questionnaires.

Table I-3 presents a summary of Boeing, CASLP, and U.S. importer/purchasers' comparisons among Boeing's other single aisle LCA (i.e., 737 MAX 8, MAX 9, and MAX 10 or previous generation equivalents).

The majority of U.S. importer/purchasers reported that manufacturing facilities, channels of distribution, and market perceptions of were fully comparable among other single aisle LCA. The majority of U.S. importer/purchasers viewed the physical characteristics and uses and interchangeability of other single aisle LCA as somewhat comparable to the other single aisle LCA. Price was the only category in which most U.S. importer/purchasers found the other single aisle LCA to be not at all comparable to each other. Boeing reported that, while channels of distribution are \*\*\* comparable, customer and producer and prices are \*\*\* comparable among the other single aisle LCA.

**Table I-3**

**100- to 150-seat LCA: Ratings of the comparability of other single aisle LCA to other single aisle LCA by Boeing, U.S. importer/purchasers, and CSALP**

Product pair / factor	U.S. producer Boeing				U.S. importer / purchasers				CSALP (Bombardier)			
	Fully	Mostly	Somewhat	Not at all	Fully	Mostly	Somewhat	Not at all	Fully	Mostly	Somewhat	Not at all
	Number of firms (count)				Number of firms (count)				Number of firms (count)			
<b>737-800 / MAX 8 vs. 737-900 / MAX 9.--</b> Physical characteristics and uses	***	***	***	***	---	3	6	---	***	***	***	***
Interchangeability	***	***	***	***	---	2	7	---	***	***	***	***
Manufacturing facilities, processes, and employees	***	***	***	***	6	1	---	---	***	***	***	***
Channels of distribution	***	***	***	***	8	1	---	---	***	***	***	***
Customer and producer perceptions	***	***	***	***	3	1	3	1	***	***	***	***
Price	***	***	***	***	---	---	4	5	***	***	***	***
<b>737-800 / MAX 8 vs. MAX 10.--</b> Physical characteristics and uses	***	***	***	***	---	3	3	1	***	***	***	***
Interchangeability	***	***	***	***	---	1	6	---	***	***	***	***
Manufacturing facilities, processes, and employees	***	***	***	***	6	1	---	---	***	***	***	***
Channels of distribution	***	***	***	***	8	1	---	---	***	***	***	***
Customer and producer perceptions	***	***	***	***	3	1	2	2	***	***	***	***
Price	***	***	***	***	---	---	2	5	***	***	***	***
<b>737-900 / MAX 9 vs. MAX 10.--</b> Physical characteristics and uses	***	***	***	***	---	4	3	---	***	***	***	***
Interchangeability	***	***	***	***	---	2	5	---	***	***	***	***
Manufacturing facilities, processes, and employees	***	***	***	***	6	1	---	---	***	***	***	***
Channels of distribution	***	***	***	***	8	1	---	---	***	***	***	***
Customer and producer perceptions	***	***	***	***	3	1	3	1	***	***	***	***
Price	***	***	***	***	---	---	2	5	***	***	***	***

Note.-- CSLAP, the proposed joint venture between Bombardier and Airbus, completed a U.S. producers' questionnaire based on its plans to assemble 100- to 150-seat LCA at Airbus Americas' facility in Alabama, but has yet to begin operations.

Source: Compiled from data submitted in response to Commission questionnaires.

## Physical characteristics and uses

Boeing reported in its questionnaire responses that \*\*\* and CSALP \*\*\*. However, Boeing reported that 100- to 150-seat LCA have a \*\*\*. In addition, 100- to 150-seat LCA generally have a greater nautical mile range than other single-aisle LCA and tend to fly newly created or less dense flight routes. Boeing further noted that differences in seating capacity and ranges affect how the different types of commercial aircraft are used with respect to routes in addition to airport locations and conditions.<sup>81</sup>

American indicated in its questionnaires responses that the 737 family has a \*\*\*. Delta reported that it operates \*\*\*. Respondents contend that the entire 737 family shares similar characteristics and uses. They further contend that a dividing line of 150 seats and a minimum range of 2,900 nautical miles is not significant since the same aircraft can be configured with either more or fewer than 150 seats.<sup>82</sup>

## Interchangeability

Boeing explained that, while 100- to 150-seat LCA can \*\*\*. Boeing also noted that other single-aisle LCA cannot serve certain airports at certain times due to their runway size, elevation levels, as well as temperature and humidity levels in surrounding areas. Boeing further explained that airlines plan their fleets in order to optimize the profitability of routes flown, which usually results in a combination of 100- to 150-seat LCA and other single-aisle LCA. Therefore, the different segments of the LCA market play a distinct role in matching demand. These specific profit maximization goals of airlines are ultimately the reason why aircraft with these specific characteristics exist.<sup>83</sup>

United reported that \*\*\*, other importer/purchasers (Air Lease, American, BBAM, and Southwest) reported that \*\*\*.

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<sup>81</sup> Conference transcript, pp. 44-45 (Anderson); Boeing's postconference brief, pp. 10-11.

<sup>82</sup> Conference transcript, pp. 184-185 (Aranoff); Delta's postconference brief, p. 10; Bombardier's postconference brief, p. 6.

<sup>83</sup> Conference transcript, pp. 45, 78 (Anderson). In addition, higher operating costs for pilots and flight crew associated with other single-aisle LCA is another factor separating these products from 100- to 150-seat LCA. A pilot's compensation is partly based on the size of the aircraft and higher seating capacity incurs higher flight crew costs as the FAA requires an additional flight attendant for passenger-carrying aircraft with over 150 seats. Boeing's postconference brief, p. 12.

## **Manufacturing facilities, production processes, and production employees**

Boeing explained that \*\*\*. Boeing further notes that \*\*\*. In addition, Boeing indicated that specific tooling must be used in order to meet FAA requirements, and high learning curve costs are incurred when production shifts between different categories of single-aisle LCA.<sup>84</sup>

U.S. importer/purchasers \*\*\* reported that 100- to 150-seat LCA and other single-aisle LCA are generally manufactured in the same facilities with the same employees.<sup>85</sup> U.S. importer/purchasers claim that the entire 737 family is manufactured in common facilities with the same employees and a high degree of the same parts because the 737 models all maintain the same basic design even if they increase incrementally in size.<sup>86</sup>

## **Channels of distribution**

Table I-4 presents Boeing's channels of distribution by product type. Boeing indicated in its questionnaire response that 100- to 150-seat LCA are \*\*\* to other single-aisle LCA with regard to channels of distribution. Boeing explained that 100- to 150-seat LCA and other single-aisle LCA are \*\*\*. Boeing believes that channels of distribution are not meaningful for the domestic like product analysis.<sup>87</sup>

All but one of the responding U.S. importer/purchasers (\*\*\*) reported that 100- to 150-seat LCA and other single-aisle LCA are fully comparable in terms of channels of distribution. \*\*\*. Since both the petitioner and respondents agree that the channels of distribution for 100- to 150-seat LCA and other single-aisle LCA are the same, Bombardier claims that this factor supports defining the domestic like product to be a continuum consisting of all 737 aircraft.<sup>88</sup>

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<sup>84</sup> Conference transcript, pp. 46, 61 (Anderson, Conner); Boeing's postconference brief, p. 13. Specialized tooling is also required when manufacturing the Boeing 727 MAX 7 model as compared to the 737-700 model. Conference transcript, p. 136 (Conner).

<sup>85</sup> \*\*\* indicated they are not familiar with the production processes of single-aisle LCA.

<sup>86</sup> Conference transcript, pp. 185-186 (Aranoff); Bombardier's postconference brief, p. 10.

<sup>87</sup> Boeing's postconference brief, p. 14.

<sup>88</sup> Bombardier's postconference brief, p. 11.

**Table I-4**

**All single aisle LCA: Boeing's channels of distribution by product type**

Item	Calendar year			January to September	
	2014	2015	2016	2016	2017
<b>737-700, MAX 7 and equivalents:</b>	<b>Share (percent)</b>				
Commercial U.S. shipments.-- to Airlines / operators	***	***	***	***	***
to Leasing / financing companies	***	***	***	***	***
to Other firms	***	***	***	***	***
<b>737-800, MAX 8 and equivalents:</b>	<b>Share (percent)</b>				
Commercial U.S. shipments.-- to Airlines / operators	***	***	***	***	***
to Leasing / financing companies	***	***	***	***	***
to Other firms	***	***	***	***	***
<b>737-900, MAX 9 and equivalents:</b>	<b>Share (percent)</b>				
Commercial U.S. shipments.-- to Airlines / operators	***	***	***	***	***
to Leasing / financing companies	***	***	***	***	***
to Other firms	***	***	***	***	***
<b>MAX 10 and equivalents:</b>	<b>Share (percent)</b>				
Commercial U.S. shipments.-- to Airlines / operators	***	***	***	***	***
to Leasing / financing companies	***	***	***	***	***
to Other firms	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

**Customer and producer perceptions**

Boeing indicated in its questionnaire responses that \*\*\*. It stated that \*\*\*. Boeing further stated that \*\*\*.

U.S. importer/purchasers indicated in their questionnaires responses that \*\*\*; that \*\*\*; that \*\*\*; and that \*\*\*.

**Price**

Boeing indicated in its questionnaire responses that \*\*\*. It added that there has historically been a \*\*\* percent gap between Boeing's prices on sales of 100- to 150-seat LCA and its prices on sales of larger single-aisle LCA.<sup>89</sup> Boeing stated that \*\*\*.

U.S. importer/purchasers indicated in their questionnaires responses that \*\*\*; that \*\*\*; that \*\*\*; that \*\*\*; that \*\*\*; and that \*\*\*.

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<sup>89</sup> Boeing's postconference brief, exh. 13.



Table I-5 presents a summary of Airbus Americas' and Boeing's commercial U.S. shipments and total shipments (i.e., including commercial shipments, internal consumption, and export shipments) by product type. \*\*\* of 100- to 150-seat LCA, but the average unit values of total shipments of 100- to 150-seat LCA ranged from \$\*\*\* per unit in January–September 2017 to \$\*\*\* per unit in January–September 2016. These shipments consisted \*\*\* of 100- to 150-seat LCA.<sup>90</sup> The average unit values of Boeing's and Airbus Americas' total shipments of other single aisle LCA ranged from \$\*\*\* per unit in 2014 to \$\*\*\* per unit in January–September 2017, \*\*\*. The average unit values of Boeing's historical U.S. shipments of 100- to 150-seat LCA, however, ranged from \$\*\*\* per unit to \$\*\*\* per unit during 2007-13 (see *Infra* table III-8). In addition, the average unit values of Boeing's historical U.S. shipments of other single aisle LCA ranged from \$\*\*\* per unit to \$\*\*\* per unit during 2007-13.<sup>91</sup>

Boeing also provided list price data, which show that prices of 100- to 150-seat LCA produced by Boeing range from \$82.4 million (737-700) to \$92.2 million (737 MAX 7) in 2017.<sup>92</sup> Boeing's list prices of other single aisle LCA in 2017 are as follows: \$98.1 million (737-800); \$112.4 million (737 MAX 8); \$104.1 million (737-900ER); \$119.2 million (737 MAX 9); and \$124.7 million (737 MAX 10).<sup>93</sup>

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<sup>90</sup> Boeing explained that \*\*\*.

<sup>91</sup> Boeing's U.S. producers' questionnaire response, V-3.

<sup>92</sup> Boeing's postconference brief, exh. 12, exh. 30.

<sup>93</sup> "About Boeing's Commercial Airlines," *Boeing*, <http://www.boeing.com/company/about-bca/>, accessed January 8, 2018.

**Table I-5**

**All single aisle LCA: Airbus Americas' and Boeing's commercial U.S. shipments and total shipments by product type**

Item	Calendar year			January to September	
	2014	2015	2016	2016	2017
<b>Commercial U.S. shipments:</b>	<b>Average unit value (1,000 dollars per unit)</b>				
737-700, MAX 7 and equivalents	***	***	***	***	***
737-800, MAX 8 and equivalents	***	***	***	***	***
737-900, MAX 9 and equivalents	***	***	***	***	***
MAX 10 and equivalents	***	***	***	***	***
<b>Total shipments:</b>	<b>Average unit value (1,000 dollars per unit)</b>				
737-700, MAX 7 and equivalents <sup>1</sup>	***	***	***	***	***
737-800, MAX 8 and equivalents	***	***	***	***	***
737-900, MAX 9 and equivalents	***	***	***	***	***
MAX 10 and equivalents	***	***	***	***	***

<sup>1</sup> The unit values for the 737-700, MAX 7, and equivalents include \*\*\*. See \*\*\*.

Note.—Total shipments include commercial shipments, internal consumption, and exports.

Source: Compiled from data submitted in response to Commission questionnaires

## PART II: CONDITIONS OF COMPETITION IN THE U.S. MARKET

### U.S. MARKET CHARACTERISTICS

The U.S. 100- to 150-seat LCA market is characterized by a small number of current and potential producers, a concentrated and relatively small number of purchasers, high-tech long-life assets, and capital intensive production that is subject to scale economies and substantial learning curves. Given these characteristics, there can be limited annual shipments of these aircraft.<sup>1</sup> According to Boeing, the 100- to 150-seat LCA industry accounts for annual sales of “\$1 billion” in the United States and \$4 billion globally, though sales and shipments can vary substantially from year to year.<sup>2</sup> In addition, U.S. airlines are leaders in the global aviation market, and the U.S. market has the largest existing (as well as aging) fleets of 100- to 150-seat LCA.<sup>3</sup> For this reason, Boeing stated that most of the replacement market globally is in the United States.<sup>4</sup>

100- to 150-seat LCA are high-tech capital assets that cost tens of millions of dollars each. 100- to 150-seat LCA production is highly capital intensive, where low-volume/high-value products require billions of dollars to develop and produce, and can be expected to last approximately twenty-five years. Because of the high capital costs and risks, producers often are only able to offer a limited number of product choices. In addition, because 100- to 150-seat LCA producers aim to operate with an order backlog that would take several years to fill, there can be a considerable lag time between orders and deliveries.<sup>5</sup>

Boeing is in the process of developing its first new product offering in the 100- to 150-seat LCA market space since 1993, the Boeing 737 MAX 7, which was launched (i.e., officially announced) in 2011 with deliveries scheduled to begin in 2019.<sup>6</sup> Similarly, Airbus developed the Airbus 319neo as a new model (although, like the MAX 7, not a clean sheet design) of 100- to 150-seat LCA (see Imports from nonsubject sources, below).

Bombardier has also introduced its C Series, which is the first aircraft designed clean sheet (not a derivative model) in the single aisle market in three decades.<sup>7</sup> Bombardier completed its design of the C Series in 2008 and delivered its first C Series LCA to SWISS in June 2016.<sup>8</sup> In 2016, both the CS100 (108 passengers) and CS300 (130 passengers) received FAA

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<sup>1</sup> Apparent U.S. consumption of 100- to 150-seat LCA decreased \*\*\* during 2014-16, from \*\*\* in 2014 to \*\*\* in 2015 to \*\*\* in 2016. All commercial shipments of new 100- to 150-seat LCA during this period were by \*\*\* selling to \*\*\*.

<sup>2</sup> Conference transcript, p. 11 (Novick).

<sup>3</sup> Petition, pp. 72-73. See also Boeing’s prehearing brief, pp. 42-46.

<sup>4</sup> Conference transcript, p. 93 (Conner). See also Boeing’s prehearing brief, pp. 42-46.

<sup>5</sup> Petition, pp. 17, 46. See also hearing transcript, pp. 98 (Novick) and 155 (Anderson).

<sup>6</sup> Petition, p. 2.

<sup>7</sup> Conference transcript, p. 269 (Mitchell), and hearing transcript, p. 192 (Levesque).

<sup>8</sup> Boeing’s postconference brief, exh. ER-18, and Bombardier’s prehearing brief, pp. 45 and 90.

certifications.<sup>9</sup> After the preliminary phase of these investigations, Bombardier announced a tentative agreement with Airbus to expand operations in Airbus Americas' Mobile, Alabama facility to include assembly of C Series aircraft (see *Parts I and III*).<sup>10</sup>

Bombardier and Delta describe the 100- to 150-seat LCA market as divided between aircraft with 110 seats or fewer, and those with closer to 150 seats. They indicated that the former market space is served by the CS100 and by larger regional jets, even if those regional jets do not have transcontinental capability. They contend that Boeing "abandoned" the 100-110 seat market space with cancellation of the 717 and 737-600.<sup>11</sup> (Bombardier further stated that while its own regional jet does not compete with its C Series, Embraer produces aircraft that compete with both its regional jet and its C Series).<sup>12</sup> On the other hand, Boeing described the 100- to 150-seat category of transcontinental aircraft as a unified category that has existed for a long time in the public statements of aircraft analysts and producers (including Bombardier), and described the transcontinental (greater than 2,900 nautical mile) range of 100- to 150-seat LCA as separating its market from that of regional aircraft.<sup>13</sup>

Purchasers can also meet demand through used or refurbished 100- to 150-seat LCA. As described by Boeing, used aircraft are part of the total economic equation as purchasers evaluate cost-effectiveness, stating that used aircraft have higher maintenance costs and lower fuel efficiency.<sup>14</sup> According to Boeing, airlines generally do not rely on the used market for their fleet replacement needs, because used aircraft are not available in sufficient quantities. Instead, airlines typically choose to purchase used and/or refurbished aircraft to meet near-term additional capacity needs that cannot be met by producers of new aircraft in the desired delivery timeframe. Boeing estimates that there are on average \*\*\* used and/or refurbished 100- to 150-seat LCA available in the global market in a given year.<sup>15</sup>

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<sup>9</sup> Conference transcript, p. 156 (Mullot), and Bombardier's prehearing brief, p. 45. FAA certification ensures the safety of aircraft before they enter into service. There are four main types: the type certification (design), the production certificate (manufacturing process), the airworthiness certificate (specific units of the aircraft), and the airline operating certificate (operator). Bombardier's postconference brief, app. 29.

<sup>10</sup> \*\*\*. \*\*\*.

<sup>11</sup> Hearing transcript, pp. 184-186 (Mitchell), 199 (May), and 227-229 (Dewar, Mitchell, and Baisburd).

<sup>12</sup> Hearing transcript, p. 222 (Mitchell).

<sup>13</sup> Hearing transcript, pp. 74-78 (McAllister, Anderson, and Nickelsburg), Boeing's posthearing brief, responses to questions, pp. 40-46.

<sup>14</sup> Conference transcript, p. 110-11 (Anderson), and hearing transcript, pp. 39, 73 (McAllister) and 175-177 (McAllister and Nickelsburg). Boeing sells both used and new aircraft.

<sup>15</sup> Boeing's postconference brief, app. 17, 18. According to a May 11, 2016 industry article, Southwest and other U.S. airlines were increasingly demanding second-hand jetliners as low-cost fuel made older, less efficient models more economical to operate. Very low fuel prices and currency fluctuations had reduced incentive to buy more fuel-efficient aircraft. In addition, "{Southwest} saw a glut of deeply discounted Boeing 737-700s as the perfect replacement for smaller Boeing 717s that Southwest planned to offload to Delta." Boeing's postconference brief, exh. ER-62.

According to Boeing, the U.S. market for 100- to 150-seat LCA is subject to unique conditions of competition, including programs requiring intensive long-term planning and years of research and development that cost billions of dollars before production can begin. It can take four to seven years to develop new derivatives. As a result, aircraft manufacturers assume substantial up-front costs and risks without a guarantee of future commercial success.<sup>16</sup> The need to fund and maintain program development efforts relies on pre-delivery payments pursuant to advance orders from customers (\*\*\*), and on profits generated by current production.<sup>17</sup> Respondents contend, however, that pre-delivery payments “top out at 15 to 20 percent of the contract value {and this} makes it impossible to finance development costs using pre-delivery payments.”<sup>18</sup>

When asked if there had been a change in products in the market since January 1, 2014, responding firms often identified Bombardier’s C Series as recently or currently available in the market.<sup>19</sup> According to Boeing, \*\*\*. Bombardier identified the \*\*. Importer/purchaser \*\*\* described the C Series as introducing improved fuel consumption, advanced technologies, and improved cabin features into the market, and \*\*\* also described the introduction of the C Series as a “significant development.” \*\*\* described Airbus and Boeing as more interested in markets for larger LCA than 100- to 150-seat LCA.<sup>20</sup>

### **U.S. IMPORTER/PURCHASERS**

In general, the 100- to 150-seat LCA market has a high degree of customer concentration, as the industry consists of a relatively small number of buyers. With only a few potential 100- to 150-seat LCA customers worldwide, annual deliveries are relatively low and

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<sup>16</sup> The risks associated with aircraft development include a manufacturer’s capital needs, meeting performance requirements, timely delivery, and ability to make sufficient sales to recover launch costs and earn a profit. In addition, reputational risk could be a significant problem. Reputational risk stems primarily from the willingness of purchasers to make large financial commitments to manufacturers that have not been successful or are entering a new market segment. Glennon Harrison, *Challenge to the Boeing-Airbus Duopoly in Civil Aircraft: Issues for Competitiveness*, Congressional Research Service, July 25, 2011, pp. 7, 10.

<sup>17</sup> Boeing’s prehearing brief, pp. 56-57.

<sup>18</sup> Conference transcript, p. 167 (Mitchell) and Bombardier’s postconference brief (p. 26) stating that “Initial deposits upon execution of a firm order tend to be between 1% and 5% of the contract value, while overall pre-delivery payments do not exceed 15% to 30% of the contract value. Accordingly, the vast majority of the purchase price is paid only upon delivery.” See also Bombardier’s prehearing brief, p. 51.

<sup>19</sup> Responses varied based on interpretations of market presence.

<sup>20</sup> Overall, six importer/purchasers (including \*\*\*) identified changes in the production or marketing of 100- to 150-seat LCA since January 1, 2014, while three (including \*\*\*) indicated that there had not been any such changes.

sales are concentrated in a few transactions with a few customers placing very large orders. Individual purchase contracts are high value, running into the billions of dollars.

Different airlines take different approaches to fleet composition and aircraft sourcing preferences. Alaska Air and Southwest have built their fleets around the Boeing 737 models. However, American and Delta have purchased aircraft from a more diverse range of suppliers, including Airbus, Boeing, Bombardier, and Embraer.<sup>21</sup>

The Commission received thirteen questionnaire responses from firms that import and/or purchase 100- to 150-seat LCA or other single-aisle LCA, including eight that bought 100- to 150-seat LCA during January 2014-September 2017 (table II-1).<sup>22</sup> Seven responding firms are commercial airline operators, and six are aircraft leasing companies.<sup>23</sup> These firms reported making sporadic purchases and shipments for new or used/refurbished subject product from Boeing or Airbus since January 1, 2014, and none from Bombardier. One leasing company, \*\*\*, noted that its business model is to \*\*\*.

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<sup>21</sup> Prehearing brief of Delta, p. 18.

<sup>22</sup> One of these purchaser/importers, \*\*\*, did not respond to any questions about pricing or market factors. Of the eight responding firms that reported importing and/or purchasing shipments of 100- to 150-seat LCA during January 2014-September 2017, \*\*\* bought 100- to 150-seat LCA from Boeing (domestic, all used or refurbished), \*\*\* bought subject 100- to 150-seat LCA from Bombardier (Canada), \*\*\* bought from Airbus (EU, two purchasing new 100- to 150-seat LCA and two purchasing used or refurbished 100- to 150-seat LCA).

<sup>23</sup> \*\*\*.

**Table II-1**  
**100- to 150-seat LCA: List of importer/purchasers, their total imports/purchases, by source,**  
**January 2014-September 2017**

Firm	Total reported imports and/or purchases during January 2014-September 2017 (units)					
	United States (Boeing)		Canada (Bombardier)		European Union (Airbus)	
	New	Used/ refurbished	New	Used/ refurbished	New	Used/ refurbished
Air Lease	***	***	***	***	***	***
Alaska	***	***	***	***	***	***
American	***	***	***	***	***	***
ACG	***	***	***	***	***	***
BBAM	***	***	***	***	***	***
Boeing Capital	***	***	***	***	***	***
BofA	***	***	***	***	***	***
Delta	***	***	***	***	***	***
GECAS	***	***	***	***	***	***
Southwest	***	***	***	***	***	***
United	***	***	***	***	***	***
Virgin America	***	***	***	***	***	***
Total	***	***	***	***	***	***

Note.--\*\*\* is not included in the table because its final-phase questionnaire was not complete.

Source: Compiled from data submitted in response to Commission questionnaires.

## SUPPLY AND DEMAND CONSIDERATIONS

### U.S. supply

#### Domestic production

Boeing is currently the only domestic producer of 100- to 150-seat LCA. Airbus Americas commenced aircraft assembly at its Mobile, Alabama plant in July 2015, but does not currently manufacture 100- to 150-seat LCA domestically. In the short term, the domestic industry does not have the ability to respond to changes in demand with changes in the quantity of shipments of U.S.-produced 100- to 150-seat LCA, due to the long delivery times and high level of capacity utilization in the domestic aircraft market. In the longer term, however, the domestic industry appears to have the capability to respond to changes in demand with moderate changes in the quantity of shipments of U.S.-produced 100- to 150-seat LCA. The main contributing factor to this degree of responsiveness of supply is the ability to shift production to or from out-of-scope LCA and the ability to shift shipments from alternate markets. Factors mitigating responsiveness of supply, particularly in the short term, include long order-to-delivery lag times, customer-specific produced-to-order product, and lack of inventories.

## **Industry capacity**

Because orders for 100- to 150-seat LCA are received years in advance of their delivery date, Boeing's production rate is reportedly set at a level that ensures the most efficient use of its workforce, PPE (property, plant, and equipment), and other assets.<sup>24</sup> Accordingly, reported capacity utilization is at or around \*\*\* percent.<sup>25</sup> The overall capacity for the domestic industry to produce LCA (including both in-scope 100- to 150-seat LCA and other out-of-scope single aisle LCA) increased between 2014 and 2016, from \*\*\* units to \*\*\* units. The share of 100- to 150-seat LCA produced compared to other single aisle LCA decreased during this time, from \*\*\* percent of total production (\*\*\* units) in 2014 to \*\*\* percent of total production (\*\*\* units) in 2016.

Boeing projected its overall capacity and production of 100- to 150-seat LCA to increase \*\*\*.<sup>26</sup> Airbus Americas \*\*\*. In October 2017, Airbus Americas and Bombardier announced that Airbus would acquire a majority stake in Bombardier's C Series. According to Airbus, final assembly of product for U.S. customers is planned for Alabama.<sup>27</sup>

Overall, \*\*\* projected increases in the total number of LCA produced in the United States, from \*\*\*. \*\*\* also projected that they will \*\*\*.

This high level of capacity utilization indicates that Boeing does not have the ability to increase production of 100- to 150-seat LCAs in the short term in response to an increase in prices. Boeing reported that \*\*\*. Boeing therefore appears to have some potential to increase production of 100- to 150-seat LCA in the longer term in response to an increase in prices.

## **Alternative markets**

Boeing's exports, as a share of total shipments, fluctuated during 2014-16, increasing from \*\*\* percent in 2014 to \*\*\* percent in 2015, then decreasing to \*\*\* percent in 2016. Boeing's total export shipments \*\*\*. According to Boeing, the two next-largest markets for aircraft after the United States are China and Europe, which are subject to political pressure to purchase locally produced aircraft.<sup>28</sup>

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<sup>24</sup> Boeing reported that the average duration between order date and delivery date is \*\*\*. See "Lead times" in this section of the report for an expanded discussion on lead times.

<sup>25</sup> Boeing indicated that \*\*\*. Boeing reported that \*\*\*. See also hearing transcript, p. 174 (McAllister).

<sup>26</sup> In January 2018, after these data were reported, Southwest announced that it was delaying delivery of its orders of MAX 7s. See Part III.

<sup>27</sup> Airbus, "Airbus and Bombardier Announce C Series Partnership," October 16, 2017 <http://www.airbus.com/newsroom/press-releases/en/2017/10/airbus-bombardier-cseries-agreement.html> downloaded November 24, 2017.

<sup>28</sup> Petition, p. 73.



### ***Inventory levels***<sup>29</sup>

Due to the tightly planned nature of production, Boeing holds \*\*\* inventories, indicating that it does not have the ability to respond to changes in demand with changes in the quantity shipped from inventories.

### ***Production alternatives***<sup>30</sup>

Boeing reported that \*\*\*. Airbus Americas reported that since it does not produce in-scope LCA, \*\*\*. \*\*\* switch production from other products to 100- to 150-seat LCA.

### ***Supply constraints***

Boeing reported that it \*\*\* refused, declined, or been unable to supply 100- to 150-seat LCA since January 1, 2014. As of September 30, 2017, Boeing's backlog for the 737 family of LCA was 4,431 planes.<sup>31</sup> In the preliminary phase of these investigations, Bombardier claimed that a similar amount represented a seven-to-eight year backlog.<sup>32</sup>

U.S. producers were asked how often their firms had delayed delivery of 100- to 150-seat LCA. For the period January 1, 2007 to December 31, 2013, Boeing stated that \*\*\*. For the period January 1, 2014 to the present, Boeing stated that \*\*\*.

\*\*\* stated that \*\*\*. No other importer/purchaser reported any supply constraints by U.S. producers.

### **Subject imports from Canada**

Bombardier is currently the only Canadian producer and exporter of 100- to 150-seat LCA. Bombardier began working on the C Series in the mid-2000s in order to enter the 100- to 150-seat LCA market, and launched the program in 2008. The program faced financial distress, but was supported by government financial aid received from Canada, the United Kingdom, and Quebec.<sup>33</sup> Bombardier delivered its first 100- to 150-seat LCA in June 2016 to SWISS.<sup>34</sup> Bombardier has not yet exported any 100- to 150-seat LCA from Canada to the United States.<sup>35</sup>

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<sup>29</sup> Both Boeing and Bombardier stated that product is not produced for inventory; inventory, also known as "white-tails," are not a deliberate part of industry. Conference transcript, p. 86, 260 (Novick, Mitchell), Boeing's prehearing brief, p. 58, and Bombardier's prehearing brief, p. 48.

<sup>30</sup> See *Part III* for additional information on alternative products.

<sup>31</sup> Boeing, "Commercial Airplanes Fact Sheet," <http://investors.boeing.com/investors/fact-sheets/default.aspx> (accessed on November 30, 2017). Boeing also plans to increase production of the 737 aircraft from 47 units per month in 3Q2017 to 52 units per month in 2018, to 57 units per month in 2019. *Ibid.*

<sup>32</sup> Conference transcript, pp. 17, 190 (Lichtenbaum, Aranoff), and Bombardier's prehearing brief, pp. 1-3, 38, and 46.

<sup>33</sup> Boeing's prehearing brief, quoting the governments of Canada and Quebec, and the European Commission, at pp. 78-80.

Based on available information, producers of 100- to 150-seat LCA from Canada do not have the ability to respond to changes in price in the short term, but do have the ability to respond to changes with moderate to substantial changes in the quantity of shipments of 100- to 150-seat LCA to the U.S. market in the longer term. The main contributing factors to this degree of responsiveness of supply are the potential for increasing amounts of available capacity. Factors mitigating Bombardier's responsiveness of supply include a lack of inventories and the limited ability to shift production to or from alternate products.

### ***Industry capacity***

Bombardier reported that its overall capacity and production to produce 100- to 150-seat LCA was \*\*\* units in 2014 and 2015, \*\*\* in 2016 and \*\*\* in January-September 2017. Similar to Boeing, Bombardier reported that capacity utilization was \*\*\* percent.<sup>36</sup> Bombardier projected its overall capacity of 100- to 150-seat LCA to increase \*\*\*. It projected that its total capacity would increase \*\*\*, \*\*\* its production of 100- to 150-seat LCA would increase \*\*\*. It also added that in 2016, it was only able to make 7 of 15 planned deliveries, and in 2017, 20 of 35.<sup>37</sup> These projected levels of capacity utilization suggest that Bombardier has very limited ability to increase production of 100- to 150-seat LCAs in the short term in response to an increase in prices, but may have a moderate-to-substantial ability to increase production of 100- to 150-seat LCA in the long term.

### ***Alternative markets***

Bombardier reported shipping \*\*\* to \*\*\*, and \*\*\*. It projected that its shipments to these alternative markets will decrease from \*\*\* percent of its commercial shipments in 2017 to \*\*\* percent in 2021, while its shipments to the U.S. market and its home market will both increase, from \*\*\* percent of commercial shipments in 2017 to \*\*\* and \*\*\* percent in 2021, respectively.

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(...continued)

<sup>34</sup> Petition, pp. 8, 9, 27, 31.

<sup>35</sup> Petitioner also reports that "although Republic Airlines has placed an order for 40 CS300s, it is unclear that these orders will ever be delivered in light of Republic Airways' poor financial condition." Petition, pp. 27, 29, n. 86. Bombardier bid data (from the preliminary phase of these investigations) noted that the \*\*\*."

<sup>36</sup> Bombardier reported attempting to maintain a book-to-bill ratio of \*\*\*.

<sup>37</sup> Hearing transcript, p. 183 (Dewar).

### ***Inventory levels***<sup>38</sup>

Similar to Boeing, Bombardier reported holding \*\*\* inventories of 100- to 150-seat LCA, indicating that Bombardier has limited ability to respond to changes in demand with changes in the quantity shipped from inventories.

### ***Production alternatives***

Bombardier reported that it \*\*\* switch production from 100- to 150-seat LCA to other products. Bombardier produces a number of other out-of-scope aircraft, \*\*\*.

### ***Supply constraints***

Bombardier reported \*\*\*. \*\*\*.

Foreign producers were also asked to provide details on how often they had deferred delivery of 100- to 150-seat LCA since January 1, 2007. Bombardier stated that \*\*\*.

No importer/purchaser reported any supply constraints by Bombardier.

### ***Imports from nonsubject sources***

According to questionnaire data, imports \*\*\* accounted for \*\*\* imports of new 100-150-seat LCA from nonsubject sources since January 1, 2014. No importer/purchaser reported any supply constraints by any nonsubject-country producers.

Airbus launched its A319 (currently known as the A319ceo) in 1993, and it is scheduled to remain in production through 2018.<sup>39</sup> The A319neo was launched in 2010, and is scheduled to enter into service in 2018.<sup>40</sup> Although there are emerging aircraft producers in China and Russia, these producers continue to face challenges, including getting orders from established carriers, budget and schedule over-runs, and delays in establishing a track record of reliable, safe, and trouble-free operation.<sup>41</sup> For more information on nonsubject producers, see *Part VII*.

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<sup>38</sup> Both Boeing and Bombardier stated that product is not produced for inventory; inventory, also known as “white-tails,” are not a deliberate part of industry. Conference transcript, p. 86, 260 (Novick, Mitchell), Boeing’s prehearing brief, p. 58, and Bombardier’s prehearing brief, p. 48.

<sup>39</sup> Petition, p. 30.

<sup>40</sup> The term “neo” stands for new engine option, and the term “ceo” stands for current engine option. Petition, p. 30.

<sup>41</sup> Deloitte, “2017 Global aerospace and defense sector outlook,” 2017, p. 5.

## U.S. demand

Based on available information, the overall demand for 100- to 150-seat LCA is likely to experience small-to-moderate changes in response to changes in price. The main contributing factor to this is the availability of substitutes (namely smaller or larger aircraft), the ability of purchasers to extend aircraft service life in the short term, and some ability to alter networks to optimize returns based on a different cost structure (in the longer term). Demand responsiveness is mitigated, however, by the economic viability of substitute aircraft.

According to Boeing, the U.S. air travel market is the largest in the world,<sup>42</sup> and demand for new 100- to 150-seat LCA is divided between (1) replacement demand – the need to replace aging aircraft, and (2) growth demand – the need to grow fleet size. Replacement demand can be projected based on the age of aircraft in airline fleets, and based on Boeing’s projections, U.S. airlines will require approximately \*\*\* new 100- to 150-seat LCA delivered by 2028. Given the typical lag between orders and deliveries, Boeing stated that “it is highly likely that orders to replace most of these units will be made in the next five years.”<sup>43</sup> In addition, Boeing estimates that the 100- to 150-seat LCA will account for \*\*\*.<sup>44</sup>

However, representatives of the government of Canada described 100- to 150-seat LCA as a market that is shrinking due to changes in the airline industry, including the advent of low-cost carriers that use online booking, as well as consolidation in the airline industry. It described these changes as compelling both low-cost carriers and larger consolidated airlines to prefer larger aircraft.<sup>45</sup>

Overall, demand for 100- to 150-seat LCA depends on demand by airline and airplane leasing companies for 100- to 150-seat LCA, which in turn is driven by the scale and type of passenger air travel demand. Boeing described the U.S. passenger air travel market served by 100- to 150-seat LCA as highly price sensitive, with U.S. travelers preferring low prices to comfort, in turn making airlines highly price sensitive when purchasing aircraft.<sup>46</sup> In addition to economic and industry indicators, Delta noted that demand is also driven by the specific “mission profile” of each airline as it evaluates its operations, network, and fleet to meet current and future needs.<sup>47</sup> Economic indicators and airline industry demand drivers show steady growth during 2014-16 and the first nine months of 2017, as shown below.

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<sup>42</sup> Posthearing brief of Boeing, p. 41.

<sup>43</sup> Boeing’s postconference brief, app. 3-4, and Boeing’s prehearing brief, p. 46.

<sup>44</sup> “\*\*\*.” Boeing’s postconference brief, app. 15-16. According to an Oliver Wyman market forecast, “Small narrow-bodies with a seat count ranging between 100 and 150 seats currently make up 23% of the passenger narrow-body fleet. Only 11% of narrow-bodies are forecast to be in this size in 2027.” Boeing’s postconference brief, exh. ER-6.

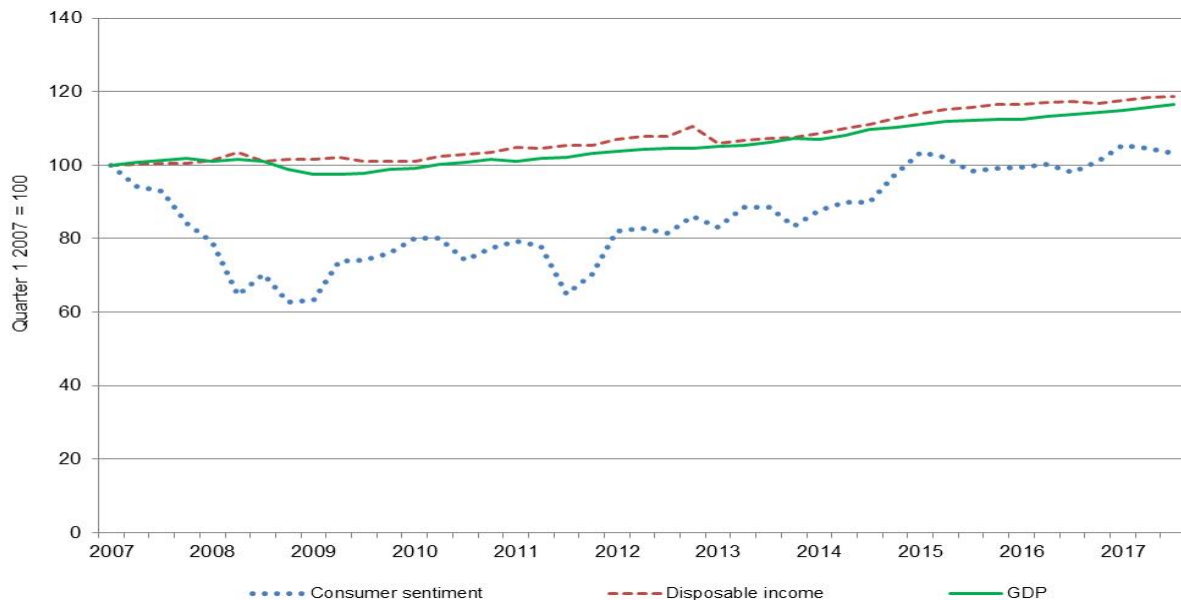
<sup>45</sup> Canada’s prehearing brief, pp. 47-48.

<sup>46</sup> Posthearing brief of Boeing, p. 43.

<sup>47</sup> Delta’s postconference brief, p. 15. Boeing described similar factors underlying airlines’ demand. See hearing transcript, p. 74 (McAllister).

Overall passenger air travel is largely affected by growth in gross domestic product (GDP), consumer confidence, and disposable income.<sup>48</sup> Real disposable income and real GDP have increased steadily since 2007. While consumer sentiment dropped relatively more during the Great Recession (2008-09), it has been rising intermittently since (figure II-1). Between the first quarter of 2007 and the first quarter of 2014, consumer sentiment decreased by 12.3 percent, while real disposable income and real GDP increased by 8.6 and 7.0 percent, respectively. Between the first quarter of 2014 and the third quarter of 2017, consumer sentiment, real disposable income, and real GDP all increased by 17.6, 9.2, and 8.9 percent, respectively. According to the October 2017 *Blue Chip Economic Indicators*, the consensus forecasts for 2018 real GDP and real disposable income growth are \*\*\* and \*\*\* percent, respectively.<sup>49</sup>

**Figure II-1**  
**Demand driving factors: Indexes of consumer sentiment, real disposable income, and real GDP in the United States, quarterly, January 2007-September 2017**



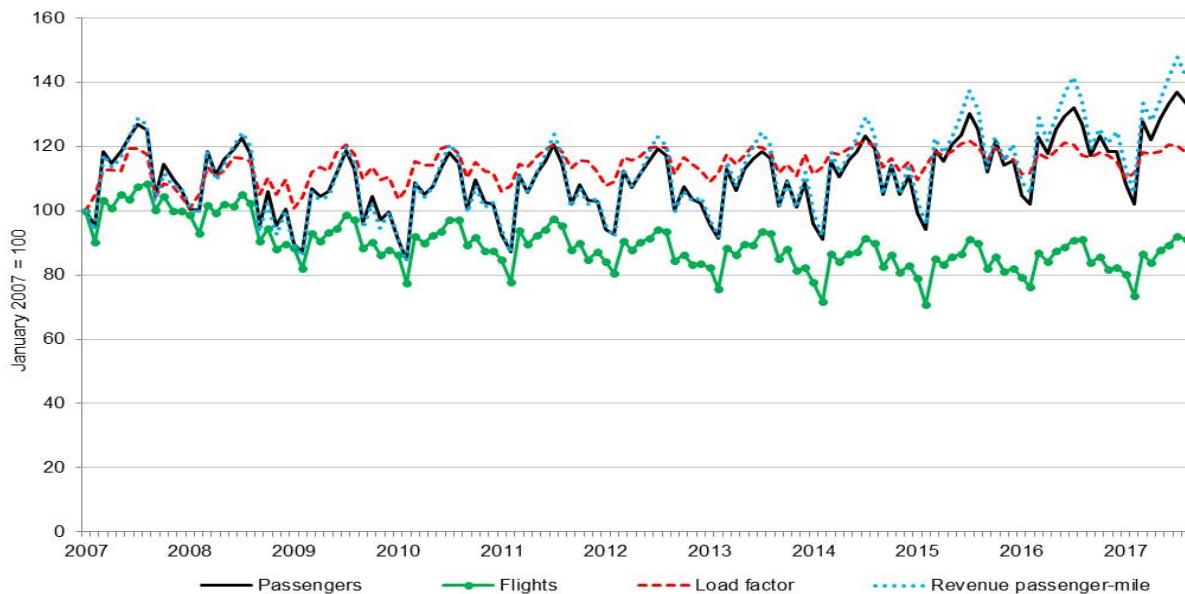
Source: St. Louis Federal Reserve, Federal Reserve Economic Data (FRED). Retrieved November 3, 2017.

<sup>48</sup> In developed markets, demand for essential travel has been met, so growth comes from discretionary travel, and GDP per capita matters less. Other factors such as the availability of vacation days earned, the funds needed to travel, consumer confidence, service pricing, and service quality have a greater impact on demand. Boeing, “Current Market Outlook 2016–2035,” p. 22.

<sup>49</sup> *Blue Chip Economic Indicators* is a publication that assembles numerous economic forecasts for U.S. economic indicators. *Blue Chip Economic Indicators*, vol. 42, no. 10, October 10, 2017.

Additionally, Boeing stated that U.S. passenger demand for travel on routes served by 100- to 150-seat LCA is highly price sensitive, leading to purchasers seeking low-priced 100- to 150-seat LCA. Boeing added that \*\*\*. According to air travel data collected from the Bureau of Transportation Statistics, the number of domestic passengers, domestic load factor,<sup>50</sup> and domestic revenue passenger-mile<sup>51</sup> have all increased since 2007, while the number of domestic flights has decreased (figure II-2). Between January 2007 and January 2014, the total number of passengers and flights decreased, by 4.1 and 22.3 percent, respectively, as did revenue per passenger-mile, by 0.8 percent. However, load factor increased, by 11.5 percent. Between January 2014 and January 2017, the total number of passengers, flights, and revenue passenger-mile all increased, by 12.8, 3.2, and 14.8 percent, respectively, while load factor decreased by 1.5 percent.<sup>52</sup> The decreasing number of flights and increasing load factor before January 2014 may have reduced the overall demand for aircraft during that period.

**Figure II-2**  
**Airline data: Indexes of domestic passengers, domestic flights, domestic load factor, and domestic revenue passenger-miles among all U.S. carriers, monthly, January 2007-August 2017**



Source: Bureau of Transportation Statistics, T-100 Market data. Retrieved November 16, 2017.

### Business cycles

No firm reported that the market for 100- to 150-seat LCA was subject to business cycles, but \*\*\* and 2 of 10 responding importer/purchasers indicated that the market was

<sup>50</sup> Load factor, which measure the number of seats sold in terms of total seats available, is calculated by dividing revenue passenger-miles by available seat miles.

<sup>51</sup> Revenue passenger-mile is calculated by dividing the number of passengers by the distance flown.

<sup>52</sup> Data in figure II-2 go through August 2017, but are not summarized here because of the visible seasonal effect.

subject to distinct conditions of competition. \*\*\* reported that \*\*\*. \*\*\* reported that the 100- to 150-seat LCA market was not subject to business cycles or distinct conditions of competition. Importer/purchaser \*\*\* reported that used aircraft (including the Boeing 717, which is no longer in production) and new Embraer 190 and 195 compete with new aircraft in the 100- to 150-seat LCA market. However, it noted that none of these aircraft meet the definition of 100- to 150-seat LCA.<sup>53</sup>

\*\*\* and importer/purchaser \*\*\* stated that there had not been any changes to the conditions of competition since January 1, 2014. Other importer/purchasers did not answer the question.

### **Fleet replacement**

U.S. importers were asked what percentage of 100-to-150-seat LCAs in their fleet that they anticipated replacing with new 100-to-150-seat LCAs and/or other aircraft. Five firms responded, generally describing their fleet replacement as having a long time horizon. \*\*\* stated that it expected to replace \*\*\* percent of its existing fleet of 100- to 150-seat LCA in \*\*\*, and \*\*\* in \*\*\*, anticipating that \*\*\*. \*\*\* stated that it \*\*\*. \*\*\* anticipated \*\*\* fleet with \*\*\*.<sup>54</sup> \*\*\* anticipated \*\*\* fleet with \*\*\*. \*\*\* stated that \*\*\*.

U.S. importer/purchasers were also asked what percentage of other aircraft (not 100- to 150-seat LCAs) in their fleet they anticipated replacing with new 100-to-150-seat LCAs. Five firms responded, generally not anticipating replacement of other aircraft with 100- to 150-seat LCAs. \*\*\* stated that it \*\*\*. \*\*\* anticipated replacing \*\*\* percent of its other aircraft with other aircraft in 2 to 5 years, \*\*\* percent in 5 to 10 years, and \*\*\* percent in more than 10 years from now. \*\*\* stated that it planned to replace \*\*\*. \*\*\* also stated that it planned to \*\*\*. \*\*\* stated that it \*\*\*.

### **Commercial momentum**

In the preliminary phase of these investigations, Boeing stated that purchases of 100- to 150-seat LCA are characterized by “commercial momentum” or a potential for positive and negative feedback cycles. It stated that customers are far more likely to place follow-on orders for the same 100- to 150-seat LCA than to order another producer’s competing product. In addition, other customers are more likely to purchase from a producer who is experiencing positive commercial momentum, especially if the momentum is driven by orders from large, well-respected airlines. This likelihood is driven by both mimicking and by the economic advantages of market acceptance, including higher residual value, easier financing, superior lifetime support costs, and a reduced likelihood of early production termination. Consequently, sales lead to more sales and lost sales lead to fewer sales.<sup>55</sup> Positive commercial momentum

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<sup>53</sup> See also Canada’s prehearing brief, p. 6.

<sup>54</sup> \*\*\*.

<sup>55</sup> Petition, pp. 17, 18, 51, and hearing transcript, pp. 49-50 (Nickelsburg).

also affects production efficiency by increasing the rate at which the producer moves up the learning curve, lowers its marginal cost, and facilitates access to economies of scale effects through volume discounts on input purchases.<sup>56</sup> However, in the preliminary phase of the investigations, Bombardier stated that \*\*\*.

Of the three importer/purchasers that provided substantive responses in the preliminary phase, \*\*\* indicated that recent market sales performance has \*\*\*. Similarly, \*\*\* responded that prior market sales did not impact sales performance at all, and that, \*\*\*.<sup>57</sup> Finally, \*\*\* responded that prior market sales performance had “little or no impact” on its purchasing decisions.

In the final phase of these investigations, importer/purchasers were asked if commercial momentum played a role in their decisions to purchase 100- to 150-seat LCA from specific producers. Five (\*\*\*) answered that it did not, while six (\*\*\*)<sup>58</sup> indicated that it did. \*\*\* stated that commercial momentum is more relevant for lessors, because it may be difficult to finance an aircraft that is selling poorly. \*\*\* stated that commercial momentum does not impact the sales of used aircraft. \*\*\* described performance assurance as a reason commercial momentum played a role in their decisions, and \*\*\* described commercial momentum as having a large effect or being very important. However, \*\*\* described commercial momentum as playing a small role in its purchasing decisions.

## **Lifecycle costs**

100- to 150-seat LCA have long life expectancies; life expectancy estimates ranged from 20 to 30 years. Respondents estimated that the purchase price of a 100- to 150-seat LCA typically represents at most 25 percent of the direct operating costs over the airplane’s life.<sup>59</sup> The subsequent operating costs represent the large majority of the lifetime cost of a plane—about three times the initial purchase price.<sup>60</sup>

Lifecycle costs, or the sum of all these recurring and one-time costs over the full life span of a product, are an important factor in the purchase of 100- to 150-seat LCA. Firms were asked to identify which factors purchasers consider in determining 100- to 150-seat LCA lifecycle costs. \*\*\* reported that the most critical factors that contribute to lifecycle costs are the cost of ownership (i.e., purchase price or financing cost), expected operating costs; fuel

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<sup>56</sup> Petition, p. 52. In addition, Petitioner states that orders are critical to both the particular transaction and the manufacturer’s viability because order contracts ordinarily provide for an initial deposit and pre-delivery payments. These payments are “critical” for cash flow and program development. Petition, p. 18.

<sup>57</sup> Delta adds that it is not familiar with any industry-recognized concept of “commercial momentum.” Delta’s postconference brief, p. 31.

<sup>58</sup> These lessors were \*\*\*.

<sup>59</sup> Conference transcript, p. 165 (Mitchell). Delta notes that aircraft acquisition costs represents less than 25 percent of the total operating (i.e., “seat”) costs. Delta’s postconference brief, p. 21, and Delta’s prehearing brief, p. 27.

<sup>60</sup> Bombardier’s postconference brief, p. 23.



efficiency; pilot and crew classification and requirements; pilot and crew training costs; maintenance, repair, and overhaul (“MRO”) costs; operational reliability; and residual value.<sup>61</sup> Among other responding importer/purchasers, the most common responses were maintenance costs (cited by 6 firms), fuel burn/fuel efficiency (5 firms), purchase price/initial acquisition (4 firms), crew costs (4 firms), financing costs (2 firms), and ownership costs (2 firms). \*\*\* reported that firms will consider cash operating costs, ownership/financing costs, support costs, crew transition/training costs, and residual value.

In addition, questionnaire recipients were asked to provide net present value calculations for the top five factors contributing to lifecycle costs (table II-2). \*\*\*. Importer/purchasers reported that ownership costs, fuel costs, and maintenance costs were among the most important costs considered in the purchase decisions for 100- to 150 seat LCA.<sup>62</sup>

**Table II-2**  
**100- to 150-seat LCA: Firms’ responses regarding largest factors influencing lifecycle costs for 100- to 150-seat LCA**

\* \* \* \* \*

**Demand trends**

\*\*\* and a plurality of responding importer/purchasers reported that demand for 100- to 150-seat LCA in the United States had fluctuated since January 1, 2014 (table II-3). Boeing explained that \*\*\*.<sup>63</sup> Bombardier reported that \*\*\*.

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<sup>61</sup> “Although maintenance, repair, and overhaul (MRO) spending generally amounts to less than 10 percent of total annual operating expenses, long lasting assets, such as airframes and engines, require ongoing maintenance and repairs, as well as overhauls as planes age. Over the course of an aircraft’s lifespan, engines account for 46% of maintenance, repair, and overhaul (MRO) spending, while airframes account for the rest.” Glennon Harrison, *Challenge to the Boeing-Airbus Duopoly in Civil Aircraft: Issues for Competitiveness*, Congressional Research Service, July 25, 2011, p. 16.

<sup>62</sup> In its prehearing brief, Boeing submitted an internal analysis of what an airline’s comparison of the net present value of a 737 MAX 7 and a CS300 would look like, and concluded that the CS300 is \*\*\*. Boeing’s prehearing brief, pp. 65-66, 96 and exhibit 44.

<sup>63</sup> See also conference transcript, pp. 35-36 (Nickelsburg).

**Table II-3**  
**100- to 150-seat LCA: Firms' responses regarding U.S. demand and demand outside the United States, by number of responding firms**

Item	Increase	No change	Decrease	Fluctuate
<b>Demand in the United States</b>				
Boeing	***	***	***	***
Importer/purchasers	2	2	1	4
Bombardier	***	***	***	***
<b>Demand outside the United States</b>				
Boeing	***	***	***	***
Importer/purchasers	3	1	1	2
Bombardier	***	***	***	***

Note.--\*\*\*.

Source: Compiled from data submitted in response to Commission questionnaires.

Among importer/purchasers, \*\*\* reported that demand for 100- to 150-seat LCA has generally decreased in the United States due to their high operating costs, and that demand has increased for 76-seat regional jets (such as the Embraer E175 and Bombardier CRJ-900) because they can be operated at lower costs at regional airlines. \*\*\* reported that demand trends for 100- to 150-seat LCA generally track the demand for air transportation services, and that the demand for air transportation services in U.S. markets has increased on average by approximately 6.3 percent per year since 2014 (based on Department of Transportation O&D passenger survey data), and 5.6 percent for international air travel.<sup>64</sup> \*\*\* indicated that there had been growth in demand for larger aircraft outside the U.S. market, while \*\*\* reported slightly lower demand for wide-body aircraft both domestically and internationally.

### Substitute products

According to Boeing, 100- to 150-seat LCA are optimal for a large number of routes operated by U.S. airlines that include many less populous destinations, because this model allows for more frequent flights with fewer passengers, has lower pilot costs, and can serve airports with shorter or obstacle-impaired runways.<sup>65</sup> In addition, because of the seating capacities of 100- to 150-seat LCA, other Boeing large civil aircraft are considerably larger and would force the customer to bear higher operating costs without any passenger revenue

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<sup>64</sup> "The Airline Origin and Destination Survey is a 10 percent sample of airline tickets from reporting carriers collected by the Office of Airline Information of the Bureau of Transportation Statistics. Data includes origin, destination and other itinerary details of passengers transported. This database is used to determine air traffic patterns, air carrier market shares and passenger flows." *Department of Transportation website, Bureau of Transportation Statistics, Overview*, [https://www.transtats.bts.gov/DatabaseInfo.asp?DB\\_ID=125](https://www.transtats.bts.gov/DatabaseInfo.asp?DB_ID=125), accessed on May 25, 2017.

<sup>65</sup> Conference transcript, p. 34 (Nickelsburg).

benefits. “\*\*\* from the perspective of the manufacturer.”<sup>66</sup> However, respondents frequently characterized Boeing’s 100- to 150-seat LCA as competing with other types of aircraft, including used aircraft as well as both larger and smaller new aircraft, and even within purchases from Boeing in which the purchaser has opted to buy a larger, out-of-scope aircraft after originally contracting for 100- to 150-seat LCA (see *Part V*).<sup>67</sup>

U.S. importer/purchasers were asked to rate the degree to which other types of aircraft (including regional civil aircraft, other single aisle LCA, all other LCA, and other aircraft) can be substituted for 100- to 150-seat LCA. As shown in table II-4, most firms reported that each of the other types of listed aircraft can “sometimes” be substituted for 100- to 150-seat LCA.

**Table II-4**  
**100- to 150-seat LCA: Substitutability with other types of aircraft, as reported by U.S. importers/purchasers, by number of responding firms**

Type of substitute	Always	Frequently	Sometimes	Never
Regional civil aircraft	0	0	7	1
Other single aisle LCA	0	3	5	0
All other LCA	0	0	5	3
Other aircraft	0	0	4	0

Note.--Regional civil aircraft includes aircraft either (a) with seat counts less than 100 intended for civil uses or (b) aircraft with seat counts between 100 and 150 that do not otherwise conform to in-scope 100- to 150-seat LCA (e.g., Embraer 190, Bombardier CRJ 700, CRJ 900, and CRJ 1000). Other single aisle LCA includes large civil aircraft with a single aisle that do not meet the definition of 100- to 150-seat LCA as defined on page 2 or regional civil aircraft as defined above (e.g., Boeing 737-800/737 MAX 8, 737-900/737 MAX 9, 737 MAX 10, and Airbus A320 and A321). All other LCA includes large civil aircraft not included in the definition of 100- to 150-seat LCA as defined or as “other single aisle LCA” as defined above (i.e., LCA with more than one aisle). This category includes jumbo, two-aisle models.

Source: Compiled from data submitted in response to Commission questionnaires.

\*\*\* reported that while 200- to 300-seat aircraft are not generally substitutable for 100- to 150-seat LCA, other larger single-aisle aircraft (such as a Boeing 737-800) can be substituted for 100- to 150-seat LCA (such as an Airbus A319) when the larger aircraft takes over a route with high demand and reduces the number of trip frequencies. It added that it is possible to substitute a smaller regional aircraft (such as an Embraer E175) for a 100- to 150-seat LCA and increase the trip frequencies. \*\*\* reported that is also possible to substitute an A319 with a Boeing 757 in some high altitude, hot, or short-runway markets.

\*\*\* also reported that some aircraft are substitutes for 100- to 150-seat LCA. It stated that on the lower end of the range of size or distance in the definition of 100- to 150-seat LCA, in-scope aircraft (such as the Bombardier CS100) competes with out-of-scope aircraft such as those of Embraer, or used Boeing 717s and MD 88s. It also stated that at the higher end of the

<sup>66</sup> Petition, p. 44.

<sup>67</sup> For example, see Canada’s posthearing brief, pp. 6-7.

seating or size range, other out-of-scope products such as the Airbus A320 can compete with larger 100- to 150-seat LCA.

Other importer/purchasers named seating, range, payload, and landing field capabilities as factors that may affect the substitutability of 100- to 150-seat LCA for the other products listed.

Five importer/purchasers reported how much they used 100- to 150-seat LCA on their routes in 2016.<sup>68</sup> Reported use of 100- to 150-seat LCA in their networks varied substantially. Airline companies reported using 100- to 150-seat LCA on \*\*\* percent (\*\*\*), \*\*\* percent (\*\*\*), \*\*\* percent (\*\*\*), \*\*\* percent (\*\*\*), and \*\*\* percent (\*\*\*) of their network measured by routes. They also reported using 100- to 150-seat LCA on \*\*\* percent (\*\*\*), \*\*\* percent (\*\*\*), \*\*\* percent (\*\*\*), \*\*\* percent (\*\*\*), and \*\*\* percent (\*\*\*) of their network measured by total miles.

When asked how often smaller aircraft (with fewer than 100 seats) were used on the same routes as 100- to 150-seat LCA in 2016,<sup>69</sup> \*\*\* responded it did so on \*\*\* percent of its routes, accounting for \*\*\* percent of its miles. \*\*\* responded that it did so for \*\*\* percent of its routes, accounting for \*\*\* percent of its miles. \*\*\* responded that it did so for \*\*\* percent of its routes, accounting for \*\*\* percent of its miles. \*\*\* responded that it did so for \*\*\* percent of its routes.<sup>70</sup>

When asked how often larger aircraft (with more than 150 seats) were used on the same routes as 100- to 150-seat LCA in 2016, \*\*\* responded it did so on \*\*\* percent of its routes, accounting for \*\*\* percent of its miles. \*\*\* responded that it did so for \*\*\* percent of its routes, accounting for \*\*\* percent of its miles. \*\*\* responded that it could do so for \*\*\* percent of its routes, accounting for \*\*\* percent of its miles. \*\*\* responded that it did so for \*\*\* percent of its routes, accounting for \*\*\* percent of its miles.

Importer/purchasers were asked how the availability of used or refurbished 100- to 150-seat LCA affects their purchase decisions. Most responding firms indicated that the availability

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<sup>68</sup> The remaining firms did not provide responses.

<sup>69</sup> In the preliminary phase, when asked for the percent of routes for which larger or smaller aircraft “can” be substituted for 100- to 150-seat LCA, United responded \*\*\* percent for \*\*\*; Delta responded \*\*\* percent for larger aircraft, but only \*\*\* percent for smaller aircraft; and Southwest responded \*\*\* percent for larger aircraft, and \*\*\* percent for smaller aircraft.

<sup>70</sup> At the hearing, and in the briefs, parties disagreed over the importance of whether an aircraft had transcontinental ability (i.e., the ability to travel more than 2,900 nautical miles). Delta and Bombardier stated that most U.S. domestic routes do not require transcontinental ability, and can be served by out-of-scope aircraft that do not have such a capability. Bombardier’s posthearing brief, answers to questions, pp. 1-2. Delta stated that it flies 100- to 150-seat LCA exclusively on only 6 of its 426 U.S. domestic routes, and on the rest, shares the routes between 100- to 150-seat LCA and out-of-scope single-aisle aircraft. Delta’s posthearing brief, answers to questions, p. 4, and hearing transcript, p. 206 (Esposito). Boeing stated that even though airlines do not necessarily use transcontinental capacity in the majority of their flights, they still will want such a capacity because an aircraft may fly a mix of transcontinental and shorter routes during a particular day. Boeing’s posthearing brief, answers to questions, pp. 85-87, and hearing transcript, p. 146 (Nickelsburg).

of used product can have at least some impact on their firms' purchasing decisions. \*\*\* stated that it had begun \*\*\*. \*\*\* stated that it had seen an increasing number of used 100- to 150-seat LCA in the market in recent years, diminishing its interest in purchasing new product. \*\*\* also indicated that they took the availability of used product into consideration. However, \*\*\* stated that it has not historically purchased used product due to the cost to standardize different used aircraft. \*\*\* stated that it has taken used 100- to 150-seat LCA into consideration when it needed supply more quickly than manufacturers could meet with new aircraft. \*\*\* indicated that it purchases both used and new product on a case-by-case basis.

### **SUBSTITUTABILITY ISSUES**

The degree of substitution between domestic and imported 100- to 150-seat LCA depends upon such factors as relative prices, quality (e.g., reliability of supply, defect rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, payment terms, product services, etc.). Based on available data, staff believes that there is moderate-to-high degree of substitutability between domestically produced 100- to 150-seat LCA and Canadian-produced 100- to 150-seat LCA, reflecting the mixed responses of market participants in terms of interchangeability, factors other than price, comparability of factors, and other information on the record.

#### **Importance of specific purchasing factors**

Importer/purchasers were asked to rate the importance of 22 factors in their purchasing decisions (table II-5). The factors rated as "very important" by at least six responding firms were availability, lifetime operating costs (seat and trip), maintenance costs, payment terms, performance, price,<sup>71</sup> reduced fuel requirements, and seat capacity. The factors rated as "not important" by at least half of responding importers included trade-in commitments (6 firms) and residual value guarantees (5 firms). Counsel for Delta described price as only about 20 percent of the total lifetime operating costs of a 100- to 150 seat LCA, and thus not the most important factor for purchasers.<sup>72</sup>

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<sup>71</sup> \*\*\* responded that price was not important.

<sup>72</sup> Hearing transcript, p. 299 (Baisburd).

**Table II-5**  
**100- to 150-seat LCA: Importance of purchase factors, as reported by U.S. importer/purchasers, by factor**

Factor	Very important	Somewhat important	Not important
Availability/backlog	6	1	2
Cabin comfort	2	4	3
Commensurate pricing (i.e., most favored customer agreement)	4	1	4
Commonality with existing fleet	4	2	3
Delivery terms	4	1	4
Emissions requirements	3	4	2
Engine size	2	3	4
Entry-into-service support	4	2	3
Lifetime operating costs (seat and trip)	6	1	2
Maintenance costs	6	2	1
Noise requirements	3	4	2
Payment terms	6	1	2
Performance (landing, take-off, range)	6	1	2
Price	7	1	1
Range greater than 2900 nautical miles	2	3	4
Reduced fuel requirements	6	2	1
Residual value guarantees	3	0	5
Seat capacity	6	2	1
Spare parts	4	2	3
Superior technology	3	5	1
Trade-in commitments	2	1	6
Training support	3	3	3

Source: Compiled from data submitted in response to Commission questionnaires.

Several firms provided explanations for the roles these factors play in their bidding and purchasing decisions. \*\*\* reported that if an aircraft is not available in the time frame required, it will not be considered. It also indicated that its ability to \*\*\* meant that it had some flexibility in the \*\*\* areas. \*\*\* indicated that entry-into-service and training support is very important when the aircraft is the first of its type in the fleet. Both \*\*\* indicated that lifetime operating costs (and maintenance costs) are some of the most important factors. Among \*\*\*, \*\*\* indicated that commensurate pricing is the key factor in purchasing aircraft as it has a direct correlation to the profitability of \*\*\*. It added that fuel efficiency and engine reliability are more important than engine size.

Importer/purchasers were asked how a manufacturer's ability to deliver 100-to 150-seat LCA within a specified time frame affects its competitiveness. \*\*\* described it as a "critical" factor. Several others described it as important, but sometimes qualified it as not the only issue. For example, \*\*\* described meeting its needs on time as a definite advantage to a manufacturer's competitiveness, but not necessarily a "deal-breaker." \*\*\* stated that meeting delivery deadlines "improves" the competitiveness both of the supplier and the airline.

Additionally, importer/purchasers were asked to rate the importance of several other reputational purchasing factors with regard to purchasing decisions for existing/current 100- to 150-seat LCA, derivative new model 100- to 150-seat LCA, and clean sheet new model 100- to 150-seat LCA. Their answers are summarized in table II-6. Their responses did not vary much by type of 100- to 150-seat LCA ordered, with most purchasers rating most factors as very or somewhat important. Such factors were slightly more likely to be important for clean sheet new models than existing models, and for existing models than derivative. In additional comments, \*\*\* stated that the primary factors in its purchase decisions are \*\*\*. It added that the factors in table II-6 are given consideration to the extent they affect those primary factors. For example, it noted that prior performance and purchases are very important because they allow \*\*\*. \*\*\* explained that lessors want an aircraft with broad industry acceptance. Most "not important" answers came from \*\*\*, the latter of which explained that its purchasing decisions are \*\*\*.

**Table II-6**  
**100- to 150-seat LCA: Importance of reputational purchase factors, as reported by U.S. importer/purchasers, by factor**

<b>Existing/current 100- to 150-seat LCA</b>			
<b>Factor</b>	<b>Very important</b>	<b>Somewhat important</b>	<b>Not important</b>
Prior domestic sales	4	3	3
Prior global sales	4	5	1
Domestic market performance	4	3	3
Global market performance	4	5	1
Length of time in domestic market	2	5	3
Proven performance record at U.S. airline	4	4	2
Proven performance record at a non-U.S. airline	4	4	2
Prior purchases of 100- to 150-seat LCA from the same manufacturer	4	3	3
Prior purchases of other single aisle LCA from the same manufacturer	4	3	2
<b>Derivative new model of 100- to 150-seat LCA</b>			
<b>Factor</b>	<b>Very important</b>	<b>Somewhat important</b>	<b>Not important</b>
Prior domestic sales	4	3	3
Prior global sales	4	5	1
Domestic market performance	4	3	3
Global market performance	4	5	1
Length of time in domestic market	2	5	3
Proven performance record at U.S. airline	3	5	2
Proven performance record at a non-U.S. airline	3	5	2
Prior purchases of 100- to 150-seat LCA from the same manufacturer	4	3	3
Prior purchases of other single aisle LCA from the same manufacturer	4	3	2

Table continued on next page.



**Table II-6--Continued**  
**100- to 150-seat LCA: Importance of reputational purchase factors, as reported by U.S. importer/purchasers, by factor**

<b>Clean sheet new model of 100- to 150-seat LCA</b>			
<b>Factor</b>	<b>Very important</b>	<b>Somewhat important</b>	<b>Not important</b>
Prior domestic sales	4	3	3
Prior global sales	4	5	1
Domestic market performance	4	3	3
Global market performance	4	5	1
Length of time in domestic market	3	4	3
Proven performance record at U.S. airline	5	2	3
Proven performance record at a non-U.S. airline	5	3	2
Prior purchases of 100- to 150-seat LCA from the same manufacturer	4	2	3
Prior purchases of other single aisle LCA from the same manufacturer	4	3	2

Source: Compiled from data submitted in response to Commission questionnaires.

Another important factor in purchasing pattern decisions is fleet composition and fleet complexity.<sup>73</sup> For airline companies, fleet complexity provides flexibility with different aircraft, but also increases costs because the variety of aircraft requires additional support, different parts inventories, and various different training programs for the crew and maintenance personnel. Fleet complexity can result from airline intent or by merger. An airline or leasing company's fleet complexity also affects producers. If the airline already has aircraft from different producers, producers are better able to compete with each other.<sup>74</sup> Petitioner notes that fleet complexity or commonality is more important for smaller airlines where the cost of

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<sup>73</sup> "Fleet composition choice is one of the most important strategic decisions that airlines have to face, not only because of the huge investment deriving from a new aircraft purchase and the long payback period, but also because this choice affects their operating costs and their strategy in selecting which routes to serve. The challenge in fleet planning is to balance the benefits of a uniform fleet (in terms of same aircraft model and same engine type) and the choice of different aircrafts for different routes." Carolina Billitteri and Giovanni Perrone, "How do airlines preferences about engines influence the competition in the commercial aircraft industry: an empirical analysis," *Proceedings of the 2011 International Conference on Industrial Engineering and Operations Management*, Kuala Lumpur, Malaysia, January 22 – 24, 2011, p. 718.

<sup>74</sup> "Fleet complexity has direct and indirect effects on aircraft manufacturers. Aircraft manufacturers have found it easier to compete against one another for an airline's business if the airline owns various models of airplanes made by multiple aircraft manufacturers. Aircraft manufacturers typically work closely with launch customers to create an airplane that meets customer requirements. This has frequently led to bidding wars among major aircraft makers, which sometimes offer airplanes to launch customers at unrealistically low prices, which then requires the manufacturer to sell many more planes to reach a breakeven point. Conversely, an airline that builds its network around one manufacturer/one type of aircraft creates a network effect that results in 'lock-in.' A low-cost carrier with a network based  
 (continued...)

multiple types of planes can be costly. However, for larger airlines, particularly those that developed complex fleets due to industry mergers and consolidation, commonality and the cost of complexity becomes less important in purchasing decisions.<sup>75</sup> For example, Delta stated that it is a “believer in a diversified fleet;” having aircraft from every major manufacturer allows it to closely match its fleet to its specific mission profile.<sup>76</sup>

### Changes in purchasing patterns

Importer/purchasers were asked about changes in their purchasing patterns from different sources since 2007. Many firms reported not purchasing from any source since January 2007 (table II-7). Among firms that did report purchasing 100- to 150-seat LCA during this time, most reported fluctuating purchases of U.S. product, or a variety of changes for EU product.

**Table II-7**  
**100- to 150-seat LCA: Changes in purchase patterns from U.S., subject, and nonsubject countries**

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	4	1	1	1	4
Canada	10	0	0	0	1
European Union	6	2	1	2	0
Other	9	0	0	0	1

Source: Compiled from data submitted in response to Commission questionnaires.

In additional responses, \*\*\* reported that it changes its purchasing patterns (including when to purchase and whether to convert aircraft within a contract) based on its fleet needs. \*\*\* stated that it \*\*\*. \*\*\* indicated that it had decreased purchases of U.S. and EU product because demand had switched to larger aircraft with more than 150 seats. \*\*\* reported constant purchases of \*\*\* \*\*\* described \*\*\*.

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(...continued)

on one aircraft model has little incentive to purchase a comparable airplane from another manufacturer, even if the upfront price of the alternative airliner is attractive.” Glennon Harrison, *Challenge to the Boeing-Airbus Duopoly in Civil Aircraft: Issues for Competitiveness*, Congressional Research Service, July 25, 2011, pp. 8-9.

<sup>75</sup> Conference transcript, p. 125 (Nickelsburg), and Boeing’s postconference brief, app. 33.

<sup>76</sup> Delta’s postconference brief, p. 18, and Delta’s prehearing brief, pp. 26-27.

## Comparison of U.S.-produced and imported 100- to 150-seat LCA

Importer/purchasers were asked a number of questions comparing 100- to 150-seat LCA produced in the United States, Canada, and the EU. First, purchasers were asked for a country-by-country comparison on the same 22 factors (table II-8) for which they were asked to rate the importance.

Only four importer/purchasers (\*\*\*) consistently answered the questions comparing U.S. and Canadian 100- to 150-seat LCA. Other airlines, such as \*\*\*, did not answer the question at all. Responding purchasers had mixed responses on the comparability of U.S. and Canadian 100- to 150-seat LCA. A majority indicated that Bombardier product was superior to that of Boeing in availability, lifecycle costs, maintenance costs, price, reduced fuel requirements, and superior technology.<sup>77</sup> A majority also indicated that Boeing product was superior to that of Bombardier in commonality with existing fleet, performance, and range. A majority of responding purchasers rated Boeing and Airbus product as comparable in all factors, while the comparisons of Airbus and Bombardier product were similar to those of Boeing and Bombardier product.

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<sup>77</sup> In its posthearing brief, Delta described Boeing's 737-700 as having a higher per-seat operating cost than the CS100, and added that while the 737-700 has "limited utility in a handful of airports, it is an inefficient aircraft to operate and undesirable in most every circumstance for Delta's network." Delta's posthearing brief, answers to questions, p. 7. See also hearing transcript, p. 198 (May).

**Table II-8**  
**100- to 150-seat LCA: Importer/purchasers' comparisons between U.S.-produced and imported product**

Factor	U.S./Boeing vs. Canada/Bombardier			U.S./Boeing vs. EU/Airbus			Canada/Bombardier vs. EU/Airbus		
	S	C	I	S	C	I	S	C	I
Availability/backlog	0	2	4	0	7	1	2	3	0
Cabin comfort	1	2	2	0	6	2	2	2	1
Commensurate pricing (i.e., most favored customer agreement)	2	1	1	1	7	0	1	2	1
Commonality with existing fleet	5	0	0	1	7	0	0	1	4
Delivery terms	0	4	0	0	8	0	0	4	0
Emissions requirements	0	3	2	0	8	0	2	3	0
Engine size	1	4	0	0	8	0	0	4	1
Entry-into-service support	1	2	0	0	7	0	0	2	1
Lifetime operating costs (seat and trip)	0	1	3	0	7	0	3	1	0
Maintenance costs	0	1	3	0	8	0	3	1	0
Noise requirements	0	3	2	0	8	0	2	3	0
Payment terms	0	3	0	0	7	0	0	3	0
Performance (landing, take-off, range)	3	2	1	1	7	0	1	3	2
Price <sup>1</sup>	0	1	3	1	7	0	3	1	0
Range greater than 2900 nautical miles	3	2	0	1	7	0	0	3	2
Reduced fuel requirements	0	2	3	0	8	0	3	2	0
Residual value guarantees	0	2	0	0	6	0	0	2	0
Seat capacity	2	1	1	0	8	0	1	1	2
Spare parts	3	2	0	0	8	0	0	2	3
Superior technology	0	2	3	0	8	0	2	3	0
Trade-in commitments	1	2	0	0	7	0	0	2	1
Training support	1	3	0	0	8	0	0	3	1

<sup>1</sup> A rating of superior means that price is generally lower. For example, if a firm reported "U.S. superior," it meant that the U.S. product was generally priced lower than the imported product.

Note.--S=first listed country's product is superior; C=both countries' products are comparable; I=first list country's product is inferior.

Source: Compiled from data submitted in response to Commission questionnaires.

In order to determine whether U.S.-produced 100- to 150-seat LCA can generally be used in the same applications as imports from Canada, the European Union, and other nonsubject countries, firms were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in table II-9, \*\*\* and some importer/purchasers reported that 100- to 150-seat LCA from the United States are "always" interchangeable with 100- to 150-seat LCA from Canada, the European Union, and other nonsubject sources. However, other importer/purchasers and \*\*\* generally reported that such aircraft are "sometimes" or "never" interchangeable.

**Table II-9**  
**100- to 150-seat LCA: Interchangeability between 100- to 150-seat LCA produced in the United States and in other countries, by country pair**

Country pair	Boeing				Number of U.S. importer/purchasers reporting				Bombardier			
	A	F	S	N	A	F	S	N	A	F	S	N
<b>U.S. vs. subject countries:</b> U.S. vs. Canada	***	***	***	***	3	1	3	1	***	***	***	***
<b>Nonsubject countries comparisons:</b> U.S. vs. European Union	***	***	***	***	4	1	2	1	***	***	***	***
U.S. vs. other nonsubject	***	***	***	***	1	1	1	1	***	***	***	***
Canada vs. European Union	***	***	***	***	3	1	3	1	***	***	***	***
Canada vs. other nonsubject	***	***	***	***	1	2	0	1	***	***	***	***
European Union vs. other nonsubject	***	***	***	***	1	1	1	1	***	***	***	***

Note.--The question specified that “U.S.” meant the Boeing 700 or 737 MAX 7, “Canada” meant the Bombardier CS100 or CS300, and “European Union” meant the Airbus 319. Responses of \*\*\* were not included in the table. \*\*\*. This table includes the responses of \*\*\*.

Note.--A=Always, F=Frequently, S=Sometimes, N=Never.

Source: Compiled from data submitted in response to Commission questionnaires.

In additional comments, \*\*\* stated that while the Embraer E190 and E195 models are out of scope according to the definitions outlined in these investigations, they are substitutable with Bombardier’s CS100.<sup>78</sup> \*\*\* elaborated that while Boeing’s 737-700 aircraft are useful in certain unique mission profiles, such as routes requiring take-offs on short runways or at high elevation airports, it is an uneconomical alternative to the Airbus A319 or Bombardier CS300 due to its comparatively poorer fuel efficiency and heavier weight.<sup>79</sup> \*\*\* cited different crews, runway length requirements, maintenance requirements, seat capacities, and range as factors that limited interchangeability.

Bombardier elaborated that \*\*\*, due to the following factors: \*\*\*. Bombardier also stated that \*\*\*.<sup>80</sup>

Firms were also asked to assess how often differences other than price were significant in sales of 100- to 150-seat LCA from the United States, Canada, the European Union, or other nonsubject countries. As seen in table II-10, \*\*\* reported that factors other than price are \*\*\* significant when comparing 100- to 150-seat LCA from all sources, while \*\*\* reported that they

<sup>78</sup> \*\*\*.

<sup>79</sup> \*\*\* added that Boeing’s new 737 MAX 7 aircraft may eventually provide an additional alternative, but that it is not scheduled to be available until at least 2019.

<sup>80</sup> In its questionnaire response, \*\*\* provided similar observations.

“sometimes” are significant for all country comparisons. Among importer/purchasers, either a majority of firms reported that factors other than price are “always” or “frequently” significant in all comparisons except for Canadian product compared to other nonsubject-country product, in which a plurality reported that they are “sometimes” significant. No firm reported that factors other than price are “never” significant.

**Table II-10**  
**100- to 150-seat LCA: Significance of differences other than price between 100- to 150-seat LCA produced in the United States and in other countries, by country pair**

Country pair	Boeing				Number of U.S. importer/purchasers reporting				Bombardier			
	A	F	S	N	A	F	S	N	A	F	S	N
<b>U.S. vs. subject countries:</b> U.S. vs. Canada	***	***	***	***	3	2	0	0	***	***	***	***
<b>Nonsubject countries comparisons:</b> U.S. vs. European Union	***	***	***	***	2	2	1	0	***	***	***	***
U.S. vs. other nonsubject	***	***	***	***	2	1	0	0	***	***	***	***
Canada vs. European Union	***	***	***	***	3	2	1	0	***	***	***	***
Canada vs. other nonsubject	***	***	***	***	1	1	2	0	***	***	***	***
European Union vs. other nonsubject	***	***	***	***	2	1	1	0	***	***	***	***

Note.--The question specified that “U.S.” meant the Boeing 700 or 737 MAX 7, “Canada” meant the Bombardier CS100 or CS300, and “European Union” meant the Airbus 319. Responses of \*\*\* were not included in the table. \*\*\*. This table includes the responses of \*\*\*.

Note.--A=Always, F=Frequently, S=Sometimes, N=Never.

Source: Compiled from data submitted in response to Commission questionnaires.

In describing the significance of factors other than price, \*\*\* stated that factors other than price (such as fuel efficiency) are typically monetized in a customer's evaluation of the net present value (NPV) of producers' competing bids, and that this provides parties with a well-understood framework for using price discounts to improve the attractiveness of bids. \*\*\* stated that \*\*\*, it sees the following non-price factors as being important in the 100- to 150-seat LCA market: quality, availability, dispatch reliability, product support and auxiliary services, fuel burn and other cash operating costs, transition costs to a new type of aircraft, commonality with an existing fleet of aircraft, availability of other types of aircraft within the same family that may be ordered in the future, residual value assumptions and guarantees, customization of the aircraft for a particular customer, and availability of financing.

Bombardier stated that \*\*\*.<sup>81</sup>

<sup>81</sup> In its questionnaire response, \*\*\* provided similar observations.

Among responding importer/purchasers, three identified fuel burn/fuel efficiency as an important non-price factor, two identified delivery schedule/availability, two identified maintenance costs, and one firm each identified the following other non-price factors: delivery time, operating history, crew costs, fleet commonality, considerations for new interiors (such as larger bins and wider seats), and expected total cost of ownership. \*\*\* stated that Boeing and Airbus have superior technical support compared to Bombardier. \*\*\* stated that the economics of an aircraft is based on maintenance costs, fuel efficiency, and purchase price.

## **ELASTICITY ESTIMATES**

This section discusses elasticity estimates; parties were encouraged to comment on these estimates in their prehearing or posthearing brief; none suggested any revisions.

### **U.S. supply elasticity**

The domestic supply elasticity<sup>82</sup> for 100- to 150-seat LCA measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of 100- to 150-seat LCA. The elasticity of domestic supply depends on several factors including the level of excess capacity, the ease with which producers can alter capacity, producers' ability to shift to production of other products, the existence of inventories, and the availability of alternate markets for U.S.-produced 100- to 150-seat LCA. Analysis of these factors above indicates that the U.S. industry has a moderate ability to increase or decrease shipments to the U.S. market in the longer-term; an estimate in the range of 3 to 6 is suggested. (In the short run, aircraft production is much less elastic; see "U.S. supply" above).

### **U.S. demand elasticity**

The U.S. demand elasticity for 100- to 150-seat LCA measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of 100- TO 150-seat LCA. This estimate depends on factors discussed above such as the existence, availability, and commercial viability of substitute products, as well as the component share of the 100- to 150-seat LCA in the production of any downstream products. Based on the available information, the aggregate demand for 100- to 150-seat LCA is likely to be moderately inelastic to moderately elastic; a range of -0.75 to -1.0 is suggested.

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<sup>82</sup> A supply function is not defined in the case of a non-competitive market.

### **Substitution elasticity**

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.<sup>83</sup> Product differentiation, in turn, depends upon such factors as quality (e.g., chemistry, appearance, etc.) and conditions of sale (e.g., availability, sales terms/ discounts/ promotions, etc.). Based on available information, the elasticity of substitution between U.S.-produced 100- to 150-seat LCA and imported 100- to 150-seat LCA is likely to be in the range of 3 to 5.

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<sup>83</sup> The substitution elasticity measures the responsiveness of the relative U.S. consumption levels of the subject imports and the domestic like products to changes in their relative prices. This reflects how easily purchasers switch from the U.S. product to the subject products (or vice versa) when prices change.



## **PART III: U.S. PRODUCERS' PRODUCTION, SHIPMENTS, AND EMPLOYMENT**

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and (except as noted) is based on the questionnaire responses of one firm, Boeing, that accounted for all U.S. production of 100- to 150-seat LCA during 2016.<sup>1 2</sup>

### **U.S. OPERATIONS**

The Commission issued a U.S. producer questionnaire to two firms, Airbus Americas and Boeing, based on information contained in the petition and other available industry resources. Boeing provided usable data on its productive operations on 100- to 150-seat LCA. Staff believes that this response represents all U.S. production of 100- to 150-seat LCA. Although they have not yet produced 100- to 150-seat LCA in the United States, Airbus Americas, as well as CSALP, submitted U.S. producers' questionnaire responses with data regarding planned production of 100- to 150-seat LCA and/or current production of other single aisle LCA in the United States.

Table III-1 lists Airbus Americas', Boeing's, and CSALP's, production locations, positions on the petition, and shares of reported production in 2016.

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<sup>1</sup> Airbus Americas has \*\*\*. As of the date of this report, Airbus Americas has \*\*\*. Airbus Americas' U.S. producers' questionnaire response, II-7, V-2a, and V-2b.

<sup>2</sup> CSALP submitted a U.S. producers' questionnaire response, which accounts for planned production of the Bombardier C Series aircraft at Airbus Americas' Alabama production facility. Press Release, *Airbus and Bombardier Announce C Series Partnership*, Retrieved November 24, 2017 at <http://www.airbus.com/newsroom/press-releases/en/2017/10/airbus-bombardier-cseries-agreement.html>

**Table III-1**  
**100- to 150-seat LCA: Airbus Americas', Boeing's, and CSALP's, production locations, positions on the petition, and shares of reported production, 2016**

Firm	Position on petition	Production location(s)	Share of production (percent)
Airbus Americas	***	Mobile, AL	---
Boeing	Support	Renton, WA Seattle, WA Ladson, SC Auburn, WA Salt Lake City, UT Gresham, WA Helena, MT Everett, WA Puyallup, WA Tukwila, WA	100.0
CSALP	***	Mobile, AL (prospective)	---
Total			100.0

Note.—Airbus Americas and CSALP \*\*\*.

Source: Compiled from data submitted in response to Commission questionnaires.

### Production-related activities

As noted above, Boeing is the only firm that currently produces 100- to 150-seat LCA in the United States. Pursuant to the recently announced planned partnership between Airbus and Bombardier, the Commission requested information through its questionnaires regarding U.S. production plans for CS100 and CS300 models, based on the following factors: (1) source and extent of the firm's capital investment; (2) technical expertise involved in U.S. production activities; (3) value added to the product in the United States; (4) employment levels; (5) quantity and type of parts sourced in the United States; and (6) any other costs and activities in the United States directly leading to production of the like product. CSALP's responses are presented in table III-2.

**Table III-2**  
**100- to 150-seat LCA: CSALP's responses to questions regarding U.S. production of C Series aircraft**

\* \* \* \* \*

Bombardier stated that CSALP will invest \$300 million to build a new final assembly line ("FAL") for the C Series at the existing Airbus facility in Mobile, Alabama. This FAL reportedly will be a replica of one of Bombardier's two C Series FALs currently in operation in Mirabel, Quebec, and will create approximately 2,000 permanent new jobs.<sup>3</sup> According to Bombardier,

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<sup>3</sup> Hearing transcript, p. 193 (Levesque).

the replica FAL in Mobile will involve the same production operations as the two FAL's in Mirabel. Those operations involve the following:<sup>4</sup>

\* \* \* \* \*

Bombardier contends that more than half of the total value of the C Series aircraft produced in Mobile will come from U.S. suppliers.<sup>5</sup> The engines for the C Series are supplied by U.S.-headquartered Pratt & Whitney. \*\*\*.<sup>6</sup> Bombardier plans “to supply our U.S. customers from the new U.S. FAL while continuing to supply customers outside the U.S. from the Quebec facility.”<sup>7</sup> Delta, which originally ordered 75 CS100 to be delivered from Canada, stated that it is “working to renegotiate our CS100 orders to allow U.S. production, although the final details have not been finalized, Delta now does not intend to take delivery of any Canadian-manufactured CS100 but will instead be taking delivery of CS100s manufactured in Mobile, Alabama.”<sup>8</sup> Bombardier stated that CSALP is prohibited from performing certain actions pending antitrust approval, but that the partnership is already moving ahead with site visits and planning steps permitted under antitrust law. Permissible steps including planning the volume and timing of deliveries, how to obtain the necessary production equipment, the organizational structure, tasks to be executed, how to obtain local permits, and budgeting.<sup>9</sup> Regulatory approvals \*\*\*.

#### RELATED FIRMS

As indicated in table III-3, Airbus Americas is owned by Airbus SAS (“Airbus”), a producer of 100- to 150-seat LCA headquartered in France. Boeing is the parent company of \*\*\*. CSALP is a pending limited partnership between Airbus and Bombardier, in which Airbus has a majority stake.<sup>10</sup>

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<sup>4</sup> Bombardier’s posthearing brief, “Responses to Commission Questions,” p. 30.

<sup>5</sup> Hearing transcript, pp. 193-194 (Levesque).

<sup>6</sup> Bombardier’s posthearing brief, “Responses to Commission Questions,” p. 32.

<sup>7</sup> Hearing transcript, p. 194 (Levesque).

<sup>8</sup> Hearing transcript, pp. 200-201 (May). In its posthearing brief, Delta referred to its intentions to take delivery of U.S.-assembled CS100s as a “strong preference.” Delta’s posthearing brief, p. 11. Delta also stated that it currently does not have a commercial right to refuse delivery of its initial order from Canada. Hearing transcript, p. 262 (May).

<sup>9</sup> Hearing transcript, p. 195 (Aranoff); Bombardier’s postconference brief, p. 14.

<sup>10</sup> The agreement was signed by parties on October 16, 2017 and approved by Boards of Directors of Airbus and Bombardier, as well as, the Cabinet of the Government of Quebec. The agreement remains subject to “regulatory approvals, as well as other conditions usual in this type of transaction”, but is currently expected to be completed in the second half of 2018. Press Release, *Airbus and Bombardier Announce C Series Partnership*, Retrieved November 24, 2017 at

<http://www.airbus.com/newsroom/press-releases/en/2017/10/airbus-bombardier-cseries-agreement.html>

**Table III-3**  
**100- to 150-seat LCA: U.S. operations ownership, related and/or affiliated firms**

Firm	Firm name	Affiliated/ownership
<b>Ownership:</b>		
Airbus Americas	Airbus SAS (France)	100 percent ownership
Boeing	Boeing	Publically traded on NYSE: BA
CSALP	Airbus SAS (France)	50.01 percent ownership
	Bombardier	31 percent ownership
	Investissement Québec (IQ)	19 percent ownership
<b>Related producers:</b>		
Airbus Americas	Airbus SAS (France)	Parent company
CSALP	Airbus Americas	Sister company
<b>Related importer/purchasers:</b>		
***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and Press Release, *Airbus and Bombardier Announce C Series Partnership*, retrieved November 24, 2017 at <http://www.airbus.com/newsroom/press-releases/en/2017/10/airbus-bombardier-cseries-agreement.html>

### Changes in operations

Table III-4 presents reported changes in Airbus Americas and Boeing operations since January 1, 2014. In addition to the changes reported in the table, on December 21, 2017, Boeing and Embraer announced that they had entered into discussions regarding the potential purchase of Embraer by Boeing. According to the companies, the talks remain under discussion, there is no guarantee that a transaction will occur as a result, and any transaction would be subject to the approval of the Brazilian government and regulators, the two companies' boards, and Embraer's shareholders.<sup>11</sup>

**Table III-4**  
**100- to 150-seat LCA: Reported changes in Airbus Americas and Boeing operations, since January 1, 2014**

\* \* \* \* \*

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<sup>11</sup> *Embraer Press Release*, PR Newswire, <https://www.prnewswire.com/news-releases/embraer-sa-material-fact-300574679.html>, accessed December 21, 2017.

## U.S. PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION

### 100- to 150-seat LCA

Table III-5 and figure III-1 present Boeing's production, capacity, and capacity utilization. Boeing's aggregate capacity and production decreased from \*\*\* units in 2014 to \*\*\* units in 2015 and 2016, and was lower at \*\*\* units in January – September 2017 compared to \*\*\* in January-September 2016. Boeing explained that \*\*\*.<sup>12</sup> Capacity utilization remained at \*\*\* percent throughout from 2014 through September 2017.

**Table III-5**

**100- to 150-seat LCA: Boeing's capacity, production, and capacity utilization, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Figure III-1**

**100- to 150-seat LCA: Boeing's capacity, production, and capacity utilization, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

Although \*\*\*, Boeing states that its Renton facility has the ability to produce 42 aircraft per month based on a measurement of output per working day. Boeing employs several strategies in order to manage its available skyline \*\*\*. In the near term, Boeing \*\*\*. It adds that \*\*\*. In the long-term, Boeing can grow its production plan, something which it claims to have done on a nearly annual basis as 737 demand has increased. In order to grow its production plan, Boeing \*\*\*. Boeing's current plan is to increase production to 57 airplanes a month, \*\*\*. At its Renton facility, \*\*\*.<sup>13</sup> Delta disputes Boeing's claims that it can incorporate new orders into \*\*\* skyline. According to Delta, Boeing did not compete for an order of 37 737-900ERs because it informed Delta that it had no production slots available through 2020.<sup>14</sup>

### Alternative products

Table III-6 presents Airbus Americas' and Boeing's production of aircraft in the United States regardless of whether using shared machinery. 100- to 150-seat LCA accounted for \*\*\* percent of total the number of aircraft produced during 2016. Production of larger aircraft (other single aisle LCA and all other LCA) accounted for \*\*\* percent of total aircraft production

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<sup>12</sup> Boeing also explained that capacity utilization is based on existing orders and at no point is there excess capacity. Capacity, according to Boeing, is linked to the manufacturer's ability to win orders. Conference transcript, p. 118 (Anderson).

<sup>13</sup> Boeing's postconference brief, att. A, pp. 81-84.

<sup>14</sup> Hearing transcript, p. 200 (May); Delta's posthearing brief, exh. 1, p. 3.

during 2016. Other single aisle LCA production since 2014 consisted of \*\*\*, as well as, \*\*. The all other LCA category (double-aisle aircraft) production consisted of \*\*. <sup>15</sup>

Airbus Americas and Boeing were asked about their ability to switch production between products. Boeing notes that \*\*. Airbus Americas reported that \*\*.

Airbus Americas and Boeing were also asked to describe the constraint(s) that set the limit(s) of their production capacity. Boeing explained that “\*\*\*”.

**Table III-6**

**All aircraft: Airbus Americas’ and Boeing’s production of aircraft in the United States regardless of whether using shared machinery, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

Table III-7 presents Boeing’s fixed assets <sup>16</sup> dedicated to production of 100- to 150-seat LCA and those assets that can be economically repurposed for production of other aircraft.

**Table III-7**

**100- to 150-seat LCA: Boeing’s fixed assets for 100- to 150-seat LCA production, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

Table III-8 presents Airbus Americas’ and Boeing’s projected production whether or not using the same equipment as 100- to 150-seat LCA during 2017-22. U.S. producers reported that the \*\* of their production \*\* during 2017-22 but the share of production of 100- to 150-seat LCA will increase to \*\* percent by 2022. Boeing contends that “{i}n the unlikely event that the 737 MAX 7 manages to remain viable in the face of additional pressure from the C Series, {...there will be} reductions in production and shipments” as well as harm to Boeing’s overall operations and finances. <sup>17</sup> Boeing’s \*\* MAX 7 U.S. customer to date, Southwest, recently announced that it will delay delivery of some of its order until 2023 and 2024, thereby impacting some of the data presented in the table below. <sup>18</sup> Boeing also projected that U.S.

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<sup>15</sup> Boeing noted that double-aisle LCA are produced in a separate facility located in Everett, Washington. Conference transcript, p. 61 (Conner).

<sup>16</sup> Fixed assets were defined in the questionnaire as tangible objects used in production with a useful life greater than one year.

<sup>17</sup> Boeing’s postconference brief, pp. 48-49.

<sup>18</sup> Of Southwest’s total MAX 7 order, 23 aircraft are now scheduled for delivery in 2023 and 11 aircraft are scheduled for delivery in 2024. “Southwest Defers Smallest Boeing 737 Max, Adds Larger Planes,” *Bloomberg*, <https://www.bloomberg.com/news/articles/2018-01-02/southwest-moves-up-40-max-737-8-orders-delays-23-max-7-planes>, accessed January 4, 2018; Southwest Airlines to Boeing: We’ll take the large, *CNBC*, <https://www.cnbc.com/2018/01/03/southwest-airlines-wants-larger-boeing-737-max-8s-soon.html>, accessed January 4, 2017.

airlines will require approximately \*\*\* new 100- to 150-seat LCA units delivered by 2028 in order to meet current fleet replacement needs. These orders will most likely be made within the next five years due to the lag times between orders and deliveries, which is typically several years.<sup>19</sup>

**Table III-8**  
**100- to 150-seat LCA: Airbus Americas' and Boeing's projected production regardless of whether using shared machinery, 2017-22**

\* \* \* \* \*

**BOEING'S U.S. SHIPMENTS AND EXPORTS**

**Historical shipments**

Table III-9 and figure III-2 present Boeing's historical U.S. shipments of 100- to 150-seat LCA during 2007-16. These data show that the number of Boeing's U.S. shipments decreased from \*\*\* units to \*\*\* units from 2007 to 2013. As explained further below, U.S. shipments during 2014-16 consisted of \*\*\*.

**Table III-9**  
**100- to 150-seat LCA: Boeing's historical U.S. shipments, 2007-16**

\* \* \* \* \*

Boeing explained the trend in its shipments from 2007 to 2013. \*\*\*.<sup>20</sup>

**Figure III-2**  
**100- to 150-seat LCA: Boeing's historical U.S. shipments, 2007-16**

\* \* \* \* \*

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<sup>19</sup> Boeing's postconference brief, app. A, p. 3.

<sup>20</sup> \*\*\*. Delta noted that Boeing could not offer Delta new aircraft in the 100- to 150-seat space that met its needs in the required timeframe (by 2020), which is why it purchased the aircraft from Bombardier. Conference transcript, pp. 176-177 (May); hearing transcript, p. 200 (May); Delta, however, also stated that it now intends to take delivery of the C Series aircraft assembled in Mobile, Alabama beginning in \*\*\*. Hearing transcript, p. 201 (May); Delta's prehearing brief, p. 45. Boeing contends that it did not offer new 737-700 or 737 MAX 7 models because \*\*\*. Boeing's postconference brief, p. 20, n.94.

## Current shipments

Table III-10 presents Boeing’s U.S. shipments, export shipments, and total shipments of 100- to 150-seat LCA. Boeing’s reported U.S. shipments of 100- to 150-seat LCA consisted \*\*\* from 2014 to September 2017. Boeing also reported \*\*\*. Boeing’s total shipments of 100- to 150-seat LCA decreased by \*\*\* percent from 2014 to 2016, and were \*\*\* percent lower in January–September 2017 than in January–September 2016. The value of Boeing’s total shipments also decreased by \*\*\* percent from 2014 to 2016 and was \*\*\* percent lower in January–September 2017 than in January–September 2016. The average unit value of Boeings total shipments of 100- to 150-seat LCA fluctuated, however, increasing by \*\*\* percent from 2014 to 2015, but decreasing by \*\*\* percent from 2015 to 2016 and was \*\*\* percent lower in January–September 2017 than in January–September 2016.<sup>21</sup>

Export shipments of 100- to 150-seat LCA accounted for \*\*\* of total shipments during 2014-September 2017. Boeing explained that \*\*\*.<sup>22</sup> In addition, Boeing reported that \*\*\*.<sup>23</sup>

**Table III-10**  
**100- to 150-seat LCA: Boeing’s U.S. shipments, export shipments, and total shipments, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

## Backlog

Table III-11 presents Boeing’s historical orders, beginning of period backlog, and total order book of 100- to 150-seat LCA, by customer type.<sup>24</sup> Boeing’s reported total end-of-period backlog of orders of 100- to 150-seat LCA from all customers ranged from \*\*\* to \*\*\* units on various dates between December 31, 2014 and September 30, 2017 (table III-12).<sup>25</sup> Boeing also indicated that \*\*\*.<sup>26</sup> The decrease in backlog from 2015 to 2016 was attributable to a

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<sup>21</sup> During 2007-16, Boeing’s commercial shipments accounted for \*\*\* percent of total shipments.

<sup>22</sup> \*\*\*.

<sup>23</sup> Ibid.

<sup>24</sup> Boeing’s total backlog across all aircraft types (including wide-body) is 5,864 aircraft, which the company states is equal to seven years’ worth of production. “Boeing surges after reporting record jet deliveries and massive order backlog,” *CNBC*, published January 9, 2018 and updated January 10, 2018, <https://www.cnbc.com/2018/01/09/boeing-caps-2017-with-record-deliveries-backlog.html>, accessed January 10, 2018. Bombardier has similarly argued that Boeing’s backlog of 4,431 aircraft in the 737 family equals seven-to-eight years’ worth of production. Conference transcript, pp. 17, 190 (Lichtenbaum, Aranoff), and Bombardier’s prehearing brief, pp. 1-3, 38, and 46.

<sup>25</sup> These total backlog amounts include \*\*\*. \*\*\*.

<sup>26</sup> \*\*\*.



converted purchase option by United, in which it opted for delivery of other single aisle LCA from Boeing.<sup>27</sup>

**Table III-11**

**100- to 150-seat LCA: Boeing's historical orders, beginning of period backlog, and total order book, by customer type, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Table III-12**

**100- to 150-seat LCA: Boeing's end-of-period backlog, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Sales efforts**

The U.S. producers' questionnaire asked firms to report on recent, current, and likely future 100- to 150-seat LCA sales efforts concerning U.S. customers during 2014-22. Boeing reported the following sales efforts:<sup>28</sup>

\* \* \* \* \*

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<sup>27</sup> In the first quarter of 2016, \*\*\*. In November 2016, United converted all sixty-five 737-700 orders to \*\*\*. Boeing's postconference brief, p. 8 and Boeing's U.S. producers' questionnaire response to question IV-17 of the U.S. producers' questionnaire.

<sup>28</sup> Airbus Americas reported that \*\*\*. CSALP did not provide a response to this question.

## BOEING'S ORDERS

The Commission received information regarding orders of 100- to 150-seat LCA from Boeing. Airbus Americas reported \*\*\*, and indicated that \*\*\*.

Boeing contends that orders determine capacity and production in the aircraft manufacturing industry, as firms do not manufacture aircraft to create inventory.<sup>29</sup> Orders are also important to the development of a new line of aircraft, as they serve as a sign of product viability to potential customers, and because they are a source of advance payments that can partially fund the development of new aircraft. In particular, “winning orders during the design and development phase is generally necessary to prevent premature program termination.”<sup>30</sup> Orders reportedly effect the secondary market value of an aircraft, as “a large number of aircraft and operators create confidence among lessors and among the secondary market purchasers.”<sup>31</sup> Further, cost-effective service and maintenance tends to be more readily available for high-volume models.<sup>32</sup> Boeing further explained that orders enable firms to navigate learning curves relatively quickly during the production of new aircraft.<sup>33</sup> Due to the limited number of major orders, Boeing contends that the loss of one order may have a negative impact on the firm’s commercial momentum.<sup>34</sup>

### Order details

Boeing had orders for a total of seven 737-700 and 737-700C<sup>35</sup> model aircraft from January 2014 to October 2017. Most of the identified customers for these aircraft are foreign entities: China Development Bank Financial Leasing Co. (three 737-700 model aircraft), Kunming Airlines (two 737-700 model aircraft), and Air Algerie (two 737-700C model aircraft). Additionally, The United States Navy ordered two 737-700C model aircraft and unidentified customers ordered two 737-700 model aircraft. Boeing also reports that it currently has unfilled orders for four 737-700 and 737-700C model aircraft.<sup>36</sup>

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<sup>29</sup> Conference transcript, pp. 21 (Novick), 118 (Anderson), and 119-120 (Conner).

<sup>30</sup> Ibid., pp. 36-37 (Nickelsburg).

<sup>31</sup> Hearing transcript, pp. 48-49 (Nickelsburg).

<sup>32</sup> Ibid., p. 49 (Nickelsburg).

<sup>33</sup> Conference transcript., p. 92 (Anderson).

<sup>34</sup> Ibid., p. 28 (Conner). See *Part V* for more information on commercial momentum.

<sup>35</sup> The “C” is a reference to the aircraft’s ability to convert between an all-passenger and all-cargo configuration. This is due in part to the presence of a main-deck cargo door and cargo handling system. “Boeing Delivers First Next-Generation 737-700 Convertible With Quick Change Options,” *Boeing*, <http://boeing.mediaroom.com/2001-11-02-Boeing-Delivers-First-Next-Generation-737-700-Convertible-With-Quick-Change-Options>, accessed January 12, 2018.

<sup>36</sup> Boeing, “Orders & Deliveries,” database, <http://www.boeing.com/commercial/#/orders-deliveries> (accessed November 17, 2017).

Regarding its current U.S. orders for the 100- to 150-seat LCA, Boeing indicated that \*\*\*.<sup>37</sup> However, on January 2, 2018 Southwest delayed delivery of some of its MAX 7s, with 23 aircraft now scheduled for delivery in 2023 and 11 aircraft in 2024. Southwest will still take delivery of seven MAX 7s in 2019, down from the originally estimated 15 aircraft.<sup>38</sup> Boeing reported \*\*\* orders of 100- to 150-seat LCA for delivery during 2017-18.

As mentioned above, in November 2016 United converted an order for 737-700s into 737-800s and MAX 9s. According to Boeing officials, United exercised this conversion option because the airline installed new management with a new fleet strategy in July 2016.<sup>39</sup> However, Boeing added that \*\*\*.<sup>40</sup>

Overall, Boeing reports that it has received \*\*\*.

### Order pricing

Based on the data provided by Boeing on its U.S. orders for 100- to 150-seat LCA aircraft, the price of an individual aircraft is between \$\*\*\*. The price of Boeing's \*\*\* current unfulfilled orders for these aircraft includes a number of ancillary items—these include \*\*\*.<sup>41</sup> Boeing reported that \*\*\*.

### Order delivery

Boeing reported that the average length of time between orders and deliveries is \*\*\*. According to Boeing, 18 to 24 months is the typical lead time necessary to prepare itself and its supply chain to deliver single aisle LCA, particularly for large orders, but that Boeing has the ability to serve demand faster than that both in its production skyline and through other arrangements such as leases.<sup>42</sup> Boeing \*\*\*.

Boeing states that deliveries for a particular order are generally stretched out over time, enabling the customer to phase new aircraft into its network without disruption. This also

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<sup>37</sup> Boeing's data on its current orders \*\*\*. \*\*\*.

<sup>38</sup> Along with delaying delivery of the MAX 7s, Southwest also converted options to firm orders for 40 MAX 8s, with 15 scheduled for delivery in 2019 and 25 scheduled for delivery in 2020. "Southwest Defers Smallest Boeing 737 Max, Adds Larger Planes," *Bloomberg*, <https://www.bloomberg.com/news/articles/2018-01-02/southwest-moves-up-40-max-737-8-orders-delays-23-max-7-planes>, accessed January 4, 2018; Southwest Airlines to Boeing: We'll take the large, *CNBC*, <https://www.cnbc.com/2018/01/03/southwest-airlines-wants-larger-boeing-737-max-8s-soon.html>, accessed January 4, 2017.

<sup>39</sup> Boeing's postconference brief, p. 8.

<sup>40</sup> Petition, exh. 101; Boeing's postconference brief, p. 8 and att. A, p. 1.

<sup>41</sup> Ancillary items account for \*\*\* of the total cost of the company's future 737 MAX 7 orders.

<sup>42</sup> Hearing transcript, pp. 101-102 (McAllister).

allows airline customers to adjust to changes in their network by shifting delivery from one year to another while “maintaining the general spread of aircraft over a number of years.”<sup>43</sup> \*\*\*.

### Order risk and cancellation

Boeing states that “when an airline places an order it's firm. It's a firm obligation for us to have an airplane available and it's a firm obligation for them to take an airplane.”<sup>44</sup> Boeing reported that \*\*\*. According to Delta, negotiated changes to delivery are the rule rather than the exception in the aircraft industry. Delta stated that in the past it has negotiated for and subsequently cancelled as much as 40 percent of an aircraft order without penalty, but that cancelling becomes difficult within a 12 month window of delivery because that is when customization of the aircraft for the specific customer typically begins.<sup>45</sup> As an example, Delta cited \*\*\*.<sup>46</sup>

### BOEING'S INVENTORIES

U.S. producers were asked to report end-of-period inventories of 100- to 150-seat LCA (table III-13). Boeing reported \*\*\* in its end-of-period inventories throughout 2014–September 2017. Boeing reported, with respect to inventories, that it \*\*\*.

**Table III-13**

**100- to 150-seat LCA: Boeing's inventories, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

---

<sup>43</sup> Hearing transcript, p. 84 (McAllister). On January 2, 2018, Southwest announced that it has delayed delivery for the majority of its MAX 7 order, with 23 aircraft now scheduled for delivery in 2023 and 11 aircraft in 2024. “Southwest Defers Smallest Boeing 737 Max, Adds Larger Planes,” *Bloomberg*, <https://www.bloomberg.com/news/articles/2018-01-02/southwest-moves-up-40-max-737-8-orders-delays-23-max-7-planes>, accessed January 4, 2018; Southwest Airlines to Boeing: We'll take the large, *CNBC*, <https://www.cnbc.com/2018/01/03/southwest-airlines-wants-larger-boeing-737-max-8s-soon.html>, accessed January 4, 2017.

<sup>44</sup> Hearing transcript, p. 84 (McAllister). Boeing reports that, on average, approximately \*\*\* of its 737 aircraft are delivered as originally ordered; only about \*\*\* of deliveries involve substitution to a different model. Boeing's posthearing brief, attachment A, p. 46.

<sup>45</sup> Hearing transcript, pp. 254-255 (May)

<sup>46</sup> Delta's posthearing brief, p. 10.

## BOEING'S IMPORTS AND PURCHASES

U.S. importer/purchaser Boeing Capital Corporation ("Boeing Capital") \*\*\*.<sup>47</sup> Since 2014, Boeing Capital purchased \*\*\* used/refurbished 100- to 150-seat LCA units from Boeing at a value of approximately \$\*\*\*.

## U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Boeing produces 100- to 150-seat LCA in Renton, Washington.<sup>48</sup> Table III-14 presents Boeing's employment-related data for 100- to 150-seat LCA. Boeing's employment measured by production and related workers ("PRW") decreased by \*\*\* percent from 2014 to 2015, but increased by \*\*\* percent from 2015 to 2016. Boeing's employment measured by PRWs decreased by \*\*\* percent overall from 2014 to 2016.<sup>49</sup> Boeing's total hours worked decreased by \*\*\* percent from 2014 to 2015, but increased by \*\*\* percent from 2015 to 2016. Boeing's total hours worked decreased overall by \*\*\* percent from 2014 to 2016. In addition, Boeing's hourly wages increased by \*\*\* percent from 2014 to 2016. Boeing noted that \*\*\*. Furthermore, unit labor costs increased by \*\*\* percent from 2014 to 2016, and productivity decreased by \*\*\* percent from 2014 to 2016.

**Table III-14**

**100- to 150-seat LCA: Boeing's average number of production and related workers, hours worked, wages paid to such employees, hourly wages, productivity, and unit labor costs, 2014-16 January to September 2016, and January to September 2017**

\* \* \* \* \*

Table III-15 presents estimated value-added by production activities in the United States by Boeing, as well as a projection of value-added activities by CSALP. Boeing reported that, "\*\*\*\*."

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<sup>47</sup> \*\*\*.

<sup>48</sup> Conference transcript, pp. 59-60 (Conner).

<sup>49</sup> Boeing further noted that it cross-trains employees to maintain a learning curve, enabling them to work on various LCA models. Ibid., p. 149 (Conner).

**Table III-15**  
**100- to 150-seat LCA: Boeing and CSALP's estimated U.S. value-added**

Item	Estimated value-added	
	Boeing 2016	Bombardier / CSALP <sup>1</sup>
U.S. valued added	***	***
Foreign value added	***	***
Total value	100.0	100.0

<sup>1</sup> Bombardier based this on \*\*\*. Bombardier's posthearing brief, "Responses to Commission Questions," p. 30.

Source: Compiled from data submitted in response to Commission questionnaires.

## **PART IV: U.S. IMPORTS, APPARENT U.S. CONSUMPTION, AND MARKET SHARES**

### **U.S. IMPORTER/PURCHASERS**

The Commission issued U.S. importer/purchaser' questionnaires to 41 firms believed to be importer/purchasers of 100- to 150-seat LCA, as well as to U.S. producers of 100- to 150-seat LCA.<sup>1</sup> Usable questionnaire responses were received from 13 companies, representing \*\*\* U.S. purchases and sales for importation from Canada and Europe from January 1, 2014 through September 30, 2017 under HTS subheading 8802.40.00.<sup>2</sup> Eight companies certified that they have not imported, ordered, accepted delivery of, received offers for sale for, and/or entered into a lease arrangement for 100- to 150-seat LCA or other single aisle LCA from any country since 2007: \*\*\*. Two airlines (\*\*\*), and twenty-three leasing and/or finance companies did not respond to the Commission's questionnaire.<sup>3</sup>

Table IV-1 lists all responding U.S. importer/purchasers of 100- to 150-seat LCA, their locations, and their shares of U.S. imports and purchases, by quantity, in 2016. For data concerning imports including partially assembled aircraft, see appendix E.

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<sup>1</sup> The Commission issued questionnaires to those firms identified in the petition, along with firms that, based on a review of data provided by \*\*\*, may have accounted for more than one percent of total imports under HTS subheading 8802.40.00 since 2010.

<sup>2</sup> Since HTS subheading 8802.40.00 is a broad category for passenger aircraft that includes a substantial amount of out-of-scope items, import data presented in the report are based on data compiled from completed questionnaire responses.

<sup>3</sup> In the preliminary phase of these investigations, eight companies certified that they have not imported, ordered, accepted delivery of, received offers for sale for, and/or entered into a lease arrangement for 100- to 150-seat LCA or other single aisle LCA from any country since 2007: (\*\*\*). These companies were not issued questionnaires in the final phase.

**Table IV-1**  
**100- to 150-seat LCA: U.S. importer/purchasers by source, 2016**

Firm	Headquarters	Share of imports and/or purchases by source (percent)				
		Boeing / United States	Bombardier / Canada	Airbus / European Union	All import sources	Total purchases and imports
Air Lease	Los Angeles, CA	***	***	***	***	***
Alaska	Seattle, WA	***	***	***	***	***
American	Ft. Worth, TX	***	***	***	***	***
ACG	Newport Beach, CA	***	***	***	***	***
BBAM	San Francisco, CA	***	***	***	***	***
Boeing Capital	Renton, WA	***	***	***	***	***
BofA	Charlotte, NC	***	***	***	***	***
Delta <sup>1</sup>	Atlanta, GA	***	***	***	***	***
GECAS	Norwalk, CT	***	***	***	***	***
JetBlue	Long Island City, NY	***	***	***	***	***
Southwest	Dallas, TX	***	***	***	***	***
United	Chicago, IL	***	***	***	***	***
Virgin	Burlingame, CA	***	***	***	***	***
Total		100.0	***	100.0	100.0	100.0

<sup>1</sup> Delta \*\*\*. See \*\*\*.

Note.--These data include imports/purchases of both new and used/refurbished aircraft.

Source: Compiled from data submitted in response to Commission questionnaires.

**Air Lease**

Air Lease \*\*\* (table IV-2). Air Lease plans to \*\*\*. Air Lease reported that \*\*\*.

**Table IV-2**  
**Single aisle civilian aircraft, including 100- to 150-seat LCA: Air Lease's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*



## Alaska

Alaska \*\*\* (table IV-3).

### Table IV-3

**Single aisle civilian aircraft, including 100- to 150-seat LCA: Alaska's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

## American

American \*\*\* (table IV-4). While American \*\*\* in 2015, the majority of American's fleet of \*\*\*. American noted that \*\*\*.<sup>4</sup>

### Table IV-4

**Single aisle civilian aircraft, including 100- to 150-seat LCA: American's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

## Aviation Capital Group ("ACG")

ACG's \*\*\* (table IV-5). ACG has a \*\*\*. It \*\*\*.

### Table IV-5

**Single aisle civilian aircraft, including 100- to 150-seat LCA: ACG's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

## BBAM

BBAM's \*\*\* (table IV-6). As a \*\*\*.<sup>5</sup>

### Table IV-6

**Single aisle civilian aircraft, including 100- to 150-seat LCA: BBAM's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

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<sup>4</sup> American \*\*\*.

<sup>5</sup> \*\*\*.

## Boeing Capital

Boeing Capital \*\*\* (table IV-7). Boeing Capital \*\*\*.<sup>6</sup> Boeing Capital noted that \*\*\*.

### Table IV-7

**Single aisle civilian aircraft, including 100- to 150-seat LCA: Boeing Capital's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

## BofA

BofA \*\*\* (table IV-8). BofA \*\*\*.

### Table IV-8

**Single aisle civilian aircraft, including 100- to 150-seat LCA: BofA's business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

## Delta

Delta \*\*\* (table IV-9). While Delta \*\*\*, it ordered 75 CS100s from Bombardier in 2016 with deliveries to occur \*\*\*, although it is seeking to defer the first deliveries until \*\*\* so that they can be supplied by CSALP.<sup>7</sup> These \*\*\*.<sup>8</sup> Delta noted that \*\*\*. In addition, Delta explained that the \*\*\*.

Delta further explained that it maintains a diverse aircraft fleet of various sizes from every major manufacturer to enable it to match its aircraft to its specific mission profile. Delta is also currently executing a fleet optimization strategy to reduce operating costs and improve product quality by shifting from small regional jets to increasingly larger mainline aircraft, including both subject 100- to 150-seat LCA and other single aisle LCA, which are most cost-efficient on a per-seat basis.<sup>9</sup> In addition, Delta noted that it looks at its "mission per seat cost {and} revenue projections to evaluate the financial merit of any potential acquisition in combination with {its...} own experience in negotiating with suppliers."<sup>10</sup>

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<sup>6</sup> Boeing Capital \*\*\*.

<sup>7</sup> Delta's current order with Bombardier is for 75 CS100s with the option to purchase an additional 50 CS100s, as well as an option to convert the order to CS300s \*\*\*. \*\*\*. Delta also \*\*\*. Delta expects that it will accept delivery of the first CS100s \*\*\* from Mobile, Alabama, \*\*\*, although it currently does not have a commercial right to refuse delivery of its initial order from Canada. Delta's importer/purchaser questionnaire response and hearing transcript, pp. 200 and 262 (May).

<sup>8</sup> Delta's U.S. importer/purchasers' questionnaire response, attachment.

<sup>9</sup> Delta's postconference brief, pp. 18, 22.

<sup>10</sup> Conference transcript, p. 179 (May).

**Table IV-9**  
**Single aisle civilian aircraft, including 100- to 150-seat LCA: Delta’s business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**GECAS**

GECAS \*\*\*(table IV-10). \*\*\*. GECAS \*\*\*.<sup>11</sup>

**Table IV-10**  
**Single aisle civilian aircraft, including 100- to 150-seat LCA: GECAS’ business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**JetBlue**

JetBlue \*\*\* (table IV-11). It operates a fleet of \*\*\*. JetBlue \*\*\* from January 2014 through September 2017, but \*\*\*.<sup>12</sup>

**Table IV-11**  
**Single aisle civilian aircraft, including 100- to 150-seat LCA: JetBlue’s business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Southwest**

Southwest \*\*\* (table IV-12). It also \*\*\* during 2014 to September 2017. Southwest \*\*\*. Southwest expects to \*\*\*. On January 2, 2018, Southwest announced that it has delayed delivery for the majority of its MAX 7 order, with 23 aircraft now scheduled for delivery in 2023 and 11 aircraft in 2024.<sup>13</sup> Additionally, \*\*\*.<sup>14</sup> Southwest \*\*\* ordered the MAX 7 and accounted for \*\*\* of the total order volume.

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<sup>11</sup> GECAS explained that \*\*\*. \*\*\*.

<sup>12</sup> Staff telephone interview with \*\*\*, November 22, 2017. \*\*\*.

<sup>13</sup> “Southwest Defers Smallest Boeing 737 Max, Adds Larger Planes,” *Bloomberg*, <https://www.bloomberg.com/news/articles/2018-01-02/southwest-moves-up-40-max-737-8-orders-delays-23-max-7-planes>, accessed January 4, 2018; Southwest Airlines to Boeing: We'll take the large, *CNBC*, <https://www.cnbc.com/2018/01/03/southwest-airlines-wants-larger-boeing-737-max-8s-soon.html>, accessed January 4, 2017.

<sup>14</sup> \*\*\*'s importer/purchaser questionnaire response, section II-9.

**Table IV-12**

**Single aisle civilian aircraft, including 100- to 150-seat LCA: Southwest’s business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**United**

United \*\*\* (table IV-13). The \*\*\*. United explained that \*\*\*. United \*\*\*.<sup>15</sup> \*\*\*.

**Table IV-13**

**Single aisle civilian aircraft, including 100- to 150-seat LCA: United’s business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Virgin America**

Virgin America, which merged with Alaska in 2016,<sup>16</sup> \*\*\* (table IV-14).<sup>17</sup> The firm reported \*\*\*. It also did \*\*\*.

**Table IV-14**

**Single aisle civilian aircraft, including 100- to 150-seat LCA: Virgin America’s business model, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**U.S. IMPORTS/PURCHASES**

Table IV-15 and figure IV-1 present data for U.S. imports and/or purchases of 100- to 150-seat LCA.<sup>18</sup> These data show that \*\*\*,<sup>19</sup> while \*\*\*. There were \*\*\*.<sup>20</sup> \*\*\*.

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<sup>15</sup> Email from United to investigator, November 20, 2017 (EDIS doc. No. 631325).

<sup>16</sup> Alaska Air Group Closes Acquisition of Virgin America, Becomes the 5<sup>th</sup> Largest U.S. Airline, <https://newsroom.alaskaair.com/2016-12-14-Alaska-Air-Group-closes-acquisition-of-Virgin-America-becomes-the-5th-largest-U-S-airline>, December 14, 2016.

<sup>17</sup> Virgin America \*\*\*.

<sup>18</sup> Import data refer to purchases of new aircraft from manufacturers other than Boeing.

<sup>19</sup> Virgin reported \*\*\*.

<sup>20</sup> Boeing noted that purchasing a used airplane can be a more cost-effective solution for a customer if the airplane and refurbishment price prices are appropriate and it still has a long economic life, despite the fact that it may not have as advanced operating performance features and would require higher maintenance costs. Conference transcript, pp. 109, 111 (Conner, Anderson).

Boeing also explained that with the exception of Delta, airlines typically do not look to the used LCA market for their fleet replacement needs since used LCA are not available in sufficient quantities. They will purchase used/refurbished LCA to meet a need for additional capacity in a short timeframe. Delta,

(continued...)

**Table IV-15**  
**100- to 150-seat LCA: U.S. imports and/or purchases, by source, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Figure IV-1**  
**100- to 150-seat LCA: U.S. import quantities and average unit values (new aircraft), 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**NEGLIGENCE**

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.<sup>21</sup> Negligible imports are generally defined in the Tariff Act of 1930, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petition or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.<sup>22</sup> The statute also provides that, even if subject imports are found to be negligible for the purposes of present material injury, they shall not be treated as negligible for purposes of a threat analysis should the Commission determine that there is a potential that subject imports from the country concerned will imminently account for more than 3 percent of all such merchandise imported into the United States.<sup>23</sup>

Imports from Canada accounted for zero percent of total imports of 100- to 150-seat LCA by quantity during 2016 and for the period from April 2016 to March 2017. The petitioner, however, alleges that C Series imports from Canada will be 100 percent of all imports in 2018 and well above 50 percent in each subsequent year through 2021 based on the terms of Delta’s order for C Series aircraft.<sup>24</sup> Respondents argue that imports from Canada are negligible

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(...continued)

however, uses a strategy that involved purchasing used/refurbished LCA and maximizing its in-house maintenance capabilities to extend the useful life of these LCA. Boeing’s postconference brief, app. A, pp. 17-18.

<sup>21</sup> Sections 703(a)(1), 705(b)(1), 733(a)(1), and 735(b)(1) of the Act (19 U.S.C. §§ 1671b(a)(1), 1671d(b)(1), 1673b(a)(1), and 1673d(b)(1)).

<sup>22</sup> Section 771 (24) of the Act (19 U.S.C § 1677(24)).

<sup>23</sup> 19 U.S.C. § 1677(A)(iv).

<sup>24</sup> Petition, p. 28; Boeing’s prehearing brief, pp. 69-70.

because there were no imports of 100- to 150-seat LCA from Canada from 2014 to 2016, and that because Bombardier and Airbus plan to supply U.S. customers from a new U.S. FAL in the future, and the lag time between orders and deliveries in this industry mean as-yet-unannounced sales cannot result in “imminent” imports.<sup>25</sup>

Table IV-16 presents data regarding projected deliveries of 100- to 150-seat LCA to the United States by Airbus and Bombardier. During the preliminary phase of these investigations, deliveries by Bombardier of 100- to 150-seat LCA were projected to begin April 2018;<sup>26</sup> however, in light of the partnership agreement between Bombardier and Airbus, Delta stated that it no longer plans to import these aircraft in 2018. According to Delta, it is renegotiating the terms of the original contract to accommodate delivery of Bombardier’s aircraft from Alabama \*\*\*.<sup>27</sup> Bombardier \*\*\*.<sup>28</sup> Delta has acknowledged that “we do not have a current commercial right to refuse” delivery of C Series from Canada beginning in 2018 “but we’ve made it clear what our desires are and it is an open negotiation.”<sup>29</sup> For data concerning the negligibility of imports from Canada including partially assembled aircraft, see appendix E.

**Table IV-16**

**Projected 100- to 150-seat LCA deliveries of Airbus and Bombardier, 2017-22**

\* \* \* \* \*

#### **APPARENT U.S. CONSUMPTION AND MARKET SHARES**

Table IV-17 presents data on apparent U.S. consumption and U.S. market shares for new 100- to 150-seat LCA. These data show that consumption of 100- to 150-seat LCA consists of \*\*\*. Apparent U.S. consumption increased by \*\*\* from 2014 to 2015, but decreased by \*\*\* from 2015 to 2016. In addition, apparent U.S. consumption by quantity was \*\*\* higher during January to September 2016 than (\*\*\*) during January to September 2017.

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<sup>25</sup> Bombardier’s prehearing brief, p. 15; Delta’s prehearing brief, pp. 39-40; Government of Canada’s prehearing brief, pp. 11-15

<sup>26</sup> Bombardier’s postconference brief, p. 2.

<sup>27</sup> Delta’s U.S. importer/purchasers’ questionnaire response, II-8; CSALP’s U.S. producers’ questionnaire response, II-16 and attachments thereto; Hearing transcript, pp. 200-201 (May).

<sup>28</sup> Bombardier’s foreign producers’ questionnaire response, attached supplement to II-11a.

<sup>29</sup> Hearing transcript, p. 262 (May).

**Table IV-17**  
**100- to 150-seat LCA: Apparent U.S. consumption 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Figure IV-2**  
**100- to 150-seat LCA: Apparent U.S. consumption, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*





## PART V: PRICING DATA

### INPUT COSTS

The main inputs for the production of 100- to 150-seat LCAs are the components required to assemble aircraft. Once a purchase order is received, 100- to 150-seat LCA manufacturers work with various component suppliers to develop and produce parts for each aircraft. While some components are used across all 100- to 150-seat LCA, some components can be specifically developed and produced based on purchaser specifications. Overall, Boeing's cost of raw materials, as a percentage of total cost of goods sold, was \*\*\* over 2014 to 2016.<sup>1</sup>

### SALES AND PRICING PRACTICES

#### 100- to 150-seat LCA prices

According to Boeing, subject imported and domestic 100- to 150-seat LCA are substitutable and ultimately compete for sales on price alone, with non-price factors monetized, and then reflected in the final contract price.<sup>2</sup> Boeing also reported that demand for travel on routes served by 100- to 150-seat LCA is highly price sensitive, which in turn drives airline companies to aggressively seek competitive aircraft pricing.<sup>3</sup>

Respondents, however, contend that in addition to price, airlines also consider other factors such as fuel burn rates and efficiency, the weight of the aircraft (which can drive landing fees and other costs), and maintenance costs as well as factors such as range, passenger comfort, field performance, and noise levels.<sup>4</sup> For example, Delta described first identifying a mission (i.e., passenger flights that it wished to provide), then calculating the net present value of an aircraft for that mission, including fuel, crew, maintenance, spare engines, spare parts, tooling, flight simulators and training, and "numerous other costs."<sup>5</sup> Respondents conclude that, "numerous ancillary terms, options, and performance guarantees would make it impossible to compare simple price data across contracts on a consistent, apples-to-apples basis."<sup>6</sup>

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<sup>1</sup> See *Part VI* for additional information on raw material costs.

<sup>2</sup> Conference transcript, p. 49 (Anderson), and hearing transcript, p. 62 (Anderson). For example, \*\*\*. Boeing's postconference brief, exh. ER-97. Boeing submitted an internal analysis of what an airline's comparison of the net present value of a 737 MAX 7 and a CS300 would look like, and concluded that the CS300 is \*\*\*. Boeing's prehearing brief, pp. 65-66, 96, and exhibit 44.

<sup>3</sup> Petition, p. 49.

<sup>4</sup> Conference transcript, p. 165 (Mitchell).

<sup>5</sup> Posthearing brief of Delta, pp. 26-28, and Delta's prehearing brief, pp. 26-27.

<sup>6</sup> Bombardier's postconference brief, p. 30. In addition, Respondents stated that high-volume purchases by a customer result in commercial or volume discounts. Conference transcript, p. 177 (May).

In addition to differences in pricing due to non-price factors, Respondents allege that there is a pattern of pricing for new aircraft that are entering into service for the first time. An airline that is among the first to accept the delivery of a new model knows that it faces risks of difficulties and delays given the complexity of aircraft production.<sup>7</sup> According to Respondents, the “launch price” or “marquee deal” (see below) can be anywhere from 20 to 30 percent lower than the price of subsequent sales.<sup>8</sup> Delta added that “one widely recognized and consistent feature {of this industry} is that launch or marquee customers receive favorable pricing that reflect their status and the risk associated with adopting new aircraft.”<sup>9</sup> Consequently, in their view, because the launch price compensates for additional risk and the evaluation of a new aircraft, the launch price does not set a price ceiling (or create a “lighthouse effect”) for subsequent sales.<sup>10</sup> In situations where an aircraft is “unproven,” smaller airlines give “significant” weight to larger airlines when considering placing an order for a new aircraft type.<sup>11</sup> Respondents add that after an aircraft obtains certification, a steady delivery stream is established, and in-service disruptions diminish, the risks associated with purchasing the aircraft decline and prices tend to rise.<sup>12</sup> Boeing argues that Delta could not have received launch pricing on its order for CS100s because producers do not normally offer launch pricing seven to eight years after the launch of a new LCA model or after the model has been certified, and the CS100 was launched in 2008 and certified by Transport Canada in December 2015.<sup>13</sup>

### **Contracts, sales terms, and discounts**

According to Boeing, the key purchase items (see below) are set at the time of order and formalized in contractually binding obligations. Order contracts include initial deposits at time of order, and significant pre-delivery installment payments that support the cash flow needed to sustain production operations.<sup>14</sup>

Both Boeing and Bombardier reported that their sales contracts contain \*\*\*. Boeing indicated that it had \*\*\*. For its U.S. orders, Bombardier described the \*\*\*.<sup>15</sup>

Boeing described its pre-delivery payment as \*\*\*.

Bombardier described its pre-delivery schedule as \*\*\*.<sup>16</sup>

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<sup>7</sup> Conference transcript, p. 165 (Mitchell).

<sup>8</sup> Conference transcript, p. 238 (May).

<sup>9</sup> Delta’s postconference brief, p. 28.

<sup>10</sup> Conference transcript, pp. 177, 178 (May).

<sup>11</sup> Delta’s postconference brief, p. 31.

<sup>12</sup> Conference transcript, p. 166 (Mitchell).

<sup>13</sup> See Boeing’s prehearing brief, p. 100; Boeing’s posthearing brief, responses to Commissioner questions, pp.29-30; hearing transcript, p. 132-133 (Nickelsburg). Delta states that “the CS100 . . . did not win its flight certification until December 2015.” Delta’s posthearing brief, p.12.

<sup>14</sup> Petition, pp. 2, 47, and Boeing’s prehearing brief, p. 67.

<sup>15</sup> \*\*\*.

<sup>16</sup> Regarding engine pricing, Boeing indicated that the “\*\*\*.” Bombardier indicated that the “\*\*\*.”

Boeing indicated that \*\*\*.

Contracts for 100- to-150 seat LCA may allow importer/purchasers to make some changes to delivery and the models specified. Delta described changes to material terms of purchase agreements as routine in the aircraft market.<sup>17</sup> Boeing reported that \*\*\* to \*\*\* percent of its 737 aircraft are delivered as originally ordered.<sup>18</sup>

Table V-1 summarizes importer/purchaser descriptions of how often their contracts contain such options, and table V-2 summarizes how often they reported exercising such options. Importer/purchasers were more likely to report sometimes deferring delivery than upgrading to other models. However, five purchasers did describe having contracts with the ability to upgrade models, and sometimes exercising such options.<sup>19</sup> Among major airlines, \*\*\* stated that contracts frequently allow deferred delivery and sometimes allow upgrades to other models; \*\*\* answered sometimes to both; and \*\*\* answered sometimes to each individually, but stated that contracts never allowed both. The two firms describing themselves as frequently exercising options to purchase out-of-scope aircraft were \*\*\*.

**Table V-1**  
**100- to 150-seat LCA: U.S. importer/purchasers' reported frequency of contractual options**

Item	Number of firms reporting			
	Always	Frequently	Sometimes	Never
Deferred delivery	0	1	6	2
Upgrade to models not originally in contract	0	0	5	4
Deferred delivery and upgrade to models not originally in contract	0	0	4	5

Source: Compiled from data submitted in response to Commission questionnaires.

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<sup>17</sup> Posthearing brief of Delta, pp. 40-42.

<sup>18</sup> Boeing's posthearing brief, responses to Commissioner questions, p.46.

<sup>19</sup> With regard to deferral specifically, importer/purchasers were asked how often, since January 1, 2007, they had requested deferred deliveries of 100- to 150-seat LCA. For the period 2007 through 2013, no importer/purchaser indicated it had requested such deferrals by a specific amount of time, although \*\*\* stated that it had frequently adjusted its order books, for varying periods, to align with demand. \*\*\*. For the period since January 1, 2014, \*\*\* indicated that it had \*\*\*. \*\*\* indicated that it had deferred \*\*\* aircraft for more than 2 years, based on its aircraft network needs.

**Table V-2**

**100- to 150-seat LCA: U.S. importer/purchasers' reported frequency of exercising contractual options**

Item	Number of firms reporting			
	Always	Frequently	Sometimes	Never
Option to buy additional scope	0	0	3	6
Option to convert to larger scope model	0	0	1	8
Option to convert to larger out-of-scope model	0	2	3	4

Source: Compiled from data submitted in response to Commission questionnaires.

Both airline and leasing company importer/purchasers that described upgrading or deferring shipments under a purchase contract described doing so because of changing market demands and/or new models introduced. When asked why a buyer may wish to upgrade a model, importer/purchasers described the benefits as keeping the fleet more aligned with demand conditions. Some added that those benefits must be balanced against the cost of any cost escalators in the contract for doing so.

### **Bidding process**

Because of the limited number of global producers and high concentration of purchasers, responding firms described various 100- to 150-seat LCA solicitation and purchase processes ranging from formal request for proposals (“RFP”) and bids, to informal discussions or direct negotiations with one or more suppliers, to single sourcing of aircraft. Boeing described the process as primarily centered on the bid process.

According to Boeing, aircraft sales are generally \*\*\*.<sup>20</sup> Boeing also stated that, although sales campaigns vary in terms of the formality of the process, \*\*\*. Boeing added that \*\*\*.

\*\*\* described bids as being \*\*\*. \*\*\*.

Bombardier reported conducting its sales \*\*\*, as did CSALP. Bombardier stated that \*\*\*.

Importer/purchasers described a variety of purchase methods, driven by individual fleet needs and purchase preferences. \*\*\* reported that it typically engages in a bidding process (but for additional aircraft purchases for the existing 737 fleet, it will \*\*\*; whereas \*\*\* indicated that it generally does not issue an RFP, preferring to work with identified manufacturers when there is an identified need. \*\*\* negotiate and enter into agreements directly with Boeing (\*\*\*) and Airbus (\*\*\*). \*\*\* negotiates directly with manufacturers for new aircraft, but solicits bids for used aircraft. \*\*\* reported that it uses no single standard method, elaborating that its recent purchase agreement with \*\*\*.<sup>21</sup> Among other importer/purchasers, \*\*\* requests formal proposals, \*\*\* negotiates directly with suppliers, and \*\*\*.

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<sup>20</sup> See also Boeing’s prehearing brief, p. 61.

<sup>21</sup> \*\*\*.

Four importer/purchasers (\*\*\*) described bids as closed, while two (\*\*\*) indicated that they were open. \*\*\* indicated that in closed bids, bidders typically knew the identities of other bidders.<sup>22</sup>

Four importer/purchasers (\*\*\*) indicated that in the negotiating process, they discussed competing bids or solicitations in order to obtain lower prices. \*\*\* stated that they did not share the specifics of competitors' bids, but do let bidders know when their bids are not competitive. \*\*\* stated that it did let competitors know how much they lagged other bidders. Four other importer/purchasers (\*\*\*) indicated that they did not discuss competing bids.

U.S. importer/purchasers reported considering price and non-price factors during the bid process. Identified factors include various economic and technical factors such as purchase price, overall operating cost, seat cost efficiency, availability/delivery timing, performance, warranties, and finance terms. \*\*\* reported that there are many iterations in its bid process, and that price is only one of many factors considered.

In terms of frequency of solicitation and years of deliveries covered by purchases, importer/purchasers generally did not report specific approaches or requirements. Most indicated that they purchase infrequently, having no specific pattern, or as needed, and that overall purchase timing and delivery schedule depends on fleet plan, size of order, and aircraft needs. Airline importer/purchasers generally indicated that deliveries under a purchase can extend for two to seven years. \*\*\* elaborated that in its \*\*\*.

### **Impacts of bids or purchase price offers**

Producers and importer/purchasers were asked how the outcome of bids or purchase price offers in the 100- to 150-seat LCA industry influence their subsequent bids or price offers to other purchasers. Boeing stated that \*\*\*. Bombardier stated that \*\*\*. \*\*\*.

Among importer/purchasers, \*\*\* stated that on multi-offer bids, the winning bid usually contains \*\*\*. \*\*\* stated that it \*\*\*. \*\*\* also noted similar reasons for preferring to stay with the same supplier, but added that it \*\*\*. Leasing firm \*\*\* stated that \*\*\*. \*\*\* stated that \*\*\*.

### **Impact of sales performance**

Firms were asked how recent market sales performance of a given 100- to 150-seat LCA model affects the likelihood that a purchaser will order that model in the future. Boeing stated that \*\*\*.

Bombardier and CSALP described \*\*\*.

Among importer/purchasers, several responding firms indicated that past sales performance does not play a large role in their purchases of 100- to 150-seat LCA. Three \*\*\*, along with \*\*\*, stated that past sales performance of a particular model plays little or no role in their likelihood to order that model. \*\*\* stated that purchases are determined by \*\*\*. \*\*\*

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<sup>22</sup> No other importer/purchasers answered the question.

stated that it pursues a strategy of \*\*\*. \*\*\* stated that it looks at \*\*\*. On the other hand, \*\*\* stated that it \*\*\*. \*\*\* stated that it \*\*\*.

### **Firms excluded from bids**

Firms were asked to describe any instances of being excluded from bidding, or purchaser solicitations, on U.S. sales of 100- to 150-seat LCA. Boeing \*\*\*. Bombardier \*\*\*.<sup>23</sup>

### **Trends in bid and sales prices**

Firms were asked about trends in bid or sales prices since January 1, 2014. Boeing indicated that \*\*\*. On the other hand, \*\*\*.

Among importer/purchasers, \*\*\* described the trend in prices since 2014 \*\*\*. \*\*\* stated that it sees variation in the prices of 100- to 150-seat LCAs depending on conditions in the wider economy. \*\*\* stated that it \*\*\*. \*\*\* stated that when demand is higher for a particular type of aircraft, delivery times become longer.

### **Launch and marquee sales**

Launch sales are sales of new models of large civil aircraft. Producers and importer/purchasers were asked to identify discounts from average list prices received by launch customers. Boeing stated that \*\*\*. Boeing added that \*\*\*. Boeing also stated that launch and other strategic pricing is not “below production cost” pricing,<sup>24</sup> and that launch pricing comes in the time period after an aircraft has been designed but before the aircraft has been produced or certified.<sup>25</sup>

Bombardier and CSALP \*\*\*.<sup>26</sup>

Eight importer/purchasers expressed familiarity with launch sales, while three indicated that they were not familiar. Importer/purchasers described a wide range (from 5 to 50 percent) for the discounts off list price that launch sales may command, but \*\*\* clarified that while all customers may receive a \*\*\* percent discount for routine sales, there is an additional \*\*\* percent discount for launch sales. Similarly, \*\*\* stated that the \*\*\*. Importer/purchasers generally did not distinguish between derivative and clean sheet LCA models in describing launch sale discounts, with \*\*\* adding that while there is no consistent difference between

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<sup>23</sup> For details of \*\*\*.

<sup>24</sup> Hearing transcript, pp. 54, 138 (Nickelsburg).

<sup>25</sup> Hearing transcript, pp. 132-133 (Nicklesburg) and 135 (McAllister).

<sup>26</sup> In its prehearing brief, Bombardier stated that launch pricing for its C Series product “sets no reference point for future sales, once the program matures.” Bombardier’s prehearing brief, p. 3. It also described price trends for Boeing 787s as showing that launch prices do not keep prices low indefinitely. Bombardier’s posthearing brief, answers to questions, pp. 10-11.

derivative-model and clean-sheet-model launch sale discounts, it would expect a slightly higher discount on models that were not yet accepted in the market. \*\*\* stated that it did not think there was any “typical” discount due to high levels of variation from sale to sale.

Importer/purchasers were asked how launch prices affect their expectations for similar LCA. \*\*\* stated that when a manufacturer has launched a new model to compete against a competitor’s existing model, it would expect a discount on the new model. \*\*\* similarly stated that it expected competitive discounts on later sales. \*\*\* stated that “what affects price” is competition among suppliers for a sale. With regard to derivative models in particular, \*\*\* stated that it expected the best pricing on launch sales, and \*\*\* stated that discounts are usually not maintained on later sales.

Importer/purchasers were also asked about how the announced launch of derivative models of 100- to 150-seat LCAs affects the prices of other 100- to 150-seat LCAs from the same manufacturer. Five answered that it would likely, or at least could, reduce prices, citing the perception that such sales would mean older models are being replaced with newer, more technologically advanced ones. However, \*\*\* did not expect any reduction, and \*\*\* stated that an effect would be unclear, since it described Airbus and Boeing as “really” only having one model each in the 100- to 150-seat LCA market. Five importer/purchasers expected that a new model of 100- to 150-seat LCA would decrease the price that they would be willing to pay for current models, while three (\*\*\*) did not anticipate a change. \*\*\* stated that its answer depended on the technology in the two models remaining the same. \*\*\* stated that price depends on competition.

“Marquee sales” are sales of large civil aircraft to prominent purchasers. Firms were asked to identify the discount from average list price received by marquee customers. Boeing stated that \*\*\*. Boeing also added that \*\*\*.

Bombardier and CSALP \*\*\*.

Seven importer/purchasers expressed familiarity with marquee sales, while two indicated that they were not familiar with such sales. Similar to its response for launch sales, \*\*\* stated that \*\*\*. \*\*\* stated that it expects discounts of \*\*\* percent off of the list price for marquee sales. \*\*\* stated that marquee discounts exist both because \*\*\*. \*\*\* stated that it did not think there was any “typical” discount due to high levels of variation from sale to sale. (No importer/purchaser responded differently for clean sheet models than for derivative models, other than to indicate that they had only purchased derivative models).

Importer/purchasers did not provide extensive answers when asked how marquee prices affect their purchase prices for similar LCA. \*\*\* stated that it \*\*\*. \*\*\* stated that “what affects price” is competition among suppliers for a sale. \*\*\* stated that it would expect deeper discounts on new models with untested features than on derivative models.

### **Bundled purchases**

Importer/purchasers were asked if they simultaneously negotiate with a single manufacturer for the purchase of 100- to 150-seat LCA along with other aircraft. Seven stated that they did not, while five (\*\*\*) stated that they did. Four of those five stated that the price negotiated for the 100- to 150-seat LCA is contingent on the prices of the other aircraft, while

\*\*\* stated that it was not. \*\*\* described bundled purchases as affecting prices for 100- to 150-seat LCA “from time to time.” \*\*\* stated that it typically negotiated \*\*\*. \*\*\* also indicated that it negotiates for such \*\*\*. \*\*\*.

### **Conversions**

Some contracts allow purchasers to convert their orders of one type of aircraft to another, that is, from a 100- to 150-seat LCA to another aircraft, or vice versa. \*\*\*. \*\*\*.

Boeing estimated that, on average, about \*\*\* percent of its 737 aircraft are delivered as originally ordered. It continued that its customers ask for conversion rights in order to have the flexibility to adjust their order to their business and market needs closer to delivery, typically \*\*\* prior to delivery.<sup>27</sup> Bombardier submitted an analysis of outside aircraft fleet data that indicated that 81 percent of Boeing’s conversions of 737s since 1997 have been to more expensive models.<sup>28</sup> Delta described conversion rights as ubiquitous in its aircraft purchase contracts.<sup>29</sup>

### **Lighthouse effect and commercial momentum**

Aircraft pricing is set at the time of the order and affects both the specific sales transaction, and according to Boeing, future sales transactions. Boeing argues that price feedback from purchasers creates a mechanism by which purchasers expect comparably low prices for future sales, also called the “lighthouse effect.” The effect is not limited to new orders or a formal sales campaign, but may also be made by existing customers for incremental product deliveries.<sup>30</sup> According to Boeing, \*\*\*. Boeing identified the main drivers of price discovery as the relatively small number of sophisticated customers, highly publicized sales campaigns that occur infrequently, and information sources such as securities filings, lease company offers, and financial packages.<sup>31</sup> It added that while purchasers may not observe the exact price paid, they will have a general idea based on these sources.<sup>32</sup>

Bombardier, however, stated that “\*\*\*, noting that if Boeing were correct, one would expect to see additional C Series orders in the U.S. market, but none have occurred in the 13 months since the Delta purchase.<sup>33</sup> The Government of Canada stated that, because

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<sup>27</sup> Boeing’s prehearing brief, answers to questions, p. 46. See also hearing transcript, p. 96 (McAllister).

<sup>28</sup> Bombardier’s posthearing brief, answers to questions, p. 10.

<sup>29</sup> Hearing transcript, p. 253 (May).

<sup>30</sup> Petition, pp. 19, 49.

<sup>31</sup> Conference transcript, p. 37 (Nickelsburg). Boeing identified three reasons Republic Airways’ C Series purchase did not have the same effect: price, significantly lower volumes, and Republic is not a “market leader.” Boeing’s postconference brief, app. 22-3.

<sup>32</sup> Hearing transcript, pp. 129-130 (Nickelsburg).

<sup>33</sup> Bombardier’s postconference brief, p. 28.



Bombardier subsequently described the sale as an “onerous contract provision” in a securities announcement, market participants understand that similar prices will not be available on future orders.<sup>34</sup> Delta claimed that one of the characteristics of the aircraft industry is the high degree of price opacity, which limits the ability of price transmission.<sup>35</sup>

Ten importer/purchasers (including \*\*\*) stated that in general, they were not aware of prices paid by other purchasers for 100- to 150-seat LCA. \*\*\* stated that it was broadly aware, and both it and \*\*\* stated that sometimes they received relatively vague word-of-mouth information at conferences or industry events. \*\*\* stated that it \*\*\* in combination with many other factors it uses in purchase negotiations.

When asked how the outcome of prior sales in the 100- to 150-seat LCA market affects their purchase price expectations, most importer/purchasers stated that they did not know other prior sales prices, so the effect is small. However, \*\*\* stated that if they knew, they would expect comparable discounts. \*\*\* stated that \*\*\*. \*\*\* stated that competition for an order is “what affects price.” Firms did not respond differently for prior sales of current, derivative, or clean-sheet models.

### Questionnaire bid data

In the preliminary phase of these investigations, U.S. and foreign producers were asked to provide bid data for bids since January 1, 2014. For each bid/sales campaign, they were requested to provide the following information: for initial and final offers—customer, offer date, offer model(s), aircraft specifications, firm order units offered, included engine price, ancillary items per aircraft, delivery terms, payment terms, and offer acceptance, as well as a description of factors driving changes in initial versus final offers. Boeing provided bid data for \*\*\* individual sales campaigns, \*\*\* (table V-3a). Bombardier provided bid data for \*\*\* individual sales campaigns involving \*\*\* (table V-3b). Selected bid information is presented chronologically in table V-4.

Of the seven bid events, only one had an accepted initial offer—\*\*\*.<sup>36</sup> \*\*\* of the \*\*\* Boeing \*\*\*. All \*\*\*. None of Boeing’s bids showed \*\*\*.

**Table V-3a**  
**100- to 150-seat LCA: Boeing’s bids since January 1, 2014, by customer, by model**

\* \* \* \* \*

**Table V-3b**  
**100- to 150-seat LCA: Bombardier’s bids since January 1, 2014, by customer, by model**

\* \* \* \* \*

<sup>34</sup> Canada’s prehearing brief, p. 42.

<sup>35</sup> Delta’s postconference brief, pp. 28-29. Flight Ascend also stated that important price elements are not known by non-participants. Hearing transcript, p. 287 (Dimitroff).

<sup>36</sup> \*\*\*. Canada’s prehearing brief, p. 45.

**Table V-4**

**100- to 150-seat LCA: Boeing's and Bombardier's bid events since January 1, 2014, by date**

\* \* \* \* \*

**Importer/purchasers' bid information**

In the final phase of these investigations, importer/purchasers were also asked about bid solicitations or solicitations made to them since January 1, 2007. Four importer/purchasers (\*\*\*) indicated that they had been involved in such solicitations, although \*\*\* did not provide any additional information. Five importer/purchasers (\*\*\*) indicated that they had not had any involvement in such solicitations.

Importer/purchaser bid information is summarized below. Importer/purchaser bid information does not exactly match the supplier bid information received in the preliminary phase. As shown in table V-4 above, \*\*\*.<sup>37</sup> Also, as discussed below, \*\*\*.<sup>38</sup>

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\*\*\*.<sup>40</sup> \*\*\*.<sup>41</sup> \*\*\*.<sup>42</sup>

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<sup>37</sup> See email from \*\*\*.  
<sup>38</sup> See email from \*\*\*.  
<sup>39</sup> \*\*\*. Prehearing brief of Boeing, p. 97.  
<sup>40</sup> \*\*\*.  
<sup>41</sup> \*\*\*.  
<sup>42</sup> \*\*\*.  
<sup>43</sup> \*\*\*.

## LOST SALES AND LOST REVENUE

The Commission requested that U.S. producers of 100- to 150-seat LCA report purchasers where they experienced instances of lost sales or revenue due to competition from imports of 100- to 150-seat LCA from Canada during 2014-16. Boeing reported \*\*\*.<sup>45</sup> \*\*\*.

In the preliminary phase of these investigations, Boeing \*\*\*. \*\*\* involved a sales campaign at United. According to Boeing, although it eventually succeeded in getting the contract for 65 100- to 150-seat LCAs, the reduced price would have resulted in a \*\*\* had the contract been fulfilled.<sup>46</sup> In responding to whether U.S. producers had reduced prices to compete with imports, \*\*\*. \*\*\*.<sup>47</sup> Bombardier, however, described the competition for the sale with United as between it and Embraer, until Boeing entered with a “sweetheart deal.”<sup>48</sup> Delta added that it believed that United was looking for smaller 100- to 150-seat LCA again (after converting its rights from the 700s to larger aircraft), and specifically looking at used A319s.<sup>49</sup>

Also in the preliminary phase of these investigations, Boeing \*\*\*. \*\*\* involved a sales campaign at Delta. According to Boeing, the \*\*\*. According to Boeing, Bombardier offered a price of \$19.6 million per-100- to 150-seat LCA, which it alleges is significantly below the cost of production (\$33.2 million) and below the price it charged Air Canada (\$30 million). \*\*\* involved 75 100- to 150-seat LCAs with an option for 50 more planes.<sup>50</sup>

According to Delta representatives, “Boeing {was} not competing for new orders when we were negotiating with Bombardier. Boeing had no viable competitive alternatives to the CS100. We were not even considering any new Boeing product as an alternative when we made the purchase that Boeing challenges in the petition. Boeing offered us used E190s and Embraer Brazilian E190s, which we purchased and subsequently resold. At no time did Boeing even try to convince us to consider the 737 and 700. It would be wrong to suggest that Boeing lost sales to Delta because we purchased the CS100. Boeing simply was not in the mix. They did not have a plane that satisfied our mission profile and needs.”<sup>51</sup> In addition, Delta stated that “Boeing also had made it clear during this time frame they had no slot availability in 2018 and 2019 to deliver aircraft in that critical time for us.”<sup>52</sup>

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(...continued)

<sup>44</sup> See also email from \*\*\*.

<sup>45</sup> Since it did not produce subject product in the United States, \*\*\*.

<sup>46</sup> United later converted the orders to orders for larger Boeing models with deferred delivery dates. Petition, p. 14.

<sup>47</sup> \*\*\*. Bombardier’s posthearing brief, answers to questions, pp. 22-23.

<sup>48</sup> Hearing transcript, p. 287 (Dewar).

<sup>49</sup> Hearing transcript, p. 259 (May).

<sup>50</sup> Petition, pp. 15-16.

<sup>51</sup> Conference transcript, p. 182-3 (May).

<sup>52</sup> Conference transcript, p. 220-1 (May). According to Delta, Boeing’s backlog meant that Delta would not be able to acquire “any significant number” of aircraft before 2020. Delta’s postconference brief, p. 26. (\*\*\*). Delta added that, as part of the offer from Boeing, \*\*\*.” Delta’s postconference brief, pp. 26, 34, and exh. 18.

Delta also stated that \*\*\* because it described no U.S. manufacturer as offering an alternative 100-110 seat aircraft which would have been a viable alternative to the CS100. Delta stated that it was seeking to acquire 100-110 seat mainline aircraft, and not larger aircraft. The only suitable competitive options Delta was able to identify included used and new Brazilian-made Embraer 190s, new Embraer 195s, and Bombardier's C Series aircraft. (Delta also considers used Boeing 717 aircraft as a viable substitute, but Boeing ceased production of the 717 model in 2006.) Delta stated that while it was evaluating its options, Boeing offered used Embraer E190s (which Delta purchased \*\*\*). Delta stated that \*\*\*.<sup>53</sup>

Boeing also stated that, in the aftermath of the Delta sale, \*\*\* of its major customers, \*\*\*, had demanded price concessions in line with the prices that they believed Delta had received.<sup>54</sup> It added that the pricing received by Delta set pricing expectations in the market not only for the CS100, but also for the CS300.<sup>55</sup>

Twelve importer/purchasers indicated that they had not purchased, or committed to purchase, Canadian 100- to 150-seat LCA instead of U.S.-produced 100- to 150-seat LCA since January 1, 2014. Similarly, six purchasers indicated that they had not done so for 100- to 150-seat LCA from nonsubject countries rather than U.S.-produced 100- to 150-seat LCA, in the same time period.

Additionally, importer/purchasers were asked if, since January 1, 2014, U.S. producers had reduced their prices of domestically produced 100- to 150-seat LCA in connection with a sale or offer to sell lower-priced 100- to 150-seat LCA from Canada or nonsubject countries. Five indicated that U.S. producers had not reduced prices in connection with any offers to sell Canadian 100- to 150-seat LCA at lower prices, and seven stated that they did not know. Four indicated that U.S. producers had not reduced prices in connection with any offers to sell 100- to 150-seat LCA from nonsubject countries at lower prices, and five stated that they did not know.

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<sup>53</sup> \*\*\*. See also hearing transcript, pp. 188-189 (Mitchell) and 196-197 (May).

<sup>54</sup> Boeing's posthearing brief, answers to questions, pp. 17-19, and hearing transcript, p. 41 (McAllister).

<sup>55</sup> Hearing transcript, p. 85 (McAllister).

## PART VI: FINANCIAL EXPERIENCE OF U.S. PRODUCERS

### BACKGROUND

Boeing, currently the sole U.S. producer of in-scope 100- to 150-seat LCAs, provided usable financial data.<sup>1</sup> The firm has a fiscal year-end of December 31. Overall, Boeing is a multibillion dollar firm that operates through three business segments producing and selling a wide range of commercial aircraft, military manned and unmanned aircraft and weapons systems, networks and space systems, and provides aviation support services. Boeing also offers operating leases, finance leases, and assets held for sale or re-lease through a finance segment.<sup>2</sup>

The Boeing model 737 series went into service in 1968 (“Classic 737”) as a short- to medium-range twinjet narrow-body airliner. Boeing announced the 737 “Next Generation” (“737 NG”) series in 1993, which consisted of the 737-600, -700, -800, and -900 models. While retaining important commonality features with the Classic 737, the 737 NG featured increased wing span, increased fuel capacity, and new CFM56-7B engines, which were quieter and more fuel efficient than the previous engines. These changes increased the range of the 737 NG by 900 nautical miles permitting transcontinental service. The first 737-700 model flew in February 1997.<sup>3</sup> The first delivery was to Southwest Airlines in December 1997 and Southwest Airlines remains that model’s primary user.

Boeing announced the 737 MAX program in 2011 with three variants, 737 MAX 7, 737 MAX 8, and 737 MAX 9. Changes from the 737 NG included the use of more efficient CFM International LEAP-1B engines, said to be a 14 percent lower fuel burn compared with the 737 NG, split-tip winglets, and modifications to the airframe, and landing gear. The 737 MAX 7 reportedly is a design derived from the MAX 8, with structural re-gauging and strengthening, and systems and interior modifications to accommodate a longer length than the 737-700.<sup>4</sup> The

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<sup>1</sup> Commission staff verified the questionnaire response of Boeing. See Verification Report (EDIS document 633343, January 9, 2018). Airbus Americas does not currently produce a model in the United States comparable to the 737-700 or 737 MAX 7. Results of operations on the Boeing models 737-800 (MAX 8) and 737-900 (MAX 9) and comparable Airbus Americas’ models A320 and A321, respectively, are shown in tables C-2 and C-3.

<sup>2</sup> Boeing 2016 Form 10-K, pp. 1-2. The commercial aircraft segment accounted for approximately 69 percent of Boeing’s total sales revenues of \$94.6 billion, and 54 percent of the firm’s earnings from operations in 2016. Calculated from Boeing’s 2016 Form 10-K, pp. 17 and 20.

<sup>3</sup> Deliveries of all 737 models reached a cumulative total of 6,203 planes in 2016, up 490 planes from 2015, which was an increase of 495 planes over the cumulative total of 5,218 planes delivered as of end-2014. Boeing delivered a total of 748 planes in 2016, including models within the 737, 747, 767, 777, and 787 series. Boeing 2016 Form 10-K, p. 27.

<sup>4</sup> “Boeing 737 MAX,” Wikipedia citing “Farnborough: Boeing’s Execution on 737 MAX Sparkles as MAX 7.5 and MAX 10X Loom,” Airways Magazine, July 10, 2016 and “Boeing confirms 737 MAX 7 redesign,” Flight Global, July 11, 2016. Found at [https://en.wikipedia.org/wiki/Boeing\\_737\\_Max](https://en.wikipedia.org/wiki/Boeing_737_Max), retrieved on December 5, 2017.

737 MAX 7 is scheduled to enter service in January 2019 compared with the 737 MAX 8, which test flew in January 2016 and obtained FAA certification on March 9, 2017.

### OPERATIONS ON 100- TO 150-SEAT LCA

Table VI-1 presents data on Boeing’s operations in relation to 100- to 150-seat LCA during 2014-16. The sales represent units that were delivered and accepted by the customer and costs are based on Boeing’s unit costing and allocations as described.<sup>5</sup> Table VI-2 presents data for changes in average unit values between periods. Table VI-3 shows the results of operations of Boeing with respect to 100- to 150-seat LCA from 2007 to 2016. These data include \*\*\*.

**Table VI-1**  
**100- to 150-seat LCA: Results of operations of Boeing, 2014-16, January-September 2016, and January-September 2017**

\*       \*       \*       \*       \*       \*       \*

**Table VI-2**  
**100- to 150-seat LCA: Changes in average unit values, 2014-16, January-September 2016, and January-September 2017**

\*       \*       \*       \*       \*       \*       \*

### Total net sales

As may be seen from the data in table VI-1, Boeing reported the deliveries of a \*\*\*.

**Table VI-3**  
**100- to 150-seat LCA: Selected results of operations of Boeing, 2007-16**

\*       \*       \*       \*       \*       \*       \*

Data from table VI-3 for the average unit value and average unit value of operating income per aircraft are shown graphically in figure VI-1.

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<sup>5</sup> Boeing recognizes sales of commercial airplanes as each unit is completed and accepted by the customer. Sales recognized represent the price negotiated with the customer, \*\*\*. Boeing reported on the basis of U.S. GAAP.

**Figure VI-1**  
**100- to 150-seat LCA: Selected results of operations of Boeing, 2007-16**

\* \* \* \* \*

### **Operating costs and expenses**

In its questionnaire response, Boeing provided cost data \*\*\*.<sup>6</sup> Total COGS is based on \*\*\*.<sup>7</sup>

As can be seen from the data in table VI-1, \*\*\*. Total COGS and the ratio of total COGS to net sales were lower in interim 2017 compared to interim 2016. The category of raw materials, \*\*\*. The two cost categories of direct labor and other factory costs, which are described in the notes to table VI-1, \*\*\*. SG&A expenses also declined from 2014 to 2016, \*\*\* and were lower in interim 2017. Boeing reported \*\*\*.<sup>8</sup> \*\*\*.<sup>9</sup> \*\*\*.<sup>10</sup>

### **Profitability**

With the \*\*\*, gross profit declined \*\*\* from 2014 to 2016. With the \*\*\*, operating income likewise declined \*\*\* from 2014 to 2016 and in interim 2017 compared with interim 2016 (although the ratio of operating income to total net sales was slightly higher in interim 2017). Net income before taxes and cash flow (the sum of net income and depreciation charges) followed the same trends as operating income.

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<sup>6</sup> Boeing reported COGS using \*\*\*. Boeing's U.S. producer questionnaire response, sections III-18 and III-4 and correspondence Boeing 11-27-17 (EDIS document 629889).

For financial accounting purposes, Boeing applies program accounting to allocate cost of goods sold. Under program accounting, \*\*\*. As noted in Boeing's 2016 Form 10-K, "the accounting quantity is our estimate of the quantity of airplanes that will be produced for delivery under existing and anticipated contracts. The determination of the accounting quantity is limited by the ability to make reasonably dependable estimates of the revenue and cost of existing and anticipated contracts. The accounting quantity for each program may include units that have been delivered, undelivered units under contract, and units anticipated to be under contract in the reasonable future (anticipated orders). In developing total program estimates, all of these items within the accounting quantity must be considered." Boeing 2016 Form 10-K, pp. 45 and 57 (as filed).

<sup>7</sup> Boeing stated in response to a question from staff, \*\*\*. Correspondence Boeing 11-27-17 (EDIS document 629889).

<sup>8</sup> \*\*\*. Boeing questionnaire response, sections III-18 and III-11b.

<sup>9</sup> Questionnaire response of Boeing, section III-13d. See table VI-5.

<sup>10</sup> Questionnaire response of Boeing, section III-11a. \*\*\*.

## Variance analysis

A variance analysis for the operations of Boeing with respect to 100- to 150-seat LCA is presented in table VI-4.<sup>11</sup> The information for this variance analysis is derived from table VI-1. A variance analysis is a method to assess the changes in profitability from period to period by measuring the impact of changes in the relationships between price, cost, and volume. A calculation is made of the impact of each factor by varying only that factor while holding all other factors constant. The components of net sales variances are either favorable (positive), resulting in an increase in net sales and profitability or unfavorable (negative), resulting in the opposite. As the data depict the unfavorable volume variance (lower number of units delivered) and unfavorable cost/expense variance (unit costs/expenses rose) led to lower operating and net income. These unfavorable variances outweighed a favorable price variance.

**Table VI-4**  
**100- to 150-seat LCA: Variance analysis on the operations of Boeing, 2014-16, January-September 2016, and January-September 2017**

\* \* \* \* \*

## CAPITAL EXPENDITURES AND RESEARCH AND DEVELOPMENT EXPENSES

In accounting terms, capital expenditures increase the value of specific plant and equipment and total assets, while charges for depreciation and amortization (in the case of intangible assets), impairments, and divestitures (or retirement or abandonment of property) decrease the value of assets. Capital expenditures are made and research and development (“R&D”) expenses are incurred to achieve improvements in equipment and the quality of products produced or reduce operating costs.

Boeing stated that R&D expenses consist of \*\*\*.<sup>12</sup> As previously noted, R&D expenses \*\*\*.

Table VI-5 presents capital expenditures and R&D expenses as reported by Boeing.<sup>13</sup> The data are presented separately for the 737-700 and 737 MAX 7 models.

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<sup>11</sup> The Commission’s variance analysis is calculated in three parts: Sales variance, cost of sales variance (COGS variance), and SG&A expense variance. Each part consists of a price variance (in the case of the sales variance) or a cost or expense variance (in the case of the COGS and SG&A expense variance), and a volume variance. The sales or cost/expense variance is calculated as the change in unit price or per-unit cost/expense times the new volume, while the volume variance is calculated as the change in volume times the old unit price or per-unit cost/expense. Summarized at the bottom of the table, the price variance is from sales; the cost/expense variance is the sum of those items from COGS and SG&A variances, respectively, and the volume variance is the sum of the volume components of the net sales, COGS, and SG&A expense variances. Here, the volume variance is more important than is usually the case.

<sup>12</sup> \*\*\*.



**Table VI-5**  
**100- to 150-seat LCA: Capital expenditures and R&D expenses of Boeing, 2007-16, January-September 2016, and January-September 2017, and estimated full years 2017 and 2018**

\* \* \* \* \*

Boeing’s statements regarding the nature, focus, and significance of the firm’s capital expenditures are shown in the following tabulation:

\* \* \* \* \*

Boeing reported that it \*\*\*.<sup>14</sup>

**ASSETS AND RETURN ON ASSETS**

Table VI-6 presents data on Boeing’s total assets and the return on assets (“ROA”) (calculated as the ratio of operating income to total assets). Boeing described the composition of total assets as follows: \*\*\*.<sup>15</sup>

**Table VI-6**  
**100- to 150-seat LCA: Boeing’s total assets and return on assets, 2014-16**

\* \* \* \* \*

Boeing stated that total assets are \*\*\*.<sup>16</sup> Boeing provided data on total assets from 2007-16, which indicated a steady decrease from \$\*\*\* in 2007 to \$\*\*\* in 2010, an increase to \$\*\*\* in 2011, an \*\*\* decrease between 2011 and 2015, and an increase in 2016. Boeing estimated total assets for full year 2017 at \$\*\*\*, split between 700-700 at \$\*\*\* and 737 MAX 7 at \$\*\*\*. Boeing’s operating return on assets increased irregularly from \*\*\* in 2008 (on total net assets of \$\*\*\*) to \*\*\* in 2010, down to \*\*\* in 2011, increasing to \*\*\* in 2012 (on assets of \$\*\*\*) and \*\*\* in 2013 (on assets of \$\*\*\*).

Boeing also provided data on \*\*\*.<sup>17</sup>

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(...continued)

<sup>13</sup> Airbus Americas operates a facility in Mobile, Alabama for the production of the Airbus A321 and A320 models. The firm reported capital expenditures of \*\*\*. Airbus does not consider either of these models to be within the scope and the data are not included in this part of the report. Data on Airbus Americas’ operations on these two models are included in tables C-2 and C-3.

<sup>14</sup> \*\*\*.

<sup>15</sup> \*\*\*.

<sup>16</sup> \*\*\*.

<sup>17</sup> \*\*\*.

## CAPITAL AND INVESTMENT

The Commission requested Boeing to describe any actual or potential negative effects of imports of 100- to 150-seat large civil aircraft from Canada on the firm's growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table VI-7 presents Boeing's responses.

**Table VI-7**  
**100- to 150-seat LCA: Negative effects of imports from Canada on investment, growth, and development since January 1, 2014 and anticipated negative effects of imports from Canada**

\* \* \* \* \*

Table VI-8 presents Boeing's narrative responses on actual negative effects on growth and development and anticipated effects of imports.

**Table VI-8**  
**100- to 150-seat LCA: Boeing's narrative responses on actual and anticipated negative effects on growth, and development and anticipated effects of imports since January 1, 2014**

\* \* \* \* \*

## PART VII: THREAT CONSIDERATIONS AND INFORMATION ON NONSUBJECT COUNTRIES

Section 771(7)(F)(i) of the Act (19 U.S.C. § 1677(7)(F)(i)) provides that—

*In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the subject merchandise, the Commission shall consider, among other relevant economic factors<sup>1</sup>--*

- (I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,*
- (II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,*
- (III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,*
- (IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,*
- (V) inventories of the subject merchandise,*

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<sup>1</sup> Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that “The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition.”

- (VI) *the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,*
- (VII) *in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both),*
- (VIII) *the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and*
- (IX) *any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).<sup>2</sup>*

Information on the nature of the subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in *Parts IV and V*; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in *Part VI*. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any trade actions in third-country markets, follows. Also presented in this section of the report is information obtained for consideration by the Commission on 100- to 150-seat LCA production in nonsubject countries.

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<sup>2</sup> Section 771(7)(F)(iii) of the Act (19 U.S.C. § 1677(7)(F)(iii)) further provides that, in antidumping investigations, ". . . the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other WTO member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

## THE INDUSTRY IN CANADA

### Overview

The Commission issued foreign producers' or exporters' questionnaires to one firm, Bombardier, believed to be the only producer and exporter of 100- to 150-seat LCA from Canada. Bombardier submitted a usable response to the Commission's questionnaire. This firm's exports to the United States account for \*\*\* of 100- to 150-seat LCA from Canada.<sup>3</sup> According to Bombardier's estimates, the production of 100- to 150-seat LCA in Canada reported in this section of the report accounts for \*\*\* percent of production of 100- to 150-seat LCA in Canada. Table VII-1 summarizes Bombardier's 100- to 150-seat LCA operations in Canada.

**Table VII-1**  
**100- to 150-seat LCA: Summary data for producer in Canada, 2016**

Firm	Production (units)	Share of reported production (percent)	Exports to the United States (units)	Share of reported exports to the United States (percent)	Total shipments (units)	Share of firm's total shipments exported to the United States (percent)
Bombardier	***	***	***	***	***	***
Total	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

### Changes in operations

As presented in table VII-2, Bombardier reported several operational and organizational changes since January 1, 2014.

**Table VII-2**  
**100- to 150-seat LCA: Bombardier's reported changes in operations, since January 1, 2014**

\* \* \* \* \*

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<sup>3</sup> As explained in Table VII-2 below, \*\*\*.

## Operations on 100- to 150-seat LCA

Table VII-3 presents information on the 100- to 150-seat LCA operations of Bombardier. These data show that Bombardier \*\*\*. These units were subsequently \*\*\*. Bombardier explained that \*\*\*. Bombardier indicates that, in the near term, capacity limitations will preclude the further production of C Series aircraft for U.S. customers at its Mirabel facility.<sup>4</sup>

Bombardier \*\*\*. Bombardier also noted that it is not possible to switch production from its C Series aircraft to its CRJ family of regional jets since they are manufactured on different production lines that have different tooling and manufacturing processes.<sup>5</sup> In its questionnaire, the firm indicated that \*\*\*.

**Table VII-3**  
**100- to 150-seat LCA: Data on industry in Canada, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

Bombardier stated that it operates two parallel production lines at its Mirabel, Quebec facility, each of which performs the following functions. According to Bombardier, these same production functions will be replicated at its CSALP facility in Mobile, Alabama.<sup>6</sup>

\* \* \* \* \*

Bombardier contends that more than half of the total value of the C Series aircraft produced in Mirabel comes from U.S. suppliers.<sup>7</sup> The engines for the C Series are supplied by U.S.-headquartered Pratt & Whitney. \*\*\*.<sup>8</sup>

Table VII-4 presents information on the overall operations of Bombardier. These data show that 100- to 150-seat LCA accounted for \*\*\* percent of the total number of aircraft produced by Bombardier in 2016, and for \*\*\* percent of such production in January-September 2017. \*\*\* accounted for \*\*\* of Bombardier's total production throughout the period for which data were collected.<sup>9</sup>

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<sup>4</sup> Hearing Transcript, p. 183 (Dewer).

<sup>5</sup> Conference transcript, p. 198 (Mullot).

<sup>6</sup> Bombardier's posthearing brief, "Responses to Commission Questions," p. 30.

<sup>7</sup> Hearing transcript, pp. 193-194 (Levesque).

<sup>8</sup> Bombardier's posthearing brief, "Responses to Commission Questions," p. 32.

<sup>9</sup> Bombardier reported that its production of \*\*\*. Bombardier's foreign producers' questionnaire response, II-3a.

**Table VII-4**  
**All aircraft: Total production of aircraft by producers in Canada, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

### **Onerous contract provision**

Bombardier<sup>10</sup> recognized a loss of \$516 million in 2016 under the “onerous contracts provision” under International Financial Reporting Standards (“IFRS”). In the firm’s annual report it stated that this loss was recognized on the closing of firm aircraft orders in its C series aircraft program during the second quarter of 2016.<sup>11</sup> As Bombardier explained in its annual financial statements, “an onerous contract provision is recorded if it is more likely than not that the unavoidable costs of meeting the obligations under a firm contract, exceed the economic benefits expected to be received under the contract.”<sup>12 13</sup> The amount of \$486 million (net of the balance that was included in corporate and eliminations) was included in cost of sales in 2016, leading to a net loss after special items but before interest and taxes of \$903 million for the commercial aircraft segment of Bombardier.

### **Projected operations on 100- to 150-seat LCA**

As shown in table VII-5, Bombardier \*\*\*. Bombardier explained that \*\*\*.” The data reported in table VII-5 \*\*\*.

---

<sup>10</sup> Bombardier Inc. is a company organized under the laws of Canada. Its accounting statements are reported under IFRS. The amounts in Bombardier’s annual report are expressed in U.S. dollars.

<sup>11</sup> Bombardier Inc. Financial Report, Fiscal Year Ended December 31, 2016 (“Bombardier 2016 Financial Report”), pp. 8, 57, 66, and 70. In a table (page 70) showing orders by customer in 2016, in the second quarter of 2016, Delta Airlines is shown as a buyer of 75 CS100 with options for 50 CS100; Air Canada and Air Baltic are shown as buyers of 45 CS300 (options for an additional 30 CS300) and 7 CS300, respectively. Testimony at the staff conference focused on Delta’s purchase from Bombardier.

<sup>12</sup> Bombardier 2016 Financial Report, p. 123. In other words, if a contract review indicates a negative gross margin, the entire expected loss on the contract is recognized in cost of sales in the period in which the negative gross margin is identified. The note also states that “unavoidable costs exclude the allocation of certain indirect overheads which are included in the cost of inventories, such as amortization. As early production units in a new aircraft program require higher costs than units produced later in the program, cost estimates also depend on expected delivery schedules. The estimates are reviewed on a quarterly basis.”

<sup>13</sup> IFRS and U.S. Generally Accepted Accounting Principles are similar in many respects. The Financial Accounting Standards Board (FASB) decided in 2014 to exclude specific guidance for onerous contracts and to retain the existing guidance on the provision for loss contracts in the revenue recognition principles for construction type and production type contracts. It should be pointed out that the onerous contract provision and related revenue recognition are not the same as program accounting.

Excluding exports to the U.S., Bombardier projects exports to \*\*\* of \*\*\* aircraft in 2017, \*\*\* aircraft in 2018, \*\*\* aircraft in 2019, \*\*\* aircraft in 2020, \*\*\* aircraft in 2021, and \*\*\* aircraft in 2022. Bombardier also projects home shipments of \*\*\*. Bombardier \*\*\*.<sup>14</sup> In addition, in October 2016, Republic and Bombardier reached a settlement providing deferral of all C Series deliveries to Republic \*\*\*.<sup>15</sup>

**Table VII-5  
100- to 150-seat LCA: Projected data on industry in Canada, 2017-22**

\* \* \* \* \*

**BOMBARDIER’S ORDERS**

The Commission received information on orders from one Canadian producer: Bombardier. Bombardier provided information on its orders of two 100- to 150-seat LCA models: the CS100 model and the CS300 model.

**Order details**

Bombardier had orders for a total of 360 100- to 150-seat LCA as of September 30, 2017: 123 CS100 units (34.2 percent of total orders) and 237 CS300 units (65.8 percent of total orders). Delta accounted for the largest share of these orders, with an order for 75 CS100 units. Other entities with relatively large orders for the 100- to 150-seat LCA included Air Canada (with an order for 45 CS300 units) as well as Macquarie AirFinance and Republic<sup>16</sup> (both with orders for 40 CS300 units). Bombardier reported that 341 units are part of the current backlog.<sup>17</sup>

In its questionnaire response, Bombardier reported that \*\*\*.<sup>18</sup> \*\*\*. According to Bombardier, \*\*\*.<sup>19</sup> Aeromexico is considering placing an order for C Series aircraft produced in Canada, with delivery beginning in 2018.<sup>20</sup> Bombardier stated that it has not received any C

<sup>14</sup> Bombardier’s foreign producers’ questionnaire response, attached supplement to II-11a .

<sup>15</sup> Bombardier’s posthearing brief, “Responses to Commission Questions,” pp. 25-26.

<sup>16</sup> Republic is currently in bankruptcy and it is unclear whether these orders will ever be delivered. In October 2016, Republic and Bombardier reached a settlement providing deferral of all C Series deliveries to Republic \*\*\*. Bombardier’s posthearing brief, “Responses to Commission Questions,” pp. 25-26.

<sup>17</sup> Bombardier, “September 30, 2017: Program Status Report - C Series aircraft,” <http://www.bombardier.com/content/dam/Websites/bombardiercom/supporting-documents/BA/Bombardier-Aerospace-20170930-CSeries-Program-Status-en.pdf> (accessed November 21, 2017).

<sup>18</sup> Bombardier \*\*\*. Bombardier’s foreign producers’ questionnaire response, attached supplement to II-11a.

<sup>19</sup> Bombardier’s posthearing brief, “Responses to Commission Questions,” p. 22.

<sup>20</sup> Delta owns a 49 percent stake in Aeromexico. Aeromexico is also considering Embraer E195-E2 aircraft and Mitsubishi MRJ aircraft for its order. “Aeromexico Weighs Bombardier C Series Order,”

(continued...)



Series aircraft orders from U.S. customers since April 2016, when Delta placed its order,<sup>21</sup> nor has any U.S. C Series customer converted any part of its order or plans to do so.<sup>22</sup> Delta holds an option to convert its CS100 order into CS300, but that conversion option only becomes available after the first \*\*\* CS100 have been delivered.<sup>23</sup>

### Order backlog

Bombardier reported a total backlog of orders for the subject aircraft that ranged from \*\*\* units on various dates between December 31, 2014 and September 30, 2017 (table VII-6).

**Table VII-6**  
**100- to 150-seat LCA: Canadian producer's end-of-period backlog, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

### Order pricing

Bombardier reported the total price of individual CS100 units to be approximately \$\*\*\*, while the total price of individual CS300 units is approximately \$\*\*\*. The prices of Bombardier's future orders for 100- to 150-seat LCA include \*\*\*. Ancillary items account for \*\*\*. Bombardier also indicated that \*\*\*.

### Order delivery

Bombardier reported that the average length of time between orders and deliveries is \*\*\*. The firm reports that \*\*\*.<sup>24</sup> Bombardier's \*\*\*.

### Order risk and cancellation

Bombardier indicated in its questionnaire response that \*\*\*.

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(...continued)

Bloomberg, <https://www.bloomberg.com/news/articles/2017-12-26/aeromexico-is-said-to-mull-c-series-order-as-delta-faces-tariffs>, accessed December 27, 2017,

<sup>21</sup> Bombardier's prehearing brief, p. 81 and hearing transcript, p. 189 (Mitchell).

<sup>22</sup> Bombardier's posthearing brief, "Responses to Commission Questions," p. 26

<sup>23</sup> Delta's posthearing brief, p. 9.

<sup>24</sup> Respondent Bombardier's prehearing brief, pp. 79-80. The engines for the C Series are supplied by U.S.-headquartered Pratt & Whitney. \*\*\*. Bombardier's posthearing brief, "Responses to Commission Questions," p. 32.

## Exports

According to GTA, Canada's leading export markets in 2016 for aircraft greater than 15,000 kgs—which include out-of-scope aircraft such as military aircraft, cargo aircraft, and used passenger aircraft—were the United States, China, Malta, and Spain (table VII-7). During 2016, the United States was the top export market for aircraft greater than 15,000 kgs from Canada, accounting for 38.3 percent, followed by China, Malta, and Spain, all accounting for 8.4 percent, respectively.

**Table VII-7**  
**Aircraft greater than 15,000 kgs: Exports from Canada by destination market, 2014-16**

Destination market	Calendar year		
	2014	2015	2016
	<b>Quantity (units)</b>		
Canada exports to the United States	97	86	41
Canada exports to other major destination markets.--			
China	11	10	9
Malta	10	10	9
Spain	---	---	9
Finland	1	---	5
Switzerland	1	---	5
United Kingdom	5	5	5
Japan	1	1	4
Germany	---	---	3
All other destination markets	37	36	17
Total Canada exports	163	148	107
	<b>Value (1,000 dollars)</b>		
Canada exports to the United States	2,888,042	2,632,432	1,329,060
Canada exports to other major destination markets.--			
China	359,486	267,691	288,957
Malta	475,644	492,244	452,591
Spain	---	---	264,589
Finland	50,002	---	120,269
Switzerland	43,037	---	261,988
United Kingdom	231,008	220,181	218,952
Japan	32,445	32,911	104,662
Germany	---	---	92,747
All other destination markets	1,241,971	1,322,890	538,422
Total Canada exports	5,321,635	4,968,349	3,672,237

Table continued on next page.

**Table IV-7--Continued**

**Aircraft greater than 15,000 kgs: Exports from Canada by destination market, 2014-16**

Destination market	Calendar year		
	2014	2015	2016
	<b>Unit value (1,000 dollars per unit)</b>		
Canada exports to the United States	29,774	30,610	32,416
Canada exports to other major destination markets.--			
China	32,681	26,769	32,106
Malta	47,564	49,224	50,288
Spain	---	---	29,399
Finland	50,002	---	24,054
Switzerland	43,037	---	52,398
United Kingdom	46,202	44,036	43,790
Japan	32,445	32,911	26,165
Germany	---	---	30,916
All other destination markets	33,567	36,747	31,672
Total Canada exports	32,648	33,570	34,320
	<b>Share of quantity (percent)</b>		
Canada exports to the United States	59.5	58.1	38.3
Canada exports to other major destination markets.--			
China	6.7	6.8	8.4
Malta	6.1	6.8	8.4
Spain	---	---	8.4
Finland	0.6	---	4.7
Switzerland	0.6	---	4.7
United Kingdom	3.1	3.4	4.7
Japan	0.6	0.7	3.7
Germany	---	---	2.8
All other destination markets	22.7	24.3	15.9
Total Canada exports	100.0	100.0	100.0

Note.--Global trade at the 6-digit level includes primarily out-of-scope products (military aircraft, cargo aircraft, used passenger aircraft, and large civil aircraft that do not match the scope of these investigations).

Note.--These data are all exports of Bombardier. Two other aerospace companies in Canada, Diamond Aircraft and Viking Air produce small jets that weight less than 15,000 kgs and are therefore not included in these export data. "Our Aircraft," <http://www.diamondaircraft.com/our-aircraft/>; Viking Aircraft, <https://www.vikingair.com/viking-aircraft>.

Source: Official exports statistics under HS subheading 8802.40 as reported by Canada Customs in the IHS/GTA database, accessed October 30, 2017.

## END-OF-PERIOD INVENTORIES

Bombardier \*\*\* during 2014-16, January to September 2016, and January to September 2017. In addition, U.S. importers/purchasers' end-of-period inventories reflect the number of 100- to 150-seat LCA in their fleet. Therefore, these numbers are not inventories of merchandise available for sale.

## PROJECTED U.S. IMPORTS AND/OR PURCHASES OF 100- TO 150-SEAT LCA

Table VII-8 presents data on projected U.S. imports and/or purchases, by source, during 2017-22. These data show that \*\*\* of projected imports/purchases are of \*\*\*. \*\*\*.<sup>25</sup> In addition, \*\*\*.<sup>26</sup>

**Table VII-8**  
**100- to 150-seat LCA: Projected U.S. imports and/or purchases, by source, 2017-22**

\* \* \* \* \*

## ANTIDUMPING OR COUNTERVAILING DUTY ORDERS IN THIRD-COUNTRY MARKETS

There have been no antidumping duty, countervailing duty, or safeguard investigations of 100- to 150-seat LCA in any third country.

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<sup>25</sup> In its questionnaire response, Bombardier continued to project imports by Delta as beginning in \*\*\*. Delta has acknowledged that “we do not have a current commercial right to refuse” delivery of CS100s from Canada beginning in 2018 “but we’ve made it clear what our desires are and it is an open negotiation.” Hearing transcript, p. 262 (May). In addition, on January 2, 2018, Southwest announced that it has delayed delivery for the majority of its MAX 7 order, with 23 aircraft now scheduled for delivery in 2023 and 11 aircraft in 2024. “Southwest Defers Smallest Boeing 737 Max, Adds Larger Planes,” *Bloomberg*, <https://www.bloomberg.com/news/articles/2018-01-02/southwest-moves-up-40-max-737-8-orders-delays-23-max-7-planes>, accessed January 4, 2018; Southwest Airlines to Boeing: We'll take the large, *CNBC*, <https://www.cnbc.com/2018/01/03/southwest-airlines-wants-larger-boeing-737-max-8s-soon.html>, accessed January 4, 2017.

<sup>26</sup> \*\*\*.

## INFORMATION ON NONSUBJECT COUNTRIES<sup>27</sup>

### European Union

Airbus is the only producer of 100- to 150-seat LCA that operates final production facilities in nonsubject countries. Final production facilities for the Airbus A319ceo and Airbus A319neo are located in Hamburg, Germany and Tianjin, China.<sup>28</sup> However, as of September 2017, the United States has not imported any subject aircraft from China.<sup>29</sup> Therefore, Germany is the only nonsubject source of 100- to 150-seat LCA. Airbus also operates a production facility in the United States, but \*\*\*.

Based on the Ascend database,<sup>30</sup> Airbus delivered 54 A319ceo aircraft units to U.S. purchasers in the United States between 2007 and 2016, representing 28.1 percent of U.S. deliveries of 100- to 150-seat LCA for that period. For comparison, Boeing delivered 138 737-700 aircraft units during the same period, accounting for the remaining 71.9 percent of U.S. deliveries.<sup>31</sup> Between 2017 and 2022, a projected shift in aircraft model deliveries is reflected by the replacement of the Boeing 737-700 and Airbus A319ceo models with their derivatives, the Boeing 737 MAX 7 and Airbus A319neo models. Projected U.S. imports/purchases of subject 100- to 150-seat LCA between 2017 and 2022 include \*\*\* Boeing 737-700, \*\*\* Boeing 737 MAX 7 units, \*\*\* Bombardier CS100 units, and \*\*\* Airbus A319neo units. There are no current projected deliveries of the Bombardier CS300 model to purchasers in the United States.<sup>32</sup> Therefore, 10.7 percent of U.S. deliveries of 100- to 150-seat large civil aircraft are projected to be from nonsubject countries between 2017 and 2022.<sup>33</sup>

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<sup>27</sup> 100- to 150-seat LCA are imported under HTS 8802.40.0040 which covers all passenger aircraft greater than 15,000kg. This is an extremely broad category which includes all passenger planes ranging from smaller regional jets to the largest category of civil aircraft. Export analysis of specific aircraft models would therefore be impractical due to the range of aircraft covered by the reporting number.

<sup>28</sup> Airbus, "Final Assembly and Tests," <http://www.airbus.com/company/aircraft-manufacture/how-is-an-aircraft-built/final-assembly-and-tests/>.

<sup>29</sup> Official U.S. imports based on General Imports using statistical reporting number 8802.40.0040 (accessed on October 30, 2017).

<sup>30</sup> Petition, Vol I, exh. 44. Data reported in this database may not fully match the data reported in questionnaire responses. The database, for example, \*\*\*, \*\*\*.

<sup>31</sup> Ibid.

<sup>32</sup> In February 2010, Republic Airway Holdings ordered 40 CS300 aircraft with an option for an addition 40 CS300 aircraft. However, Republic Airways Holdings subsequently filed for Chapter 11 bankruptcy and sold Frontier, the intended subsidiary to operate the aircraft. The order remains questionable and Republic Airways Holdings and Bombardier agreed to delay deliveries. Bombardier postconference brief, Attachment A, p. 30. \*\*\*. Bombardier's posthearing brief, "Responses to Commission Questions," pp. 25-26. Delta has an option for CS300 aircraft as part of its purchase agreement for 75 CS100s but argues that exercising the option for CS300 aircraft is "pure speculation" at this point. Delta postconference brief p. 8.

<sup>33</sup> Compiled from data submitted in response to Commission questionnaires.

## Brazil

Empresa Brasileira de Aeronáutica S.A. (“Embraer”) was founded in 1969 as Brazil’s state-owned aerospace company but was later privatized in 1994 following an economic crisis in the late 1980s.<sup>34</sup> However, the Brazilian government retained a special class of shares in the company known as “golden shares” which allow for veto power over certain strategic decisions.<sup>35</sup> Embraer focuses on manufacturing regional and executive jets. In 2011, it switched plans from designing an in-scope aircraft capable of transporting 130 to 160 passengers to instead focus on creating a redesign of its smaller E-Jet family.<sup>36</sup>

The Embraer E190-E2 and Embraer E195-E2 are the redesigned and slightly larger versions of the Embraer E190 and Embraer E195. The Embraer E195-E2 is Embraer’s largest aircraft offering and had its first flight on March 29, 2017. It is capable of transporting 120 passengers in a three-class seating arrangement and 132 passengers in a singular class. The Embraer E195-E2 has a range of 2,450 nautical miles.<sup>37</sup> The Embraer E190-E2 transports fewer passengers, 97 in a three-class seating arrangement and 106 in a singular class, but has a longer range of 2,850 nautical miles.<sup>38</sup> While Embraer’s new E-jet offerings are similar in seating capacity to 100- to 150-seat large civil aircraft, their lower nautical mile range classifies them as regional jets.

On December 21, 2017, Boeing and Embraer announced that they had entered into discussions regarding the potential purchase of Embraer by Boeing. According to the companies, the proposed transaction remains under discussion, there is no guarantee that a transaction will occur as a result, and any transaction would be subject to the approval of the Brazilian government and regulators, the two companies' boards, and Embraer's shareholders.<sup>39</sup>

## China

The Commercial Aircraft Corporation of China, Ltd. (“COMAC”) is a state-owned corporation approved and jointly-invested in by the State Council of the People’s Republic of

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<sup>34</sup> Embraer, “Who We Are,” <http://www.embraer.com/en-US/ConhecaEmbraer/TradicaoHistoria/Pages/default.aspx>; Novais, “Understand Embraer,” The Brazil Business, June 13, 2012, <http://thebrazilbusiness.com/article/understand-embraer>; Embraer, “90’s Events,” <http://www.centrohistoricoembraer.com.br/sites/timeline/en-US/Pages/default.aspx#todos/1990>.

<sup>35</sup> Embraer, “Governance,” <http://www.embraer.com/en-US/ConhecaEmbraer/Governanca/Pages/default.aspx>.

<sup>36</sup> Trimble, “Embraer Commits to Re-Engined E-Jets,” FlightGlobal, November 10, 2011 <https://www.flightglobal.com/news/articles/embraer-commits-to-re-engined-e-jets-364603/>.

<sup>37</sup> Embraer, “E195-E2. The Profit Hunter,” <http://www.e2fleetsmart.com/e195-e2/>.

<sup>38</sup> Embraer, “E190-E2,” <http://www.e2fleetsmart.com/e190-e2/>.

<sup>39</sup> *Embraer Press Release*, PR Newswire, <https://www.prnewswire.com/news-releases/embraer-sa-material-fact-300574679.html>, accessed December 21, 2017.

China. COMAC was founded in 2008 and is comprised of nine organizations with responsibilities including research and development, manufacturing, customer service, and flight test centers. The main purpose of COMAC is to industrialize China's commercial aircraft industry through the production of both large civil aircraft as well as smaller, regional jets.<sup>40</sup> COMAC has been working with other companies in an effort to expand its aerospace offerings. COMAC and Bombardier have recently been collaborating about a possible investment by COMAC into Bombardier's C Series program.<sup>41</sup> Additionally, on May 22, 2017, COMAC and United Aircraft Corporation ("UAC") (a Russian LCA producer) entered into a joint venture with the purpose of producing larger, wide-body jets capable of transporting around 280 passengers a distance of 6,500 nautical miles.<sup>42</sup>

COMAC does not currently produce aircraft that fall within the scope of these investigations. Instead, its most similar aircraft are the slightly smaller COMAC ARJ21-700 and the slightly larger COMAC C919. The ARJ21-700 is a regional aircraft capable of transporting 78 passengers in a typical, two-class seating arrangement and has a range of 1,998 nautical miles.<sup>43</sup> A larger model, the ARJ21-900 has yet to launch, but it would still be classified as a regional jet rather than a 100- to 150-seat large civil aircraft.<sup>44</sup> Alternatively, the recent advent of the COMAC C919 is slightly larger than in-scope aircraft and capable of transporting 158 passengers in a typical, two-class seating arrangement. The COMAC C919 has a range of 2,999 nautical miles.<sup>45</sup>

Shenyang Aircraft Corporation, a subsidiary of China's state-owned Aviation Industry Corporation of China (AVIC), produces the fuselage for Bombardier's C Series in China.<sup>46</sup> AVIC is a shareholder in COMAC.<sup>47</sup>

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<sup>40</sup> COMAC, "Introduction," <http://english.comac.cc/aboutus/introduction/>.

<sup>41</sup> Weinland, "Chinese Group in Talks to Aid Struggling Jet Maker Bombardier," Financial times, <https://www.ft.com/content/0003ce56-3ba4-11e7-821a-6027b8a20f23>.

<sup>42</sup> The joint venture is the China-Russia Commercial Aircraft International Co., Ltd (CRAIC). COMAC, "China-Russia Commercial Aircraft International Co., Ltd Established," May 22, 2017, [http://english.comac.cc/news/latest/201705/24/t20170524\\_5262164.shtml](http://english.comac.cc/news/latest/201705/24/t20170524_5262164.shtml).

<sup>43</sup> COMAC, "ARJ21," <http://english.comac.cc/products/rj/>.

<sup>44</sup> Perrett, "With ARJ21-700 Certified, Focus Shifts to Support," Aviation Week, January 20, 2015, <http://aviationweek.com/commercial-aviation/arj21-700-certified-focus-shifts-support>.

<sup>45</sup> COMAC, "C919," <http://english.comac.cc/products/ca/>; Waldron, "Pictures: Comac C919 Lands after uneventful Maiden Sortie," FlightGlobal, May 5, 2017, <https://www.flightglobal.com/news/articles/comac-c919-lands-after-uneventful-maiden-sortie-436913/>.

<sup>46</sup> Marowitz, Ross, "Bombardier Puts Composite Materials to Test on Chinese-made Fuselage," The Globe and Mail, Updated March 26, 2017. <https://www.theglobeandmail.com/report-on-business/bombardier-puts-composite-materials-to-test-on-chinese-made-fuselage/article4283100/>.

<sup>47</sup> COMAC, "Shareholders," (accessed on January 11, 2018). <http://english.comac.cc/aboutus/shareholders/#>.

## Russia

In 2006, the Public Joint-Stock Company UAC was established by RF Presidential Decree No. 140 and became the largest aircraft manufacturing company in Russia.<sup>48</sup> The UAC, which is majority owned by the Russian Government, is comprised of approximately 30 Russian aircraft manufacturers and companies, including the Sukhoi Company and the Irkut Corporation.<sup>49</sup> Currently focused on producing military aircraft, the UAC is expecting to increase its share of civil aircraft production from 20 percent of revenues in 2017 to 45 percent of revenues by 2035. This change in strategic goals is estimated to boost UAC's share of the global civil aircraft market from 1 percent in 2017 to 4.5 percent in 2025.<sup>50</sup> The two main civil aircraft families projected to drive this expansion are the Irkut MC-21 and the Sukhoi Superjet 100.<sup>51</sup>

The Irkut MC-21-300 is capable of transporting 163 passengers in a typical, two-class seating arrangement and has a range of 3,186 nautical miles.<sup>52</sup> It underwent its first test flight on May 28, 2017.<sup>53</sup> A slightly smaller model, the Irkut MC-21-200, would be considered in-scope but is not currently in production with assembly of the first prototype scheduled to begin in 2017.<sup>54</sup> Once completed, the Irkut MC-21-200 would be capable of transporting 135 passengers in a typical, two-class seating arrangement a range of 3,240 nautical miles.<sup>55</sup> The Sukhoi Superjet 100 is a smaller, regional aircraft capable of transporting 98 passengers in a typical, two-class seating arrangement with a maximum range of 2,472 nautical miles.<sup>56</sup> Plans for the next generation of the Sukhoi Superjet are still in preliminary stages with an estimated in service date after 2025. Details regarding the new model are scarce but it is expected to seat 130 passengers and have updated wing structures and engines.<sup>57</sup>

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<sup>48</sup> United Aircraft Corporation, "History," <http://www.uacrussia.ru/en/corporation/history/>.

<sup>49</sup> United Aircraft Corporation, "General Information," <http://www.uacrussia.ru/en/investors/>; Grossman, "Russia Says its New Commercial Airliner is as Good as Any Boeing or Airbus," Popular Mechanics, June 9, 2016. <http://www.popularmechanics.com/flight/a21270/russian-build-commercial-airliner/>.

<sup>50</sup> United Aircraft Corporation, "Strategy," <http://www.uacrussia.ru/en/corporation/strategy/>.

<sup>51</sup> United Aircraft Corporation, "History," <http://www.uacrussia.ru/en/corporation/history/>.

<sup>52</sup> United Aircraft Corporation, "MC-21 Aircraft Specification," <http://www.uacrussia.ru/en/aircraft/lineup/civil/ms-21/aircraft-specific/>.

<sup>53</sup> Polek, Gregory and Vladimir Karnozov, "Russia's Irkut MC-21-300 Performs First Flight," AIN Online, May 30, 2017. <https://www.ainonline.com/aviation-news/air-transport/2017-05-30/russias-irkut-mc-21-300-performs-first-flight>

<sup>54</sup> Pyadushkin, "Russia's MC-21 Airliner Prepares for First Flight," Aviation Week Shownews, July 12, 2016, <http://aviationweek.com/shownews/russia-s-mc-21-airliner-prepares-first-flight>.

<sup>55</sup> United Aircraft Corporation, "MC-21 Aircraft Specification," <http://www.uacrussia.ru/en/aircraft/lineup/civil/ms-21/aircraft-specific/>.

<sup>56</sup> United Aircraft Corporation, "Sukhoi Superjet 100 Aircraft Specifications," <http://www.uacrussia.ru/en/aircraft/lineup/civil/superjet-100/aircraft-specific/>.

<sup>57</sup> Pyadushkin, Maxim, "Sukhoi Plans Next-Generation Superjet," Aviation Week, June 18, 2017. <http://aviationweek.com/paris-air-show-2017/sukhoi-plans-next-generation-superjet>



**APPENDIX A**

***FEDERAL REGISTER* NOTICES**



The Commission makes available notices relevant to its investigations and reviews on its website, [www.usitc.gov](http://www.usitc.gov). In addition, the following tabulation presents, in chronological order, *Federal Register* notices issued by the Commission and Commerce during the current proceeding.

<b>Citation</b>	<b>Title</b>	<b>Link</b>
82 FR 20634 May 3, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Institution of Antidumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-05-03/pdf/2017-08894.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-05-03/pdf/2017-08894.pdf</a>
82 FR 24292 May 26, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Initiation of Countervailing Duty Investigation</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-05-26/pdf/2017-10957.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-05-26/pdf/2017-10957.pdf</a>
82 FR 24296 May 26, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Initiation of Less-Than-Fair-Value Investigation</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-05-26/pdf/2017-10733.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-05-26/pdf/2017-10733.pdf</a>
82 FR 27524 June 15, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Determinations</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-06-15/pdf/2017-12436.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-06-15/pdf/2017-12436.pdf</a>
82 FR 31045 July 5, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Postponement of Preliminary Determination Countervailing Duty Investigation</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-07-05/pdf/2017-14057.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-07-05/pdf/2017-14057.pdf</a>
82 FR 45807 October 2, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Preliminary Affirmative Countervailing Duty Determination and Alignment of Final Determination With Final Antidumping Duty Determination</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-10-02/pdf/2017-21055.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-10-02/pdf/2017-21055.pdf</a>
82 FR 47697 October 13, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Preliminary Affirmative Determination of Less-Than-Fair-Value</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-10-13/pdf/2017-22203.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-10-13/pdf/2017-22203.pdf</a>
82 FR 49850 October 27, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada; Scheduling of the Final Phase of Countervailing Duty and Antidumping Duty Investigations</i>	<a href="https://www.gpo.gov/fdsys/pkg/FR-2017-10-27/pdf/2017-23430.pdf">https://www.gpo.gov/fdsys/pkg/FR-2017-10-27/pdf/2017-23430.pdf</a>
82 FR 61252 December 27, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada: Final Affirmative Countervailing Duty Determination</i>	<a href="https://www.federalregister.gov/d/2017-27875">https://www.federalregister.gov/d/2017-27875</a>
82 FR 61255 December 27, 2017	<i>100- to 150-Seat Large Civil Aircraft From Canada: Final Affirmative Determination of Sales at Less Than Fair Value</i>	<a href="https://www.federalregister.gov/d/2017-27874">https://www.federalregister.gov/d/2017-27874</a>



**APPENDIX B**

**LIST OF HEARING WITNESSES**



## CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

**Subject:** 100- to 150-Seat Large Civil Aircraft from Canada

**Inv. Nos.:** 701-TA-578 and 731-TA-1368 (Final)

**Date and Time:** December 18, 2017 - 9:30 am

Sessions were held in connection with these investigations in the Main Hearing Room (Room 101), 500 E Street, SW, Washington, DC.

### **Embassy Witnesses:**

**The Embassy of the United Kingdom  
Washington, DC**

**His Excellency Sir Kim Darroch, British Ambassador to the United States of America**

**The Embassy of Canada  
Washington, DC**

**His Excellency David MacNaughton, Ambassador of Canada to the United States of  
America**

### **Delegation Witness:**

**Delegation of the European Union to the United States of America  
Washington, DC**

**Damien Levie, Minister Counselor and Head of Trade Section**

### **OPENING REMARKS:**

Petitioner (**Robert T. Novick**, Wilmer Cutler Pickering Hale and Dorr LLP)  
Respondents (**Peter Lichtenbaum**, Covington & Burling LLP)

**In Support of the Imposition of  
Antidumping and Countervailing Duty Orders:**

Wilmer Cutler Pickering Hale and Dorr LLP  
Washington, DC  
on behalf of

The Boeing Company (“Boeing”)

**Kevin McAllister**, Executive Vice President, The Boeing Company;  
President and Chief Executive Officer, Boeing Commercial  
Airplanes

**Jerry Nickelsburg, Ph.D.**, Adjunct Professor of Economics, University  
of California, Los Angeles (“UCLA”); Senior Economist, UCLA  
Anderson Forecast

**Charles Anderson**, Principal, Capital Trade

**Robert T. Novick** )  
**Patrick J. McLain** ) – OF COUNSEL  
**Stephanie Hartmann** )

**In Opposition to the Imposition of  
Antidumping and Countervailing Duty Orders:**

Dentons US LLP  
Washington, DC  
on behalf of

Delta Air Lines, Inc.

**Scott McClain**, Associate General Counsel, Delta Air Lines, Inc.

**Joe Esposito**, Vice President, Network Planning, Americas, Delta  
Air Lines, Inc.

**Greg May**, Senior Vice President, Supply Chain Management &  
Fleet, Delta Air Lines, Inc.

**Yohai Baisburd** )  
 ) – OF COUNSEL  
**Daniel Morris** )



**In Opposition to the Imposition of  
Antidumping and Countervailing Duty Orders (continued):**

Covington & Burling LLP  
Washington, DC  
on behalf of

Bombardier Inc.

**Ross Mitchell**, Vice President, Commercial Operations, Commercial Aircraft Division, Bombardier Inc.

**Robert Dewar**, Vice President, C Series Program, Commercial Aircraft Division, Bombardier Inc. and C Series Aircraft Limited Partnership

**Sylvain Levesque**, Vice President, Corporate Strategy, Bombardier Inc.

**George Dimitroff**, Flight Ascend Consultancy

**Shara L. Aranoff** )  
**Peter Lichtenbaum** ) – OF COUNSEL  
**James M. Smith** )

Steptoe & Johnson LLP  
Washington, DC  
on behalf of

Government of Canada

**Mark A. Moran** )  
**Eric C. Emerson** ) – OF COUNSEL  
**Maureen F. Browne** )

Steptoe & Johnson LLP  
Law Office of Gary N. Horlick  
Washington, DC  
on behalf of

Government of the United Kingdom

**Gary N. Horlick** ) – OF COUNSEL

**REBUTTAL/CLOSING REMARKS:**

Petitioner (**Robert T. Novick**, Wilmer Cutler Pickering Hale and Dorr LLP)  
Respondents (**Shara L. Aranoff**, Covington & Burling LLP)

**-END-**



**APPENDIX C**  
**SUMMARY DATA**

## OUTLINE

This appendix presents data for the domestic like product as well as for two alternative (expanded) domestic like products:

- (1) Table C-1 presents data for 100- to 150-seat LCA, which include Boeing models 737-700 and 737-MAX 7 and Airbus A319.
- (2) Table C-2 presents data for 100- to 150-seat LCA, Boeing models 737-800 and 737-MAX 8, and Airbus model A320. Airbus Americas began production of the comparable model A320 in 2016 with delivery beginning in 2017 (data reported in the January-September 2017 period).<sup>1</sup>
- (3) Table C-3 presents data for all of the foregoing and Boeing models 737-900 and 737-MAX 9 and Airbus model A321. Airbus Americas began producing the comparable A321 in 2015 with delivery beginning in 2016 (data reported in 2016 and both interim periods).<sup>1</sup>

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<sup>1</sup> \*\*\*.

**Table C-1**  
**100- to 150-seat LCA: Summary data concerning the U.S. market, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Table C-2**  
**100- to 150-seat LCA and 737-800 and equivalents: Summary data concerning the U.S. market, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*

**Table C-3**  
**100- to 150-seat LCA and all other single aisle LCA: Summary data concerning the U.S. market, 2014-16, January to September 2016, and January to September 2017**

\* \* \* \* \*



**APPENDIX D**

**COMMENTS BY BOEING, CSALP, AND U.S. IMPORTER/PURCHASERS REGARDING  
THE COMPARABILITY OF 100- TO 150-SEAT LCA VS.  
OTHER SINGLE AISLE LCA**





**Table D-1**  
**100- to 150-seat LCA: Boeing's responses to the like product factors narratives**

\* \* \* \* \*

**Table D-2**  
**100- to 150-seat LCA: CSALP's responses to the like product factors narratives**

\* \* \* \* \*

**Table D-3**  
**100- to 150-seat LCA: U.S. importer/purchasers' responses to the like product factors narratives**

\* \* \* \* \*



**APPENDIX E**

**IMPORTS OF 100- TO 150-SEAT LCA, INCLUDING PARTS**



**Table E-1**  
**100- to 150-seat LCA: Estimated value of imports, including parts**

Item	Projection calendar					
	2017	2018	2019	2020	2021	2022
	<b>Value (1,000 dollars)</b>					
Projections:						
C Series imports of parts from Canada <sup>1</sup>	***	***	***	***	***	***
C Series imports of parts from all other sources <sup>2</sup>	***	***	***	***	***	***
C Series imports of parts from all sources	***	***	***	***	***	***
Boeing's imports of parts from Canada	***	***	***	***	***	***
Boeing's imports of parts from all other sources	***	***	***	***	***	***
Boeing's imports of parts from all sources <sup>3</sup>	***	***	***	***	***	***
Imports of Airbus aircraft from all sources <sup>4</sup>	***	***	***	***	***	***
Total	***	***	***	***	***	***
	<b>Share of value (percent)</b>					
Projections:						
C Series imports of parts from Canada	***	***	***	***	***	***
C Series imports of parts from all other sources	***	***	***	***	***	***
C Series imports of parts from all sources	***	***	***	***	***	***
Boeing's imports of parts from Canada	***	***	***	***	***	***
Boeing's imports of parts from all other sources	***	***	***	***	***	***
Boeing's imports of parts from all sources	***	***	***	***	***	***
Imports of Airbus aircraft from all sources	***	***	***	***	***	***
Total	100.0	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Bombardier's projected imports of parts for CSALP. Imported parts from Canada include the following items: \*\*\*.

<sup>2</sup> Bombardier's projected imports of parts for CSALP. Imported parts from the rest of the world (excluding the United States) include the following items: \*\*\*.

Footnotes continued on next page.

Footnotes—continued

<sup>3</sup> Boeing's projected imports of parts for the 737-700 and MAX 7. Boeing's did not separate the description of its imported parts by source country. Imported parts from all sources include the following items: \*\*\*.

<sup>4</sup> Includes Ascend's projected imports of the Airbus A319neo, with values constructed based on the unit value for nonsubject imports in 2014. Airbus stated that \*\*\* and that \*\*\*. \*\*\*. Airbus' response to Commission's January 4, 2018 question regarding imported parts (EDIS document 633209).

Source: Table C-1; petition, exhibit 44; Boeing's posthearing brief, attachment A, pp. 88-89; Bombardier's response to Commission's January 4, 2018 question regarding imported parts (EDIS document 633199).

**APPENDIX F**

**U.S. PRODUCERS' PRODUCTION SKYLINE FOR ALL SINGLE AISLE LCA**





**Table F-1**  
**Single aisle LCA: U.S. producers' actual and projected annual U.S. deliveries, by model**

\* \* \* \* \*

