Aerospace Local and Regional Impacts

Aerospace Works for Washington

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Prepared for:

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KEY FINDINGS

The Aerospace industry in Washington, led by The Boeing Company, continued to perform at historic levels through 2016. Business revenues were down slightly from peak levels in 2015. Productivity gains have come with declining employment, though nowhere the lows seen historically during lower levels of Aerospace economic cycles. The industry continues to evolve differently than the patterns of employment gains and losses seen for forty years from 1960 through 2000.

Key findings are as follows:

- Aerospace revenues in Washington in 2016 remained much higher than was seen in the past several years. In 2016, Aerospace companies in Washington reported $68.4 billion in gross revenues, down slightly from its historic peak in 2015, but still well above averages for the ten years from 2000 to 2010, when revenues averaged $40 billion (all inflation adjusted and reported in 2016 dollars).
- The Boeing Company largely—but not entirely—defines the industry in Washington state. Boeing company revenues reported for work in Washington was $57.0 billion, down from its historic high of $60.9 billion in 2015. Company revenues averaged $35 billion from 2000 to 2010.
- Revenues at other aerospace companies, other than Boeing, have grown substantially in past years, from $1.3 billion in 2012 up to $11.4 billion in 2016.
- Productivity gains in the industry have led to declining aerospace employment since 2013. Fewer workers have been required to produce increasing levels of output. In 2017, there were 84,900 jobs directly employed by the industry in Washington, down from a high of 96,000 in 2013 (down by 11.5%). Jobs at Boeing in Washington state were at 68,900 in 2017, down from 84,800 in 2012. This is consistent with a companywide decline in employment across all locations globally of 4.1% per year between 2012 and 2017, from 174,400 workers to 141,322 workers at end of December 2017.[1]
- Aerospace revenue gains resulted in a total jobs economic impact that offset direct industry employment declines during those same periods. Total jobs in the statewide economy supported by the industry, including both direct jobs and indirectly supported jobs, totaled 242,800, down from 253,400 in 2012 (down 9.6% in total).

[1] The Boeing Company, *2016 Annual Report* and 2018 "Boeing in Brief," accessed at http://s2.q4cdn.com/661678649/files/doc_financials/annual/2016/2016-Annual-Report.pdf and http://www.boeing.com/company/general-info/#/governance.

- The average annual wage in Aerospace in 2016 was $108,300, very nearly the same as in 2015, 3% lower than in 2014. This was higher than any other year, inflation adjusted, since 2000 (no data were analyzed prior to 2001).
- The industry contributed a total of $290.4 million to Washington state government, through state-level taxes alone (not including local taxes).

The large numbers of statewide impacts sometimes overshadow an understanding of how local communities benefit from Aerospace and its employees that live and shop in their communities. Aerospace workers live relatively near their workplaces. Worker residences are concentrated in Western Washington counties, up and down nearly the entirety of the I-5 corridor, including many workers living on the eastern side of I-5 counties.

Everett, Marysville, Arlington, and surrounding rural areas rank highest in worker residents, working out of facilities north of Seattle. Renton area and Kent industrial valley workers are more dispersed throughout urban areas in Western Washington.

Spending patterns of Aerospace workers in their places of residence provide an understanding of local impacts from Aerospace. Analysis of selected communities demonstrate the importance of Aerospace workers for specific communities, as follows:

- **Everett-Lynnwood.** In the Everett and Lynnwood area alone, Aerospace workers and spending support a tremendous amount of business activity.
  - **Car sales.** In the Everett to Lynnwood areas, Aerospace workers support the equivalent of three car dealerships, or a total of 1,800 cars each year purchased by Aerospace workers.
  - **Restaurants.** Typical dining out patterns, assuming most of their spending is local to them, support $76 million in sales at restaurants and drinking places, which equates to nearly 1,300 restaurant workers and 89 individual restaurants.
  - **Retail.** Additional retail spending by Aerospace workers supports nearly 900,000 s.f. of retail space, nearly $300 million in retail sales.
  - **Health care professionals.** The equivalent of 120 doctors and dentists offices are supported by Aerospace workers, which includes a total of 1,900 jobs.
- **North Everett to Arlington.** Northward from Everett into Arlington, Aerospace workers and spending support the following business activity.
  - **Car sales.** Aerospace workers support the equivalent of one to two car dealerships, or a total of 600 cars each year purchased by Aerospace workers.

    - **Restaurants.** Typical dining out patterns, assuming half of their spending is local to them, supports $24 million in sales at restaurants and drinking places, which equates to over 400 restaurant workers and roughly 28 individual restaurants.
    - **Retail.** Additional retail spending by Aerospace workers supports nearly 270,000 s.f. of retail space, nearly $87 million in retail sales.
    - **Health care professionals.** The equivalent of 27 doctors and dentists offices are supported by Aerospace workers, which includes a total of 600 jobs.
- **Auburn-Renton.** From Auburn to Renton, Aerospace workers and spending support the following business activity.
    - **Car sales.** Aerospace workers support the equivalent of two car dealerships, or a total of 800 cars per year purchased by Aerospace workers.
    - **Restaurants.** Typical dining out patterns, assuming half of their spending is local to them, supports $37 million in sales at restaurants and drinking places, which equates to more than 600 restaurant workers and roughly 43 individual restaurants.
    - **Retail.** Additional retail spending by Aerospace workers supports more than 400,000 s.f. of retail space, $130 million in retail sales.
    - **Health care professionals.** The equivalent of 51 doctors and dentists offices are supported by Aerospace workers, which includes a total of nearly 900 jobs.
- **Pierce and South King County.** In Pierce County communities, and the southern portion of King County, Aerospace workers and spending support the following business activity.
    - **Car sales.** Aerospace workers support the equivalent of one to three car dealerships, or a total of 1,200 cars per year purchased by Aerospace workers.
    - **Restaurants.** Typical dining out patterns, assuming half of their spending is local to them, supports $54 million in sales at restaurants and drinking places, which equates to over 900 restaurant workers and roughly 63 individual restaurants.
    - **Retail.** Additional retail spending by Aerospace workers supports nearly 600,000 s.f. of retail space, nearly $200 million in retail sales.
    - **Health care professionals.** The equivalent of 55 doctors and dentist offices are supported by Aerospace workers, which includes a total of 1,300 jobs.

INTRODUCTION

This report assesses the statewide and local and regional impacts of the aerospace sector in Washington state on behalf of Aerospace Works for Washington (AWW). AWW is a non-profit coalition of elected, business, and community leaders dedicated to ensuring Washington state remains a leader in aerospace. To advance this mission, Aerospace Works for Washington requested an updated analysis on the economic benefits of the aerospace sector and The Boeing Company in Washington state, along with a discussion of the impacts of aerospace at the local and regional levels.

Analytics presented in this report include updated estimates on the direct and secondary economic and fiscal impacts of aerospace statewide and a data-rich narrative on the ways aerospace contributes to local economic growth and economic resiliency.

Methods

This report leverages public data and proprietary information from The Boeing Company, along with modeling tools published by the Washington State Office of Financial Management for economic impact computations. Custom data modeling estimates economic benefits of aerospace workers by select regions of Western Washington.

Organization of Report

The remainder of this report is organized as follows:

- **Current conditions**. A review key of trends in aerospace and The Boeing Company in Washington state.
- **Economic and fiscal impacts**. Modeled estimates of the broader economic and fiscal impacts of aerospace and The Boeing Company in Washington state.
- **Local and Regional Impacts**. An assessment, leveraging data and modeling tools, of the varied impacts of aerospace to cities and communities across the state.
- **Summary and conclusions**. Review of key findings.

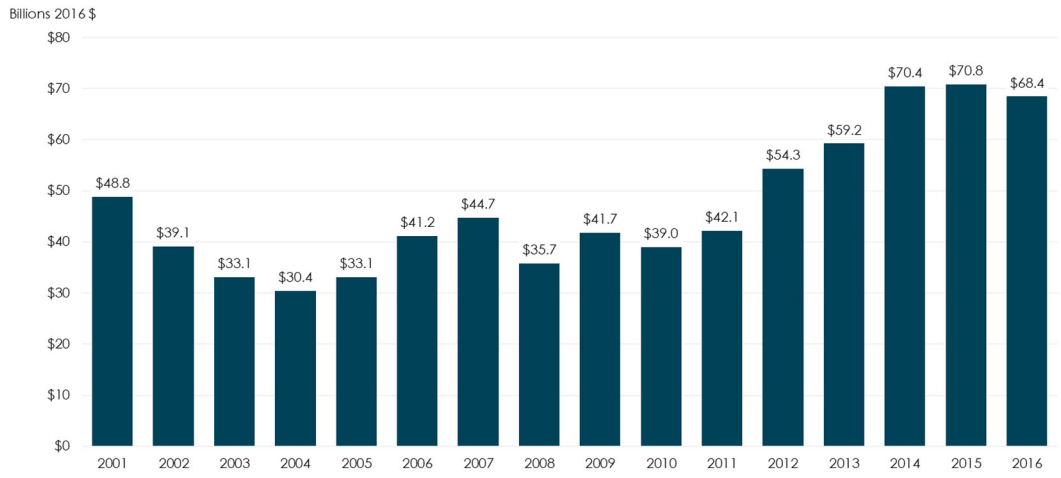
CURRENT CONDITIONS

This section reviews the current impacts of the aerospace industry and The Boeing Company in Washington state. Findings illustrate the impacts of the industry from a statewide perspective, and how they have changed over time.

Business Revenues

In 2016, the aerospace industry directly generated $68.4 billion in gross business income (**Exhibit 1**). This was down slightly (3.3%) from 2015, adjusted for inflation, when revenues reached an historic peak of $70.8 billion (2016 dollars). Revenues in 2016 remained high by historic standards—GBI in 2016 was 91% above the low of $35.7 billion in 2008 (in 2016 dollars).

Exhibit 1. Aerospace Gross Business Income in Washington State, 2003-2016

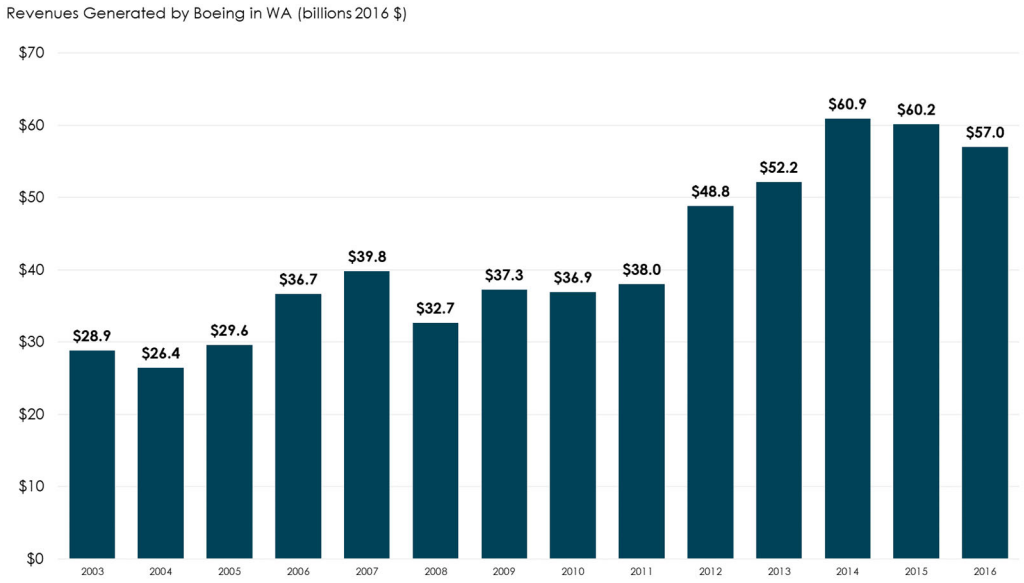


Sources: Washington State Department of Revenue, 2017; Community Attributes, 2017.

The Boeing Company anchors the aerospace sector in Washington state. In 2016, The Boeing Company generated an estimated $57.0 billion in revenues from operations in Washington state (**Exhibit 2**), including final production facilities for the 737 and 737 MAX, 747-8, 767, 777 (and soon 777X, including the manufacture of the composite wing), and 787, as well the KC-46A air refueling tanker (based on the 767) and P-8 anti-submarine aircraft (based on the 737).

The Boeing Company's revenues in Washington in 2016 represented more than 83% of all aerospace revenues in the state. Between 2003 and 2016, Boeing revenues averaged nearly 89% of all aerospace revenues in Washington state.

Exhibit 2. Business Revenues Generated by Boeing in Washington State, 2003-2016

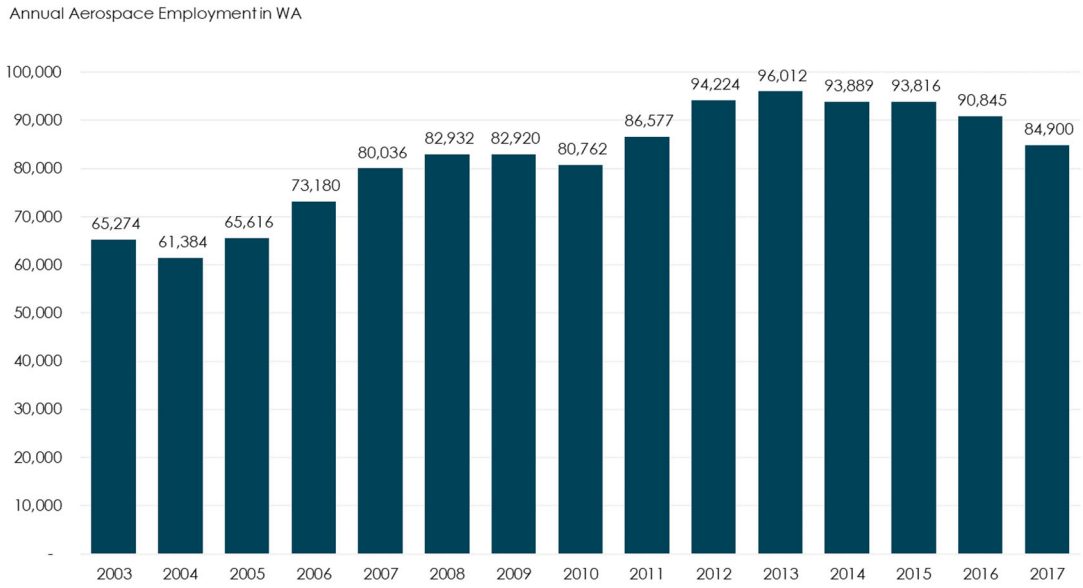


Sources: Washington State Department of Revenue, 2017; The Boeing Company, 2017; Community Attributes Inc., 2017.

Jobs, Occupations, and Wages

In 2017, as of October the aerospace industry supported an annual workforce of 84,900 workers (**Exhibit 3**). This employment level represents 30% of all manufacturing jobs in Washington state.

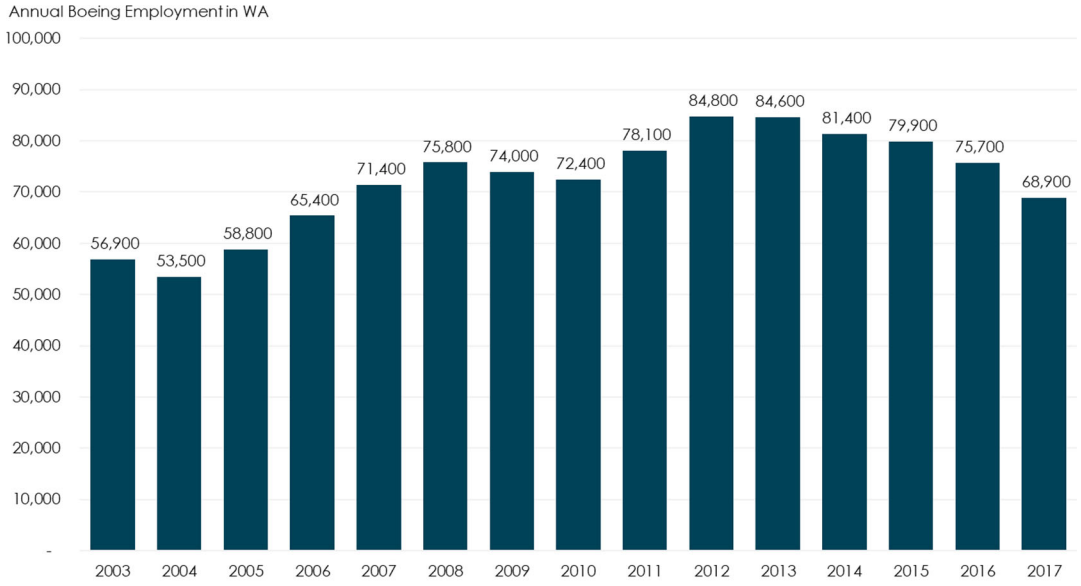
Exhibit 3. Aerospace Employment in Washington State, 2003-2017



Sources: Washington State Employment Security Department, 2017; Community Attributes Inc., 2017.

The Boeing Company is Washington state's largest private sector employer. Through the first nine months of 2017, Boeing employment in Washington state averaged nearly 69,000 workers. This is down from a recent peak of 84,776 in 2012 (**Exhibit 4**). This employment extends across the Puget Sound region, including in Renton and Everett for final assembly and additional manufacturing facilities in Auburn, Seattle, and Puyallup. This decline in employment is consistent with a companywide decline of 4.1% per year between 2012 and 2017, from 174,400 workers to 141,322 workers at end of December 2017.

Exhibit 4. Boeing Jobs in Washington State, 2003-2017



Source: The Boeing Company, 2017; Community Attributes Inc., 2017.

Major occupations at Boeing include aircraft and structural assembly jobs, aerospace engineers, and industrial engineers (**Exhibit 5**).

Exhibit 5. Leading Boeing Occupations, 2017[2]

SOC	Description	Number of Jobs
512011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	9,930
172011	Aerospace Engineers	4,860
172112	Industrial Engineers	3,560
519061	Inspectors, Testers, Sorters, Samplers, and Weighers	3,310
131081	Logisticians	3,010
131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	2,590
493011	Aircraft Mechanics and Service Technicians	2,400
131199	Business Operations Specialists, All Other	1,780
435061	Production, Planning, and Expediting Clerks	1,750
514041	Machinists	1,520
151121	Computer Systems Analysts	1,360
172141	Mechanical Engineers	1,270
151133	Software Developers, Systems Software	1,270
511011	First-Line Supervisors of Production and Operating Workers	1,250
173026	Industrial Engineering Technicians	1,220
172071	Electrical Engineers	1,190
131111	Management Analysts	1,030
151132	Software Developers, Applications	950
173013	Mechanical Drafters	910
119041	Architectural and Engineering Managers	850
132099	Financial Specialists, All Other	850
152031	Operations Research Analysts	820
499041	Industrial Machinery Mechanics	730
514011	Computer-Controlled Machine Tool Operators, Metal and Plastic	720
172131	Materials Engineers	720
	All other occupations	*19,050*
	Total	**68,900**

Sources: Washington State Employment Security Department, 2017; Boeing, 2017; Community Attributes, 2017.

[2] SOC refers to Standard Occupational Code, the codes established by the U.S. Bureau of Labor Statistics to classify occupations.

Aerospace is among the highest industries for worker compensation in Washington state. In 2016, aerospace workers statewide averaged $108,300 per year (**Exhibit 6**), not including benefits, such as employer-based health insurance. Adjusted for inflation, the average wage has declined slightly from $111,536 in 2014. This may in part reflect an increase in retirements since 2014 and hiring of younger workers who are earlier in their careers.

Exhibit 6. Annual Wage, Aerospace, Washington State, 2001-2016

Sources: Washington State Employment Security Department, 2017; Community Attributes Inc., 2017.

Economic and Fiscal Impacts

Economic Impacts

The aerospace industry has widespread impacts across the state economy, owing to its large size and high wages. Total economic impacts represent both the direct footprint of the aerospace sector as well as additional jobs, labor income, and business revenues supported through upstream business-to-business transactions (indirect impacts) and worker income expenditures (induced impacts). Impacts were computed through use of the Washington State Input-Output (I-O) Model, maintained by the Washington State Office of Financial Management.

In 2016, the aerospace sector directly employed 90,800 workers, paid $12.5 billion in labor income (including benefits), and generated an estimated $$67.5 billion in business revenues. These activities in turn supported a total of 242,800 jobs across the state economy, $21.1 billion in labor income, and $93.5 billion in business revenues (**Exhibit 7**).

Exhibit 7. Aerospace Economic Impacts, Statewide, 2016

	Direct	Indirect	Induced	Total
Jobs	90,800	26,700	125,300	242,800
Labor Income (mils 2016 $)	$12,460.0	$2,106.4	$6,528.8	$21,095.2
Business Revenue (mils 2016 $)	$67,534.9	$6,543.0	$19,447.1	$93,525.0

Source: Office of Financial Management, 2017; Community Attributes Inc., 2017

These impacts can be translated into economic multipliers. For example, each dollar of direct revenue in aerospace supports an additional $0.40 in economic activity elsewhere in the state economy. Likewise, every job in aerospace is associated with a total of 2.67 jobs across the state (**Exhibit 8**).

Exhibit 8. Economic Multipliers, 2016

Type	Multiplier
Total output per $ final demand	1.4
Total jobs per direct job	2.7
Total labor income per $ direct income	1.7
Total jobs per $ mil final demand	3.6

Source: Office of Financial Management, 2017; Community Attributes Inc., 2017

The Boeing Company constitutes the vast majority of this statewide impact, due to its majority share of aerospace activities in the state (75,700 jobs in 2016). In 2016, The Boeing Company supported 202,200 jobs and $77.9 billion in business revenues statewide, factoring in direct, indirect, and induced impacts (**Exhibit 9**).

Exhibit 9. The Boeing Company Economic Impacts, Statewide, 2016

	Direct	Indirect	Induced	Total
Jobs	75,700	22,100	104,400	202,200
Labor Income (mils 2016 $)	$10,380.5	$1,753.84	$5,438.8	$17,573.2
Business Revenue (mils 2016 $)	$56,230.0	$5,447.7	$16,200.2	$77,877.9

Source: Office of Financial Management, 2017; Community Attributes Inc., 2017

Fiscal Impacts

As a major employer and operator in the state, the aerospace industry and Boeing make sizable direct and secondary impacts to the state in the form of taxes. In 2016, the aerospace sector made direct tax payments—including B&O, sales & use, and other tax categories—of $29.6 million. The total fiscal impact of the aerospace sector, including taxes paid by businesses associated with aerospace through indirect and induced impacts, summed to $290.4 million in 2016 (**Exhibit 10**).

Exhibit 10. Aerospace Statewide Fiscal Impacts, 2016

	Direct	Secondary	Total
State Tax Payments	$29.6	$260.9	$290.4

Source: Office of Financial Management, 2017; Washington State Department of Revenue, 2017; Community Attributes Inc., 2017

LOCAL AND REGIONAL IMPACTS

The aerospace industry and The Boeing Company have large, varied impacts to communities across the state. This section reviews each of these impacts, defined as follows:

- Jobs and income among aerospace workers—and the associated benefits to the communities these workers live in.
- The spending of income among these workers, both in their own communities and in nearby commercial areas.
- Wealth effects from dividends and capital gains from appreciation in The Boeing Company stock value, and the many individuals and families who own Boeing stock, either directly or through a retirement investment plan or other financial investment that includes Boeing stock.
- Employee charitable contributions and The Boeing Company matches.

Aerospace Jobs by Zip Code and Region

The majority of aerospace jobs by place of work and residence are within the Puget Sound region, owing to the concentration of Boeing and supplier operations in the region. **Exhibit 11** illustrates key aerospace facilities across the state, highlighting Boeing offices and facilities in the region.

These facilities serve as anchors for aerospace employment residencies in the region. Outside of the Puget Sound region, there are concentrations of aerospace workers living in areas in Southwestern Washington (e.g., Vancouver area), Spokane, as well as in Central Washington (**Exhibit 12 and 13**).

Exhibit 11. Aerospace Jobs by Place of Work, 2016

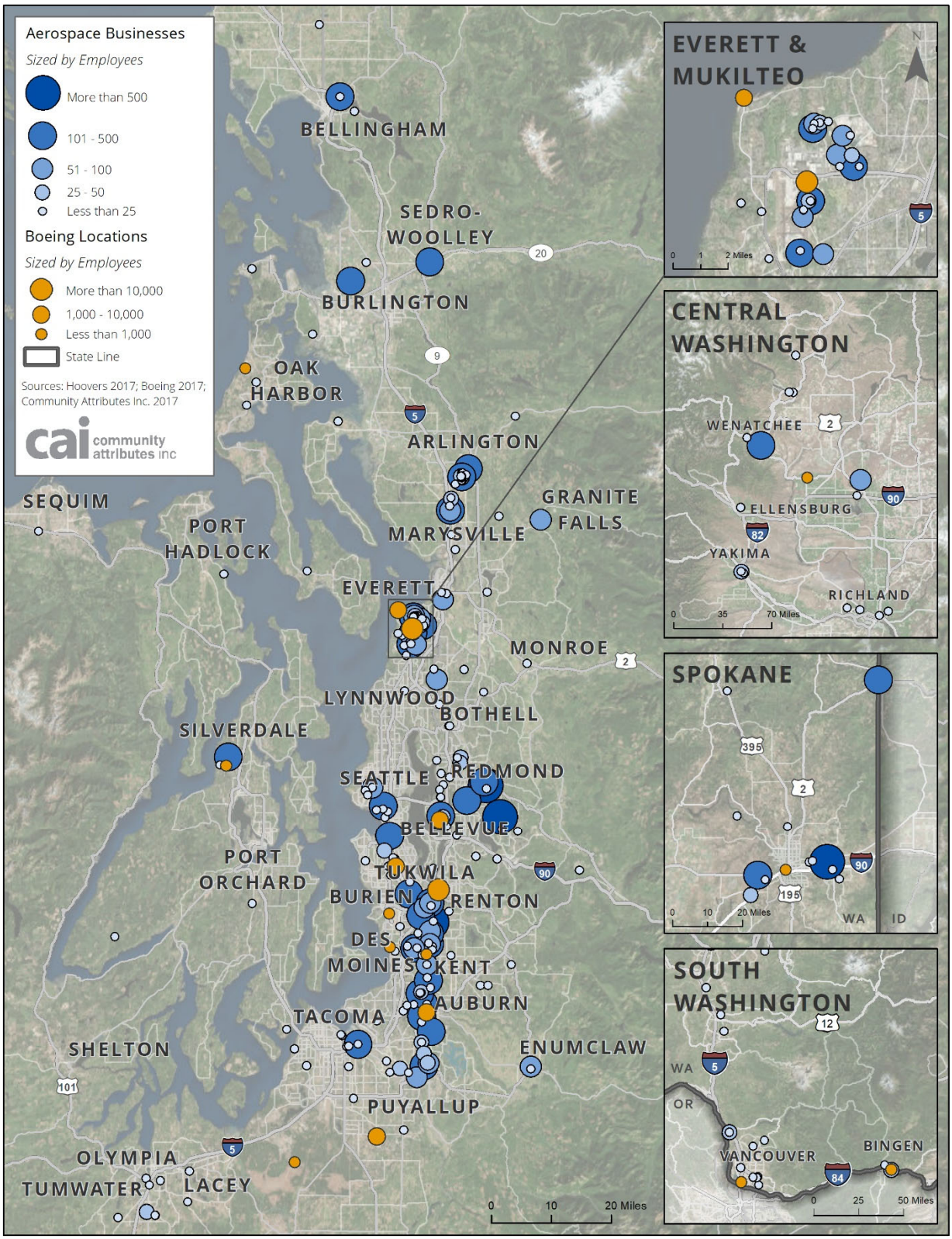
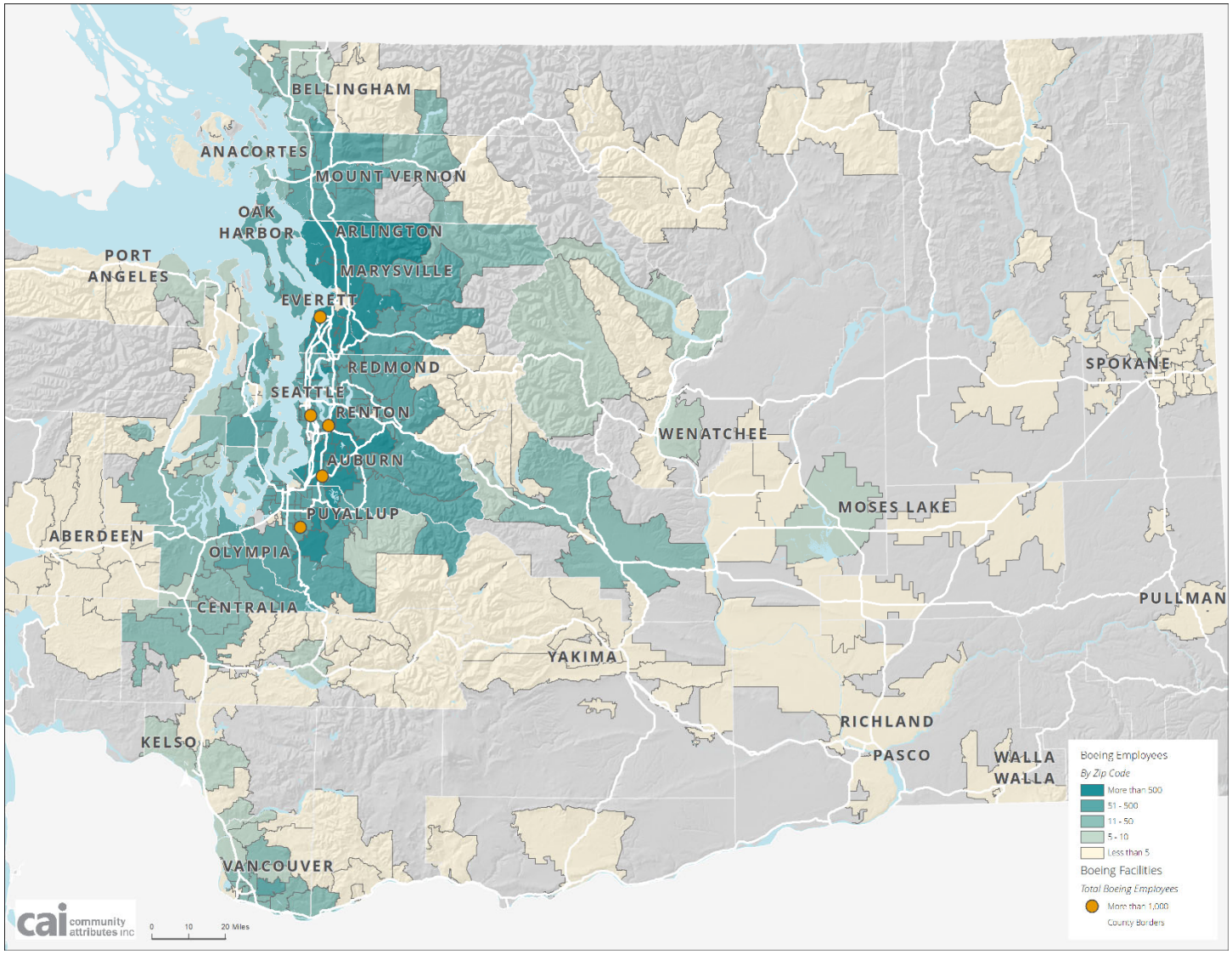


Exhibit 12. Boeing Workers by Place of Residence, 2017



Source: The Boeing Company, 2017.

Exhibit 13. Aerospace Workers by Place of Residence, Wages, As Share of Local Workforce, and Wages, 20 Largest Zip Codes by Aerospace Workers

Zip Code	City	Aerospace Workforce	Share of Total Labor Force	Aerospace Wages
98208	Arlington	3,100	9.8%	$109,900
98258	Arlington	2,900	17.0%	$329,800
98270	Arlington	2,600	10.2%	$329,800
98223	Arlington	2,300	10.9%	$250,780,100
98203	Everett	2,100	11.0%	$227,692,000
98275	Everett	1,900	16.9%	$1,099,400
98204	Arlington	1,700	7.4%	$109,900
98012	Bothell	1,400	4.3%	$153,150,700
98290	Lynnwood	1,300	7.0%	$109,900
98087	Camano Island	1,300	6.3%	$109,900
98058	Kenmore	1,200	5.2%	$109,900
98391	Bonney Lake	1,200	4.5%	$131,381,900
98271	Everett	1,200	8.4%	$329,800
98092	Auburn	1,200	5.1%	$126,544,400
98296	Everett	1,100	6.9%	$109,900
98059	Newcastle	1,100	5.4%	$15,941,700
98292	Arlington	1,100	10.0%	$109,900
98038	Maple Valley	1,000	5.7%	$114,560,600
98012	Bothell	1,000	3.0%	$153,150,700
98031	Kent	900	4.3%	$95,870,300

Sources: Washington State Employment Security Department, 2017; U.S. Census Bureau, American Community Survey 5-year estimates, 2017; Community Attributes Inc., 2018.

Regional Analysis and Impacts

Four regions were selected for assessment of aerospace worker spending impacts: 1) Everett-Lynwood; 2) North of Everett to Arlington; 3) Auburn-Renton; and 4) Pierce and South King County, representing a much larger region encompassing the Auburn-Renton area plus neighboring zip codes and all of Pierce County. In 2016, more than 25,500 aerospace workers lived in the Pierce and South King County region, with another nearly 25,000 in the Everett-Lynwood region. Workers in Everett-Lynwood earned, before benefits, more than $2.7 billion in wages that in turn supported nearly $1 billion in personal consumption within the resident region (**Exhibit 14**).

Exhibit 14. Summary of Workers, Wages, and Spending by Area

	Everett-Lynwood	North of Everett to Arlington	Auburn-Renton	Pierce and South King County
Resident Aerospace workers	24,784	11,332	14,170	25,543
Wage and salary income (mils $)	$2,724.8	$1,245.9	$1,557.9	$2,808.3
Estimated personal consumption within resident region (mils $)	$1,461.9	$445.6	$668.7	$1,004.5

Sources: Washington State Employment Security Department, 2017; Washington State Department of Revenue, 2017; U.S. Bureau of Economic Analysis, 2018; Community Attributes Inc., 2018.

Aerospace jobs in these regions were then grouped into high, medium, and low wage occupations, relative to the statewide average wage. As is the case with aerospace jobs in general in Washington, the majority of positions are those that earn at or above 120% of the state average, with many of these jobs well above this threshold. Roughly about one third (34%) of all aerospace jobs are estimated to earn within 20% of the state average (**Exhibit 15**).

Exhibit 15. Aerospace Jobs by Region and Wage Range, 2016

Wage Category	Everett-Lynwood	North of Everett to Arlington	Auburn-Renton	Pierce and South King County	All Aerospace Jobs
High Wage Jobs (+20% state average wage)	14,803	6,761	8,465	15,259	50,249
Medium Wage Jobs (within 20% state average wage)	8,409	3,843	4,804	8,661	28,546
Low Wage Jobs (20% below state average wage)	1,572	716	892	1,618	5,326
Total	*24,784*	*11,320*	*14,161*	*25,538*	*84,121*

Sources: Washington State Employment Security Department, 2017; Washington State Department of Revenue, 2017; U.S. Bureau of Economic Analysis, 2018; Community Attributes Inc., 2018.

Exhibit 16 below provides a summary of estimated aerospace worker personal consumption expenditures in their home region. Analytics are based on regional assumptions of the amount of spending in that region equivalent to a share of each worker's personal income spending, the remainder being spent in other regions or saved in a financial institution. The assumptions per region, based on taxable retail sales analysis for each region, are as follows:

Everett-Lynnwood:	75%
North Everett to Arlington:	50%
Auburn to Renton:	60%
Pierce and South King County:	50%

Exhibit 16. Aerospace Worker Estimated Personal Consumption Expenditures by Resident Region, 2016

PCE Category	Everett-Lynwood	North of Everett to Arlington	Auburn-Renton	South King County
Durable Goods	$165,088,140	$50,322,219	$75,509,972	$113,429,265
Motor vehicles and parts	$45,980,811	$14,015,885	$21,031,249	$31,592,636
Furnishings and durable household equipment	$37,602,085	$11,461,879	$17,198,888	$25,835,756
Recreational goods and vehicles	$62,091,124	$18,926,636	$28,399,975	$42,661,760
Other durable goods	$19,380,060	$5,907,436	$8,864,282	$13,315,711
Nondurable goods	$285,217,265	$86,940,016	$130,456,057	$195,967,953
Food and beverages purchased for off-premises consumpt	$109,059,671	$33,243,603	$49,883,006	$74,933,053
Clothing and footwear	$36,954,948	$11,264,619	$16,902,893	$25,391,119
Gasoline and other energy goods	$22,172,969	$6,758,771	$10,141,736	$15,234,671
Other nondurable goods	$117,029,678	$35,673,023	$53,528,423	$80,409,110
Services	$1,011,611,894	$308,359,855	$462,703,052	$695,061,400
Household consumption expenditures (for services)	$966,652,879	$294,655,434	$442,139,164	$664,170,822
Housing and utilities	$285,285,385	$86,960,781	$130,487,215	$196,014,757
Health care	$234,978,972	$71,626,364	$107,477,471	$161,450,072
Transportation services	$49,591,156	$15,116,392	$22,682,591	$34,073,243
Recreation services	$62,840,441	$19,155,043	$28,742,707	$43,176,603
Food services and accommodations	$87,738,199	$26,744,385	$40,130,738	$60,283,430
Financial services and insurance	$113,828,051	$34,697,102	$52,064,025	$78,209,326
Other services	$132,390,675	$40,355,367	$60,554,418	$90,963,391
Total	**$1,461,917,300**	**$445,622,091**	**$668,669,081**	**$1,004,458,618**

Based on the above analytics, several spending impacts by industry are estimated. Examples of spending are provided in **Exhibit 17** below.

- *Car and truck sales*. Aerospace workers in the Everett-Lynwood region spent an estimated $46.0 million in automobile purchases within the region in 2016, the equivalent of 1,800 cars sold, or approximately 5 whole dealerships in the region.
- *Restaurants*. Aerospace workers in the region North of Everett to Arlington spent an estimated $24.3 million at food and beverage establishments in the region in the 2016, the equivalent of 3.5% of all restaurant sales in the region and supporting more than 400 jobs.
- *Doctor and dentist offices*. Aerospace workers in Pierce and South King County spent an estimated $161.5 million on healthcare services in the region in 2016, equal to 2.0% of all healthcare spending in the region.
- *Retail*. In the Auburn-Renton region, aerospace workers spent $130.5 million on retail in the region, equivalent to 400,000 square feet of retail space.

Exhibit 17. Spending Impacts from Aerospace Workers by Region

PCE Category	Everett-Lynwood	North of Everett to Arlington	Auburn-Renton	Pierce and South King County
Car sales supported by aerospace workers	$45,981,000	$14,016,000	$21,031,000	$31,593,000
Equivalent number of cars sold	1,800	600	800	1,200
Equivalent car dealerships	5	2	2	3
Restaurants				
Estimated sales	$76,384,776	$24,318,876	$36,643,761	$54,255,087
Estimated % all restaurant sales in region	9.1%	3.5%	11.3%	4.0%
Jobs supported by aerospace workers	1,295	412	621	920
Estimated restaurants supported by aerospace workers	89	28	43	63
Doctor and dentist offices, including labs and outpatient clinics				
Estimated spending	$234,978,972	$71,626,364	$107,477,471	$161,450,072
Estimated % all healthcare revenues in region	6.9%	6.9%	3.4%	2.0%
Jobs supported by aerospace workers	1,892	577	866	1,300
Estimated offices supported by aerospace workers	121	27	51	55
Retail				
Estimated sales	$285,217,265	$86,940,016	$130,456,057	$195,967,953
Sqft supported by aerospace workers (based on $322/sqft i	885,114	269,801	404,844	608,147

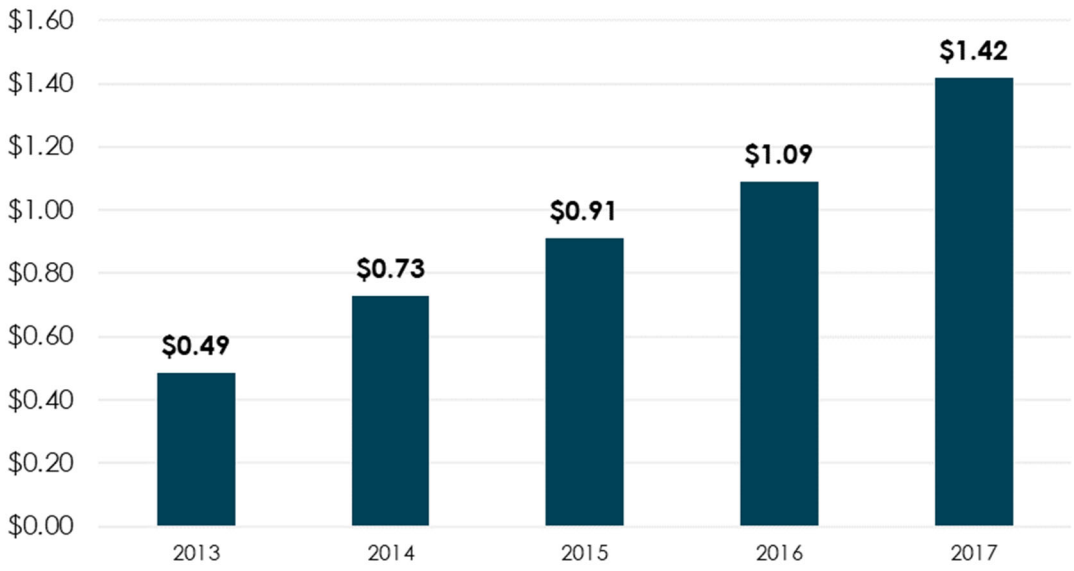
Sources: Washington State Employment Security Department, 2017; Washington State Department of Revenue, 2017; U.S. Bureau of Economic Analysis, 2018; Community Attributes Inc., 2018.

Boeing Dividend Payments

The aerospace sector creates wealth for Washington residents through stock ownership and dividend payments. While data does not exist on the precise number of Boeing shareholders in Washington state, a large number reside in the state. Some investors are passive, in the sense that they own Boeing stock as part of an indexed fund or other instrument, and did not directly purchase Boeing stock. Boeing's recent stock value increases translate into greater wealth among its shareholders in Washington state.

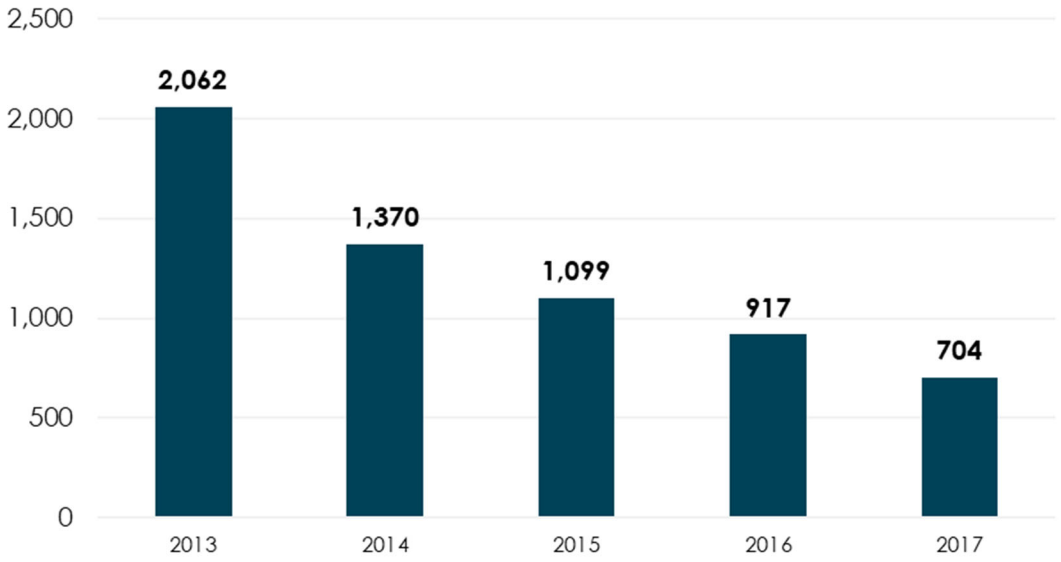
From 2013 to 2017, Boeing's dividend payments increased from $0.49 in 2013 to $1.42 in 2017 (**Exhibit 18**). Conversely, for a shareholder to earn annual dividend payments of $1,000, one would need to own just 704 shares in 2017, compared with 2,062 in 2013 (**Exhibit 19**).

Exhibit 18. Boeing Dividend Payments per Share, 2013-2017



Sources: Yahoo! Finance, 2017; Community Attributes Inc., 2017.

Exhibit 19. Shares Needed to Earn $1,000 in Annual Dividend Payments



Sources: Yahoo! Finance, 2017; Community Attributes Inc., 2017.

Boeing Charitable Contribution

Boeing's community impacts extend to charitable contributions by The Boeing Company and its employees. A large share of company-wide contributions accrue to Washington state.

In 2016, The Boeing Company contributed $125.9 million in charitable donations nationwide, up from $75.0 million in 2015. Boeing employees contributed an additional $35.3 million (**Exhibit 20**).

Exhibit 20. Boeing Company-wide Charitable Investments in Communities, 2009-2016

Year	Charitable and Business Contributions ($ Million)	Employee Giving ($ Million)	Charitable Trust ($ Million)	In-kind Donations ($ Million)	Total Giving ($ Million)
2009	$45.47	$39.47	$57.00	$0.95	$142.89
2010	$60.00	$43.00	$57.00	-	$160.00
2011	$52.30	$38.00	$57.00	-	$147.30
2012	$71.00	$42.00	$66.00	-	$179.00
2013	$67.00	$42.70	$66.60	-	$176.30
2014	$76.00	$41.00	$71.00	-	$188.00
2015	$75.00	$39.00	$76.00	-	$190.00
2016	$125.90	$35.30	$1.80	-	$163.00

Sources: The Boeing Company, 2017; Community Attributes Inc., 2017.

SUMMARY AND CONCLUSIONS

The Aerospace industry in Washington, led by The Boeing Company, continued to perform at historic levels through 2016. Business revenues were down slightly from peak levels in 2015. Productivity gains have come with declining employment, though nowhere the lows seen historically during lower levels of Aerospace economic cycles. The industry continues to evolve differently than the patterns of employment gains and losses seen for forty years from 1960 through 2000.

The large numbers of statewide impacts can overshadow an understanding of how local communities benefit from Aerospace and its employees that live and shop in their communities. Analysis of typical spending patterns of Aerospace workers in their places of residence demonstrate how local communities throughout Washington prosper from and depend on Aerospace workers living, working, and engaging in all aspects of their community.