Appendix B
GRADE CALCULATIONS

Determining Grades

In *Oregon Shines II*, the Board's 1997 report to the legislature, specific year 2000 "performance targets" were identified for most of the benchmarks. Grades provide an assessment of whether Oregon is "on track" toward achieving those year 2000 performance targets. To calculate grades the Board did two things. First, it determined how much progress Oregon had made between 1990 and 2000 (or the most recent year for which data is available) for each benchmark and compared that to where Oregon needed to be to meet the year 2000 performance target. Second, it examined the short term trend by comparing where Oregon was the last time the Board reported (in 1998) to where Oregon was in 2000 (or the most recent year for which data is available.) The Board assumed a simple straight line progression between the 1990 data point and the year 2000 target and the 1998 reported data point and the year 2000 target. The two calculations were averaged to determine the overall grade.

Formula = average of the following results:

1. **Long term trend:** (current year value – base year value)/(((2000 target year value– base year value)/total year time-span)*(# of years of data between current year and base year)))
2. **Short term trend:** (current year value – 1998 reported year value)/(((2000 target year value – 1998 reported year value)/time-span between 1998 reported year and 2000 target year)* (# of years of data between 1998 reported year and 2000 reported year)

Multi-Part Benchmarks

Each part of multi-part benchmarks, such as housing affordability, each part was graded independently and then those grades were combined for a final grade.

Margin of Error Calculations

Some benchmark data is derived from random surveys of different populations. Like any survey of a randomly selected subset of a population, these are simply good estimates of what is happening within that population. To understand the meaning of the data reported, the reader must know the margin of error associated with the survey. This A+ or -A factor tells the reader how far off the actual answer could be from the reported estimate.

When comparing data for a survey-derived benchmark over two different years, the reader can only assume that a real change has occurred with the benchmark if the difference between the two years is outside the benchmarks' combined margins of error. Statisticians call that type of change statistically significant. For example, if affordable childcare in Oregon in 1990 was reported at 69% and affordable childcare in 1999 at 67% with a margin of error of 6%, the change is not statistically significant. Why? Because the difference would have to be more than the combined margins of error (twelve percent) in order to achieve statistical significance.

Survey data is also reported with a "confidence interval." This quantifies the degree of certainty associated with the survey. A 95% confidence interval means that the survey results are accurate 95% of the time over the long run. Margins of errors noted in this report are at the 95% confidence level unless otherwise noted.

In cases involving statistically insignificant changes, the "+/-" factor was calculated for the short and/or long term trend, graded separately, and then combined for a grade, again using the midpoints. In some cases the long term results were statistically insignificant while the short-term results were not (or vice versa). In these instances, the +/- factor was calculated only for the insignificant trends. Margin of errors for survey derived benchmark data can be found in the endnotes of this report.

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Grading Scale

Benchmark grades were assigned by using the following scale:	Midpoint
A - Projected to meet or exceed the benchmark performance target	
A = 1	N.A.
A- = .94 -.99	.965
B - Projected to make significant progress toward target	
B+ = .88-.93	.91
B = .77-.87	.82
B- = .66-.76	.71
C - Projected to make some progress toward target	
C+ = .55-.65	.6
C = .44-.54	.49
C- = .33-.43	.38
D - Projected to make little or no progress toward target	
D+ = .23-.32	.275
D = .12-.22	.17
D- = 0-.1	.05
F - Projected to go in the opposite direction from target	
F = <0	

State Rankings

Four benchmarks use state rankings. They are: BM #2 – Traded Sector, BM #3 – New Companies, BM #8 – Venture Capital Investments, and BM #37– Arts Funding. In these cases the Board used a different approach to create a grade. First, using a straight-line extrapolation to the year 2000 for the long-term and short-term trends, it established where the benchmark would be in 2000. Based on the projected 2000 data point, a five point increment grading system was used to establish the grade. For instance, in 1990 Oregon's national rank in new companies was 13th. In 1999 its rank was 11th. Using a straight line extrapolation from 1990 through 1999, the rank in 2000 would be 11th. Using a similar technique, the short term extrapolation yields a projected 2000 rank of 13th. The long term grade is an A- and the short term grade is a B. (1st-10th=A, 11th=A-, 12th-15th=B, 16th-20th=C, 21st-25th=D, >26th=F). Averaging the short and long term grades yields a final grade of B+.

Grade Calculations

	Calculation	Score	Grade
Economy			
1. Employment Dispersion			**D**
	(25.2-25.8)/(((25.8-25.8)/10)*9)	<0	F
	(25.2-24.9)/(((25.8-24.9)/3)*2)	0.50	C
2. Traded Sector	**state ranking**		**B-**
	long term - extrapolation to 2000	30th	B-
	short term - extrapolation to 2000	29th	B-
3. New Companies	**state ranking**		**B+**
	long term - extrapolation to 2000	11th	A-
	short term - extrapolation to 2000	13th	B
4. Net Job Growth			**F**
	(27111-43276)/(((50000-43276)/10)*9)	-2.67	F
	(27111-55927)/(((50000-55927)/3)*2)	<0	F
5. Professional Services			**D**
	(84-81)/(((93-81)/10)*8)	0.31	D+
	(84-88)/(((93-88)/4)*2)	-1.60	F
6. Economic Diversification			**N/A**
7. Industry R&D			**C**
	(1.11-0.61)/(((2.1-0.61)/10)*7)	0.47	C
	(1.11-0.91)/(((2.1-0.91)/5)*2)	0.42	C-
8. Venture Capital Investments	**state ranking**		**B**
	long term - extrapolation to 2000	13th	C
	short term - extrapolation to 2000	4th	A
9. Workers' Compensation			**A**
		met target	**A**
	(18-14)/(((15-14)/2)*2)	4.00	**A**
10. Issued Permits	*overall grade*		**C**
a. Air contaminant discharge			**B-**
	(61-57)/(((67-57)/9)*8)	0.45	C
	(61-50)/(((67-50)/3)*2)	0.97	A-
b. Wastewater discharge			**D**
	(25-41)/(((41-41)/8)*7)	<0	F
	(25-16)/(((41-16)/3)*2)	0.54	C
11. Personal Income			D
	(95-93)/(((100-93)/10)*9)	0.32	D+
	(95-95)/(((100-95)/2)*1)	0.00	D-
12. Annual Payroll			**A**
	(28820-24695)/(((26304-24695)/10)*9)	2.85	A
	(28820-27341)/(((26304-27341)/3)*2)	>1	A
13. Income Disparity			**new**
14. Workers Poverty Level			**A**
	(35-30)/(((32-30)/10)*9)	2.78	A
	(35-31)/(((32-31)/4)*3)	5.33	A
15. Unemployment Rate			**A**
	(4.8-5.5)/(((5-5.5)/10)*9)	1.56	A
	(4.8-5.8)/(((5-5.8)/3)*2)	1.88	A
16. Exports			**new**
17. Foreign Language	*overall grade*		**D**
	(14.5-17)/(((17-17)/8)*8)	<0	F
			D+
MOE(-)	(13.34-14)/(((17-14)/2)*2)	-0.22	F
MOE(+)	(15.66-14)/(((17-14)/2)*2)	0.55	C+

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	Calculation	Score	Grade
Education			
18. Ready-To-Learn	(66.5-58)/(((65-58)/3)*3)	1.21	**A**
19. 8th Grade Skill Levels	*overall grade*		**B+**
a. reading			**A**
	(64-40)/(((63-40)/9)*9)	1.04	A
	(64-55)/(((63-55)/2)*2)	1.13	A
b. math			**B-**
	(56-40)/(((59-40)/9)*9)	0.84	B
	(56-51)/(((59-51)/2)*2)	0.63	C+
20. 3rd Grade Skill Levels	*overall grade*		**A**
a. reading			**A**
	(82-52)/(((82-52)/9)*9)	1.00	A
	(82-78)/(((82-78)/2)*2)	1.00	A
b. math			**A**
	(75-35)/(((73-35)/9)*9)	1.05	A
	(75-67)/(((73-67)/2)*2)	1.33	A
21. High School Work Experience			**B**
	(42-9)/(((65-9)/7)*6)	0.69	B-
	(42-15)/(((65-15)/3)*2)	0.81	B
22. High School Dropout Rate			**D-**
	(6.6-6.6)/(((5-6.6)/10)*9)	0.00	D-
	(6.6-6.7)/(((5-6.7)/3)*2)	0.09	D-
23. High School Graduates			**C+**
	(91.7-85)/(((94-85)/10)*10)	0.74	B-
	(91.7-91)/(((94-91)/2)*2)	0.23	D+
24. Some College Completion			**D**
	(57.6-53)/(((68-53)/10)*10)	0.31	D+
	(57.6-62)/(((68.3-62)/2)*2)	-0.70	F
25. Associates Degree	*overall grade*		**D**
			D-
MOE(-)	(3.04-4)/(((6-4)/6)*6)	-0.48	F
MOE(+)	(4.16-4)/(((6-4)/8)*8)	0.08	D-
	(3.6-3)/(((6-3)/2)*2)	0.20	D
26. Bachelor's Degree	*overall grade*		**C-**
	(28.9-23)/(((33-23)/10)*10)	0.59	C+
			D-
MOE(-)	(27.79-29)/(((33.5-29)/2)*2)	-0.27	F
MOE(+)	(30.01-29)/(((33.5-29)/2)*2)	0.22	D
28a. Computer Skills	*overall grade*		**B**
	(60.5-50)/(((61-50)/6)*6)	0.95	A-
			C
MOE(-)	(57.04-60)/(((61-60)/2)*2)	-2.96	F
MOE(+)	(63.96-60)/(((61-60)/2)*2)	3.96	A
28b. Internet Usage			**A**
	(63-10)/(((40-10)/8)*8)	1.77	A
	(63-35)/(((40-35)/2)*2)	5.60	A
29. Labor Force Skill Training	no target set		**N/A**

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	Calculation	Score	Grade
Civic Engagement			
30. Volunteerism	*overall grade*		**F**
	(23.2-30)/(((35-30)/8)*8)	-1.36	F
	(23.2-29)/(((35-29)/2)*2)	-1.20	F
31. Eligible Voters			**C**
	(61-55)/(((70-55)/10)*10)	0.40	C-
	(61-50)/(((70-50)/2)*2)	0.55	C+
32. Community Involvement	*overall grade*		**D**
			D
MOE(-)	(33.03-36)/(((45-36)/6)*6)	-0.33	F
MOE(+)	(39.97-36)/(((45-36)/6)*6)	0.44	C
			D
MOE(-)	(33.03-36)/(((45-36)/2)*2)	-0.33	F
MOE(+)	(39.97-36)/(((45-36)/2)*2)	0.44	C
33. The Tax System			**D+**
	(18-11)/(((25-11)/8)*7)	0.57	C+
	(18-19)/(((25-19)/3)*2)	-0.25	F
34. S&L Taxes	*no target set*		**N/A**
35. Governing Magazine Rank	*no target set*		**N/A**
36. S&P Bond Rating			**C**
	(4-3)/(((5-3)/10)*10)	0.50	C
37. Arts Funding	**state ranking**	46th	**C**
38. Public Library Service			**F**
	(84-86)/(((90-86)/10)*9)	-0.56	F
	(84-89)/(((90-89)/3)*2)	-7.50	F
Social Support			
39. Teen Pregnancy			**A-**
	(15.9-19.7)/(((15-19.7)/10)*9)	0.90	B+
	(15.9-18)/(((15-18)/3)*2)	1.05	A
40. Prenatal Care			**D+**
	(.81-.76)/(((.90-.76)/10)*9)	0.40	C-
	(81-81)/(((90-81)/3)*2)	0.00	D-
41. Infant Mortality			**B+**
	(5.8-8.3)/(((6-8.3)/10)*9)	1.21	A
	(5.8-5.6)/(((6-5.6)/4)*3)	0.67	B-
42. Immunizations			**D**
	(73-67)/(((90-67)/6)*5)	0.31	D+
	(73-73)/(((90-73)/3)*2)	0.00	D-
43. HIV Cases			**D-**
	(73-72)/(((85-72)/10)*9)	0.09	D-
	(73-76)/(((85-76)/3)*2)	-0.50	F
44. Adult Non-Smokers			**D**
	(79-78)/(((81-78)/10)*9)	0.37	C-
	(79-79)/(((81-79)/3)*2)	0.00	D-

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	Calculation	Score	Grade
45. Premature Mortality			**A**
	(52.7-64.3)/(((57.4-64.3)/10)*9)	1.87	A
	(52.7-59.6)/(((57.4-59.6)/4)*3)	4.18	A
46. Health Status			**F**
	(57-63)/(((65-63)/7)*6)	-3.50	F
	(57-59)/(((65-59)/3)*2)	-0.50	F
47. Affordable Child Care			**C**
			C
MOE(-)	(60.37-69)/(((70-69)/8)*8)	-8.63	F
MOE(+)	(73.63-69)/(((70-69)/8)*8)	4.63	A
			C
MOE(-)	(60.37-67)/(((70-67)/2)*2)	-2.21	F
MOE(+)	(73.63-67)/(((70-67)/2)*2)	2.21	A
48. Child Care Availability			**A**
	(21-14)/(((21-14)/10)*9)	1.11	A
	(21-21.4)/(((21.4-21.4)/2)*1)	at target	A
49. Eighth Grade Use	*overall grade*		**A**
a. alcohol			**A**
	(26-23)/(((26-23)/10*10))	1.00	A
	(26-26)/(((26-26)/2)*2)	met target	A
b. drugs			**A**
	(14-14)/(((15-14)/10)*10)	met target	A
	(14-19)/(((15-19)/2)*2)	1.25	A
c. cigarettes			**A**
	(13-12)/(((15-12)/10)*10)	met target	A
	(13-20)/(((15-20)/2)*2)	1.40	A
50. Child Abuse or Neglect			**F**
	(14-11)/(((9-11)/10)*9)	-1.67	F
	(14-11.8)/(((8.8-11.8)/3)*2)	-1.10	F
51. Elder Abuse			**F**
	(19-12)/(((12-12)/5)*4)	<0	F
	(19-15)/(((12-15)/3)*2)	-2.00	F
52. Infants whose Mothers Used:	*overall grade*		**A**
a. Alcohol During Pregnancy			**A**
	(2-5)/(((2-5)/10)*9)	1.11	A
	(2-2)/(((2-2)/3)*2)	at target	A
b. Tobacco During Pregnancy			**A**
	(15-22)/(((15-22)/10)*9)	1.11	A
	(15-16)/(((15-16)/3)*2)	1.50	A
53. Poverty	*overall grade*		**B**
			C
MOE(-)	(11.1-11)/(((11-11)/10)*10)	<0	F
MOE(+)	(9.5-11)/(((11-11)/10)*10)	>1	A
	(10.3-12)/(((11-12)/2)*2)	1.7	A
54. Health Insurance			**B-**
	(10.1-16)/(((9-16)/10)*10)	0.84	B
	(10.1-11)/(((9-11)/2)*2)	0.45	C

	Calculation	Score	Grade
55. Homeless Oregonians			**F**
	(8027-7607)/(((5196-7607)/8)*8)	-0.17	F
	(8027-7050)/(((5196-7050)/2)*2)	-0.53	F
56. Child Support Payments			**B-**
	(70-50)/(((72-50)/10)*10)	0.91	B+
	(70-68)/(((72-68)/2)*2)	0.50	C
57. Hunger			**new**
58. Independent Seniors			**A**
	(98-97)/(((98-96.9)/9)*8)	1.02	A
	(98-98)/(((98-98)/3)*2)	at target	A
59. Disabled Living on Their Own	no target set		N/A
60. Disabled Living in Poverty	no target set		N/A
Public Safety			
61. Overall crimes			**A**
	(131.7-139)/(((133.6-139)/10)*9)	1.50	A
	(131.7-150.2)/(((133.6-150.2)/3)*2)	1.67	A
62. Juvenile Crimes			**C**
	(48.3-46.5)/(((46.5-46.5)/10)*9)	<0	F
	(48.3-59)/(((46.5-59)/3)*2)	1.28	A
63. Students Carrying Weapons			**A**
	(14-26)/(((15-26)/9)*8)	1.23	A
	(14-19)/(((15-19)/3)*2)	1.88	A
64. Recidivism			**A-**
	(29.6-36.6)/(((28-36.6)/10)*7)	1.16	A
	(29.6-30.5)/(((28-30.5)/5)*2)	0.90	B+
65. Juvenile Recidivism			**new**
66. Cooperative Policing			**A**
	(86-31)/(((100-31)/4)*3)	1.06	A
	(86-72)/(((100-72)/2)*1)	1.00	A
67. Emergency Preparedness			**A**
	(97-50)/(((94-50)/10)*9)	1.19	A
	(97-97)/(((94-97)/3)*2)	at target	A
Community Development			
68. Traffic Congestion			**C-**
	(51-48)/(((49-48)/5)*4)	<0	F
	(53-51)/(((49-53)/3)*2)	-0.75	B
69. Safe Drinking Water			**A**
	(90-49)/(((75-49)/6)*5)	1.89	A
	(90-88)/(((75-88)/3)*2)	met target	A
70. Commuting	*overall grade*		**D-**
			D-
MOE(-)	(25.14-29)/(((36-29)/10)*10)	-0.55	F
MOE(+)	(29.26-29)/(((36-29)/10)*10)	0.04	D-
			D-
MOE(-)	(25.14-29)/(((36-29)/2)*2)	-0.55	F
MOE(+)	(29.26-29)/(((36-29)/2)*2)	0.04	D-
71. Vehicle Miles Traveled			**F**
	(8247-7733)/(((8156-7733)/10)*9)	<0	F
	(8247-8175)/(((8156-8175)/3)*2)	-5.68	F

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	Calculation	Score	Grade
72. Roads in Good Condition			**A**
a. State	(78-70)/(((77-70)/10)*9)	1.27	A
	(78-77)/(((77-77)/2)*1)	at target	A
b. County	no target set		N/A
73. Owner Occupied Households			**A**
	(73.2-67)/(((68-67)/10)*10)	1.25	A
	(73.2-67)/(((68-67)/2)*2)	2.00	A
74. Low Income Household Spending			**D**
a. Renters			**F**
	(76-70)/(((70-70)/10)*10)	<0	F
	(76-69)/(((70-69)/2)*2)	<0	F
b. Owners	*overall grade*		**C**
			C
MOE(-)	(40.41-38)/(((38-38)/10)*10)	<0	F
MOE(+)	(35.59-38)/(((38-38)/10)*10)	>1	A
			C
MOE(-)	(40.41-39)/(((38-39)/2)*2)	-1.41	F
MOE(+)	(35.59-39)/(((38-39)/2)*2)	3.41	A
Environment			
75. Clean Air			**A**
	(100-54)/(((100-54)/10)*9)	1.11	A
	(100-100/(((100-100)/3)*2))	at target	A
76. Carbon Dioxide Emissions			**F**
	(106-100)/(((100-100)/10)*7)	<0	F
	(106-105)/(((100-105)/4)*1)	-0.80	F
77. Wetlands			**A**
	(100-100)/(((100-100)/10)*9)	at target	A
	(100-100)/(((100-100)/2)*1)	at target	A
78. Stream Water Quality	*overall grade*		**B+**
a. Increasing Trends			**A**
	(64-8)/(((25-8)/10)*9)	3.66	A
	(64-52)/(((25-52)/3)*2)	at target	A
b. Decreasing Trends			**B-**
	(1-20)/(((5-20)/10)*9)	1.41	A
	(1-0)/(((5-0)/3)*2)	0.30	D+
79. Instream Water Rights	*overall grade*		**A**
a. 9 or More Months			A
	(94-39)/(((60-39)/10)*9)	2.91	A
	(94-94)/(((60-94)/4)*3)	met target	A
b. 12 Months			**A**
	(65-44)/(((35-44)/10)*9)	met target	A
	(65-76)/(((35-76)/4)*3)	met target	A
80. Agricultural Land			**F**
	(95.8-97.5)/(((96.6-97.5)/8)*5)	3.02	F
	not available		
81. Forest Land			**A**
	(92-92)/(((92-92)/10)*9)	at target	A
	(92-92)/(((92-92)/3)*2)	at target	A

Grade Calculations

	Calculation	Score	Grade
82. Sustainable Harvest Levels			**new**
83. Solid Waste			**F**
	(1690-1519)/(((1506-1519)/8)*7)	-15.03	F
	(1690-1640)/(((1506-1640)/3)*2)	-0.56	F
84. Hazardous Waste Sites			**A**
	(76-67)/(((67-67)/10)*9)	at target	**A**
	(76-68)/(((67-68)/2)*1)	at target	A
a. Tank Sites			**A**
	(76-66)/(((67-66)/10)*9)	11.11	A
	(76-68)/(((67-68)/2)*1)	at target	A
b. Other Hazardous Substances			**A**
	(73-79)/(((70-79)/10)*9)	at target	A
	(73-72)/(((70-72)/2)*1)	at target	A
85. Salmon & Steelhead			**F**
	(2-48)/(((13-48)/10)*8)	<0	F
	(2-2)/(((13-2)/3)*1)	<0	F
86. Marines Stocks at Risk			**new**
87. At-Risk Species			**D-**
	(72-76)/(((77-76)/9)*8)	-4.50	F
	(72-72)/(((77-72)/2)*1)	0.00	D-
88. Native Plant Species			**D-**
	(83.4-83)/(((90-83)/9)*8)	.064	D-
	(83.4-85)/(((90-85)/2)*1)	-0.64	F
89. Nuisance Invasive Species			**new**
90. Park Acreage			**F**
	(28.2-31.4)/(((35-31.4)/10)*10)	-0.89	F
	(28.2-28.6)/(((35-28.6)/3)*3)	-0.06	F