

**2010 Electronic Commerce and Mail Order Sales Revenue Estimates –
Technical Documentation
December 6, 2010**

This technical documentation provides additional explanation of some of the key assumptions made in the 2010 revenue estimate made for electronic commerce and mail order sales.

I. Business-to-Consumer (B-to-C)

Determination of B-to-C Nexus Percentage. Board of Equalization Research and Statistics staff used a two-step procedure to estimate remote sales made from companies registered with the California Board of Equalization. First, we determined aggregate estimates of remote sales for three sizes of companies. To do this we estimated U.S. remote sales for three groups of firms: (1) those with 500 or more employees and (2) those with 100 to 499 employees, and (3) those with less than 100 employees. (In this discussion we will call these groups “large firms,” “medium firms,” and “small firms.”) Second, we estimated nexus percentages (that is, the percentage of remote sales made by registered companies) for these three groups. This procedure required us to estimate remote sales for representative individual companies registered by the Board of Equalization for medium and large companies. We assumed California shares of U.S. remote sales for small companies without making individual company estimates. Then we calculated a weighted average nexus percentage of the three groups.

Aggregate Estimates of Remote Sales by Small, Medium and Large Company Sizes. Using data from the 2007 Economic Census, we calculated that about 74 percent of 2007 remote sales were made by large firms, 8 percent were made by medium sized firms, and that 18 percent were made by small firms.

Firm-Level Estimates of Remote Sales by Large Firms. From library and Internet research, we found sales and employment information for 154 large firms and 15 medium sized firms. We assumed that the 154 large firms we identified and found information for were representative of all 294 large firms making remotes sales in 2007.

The second major step in the process was to estimate how many of these sales were made by firms registered with the Board. We looked up each of the 154 company names in our registration data base to determine if they are registered. Using this information, we estimated that 78 percent of all remote sales by large firms were made by large firms that have California nexus.

Remote Sales by Medium-Sized Firms. In our searches for company information, we found total sales and remote sales information for 15 companies having 100 to 499 employees. This is about 5 percent of the number of medium firms making remote sales according to the 2007 Census data. We found that remote sales representing 37 percent of these 15 firms are registered with the Board. We assumed that these 15 firms are representative of all medium-sized firms.

Remote Sales by Small Firms. For small firms making remote sales, we assumed that the shares of sales by these firms that are registered with the Board are proportional to the California share of total U.S. sales by electronic shopping and mail order houses found in the 2007 Economic Census. We found that California accounted for about 13 percent of U.S. sales of electronic shopping and mail order houses in 2007.

Weighted Average Nexus Percentage. Table 1 summarizes the data from the list of companies we used to derive our weighted average nexus percentage. The table shows that 63 percent of remote sales were made by companies registered in California.

Table 1					
Weighted Average Nexus Percentage – All Companies Making Remote Sales					
Employment Size Group	Number of U. S. Companies on BOE List	Number of U. S. Companies in 2007	Estimated U.S. Remote Sales in 2007 (\$ Millions)	Estimated Shares of Total Remote Sales (Percent)	Estimated Remote Sales With California Nexus (Percent of U.S.)
Small Companies (0 - 99 Employees)	n.a.	14,940	\$30,109	18%	13%
Medium Companies (100 - 499 Employees)	15	307	\$14,249	8%	37%
Large Companies (500 or More Employees)	154	294	\$124,773	74%	78%
Totals	169	15,541	\$169,131	100%	n.a.
Weighted Average Nexus Percentage					63%

Independently Estimated Remote Sales Nexus Percentages. To verify the reasonableness of this result we obtained a copy of the 2006 edition of *The Internet Retailer Top 500 Guide: Profiles and Statistics of America’s 500 Largest Retail Web Sites Ranked by Annual Sales*, published by Vertical Web Media LLC, Chicago, Illinois. This report tabulated 2005 data for electronic sales. These data differ from the U.S. Census Bureau data in that they were estimated by a private sector entity and in that they only estimated electronic commerce sales rather than 2007 electronic and mail order sales (remote sales). The data also differ in that they do not tabulate sales by employer size groups. The data are available for all 500 companies, which is 331 more than the 169 companies we found in our research. We used these data as an independent source to verify the 63 percent weighted average sales by companies registered with the Board.

We tabulated these data and determined sales of the 500 companies made by firms registered in California. We found that 222 of the 500 companies were registered and that these companies represented about 70 percent of all sales by the Top 500 electronic commerce companies. (Sales of all 500 companies totaled \$68.9 billion. Sales by firms registered in California totaled \$47.9 billion.)

As shown in Table 1, the 2007 Census data show that there were 307 medium companies and 294 large companies in 2007, a total of 601 companies. It is likely that many of these companies are included in the Top 500 list since there tends to be a strong correlation between sales and numbers of employees. To compare the two data sources we estimated the weighted average percent of sales made by medium and large companies that were registered in California. This weighted average omits the small companies to make the comparison of the two data sources as close as possible given their differences. As shown in Table 2, this weighted average is about 74 percent, close to the 70 percent weighted average found using the *Internet Retailer Top 500* data.

Table 2 Weighted Average Nexus Percentage - Companies With More Than 100 Employees Making Remote Sales					
Company Employment Size Group	Number of Companies in BOE List	Number of U.S. Companies in 2007	Estimated U.S. Remote Sales in 2007 (\$ Millions)	Shares of Total Remote Sales [More Than 100 Employees] (Percent)	Average Estimated Remote Sales With California Nexus (Percent of U.S.)
Medium Companies (100 - 499 Employees)	15	307	14,249	10%	37%
Large Companies (500 or More Employees)	154	294	124,773	90%	78%
Total (More Than 100 Employees)	169	601	139,022	100%	n.a.
Weighted Average Nexus Percentage, More Than 100 Employees					74%

Since remote sales are so concentrated in medium and large firms (especially in large firms), these calculations imply that the overall nexus percentage of close to 63 percent would result from using either the 2007 Census data by employee size or the 2005 electronic sales data from *Internet Retailer*. We believe the calculations also imply that it is reasonable to assume the same nexus percentage for both all remote sales and the portion that are electronic rather than traditional mail order.

II. Business-to-Business (B-to-B)

Use of Census Bureau Merchant Wholesale Sales E-Commerce Estimates

The Census Bureau publishes annual estimates of electronic commerce sales collected from four separate surveys.¹ The “Note to Reader” section of the report states that their e-commerce surveys have definitional differences among them, and suggests caution in totaling figures among the four surveys. One reason for caution is that the sum of all shipments and sales is subject to double counting. The data for manufacturers includes shipments, which may be among divisions of the same company. Manufacturers may sell components to themselves, to other manufacturers, or to merchant wholesalers. The Census Bureau surveys annual sales made; relatively little is known about purchasers of the goods.

From a sales and use tax perspective, the sale of a manufactured good is taxable at the point of the final sale; components and ingredients are generally not subject to tax. Conceptually, the value of taxable sales is similar to gross domestic product by industry (value added approach), which does not count the value of production of components and ingredients more than one time. Sales may not be subject to tax for two major reasons: (1) as ingredients or components

¹ Electronic commerce data are found in: *2008 E-Commerce Multi-sector Report*, U.S. Census Bureau, May 27, 2010, web site: <http://www.census.gov/econ/estats/index.html>.

which have been purchased for resale, or (2) as items exempt from the sales and use tax (such as food for home consumption). While some data from federal agencies excludes the value of components or ingredients to avoid counting the value of production more than one time, no federal data source enables a precise estimate of the value of production under California definitions of exempt goods.

There are no federal estimates of the portion of gross domestic product (GDP) that is sold electronically; the Census Bureau only estimates sales. A distinction between sales and GDP is that the sales may be counted more than once, whereas GDP includes only the value of final sales. All Census Bureau surveys include some degree of double counting of the value of sales or shipments, and none has sufficient detail to exclude all items that would be exempt under California sales and use tax law. There are two B-to-B Census Bureau surveys, one for Manufacturers' Shipments and one for Merchant Wholesale Sales. By choosing only one of the two surveys, we attempt to minimize the problem of double counting. Given these data limitations, we decided to choose the Census Bureau survey that we believe best represents final B-to-B sales and adjust the data to reflect exempt sales using the most accurate information we have available. We also cross-checked our national estimate with other outside information for reasonableness.

The specific Census Bureau survey we used to make our B-to-B revenue estimates is based on merchant wholesale sales. We believe all sales from manufacturers are included in merchant wholesale sales. There still is some double counting of the value of components. However, we believe using merchant wholesale sales is more accurate than manufacturers' sales and shipments because merchant wholesale sales include the value added by manufacturers.