

**Appendix G: Methodology for Estimating the Number of Indoor Air
Cleaning Models to be Certified**

Methodology for Estimating the Number of Indoor Air Cleaning Models to be Certified

For OGs, the number of models per manufacturer was compiled from the list of OG models (ARB, 2006a and the manufacturers' websites, and the number of manufacturers was compiled from Piazza *et al.* (2006). Model information was updated for the top two manufacturers (Large Share) which make up over 90% of the California market for OGs (Piazza *et al.*, 2006): Alpine Air / Ecoquest and Biotech / Edenpure. Alpine and Ecoquest products were assumed to be from the same manufacturer because they market some of the same products and have historically been connected. Alpine / Ecoquest has 10 different OG models listed on their websites. Biotech / Edenpure has 2 OG models on their website. The average number of models among the Large Share manufacturers of OGs is 6 models.

Among the remaining 31 OG manufacturers on the ARB list (Small Share), none of the brands were found in more than 2% of the households with OGs in the California survey (Piazza *et al.*, 2006). The number of models in the Small Share category ranged from 1-6, with an average of 3 models. Staff estimates some Small Share manufacturers may drop out of the California market because of the expense in having their products certified, especially for those firms that focus primarily on water purification.

For By-Product (BP) devices, the number of manufacturers was estimated by first counting the different brands sold in California (Piazza *et al.*, 2006, Appendix B, and brand name data for first and second air cleaners, by air cleaner type). Next, the brands most commonly found in California (Large Share) and the brands made by the same manufacturer were identified. Then, the websites of these brands were checked for current models for sale. The Large Share manufacturers comprise about 75% of the units reported in this category, and consist of the following four manufacturers:

- Sharper Image currently lists 5 models of BPs on their website.
- Oreck lists 2 BP models on their website.
- Jarden Consumer Solutions / The Holmes Group (JCS/THG) makes air cleaner models under the brand names of not only Bionaire, but also under Arm and Hammer, Family Care, General Electric, and Holmes (AHAM, 2007). Bionaire and Holmes each have almost 40 models on the CADR list, but their websites currently list only 6 and 4 BP models for sale, respectively. Arm and Hammer has 2 BP models currently on their website, and a web listing of GE air cleaners could not be found. This suggests that JCS/THG has a total of about 12 current BP models.
- The Kaz website indicates they make 4 Honeywell BP models, 2 Enviracaire BP models, and 4 Vicks BP models, suggesting a total model number of 10 BP models for Kaz.

Based on these results, staff estimated the range of BP model numbers for Large Share is about 2-12 models, with an average of 7 models per manufacturer.

The remaining 22 BP manufacturers were considered Small Share manufacturers. The large majority of these manufacturers have only 1-4 models on the CADR list, and not all of those models are BP devices. Only a few manufacturers had higher numbers of models, i.e., in the 5-18 models range. Based on inspection of websites for several manufacturers, staff estimated typically half of the models on the CADR list are currently produced and fall into the BP

category. Although a few manufacturers have many models on the CADR list, a much smaller number are actually BP models that are currently marketed. For example, Hunter Fan / Casablanca has 66 models on the CADR list, but their website lists only 18 models of BPs currently marketed. The three other manufacturers that have 8-11 models on the CADR list (3M, Hung Hsing, and Winix) currently have only 0, 6, and 5 BP devices listed on their website, respectively. Therefore, staff estimated the number of BP models for Small Share manufacturers has a range of 1-18; because the distribution is skewed, staff estimated an average of 3 models per Small Share manufacturer.

For mechanical devices, the number of models was estimated using the same approach described above for BP devices. The most commonly found brands (Large Share) in the California survey were Honeywell (made by Kaz) and Holmes (made by JCS). These brands comprised over 50% of the units reported in this category. These manufacturers currently list 11 and 4 different mechanical models on their websites, respectively, for an average of 8 models per manufacturer.

All but one of the mechanical device manufacturers in the Small Share category have 1-8 models on the CADR list. Hunter Fan Company / Casablanca has 66 fans listed, but their website lists only 11 mechanical devices. Therefore, assuming about half of the models from Small Share manufacturers are currently marketed and are considered mechanical devices, staff estimated manufacturers of mechanical devices produce a range of 1-4 models, with average of 3 models per manufacturer.

The available lists of manufacturers and models are not comprehensive, so these estimates may be an underestimate for the current market. On the other hand, many of the BP and mechanical models in the Small Share groups may actually be made by one of the Large Share manufacturers, or be in the same "model group" regarding ozone test requirements. However, once this regulation is adopted, staff expects some smaller manufacturers to drop out of the California market, and other manufacturers may streamline their model assortment to reduce their certification costs.