Bureau of Construction Codes
Commercial Kitchen Hoods/Smoke Test Procedure

The purpose of exhaust hood smoke capture testing is to ensure containment of heat, steam, vapors, obnoxious odors, smoke, and fumes emitted by the cooking equipment and to prevent condensation accumulation and drippage. Therefore, capture needs to be evaluated at all exposed sides of the hood. In order to enhance statewide uniformity in the evaluation of kitchen exhaust systems with smoke, the following procedures shall be required.

While performing a smoke test consideration shall be taken not to adversely affect the operation of other mechanical equipment installed.

A final ventilation balance report shall be submitted prior to the capture and containment test. The ventilation balance report shall agree with the air quantities stipulated on the approved plans and specifications for the installation

Building pressure shall be verified, not to exceed 0.02" water column negative. This shall be verified with all equipment in normal operation and with all the windows and doors closed.

Test Conditions:
Movement of persons is to be minimized. Interior or exterior doors, windows, drive-thru windows, and roof hatches are to be kept closed.
All equipment (exhaust, make-up air, rooftop unit, etc) that may effect the performance of the hood shall be activated during the test.

Equipment Needed:

1. SMOKE CANDLES (cartridges): burn time minimum 45 seconds; volume 50 cubic feet; measures 0.5" Dia. X .375" L; weight 0.0 ox.; smoke.

2. TEST CONTAINER: metal cylindrical container approximately 6" in diameter and 7" high.

Test Locations:

1. Locate the test container on the cooking surface or inside the cooking vessel or cavity as necessary.

2. Where the test location is to be the cooking surface, adjust the centerline of the test container inward 12 inches from the leading edge of the cooking surface and 12 inches from the hood end, measured horizontally.

3. Where ends are exposed, the test container is to be located 12 inches from the wall and 12 inches inward from the open hood end, measured horizontally.

4. Each subsequent test location is to be 36 inches to the left or right from the previous test location until the full length of the hood is tested.

Cooking Equipment:

1. The cooking equipment shall be tested and operated in a manner similar to normal usage.

2. When deep-fat fryers are included in a bank of cooking equipment, the fryers may be operated using water in place of oil and the temperature adjusted to produce simmering, not vigorous boiling, water, (If oil is used, it must be discarded following the evaluation in order to prevent potential food contamination). The test container is to be located in or on the surface of the fryer basket(s).

3. When ovens are installed (except convection, range, and combi ovens), only the top cavity door is to be open and the heat/steam source activated for all compartments; open means a position 90 degrees from the closed position. The centerline of the test container is to be located inward a minimum of 12 inches from the front edge and inside the oven cavity. NOTE: Range ovens are to be operated but not tested if the range top gas-fired burners or the electric heating elements are to be tested.

4. Convection and combi ovens are to operate with all doors closed, the heat source activated in all compartments, and the air circulating fan(s) activated. Locate the top lip of the test container 42" above the floor and in contact with the front of the oven. Where ovens are installed so as to be at the ends of the hood and a full side curtain or wall is not installed, the lip of the test container is to be located level with the top of the oven cabinet.

5. Conveyor-type ovens shall be set at operating temperatures and the air circulating fan(s) activated. Test container shall be placed at each end of the oven openings.

6. When range tops, gas-fired burners, or electric heating elements are installed, open cooking containers filled with water are to be located on 25% of the burners and heated surfaces and allowed to heat to 180 degrees F. A minimum of 51% of the range surface and heating devices and the range ovens are to be activated.

7. Brazing units, steam jacketed kettles, Chinese wok ranges, and similar cooking equipment are to be filled with water to a level of 2-3 inches or as recommended by the manufacturer; the heating elements activated; and the water allowed to heat but not boil. Covers, if provided, are to be in the open position. The test container is to be located inside the open vessel. NOTE: Chinese wok ranges equipped with continuous water-cooling, should have these devices activated.

Performance Evaluation:

Acceptable performance, consist of capture of all visible smoke generated. A demonstration is a complete testing of all identified test locations. A complete and thorough ventilation system evaluation will ensure that when the system is properly maintained and operated, it will capture effectively.