

WALKTHROUGH SURVEY

General Development Data

Development Identification

- 4-1. Development ID number: _____
4-2. Development name: _____
4-3. Development address: _____
4-4. Name of person responsible for completing this survey: _____
4-5. Contact person's telephone number: (____) _____ - _____

Location and Climate

- 4-6. City: _____
4-7. State: _____

Complete questions 4-8 and 4-9 with information from Appendix A, Climate Data. If your development's specific location is not listed, use data for the closest city listed.

- 4-8. Heating degree day zone [ECMs No. 1-8, 13]: _____ DDZ
4-9. Heating season hours [ECM No. 14]: _____ Hrs

Building Types and Quantities

- 4-10. Residential building types (check off applicable building type, then answer all further questions under that type):

- Single or twin-family houses
Number of single-family houses: _____
Number of twin-family houses: _____
- Low-rise multifamily buildings (4 stories or less)
Number of buildings: _____
Number of stories: _____
- High-rise multifamily buildings (5 stories or more)
Number of buildings: _____
Number of stories: _____

- 4-11. Non-residential building types (i.e., separate structures used as office space, community rooms, laundry facilities, mechanical room, etc.)

- Number of buildings: _____
 Number of stories: _____

4-12. Total number of buildings in your development: _____

Development Size

4-13. Number of dwelling units in development

Number of 0-1 bedroom units: _____

Number of 2-3 bedroom units: _____

Number of 4+ bedroom units: _____

Total number of dwelling units [ECMs No. 26, 33]: ... _____

4-14. Total number of residents in development [ECMs No. 21, 22, 23, 25]:

4-15. Average number of residents per dwelling unit (divide total number of residents by total number of dwelling units) [ECM No. 4]:

Total Residents _____ / Total Units _____ = _____

Architectural Data

Development Size

4-16. Total floor area of all floors in the development (if more than one building, add all buildings):

_____ square feet

4-17 Total development volume (total area in question 4-16 times typical floor-to-ceiling height, usually 8.0 feet) [ECMs No. 1, 2, 8]:

_____ cubic feet

Windows

4-18 Window area (total for entire development) [ECMs No. 1, 2]:

_____ square feet

4-19. Window panes (typical or predominant type) [ECM No. 2]:

- Single-pane
- Double-pane
- Triple-pane

4-20. Window frame material [ECM No. 1]:

- Wood
- Metal
- Vinyl
- Fiberglass

4-21. Typical window fit (check off predominant condition) [ECMs No. 1, 2]:

- Loose (frame rattles, large air gaps, large drafts)
- Average (some looseness, no large gaps, no large drafts)
- Tight (no excessive frame movement or drafts)

4-22. Are the windows equipped with storm windows? [ECM No. 1]:

- Yes No

4-23. Are windows and/or storm windows weatherstripped adequately? [ECMs No. 1, 2]

- Yes No

4-24. Are office and community spaces in the development air-conditioned? [ECM No. 3]

- Yes No

Complete questions 4-25 through 4-27 only for office and community spaces that are air-conditioned. Proceed to question 4-28 if there are no air-conditioned spaces in your development.

4-25. Window area (in air-conditioned office and community spaces only) [ECM No. 3]:

South-facing windows only: _____ square feet
East and west-facing windows only: _____ square feet

4-26. Are windows in office and community areas well shaded (i.e., 50% of summer daylight hours, 50% of their area) by trees or vegetation? [ECM No. 3]:

- Yes No

4-27. Are windows in office and community areas equipped with exterior shades, interior blinds or tinted glass? [ECM No. 3]:

- Yes No

Exterior Doors

4-28. Total number of exterior doors in your development [ECM No. 4]:

_____ doors

4-29. Typical exterior door fit (check off predominant condition) [ECM No. 4]:

- Loose (large drafts)
- Average (no excessive drafts)
- Tight (no drafts)

4-30. Are exterior doors adequately weatherstripped? [ECM No. 4]:

- Yes
- No

4-31. Are exterior doors equipped with storm doors? [ECM No. 4]:

- Yes
- No

4-32. Predominant door type (inspect doors, door labels, or construction specifications) [ECM No. 4]:

- Wood
Specify wood door thickness: _____ inches
- Metal (energy conserving type - insulated steel)
- Metal (standard type - hollow steel)

Attics and Flat Roofs

4-33. Does the development have attics or flat roofs on the buildings? [ECMs No. 5, 6]

- Attics (i.e., roofs with crawl space or full attics underneath)
- Flat roofs (i.e., flat or nearly flat roofs with no attic or crawl space underneath)

If you checked off "attics" answer questions 4-34 and 4-35. If you checked off "flat roofs" answer questions 4-36 and 4-37.

4-34. Area of attic (assume it is equal to the floor area of the top floor) [ECM No. 5]:

_____ square feet

4-35. Attic insulation type and level, i.e., depth (measure typical insulation thickness and enter below; round off to nearest inch) [ECM No. 5]:

- Batt fiberglass
- Dry cellulose
- Loose fill fiberglass

_____ inches

4-36. Area of flat roof (assume that it is equal to the total floor area of the top floor of the building) [ECM No. 6]:

_____ square feet

4-37. Type of existing flat roof structure (check whether insulated or uninsulated; if uninsulated also check structure type) [ECM No. 6]:

- Insulated
- Uninsulated
 - Wood structure
 - Concrete structure
 - Steel structure

Walls

4-38. Wall construction, size and insulation (check off whether insulated or uninsulated; for uninsulated construction also check structure and siding type) [ECM No. 7]:

- Insulated construction
- Uninsulated construction
 - Wood frame with wood siding
 - Wood frame with aluminum siding
 - Wood frame with brick siding
 - Wood frame with other siding
 - Concrete block masonry wall
 - Brick masonry wall
 - Other masonry wall construction

Total area of all uninsulated exterior (not including windows and doors)
[ECM No. 7]:

_____ square feet

Heating and Cooling Systems Data

Heating System & Fuel Type

4-39. Heating system type (check off applicable type):

- Individual heating systems
- Central heating system

If you checked off "Central heating system," check off system type:

- Boiler
- Furnace
- Other (e.g., heat pump)

4-40. Heating fuel type (check off applicable type):

- Electricity
- Natural Gas
- Heating Oil
- Propane

If you checked off "Individual heating systems" in question 4-39, answer questions 4-41 through 4-43. If you checked off "Central heating system" above, answer questions 4-44 through 4-51.

Individual Heating Systems

4-41. Do the heaters have vent dampers or flue dampers (applies only to oil and gas furnaces and boilers)? [ECMs No. 9, 10]:

- Yes
- No

4-42. Do gas heaters have constant-burning pilot lights? [ECM No. 10]:

- Yes
- No

4-43. Are heaters controlled by thermostats? If yes, indicate type [ECM No. 13]:

- No
- Yes
 - Non-setback
 - Setback

Central Heating System

4-44. Does the system have flue dampers or vent dampers (question applies to oil and gas furnaces and boilers only)? [ECMs No. 9, 10]:

- Yes
- No

4-45. Heat distribution type of your central heating system (check off applicable type)
[ECM No. 16]:

- Steam
- Hot water
- Forced air

4-46. Check off which of the following are used to control heating:

- Outdoor reset and cutout controls (boiler systems only) [ECM No. 11]
- Non-setback thermostats in the dwelling units [ECM No. 13]
- Setback thermostats in the dwelling units [ECM No. 13]
- Radiator controls in the dwelling units (boiler system only) [ECM No. 14]

Total number of radiators in your development: _____

4-47. Are all or most hot water or steam distribution pipes insulated (question does not apply to forced air distribution systems)? [ECM No. 15]

- Yes
- No

If NO (i.e., pipes are not insulated), answer question 4-48.

4-48. Measure or estimate from engineering drawings total linear feet lengths of uninsulated pipes. For each diameter of pipe, multiply the average length by the number of pipes. Measure different diameter pipes separately. [ECM No. 15]

Linear feet of uninsulated pipes (do not include pipes that are in heated areas such as dwelling units) [ECM No. 15]:

3/4" diameter pipe:	_____	linear feet
1" diameter pipe:	_____	linear feet
1-1/2" diameter pipe:	_____	linear feet
2" diameter pipe:	_____	linear feet
3" diameter pipe:	_____	linear feet
4" diameter pipe:	_____	linear feet
6" diameter pipe:	_____	linear feet

Combustion Efficiency Test for Central Boilers and Furnaces

To properly estimate energy savings for replacing a central heating system, a combustion efficiency test must be performed on the existing central boilers or furnaces. (Note: Combustion efficiency is not the same as Annual Fuel Usage Efficiency, or AFUE. Please refer to the Glossary in Appendix B.) A combustion efficiency test determines how completely the fuel is burned in the boiler or furnace by measuring the oxygen or carbon dioxide concentration in the flue gas. Combustion efficiency tests should be performed only on large central boilers or furnaces, not on boilers or furnaces for individual units. A qualified technician, familiar with combustion efficiency test procedures should conduct the

test. The test should be conducted during the heating season. If these tests are routinely conducted at your development, use the most recent test data (if not more than two years old) to answer the following question:

4-49. What is the existing combustion efficiency of your central boiler or furnace (enter as decimal fraction, e.g.,: 75% = .75) [ECM No. 12]:

4-50. Is your central boiler or furnace oversized? (i.e., cycles often—as a rough guideline this means that the boiler or furnace starts up more than two times per hour).

Yes No

Air-Conditioning (AC) Systems

4-51. Do you have air-conditioning in your development to cool community and office areas? [ECMs No. 19, 20]:

Yes No

4-52. Do you have air-conditioning in your development to cool residential units (do not include individual window or wall AC units if they are owned and installed by the residents)? [ECMs No. 19, 20]:

Yes No

4-53. Does the HA pay for the fuel consumption for residential air conditioning?

Yes No

If you answered YES to question 4-53, proceed to questions 4-54 through 4-56.
If NO, proceed to 4-57.

4-54. Air-conditioning system type and number of units [ECMs No. 19, 20]:

- Individual window or wall units: ____ units
- Central system: ____ units

- 4-55. Power requirement of typical existing unit or system (read equipment labels, literature, or engineering specification drawings) [ECMs No. 19, 20]:

Typical ranges:

Window or wall AC units:	500-5,000 watts
Central AC unit:	2,000-10,000 watts
Chiller:	10,000-1,400,000 watts

_____ Watts

- 4-56. Cooling capacity of typical existing unit or system (read equipment labels, literature or engineering specification drawings) (Note: One ton of cooling capacity = 12,000 Btu) [ECMs No. 19, 20]:

Typical ranges:

Window or wall AC units:	5,000-30,000 Btu
Central AC unit:	20,000-60,000 Btu
Chiller:	60,000-12,000,000 Btu

_____ Btu

Domestic Hot Water (DHW) System/Water Supply Systems Data

Hot Water Heater Fuel and Type

- 4-57. Does the development have DHW tanks? [ECMs No. 22, 23]:

Yes No

- 4-58. Are the DHW tanks insulated? (Note: Most newer hot water heaters have adequate insulation built into the design, but may not look "wrapped.") [ECMs No. 22, 23]:

Yes No

- 4-59. Water heater type (check off applicable type) [ECM No. 25]:

- Individual tank water heater
 Central DHW heater

- 4-60. Water heater fuel type:

- Heating oil
 Natural gas
 Electricity
 Propane

Water Supply Systems

4-61. Do you have low-flow faucet aerators and shower heads installed on all or most faucets and showers? [ECM No. 21]:

- Yes No

4-62. How is proper water pressure maintained in your development? [ECM No. 36]:

- Roof-mounted storage tank
 From street mains (no tanks and no pumps)
 Pressurizing pump system (booster pumps)

Total horsepower of existing booster pumps (read pump labels or engineering drawings) [ECM No. 36]:

_____ horsepower

4-63. Have water-saving toilets been installed in your development? [ECM No. 35]:

- Yes No

Central Laundry Facilities

4-64. Do you have central public laundry facilities as part of your development? [ECM No. 24]:

- Yes No

4-65. Total number of washing machines [ECM No. 24]: _____

4-66. Are washing machines restricted to cold water rinse only? [ECM No. 24]:

- Yes No
-

Lighting Systems Data

Residential Unit Lighting

4-67. Type of lighting in residential units (check off predominant fixture type in each of the following spaces) [ECM No. 26]:

Kitchen:

- Fluorescent
- Incandescent

Bathroom:

- Fluorescent
- Incandescent

Hallway/Foyer:

- Fluorescent
- Incandescent

Common Area Lighting

Common areas include offices, community rooms, lobbies, corridors, hallways and stairways in both public and basement floors. All questions refer to "general lighting" only; do not include "task lighting" such as desk lamps, etc.

4-68. Is there incandescent lighting in the common areas? [ECMs No. 27, 28, 29, 30]:

- Yes No

If YES, answer questions 4-69 and 4-70. If NO, proceed to question 4-71.

4-69. Total number of incandescent fixtures (common areas only)* [ECM No. 27]:

* To obtain total number of incandescent fixtures in the common areas select one building that is representative of the buildings on the site, count the number of fixtures in the basement, at the ground floor, and at the typical floor. Multiply the number of fixtures at the typical floor by the number of floors in the building. Add this figure to the number of fixtures located in the basement and the ground floor to obtain the total number of fixtures in the building. Multiply this total building figure by the number of buildings on the site.

4-70. Average watts per incandescent lighting fixture (e.g., 50, 75, or 100 watts) [ECM No. 27]:

_____ Watts

4-71. Is there fluorescent lighting in the common areas? [ECMs No. 27, 28, 29, 30]:

Yes No

If YES, answer questions 4-72 through 4-75. If NO, proceed to question 4-76.

4-72. Type of fixture (check off predominant type of fixture in common areas) [ECMs No. 28, 29]:

- 2 tubes/4 feet long
- 2 tubes/8 feet long
- 4 tubes/4 feet long
- 4 tubes/8 feet long
- 6 tubes/4 feet long
- 8 tubes/4 feet long
- Other

4-73. Are the fluorescent lamps "energy-conserving" lamps (e.g., General Electric's Watt-Miser, Osram Sylvania's SuperSaver, Philips Econ-o-Watts, and Duro-Test's Watt-Saver)? [ECM No. 28]:

Yes No

4-74. Are the ballasts electronic? (Note: As a general rule, if the lighting has not been updated, the ballasts are not electronic.) [ECM No. 29]:

Yes No

4-75. Total number of fluorescent fixtures in the development (common areas only) [ECMs No. 28, 29]

Complete the following questions (4-76 through 4-78) for office areas only. Do not answer the questions if there are no office or management spaces in your development or if the offices are windowless or all "general lighting" is incandescent.

4-76. Are lights located near the windows routinely turned off during the daytime hours? [ECM No. 30]:

Yes No

4-77. Number of fluorescent fixtures within 10 feet of the windows (office areas only) [ECM No. 30]:

4-78. Type of predominant fluorescent fixture within 10 feet of windows in office areas [ECM No. 30]:

- 2 tubes/4 feet long
- 2 tubes/8 feet long
- 4 tubes/4 feet long
- 4 tubes/8 feet long
- 6 tubes/4 feet long
- 8 tubes/4 feet long

Exterior Lighting

4-79. Predominant type of exterior lighting fixture (check off applicable type) [ECM No. 31]:

- None (no exterior lighting)
- Sodium vapor lamps (high or low-pressure)
- Mercury vapor lamps
- Metal halide lamps
- Incandescent lamps
- Fluorescent lamps
- Halogen lamps

4-80. Number of exterior lighting fixtures [ECMs No. 31, 32]: _____

4-81. Energy consumption (watts) per predominant exterior lighting fixture type (i.e, per fixture unit) [ECMs No. 31, 32]:

_____ Watts

4-82. Who pays for exterior lighting electricity? [ECMs No. 31, 32]:

- Housing Authority
- Local town or city government

4-83. Type of exterior lighting controllers (check off applicable type) [ECM No. 32]:

- Manual switching (no controls)
- Timers
- Photo-controls

If you checked Manual Switching or Timers on question 4-83, go to question 4-84. Otherwise, skip to question 4-85.

4-84. Number of hours per year exterior lighting is turned on* [ECM No. 32]:

_____ Hrs/yr

* Estimate annual hours by multiplying average daily hours of use (hours between turning on and off) by 365 days. Adjust for weekend and seasonal variations, if necessary.

Miscellaneous Data

4-85. Average age and size of existing refrigerators (check off predominant age and size of existing refrigerators in your development) [ECM No. 33]:

- | | |
|---|---|
| <input type="checkbox"/> 1970s | <input type="checkbox"/> 13 cubic feet or smaller |
| <input type="checkbox"/> 1980s | <input type="checkbox"/> 14-15 cubic feet |
| <input type="checkbox"/> 1990s or newer | <input type="checkbox"/> 16 cubic feet or larger |

4-86. Type of motors that could be operating fans or pumps at your development (check off applicable type) [ECM No. 34]:

- Elevator
- Ventilation system
- Hydronic heating or cooling system

4-87. Predominant size of motor for each of the above systems [ECM No. 34]:

Elevator	_____	horsepower
Ventilation system	_____	horsepower
Hydronic heating or cooling system	_____	horsepower

4-88. Number of motors of each type [ECM No. 34]:

_____	Elevator
_____	Ventilation system
_____	Hydronic heating or cooling system

4-89. Average operating hours per year of each motor [ECM No. 34]:

Elevator	_____	Hrs/yr
Ventilation system	_____	Hrs/yr
Hydronic heating or cooling system	_____	Hrs/yr