|  |  |
| --- | --- |
| Worksheet #1:Characteristics, Energy Sources, and Equipment *(Establishments)* |  |
| 2012 Commercial Buildings Energy Consumption SurveySponsored by the U.S. Energy Information AdministrationConducted by Westat |
| The following are *some* of the topics that will be discussed in the upcoming interview. Completing this worksheet and having it available will facilitate and shorten the interview. Thinking of *calendar year 2012*, please provide the following for the establishment listed above.  |
| Box 1. Gross/Total Square Footage of Establishment (Both finished and unfinished, including basements, hallways, lobbies, stairways, and elevator shafts.) | **Box 2. Number of Employees**(The number of employees that work ***in the establishment*** during its main shift*,* the shift when most employees are in the building. Include volunteers; do not include employees who always work outside of the establishment, customers, patients, students, or institutionalized residents.) | Box 3. Heating Energy SourcesWhich energy sources, if any, were used for heating during 2012? Check all that apply:

|  |  |
| --- | --- |
|  | Electricity |
|  |  |
|  | Natural Gas |
|  |  |
|  | Fuel oil/Diesel/Kerosene |
|  |  |
|  | Bottled Gas/LPG/Propane |
|  |  |
|  | District Steam |
|  |  |
|  | District Hot water |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

Which of these was the ***main*** energy source for heating? (Please circle the energy source used to heat most of the square footage in the establishment most of the time.)  |
| **Box 4. Heating Equipment**Check all that apply:

|  |  |
| --- | --- |
|  | Furnaces that heat air directly |
|  |  |
|  | Packaged central units  |
|  |  |
|  | Boilers inside (or directly adjacent |
|  | to) the building to produce |
|  | steam or hot water |
|  |  |
|  | District steam or hot water piped |
|  | into the establishment from outside the |
|  | the *mall building* |
|  |  |
|  | Heat pumps for heating |
|  |  |
|  | Individual space heaters |
|  |  |
|  | Some other type (specify) |
|  |  |
|  |  |

 | **Box 5. Type of Packaged Heating** (if applicable)Check all that apply:

|  |
| --- |
| **Type of Packaged Unit(s)** |
|  |
|  | Factory-assembled unitary unit  |
|  |  |
|  | Custom built-up unit |
|  |  |
| **Heating Component of Packaged** |
| **Unit(s)** |
|  |  |
|  | Furnace |
|  |  |
|  | Heat pump |
|  |  |
|  | Heating coil |
|  |  |
|  | Powered induction unit (PIU) |
|  |  |
|  | Duct reheat |

 | **Box 6. Boiler or District Steam/Hot Water Distribution System**(if applicable)Check all that apply:

|  |  |
| --- | --- |
|  | Radiators |
|  |  |
|  | Fan coil units |
|  |  |
|  | Induction units |
|  |  |
|  | Water loop heat pump |
|  |  |
|  | Central air handler (hydronic/steam |
|  | coils) |
|  |  |
|  | Packaged unit (hydronic/steam coils) |
|  |  |
|  | Duct reheat (hydronic/steam coils) |

**Go to Box 7** |

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Box 7. Type of Heat Pump Used for Heating** (if applicable)Check all that apply:

|  |
| --- |
| **Heat Pump System** |
|  |
|  | Packaged unit |
|  |  |
|  | Split system (residential-type) |
|  |  |
|  | Individual room heat pump |
|  |  (packaged terminal heat pump) |
|  |  |
|  | Ductless mini-split system |
|  |  |
|  | Variable refrigerant flow (VRF) |
|  |  |
| **Type of Heat Pump** |
|  |  |
|  | Air source |
|  |  |
|  | Ground source or ground water |
|  |  (geothermal) |
|  |  |
|  | Dual source (combination of air |
|  |  source and geothermal) |
|  |  |
|  | Water loop |

 | **Box 8. Individual Space Heater**(if applicable)Check all that apply:

|  |  |
| --- | --- |
|  | Infrared radiant heater (permanent) |
|  |  |
|  | Baseboard heater (permanent) |
|  |  |
|  | Portable space heater |
|  |  |
|  | Wall heater |
|  |  |
|  | Individual furnace |
|  |  |
|  | Unit heater |
|  |  |
|  | Heating element in packaged |
|  | terminal air conditioner (PTAC) |
|  |  |

 | Box 9. Cooling Energy SourcesWhich energy sources, if any, were used for cooling during 2012? Check all that apply:

|  |  |
| --- | --- |
|  | Electricity |
|  |  |
|  | Natural Gas |
|  |  |
|  | District Chilled Water |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

: heating only;erng to  |
| Box 10. Cooling EquipmentCheck all that apply:

|  |  |
| --- | --- |
|  | Residential-type central air |
|  | conditioners (other than heat pumps) |
|  |  |
|  | Packaged air conditioning units  |
|  | (other than heat pumps) |
|  |  |
|  | Central chillers inside (or directly  |
|  | adjacent to) the building that chill |
|  | water for air conditioning |
|  |  |
|  | District chilled water piped into the |
|  | building from outside the building |
|  |  |
|  | Heat pumps for cooling |
|  |  |
|  | Individual room air conditioners |
|  | (other than heat pumps) |
|  |  |
|  | “Swamp coolers” or evaporative |
|  | coolers |
|  |  |
|  | Some other type (specify) |
|  |  |
|  |  |

 | **Box 11. Type of Packaged Cooling** (if applicable)Check all that apply:

|  |
| --- |
| **Type of Packaged Unit(s)** |
|  |
|  | Factory-assembled unitary packaged |
|  | unit |
|  |  |
|  | Custom built-up unit |

 | **Box 12. Type of Chiller**(if applicable)Check all that apply:

|  |
| --- |
| **Type of Chiller** |
|  |
|  | Air-cooled |
|  |  |
|  | Water-cooled |
|  |  |
|  | Absorption |
|  |  |
|  | Check if absorption chiller |
|  | can operate as a “heater chiller” |

 |
| **Box 13. Chiller or District Chilled Water Distribution System** (if applicable)Check all that apply:

|  |  |
| --- | --- |
|  | Central air handler (hydronic coils) |
|  |  |
|  | Fan coil units |
|  |  |
|  | Induction units |
|  |  |
|  | Water loop heat pump |
|  |  |
|  | Chilled beam |
|  |  |
|  | Packaged unit (hydronic coils) |
|  |  |
|  | Duct reheat |

 | **Box 14. Type of Heat Pump Used for Cooling** (if applicable)Check all that apply:

|  |
| --- |
| **Heat Pump System** |
|  |
|  | Packaged unit |
|  |  |
|  | Split system (residential-type) |
|  |  |
|  | Individual room heat pump |
|  |  (packaged terminal heat pump) |
|  |  |
|  | Ductless mini-split system |
|  |  |
|  | Variable refrigerant flow (VRF) |
|  |  |
| **Type of Heat Pump** |
|  |  |
|  | Air source |
|  |  |
|  | Ground source or ground water |
|  |  (geothermal) |
|  |  |
|  | Dual source (combination of air |
|  |  source and geothermal) |
|  |  |
|  | Water loop |

**Go to Box 15** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Box 15. Ventilation and Distribution Equipment for Heating and Cooling**Indicate all that apply:B—heating and coolingH—heating onlyC—cooling only

|  |  |
| --- | --- |
|  | Central air handling unit(s) with  |
|  | constant air volume (CAV) control |
|  |  |
|  | Central air handling unit(s) with |
|  | variable air volume (VAV) control |
|  |  |
|  | Underfloor air distribution |
|  |  |
|  | Dedicated outside air system  |
|  | (DOAS) |
|  |  |
|  | Demand controlled ventilation |
|  |  |
|  | None of these types |
|  |  |

Does the establishment use either of the following?

|  |  |
| --- | --- |
|  | Air-side economizer |
|  |  |
|  | Water-side economizer |

 | **Box 16. Water Heating Energy Sources**Which energy sources, if any, were used for water heating during 2012?

|  |  |
| --- | --- |
|  | Electricity |
|  |  |
|  | Natural Gas |
|  |  |
|  | Fuel Oil/Diesel/Kerosene |
|  |  |
|  | Bottled Gas/LPG/Propane |
|  |  |
|  | District Steam |
|  |  |
|  | District Hot Water |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

 | **Box 17. Cooking Energy Sources**Which energy sources, if any, were used for cooking during 2012?

|  |  |
| --- | --- |
|  | Electricity |
|  |  |
|  | Natural Gas |
|  |  |
|  | Fuel Oil/Diesel/Kerosene |
|  |  |
|  | Bottled Gas/LPG/Propane |
|  |  |
|  | District Steam |
|  |  |
|  | District Hot Water |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

: heating only;erng to  |
| **Box 18. Sources for On-Site Electricity Generation**Which energy sources, if any, were used for on-site electricity generation during 2012?Check all that apply:

|  |  |
| --- | --- |
|  | Natural Gas |
|  |  |
|  | Fuel Oil/Diesel/Kerosene |
|  |  |
|  | Bottled Gas/LPG/Propane |
|  |  |
|  | Wood |
|  |  |
|  | Coal |
|  |  |
|  | Solar |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

 | **Box 19. Areas for Food Preparation or Service**Check all of the types of food preparation or serving areas found in the establishment:

|  |  |
| --- | --- |
|  | Snack bar or concession stand |
|  |  |
|  | Fast food or small restaurant |
|  |  |
|  | Cafeteria or large restaurant |
|  |  |
|  | Large kitchen, commercial |
|  | kitchen, or other large food |
|  | preparation area |
|  |  |
|  | Small kitchen area |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

 | **Box 20. Refrigeration Equipment**Check all the types of refrigeration or freezer equipment that apply and indicate the number used in the establishment in 2012:

|  |  |  |
| --- | --- | --- |
|  |  | Number |
|  | Full-size residential type |  |
|  |  |  |
|  | Half-size or compact |  |
|  |  |  |
|  | Walk-in |  |
|  |  |  |
|  | Open cases or cabinets |  |
|  |  |  |
|  | Closed cases or cabinets |  |
|  |  |  |
|  | Refrigerated vending |  |
|  |  |  |
|  | Commercial ice makers |  |
|  |  |  |
|  |  | Percent of |
|  |  | floor area |
|  | Large cold storage areas |  |

**Go to Box 21** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Box 21. Office and Other Equipment**Check all that apply and indicate number used in the establishment during 2012:

|  |  |  |
| --- | --- | --- |
|  |  | Number |
|  | Computers (desktop) |  |
|  |  |  |
|  | Laptop computers |  |
|  |  |  |
|  | Printers |  |
|  |  |  |
|  | Dedicated servers |  |
|  |  |  |
|  | TV or video displays |  |
|  |  |  |
|  | Cash registers |  |
|  |  |  |
|  | Photocopiers |  |

 | **Box 22. Lighting Equipment**Was any of the square footage in this establishment lit by the following during 2012?Check all that apply:

|  |  |
| --- | --- |
|  | Fluorescent lighting other than compact fluorescent light bulbs |
|  |
|  |  |
|  | Compact fluorescent bulbs |
|  |  |
|  | Incandescent bulbs, other than halogen bulbs |
|  |
|  |  |
|  | Halogen bulbs |
|  |  |
|  | High intensity discharge (HID) lights, such as high pressure sodium, metal halide, or mercury vapor |
|  |
|  |
|  |  |
|  | Light-emitting diode (LED) lights |
|  |  |
|  | Other (specify) |
|  |  |
|  |  |

 | **Box 23. Lighting Controls or Lighting Control Strategies**Check all types of lighting controls or lighting control strategies that were used in the establishment:

|  |  |
| --- | --- |
|  | Scheduling (use of time clocks to |
|  | turn off or dim lighting) |
|  |  |
|  | Occupancy sensors |
|  |  |
|  | Multi-level lighting or dimming |
|  |  |
|  | Daylight harvesting |
|  |  |
|  | High-end trimming or  |
|  | light-level tuning |
|  |  |
|  | Plug-load control |
|  |  |
|  | Demand responsive lighting |
|  |  |
|  | None of these |

 |
|  |  |  |