

Shootout 2015 Data Dictionary

“Power City” – A study in Energy Consumption and Renewable Energy Production

This document lists the datasets provided to accompany the 2015 SAS Shootout Competition. Each dataset is described for content, the dataset name is provided, and the data elements are described.

Provided Data:

1. Sector_Use_Matrix.xlsx
2. Calendar_Days_Consumption.sas7bdat
3. Calendar_Days_Scenario.sas7bdat
4. Car_Charging.sas7bdat
5. Powercity_Consumption.sas7bdat
6. PowerCity_Population.sas7bdat
7. PowerCity_SolarAngle_Consumption.sas7bdat
8. PowerCity_Weather_Consumption.sas7bdat
9. PowerCity_Weather_Scenario.sas7bdat
10. SolarArray_Production.sas7bdat
11. SolarArray_Weather.sas7bdat
12. SolarArray_SolarAngle.sas7bdat
13. WindFarm_Production.sas7bdat
14. WindFarm_WindSpeed.sas7bdat

Descriptions:

1. **Sector_Use_Matrix.xlsx:** Number of square footage per person in each age segment by sector.
Contains 6 Columns and 8 Rows.
 - **Sector:** Sector of building type in Power City
 - **<5:** Square footage of space per person <5
 - **5>18:** Square footage of space per person 5>18
 - **18>25:** Square footage of space per person 18>25
 - **25>65:** Square footage of space per person 25>65
 - **65+:** Square footage of space per person 65+
2. **calendar_days_consumption.sas7bdat:** Designates type of each day in the Consumption year.
Contains 7 Columns and 732 Rows.
 - **Year:** Year of calendar days for Consumption and Scenario
 - **Month:** Numeric month (1 = January, 2 = February, etc.)
 - **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
 - **Day_of_week:** Numeric day of a 7 day week (eg. 1 = Sunday)
 - **Weekdays:** Day of week as a String (eg. Sun = Sunday)

- **HolidayName:** Name of holiday
 - **School_Day:** Lists school days as binary (0 = no school, 1 = school in session)
3. **calendar_days_scenario.sas7bdat:** Designates type of each day in the Scenario year. Contains 7 Columns and 732 Rows.
- **Year:** Year of calendar days for Consumption and Scenario
 - **Month:** Numeric month (1 = January, 2 = February, etc.)
 - **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
 - **Day_of_week:** Numeric day of a 7 day week (eg. 1 = Sunday)
 - **Weekdays:** Day of week as a String (eg. Sun = Sunday)
4. **car_charging.sas7bdat:** Hours of electrical consumption used by electric car charging. Contains 6 columns and 8,760 rows.
- **Year:** Year of days for Scenario
 - **Month:** Numeric month of reading (1 = January, 2 = February, etc.)
 - **Day:** Numeric day of reading (1 = 1st of the month, 2 = 2nd of the month, etc.)
 - **Hour:** Numeric hour of reading in military (1-24 military time)
 - **Consumption_type:** Type of consumption
 - **Electricity_KW_SQFT:** The electricity reading in kilowatts per hour
5. **Powercity_Consumption.sas7bdat:** List of all the individual buildings in power city and information on certain electrical readings at random times. Contains 6 Columns and 70,080 Rows.
- **Year:** Year of consumption data labeled as "Consumption"
 - **Month:** Numeric month (1 = January, 2 = February, etc.)
 - **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
 - **Hour:** Numeric hour (1-24)
 - **Sector:** Building sector of Power City
 - **Electricity_KW_SQFT:** The electricity reading in kilowatts per square footage of the sector
6. **PowerCity_Population.sas7bdat:** Lists the population of Power City by Census Tracts and breaks it down by age groups. Contains 8 Columns and 44 Rows.
- **Tract_ID:** Census Tract identifier
 - **CITY:** Name of the City that each Tract belongs to
 - **Total:** Total population in each tract
 - **Pop <5:** Population of people under 5 years of age in each tract
 - **Pop 5- <18:** Population of people between 5 and under 18 years of age in each tract
 - **Pop 18-<25:** Population of people between 18 and under 25 years of age in each tract
 - **Pop 25-<65:** Population of people between 25 and under 65 years of age in each tract
 - **Pop 65+:** Population of people at least 65 years of age in each tract

7. **PowerCity_SolarAngle_Consumption.sas7bdat:** Solar Elevation during each hour in Power City during the consumption year. Contains 6 Columns and 8,783 Rows.

- **City:** Name of the city
- **Year:** Year of consumption data labeled as "Consumption"
- **Month:** Numeric month (1 = January, 2 = February, etc.)
- **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
- **Hour:** Numeric hour (1-24)
- **Solar_Elevation:** The **solar elevation (angle)** is the altitude of the sun, measured as the angle between the horizon and the center of the sun's disc.

8. **PowerCity_Weather_Consumption.sas7bdat:** Hourly weather variables over the course of a year. Contains 12 Columns and 8,760 Rows.

- **City:** Location of weather variables
- **Year:** Year of weather variables
- **Month:** Numeric month (1 = January, 2 = February, etc.)
- **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
- **Hour:** Numeric hour (1-24)
- **Cloud_Cover_Fraction:** Amount of cloud cover (decimal from 0 being no clouds to 1 being fully cloudy)
- **Dew_Point:** Temperature of the dew point in degrees Celsius
- **Humidity_Fraction:** Fraction of humidity in the air (0 to 1)
- **Precipitable_Water:** The total precipitable water contained in a column of unit cross section extending from the earth's surface to the top of the atmosphere in millimeters
- **Pressure:** Pressure reading in millibars
- **Temperature:** Temperature reading in degrees Celsius
- **Visibility:** Visibility in kilometers

9. **PowerCity_Weather_Scenario.sas7bdat:** Hourly weather variables over the course of a year. Contains 13 Columns and 8,784 Rows.

- **City:** Location of weather variables
- **Year:** Year of weather variables
- **Month:** Numeric month (1 = January, 2 = February, etc.)
- **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
- **Hour:** Numeric hour (0-23)
- **Cloud_Cover_Fraction:** Amount of cloud cover (decimal from 0 being no clouds to 1 being fully cloudy)
- **Dew_Point:** Temperature of the dew point in degrees Celsius
- **Humidity_Fraction:** Fraction of humidity in the air (0 to 1)
- **Precipitation:** Amount of precipitation during the hour in millimeters
- **Pressure:** Pressure reading in millibars

- **Temperature:** Temperature reading in degrees Celsius
- **Visibility:** Visibility in kilometers
- **Wind_Speed:** Wind speed in meters per second

10. SolarArray_Production.sas7bdat: Energy generated from a solar array over the course of a 56-month period (January 2010 to August 2014). Contains 3 Columns and 18,704 Rows.

- **Date:** Complete date listed as Month/Day/Year
- **Hour:** Numeric hour (1-24)
- **Electricity_KW_HR:** Hourly power output of solar energy in Kilowatts (kw)

11. SolarArray_Weather.sas7bdat: Hourly weather variables at the solar array location during the timeframe of production. Contains 13 Columns and 41,322 Rows.

- **Location:** Location of weather variables
- **Year:** Year of weather variables
- **Month:** Numeric month (1 = January, 2 = February, etc.)
- **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
- **Hour:** Numeric hour (0-23)
- **Cloud_Cover_Fraction:** Amount of cloud cover (decimal from 0 being no clouds to 1 being fully cloudy)
- **Dew_Point:** Temperature of the dew point in degrees Celsius
- **Humidity_Fraction:** Fraction of humidity in the air (0 to 1)
- **Precipitation:** Amount of precipitation during the hour in millimeters
- **Pressure:** Pressure reading in millibars
- **Temperature:** Temperature reading in degrees Celsius
- **Visibility:** Visibility in kilometers
- **Wind_Speed:** Wind speed in meters per second

12. SolarArray_SolarAngle.sas7bdat: Solar Elevation during each hour at the solar array during the production timeframe. Contains 6 Columns and 40,820 Rows.

- **City:** Name of the city
- **Year:** Year of consumption data labeled as "Consumption"
- **Month:** Numeric month (1 = January, 2 = February, etc.)
- **Day:** Numeric day (1 = 1st of the month, 2 = 2nd of the month, etc.)
- **Hour:** Numeric hour (1-24)
- **Solar_Elevation:** The **solar elevation (angle)** is the altitude of the sun, measured as the angle between the horizon and the center of the sun's disc.

13. WindFarm_Production.sas7bdat: Energy generated from a wind farm over the course of a 22-month period (March 2011 to December 2012). Contains 3 Columns and 15,381 Rows.

- **Date:** Complete date listed as Day/Month/Year
- **Hour:** Numeric hour (1-24)

- **Electricity_KW_HR:** Hourly power output of wind energy in Kilowatts (kw)

14. WindFarm_WindSpeed.sas7bdat: Contains multiple measures of wind speeds at the wind farm.

Contains 6 Columns and 15,390 Rows.

- **Location:** Name of location
- **Date_time:** Complete date and time identifier
- **Hour:** Numeric Hour (0-23)
- **Wind_Speed:** Average wind speed in meters per second