

# TAMING BIGFOOT

## MOBILE APP AND WEBSITE

### INPUTTING ACCURATE DATA

This document helps users record and enter accurate data to the Taming Bigfoot mobile application and website. It includes the units of measure for each data item plus some hints to assist in obtaining those data. All platforms running the Taming Bigfoot software (both Android and iOS smartphone Taming Bigfoot apps and the Taming Bigfoot website) are linked, so data entered on any platform is stored in a single location and can be recalled and reviewed on any other platform.

Data are added in the My Data area of either platform. The data entry area is further subdivided into four sectors: Home, Transportation, Food and Shopping. Data can be entered in any or all of these sectors in a single session without clicking "Save" or "Submit" before moving to the screen of a different sector. The date appropriate to the entry can be set from a calendar interface and will appear at the top of each sector's screen. All data entered in this session should correspond to this date. To enter data for a different date, one session should be ended, and a new session begun. Entered data from the entire session will not be stored until the "Save" or "Submit" button is clicked, but it only needs to be clicked once per session.

### HOME SECTOR

All data input in the HOME Sector should reflect the energy, water or garbage for the entire household. This value will be divided by the "# in Household" value shown in the box immediately below the date. This value corresponds to the value set by the user in Settings, but can be changed to allow for periods when additional guests, or absent residents change the number of occupants responsible for the energy/ water/garbage. This change will only apply to the data entered in this session. Once the data are submitted, the "# in Household" value will revert to the value in Settings.

### ENERGY

Various forms of home energy are included; you only need to use those which apply to you. Again, for all energy usage report the whole house usage.

#### Electricity

Unit: **kWh** (kilowatt hour). A convenient method is to read your electric meter at the start of each month (this is particularly important for Taming Bigfoot competitions that align baseline and reduction periods with calendar months) and again at the end of that month. Subtracting the first reading from the second will result in the kWh used for that month. The end reading will be the start reading for the next month. An on-line guide to reading either dial or digital meters is available at <https://www.wikihow.com/Read-an-Electric-Meter>. Alternatively, if you are not participating in a competition, you can transfer your kWh usage from your electric bill, although the start and end dates may not correspond precisely to a calendar month. If you have solar panels, you can subtract from your total home electric usage that portion that your

solar panels generated, i.e., only input the kWh delivered to your home from the public utility grid.

### **Natural Gas**

Unit: **CCF** (100 cubic feet). Similar to calculating electricity usage, read your gas meter at the start of a reporting period (e.g., calendar month) and again at the end of that period. Subtract the first reading from the second, the result will be the CCFs used. The end reading will be the start reading for the next period. Read the dials across the top row of the meter and ignore the dials below. Read the dials left to right. If the hand is between two numbers, always select the lower number. When the hand is between "9" and "0," then "9" is considered the lower number.

### **Heating Oil**

Unit: **Gallon**. Once again, the best method is to read your heating oil tank meter at the start of a reporting period (e.g., calendar month) and again at the end of that period. Tank readings are usually in percentages so the difference between the starting and ending readings is a percentage and must be multiplied by the storage tank capacity (in gallons) to calculate how many gallons were used. The end reading will be the start reading for the next period.

### **Propane**

Unit: **Gallon**. Identical to Heating Oil (above). Tank capacity must be known if the gauge is labeled in percent.

### **Wood**

Unit: **Cubic feet**. A cord is the most common unit of measure for wood and is commonly referred to as a pile of stacked logs 8 feet long by 4 feet wide by 4 feet high. However, this is a large amount of wood making it difficult to estimate wood usage by fractional cord so cubic feet (cu. ft.) is used here. One cord is 128 cubic feet and a cubic foot is 1 foot long by 1 foot wide by 1 foot high. It may be convenient to transport wood into your house in a repeatable amount, say 4 cubic feet, and enter that amount of wood in the Taming Bigfoot calculator as used when more wood is brought in.

### **Wood Pellets**

Unit: **Pound**. It is recommended using the same container to measure pellets throughout the competition. By weighing the container both empty and full, the weight of the container's-load of pellets is calculated by subtracting the full weight from the empty weight. Once this is done, it will be simple to enter these data into the calculator by counting container loads used.

## **WATER**

As with Energy, report the whole house water usage and the calculator will use the "# in Household" value from your Settings (or the temporary number you entered for this session) to calculate your share of the total.

Unit: **CCF**. Participants connected to municipal water providers are likely billed according to the number of water *units* they use. A unit usually is referred to as CCF (100 cubic feet).

Contact your water supplier to find out where your meter is located if you don't already know. The meter probably will have five or six digits. If it has five digits record the first three digits and don't worry about the last two digits. For example; the reading might be 76123, record only 761. If it has six digits record the first four digits and don't worry about the last two digits. General assistance can be found on-line at <https://www.wikihow.com/Read-a-Water-Meter>, but because meter styles can vary, it is worthwhile to confirm these instructions with your water supplier. If your meter reads in gallons, you will need to convert to CCF by dividing number of gallons by 748 (i.e., 1 CCF = 748 gallons).

As with the metered energy items described earlier, read your water meter at the start of a recording period (e.g., calendar month) and again at the end of that period. Subtract the first reading from the second and the result will be the CCFs used. The end reading will be the start reading for your next recording period.

If you pump your water from a private well, enter zero for water usage since your usage is reflected in the electricity used to pump the water from your well and cannot be separated from other electricity use.

If you entered a value for municipal water, a checkbox will appear for you to indicate if you discharge your wastewater to a private septic. If you check this box, there is no additional carbon emission impact of your wastewater beyond the additional electricity (already captured in that usage data) used to pump wastewater to your drainfield. Not checking this "private septic" box indicates there is a connection to a municipal sewer system. In this case, the amount of wastewater produced is assumed to be a fraction (81.6%) of the water input drawn, using average values for a residential community.

### **NON-RECYCLED GARBAGE**

Unit: **Pound**. This category refers to what you place in your garbage can or take to the Transfer Station for landfilling. It does not include recycled garbage or yard/food waste collection. You are encouraged to weigh your own garbage for accuracy. This can be done using a bathroom scale, either by putting only the bag on the scale, or by stepping onto the scale while holding the bag and subtracting your weight.

Alternatively, estimates can be made using the following average values.

Scheduled household garbage service uses the 32-gallon can as the basic unit. The average 32-gallon can, when full, averages 25 pounds of material. If you recycle as much as you can and put food waste into a yard waste container, then the average full can drops to 18 pounds of material. The mini-can service level is a 20-gallon can. The average waste weight of this smaller container is 15 pounds when full and 9 pounds when offset by avid recycling and food waste diversion. Refer to your bill for level of garbage service.

## **TRANSPORTATION SECTOR**

The transportation sector is separated into that portion where the actual amount of fuel used can be recorded and the portion where it must be estimated from the mileage traveled and additional averaged data.

It is important to emphasize that data entered in this sector applies to the user alone and (with the exception of the Carpooling entry) is not adjusted by the "# in Household" value.

## **PRIVATE TRANSPORTATION**

### **Gasoline, Diesel, and Bio-diesel**

Unit: **Gallon**. This category covers all vehicles (cars, trucks, motorcycles, boats, ATVs, *even lawn maintenance equipment*) for which you buy the fuel (gasoline, diesel, or bio-diesel). Monitoring fuel usage directly is a more accurate means of quantifying emissions than monitoring miles traveled because fuel economy varies significantly between seemingly identical vehicles (make, model, year, etc.) due to factors such as tire inflation, engine condition and driving style. Thus, this category can also be used for other transportation for which you know how much fuel was used.

The best means to use this method of calculating greenhouse gas emissions by measuring fuel usage directly is to always fill your fuel tanks when fueling and to time the filling of fuel tanks so it includes the start/end of the reporting periods. By starting with a full tank, the amount of fuel used between that time and the next fill-up equals the number of gallons required to restore the tank to full. Each fill-up can be entered as it occurs, eliminating the need for separate record keeping.

This accurate method works best if the Taming Bigfoot user is the only person who uses this fuel and many households have two cars, each with a primary driver. However, car-sharing is common. For shared travel, to use this fuel-tracking entry the actual proportion of fuel associated with the user must be tracked and used to adjust the gallons entered. The alternative method for non-exclusive use of a vehicle by the user is to use the Carpooling entry option explained in the next section. In that case, reasonably accurate data can be entered for a solo trip by the user in a shared vehicle by knowing the miles driven, the mpg of the vehicle and entering 1 for the vehicle occupancy.

## **PUBLIC/SHARED TRANSPORTATION**

Unit: **Mile**. This item refers to ride sharing when the vehicle is not owned by you or when actual fuel use cannot be monitored. In these cases, monitoring mileage traveled becomes the next best method of estimating emissions

### **Carpooling**

Unit: **Mile**. When you enter a value for the number of miles travelled (total miles, not your "share"), two other entry boxes appear; one to enter the number of people in the carpool vehicle, including the driver (so the calculator can calculate your "share"), and another that allow you to change the miles per gallon of the vehicle from the default estimate of 25mpg. Unless these variables of mileage and carpool number are constant, it is advisable to report

each trip separately and allow the software to accumulate the resulting greenhouse gas emissions through the recording period.

For hired rides, e.g. taxi, Uber, Lyft, do not count the driver as an occupant, since they are not "responsible" for the trip being taken, rather the persons requesting the transportation are. On the other hand, for round trips taken to transport you (and possibly others) somewhere, but the vehicle returns to its starting location without supporting any other purpose (a good example is a parent driving a student to school and then returning home) the sole purpose of the trip is the responsibility of the transported person so the full, round-trip mileage and an occupancy of 1 should be entered.

### **Business vans/shuttle, Busses, Urban Light Rail, and Trains**

Unit: **Mile**. These categories are provided to capture the variety of public transportation options for conveyances where the number of passengers changes frequently as does the fuel efficiency of the conveyance. Broad averages over an entire year's operations were calculated by dividing the total fuel used for each service by the total passenger-miles traveled. You only need to input the number of miles traveled. These events can be input as single trips as they occur, or accumulated to a total before entering.

### **Ferry**

This category is very similar to other public conveyances above where you only need to input the miles traveled. An average Washington State ferry trip is 11 miles.

### **Airplane**

Unit: **Mile**. There are even more variables that influence the carbon emissions of airline travel than of road travel. As with travel public conveyance, broad averages spanning millions of passenger-miles were calculated. You just input the miles traveled, trip-by-trip or as a total.

### **Carbon (CO<sub>2</sub>) Offsets for Transportation (If allowed)**

Unit: **Pound**. This category is provided if you wish to account for carbon offsets you may have purchased. All offsets (pounds of CO<sub>2</sub>) should be purchased from a certified site. Amtrak and most airlines offer links to pursue this option. If the sites use units of metric tons, a metric ton equals 2205 lbs.

## **FOOD AND SHOPPING SECTORS**

The greenhouse gas emissions from these two sectors are the most difficult to quantify because there are even more variables to consider than with public transportation. The approach taken is to include a few items that figure heavily toward the overall footprint in these areas and for which a reasonable path toward quantifying the greenhouse gas emissions can be documented. Refer to the **Conversion Factor Documentation**, for these details.

A further accounting complexity in these sectors is whether to enter data on a single-user or household basis. Three of the five remaining items (Meat, Clothing and Paper Reading Material) use a single-user basis. Locally Sourced Food and Organic Produce use a household

basis, however, there is the opportunity to temporarily adjust this # in Household value for the purposes of more accurately partitioning the user's share of these food purchases.

## FOOD

### Meat

Unit: **Number of 4 oz. servings of:**

- a) beef and lamb
- b) pork and turkey
- c) chicken and fish

Portion sizes vary but "main entrée" commonly refers to a 4-ounce portion. For most people, this would include dinners only. Decimal values can be entered, i.e., an 6-oz serving would be entered as 1.5, but at present, the entry will be rounded to the nearest integer.

### Locally Sourced Food

Units: **Dollars** spent on food, and **% percent** of that food purchase that originates from local sources. To clarify, 50% should be input as "50", not "0.50" and the dollar amount entered should be of the total purchase, not the just the amount spent on local food. There is no strict boundary defining "local", but for Taming Bigfoot users in western Washington State, a simple definition adopted by Taming Bigfoot competition organizers is food grown or produced within Washington, Oregon, or British Columbia.

Recall that the entered cost is for the entire household. This value is shown and there is the opportunity to enter a different value temporarily for more accurately partitioning the user's share of the food purchase. An example would be if the user shares their home, but makes their own food purchases, then the # in Household value is 2, but a value of 1 could be entered here (without changing the Settings value of # in Household).

### Organic fruits and vegetables

Units: **Dollars** spent on produce (fruits and vegetables), and **% percent** of that produce purchase that are grown organically. To clarify, 50% should be input as "50", not "0.50" and the dollar amount entered should be of the cost of all the produce, not the just the amount spent on organic produce.

Recall that the entered cost is for the entire household. This value is shown and there is the opportunity to enter a different value temporarily for more accurately partitioning the user's share of the food purchase. An example would be if the user shares their home, but makes their own food purchases, then the # in Household value is 2, but a value of 1 could be entered here (without changing the Settings value of # in Household).

## SHOPPING

It is very difficult to quantify carbon footprint contributions from shopping behavior because there is so much variation in the manufacture of similar products themselves and the energy used to make, package and transport them to point of purchase.

Online shopping has become more popular, but the emissions savings in your transportation for in-store shopping is often outweighed by the increased carbon footprint of packaging materials and delivery services for the articles shopped online.

Two categories within this broad area of behavior were selected as indicative.

**Clothing**

Unit: **Dollars** spent on clothing that is new-to-you.

**Paper reading material**

Unit: **Dollars** spent on newspapers, magazines, and books in paper (not digital) form.