# Food Systems:

* **Food Energy Breakdown (graph in PPT).**
* **5 Phases of the Food System:**
  + **Production:**
    - Involves the process of growing, raising, managing, and harvesting the raw materials that make up the various foods we eat.
      * Includes agriculture, livestock and fish.
    - Energy inputs are necessary to all aspects of our food production system.
      * Agriculture relies on:
        + Water.
        + Energy for irrigation equipment.
        + Fuel for operating farming machinery.
        + Fertilizers and pesticides.
      * Livestock relies on:
        + Food and water via feed lots or open fields.
        + Energy for lighting, heating, and equipment within processing plants.
        + Fuel for operating livestock management machinery.
      * We put nearly as much energy into producing food for livestock as we put into producing crops for ourselves!
  + **Processing**
    - Involves transporting goods from farm to processing and packaging plant, as well as the energy needed to turn raw goods into store products.
      * Some goods are processed on site and may not undergo transportation to a separate processing facility.
      * Processing can include cleaning, cutting shaping, freezing, cooking, concentrating, and adding preservatives/additives to foods.
    - Energy inputs involve:
      * Transportation to processing plants.
      * Energy needed to operate processing and packaging machinery.
        + Energy concentrated in processing stage:

30% - Beef, poultry, fish, and pork.

Packaging only makes up 5% of this stage.

40% - Baked goods, cereals, processed fruits and veggies, condiments, and beverages.

Packaging makes up 10-20% of this stage.

\*Non animal proteins (like soy products, tofu, etc.) are very energy intensive to process as well, meaning a vegetarian lifestyle is not necessarily less energy consumptive.

* + - * Being an energy conscious eater is more than just adopting a vegetarian, organic, or locavore lifestyle.
        + Considering the whole of the process of food system is essential in understanding your energy impact.
  + **Distribution**
    - Involves transportation to stores and storage facilities where products will be sold, as well as energy costs for stores such as fridge and freezer cases, lighting, heating, etc.
      * “Food miles” – how far a food has travelled before it arrives on our plates; can be affected by travel distance AND mode of transportation (i.e. more efficient transportation can use less energy than a shorter travel distance).
      * This is an important consideration in determining energy efficiency of foods.
  + **Consumption**
    - Involves energy used driving to stores, running our fridges, freezers, stoves, microwaves, grills, and dishwashers. Also includes restaurant visits.
      * This is the largest piece of the “food energy pie.”
      * The ring around the outside of the pie illustrates that waste occurs at every stage of the process (see PPT).
    - Important energy considerations include:
      * Purchasing choices (ex. Animal products use more overall energy than plant products, and buying more food requires more storage and prep energy).
      * Food prep/storage appliances.
      * Energy efficient appliances are essential.
  + **Waste**
    - Involves food spoiling before it can be consumed, which can occur during growing, transportation, at the store, or after purchase.
      * Appx 33% of food grown is wasted every year! (FAO.org)
    - In more developed countries, most food is wasted by the consumer, whereas more food is wasted during the production and processing phases in developing countries.

# Ways You Can Reduce Energy Use!

* + Reduce consumption of energy intensive foods.
    - This involves meat, poultry, and seafood.
    - Foods with a lot of packaging or processing involved.
    - Frozen goods.
  + Store, prepare, and use foods efficiently.
    - Buy energy efficient appliances.
    - Use or preserve food before it spoils.
    - Compost food scraps.
  + Buy more food that is in season, local, or organic.
    - Consider and compare energy consumption factors from growing something out of season vs. transporting something from far away.
    - Look first for in-season food, then if it is locally grown, and lastly if it’s grown organically.
    - While not all farms may be certified organic, many still utilize organic practices in growing their food. Do your own research into what practices different growers use.
    - Don’t be deterred by “less pretty food”. Large quantities of food are wasted simply because of minor blemishes, which have no effect on food quality.
* Growing your own food allows you to control every aspect of the process, so you know exactly how it was grown, what was put in it, how it was processed, etc.
  + - This can be as simple as a few herbs on your windowsill, backyard chickens, or a vegetable garden.
* The food process is intricate and involves many different factors. Educating yourself on how to be a conscious consumer is the best way to reduce your energy impact on the food system. Start small, don’t get discouraged if everything isn’t local or organic *every time,* and share your knowledge with friends and family! Together we can all do our part to create a more efficient, sustainable food system!

**Questions for HS and above**

* What is one way you can change your consumption patterns to reduce energy use?
  + Buy more food
  + Buy more animal products
  + Buy only food that’s on sale
  + **Buy more plant based, local, organic, and in-season food**
* In what phase of the food system is the most energy spent?
  + Production
  + Processing
  + Distribution
  + **Consumption**
* You have the option to buy a tomato grown in location A, where it is tomato season, or in location B, where is not in season. Which tomato will require LESS energy to be grown?
  + **Location A**
  + Location B
  + The energy use is the same
* What is a benefit of growing your own food?
  + Reduce gasoline use
  + Save time spent preparing food
  + Requires less packaging
  + **Both A and C**
* Approximately how much produced food is wasted every year in various steps of the food system?
  + 1/5
  + ¼
  + **1/3**
  + ½