Louisiana State University
**Agricultural Center**
Louisiana Cooperative Extension Service

ENERGY DIVISION
*Expanding Louisiana's Energy Potential*

Louisiana Department
of Natural Resources

**I. Program Title:** Energy Throughout the Ages, **a story featuring Sav-A-Lot, the Energy Bug.**

**II. Intended Audience:** 1992 Summer Library Reading Program

**III. Teaching Objectives:**

**Students Will:**

(1) trace the historical development of energy sources
(2) learn about simple things they can do at home to conserve energy

**IV. Related Subject Areas:** Science and social studies

**V. Time Required:** 15-20 minutes

**VI. Materials Required:**

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|---|---|
| flannel board | story cut-outs |
| cotton string | drinking straws |
| tape | balloons |

**VII. Context:**

Hi! My name is _____ and I'd like for you to meet my friend, Sav-A-Lot, the Energy Bug. We're here to tell you a story about energy. Do you know what energy is? Energy is the ability to do work. Anything that does work has energy. People work, animals work and machines work. In this story you'll learn about where different things get energy to help them do work. You will also learn what you can do at home to help your family conserve energy.

Let's follow Sav-A-Lot as he tells his energy story.

## SCENE 1: MUSCLE ENERGY

Back in the early days of the caveman, Sav-A-Lot and his friends were not as lucky as we are today. They didn't have machines to help make their lives easier. They had to use their own **MUSCLE ENERGY** to do work. For example, they didn't have cars to take them where they wanted to go--they had to use their own leg muscles and walk everywhere they went. Sav-A-Lot had to grow or catch his own food. He didn't have tractors to help him plant and harvest his crops.

The cavebugs learned early in life that the sun was their friend. The heat from the sun kept them warm on cold days. They also learned that the heat from the sun helped the plants grow so they could have food to eat.

The heat that comes from the sun is a kind of energy. This energy is called solar energy. All types of energy come from the sun.

## SCENE 2: WIND AND WATER ENERGY

Sav-A-Lot and his friends began looking for ways to make their lives easier so they wouldn't have to use their muscles so much. It wasn't because they were lazy!! They just wanted to find a better and faster way to do work.

Around 4000 B.C., (that's a long time ago!), Sav-A-Lot's Egyptian friends found that if they attached a piece of cloth to their boats, the wind would get caught in the cloth and move their boats across the water. They still had to use their muscle energy to paddle or steer the boat, but they could move much quicker and not be quite so tired. They had discovered the magic of **WIND AND WATER ENERGY.**

## SCENE 3: SOLAR AND MUSCLE ENERGY

Sav-A-Lot's Greek friends developed simple machines like pulleys and gears to help them lift heavy things. They built magnificent buildings with these machines. These simple machines did not replace muscle energy, but they did help the energy bugs better use their muscles.

They also made a great new discovery about solar energy. You remember, that's energy from the sun. They found out that if you take the energy from the sun (that is, the sun's rays) and direct them onto something shiny, like a shield, that, when they reflect off of that shiny thing, they produce a great amount of heat--enough to start a fire. What a great discovery!!

## SCENE 4: WIND, WATER AND HORSEPOWER

The energy bugs knew that anything that moves has energy and can do work. The energy bugs got real smart about this time and began using some of their animals to do their work. They trained their horses and mules to pull their wagons, chariots and farm machinery. This is where the word "**HORSEPOWER**" comes from--horses supplying the power or energy to do work. Using animals to do work not only helped Sav-A-Lot and his buddies to travel faster, but they did not need to use any muscle energy while traveling. They could just sit back and enjoy the scenery.

It was also about this time that the energy bugs realized that WATER AND WIND ENERGY could make their lives even easier. Do you know what this is? It's a windmill. Remember, we said just a second ago that anything that moves has energy and is doing work. Wind is moving air. A windmill uses water and wind energy to do work. The

energy bugs used the windmills to pump water, to water their fields and to grind grain.

SCENE 5: STEAM ENERGY

Choo Chooooo!!!! Then, along came the steam engine. In the early 1700's, Thomas Savery invented the first steam engine. These trains burned coal to produce STEAM ENERGY to make the trains work.

Of course, for the steam engine to be able to go anywhere, there had to be railroad tracks. By the year 1869, railroads were all over the United States. Sav-A-Lot and his friends used the railroad and steam engines to get from one place to another. They also used them to move mail and other things across the country.

SCENE 6: ELECTRICAL ENERGY

The kind of energy you probably know the most about is the kind you have in your home today. Do you know what it is called? That's right! Electricity or ELECTRICAL ENERGY. It's the kind of energy that you plug the t.v., lights, radio and many other things in your house into. Can you name some other things in your house that use electrical energy? (Allow response). What do you think people used for light before there was electricity? How about for heating and cooling? What would your life be like if you didn't have electrical energy?

Sav-A-Lot and his friends would like to remind you that it's important for us to "conserve" energy. What does that mean? Well, it means that we need to be careful not to waste energy because it is expensive and because it uses up natural resources.

How can you conserve electrical energy?

1. **TURN OFF THE LIGHTS WHEN YOU LEAVE THE ROOM.**
2. **DON'T LEAVE THE T.V. OR RADIO ON WHEN YOU LEAVE THE ROOM.**
3. **DECIDE WHAT YOU WANT <u>BEFORE</u> YOU OPEN THE REFRIGERATOR DOOR.**
4. **PUT ON A SWEATER IF YOU FEEL COOL RATHER THAN ASKING MOM AND DAD TO TURN UP THE HEAT. TAKE ADVANTAGE OF THE SOLAR ENERGY FROM THE SUN TO WARM YOU ON WINTER DAYS (LIKE THE CAVEMAN DID).**

**<u>SCENE 7: PETROLEUM ENERGY</u>**

There's another kind of energy we have not talked about yet that you and I and Sav-A-Lot depend on every day. I'll give you a hint! It's what makes your car go. That's right! It's gasoline or **PETROLEUM ENERGY.** Gasoline is made from oil. The oil comes from deep within the earth. We've probably all seen oil wells that have been drilled here in Louisiana. When the oil comes out of the ground it is taken to a place called a "refinery" and gas and other things are made from it. Then we put the gas into our car or truck and it gives the vehicle the energy it needs to move. Petroleum is also used in airplanes, buses, lawnmowers and other machines. Once Sav-A-Lot and his friends learned about petroleum energy they could really go places fast and get their work done even more quickly. Zooooom and they were off again!!!

**<u>SCENE 8: TODAY'S ENERGY</u>**

Today Sav-A-Lot and his friends use many different kinds of energy. They still use **STEAM ENERGY, WIND ENERGY, SOLAR ENERGY, PETROLEUM ENERGY AND ELECTRICAL ENERGY.** But they are also looking at some other kinds of energy, too. You might have heard something about NUCLEAR ENERGY, GEOTHERMAL ENERGY

**OR HYDROELECTRIC ENERGY.** All of these are kinds of energy that scientists are looking into now. Each of these things will help make our lives easier and will save our natural resources.

**SCENE 9: FUTURE ENERGY SOURCES**

**(DEPENDING ON THE AGE AND INTEREST OF THE AUDIENCE AND ALSO THE TIME, YOU MIGHT WANT TO ALLOW SOME DISCUSSION ON WHAT FUTURE SOURCES OF ENERGY MIGHT BE. SOME SIMPLIFIED EXAMPLES FOLLOW.)**

**GEOTHERMAL** - Energy is taken from very hot water from within the earth and used to make electricity.

**TIDAL** - Energy is taken from the moving water (waves) in the ocean and is used to make electricity.

**BIOMASS** - Energy from garbage? Who ever heard of such a thing? It's true, we can use garbage to produce energy.

**SOLAR ELECTRICITY** - Using very much the same idea as Sav-A-Lot and his friends did many years ago, we are learning how to make electricity from the sun's rays.

**ACTIVITY**

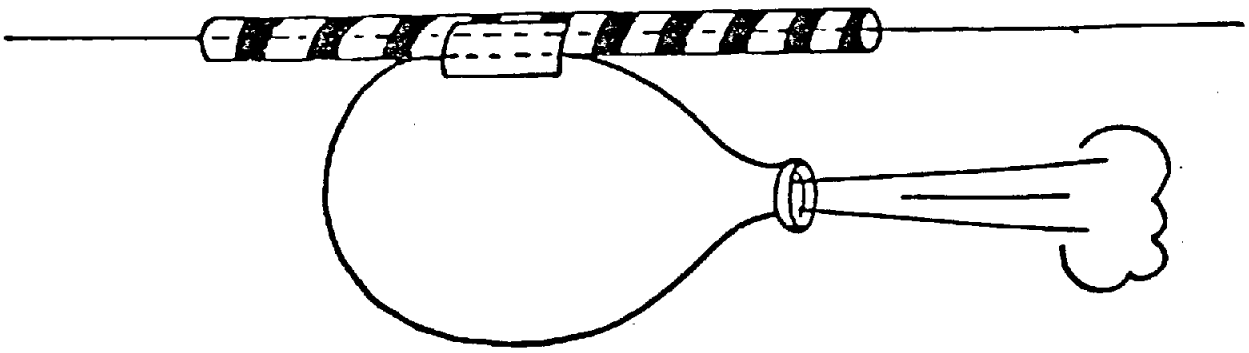
Sav-A-Lot has certainly taught us a lot about the many different kinds of energy and how they have been used throughout the years, but can we "see" energy? Not exactly, but we can see the results of energy, like the car moving and the lights coming on. Now we are going to see one example of how energy works.

**PROCEDURE: THIS IS A VERY SIMPLE ACTIVITY TO ALLOW THE CHILDREN TO SEE THE RESULT OF THEIR ENERGY.**

**Have "volunteers" hold each end of a string which has already been run through a straw. Have a student blow up the balloon. Holding the balloon tightly by the end, tape it to the straw, as in the illustration which follows. Move the balloon and straw to one end of the string. The idea is for the students to take their energy and put it into the balloon. When they release the balloon. The energy in the balloon causes the balloon to move.**

**Once the balloon runs out of energy, the balloon stops until more energy is put into it.**

**Students can "race" balloons by having teams and more than one string set. They can discuss what happens when you put more air into the balloon and where the energy comes from that they put into the balloon.**



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The Louisiana Energy Education for Tomorrow Program is a three-year program funded 100% ($1,405,224) from Petroleum Violation Escrow funds from the Exxon settlement as provided by the Louisiana Department of Natural Resources and approved by the U. S. Department of Energy. The program is implemented through an interagency agreement with the Louisiana State University Cooperative Extension Service.