2011-2012

Today in Energy

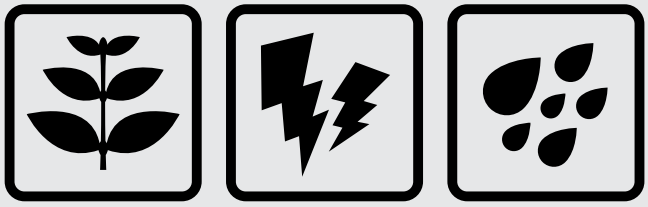
To introduce primary students to the economics of energy use in their daily lives.

EFFICIENCY
CONSERVATION

Grade Level:
- Primary
- Elementary

Subject Areas:
- Science
- Social Studies
- Math
- Language Arts

NEED
National Energy Education Development Project



Teacher Advisory Board

NEED Mission Statement

The mission of The NEED Project is to promote an energy conscious and educated society by creating effective networks of students, educators, business, government and community leaders to design and deliver objective, multi-sided energy education programs.

Teacher Advisory Board Statement

In support of NEED, the national Teacher Advisory Board (TAB) is dedicated to developing and promoting standards-based energy curriculum and training.

Permission to Copy

Energy Data Used in NEED Materials

NEED believes in providing the most recently reported energy data available to our teachers and students. Most statistics and data are derived from the U.S. Energy Information Administration's Annual Energy Review that is published in June of each year. Working in partnership with EIA, NEED includes easy to understand data in our curriculum materials. To do further research, visit the EIA web site at www.eia.gov. EIA's Energy Kids site has great lessons and activities for students at www.eia.gov/kids.

NEED
National Energy Education Development

1.800.875.5029
www.NEED.org

Printed on Recycled Paper

Today in Energy

Table of Contents

EFFICIENCY
CONSERVATION

Correlations to National Science Education Standards: Grades K-4

This book has been correlated to National Science Education Content Standards.
For correlations to individual state standards, visit **www.NEED.org**.

Content Standard F | *SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES*

- **Types of Resources**
  - Resources are things that we get from the living and nonliving environment to meet the needs and wants of a population.
  - Some resources are basic materials, such as air, water, and soil; some are produced from basic resources, such as food, fuel, and building materials; and some resources are nonmaterial, such as quiet places, beauty, security, and safety.
  - The supply of many resources is limited. If used, resources can be extended through recycling and decreased use.
- **Science and Technology in Local Challenges**
  - People continue inventing new ways of doing things, solving problems, and getting work done. New ideas and inventions often affect other people; sometimes the effects are good and sometimes they are bad. It is helpful to try to determine in advance how ideas and inventions will affect other people.
  - Science and technology have greatly improved food quality and quantity, transportation, health, sanitation, and communication. These benefits of science and technology are not available to all of the people in the world.

Content Standard E | *SCIENCE AND TECHNOLOGY*

- **Understandings about Science and Technology**
  - Perfectly designed solutions do not exist. All technological solutions have trade-offs, such as safety, cost, efficiency, and appearance. Engineers often build in back-up systems to provide safety. Risk is part of living in a highly technological world. Reducing risk often results in new technology.
  - Technological designs have constraints. Some constraints are unavoidable, for example, properties of materials, or effects of weather and friction; other constraints limit choices in the design, for example, environmental protection, human safety, and aesthetics.

EFFICIENCY CONSERVATION

Teacher Guide

Background

Today in Energy is designed to help primary and elementary students become aware of the ways they use energy every day. It introduces students to the concepts of choice, trade-offs, and cost. Students are given a limited amount of money (in energy bucks) for a day of activities. They are given 13 two-sided cards that have activity choices on either side. There are also two blank cards, so that students can add additional choices, if you so choose. Students use math and critical thinking skills to plan their day so that they can pay for their choices and still have fun.

Concepts

- Everyone uses energy every day.
- Energy costs money. Some uses cost more than others.
- People make choices about energy use.
- For most people, the amount of money they can spend on energy is limited or limits their choices.

Skill Reinforcement

- Motor skills
- Math—adding and subtracting single digits
- Money
- Critical thinking

Grade Level

- Primary/Elementary

Time

- 30-45 minutes

Materials by Grade Level

Grades K-1

- Ten Energy Bucks for each student.
- One set of *Today in Energy* activity cards.

Grades 2-4

- Ten Energy Bucks for each student.
- One set of *Today in Energy* activity cards for each student.

Preparation by Grade Level

Grades K-1

- Copy one Energy Bucks sheet for each student on colored paper. Have the students cut the sheet into individual energy bucks and place in a stack.
- Copy and put together one set of *Today in Energy* activity cards for your use.

Grades 2-4

- Print one Energy Bucks sheet for each student on colored paper. Have the students cut the sheet into individual energy bucks and place in a stack.
- Copy one set of *Today in Energy* activity cards for each student. Have the students cut, fold, and paste the activity cards, then put them in order from number 1 to 13.

Procedure by Grade Level

Grades K-1

- Explain to the students that they must pay for all the energy they use today. Tell them that they will have choices, and that different choices cost different amounts of money. With each card, they will make a choice. They must put the corresponding amount of money to pay for each choice into a separate stack on their desks.
- Go through the cards one at a time, reading the choices and the number of energy bucks each choice costs.
- Some students will run out of money before you finish going through the cards. Explain that that is okay, they will have another chance at the end of the round. At the end of the first round, see how many students have made it through the day with money left over. Most students will not have any money remaining.
- Go through the cards again. Most students will make it through the day on this round. Discuss the concepts listed on the previous page with the students.

Grades 2-4

- Have the students put their energy bucks aside. Instruct them to go through the activity cards and plan a perfect day. After they have made their choices, have the students go through the cards they have chosen, paying for each activity. Most, if not all, of the students will run out of energy bucks before they are through the cards.
- Have the students go through their cards again, changing their choices until they can make it through the day with the energy bucks they have. Discuss the activity and the concepts listed on the previous page with the students.
- Explain to them that most adults, including their parents, make choices like these every day. Suggest that they share the activity cards at home with their siblings and parents.

Today in Energy
1-A

Winter: Warm House
(t-shirt)
or
Summer: Cool House
(air conditioner)

$3

Today in Energy
1-B

Winter: Cool House
(sweatshirt)
or
Summer: Cool House
(fans)

$2

Today in Energy
2-A

Wake Up Early
Walk to School

$0

Today in Energy
2-B

Sleep Late
Ride to School

$1

Today in Energy
3-A

Make and Eat
Breakfast

$1

Today in Energy
3-B

Make and Eat
Breakfast

$1

Today in Energy
4-A

Make and Eat
Lunch

$1

Today in Energy
4-B

Make and Eat
Lunch

$1

Today in Energy
5-A

Recycle Club
After School

$1

Today in Energy
5-B

Play with Friends
After School

$0

Today in Energy
6-A

Walk Home
From School

$0

Today in Energy
6-B

Get a Ride Home
From School

$1

Today in Energy
7-A

Make and Eat
An After School Snack

$1

Today in Energy
7-B

No
After School Snack

$0

Today in Energy
8-A

Study in Daylight
Play Later

$0

Today in Energy
8-B

Play Video Games
Study Later with Lights

$1

Today in Energy
9-A

Watch a Movie

$1

Today in Energy
9-B

Read a Book

$0

Today in Energy
10-A

Make and Eat
Dinner

$2

Today in Energy
10-B

Make and Eat
Dinner

$2

Today in Energy
11-A

Watch TV

$1

Today in Energy
11-B

Watch the Stars

$0

Today in Energy
12-A

Hot Bath

$2

Today in Energy
12-B

Quick Shower

$1

Today in Energy 13-A

Winter: Go to Bed with Electric Blanket

or

Summer: Air Conditioning

$3

Today in Energy 13-B

Winter: Go to Bed with Blankets

or

Summer: Ceiling Fan

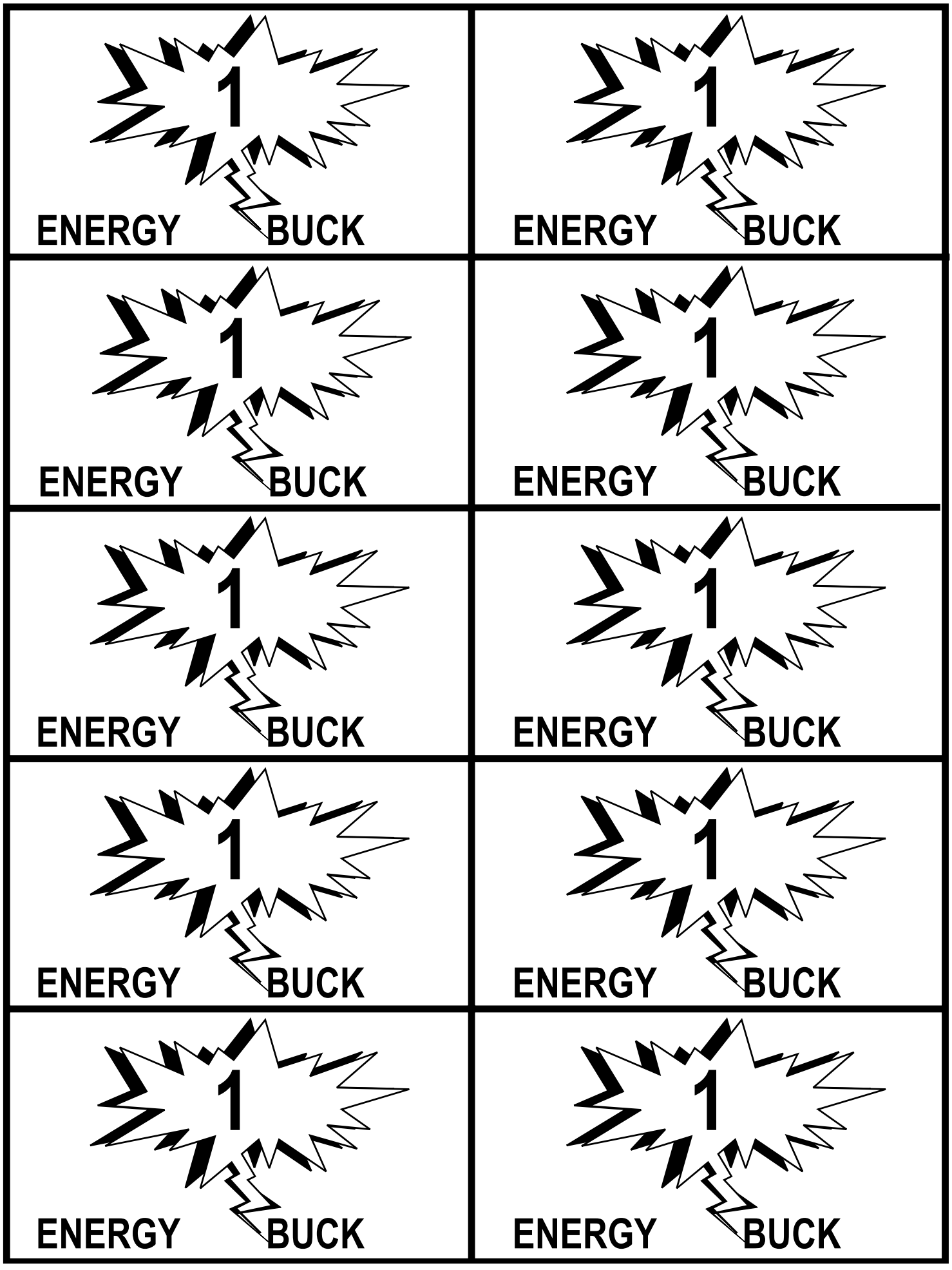
$3

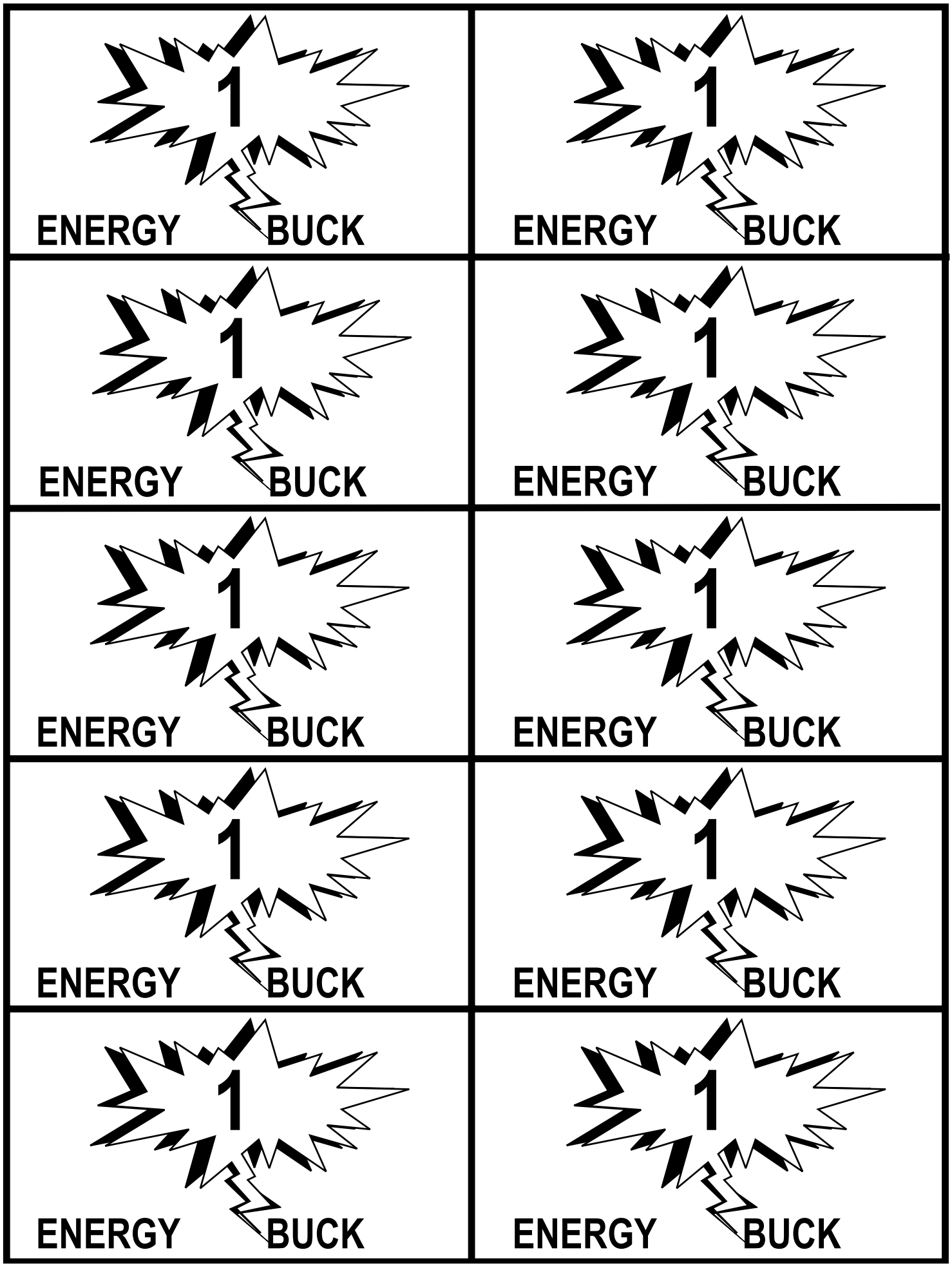
Today in Energy -A

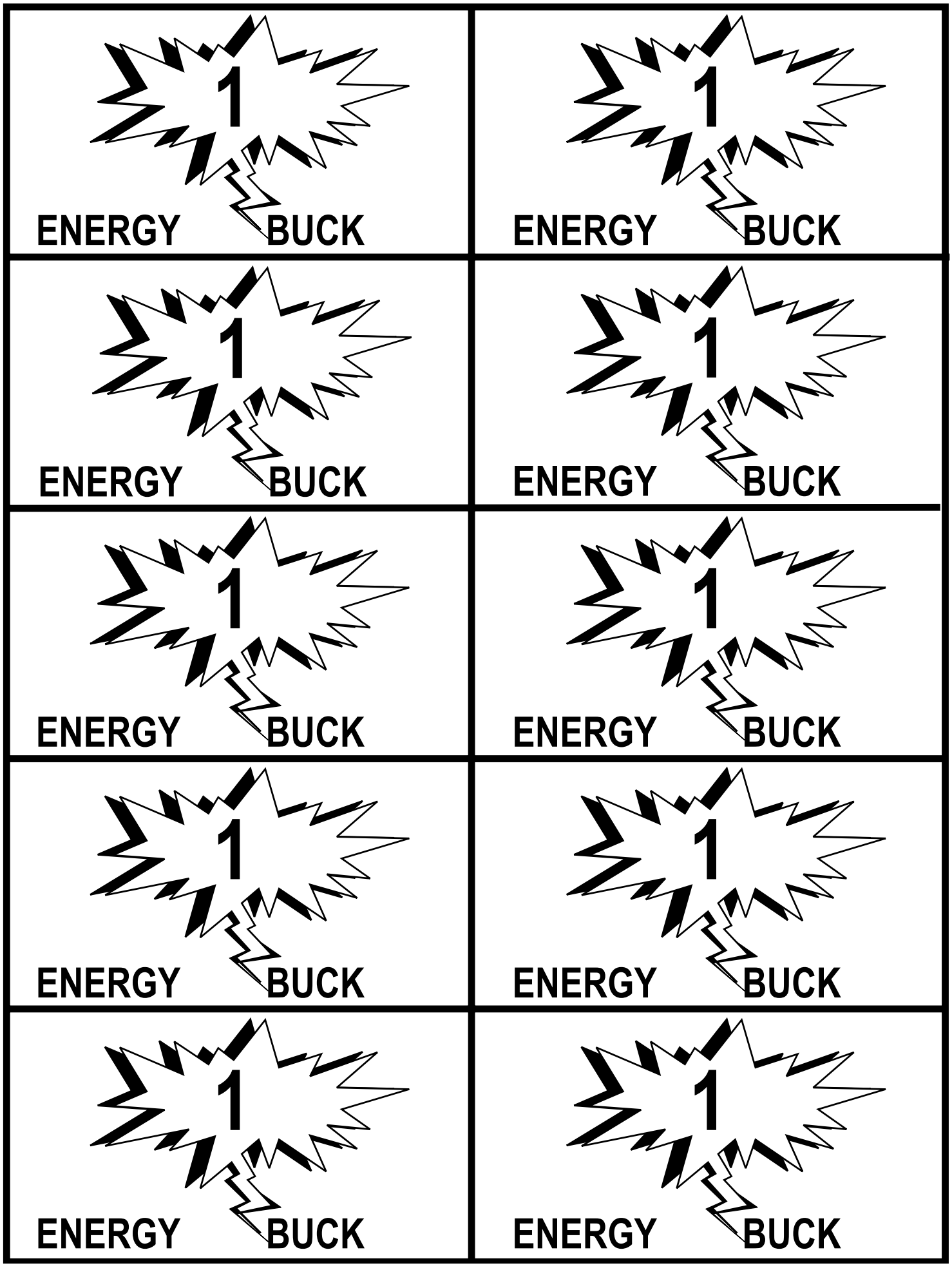
Today in Energy -B

Today in Energy -A

Today in Energy -B


1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK


1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK


1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK
1
ENERGY
BUCK

Today in Energy Evaluation Form

State: _____ **Grade Level:** _____ **Number of Students:** _____

1. Did you conduct the entire activity?	❑ Yes	❑ No
2. Were the instructions clear and easy to follow?	❑ Yes	❑ No
3. Did the activity meet your academic objectives?	❑ Yes	❑ No
4. Was the activity age appropriate?	❑ Yes	❑ No
5. Was the allotted times sufficient to conduct the activity?	❑ Yes	❑ No
6. Was the activity easy to use?	❑ Yes	❑ No
7. Was the preparation required acceptable for the activity?	❑ Yes	❑ No
8. Were the students interested and motivated?	❑ Yes	❑ No
9. Was the energy knowledge content age appropriate?	❑ Yes	❑ No
10. Would you teach this activity again?	❑ Yes	❑ No

Please explain any 'no' statement below.

How would you rate the unit overall?	❑ excellent	❑ good	❑ fair	❑ poor
How would your students rate the activity overall?	❑ excellent	❑ good	❑ fair	❑ poor

What would make the activity more useful to you?

Other Comments:

Please fax or mail to **The NEED Project**
P.O. Box 10101
Manassas, VA 20108
FAX: 1-800-847-1820

NEED National Sponsors and Partners

American Association of Blacks in Energy
American Chemistry Council
American Electric Power
American Electric Power Foundation
American Solar Energy Society
American Wind Energy Association
Appalachian Regional Commission
Areva
Arkansas Energy Office
Armstrong Energy Corporation
Association of Desk & Derrick Clubs
Robert L. Bayless, Producer, LLC
BP
BP Alaska
C&E Operators
Cape and Islands Self Reliance
Cape Cod Cooperative Extension
Cape Light Compact–Massachusetts
L.J. and Wilma Carr
Central Virginia Community College
Chevron
Chevron Energy Solutions
ComEd
ConEd Solutions
ConocoPhillips
Council on Foreign Relations
CPS Energy
Dart Foundation
David Petroleum Corporation
Desk and Derrick of Roswell, NM
Dominion
Dominion Foundation
DTE Energy Foundation
Duke Energy
East Kentucky Power
El Paso Foundation
E.M.G. Oil Properties
Encana
Encana Cares Foundation
Energy Education for Michigan
Energy Training Solutions
Energy Solutions Foundation
Entergy
Equitable Resources
First Roswell Company
Foundation for Environmental Education
FPL
The Franklin Institute
GenOn Energy–California
Georgia Environmental Facilities Authority
Government of Thailand–Energy Ministry
Guam Energy Office
Gulf Power
Halliburton Foundation
Hawaii Energy
Gerald Harrington, Geologist
Houston Museum of Natural Science
Hydro Research Foundation
Idaho Department of Education
Idaho National Laboratory
Illinois Clean Energy Community Foundation
Independent Petroleum Association of America
Independent Petroleum Association of New Mexico
Indiana Michigan Power
Interstate Renewable Energy Council
iStem–Idaho STEM Education
Kansas City Power and Light
KBR
Kentucky Clean Fuels Coalition
Kentucky Department of Education
Kentucky Department of Energy Development and Independence
Kentucky Oil and Gas Association
Kentucky Propane Education and Research Council
Kentucky River Properties LLC
Kentucky Utilities Company
Lenfest Foundation
Littler Mendelson
Llano Land and Exploration
Los Alamos National Laboratory
Louisville Gas and Electric Company
Maine Energy Education Project
Maine Public Service Company
Marianas Islands Energy Office
Massachusetts Division of Energy Resources
Lee Matherne Family Foundation
Michigan Oil and Gas Producers Education Foundation
Midwest Energy Cooperative
Mississippi Development Authority–Energy Division
Montana Energy Education Council
The Mosaic Company
NADA Scientific
NASA
National Association of State Energy Officials
National Fuel
National Grid
National Hydropower Association
National Ocean Industries Association
National Renewable Energy Laboratory
Nebraska Public Power District
New Mexico Oil Corporation
New Mexico Landman's Association
New Orleans Solar Schools Initiative
New York Power Authority
NSTAR
Offshore Energy Center
Offshore Technology Conference
Ohio Energy Project
Pacific Gas and Electric Company
PECO
Petroleum Equipment Suppliers Association
PNM
Puerto Rico Energy Affairs Administration
Puget Sound Energy
Rhode Island Office of Energy Resources
RiverWorks Discovery
Roswell Climate Change Committee
Roswell Geological Society
Sacramento Municipal Utility District
Schneider Electric
Science Museum of Virginia
C.T. Seaver Trust
Shell
Snohomish County Public Utility District–WA
Society of Petroleum Engineers
SolarWorld USA
David Sorenson
Southern Company
Southern LNG
Southwest Gas
Space Sciences Laboratory–University of California Berkeley
Tennessee Department of Economic and Community Development–Energy Division
Tennessee Valley Authority
Toyota
TXU Energy
United States Energy Association
University of Nevada–Las Vegas, NV
U.S. Department of Energy
U.S. Department of Energy–Hydrogen Program
U.S. Department of Energy–Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy–Office of Fossil Energy
U.S. Department of Energy–Wind for Schools
U.S. Department of Energy–Wind Powering America
U.S. Department of the Interior–Bureau of Land Management
U.S. Department of the Interior–Bureau of Ocean Energy Management, Regulation and Enforcement
U.S. Energy Information Administration
U.S. Environmental Protection Agency
Van Ness Feldman
Virgin Islands Energy Office
Virginia Department of Education
Virginia Department of Mines, Minerals and Energy
Walmart Foundation
Washington and Lee University
Western Kentucky Science Alliance
W. Plack Carr Company
Yates Petroleum Corporation