

Summary: Students develop an action plan that addresses an issue related to energy resource management.

Energy Action Plan



This project can be assigned at the beginning, middle, or end of a unit related to managing energy resource use. It can also be the energy unit; by developing the plan, students teach themselves and the class about energy resource management practices. Students can be given class time to develop and implement the plan, or do this on their own. Students can gain knowledge and skills about management practices through other activities in this guide.

Grade Level: 9–12 (5–8)

Subject Areas: Agricultural Education, Art, English Language Arts, Family and Consumer Science, Health, Science

Setting: Classroom and community

Time:

The time frame depends on when and how project is implemented. The following is a possible timeline for the project.

Week One

Introduce assignment and have students select their project (Orientation and Steps 1-3).

Weeks Two and Three

Students plan their project (in and outside of class) and participate in class activities related to effects of energy use and development (Step 4).

Week Four

Students complete project. Meet with students to discuss progress reports. Students prepare and turn in assessments of results (Step 5 and **Closure**).

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Objectives

By the end of this activity, students will be able to:

- contrast possible solutions to an energy-related issue;
- develop an energy action plan;
- implement the energy action plan to promote positive behavior regarding energy use, to help resolve an energy-related issue, or both; and
- judge the effectiveness of their action plan.

Rationale

Developing and implementing an energy action plan allows students to gain first-hand experience in energy resource use management.

Materials

Materials are dependent on the project selected. Copy the following student pages as needed:

- **Project Action Planning Form**
- **Project Action Selection Guide**
- **Decision-Making Grid for Action Ideas**
- **Self-Assessment Questionnaire**
- **Evaluation Criteria**
- **School Case Studies** (See **Getting Ready**.)

Background

Through media and education, students are introduced to a variety of topics related to energy resource development and use. Some of these topics or effects are positive (sanitary living conditions, convenient lifestyles) while some are negative (air pollution, resource depletion). Sometimes negative effects seem overwhelming and many students think there is nothing they can do to lessen them. Students become empowered when they learn strategies that enable them to make positive contributions.

As a result of investigating a school's energy use, students may identify strategies or actions they can take to make their school more efficient.

People have a variety of reasons for deciding to take action regarding effects of energy resource development and use. Beliefs, values, and attitudes are strong motivators. Seeing that other people are doing something to make positive contributions or knowing that they will benefit after taking action also promotes people to become involved. Students and teachers gain positive experiences from participating in action projects as well (see **Benefits for Students and Teachers**).

Action projects can be designed to promote positive effects of energy resource development or use or to help improve negative effects. People can become involved in managing energy resources or taking actions in a variety of ways. Six common citizen action strategies include education, persuasion, economic action, political action, ecomanagement, and legal action (see **Action Strategies**). Student projects can utilize one or a combination of these approaches.

When students are contemplating a project, they should establish a goal and determine objectives. The goal is the purpose or intent of the project. Objectives are specific and achievable tasks related to accomplishing the goal. The specific steps to accomplishing the objectives are the methods. An example of a goal is: "To educate people about energy-related air pollution issues." One objective is to survey people to find out their current attitudes and beliefs. Setting timelines and formulating a budget are intrinsic components of a project.

After thoroughly researching their school's energy use and deciding on an action strategy, students will still need to consider several factors before beginning a project. An action analysis criterion can be organized

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Major Concept Areas:

- Management of energy resource use
- Future outlooks for the development and use of energy resources

Getting Ready:

Review the resources and examples of **School Case Studies** on keepprogram.org > Curriculum & Resources > Energy & Your School > Additional Resources. You may choose to direct students here for research purposes.

into a checklist to determine if action is warranted and appropriate (see **Decision-Making Grid for Action Ideas**).

Educators should be aware of considerations and needs unique to their school and community and include these criteria in the checklist.

- Is the project relevant to the objectives of the class?
- Does the project comply with policies of the school system or organization?
- How does the project fit into the curriculum?
- What are the interdisciplinary connections?
- Will student motivation and ownership be generated?
- Will the project include a diversity of learning techniques?

When action projects are conducted in a school setting, purposeful learning must occur. The decision to become involved should come from the students. They may need guidance to determine if the project is within their capabilities. See **Some Tips to Keep in Mind**.

Through action projects, students gain firsthand experiences and learn they can

make contributions to energy resource management. Even if the outcome of the project is not successful, meaningful learning occurs. Throughout the planning and implementation of an action project, people learn about themselves, their colleagues, the environment, society, and how all these elements work together to create change and form our futures. Having students participate in energy action projects provides them with the opportunity to secure energy resources for their own needs today as well as for tomorrow.

Procedure

Orientation

Prior to this activity students may want to investigate an effect related to energy resource development and use (see the activity “Energy Investigations for School Buildings”).

Share one of the **School Case Studies** from the KEEP website. The following questions can be used to orient students to the elements involved in conducting an action project.

- What type of actions did they undertake?
- What motivated the individual or group to take these actions?
- What barriers and challenges did they face?
- How did they overcome these barriers?
- Do you know stories about people who faced a similar challenge?

Steps

1. Divide the class into cooperative working groups of three or four. Ascertain their interest in taking action relating to an effect of energy resource development and use.

Share the rationale behind taking action (see **Background**). Inform students that actions can be taken to support positive effects or try to improve negative effects. NOTE: This project can be done individually or by the whole class.

2. Have each group identify an issue related to school energy use. By conducting a school energy audit, other problems or issues may arise (see the activity “Energy Investigations for School Buildings”).

It is very important that student interest drive this project. Student concern and involvement in managing an effect of energy resource development and use can be enhanced through research and investigation. If necessary, allow students to change groups to join one that is working on a project that is more interesting to them.

3. Involve students in a discussion of what can be done. Have students use the **Project Action Selection Guide** to identify a mode of action they'd like to take. See **Energy Saving Activities for Schools** in the Appendix for a list of projects that can be undertaken to address many of the energy issues discussed throughout this guide.

4. Provide students copies of the **Project Action Planning Form**. Discuss the information on this form. Review the procedures required for students to complete their project. Have students outline a list of responsibilities and assign members of their group to complete each task. It may be helpful to classify tasks under different group role titles. Following are several possibilities:

- **Leader or facilitator:** directs the group and makes sure tasks are completed
- **Researcher:** locates and organizes information needed to complete the project
- **Planner or engineer:** develops strategies for completing the project
- **Construction worker:** builds, conducts, or takes necessary actions to complete the project
- **Recorder:** takes notes or documents the group's progress
- **Public relations:** communicates with the public, secures permission to

conduct project, presents results of project

Encourage students to contact organizations and local community groups that have information about their intended action project. See the KEEP website for lists of agencies, organizations, and other resources.

Students should also begin considering how they will monitor the progress of their endeavors. An energy learning log or some other method of documentation is an ideal way for students to record what they have learned and to reflect on their learning (see **Ideas for Monitoring Progress**).

5. Have students implement their plan. Conduct group meetings and discussions to help students execute the forms, initiate action, and complete their projects. For long-term projects, arrange for students to submit written or verbal progress reports regularly.

Closure

When students have completed their projects or taken some kind of action, have them discuss their feelings and experiences. Review the processes students used to monitor their progress. They can fill out the **Self-Assessment Questionnaire** to evaluate their success.

Encourage students to prepare a presentation about their project. They can present results at fairs and civic events. They may also want to develop a video to share with various community groups.

Assessment

Formative

- Were students able to identify action strategies that addressed an effect of energy resource development and use?
- Did they develop effective criteria that helped them select a feasible strategy of action?
- Did students carefully document their progress, reflecting on the effectiveness of each of their steps?

Benefits for Students and Teachers

What are the reasons for conducting action projects in the classroom? When teachers are given time to consider this question, they have a lot to say. Here is what one group of teachers came up with during a workshop on teaching environmental issues.

Benefits for Students

- Young people have concerns about their community, and it is important to respond to their concerns and support them. Investigating actual problems and making an effort to improve those situations engages students and motivates them. The process makes learning relevant to their lives.
- Going through a process of investigation and action can instill optimism, rather than despair about the future. Students should understand the seriousness of energy-related problems but also develop a sense of hope and commitment to change.
- Considering energy-related issues and their solutions requires students to practice and improve skills such as decision making, critical reflection, and problem solving. These skills are particularly important in the context of imperfect or incomplete information. They learn how to apply their skills and knowledge and reconsider their opinions as they build their own world.

- Studying energy-related issues can empower young people by connecting their daily lives and local community with their classroom studies. Their actions may help them save money, enhance the health and well-being of community members, conserve energy resources, etc.

Benefits for Teachers

- Energy issues are making headlines. They can attract and hold students' interest because they are current, relevant, critical issues of the times.
- Addressing energy issues involves a variety of activities and learning experiences, thus improving the quality of teaching.
- Involvement in energy action projects develops cooperation and a sense of community among students.
- Effects of energy resource development and use provide a context for interdisciplinary learning.
- A systematic approach to exploring, analyzing, and solving problems addresses learning objectives that are central to education reform.
- The urgency of environmental deterioration demands that we incorporate environmental issues into the classroom experience.

Summative

- Review and discuss students' responses to the **Self-Assessment Questionnaire** or other means they used for evaluation.
- Have students use an energy learning log or some other method to document their progress (see **Ideas for Monitoring Progress**). Refer to **Evaluation Criteria** to identify ways to assess student work.
- Monitor how successfully students educated others about their project. You may want to develop or have students develop a simple survey for people to record what they think they learned.

Credits

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Ideas for Monitoring Progress

- Keep a video or photo log of project highlights. After the project is completed, use the video or photo scrapbook as a springboard for discussions in which students share their feelings about the experience and what they learned.
- Collect memorabilia (articles about the project, newspaper photos, students' own photos, planning schedules, and so on) to create an action project scrapbook that students can sign and write comments in.
- Ask students whether they've changed their thinking or behaviors as a result of the project. Have them write essays describing those changes and what they think prompted them.
- Have students keep a journal to record feelings about the project, its progress, and its setbacks and to keep notes about working with others. After the project, have students share parts of their journals with the group and discuss their feelings.
- Have students evaluate other members of their group, as well as themselves. Before they do, give students pointers on positive, constructive feedback and focus the session on specific points, such as contribution to the project, effort, conflict resolution approach, and so on.
- Have community members who were involved in the project assess student performances. You can develop an assessment form or have students conduct short interviews.

Action Strategies

Education involves teaching or informing others about a topic or issue related to energy resource use and development. Approaches include the following:

- Developing an energy education unit and presenting it to another class
- Producing a play that presents information about the topic to a community group or the school
- Writing and printing a newspaper about energy issues, problems, and benefits

Persuasion is employed when a person or a group tries to convince people to support a certain course of action. Examples of persuasion action projects include the following:

- Writing and presenting speeches about energy issues during a school event, such as Earth Day
- Creating and performing a play intended to encourage people to conserve energy
- Designing posters and fliers that urge local businesses to start a recycling program in the office
- Conducting a debate in school about the school's heating fuel choice
- Writing a letter to the editor of a newspaper promoting renewable energy resources

Economic Action involves trying to have an impact on an issue through the marketplace by making a point of purchasing or boycotting a product. Students can also raise money and make a financial contribution to support the resolution of issues. Examples of this approach to citizen action include the following:

- Conducting a fundraiser that involves designing and selling energy efficient products, such as crafts from recycled materials
- Refusing to buy products that are overpackaged or have non-recyclable containers
- Raising money and donating it to a nonprofit organization that promotes wise energy use
- Writing a grant or contacting a funding source to support an energy management project

Political Action involves encouraging or pressuring elected officials to address an issue. Examples in this category include the following:

- Phoning or writing a letter about an energy issue to an elected official
- Conducting a “get out and vote” campaign to support a candidate who promotes wise energy use
- Speaking about an energy issue at a public hearing

Ecomanagement consists of taking physical action to protect or to improve the environment. Examples include the following:

- Turning off lights when not in use
- Using alternative means of transportation
- Reusing paper
- Reducing the amount of food wasted during meals

Legal Action pertains to promoting change in agencies, the government, and organizations through legislation or the judicial system. Generally, students will not utilize this approach because it involves activities such as bill writing or civil action suits. However, through the education action strategies, students can learn how legal actions helped form many of the laws and regulations governing use of our energy resources.

Some Tips to Keep in Mind

Encourage Student Ownership and Initiative

The more your students are involved in the project, the more they'll get out of it. To the extent possible, allow them to make their own decisions (which issue to focus on, how to conduct the project, and how to share results). Of course, you will be involved in decisions by (among other things) helping students evaluate the pros and cons of each choice. You can gauge how much direction makes the most sense, but, ultimately, the students should feel as though they're charting their own course.

Encourage Parents and Other Community Members to Become Involved with the Project

Conflict can sometimes surface when students interact with community members and parents who don't agree with a specific activity or who don't feel that action projects are an appropriate educational approach. In many cases, you can diffuse this response by discussing projects with parents and community members beforehand and by explaining how action projects enhance educational goals.

Keep Your Opinions in Perspective

We all have our own ideas, beliefs, and opinions about issues. Part of being an effective educator is allowing everyone to openly express opinions, no matter how different they may be from our own. Many educators recommend that teachers hold back on sharing their opinions so students have a chance to discuss the issues, to research material, and to form their own ideas about how they feel. It is also critical for educators to keep students on track and focused on the facts. Emotionally charged debate and hotly contested points of view can obscure the real facts and divert students' attention from the issue under scrutiny.

Encourage Student Cooperation, Compromise, and Understanding

Have your students work in small groups as much as possible. Besides the well-documented educational benefits of cooperative learning, group work offers a taste of real-life problem solving. Point out that finding solutions to issues is rarely a solitary endeavor. Teams of people—scientists, politicians, concerned citizens—

often arrive at a plan of action together. Ideally, each person brings his or her own perspectives and talents to the process, and the results reflect the strengths of those human resources. Multiple perspectives encourage thoughtful debate, boost critical thinking skills, and allow students to make informed choices—especially if opinions are accompanied by reliable information.

Help Students Evaluate Their Methods and Change Their Plans If Necessary

Being able to adapt—or even totally change directions if something isn't working—is a plus when it comes to solving problems. From time to time over the course of a project, have the students step back, assess the overall scheme, and evaluate their methods. Ask if they think things are running as smoothly as they expected. If they think there's room for improvement, ask what might be done to adjust the situation. In some cases, problem-solving teams can brainstorm ways to deal with the snags and setbacks encountered along the way. Encourage specific methods for evaluating success as the project develops. Students might keep journals and record what they think is going well and what seems to need change. They can also survey community members to get reactions to the project's plan and progress. Likewise, periodic checkups for reactions from colleagues, teachers, or other students can be valuable.

Help Students Appreciate the Value of Their Work

It's important for students to know that their project, no matter how small, is significant. Too often all of us feel that there's nothing we can do to solve a problem, or that whatever we can do isn't enough. Assure youngsters that every action counts. Even if the students' actions don't seem to have much effect right away, the long-term results can be very important. For example, if a project designed to help consumers choose environmentally friendly products fails to make big changes in consumer purchases, students will have learned a lot about the issue and raised public attention—perhaps they will have inspired others to take up the cause.

Project Action Planning Form

Group Members' Names

Responsibility

Briefly describe your project, its goal, and why it is important.

Project Objectives

Develop a set of objectives for your project. These objectives should encompass the expected results and accomplishments, what you hope to learn, and any other considerations provided by your teacher.

Research and Background Information

Has your project been done before? If so, how was it done? What approach worked best?

Make a list of information and data you need to gather in order to complete your project. Identify possible sources of information relevant to your project and where you might find them.

Identify any community, state, or national organizations that might provide you with information, materials, or services.

Identify other people such as teachers, administrators, parents, or community members who might help you with your project. Describe how they can help.

Planning

On a separate sheet of paper, create a workable project outline.

- a) Begin by listing all the tasks you will need to do in order to finish your project.
- b) For each task, assign responsibility to someone on your team.
- c) Assign a date by which that task will need to be completed.

Make a list of all the materials and resources you will need to complete your project. Use the project outline to identify materials and resources you will need to accomplish each task.

Determine the costs (if any) of doing your special project. Make a list of ways you can minimize your costs.

Identify any obstacles you may encounter when conducting your project and describe possible ways to resolve them.

Educating Others

How will you inform others about what you have accomplished? You could write a feature article for a local newspaper or gain attention from a television news program. You may also present a summary of your efforts to another class or at a town or school meeting.

Other Considerations

What special equipment or arrangements will you need in order to complete your project? How will you obtain them (permissions, transportation, use of computers or telephone, special field equipment, etc.)?

When will you work on your project (during school, after school, in the evening, on weekends)? Are you willing to spend the time you need to complete the project?

How will you keep track of your progress (a journal, photographs, recording, portfolio, etc.)?

Will your project require long-term follow-up? If so, who will continue your project after you are finished? What long-term maintenance costs are associated with your project?

Project Selection Guide

1. What effect of energy resource development and use will your project address?
NOTE: It is best that you conduct an investigation of this topic or issue before doing an action project. An investigation involves researching and analyzing the history and causes of the effect and how it influences our lives and the environment.

2. Do you plan to support (enhance, promote) or correct (improve, change) the effect?

3. What evidence is there that action is needed?

4. Do you have a good understanding of the beliefs and values of people who will be affected by this project? Summarize their viewpoints.

5. Once you have decided on an effect of energy resource development or use, brainstorm action ideas for conducting a project that addresses this topic or issue. In addition, write down the desired result.

Action Idea

Intended Outcome

6. Use the **Decision-Making Grid for Action Ideas** to evaluate each of the action ideas you listed. Some decision-making criteria are listed, but you may have others you'd like to include. Rule out projects that are unmanageable. Decide which is the most feasible in terms of time, cost, and participant support. Which one will most likely be successful?

Decision-Making Grid for Action Ideas

	Action Ideas				
	(List each of your ideas in a box below)				
Criteria	Idea 1	Idea 2	Idea 3	Idea 4	Idea 5
It is safe (it will not endanger the life or health of people involved).					
It is legal.					
Your values support this action.					
You have the skills to conduct this idea.					
The time needed to conduct this project is reasonable.					
There are available resources to help complete the project.					
The cost is worth the benefit.					

Which action idea are you going to choose, and why?

Self-Assessment Questionnaire

Decide how effectively you met each of your objectives. For objectives you achieved, describe what you learned from the experience. For those you haven't accomplished, will you still try to achieve them? If yes, how? If no, why not?

What was the most successful part of your project? What was the least successful part?

Who was influenced or motivated by your actions? Who might those people now influence?

If you repeated the project, what, if anything, would you do differently and why?

How do you feel about your involvement in the project?

Have your beliefs and opinions about the issue you worked on changed since you began the project? If so, how? If not, why not?

What did you learn during this project that you'll be able to apply to other energy use situations that you'd like to change?

Would you get involved in another energy action project? Why or why not?

What advice would you give to other students planning an action project?

Do you think it's important for citizens to volunteer for community service? Why or why not?

Evaluation Criteria

Investigation and Report Title _____

Group Members' Names	Responsibility
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Selection of the Action Strategy

The group considered a variety of alternative action ideas	Strongly Agree	Agree	Disagree	Strongly Disagree
The group evaluated and selected the most plausible action idea for their project	Strongly Agree	Agree	Disagree	Strongly Disagree

Planning the Project

The group established realistic goals (criteria) for the project	Strongly Agree	Agree	Disagree	Strongly Disagree
The group used a systematic approach to research information needed to complete the project	Strongly Agree	Agree	Disagree	Strongly Disagree
The group developed a workable project outline and timeline	Strongly Agree	Agree	Disagree	Strongly Disagree
The group worked efficiently together to complete tasks	Strongly Agree	Agree	Disagree	Strongly Disagree

Project Completion

The group carefully documented the progress of the project	Strongly Agree	Agree	Disagree	Strongly Disagree
The results of the group's project positively addressed the energy effect studied	Strongly Agree	Agree	Disagree	Strongly Disagree
The group accomplished the goal and objectives of their project	Strongly Agree	Agree	Disagree	Strongly Disagree

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