

ENERGY EXCHANGE

Celebrating 30 Years of Energy Education

A look back at some of the activities, programs and accomplishments of NEED's first 30 years by people who were there.

It began on March 20, 1980, when President Jimmy Carter, in response to the energy shortages of the 1970s, issued a proclamation establishing a "National Energy Education Day." This planned one-day event soon turned into a national energy education organization built around classroom-based activities and programs, and a unique "kids teaching kids" concept that has helped develop the leadership skills of tens of thousands of school children.

Thirty years after its founding, The National Energy Education Development Project teaches more than 700 teacher and student workshops each year, reaching into 65,000 classrooms around the country and even around the world.

Perhaps the NEED concept was best described by President Ronald Reagan in his May, 1983, letter of greetings to the teachers, students and their families attending the third annual Youth Awards. After mentioning the importance of wise use of energy and the lessons learned during the 1970s, the President wrote:

... we must guard against a recurrence of the complacency that brought about our past energy problems. One of the surest ways of doing this is to instill the concept of energy awareness in the nation's school system. When young people, aided by talented teachers and supportive parents, bend their talents to energy projects, the community takes notice. In the relatively short time it has been functioning, NEED has proved an invaluable instrument in developing the nation's energy conscience, both for now and the future.

Five years later, in the 1988 annual report, NEED's founder Jerry Katz explained his view of how the organization best serves America's students and teachers: "Getting students to

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During the past few months, we've heard from many former NEED teachers, students, board members, and other volunteers who have helped make us what we are today.

In this issue, we share some of their reminiscences, thoughts, and comments about NEED and how their participation has affected their lives.

Space has limited what we can use this month, but watch this fall for more features, photos, and guest articles as we celebrate NEED's 30th anniversary.

Whether you're a teacher or a student, we think you'll find these articles not only interesting but also helpful in your classes, your career, and in the way you think about and use energy in your daily life.



NEED's student staff kicked off the 1997 Youth Awards ceremony. Most of these former student leaders are still involved with NEED.

PAUL TORCELLINI – FROM "NEED KID" TO ENERGY RESEARCHER



Paul Torcellini is Principal Group Manager of Commercial Buildings Research at the National Renewable Energy Laboratory in Golden, CO, but he wasn't always one of the country's most respected energy researchers. Fact is, he used to be a "NEED kid." We asked him to take a look back at his work with NEED that began shortly after the organization was created, and here's his story in his own words.

Back in the summer of 1981, I was a high school senior in Connecticut, and I was lucky enough to be chosen as a student leader for the state to go to NEED's first summer program, learn about the organization, and take back home what I learned. NEED was only a year old then and was really in its infancy in a lot of ways. I was really excited to be a part of the formulation of the how's and why's of the group that were being developed in those early years. Here I was, just a high school kid, and I was in the midst of all the planning and activities for this new organization.

Back in those days, NEED didn't have many official staff members, and pretty much all we had were people like me called "student

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Richard Zuercher, Chairman, NEED Board of Directors

Richard Zuercher is Manager - Nuclear Public Affairs for Dominion in Glen Allen, VA.



When I joined the Board of Directors in 2003, NEED was a much smaller organization, run by a part-time executive director and a few staff members. The budget for the entire organization was about \$1.5 million and the only time the board members physically met together was on Monday after the National Youth Awards Ceremony. In 2006, as Vice Chairman, I was tasked with revisiting the strategic direction of NEED, as the public interest in energy was rising significantly and the price of gas, both for home heating and transportation was soaring to new heights, not only in the United States, but around the world.

With the input of several of my colleagues on the board and Mary Spruill, then the Program Director, a strategic plan was set in motion that resulted great changes at NEED and an ambitious plan to increase our outreach to schools from about 3.3 million classrooms at the time to 5 million teachers by 2010. Our budget has since expanded to more than \$5.5 million and we have placed Mary in charge of running this dynamic organization that is staffed with talented energetic people fully on board with our vision for success.

The directors who serve with me on the NEED Board are fully engaged in the growth of the organization and working individually and as a team to ensure that NEED's programs and educational materials are of premier quality. We are meeting more frequently to ensure NEED is doing the right things to meet the public demand for energy programs. Our sponsors and partners are growing and playing an important role in NEED's success.

As NEED celebrates its 30th Anniversary I want to thank the members of our Board of Directors for their time and personal commitment to making our programs so successful, energizing, and fun for classroom teachers and students. I also want to thank our sponsors and partners for their assistance and support, which is allowing us to expand our outreach in the nation's schools. Most of all, my hat is off to Mary and her team who are in the field daily helping students and teachers understand the importance of energy and its impact on our lives and our nation. NEED is relevant, vital, and important to schools and to energy companies like Dominion who are seeking the workforce of the future. I am honored to be NEED's Chairman during this year of celebration and look forward to NEED's success in the next 30 years.

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plan, create, and organize an academic endeavor is probably as important, if not more important, than the energy education knowledge they have acquired. The knowledge they did acquire was a result of their own investigation and that of their fellow group members. This knowledge will stay with them so much longer than if they were asked to read a book, watch a filmstrip and 'study' for the test." He added that "This active participation is why NEED works, the philosophy employed is that 'people support that which they help to create.'"

Mary Spruill joined NEED in 1986 as a student learning about energy in the classroom. NEED continues to energize and inspire teachers and students to learn about energy, to make smart energy decisions, and to educate their peers and communities about the energy opportunities and challenges facing us. "NEED success is found in the impact we make in the classroom, at community energy events, and in our students' homes as they learn about energy," she said. "The main factor is that students play a key role in the leadership of our activities, working side-by-side with teachers and NEED sponsors. They help design, create, and implement our programs, and while our staff supports them throughout their work, they make NEED work so well. NEED success really is about the coming together of teachers, students, families, and community sponsors who believe learning and teaching about energy is important. Who doesn't agree that energy is an important topic to understand and discuss?"

And what an impact NEED has made during the past 30 years! Ask Krista Schouties, a teacher in Cold Spring, KY, who's been involved with NEED for the past 10 years, what her best experience with NEED has been, and she'll tell you: "Seeing how excited the children are learning the material and using it to make a difference in their community or school. At first I thought it would be too difficult for my third-graders, but they proved me wrong. The energy unit we do in third-grade is remembered and asked about as upper-classmen visit our room and ask our current students if they have learned about it yet."

What does Nina Corley, who teaches at the Satori School in Galveston, TX, say about her six years being involved with NEED? "My best experience," she said, "is when my students were presenting the *Science of Energy* to senior citizens and sharing information they had learned and learning from the senior citizens. The NEED program has affected our school. We now have solar panels. It had a great impact on how our school and families in our school rebuilt and repaired their homes after Hurricane Ike. We are all now much more energy-conscious."

Scott Sutherland, a principal in the Providence (RI) Public Schools, who has been involved with NEED since 1993, noted that "The students that NEED serves in Providence are 'at-risk' and are all Title One students. Many of these students have become active within the Providence community due to their experiences with The NEED Project and through the 'kids teaching kids' experience."

This issue has comments from several current and former NEED teachers, students, staff, and board members writing about their thoughts on NEED as it celebrates this milestone anniversary. Read upcoming issues for more articles by people involved with NEED, reflecting on the impact NEED has made on their professional and their personal lives.

Caterina Spaziano, a NEED Student Leader for many years, explains that "The NEED Project gave me the confidence I was looking for when it came to public speaking. I would not be able to speak in front of a group like I can if not for my involvement with NEED from an early age. Whether it is a group of five teachers or a room full of 500 people, I know for sure I will be able to confidently present my information because of my vast experience with NEED."



The NEED Project NATIONAL ENERGY

EDUCATION DEVELOPMENT

P.O. Box 10101, Manassas, VA 20108

Phone: 800-875-5029

Fax: 800-847-1820

Email: info@need.org

Web: www.need.org

The NEED Project is a 501(c)(3) nonprofit education association providing professional development, innovative materials correlated to the National Science Education Content Standards, ongoing support, and recognition to educators nationwide.

NEWSLETTER STAFF

Mary Spruill

Executive Director

Hallie Mills

Curriculum Director

Ken Sheinkopf

Editor/Designer

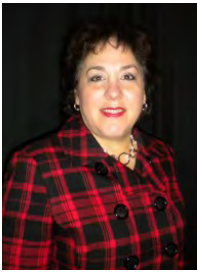
Energy Exchange is published four times a year by NEED for educators and students. We welcome your questions, comments and suggestions.

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Constance Beatty, Teacher, Kankakee, IL

Constance Beatty is a 5th/6th-grade teacher at Kennedy Middle Grade School in Kankakee, IL. She also serves on NEED's Teacher Advisory Board and the NEED Board of Directors.



Last year my students were involved in a unique project in which they made short movies about energy conservation and then went to different decision making bodies in our local area and presented their creations. Groups were able to present to Kiwanis, Rotary, the Kankakee County Board, City Council, and the School District Board. The students asked each of these groups to fill out a "Change a Light Pledge" for the ENERGY STAR "Change the World" pledge drive. Many of these group members became involved with our pledge drive and took pledges to other groups they were involved with, and we ended up with more than 2,000 pledges and were in the top 10 elementary education pledge drivers nationally. My students were very proud of themselves and their hard work.

Another highlight for me took place several years ago as a part of the Youth Awards staff when I was privileged to be in charge of the Career Fair. This activity was held on Friday afternoon as the school groups arrived at the Hyatt. Energy corporations sent employees and set up tables for the students to visit to learn about energy and careers in the energy field. Each student had an "energy passport" to fill out. It was amazing to watch the students interact with the adults asking questions and listening intently to the answers. Both the students and the employees gave the experience rave reviews.

John Weiner, Member, NEED Board of Directors

John Weiner, who is retired from the U.S. Energy Information Administration, is currently Secretary-Treasurer of NEED's Board of Directors.



As it has done with so many of its partners throughout its distinguished 30-year history, NEED has made an important contribution to the work of the Energy Information Administration. As director of EIA's public information service for many years, I offer this narrative in admiration and gratitude.

In 1997, the Assistant Secretary for Fossil Energy convened a meeting of Department of Energy information and education specialists to hear a presentation by Mary Spruill about NEED. At the time, my office was one of the stewards of EIA's nascent electronic information dissemination program and its two-year-old web site, whose principal products were on-line versions of data tables from our publications.

During her summary of the NEED program, Mary stressed how much NEED relied on EIA data in the materials it prepared for teacher and students. As I listened to her, I saw that our organizations complemented each other well and decided that we should look into increasing our collaboration. Using the power of the Internet, the efforts we in EIA were expending to serve our traditional customers in Congress, the Executive Branch, the financial community and the energy industry could be directed as well to serving our youth.

Mary and her team liked the idea, and we started to plan. Ultimately, our collaboration focused on the Energy Kids Page, an EIA web product for the general public and especially for students and teachers. Our starting point was a prototype developed as a "graduation" project by a group of EIA employees participating in an in-house course on energy basics. I asked EIA's leadership to sponsor the Kids Page, provided that NEED could join us for critical content review and enrichment. They agreed, and, with the NEED community's input and approval, the page went live in 1998. We even recruited "Energy Ant" to be the host!

The Energy Kids Page has grown to become EIA's most popular web product, visited among others by the thousands of students and teachers who participate in NEED programs across the country. NEED continues the review and enrichment process on an annual basis. Also, for many years, NEED has taught the energy basics course, which has become an integral part of the EIA employee orientation program.

When we started the Kids Page, many in EIA questioned whether it was an appropriate business for us to be in. The overwhelming response convinced them that energy was a subject of great interest to students and teachers and that EIA's support of energy education was appropriate and needed. As they saw the positive customer feedback, the leadership's enthusiasm grew, too. Mary has briefed them on many occasions during the past decade, and they have come to respect NEED as a professional partner informing the public about energy. The EIA-NEED collaboration has been a resounding success. Visit Energy Kids at www.eia.doe.gov/kids.

Former NEED student leader Lauren Beatty says that "I'm so glad that NEED has allowed me to come back year after year. I've gotten so much leadership experience through the years."

Whitney Newman

Whitney Newman is a student at the College of William and Mary. She is studying abroad in Italy during the Spring of 2010.



I'm finding it quite interesting here in Italy to see how different the European standards are for conserving power and resources as compared to ours back in the U.S. For example, the Italian government regulates the temperature in all residences and you are heavily fined if you do not follow the standards set. In my apartment, we are not allowed to have our heat on higher than 64 degrees, a great idea in theory but it sure does make for chilly nights because our building has marble floors and high ceilings (not to mention windows that offer very little insulation!). I am starting to get used to lower temperatures and at least it's always a constant reminder that I am doing my part to save energy here in Italy.

I think my best NEED experience was my first time at Youth Awards when I was in 5th grade. It was my first real trip to D.C. and it was so much fun to tour with all of my fellow energy patrollers. From touring the monuments to the Potomac dinner cruise to going on stage at the awards ceremony, the entire trip felt surreal and still does to this day. I remember thinking how awesome the NEED staffers were and now it's funny to look back knowing that I'm one of them now.

I think getting involved with NEED through my teacher, Mrs. Hutton, was one of the greatest opportunities that translated from elementary school into my actual daily life as a young adult. I even remember all the little energy tips Mrs. Hutton used to tell us and to this day I can still recite the NEED clap that we created in 5th grade. Energy awareness and conservation really has been a driving force in my personal life and is becoming even more important as I start thinking about what I want to do after graduation next year. With any luck I'll be able to find a way to combine my love of fashion, travel, and sustainability into some sort of career. I definitely want to work for a "green" company with energy-conscious values.

Some Photos From NEED's History



NEED founder Jerry Katz presents the 1995 NEED Student Leadership Award to Josh Rising.



Kids of all ages (adults, too) enjoy learning about radiant energy with the Radiometer, circa 1993.



Bryan Landsiedel, a NEED Student Leader from 1990 - 1995, teaches participants at a Youth Awards ceremony all about the game "Polar Bears Around the Icehole."



NEED student leaders from Pensacola, FL, present a photo of the Blue Angels to NEED Program Director Mary Spruill and Curriculum Director Martha Callan at the 2000 Youth Awards.

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staff” and some adult teachers that NEED’s founder Jerry Katz knew, so I really felt a part of things. I was even on staff when a student named Mary Spruill, who is now NEED’s Executive Director, started with NEED a few years later, so I got to work with a lot of the people doing the planning in the early days for the incredible organization we see today.

During that first NEED conference in the summer of 1981, they got a group of students and teachers together, and gave us a framework for running student-led energy education programs in our states. The vision was to get students knowledgeable in energy issues. Most of us there were highly motivated and were energized to go home to run energy programs. The first year kind of got us organized, but by the second year, we were really doing things.

From then on, we continued to run the Youth Awards and summer programs, so I ended up spending my summers with NEED putting on leadership training conferences, training student leaders and teachers on energy issues, and showing them how to take the information and ideas back to their schools. It was really a grassroots campaign with very little staff at the national level, just a core group of staff plus teachers and student leaders. I worked on the summer programs through the mid-1990s, and took every summer off through undergrad and graduate school to work for NEED. I had the role of running their summer programs and we eventually got organized into a crew of people who traveled for four weeks straight. From Sunday through Friday, we’d put on a conference, travel to a new location Saturday, and then start again on Sunday, working with some local people who helped with logistics.

“I think what made our programs work so well was that the model was great. It was student-led and student-focused.”

During those early years, the programs were mainly for high school students and teachers to get them involved in energy education. We found that students could transform education. The problem with this approach, though, is that students come and go. Finding corporate sponsors to pay for the constant change in audience and trained participants became difficult, so NEED changed to a model of training teachers and expanded to reach all grade levels K-12.

I think what made our programs work so well was that the model was great. It was student-led and student-focused. The NEED staff worked primarily on the Youth Awards program and activity development, and students like me did the main teaching work. It was absolutely about the relationships. We were professional motivators and we loved that role, and truthfully, I think it still describes what NEED does today.

I have to smile when I think back on what we did in those days and what the technology we used was like as compared to what we have today. For example, one of the things we did every conference starting with the first or second one was to put together a huge slideshow at the end of the event highlighting the activities, much like NEED does today. However, in those days, there were no digital cameras, so we took roughly 10 rolls of film, stayed up all night processing them, and then hand-mounted the pictures in slide mounts to produce the final show. I can recall processing film in the middle of the night, then hanging it up to dry in a bathtub in our bathroom “darkroom,” then processing the film as quickly as we could.

We also produced newsletters at the conferences so we shipped typewriters around the country and cut-and-pasted by hand to create the newsletter with a recap of what happened, and then we published them. I think we found photocopiers most times but we may have used a duplicating machine now and then. We had learned from student council, 4-H, Boys and Girls State and other programs at school how they did their newsletters, so we put that experience to work for NEED.

In some ways, though, we were actually cutting-edge in getting technologies and strategies to the conference world, as well as setting up the innovative idea of students and teachers working as teams. For example, I had one of the original Kaypro computers, one of the first consumer laptops, that I lugged around the country with me to use. I use the word “lug” since those early versions weighed close to 30 pounds, and you can only imagine how little they could do as compared to what today’s computers can.

I provided a lot of the technical insight in the early days because of my engineering background, since most of the people working with NEED had no engineering or even strong math or science backgrounds. But the students were all bright and motivated, and we all learned quickly that you had to identify people’s talents and use them. That’s how we were able to put together the newsletters, put on the popular play on the last day – I remember that one of the favorites was always the “Ms. Renewables Beauty Pageant,” and led the workshops and training programs. All this helped us develop leadership skills and build upon the skills and talents each of us had. We based what we did upon the concept that every decision you make has an energy impact. It doesn’t matter what it is, but getting people to think that way and tie it in with their classes in English, social studies, math and science, language arts and other subjects, clearly proved that everyone has a part to play in solving energy problems.

Over the years, I’ve served on the NEED Board of Directors, including filling the position of Treasurer for a number of years. I enjoyed my work on the Board and am glad I was able to help play a role in this incredible organization. You wouldn’t believe how often I work with NEED or hear about their programs and activities, and remind myself that I was one of first students to come out of NEED. I know it had a huge impact on what I’ve done with my life.

NEED NEWS

Are you on Facebook? Become a FAN of NEED!

Summer is HERE! Tell us about your experiences with NEED curriculum and training! Help us improve for the next 30 years!

As the 2009-2010 school year comes to a close, we want to hear from NEED teachers and students in the annual NEED Year-End Survey. This evaluation is used each year to make changes to curriculum and training to make the program more robust, more user friendly, and more helpful to teachers and students as they learn and teach about energy.

All teachers who respond will be entered to win their choice of NEED's hands-on kits. Up to 15 winners will be randomly selected from the evaluation responses. Help us get better so that we can serve you better!

Visit <http://www.surveymonkey.com/s/2010endofyear> to complete the survey.

Do your students have comments about their experiences with NEED? Visit www.need.org and take the student survey to share!

National Energy Conference for Educators – Coming Soon to Dallas, Texas.

The 2010 NEED Energy Conference for Educators is scheduled for July 11-15, 2010 in Dallas, Texas. The conference provides attendees the opportunity to improve their knowledge of energy and energy issues while learning valuable ways to bring energy into their classrooms – at any grade level. Thanks to TXU Energy and the Society of Petroleum Engineers for their support! To register or apply for sponsorship to attend, visit www.need.org/summertraining.

Want to Learn More about Nuclear Energy?

Thanks to support from The Lenfest Foundation, NEED is pleased to host the Nuclear Energy Conference for Educators in Charlottesville, Virginia July 25-29, 2010. Up to 50 educators from around the country will be accepted to attend. Travel, lodging, meals, and curriculum are provided. The conference includes speakers and presentations from noted experts in the field, including Dr. Frank Settle of Washington and Lee University and Dr. Charles Ferguson of the Federation of American Scientists as well as NEED's nuclear education team. The conference is a mix of presentations and hands-on activities designed to expand knowledge of energy and nuclear energy while providing teachers with resources to take back to their classrooms and use easily. Educators teaching grades 6-12 are encouraged to apply. All expenses will be covered by the conference sponsors. Apply to attend at www.need.org/nuclear.

2010 Youth Awards Winners Announced

As this issue goes to press, the 2010 NEED Youth Awards Winners are being selected. Visit the NEED website at www.need.org to see the winners and their award winning projects! Join NEED at the 30th Annual Youth Awards for Energy Achievement, June 25-28, in Washington, D.C.!



Students in Erin Gockel's class in Farmington, New Mexico, received their award at the 2009 Youth Awards for Energy Achievement. See you in June!

“As I look back on my 36 years of teaching, my most treasured memories are The NEED Project memories and watching what using the materials and working with the NEED staff did to create energy-educated students. Kitty Hawk's fifth-graders spent many years educating our community through energy projects and activities, and we worked hard in our school to create energy awareness, and we were successful. I believe, without a doubt, that The NEED Project's materials are the most exciting, useful, and relevant curriculum for teaching energy and energy integration into the curriculum.”

Linda Hutton, Kitty Hawk (NC) Elementary School

K-5 Activity: Comparing Energy Use

My Energy Use

Energy is light, heat, sound, motion, growth, and powers our appliances and electronics. We use energy every single day to keep our homes at a comfortable temperature, to run the refrigerator, heat our water, cook our food, power our vehicles, fuel our bodies, and much more.

Summer is just around the corner and soon your daily routine will be changing. In the chart below, compare how you use energy at home on a typical school day to how you will be using energy at home on a typical summer day.

	School Day	Summer Day
At Home		
Food		
Transportation		
Entertainment		

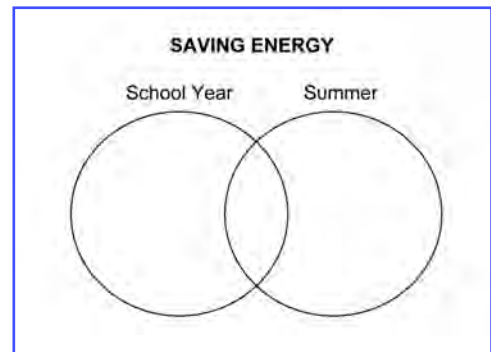
Do you notice one area that uses more energy than another? We need to use energy, but we don't want to waste energy either. Think about ways you can save energy at home. On a separate piece of paper, create a Venn Diagram similar to the one below about ways that you can save energy at home in the summer as compared to the school year.

Extension: Have students write a compare-and-contrast paper about their energy use during the school year and summer, and ways to save energy.

Social Studies Connection: Pick a different part of the world and compare the energy use for a child there with your students' energy use. Who uses more energy? Why do you think this is?

Teacher Note: Primary teachers may want to complete this activity as an entire class.

For more information about saving energy, visit the Energy Kids Page at www.eia.doe.gov/kids. You can also download the *Saving Energy Flipbook* (grades K-1), *Building Buddies Student Guide* (grades 2-3) or *Monitoring and Mentoring Student Guide* (grades 4-6) from www.need.org.



6-12 Activity: Summer Road Trip

Summer is just around the corner and plans are underway for how to spend vacation days. Whether your plans take you near or far, energy will be required to transport you from place to place. In the United States, the transportation sector consumes 28% of total energy supply and is responsible for about 34% of the greenhouse gases emitted each year.

Plan a four day summer road trip. Where would you go? What stops would you make along the way?



1. Select a vehicle make and model for your trip, then find its fuel economy ratings at www.fueleconomy.gov. Fill in the information below.

Vehicle Make and Model: _____

Fuel Type: _____ Fuel Economy (MPG): _____

2. In the chart's left hand column, plan out each segment of your trip. Use the data and formulas provided below to calculate how many gallons of fuel will be required, and the amount of CO₂ emissions. Expand the chart as needed.

The EPA uses the following CO₂ emission values. Circle the value you will use in your calculations:

Gasoline CO₂ Emissions = 19.4 pounds/gallon or Diesel CO₂ Emissions = 22.2 pounds/gallon

Miles Driven/MPG = Total Gallons Consumed. Total Gallons Consumed x CO₂ Emissions pound/gallon = Total CO₂ Emissions.

To	From	Miles	Gallons Consumed	Total CO ₂ Emissions

On a separate piece of paper answer the following questions:

Why did you choose the vehicle you chose?

What is the total amount of CO₂ emissions associated with your trip?

What is the price of fuel in your area? How much will fuel for the entire trip cost?

Are there ways you can reduce your fuel consumption on this trip?

Are there some portions of your trip where you can use public transportation? Why or why not?

How would using public transportation compare to driving your own personal vehicle?

A 2010 Volkswagen Jetta using diesel fuel gets 34 mpg, and one using premium gasoline gets 27 mpg. Which car would be better to take on your road trip? Use data to explain your reasoning.

Can you find a less expensive, less carbon intensive vehicle than your first vehicle choice? Find at least two alternatives and explain how they compare to your original vehicle.

Resources: For more information on alternative fuel vehicles, visit the U.S. Department of Energy's *Alternative Fuels & Advanced Vehicles Data Center* at www.afdc.energy.gov/afdc/.



What a Difference 30 Years Makes!

Back in 1980, when President Jimmy Carter signed the proclamation that led to the establishment of The NEED Project, you could mail a letter for 15 cents, buy a gallon of gas for around \$1.25, get a new car for an average of \$7,200, and even purchase a new home for \$76,400.

Today, that stamp will cost 44 cents, the gallon of gas around \$3, the car cost has jumped to \$26,500, and the price of a new home has soared to more than \$221,000.

Check out the articles in this issue to find out what NEED has done during these past 30 years. Lots of changes have made The NEED Project more valuable and useful to teachers and students than ever before!



NEED students show off the 2001 t-shirt. The styles change every year, and students always look forward to the latest NEED "look."



In the early years, NEED hosted summer camps that helped students gain leadership skills and energy knowledge. "Energy Pictionary" is a long-time NEED favorite.



Long-time NEED song leader Rich Ammentorp leads energy songs at one of the Youth Awards ceremonies, circa 1988.

For a detailed calendar of upcoming NEED events and workshops, visit www.need.org/calendar.