ADDENDUM 1

A School's Greenhouse Gas Emissions Calculator

Doing Our Share to Reverse Global Warming

For the year _____ (the latest year for which information is available)

1. **Electricity**
   Enter the number of kilowatt hours used _____ x 1.268 lbs. CO_2/kilowatt hour = _____ lbs. CO_2
2. **Heating**
   Gals. of heating oil used _____ x 22.38 lbs. CO_2/gal. = _____ lbs. CO_2
   Therms of natural gas used _____ x 11.7 lbs. CO_2/therm = _____ lbs. CO_2
3. **Transportation**
   Gals. of gasoline used _____ x 19.64 lbs. CO_2/gal. = _____ lbs. CO_2
   Gals. of diesel fuel used _____ x 22.38 lbs. CO_2/gal. = _____ lbs. CO_2
   Therms of natural gas used _____ x 11.7 lbs. CO_2/therm = _____ lbs. CO_2
4. **Total** lbs. of CO_2/ released into the atmosphere = _____ lbs. CO_2

New Jersey's goal: Reduce greenhouse gas emissions by 3.5% below 1990 levels by 2005.

For the year 1990 (the base year) or 199___

5. **Electricity**
   Kilowatt hours used _____ x 1.33 lbs. CO_2/kilowatt hour = _____ lbs. CO_2
6. **Heating**
   Gals. of heating oil used _____ x 22.38 lbs. CO_2/gal. = _____ lbs. CO_2
   Therms of natural gas used _____ x 11.7 lbs. CO_2/therm = _____ lbs. CO_2
7. **Transportation**
   Gals. of gasoline used _____ x 19.64 lbs. CO_2/gal. = _____ lbs. CO_2
   Gals. of diesel fuel used _____ x 22.38 lbs. CO_2/gal. = _____ lbs. CO_2
   Therms of natural gas used _____ x 11.7 lbs. CO_2/therm = _____ lbs. CO_2
8. **Total** lbs. of CO_2/ released into the atmosphere = _____ lbs. CO_2

The *Doing Our Share* Calculations

The goal is to reduce greenhouse gas emissions by 3.5% of the school's 1990 total by 2005.

9. **Multiply** the total on line 8 _____ x .035 = _____ lbs. CO_2
10. **Subtract:** line 8 total _____ minus line 9 total _____ = _____ lbs. CO_2

This is the school's target amount of greenhouse gas emissions for 2005.
How does it compare with line 4?
What steps can your school take to reach the goal on line 10 by 2005?

School _____

Address _____

Name of contact person _____ Date _____

Contribute to the *Doing Our Share* Campaign. Send a copy of your completed form to:
NJ Sustainable Schools Network, c/o Global Learning, Inc., 400 Union Ave., Brielle, NJ 08730

Our School's Greenhouse Gas Emissions Calculator

Doing Our Share to Reverse Global Warming

Name of School _____

Address of School _____

Name of Student(s) _____

Name of Teacher _____ Grade _____Date _____

For the year _____ (the latest year for which information is available)

1. **Electricity**
   Enter the number of kilowatt hours used _____
   x 1.268 lbs. CO_2/kilowatt hour =
   _____ lbs. CO_2
2. **Heating**
   Gals. of #2 heating oil used _____
   x 22.38 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Gals. of #6 heating oil used _____
   x 26.0 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Therms of natural gas used _____
   x 11.7 lbs. CO_2/therm =
   _____ lbs. CO_2

British Thermal Unit (Btu) - The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories.
Therm - A unit of heat containing 100,000 British thermal units (Btu).

3. **Transportation**
   Gals. of gasoline used _____
   x 19.64 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Gals. of diesel fuel used _____
   x 22.38 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Therms of natural gas used _____
   x 11.7 lbs. CO_2/therm =
   _____ lbs. CO_2

4. **Total** lbs. of CO_2/ released into the atmosphere = _____ lbs. CO_2

Name of School _____

Name of Student(s) _____

Name of Teacher _____ Grade _____Date _____

For the year 1990 (the baseline year)

5. **Electricity**
   Kilowatt hours used _____
   x 1.33 lbs. CO_2/kilowatt hour =
   _____ lbs. CO_2
6. **Heating**
   Gals. of #2 heating oil used _____
   x 22.38 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Gals. of #6 heating oil used _____
   x 26.0 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Therms of natural gas used _____
   x 11.7 lbs. CO_2/therm =
   _____ lbs. CO_2

7. **Transportation**
   Gals. of gasoline used _____
   x 19.64 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Gals. of diesel fuel used _____
   x 22.38 lbs. CO_2/gal. =
   _____ lbs. CO_2

   Therms of natural gas used _____
   x 11.7 lbs. CO_2/therm =
   _____ lbs. CO_2

8. **Total** lbs. of CO_2/ released into the atmosphere in 1990 = _____ lbs. CO_2

Name of School _____

Name of Student(s) _____

Name of Teacher _____ Grade _____Date _____

The *Doing Our Share* Calculations

The goal is to reduce greenhouse gas emissions by 3.5% of the school's 1990 total by 2005.

9. **Multiply** the total on line 8 _____
x .035 =
_____ lbs. CO_2

10. **Subtract:** line 8 total _____
minus line 9 total _____ =
_____ lbs. CO_2

This is the school's target amount of greenhouse gas emissions for 2005.

How does it compare with line 4?

What steps can your school take to reach the goal on line 10 by 2005?

Please contribute to the statewide Doing Our Share Campaign by sending a copy of your results to Global Learning, Inc., 1018 Stuyvesant Avenue, Union, NJ 07083, or by email to globallearning@att.net. Thank you!

Name of School _____

The *Doing Our Share* Comparisons

11. Total emissions for 2000 (line 4) _____ lbs./CO_2

12. Total emissions for 1990 (line 8) _____ lbs./CO_2

13. Subtract the smaller number from the larger _____ lbs./CO_2.

14. The 2000 total represents an *increase* / *decrease* (circle one) of - _____ % compared with 1990 total (line 12). Divide line 13 by line 12.

15. If line 14 is an *increase* over, or *less* than a 3.5% *decrease* from, 1990, how many lbs. of CO_2 must still be cut?

    Line 11 _____ minus line 10 _____ =

    _____ lbs./CO_2

16. This amount represents what percentage reduction over <u>2000</u> totals?

    Line 15_____ divided by line 11 _____ =

    _____%

17. This amount represents what percentage reduction over <u>1990</u> totals?

    Line 15_____ divided by line 12 _____ =

    _____%

SAMPLE MEMORANDUM OF UNDERSTANDING

DATE:
TO: Superintendent (name), ……. School District
FROM:
SUBJECT: Green Schools Project Letter of Intent

The Alliance to Save Energy is pleased to accept this statement of intention of the …….. School District, to cooperatively implement the Alliance's Green Schools Project through December 2001 at the ……school district. The program will begin the first year with ……High School, …… Elementary school and … Middle School, with the expectation that it will expand to more schools the second year.

The goals of the program are:

- to help schools save money on energy costs and protect the environment through cooperative, school-wide changes in behavior, operations and maintenance procedures and retrofits of more efficient equipment;

- to provide excellent, hands-on learning opportunities for students; and

- to build a model that can be used by other New Jersey schools.

The program will provide motivation for individual schools to conserve resources and will also help students translate their energy efficiency experience in schools to their home. This statement of intention describes the general roles of each party in carrying out the program. Where appropriate, intended dates are noted.

The Alliance to Save Energy will:

1. **support Green Schools teachers** to provide learning and resource-efficiency opportunities for their students by:

- facilitating a 12 hour workshop on……. from 2:00 PM to 6:00 bringing together teams from each of ten schools to design and coordinate Green Schools goals and activities at their schools;
- facilitating mid-year and end-of-year meetings of the Green Schools staff to share successes, discuss and resolve problems, and continue planning;
- Providing stipends of $… for up to five teachers participating in the project and documenting their work, as described in the attached Scope of Work; and
- Providing a Guide to Project Resources, including instructional materials correlated with the New Jersey Core Curriculum Content Standards, data base of teachers' experiences with these materials, and supplies for teachers to use in implementing project activities.

2. Support custodians and facilities staff to work with teachers and students to identify and implement changes in school facilities that will use energy more efficiently while also improving comfort levels, indoor air quality,

3. Provide a stipend for the head custodian (or designee) in each school for activities beyond the normal scope of their work; see attached (draft) Facilities Professional Scope of Work.

4. Provide software and training, and assist participating schools and districts in developing a baseline of energy and resource use, and tracking dollar savings resulting from Green Schools activities.

5. Facilitate communication between teachers and students in the 10 schools. A web site and periodic newsletter provide new resources, updates of activities at schools and other organization, and access to technical tools and information.

6. Support the overall development of Green Schools in the …….district by identifying additional resource and partnerships.

The ……. School District will:

1. Identify and support three to five teachers, an administrator and the head custodian (or designee) as the Green Schools Team in implementing the Green Schools activities in their classrooms and schools, including encouraging their participation in Green Schools workshops and meetings (described above) and school-level team meetings;

2. Have at least one district-level staff person participate in training in energy management software to be used for setting baselines and tracking energy and water use;

3. **Return at least 50 percent of the dollars saved on energy, water and recycling due to no-cost behavior and operations changes to the individual school that achieved them; to be used for educational purposes at the discretion of the principal, and to leave that baseline in place, adjusting for retrofits and other physical changes, for at least two years**;

4. Consider student and professional recommendations on energy efficient retrofits, and implement those that meet the school district's criteria for cost-effectiveness and performance.

(name)
Superintendent, ……School District

Date _____

ADDENDUM 3

The School Campaign to Do Our Share for Greenhouse Gas Reductions
RESOLUTION FOR SCHOOL BOARDS OF EDUCATION

Whereas, since 1990, scientists around the world have conducted a wide range of studies that have shown that global warming is melting polar ice, raising sea levels and causing droughts and extreme weather events; and

Whereas, the current scientific consensus is that the primary cause of change in global climate during the last century is the human-caused input of greenhouse gases (GHGs) to the atmosphere; and

Whereas, the New Jersey Department of Environmental Protection's (NJDEP) Administrative order 1998-09 on climate change (3/17/98) has established the quantitative target of a 3.5% reduction in New Jersey's GHG emissions below our 1990 baseline by 2005; and

Whereas, one of the most significant environmental impacts to New Jersey attributable at least in part to global warming is sea level rise; and

Whereas, more than 80% of New Jersey's GHGs are from CO_2, which is the result of the combustion of fossil fuels for heating, electrical generation and use, and transportation; and

Whereas, the *New Jersey Department of Environmental Protection's Sustainability - Greenhouse Gas Action Plan* identifies specific measures and actions that can help achieve this goal, including, but not limited to:

- increasing the rate of lighting upgrades,
- increasing the rate of heating/cooling and distribution of system tune up/maintenance to reduce both the electric requirement and the non-electric fuel use,
- increasing building efficiency through upgrade use of newer energy building codes and Energy Star Building programs,
- increasing the use of higher efficiency HVAC equipment including geothermal systems and microturbines,
- increasing use of combined heat and power system and more efficient use of waste heat,
- increasing use of renewable energy systems including photovoltaics and fuel cells,
- increasing the rate of office equipment upgrade to Energy Star level,
- increasing the maintenance of fleet vehicles to improve fuel efficiency & reduce emissions,
- reducing trips to work (applicable to both staff & students), and
- utilizing alternative fuel vehicles; and

Whereas, the **New Jersey School Boards Association** approved a "*Reduction of Greenhouse Gas Emissions*" policy on 11/1/01, stating: "The NJSBA believes that the state, business and public entities, including schools, should support efforts to protect the resources and systems that support us today so that they will be available to future generations. All reasonable efforts to implement voluntary programs and initiatives to accomplish the reduction of greenhouse gas emissions should be supported;" and

Whereas, school buildings, vehicles and operations through their use of energy to heat, cool, ventilate and light their facilities within a district contribute to the emission of GHG, especially CO_2, and thus can contribute significantly to the solution of this global problem; and

Whereas, in order to meet the new facility efficiency standards, as set forth in the New Jersey School Construction and Financing Act of 2000, K-12 public school districts may undergo construction including new construction, replacement of existing facilities and retrofitting or expansion of existing facilities as delineated in a district's Long Range Facility Plan; and

Whereas, part of this new or replacement construction may include energy systems to heat, cool, ventilate and light the district's facilities; and

Whereas, a school district's long term operating costs can be lowered by including energy efficiency measures for heating, cooling, ventilation and other electric uses and by including renewable energy technologies within the Long Range Plan to meet the minimum facility efficiency standard as required under the School Construction and Financing Act for retrofits, replacements and new construction; and

Whereas, the capital cost of these high energy efficiency and renewable energy technologies may be higher than standard HVAC equipment and this incremental capital cost increase may in part be subsidized through the Societal Benefits Charge funding for energy efficiency and Class I renewable energy program under development by the New Jersey Board of Public Utilities in consultation with the New Jersey Department of Environmental Protection; and

Whereas, the inclusion within the curriculum of such content as the intellectual debate about the greenhouse effect, the potential consequences of climate change, and possible solutions to this global challenge will support, at minimum, the New Jersey Department of Education's science standards 5.1, 5.2, 5.4, 5.5, 5.9, 5.10 and 5.12, social studies standards 6.7, 6.8 and 6.9, language arts standards 3.2, 3.3, 3.4 and 3.5, and workplace readiness standards 2, 3 and 4;

THEREFORE BE IT RESOLVED, that _____ Board of Education pledges its support for the goals of the New Jersey Sustainability - Greenhouse Gas Action Plan and will undertake all reasonable efforts to implement voluntary programs and initiatives to accomplish the core goal of the plan, i.e., a 3.5% reduction in New Jersey greenhouse gas emissions below 1990 baseline levels by 2005; and

Encourages its staff to involve students in the analysis of this challenge and the accomplishment of this goal as part of the *School Campaign to Do Our Share for GHG Reductions*; and

Petitions the New Jersey School Boards Association to establish a policy supporting the New Jersey Sustainability Greenhouse Gas Action Plan.

_____

President *Date*

_____

Business Administrator

Source: *New Jersey Sustainability Greenhouse Gas Action Plan*. December 1999.
Available from the New Jersey Department of Environmental Protection, CN 402, Trenton, NJ 08625.
http://www.state.nj.us/dep/dsr/gcc/gcc.htm

Send a copy of this resolution to the New Jersey Sustainable Schools Network, c/o Global Learning, Inc., 1018 Stuyvesant Avenue, Union, NJ 07083 (908) 964-1114.